



**THE FUTURE OF  
THE OCEAN ECONOMY:  
WHAT IMPLICATIONS FOR SHIPPING AND SHIPBUILDING?**

***WORKSHOP ON THE FUTURE OF SHIPBUILDING***

***29<sup>TH</sup> NOVEMBER 2012***

OECD International Futures Programme  
STI/IFP



# The International Futures Programme

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- Horizon scanning for emerging issues
- Identifying potential new areas of work
- Incubating and piloting new projects
- Cross-cutting topics
- Project “The Future of the Ocean Economy” – scoping completed, work to start 2013 (VCs permitting)



# The Project in a Nutshell

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- Grand challenges for the coming decades – supporting economic growth, feeding extra 2bn people, managing natural resources sustainably, finding renewable sources of energy - oceans indispensable to meeting those challenges
- But growing the “ocean economy” needs to be done in a responsible way because oceans already under stress
- Forward look (to 2030) at the ocean economy: established ocean sectors (shipping, shipbuilding, fisheries, traditional ocean and coastal tourism, ports) and emerging ocean-based sectors (off-shore wind, off-shore oil & gas, ocean energy, marine bio, cruise tourism, aquaculture, sea-bed mining, ocean monitoring...)
- Focus on their contributions as potential sources of economic growth & employment creation, required scientific and technological breakthroughs, investment needs, funding and business models, skills, environmental implications, avenues for policy action.



# Structure of the presentation

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- Drivers of long-term future demand for ocean-based goods and services
- Some likely future trends in the ocean economy (drawn from scoping work)
  - “Established” industries - shipping, ports, fisheries,.....
  - “Emerging” industries – offshore wind; ocean energy; oil & gas exploration and extraction in deep-sea and hostile environs; sea-bed mining for metals, minerals, rare earths; cruise tourism; maritime monitoring and surveillance
- Possible implications for shipping/shipbuilding?



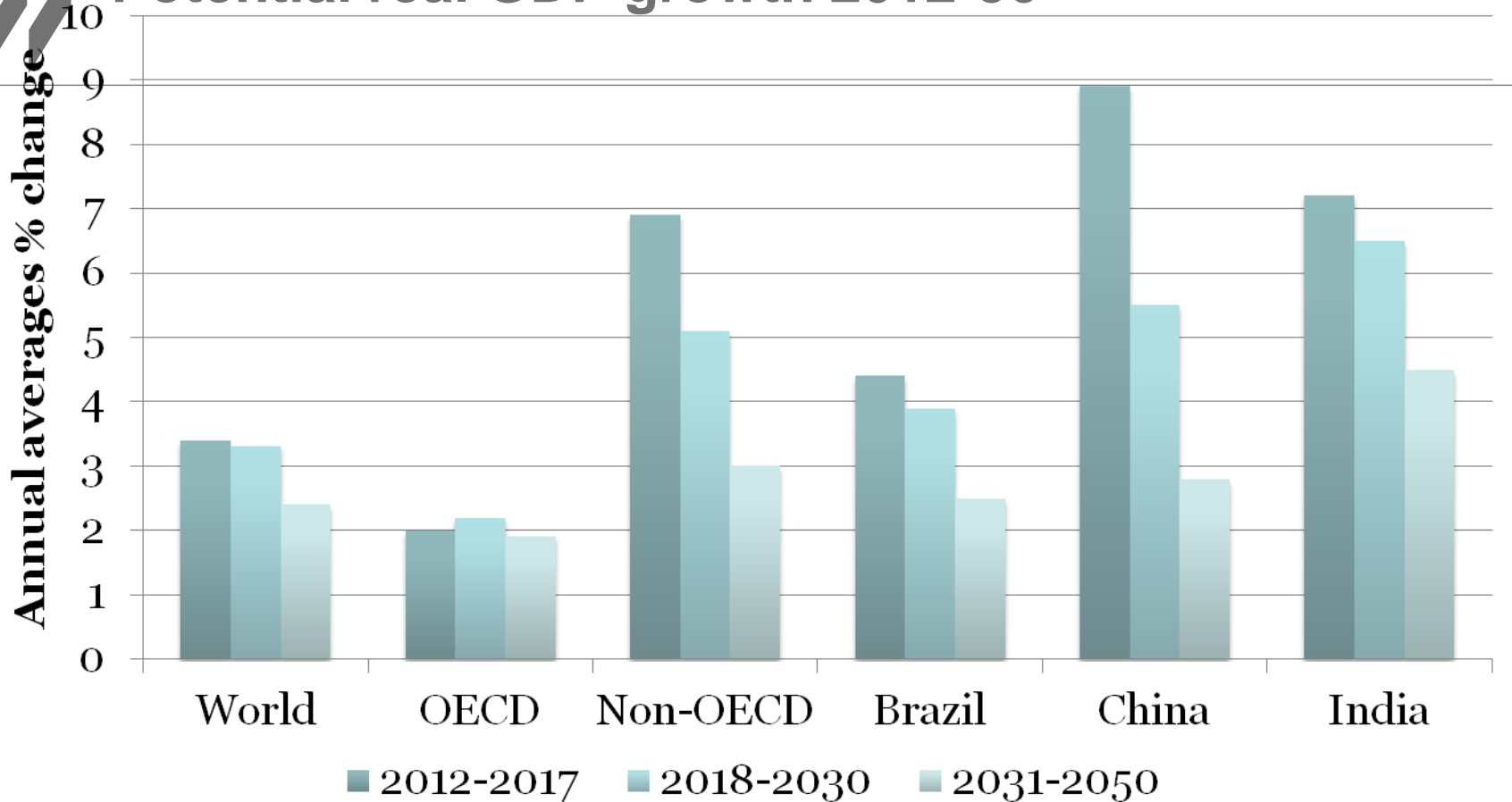
## Drivers of long-term future demand for ocean-based goods and services

