

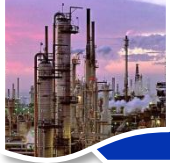


World's energy outlook and its possible consequences for the shipping industry

Selected energy drivers influencing shipping

Jakub Walenkiewicz
1st of June 2011

Content



Petroleum products – new refineries



Crude oil supply - offshore



Role of coal in power generation



Renewable energy – offshore wind

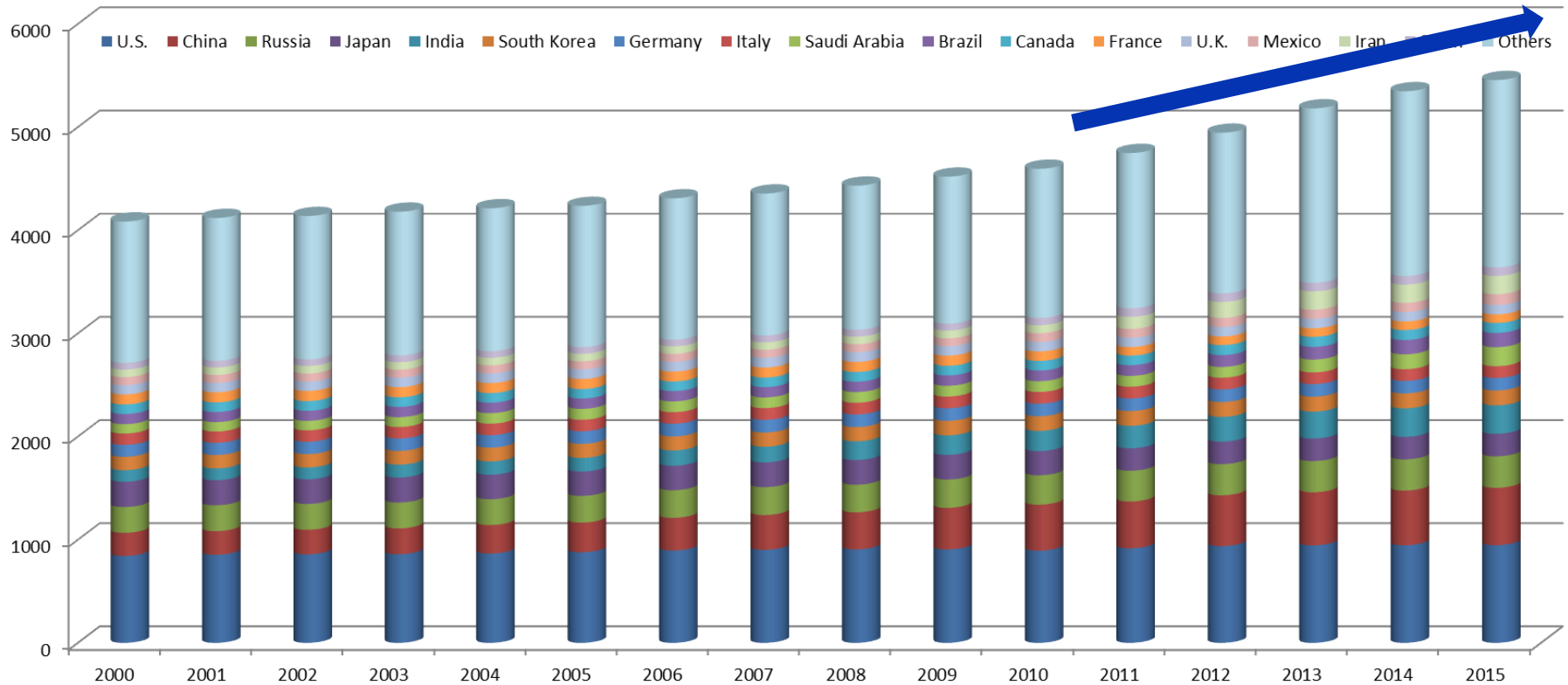


Refineries

Refining capacity development

**Worlds Total Refining Capacity
Million Tonnes Source; Global Data**

18%



Some facts...

Nearly 20% growth in capacity until 2015 – 620 MMTPA (68 new refineries)

51 new refineries are planned in Asia Pacific, Middle East and Africa

Middle East refineries will primarily focus on export (370 MMTPA)

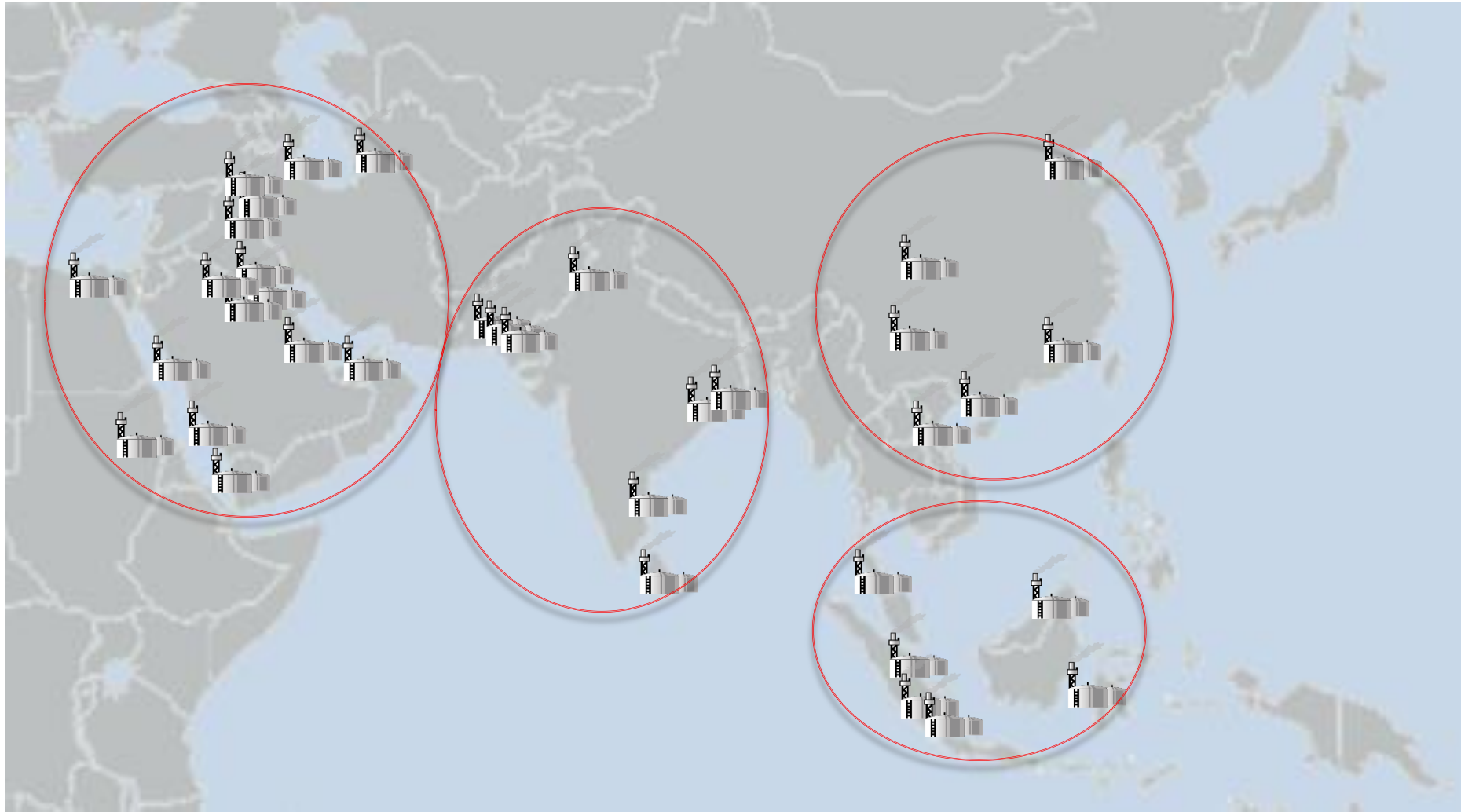
Asia Pacific (except from India) focused more on domestic markets (240 MMTPA)

Very little expansion in Europe and North America due to environmental regulations

Top 5 countries (Saudi Arabia, Iran, India, China, Brazil) – 43% of the total growth

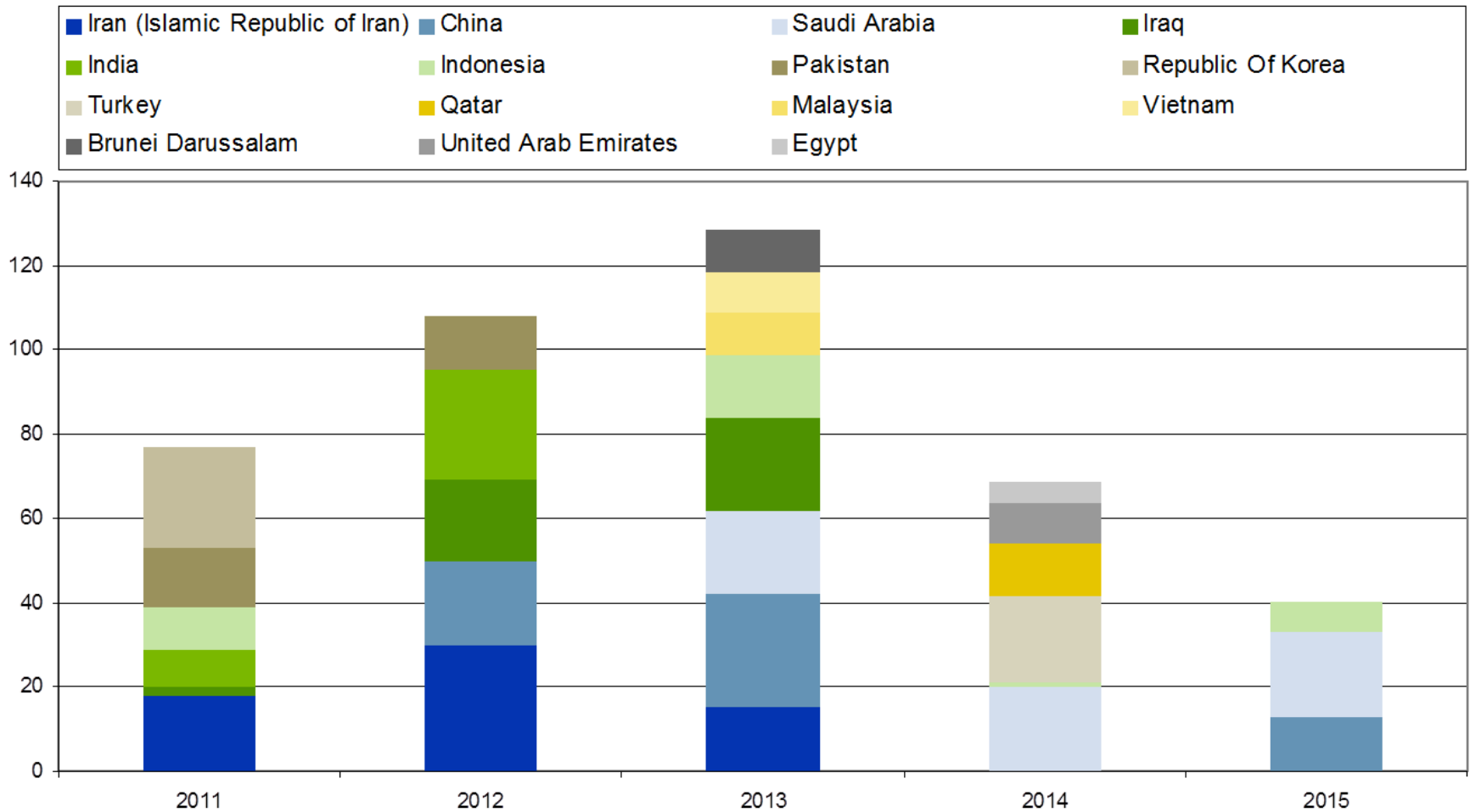
High demand for petroleum products increases competitiveness of the industry

