

Con la collaborazione di:



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(Sala Pirelli)
Corso Magenta, 59 - Milano

OPEN DAY ATTIVITÀ INTERNAZIONALI ANIE

Oil & gas, Energia ... I nuovi scenari mondiali

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Oil & gas, Energia ...
I nuovi scenari mondiali

Our main challenges today



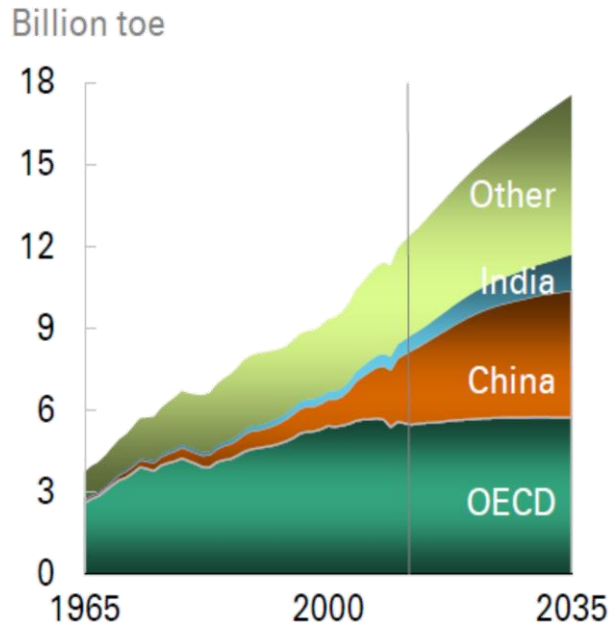
A world turned upside down

- Continuing **growth in energy** demand and related **investments**
- **Supply-side revolution:**
 - Many new oil & gas discoveries
 - Mostly in *new, unconventional, unaccessible, different, ultra-deepwater...*
- Today's many **complexities**
 - Lower oil prices
 - Lower ROIs
 - New restrictive Capex policies
 - Outsourcing
 - Cost explosion
 - Geopolitics
 - Often unclear new policies e.g. Local content, permitting, environmental
- **Decreasing project execution success**

Great transformations, complex markets, big opportunities

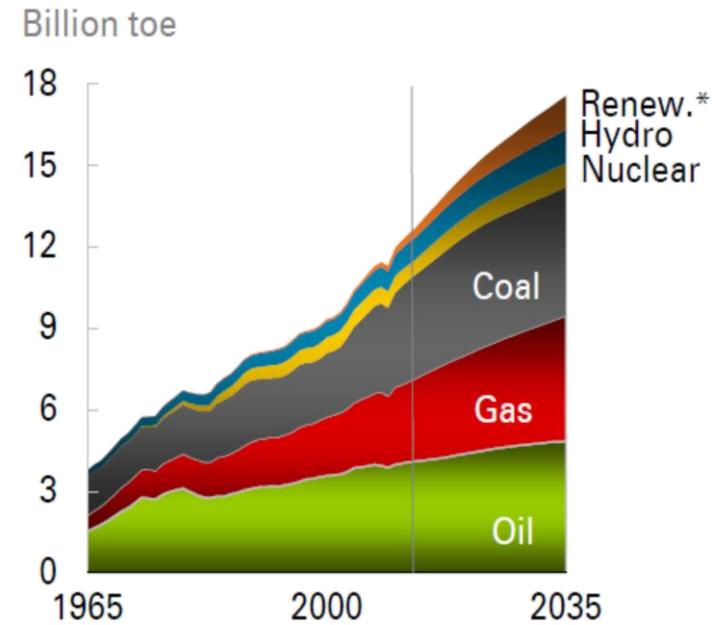
Energy demand to increase by ~ 50% in 20 years

Consumption by region



Source: BP Energy Outlook 2035 (Jan. 2014)

Consumption by fuel

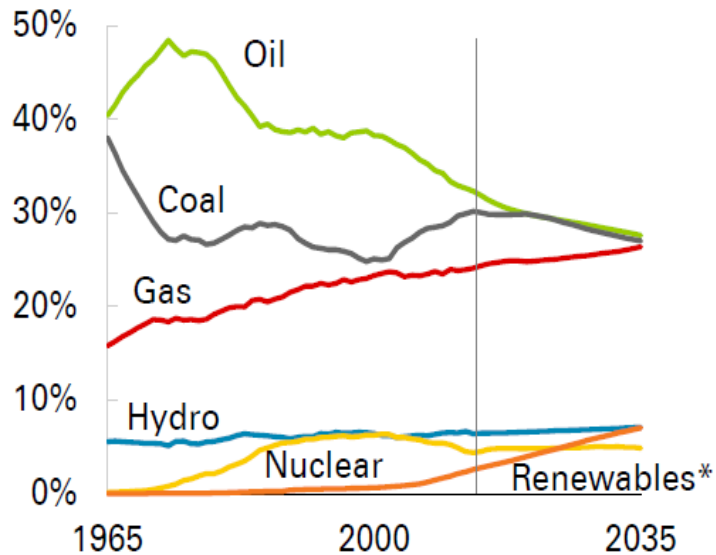


*Includes biofuels

Source: BP Energy Outlook 2035

...with a substantial change in the mix

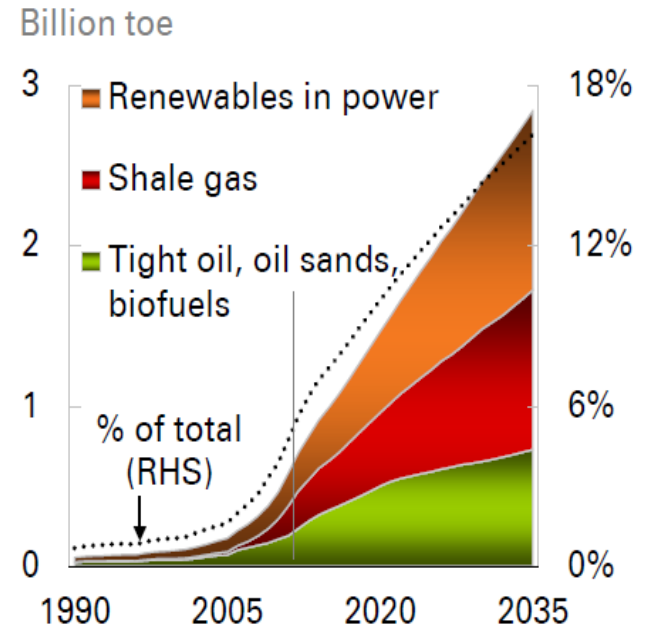
Shares of primary energy



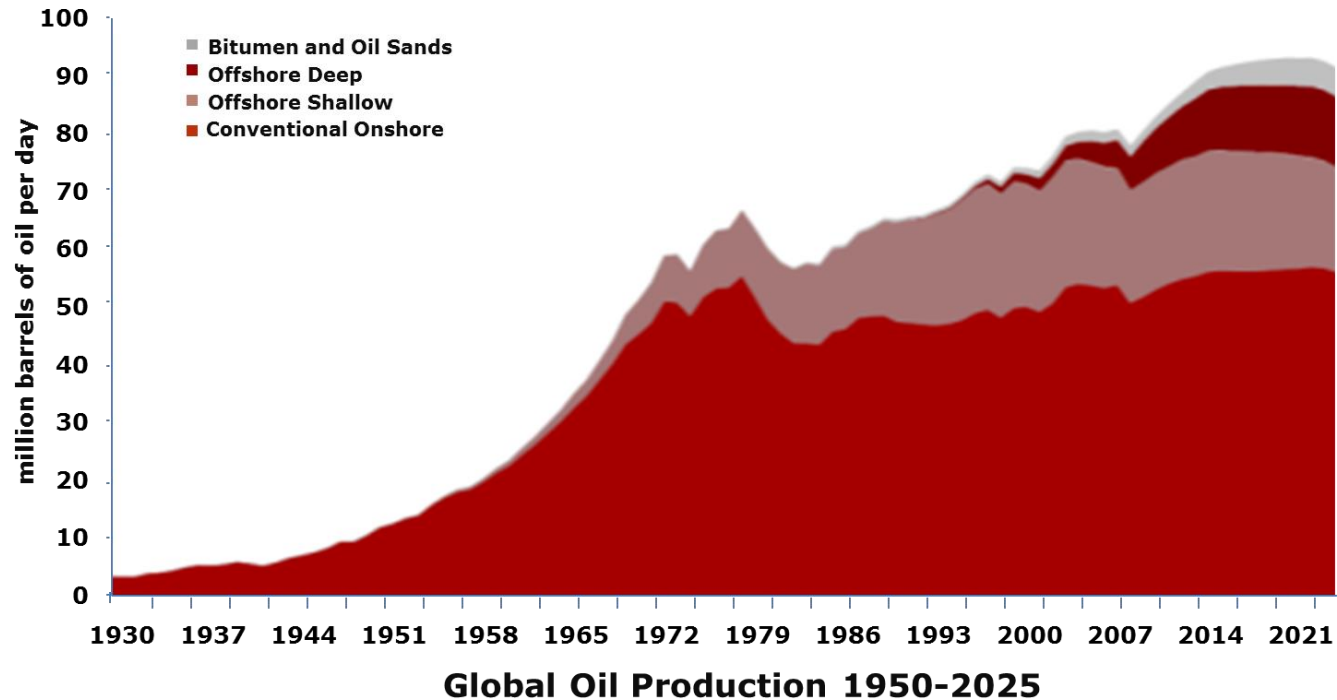
*Includes biofuels

Source: BP Energy Outlook 2035 (Jan. 2014)

