



Dredging

Profit margins expected to remain fairly healthy until 2018

September 2013



Rabobank

Executive Summary

Introduction

The dredging sector is an important segment in Belgium and the Netherlands. Four of the biggest dredging companies in the world are from Belgium (Jan De Nul, DEME) and the Netherlands (Boskalis, Van Oord). After booming market conditions in the years 2006-2008, followed by a decreasing market in the years 2010-2012, questions have been raised if this is the beginning of a severe downturn. The purpose of our report is to give our view on the market conditions until 2018 and the impact on the dredgers profit margins

Demand for dredging will continue to increase

The global dredging market will in our opinion continue to grow structurally thanks to (i) growing world population, (ii) higher energy demand, (iii) increasing seaborne trade, (iv) rising size of container vessels, and (v) rising sea level. Following several weaker years, the order intake of the top 4* dredging companies climbed strongly in 2012. Assuming no 'abnormal' economic situation, we believe that the market will continue to grow in the coming years

Capacity growth will be limited in the coming years

The total capacity of the global dredging fleet climbed strongly between 2004 and 2012, particularly at Chinese CHEC and Belgian Jan De Nul, whereas the fleet of Boskalis decreased in size. For the coming years we expect that Boskalis will invest in at least one new mega cutter. Depending on the market conditions, we expect that Van Oord will also invest in new cutter capacity to replace old equipment. Taking into account the current low capex plans for new dredgers by the top 4, the financial position of the top 4, and the time to construct new vessels, we foresee limited capacity growth until 2018, whereby the biggest uncertainty are the investment plans of the other dredging companies

Chinese CHEC has ambitions to go more global

The CEO of Chinese CCCC, the parent company of CHEC, has made clear its plans to enter the global dredging market. So far CHEC's non-Chinese sales have been limited, but the Chinese government is increasing its economical and political influence in Africa, Brazil, and the Middle East, which could lead to dredging orders for CHEC in the coming years

Slightly lower profit margins expected

We believe that the gap between capacity and demand will become smaller in the coming years thanks to the limited capacity expansion plans. However, margins at recently won orders are below those won at the time of the heydays (2006-2008) and therefore we expect slightly lower EBITDA margins going forward, albeit still at a healthy level. In our forecast we have assumed that 'exceptional' market conditions, such as Dubai or Singapore, will not occur

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Introduction



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Introduction



Dredging:

An excavation activity or operation usually carried out at least partly underwater, in shallow water areas with the purpose of gathering up bottom sediments and disposing of them at a different location

Purpose:

Keeping waterways and ports navigable, creation of new ports, coastal protection, land reclamation, the winning of sediments as sand and gravel, which are used by the construction industry

The dredging sector is an important market segment in Belgium and the Netherlands. In the Netherlands 160 companies with total annual sales of more than EUR 1bn and employing 10,000 people are active in the dredging sector ¹⁾. The dredging sector in Belgium consists of only 2 companies: Jan De Nul and DEME. These companies have a combined workforce of nearly 8,000 people, but this figure includes also employees working in other sectors than dredging, such as construction and environmental services. The Belgians and Dutch have built up a very strong reputation, not only by protecting their own countries against the sea, but also by carrying out large dredging projects worldwide, such as for instance in the Middle East (Dubai), Latin America (Panama Canal), and Far East (Singapore, airport of Hong Kong).

In this report we will describe the growth drivers for the global dredging market, the development of the global dredging fleet, the largest dredging companies and dredging equipment suppliers, the competitive environment, and the different strategies being carried out by the largest dredging companies.

1) Source: Vereniging van Waterbouwers

Types of dredging equipment

Jan De Nul has the world's two largest hopper dredgers

We can distinguish two main types of dredgers: hoppers and cutters. A trailing suction hopper dredger (TSHD) uses a suction pipe, whereby it loads the sediments into one or more hoppers. When fully loaded, the hopper sails to an area where it can dump the sediments through doors in the hull or it discharges or rainbows the sediments to the designated area.

The size of a hopper dredger is measured in m³. The two largest TSHD's are owned by Belgium dredging company Jan De Nul: Cristobal Colon and Leiv Erikson, both having a hopper capacity of 46,000m³.

In recent decades there is clearly a trend of larger and larger hoppers (see also next slide). Whereas in the '90s the jumbo hopper dredger was introduced (15,000-30,000m³), Jan De Nul's vessels entered service in 2009 and 2010. Despite of this trend of bigger equipment, it is important that a dredging company has a versatile fleet: 'different horses are needed for different courses'. Small dredgers for maintenance and beach nourishment, whereas large dredgers for land reclamation.

DEME has the largest cutter

A cutter suction dredger (CSD) has a cutting mechanism at the suction inlet of its suction tube. A cutter is used in geological areas consisting of hard surface materials, such as at gravel deposits or surface bedrock. The more recent introduction of very powerful cutters give the opportunity to excavate harder rock by cutters instead of using the blasting technique.

The size of a cutter dredger is measure in installed power (kW). The largest cutter is owned by Belgium dredging company DEME: D'Artagnan, which has 28,200kW installed power and was built in 2005. On the second place, just behind the D'Artagnan, stands Jan De Nul's JFJ, which has 27,240kW installed power and was built in 2003

Besides hoppers and cutters, dredging companies also have backhoe dredgers, split hopper barges, floating grab cranes, etc.

Trailing suction hopper dredger (TSHD)



Source: The Art of Dredging

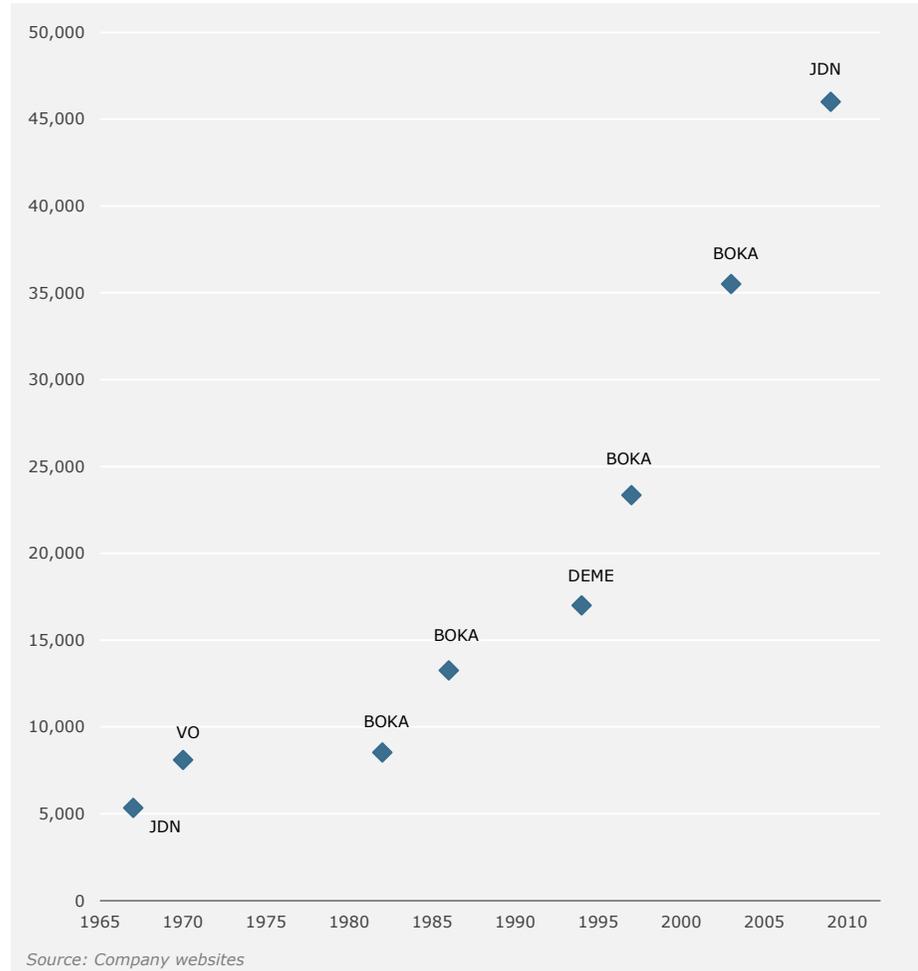
Cutter suction dredger (CSD)



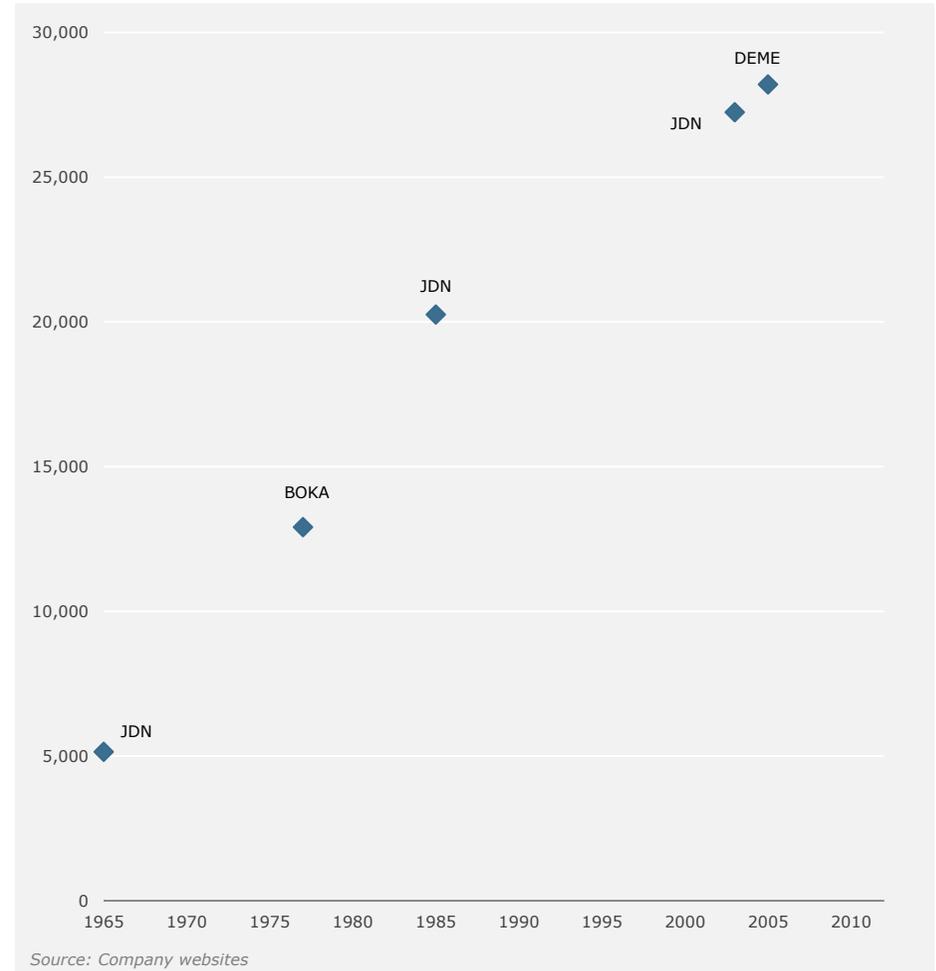
Source: Clarksons

Innovation key for the development of the dredging industry

Development size of the largest hopper (m³)



Development size of the largest cutter (kW)



China is the largest dredging market in the world

Many dredging markets not open for 'free' competition

According to the International Association of Dredging Companies (IADC) the global dredging market amounted to EUR 10.7bn in 2011 (2012 figures not yet available). China is the largest dredging market, accounting for 29% of the total market worldwide. Other large dredging markets are Europe (13%), the Middle East (11%), and Latin America (10%).

We can divide the dredging market in an open and closed market. A closed market is not accessible to foreign competitors. The largest closed markets are China and the USA. Regarding the USA, the US dredging companies are protected by the Jones Act, whereby the dredging company must be owned by US citizens, use equipment being built in the USA, and use American employees. All told, the open accessible markets accounted for 57% of the total global dredging market in 2011.

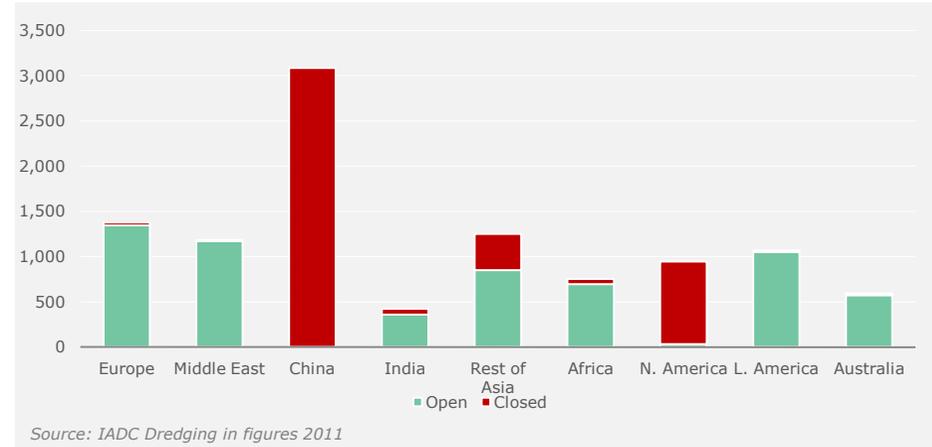
Growth world trade very important for dredging sector

In the second graph the global dredging market is divided in end markets. The largest part are projects in conjunction with the growth in world or seaborne trade: harbour extensions, new ports, navigation channels, and maintenance dredging. These projects accounted for 57% of the total global dredging market.

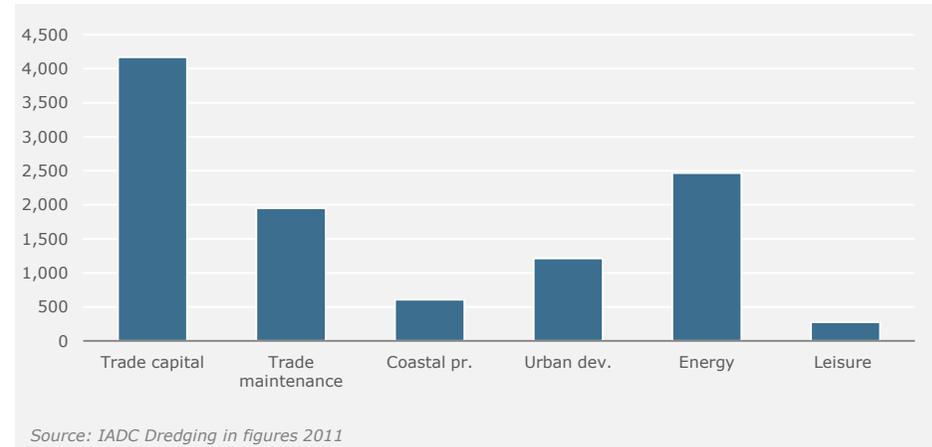
Another important segment is the energy market (23% of total). The booming LNG (liquefied natural gas) market has led to a lot of large dredging projects, such as the construction of ports to accommodate LNG vessels, in for example Australia and the Middle East (Qatar). Dredging work can also involve trenching work for the laying of oil & gas pipelines or work related to offshore wind parks.

Other segments are coastal protection, urban development (such as land reclamation for city expansion), and leisure (beach replenishment).

Geographical breakdown dredging market in 2011 (EUR m)



Dredging divided by end-market in 2011 (EUR m)



Government most important customer for dredging companies



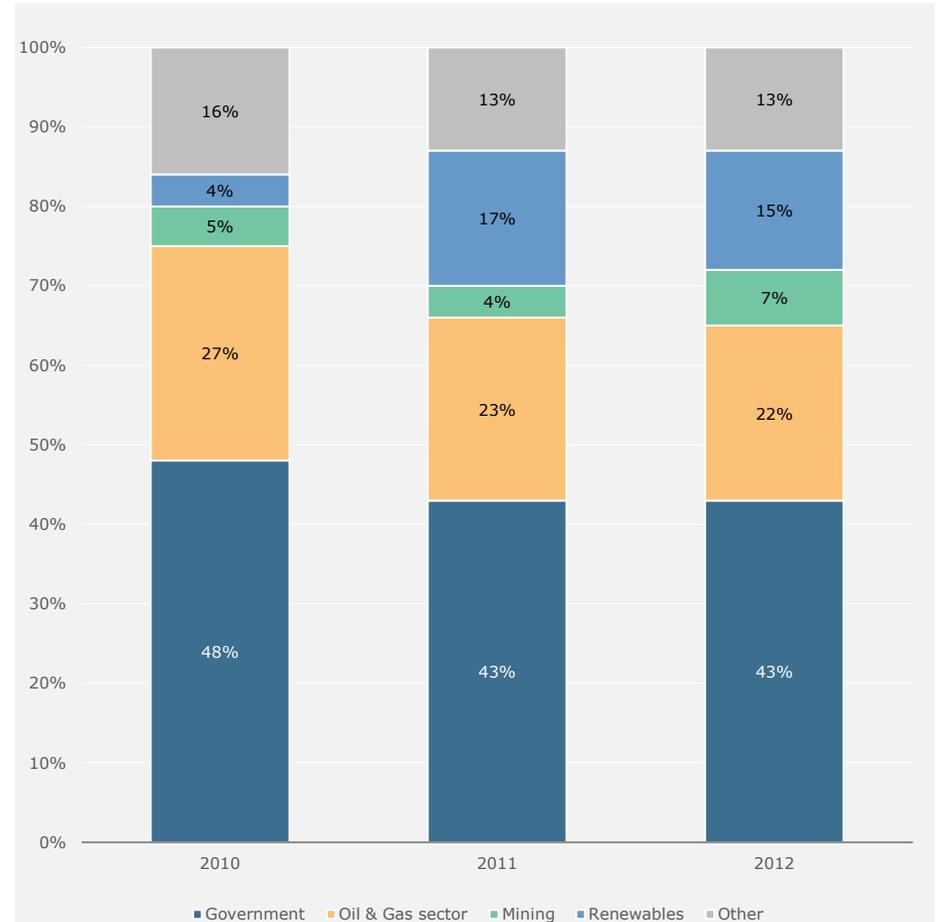
No customer breakdown available for total dredging industry

Unfortunately, only DEME provides a breakdown of its sales by customer (see graph on the right). In 2012 the government accounted for 43% of DEME's sales, followed by the oil & gas industry (22%), the renewables sector (offshore wind) (15%), mining (7%), and other.

The IADC (as shown on the previous slide) does not provide such a sales split by customer, but we argue that the government is the largest customer at the end-markets coastal protection, urban development, and leisure. In addition, also the government plays an important role at the end-markets trade capital and trade maintenance, just as several large private port operators, like Hutchison-Whampoa, PSA Corporation, APMT (Maersk), DP World, etc. At the end-market energy, particularly private companies are the customers of dredging companies, such as the oil majors (ExxonMobil, Chevron, Shell, BP, etc) and utility companies at offshore wind (RWE, Dong, etc).

Looking at the order intake, we believe that DEME and Van Oord have been extremely successful at renewables (installation of offshore wind parks in Northwest Europe). As a result, we believe that the importance of the government as a direct and indirect customer for the global dredging industry could be even higher than DEME's reported 43%.

DEME's customers (2010 - 2012)

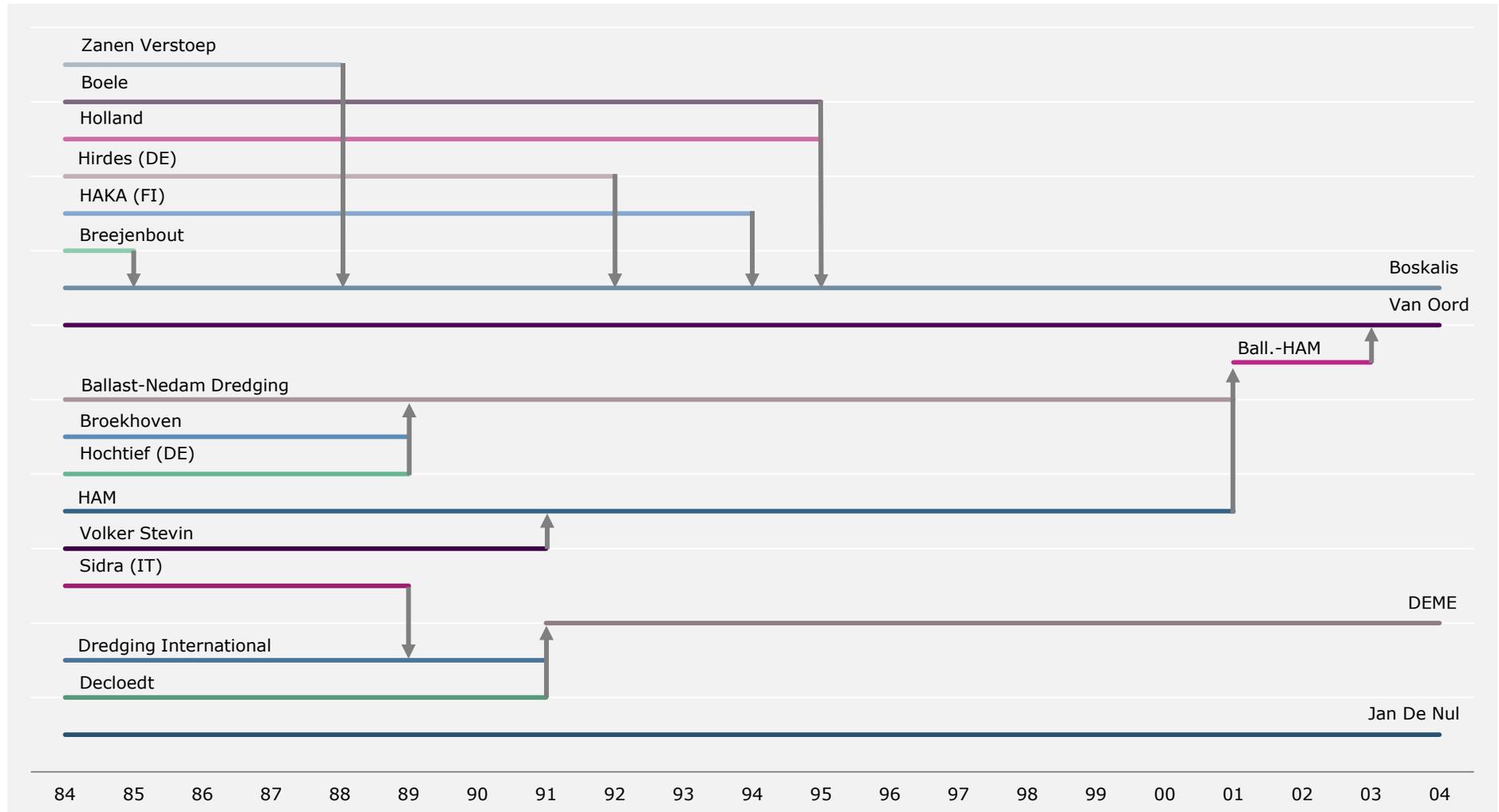


Source: DEME

Ten largest dredging companies in the world

Rank at dredging (2012)	Company	Country based	Working area	Total sales (EUR m)	Dredging sales ¹⁾ (EUR m)
1	CCCC (CHEC)	China	China (mainly)	36,409	3,949
2	Jan De Nul	Belgium	Global	2,114	1,493
3	DEME	Belgium	Global	1,915	1,456
4	Boskalis	Netherlands	Global	3,081	1,290
5	Van Oord	Netherlands	Global	1,676	1,133
6	National Marine Dredging Company	UAE	UAE/ME	658	658
7	Great Lakes Dredge & Dock company	USA	USA (mainly)	535	457
8	Penta Ocean	Japan	Asia/ME	3,273	240 *
9	Toa Corporation	Japan	Asia	1,506	181 *
10	Rohde Nielsen	Denmark	Europe	154	154