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- Population growth – 9 billion by 2050
- Population ageing – disposable incomes, leisure time...
- Climate change
- Availability and location of natural resources
- Trade and economic development
- .....



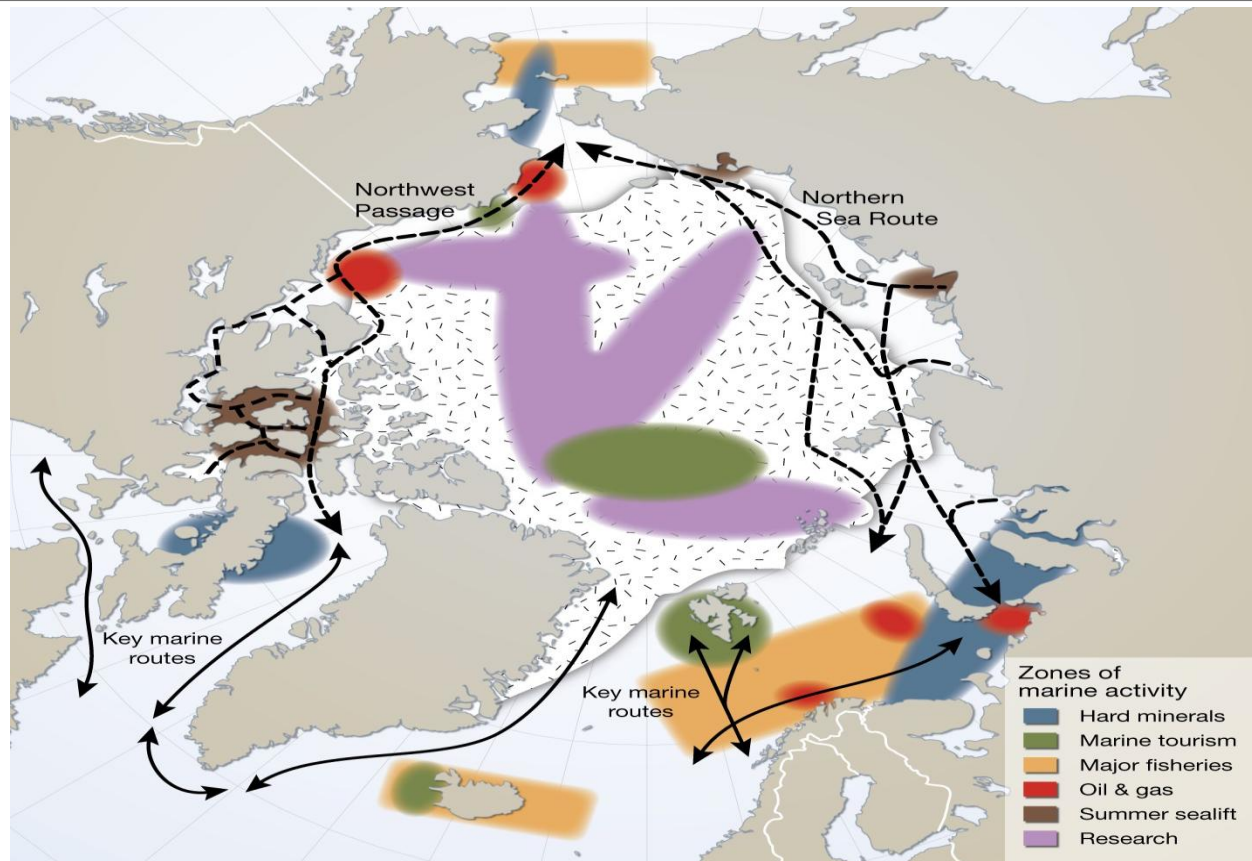
## Potential real GDP growth 2012-50



Source: Based on OECD, Economic Outlook, June 2012  
*World economic growth is set to slow in the coming decades. But global GDP is nonetheless expected to double over the period to 2030, with GDP per capita growing by around 60%. By 2050, world GDP could grow to three to four times its current level.*



# New sea routes and natural resource opportunities opening up in the Arctic



Source: Chatham House

The environmental change in the Arctic has sparked new global interests in Arctic energy, fishing, shipping and tourism.