New energy forms



Most new oil and gas production coming from unconventional sources

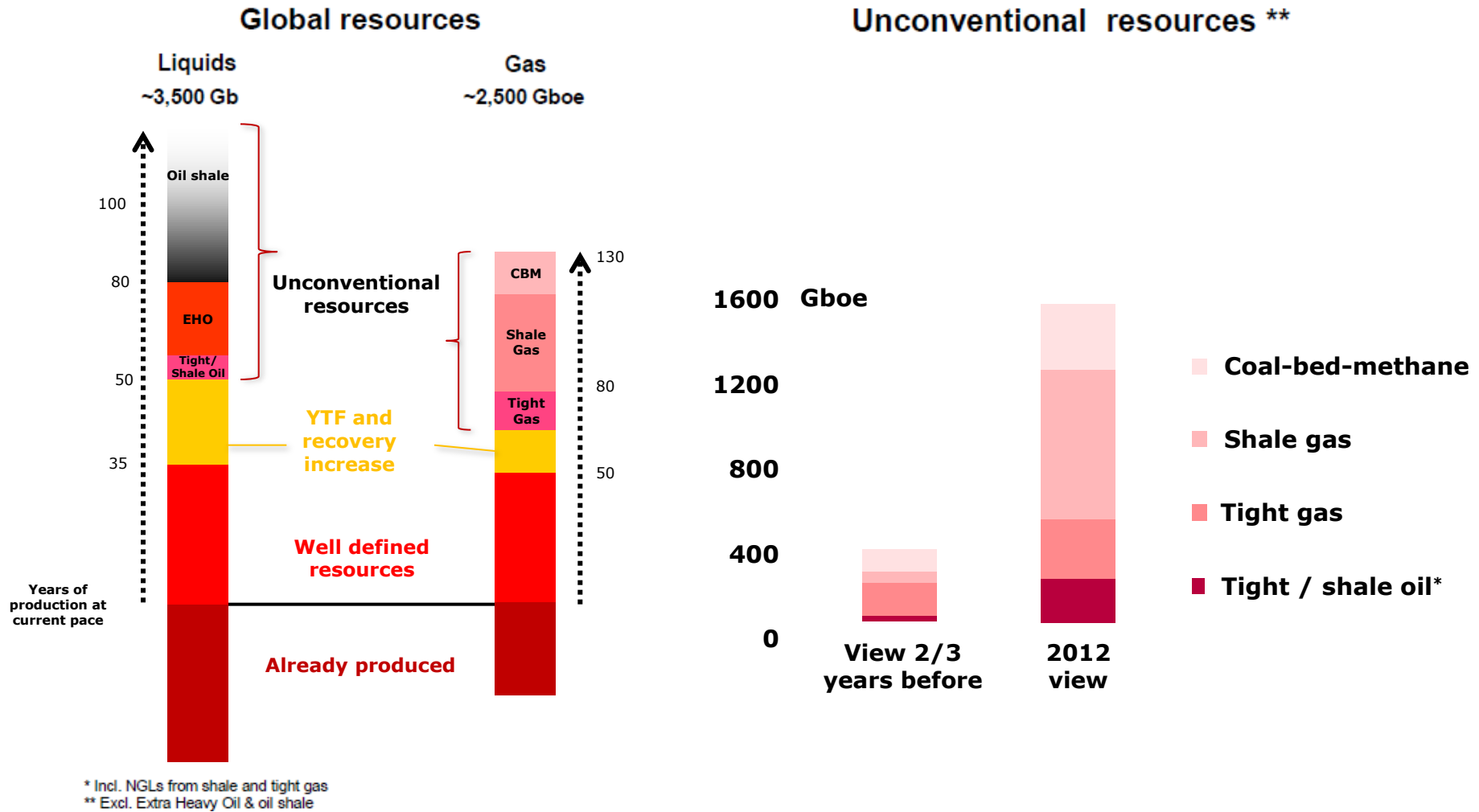


Source: Douglas-Westwood (2012)

Massive shift from conventional to **unconventional**,
from traditional to **new**

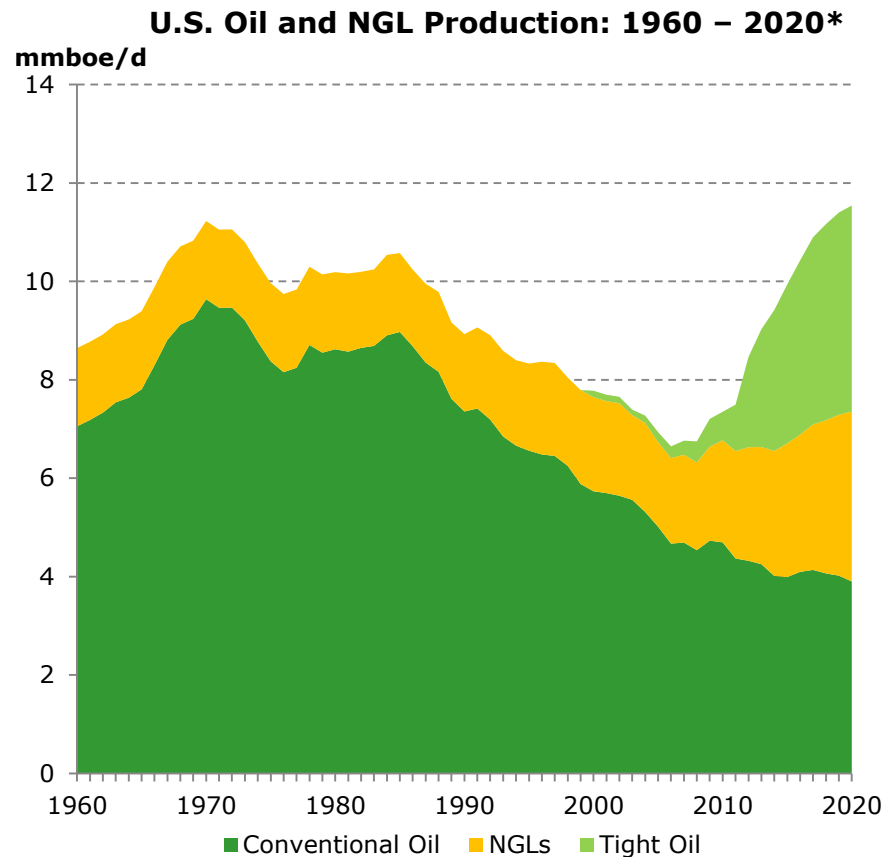
Some key trends: supply side revolution

Global oil & gas resources



Source: Total (March 2013)

Second Wave - U.S. Liquids Production Revival



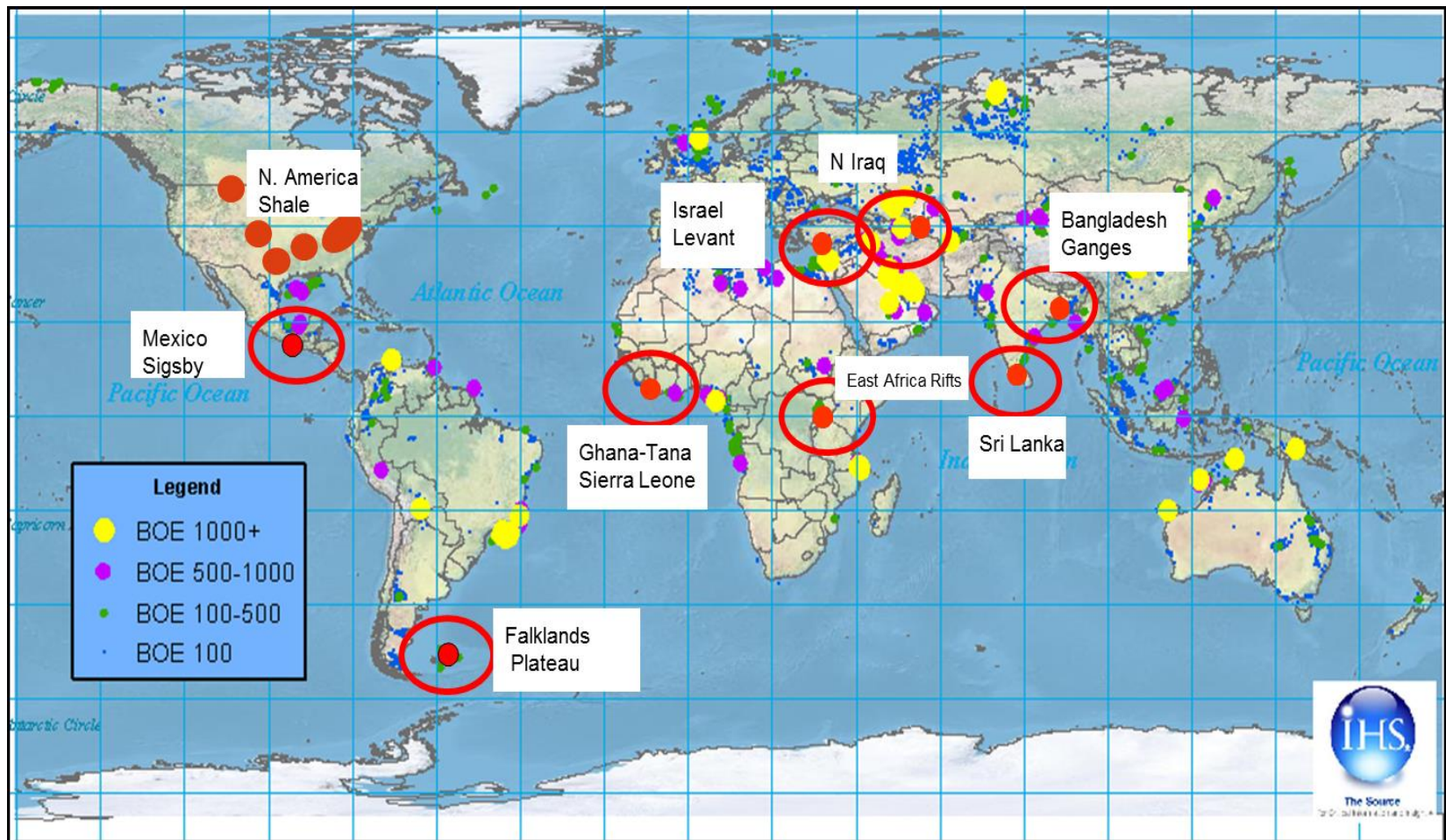
*Forecast numbers are production capacity

