



Nicolas Saverys– CEO of EXMAR

Fuelling the Future - the New Dash For Gas



Delft, 13 February 2014

- EXMAR Roots and Transition
- Natural Gas in the Post-Fukushima Age
- The New Dash for Gas – The Big Potential of Floating LNG (FLNG)
- Conclusion



EXMAR's Roots and Transition



EXMAR

Pioneering Asset Owner and Operator

- Diversified and Independent Shipping Group
- Serving the international gas and oil industry
- Based in Antwerp, Belgium
- Shipyard roots – 1829
- Operates a fleet of about 40 gas carriers
 - 8 LNG regasification vessels and 5 LNG carriers
 - 30 LPG carriers, ranging from 3,500 – 85,000 m³
 - Active in the offshore industry
 - 1 Floating liquefaction unit (under construction)
- Development of turnkey and tailor made solutions



EXMAR's Origins in Shipbuilding

EXMAR's Transition: From Pure Shipping to Infrastructure & Integrated Logistics

1960's Internationally recognized shipyard



1980's EXMAR LPG Activities
1986 Start of LPG midsize fleet



2002 – Delivery of the first worldwide trading LNGC carrier designed and build in Korea for export: EXCALIBUR.



2005 – Delivery of the worlds first LNG Regasification Vessel EXCELSIOR.



1829 – **Shipyard** was formed at river Scheldt, close to Antwerp (Belgium).



1970's EXMAR LNG Activities
1978: Building, Owning Operating largest LNG Carrier "Methania"

1989: Start of EXMAR Offshore Activities



2006 – Developed Ship-to-Ship (STS) transfer. World's First Commercial STS Transfer in 2006 in GoM.



2015: Delivery of World's First LNG Liquefaction Unit on site in Colombia



EXMAR Company Structure

One-Stop-Shop Approach

EXMAR Business Divisions

LNG	LPG / NH ₃	Offshore
<p>LNG shipping 3 LNG carriers</p> <p>Floating LNG regasification 9 regasification units 1 FSRU under construction</p> <p>Floating LNG liquefaction 1 FLNG under construction</p> <p>Small scale & LNG bunkering</p>	<p>LPG/ NH₃ shipping +30 LPG carriers, ranging from 3,500 – 85,000 m³ Market leader in midsize.</p> <p>12 midsize LPG carriers newbuild program</p> <p>Floating storage projects</p>	<p>Floating Production & Storage units Semi-submersible and FPSO projects</p> <p>Accommodation Fleet of 3 accommodation / Work Barges</p>

Services

Shipmanagement: 1400 crewmembers to perform operations & maintenance of assets

Design & Engineering: (pre) FEED studies, project management, plan approval and on site newbuild supervision.

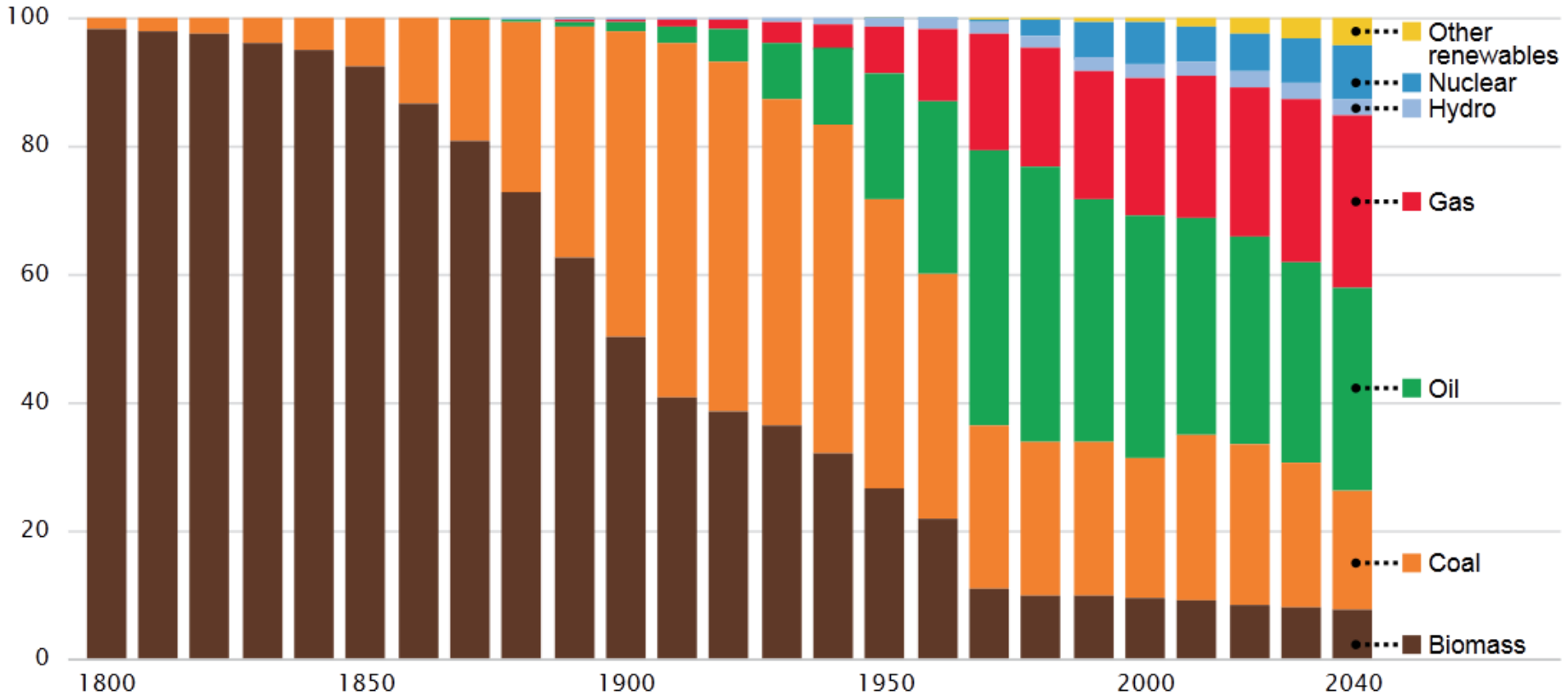
Insurance brokerage

Travel agency



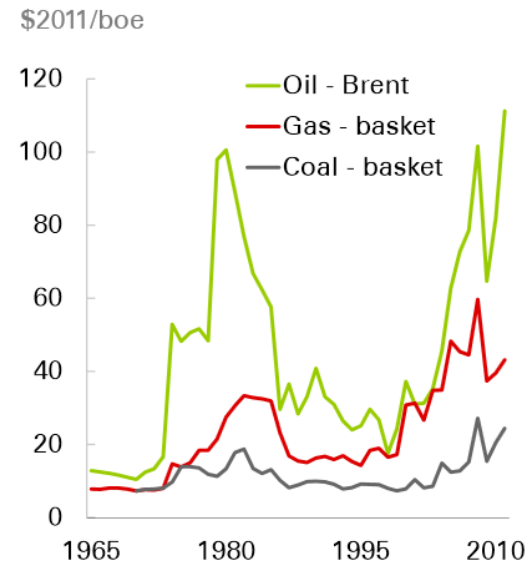
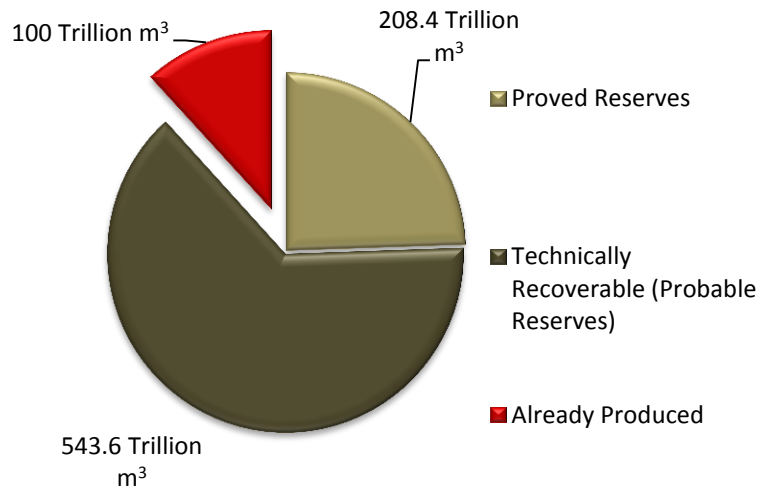
Natural Gas in the Post-Fukushima Age

The World's Continuously Changing Fuel Mix



Primary Energy Consumption: Electricity Generation; Transport; Industry; Heating; (...)

