CEMENT AND CLINKER TRADE AROUND AFRICA
A METHOD AND FACILITIES OVERVIEW

Ad Ligthart

Cement Distribution Consultants

CEMENT DISTRIBUTION CONSULTANTS

18-06-2014

INTERCEM AFRICA NAIROBI KENYA

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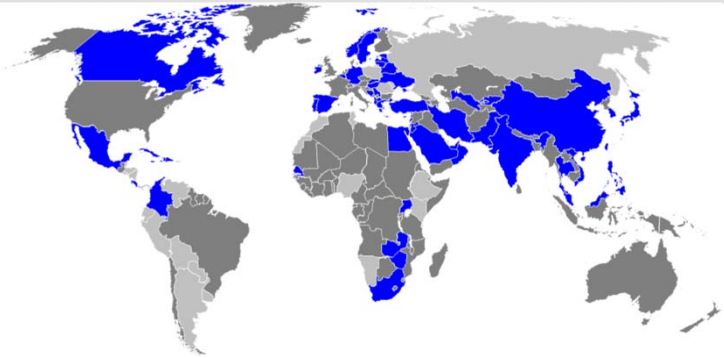

- Overview of trade flows
  - Global trade flows
  - Trade flows around Africa
  - Shipping methods
- Clinker and cement import facilities
  - General overview
  - Bagged cement imports
  - Clinker imports
  - Bulk cement imports
- Clinker and cement export facilities
  - Overview
- Does Africa needs protection against imports?
- Possible solutions for congested and difficult port situations
- Cementitious materials
  - Market potential
  - Possibilities

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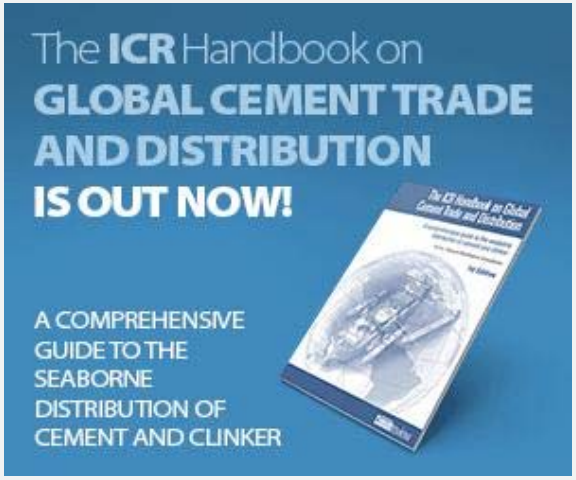
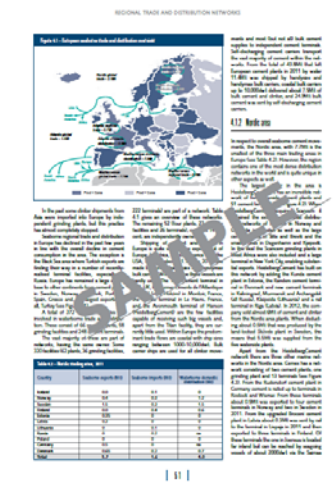
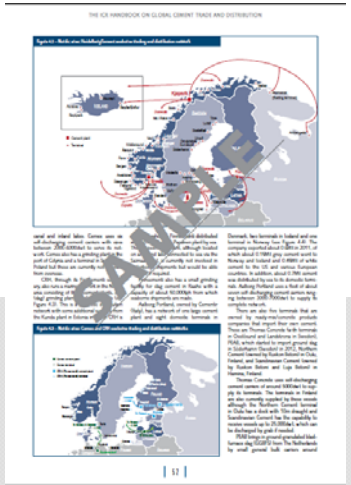
Cement Distribution Consultants
an introduction

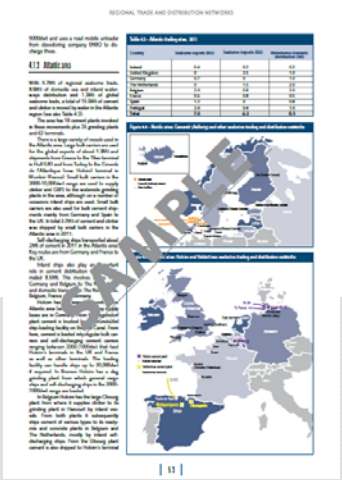
Market knowledge	Consulting	Project / interim management
• The global cement industry on Google Earth • Large database on waterside cement plants, waterside grinding plants and terminals • 30 Years experience	Logistical, economical and technical services • Feasibility studies of complete logistical chains 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 NEW Set up of a logistical system to supply cementitious materials to the GCC countries and East Africa



The Handbook on
Global Cement Trade and Distribution







- Overview of Global cement and clinker trade
- Country and regional cement trade analysis and statistics
- Fully illustrated with 80 detailed colour maps indicating material flows and trading networks and facilities
- Cement shipping and distribution economics
- Review of cement terminal design and operation
- Facilities directory

Authors:

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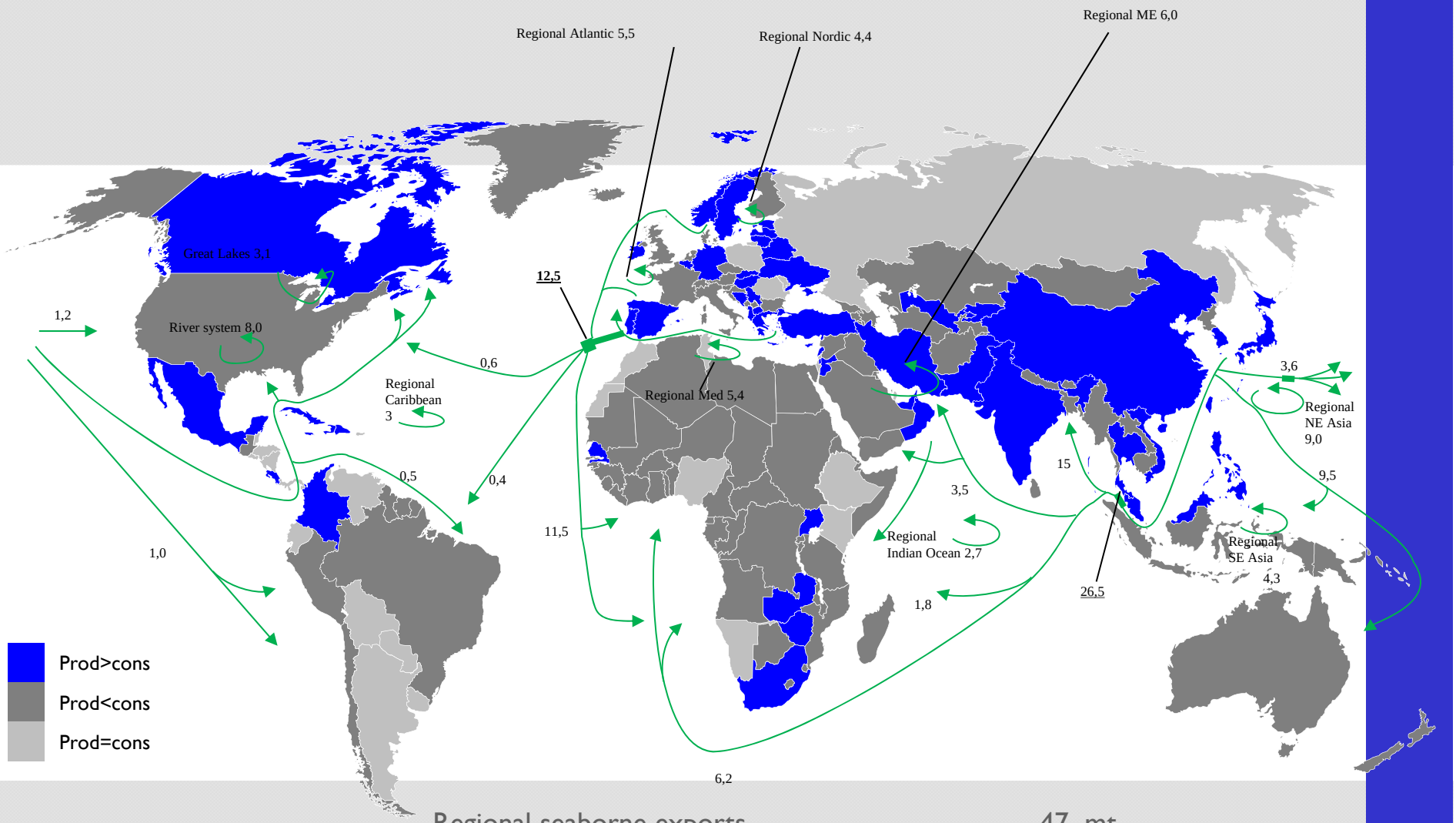
2013 Global seaborne cement and clinker trade flows (est.)



Regional seaborne exports	47	mt
Global seaborne exports	53	mt
Waterborne domestic distribution	110	mt (excl. China)
Total	220	mt

