

# Ryder Scott 2019 Mexico Reserves Conference

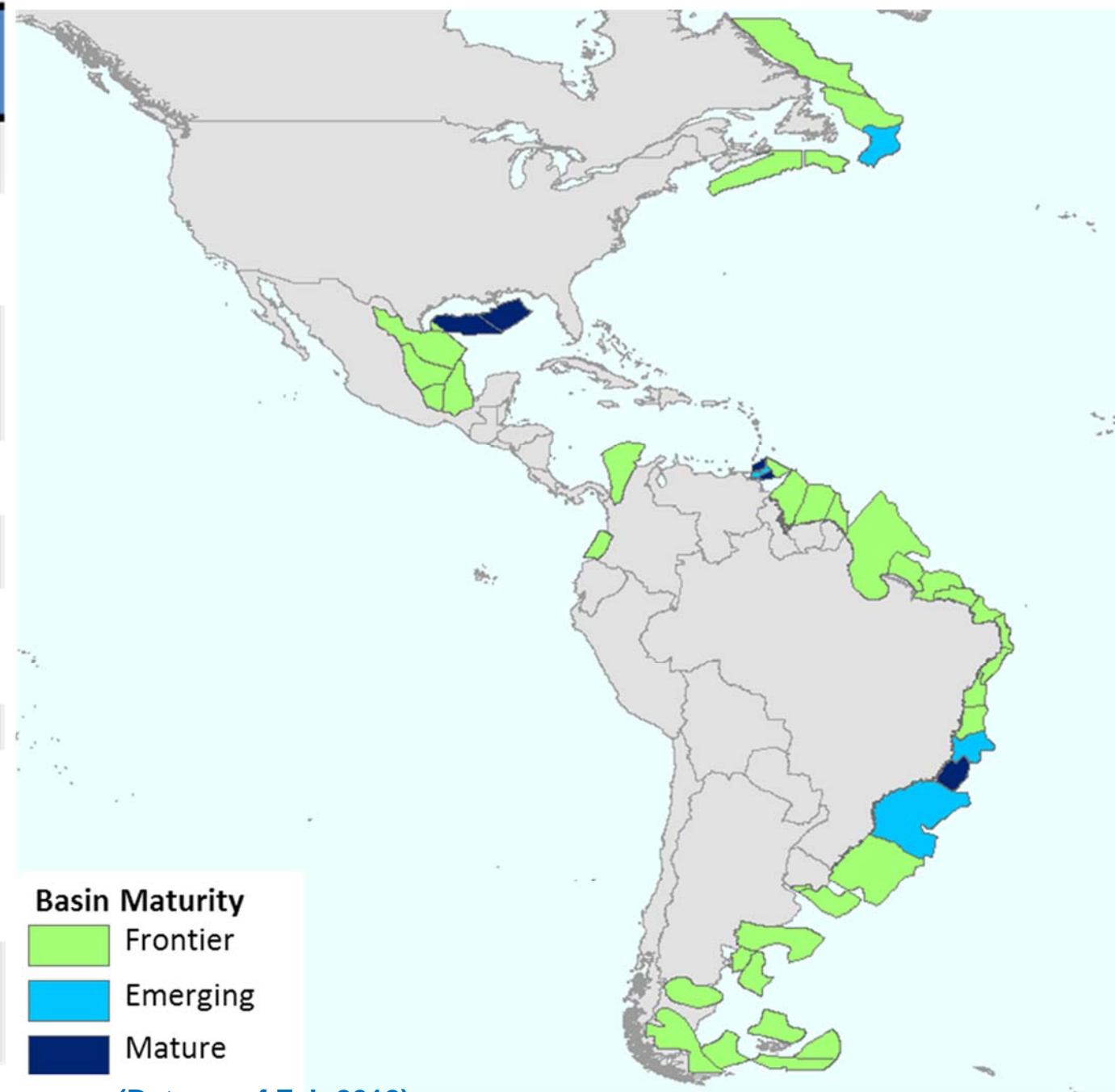


**Americas- Deepwater Basins  
Potential, Growth, and Sustenance**

**Presented by: Sandeep Khurana  
2.40pm-3.20pm, Friday, May 17, 2019**

# Geologic Maturity and Potential

Country	Deepwater Basin/ Region	Geological Maturity	Remaining Resources billion boe	Exploration Wells Drilled	2018 Oil Production kb/d	2018 Gas Production bcf/d
Canada	East Coast Canada	Frontier	0.3	56	0	None
USA	Gulf of Mexico	Mature, Emerging & Frontier	14.3	1326	1,600	Yes - 1.8
Mexico	Gulf of Mexico	Frontier	1.6	72	0	None
T & T	Caribbean Basins	Frontier	0.4	22	0	Discovered undeveloped
Colombia	Caribbean Basin	Frontier	0.9	9	0	Discovered, undeveloped
Guyana	Guyana Basin	Frontier	5	13	0	Discovered, undeveloped
Suriname	Guyana Basin	Frontier	0	12	0	None
Brazil	Equatorial Margin, Sergipe-Alagoas, Espirito Santo, Campos, Santos	Mature, Emerging & Frontier	43.8	495	2,645	Yes - 1.6
Argentina	Salado, Austral, Colorado, San Jorge, Malvinas	Frontier	0	1	0	None



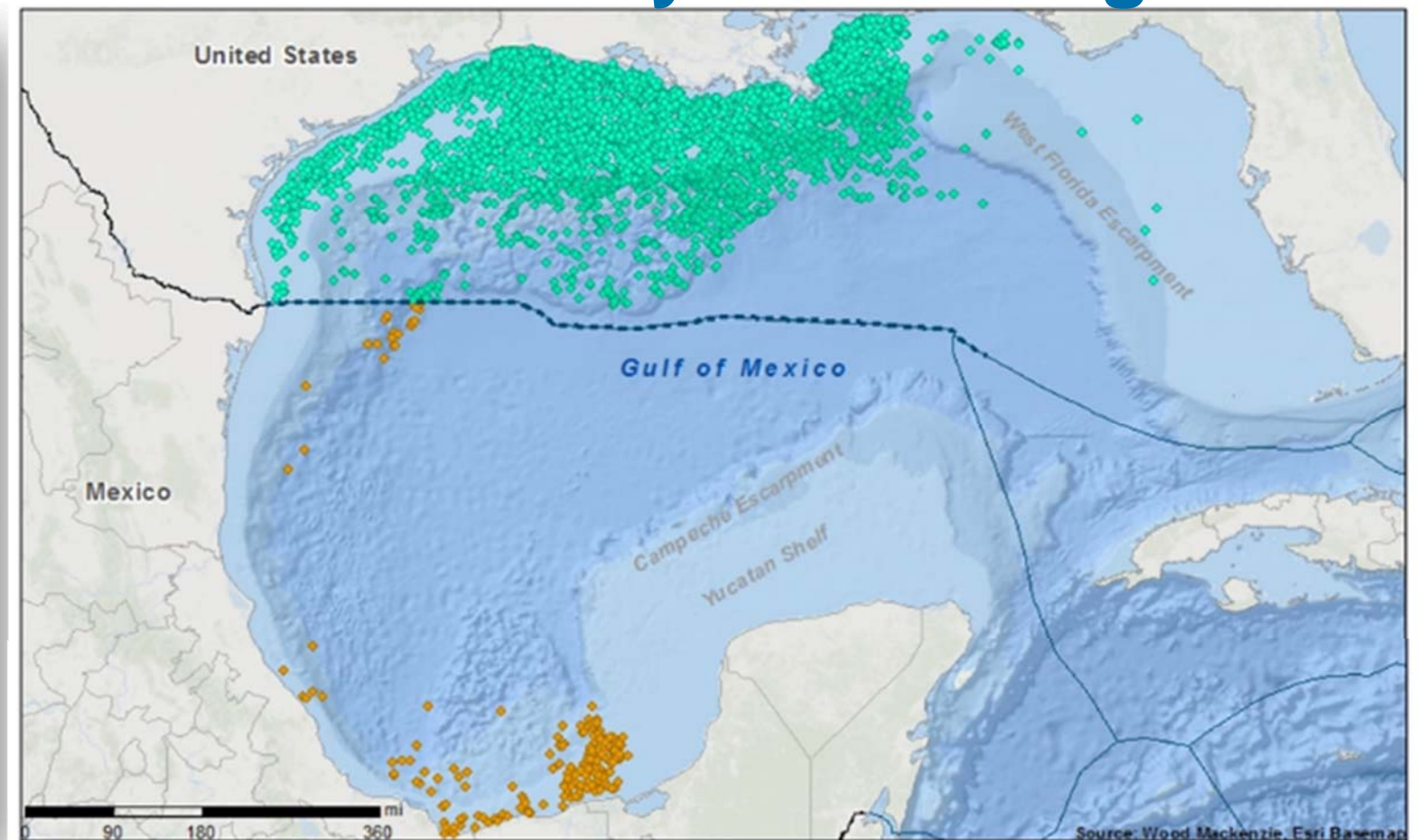
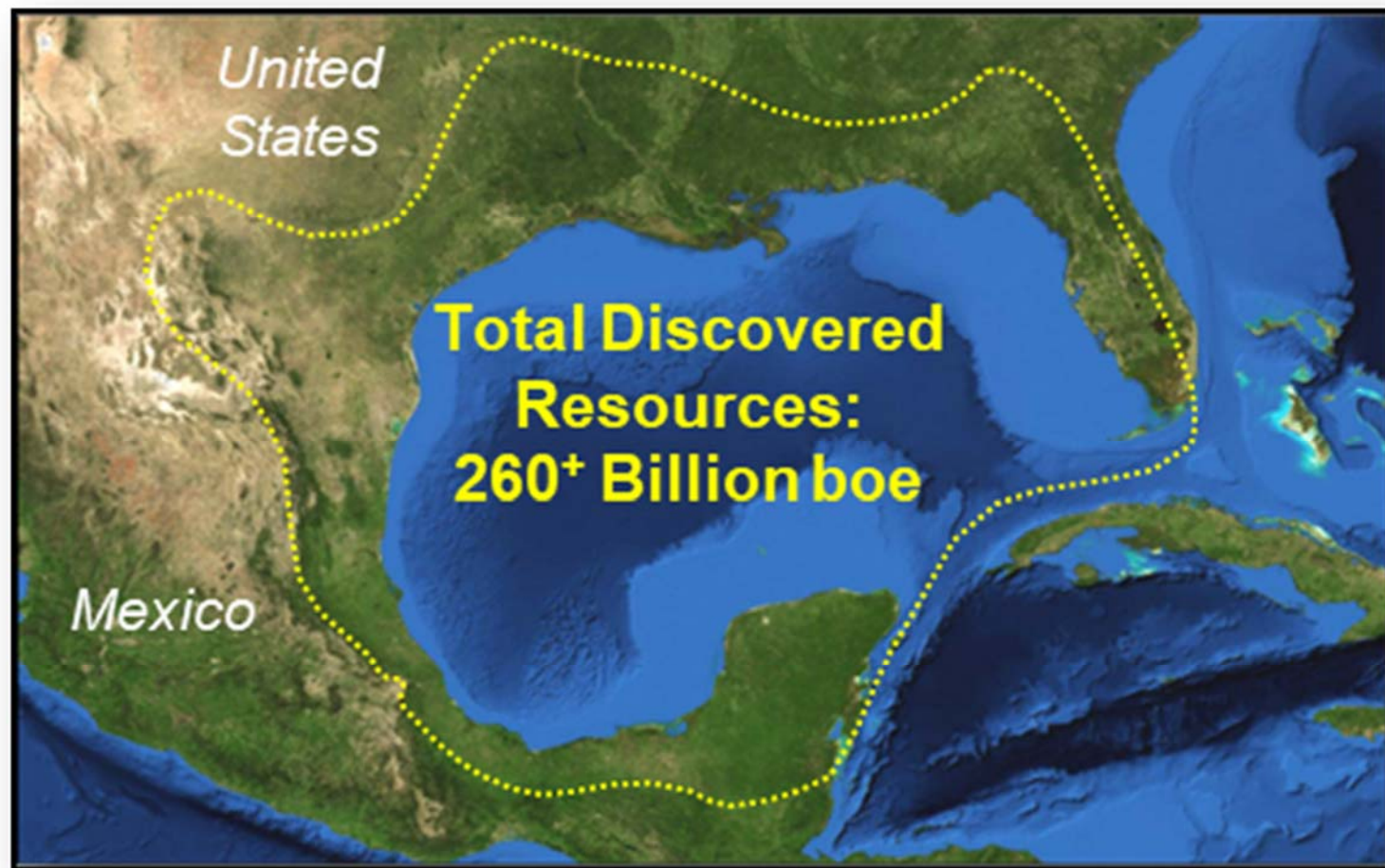
Note: Remaining resources are Wood Mackenzie estimates of discovered, not yet produced, resources (Data as of Feb 2018)

