

## Impact of COVID-19 on the Oil & Gas Sector

April 2020

The background of the slide features a silhouette of an oil pumpjack facility against a cloudy, overcast sky. Three pumpjacks are visible, each with its characteristic walking beam and counterweight. The scene is rendered in black and white, creating a stark, industrial atmosphere.

# Agenda



- 1 Executive Summary
- 2 Industry Structure Impact
- 3 Impact & Mitigation per Segment

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# COVID-19 will accelerate the Oil & Gas industry's transformation journey with oversupply and low prices expected to last for years

## Oversupply and Low Price Impact on Oil & Gas Sector

### OPEC vs Shale War + COVID-19

- Russia/Saudi Arabia battle has the US as an implicit party
- COVID-19 demand crisis deepens oversupply and exaggerates the drop in crude prices
- The national budgets of OPEC countries, and Russia, are under severe challenge at low oil prices

### Massive Cancellation of Projects

- Investments shrink because of economics and funding constraints
- Operational shutdown of some high-cost oil
- Major capital projects cancelled or delayed

### More Vulnerable Refineries

- Low utilization rates lie ahead
- Low/negative margins will accelerate expected shutdowns
- No CAPEX/financing available for quality/conversion upgrades or greenfield projects to adjust the product balance demanded

### Asset Portfolio Restructuring

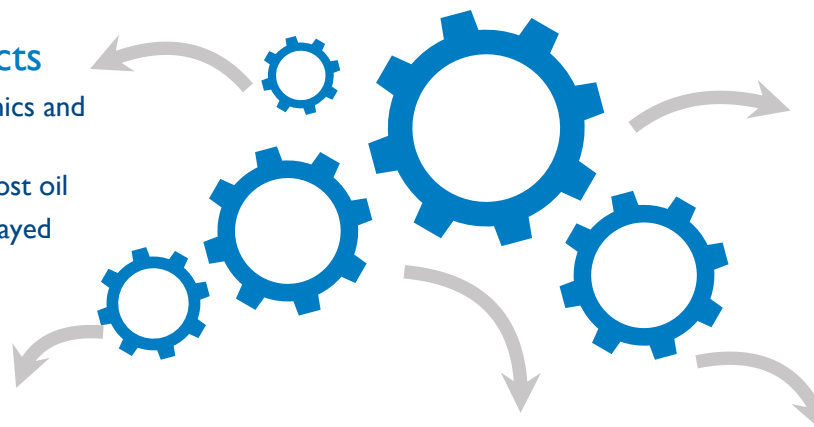
- Many asset classes become less attractive for oil companies, leading to extensive restructuring
- Active transaction markets with many distressed assets becoming available on the market

### Energy Transition

- World leaders have already decided to go “greener” (COP-21)
- Governments will be critical to transition continuity and continuing support
- Majors likely to continue their own energy transition as some renewable projects will show better economics than many E&P developments
- Cheap oil may slow the trend to renewables

### Industry Concentration

- Limited budget for reserves addition
- OPEC gains market share power from IOCs
- Efficiency gains will be achieved during crisis and after consolidation



# The oil price war, together with COVID-19, has created a perfect storm generating a highly negative short term impact for the industry

## Status

## Short Term Impact



### Production

- No agreement for reducing OPEC production quotas
- Saudi Arabia sees over-supply as a way to limit Russian and halt US shale production

- Some immediate crude production shutdowns in Nth America
- Fracking activity may come to an almost a complete halt and a majority of deep-water projects may be cancelled



### Demand

- Strong immediate impact of isolation measures
- Short to medium term impact from recession
- World was already claiming for an oil reduction for CO2 targets

- >30% drop of flights, light vehicle transit close to zero in many regions
- 5-10 MMBD annual average demand drop depending on how long COVID impact lasts
- Would take years to recover 2019 levels, with part of demand recovery going to other energies



### Prices & Margins

- Strong drop in crude oil price
- Refining margins low, even negative in some regions

- Some operations cannot cover production cash costs
- Refining shutdowns and/or do not start after turnarounds
- Pessimistic outlook for any CAPEX program



### Supply Chain Disruptions

- No storage for upcoming production, with shut-in of some crude oil production
- Financing issues along the full value chain and budget concerns for some oil producers

- Financial disruptions along full value chain. Many high leveraged US independents will not survive
- Oil Field Services strongly impacted by low activity levels and producers cash constraints

## All industry segments are impacted by the volume and price drops, the resulting financial collapses and related supply chain/operational disruptions

### Field Operations

### Oil Field Services

### Refining

### Transport & Distribution

Est. size of impact (illustrative)



Supply chain

- Storage restrictions for oversupply

- Spare part access will be critical, especially from China
- Drill bits / tools limited impact given low activities for new wells / exploration

- Already contracted crude needs to be re-sold
- Storage restrictions for crude, intermediate and final products

- Some production halt because of lack of storage downstream



Operations

- Manpower at minimum possible level
- Operators to prioritize low-cost assets

- Exploration / appraisal / new wells will halt
- Well intervention/workover to remain steady especially for rig-less activities

- Limited to minimum staff
- CAPEX initiatives and turnaround stopped
- Daily vs. monthly optimization

- Limited to minimum staff
- CAPEX initiatives reduced or stopped



Price/Margin

- Some production assets cannot cover cash costs
- Negative economics for some shale, deepwater and Canadian operations

- Many contracts will be renegotiated /cancelled
- Little room for additional efficiency gains

- Low utilization rates drive low to negative margins for some locations and configurations

- Lower revenues because of volume drop
- Financial stress for retail dealers requires support



Customers (incl. demand)

- High level of oversupply
- Penalization for non-standard crudes

- Demand will reduce until operators stabilize strategy
- Brownfield activities will be dominant

- Demand decrease under minimum production level for some refineries
- Demand mix change towards heavier fuels

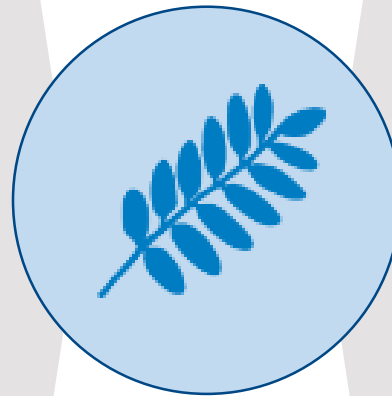
- Demand decrease until isolation ends and economy recovers

# The crisis will severely impact the oil industry, accelerating its transition to renewables, already underway, and altering its climate change approach

## Transition to renewables would accelerate



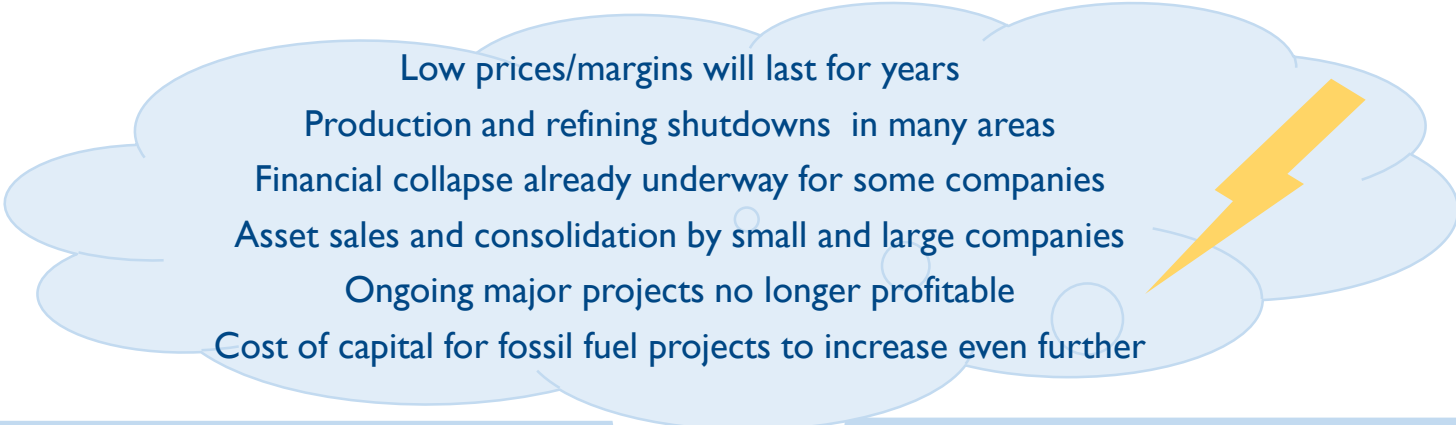
- Governments/municipalities pressure for low CO<sub>2</sub> emissions
- EU commitment to align emergency funding with “green targets”
- So, oil demand was expected to peak and fall in the coming decades anyway
- With high oil prices, it used to be attractive to invest in E&P projects
- But oil projects now have lower returns, and higher uncertainty than before
- Renewables have lower technical risks and now potentially lower commercial risk and higher return rates than oil



- Fossil fuels may be more competitive
- Cheap oil would change customer feeling about “going greener”
- Power generation prices already lower, partly due to lower fossil fuel prices
- Higher renewable subsidies will be required to reach customer breakeven
- Governments would give priority to economy recovery support after recession (i.e. reducing EV rebates)
- US & Canada would support oil industry from collapse

# Immediate and lasting impacts on the industry are likely to drive a structural transformation, leaving fewer, smaller players after the crisis

Who would be the survivors of current crisis?