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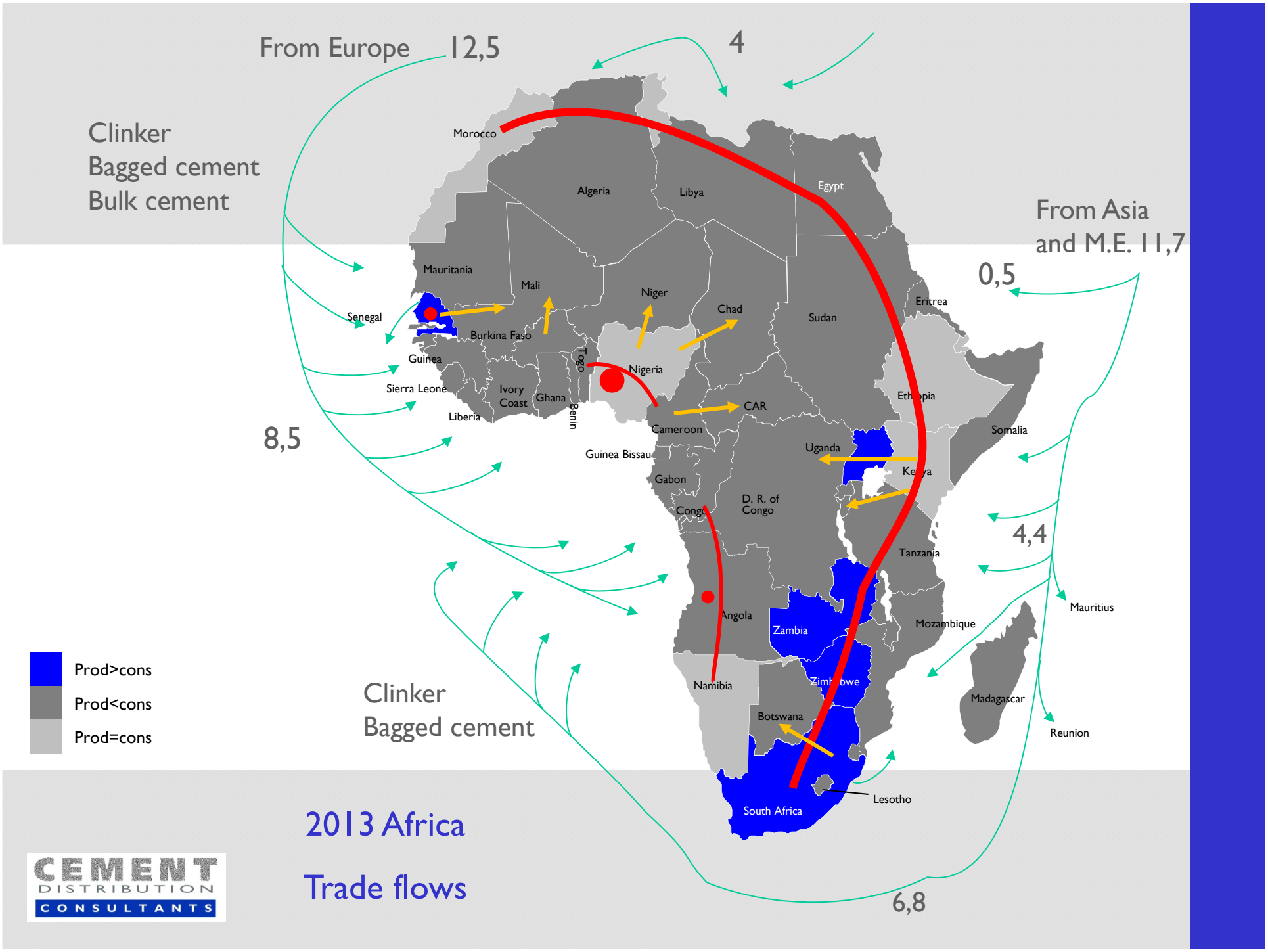

2013 Africa

Trade flows

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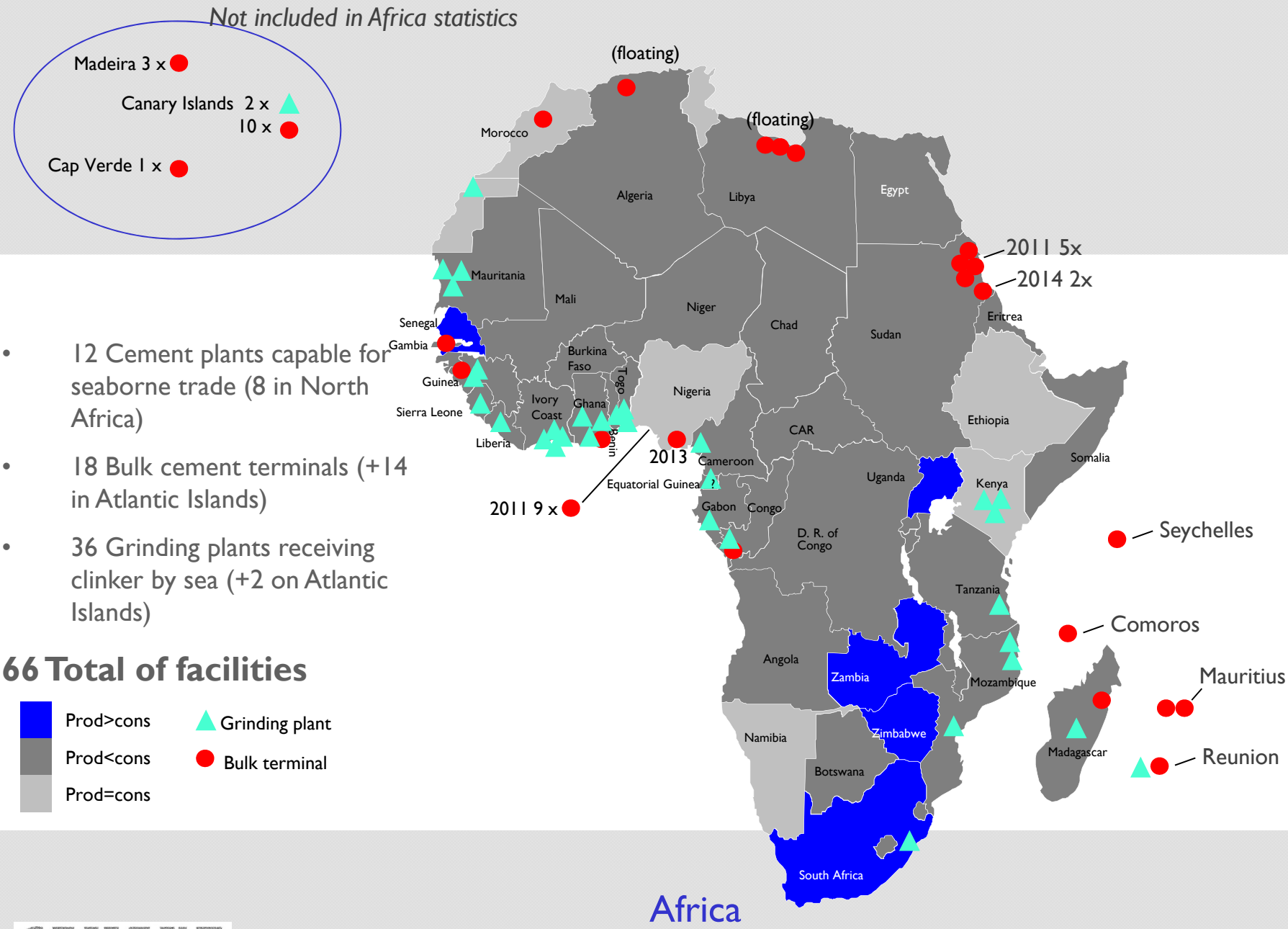
Shipping methods