Planned refineries in the Middle and Far East region 2010-15

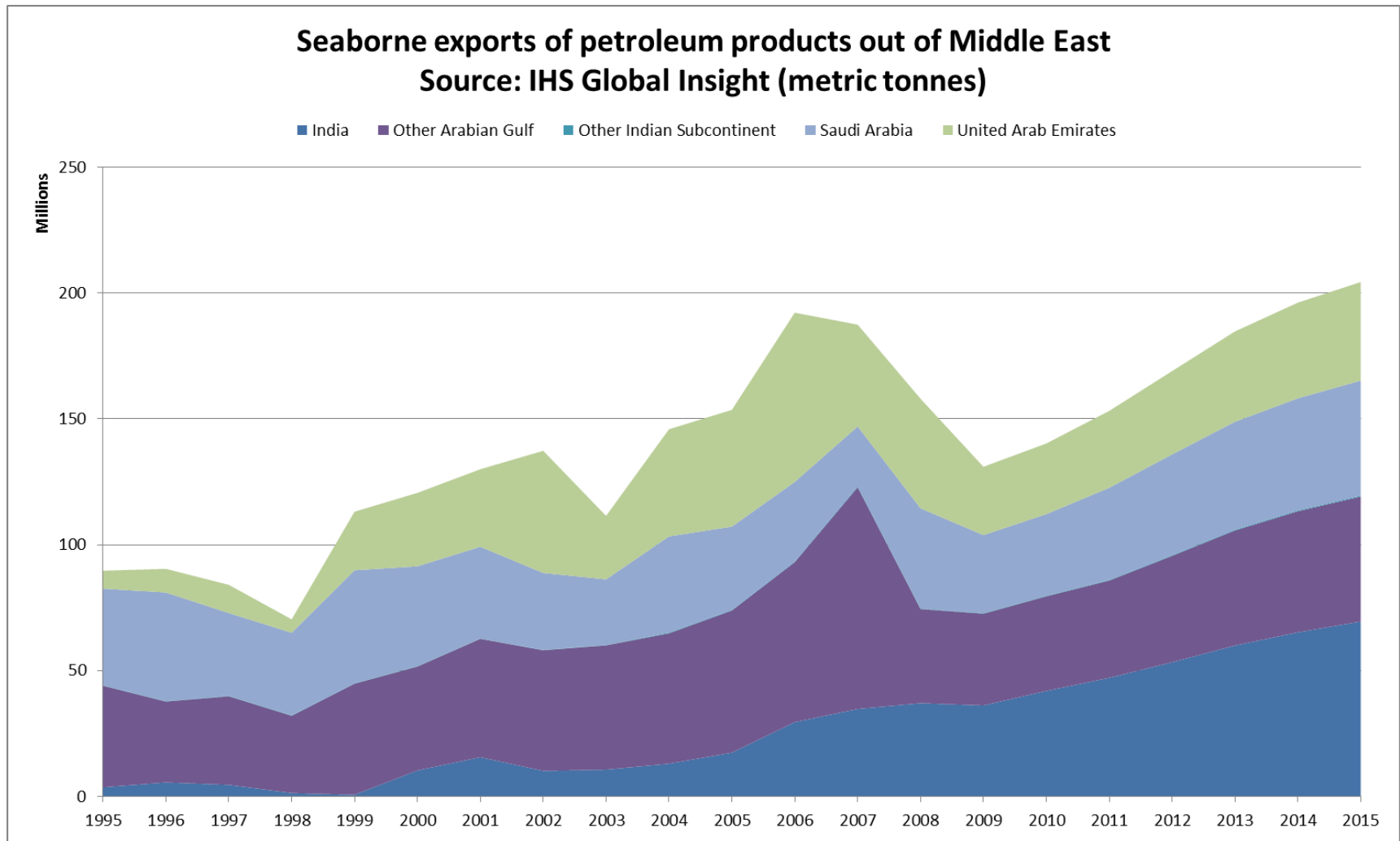


Refineries

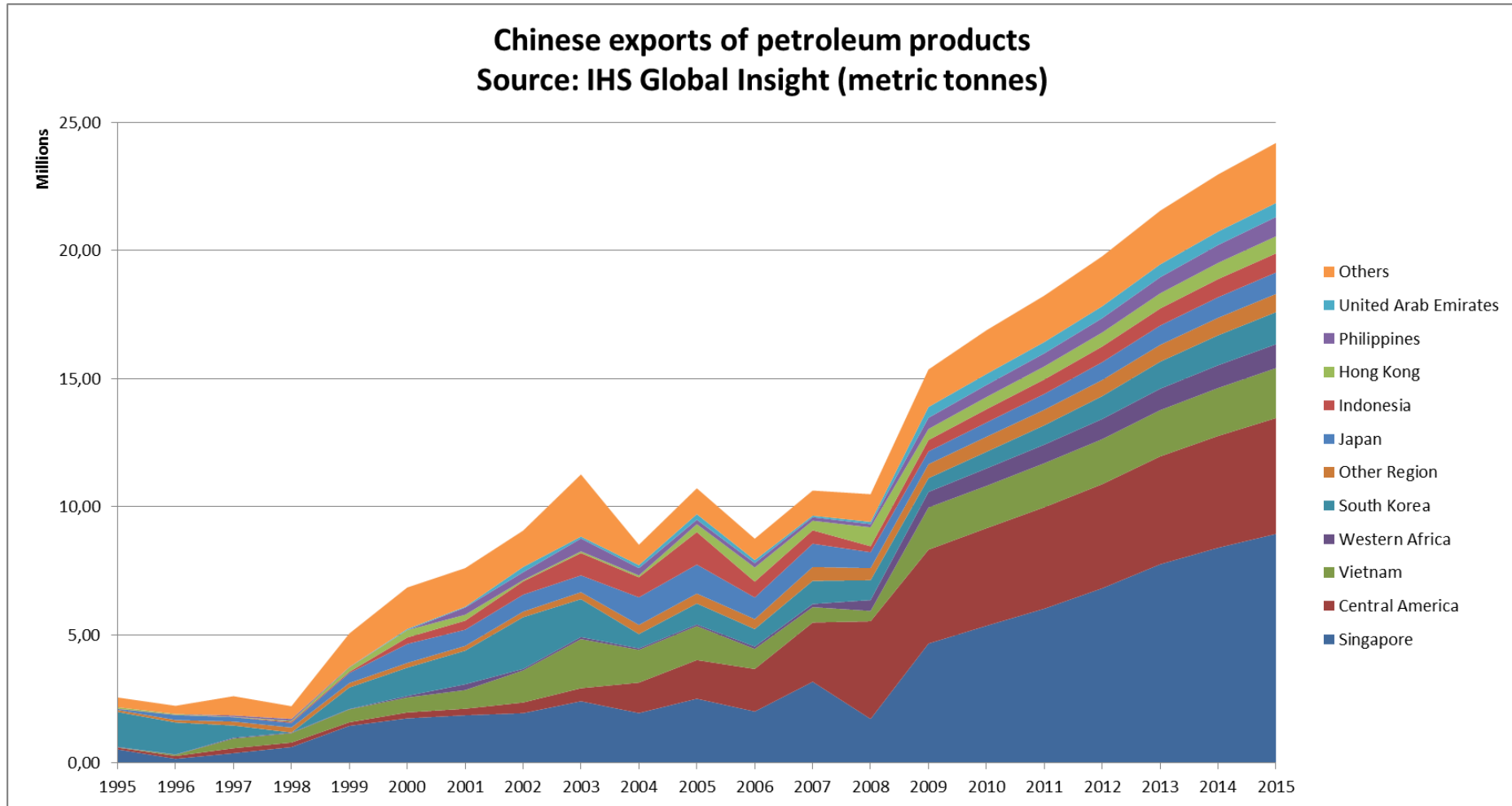
**Planned installed refinery capacity in the Middle and Far East region,
Million Tonnes. As of 2011 - GlobalData**



Middle East – petroleum seaborne export

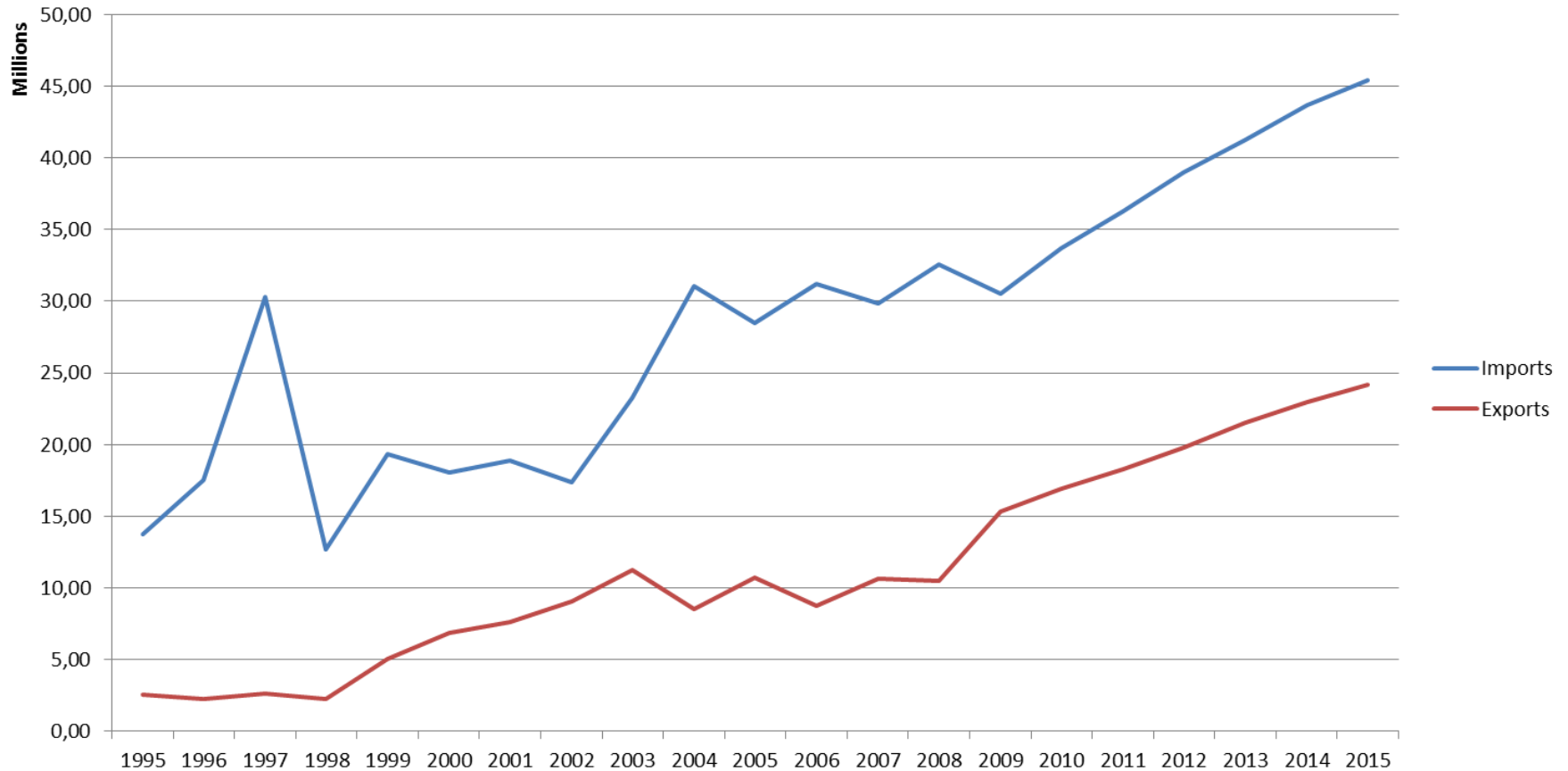


China – petroleum seaborne export



China – import/export

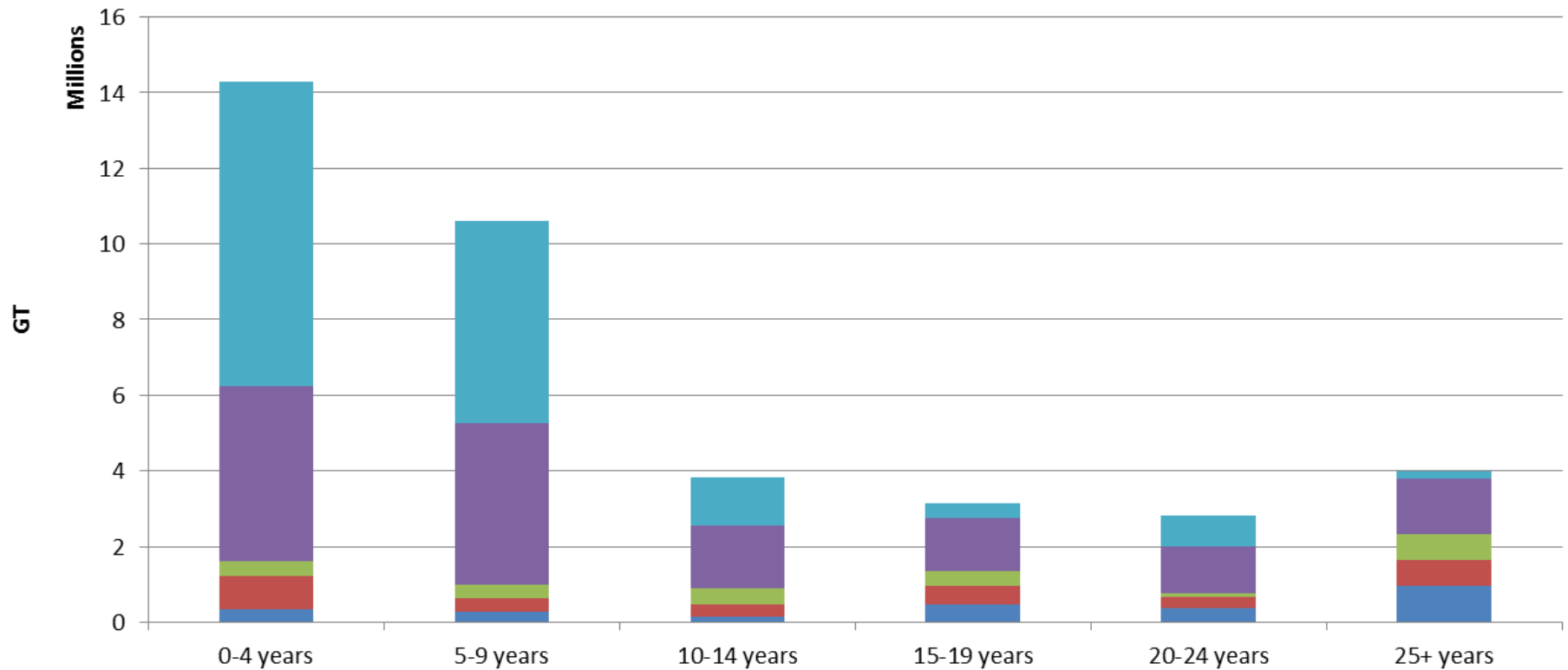
Chinese petroleum products trade balance
Source: IHS Global Insight (metric tonnes)