# Case Study: The GOM Basin

Geology knows no boundaries

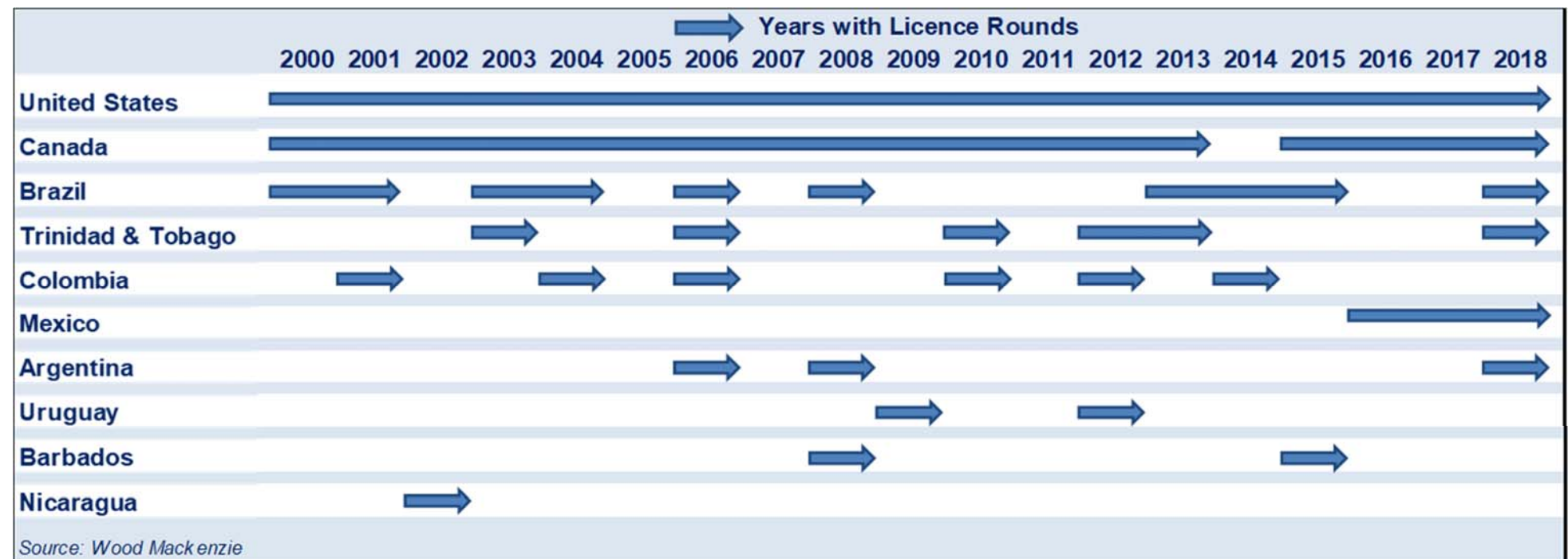


Exploration Wells and..  
Plenty of Running Room

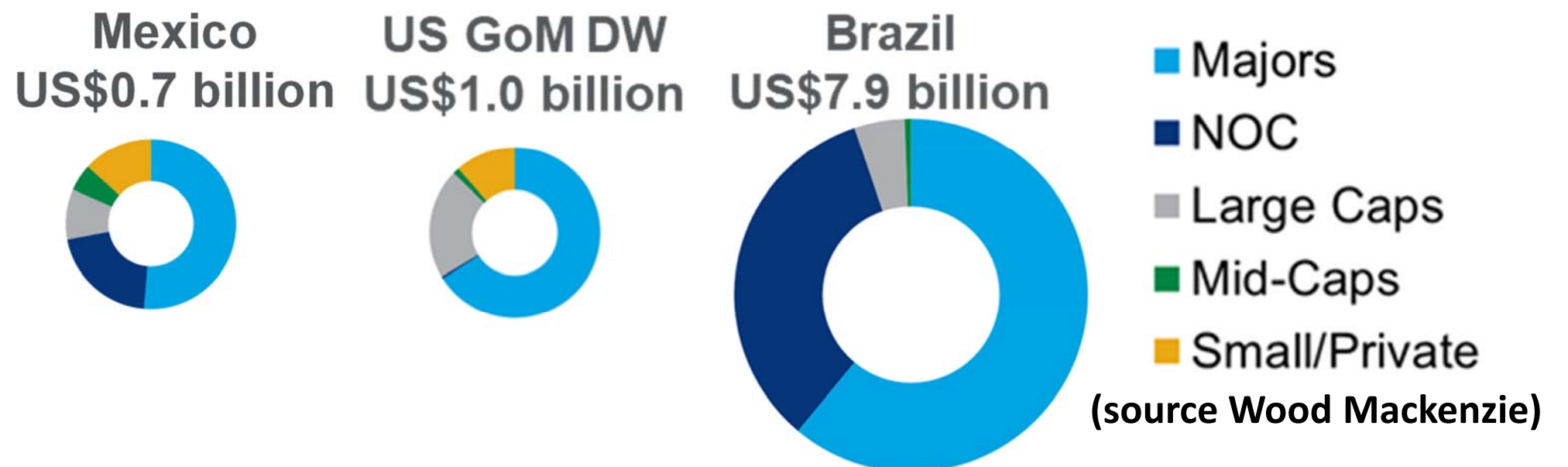


# Access to Acreage and Types of Players

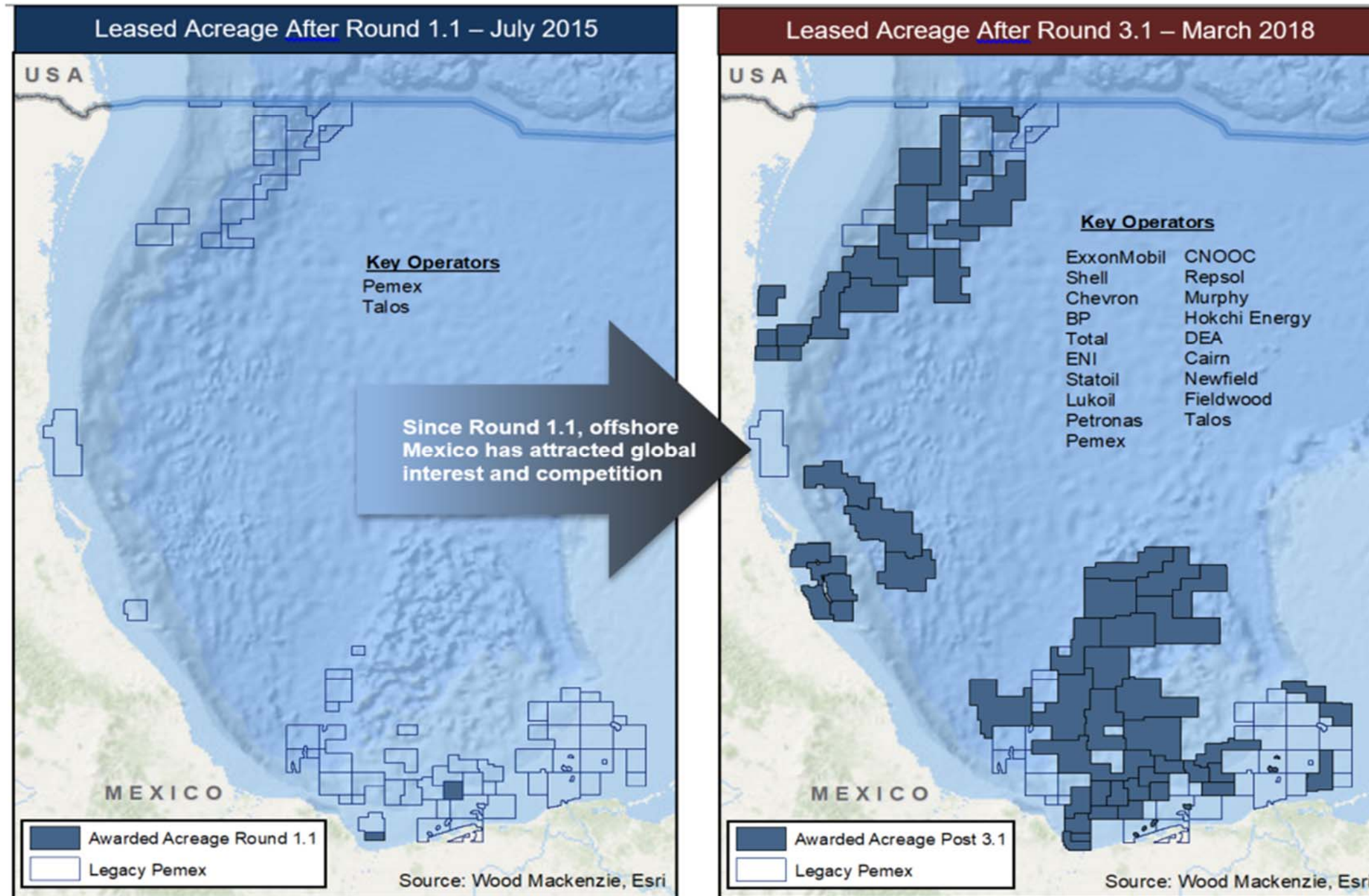
Country	Access to Acreage - bid rounds	Types of Players
Canada	Almost yearly	Majors, IOCs, NOCs
USA	Yearly	Majors, small independents
Mexico	Recent bid rounds, future access uncertain	Majors, IOCs, NOCs, Independents
T & T	Intermittent	Majors, IOCs
Colombia	Intermittent	NOC
Guyana	Direct negotiation	Majors, IOCs
Suriname	Direct negotiation	Majors, IOCs
Brazil	Frequent rounds 2000-2008 No rounds 2009-2012 2015-2016 Frequent rounds 2017 forwards	NOC, Majors, IOCs, Brazilian E&Ps
Argentina	None; first deepwater round expected 2019	Interest TBD



Signature bonuses for offshore acreage, by winning bidder company type, 2016-2019