Four large Benelux dredging companies emerged



Source: DEME Please note: List of acquired/merged dredging companies is not complete, but most important have been mentioned

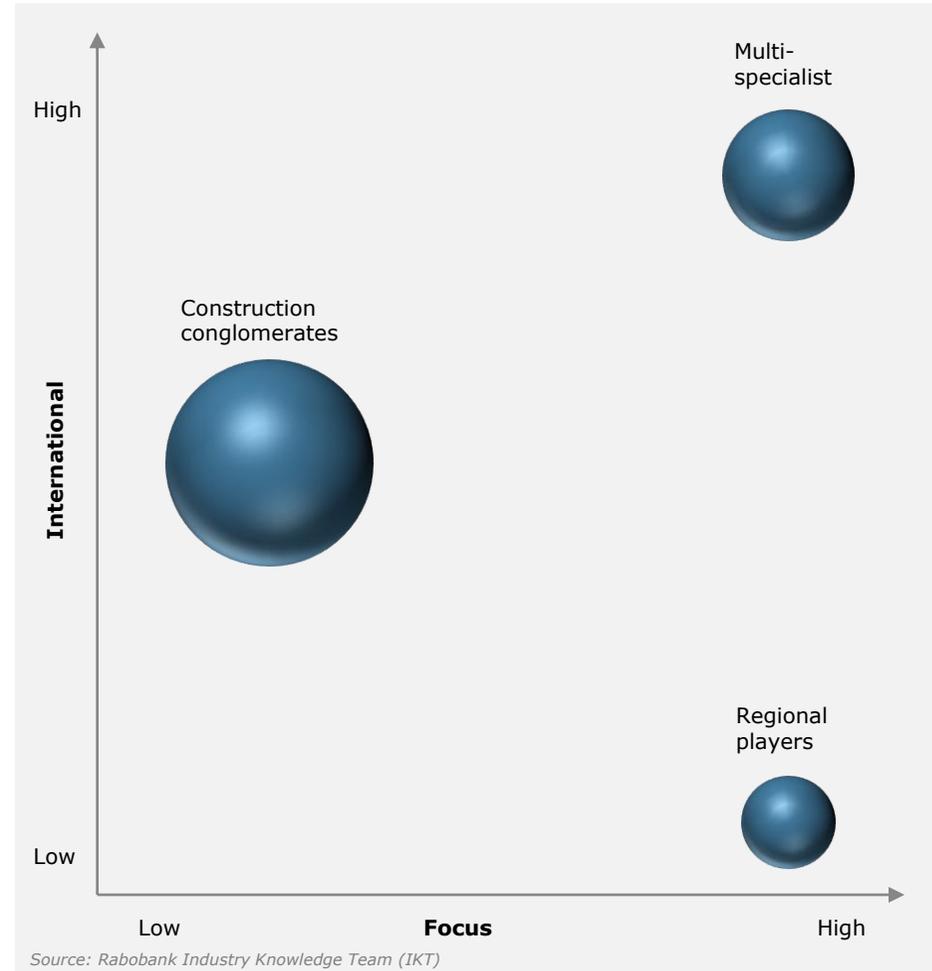
Significant number of regionally active dredging companies

Multi-specialist dredgers active globally

We distinguish three strategic groups in the dredging industry:

- **Construction conglomerates:** Besides dredging, these companies are also active in construction. Examples are CCCC (China Communications Construction Company) with its dredging subsidiary CHEC, Penta Ocean, Toa Corporation, Hyundai Engineering & Construction, and Samsung Engineering & Construction. These companies are large in size, i.e. CCCC realized sales of more than EUR 36bn in 2012
- **Multi-specialist companies:** The core activity of such a company is dredging. They perform all kinds of dredging activities, such as capital dredging (new projects), maintenance, etc. These companies are active globally (see also next slide). The main dredging companies are Jan De Nul, Boskalis, Van Oord, and DEME (in this report referred as top 4)
- **Regional players:** These companies' core activity is also dredging, but only in their own region instead of worldwide. Examples are: Van der Kamp (Netherlands), Van den Herik (Netherlands), Baggerbedrijf De Boer (Netherlands), Rohde Nielsen (Denmark), National Marine Dredging Corporation (UAE), Gulf Cobla (UAE), Great Lakes Dredge & Dock Corporation (USA), DCI (India), and Rukindo (Indonesia)

Strategic groups in dredging industry



Multi-specialist dredging companies operate worldwide



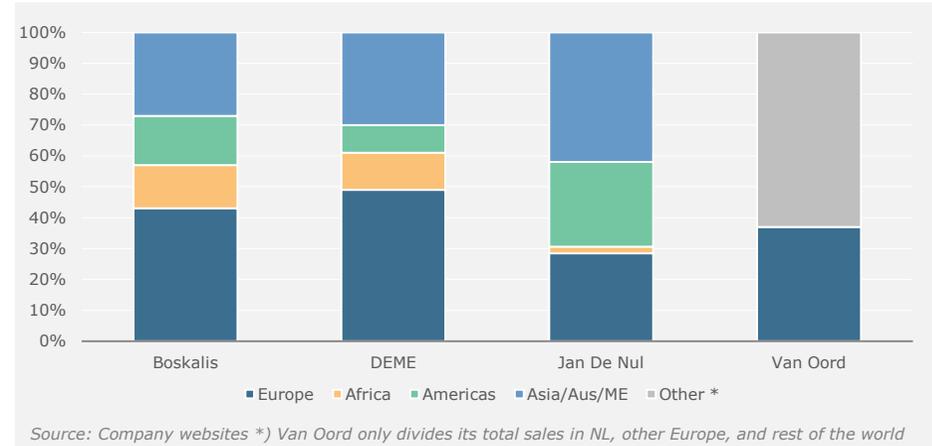
Majority of sales realized outside Europe

In the first graph we have compared the geographical sales breakdown of the four multi-specialist dredging companies. Jan De Nul 'only' realized 28% of its sales in Europe in 2012 compared with 43% at Boskalis, 37% at Van Oord, and 49% at DEME.

Jan De Nul realized a relatively high sales percentage in the Americas, particularly due to the large project of the widening of the Panama Canal. Furthermore, Boskalis, DEME and Jan De Nul realized a high percentage of sales in Asia, Australia, and the Middle East. Unfortunately, Van Oord does not give a breakdown of total sales (including Offshore) per geographical area outside Europe. However, excluding Offshore, Van Oord realised 31% of its sales in Europe, 15% in the Middle East, 38% in Asia/Australia, and 15% in Africa/Latin America.

All told, the first graph clearly illustrates the strong geographical coverage of the dredging industry, resulting in a favourable risk profile.

Geographical sales breakdown (2012 figures)

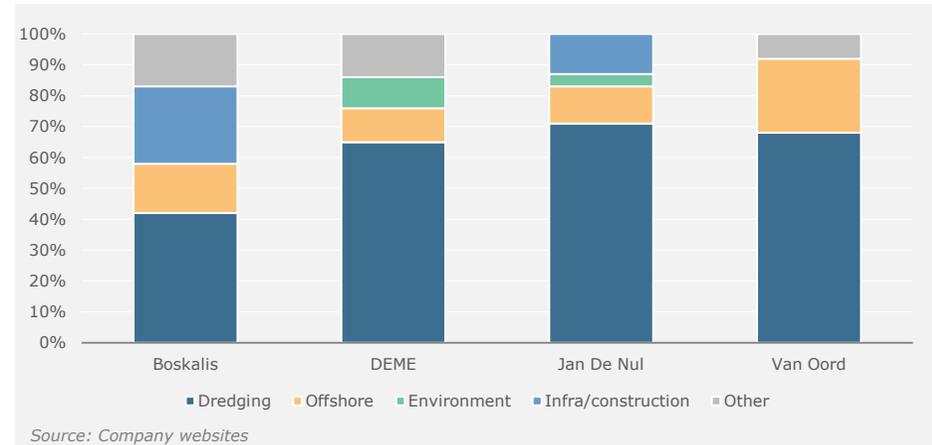


Boskalis becoming less and less a pure dredging company

As can be seen on the second graph on the right, 'only' 42% of Boskalis' sales in 2012 was attributable to dredging. This percentage was clearly higher at DEME (65%), Van Oord (68%), and Jan De Nul (71%). Other activities consist of offshore (rock dumping, port construction for LNG projects, etc.), construction (including roads), environment (soil cleaning), etc. Because of the acquisitions of Smit Internationale (2010), MNO Vervat (2011), and Dockwise (2013) Boskalis has become an integrated marine services provider, i.e. its dependence on the dredging market has decreased and will go down further in 2013.

As shown in these figures, the four multi-specialist dredging companies operate worldwide, not only with dredging activities, but also with other activities (construction, environment, transport).

Breakdown of sales by activity (2012 figures)



Dredging more profitable than general construction



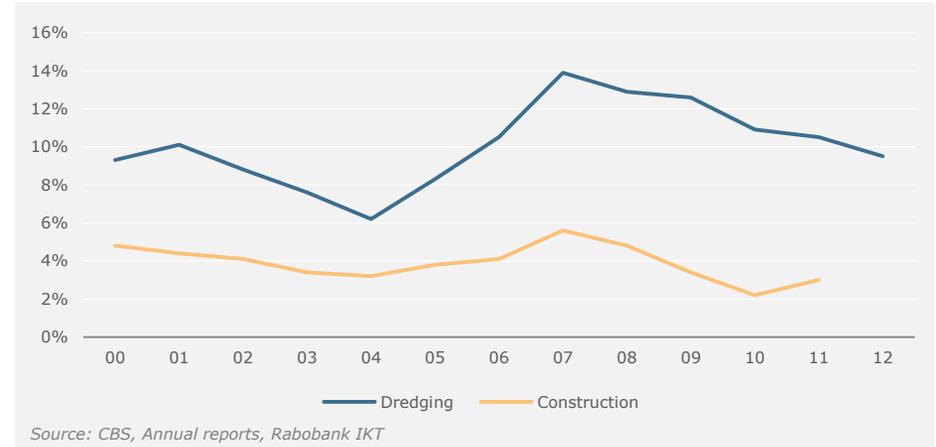
Dredging sector already highly consolidated

Although many dredging companies also have some 'general' construction activities, there is a big difference in profitability (see graph), whereby we have compared the EBIT margin of the top 4 dredging companies with the EBIT margin realised by the Dutch construction sector. The dredging company's margin fell in 2002 - 2004 as a result of the unexpected halt in project execution in Singapore and in 2009 - 2012 by the stop of land reclamation projects in Dubai.

The profitability of the Dutch construction sector decreased as of 2007 due to a sharply lower volumes at residential, non-residential, and at infra (only in 2011 a temporary recovery due to the mild winter).

Dredging is highly capital intensive, also compared with construction. As a result, in 2011 the difference in EBITDA% is much larger: 19.5% versus 5.6%.

EBIT margin trend Dutch construction versus dredging top 4

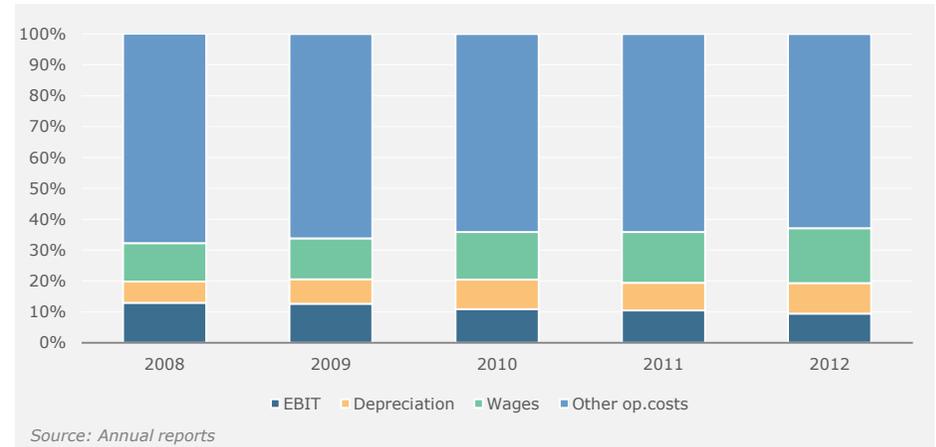


Wages are a relatively 'small' part of operating costs

In the second graph we reveal a breakdown of the operational costs of the top 4 dredging companies. In 2012 wages accounted for 17.8% of total operating costs (23.8% at general construction in 2011), depreciation costs accounted for 9.8%, and other operating expenses, such as fuel, maintenance costs, insurance, etc, stood at 62.9%. Unfortunately, we do not have a further breakdown of this 62.9%, although maintenance costs, fuel, and insurance costs in our view account for a large part of these costs.

Besides the aforementioned operating costs, the high capital intensity of the dredging sector results in significant financing expenses.

Breakdown operating costs dredging top 4 (2008 - 2012)





Dredging demand growth



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Dredging market rose by CAGR of 9% between 2000 and 2011

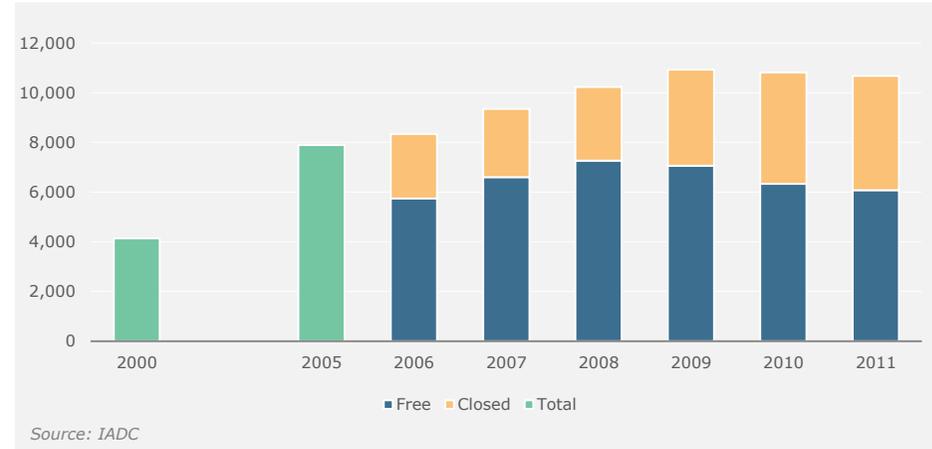
Australia, ME (excl. Dubai), and China fastest growing regions

According to IADC the global dredging market amounted to EUR 10.7bn in 2011 (see first graph on the right), of which the 'free' market was EUR 6.1bn. The overall market rose by a CAGR of 9.0% between 2000 and 2011.

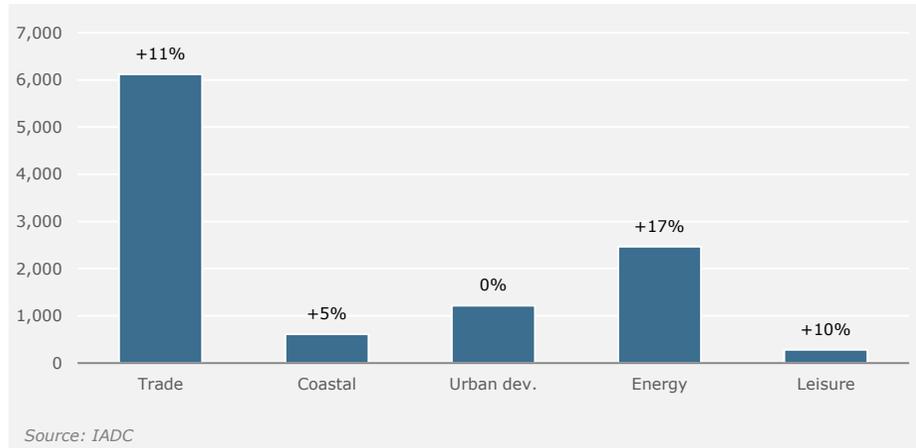
Geographically, China is the largest, 'closed' market, followed by 'open' Europe and Middle East. Thanks to the booming oil & gas market, the Middle East increased significantly, although it still accounted for 33% of the total market in 2008, just before Dubai went into financial difficulties. The 'closed' market North America stabilised in absolute figures between 2000 and 2011, but in relatively terms more than halved.

Below we see the breakdown of the dredging market by end markets. In the following slides we will discuss the main growth drivers.

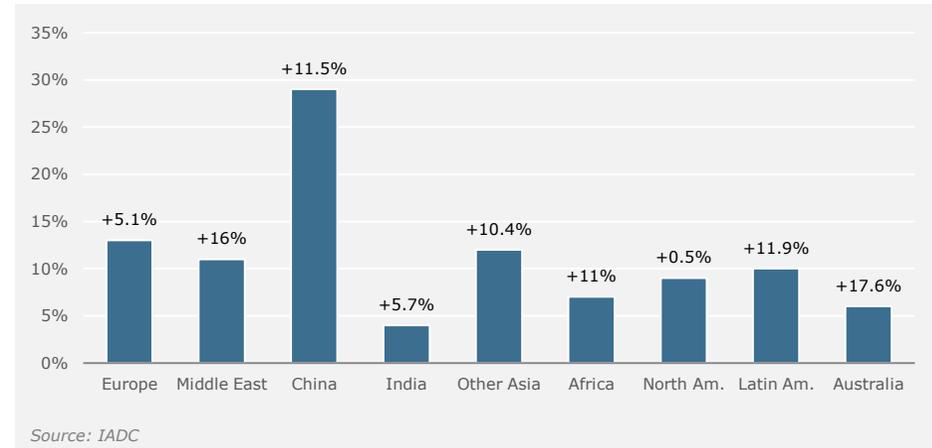
Development global size dredging market (EUR m)



Dredging market by use in 2011 (EUR m) and CAGR versus 2000



Geographical breakdown market (2011) and CAGR versus 2000



Order intake improved significantly in 2012

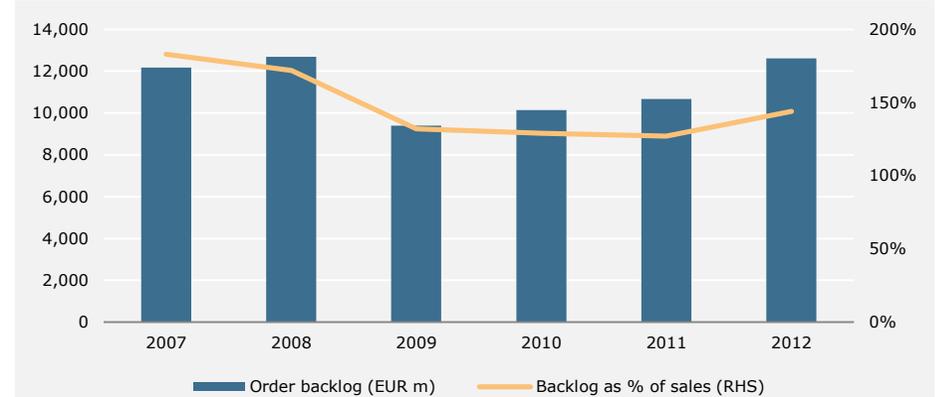
Combined total order backlog at year-end 2012 rose 18% YoY

The top graph reveals the development of the total order backlog of the top 4 dredging companies as of 2007 (before 2007 Jan De Nul did not release order backlog data), also expressed as a percentage of the company's total sales. Bear in mind that the order backlog consists of all activities (dredging, offshore, environmental, construction, harbour towage & salvage).

In 2009 the combined total order backlog plummeted by 26% to EUR 9.4bn. However, this was mainly due to the financial problems of Dubai. As a consequence, Van Oord (EUR 1.9bn) and Jan De Nul (EUR 0.7bn) had to eliminate their Dubai contracts from their order backlogs.

At year-end 2012 the combined total order backlog stood at EUR 12.6bn, up 18% compared with year-end 2011 thanks to the order intake of large LNG projects in Australia and several other oil & gas projects, port contracts, and offshore wind projects. In 2012 total sales of the top 4 amounted to EUR 8.8bn, i.e. the order backlog was 144% of sales, therefore more than one year work ahead.

Development total order backlog top 4 dredging companies

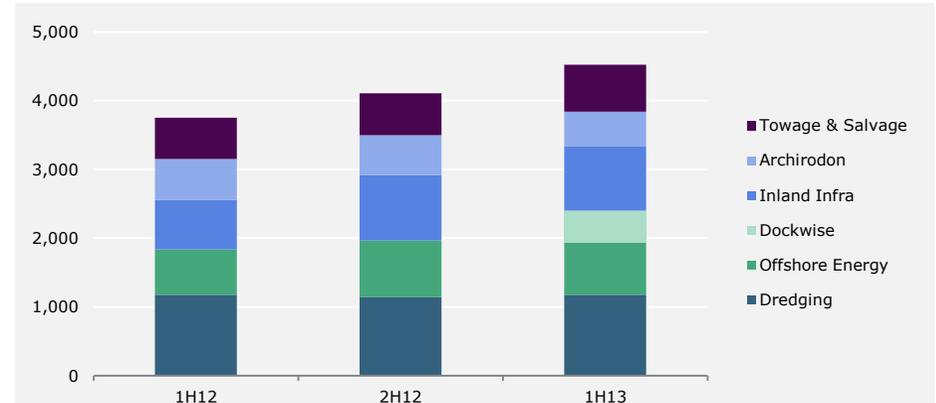


Source: Company websites Please note: Order backlog consists of all activities of the top 4

Boskalis' order backlog at Dredging stabilised in 1H13

To illustrate the diversity of the dredging company's activities, the second graph shows the development of the order backlog at Boskalis on 30 June 2012, year-end 2012, and 30 June 2013. We have used Boskalis as an example as it is the only company that gives a breakdown of its order backlog. Boskalis' order backlog rose 10% on 30 June 2013 compared with year-end 2012 thanks to the consolidation of Dockwise (included in Offshore Energy). On 30 June 2013 Archirodon was still included in Boskalis' order backlog (part of Inland Infra), but in July 2013 Boskalis sold its stake in the company. As a result, the order backlog dropped by EUR 509m. As shown in the graph, the order backlog at Dredging remained more or less the same.