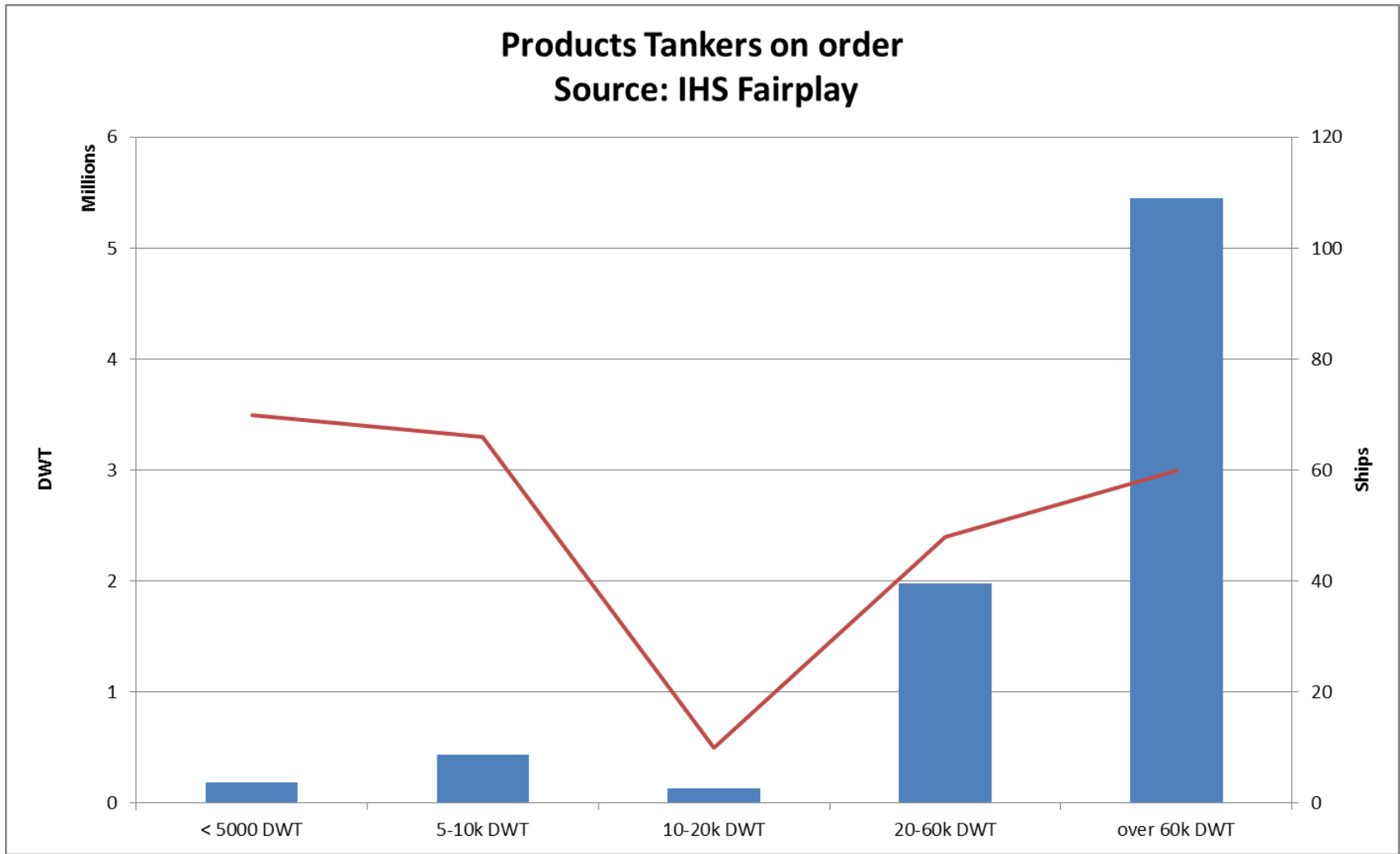
Age profile

Age profile of the products tankers
Source; IHS Fairplay as of 2011.05.01

■ < 5000 DWT ■ 5-10k DWT ■ 10-20k DWT ■ 20-60k DWT ■ above 60k DWT



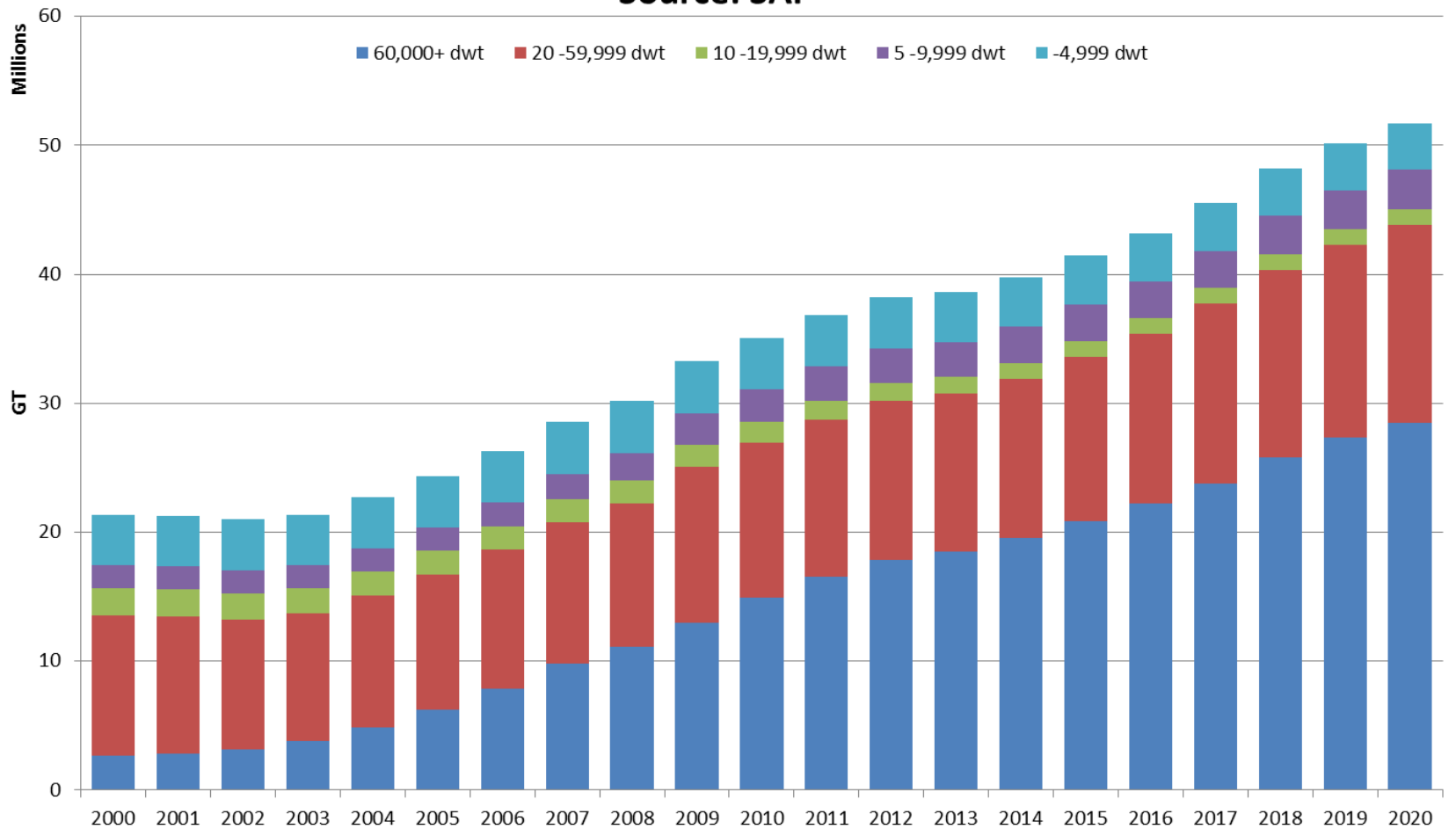
Orderbook



Products tankers

Products tankers - fleet development (incl. forecast)

Source: SAI

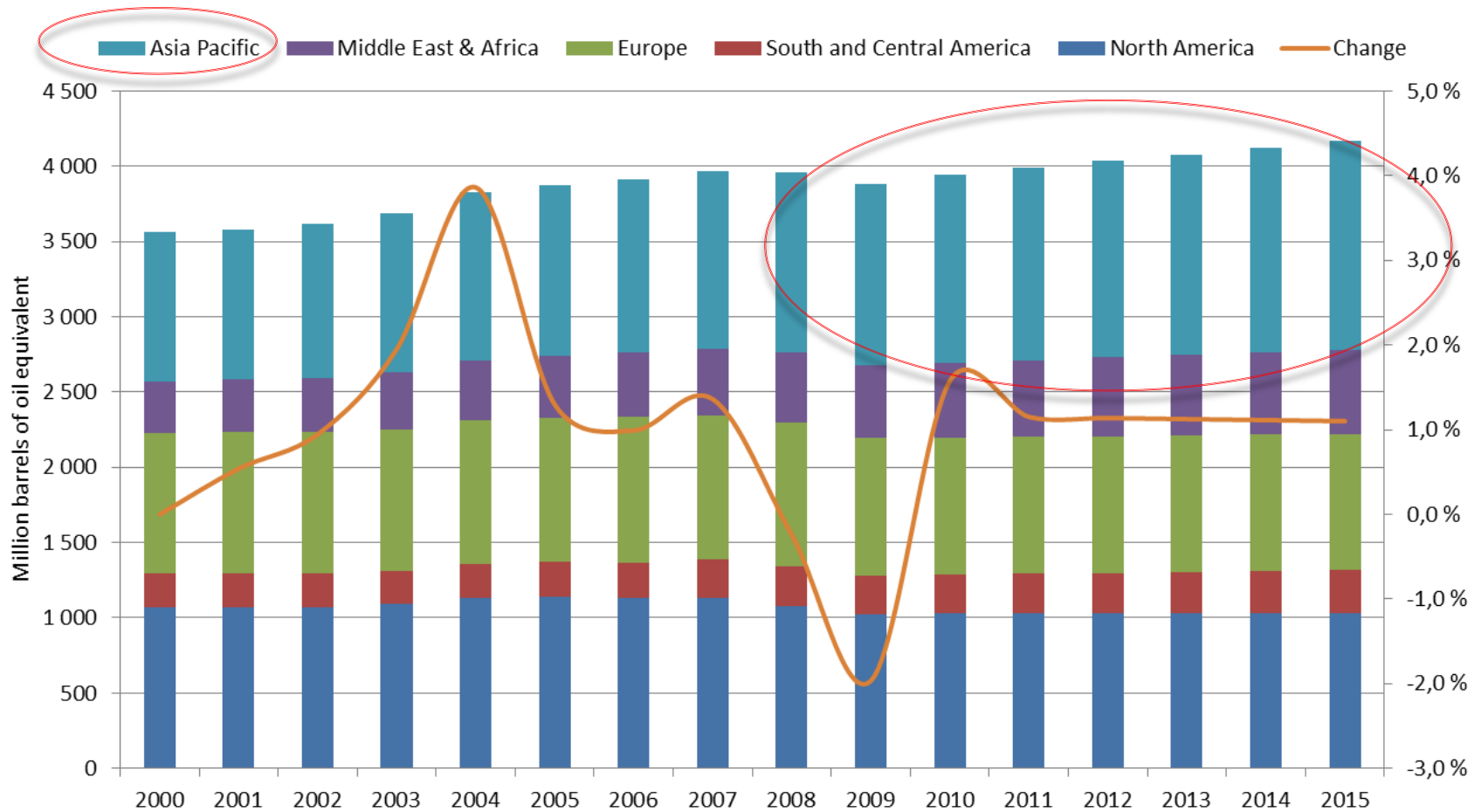




Crude oil supply - offshore

Crude Oil demand

Global crude oil demand by region, Mboe
As of 2011 - GlobalData



Some facts...

