



Capt. Marc Nuytemans – CEO EXMAR Shipmanagement nv

Fueling the Future



Athens, 21 May 2015

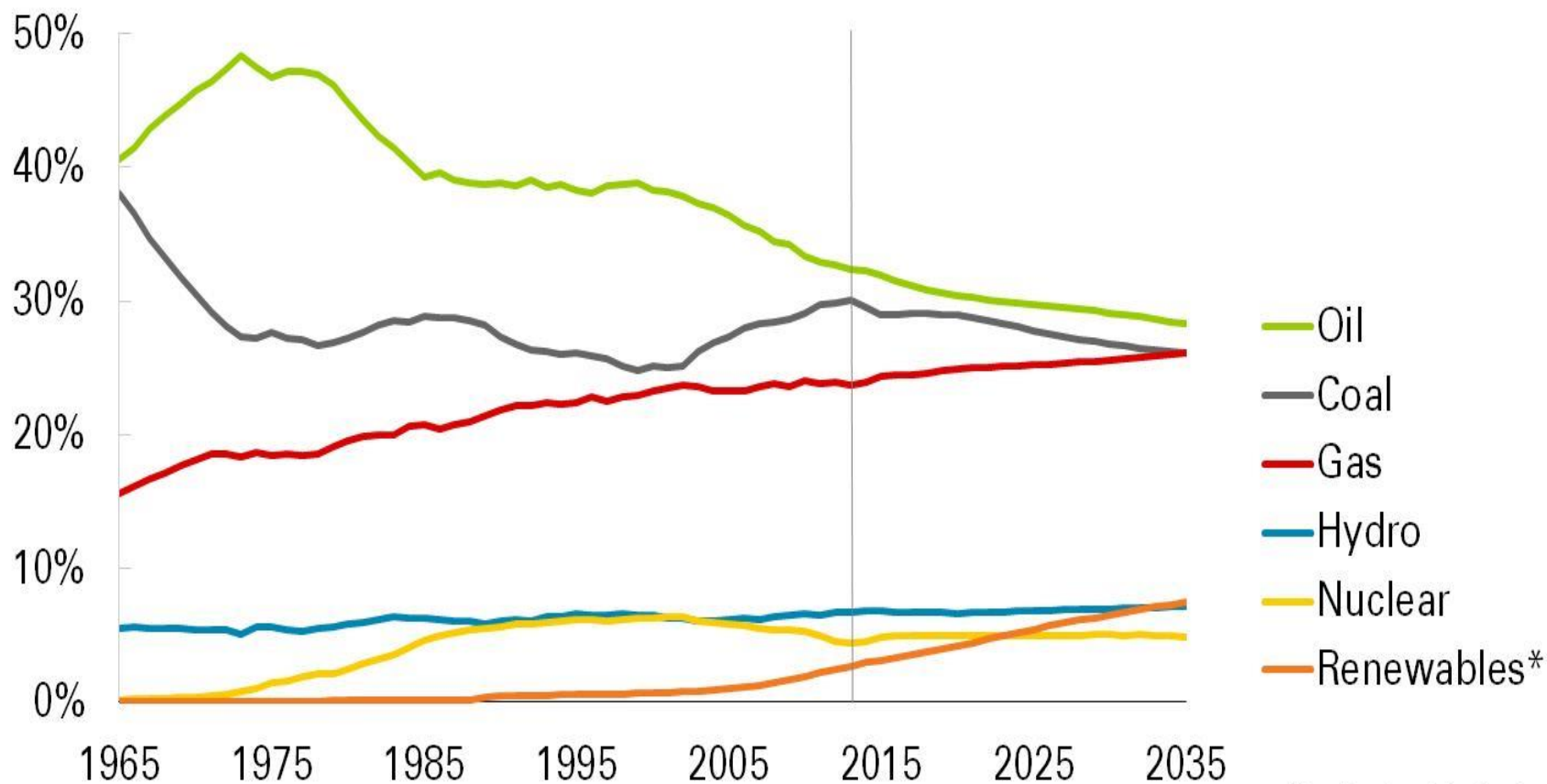




The Post-Fukushima Age