# Future trends in “established” ocean industries

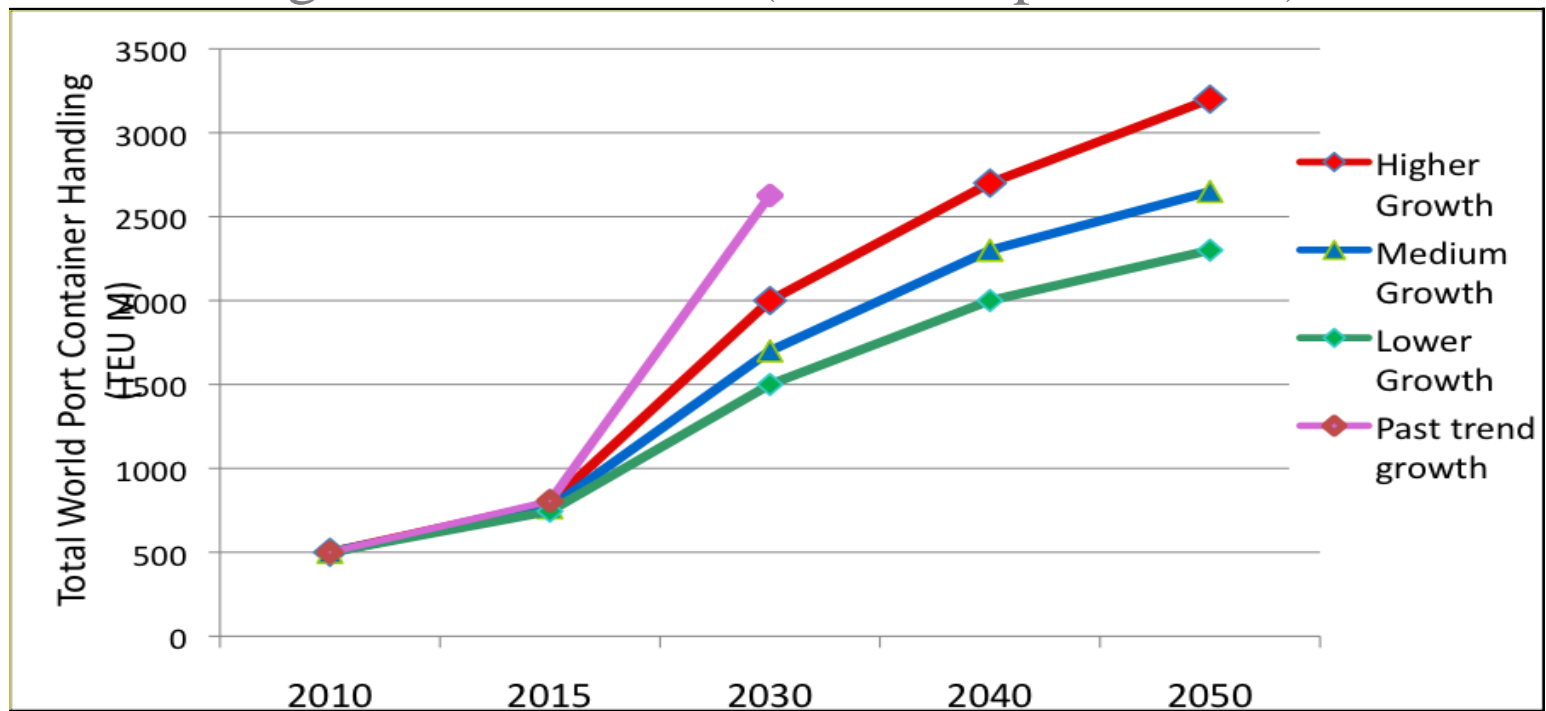
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## Trends in maritime transport

World port container handling – higher, medium and lower TEU growth scenarios (M TEUs per annum)



•Maritime demand for the main cargo types (crude oil, petroleum products and gas (including LNG); dry bulk cargoes, including iron ore, coal, grain, bauxite/alumina and phosphate rock; and containerized cargoes) expected to continue to increase over the period to 2030 and beyond.

