

Companies and Governments

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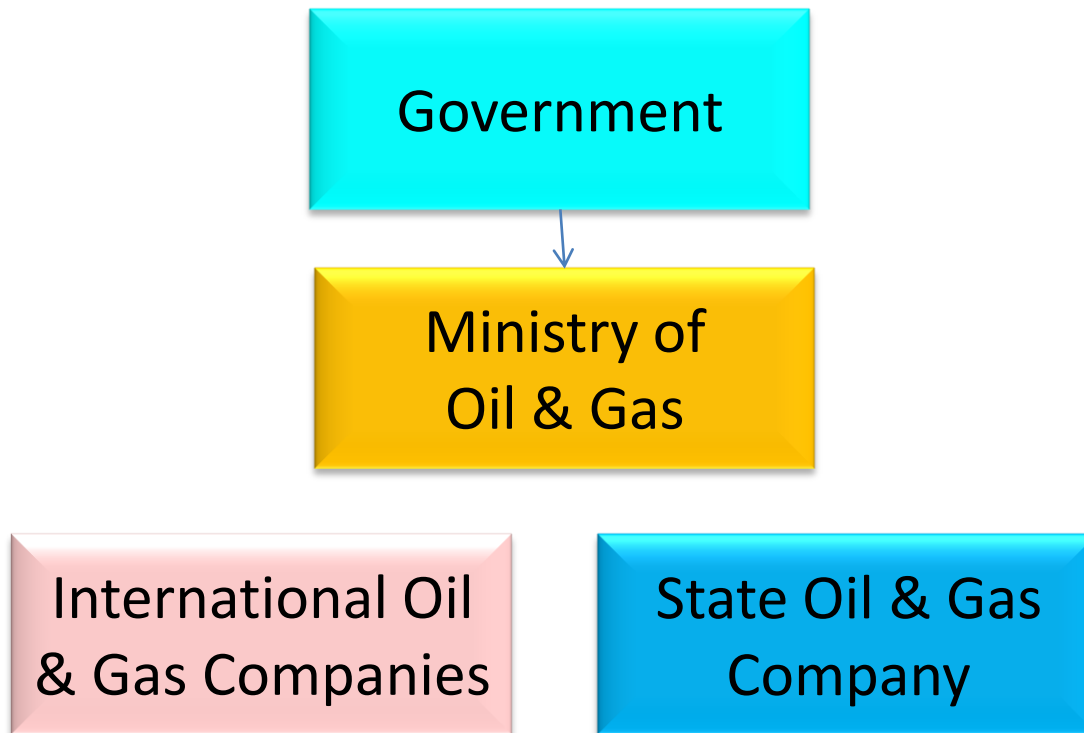
Industry Demographics

- Company Categorisation:
 - NOC (National Oil & Gas Companies)
 - IOC's – International Oil & Gas Companies
 - The Majors (Shell, ExxonMobil, BP, Total etc).
 - The Mid Sized Players (ENI, Marathon, Occidental etc)
 - The Independents (Anadarko, Plains Petroleum etc)
- Upstream/downstream
 - Some companies purely upstream focussed; some integrated through the oil and gas supply chain.
- Most companies engaged in both oil and gas.

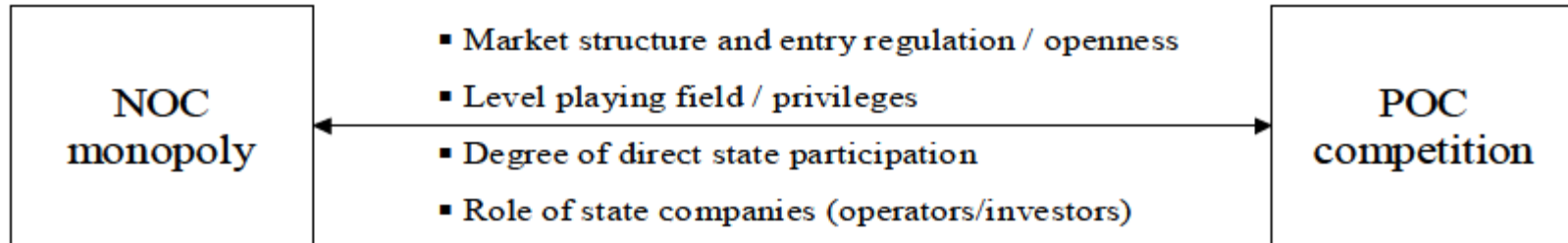


Oil and Gas Companies and Host Governments

Ownership of oil and gas is vested with the State apart from certain areas of the US and Canada where mineral rights reside with landowners. Governments, on behalf of the nation, delegate the stewardship of resource management to a Ministry. Exploration and Development of hydrocarbon resources is undertaken by International and State Oil & Gas Companies.