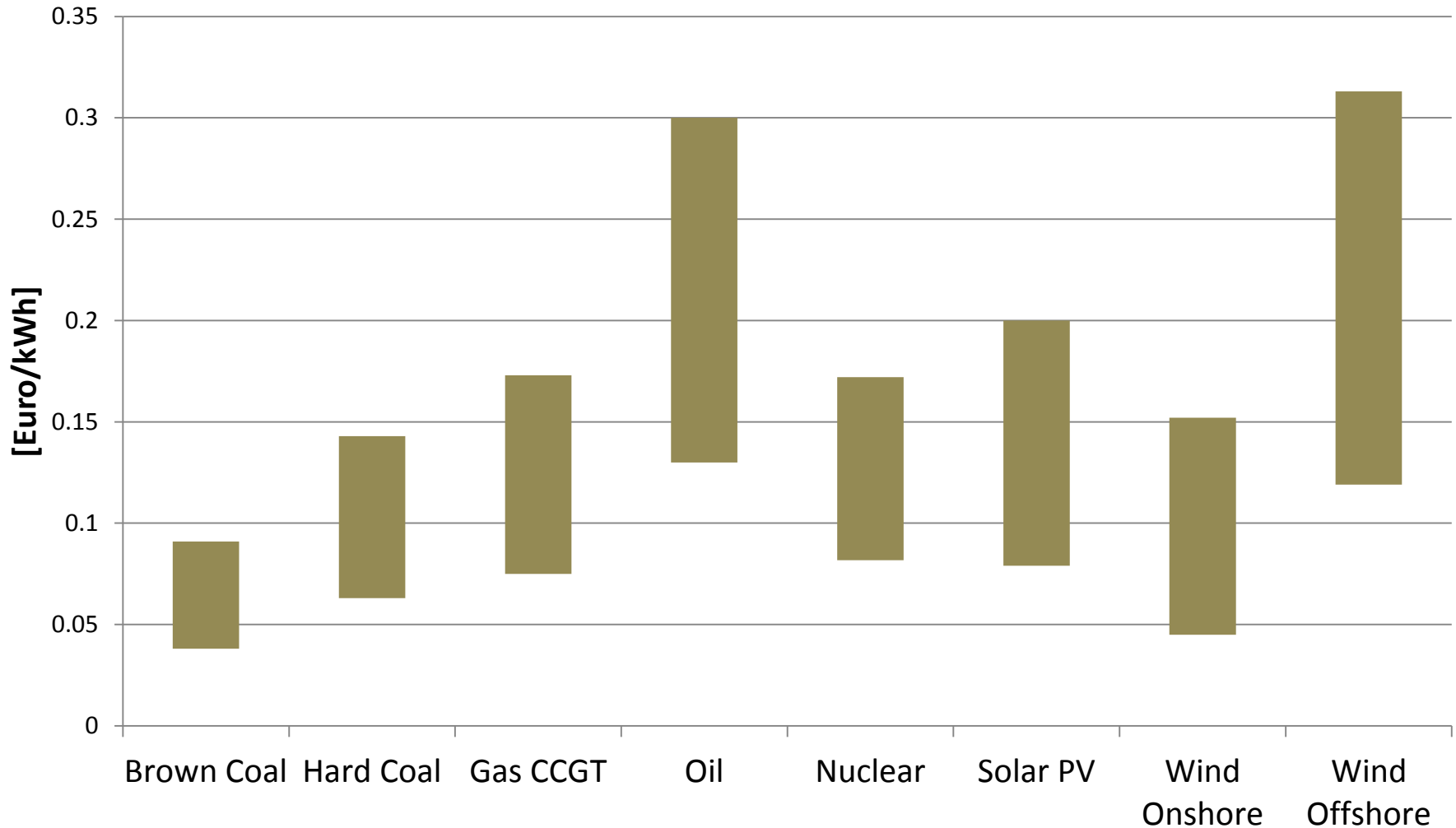
Shares of primary energy



*Includes biofuels

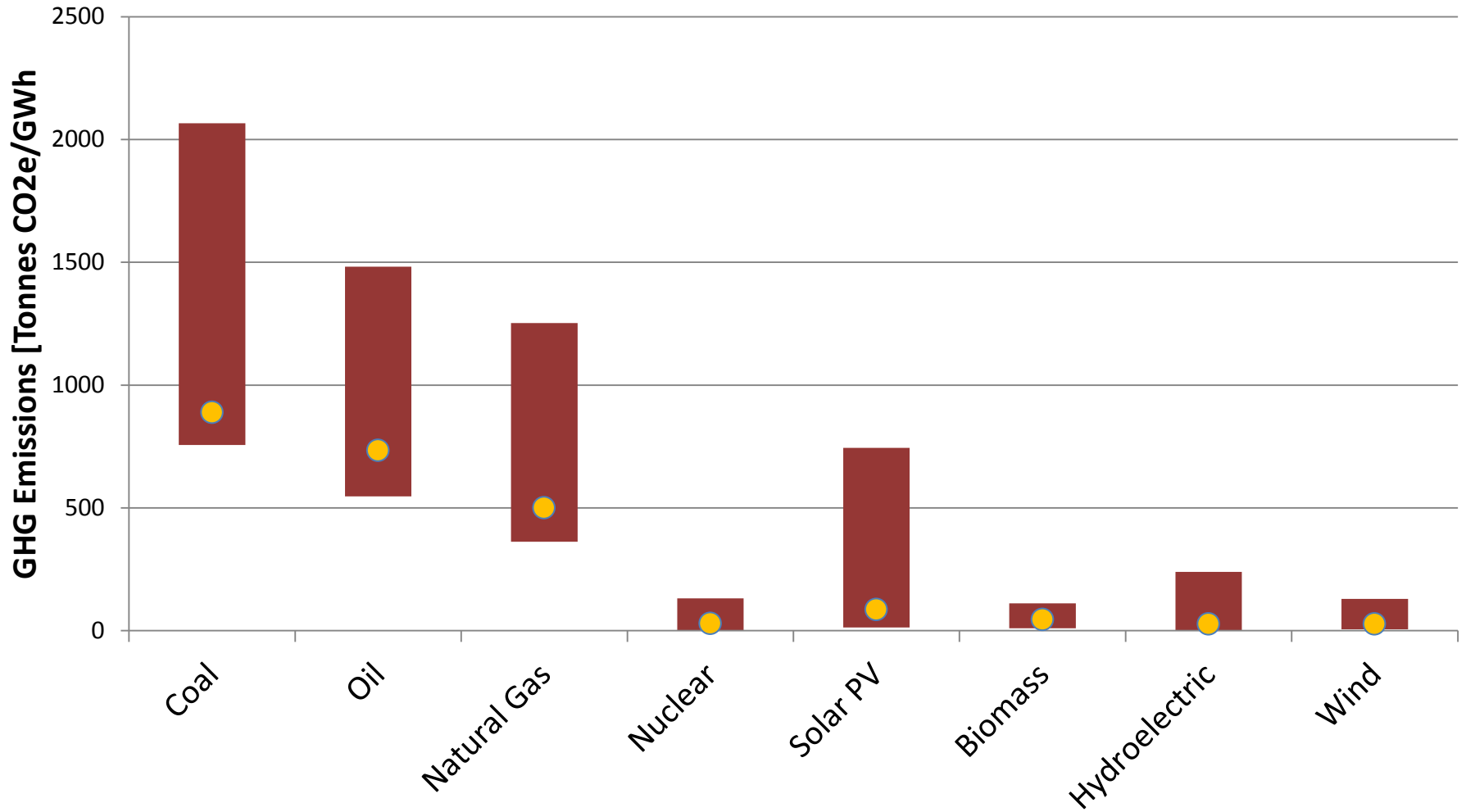
Levelized Cost of Energy by Energy Source