- 25,2 mt of cement and clinker moving around Africa consisting of
  - 12,5 mt from Europe
  - 11,7 mt from Asia and ME
  - 1,0 mt within Africa

- 25,2 mt of cement and clinker
  - 13,1 mt clinker (regular bulk carriers)
  - 8,9 mt bagged cement (regular bulk carriers)
  - 3,2 mt bulk cement (40% regular bulk carriers, 60% self discharging ships)



- 12 Cement plants capable for seaborne trade (8 in North Africa)
- 18 Bulk cement terminals (+14 in Atlantic Islands)
- 36 Grinding plants receiving clinker by sea (+2 on Atlantic Islands)

66 Total of facilities

Prod>cons
Prod<cons
Prod=cons

Grinding plant
Bulk terminal

Africa

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Clinker and cement import facilities (general overview)

With very high cement prices and a shortage situation in many African countries bagged cement imports seem attractive but there are substantial challenges.

A) Infrastructural problems

- Port development lags behind economic growth causing shortage of available berths
- Many ports insufficiently maintained in respect to dredging and berth condition
- Lack of navigational aids causing visual (daytime) approach only
- Limited storage facilities available
- Poor infrastructure between port and markets

Congestion and delays

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Bagged cement imports (8,9 mtpy!)

With very high cement prices and a shortage situation in many African countries bagged cement imports seem attractive but there are substantial challenges.

B) Poor business environment

- Lack of coordination between various authorities, agents, stevedores, etc. causing delays
- Bureaucracy
- Inefficiency
- Poor functioning legal systems. Piracy risk, war risk

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Bagged cement imports (8,9 mtpy!)

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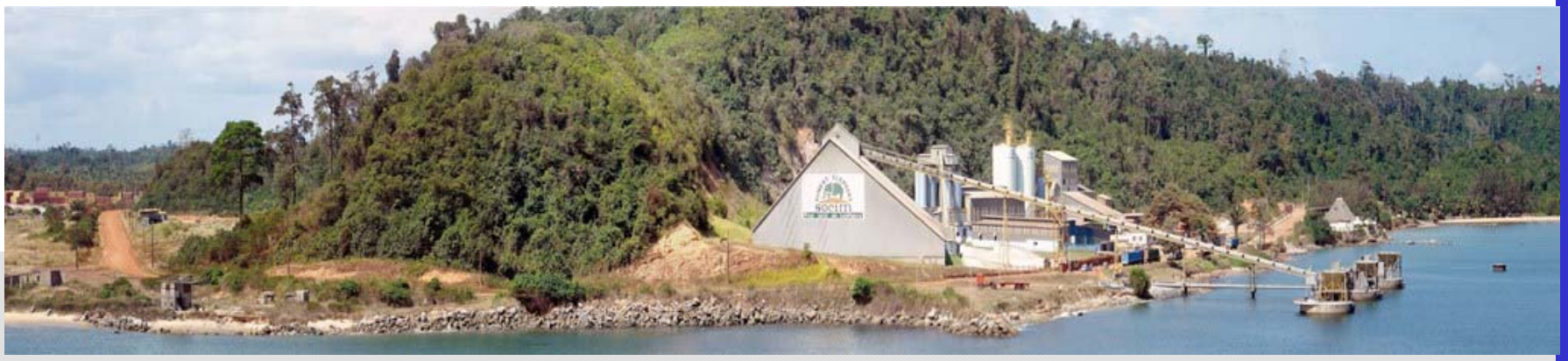
Clinker imports (13,1 mtpy)

Most grinding plants that import clinker do not have their own dedicated dock and must use general ports. This gives them the same problems as bagged cement imports.



