

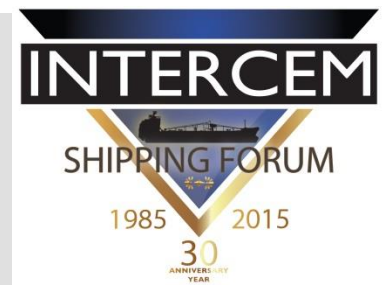
SIZES AND CAPABILITIES OF GLOBAL EXPORT, IMPORT AND DISTRIBUTION TERMINALS FOR CEMENT AND CLINKER

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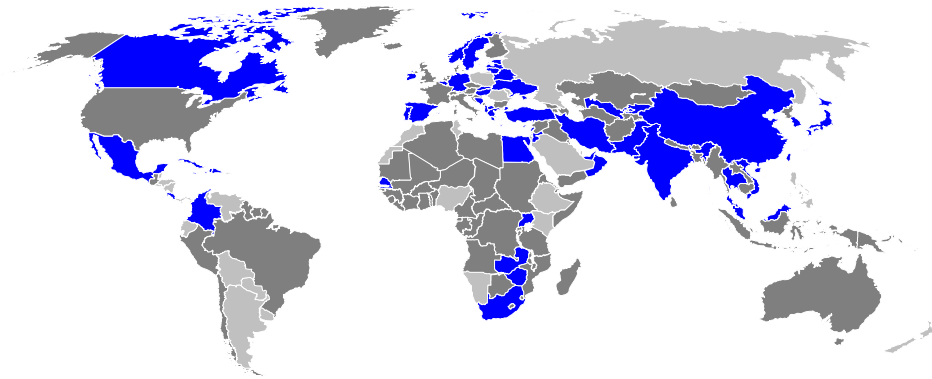
Cement Distribution Consultants



21-01-2015



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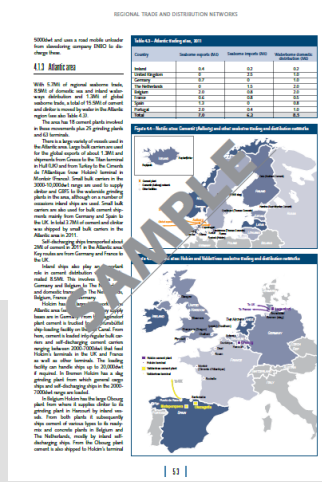
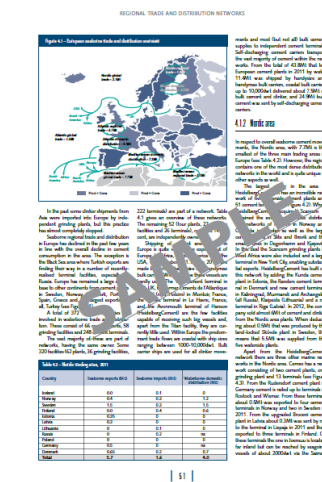
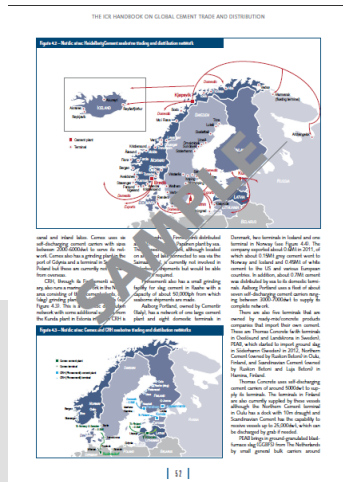


Cement Distribution Consultants

an introduction

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

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:



SHIPMENTS BY CARGO TYPE

CLINKER AND CEMENT TRADE BY WATER 2014

Clinker / cement type	Seaborne trade (Mt)		Inland water domestic trade (Mt)
	International	Domestic	
Clinker	41,9	10,0	4,8
Cement – Bulk	44,1	70,5	9,7
Cement – Bagged	18,2	12,8	3,6
Total	104,2	93,3	18,1

Total volume of cement and clinker transported by water 215,6 Mt

GLOBAL OVERVIEW CEMENT AND CLINKER SHIPPING

CLINKER AND CEMENT TRADE BY VESSEL TYPE

CLINKER AND CEMENT TRADE BY VESSEL TYPE 2014

Clinker / cement type	Bulk Carriers (Mt)		Self-disch. cement carriers (Mt)	Inland ships & water barges (Mt)*
	Large	Coastal		
Clinker	40,3	11,6	0	4,8
Cement – Bulk	7,2	10,4	97,0	9,7
Cement – Bagged	21,3	9,7	0	3,6
Total	68,8	31,7	97,0	18,1
				* excluding China