Electricity Generation

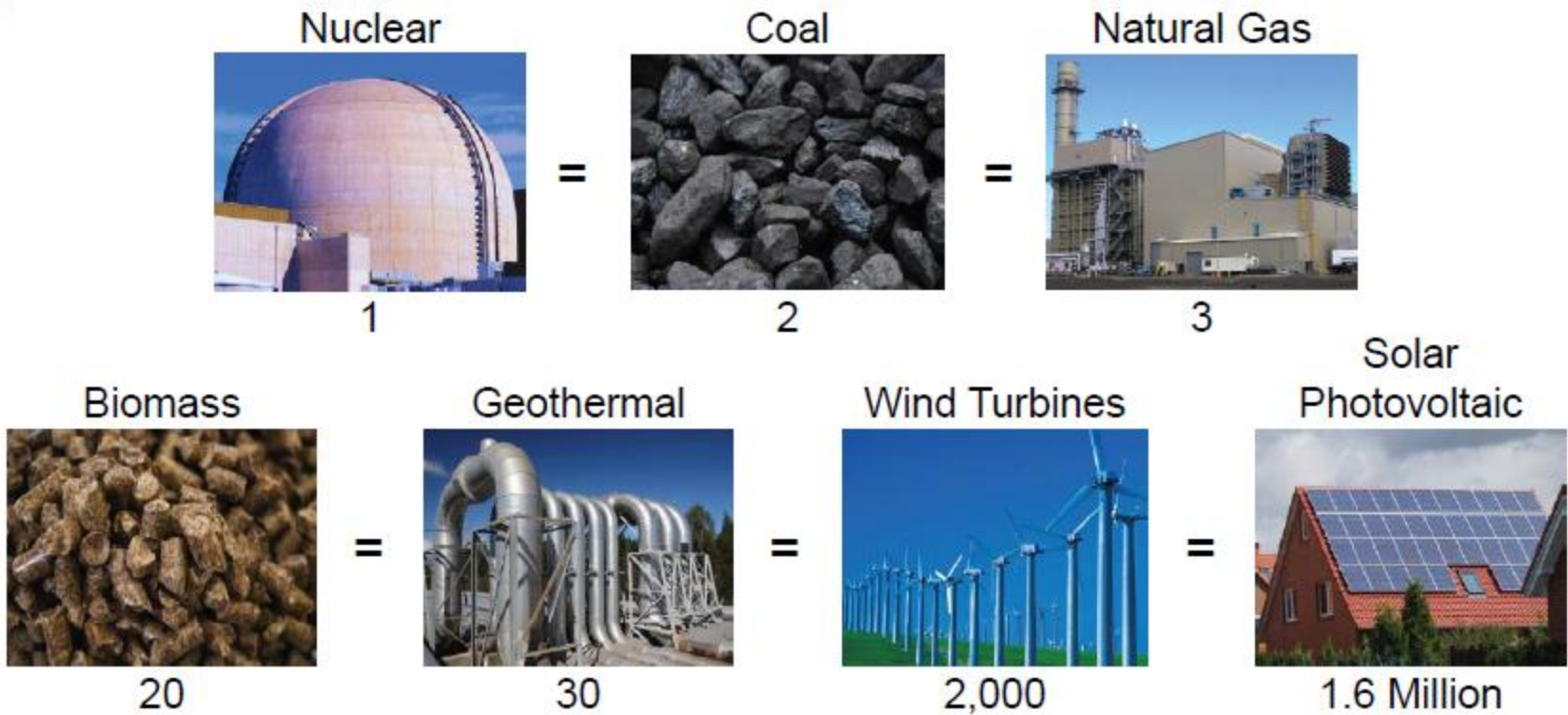


Average Emissions by Energy Source

Electricity Generation

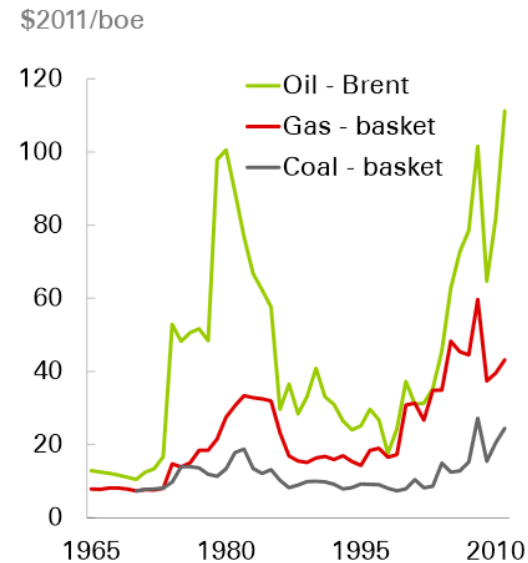
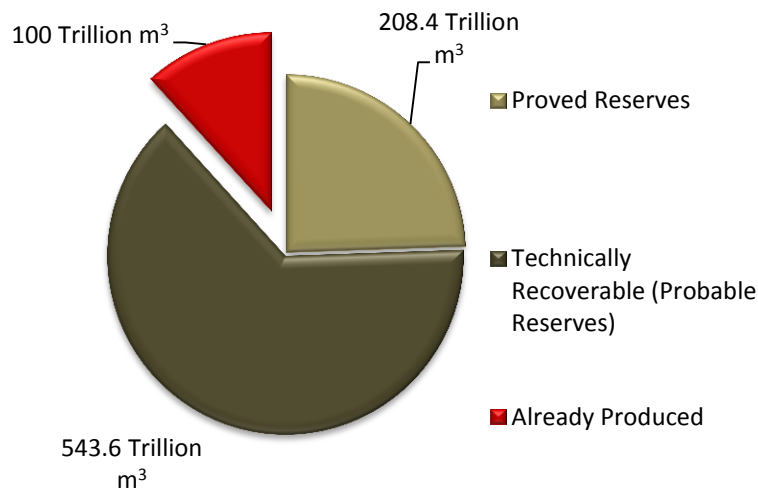