- 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

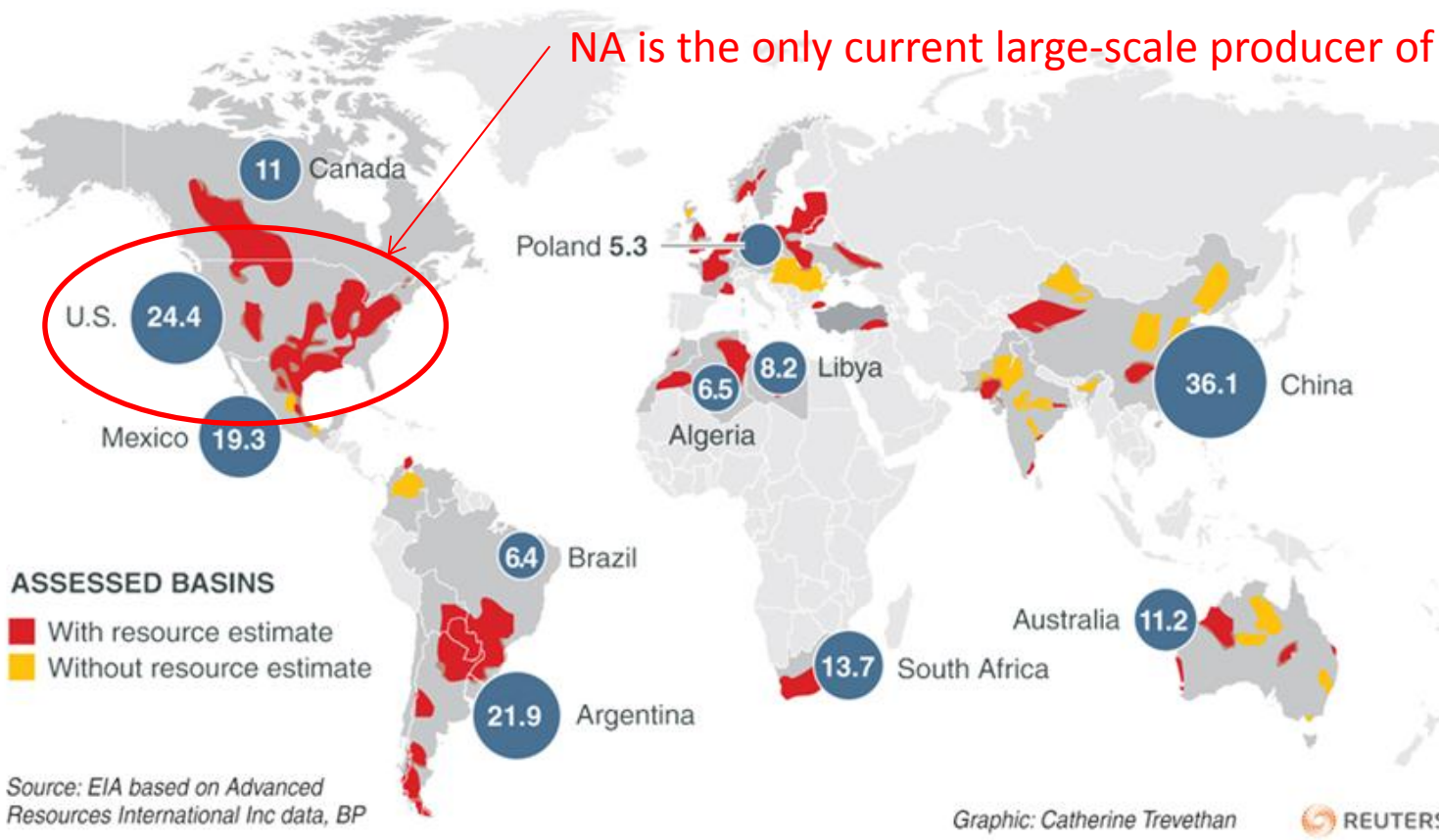




EXMAR

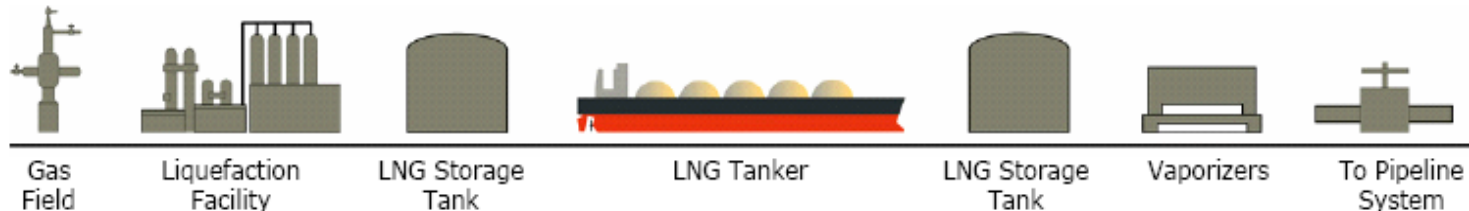
The Enormous Resource Potential of Shale Gas

● Top reserve holders 200 - In trillion cubic metres

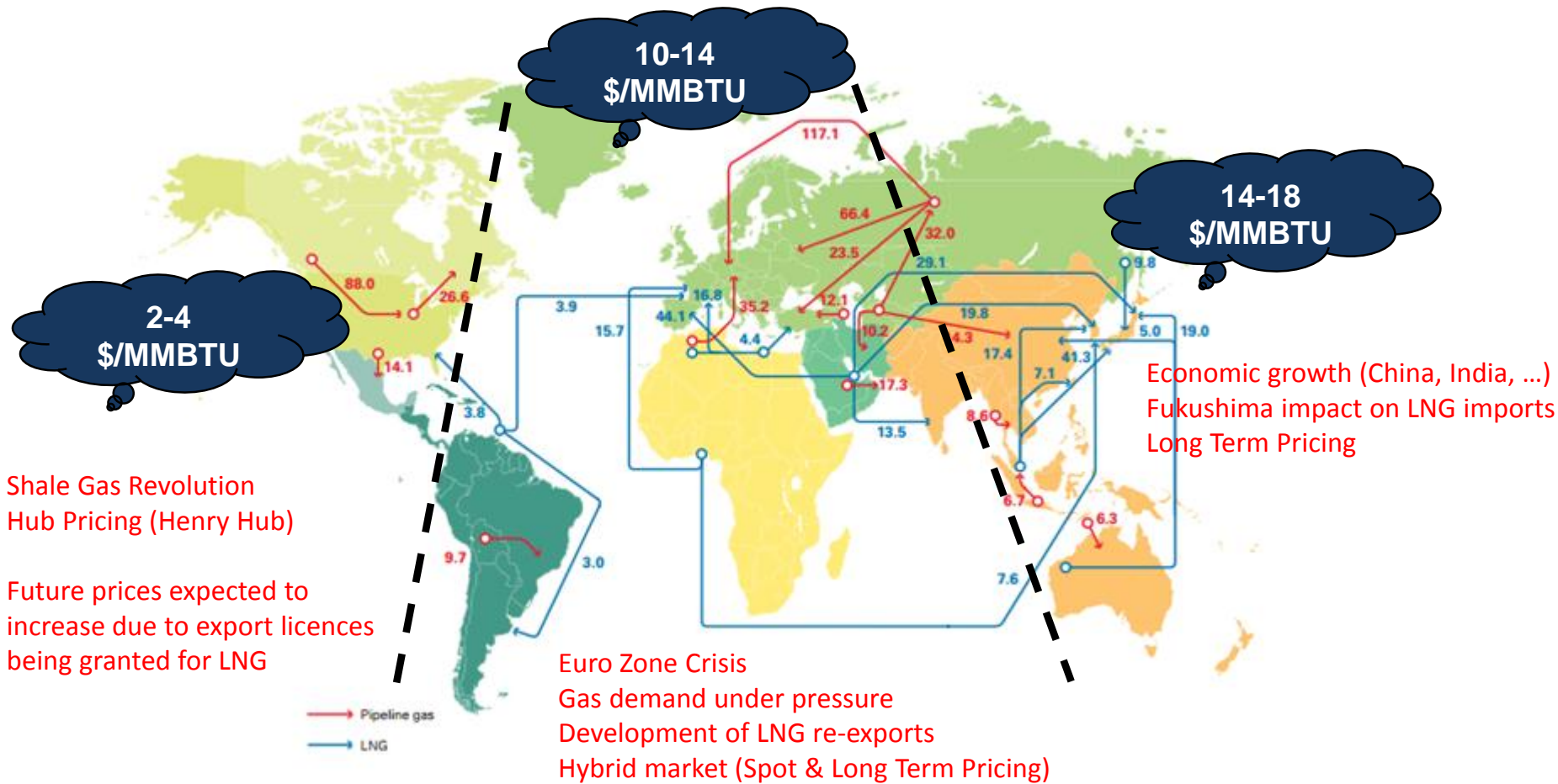


Natural Gas 101: What is LNG?