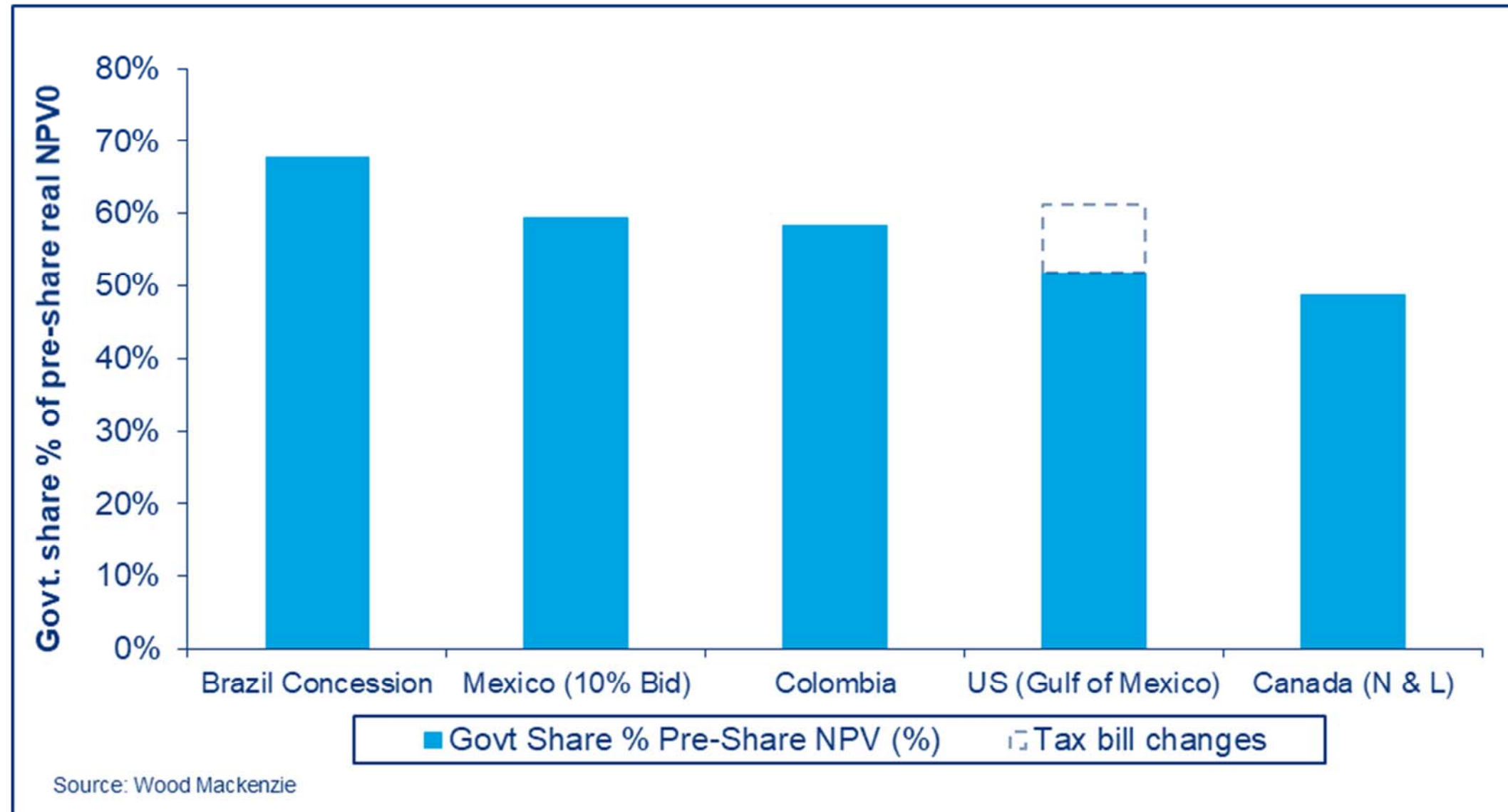


# Diversity in Progression of Mexico's Offshore Leasing



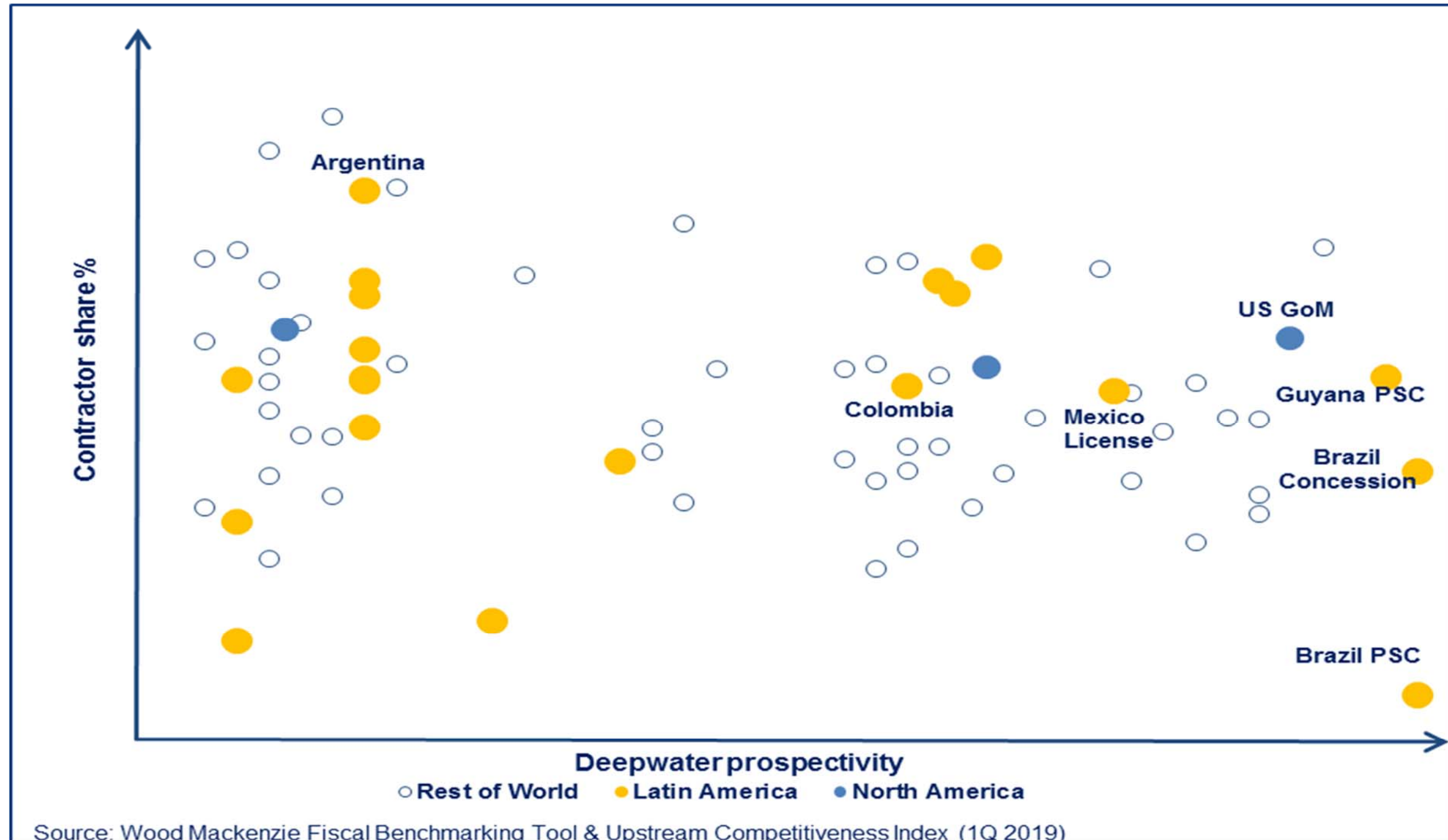
# Fiscal Terms and Government Share in the Region (1Q 2018)

Country	Fiscal Terms
Canada	Tax- royalty
USA	Tax- royalty
Mexico	Mixture
T & T	Mixture
Colombia	Tax- royalty
Guyana	PSC
Suriname	PSC
Brazil	Mixture
Argentina	PSC








Government share of a 200-mmbbl deepwater field at US\$60/bbl  
 Notes : (1) Mexico case assumes additional biddable royalty of 10%;  
 (2) Does not include Brazil PSC)

# Deepwater Prospectivity vs Contractor Share of Cashflow (1Q 2019)

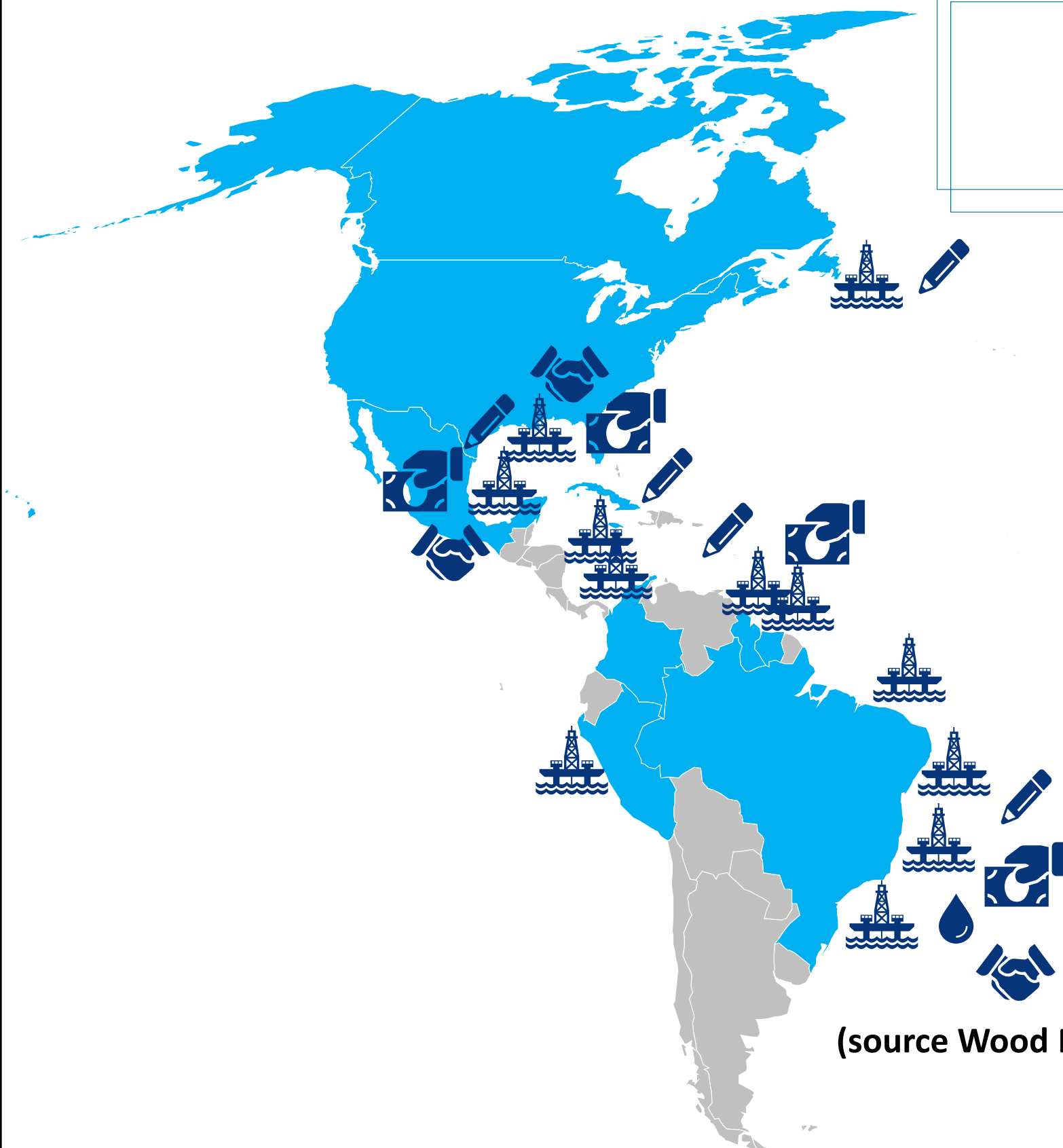


# Growth Avenues Abound

From grass-roots exploration acreage to acquisition of producing fields, higher activity levels offer more opportunities

-  Upcoming licensing round
-  High-impact exploration well(s) planned
-  Discovered resource opportunities to be offered
-  Development Final Investment Decision(s) expected
-  M&A opportunities

(source Wood Mackenzie)



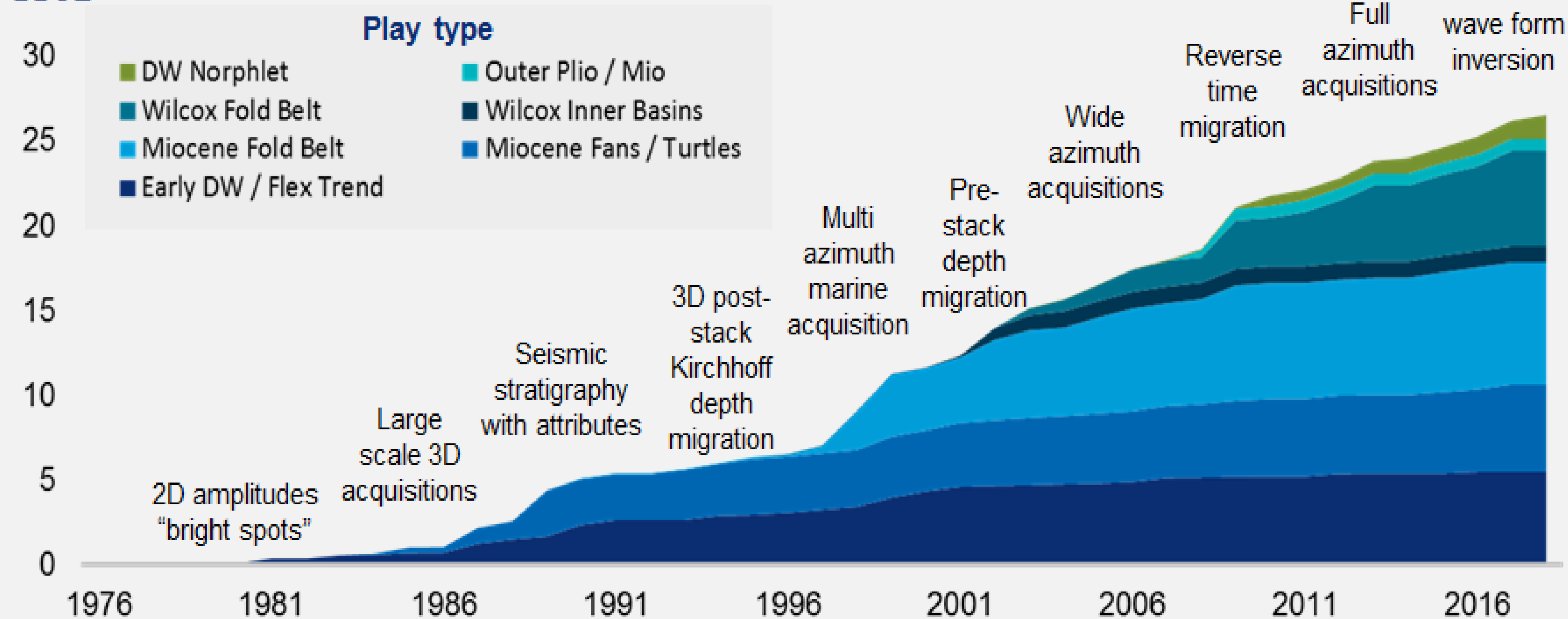


## State of the Industry – Growth to Sustenance

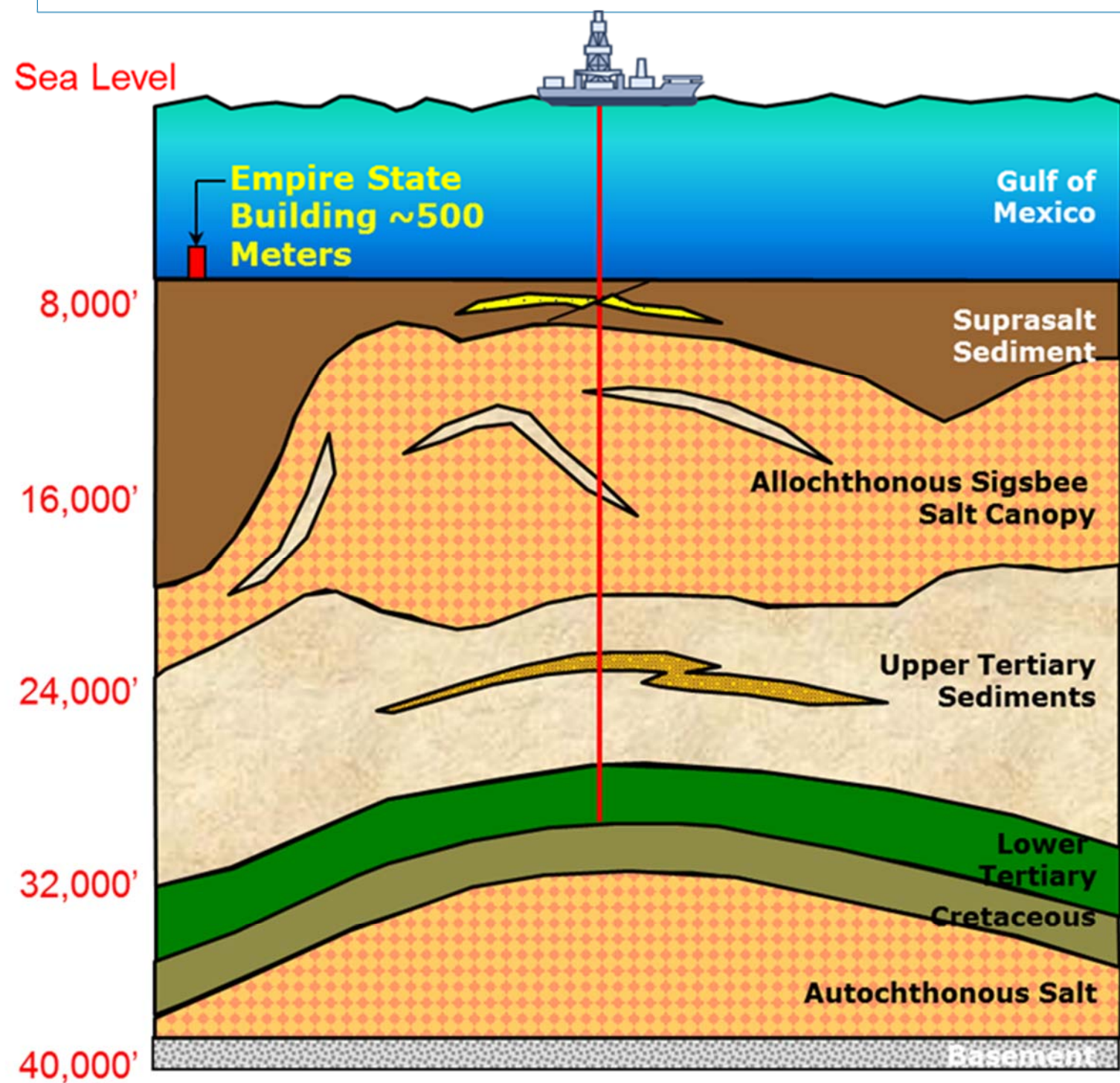
Country	Deepwater Expected CAPEX US\$ billion	Development Outlook	Pace of Development	People-Skilled O&G Workers in Country	Regulatory Capability and Capacity	Supply Chain	Technology
Canada	6.9	First FID is close; needs more discoveries for materiality	Slow due to harsh environmental conditions	Available	Well established	Established Hub	Can benefit from Norwegian experience in deepsea and harsh conditions
USA	340.3	Infrastructure led and step-out to 20ksi developments	Fast paced but some plays require new 20ksi technology	Available	Well established	Established Hub	Developed in the basin
Mexico	85.4	Major developments	Fast	Available	Well established	Need to establish	Mostly from Region
T & T	0.5	Needs more discoveries before moving ahead	NA	Available	Established	Established Hub	Mostly imported from the region
Colombia	0	Needs more discoveries before moving ahead	NA	Required	Evolving	Need to establish	Can benefit from Region
Guyana	32.9	Significant development via fast-track FPSO	Fast	Required	Evolving	Need to establish	Can benefit from Region
Suriname	0	Requires exploration success	NA	Required	Evolving	Need to establish	Can benefit from Region
Brazil	417.7	Major developments	Moderated due to policies	Available	Well established	Established Hub	Developed in the basin
Argentina	0	Requires exploration success	NA	Required	Evolving	Need to establish	Can benefit from Region