•Container traffic is expected to remain the fastest growing category of maritime freight on a global basis. Global container traffic could increase around five to six times by 2050.



# Port infrastructure investment requirements worldwide 2009-2030

**Table 2.3. Global port infrastructure investment needs, 2009-2030**

USD billions

Region	Annual average investment		Aggregate investment		
	2009-2015	2015-2030	2009-2015	2015-2030	2009-2030
Worldwide					
<b>Total</b>	<b>33</b>	<b>40</b>	<b>200</b>	<b>630</b>	<b>830</b>

**Table 2.4. Total port container investment needs (new berths and rehabilitation)**

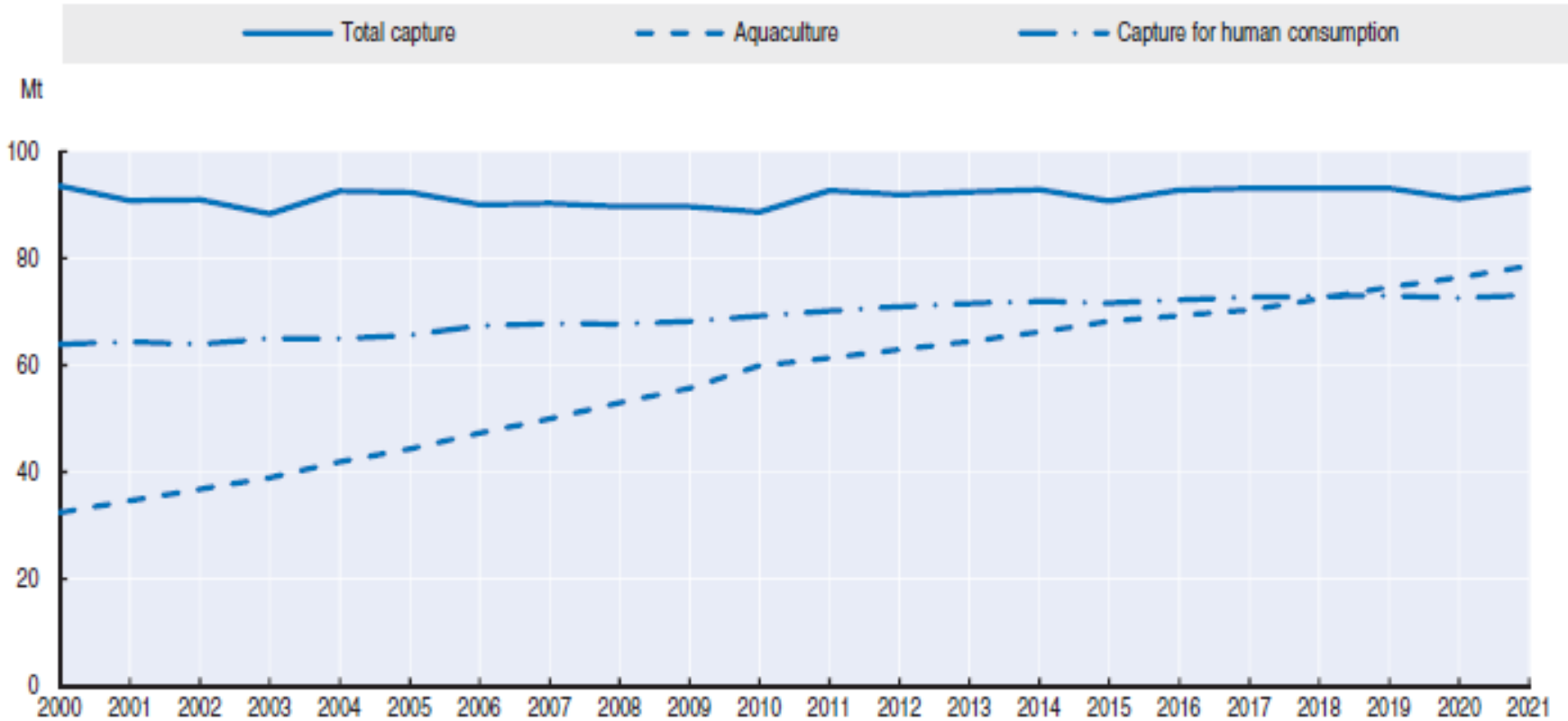
USD billions

Region	Medium TEU growth scenario				
	Annual average investment		Aggregate investment		
	2009-2015	2015-2030	2009-2015	2015-2030	2009-2030
Global					
New berths	8	12	50	190	240
Rehabilitation	3	4	17	63	80
<b>Total</b>	<b>11</b>	<b>16</b>	<b>67</b>	<b>253</b>	<b>320</b>

Source: Strategic Transport Infrastructure Needs to 2030, OECD 2012

# World capture fisheries production flat for at least the coming decade

Figure 8.4. Aquaculture overtakes capture fisheries for human consumption  
Fishery production in live weight equivalent



Source: OECD and FAO Secretariats.