Low prices/margins will last for years  
Production and refining shutdowns in many areas  
Financial collapse already underway for some companies  
Asset sales and consolidation by small and large companies  
Ongoing major projects no longer profitable  
Cost of capital for fossil fuel projects to increase even further

## Transform and survive

- Low cost /XL NOCs
- Super Majors able to transform
- Global oil field service companies
- Some niche players/regional “Mini Majors”
- .....

## Shrink/collapse or acquired

- NOCs with high cost/low reserve base
- Shale focus producers
- Small scale independent refiners
- Heavy oil/Canadian tar sands players
- .....

▶ **Some new business models would emerge and success in the new industry ecosystem**



There is still a chance for the market to get “back to normal” sooner than expected, but it is likely that the oil industry will continue to lose appeal

Scenario

**“Stagnation”**

- Oversupply lasts 2+ years
- “L-Shape” demand pattern, and persistence of high inventory levels
- Crude price below \$40/Bbl
- Low refining utilization rates and margins

**“Back to Normal”**

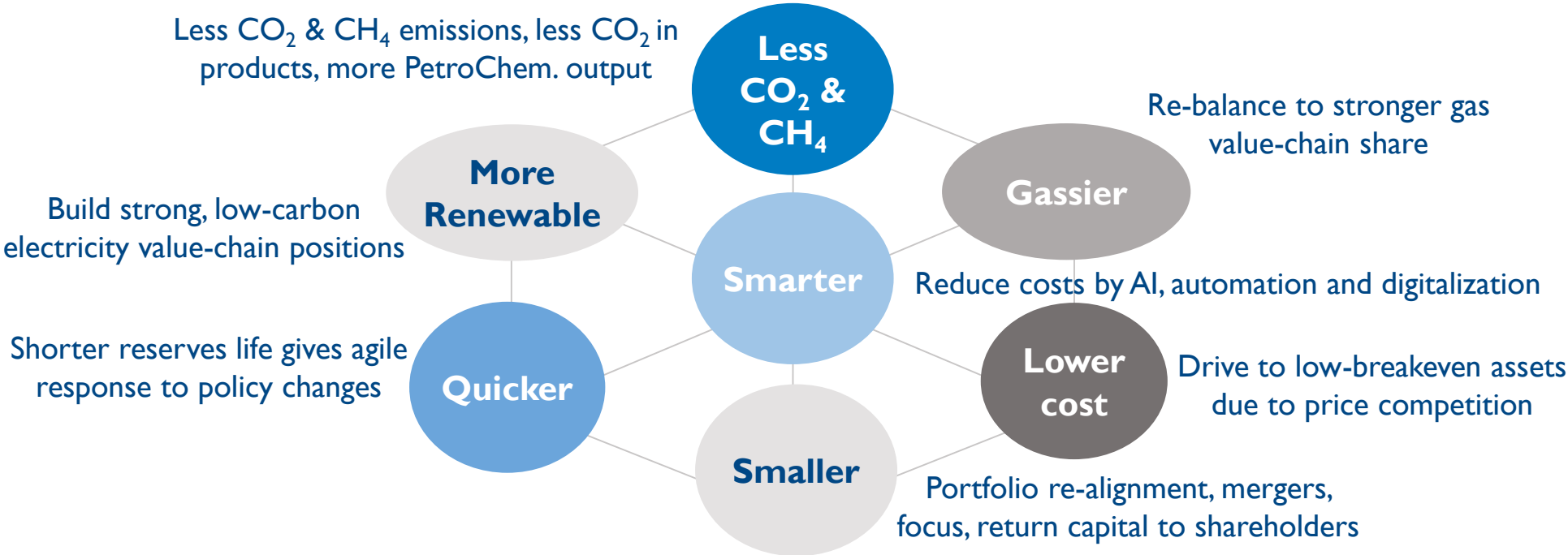
- Saudi Arabia/Russia agreement at OPEC
- Oversupply balanced
- “V-Shape” demand bounce/market rebalance
- Crude @\$50/Bbl at Q4 2020

Industry Outlook

- Larger market share concentrated in few OPEC countries
- Majors transform to survive
- Many production and refining shutdowns. Major projects cancelled as defined pre-COVID
- Significant downsizing of fracking activities
- International Oil Companies accelerate energy transition and new business models emerge
- 2020 industry financial impact will collapse some high cost producers
- Companies with already diversified portfolios will have lower impact and capitalize on market bounce
- Major capital projects will be delayed and executed later considering higher risk and lower price forecast
- International Oil Companies will focus on healthier project portfolios and efficiency gains

Under any scenario, lower expected returns, climate and CO<sub>2</sub> challenges will drive companies to search for new pathways to survive

### Key Survival Dimensions



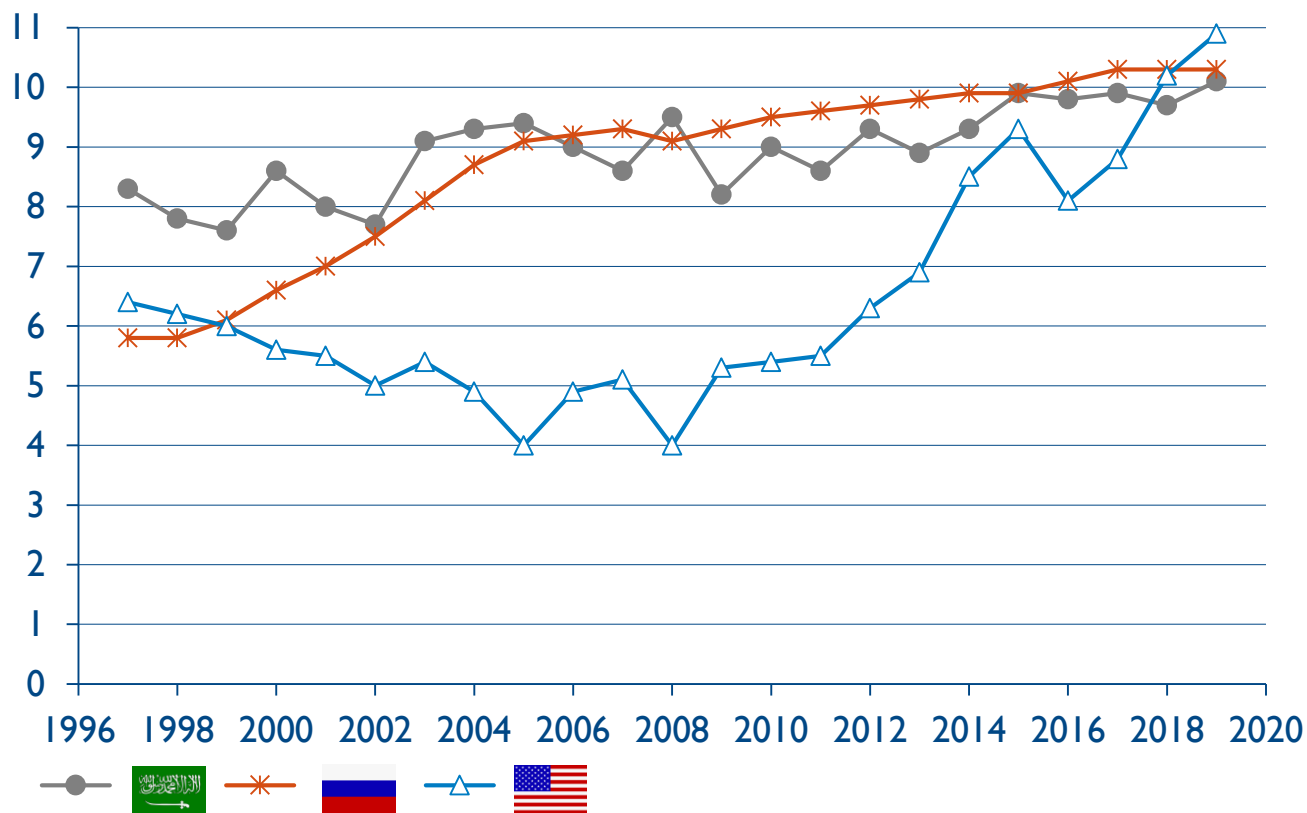
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# Saudi Arabia see oversupply as a way to limit Russian supply influence and halt US shale production growth