A Sense of Scale



Annual Electricity Consumption of 1 million homes

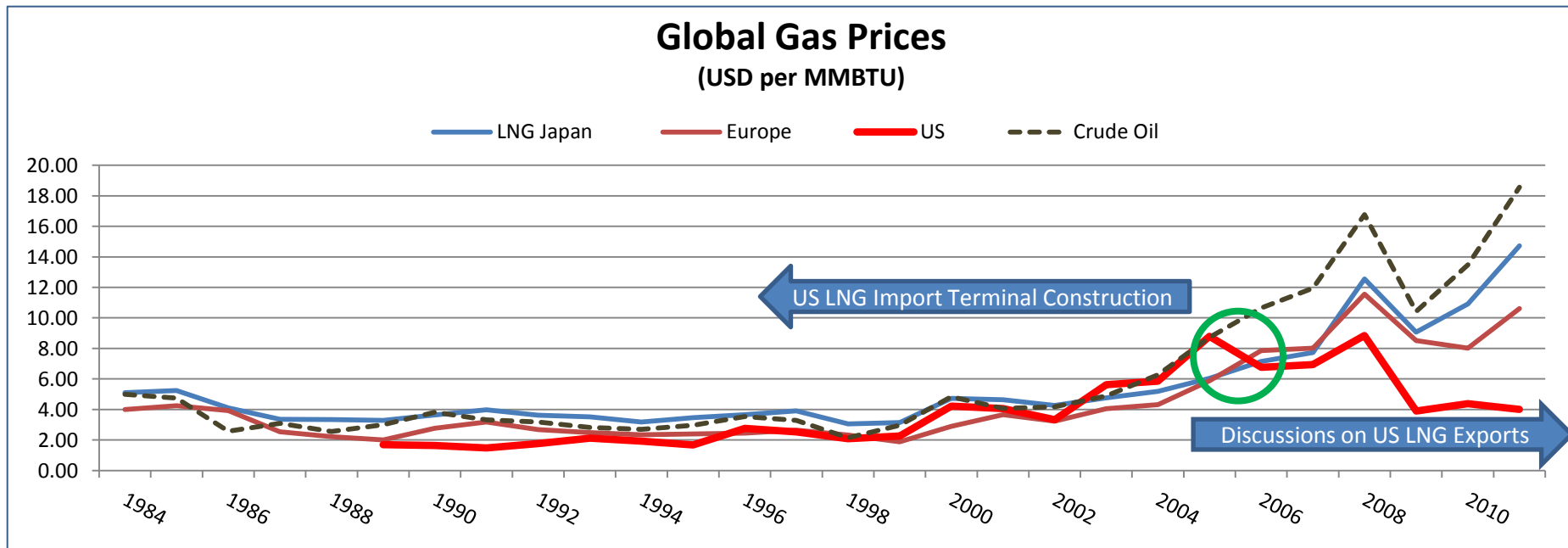
- Abundant and increasing proven reserves
 - Significant gas discoveries are frequently made
 - Rapid Technological Advances
- Cheaper than oil, more expensive than coal
- The cleanest fossil fuel



Trends in the USA

The Shale Gas Revolution

- Tremendous amounts of natural gas resources
- From importer to exporter of LNG
- Revival of industry: power, steel, chemical, ...
- Competition for investments due to low energy prices
- First export license was granted in May 2011



Trends in Asia

“Green and/or Clean” Revolution?

- Japan
 - Post-Fukushima Age
 - No nuclear power vs economic reality
 - Significant increase in coal & gas imports
- China
 - Smog problems
 - Green revolution to move away from coal
 - Large amount of investments in gas infrastructure
 - Subsidies in solar pv
- India
 - Increasing role of gas in energy portfolio



Current Trends in Europe

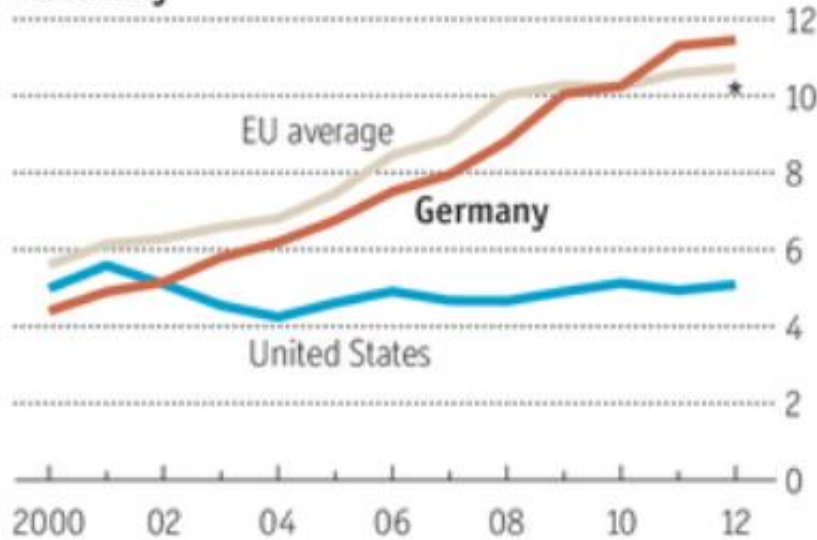
- Severe economic crisis that is ongoing
- Lower energy consumption due to that crisis
- The move towards green energy - Europe 2020 targets
 - 20% lower greenhouse gas emissions compared to 1990
 - 20% energy from renewable energy
 - 20% increase in energy efficiency
- The only region to have voluntarily submitted to such targets
- But: expensive green energy is being offset by cheaper (and dirtier) coal consumption!
 - Shale gas is consumed in US & US coal is exported to Europe