**Assumes recent high oil prices above \$80/bbl are maintained throughout the forecast period

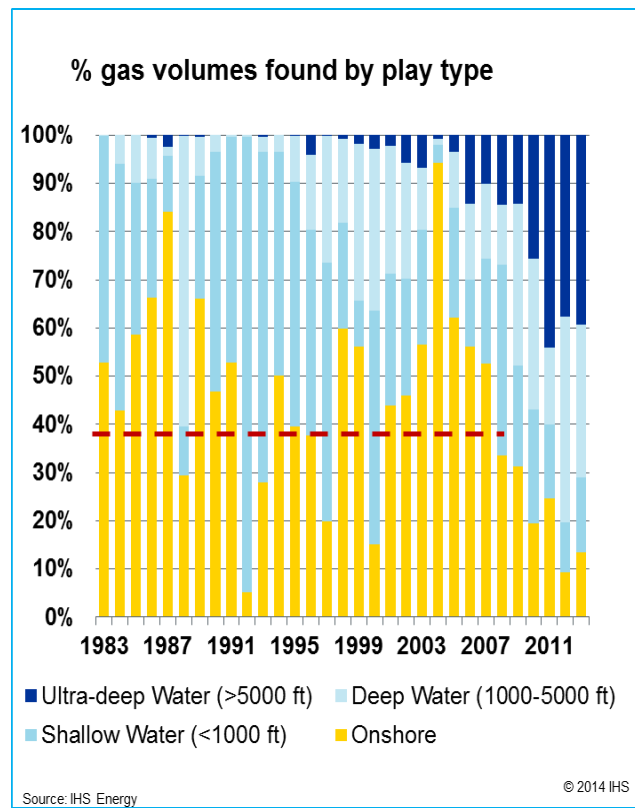
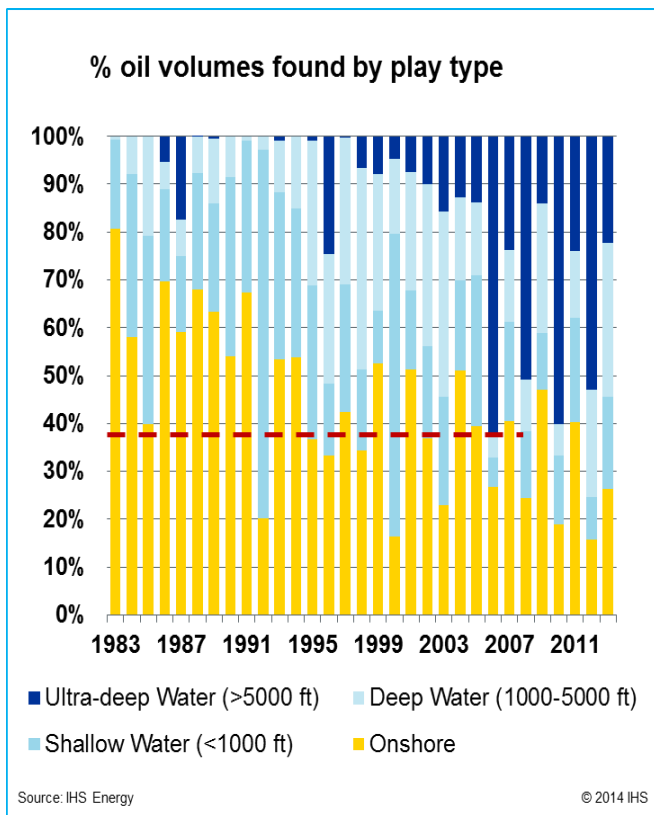
Source: IHS (2013)



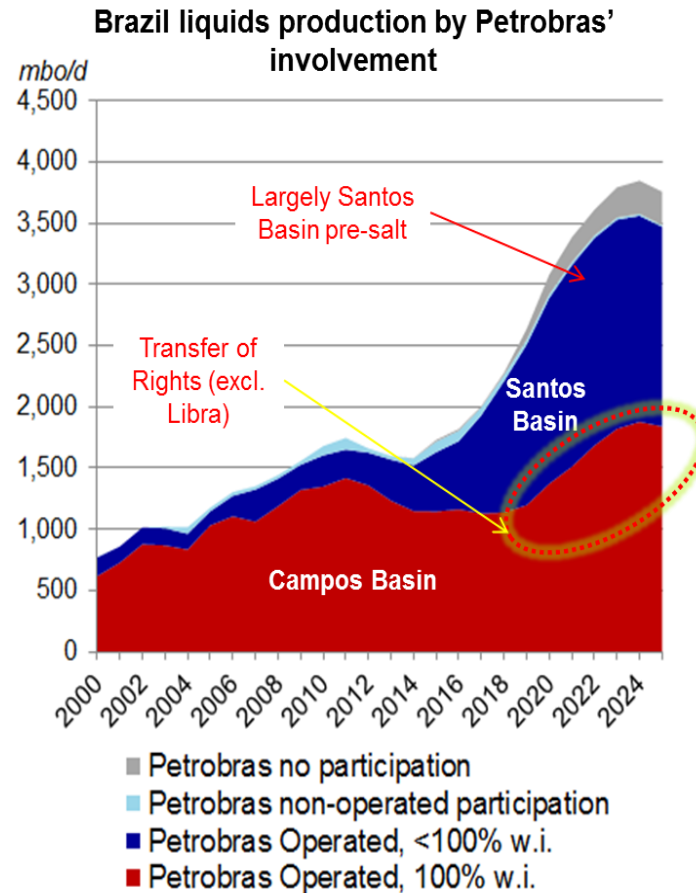
Significant discoveries and play openers, 2008–13



Example: deep and ultra-deep waters account for an increasing share of conventional oil and gas discovered

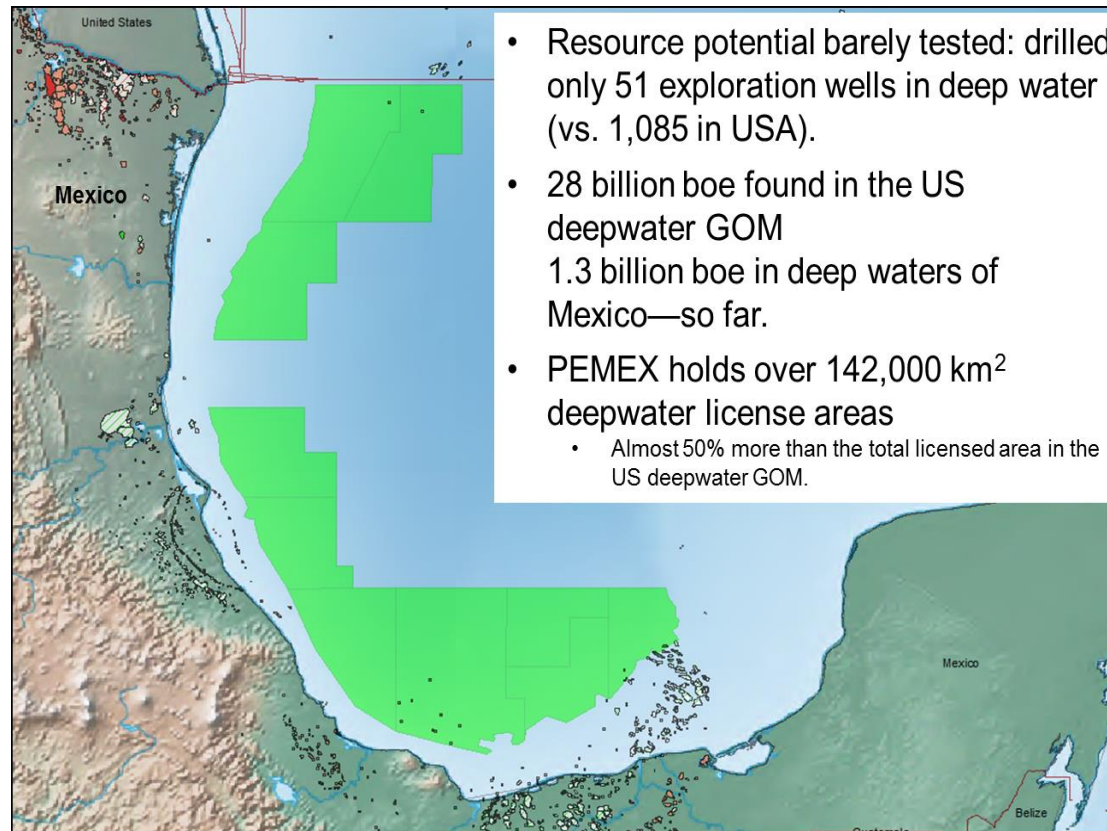


Example: Brazil's growing oil production



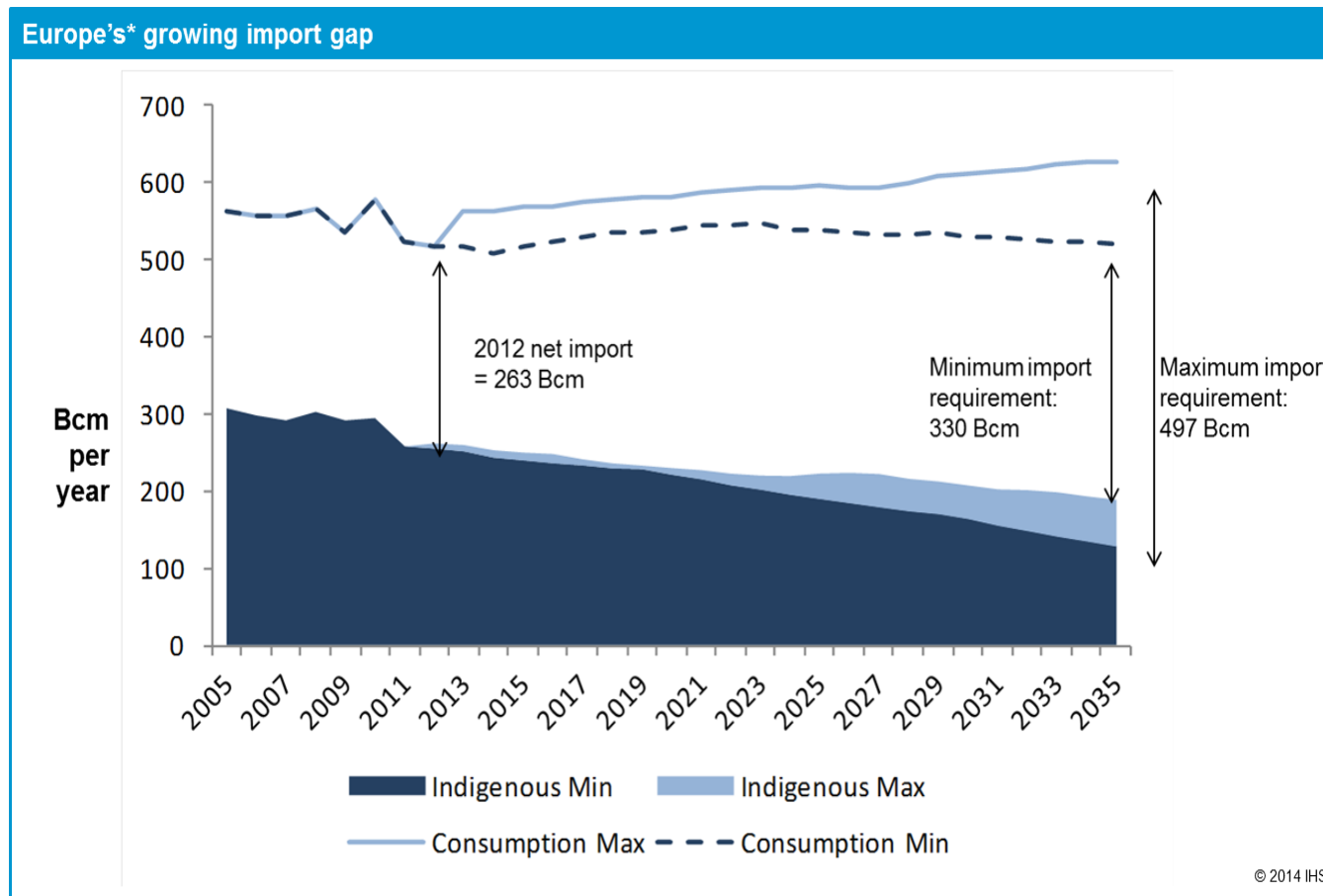
Source: IHS Energy Global Deepwater & Growth Play Service (2014)