- Natural Gas (NG) is a fossil fuel
- Two ways of transporting Natural Gas:
 - Pipeline transport;
 - Shipments of Liquefied Natural Gas
- Liquefied Natural Gas (LNG)
 - Low temperature of -160°C
 - Volume is reduced by 600 times
 - Particularly suitable for large distance transport



The Non-Uniform (L)NG Industry: Natural Gas Prices per Region

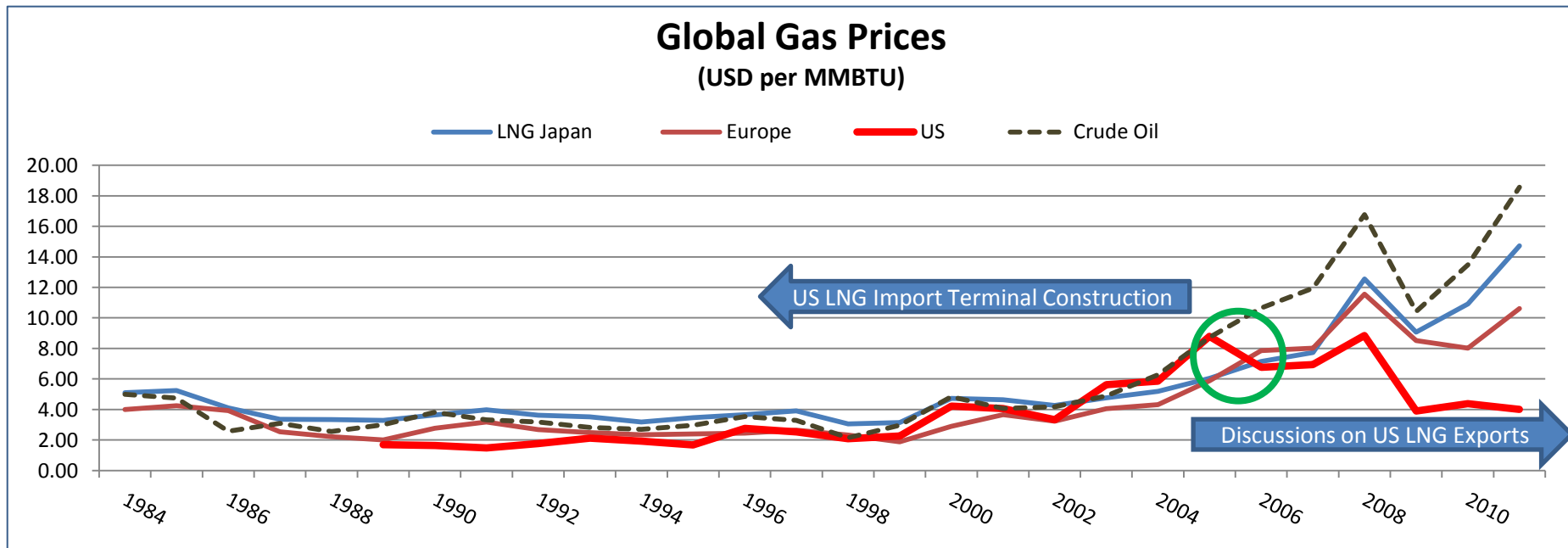


MMBTU = Million British Thermal Units

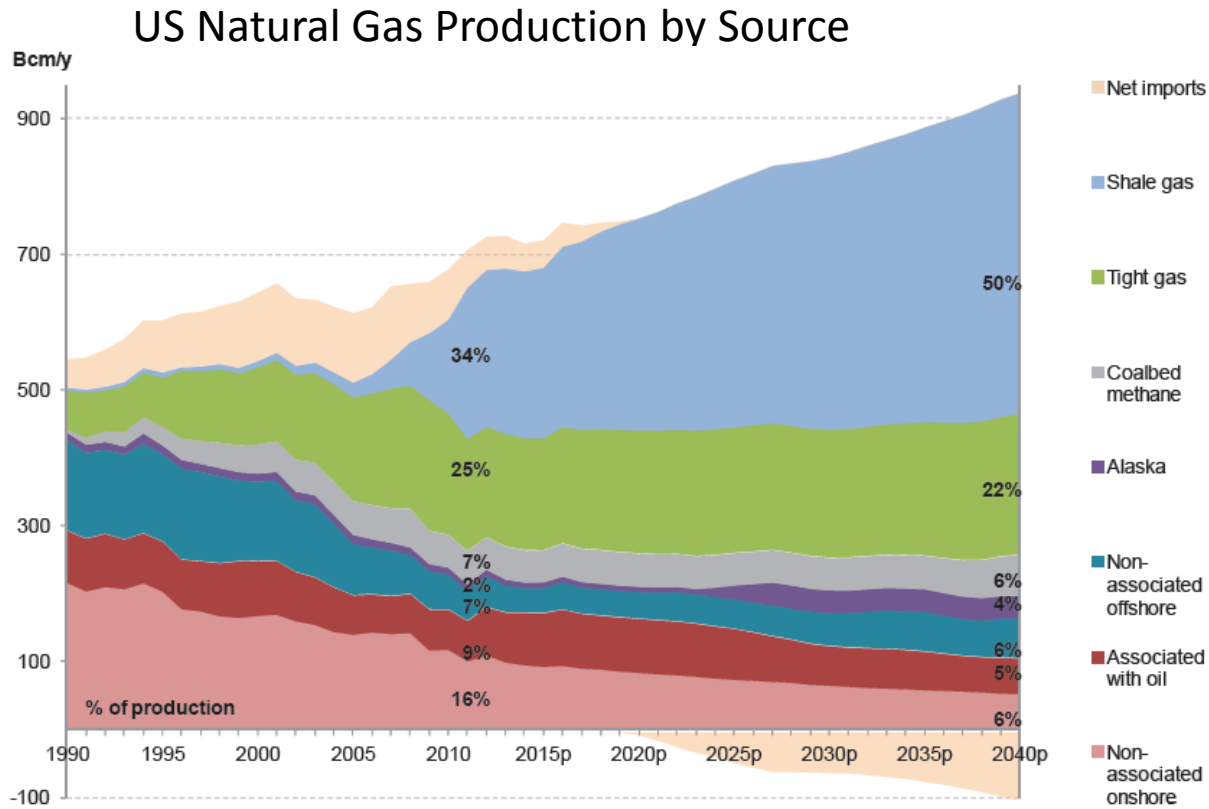
Trends in the USA

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



The Current Shale Gas Revolution in the U.S.



US transforms from importer to net exporter of gas!

Trends in Asia

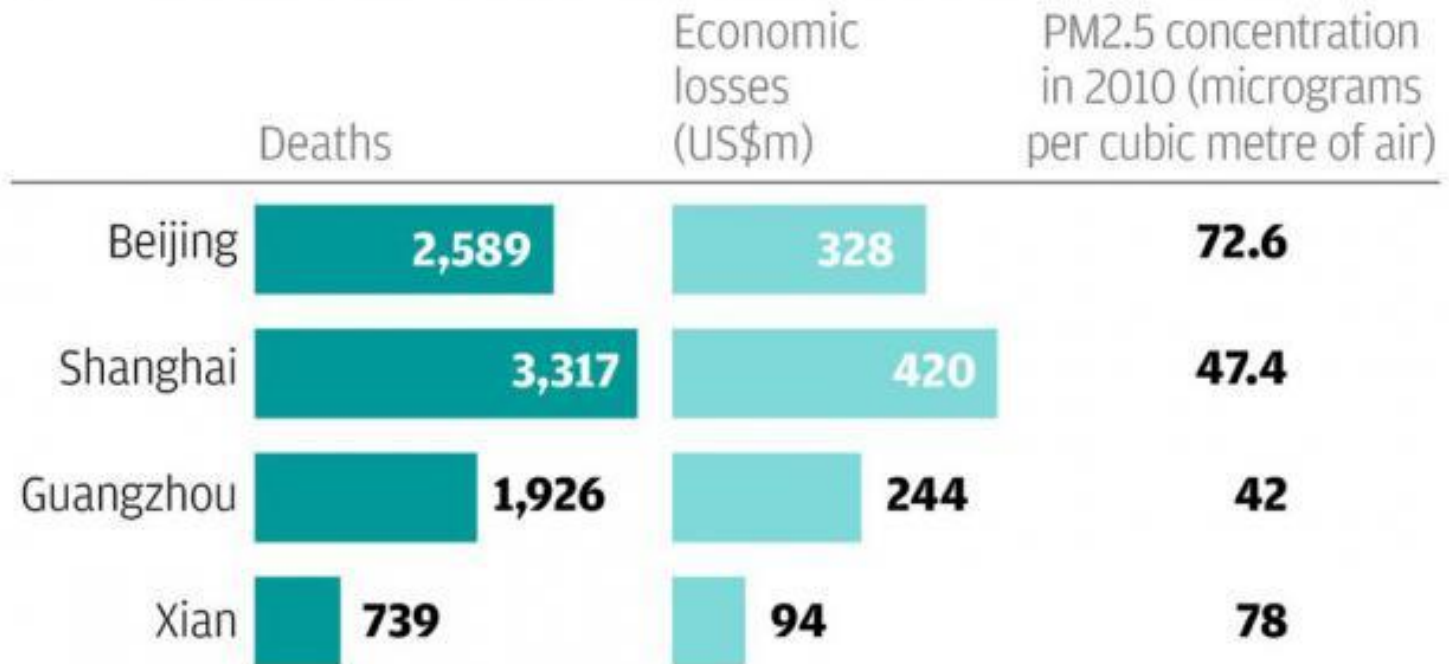
“Green and/or Clean” Revolution?