GLOBAL OVERVIEW CEMENT AND CLINKER
SHIPPING

Facilities involved in sea/waterborne cement and clinker trade and distribution

224 Cement plants

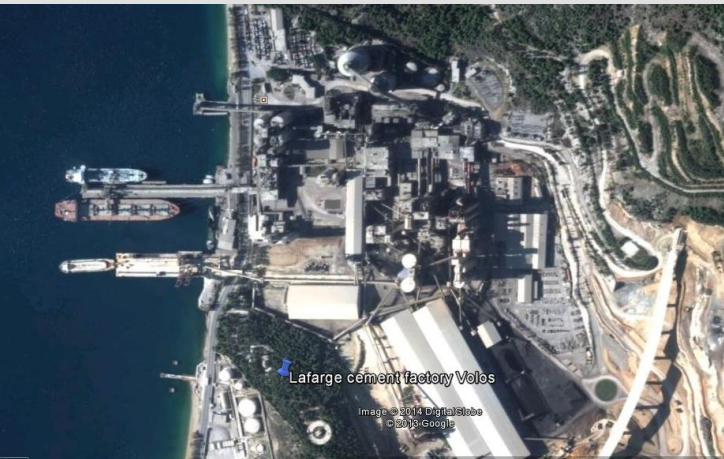
871 Cement terminals

212 Grinding plants

Total 1307 Facilities

FACILITIES OVERVIEW

224 Cement plants involved in sea / waterborne trade and distribution of cement and clinker of which...



92 Plants have their own port or dock



15 Plants rail cement to a loading facility in the plant



8 Plants connect to a loading facility in the port by a conveying belt.



4 Cement plants rail cement to the port and load ships directly from rail cars

224 Cement plants involved in sea / waterborne trade and distribution of cement and clinker of which...



23 Truck cement
to a loading
facility in the
port



55 Plants truck cement or clinker to
the port for direct ship loading



9 Cement plants
barge cement and
clinker to ports
for direct transfer
of barges to ships



18 Cement
plants distribute
domestically by
barges

FACILITIES OVERVIEW CEMENT PLANTS

224 Cement plants involved in sea / waterborne trade and distribution of cement and clinker of which...

138 Load up to Handysize and Handy max bulkers

64 Load up to coastal (<10.000 Dwt vessels)

5 Load Great Lakes vessels

17 Load inland barges solely for domestic distribution

212 Grinding plants of which....

177 Can receive Handysize / Handymax bulkers

21 Can receive coastal (<10.000 Dwt) vessels

8 Receive Great Lakes carriers

6 Receive inland barges

87| Cement terminals of which...



Houston Cement

695 Served by self discharging
vessel

176 With ship unloader

Norcem, Oslo



871 Cement terminals

140 Suitable for handysize / handymax vessels

of which....