Example: deepwater acreage in the Mexican Gulf of Mexico extensive and unexplored



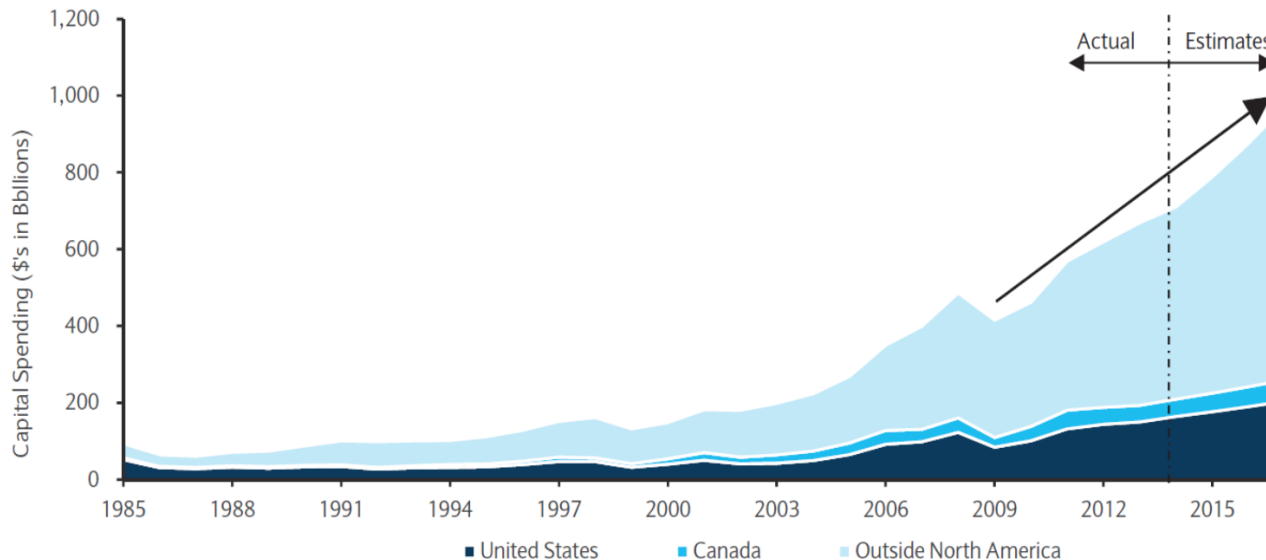
Source: IHS Energy Insight Upstream Strategies Service (2014)

Europe will need gas imports to compensate declining indigenous supply



The Capex investment expectations continue to be encouraging

We Expect Global E&P CAPEX Spending Growth to Remain in the Low-double-digit Range for the Next Several Years

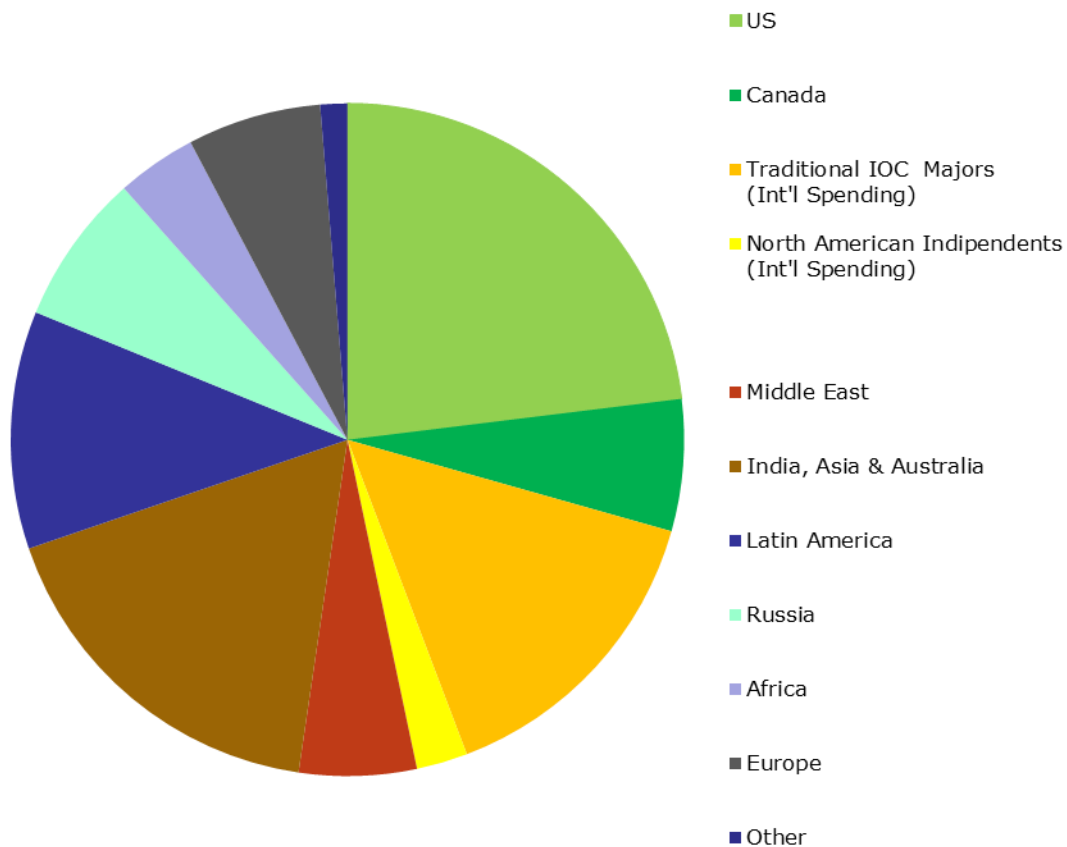


Source Company data, Barclays Research (June 2014)

..... although some analysts express caution



North America and Asia & Australia to lead the way in E&P capital spending



Source: Barclays (June 2014)

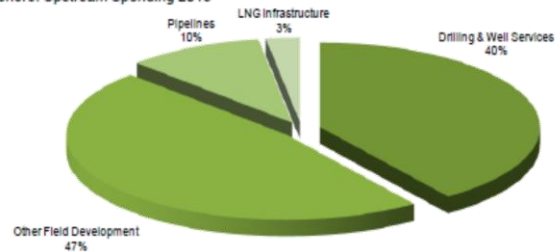
Upstream 2013

Upstream Spending 2013



Onshore Upstream 2013

Onshore: Upstream Spending 2013



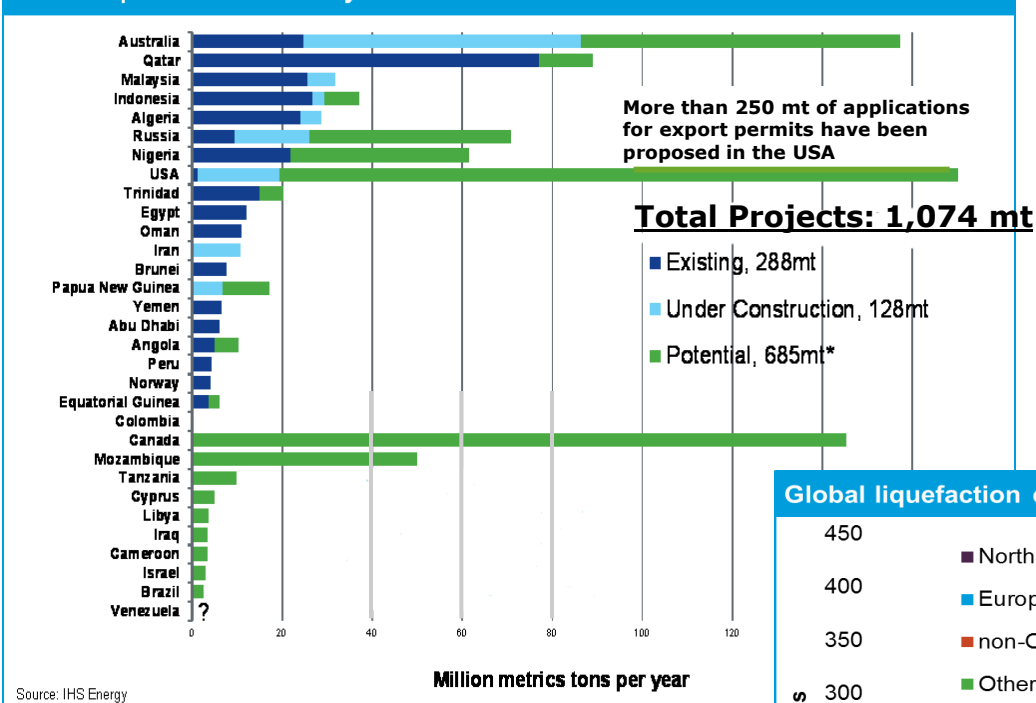
Source: Barclays (June 2014)