Development order backlog Boskalis (EUR m)



Source: Boskalis

Structural growth drivers global dredging market

A Population growth, particularly in coastal areas: More land has to be reclaimed and protected, leading to work for dredging companies

B Global warming, leading to a rise of the sea level: More people are living in coastal areas and therefore very expensive flood disasters will occur more often

C Growth seaborne trade, particularly being shipped by larger and larger container vessels: Ports not only have to be expanded thanks to increasing seaborne trade, but also because of larger (container) vessels

D Rising global consumption of energy and metals: Exploration of oil & gas is more often done in remote areas, whereby dredging companies have to construct ports, etc

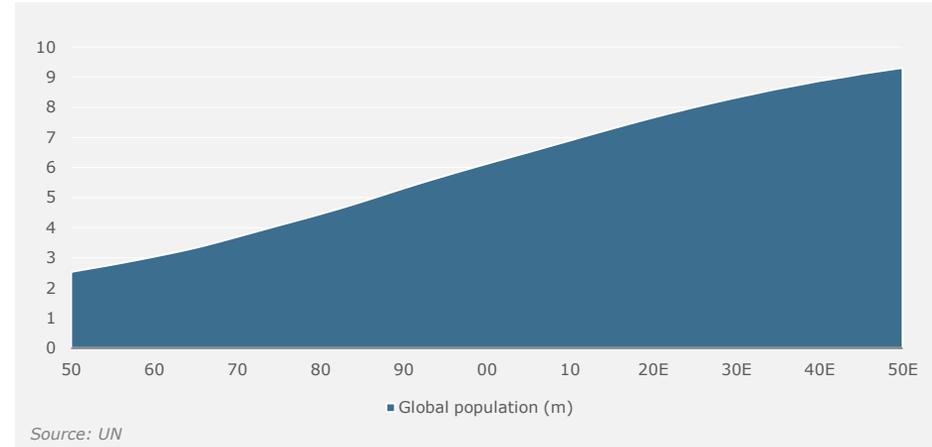
E Growth global tourism: Construction of new airports, beach replenishment, etc

A Global population continues to increase

Growth rate gradually decreasing, but still positive

In the first graph we have given the total global population. Although the annual growth percentage has come down to 'only' 1.2% per annum in the last decade (previously nearly 2% annual growth), the United Nations expects that the total population will go up from nearly 7bn in 2010 to 7.7bn in 2020 (CAGR: +1.1%), 8.3bn in 2030 (CAGR: +0.8%), and 9.3bn in 2050 (CAGR: +0.5%).

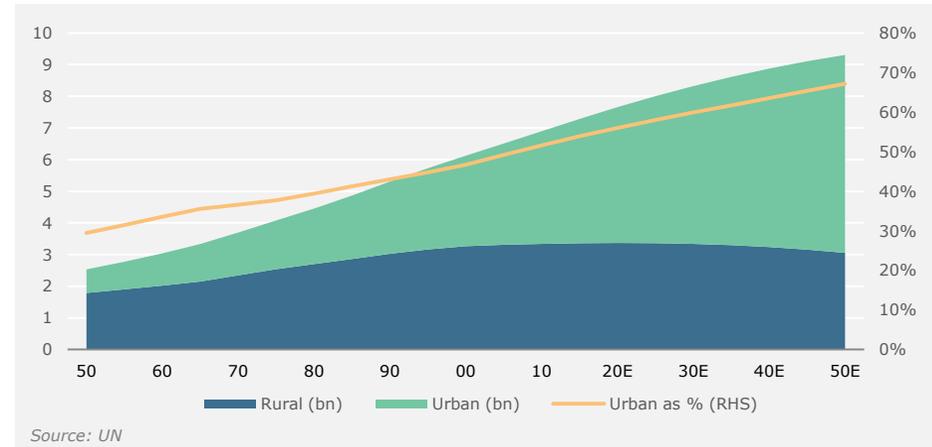
Global population will increase to 7.7bn in this decade



Urbanisation is expected to continue

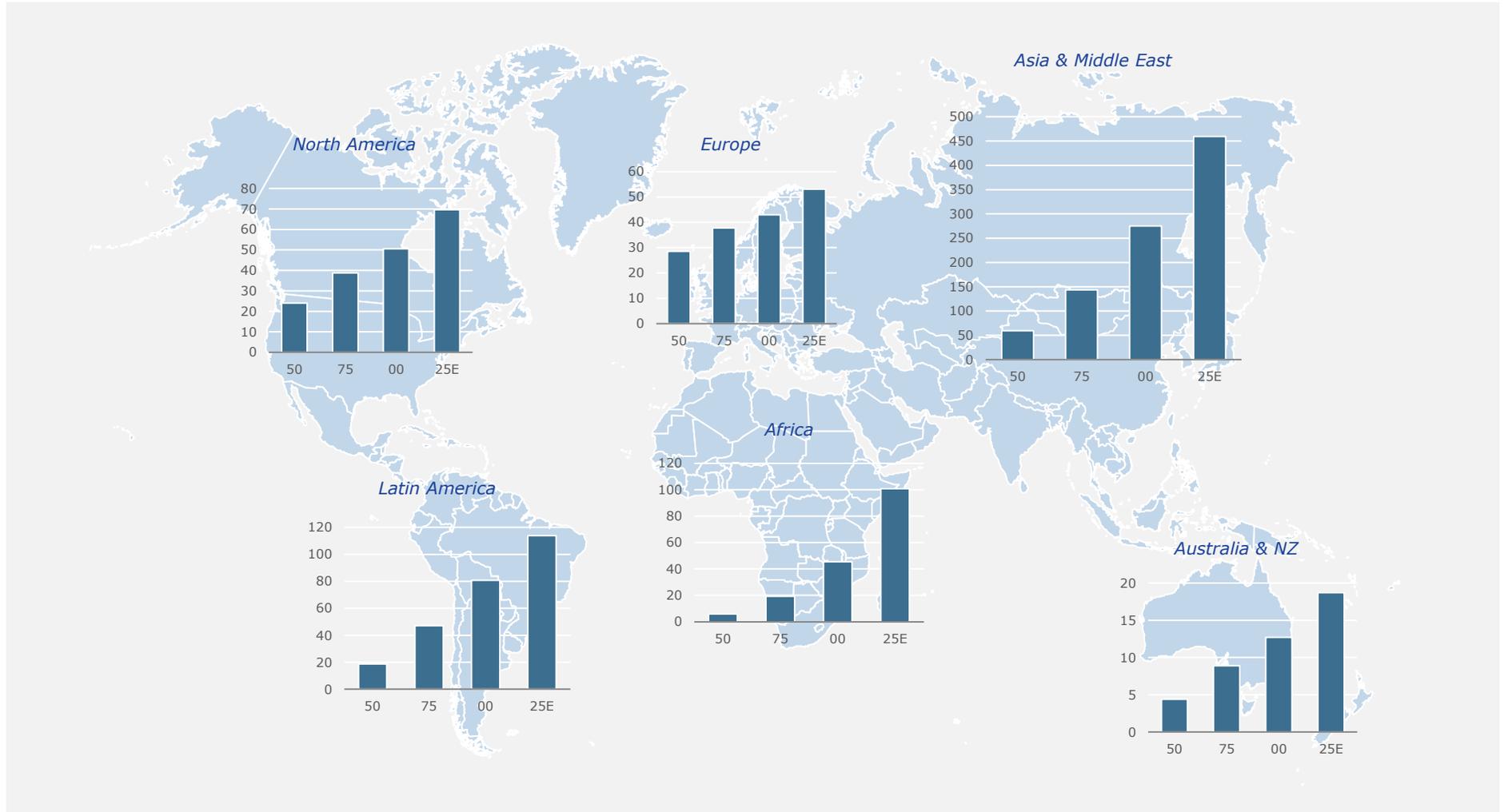
Moreover, the urbanisation trend will continue, i.e. relatively more people will live in cities. Currently more than half of the global population live in cities (see line in the second graph). According to the UN 67% of the global population will live in cities in 2050. Between 2010 and 2050 the population in rural areas will decrease by a CAGR of 0.2% per annum, whereas the population living in urban areas will go up by a CAGR of 1.4%. Particularly, people living at large cities at the coast will increase sharply (see also next slide). This will lead to the need for more land, which could come through reclamation of new land.

People living in urban areas will increase strongly



Looking at the most populated countries, China and India, the urbanisation rate will go up further. According to CEIC Data Company, around 20% of the Chinese population lived in cities in 1980, which jumped to 37% in 2000, and will exceed 50% in 2015. Also in India the urbanisation trend will continue, albeit less rapidly compared with China. Around 36% of the population will live in cities in 2015.

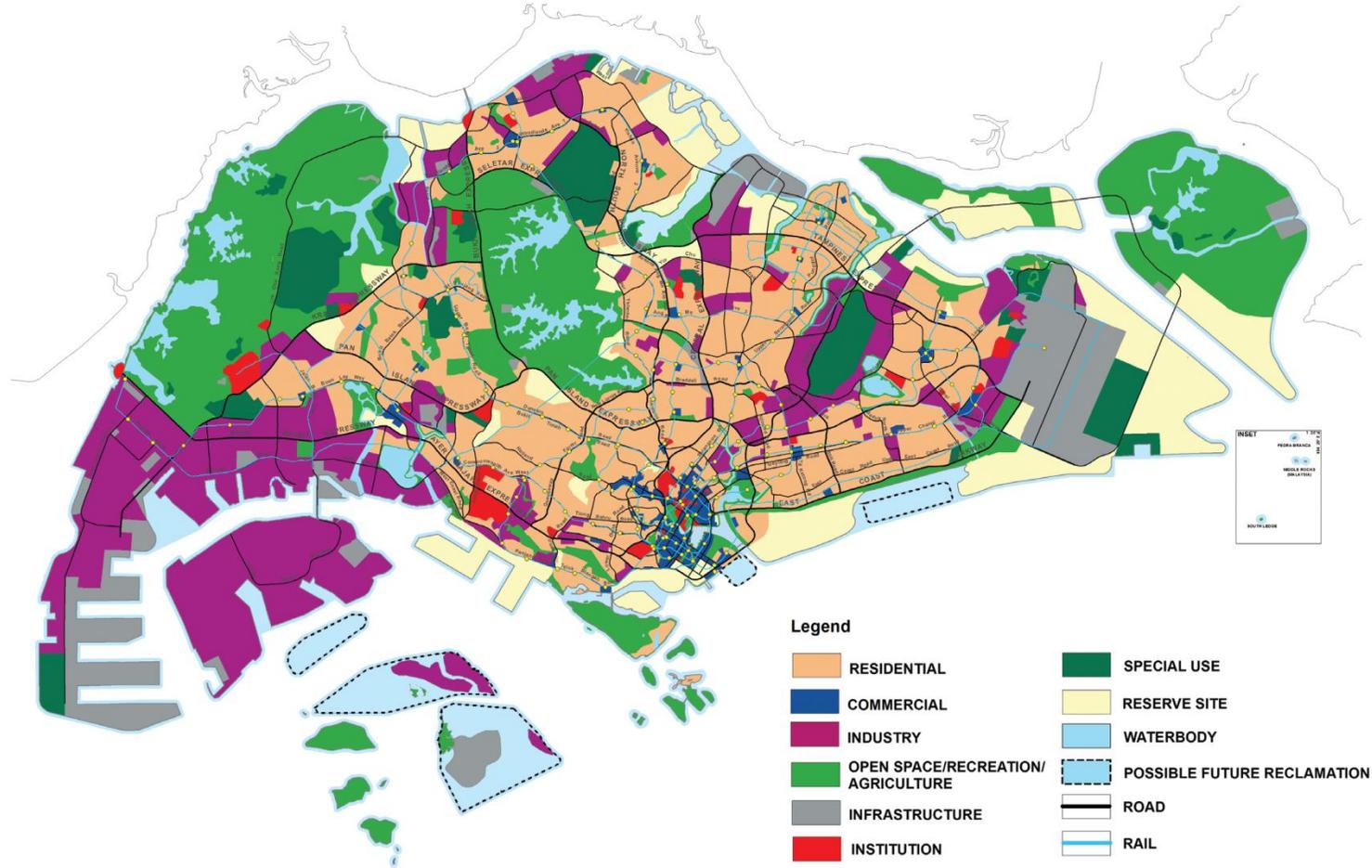
Expected growth number of large cities in coastal areas



Singapore launched ambitious Land Use Plan 2030

Restart land reclamation

To create 8% more land (5,600 ha) to meet housing and industrial demand until 2030, Singapore is currently in the process of issuing tenders (large one to be rewarded in coming 6-8 months). Necessary sand should be won in Cambodia or Thailand and therefore the contract size will be large.





Global warming leads to a certain rise of the sea level

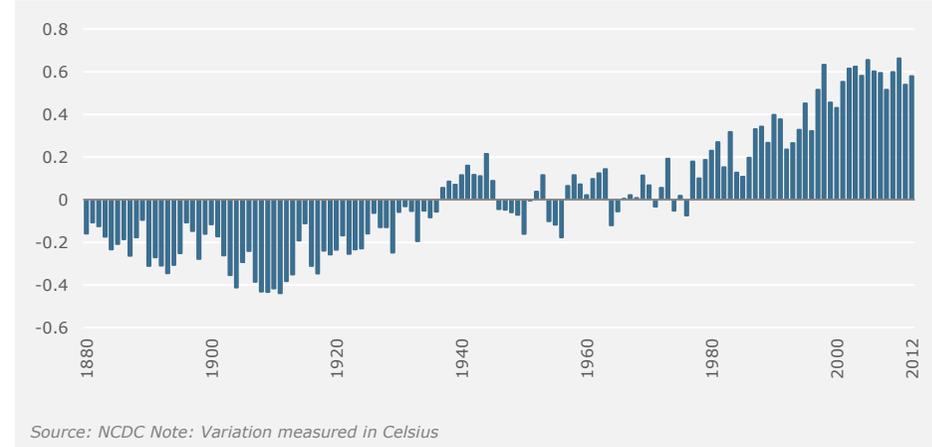


Global temperature climbed particularly in last two decades

In the top graph the variation is shown measured in Celsius of the annual global temperature – both on land and at sea – compared with the average temperature between the year 1901 and 2000. This graph clearly shows that the average temperature on earth is rising, particularly as of 1980s.

As a result, the global sea level is rising too. Whereas the average global temperature increased by 0.6 degrees Celsius in the last century, the sea level rose by 0.2 meters. This figure of 0.2 meters seems small, but the rise accelerated from 1.5mm per annum in the 20th Century to 3mm per annum over the last decade.

Variation earth's surface temperature versus average 1901-2000

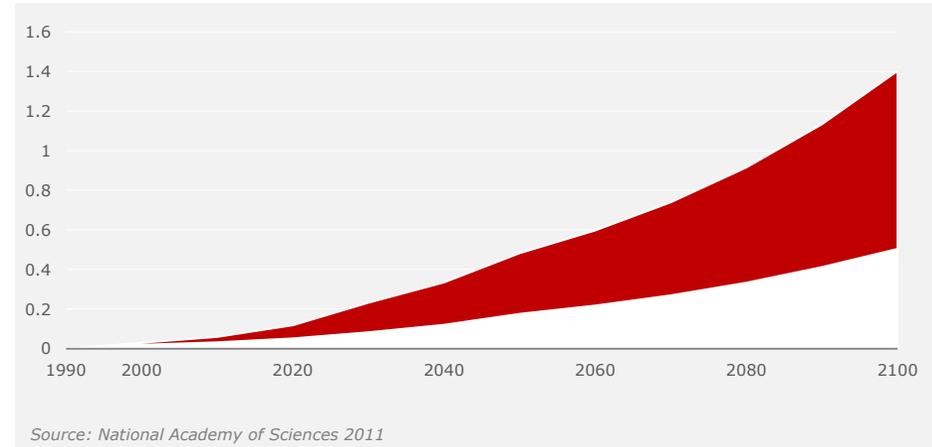


Sea level rise will have large impact on coastal population

In the second graph the expected rise of the sea level in meters is revealed until 2100 according to the report from National Academy of Sciences issued in 2011. They expect a sea level rise of 0.5 up to 1.0 metres (in a more pessimistic scenario 1.4 metres) until 2100, depending on the rise of the global temperature. The increase of the sea level, however, can even be larger depending on the temperature rise. According to Vermeer & Rahmstorf the sea level rise will be between 0.97 metres (global warming +2.3°Celsius) and 1.56 metres (+4.3°Celsius).

In 2005 the world saw the impact of hurricane Katrina on New Orleans. In 2012 hurricane Sandy had a devastating impact on New York/New Jersey. All told, governments have to take measure to protect its coastal population against the sea level rise and hurricanes.

Expected sea level rise in meters until 2100



Financial impact floods strongly going up

Hurricane Sandy caused damages of tens of billions of US dollars

In 2011 the UN published a report on the impact of climate change upon urban areas. Currently around 40 million people are living in an urban area in a 100-year floodplain, i.e. the chance of a severe flood is once every 100 years. The number of people exposed to such a risk could jump to 150 million in 2070 according to the UN. The estimated financial impact would climb from USD 3 trillion in 1999 to USD 38 trillion in 2070. Miami is the most exposed city today (see the last column at the table on the right) and will remain so in 2070 with exposed assets rising from around USD 400bn to USD 3.5 trillion. Striking is the fact that eight out of ten cities are located in Asia (see second column).

Although this report was written before hurricane Sandy, New York already ranked 3rd with the highest financial exposure. After the hurricane the total financial impact of the hurricane was estimated at USD 20-60bn. This damage is huge taking into account how much the cost of a good coastal defence system would have been (estimated at only USD 6.5bn in 2009).

On the next slide we have shown a map of the world, whereby the yellow/orange/red areas indicate the amount of risk of floods due to the sea level rise.

Exposure to floods in cities

Ranking by population exposure

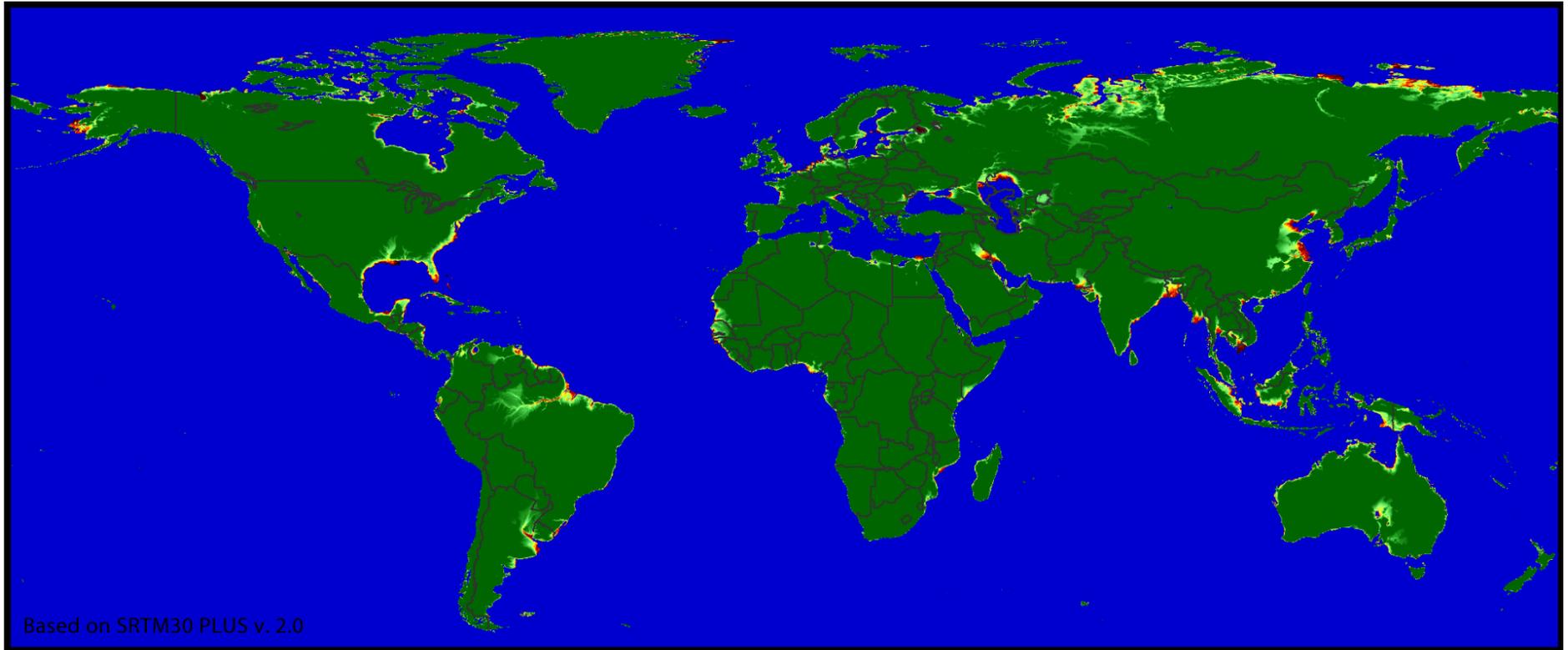
1. Kolkata (India)
2. Mumbai (India)
3. Dhaka (Bangladesh)
4. Guangzhou (China)
5. Ho Chi Minh City (Vietnam)
6. Shanghai (China)
7. Bangkok (Thailand)
8. Rangoon (Myanmar)
9. Miami (USA)
10. Hai Phong (Vietnam)

Ranking by value of property and infrastructure assets exposure

1. Miami (USA)
2. Guangzhou (China)
3. New York (USA)
4. Kolkata (India)
5. Shanghai (China)
6. Mumbai (India)
7. Tianjin (China)
8. Tokyo (Japan)
9. Hong Kong (China)
10. Bangkok (Thailand)

Source: UN Global Report on human settlements 2011

Regions vulnerable for the expected rise of the sea level



**Height Above
Sea Level (m)**



c Seaborne trade goes up in line with GDP

Seaborne trade rose by a CAGR of 3.1% between 1977-2011

In the first graph we have compared the growth rates of world GDP versus seaborne trade. Regarding the latter, we have to distinguish world trade and seaborne trade. World trade includes services, whereas seaborne trade is measured in millions of tons shipped by vessels around the globe. Between 1977 and 2011 global GDP rose by a CAGR of 3.2%, world trade by 5.5% per year, but seaborne trade 'only' by 3.1% per annum.

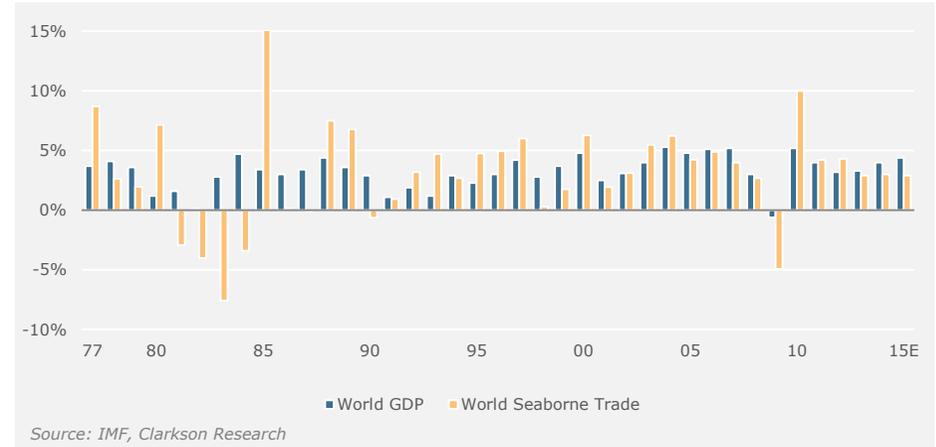
Seaborne trade is important for dredging companies as growth will lead to investments in ports (new, expansions, deepening) and/or canals (Panama canal). In 2011 8,947 millions tons of goods were shipped, of which crude oil accounted for 21%, containers 15%, iron ore 12%, coal 10%, and LNG 3%. Whereas in the 70s the introduction of VLCCs (very large crude carriers) or ULCCs (ultra large crude carriers) led to investments in ports, currently the ongoing trend of larger and larger container vessels stimulates the dredging market (see below).