Growth in oil demand predominantly from non-OECD countries

Since the year 2000 more than 50% of oil&gas discoveries found offshore

Over 60% of offshore discoveries located in deep or ultra-deep waters

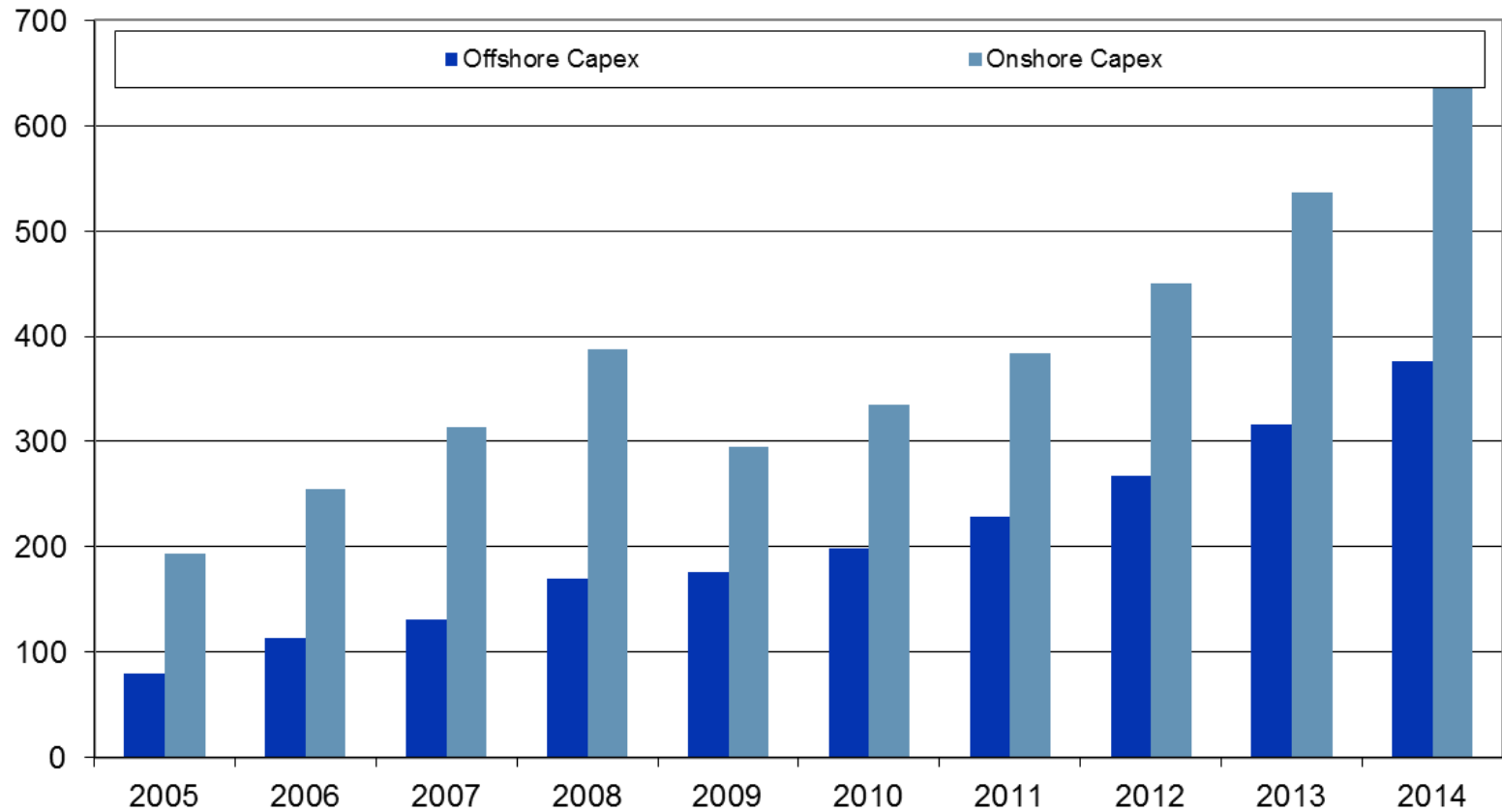
Offshore Capex expected to grow on average by 15% per annum