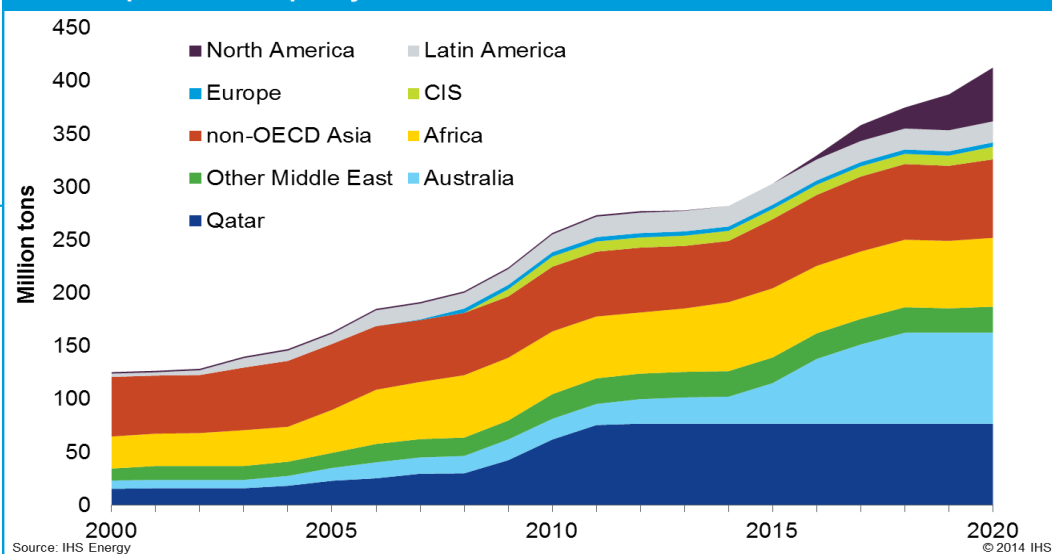
LNG supply competition is increasing

Growing and diversifying supply potential


Global liquefaction inventory



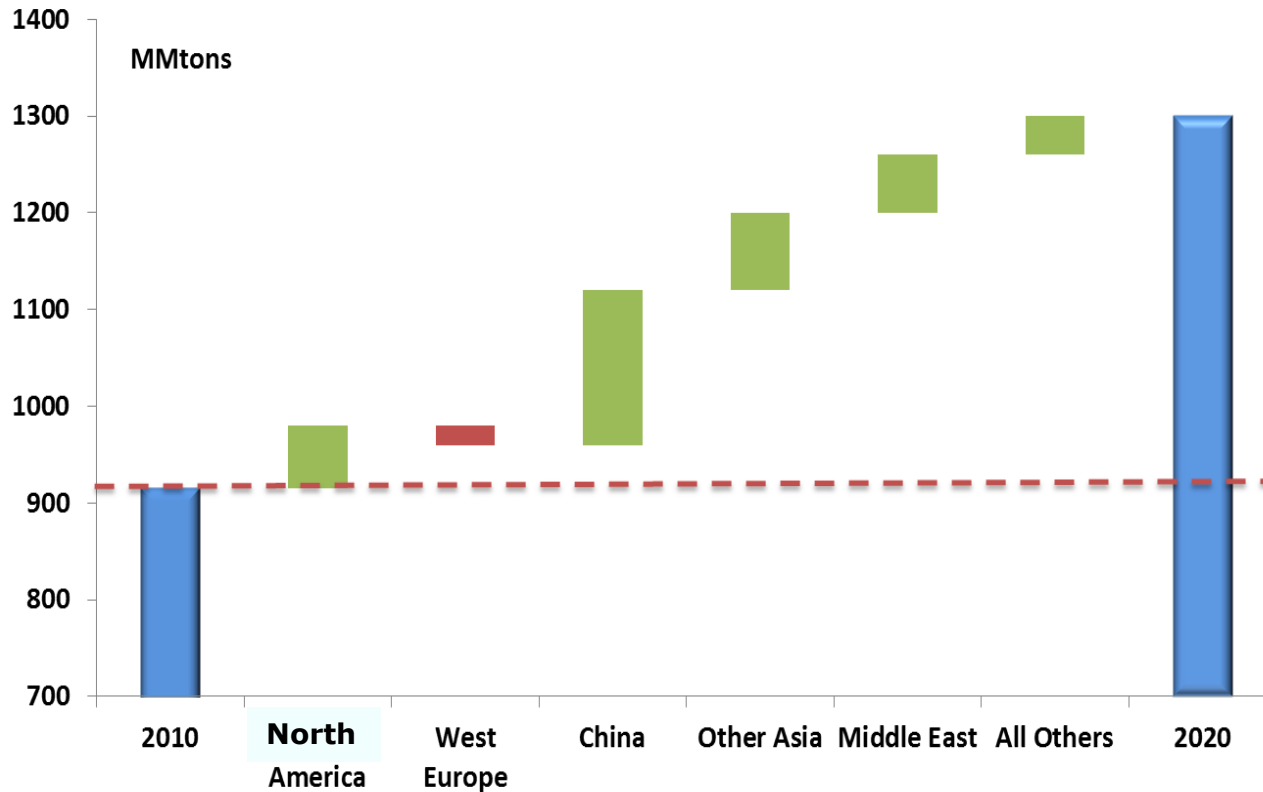
Global liquefaction capacity



Refining prospects

- Overall, a very positive growth perspective
 - + 1.2%/y global demand growth
 - + 1.2 MBPD capacity growth in 2014
 - Light transportation fuels 
 - Middle distillates 
 - Gasoline 
 - Heavy Fuel Oil 
- More stringent fuel quality standards leading to more investments
 - Virtually everywhere, although with differences
 - Uncertain timing of the International Maritime Organization's bunker fuel 0.5% limit implementation
- Production becoming global – *world class* refineries to replace older obsolete plants
- Major impact of rapidly growing new US tight oil production

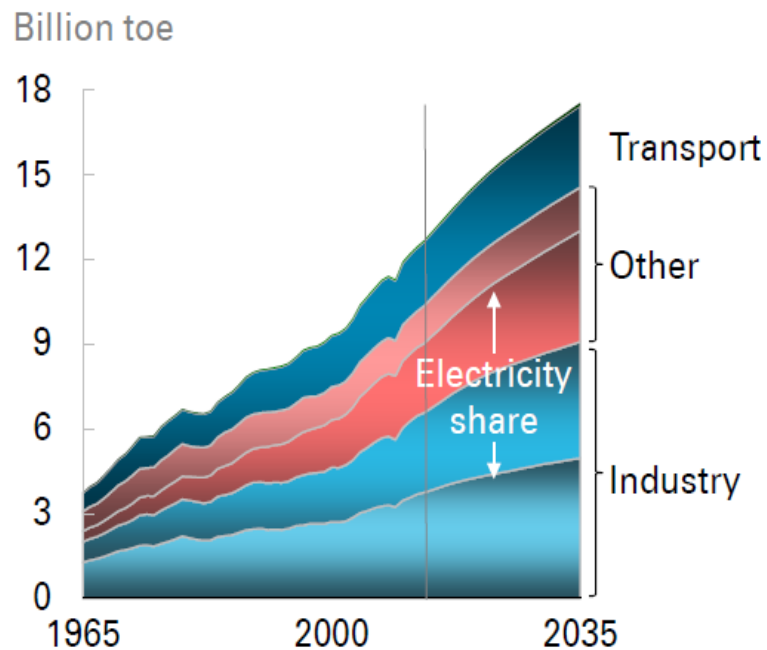
New petrochemicals capacity 2010-2020



Proximity to demand centers and low cost feed stocks

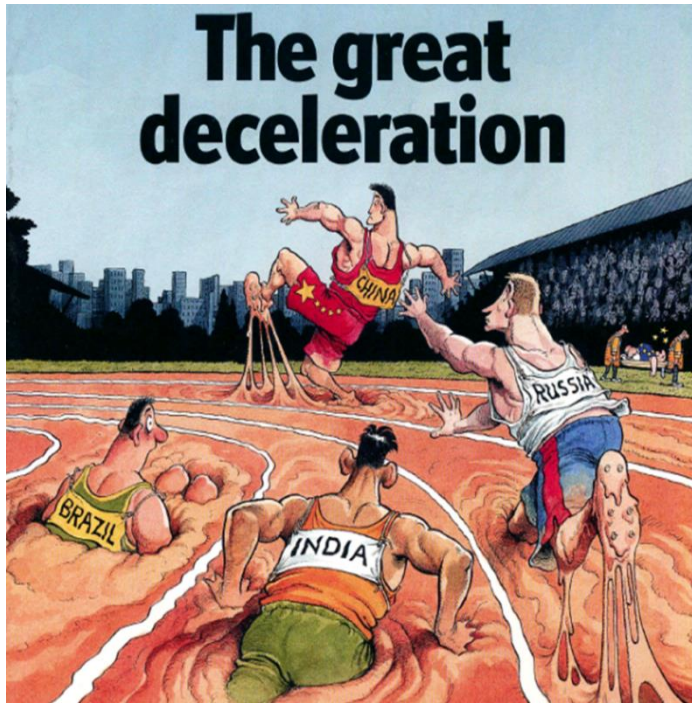
Power generation is a huge proportion of total energy demand