- 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



Hanging in the air

Estimated deaths and economic losses caused this year by PM2.5 pollution, based on pollution being the same as 2010 levels



Source: Greenpeace

SCMP

Current Trends in Europe

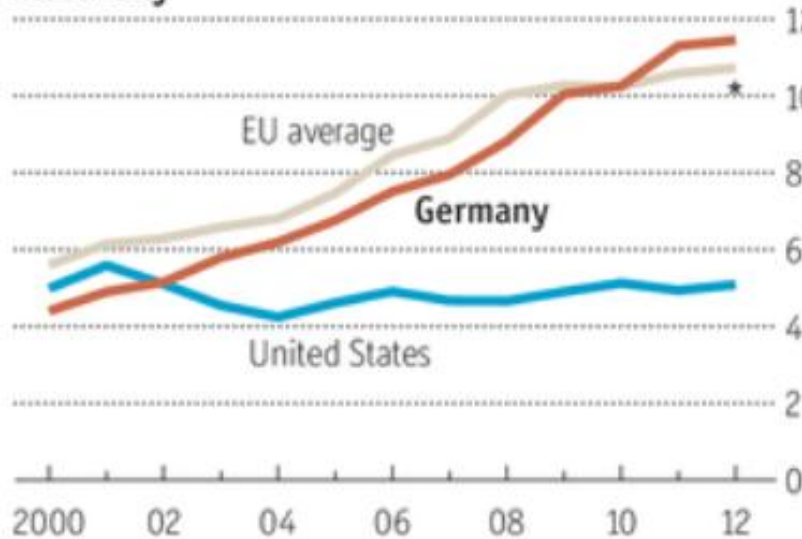
- Severe economic crisis that is ongoing
- Lower energy consumption due to that crisis
- The move towards green energy - Europe 2020 targets
 - 20% lower greenhouse gas emissions compared to 1990
 - 20% energy from renewable energy
 - 20% increase in energy efficiency
- The only region to have voluntarily 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

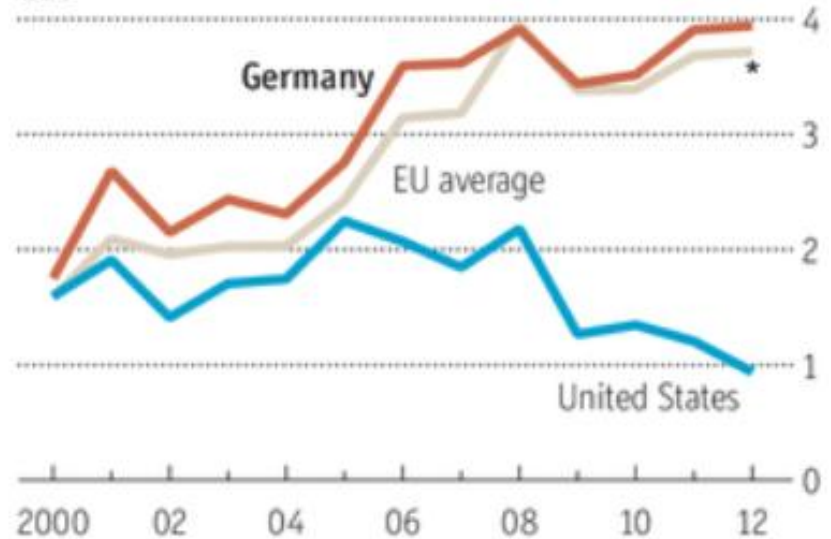
Industrial energy prices, € cents per kWh

Electricity



Source: Enerdata/McKinsey

Gas



*Estimate

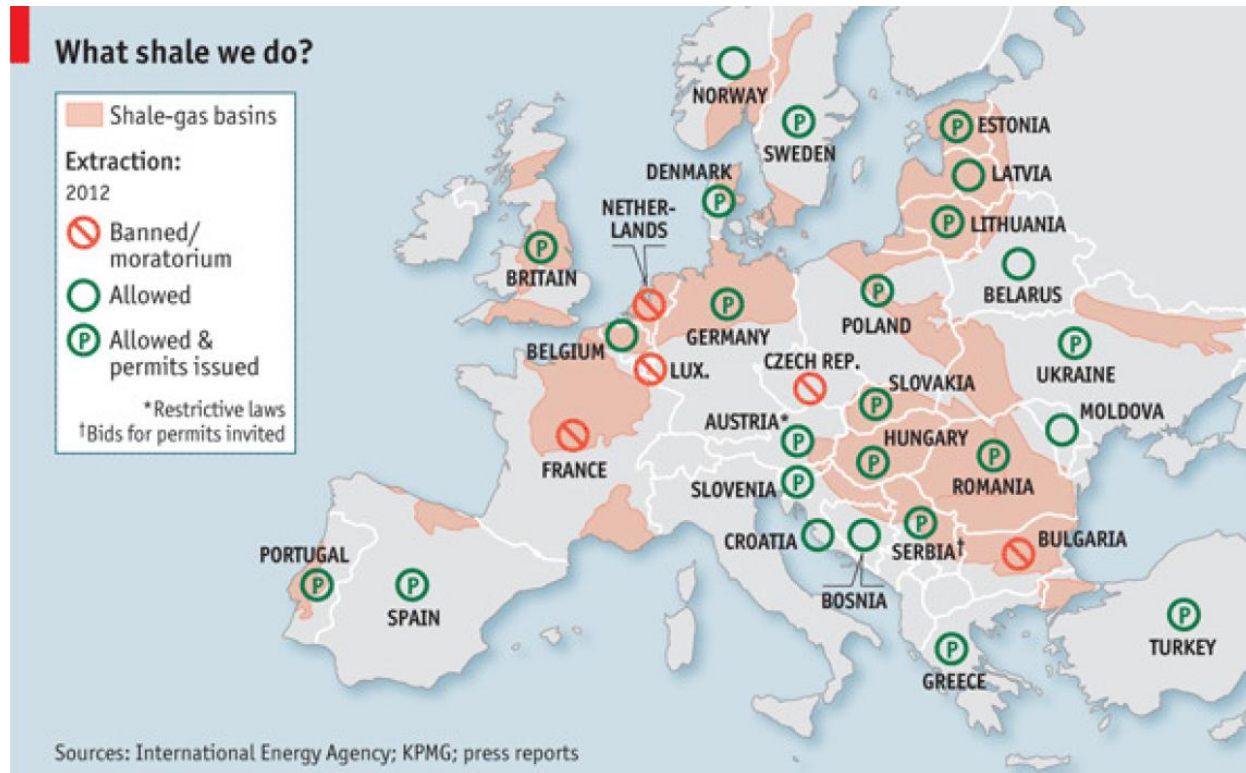
Shale Gas in Europe

Different Environment and Different Economics

- There is a significant shale gas resource potential
 - But these resources still need to be confirmed
 - Exploration/test drillings