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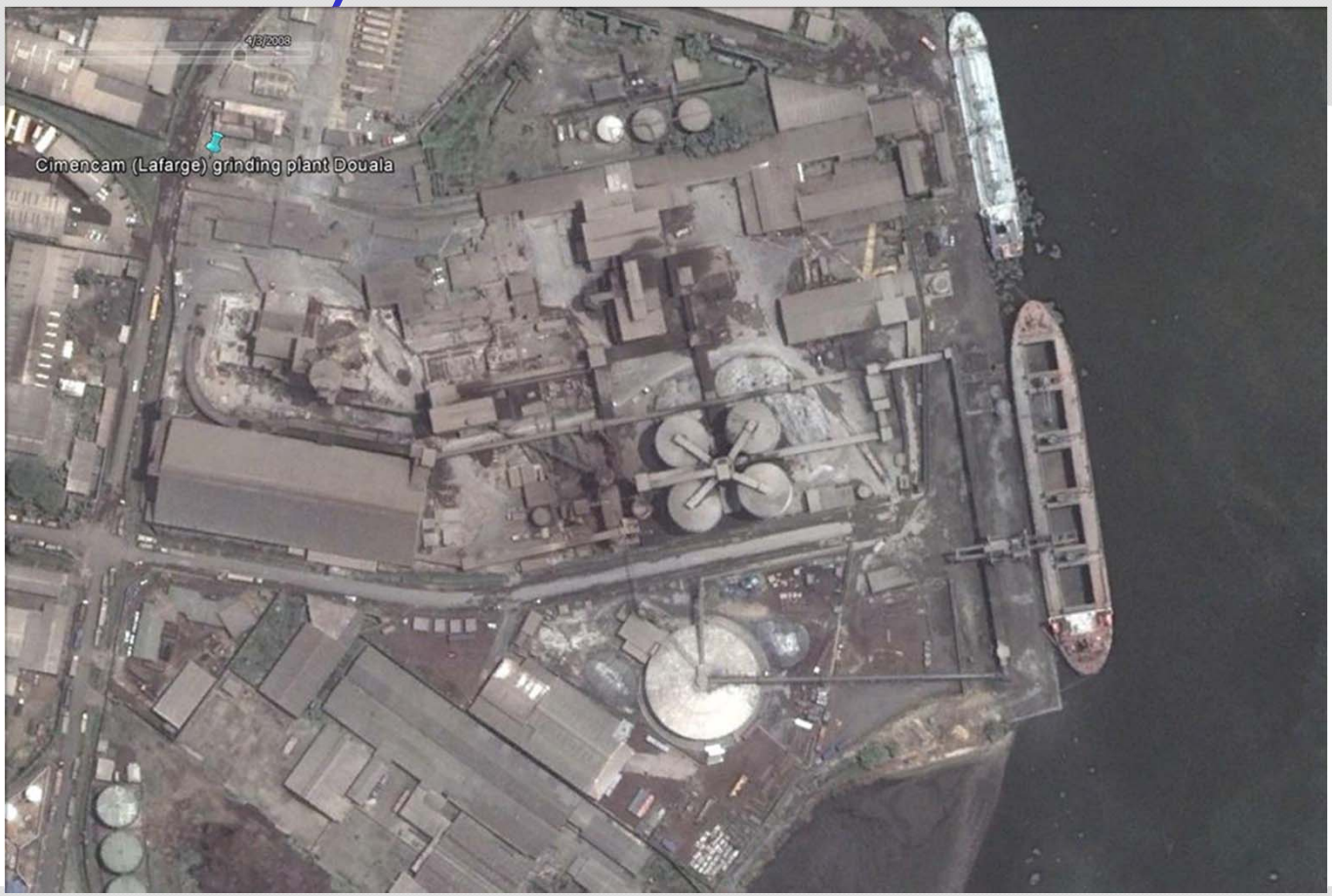
Clinker imports (13,1 mtpy!)

Of the 36 grinding plants importing clinker, only 5 have a dedicated dock



Lafarge Douala, Cameroon

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30 Grinding plants import clinker via general ports and truck to the plant

Cimgabon, Ovendo

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And a special solution

Heidelberg, Takodari

Ship discharge to barge and barge transport to the plant

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- Bulk cement imports directly into bulk trucks (No storage in ports) North Africa
- Floating terminals in North Africa
- Many bulk cement terminals closed in Nigeria and Sudan
- Very few bulk cement terminals with a dedicated berth

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Bulk cement imports (3,2 mtpy!)

North Africa

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Bulk cement imports

The situation in Nigeria, Lagos

2011 Three terminals – 2013 All closed

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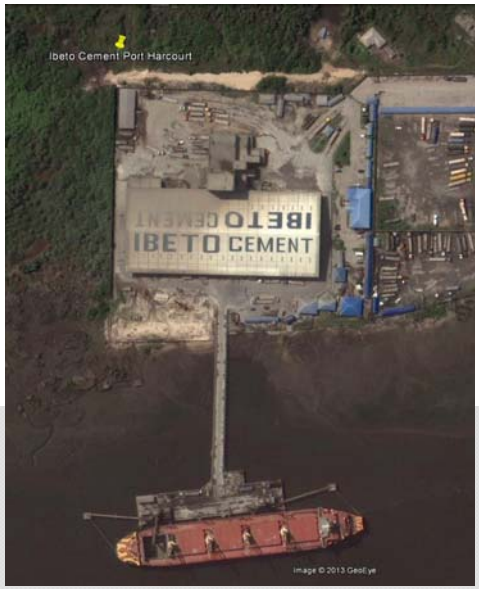
The situation in Nigeria, Port Harcourt area



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2011 Six terminals – 2013 Only IBETO terminal left