Consumption by sector



Source: BP Energy Outlook 2035

Slowdown in the forecast growth rate



The Economist, Summer 2013

Recently announced lower expectations of global economic growth

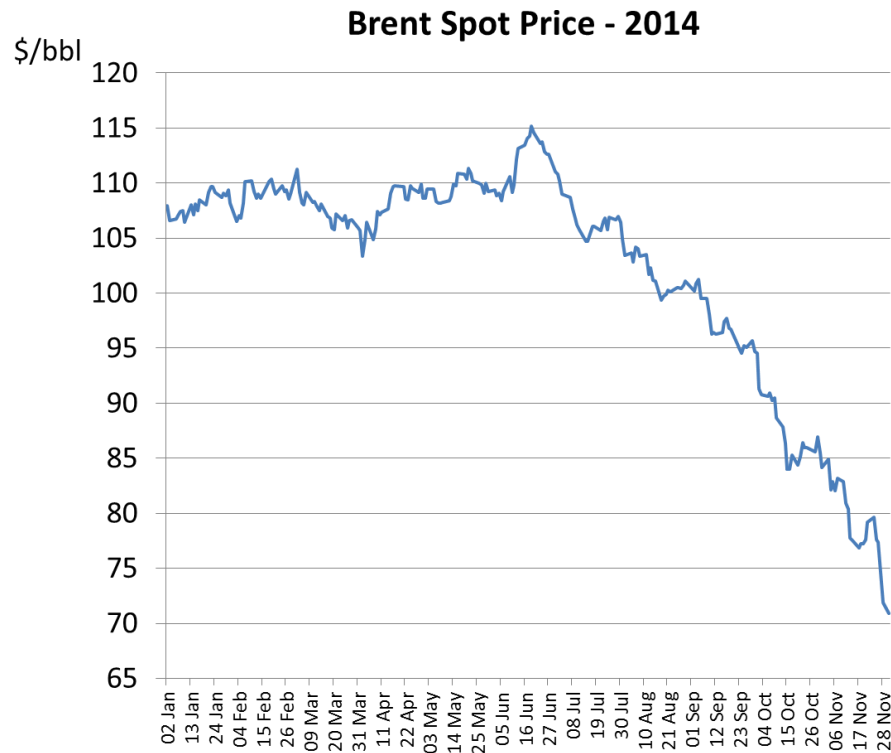
- IMF World Economic Outlook (Oct. 2014)

4.0%  3.8% in 2015

- IEA global oil demand (Oct. 2014)

92.6  92.4 Mbd in 2014

Impact of oil price sudden collapse?



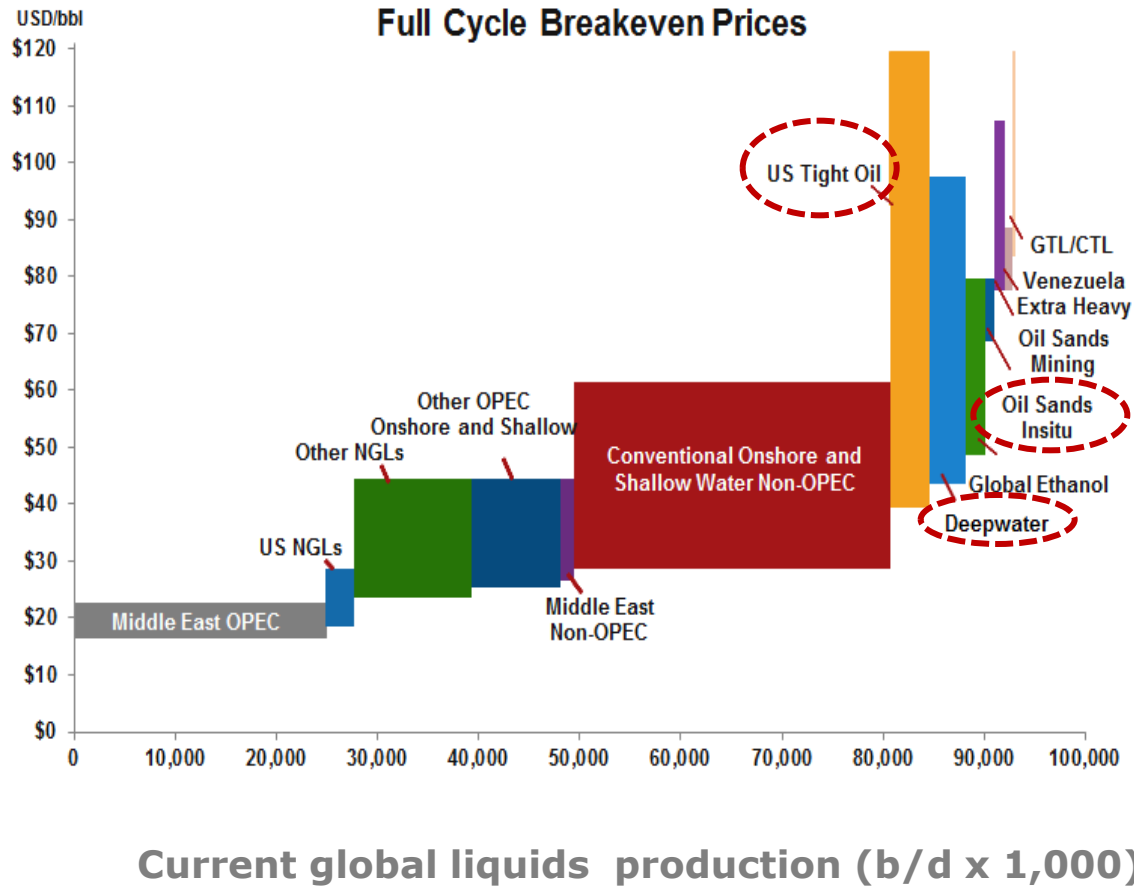
Source: EIA - US Energy Information Administration

- Reduced expectations of economic growth
- Abundance of oil and gas supply
- OPEC's quest for market share
- New geopolitical challenges

**It is early to draw long-term conclusions
and clear forecasts for the future**




Some higher cost producers might face difficulties with lower oil prices



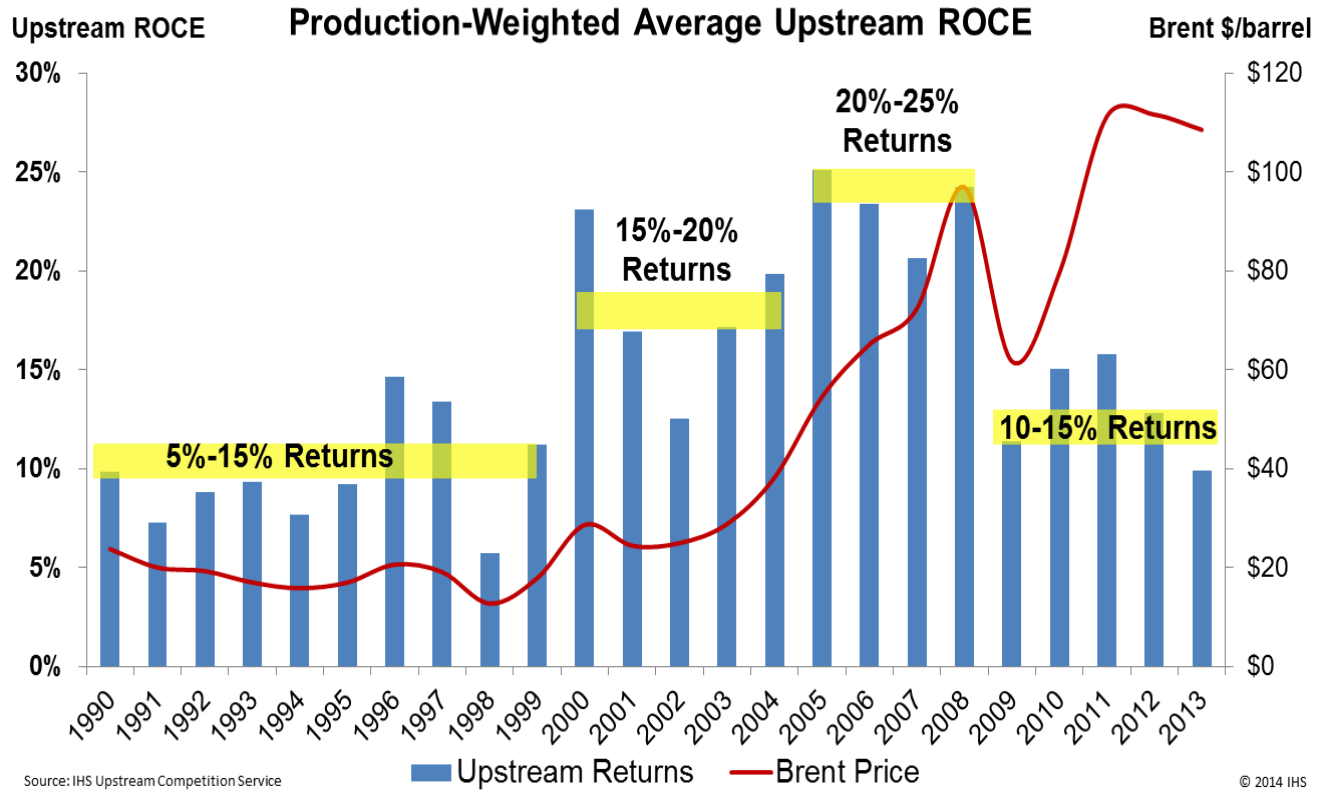
IOC's, NOC's and E&C Companies' current predicament



Scylla and Cariddi

- Much higher production costs
 - Difficult, unconventional new reserves
 - More expensive supply and execution chain
 - Increase in project complexity
 - Lower margins, lower returns
- 
- Tighter capex, cost control discipline
 - Quest for improved, new execution approaches

Consequences: Declining oil company returns even in a high oil price environment

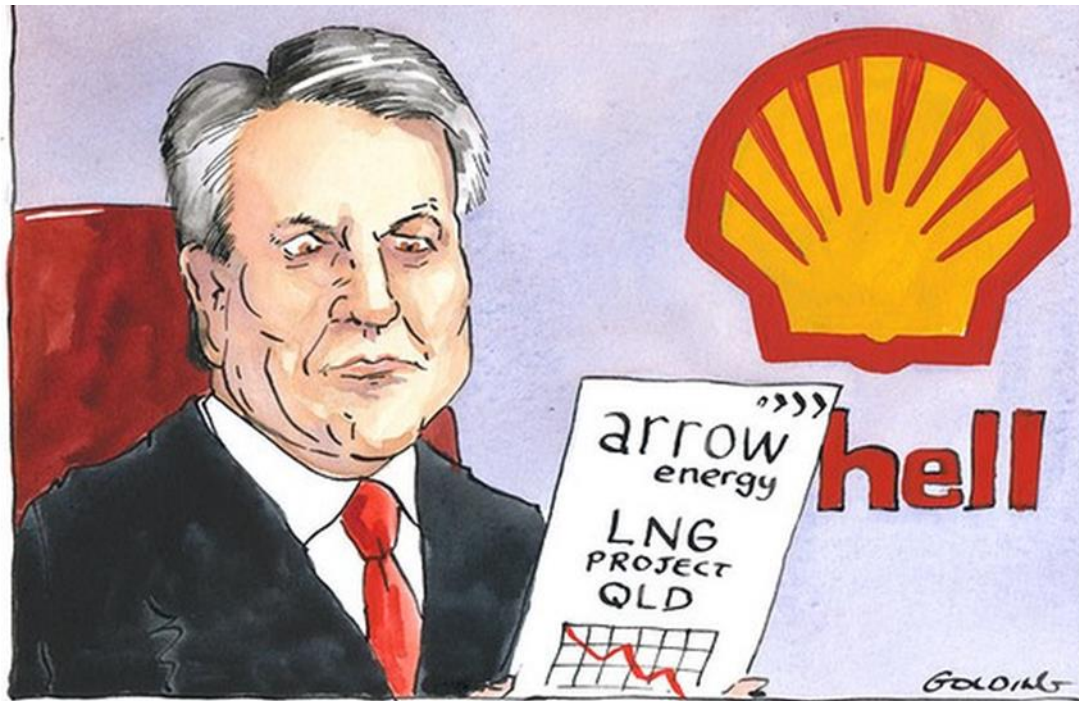


ROCE data include Anadarko, Apache, BG Group, BP, Chevron, ConocoPhillips, Eni, ExxonMobil, Hess, Marathon Oil, Occidental, Repsol, Shell, Statoil, and TOTAL.
Upstream ROCE defined as [Upstream Net Income / Upstream Year-End Net Capitalized Costs].