# US Gulf of Mexico Deepwater Cumulative Discovered Resource and Geophysical Innovation. Source: Wood Mackenzie & Chevron

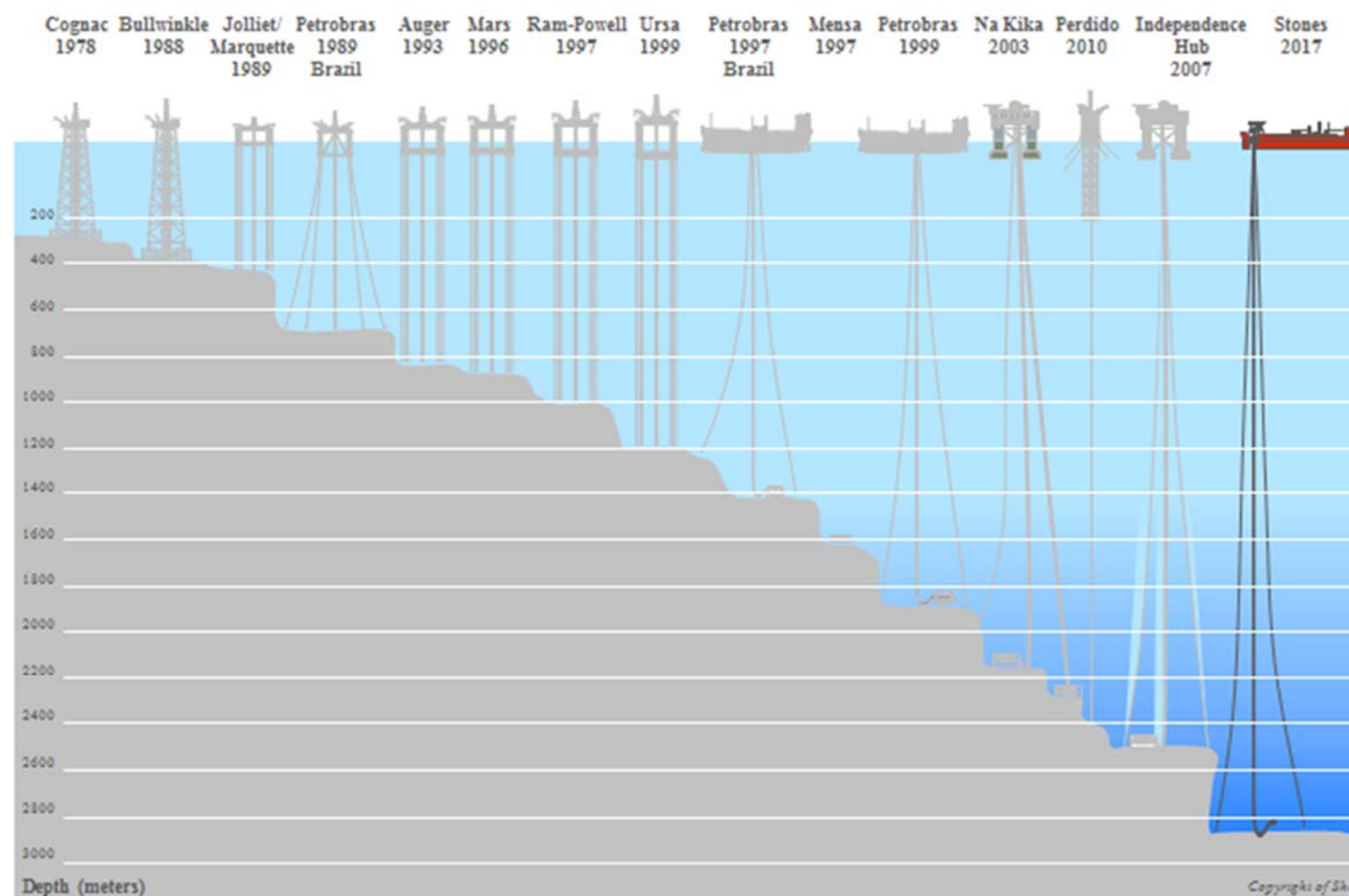
U.S. GOM Deepwater (>400 m) cumulative discovered BBOE



# Pushing Development Limits



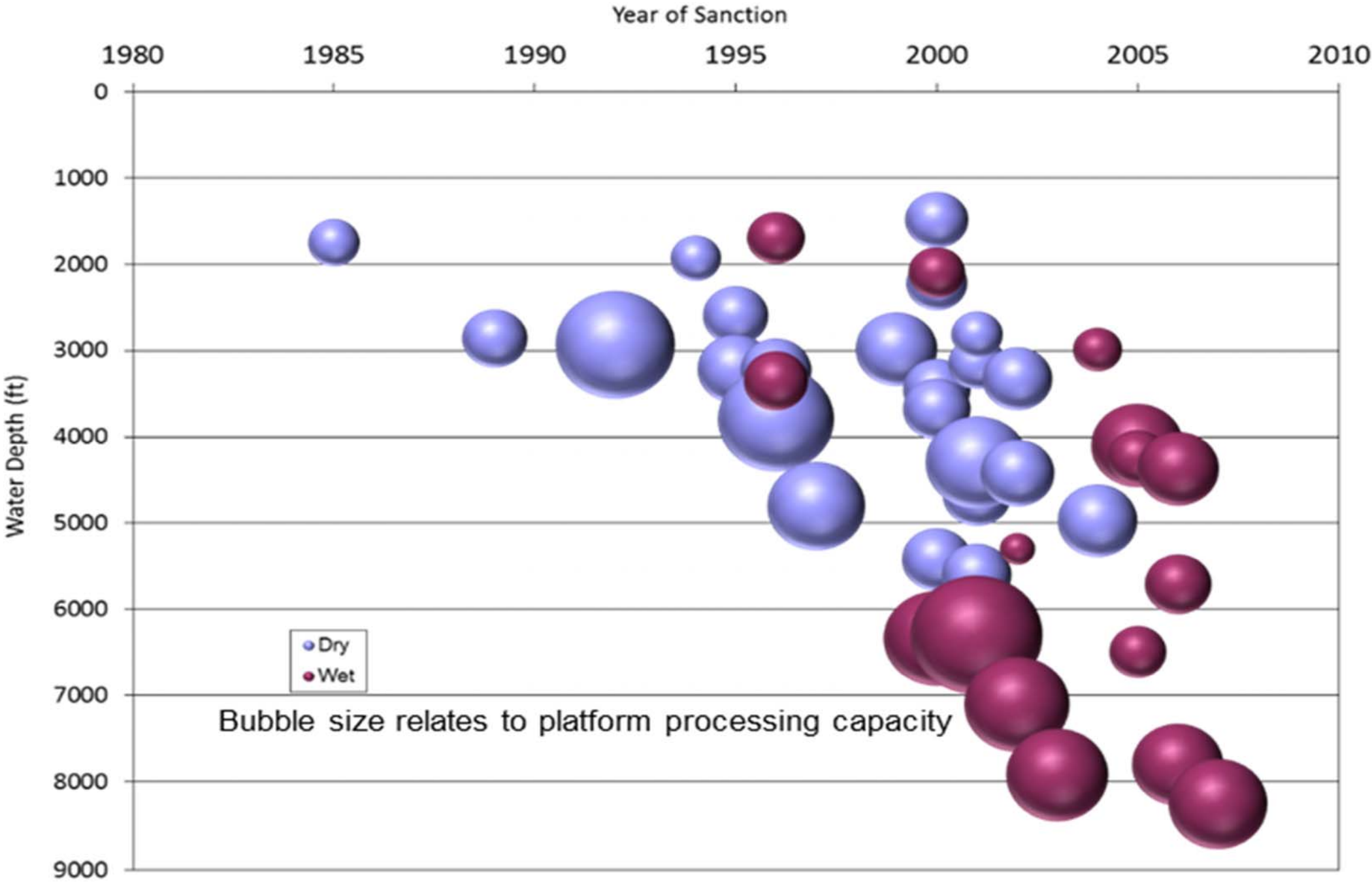
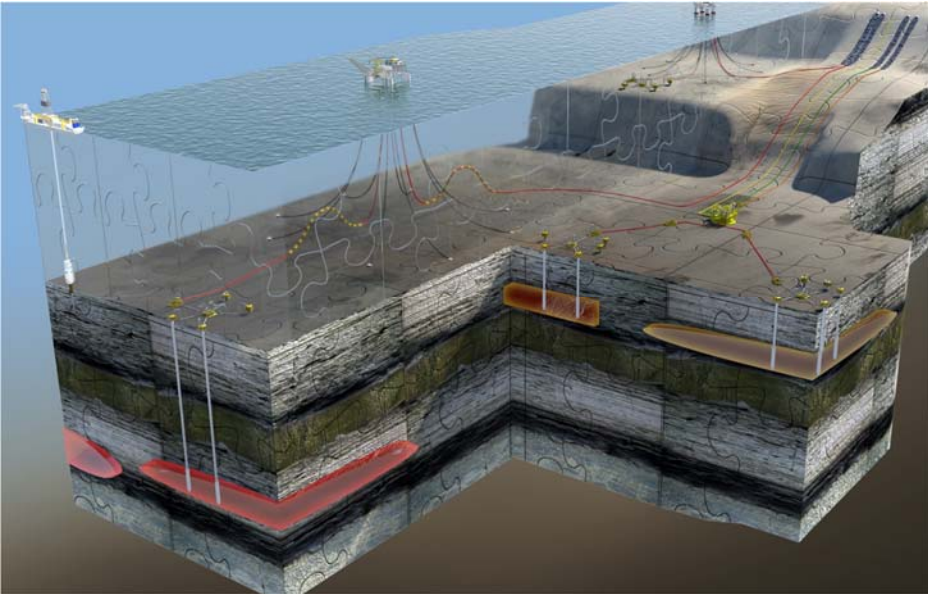
ERA	Production water depth	Exploration water depth	Total drill depth (est.)
1970's	1,148 ft (350 m)	5,742 ft (1,751 m)	15,000 ft (4,573 m)
1980's	2,625 ft (800 m)	8,202 ft (2,501 m)	17,000 ft (5,183 m)
1990's	6,562 ft (2001 m)	9,186 ft (2,801 m)	27,000 ft (8,232 m)
2000's	8,500 ft (2,591 m)	10,139 ft (3,091 m)	36,000 ft (10,976 m)
2010's (est)	9,500 ft (2,896 m)	12,000 ft (3,659 m)	40,000 ft (12,195 m)



# Progress from Dry versus to Wet Tree in US Gulf of Mexico.

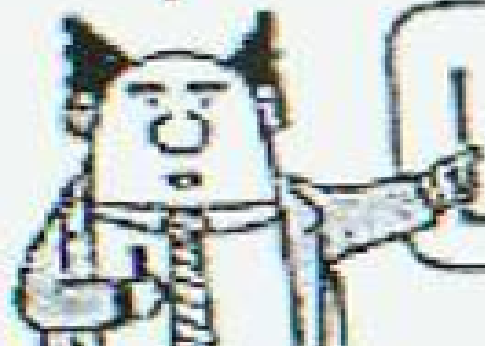
## Supply Chain of Equipment Suppliers

- Factory approach through standardization
- Host Facilities (FPSO & Semis)
- Tie-back fields/reservoirs

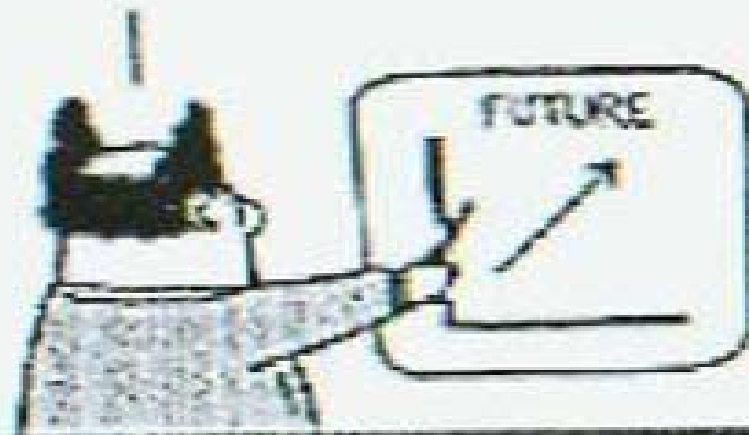


PRODUCTION IS

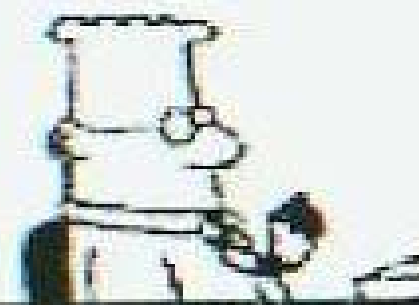
DROPPING  
LIKE A ROCK.