The situation in Sudan

2011 Five terminals

2013 Two terminals left

Port Sudan

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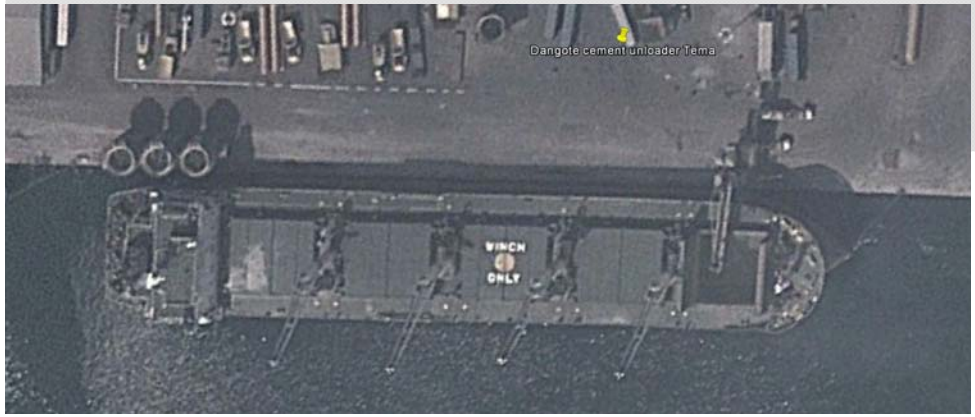
Also some bulk cement imports make use of the general port with truck transport to the terminal



Dangote, Tema

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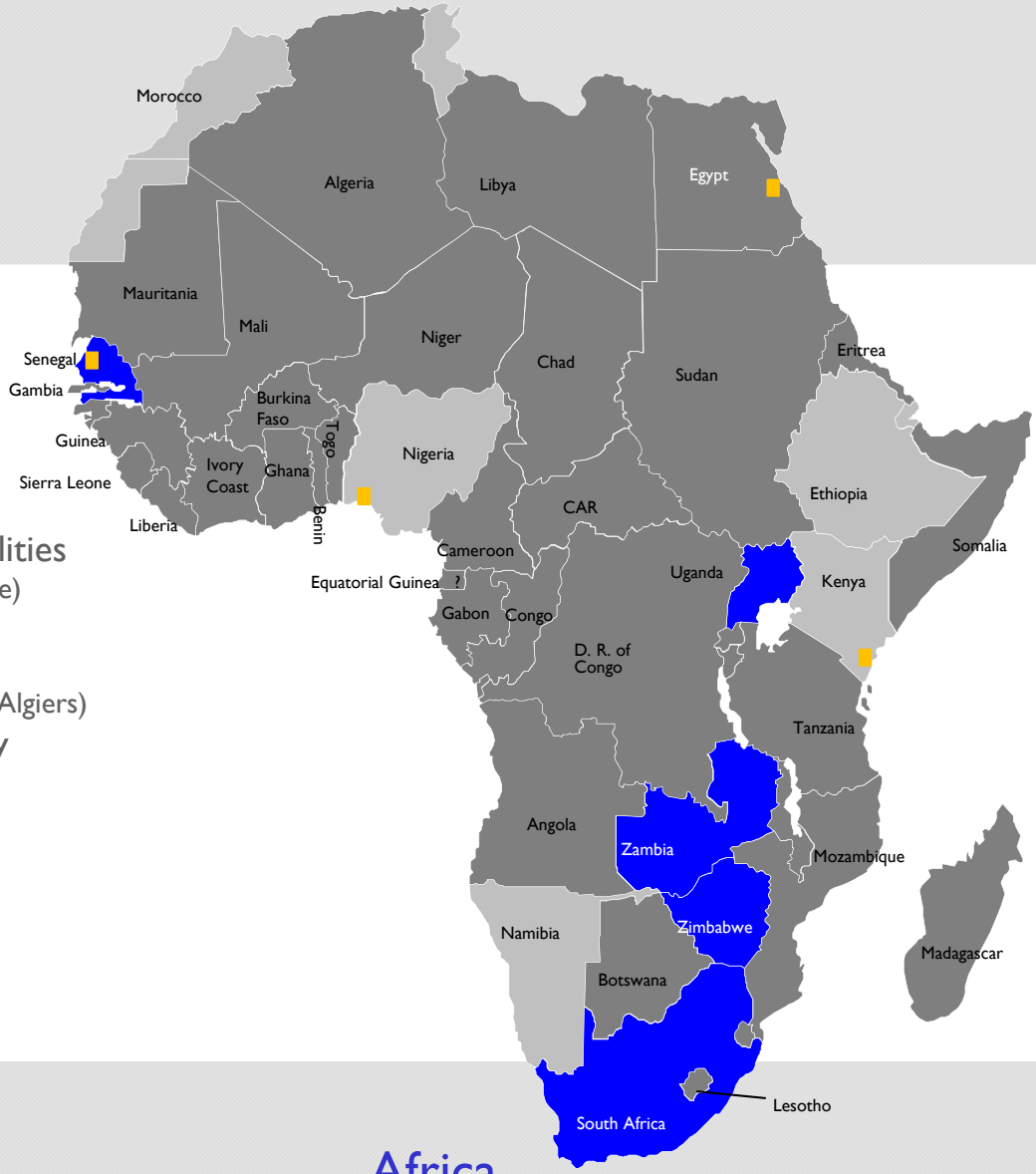
- Closed seaborne export facilities
  - Egypt (Safaga, Lafarge)
  - Kenya (Bamburi)
- Current exports
  - Senegal (via Port of Algiers)
- Possible future export facility
  - Lagos (Dangote)



Export facility

Prod>cons

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Prod=cons

Africa

Clinker and cement export facilities (general overview)

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Does Africa need protection from imports?