61 Served by self discharging ships

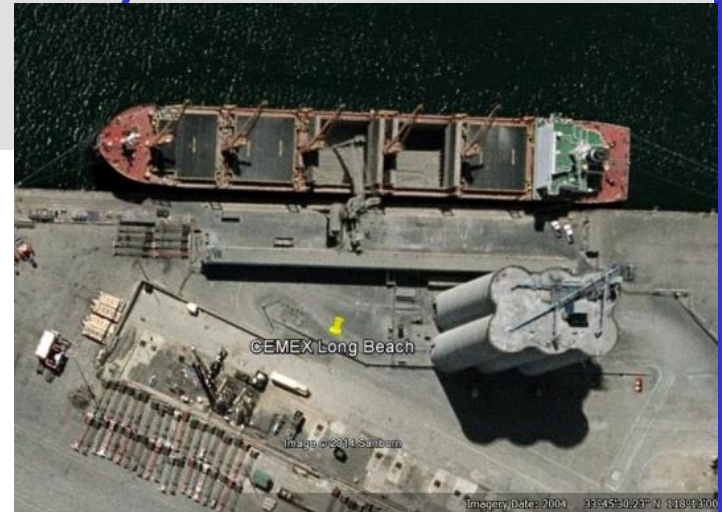
50 Have a mechanical unloader

24 Have a pneumatic unloader

5 Have grab and hopper system



Taiwan Cement, Taichung



Cemex, Long Beach



Silvi, Bristol



Lafarge, Onne

87| Cement terminals

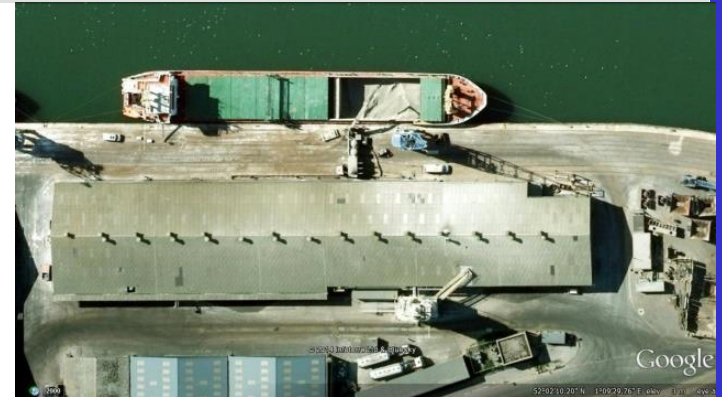
73| suitable for coastal (< 10.000 dwt) and inland vessels of which....



Holcim, Plymouth

62| Served by self discharging vessels

8| Have a pneumatic unloader

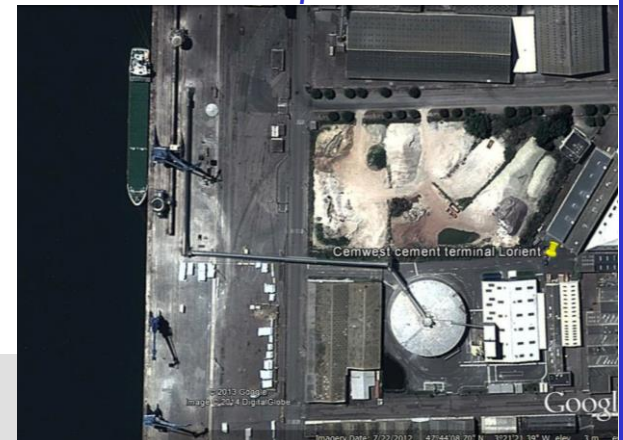


Southern Cement, Ipswich



28 Have a mechanical unloader

1 Has a grab & hopper system



Cemwest, Lorient

87| Cement terminals of which....