OUR PLAN IS TO PRODUCE  
LOTS OF OIL FOR FREE.



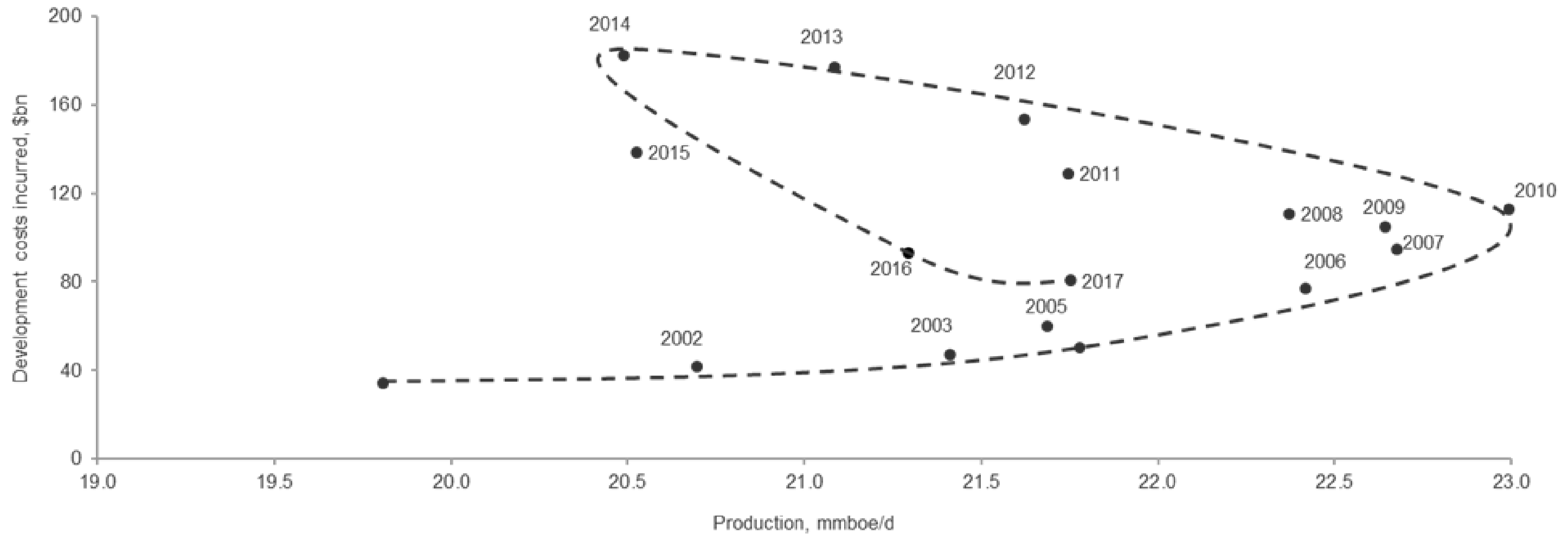
THE VISIONARY  
LEADERSHIP WORK  
IS DONE. HOW LONG  
WILL YOUR PART  
TAKE?



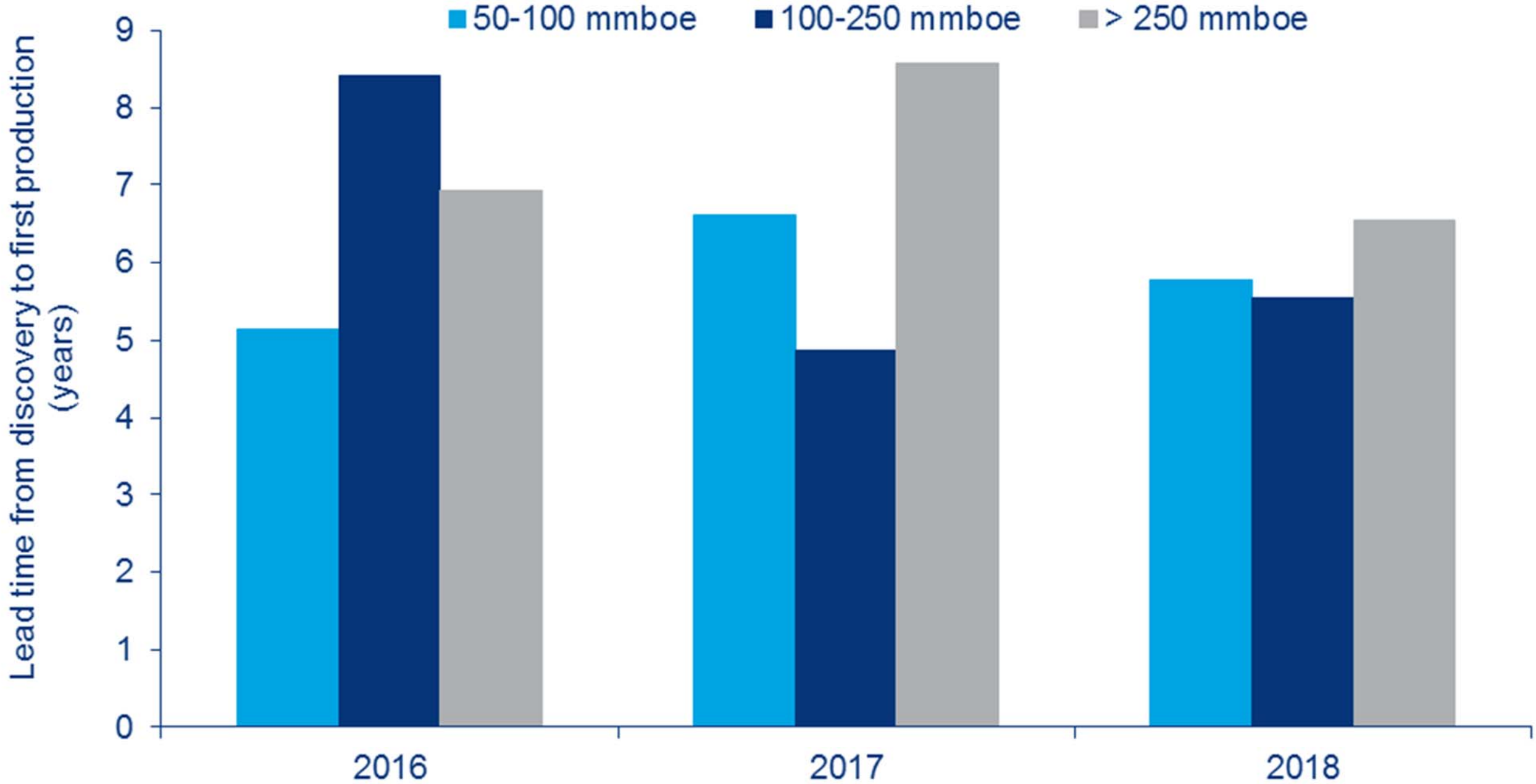
# Majors' peer group development costs vs production.

Source: Equinor

Capex roller coaster: Peer group development costs<sup>1</sup> vs production<sup>2</sup>  
Production, mmbœ/d (x-axis); Peer group annual development costs incurred, \$bn (y-axis)



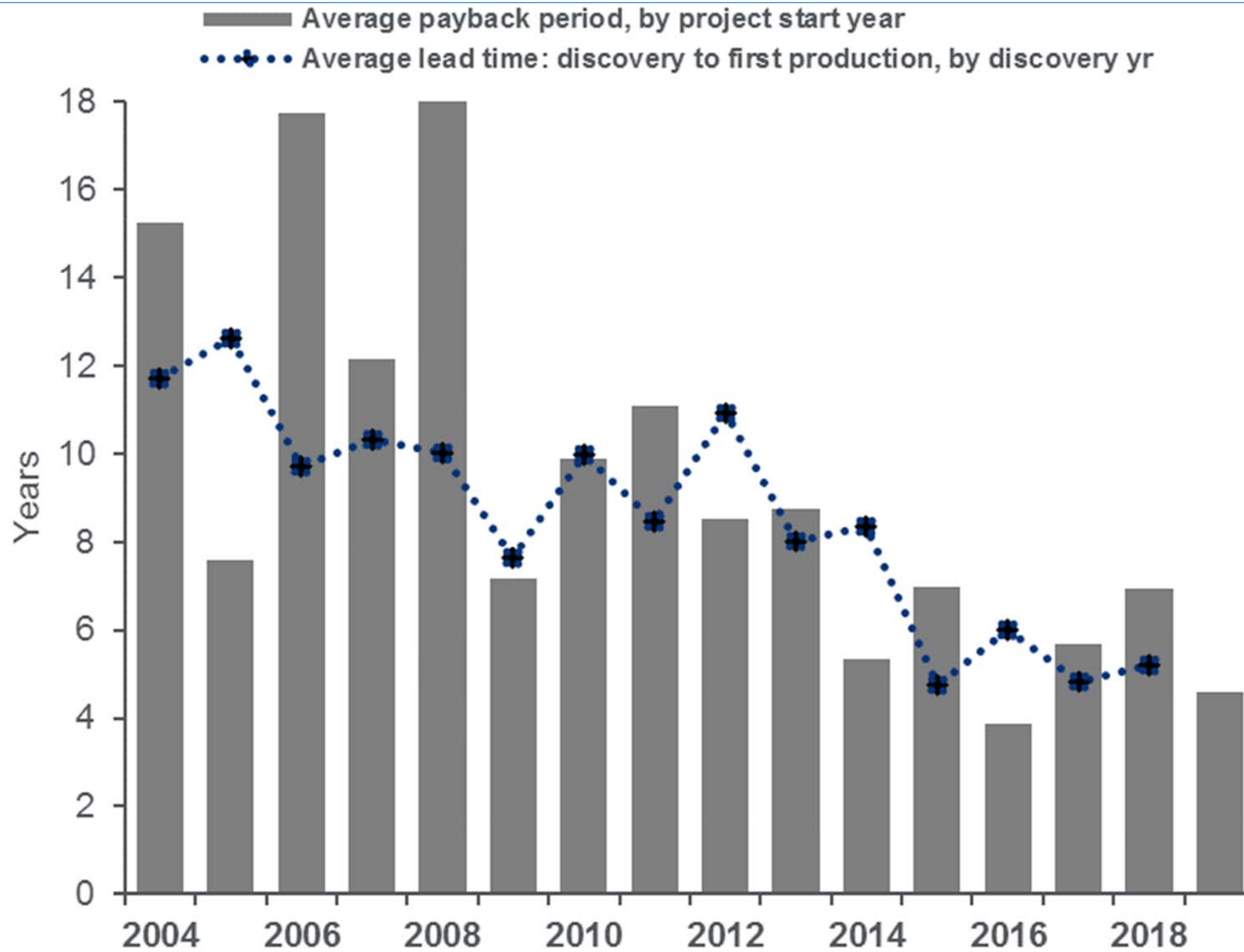
# Weighted Average Lead Time from Discovery to First Production (Fields Discovered 2016-2018)