Europe's Handicap: High Industrial Energy Prices

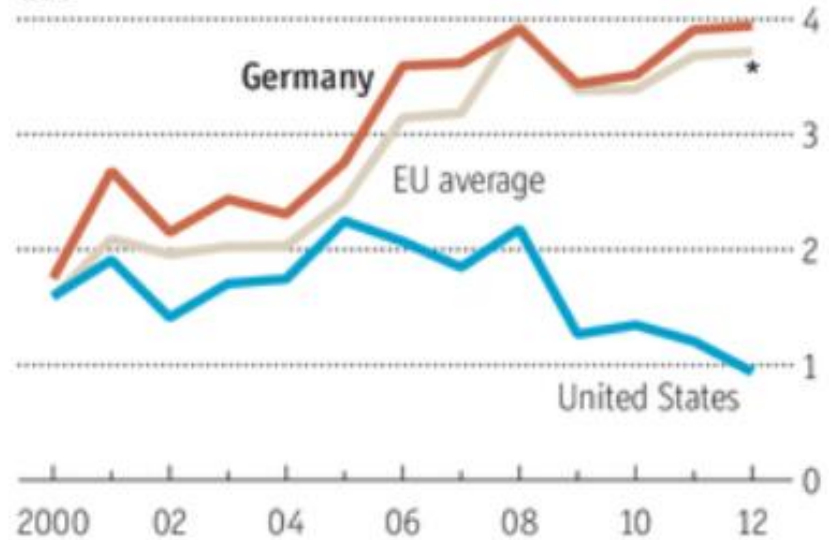
Industrial energy prices, € cents per kWh

Electricity



Source: Enerdata/McKinsey

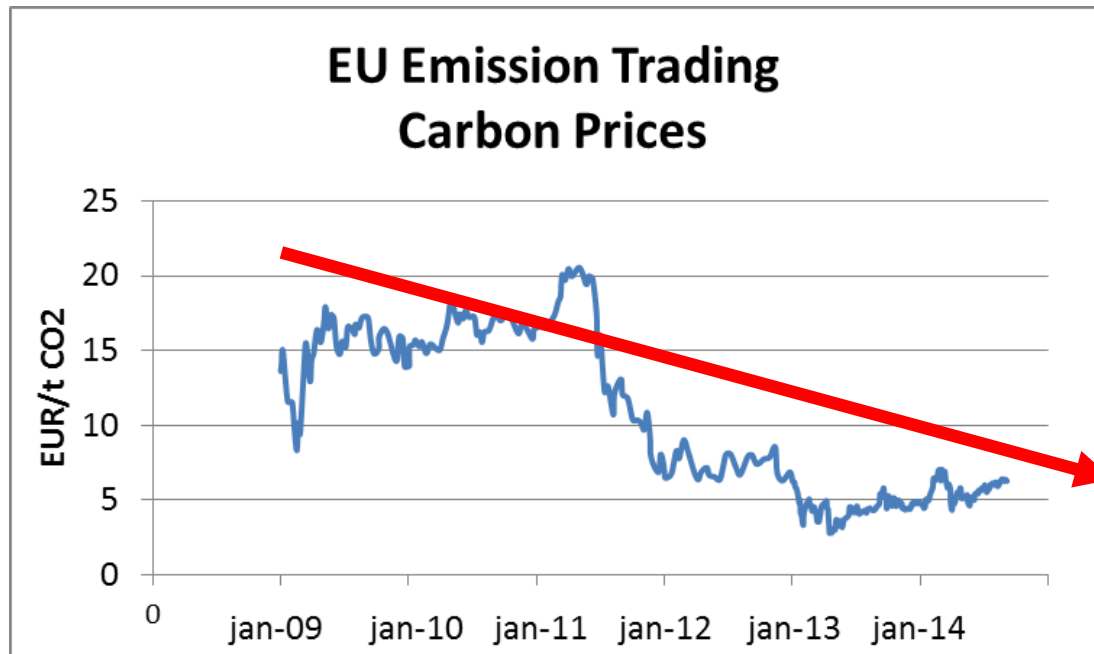
Gas



*Estimate

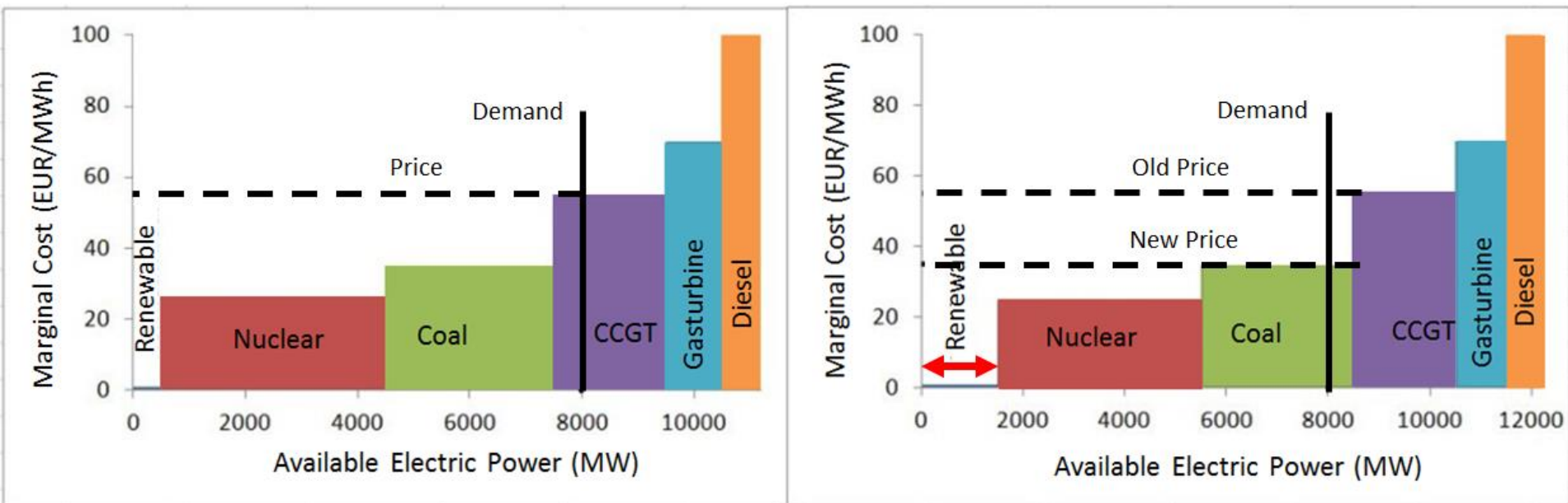
Why Are Natural Gas Fired Plants Being Shut Down?!