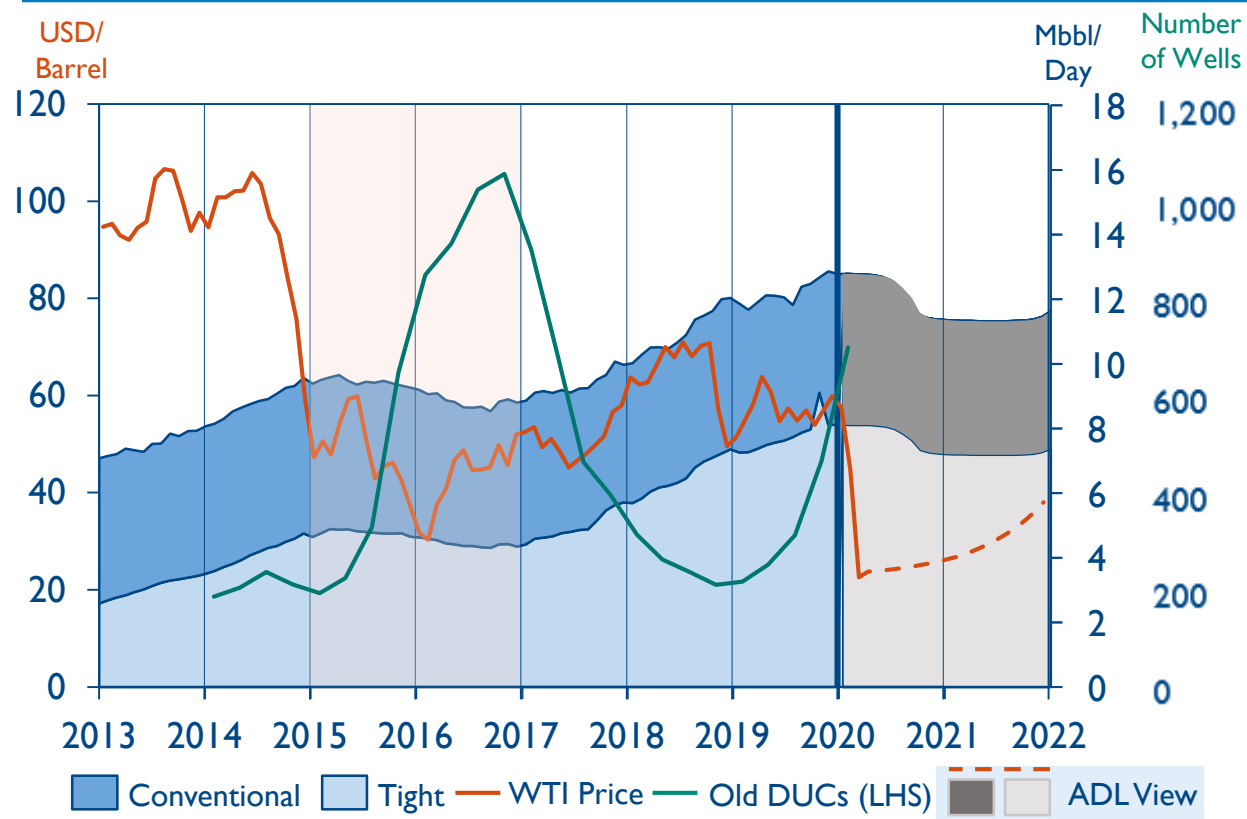
US-Russia-KSA production of crude oil  
MMBD, 1998-2019



- US became the top oil producer taking advantage of technology evolution after a period of high crude prices
- Russia-Saudi Arabia supply quota and price battle has created an oversupply
- Small imbalances in crude oil supply cause high price reactions
- US players (and others in the world) are not be able to maintain current production level at current crude prices

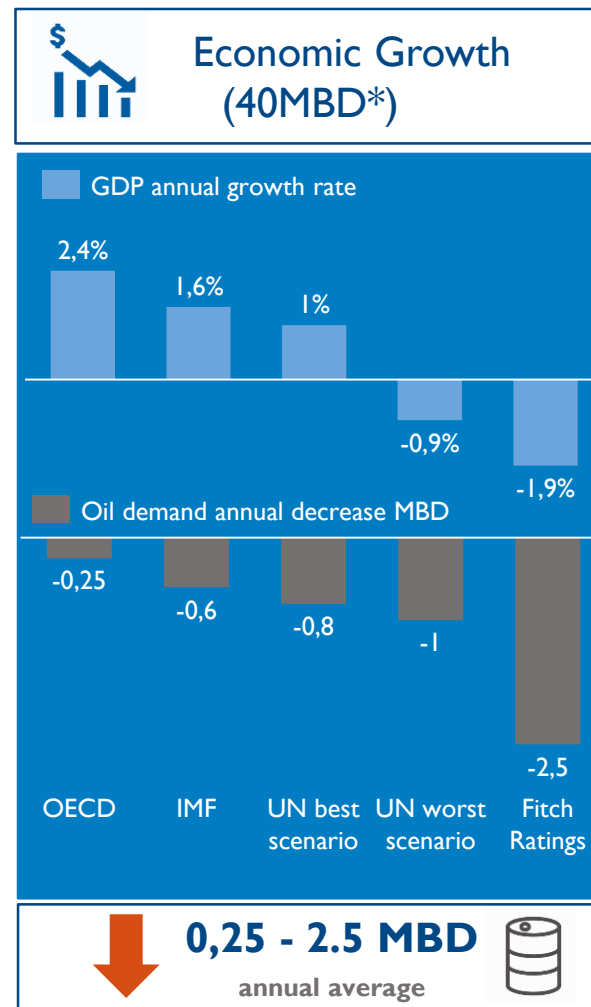
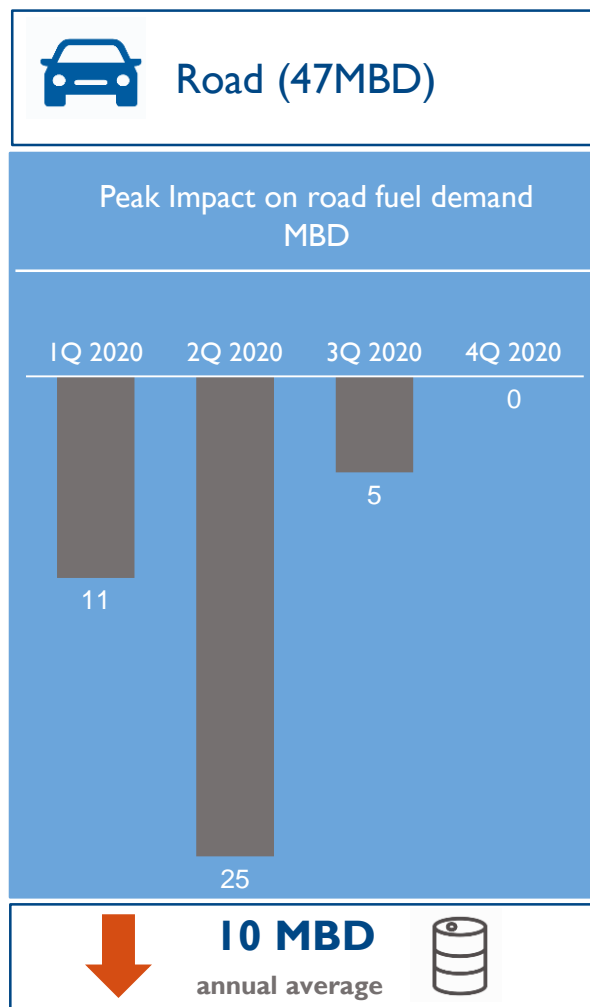
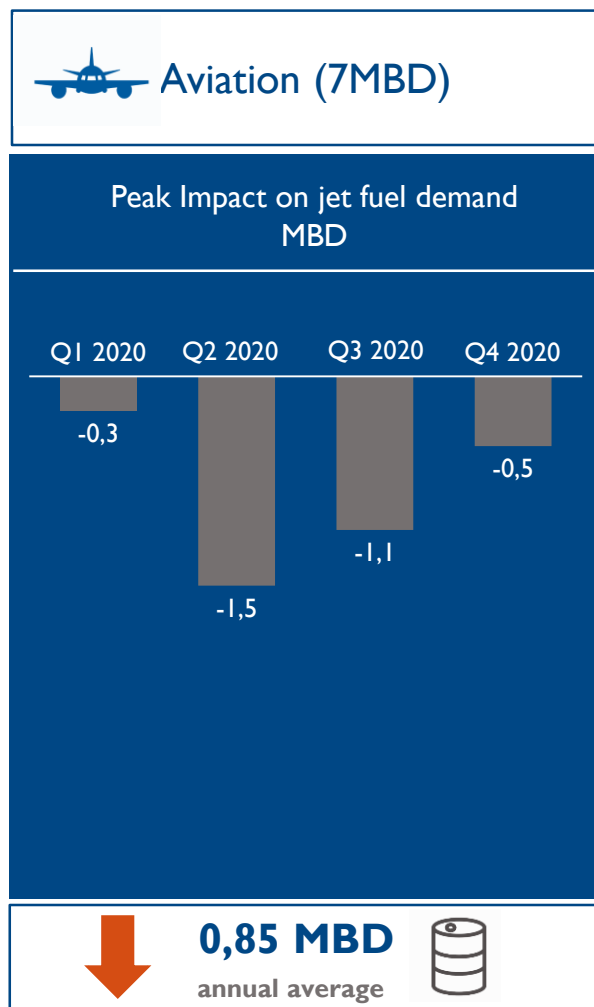
As in the 2014-16 oil crisis, US production will be strongly impacted and will not recover at our expected price-track of less than \$40/bbl