Source: Wood Mackenzie

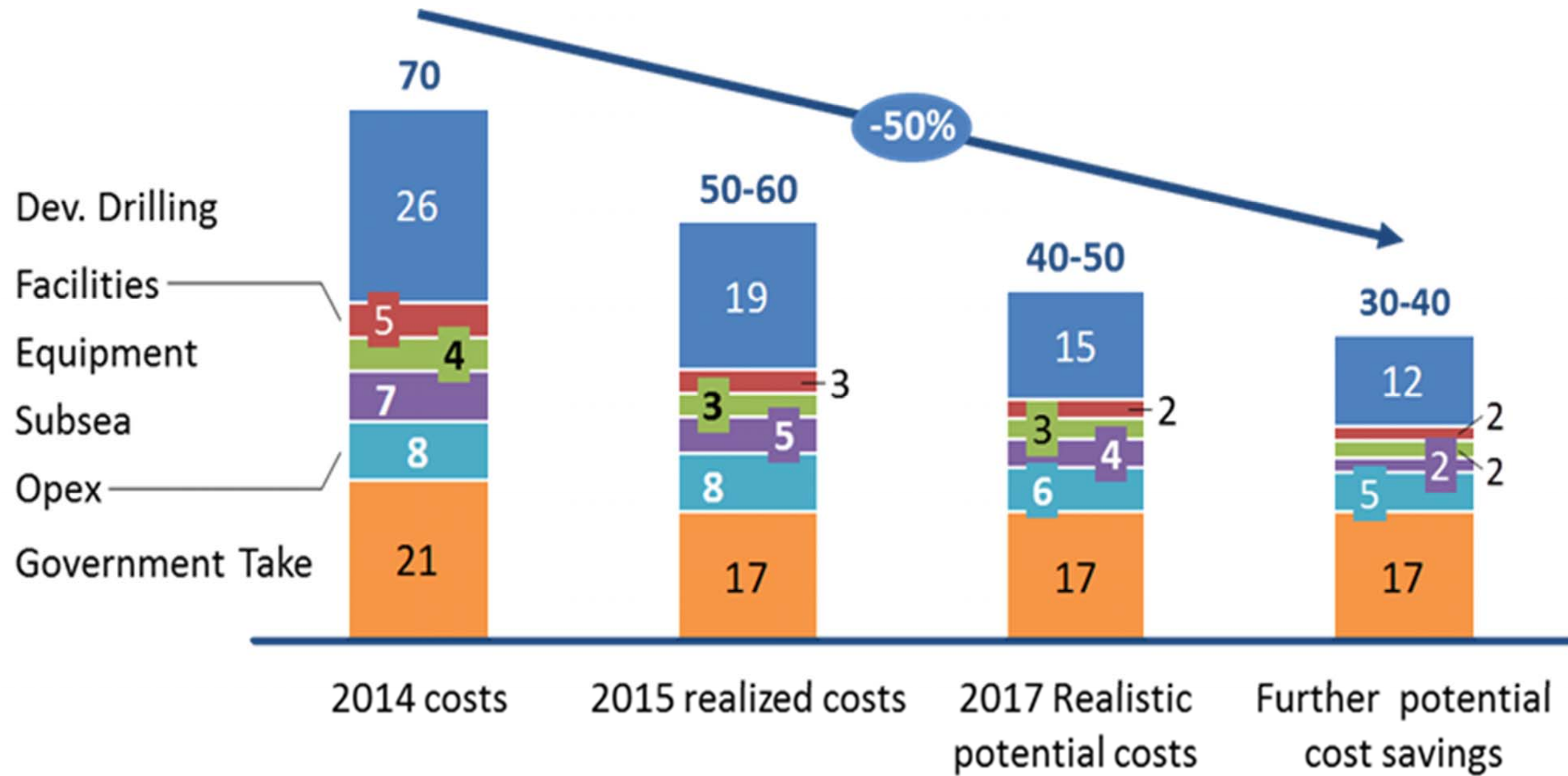
# Majors' peer group development lead time and payback

Source: Equinor & Wood Mackenzie



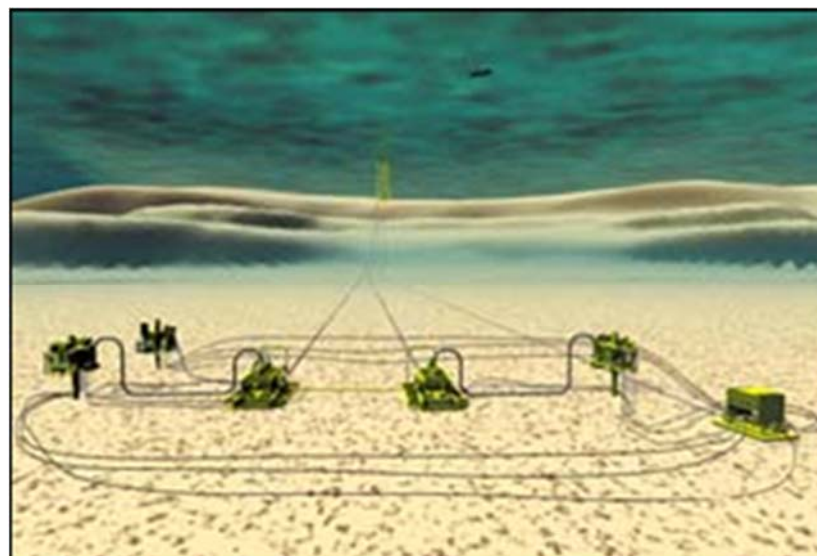
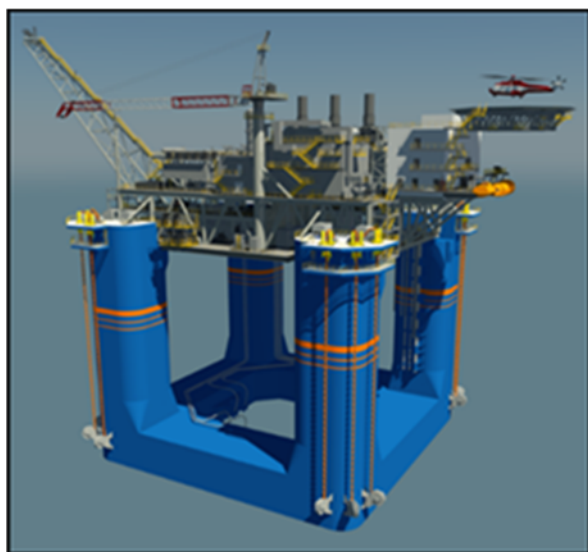


# Trend of Breakeven Oil Price and Cost Categories



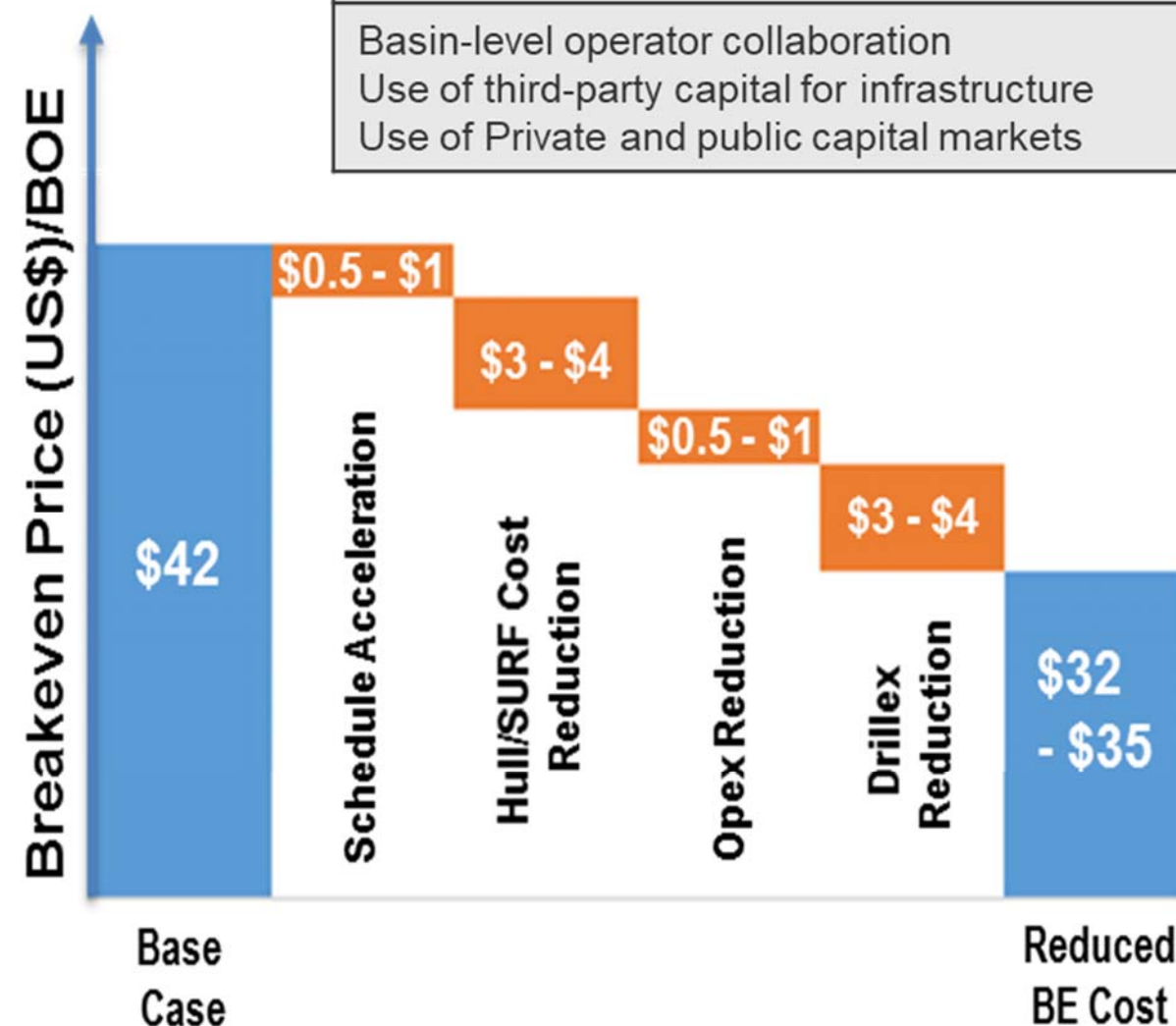
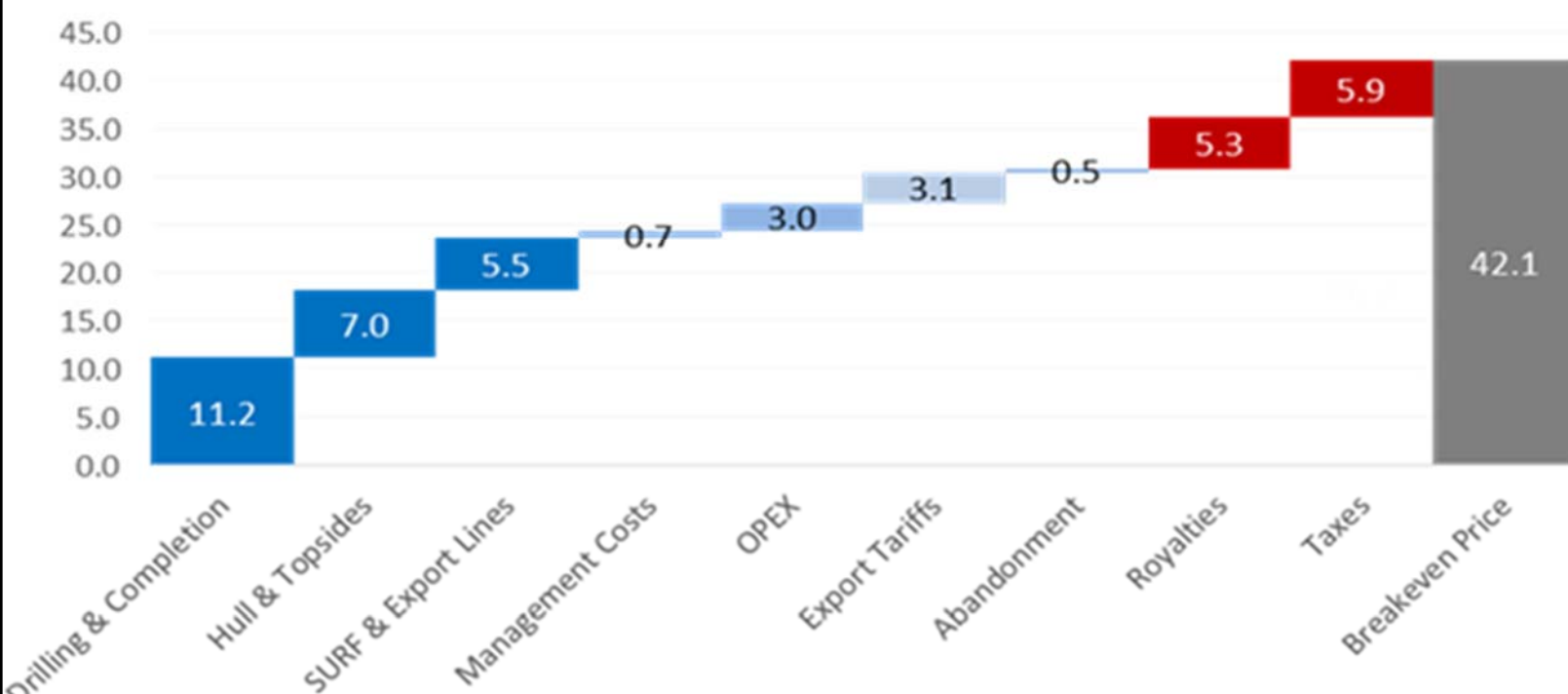
# Breakeven Oil Price Analysis for Typical Gulf of Mexico Field

## ....Most recent reductions



### STRATEGIES

- Standardization and simplification
- Re-use of existing infrastructure
- Step Change Technology- Digitalization
- Supplier-led partnerships & collaboration
- Basin-level operator collaboration
- Use of third-party capital for infrastructure
- Use of Private and public capital markets