- Low carbon prices favor coal-fired power plants
- Current carbon prices are much lower than was intended
 - System was invented in 2000
 - Initially prices floated between 20-25 EUR/t



Subsidizing Green Energy Is Also Not Helping...

- Dispatching of power normally occurs via marginal cost levels
 - Renewable energy however gets priority access to the grid
 - Renewable energy producers receive a minimum price for green energy with a guaranteed return on investment
 - Power suppliers have an obligation to buy a certain amount (quota) of Renewable Energy Certificates from green power producers
- This mechanism hurts gas-fired power generation



What Does Europe Want?



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Green Energy is Heavily Subsidized





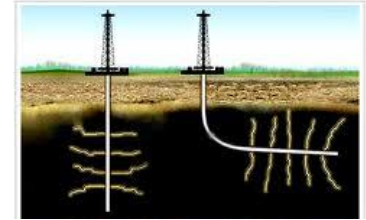
Coal is Used to Balance Energy Prices...



Ok, but we still have to solve our problem

So Where Will the Gas Have to Come From?

- Pipeline imports
 - UK (interconnector pipeline)
 - Netherlands
 - Russia (not the most popular solution at the moment)
 - Pipeline inefficient for distance >2500km
- Shale Gas in Europe?
 - More complex geology in Europe than in USA
 - Less incentives for landowners (no access to royalties)
 - No clear strategy towards shale gas
 - Different stance towards shale gas in the various countries
- LNG
 - Many LNG projects are being developed
 - Australia, USA, Canada, Mexico, ...
 - Iran sits on the 2nd largest conventional gas reserves
 - **Economics will have to be reviewed**
- LPG / Ethane
 - US shale gas created a boom in LPG production from 2.1mtpa in '08 to 10.4mtpa in '14
 - Ethane will be a new source for electricity production + feedstock for petchem industry



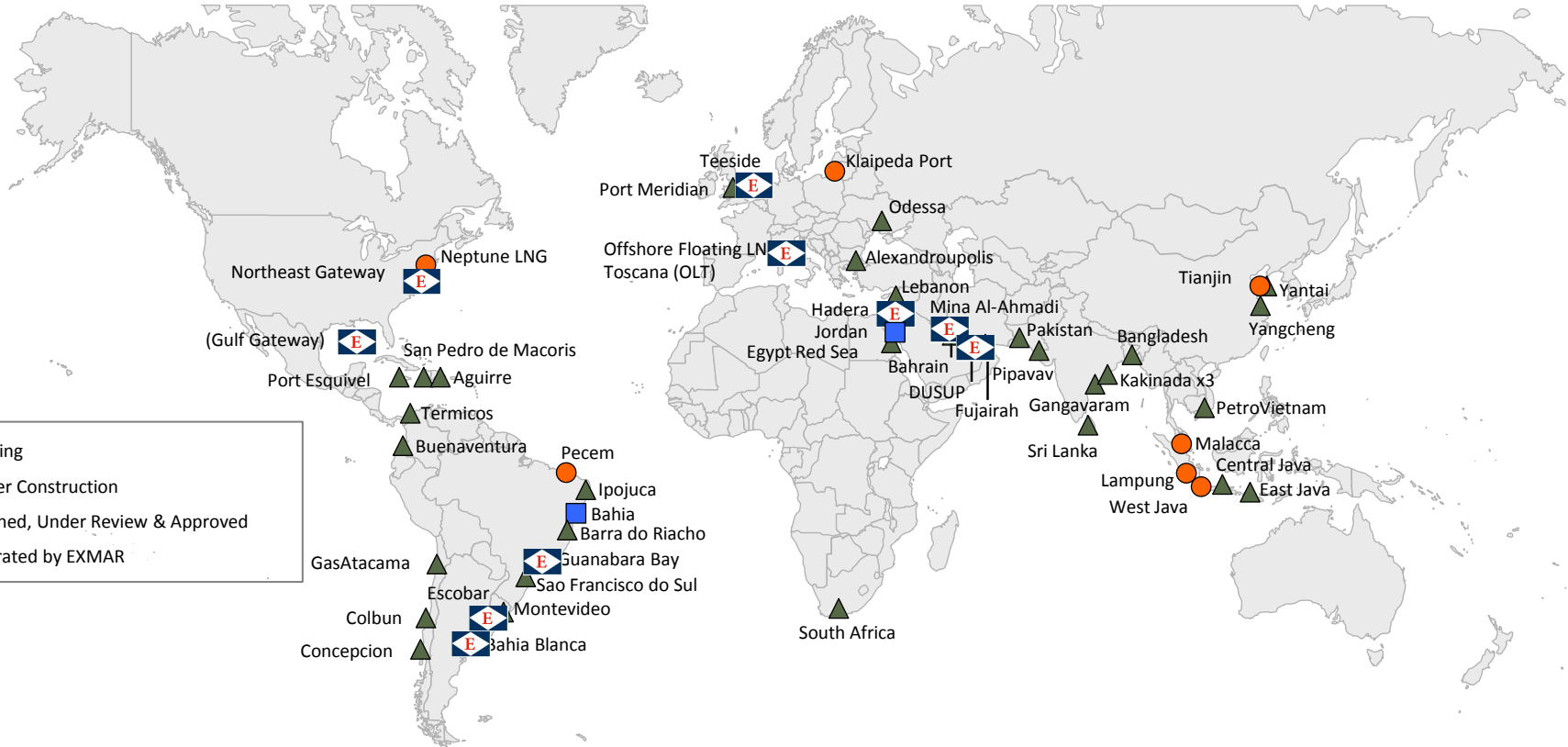
The Future

NEXT EXIT 

Evolution of Floating LNG Import Infrastructure

EXMAR is providing FSRUs since 2005

Floating regasification projects worldwide – 25 units projected to be operational by 2020