Container market remains 'booming' in volume terms

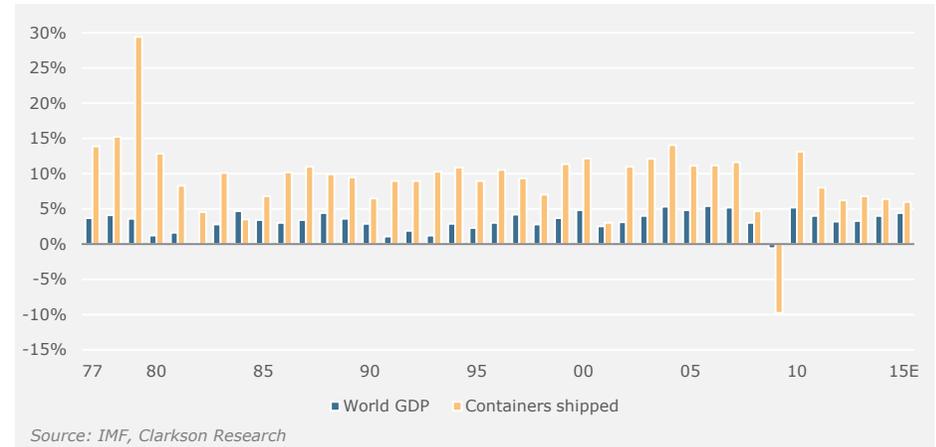
In the second graph we compared global GDP growth with the number of containers shipped worldwide. Whereas the global economy increased by a CAGR of 3.2%, the number of containers climbed by a spectacular 9.7% per annum. The latter is thanks to the ongoing containerisation, i.e. more and more dry goods are shipped via a container instead of via a general cargo ship. The containerisation was also boosted by economies of scale, i.e. container vessels are becoming bigger and bigger, leading to a lower cost per container shipped, which have been passed on to their customers through lower shipping rates, leading to high growth rates, followed by investments in larger vessels, etc (see also next slide).

The container was introduced in 1966. In 1980 the largest vessel could ship 4100 TEU (TEU = one twenty foot container). This jumped to 6,400 TEU in 1996 and 15,000 TEU in 2012. As of 2013 Maersk's 18,000 TEU vessels will be delivered. The first one, named Maersk Mc-Kinney Møller, was delivered in June 2013 and moored in Rotterdam in August .

World GDP growth compared with seaborne trade growth



Shipment of containers increased much more than global GDP



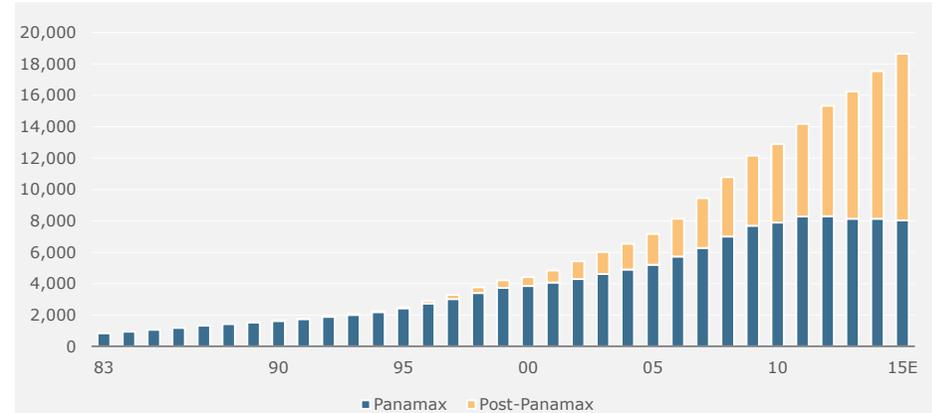
Larger container vessels need more draft and space

Capacity Post-Panamax vessels will exceed Panamax vessels

The top graph shows the development of the number of Panamax and Post-Panamax vessels. The latter are vessels, which cannot sail through the Panama Canal as its size is too big. A Post-Panamax vessel carries more than 5,000 TEU with a draft of more than 12 meters, length of >294 meters, and width of 32 meters. After the expansion of the Panama canal, which should be finalised in 2014, container vessels up to 13,000 TEU with a draft of maximum 15 meters, length up to 366 meters and width of 49 meters can sail through the canal.

Between 2000 and 2012 total available capacity in TEU of Panamax vessels increased by a CAGR of 6.6% compared with a CAGR of 23.4% for Post-Panamax vessels. As a result, Post-Panamax vessels currently accounts for 46% of the total container carrying capacity in the world (2000: 13%), which will go up further to an estimated 57% in 2015.

Spectacular growth Post-Panamax container vessels



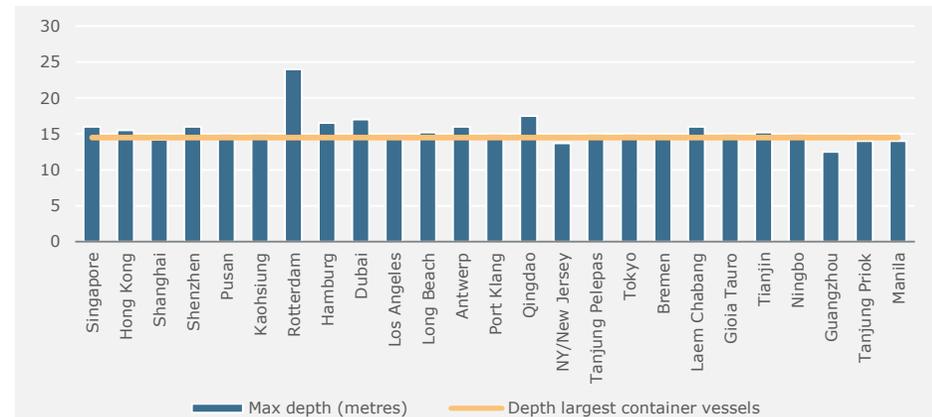
Source: Clarkson Research

Rotterdam's Maasvlakte II is the deepest port in the world

To handle the continuously larger container vessels, port authorities invest heavily in building new ports, expansion of the port, and/or deepening of the port, resulting in a lot of work for the dredging companies. Well known examples are Rotterdam's Maasvlakte II (dredging costs EUR 1bn), London Gateway, deepening Westerschelde river, ports in Qatar, Abu Dhabi, Dubai, and Singapore.

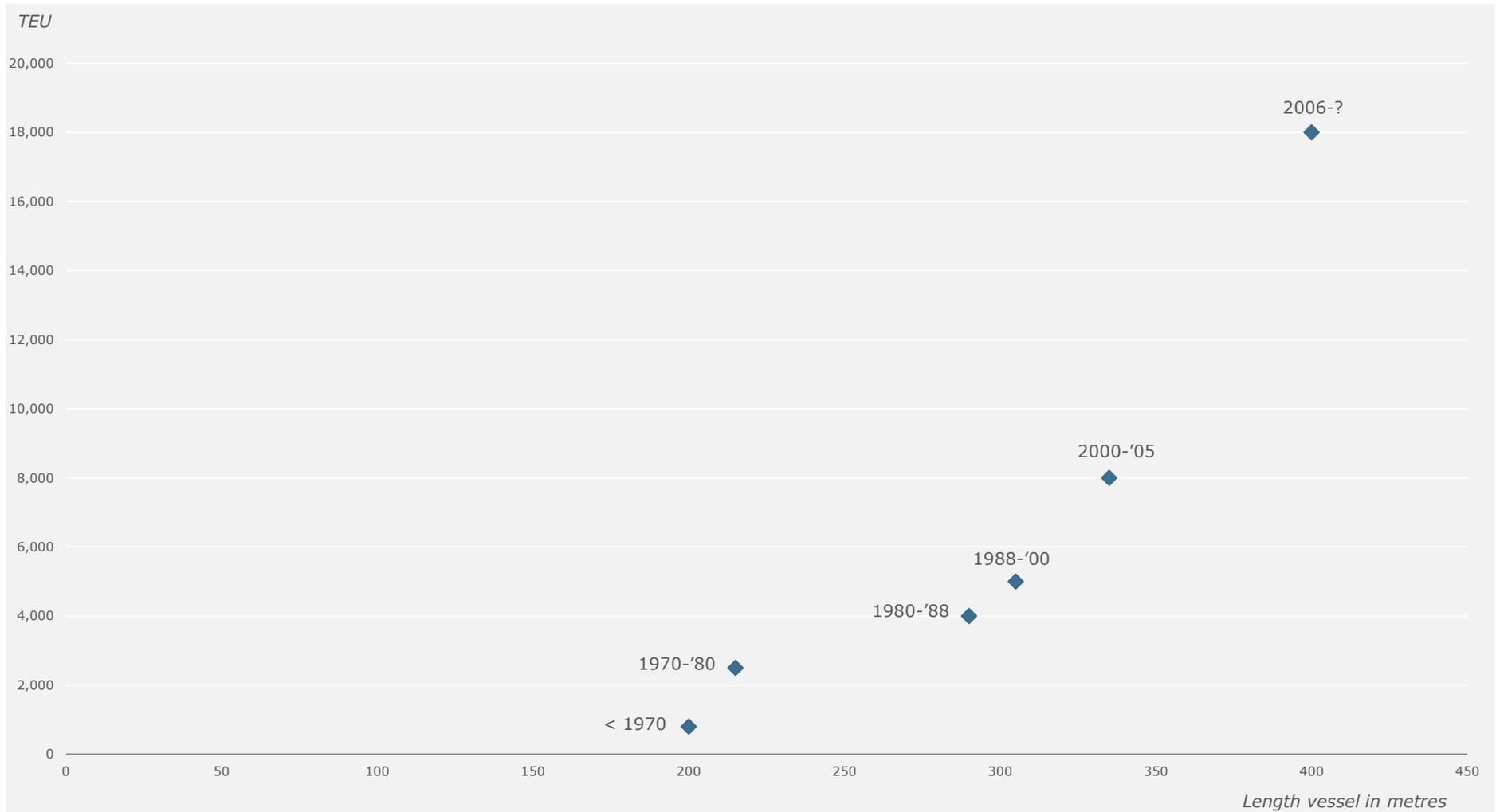
As shown in the graph, nearly all ports can handle the largest container vessels with a draft of 14.5 meters. According to Maersk, its new container vessel of 18,000 TEU will have a draft of only 14.5 meters, but its length (400 meters) and width (59 meters) are too big to sail through the Panama Canal. Probably, the actual draft of these very large container vessels will be more than published, meaning that ports will have to go on deepening their drafts to be able to receive the largest container vessels.

Depth major ports worldwide (meters)



Source: Container International, Port Authorities

Spectacular growth in average size of container vessels



D Energy consumption growing

Gas consumption continue to grow faster than oil

Despite all kinds of energy savings measures implemented, the global energy consumption is still growing, albeit at a lower pace. Whereas the energy consumption increased by a CAGR of 1.9% between 1980 and 2012, it will rise 'only' by 1.2% between 2012 and 2035.

Although governments are stimulating renewable energy, the International Energy Agency (IEA) still expects the oil and gas consumption to go up by a CAGR of 0.4% and 1.6%, respectively, until 2035. Unfortunately, the IEA does not provide a separate growth forecast for offshore wind, but only for the total of 'other renewable energy' (offshore & onshore wind, solar, etc): CAGR 7.7% between 2012 and 2035.

Shale gas only partially accounts for expected higher production

Unconventional oil and gas will become more and more important thanks to huge discoveries, which are economically interesting to explore. Unconventional oil is tight oil, extra-heavy oil, oil sands, and kerogen oil, whereas unconventional gas is shale gas, coalbed methane, and tight gas. Unconventional oil and gas accounted for only 1.5% of the total oil and gas production in 1990, but this jumped to 8.4% in 2010, and will climb to an estimated 19.4% in 2035, particularly thanks to the shale gas revolution in North America.

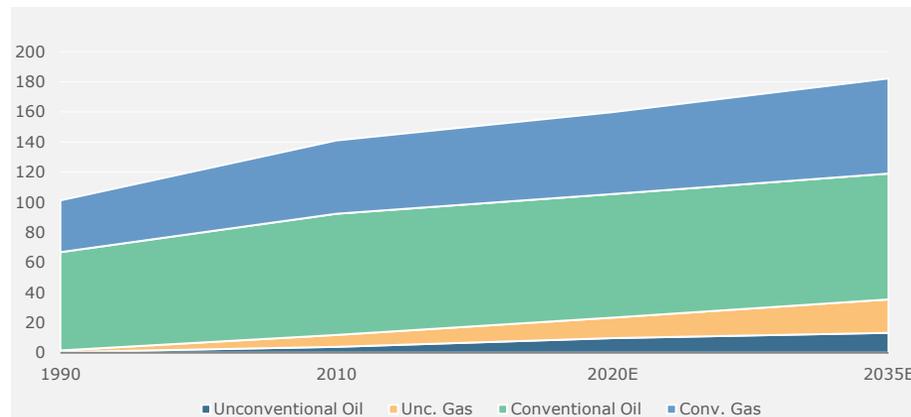
Between 2010 and 2035 unconventional oil and gas will climb by a CAGR of 5.2% and 4.2%, respectively. Despite of the 'booming' non-conventional oil and gas production market, production of conventional oil and gas will still go up by a CAGR of 0.2% and 1.0%, respectively. Taking into account the depletion of existing producing oil and gas fields (4% per annum), a significant number of new conventional oil and gas fields have to come on stream in the coming decades.

Growth energy consumption until 2035

CAGR	1980-2012	2012-2035E
Oil	+1.1%	+0.4%
Gas	+2.6%	+1.6%
Coal	+2.3%	+0.6%
Nuclear	+4.0%	+1.9%
Hydro	+2.4%	+2.0%
Total	+1.9%	+1.2%

Source: World Energy Outlook 2012, BP Statistical Review 2013

Production unconventional oil and gas rapidly rising (m b/p/d)



Source: IEA World Energy Outlook 2012 Please note: million barrels of oil equivalent per day

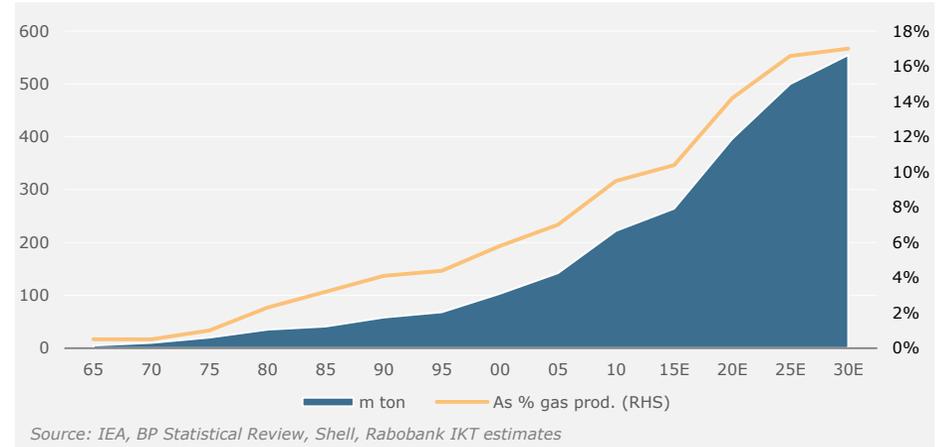
LNG booming, but rising costs could lead to postponements

LNG projects have led to substantial dredging work

As huge gas fields are discovered in areas with hardly any gas consumption, it is being liquefied (LNG) and shipped towards countries with high gas consumption, such as Japan, China, and Europe. In the graph on the right we can see the spectacular growth in LNG production as of 2005. Whereas LNG only accounted for 5.7% of total gas consumption in 2000, it jumped to 9.5% in 2010. Shell expects global LNG production to jump to 500 million tons in 2025, equalling 16.6% of total gas consumption in the world.

We believe dredgers will benefit from this rapid increase in demand for LNG. Because LNG has to be shipped from the production plant towards to clients, often new ports have be constructed. Examples are the very large projects Ras Laffan in Qatar (USD 1bn), Pluto, Wheatstone (EUR 916m), and Ichthys (EUR 767m) in Australia (see also next slide).

Global LNG production rapidly going up



Floating LNG could be a cost competitive option

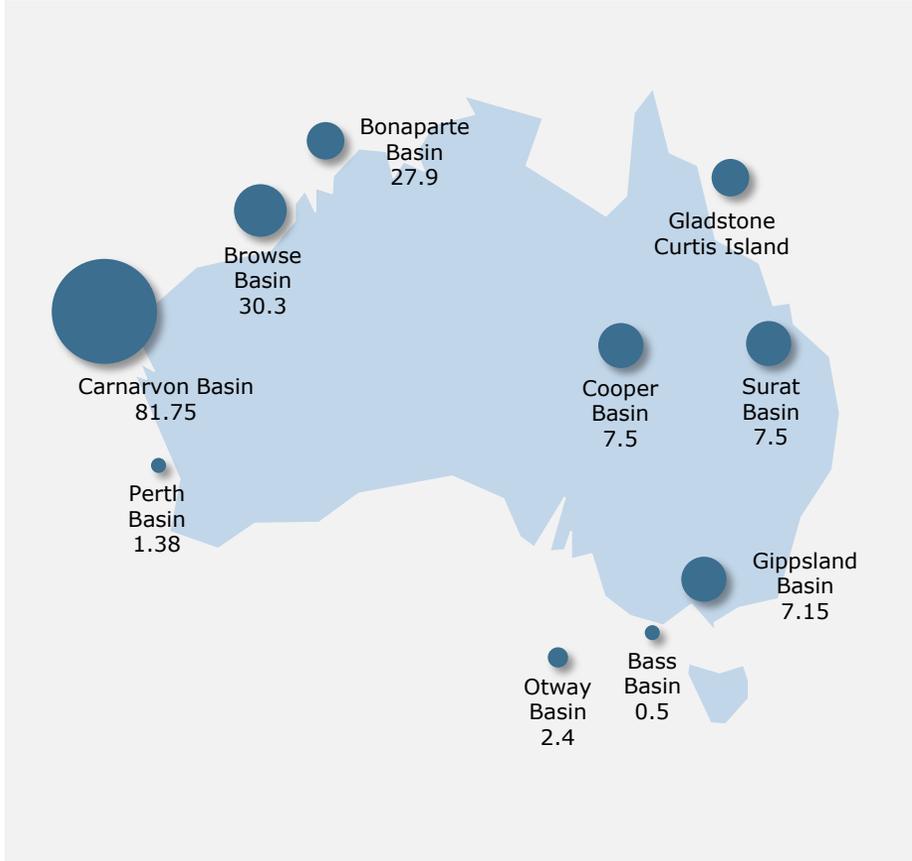
A number of LNG projects in Australia have been confronted by huge cost overruns. For instance Chevron's Gorgon LNG project will cost an estimated USD 52bn instead of the previously forecasted USD 43bn. There are a few reasons, such as the appreciation of the Australian dollar against the US dollar (+25% in three years time). In addition, the average salary costs per employee jumped by 28% to USD 171,000 (see graph), more or less twice as high compared with the industry's average and the highest per country. As a consequence, several projects have been shelved or postponed. Woodside's Browse LNG project was originally estimated at USD 30bn, but currently stands at USD 45bn. As a result, Woodside is considering the possibility of using a FLNG (Floating LNG FPSO) instead of building a LNG plant onshore. The latter gives a lot of work for dredging companies, but this is not the case at a FLNG. Currently only Shell is building a FLNG for its Prelude field (3.6m tons of LNG per year). However, Woodside's Browse field should produce 15m tons of LNG per year, i.e. it is a question mark if FLNG is a suitable option.

Highest salary per employee active at oil & gas in Australia (USD)



Australia is the main LNG supplier to Asia

Australia's gas reserves (trillion cubic feet)



Several LNG projects in Australia shelved due to huge cost overruns

Project	Field	Operator	Est. Cost USD	Targeted approval	Production	Dredger
Gorgon	Carnarvon	Chevron	52bn	Approved	2015	Boskalis
Pluto Expansion	Carnarvon	Woodside	15bn	Shelved	?	
Ichthys	Browse	Inpex	34bn	Approved	2016	Boskalis/ Van Oord
Gladstone LNG	Surat-Bowen	Santos	19bn	Approved	2015	DEME/ Van Oord
Curtis Island LNG	Surat-Bowen	BG Group	20bn	Approved	2014	
APLNG	Surat-Bowen	Origin/ Conoco-Phillips	25bn	Approved	2015	
Wheatstone	Carnarvon	Chevron	29bn	Approved	2016	DEME/ Jan De Nul
Sunrise	Sunrise-Troubadour	Woodside	12bn	Not yet	2017	
Browse	Browse	Woodside	45bn	Shelved	?	
Bonaparte	Bonaparte	GDF/Santos	?	Not yet	2018	
Total			251bn			

LNG production in Australia will go up from 20m tons in 2010 to 73m tons in 2016/17 (based on current projects under construction). New projects could push up production further to an estimated 100m tons in 2020 (Source: Santos)

Offshore wind market booming in Europe

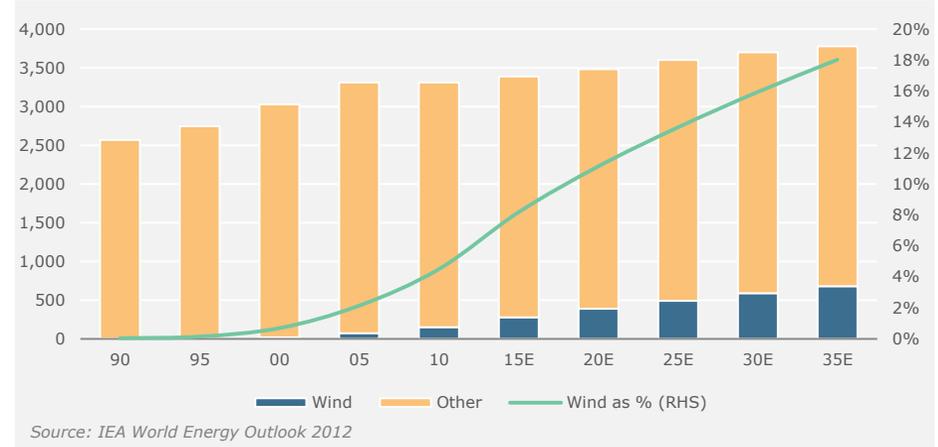
Governmental subsidies crucial in developing offshore wind parks

Besides LNG, the installation of offshore wind parks offer ample opportunities to the dredging sector. In 2012 Boskalis, DEME, Van Oord, and to a lesser extent Jan De Nul, won contracts in Europe worth EUR 0.6bn. As can be seen in the table below, offshore wind parks have only been built in Europe. To achieve the CO2 reduction targets in 2020, a lot of new offshore wind parks will be build in the European Union, not only until 2020, but also thereafter (assuming sufficient governmental subsidies).

Whereas the IEA foresees that 23GW will be installed offshore, the Global Wind Energy Council (GWEC) expects 40GW in 2020. Not only in the EU, but the IEA also foresees offshore wind parks in China, USA, and Japan in the coming years.

As can be seen in the graphs on the right, wind electricity generation in Europe will jump from 4.5% of the total in 2010 to an estimated 18% in 2035. Nearly 19% of all wind power generation will be supplied by offshore wind parks.