StatLink <http://dx.doi.org/10.1787/888932640217>



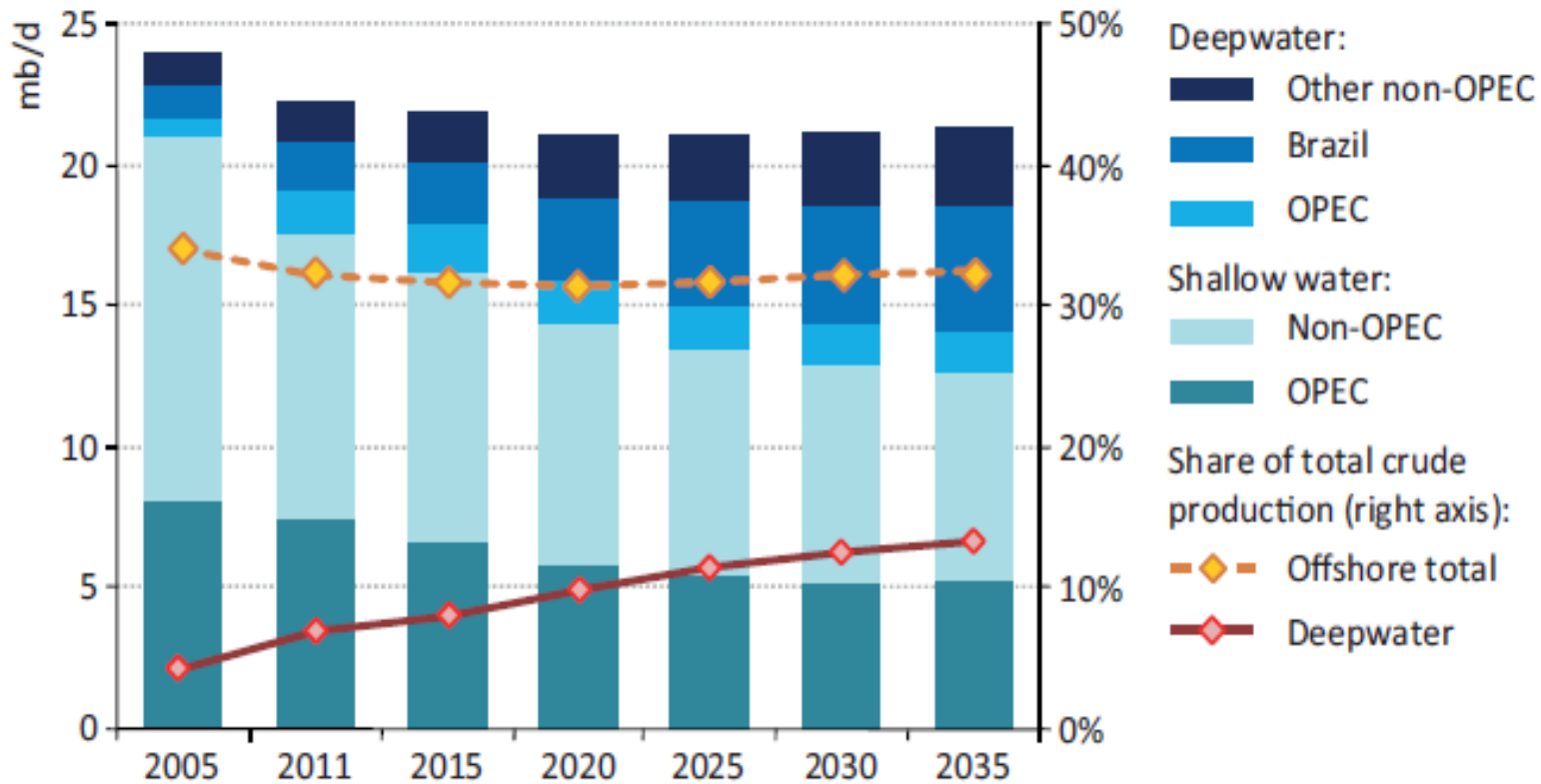
# Future trends in “emerging” ocean industries

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# Offshore oil – deepwater production to rise from 4.8 mb/d in 2011 to 8.7 mb/d by 2035

**Figure 3.20** ▶ World offshore crude oil production by physiographical location and region in the New Policies Scenario



Sources: Rystad Energy AS; IEA analysis.