US Hydrocarbon Production, WTI Prices & old DUC Inventory  
2013- 2022



- Unconventional hydrocarbons production has tight economics and reacts rapidly to price reductions
- Some producers have their prices hedged for some months into the future, but would not be able to maintain production at any lower than \$40/Bbl
- Localized US demand reductions also limit production due to logistics restrictions

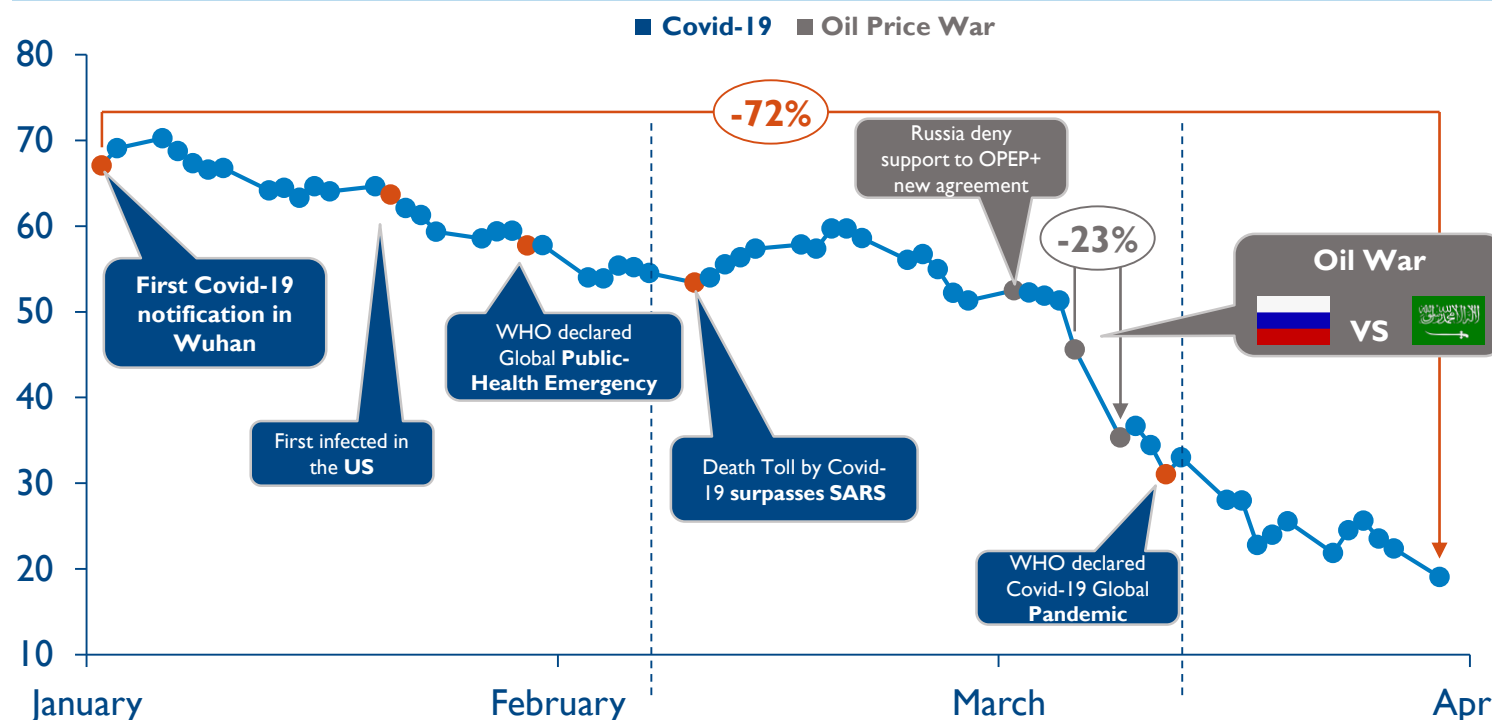
# Demand forecasts change every week, but average global reductions of more than 10 MBD are expected for 2020



\*Oil demand for non-transport activities

# Oil prices have been affected by the Russia/Saudi Arabia disagreement, the outbreak of the global pandemic and the resulting increased oversupply

Brent Spot Price Dollars per Barrel (from Jan 2, 2020 to March 30, 2020)

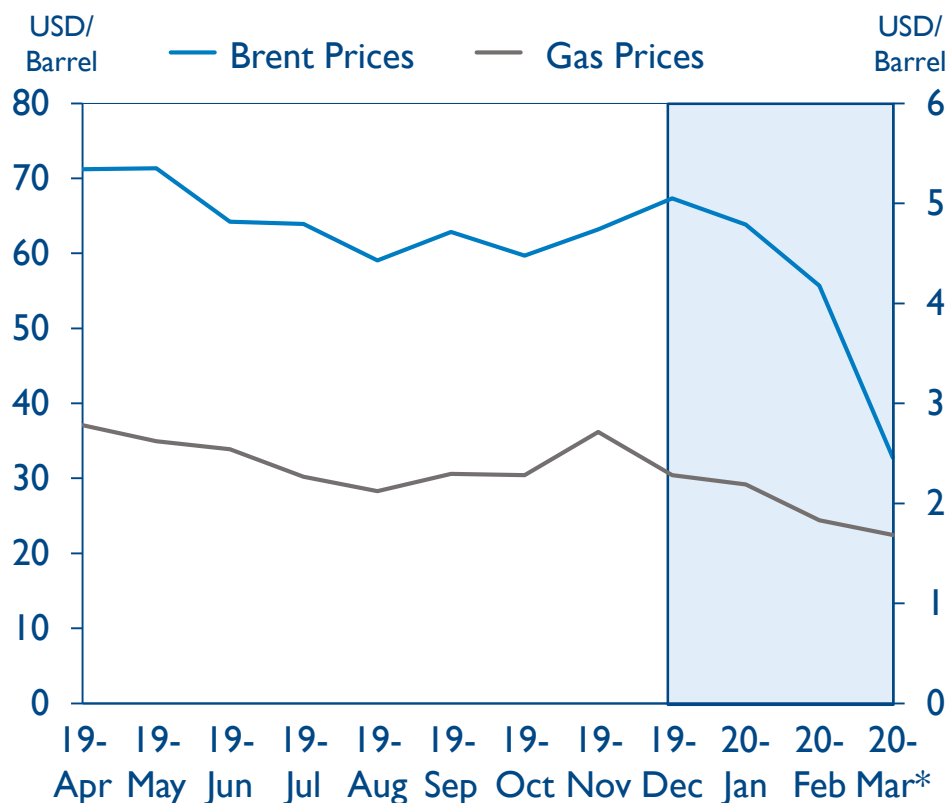


- Russia did not accept Saudi Arabia production decrease proposal after negative forecast from EIA for global demand because of COVID-19 and Saudi Arabia stated it would increase its exports
- The global pandemic, declared by WHO increased crude oil oversupply and impacted prices still further
- OPEC would soon decide soon cut production after over 70% price drop

▶ Low prices support Saudi Arabia's intention of increasing its market share but they would ultimately accept a production cut in order to support oil prices sufficient to balance its national budget

Natural gas prices have also dropped significantly, with the LNG sector being greatly impacted, reducing its expected growth in the coming years

Monthly Brent vs Natural Gas Henry Hub (HH) Price



- Economic crisis impacted on industrial demand for gas and gas-fired power globally
- Henry Hub prices are now below \$2/MMBTU and JKM futures prices are below \$3/MMBTU
- LNG liquefaction already has excess capacity, with oversupply and depressed prices, even before COVID-19
- Major capex cuts and the deferral of several multi-billion dollar LNG projects (i.e. Australian) are already announced. Shell for example is walking away from the Lake Charles gas export project.



# Crude oil oversupply has created an economic storm for the oil industry, with prices and margins in their lowest level this century

## Oil Sector Supply vs. Demand Unbalance

### Supply



- Additional Saudi production would flood the market
- Some immediate shutdowns, but some production will take more than a year to fall off-stream, including by natural decline
- Storage capacity is filling and already contracted crude is re sold to the market