Electricity generation in Europe (TWh)



Strong growth expected at installed wind power in Europe (GW)

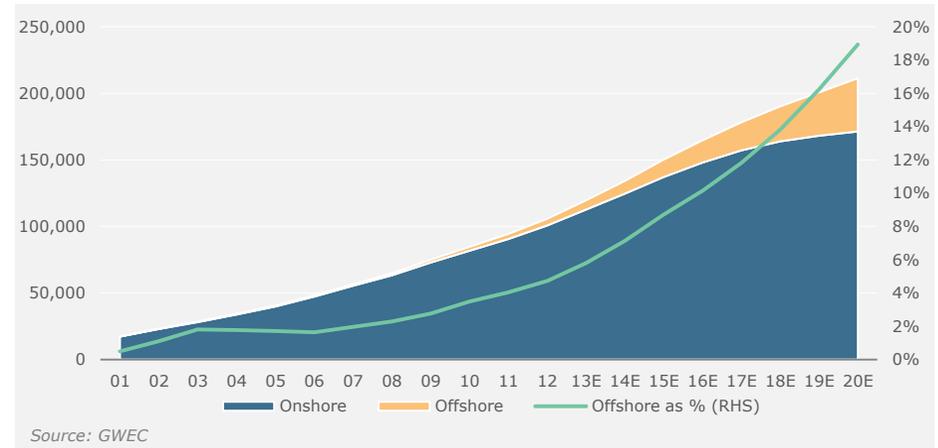
Offshore wind power	2011	2020E	2035E
European Union	4	23	70
World	4	40	175

Source: IEA WEO 2012

Offshore wind power	2011	2020E	2035E
European Union	4	40	N.A.

Source: GWEC estimate

Installed onshore and offshore wind power in Europe (MW)



Deep sea mining is on the eve of a breakthrough

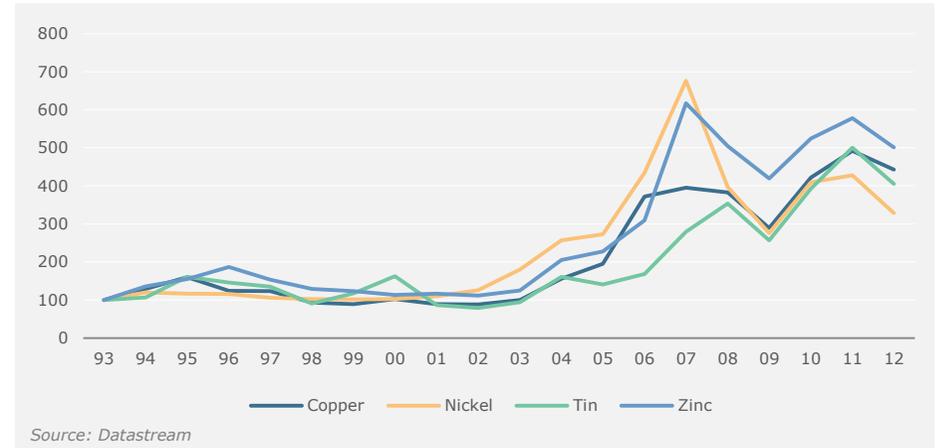


Dredging equipment not yet suitable for deep sea mining

Besides offshore oil & gas and offshore wind, a new market is on the eve of a breakthrough: deep sea mining, i.e. collecting raw materials at huge water depth (up to 5,000 metres). Relatively high raw material prices, rising demand, and shrinking reserves stimulates the extraction of these materials in deepwater areas, whenever technologically possible. Currently dredging vessels can extract these materials at water depth of up to 300 metres.

As can be seen in the top graph, prices of raw materials increased strongly between 1993 and 2012 thanks to a sharply higher global demand for raw materials. Using a basket of several raw materials, such as iron ore, copper, nickel, manganese, and zinc, the global consumption rose by CAGR of 3.2% between 1950 and 2000, jumping to a CAGR of 8.1% between 2000 and 2012 thanks to China. For example the use of iron rose more than fivefold in China compared with only 20% growth in the rest of the world between 2000 and 2012.

Development metal prices between 1993 and 2012 (USD per ton)

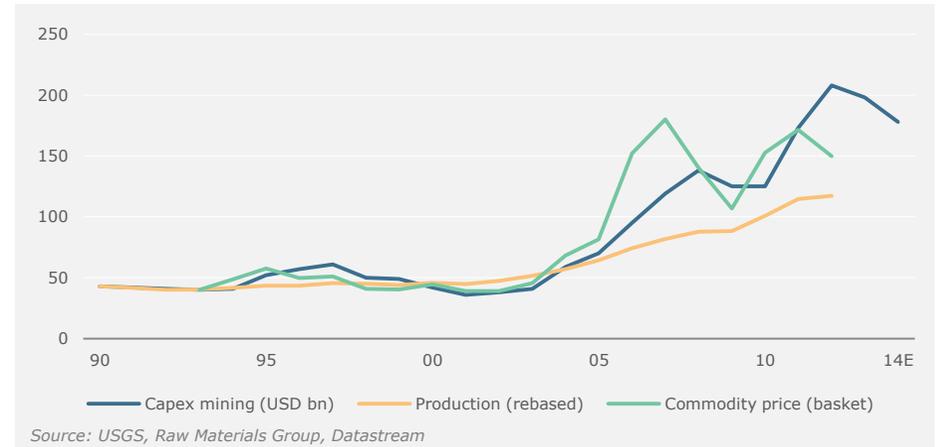


Jan De Nul's vessel Simon Stevin designed for deep sea mining

In the second graph we can see that raw material prices went up first, followed by sharply higher Capex of the mining industry. Because of the disappointing economic developments in the world in 2012, raw material prices decreased. As a consequence, we believe that the global mining industry will lower their investments in 2013 and 2014.

In 2011 IHC Merwede and DEME established a joint venture: OceanfLORE. OceanfLORE is developing offshore contract mining solutions to extract deposits, such as diamonds, phosphate, iron sands, seafloor massive sulphides, manganese nodules and crusts, and metalliferous sediments, in a cost effective way. Besides DEME, also Jan De Nul is looking at this market. The company's vessels Simon Stevin (2010) and Joseph Plateau (2013) have been designed for this market and are capable to operate in water depths up to 2,000 meters, but the first contract from Nautilus has been postponed. Boskalis is active at the Chatham Rise (rock phosphate) project in New Zealand. Finally, Van Oord is also looking for opportunities in this market.

Capex mining industry increased substantially more than production



E Tourism growing despite of economic crisis

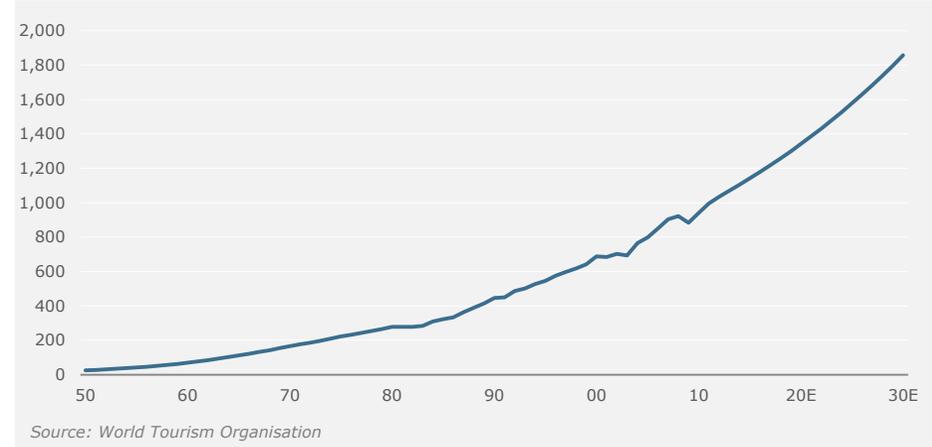


Number of tourists in 2011 already exceeded pre-crisis level

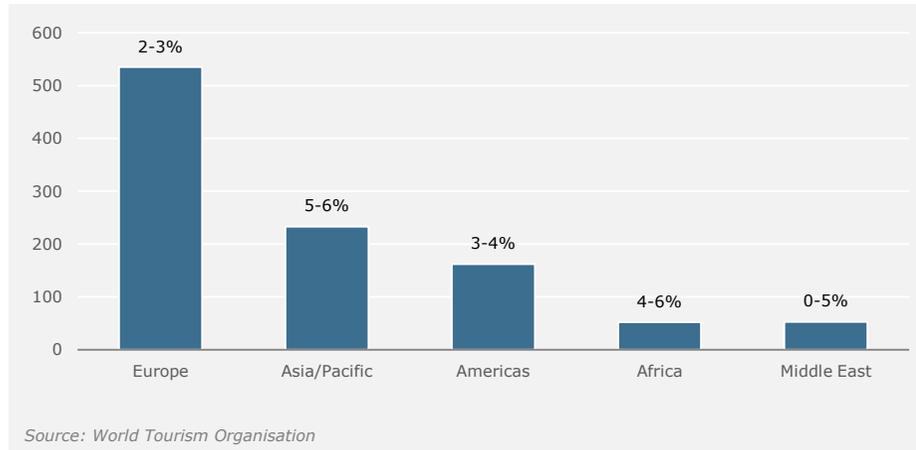
Developments at the tourism market are also impacting the dredging market. Particularly water-related tourism (marinas, cruise terminal) is important. Historically, also airports were important, such as the new airport in Hong Kong in 1995 and Palm Islands in Dubai (2008).

Between 1950 and 2012 the number of international tourist arrivals climbed by a CAGR of 6.2% despite of the impact of two major crisis (2001, 2009). The World Tourism Organisation expects the number of international tourist arrivals to go up by 3-4% in 2013 (see graph below), followed by an increase of approximately 3% per annum until 2030.

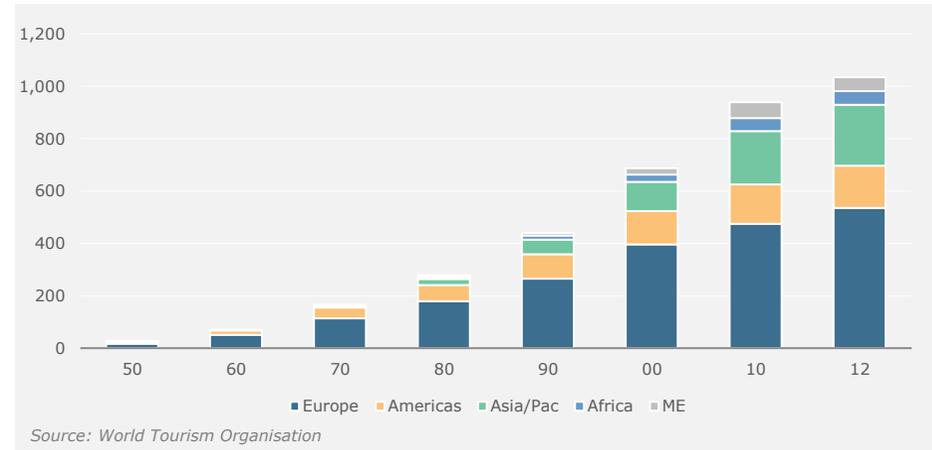
International tourist arrivals (m) between 1950 and 2030E



Expected growth number of international tourist arrivals in 2013



International tourist arrivals per region between 1950 and 2012



Summary outlook long-term demand growth: Positive



In our base scenario we estimate that the global dredging market will increase by 5.4% per annum between 2013 and 2018. This is lower than the average growth rate between 2000 and 2011 (9.0%), primarily due to the worldwide economic recession and governmental budget cutbacks, but we believe that the underlying growth drivers are still intact. Following two slightly weaker years for the dredging industry (2012 and 2013), we foresee an acceleration in growth rates again (therefore we have made a difference in the forecasted time frames in the final two columns).

	<i>A</i> <i>Population</i>	<i>B</i> <i>Global warming</i>	<i>C</i> <i>Seaborne trade</i>	<i>D</i> <i>Energy & minerals</i>	<i>E</i> <i>Tourism</i>	<i>Governmental budgets</i>	<i>CAGR 2000-2011</i>	<i>CAGR 2011-18E</i>	<i>CAGR 2013E-18E</i>
Trade capital	+		++			–	13.9%	3.2%	6.2%
Trade maintenance	+		++			–	6.3%	1.9%	4.2%
Coastal protection		++					4.8%	5.9%	8.5%
Urban development	+	+					-0.1%	2.8%	4.0%
Energy	+			++			16.6%	5.2%	5.3%
Leisure & tourism	+				+		10.2%	0.7%	2.5%
Total dredging market	+	+	++	++	+	–	9.0%	3.5%	5.4%
Global GDP (base scenario)							3.8%	4.1%	4.4%

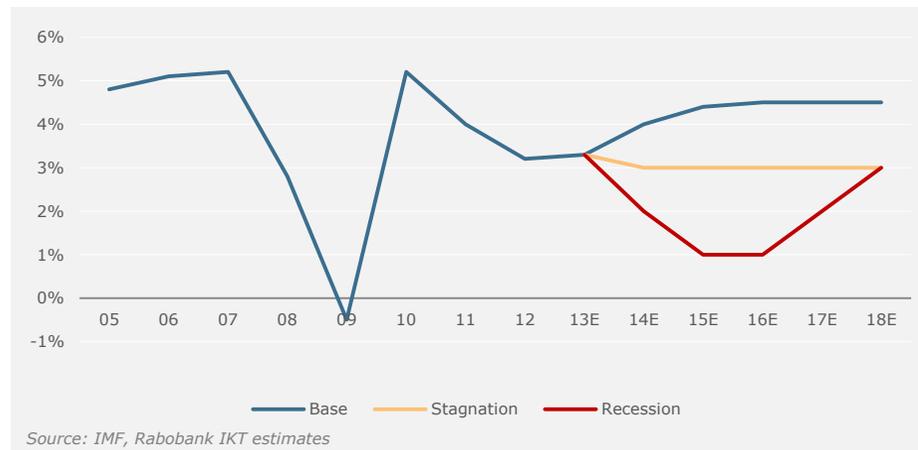
Outlook dredging based on different economic scenarios

Impact global recession on dredging market seems rather limited in our view

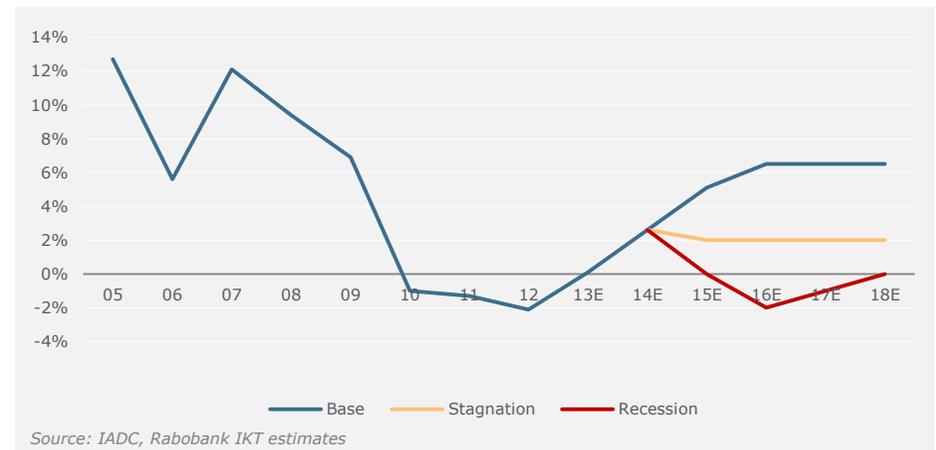
In the graphs below we show how different economic scenarios for the coming years will impact the global dredging market. In the 'base' scenario we have used IMF's GDP growth forecast for the period 2013-2018. At IMF's scenario the global economy will increase by a CAGR of 4.1% between 2011 and 2018. Under the second alternative scenario 'stagnation' we have assumed that GDP growth will remain at the relatively low level of the years 2011 and 2012, i.e. growth in the emerging markets, but Europe still struggling. In this scenario, the global economy will expand by a CAGR of 3.1% until 2018. Finally, in our third scenario the global GDP growth rate will drop to 1% per year due to severe governmental budget cuts, depressed consumption levels in Europe and the US. In this scenario the global economy will increase only by a CAGR of 2.2% until 2018.

Based on these different economic scenarios, we have not changed our forecast for the global dredging market for 2013 and 2014 thanks to the strong order backlog at year-end 2012. However, as of 2015 the impact of different economic scenarios will become clearly visible, we believe. Whereas in our 'base' scenario the global dredging market will increase by a CAGR of 3.5% until 2018, this growth rate will only be 1.2% at the 'stagnation' scenario and -0.4% at the 'recession' scenario. If one of the latter two scenarios materialises, the dredging industry's profit margins will become under significant pressure as the available global dredging capacity will continue to increase (see next Chapter). In all our scenarios we have not included the possible restart of large projects in Singapore, which were put on hold in August 2002. Several times an agreement between Singapore and Indonesia or Malaysia was near in the last eleven years.

Global GDP growth using different economic scenarios (YoY %)



Expected development global dredging market (YoY %)





Dredging capacity growth



Rabobank

Layout chapter capacity growth

In this chapter we will discuss the capacity development at the global dredging industry based on data from the IHS International Dredging Directory. In the first slides (38-41) we looked at the total dredging industry, followed by slides 42-47, whereby we focused on the fleets of the top 4.

Global dredging fleet:

- Slides 38 and 39 with the ten companies operating the largest hopper and cutter fleets in the world
- Slide 40 covering the capacity growth at the largest dredging companies in the world. We used 2004 as a starting year because of the (last) big merger in the dredging industry: Van Oord & Ballast-HAM Dredging (BHD). We have compared the total available hopper and cutter capacity in 2004 with 2012
- Slide 41 gives the development of the average size of the hopper and cutter vessels at the largest dredging companies

Capacity top 4:

- Because of a lack of data at most of the dredging companies, slides 42-47 of this chapter are focused on the top 4 dredging companies operating in the 'free' global dredging market: Jan De Nul and DEME from Belgium and Boskalis and Van Oord from the Netherlands. Whenever data are available, we have complemented our top 4 data with figures from CHEC

Dredging companies with largest hopper fleet (2012)

Ranking	Company	Country	Capacity (m ³)	Share (%)	Working area
1.	CHEC	China	329,561	15	China (mainly)
2.	Jan De Nul	Belgium	316,927	14	Global
3.	Van Oord	Netherlands	243,570	11	Global
4.	DEME	Belgium	214,560	10	Global
5.	Boskalis	Netherlands	164,820 ¹⁾	7	Global
6.	DCI	India	59,420	3	Regional
7.	Inai Kiara	Malaysia	37,203	2	Regional
8.	PT (Persero) Pengerukan	Indonesia	36,250	2	Regional
9.	Hyundai E&C	South Korea	36,000	2	Asia
10.	Great Lakes Dredging	USA	33,671	2	USA (mainly)
	Small players *	Netherlands	40,715	2	Regional
	Total		2,223,507	100	

Dredging companies with largest cutter fleet (2012)

Ranking	Company	Country	Capacity (kW)	Share (%)	Working area
1.	CHEC	China	314,974	16	China (mainly)
2.	Jan De Nul	Belgium	192,785	10	Global
3.	DEME	Belgium	155,588	8	Global
4.	Van Oord	Netherlands	133,820	7	Global
5.	Boskalis	Netherlands	122,039 ¹⁾	6	Global
6.	Great Lakes Dredging	USA	118,797	6	USA (mainly)
7.	National Marine Dredging	UAE	99,986	5	Regional
8.	Suez Canal Authority	Egypt	56,880	3	Regional
9.	Penta Ocean	Japan	37,200	2	Asia
10.	Inai Kiara	Malaysia	31,967	2	Regional
	Small players *	Netherlands	13,903	1	Regional
	Total		1,938,335	100	

CHEC and Jan De Nul more than doubled capacity in last decade



Substantial fleet expansion programs, mainly in large dredgers

As shown in chapter II, the global dredging market increased significantly between 2000 and 2011. In addition, the long-term outlook is positive. These favourable market conditions have been reflected in the total capacity growth (see table on the right). Between 2004 and 2012 the total hopper capacity measured in m³ climbed by 61%, whereas the available cutter capacity measured in kW rose by 28%. In the same period the global dredging market measured in EUR millions increased by an estimated 50% (2012 figures have not been released yet by the IADC, but estimated by Rabobank IKT).

As shown in the table, most striking are the huge capacity increases by CHEC, Jan De Nul, and to a lesser extent DEME.

On the following slide, we have also given the development of the average size of a hopper and cutter between 2004 and 2012 at the top ten dredging companies. It is obvious that most of the companies invested in relatively large vessels in the last decade, resulting in a substantially higher average capacity per vessel in 2012 compared with 2004.

Change in hopper and cutter capacity between 2004 and 2012

Company	Hoppers (m ³)	Cutters (kW)
CHEC	145%	196%
Jan De Nul	100%	140%
Van Oord	12%	22%
DEME	65%	76%
Boskalis	-16% *	-3% **
DCI India	10%	122%
National Marine Dr.	0%	-12%
Great Lakes Dredging	-13%	3%
Penta Ocean	21%	-26%
Toa Corporation	0%	-46%
Hyundai E&C	0%	-83%
Suez Canal Authority	0%	-44%
Total	61%	28%

Source: IHS International Dredging Directory *) Including Fairway: +2% **) Excluding Ursa: -15%

Average size dredging vessels clearly going up

Average size hopper vessels increased significantly

Company	Average size (m ³)	Change 2012 versus 2004
CHEC	6,705	35%
Jan De Nul	11,319	29%
Van Oord	9,740	25%
DEME	8,940	16%
Boskalis	7,492	26% *
DCI India	5,402	0%
Inai Kiara	5,315	N.A.
PT Penerukan	2,788	3%
Hyundai E&C	18,000	0%
Great Lakes Dredging	3,741	-13%

Average size cutter vessels - in general - rose as well

Company	Average size (kW)	Change 2012 Versus 2004
CHEC	8,076	52%
Jan De Nul	13,770	3%
DEME	8,189	48%
Van Oord	6,083	33%
Great Lakes Dredging	8,486	-19%
Boskalis	6,102	65%
National Marine Dredging	7,142	-43%
Suez Canal Authority	14,220	-3%
Penta Ocean	12,400	-14%
Inai Kiara	7,992	N.A.

Source: International Dredging Directory *) Including Fairway: 8,710 (+46%)

Source: International Dredging Directory

Capacity top 4 players will grow only marginally in 2013 and 2014



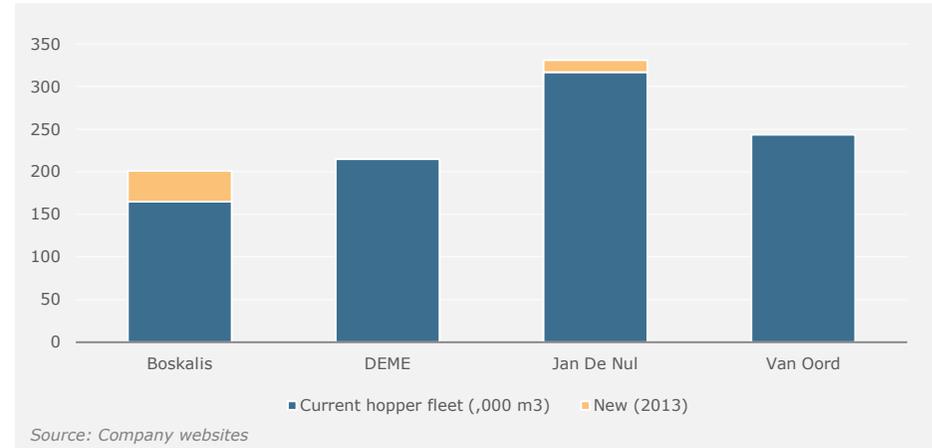
Hardly any expansion of hoppers and cutters expected in 2014

As can be seen in the top graph, only Boskalis will expand its hopper fleet significantly through the return of the mega hopper Fairway, which was severely damaged after a collision a few years ago. Regarding cutters (see second graph), only Van Oord commissioned the mega cutter Artemis in 1H13.