Participation in the oil and gas sector



- Governments have important choices to make over governance of their energy sectors
 - How much state control?
 - How much foreign help required?
 - How much competition?
 - The balance of revenues between state and industry
 - Who to trust with the country's strategic resources?
 - How much bargaining power is there and what is the balance?
- NOCs can provide a balance to the perceived power of experienced private international oil companies, as well as an initial institutional framework



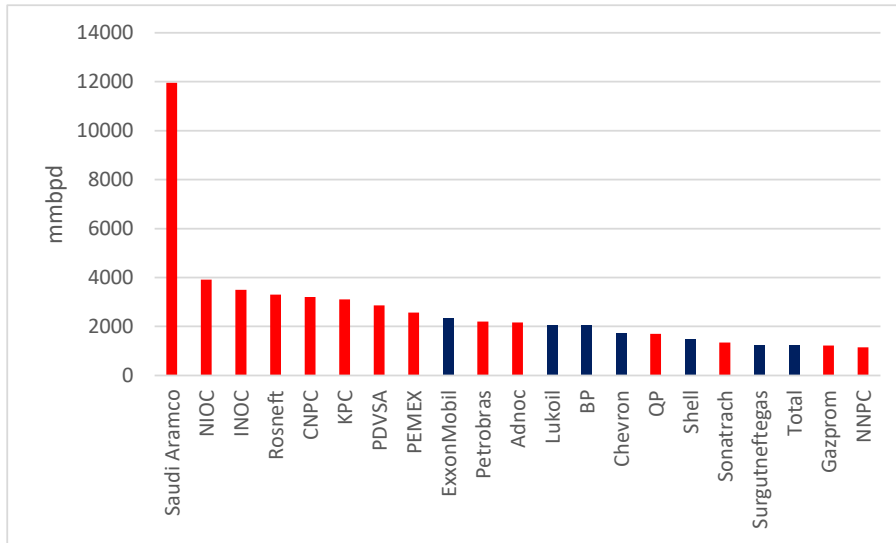
Top 30 Oil and Gas Companies in the World

| | | | | |
|----|-------------------|--|-----------------|--------------|
| 1 | Saudi Aramco | Saudi Arabian Oil Co. | Saudi Arabia | State-owned |
| 2 | NIOC | National Iranian Oil Co. | Iran | State-owned |
| 3 | Exxon Mobil | Exxon Mobil Corp. | US | Private |
| 4 | PDV | Petróleos de Venezuela, SA | Venezuela | State-owned |
| 5 | CNPC | China National Petroleum Corp. | China | State-owned |
| 6 | BP | BP plc | UK | Private |
| 7 | Royal Dutch Shell | Royal Dutch Shell plc | The Netherlands | Private |
| 8 | Chevron | Chevron Corp. | US | Private |
| 9 | ConocoPhillips | ConocoPhillips Co. | US | Private |
| 10 | Total | Total SA | France | Private |
| 11 | Pemex | Petróleos Mexicanos SA | Mexico | State-owned |
| 12 | Gazprom | GAO Gazprom | Russia | 50% State |
| 13 | KPC | Kuwait Petroleum Corp. | Kuwait | State-owned |
| 14 | Sonatrach | Enterprise Nationale Sonatrach | Algeria | State-owned |
| 15 | Petrobras | Petróleo Brasileiro SA | Brazil | 32.2% State |
| 16 | Rosneft | GAO Rosneft | Russia | 75.16% State |
| 17 | Lukoil | GAO Lukoil | Russia | Private |
| 17 | Petronas | Petroleum Nasional Berhad | Malaysia | State-owned |
| 19 | Adnoc | Abu Dhabi National Oil Co. | UAE | State-owned |
| 20 | Eni | Eni S.p.A. | Italy | 30.30% State |
| 21 | NNPC | Nigerian National Petroleum Corp. | Nigeria | State-owned |
| 21 | QP | Qatar Petroleum Corp. | Qatar | State-owned |
| 23 | EGPC | Egyptian General Petroleum Corp. | Egypt | State-owned |
| 23 | INOC | Iraq National Oil Co. | Iraq | State-owned |
| 25 | Libya NOC | National Oil Corp. | Libya | State-owned |
| 26 | Sinopec | China Petroleum & Chemical Corp. | China | 75.84% State |
| 27 | Statoil | Statoil ASA | Norway | 70.13% State |
| 28 | Surgutneftegas | GAO Surgutneftegaz | Russia | Private |
| 29 | Repsol YPF | Repsol YPF, SA | Spain | Private |
| 30 | Pertamina | Perusahaan Pertambangan Minyak Dan Gas Bumi Negara | Indonesia | State-owned |