Leading regions – Latin America, SE Asia, West Africa, India and Caspian

Declining regions – Middle East, North America, North Africa, Europe

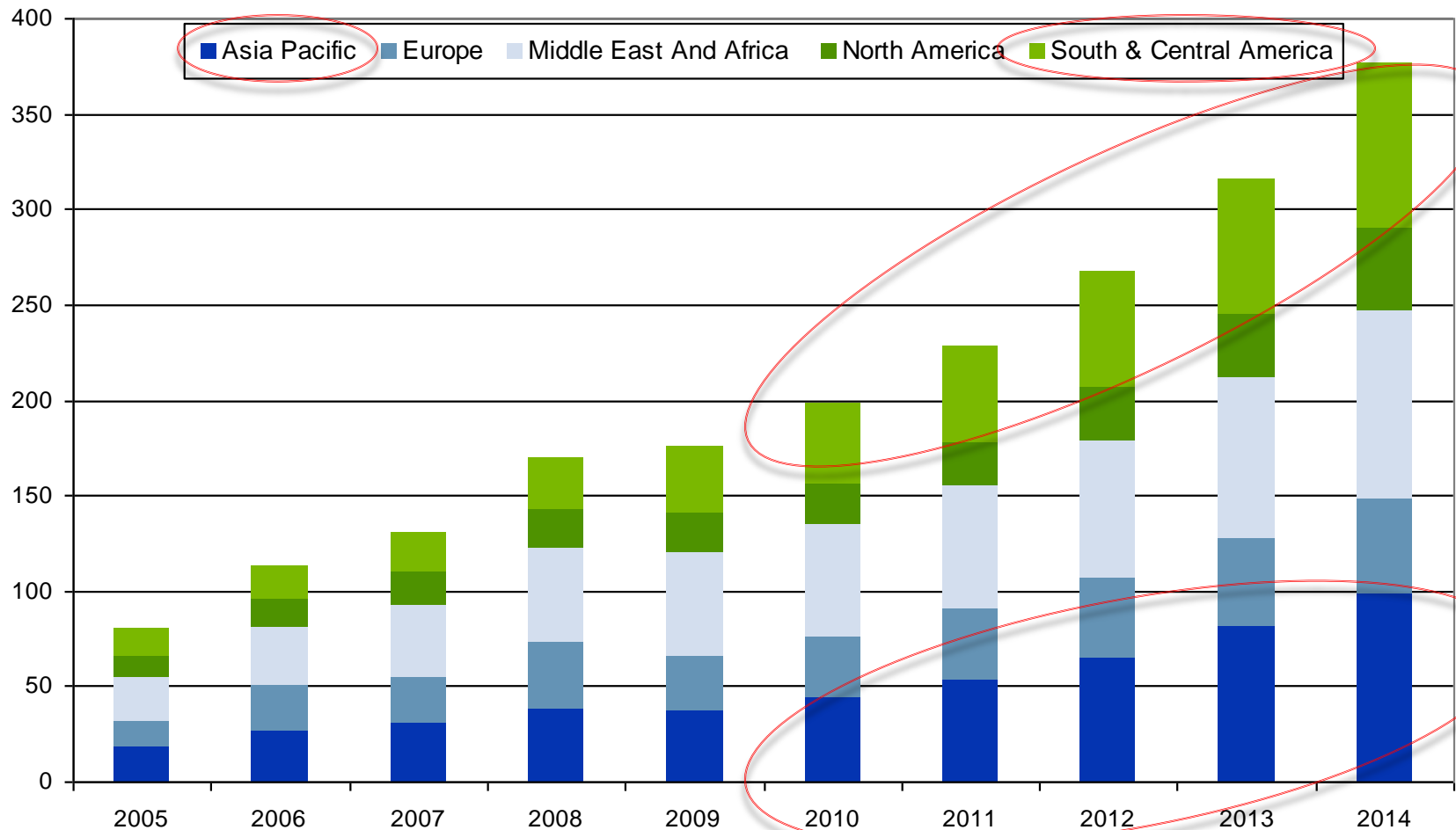
E&P Expenditures

Global onshore and offshore E&P capex, \$bn
As of October 2010 - GlobalData



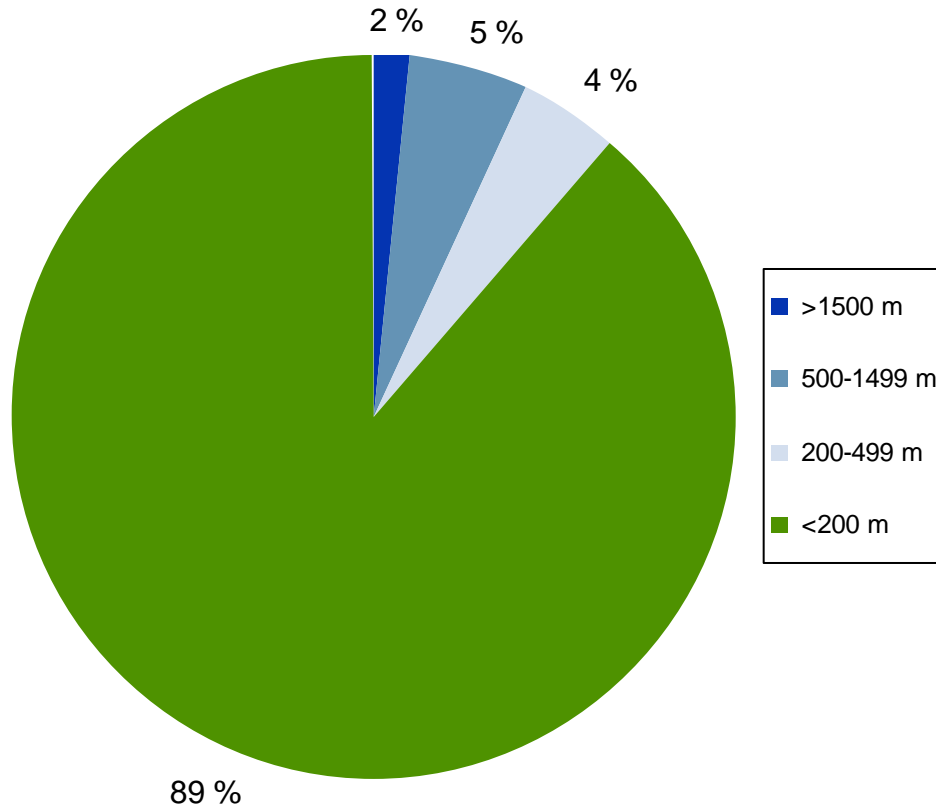
E&P capital expenditures

Total Offshore E&P capex per region, \$bn
As of October 2010 - GlobalData

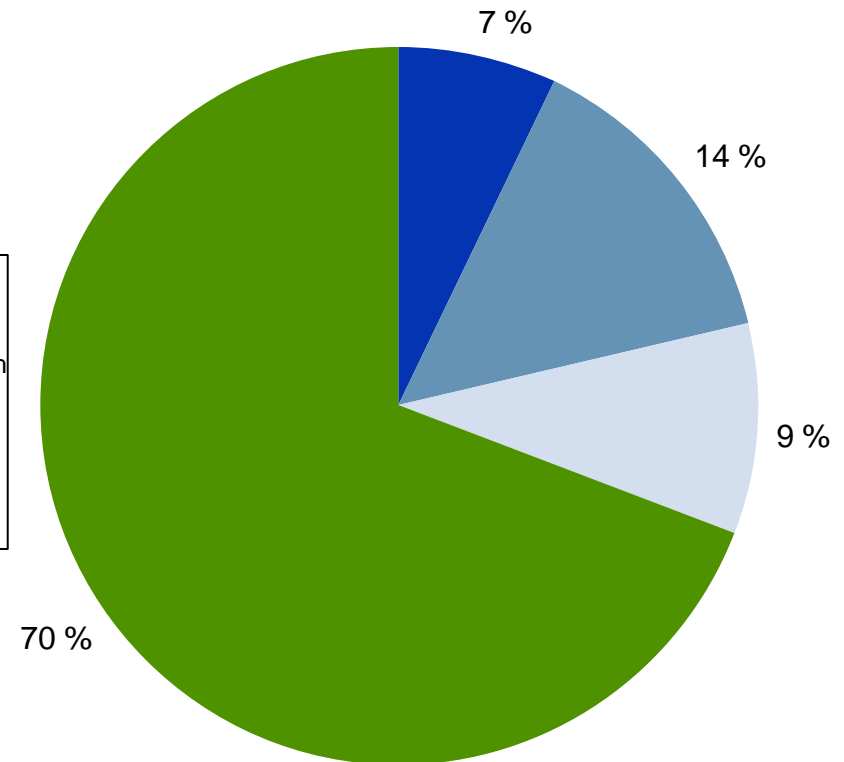


Existing versus potential offshore fields

Existing offshore fields by water depths
As of 2011 - Clarkson

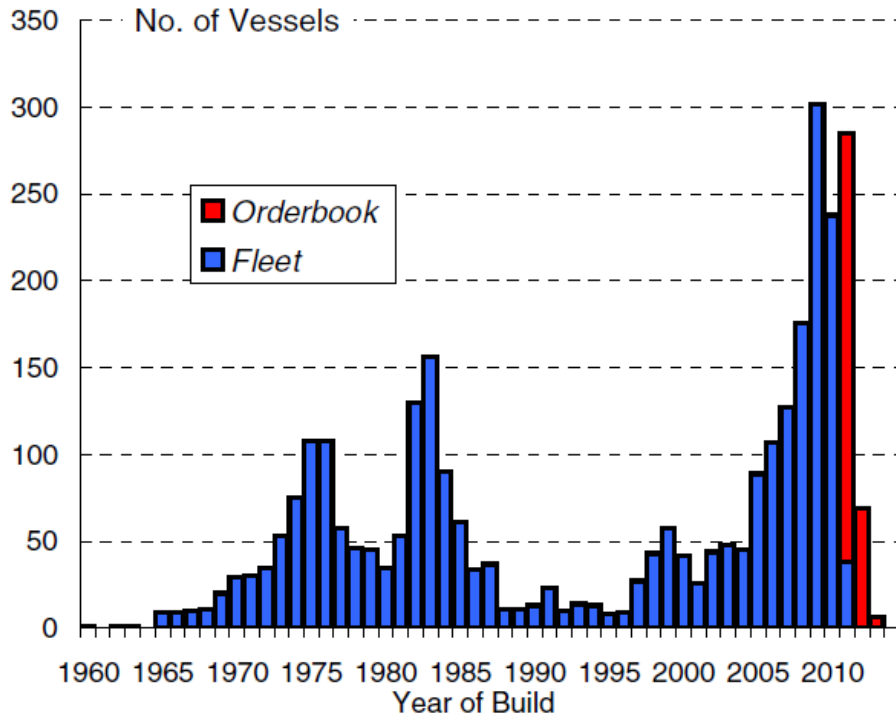


Potential offshore fields by water depth
As of 2011 - Clarkson

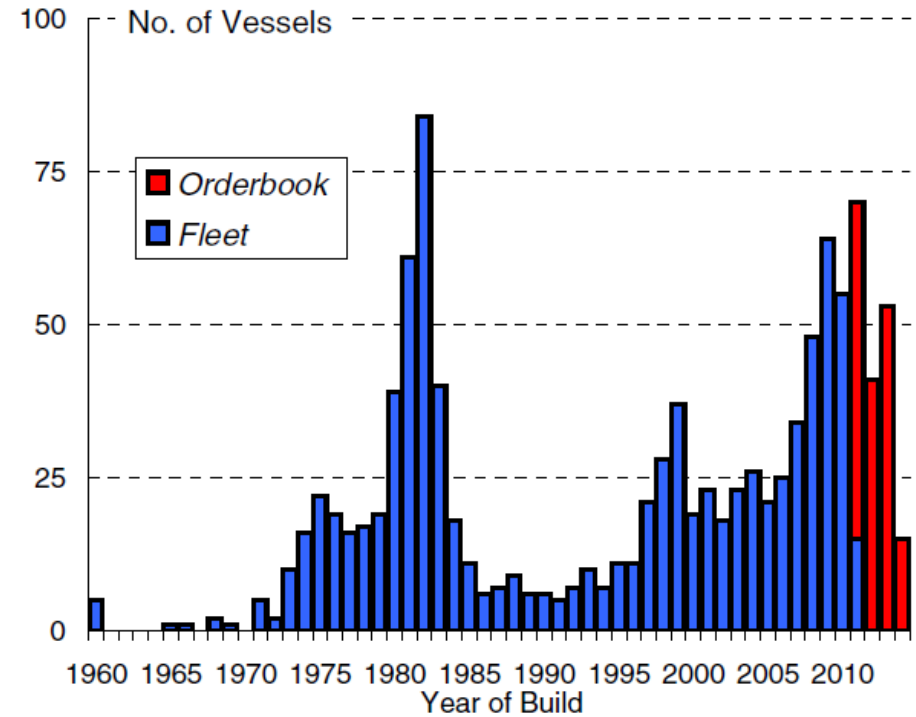


Age profiles; Source Clarksons

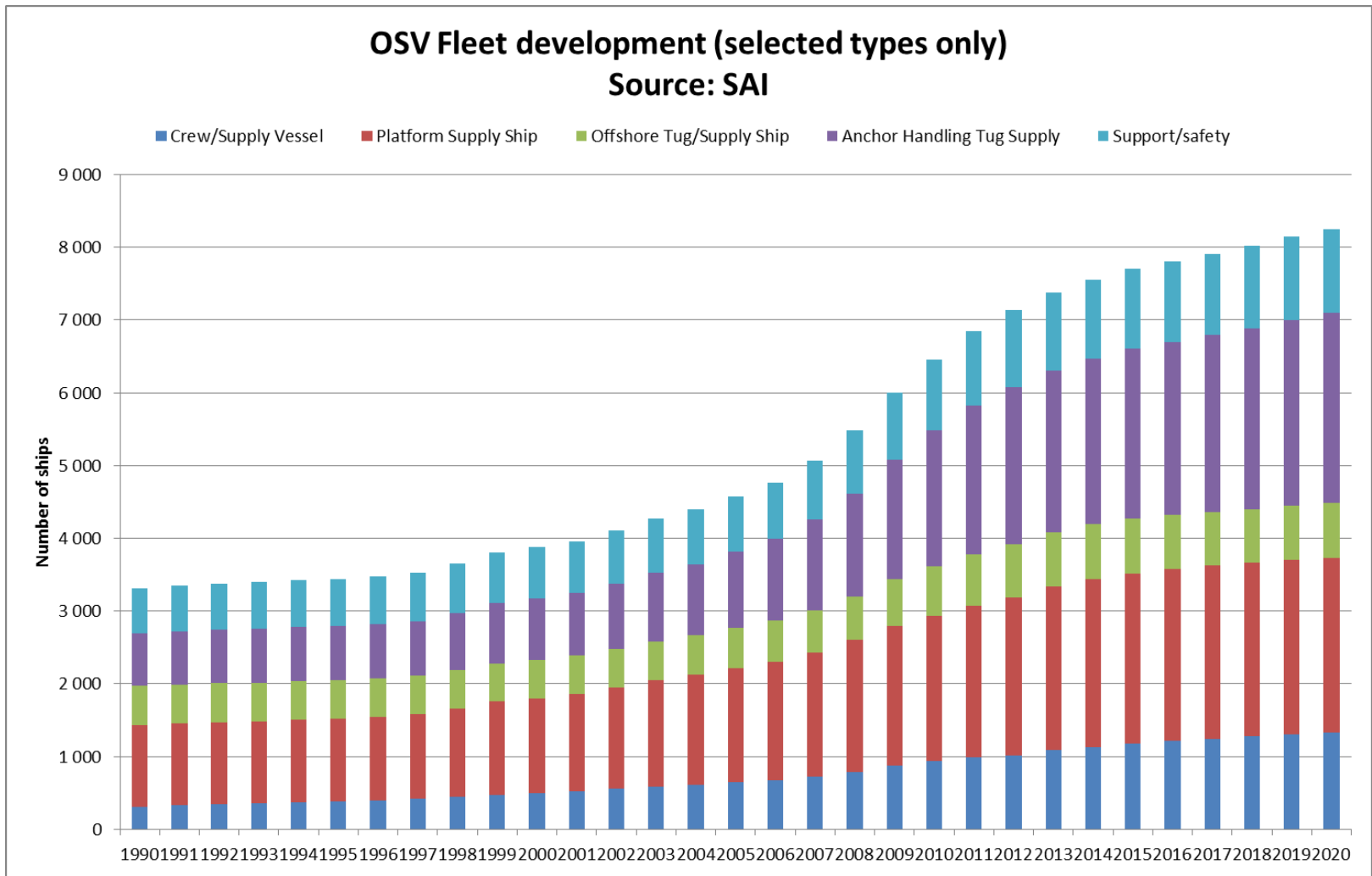
AHTS Fleet Age Profile



MODU Fleet Age Profile