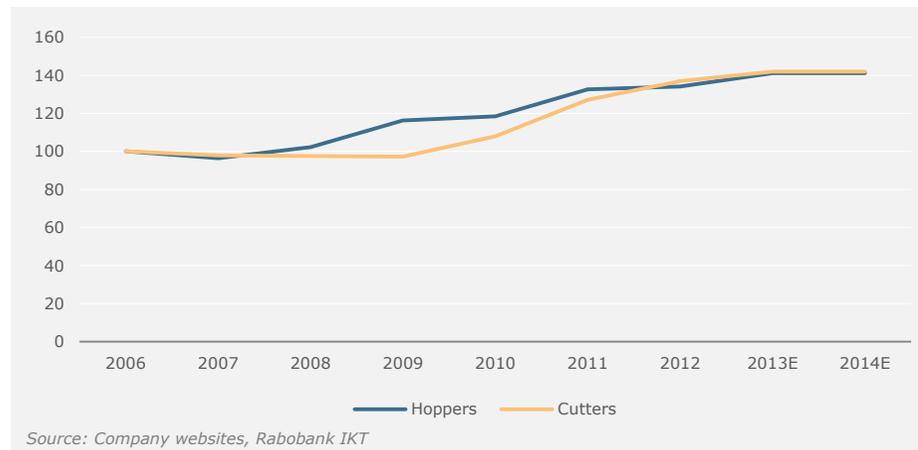
However, we have to bear in mind that the top 4 players expanded their fleet significantly over the last years (see graph below). Despite of the loss of Boskalis' mega hopper Fairway in 2007, total available hopper capacity increased by 34% between 2006 and 2012. Available cutter capacity rose by 37%.

Jan De Nul has invested strongly in mega hoppers and dredgers (see next slide). In 2013 it operates 4 hoppers with >30,000m³ (Boskalis 2; Van Oord 2; DEME 1) and 5 cutters with >23,000kW (Boskalis 1; Van Oord 2; DEME 2).

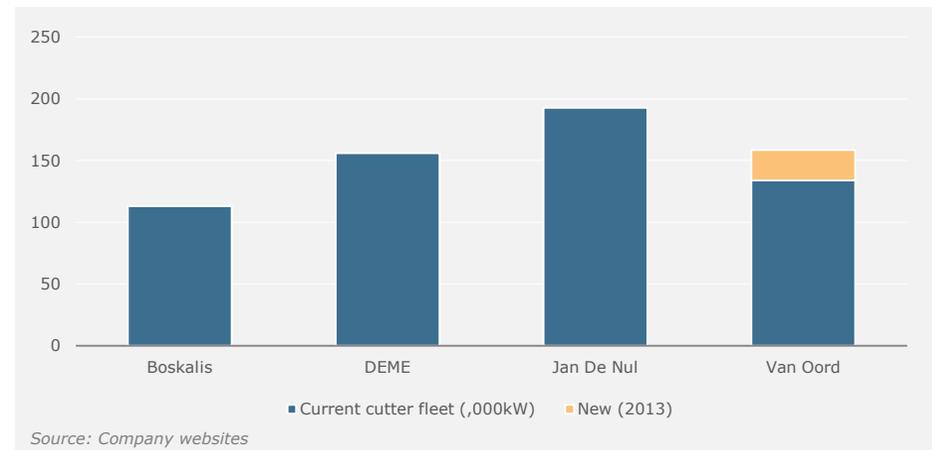
Hopper capacity top 4 (,000 m³)



Top 4 capacity growth 4 between 2006-2014E (Index: 2006=100)



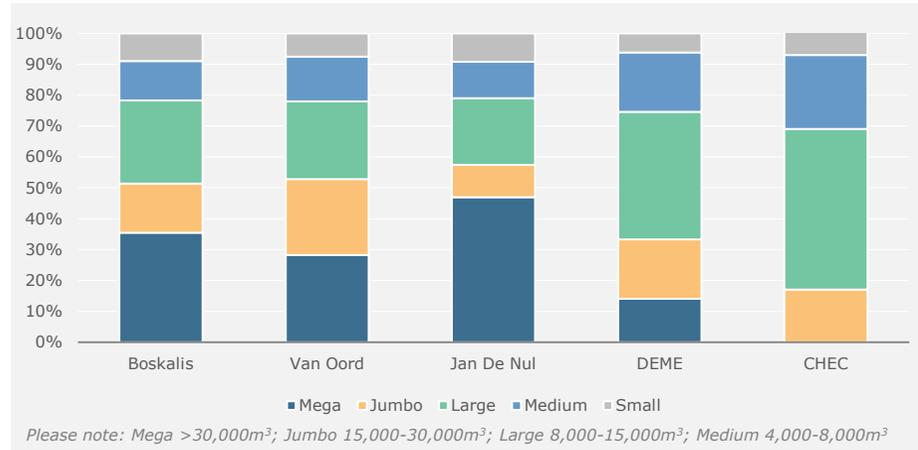
Cutter capacity top 4 (,000 kW)



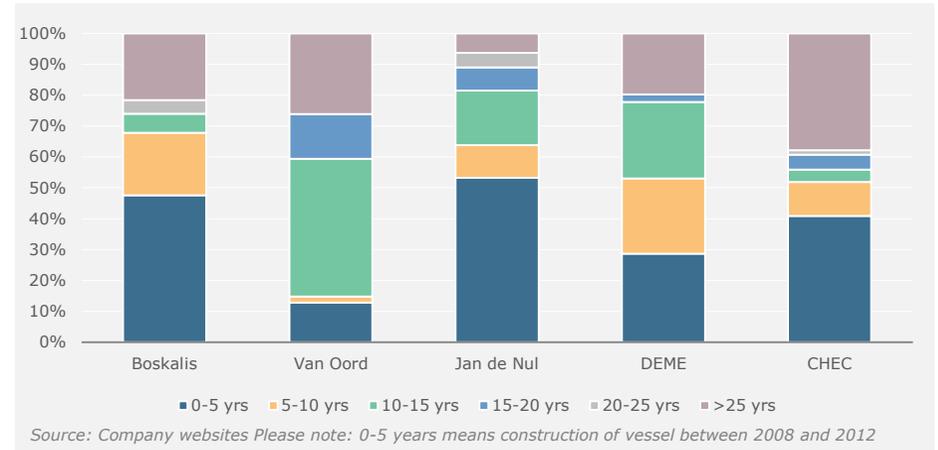
Jan De Nul operates youngest dredging fleet ...



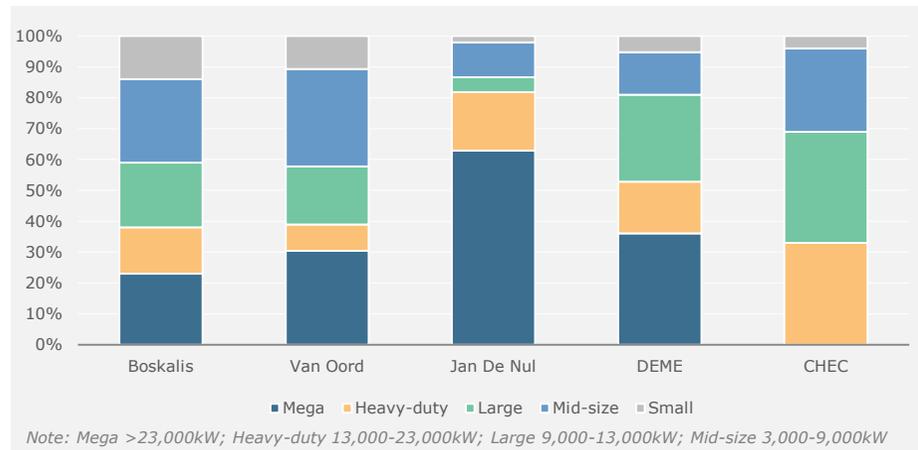
Breakdown hopper fleet in 2013 by size



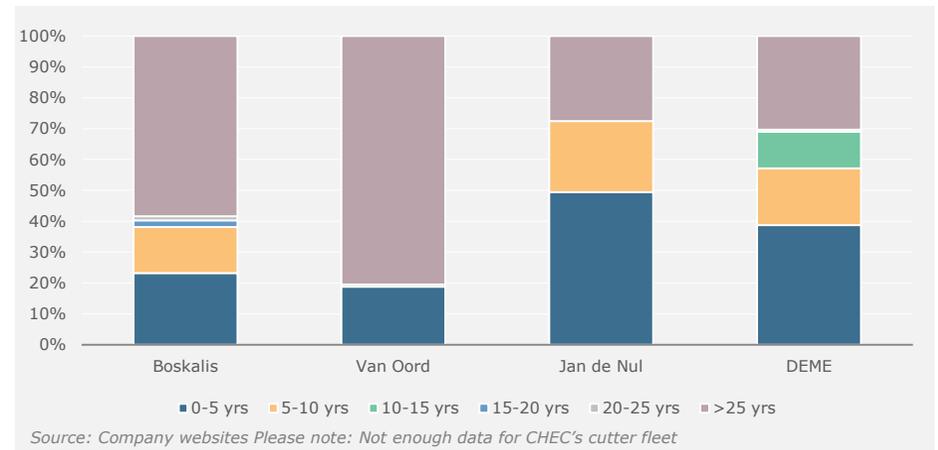
Breakdown hopper fleet by age



Breakdown cutter fleet in 2013 by size



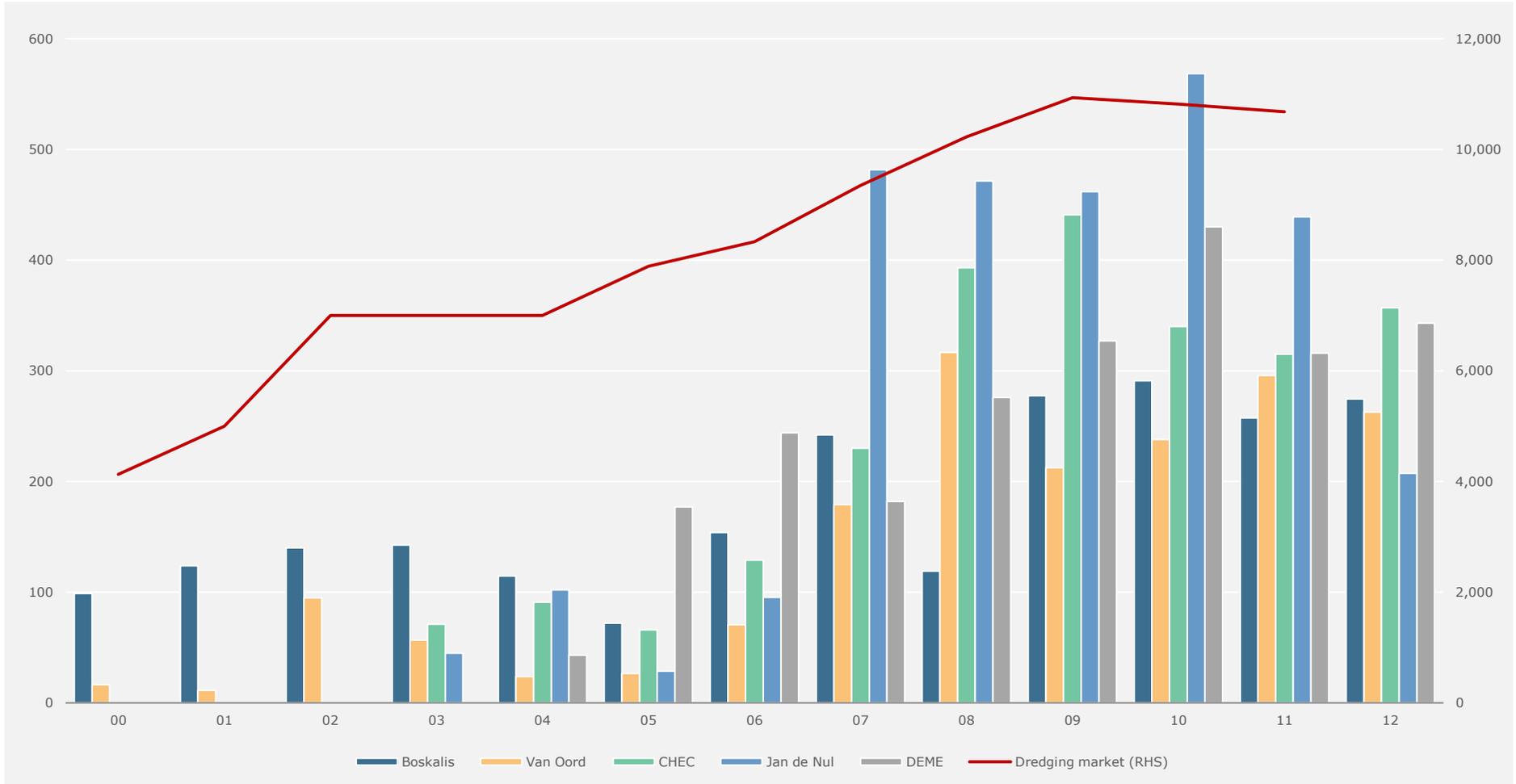
Breakdown cutter fleet by age



...as the company had largest Capex program since 2007 ...



Investments in dredging equipment between 2000 and 2012 compared with development global dredging market (EUR m)



Source: Company reports, IADC Please note: Not all data are available, such as Jan de Nul's and DEME's 2000-2002 figures; Please note: all figures are in EUR m

...resulting in the largest global market share of 'free' market

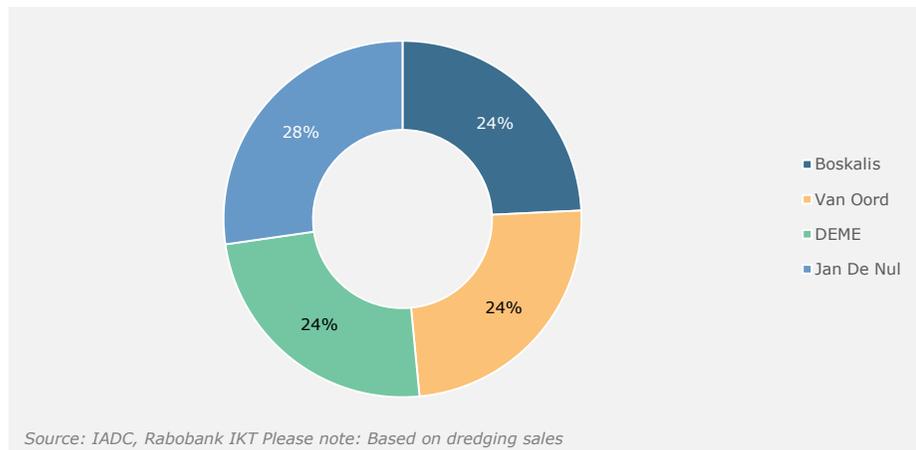


Global market share top 4 players more or less same size in 2011

In the two graphs on the right we reveal the capacity development for both hoppers and cutters between 2004 and 2012. Whereas the combined hopper capacity measured in m³ rose by a CAGR of 3.7% between 2004 and 2012, Jan De Nul's growth rate stood at 9.4%. Regarding the cutter fleet, Jan De Nul's CAGR amounted to 11.6%, whereas the total capacity of the top 4 rose by a CAGR of 5.1%. However, we have to note that all vessels from small to mega, young to old have been put in this calculation!

Based on IADC's (International Association of Dredging Companies) 2011 figures, we believe that Boskalis, DEME, and Van Oord had a 24% market share in the 'free' dredging market, i.e. the dredging markets that are open for the Belgium and Dutch dredgers (see graph below). Jan De Nul's market share stood at approximately 28%.

Estimated market share 'free' dredging market in 2011



Top 4 hopper capacity in 2004 and 2012 (,000m³)



Top 4 cutter capacity in 2004 and 2012 (,000kW)



Boskalis and Van Oord will likely have to invest in new cutters

No necessity to invest in new hoppers at top 4 until 2018

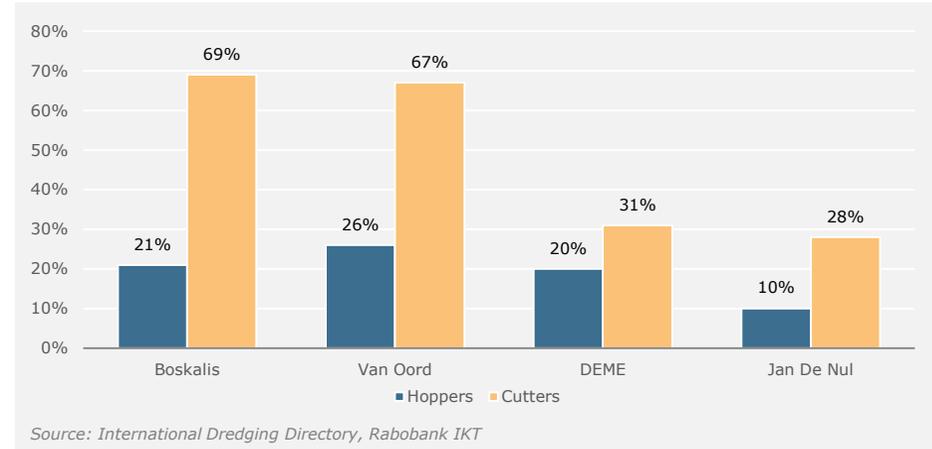
As the top graph reveals, Boskalis and Van Oord do have a relatively old cutter fleet. At Boskalis nearly 70% of its fleet measured in kW is 25 years or older. Although Van Oord recently invested in two mega cutters – Athena (2011) and Arthemis (2013) – still nearly 70% of its fleet is 25 years or older. Economically, a cutter can easily be used for more than 25 years. However, if Boskalis or Van Oord want to invest in a mega-cutter, i.e. a cutter with a capacity of at least 23,000kW, the Capex will be around EUR 200m. At the time of the release of its 1H13 results, Boskalis stated its intention to order a mega cutter in 2H13.

On the second graph we show the financial position of the top 4 dredging companies. Boskalis' net debt was nearly EUR 600m at year-end 2012 (net gearing 32%), but because of the acquisition of the remaining (67%) of the shares of Dockwise in Q1 2013, the company's net gearing climbed to 60% on 30 June 2013¹. In our assumptions, we believe that Boskalis will have to invest in at least one mega-cutter until 2018. Regarding Van Oord, we have pencilled in new vessels to replace old equipment until 2018.

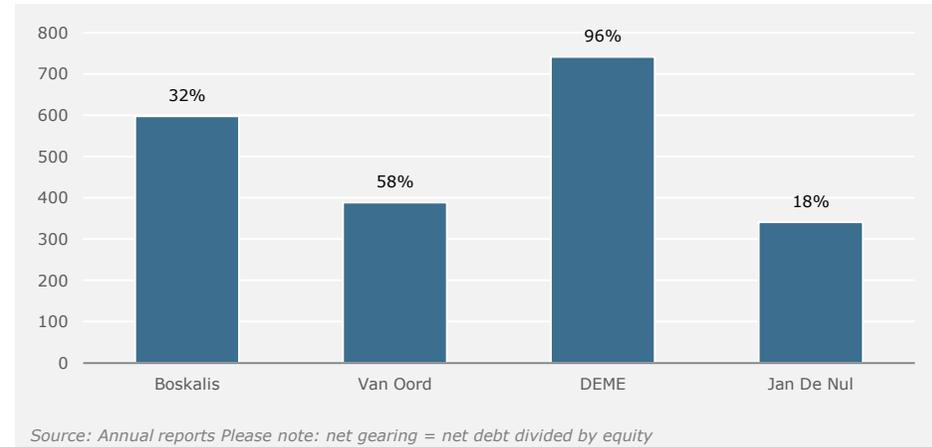
Jan De Nul most flexible in its investment program

Regarding DEME and Jan De Nul both companies are more flexible in filling in their investment programs until 2018. Jan De Nul has most room to manoeuvre as the company has the lowest net gearing percentage. In our forecast we have taken into account investments in both hoppers and cutters by both DEME and Jan De Nul until 2018.

Percentage of fleet more than 25 years of age



Net debt (EUR m) and net gearing at year-end 2012



1) Please note: On a pro-forma basis, i.e. including divestment proceeds of Archirodon, Boskalis' net gearing would have been 54% on 30 June 2013

We forecast a slowdown in global capacity growth rate until 2018



Rabobank IKT expects limited capacity growth until 2018

The conclusions of the Capex plans discussed on the previous slide are found on the two graphs on the right. Based on the given net gearing percentages, Jan De Nul has relatively more financial room to expand its capacity in the coming years compared to our forecast for the overall market. However, Boskalis has also the option of issuing new shares to finance its possible capacity plans.

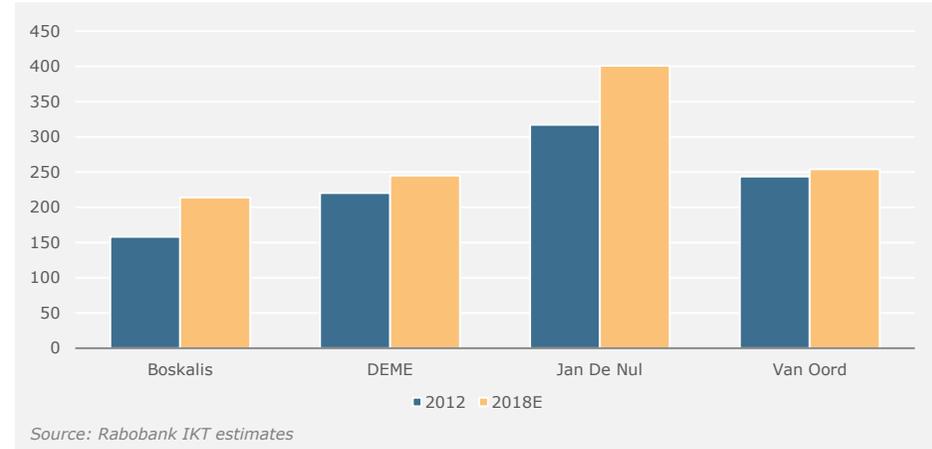
In the table below we have given our view on the expected development of the total global hopper and cutter fleet. We have estimated less capacity growth, fuelled by the relatively weak GDP growth in recent years. In addition, the global financial crisis will lead to somewhat more limited capacity growth, we believe. We have to note that these figures are estimates made by Rabobank IKT as there are hardly any Capex plans available!