### Demand



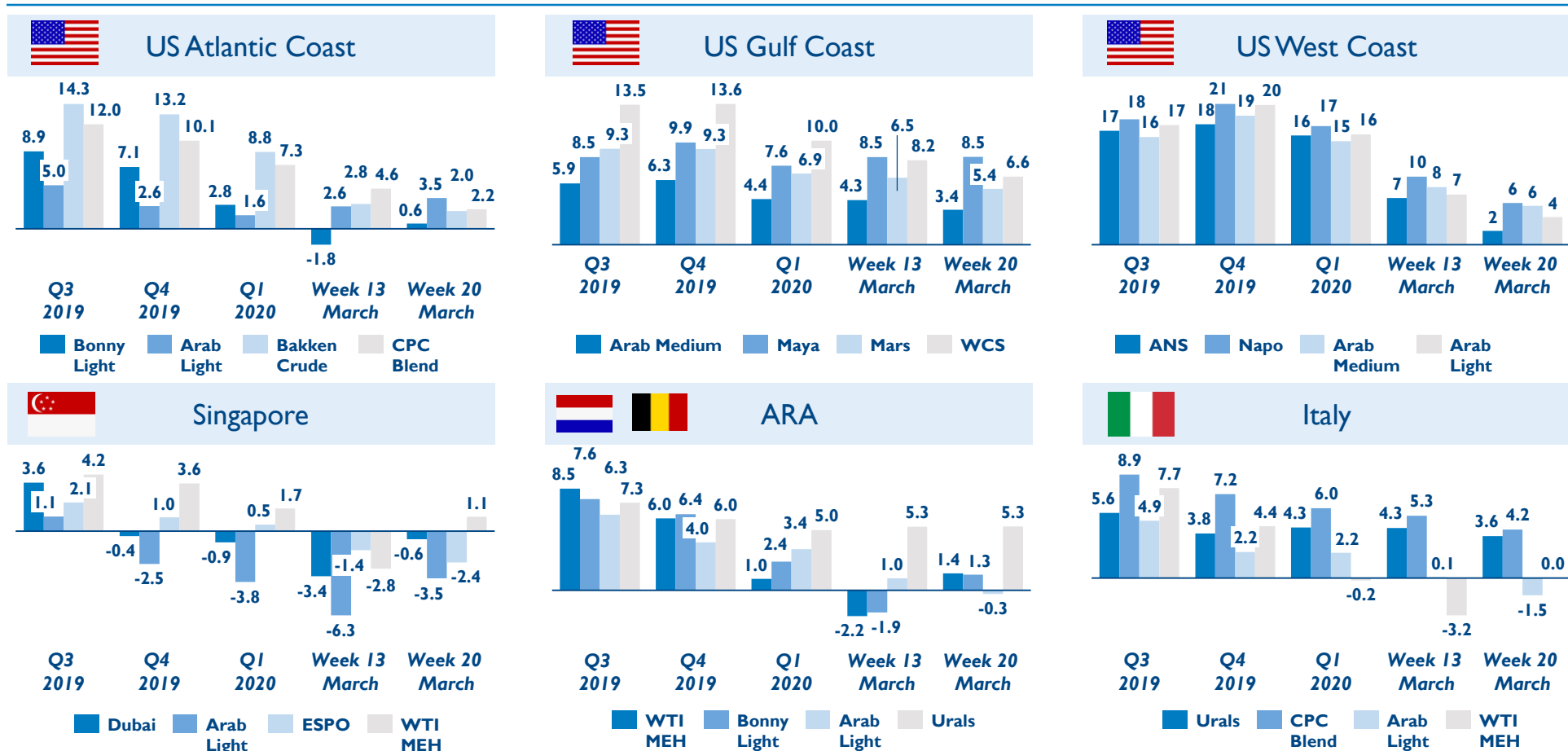
- Impact of over 10 MMBD, or about 10% of global consumption
- Demand mix changes challenges the use of refining capacity and configuration
- Even when isolation ends, recession will continue impacting fuel demand

### Economic Storm for the Oil Industry

- Crude prices below \$30/Bbl now and are **expected to remain below \$40/Bbl for >2 years**
- Tight refining margins, at least until 2019 fuel demand is restored
- Immediate financial crisis or collapse for many players; with widespread consolidation and portfolio reshaping
- Much new CAPEX projects and most exploration either cancelled or delayed
- Supply chain disruptions

# Global refining margins took a severe hit, mainly on falling gasoline and jet fuel demand, due to progressive lockdowns in multiple countries

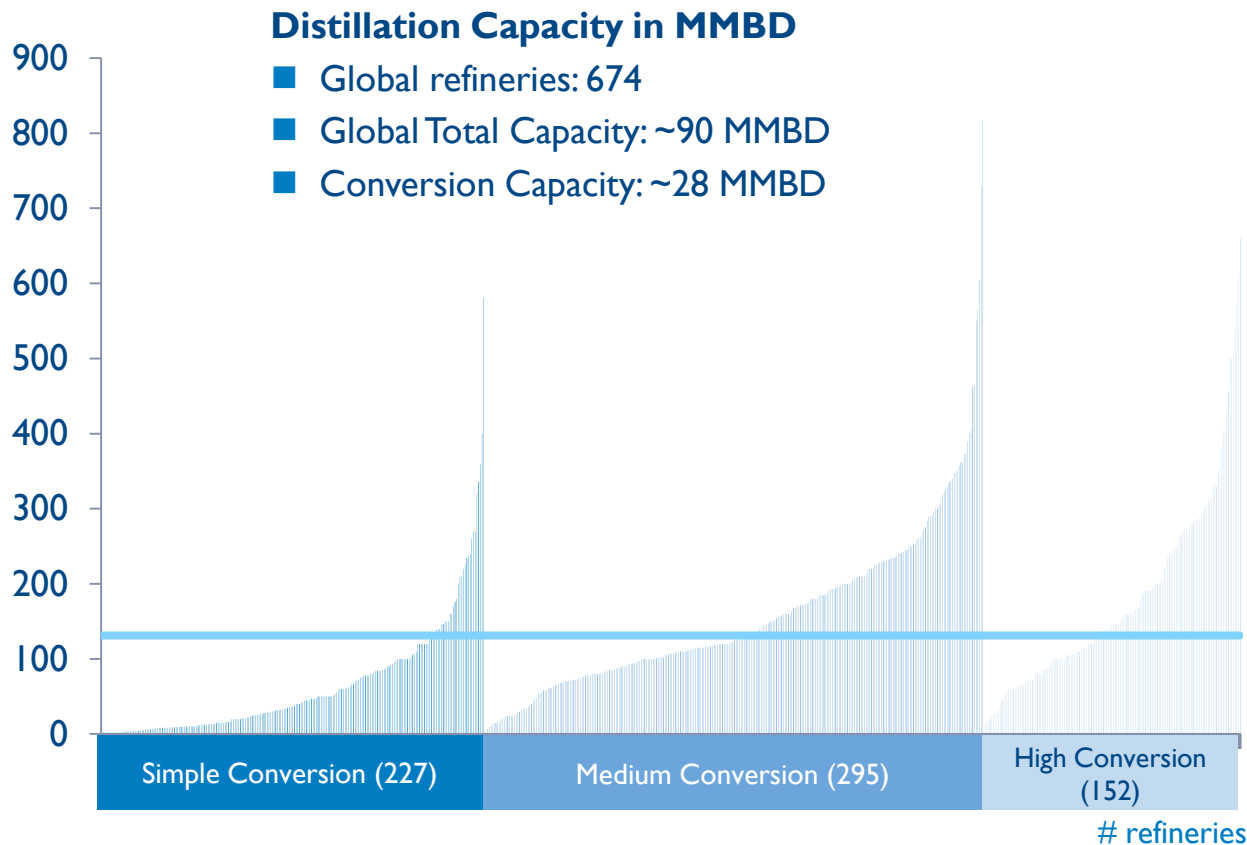
Refining Margin Averages (\$/b)



Source: Arthur D. Little, S&P Global  
 Note: Q1 2020 (January 1 to March 20)

# Demand decrease, and a strong decline in refining margins that will not recover soon, will accelerate an ongoing restructuring in global refining