730 Silo terminals

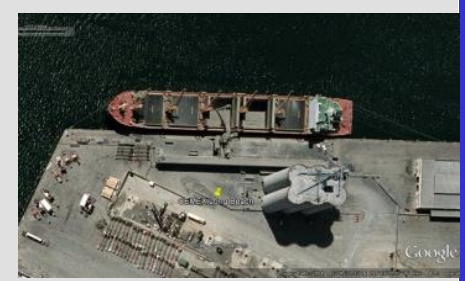
74 Flat storage terminals

24 Dome terminals

17 Floating terminals

14 Direct to end user (no storage)

12 Unknown



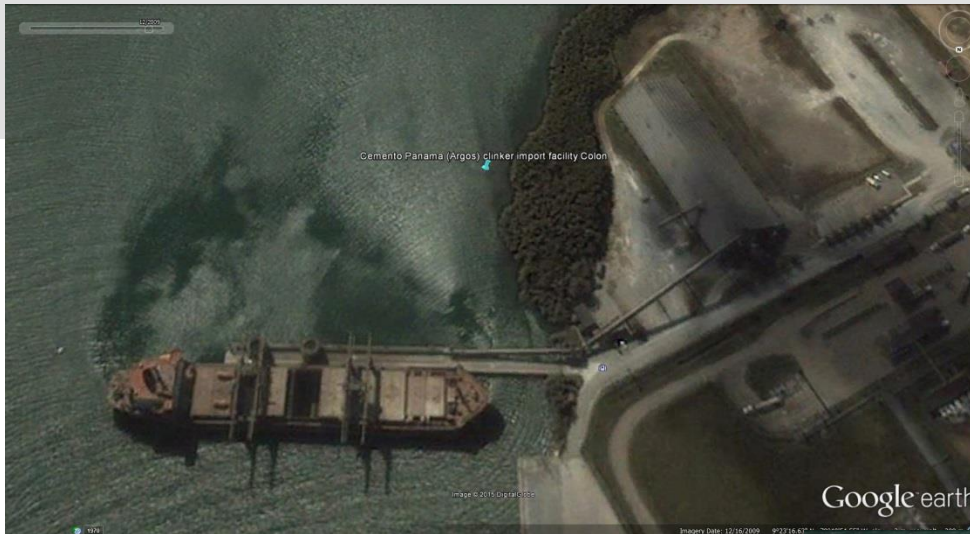
Facilities that have a dedicated dock

116 Cement plants

55 Grinding plants

243 Terminals

Grinding plants with their own dock



*Cemento Panama
(Argos), Colon*

Ciment de Mauretania



Cement terminals with their own dock



Cemex, Houston



Semen Tonasa, Celukan Bawang



Lafarge, Sete

Facilities that use a public dock

81 Cement plants

106 Grinding plants

547 Terminals

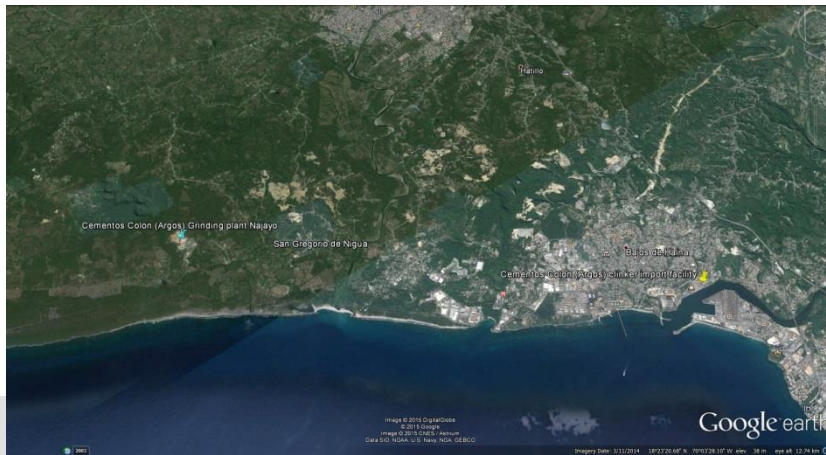
Grinding plants that use a public dock



SCA and SOCIMAT (Holcim), Abidjan



Sierra Leone (Heidelberg), Freetown



*Cementos Colon (Argos),
Dominican Republic*

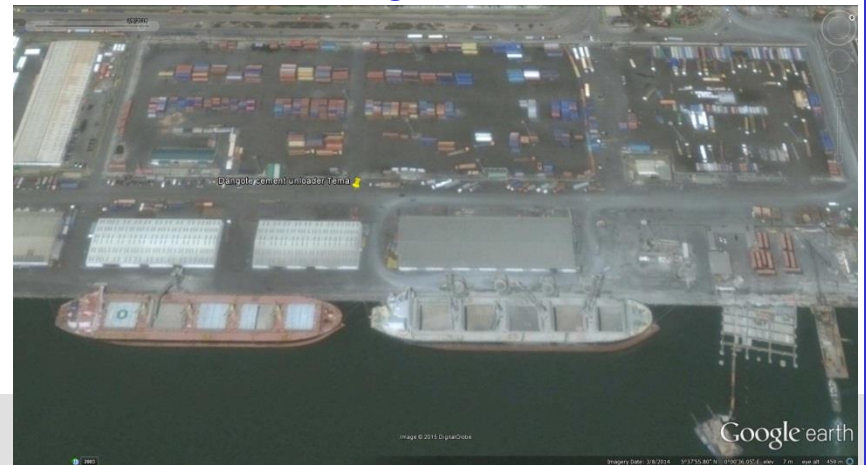
Cement terminals that use a public dock