Forecasted capacity growth global dredging fleet until 2018

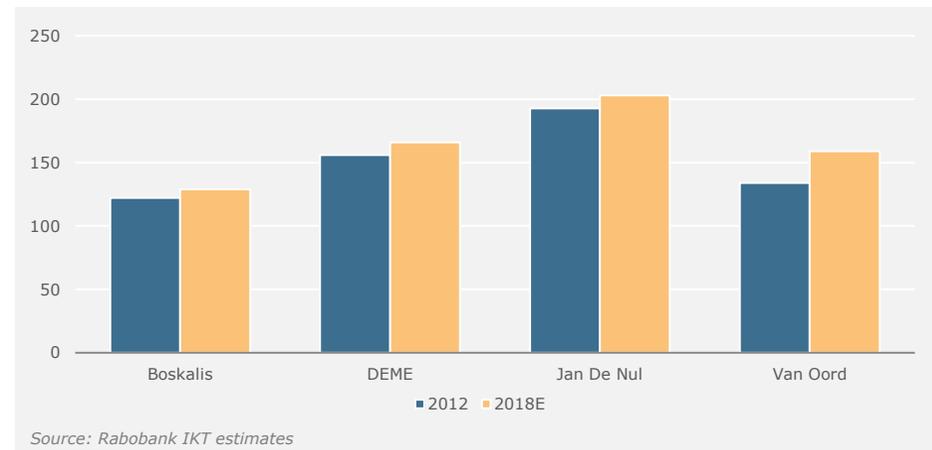
Capacity growth	CAGR 2004-2012	CAGR 2013-2018E
Hoppers Top 4	3.6%	2.9%
Hopper Other	8.4%	3.6%
Total Hoppers (m ³)	6.1%	3.3%
Cutters Top 4	4.6%	1.4%
Cutters Other	2.5%	1.8%
Total Cutters (kW)	3.2%	1.7%

Source: Rabobank IKT estimates

Expected Top 4 hopper capacity in 2018 (,000m³)



Expected Top 4 cutter capacity in 2018 (,000kW)



IV

Supply versus Demand



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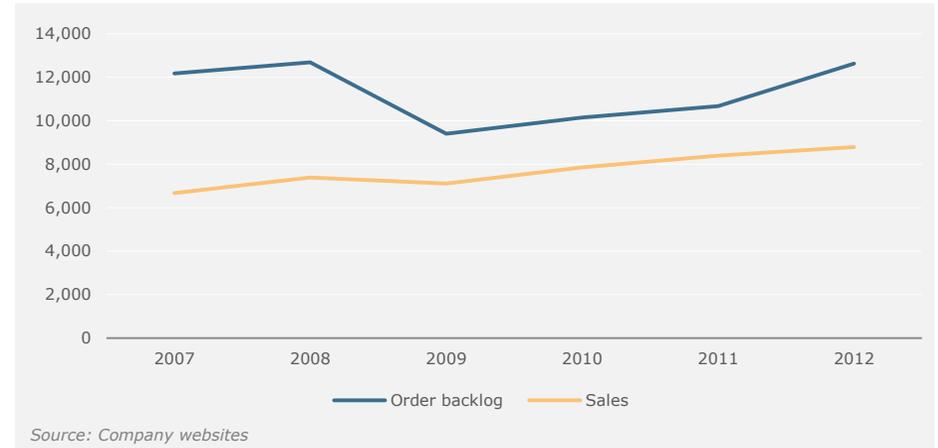
Volume 'free' dredging market stabilises in the short-term ...

Order backlog exceeds one year sales

In the first graph we reveal the total order backlog and sales of the top 4 dredging companies. Unfortunately, Jan De Nul only released its order backlog as of 2007 onwards. The graph clearly shows the impact of the stop of the dredging projects in Dubai in 2009. As a consequence, Van Oord's order backlog more or less halved, but also Jan De Nul's order backlog was impacted by several hundreds of millions.

Thanks to the strong order intake in 2012, the combined order backlog of the top 4 at year-end 2012 was substantially higher compared with year-end 2011 (+18%). Order backlogs increased significantly at Van Oord (+14%), DEME (+38%), and Boskalis (+18%), although the latter was caused by acquisitions (Boskalis' dredging backlog declined by 5% at year-end 2012). Jan De Nul's order backlog rose by 6%.

Development total sales and order backlog top 4 dredgers (EUR m)

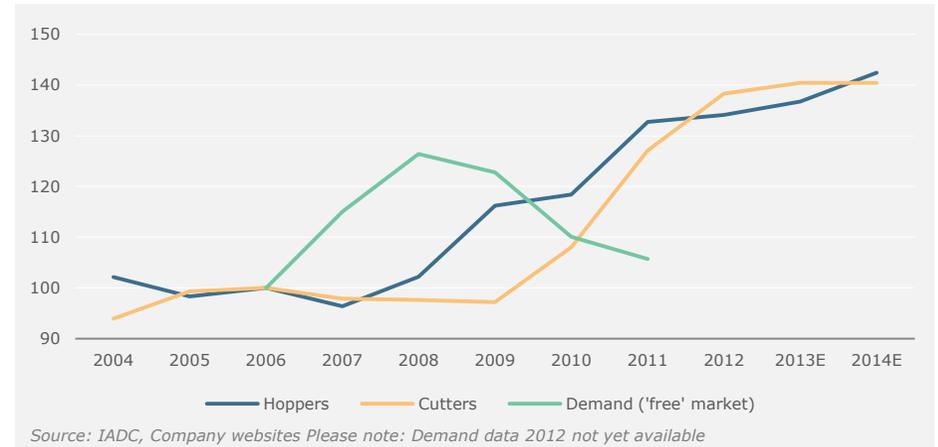


Demand is increasing; Singapore remains question mark

In the second graph, we have compared the capacity increase in hopper and cutter capacity of the top 4 players between 2004 and 2014E. In addition, we have given the size of the total dredging market (IADC data; 2012 figures not yet released). Fortunately, the order intake has improved, so it goes in the same direction as the capacity increase. We have to bear in mind, however, that the new orders won are with less favourable margins compared with the heydays in 2006-2008, although we believe still with satisfactory margins.

As shown in the previous slides, we believe that the volume of the global dredging market will increase in the coming years. It remains a question mark if special market 'boosters', like Singapore at the end of the 90s/early 00s and Dubai in the mid 00s (until early 2009), will happen again. As said before, Singapore has still big plans for land reclamation, but the winning of sand (huge distance) as well as its territorial water issues with Indonesia and Malaysia have not been solved (yet).

Capacity growth top 4 dredgers versus demand (Index: 2006=100)

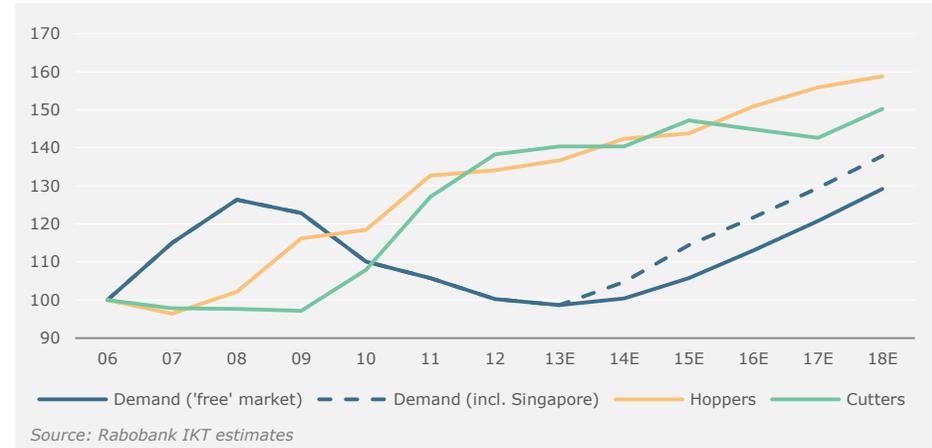


...but improves again in the long-term

Capacity and demand will become more and more in balance

In the top graph we again show the same graph as on the previous slide, but this time we have extended the time horizon until the year 2018. These estimates for 2013-2018E are based on some critical assumptions including the long-term Capex plans of the top 4 players, scrapping of old vessels, growth of the 'free' dredging market based on the long-term drivers, and the possible impact of the 'return' of Singapore in the dredging market. Finally, we have assumed that CHEC's presence in the 'free' global dredging market will hardly change as its own 'home' market China offers sufficient growth potential. To sum up, we believe that the gap between demand and capacity will gradually become smaller in the coming years, but we do not foresee a return of the heydays in 2006-2008.

Estimated long-term demand versus top 4 capacity growth

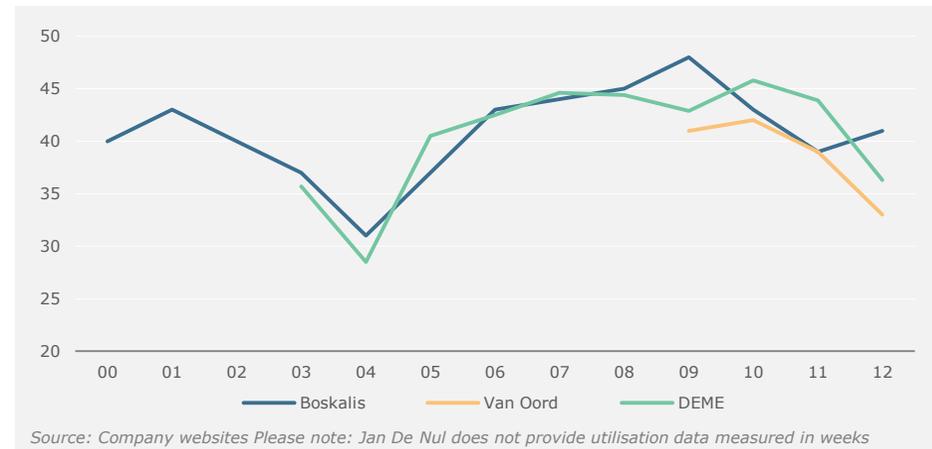


Fleet utilisation should recover again in the coming years

Looking at top graph, it seems to be that there was huge overcapacity in 2011 and 2012 as well as in the coming years. A 'healthy' utilisation rate for a hopper is 35-40 weeks per annum. The second graph shows the average utilisation of the hopper fleet of Boskalis, DEME, and Van Oord between 2000 and 2012. Jan De Nul calculates the average in a different way, but the trend is similar. We did not show the average utilisation of the company's cutter fleet, but the trend was more or less similar compared with the hoppers. According to Boskalis, its hopper fleet accounts for around 80% of the cash flow generation at its dredging activities.

The second graph clearly shows the heydays in the period 2006-2008, followed by the weaker market in 2011 and 2012. As we will show on slide 50, EBITDA margin of the top 4 peaked in 2009 (20.5%), followed by a small decrease to 19.3% in 2012. Margins are somewhat under pressure as well as the impact of recently gained orders with lower margins will in our view lead to slightly lower margins in the coming years.

Average annual use of hoppers measured in weeks

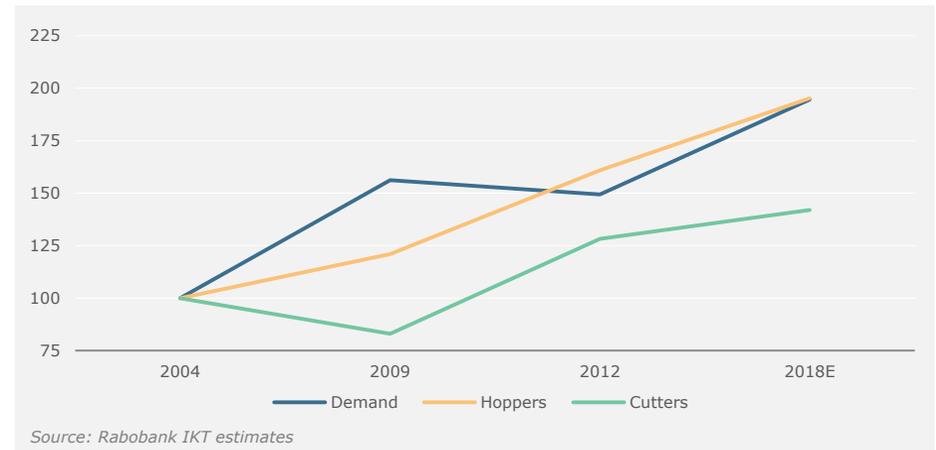


Overall picture global dredging market remains positive

Total global dredging market will remain in balance

In the graph, we reveal our demand/supply forecast for the total global dredging market ('free' and 'closed'). The used assumptions are even more uncertain compared with the previous slides, whereby we discussed the top 4. As shown in the graph, we believe that the market conditions in general will remain favourable as capacity and demand will remain in balance in the coming years (see also slides 34, 35 and 47).

Estimated development total dredging market (Index: 2004=100)



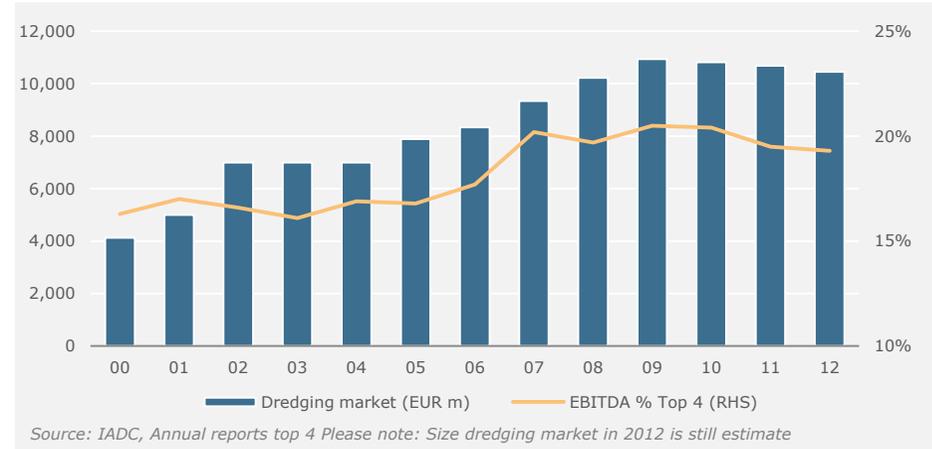
Impact different global downturns limited on EBITDA margins

Dredging companies have benefited from innovation

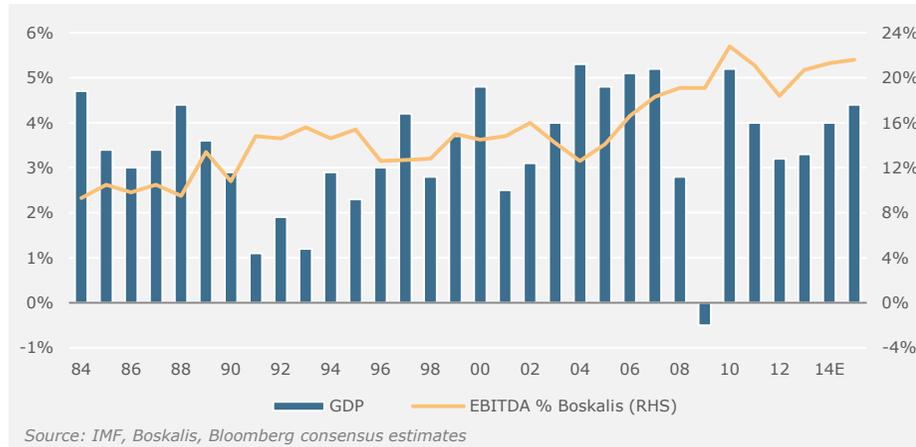
In the three graphs we have compared the global dredging market development with the overall EBITDA margin development of the top 4 and Boskalis (including 2013-2015 estimates) as well as the global GDP growth with Boskalis' EBITDA margin as of 1984. The global economy was hit by the first Gulf War (1990/1991), 11th September 2001, and the financial crisis (2008/2009). In addition, the dredging industry was impacted by the sudden stops at large projects (Singapore in 2002 and Dubai in 2009). Despite of these issues, the EBITDA margin of Boskalis and the top 4 has developed very positively. Based on our economic scenarios (slide 35), EBITDA margins could recover as of 2015 (second graph on the right).

The positive EBITDA margin development is in our view thanks to the highly innovative character of the dredging industry, i.e. huge efficiency gains realized in the last 10-15 years. Furthermore, the consolidation process, which resulted in the dominance of the current top 4 companies, has led to an oligopolistic market structure.

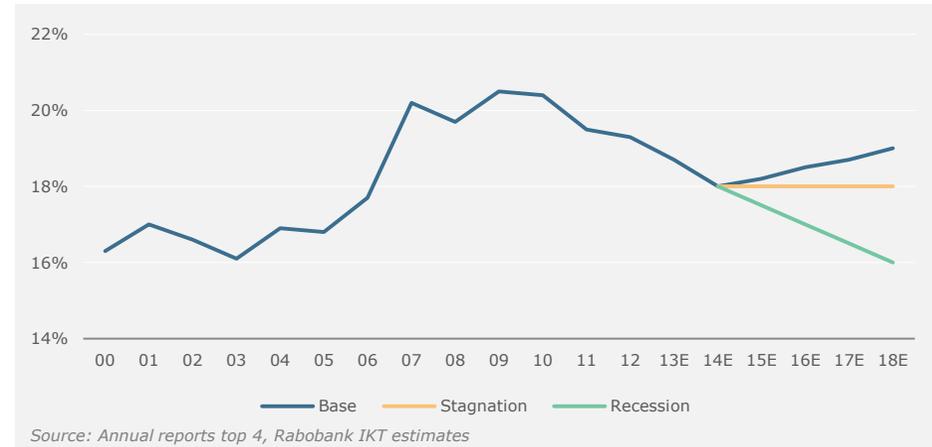
Global dredging market and EBITDA margins (2000 – 2012)



Overall EBITDA % trend Boskalis versus global GDP (1984 – 2015E)



Forecasted EBITDA % top 4 using different economic scenarios



V

Competition



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Competitive landscape in dredging ...



...not likely to change structurally in coming years

Threat new entrants is low

We believe that the chances of new companies entering the global dredging market is very low, except for CHEC. As discussed earlier, the investment levels are huge. In addition, global presence is needed to do business. Furthermore, projects are becoming larger and more complex, i.e. only very experienced dredging companies can do the job.

We do not believe – except for CHEC – that regional dredging companies will enter the global arena. They are often active in protected ‘closed’ markets and therefore not used to operate in the competitive global market. Only regarding CHEC, we believe that this company will likely become active in Africa.

We do not believe that construction companies will enter the dredging market. In the last decade construction companies have decreased their dredging capacity.

Power of suppliers is moderate

Although shipyard IHC Merwede has a global market share of around 50% at building dredging vessels, particularly highly complex ships, the number of shipyards constructing dredging vessels has increased. Dredging company Jan De Nul, which has its own engineering department, has used in recent years shipyards like Uljanik Brodogadiliste (Croatia), STX Offshore & Shipbuilding (South Korea), Tianjin Xinhe (China), and Construcciones Navales del Norte (Spain). Other shipyards active in building dredgers are Damen Shipyards, Vosta, Ellicott, IZAR, etc.

At times of the unprecedented shipbuilding boom (2005-2008) suppliers of engines, such as Caterpillar and Wärtsilä, had a lot of power as their equipment is crucial for hoppers and dredgers. However, the downturn at shipbuilding has led to more normalised market conditions again.

Power of customers remains high

Governments are an important customer group for dredging companies. Because of the global financial crisis in 2008/09, governments are forced to lower their spending in infrastructural projects.

The energy sector is becoming more and more important for the dredging companies. They have to deal with much larger multi-billion oil majors (ExxonMobil, Shell, Chevron, BP, Total, Woodside) and national oil companies (Petrobras, Petronas, Saudi Aramco, etc.).

As shown on the LNG slide for Australia, contract sizes are huge, particularly at energy related contracts. Dredging companies are often a sub-contractor, but perform a crucial part in an early stage of the project. Size and experience are key to win these kind of contracts, i.e. limited number of competitors (top 4).

Threat of substitutes is non-existing

There are in our view no substitutes for dredging.

Boskalis expands rapidly into dredging adjacent activities

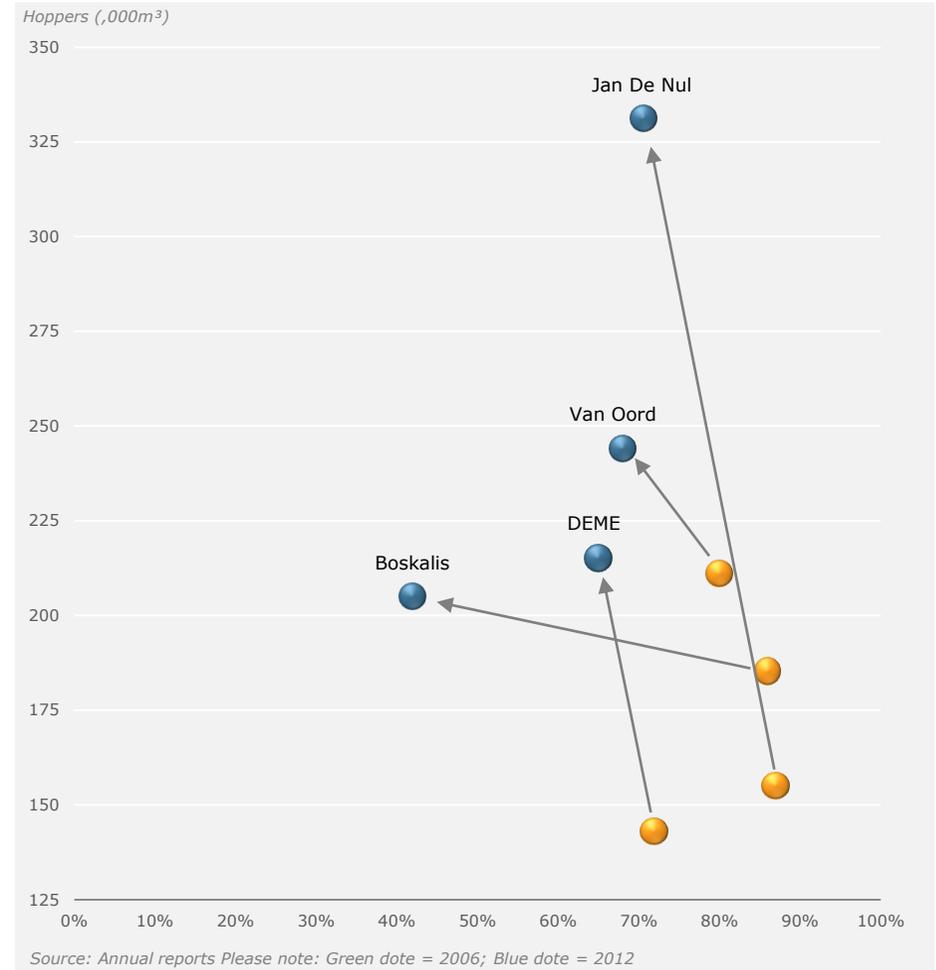


Jan De Nul, Van Oord, and DEME remain focused on dredging

In the graph we have compared the size of the hopper fleet of the top 4 companies with the percentage of sales realised by the dredging activities. We have compared the years 2006 and 2012. Most striking is the difference between Jan De Nul and Boskalis. Whereas Jan De Nul strongly expanded its hopper fleet, whereby dredging as a percentage of sales remained high, Boskalis' focus was on broadening its activity portfolio through the acquisitions of Smit Internationale and MNO Vervat. Whereas dredging accounted for 86% of Boskalis' turnover in 2006, it dropped to 42% in 2012. This percentage will go down further in 2013 due to the consolidation of Dockwise as of April 2013.

Looking at Van Oord and DEME dredging has become slightly less dominant in the company's total sales due to the expansion at energy, offshore wind, and environmental activities.

Size dredging of total sales in 2012 versus 2006



VI

CHEC: A threat for the top 4?