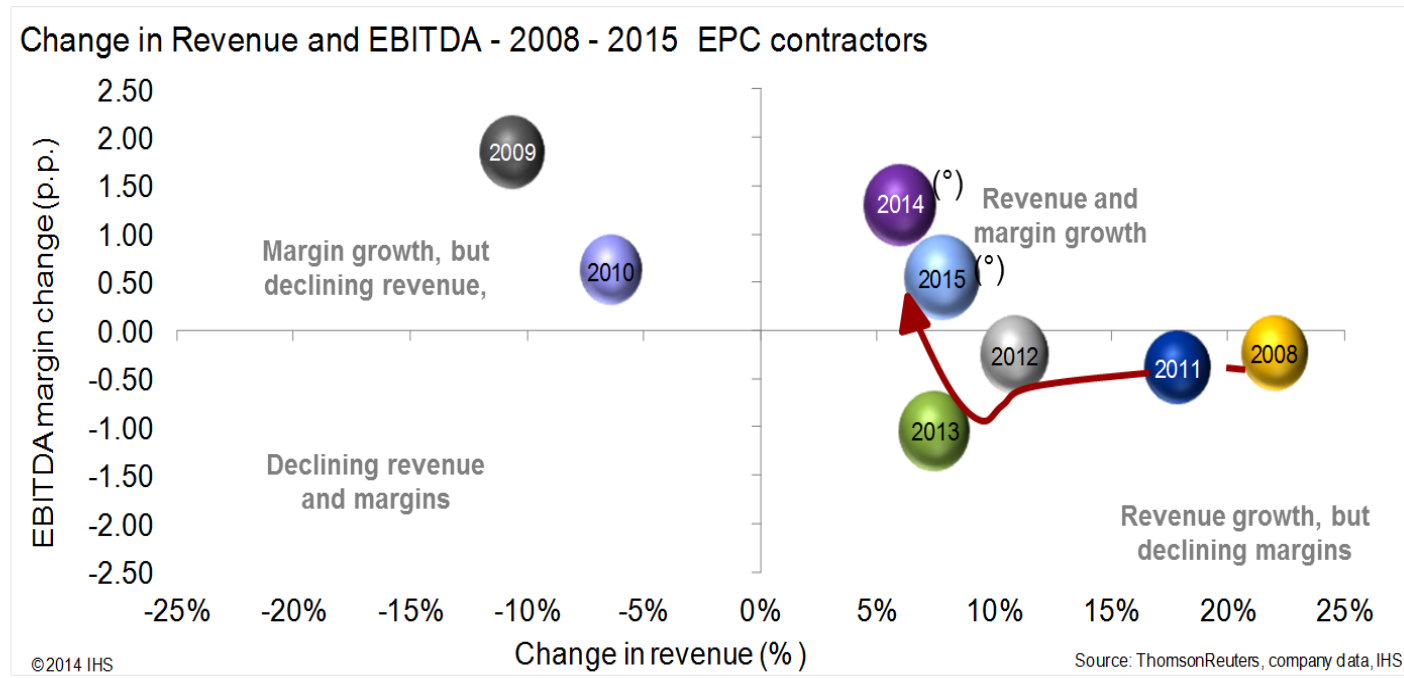


Consequences:

- Numerous project cancellations, postponements
- Tighter Capex discipline from oil companies



Consequences: Declining growth rate and margins for EPC contractors



(*) A sample of 21 largest global contractors (US, European, Japanese, Korean)

(°) Forecast

EPCs likely to focus on cost reductions and productivity to improve margins

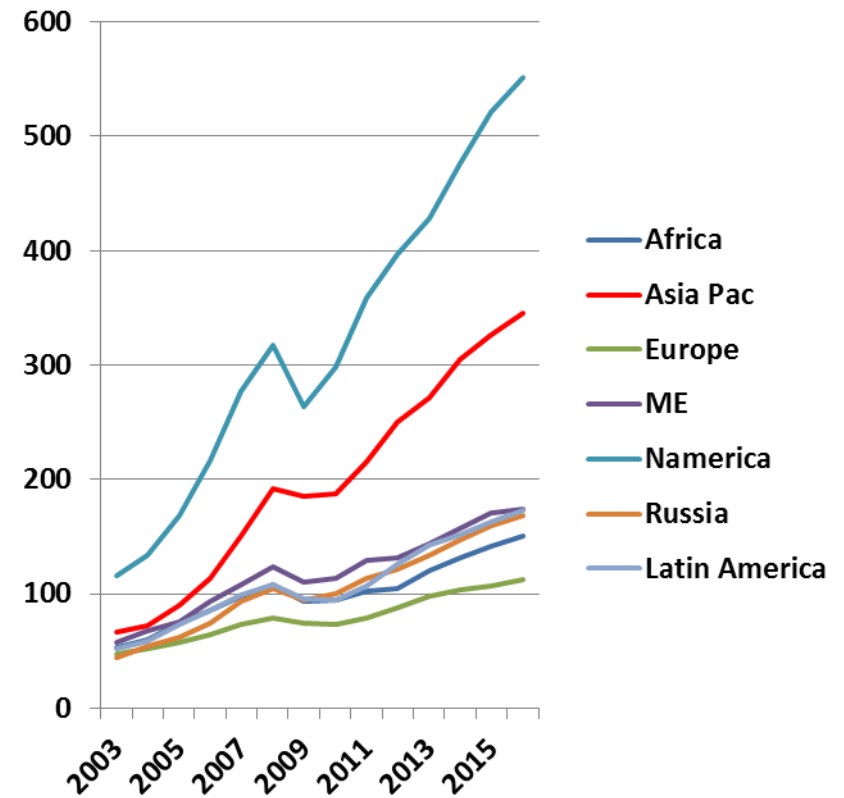


"Less Bang, More Buck"