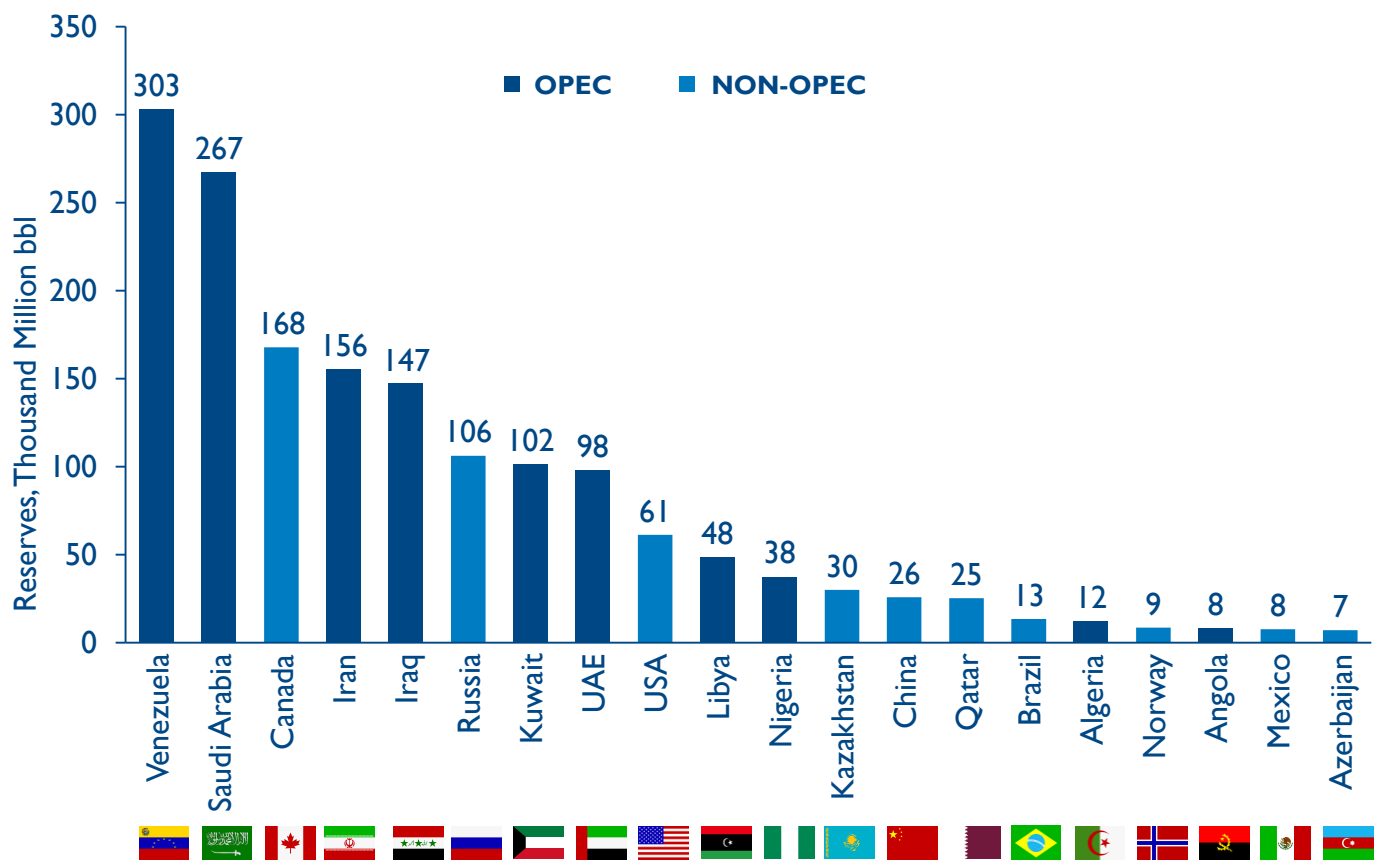
## Global Oil Refineries



- The global refining asset base was already under transformation, with large scale high complexity additions in Middle East and Asia displacing small low conversion capacity elsewhere
- The current drop in margins has already forced shutdowns, with some plants being unable to cover their cash operating costs
- Revamps, turnarounds and capital projects have been cancelled in many units
- Restructuring of the refining sector will accelerate since strong margins will not return until 2019 demand levels have been recovered

We expect OPEC to gain more power, relative to the IOCs, as oil supply becomes more concentrated in a few low cost producing countries

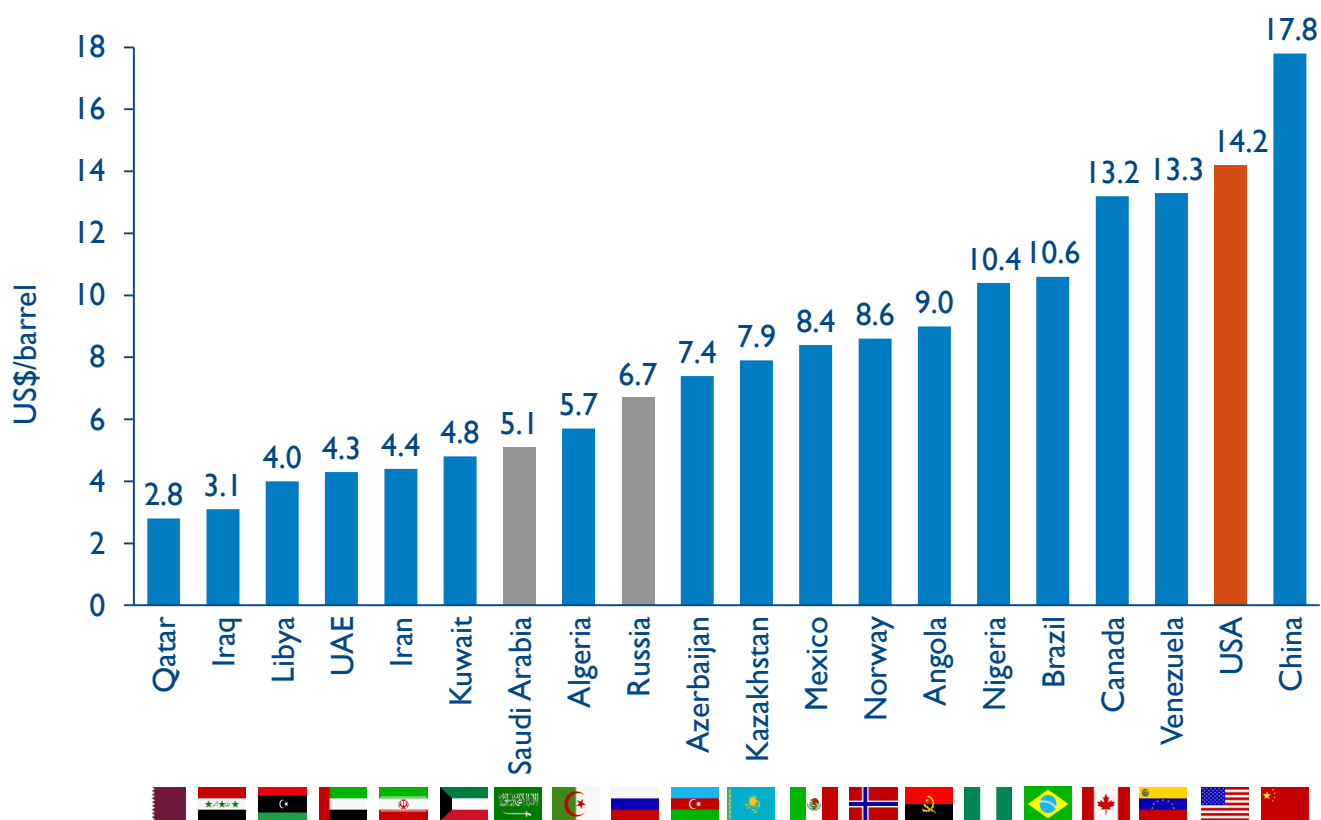
Reserves By Country (Thousand MMBbls)



- In a low oil-price scenario funding commitments by the IOCs for finding and developing new reserves will decrease sharply
- With an average reserve life of about 10 years, top IOCs reserves position will progressively shrink and their share of total oil production (and power) will reduce
- OPEC's reserves life of above 50 years, combined with their generally low production costs will ultimately displace much IOC market access

# Current prices and oil production costs favor OPEC's ability to increase market share, but challenge their national budgets and political stability

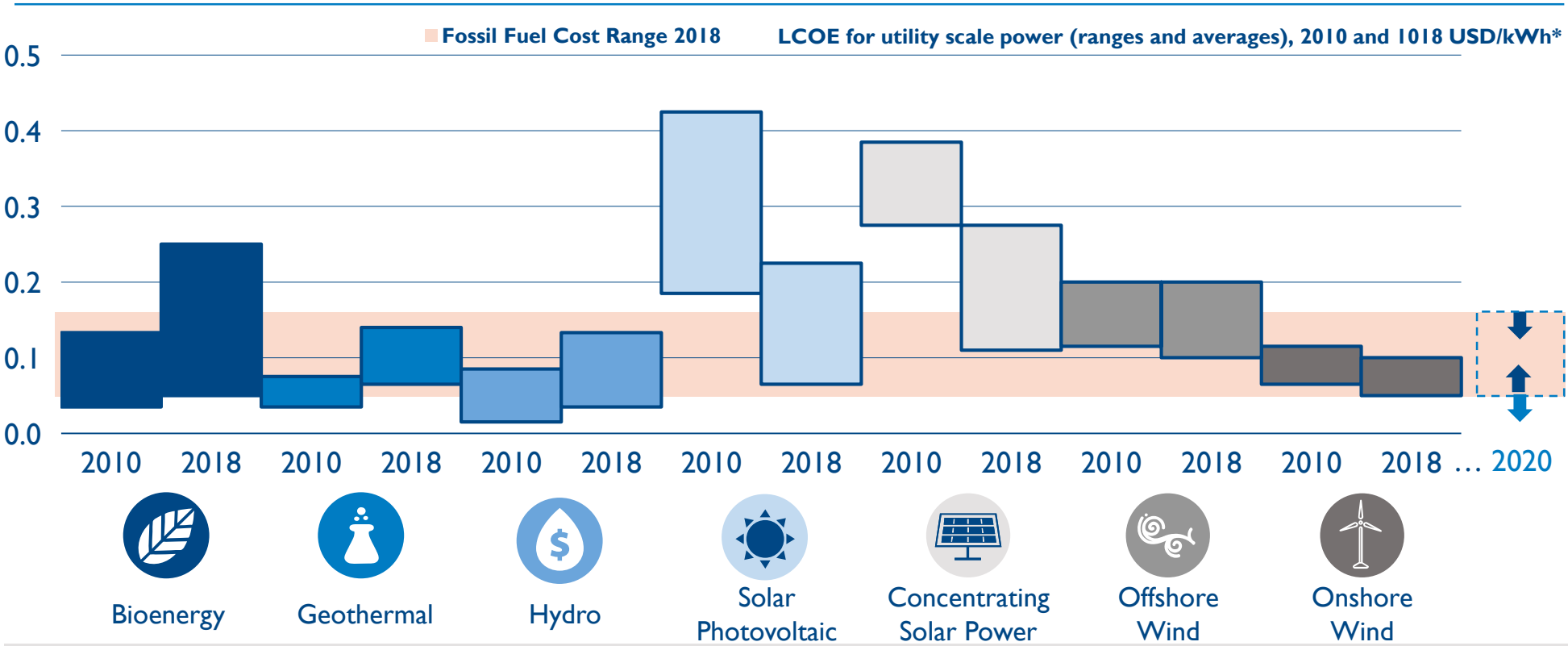
Oil Production Cost By Country \$/Bbl



- Much of OPEC's generally very large reserves volumes could be produced at only very low cost
- But, current oil prices are too low for petroleum based economies to support their national social and economic programs. This places their political stability at risk
- Nevertheless, there are also significant reserves volumes, outside OPEC, that will not be able to maintain their current production levels at prices below \$40/bbl, reducing this oversupply pressure