Fleet development

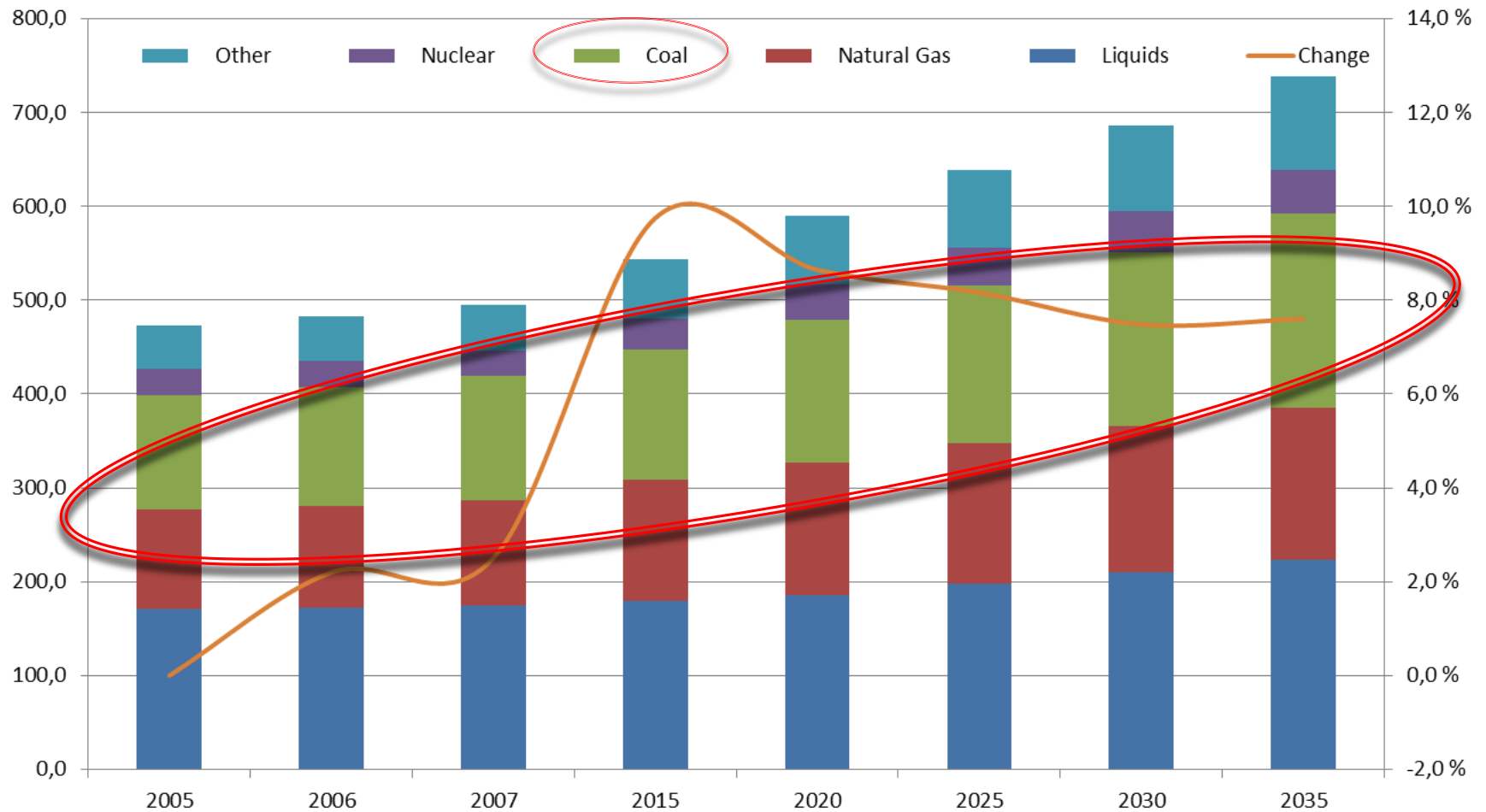




Role of coal in power generation

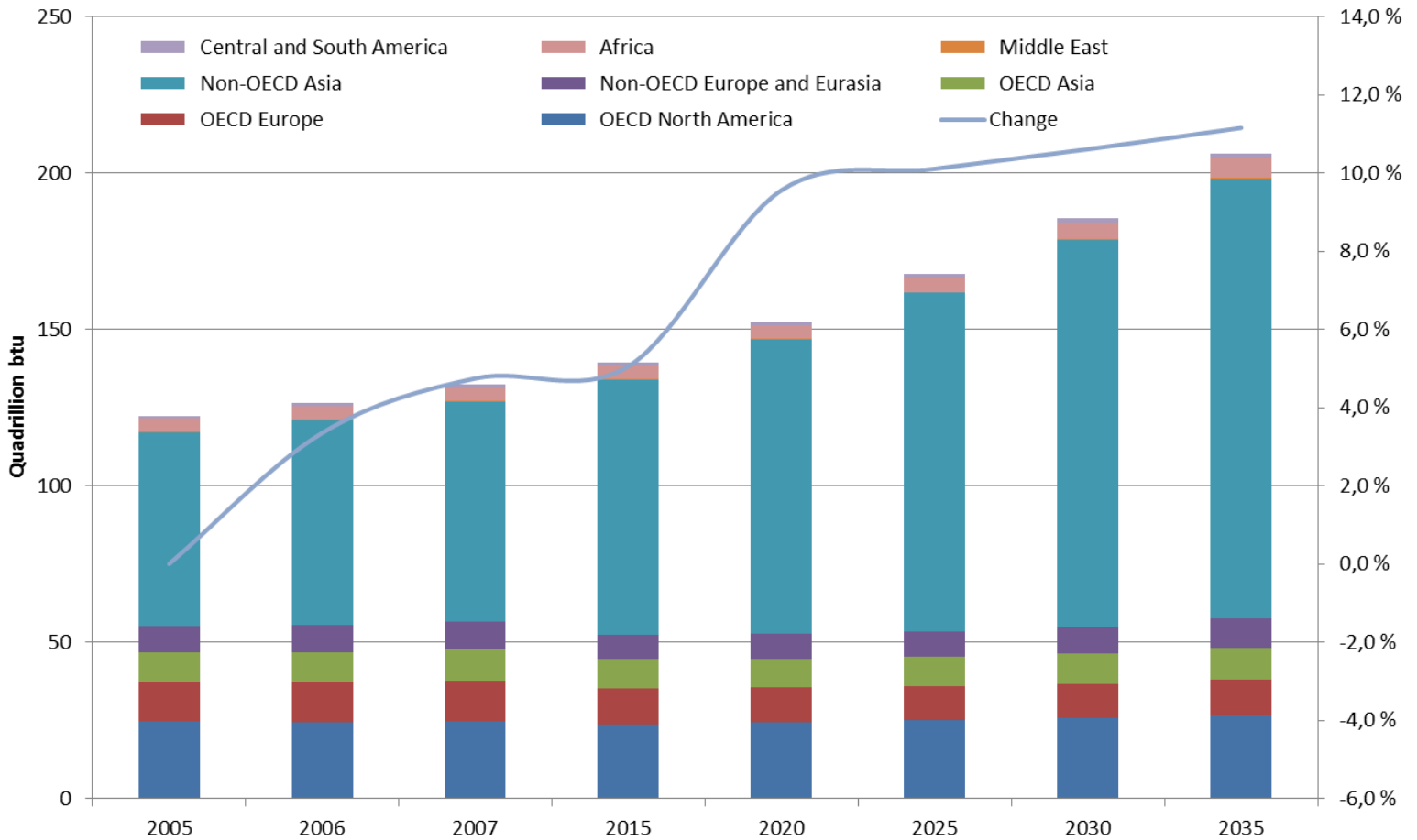
Energy demand

Global energy consumption by fuel type, quadrillion btu
As of April 2011 - EIA



Coal consumption

**Global coal consumption per region, quadrillion btu
As of 2011 - EIA**



Some facts...

Growth in coal demand predominantly from non-OECD countries

Coal accounts for 35% of the power generation mix

Around 7 billion tonnes consumed last year

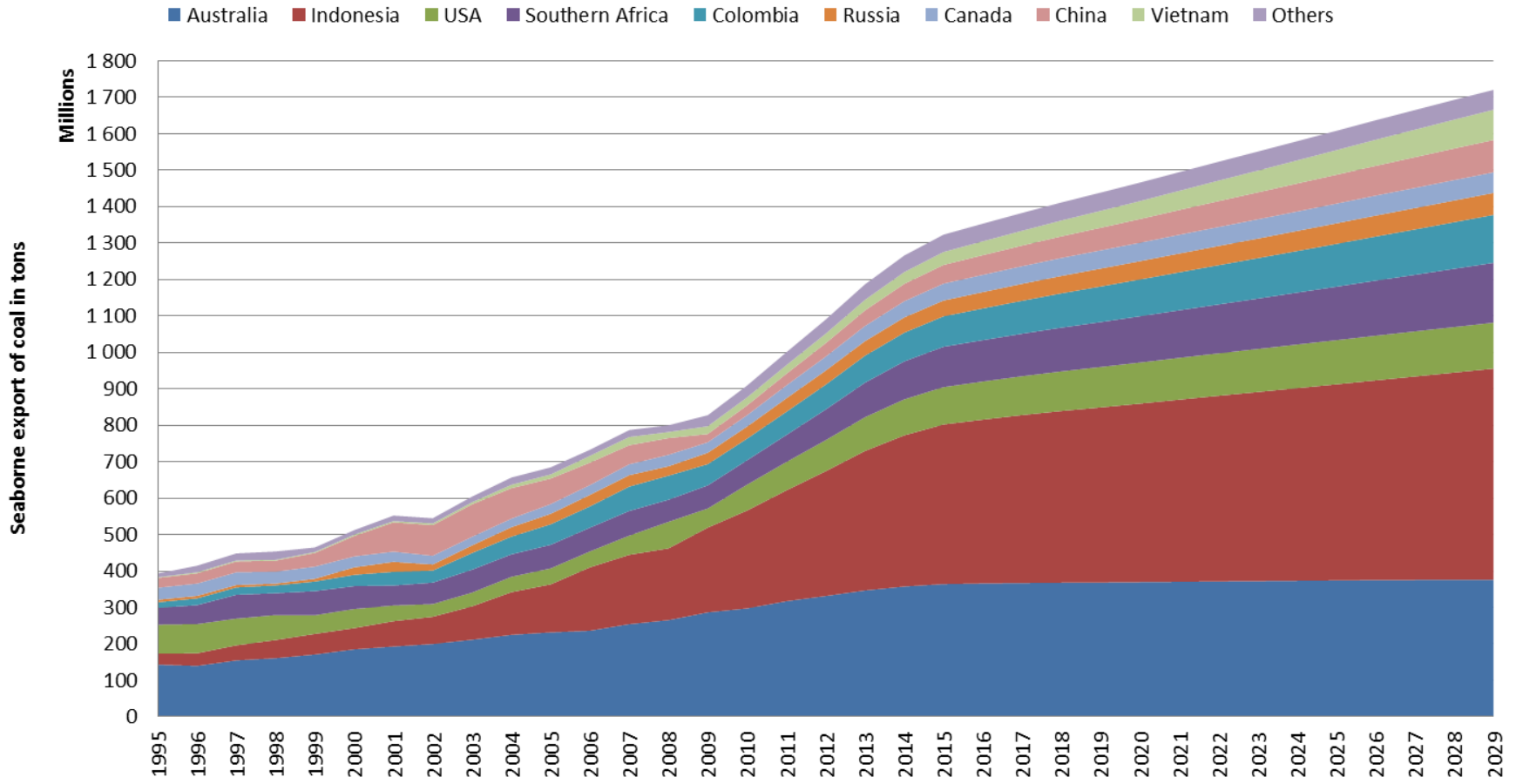
China uses coal for 80% of their power generation

No other fuel can replace coal in a foreseeable future

Consumption will grow - CCS

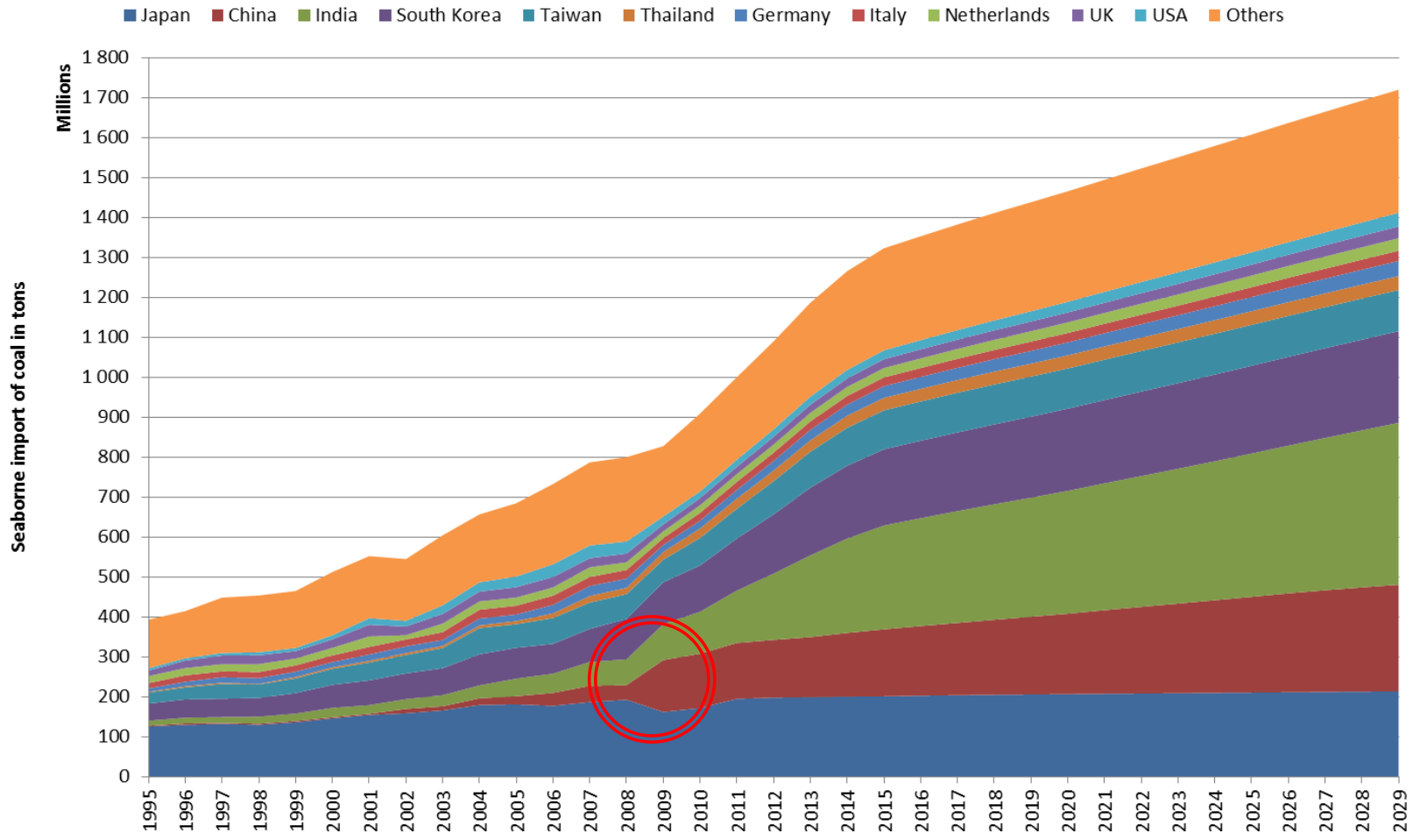
Seaborne trade

Seaborne export of coal (forecast included)
Data based upon IHS Global Insight as of May 2011