# Next Step...Digitalization of Remote Operations

- **Process Reliability**

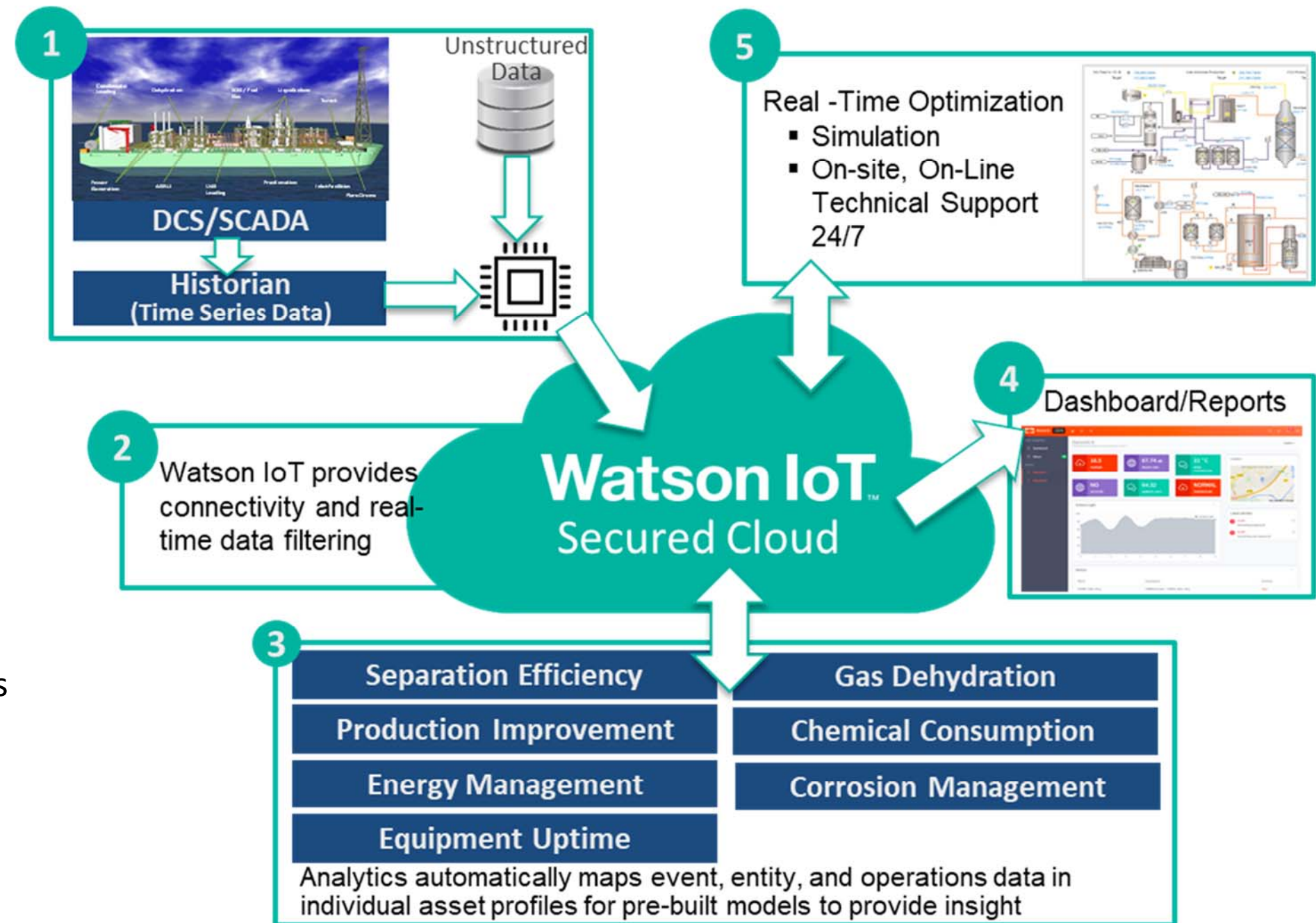
- Track operations & equipment performance
- Displays key KPIs
- Provides early event detection

- **Optimization**

- Using data through simulations
- Delivers operational recommendations
- Maximize asset utilization
- Increase profitability

- **What-If**

- Allows users to modify select parameters
- On-demand analysis
- Highlight potential economic impact and necessary operational changes



# Roadmap Towards an Unmanned Remotely Operated Factory

## Source: Equinor

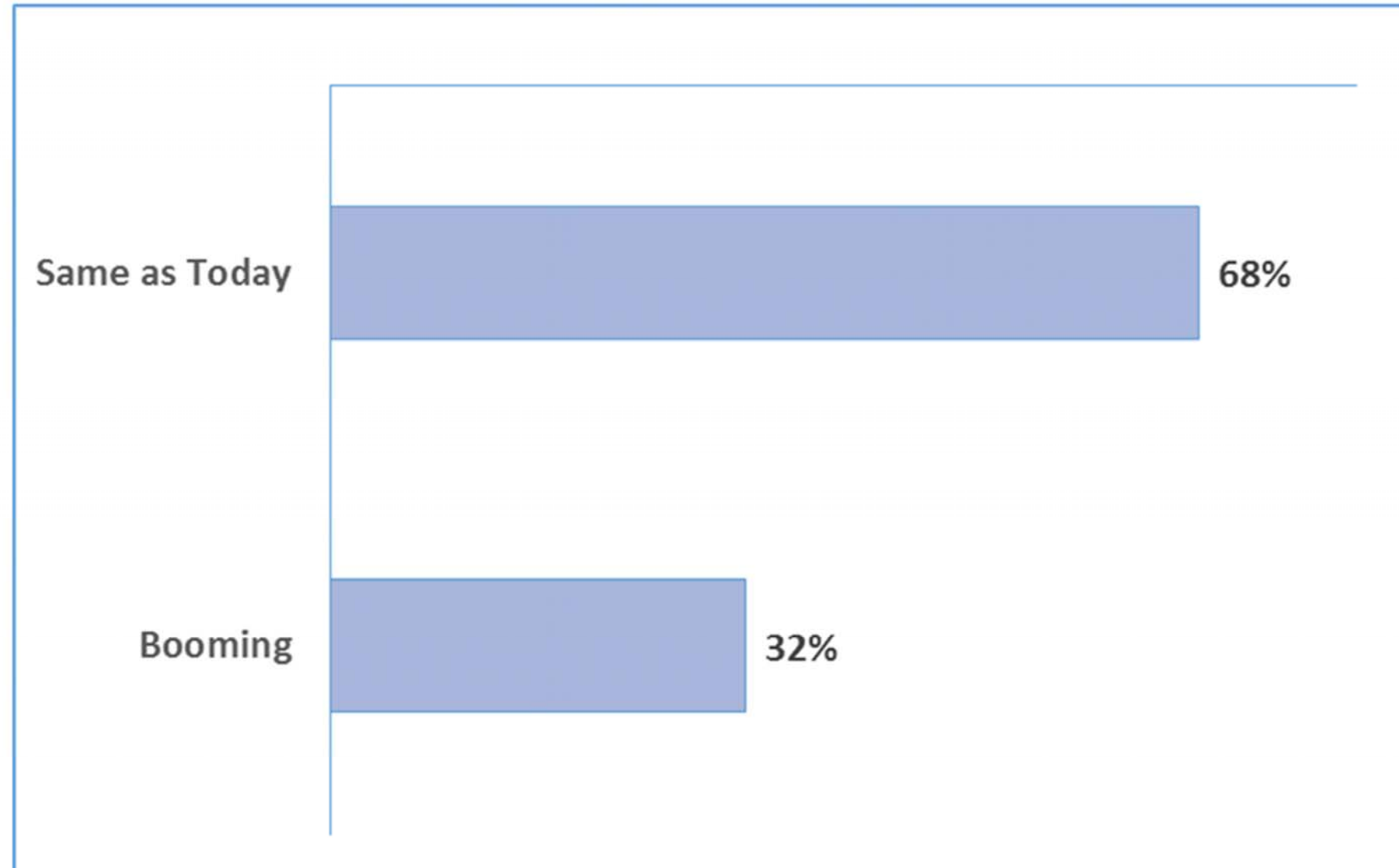
Innovation, technology and digitalisation for a future-fit portfolio



1. New concept compared to conventional facility.
2. Automated drilling compared to conventional.
3. Facility capex.

# A Look Back- May 2018 Results

What is your prediction of the activity level in the Gulf of Mexico Basin next year - OTC  
2019?



# A Look Forward- May 2019 Results

What is your prediction of the activity level in deepwater Americas next year at OTC 2020?

## Survey Results- a 50-50 split

Same at today

Booming



# Summarizing Americas Deepwater

## THE GOOD



- Deepwater basins with varying maturity allowing portfolio approach
- World-leading innovation and technology within the region
- Numerous supply chain hubs and human talent
- Mature basins providing learning curve
- Well established NOCs along with wide-variety of players from wildcatters to majors
- Same time zone

## THE BAD



- NOC hegemony ebbs back and forth
- Local content pressures
- Regulatory processes
- In a few areas, inflexibility of the fiscal regime provides limited protection against the downside

## THE UGLY



- The resilience of deepwater business is threatened by fluctuating commodity prices!