Rapidly Rising Project Execution Costs

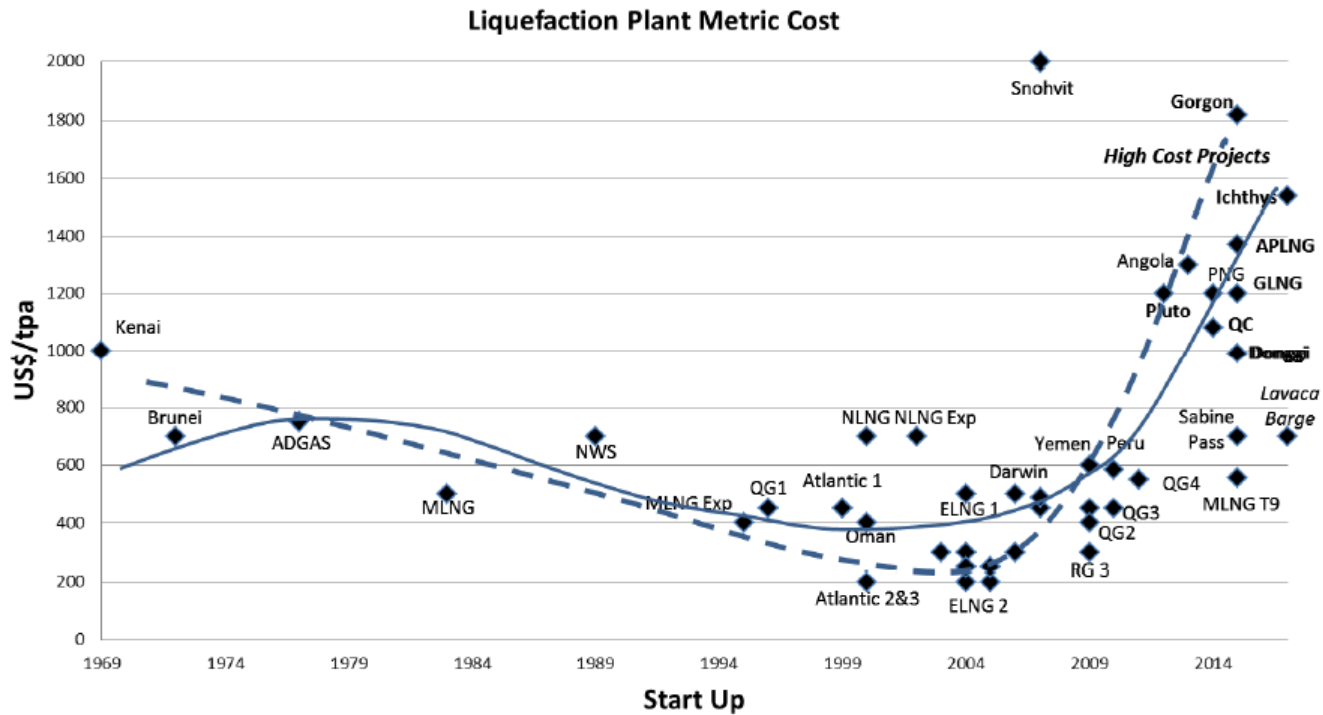


IHS Regional Upstream Cost Indexes



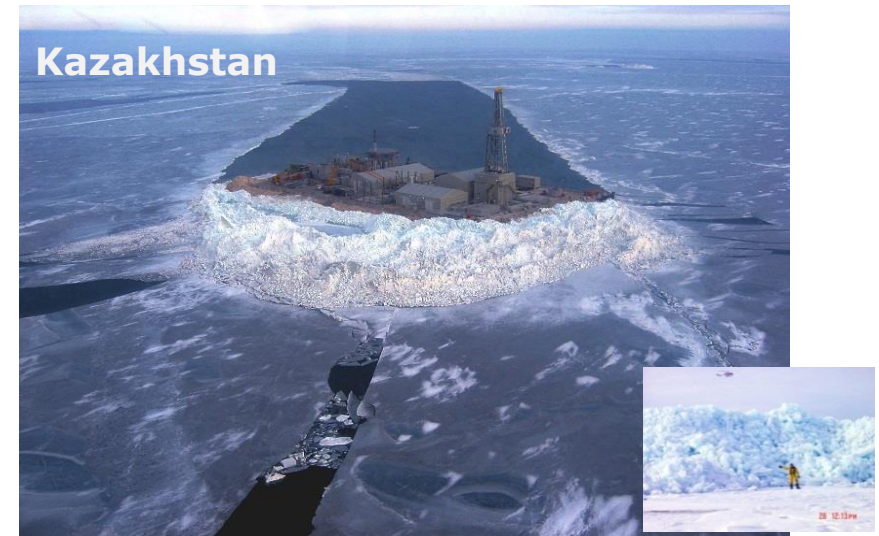
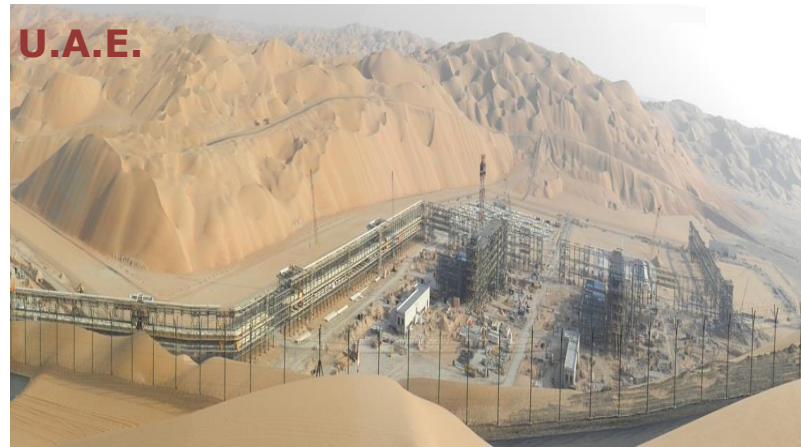
Source: IHS (2013)

Example: LNG liquefaction plants capital cost escalation (US \$)



Source: Author, Oxford Institute for Energy Studies (2014)

Many causes: e.g. difficult and inaccessible locations...



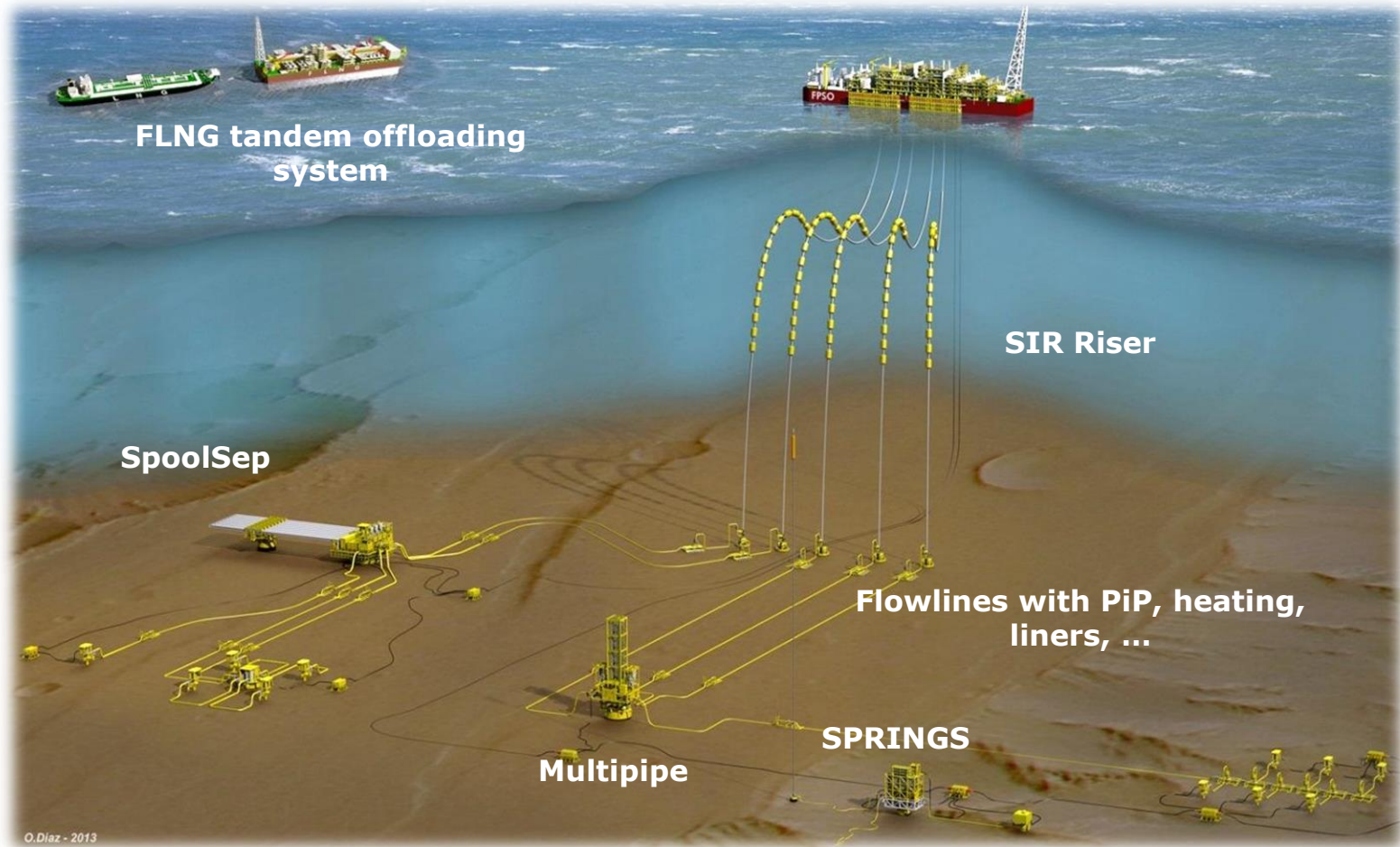
New process solutions - e.g. Floaters

World first offshore-moored FSRU



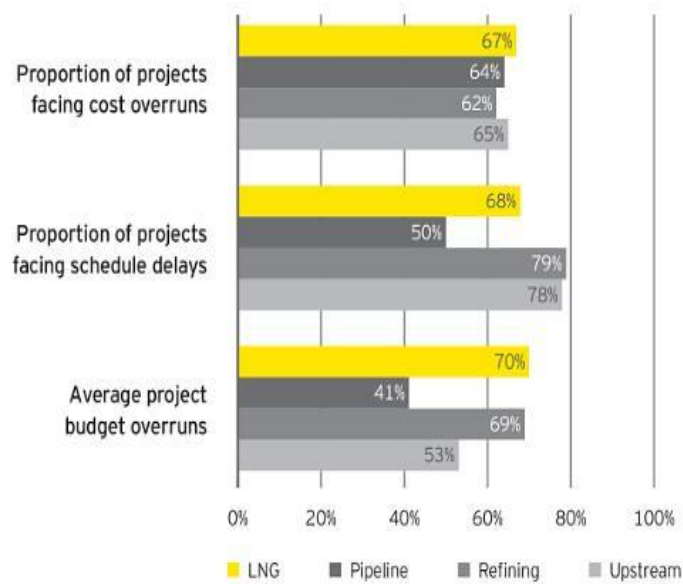
New process solutions - e.g. subsea

Advanced subsea processing



Drama in mega projects execution: increasing cost overruns and delays

Proportions of projects facing cost overruns, schedule delays
and average project budget overruns



Source: EY research and analysis.

500 B US\$ incremental cost
increase
(from US\$1,200 B US\$ original estimate
to US \$1,700 B US\$)

on a sample of 365 projects
reviewed

**Project delivery success is decreasing,
especially in industry segments
where complexity and risks are considerably higher**

Barriers to successful project delivery

SUPPLY CHAIN

- Higher costs throughout the entire supply chain
- Tight labor market
- Skills shortage



**E&C is
"Risky Business"**

- Underestimation of project costs
- Inaccurate designs
- Insufficiently thorough planning
- Poor selection and management of (sub)contractors
- Improper contracting schemes

EXECUTION

STAKEHOLDER REQUIREMENTS

- Conflicting understanding of *project success*
- Ambiguity of *project goals*
- Often unpredictable role of Gov'ts, local authorities, NGOs, ...
e.g. Local content, new legislation

- Bureaucratic barriers, regulatory and permitting issues
- Geopolitical challenges

REGULATIONS

**Scale/complexity often outgrow the ability
of even the largest companies**

Efforts to reduce CAPEX and improve project execution

- More accurate, more realistic initial project estimates

- More design optimization and value engineering

- Broader acceptance of alternative Vendors from lower cost markets (particularly China)

- Re-visitation of execution approaches and contractual forms
 - Technology development programs for cost reduction
 - Smaller EPC LSTK packages
 - Return of PMCs
 - Paid offers on large projects
 - Direct execution of certain EPC components by some IOCs
 - Frame agreements with quantity discounts - Collaborative sourcing
 - Alternative contractual arrangements e.g. "Hybrid Convertible"

Conclusions



- Investment growth to continue, but more cautiously
- Shifting and somewhat unpredictable global markets
- Growing importance of unconventional, deep and ultra-deepwaters, difficult locations
- Higher tech areas to dominate IOC's and "Western" EPC's worlds

**Great transformations, many opportunities,
with a series of contradictions**