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Chinese CHEC could become serious competitor top 4 dredgers



Chairman CCCC (CHEC) has clear ambitions to enter global dredging market

As shown in the following quote made by chairman Zhou Jichang in China Communications Construction Company's 2012 annual report, the company's dredging subsidiary CHEC has plans to enter the global dredging market:

- 'Fifthly, for the dredging business, on top of solidifying its market position in the PRC (People's Republic of China), the Company will also quicken its pace in entering the overseas dredging market and open up new market proactively through business model innovation. Meanwhile, the coordination and management of vessels, equipment and resources within the Group will be enhanced to achieve lower costs and better efficiency.' (Source: Annual report 2012 CCCC, page 5).

As far as figures were available, CHEC historically only realized around 10% of its sales outside China. However, CHEC belongs to a huge company CCCC, which realized a turnover of nearly USD 47bn in 2012, of which USD 6bn outside China (Africa, Middle East, Far East), compared with only USD 6bn in total sales in 2003. In conjunction with the Chinese 'hunger' for raw materials in foreign countries, we believe it is very likely that CHEC will receive more foreign orders in the future, particularly in Africa, Brazil, and Middle East.

Growth Chinese dredging market between 2000 and 2012 (EUR m)



Source: IADC Please note: 2012 estimated by Rabobank IKT

Capacity increase CHEC versus Chinese dredging market

	2004	2012	Growth
Chinese dredging market (EUR m)	1,600	3,086	93%
CHEC's hopper capacity (m ³)	134,516	329,561	145%
CHEC's cutter capacity (kW)	106,604	314,974	196%

Source: IADC, International Dredging Directory

Africa focus continent for China



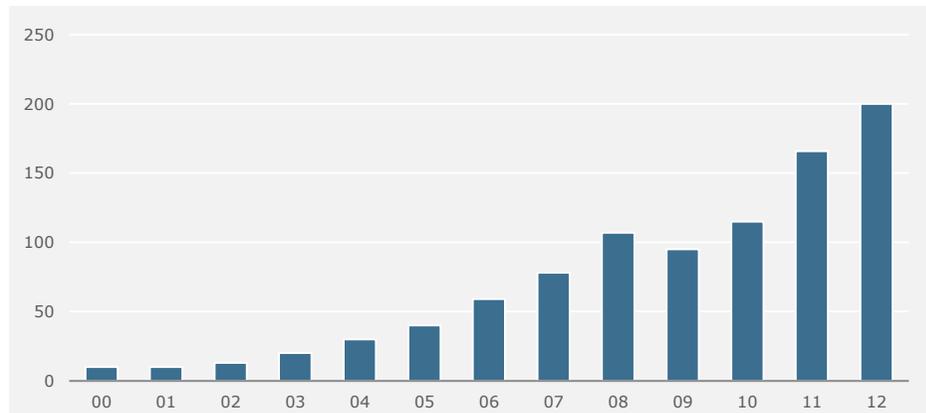
Africa attractive foreign market for CHEC

Total trade between Africa and China exploded from USD 10bn in 2000 to more than USD 200bn in 2012. Africa exports mainly raw materials to China, whereas Africa imports finished products. China's main African trading countries are Algeria, Angola, Egypt, Ethiopia, Ghana, Libya, Morocco, Nigeria, South Africa, and Sudan. To illustrate the importance of Africa, the inaugural trip of Chinese president Xi Jinping was to Congo, South Africa, and Tanzania in March 2013.

At its trip to Tanzania, the Chinese president signed a deal to develop a new port at Bagamoyo (Capex USD 10bn). This port should be ready by 2017. We believe that it will be very likely that CCCC/CHEC will be involved in the project.

Although Africa 'only' accounted for USD 753m or 7% of the global dredging market, it rose by a CAGR of 11% between 2000 and 2011.

Trade between China and Africa (USD bn)



Source: Ministry of Commerce PRC

VII

Summary and conclusions



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Profit margins are likely to remain more or less stable

EBITDA margins top 4 players are in a close range

In the first graph we have given the overall EBITDA margin development of the top 4 dredging companies between 1998 and 2014E. Regarding 2013 and 2014, these EBITDA margins are based on Bloomberg consensus estimates.

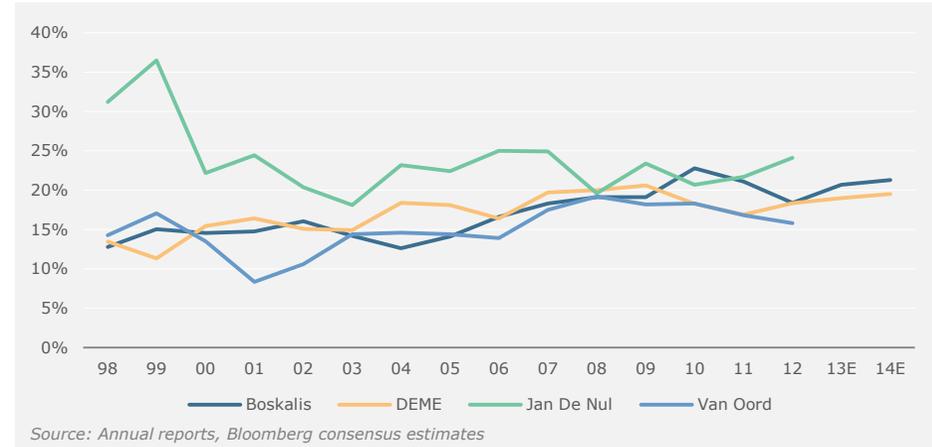
Despite of the different company profiles, i.e. Boskalis also having harbour towage, terminals, heavy lift; DEME environmental activities; Jan De Nul construction activities, the EBITDA margins in 2012 were the following: 15.8% at Van Oord, 18.3% at DEME, 18.4% at Boskalis, and 24.1% at Jan De Nul. Van Oord's margin lagged behind as it was hit hard by the problems in Dubai in 2009, after which the company was forced to look for employ of a large part of its fleet elsewhere at less favourable margins. Between 2008 and 2012 Van Oord's EBITDA margin declined by 3.4 percentage points compared with -1.7pp at DEME and -0.7pp at Boskalis, but +4.5pp at Jan De Nul. Regarding 2013 and 2014, the EBITDA margin at Boskalis and DEME will be more or less the same, whereby we have to bear in mind that Boskalis' EBITDA margin is impacted by the consolidation of Dockwise (April 2013) and the divestment of Archirodon (July 2013)

Differences in net margins somewhat bigger

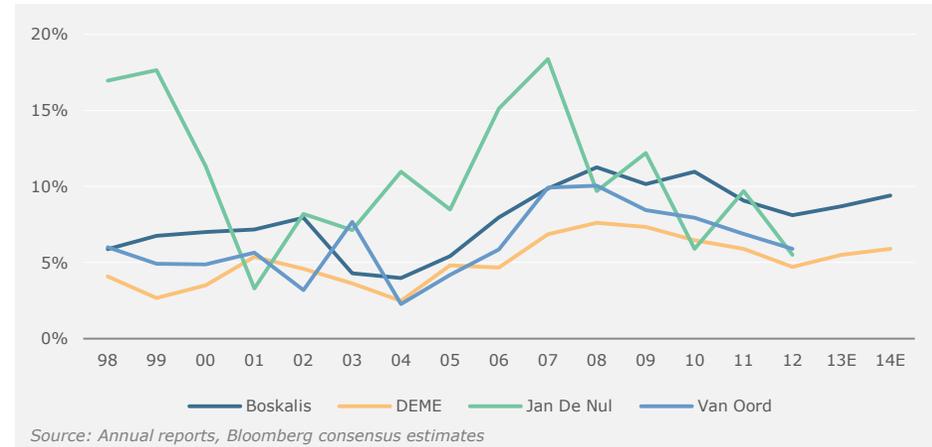
In the second graph we have given the overall net margin development of the top 4 dredging companies between 1998 and 2014E. The differences are bigger compared with the EBITDA margins due to (i) the age of the fleet and therefore depreciation charges, (ii) leverage of the company, i.e. DEME's net leverage is substantially higher compared with the other three, and (iii) height of the tax rate.

All told, we are optimistic on the outlook for the global dredging market, albeit the very high margins realised in 2007/2008 will not return. Icing on the cake could become Singapore, but we are already waiting for 10 years that this is going to happen! Regarding Jan De Nul, this company has a strong position, particularly at the top end of the market (mega hoppers and cutters). Jan De Nul has more or less financed its fleet expansion program, whereby its balance sheet ratios are still healthy!

Development EBITDA margins top 4 dredgers (1998-2014E)



Development net margins top 4 dredgers (1998-2014E)



EBITDA margins at regional players strong as well

Difference EBITDA margins limited despite of different profiles

The table on the right shows that regional players such as National Marine Dredging and DCI India realised favourable EBITDA margins, i.e. more or less in line with the top 4. Regarding this table, we have to bear in mind that the company profiles of the companies are different, i.e. dredging activities as a percentage of total sales. The EBITDA margins of most of the companies are in the range of 15-20%.

Overall EBITDA margins top 4 and regional players (2012)

<i>Company</i>	<i>EBITDA %</i>
Jan De Nul	24.1
Boskalis ¹⁾	18.4
DEME	18.3
Van Oord	15.8
CHEC	15.6
Great Lakes Dredging Corp.	8.9
National Marine Dredging	19.4
DCI India	17.4
Rohde Nielsen	17.3
Van den Herik	2.8
Baggerbedrijf De Boer	20.7

Source: Company websites, KvK

1) Please note: Boskalis' EBITDA margin at its dredging activities amounted to 22.2% in 2012

Appendix

A

Company profiles



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Jan De Nul
G R O U P



*Río Paraná and Río de la Plata Waterway Concession, Argentina
Maintenance dredging works - Trailing Suction Hopper Dredger
Source: Jan de Nul Group*

Jan De Nul's financial ratios strong despite huge Capex program



Jan De Nul is privately owned

Dredging company Jan De Nul has its head office in Luxembourg, but its operations are done out of the office in Aalst (Belgium). The company is managed by family De Nul and Jan Pieter De Nul is its CEO.

In 2012 Jan De Nul realised sales of EUR 2.1bn and a net profit of EUR 117m. Geographically, 29% of the company's sales was realised in Europe, 30% in the Middle East & Asia, 2% in Africa, 12% in Australia, and the remaining 28% in the Americas. At year-end 2012 Jan De Nul's order backlog was nearly EUR 3.3bn, up 6% on 2011.

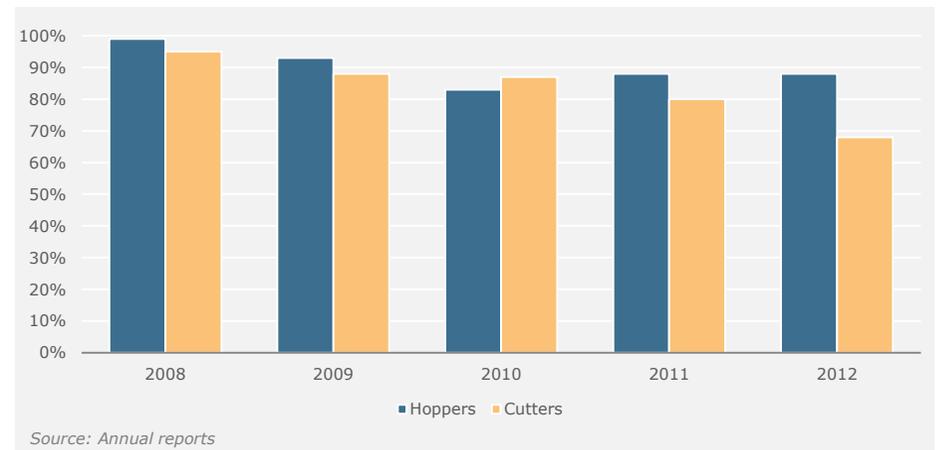
At year-end 2012 Jan De Nul's net debt decreased to EUR 340m despite its substantial investment program. The company's net gearing (net debt/equity) improved from 26.8% at year-end 2011 to 18.0% at year-end 2012.

Strategy: Growth strategy, particularly through investing in new, large hoppers and cutters.

Development order backlog (EUR m)



Fleet utilisation



Jan De Nul's financials



Financials (EUR m)	2008	2009	2010	2011	2012
Sales	1,883	2,103	1,801	2,110	2,114
EBITDA	389	493	374	458	510
EBIT	234	319	117	219	216
Net profit excluding extraordinary items	183	256	106	204	117
EBITDA margin	20.7%	23.4%	20.7%	21.7%	24.1%
EBIT margin	12.4%	15.1%	6.5%	10.4%	10.2%
Net margin	9.7%	12.2%	5.9%	9.7%	5.5%
Equity	1,278	1,504	1,647	1,775	1,887
Net debt (cash)	86	273	345	476	340
Total assets	2,936	3,358	3,463	3,830	3,782
Solvency	43.5%	44.8%	47.6%	46.3%	49.9%
Net gearing	6.8%	18.2%	20.9%	26.8%	18.0%
Net debt/EBITDA	0.22	0.55	0.92	1.04	0.67



*Hopper dredger "Oranje" and fallpipe vessel "Seahorse"
Source: Royal Boskalis Westminster N.V.*

Boskalis becoming less and less pure dredging company



Dockwise consolidated as of April 2013

Dredging company Boskalis is based in the Netherlands with its head office in Papendrecht. Since 1971 the company has been quoted on the Amsterdam stock exchange. Boskalis' largest shareholders are HAL Investment (33.88%) and Sprucegrove (5.0%).

In 2012 Boskalis realised sales of nearly EUR 3.1bn and a net profit of EUR 250m. Geographically, 25% of the company's sales was realised in the Netherlands, 19% in the rest of Europe, 11% in the Middle East, 14% in Africa, 16% in the Americas and the remaining 16% in the Australia/Asia. At year-end 2012 Boskalis' order backlog was more than EUR 4.1bn, up 18% on 2011.

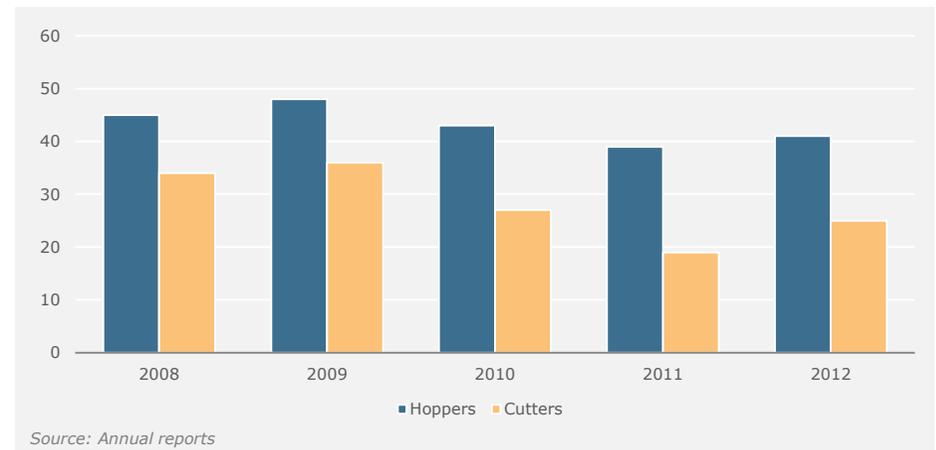
At year-end 2012 Boskalis' net debt climbed to EUR 598m due to its investment program as well as the acquisition of a 33% stake in Dockwise. The company's net gearing (net debt/equity) deteriorated from 24% at year-end 2011 to 32% at year-end 2012.

Strategy: Being leading services provider in the field of innovative and competitive all-round solutions in the maritime, coastal and delta regions of the world.

Development order backlog (EUR m)



Fleet utilisation in weeks



Boskalis' financials



Financials (EUR m)	2008	2009	2010	2011	2012
Sales	2,094	2,175	2,674	2,801	3,081
EBITDA	401	416	609	591	568
EBIT	286	269	390	354	337
Net profit excluding extraordinary items	236	221	293	254	250
EBITDA margin	19.1%	19.1%	22.8%	21.1%	18.4%
EBIT margin	13.6%	12.4%	14.6%	12.6%	10.9%
Net margin	11.3%	10.2%	11.0%	9.1%	8.1%
Equity	860	1,296	1,565	1,733	1,898
Net debt (cash)	(96)	(515)	450	410	598
Total assets	2,551	2,804	4,315	4,674	4,889
Solvency	33.7%	46.2%	36.3%	37.1%	38.8%
Net gearing	N.A.	N.A.	28.8%	23.7%	31.5%
Net debt/EBITDA	N.A.	N.A.	0.74	0.69	1.05

Van Oord

Marine ingenuity



*Self-propelled cutter suction dredger Artemis
Source: Van Oord.*

Majority Van Oord owned by the family Van Oord

Net gearing going up due to large investment program

Dredging company Van Oord is based in the Netherlands with its head office in Rotterdam. Following BAM's divestment of its minority stake in Van Oord in December 2011, the company is currently owned by the family Van Oord (78.5%), ConsOord (10.75%), and Cobepa (10.75%). ConsOord are three Dutch investors (Janivo, Breedinvest, and Rinkelberg) and Cobepa is a Belgian investor.

In 2012 Van Oord realised sales of nearly EUR 1.7bn and a net profit of EUR 98m. Geographically, 14% of the company's sales was realised in the Netherlands, 23% in Europe, and the remaining 63% in the rest of the world. At year-end 2012 Van Oord's order backlog was more than EUR 1.9bn, up 14% on 2011.

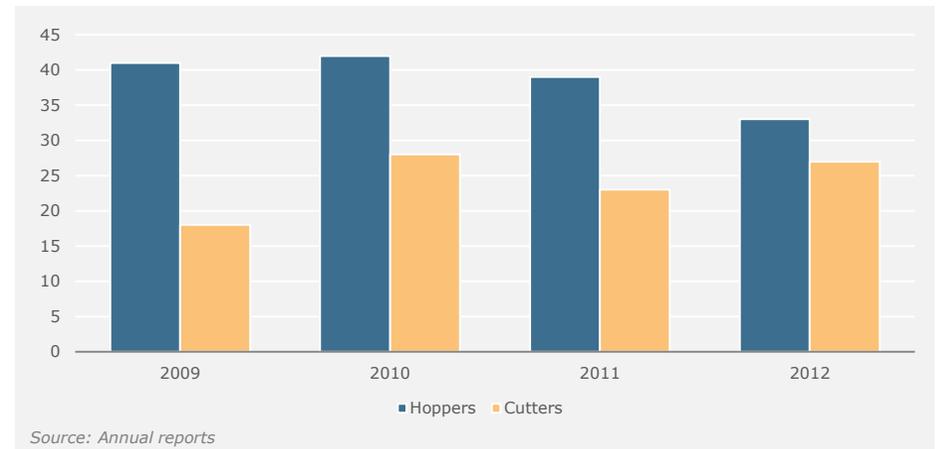
At year-end 2012 Van Oord's net debt climbed to EUR 389m due to its substantial investment program (EUR 1.3bn between 2008-2012). The company's net gearing deteriorated from 39% at year-end 2011 to 58% at year-end 2012.

Strategy: Dredging, Offshore Oil & Gas, Offshore Wind.

Development order backlog (EUR m)



Fleet utilisation in weeks



Van Oord's financials



Financials (EUR m)	2008	2009	2010	2011	2012
Sales	1,896	1,424	1,578	1,715	1,676
EBITDA	364	260	289	287	265
EBIT	255	161	174	174	138
Net profit excluding extraordinary items	190	120	125	118	98
EBITDA margin	19.2%	18.2%	18.3%	16.8%	15.8%
EBIT margin	13.4%	11.3%	11.0%	10.1%	8.2%
Net margin	10.0%	8.4%	7.9%	6.9%	5.9%
Equity	575	580	695	635	672
Net debt (cash)	36	(62)	17	245	389
Total assets	1,647	1,928	2,017	2,230	2,412
Solvency	34.9%	30.1%	34.5%	28.5%	27.9%
Net gearing	6.3%	N.A.	2.4%	38.6%	57.9%
Net debt/EBITDA	0.10	N.A.	0.06	0.85	1.47



DEME

Dredging, Environmental
& Marine Engineering



Water Injection Dredger "Parakeet"
Trailing Suction Hopper Dredger "Congo River"
Source: DEME

DEME owned by Ackermans & Van Haaren and CFE



Strong order intake in 2012

Dredging company DEME is based in Belgium with its head office in Zwijndrecht. The company is owned by Ackermans & Van Haaren (50%) and CFE (50%). Both companies are quoted on the Belgian stock market.

In 2012 DEME realised sales of more than EUR 1.9bn and a net profit of EUR 89m. Geographically, 49% of the company's sales was realised in Europe, 8% in the Middle East, 12% in Africa, 9% in the Americas and the remaining 22% in Asia/Australia. At year-end 2012 DEME's order backlog was more than EUR 3.3bn, up 38% on 2011, thanks to several large contracts: Qatar (port expansion), Australia (LNG), North Sea (offshore wind).

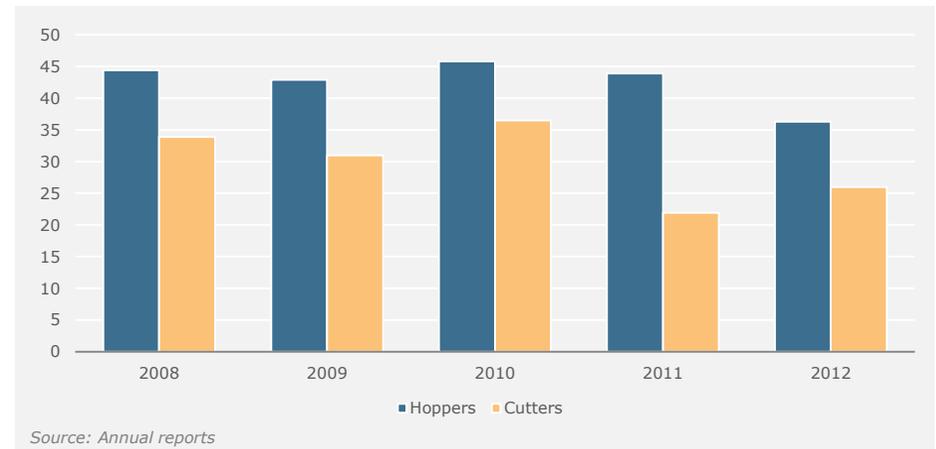
At year-end 2012 DEME's net debt rose to EUR 742m due to its substantial investment program. The company's net gearing (net debt/equity) deteriorated from 89% at year-end 2011 to 96% at year-end 2012, which is the highest percentage amongst the largest Belgian and Dutch dredging companies.

Strategy: Worldwide dredging, environmental, and marine engineering solutions provider.

Development order backlog (EUR m)



Fleet utilisation in weeks



DEME's financials



Financials (EUR m)	2008	2009	2010	2011	2012
Sales	1,508	1,403	1,801	1,766	1,915
EBITDA	302	289	329	298	351
EBIT	74	147	177	137	140
Net profit excluding extraordinary items	51	103	117	104	89
EBITDA margin	20.0%	20.6%	18.3%	16.9%	18.3%
EBIT margin	11.6%	10.5%	9.8%	7.8%	7.3%
Net margin	7.6%	7.3%	6.5%	5.9%	4.75
Equity	500	570	667	731	774
Net debt (cash)	373	358	481	651	742
Total assets	1,789	1,828	2,173	2,496	2,725
Solvency	27.9%	31.1%	30.7%	29.3%	28.4%
Net gearing	74.9%	62.9%	72.1%	89.1%	95.9%
Net debt/EBITDA	1.24	1.24	1.46	2.18	2.11

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