# ACKNOWLEDGEMENTS: Offshore Technology Conference OTC-29675-MS Coming to Americas

ExxonMobil

TALOS  
ENERGY LLC



Wood Mackenzie

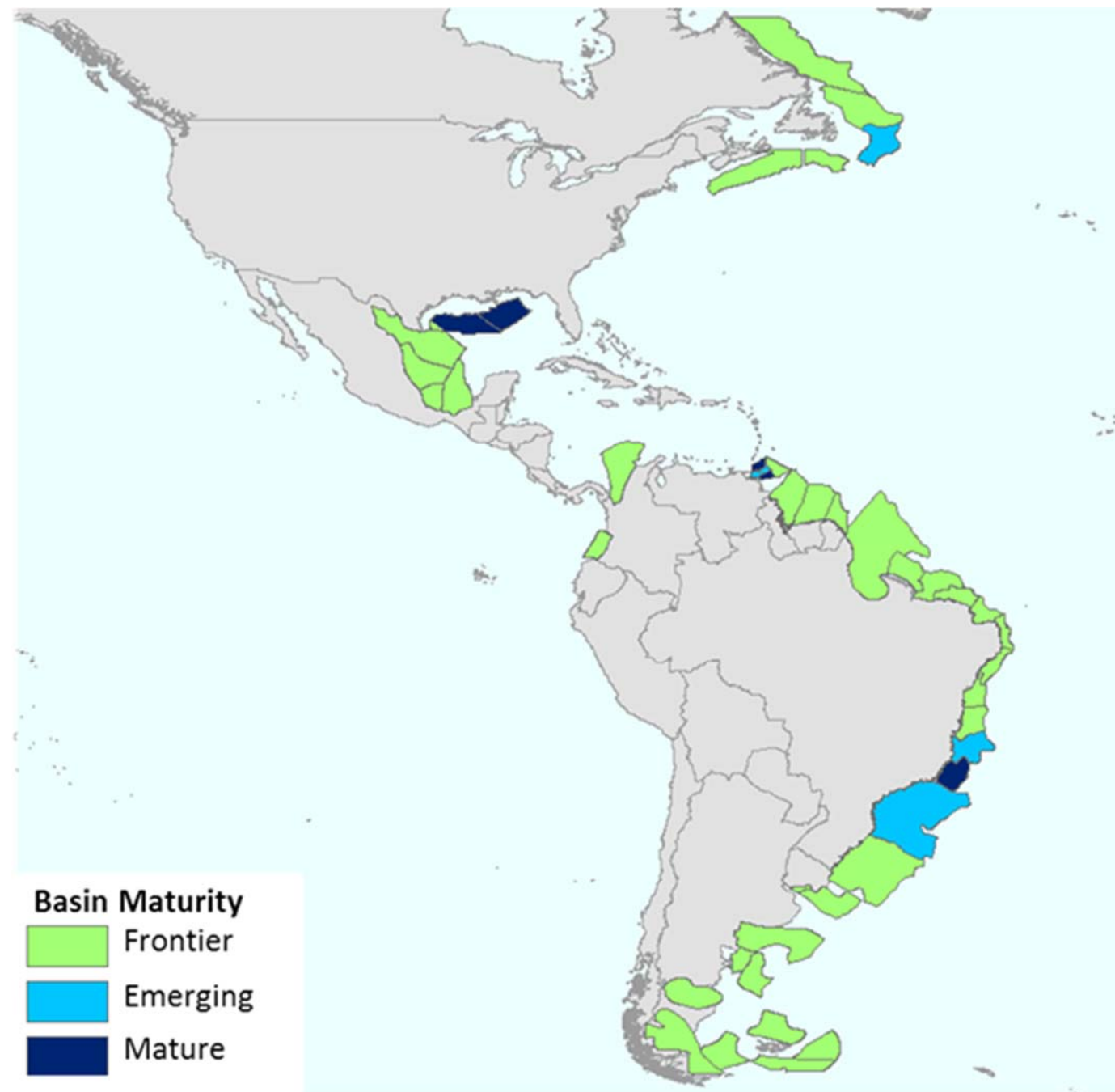


ecopETROL  
AMERICA



Granherne  
A KBR Company

equinor

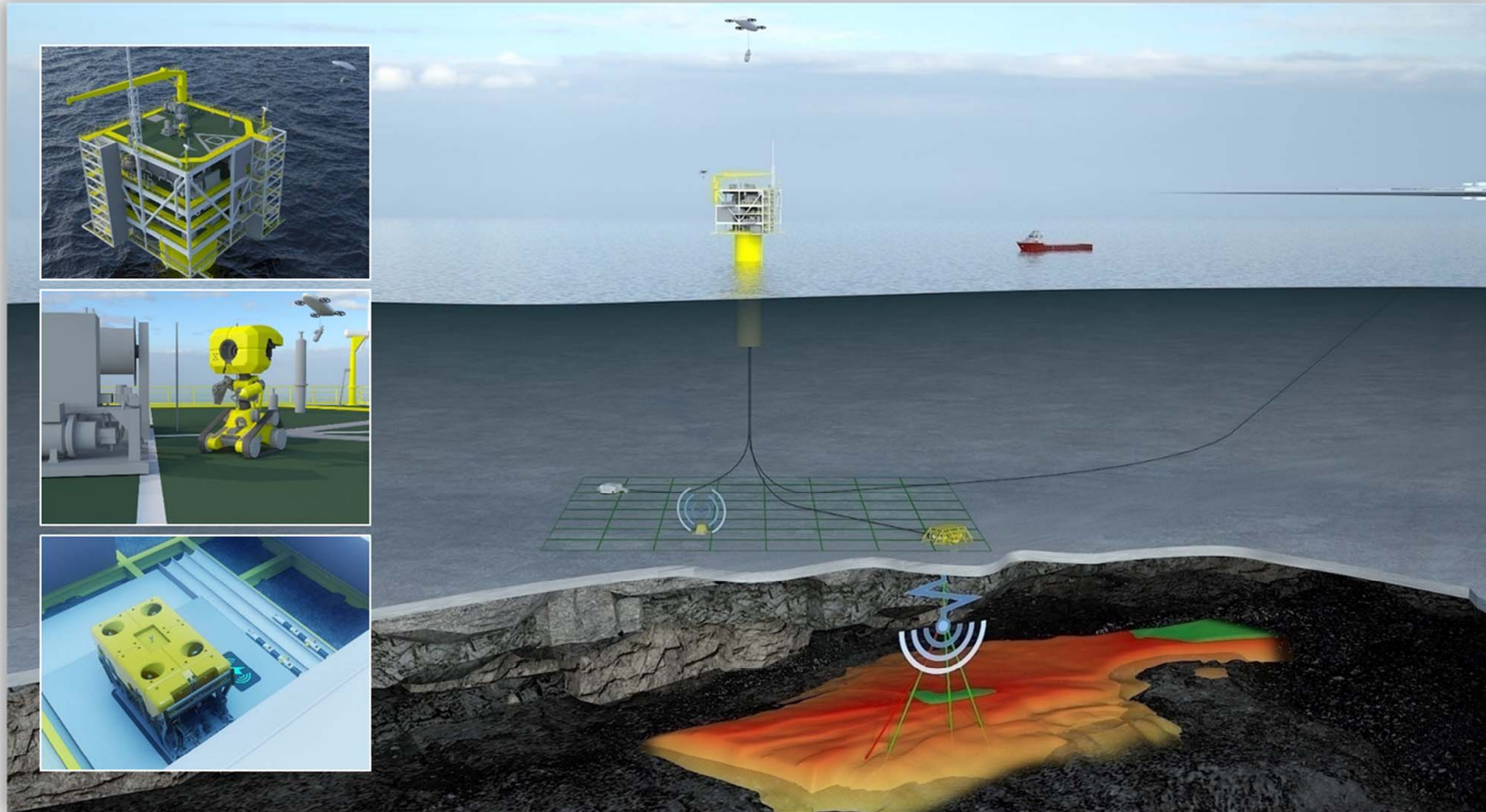




Backups

# Roadmap Towards an Unmanned Remotely Operated Factory

Source: Equinor



# GOM Floating Production Systems (FPS)



Semi-sub



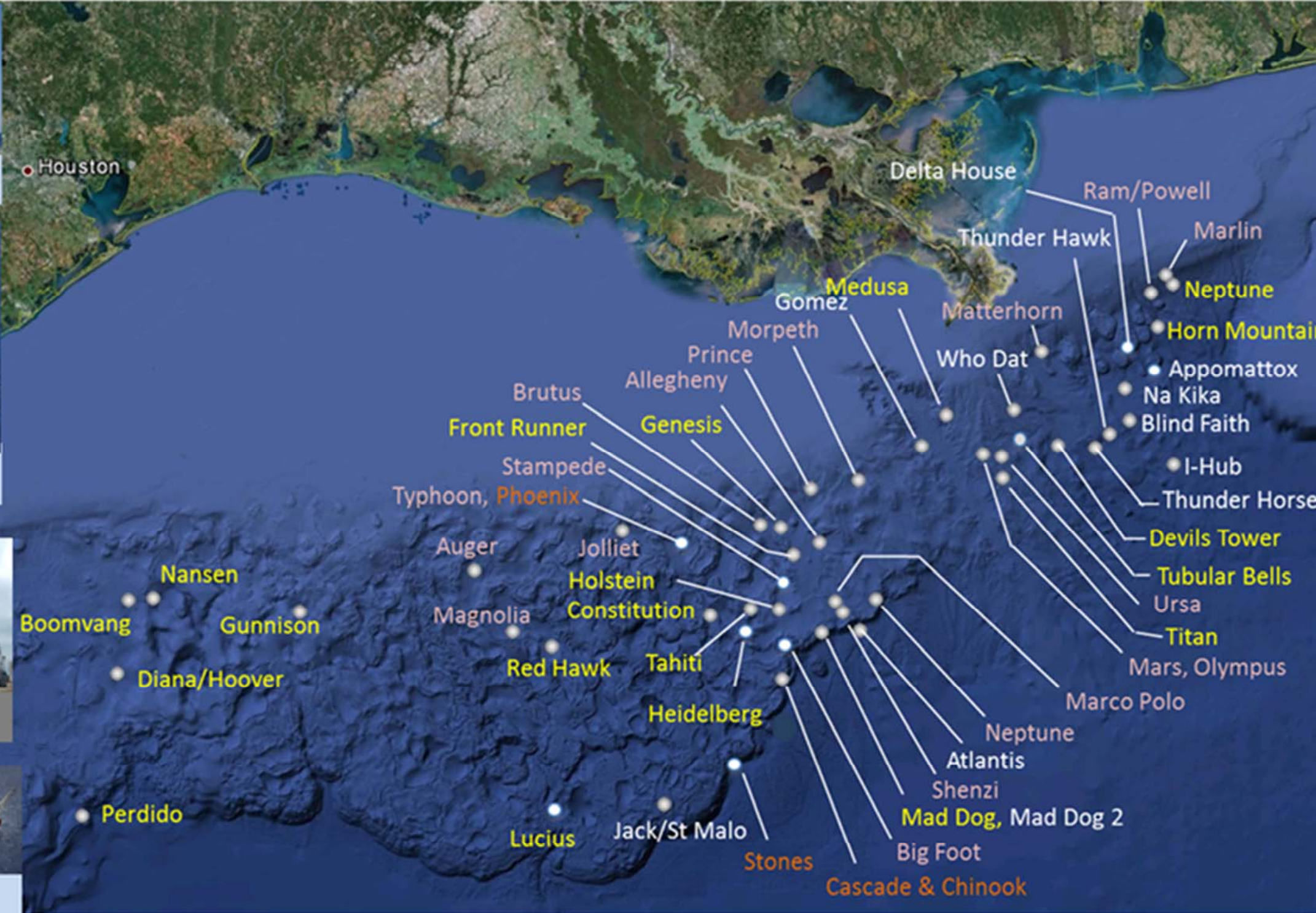
Spar



TLP



Shipshape



## Five Phases

1993 -1999  
EVOLUTION

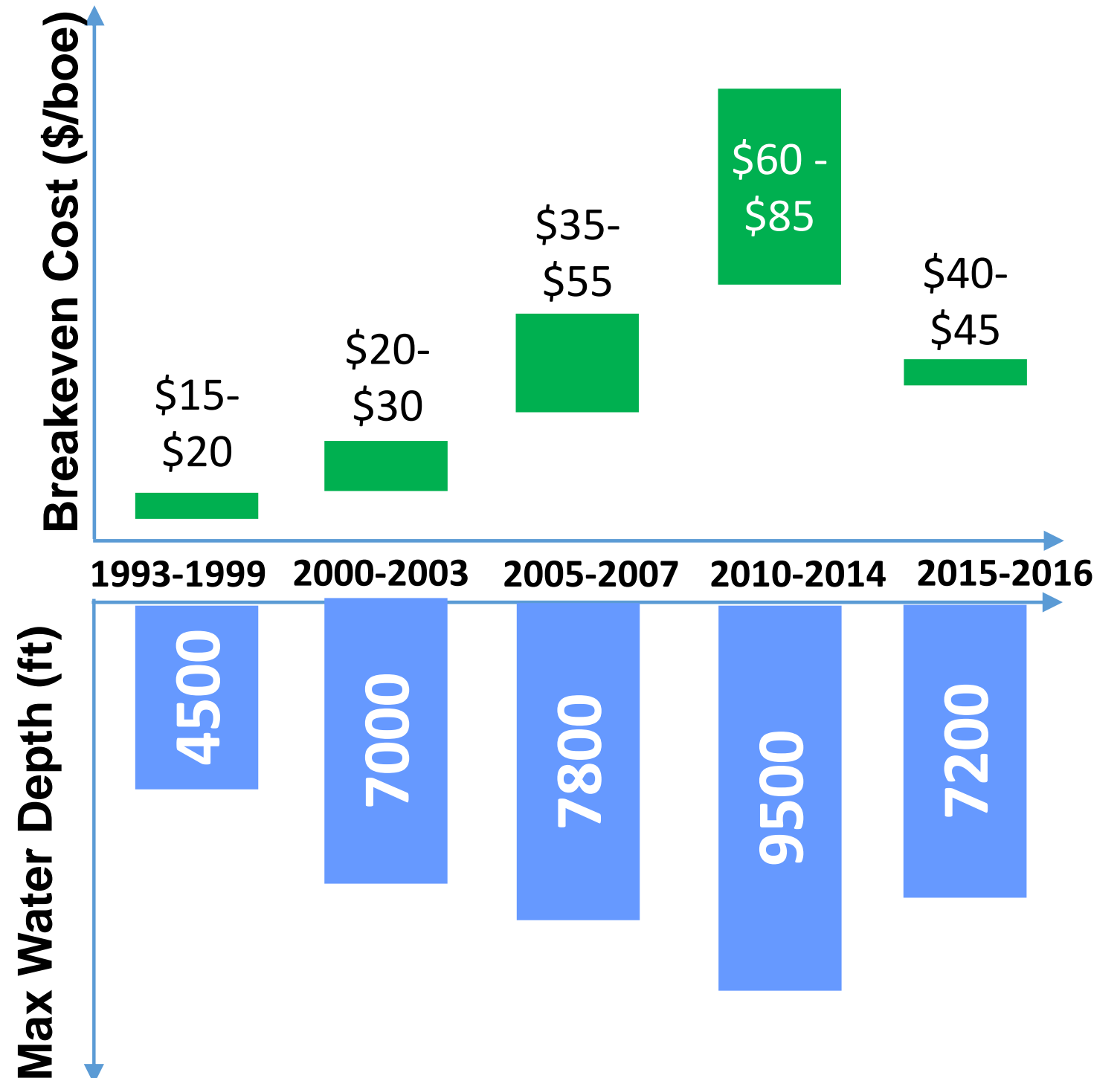
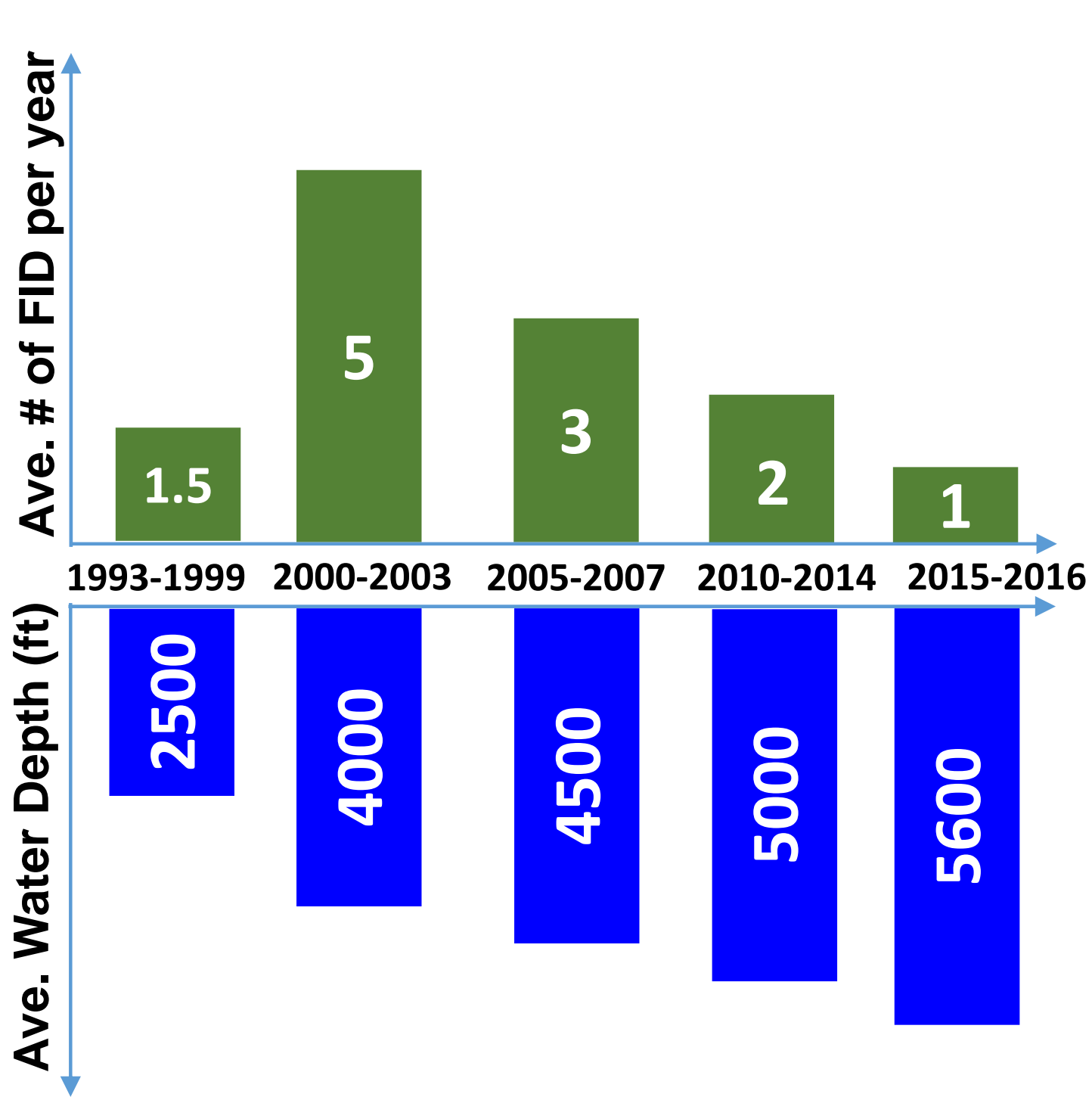
2000 -2003  
EXUBERANCE

2005 -2007  
INFALATION

2010 -2014  
HYPER-INFLATION

2015 -2017  
CORRECTION

# GOM Deepwater FIDs – A Roller Coaster Ride



# Subsea System Components Standardization Improves Cost and Schedule