Southern Cement, Ipswich



Dangote, Tema



Dangote, Tema

DOCK SITUATIONS

Facilities that do not use a dock at all

27 Cement plants

51 Grinding plants

82 Cement terminals

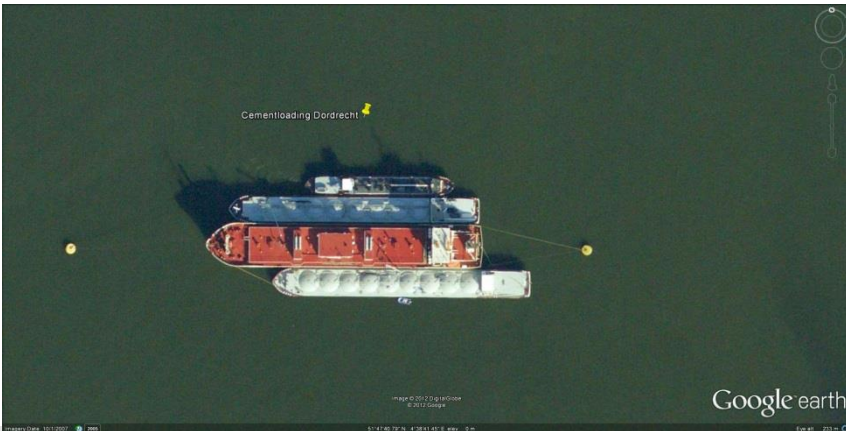
Cement plants that do not use a dock



Cement loading in the Netherlands



Clinker loading in Vietnam



Cement loading in the Netherlands

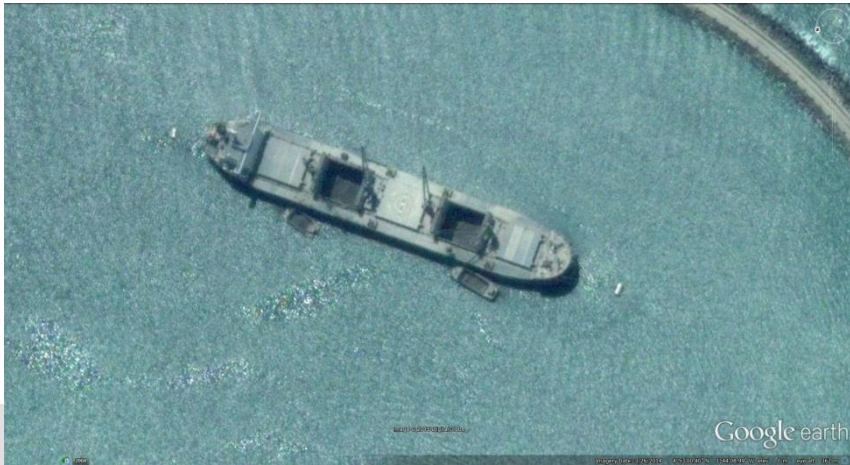
Grinding plants that do not use a dock



Ghacem (Heidelberg), Takodari

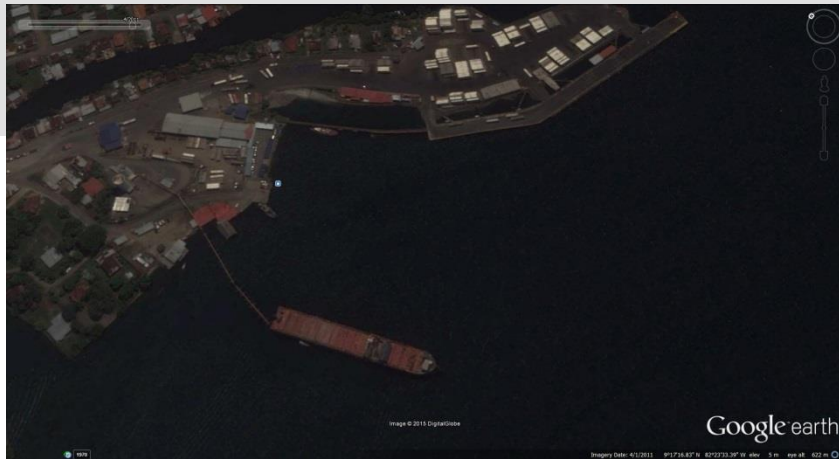


Tokuyama, Noumea

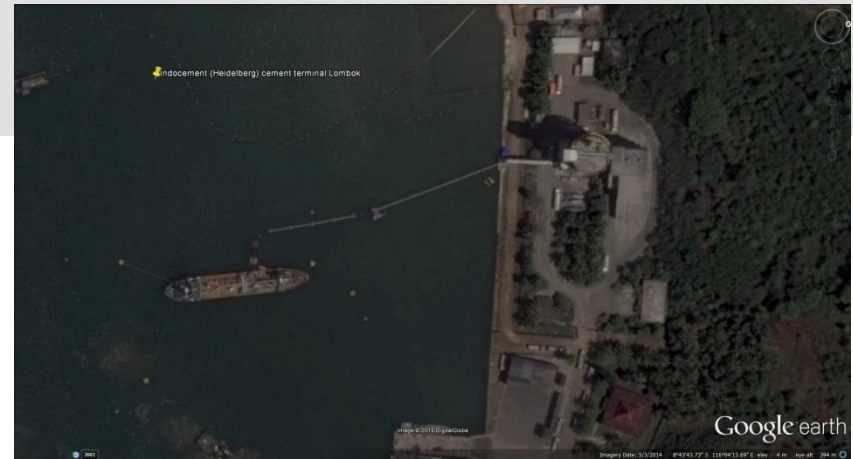


Ghacem (Heidelberg), Takodari

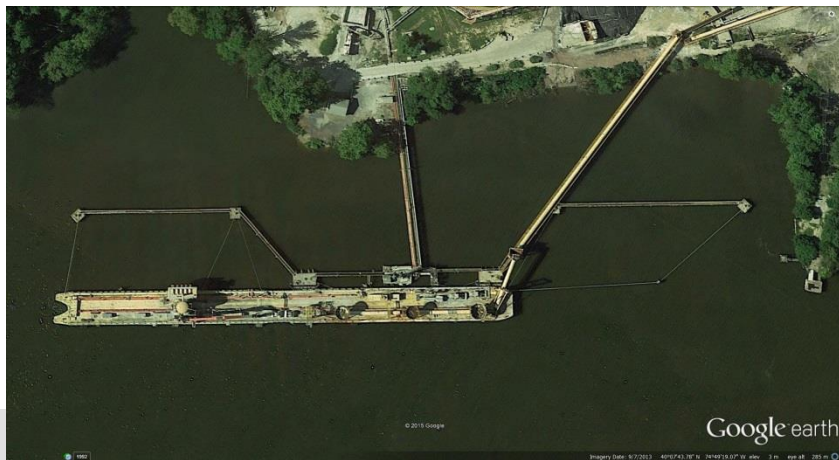
Cement terminals that do not use a dock



Floating terminal Laviolletta, Almirante



Indocement, Lombok



Riverside Construction Materials (Silvi), Bristol, PA



Semen Tonasa, Sorong

New developments in cement and clinker trade