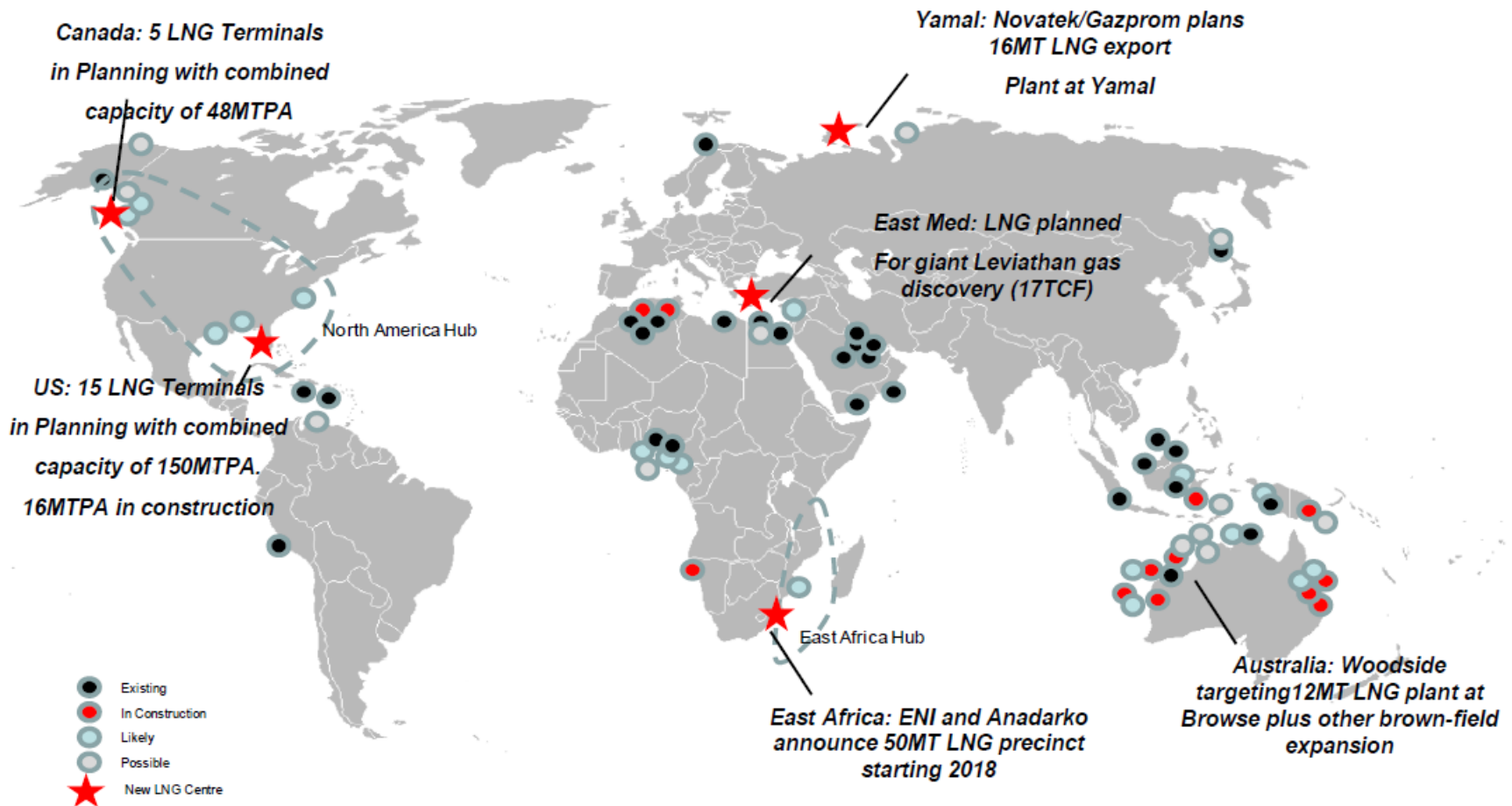
Different Environment	Different Economics
Higher population density in most regions	Higher drilling and fracturing costs (deeper wells, more complex geology)
Narrower equipment and experience base	Current European market prices attractive to import of US LNG
Higher environmental concerns (groundwater contamination; earthquakes; fauna disturbance; ...)	Market prices are linked to oil-indexed contracts and coal-switching price
More complex, land-specific permitting procedures	Large dependency on Russian pipeline gas
Less incentives for land owners (no access to royalties)	
Green movement is very powerful in Europe	

Shale Gas Developments in Europe?



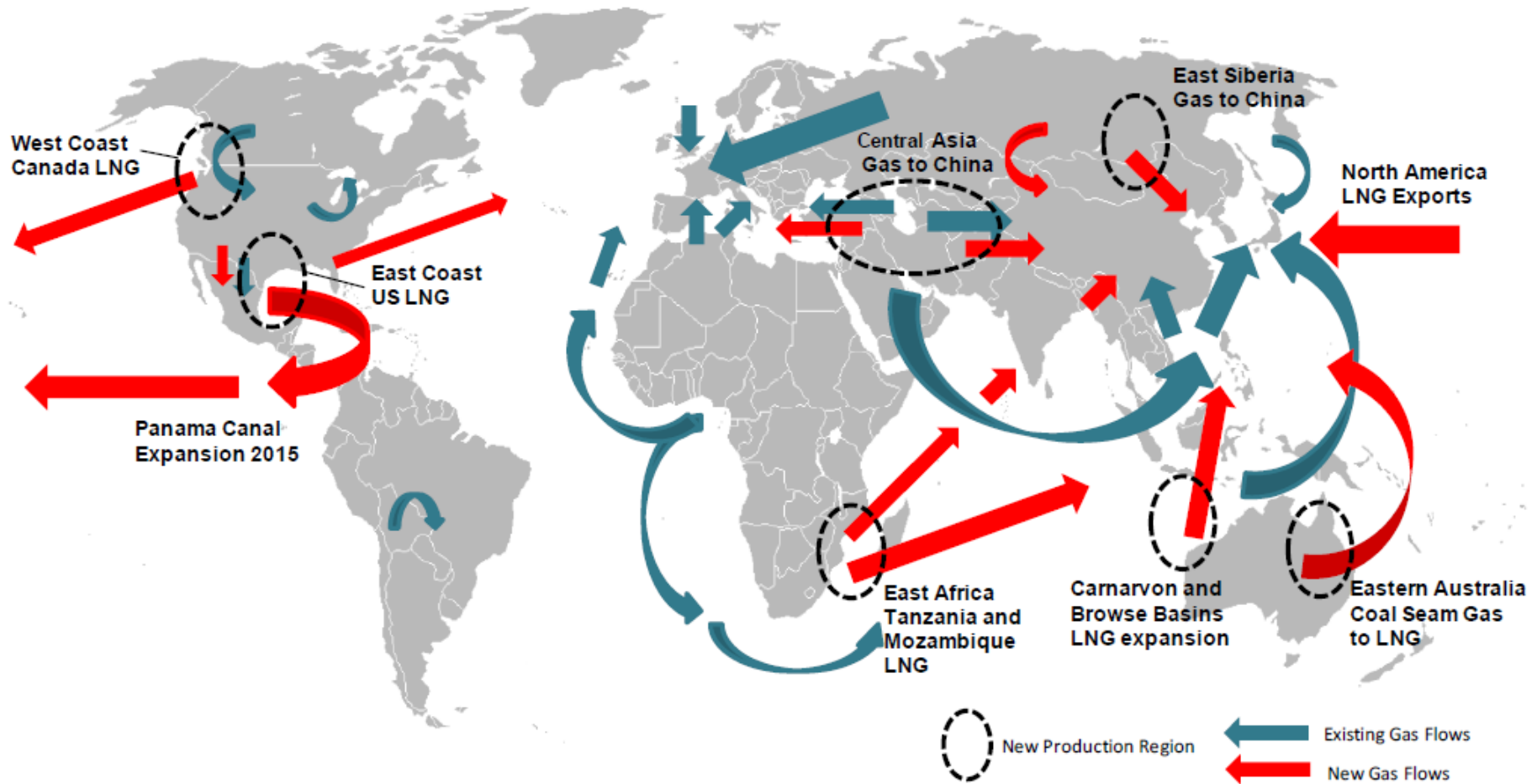
1. No clear strategy towards shale gas
2. Different stance towards shale gas in the various countries

But, There's More Than Only Shale Gas: Emergence of Other New LNG Centers



Projected Evolution of Gas/LNG Flows

Business Development Potential





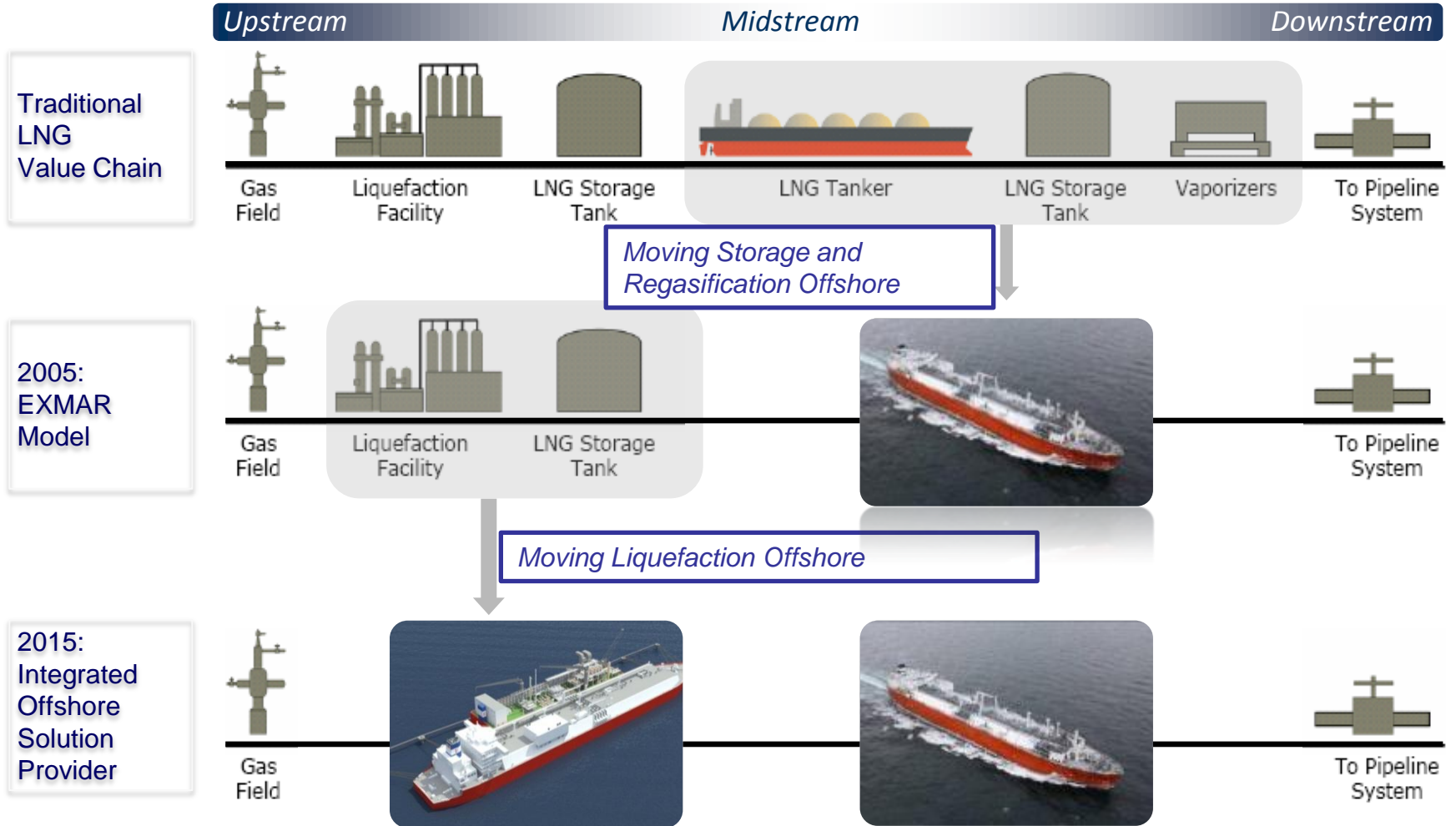
The New Dash For Gas - The Big Potential of “Floating LNG”