Benefits of floating regasification vs. traditional onshore structures

Serve new, niche LNG import markets more cost effectively

Faster implementation relative to onshore facilities

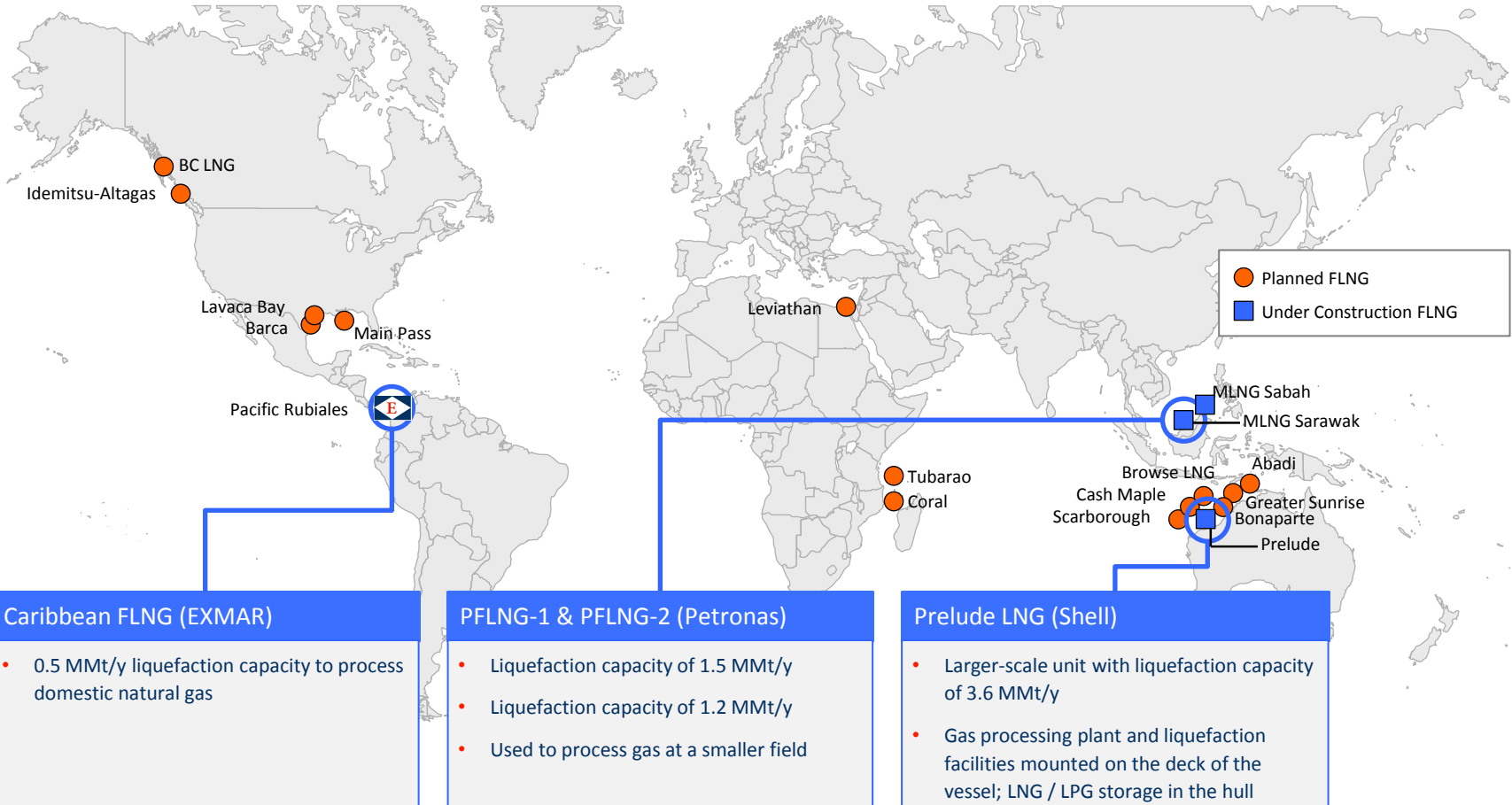
Can act as bridging solution until onshore terminal can be built

Inherent mobility provides flexibility to relocate assets

Evolution of Floating LNG Export Infrastructure

The World's **First** FLNG is Developed by EXMAR

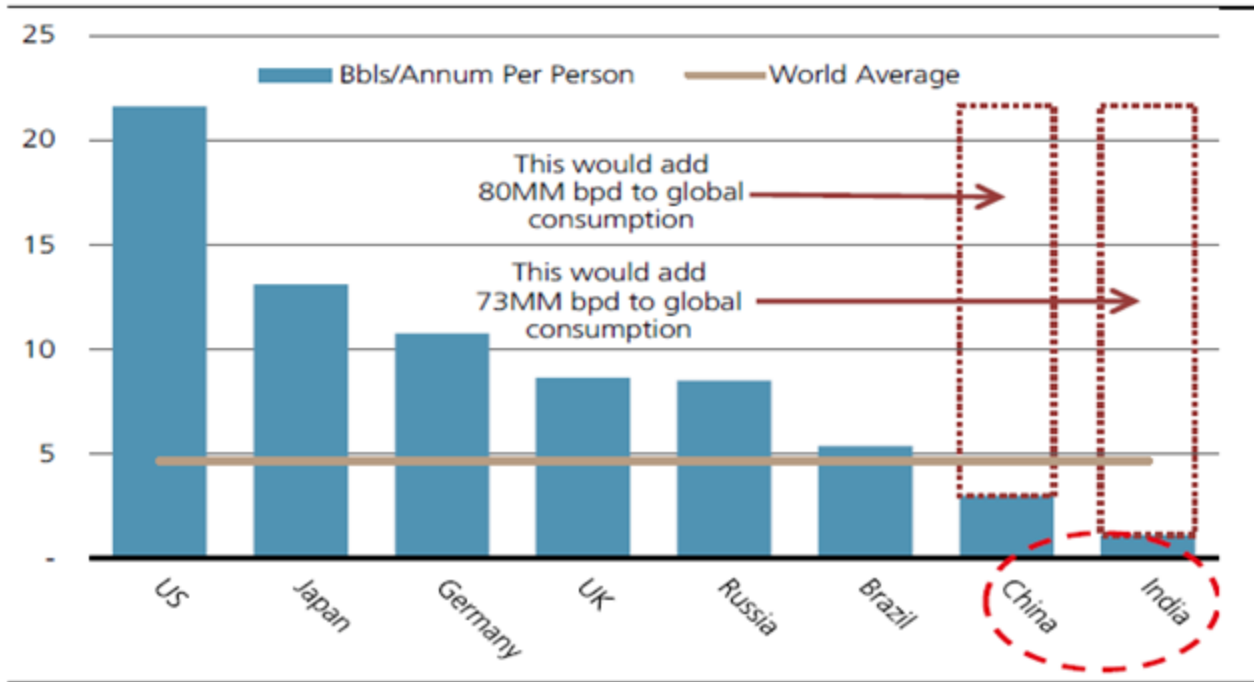
FLNG projects – planned and under construction worldwide