# LNG – trade in LNG to double to more than 575 bcm by 2035

**Table 4.7** ▶ LNG export projects under construction worldwide (July 2012)

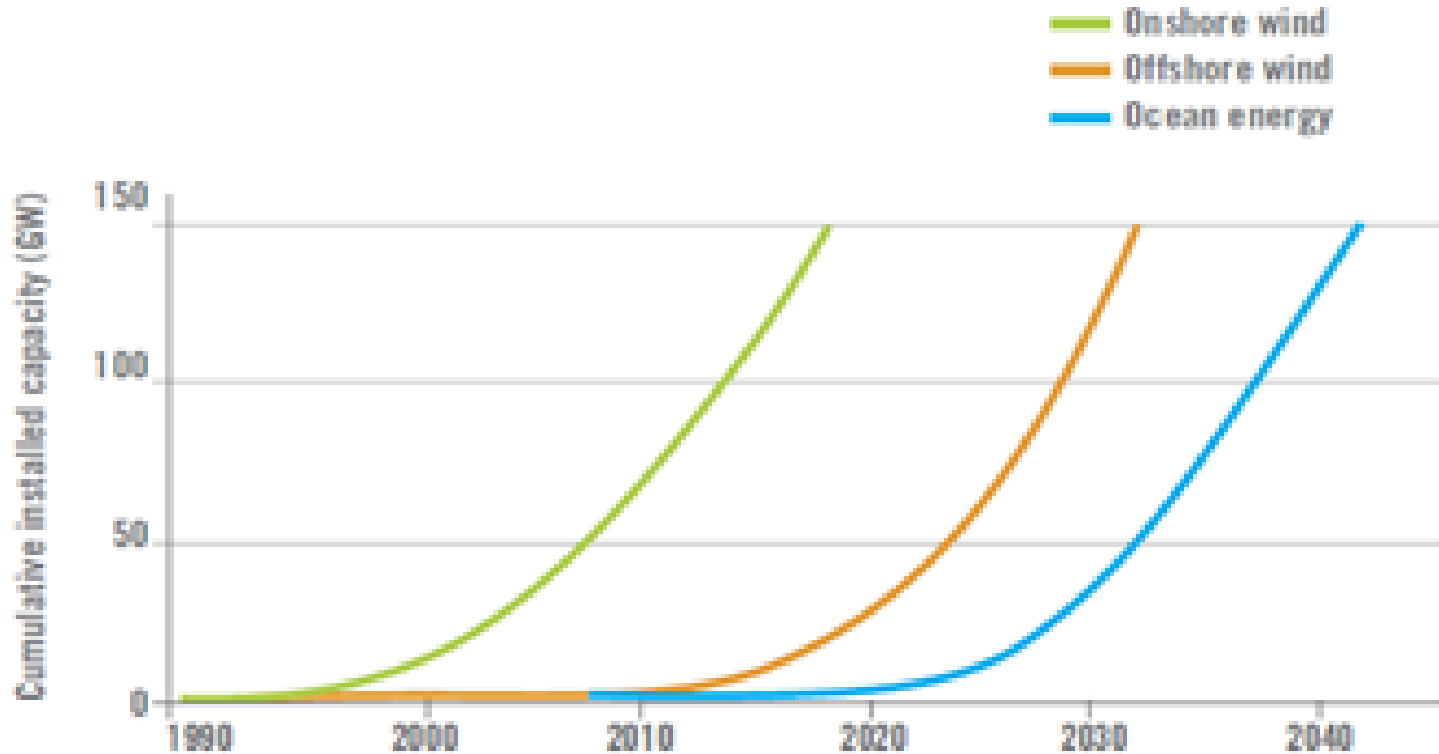
	Project	Operator	Capacity		Start-up date
			Mt/year	bcm/year	
Algeria	Skikda new train	Sonatrach	4.5	6.1	end-2012
	Gassi Touil LNG	Sonatrach	4.7	6.4	2013
Angola	Angola LNG	Chevron	5.2	7.1	Q3 2012
Australia	Gorgon LNG	Chevron	15.0	20.4	2014-15
	Queensland Curtis*	BG	8.5	11.6	2014-15
	Gladstone*	Santos	7.8	10.6	2015-16
	Australia Pacific*	ConocoPhillips	4.5	6.1	2015
	Wheatstone	Chevron	8.9	12.1	2016-17
	Prelude**	Shell	3.6	4.9	2017
	Ichthys	Inpex	8.4	11.4	2017-18
Indonesia	Donggi Senoro	Mitsubishi	2.0	2.7	2014
Papua New Guinea	PNG LNG	ExxonMobil	6.6	9.0	2014-15
<b>Total</b>			<b>79.7</b>	<b>108.4</b>	

\* Coalbed methane based. \*\* Floating LNG project.