- Larger cement terminals
- New applications of grinding plants
 - Plug & Grind
 - Floating grind plant

Larger cement terminals

- Normal size of cement terminals is 1,2 - 1,5 * ship size
- New development → terminal size is 2 - 2,5 * ship size
 - Lower shipping cost (larger shipping window)
 - Possibility to accept “opportunity” ship loads
 - Flexibility to move to multiple materials
 - Use of domes or flat storage



Riverside Construction Materials, 130.000 tons



Beton Provincial, 100.000 tons

New applications of grinding plants

Plug & grind from Cemengal

Containerised grinding plant

Grinding plant consists of 8 containers

Capacity up to 100.000 tons per year
(for clinker)

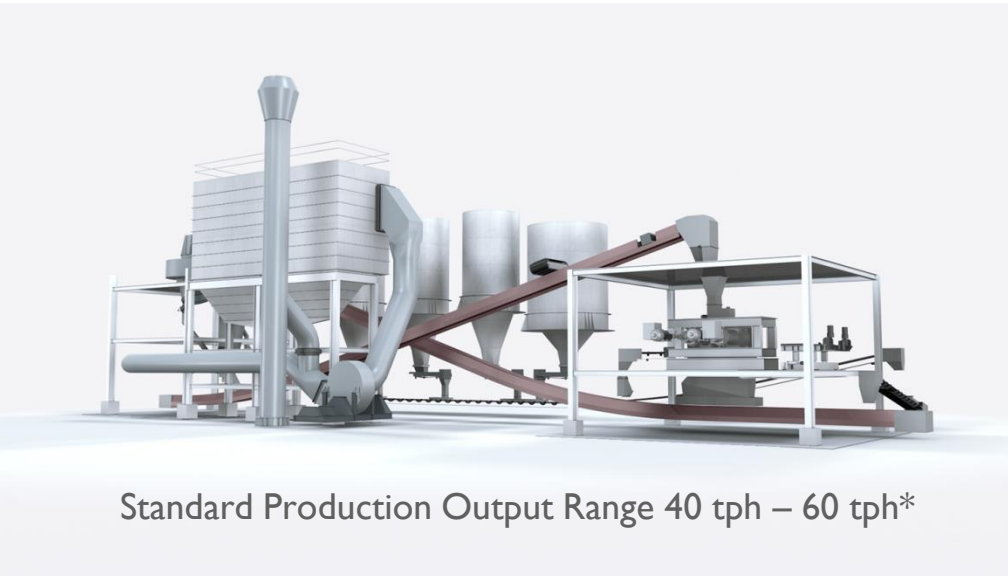
Because of smaller scale, mobility and
easy in installation it brings grinding
capability to an entire new group of
customers

Already 12 sold (of which 4 for GBFS)