The FLNG solution provides an attractive and efficient alternative to traditional liquefaction

Reminder!

Figure 8: Oil Consumption Per Capita



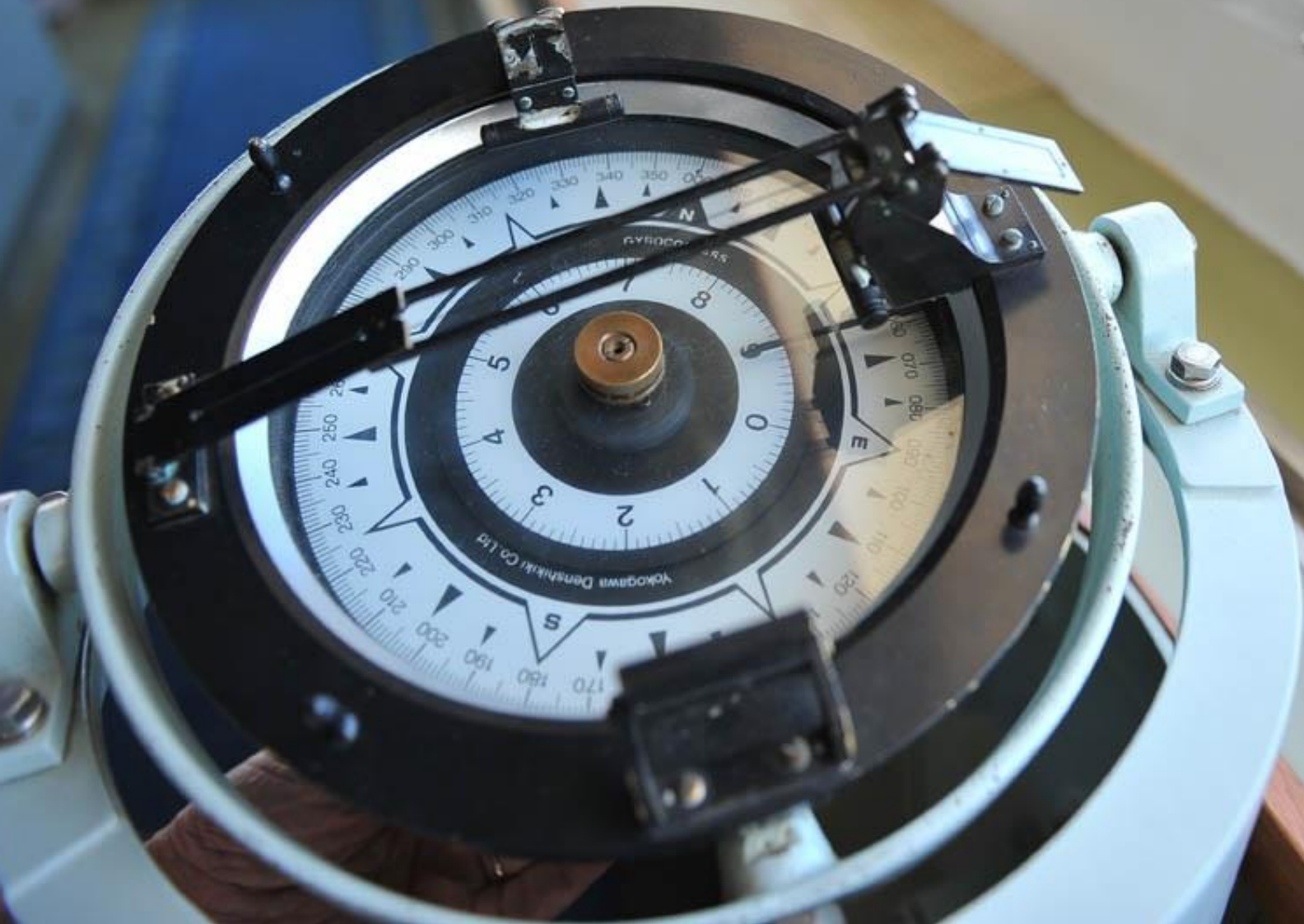
Source: BP Statistical Review, CIA World Factbook, UBS

Conclusions till 2035

- Globally the demand for energy continues (+37% till 2035)
- Fossil fuels will continue to meet most demand (81% in 2035)
- Gas will become the fastest growing fossil fuel (+1,9% pa) and it's used more and more to generate electricity (+23% pa)
- The increase in coal consumption slows (+0,8% pa)
- Supply and demand for oil will evolve over time despite vehicle numbers doubling
- Demand for oil grows modestly (+0,8%) due to improved efficiency and supply moderates as growth in US tight oil starts to level off
- Although renewables gain share rapidly (from 3% today to 8% by 2035) CO2 emissions keep rising highlighting the need for more energy efficiency, renewables and other non-fossil energy and switching from coal to gas
- Patterns of trade change in an increasingly more connected world
- Trade in LNG grows rapidly to overtake pipeline gas trade and oil flows shift to Asia

Source: BP outlook 2035

Questions & Answers



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