Source: Company announcements.



# Onshore, offshore and ocean energy projected growth

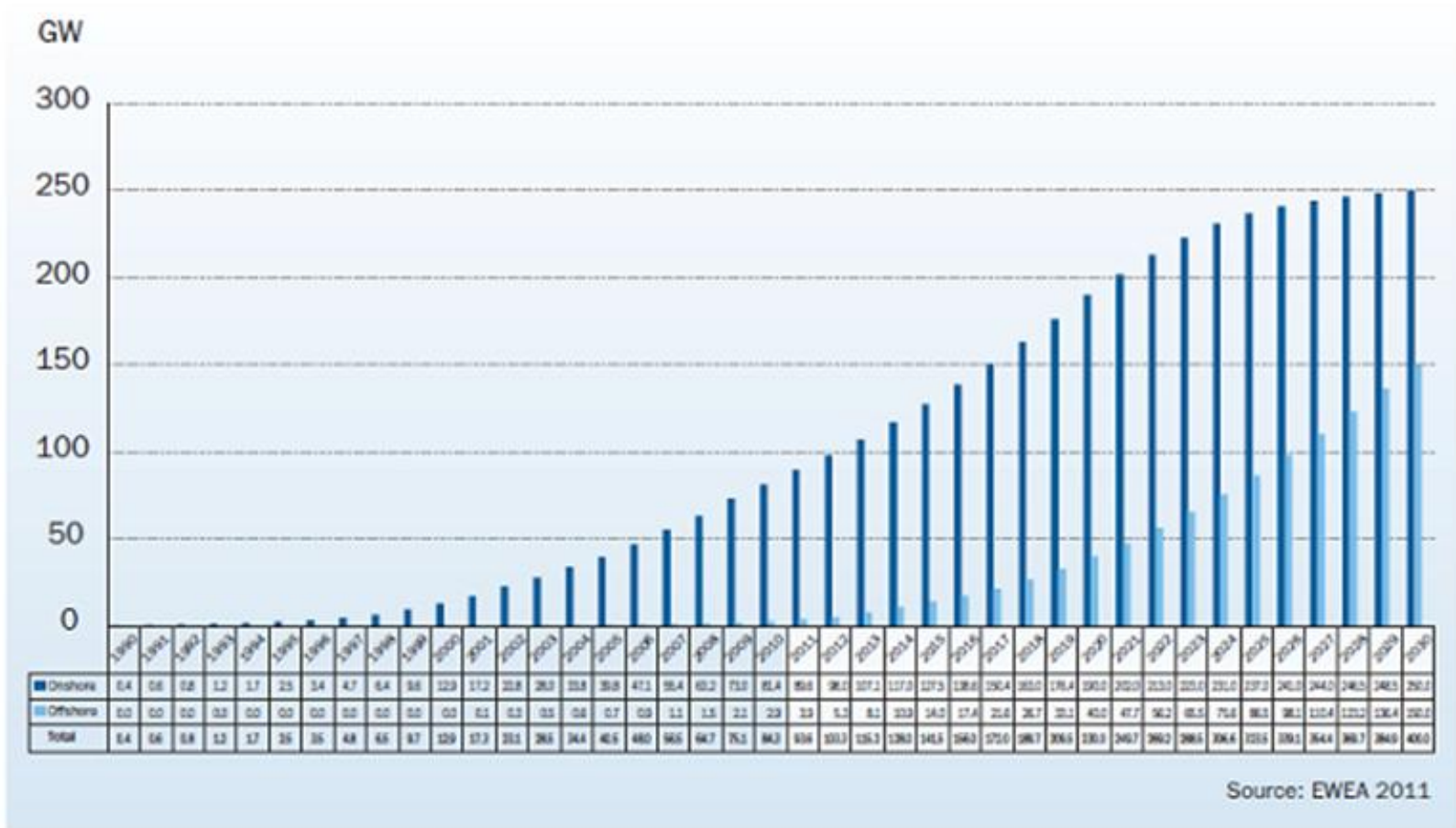


Source: European Ocean Energy Association (2010), *Oceans of energy - European Ocean Energy Roadmap 2010-2050*, European Wind Energy Association