A global commitment to a “green economy” has been underway, driven by declining renewables costs, but lower fossil fuel prices may challenge this

Competitiveness of Renewables vs Fossil Fuels 2018



Lower fossil fuel prices, combined with lower demand for power and lower power prices, industrial and transportation traditional energy sources cost, defines a lower cost competition for renewables penetration

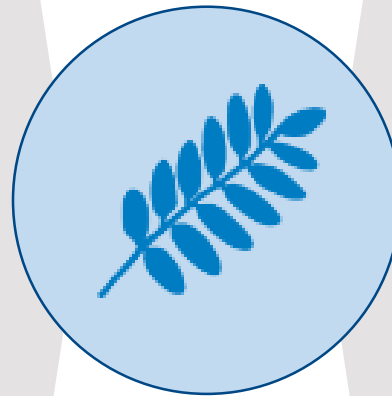
Source: IRENA 2018, Arthur D. Little estimate

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### Transition to renewables would accelerate



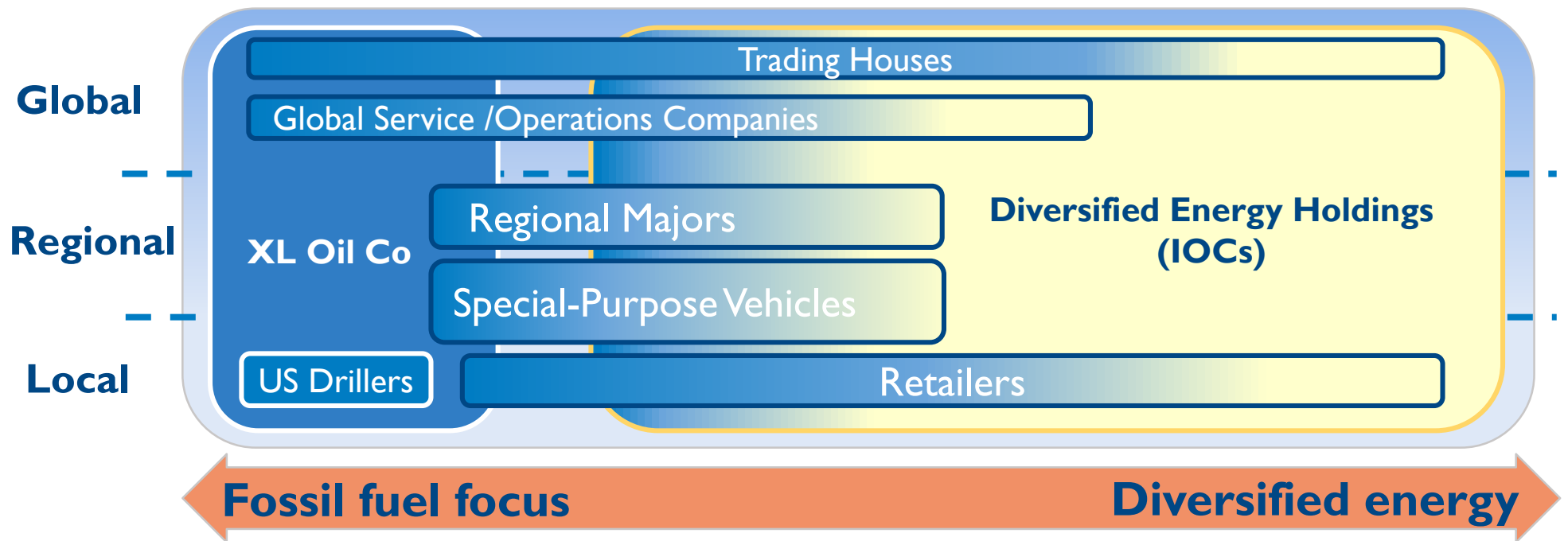
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The oil & gas industry will accelerate its transition to a cleaner and more diversified portfolio of energy sources, products and service offerings

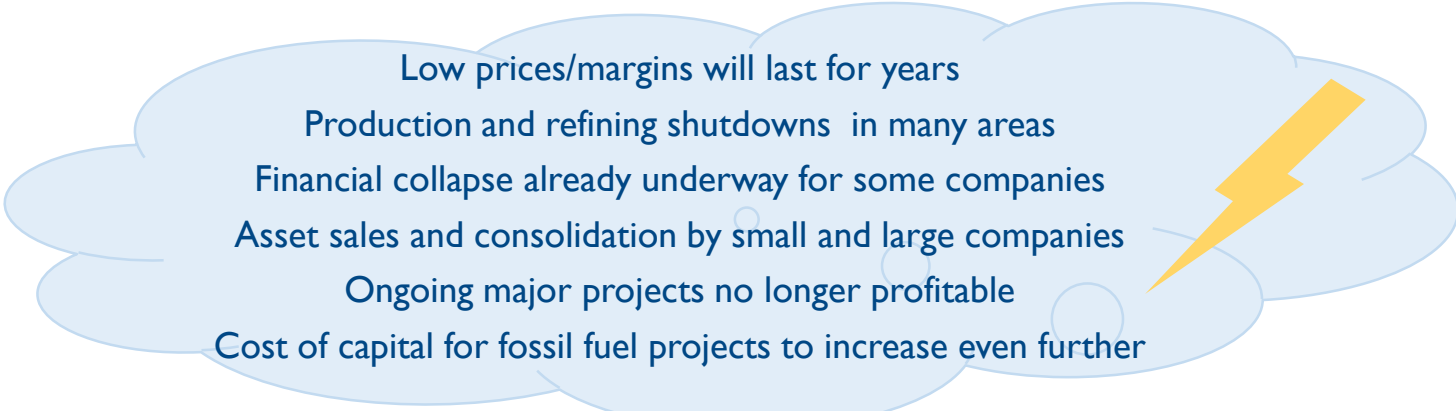
Potential ecosystem for future oil companies





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There is still a chance for the market to get “back to normal” sooner than expected, but it is likely that the oil industry will continue to lose appeal

Scenario

Industry Outlook

**“Stagnation”**

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- International Oil Companies accelerate energy transition and new business models emerge