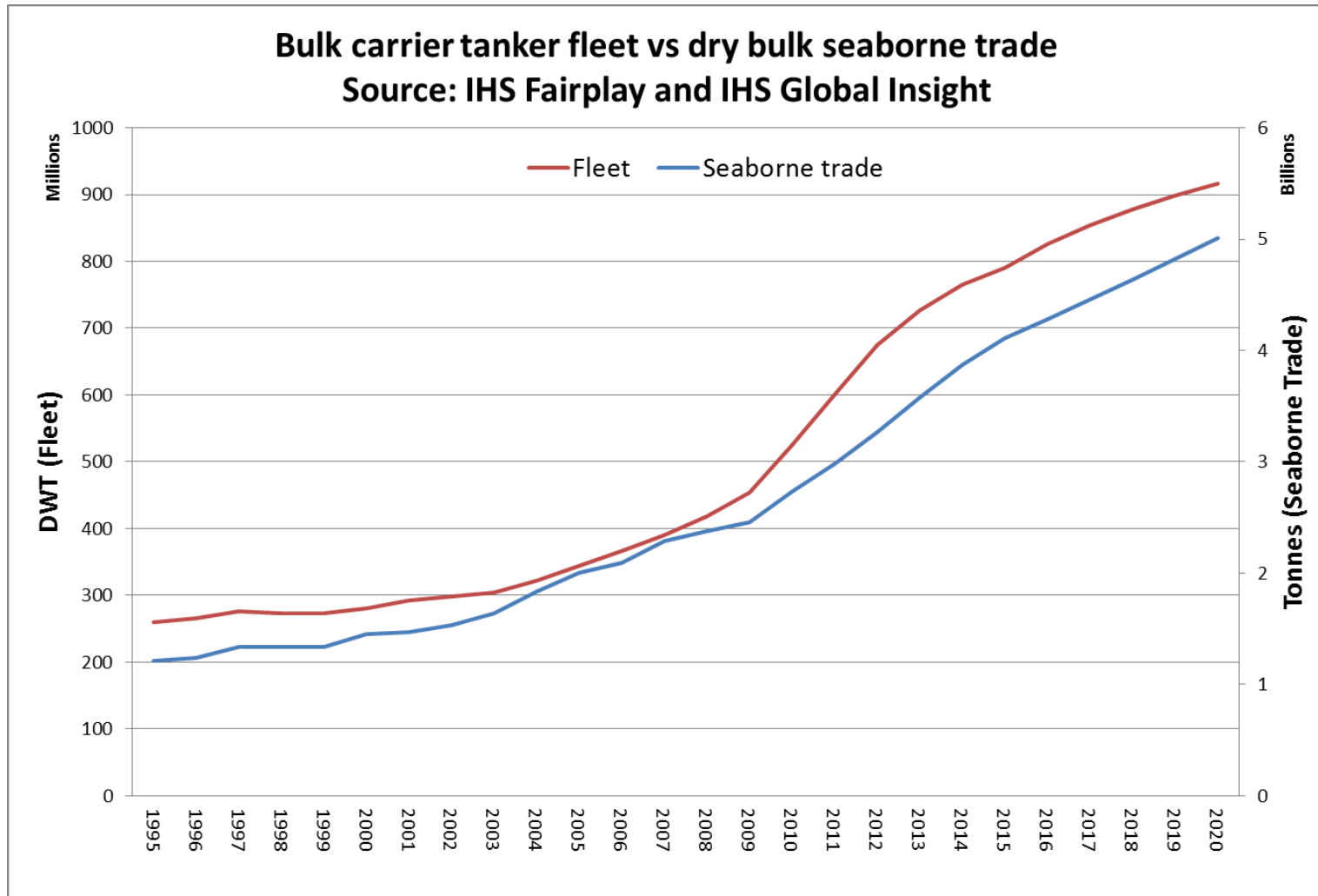


Seaborne trade

Seaborne import of coal (forecast included)
 Data based upon IHS Global Insight as of May 2011