The Driving Force of EXMAR: Innovation

- The world's first floating LNG Import Terminals
 - LNG Regasification Vessels (LNGRV)
 - 2005
- The world's first LNG Ship-to-Ship transfer system
 - “LNG STS Transfer”
 - 2006
- The world's first floating LNG export terminal
 - Floating LNG liquefaction (“FLNG”)
 - 2015



Floating LNG as Optimization of the LNG Value Chain



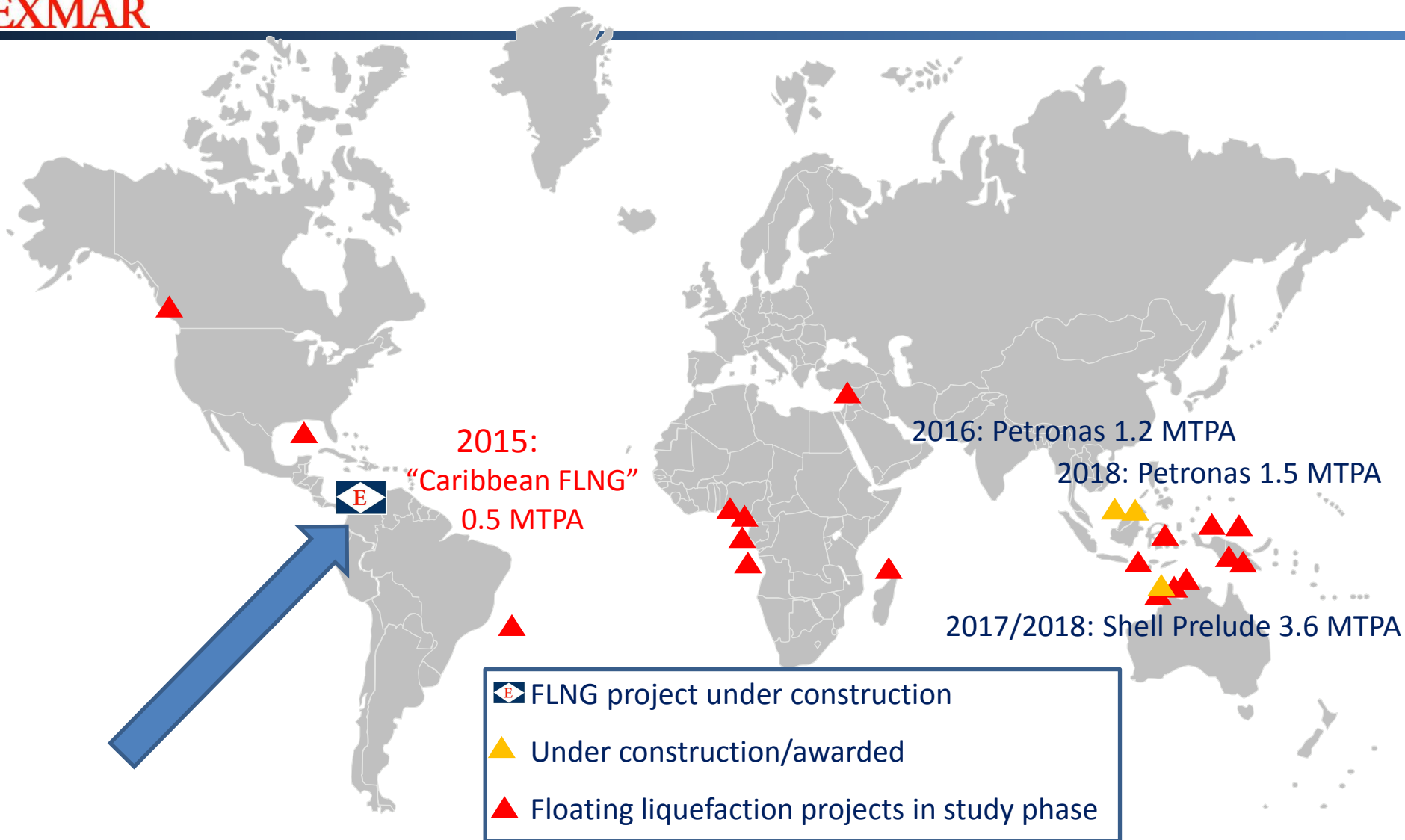
Advantages of FLNG vs Onshore Liquefaction

- Cost efficient and price stable solution
 - Efficient and industrial shipyard environment
 - Skilled labour & routine environment
 - Minimizing cost blowouts
- Fast track solution: earlier monetization
- Flexible: re-deployable
- Offshore advantages
 - Avoiding site specific restrictions and constraints
 - Permitting and security
 - Avoiding highly populated areas
- (Re-)use onshore infrastructure
 - Timing- and cost advantages





The World's First FLNG is Developed by EXMAR

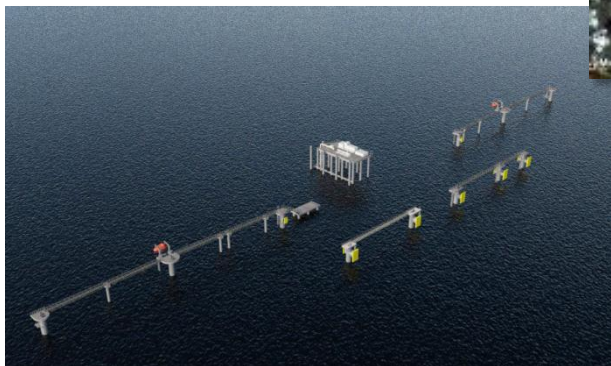
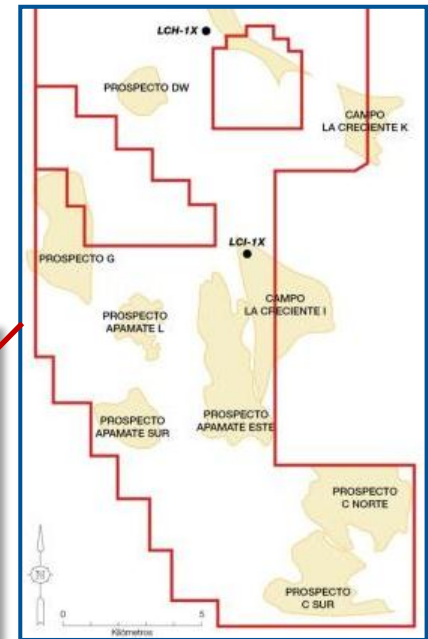


Project Overview

The Assets That Are to be Developed From Lacrecente Gas Field to Tolu



- The “Caribbean FLNG”
- Floating Storage Unit



- Lacrecente gas field
- 88 km onshore pipeline
- Offshore subsea pipeline
- Mooring infrastructure



“Puerto de Gas Licuado del Caribe”