# Offshore Wind Energy

## Cumulative Onshore and Offshore wind power in EU – 1990-2030

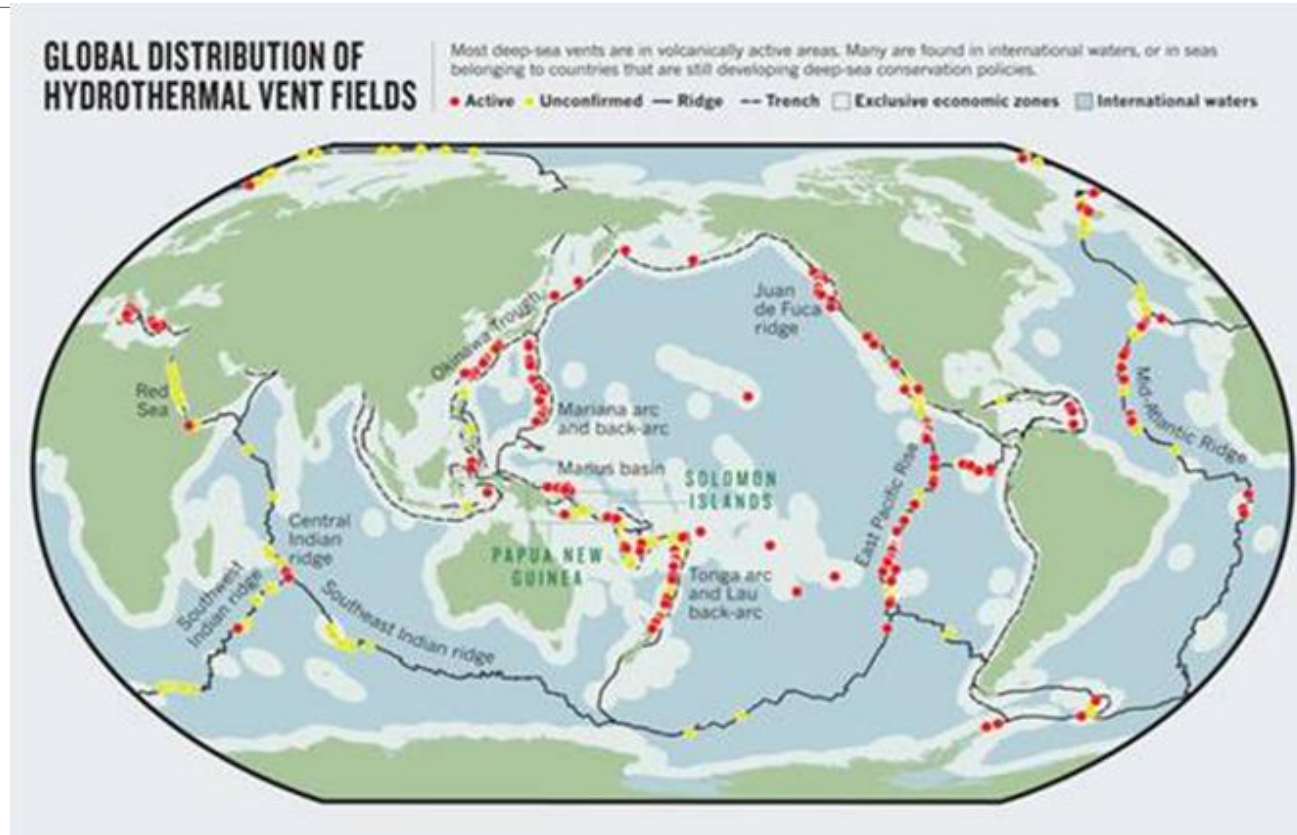


*By 2030, out of 400 GW installed capacity in Europe, 250 GW will be onshore and 150 GW offshore. Offshore farms moving increasingly further offshore and into deeper waters.*





# Deep-sea mining



Source: Joyce & Soule

Prices of metals such as copper, zinc, gold and silver have hit all time highs over the past few years. With the global demand for minerals rapidly increasing, mining of mineral deposits at deep-sea vents appears to be becoming a prime target of commercial marine mining interests with lucrative prospects for the future.



## Maritime monitoring and surveillance

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- Maritime agencies facing growing demands – patrolling borders, national fishing grounds, marine conservation zones, illegal/unregulated fishing, piracy, enforcement of international agreements, scientific activities, etc.



## Possible implications for the future of shipping and shipbuilding

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- Fast growth globally in some categories – e.g. container traffic
- Mixed picture in others, e.g. crude oil, fuels, fishing...
- Increasing specialisation associated with emerging ocean industries



## Emerging ocean industries = growing specialisation in vessels and structures?

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- Drill ships and rigs - especially for deep- and ultra-deep water operations
- LNG vessels, floating LNG processing facilities
- Offshore supply vessels – servicing increasingly remote oil, gas and sea-bed mining operations, offshore wind farms
- Cable laying vessels, turbine installation vessels and operations and maintenance vessels, related to offshore wind farms and ocean energy devices
- Ocean cruise ships
- Ice resistant vessels



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# Thank you

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