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Reasons to import cement

1. Shortage situation
2. Competitive distortions
   - Vertical integration between cement and ready mix industry in which independent ready mix producers are disadvantaged and secure their own cement supply
   - Price fixing that puts certain customers or areas at a disadvantage
3. The local cement industry fails to deliver what its customers need
   - Guaranteed supply (to the customer!)
   - Consistent quality
   - The right quality
   - Fair and decent pricing (delivered to the customer)

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Which is the best cement plant?

A. A plant with a production cost of $35 per ton and an average logistical cost of $50 per ton to get its cement delivered to the customer

B. A plant with a production cost of $45 per ton and an average logistical cost of $20 per ton to get its cement delivered to the customer

In Africa the focus of new cement plant is on production costs and not on logistics. This is a big mistake. This is what causes imports when a country its cement production capacity in itself would be sufficient.

Sometimes new cement plants have been built of which the delivery logistics were so poor that it was impossible for the plant to reach an economical production level for many years!!!!

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Problems

A) Usually poor port infrastructure and logistics (waiting time, long discharge time, receiving facilities located outside the port)

B) Risky investment climate (volatile economical political situations)

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Possible solutions for congested and difficult port situations

Solutions

A) Poor port infrastructure and logistics (waiting time, long discharge time, receiving facilities located outside the port)

Solutions:

- Midstream transfer to barges
- Midstream discharge with floating pipeline to shore

B) Unstable investment climate

Solution 1:

- Make facilities removable

Solution 2:

- Reduce the capital cost of the facilities as much as possible

Solutions

Small scale containerised grinding plant
(Plug & Grind, Cemengal)

•Midstream transfer bulk carrier ⇨ barges

•River transport to one or several small grinding plants
(< = 100.000 tons per year)

•Plants located in key markets

•Low capital cost

•Plant can be moved when economical/political situation changes

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Solutions
Midstream discharge and storage with floating pipeline to shore

- Floating terminal with spud poles and floating pipeline
- Does not need a port facility, just a sheltered location
- Storage, bagging and truck loading facilities all build-up from containers

Floating terminal Lavioletta
23.000 tons

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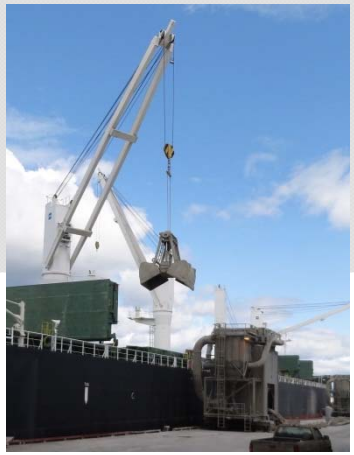
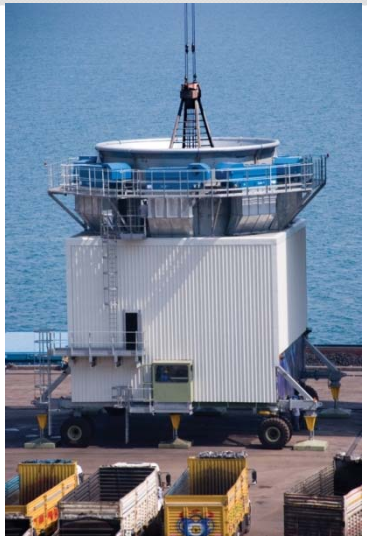
Solutions



- Geared bulk carriers discharging midstream



- Hoppers with dust collection and pneumatic convey system on pontoon or barge

- Floating pipeline to shore
- Flat storage (existing or new modular warehouse)
- Containerised reclaim and bagging systems

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Low cost terminals and ship unloaders

•Back to basics:
Simple rugged machines manufactured in low cost countries

•Standardised component but flexible use

•Everything can be transported in containers or trailers and is removable

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Advantages of cementitious materials

1. It improves workability, lowers water demand and increases strength
2. It significantly lowers heat of hydration
3. It generally exhibits less bleeding and segregation
4. It improves sulphate resistance
5. It lowers or even can prevent the risk of alkali silica reaction
6. It reduces permeability and absorption
7. It helps reducing CO_2 emissions
8. It can help increasing cement production output

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Opportunities for cementitious materials in Africa

- Large infrastructural projects require durability (minimum lifetime of concrete of 100 years).