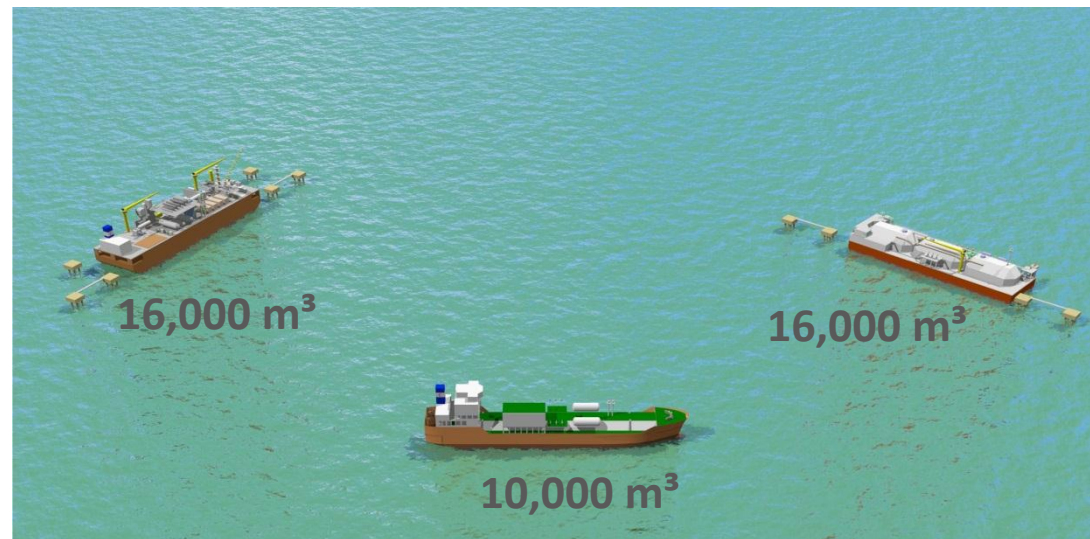
An Integrated LNG Terminal Off-Shore Colombia

- Scope Pacific Rubiales Energy (EXMAR’s client)
 - Off-shore infrastructure (jetty, pipeline, platform)
 - Permitting
 - Floating Storage Unit
- Scope EXMAR: Build, Own, Operate FLNG solution
 - FEED study & shipyard selection
 - Define functionality, specs, design & build the FLNG
 - Project management & plan approval
 - Building supervision
 - Safety studies
 - Assure quality, compliance & integration
 - Finance and own the FLNG
 - Operate and Maintain the FLNG (EXMAR Shipmanagement)

How It All Started...

Inception of the small scale LNG project

- Stranded onshore gas reserves in northern Colombia due to transport restrictions and limited markets
- Regional power markets 75% dependent on oil-based (expensive) fuels



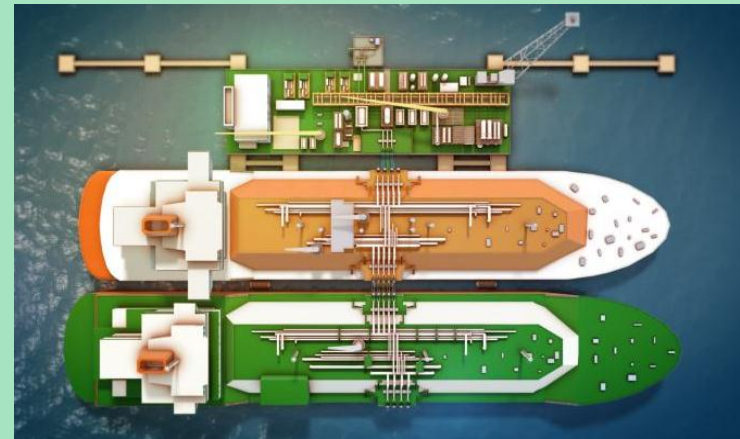
Option #1: Regional Small Scale Supply Chain

- + 75% oil-based power generation in Caribbean Islands
- + LNG can provide a clean and competitive alternative
- **However, no LNG import infrastructure present**

→ Future development potential

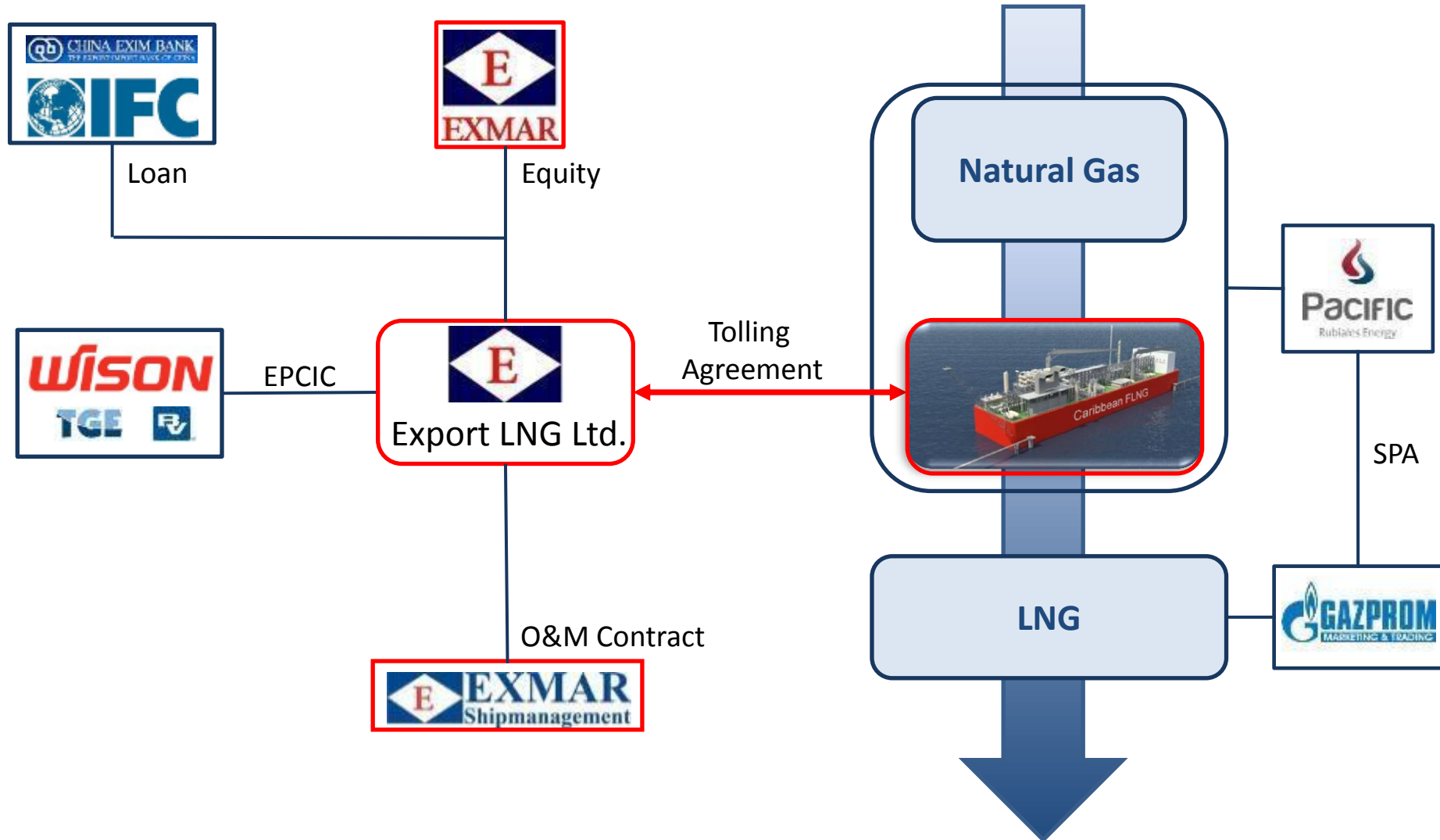
Option #2: Conventional (large scale) LNG Sales