New applications of grinding plants

Floating **GrindX**® from KHD



**Grinding plant based on roller
press technology**

Compact

Modular

Low energy consumption

Does not need a fully horizontal base

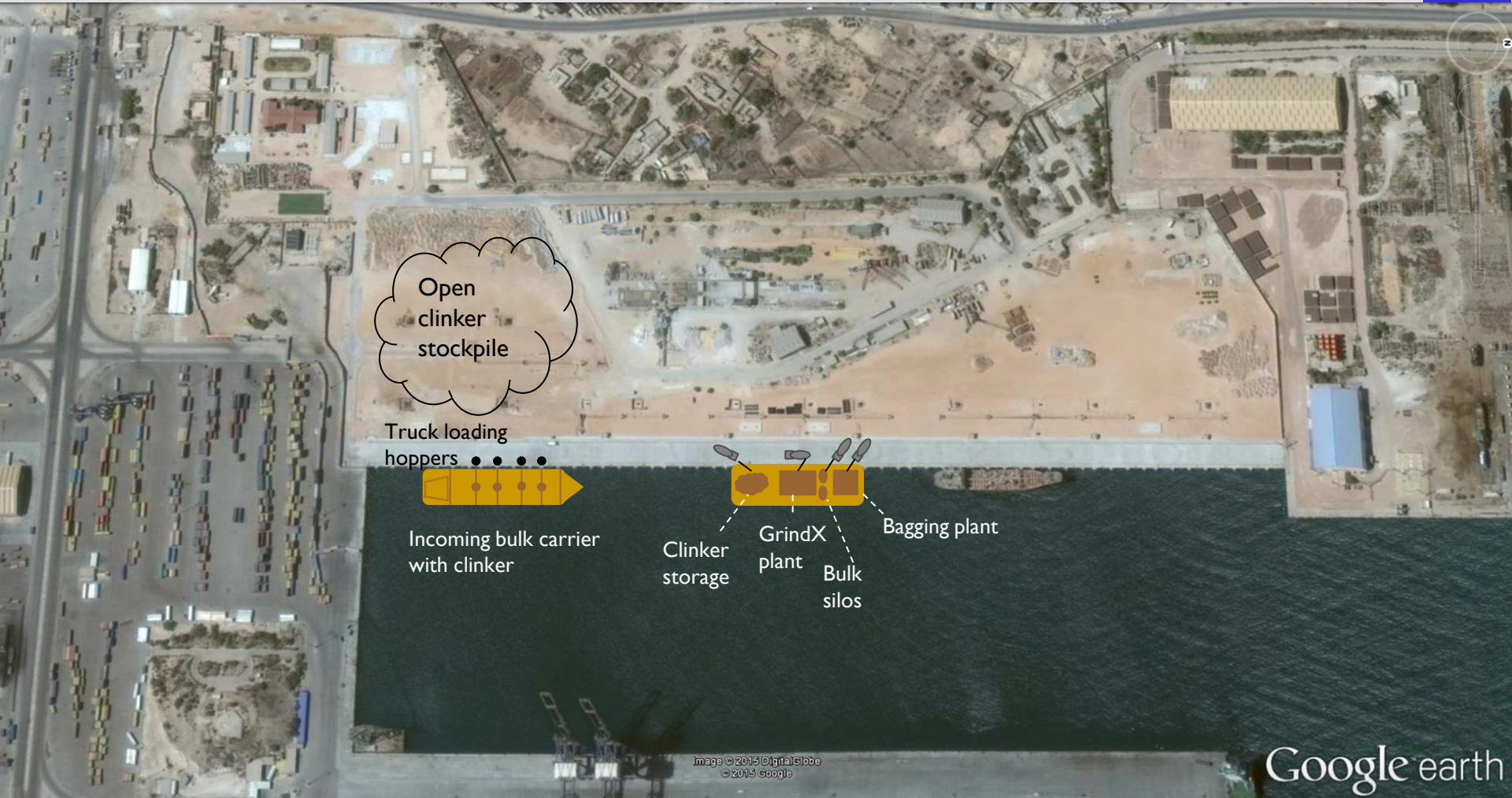
Standard Production Output Range 40 tph – 60 tph*

A **GrindX**® plant can be put on a barge or in the hold of a floating terminal!