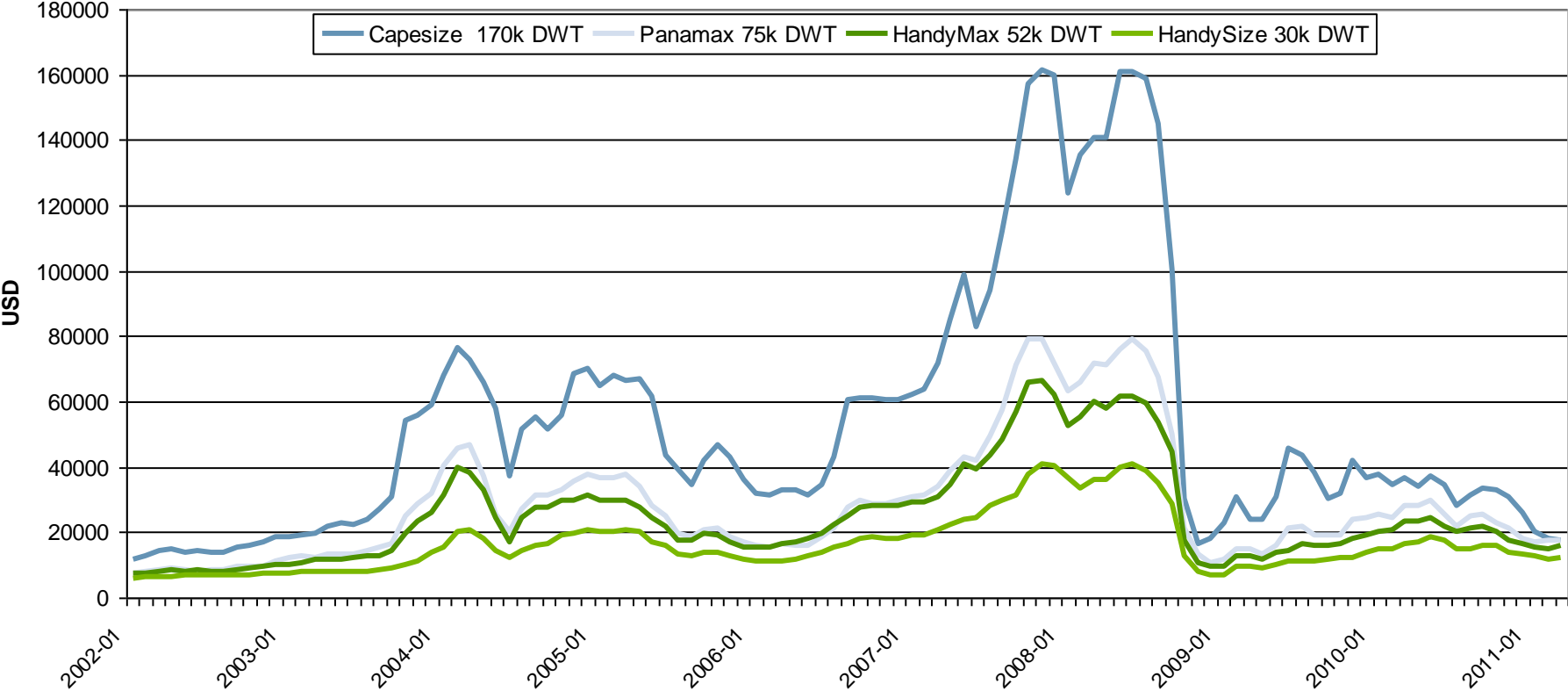


Supply vs demand – dry bulk



1 year TC rates for Bulkers

1y TC rates for Bulk Carriers
Based upon Clarksons as of 2011.04.01

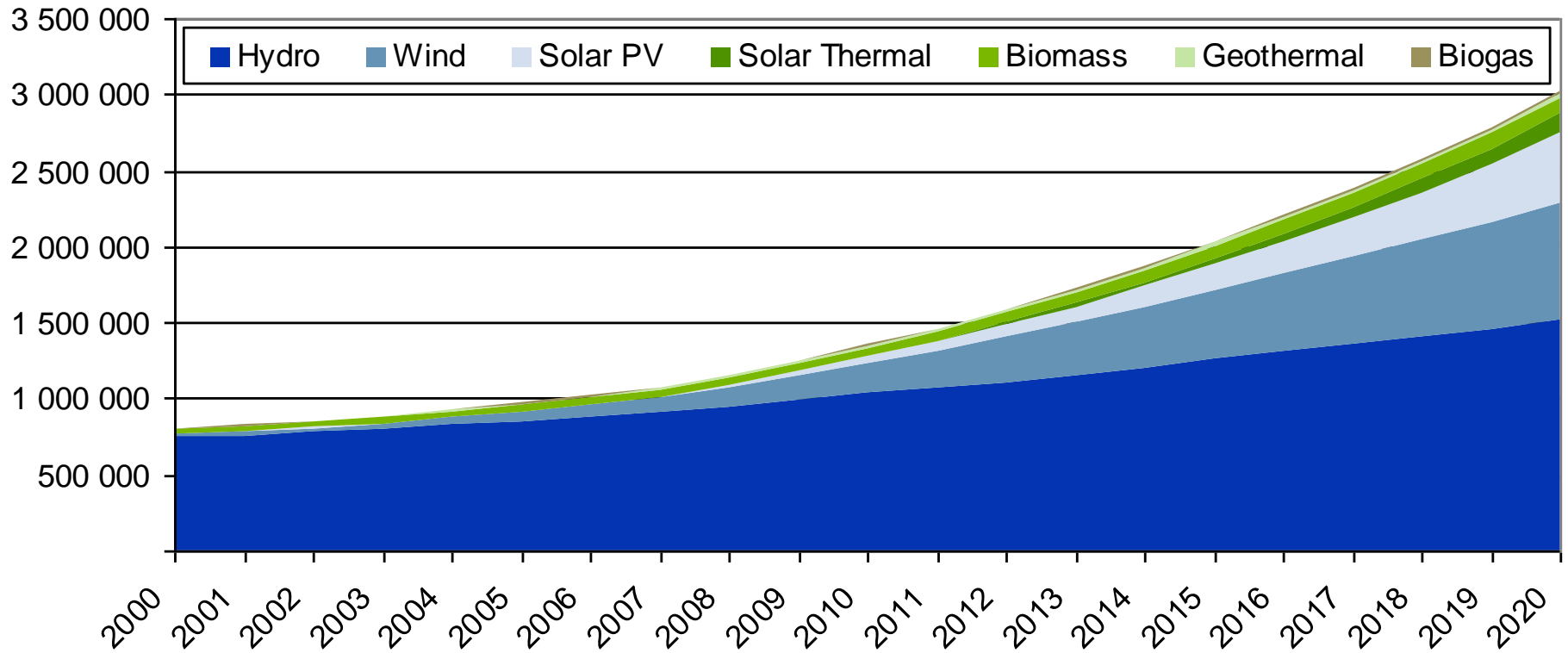




Renewable energy – offshore wind

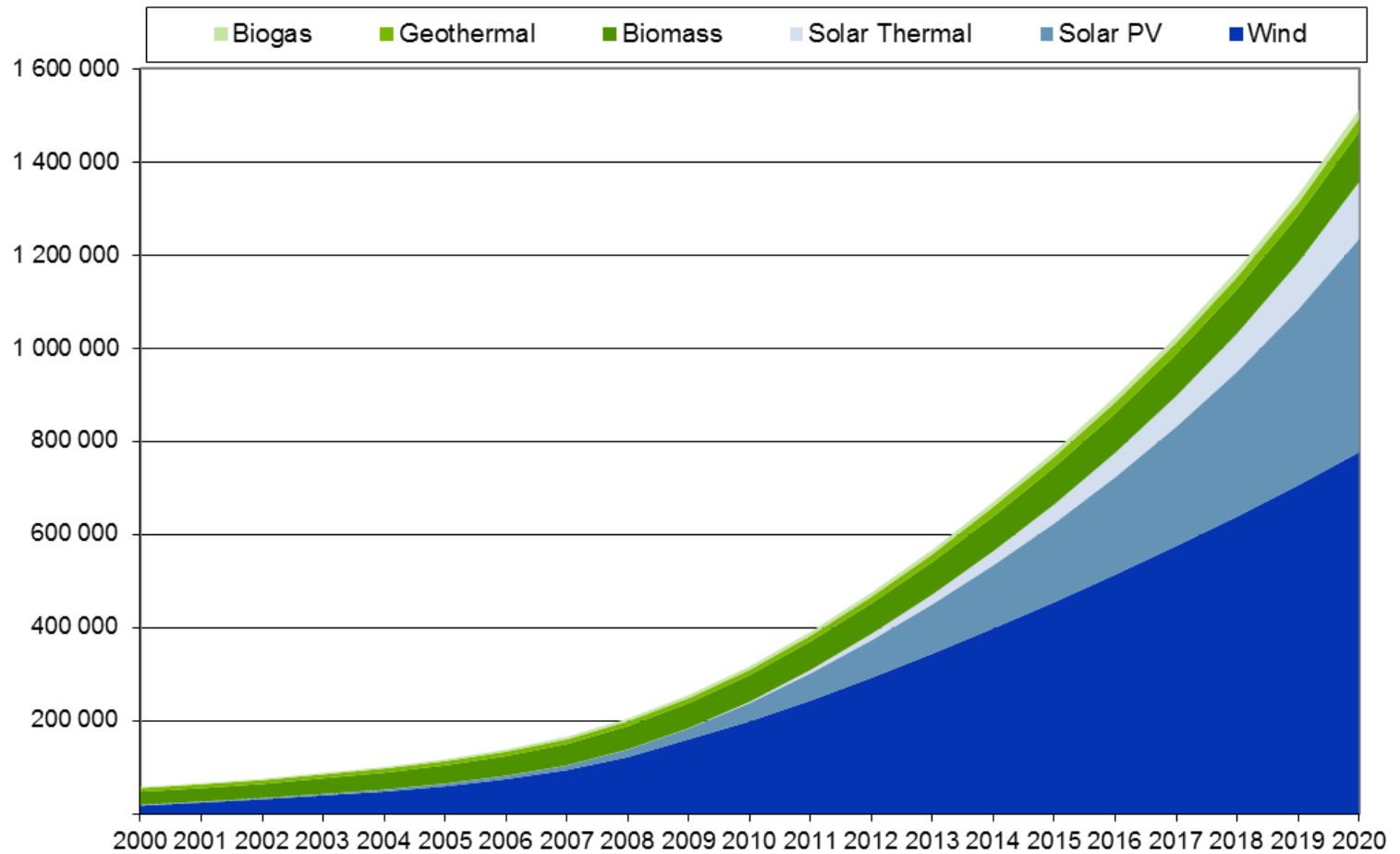
Renewable capacity

Global installed renewable capacity forecast, MW
As of 2011 - GlobalData



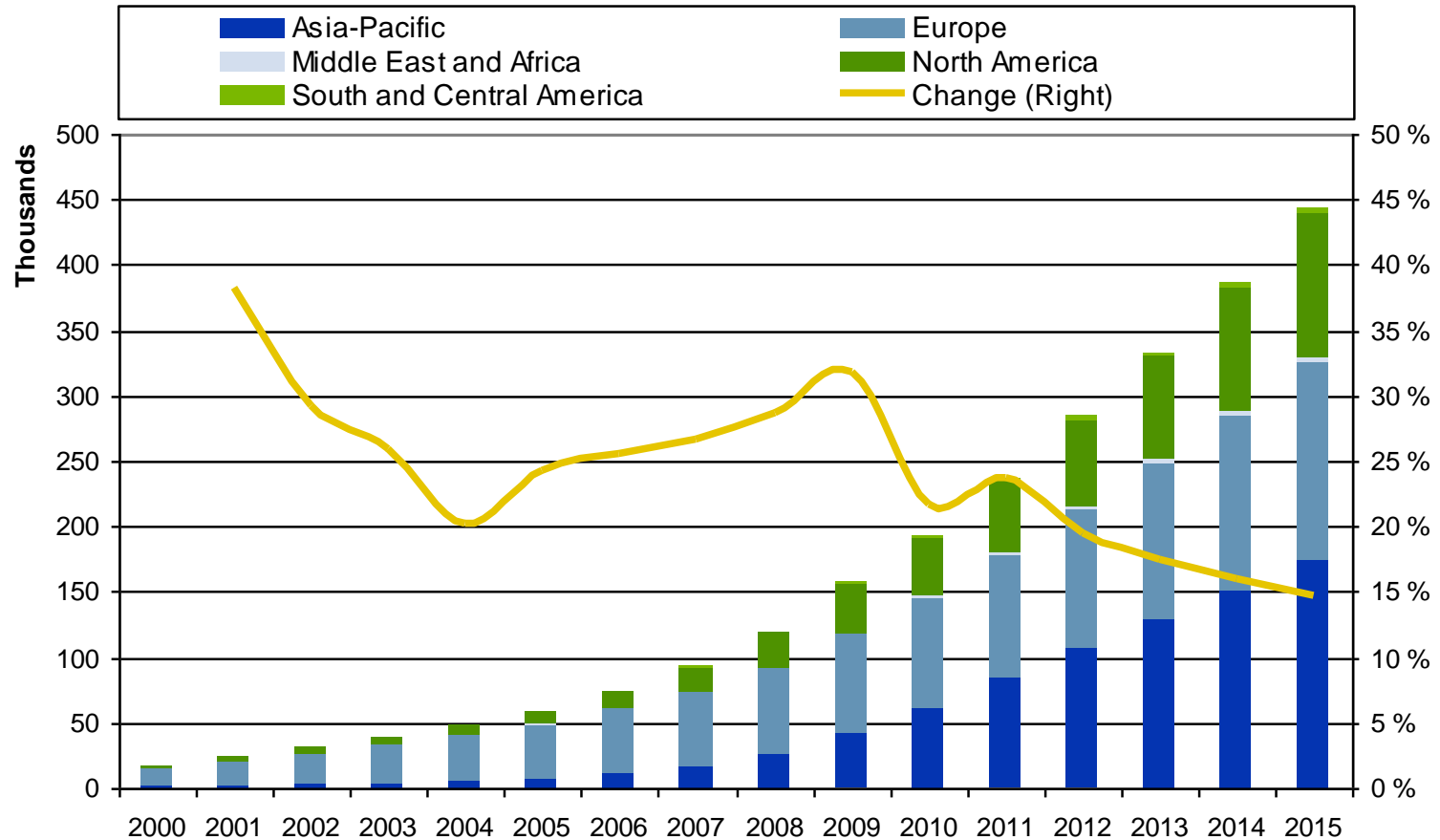
Renewable capacity

**Total renewable energy capacity forecast, MW
As of 2011 - GlobalData**



Installed capacity

**Global installed wind capacity forecast per region, MW
As of 2011 - GlobalData**



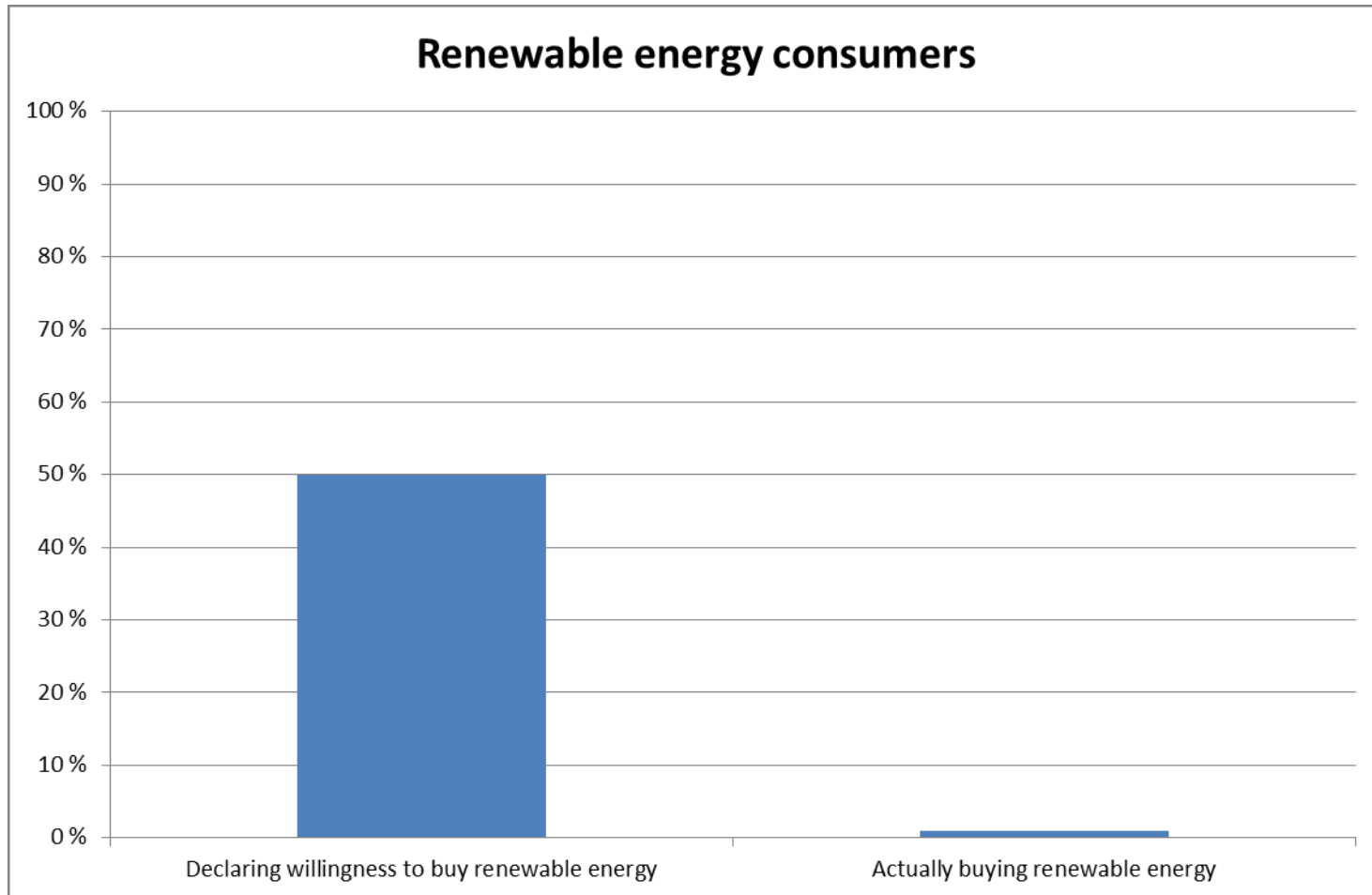


Energy drivers influencing shipping

1st of June 2011

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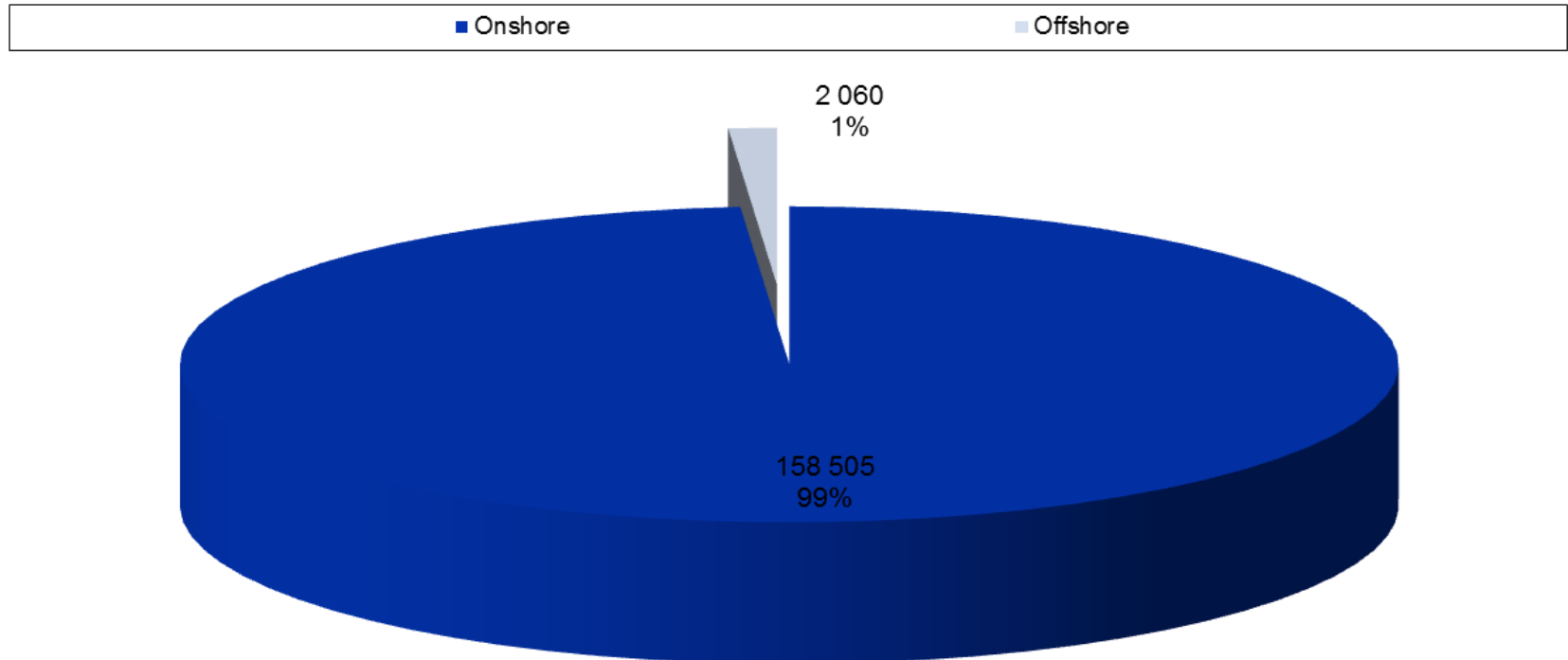
Consumers





Onshore vs. Offshore capacity

Offshore and onshore cumulative installed wind power capacity, MW
As of April 2011 - GlobalData



Some facts...

Massive double digit, everlasting growth

Accounts for only 2% of the total power generation (without hydro)

It is more expensive than conventional energy

Extremely capital intensive

Heavily subsidised

Leading regions: Europe, North America, China

Is moving towards offshore

Offshore wind technology still needs to be developed



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