  This can only be achieved with cementitious materials

- With proper logistics cementitious materials can be a very economical method to increase production capacity of cement by blending

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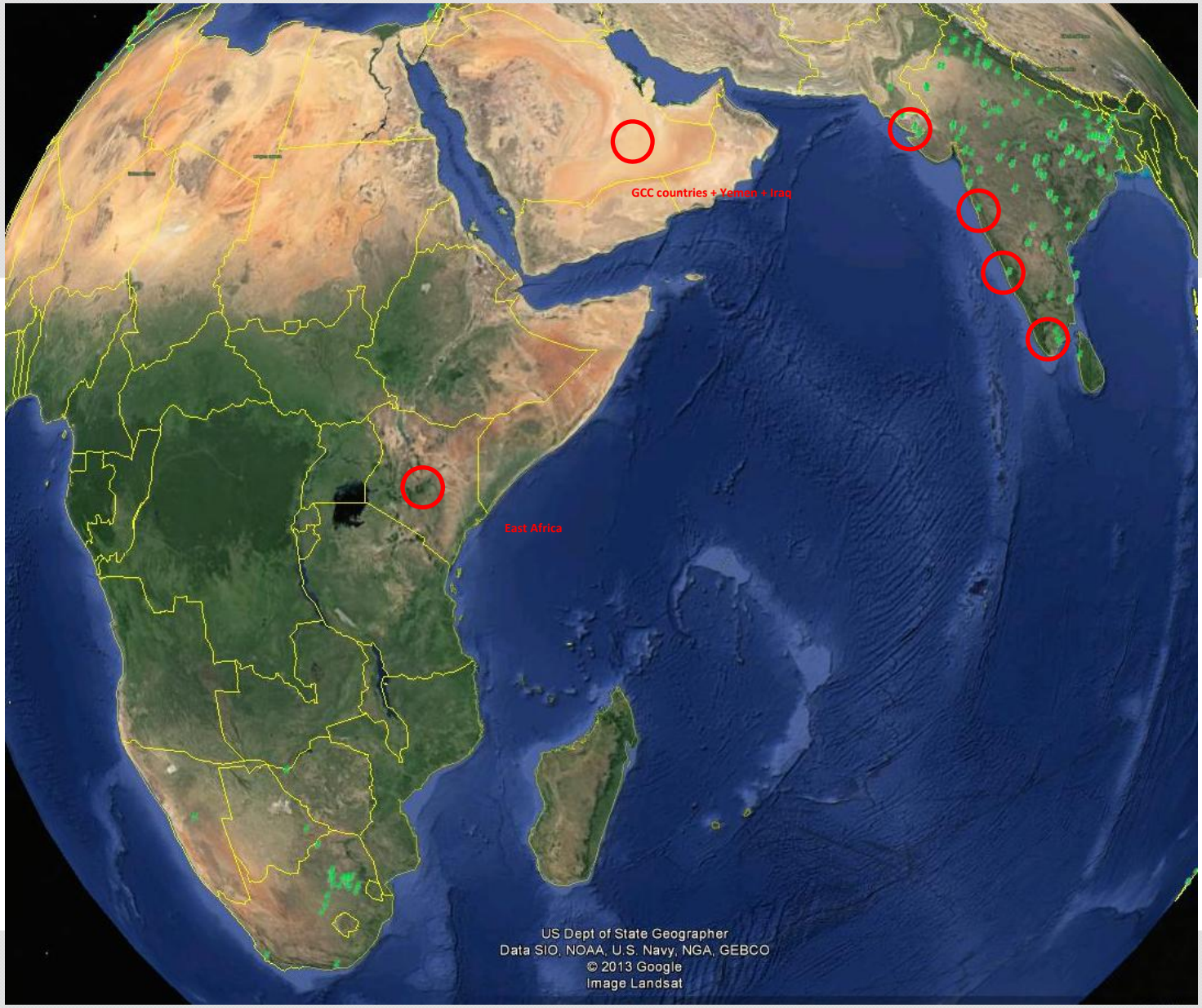

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Availability of cementitious materials for Africa

Hawar Power Minerals

- Partner for cementitious solutions
- Consultant for concrete recipes
- Continuous a reliable supply
- End to end supply chain solutions
- (Co-) investor in equipment and facilities if needed

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HAWAR POWER MINERALS
حوار باور مينرالز

STEAG

- 30 Years in power plant by-products
- Partner for energy and construction industry
- Market leader in Europe

Shipping company (TBA)

Hawar Group

- Family owned holding company
- Business focus on GCC countries
- Activities in logistics, construction and engineering

Knowledge Transfer & Investments

HAWAR POWER MINERALS

حوار باور مينرالز

End to end supplier of cementitious materials

Supply sources

Creating multiple reliable sources by guaranteeing export volumes and assisting with quality management and certification

(co) investing in export facilities

Logistics

Minimizing overall transport costs by creating volume and realizing optimal “end to end” logistics

Investing in specialist ships

Markets

Creating partnerships with cement and concrete companies providing a cost effective supply as well as technical, economical and market knowledge

(co) investing in export facilities

Conclusions 1

- Due to a lack of dedicated (bulk) import facilities imports of clinker, bagged cement and bulk cement in Africa have to go via general ports which are in most cases congested, inefficient, making imports very costly.

- New clinker and cement production capacity should be able to outcompete these expensive imports but often it does not as too much focus is placed on production costs and too little focus (and investment) on the logistics to supply the cement to the customer. This can make local clinker and cement even more expensive than imports based on delivered to customer cost.

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Conclusions 2

- There is much discussion on the potential of new production capacity to reduce imports and even to make Africa an export base in the future. However, a lack of focus on proper logistics and supply chains for African cement badly damages these prospects. The risk of underutilised African plants and continuing imports is very real because of this.

- Cementitious materials offer a good possibility to the African cement industry to increase cement production with the same amount of clinker. This not only is economical but also improves the durability and sustainability of concrete. Also the use of cementitious materials will only be possible with a focus on logistics.

The African cement industry should focus on logistics!

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THANK YOU

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