Floating **GrindX**®

Clinker versus cement	Floating grinding plant
Easier to find clinker suppliers than cement suppliers	Can be moved in and out of markets quickly and with relative ease
Clinker has a lower transport, handling and storage cost than cement	Can resolve congested port situations
Clinker does not require specialised handling and storage systems such as for cement and therefore general port facilities can be used	Suitable for temporary projects
By grinding close to the market, production can be optimised in respect to market demand and available local secondary raw materials and additives	Suitable for difficult or high risk markets
But clinker requires a grinding plant with substantial capital cost and land requirements. This is only feasible for long term projects with a stable and reasonably secure market	None or strongly reduced land lease cost

Example I Floating GrindX plant on barge with bagging and truck loading systems



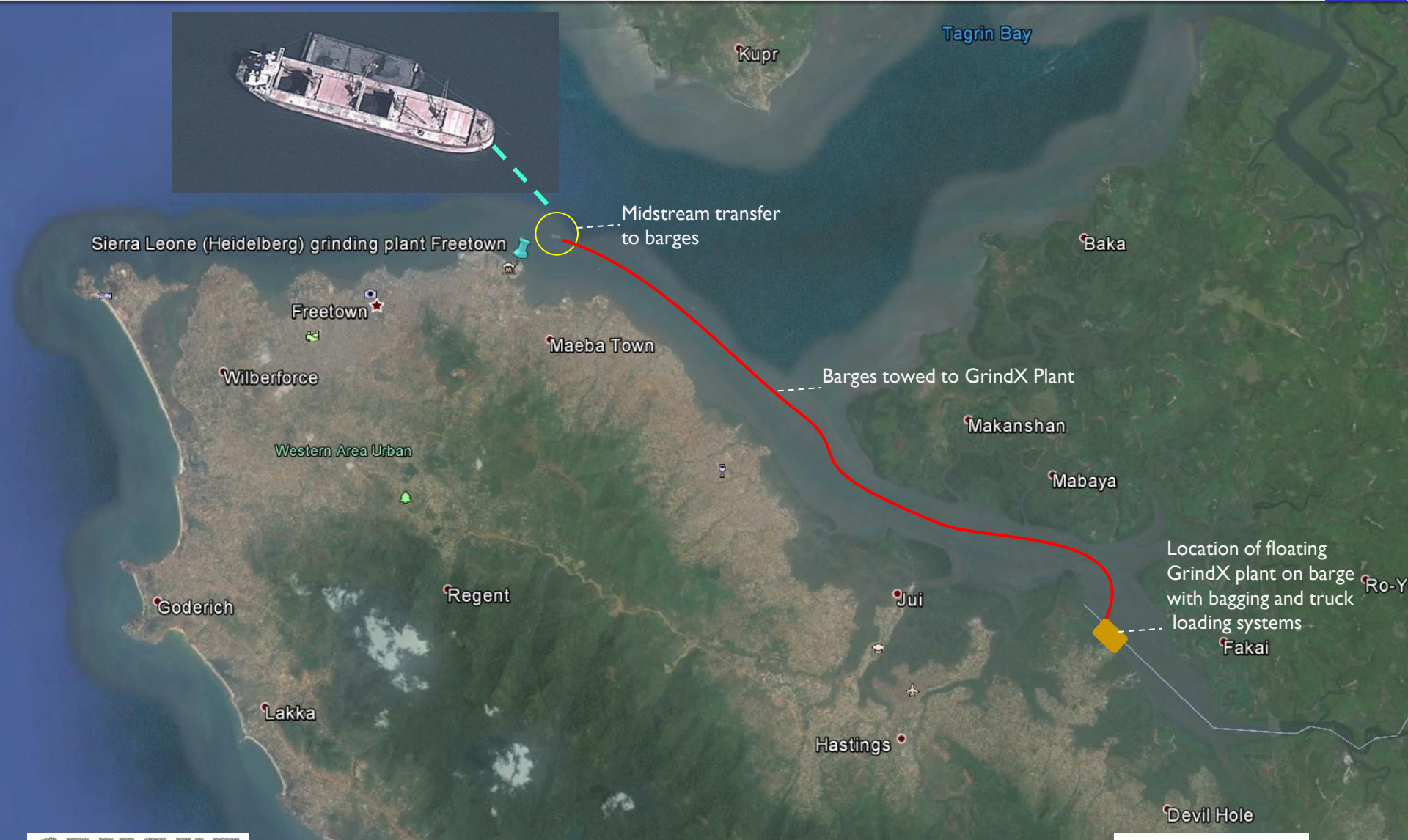
Non-congested port – Temporary project

Example II Floating clinker terminal with GrindX plant



Congested port

Example III Midstream transfer of clinker from bulk carrier to barges and barge transport to floating GrindX plant on barge



THANK YOU

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www.cementdistribution.com