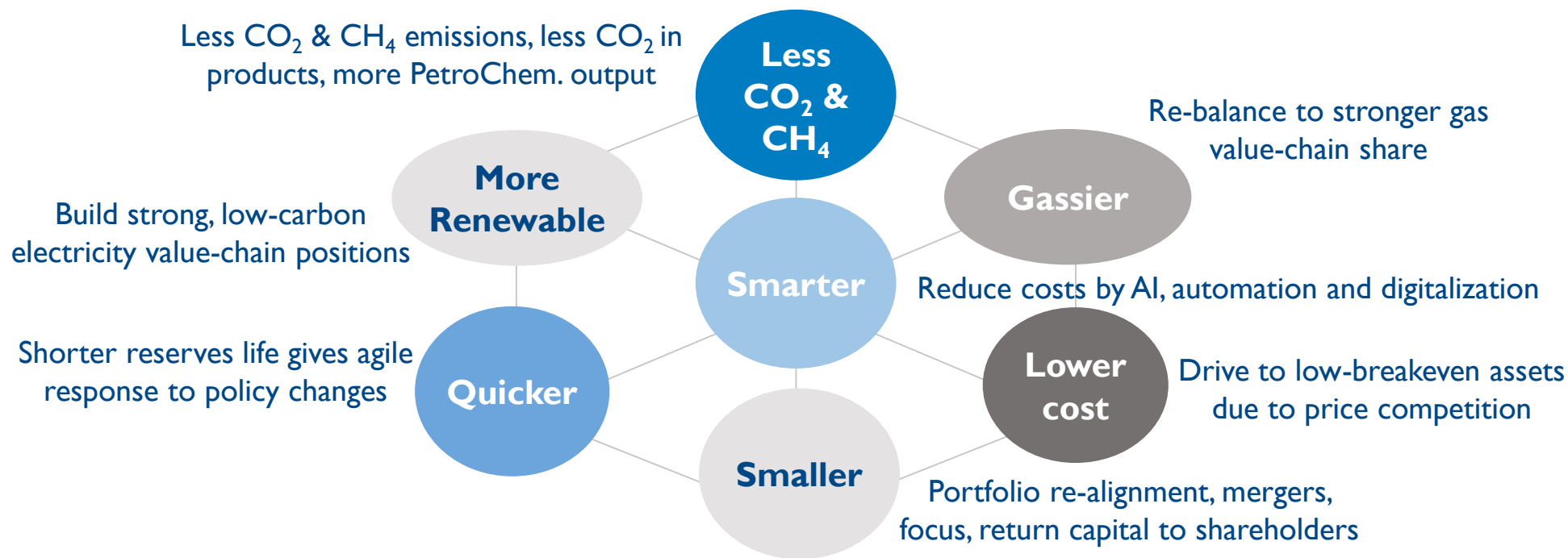
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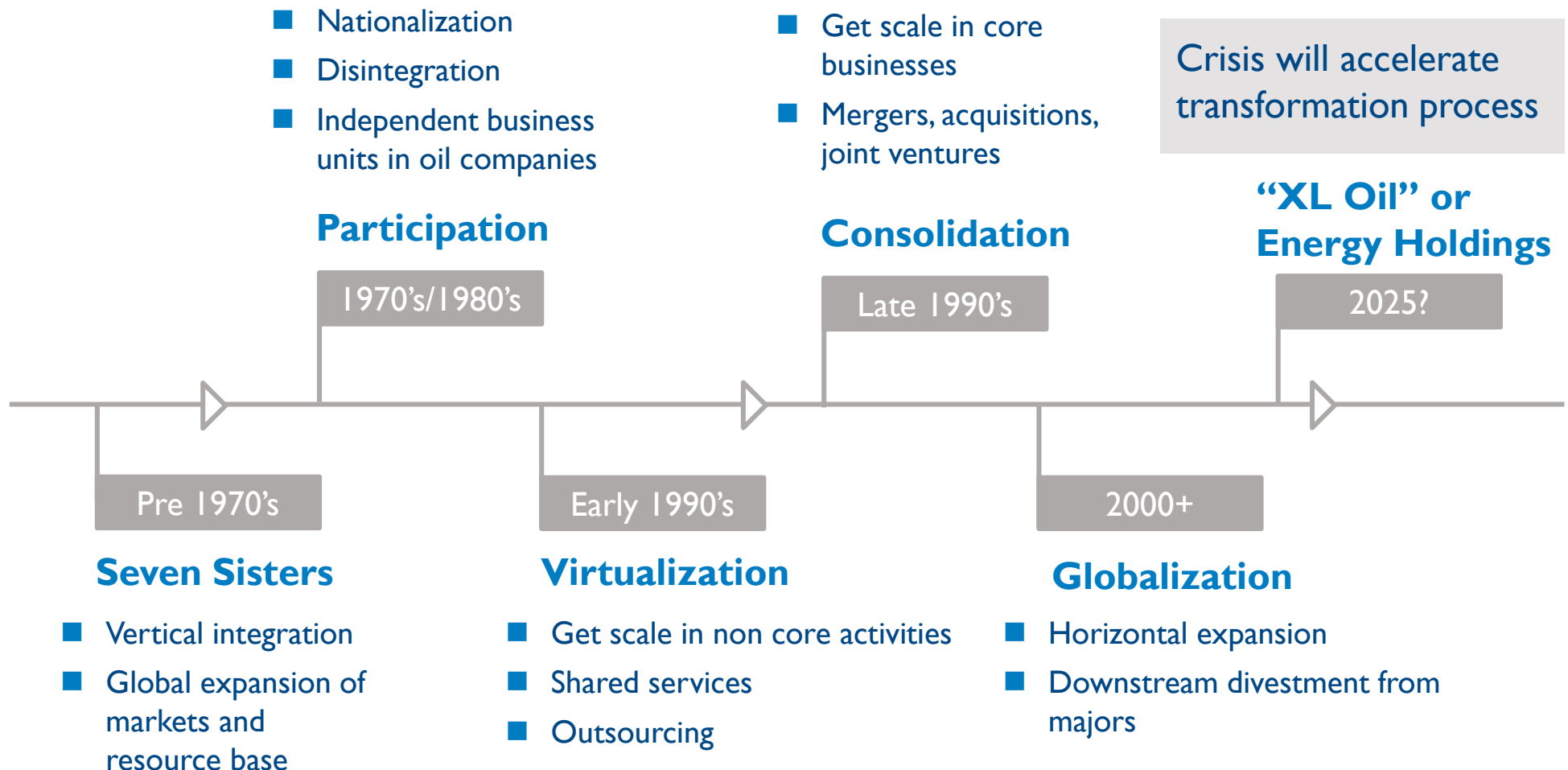
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Under any scenario, lower expected returns, climate and CO<sub>2</sub> challenges will drive companies to search for new pathways to survive

### Future success trends



This industry crisis would in fact only accelerate the transformation and diversification that we had expected to occur after 2030



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### Oil Field Services

### Refining

### Transport & Distribution

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Supply chain

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Price/Margin

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Customers (incl. demand)

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- Demand decrease until isolation ends and economy recovers

# Field operations face a drastic change on their economics and requires reengineering of exploration and production plans and investments

### Field Operations Potential threats

1

Downstream storage  
restrictions

2

Potential staff limitations

3

Tight or negative economics  
for some assets

4

Oversupply  
Crude traveling far

### Mitigation actions

- Look for long term capacity contract if low cost production
- Swap crude and/or storage among different locations
- Consolidate current and future shutdowns for 2020 and optimize plans
- Review and prioritize operating assets, new developments, and production enhancement programs
- Reduce and optimize operational runtime to a minimal in certain assets to avoid unplanned shutdowns, and manage manpower limitations
- Close monitor of point forward cash flow and economics by field/asset/project
- Take advantage of available equipment and/or suppliers to be prepared to produce as soon as crude price is back above break-even level
- Develop fast recovery programs to immediate commence operations – monitor and establish trigger points
- Be commercially proactive and flexible when looking for new production outlets

OFS players in Exploration / Greenfield developments will be most impacted while producing assets may continue but at a minimal / optimal

### Oil Field Services Potential threats

### Mitigation actions

1

Contract renegotiations /  
cancellations

- Consider flexibility in contract guarantee of work (such as contract expiry extension) if price negotiations are being sought by Operators
- Consider accelerate price normalization once the situation returns to stabilization

2

Low utilised assets

- Conduct full asset rationalization and prioritization across all operated regions
- Establish asset-readiness programs to ensure immediate deployment once market stabilizes
- Collaborate with other OFS players to sub-contract work to maintain high utilization of assets and manpower

3

Consolidation / M&A  
activities

- Monitor potential M&A opportunities
- Develop recovery plans to include grow and diversify using inorganic strategies

4

Delayed spare parts to  
maintain operations

- Conducting an asset rationalization assessment will provide full transparency on sparing philosophy
- Establish local 'pooling' of assets and services with other OFS players to optimize OPEX



# Refineries need to do frequent re programming, isolation of shifts, operate at minimum staff levels and cancel non critical CAPEX initiatives

### Refining Segment Potential threats

1 Storage restrictions

2 CAPEX initiatives and  
turnaround stopped

3 Low utilization rates drive  
low to negative margins

4 Demand decrease and mix  
change

### Mitigation actions

- Contracted feedstock/crude re sale or contract re negotiation
- High frequency of operations optimization and re scheduling
- Minimize number of staff entering refineries and depots
- Delay non critical CAPEX initiatives
- Stop or delay and reschedule turnarounds
- Close monitor of marginal economics of process unit to avoid hidden suboptimal production
- Run at minimum operational rate as soon as does not compensate to shutdown plant
- Assess buy-import vs. maintain refinery running
- Continue with operational efficiency initiatives as soon as quarantine period ends
- Close monitor marginal economics and evaluating shutdowns of light products units
- Assess buy-import vs. high processing rates
- Look after markets for intermediate products (i.e. naphtha) to maintain refinery running

# Transport and distribution segment faces logistics disruptions and financial restrictions that will need support from refiners/integrated companies

### Transport & Distribution Potential threats

1 Lack of storage downstream

2 Limited to minimum staff

3 Lower revenues because of  
volume drop

4 Demand decrease

### Mitigation actions

- More frequent and strict pipeline capacity planning, shipping only crude with a secure outlet
- Benefit by open access to own available storage
- Swap storage among geographies with trading and midstream companies
- Assess use of floating storage
- Work with isolated shifts and minimum staff levels
- Avoid delayable contractors intervention to facilities
- Cancel non critical CAPEX initiatives
- Offer flexible payment conditions to retail stations dealers
- Consider flexibilization take or pay contracts considering force majeure conditions
- Extend timing for product delivery of a contract (i.e. delivering total amount when market conditions improve)
- Re negotiate contracted freight/trucks
- Re assess key client portfolio for future expected market conditions
- Re assess channel strategy for B2B customers

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# Arthur D Little

Arthur D. Little has been at the forefront of innovation since 1886. We are an acknowledged thought leader in linking strategy, innovation and transformation in technology-intensive and converging industries. We navigate our clients through changing business ecosystems to uncover new growth opportunities. We enable our clients to build innovation capabilities and transform their organizations.

Our consultants have strong practical industry experience combined with excellent knowledge of key trends and dynamics. Arthur D. Little is present in the most important business centers around the world. We are proud to serve most of the Fortune 1000 companies, in addition to other leading firms and public sector organizations.

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