- + Conventional parcels of LNG for world market
- + Floating Storage Unit



EXMAR to Build, Own, Operate the FLNG

Classical tolling structure between EXMAR & Pacific Rubiales Energy

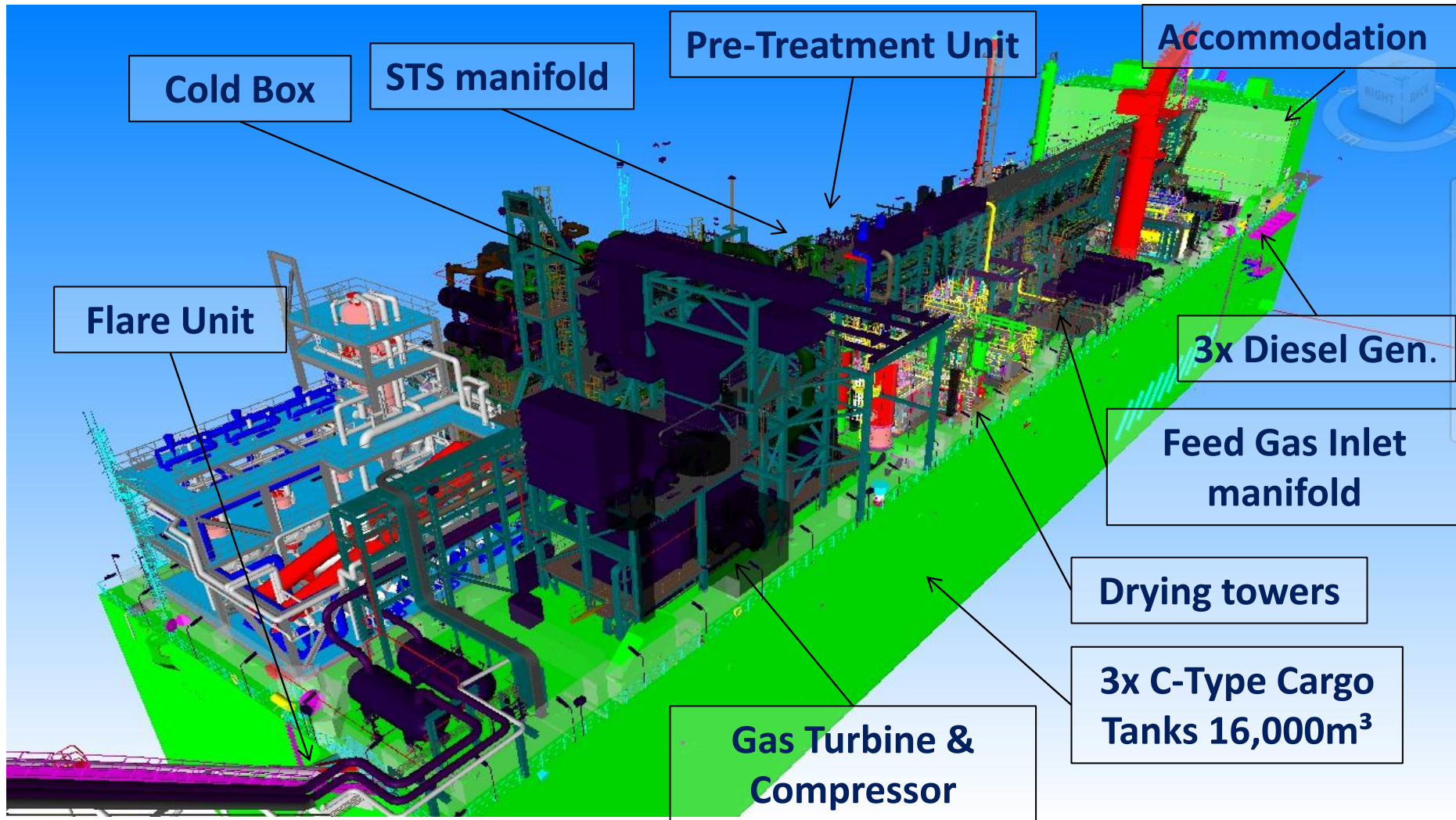


Outline of the World's First FLNG

- EXMAR is to build, own, operate and maintain the Caribbean FLNG
- Export Capacity: 500,000 ton/year
- Storage (excluding FSU):
 - Type C - TGE
 - 16,100 m³
- Dimensions
 - Length: 144 m
 - Breadth: 32 m
 - Depth: 20 m
 - Draught: 5.4 m
- Black & Veatch PRICO® Technology for the liquefaction topside
- Exmar's proven Ship-to-Ship (STS) transfer technology



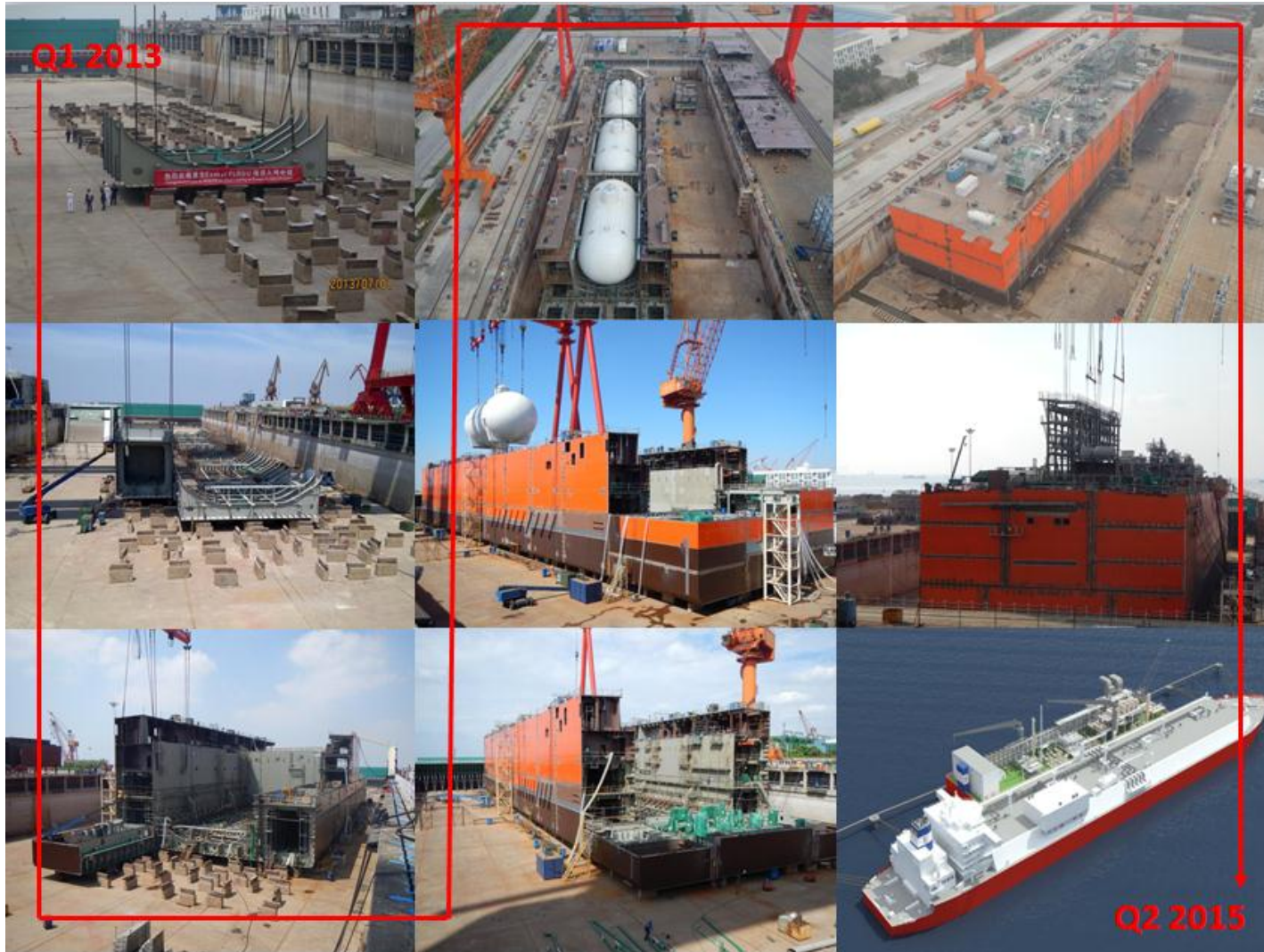
Technical Outline: Proven Technologies



Project Status

Key Milestones	Dates	
Contract Award	20/04/2012	✓
Detailed Engineering Start	18/07/2012	✓
Production Engineering Start	05/10/2012	✓
Steel Cutting	12/12/2012	✓
Keel Laying	01/07/2013	✓
Cargo tanks installed	01/11/2013	✓
Start topsides installation	15/12/2013	✓
Mechanical completion	Q2 2014	
Sail away – dry tow	Q4 2014	
Online	Q2 2015	

Construction of the Caribbean FLNG: On Budget and Schedule





Conclusion

Conclusion

- ✓ Increasing role of natural gas in the world energy market
 - ✓ Shale gas revolution
 - ✓ Emergence of new gas supply centers: North America; Africa; Mozambique
 - ✓ Rising demand for natural gas due to competitive pricing and environmental awareness

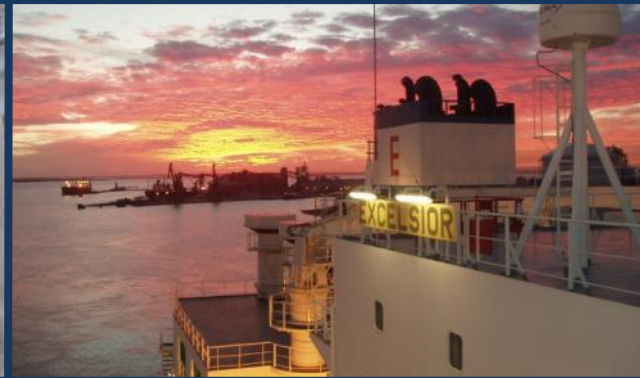
- ✓ EXMAR is continuously driving innovations in the LNG industry
 - ✓ The world's first floating LNG import terminal (regasification) – 2005
 - ✓ The world's first LNG Ship to Ship transfer (“STS”) – 2006
 - ✓ The world's first floating LNG export terminal (liquefaction) – 2015

- ✓ The role of FLNG in the LNG industry is increasing
 - ✓ Especially suitable for “stranded” gas fields
 - ✓ FLNG is increasingly popular, due to onshore cost blowouts (e.g. Australia)

- ✓ Natural gas provides a clean bridge towards a greener future



Questions & Answers



Thank You For Your Attention!