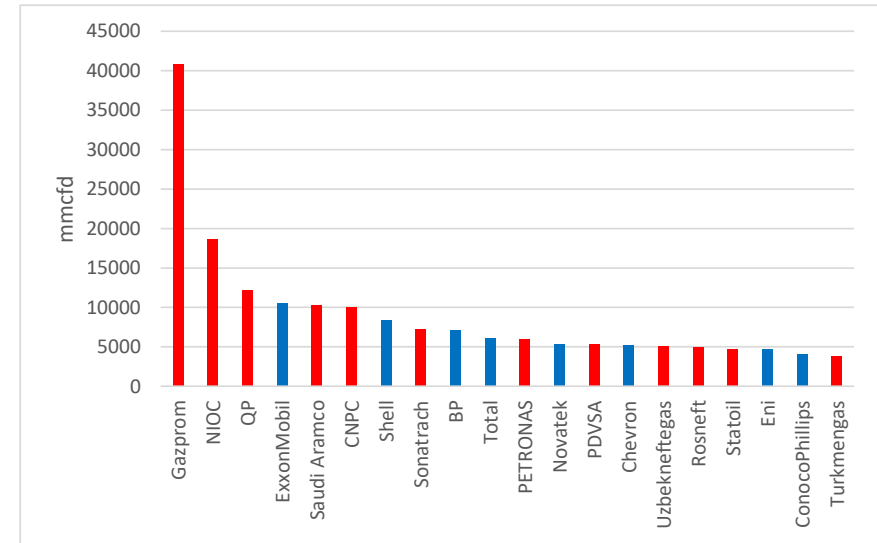


NOCs dominate oil and gas production

Top 20 oil producing companies



Top 20 gas producing companies



- National Oil Companies accounts for more than 50mmbpd of global oil production, or around 61%
- Saudi Aramco is the dominant player, with liquids output approaching 12 mmbpd
- In the gas sector, NOCs account for a similar share of total output, with Gazprom the leading player
- The share of NOCs has been rising as countries seek to avoid dependence on international oil companies (IOCs)



Rationale for forming a National Oil Company

General reasons for creating State-owned Companies

| Objective | Rationale |
|---|--|
| Overcome market failure | Market failure can occur in economic activities that involve: <ul style="list-style-type: none">▪ Natural monopolies (electricity, water)▪ Public goods (law and order, national security)▪ Merit goods (education and health)▪ Externalities (positive or negative)▪ Information asymmetry |
| Overcome regulatory failure | State ownership is desirable if and when: <ul style="list-style-type: none">▪ The state does not have the capacity to regulate effectively▪ The economic activity renders the drafting of contracts incomplete▪ The state cannot credibly promise not to confiscate or tax excessively |
| Industrial economics | <ul style="list-style-type: none">▪ Sustain industrial sectors of particular interest for the national economy▪ Safeguard employment▪ Launch emerging industries with significant start-up costs when future property rights are uncertain▪ Control the decline of senile industries▪ Help the private sector carry risk |
| Development economics | <ul style="list-style-type: none">▪ Boost the economy of the less developed region(s) of the country▪ Pursue equality and social goals |
| Fiscal policy and redistributive objectives | <ul style="list-style-type: none">▪ Invest in a sector, control entry, impose monopoly prices, then use the revenues as fiscal income; or▪ Sell at reduced prices to targeted populations and distribute subsidies▪ Maintain employment▪ Substitute for under developed welfare systems |

Source: OECD (2005)



NOCs have been around for over a century, starting in the UK

| Year | Country | Company |
|------|-------------------|--------------|
| 1914 | UK | BP |
| 1922 | Argentina | YPF |
| 1924 | France | CFP |
| 1926 | Italy | Agip |
| 1938 | Mexico | Pemex |
| 1951 | Iran | NIOC |
| 1953 | Brazil | Petrobras |
| 1956 | India | ONGC |
| 1960 | Kuwait | KNPC |
| 1962 | Saudi Arabia | Petromin |
| 1965 | Algeria | Sonatrach |
| 1967 | Iraq | INOC |
| 1970 | Libya | LNOC |
| 1971 | Indonesia | Pertamina |
| 1971 | Nigeria | NNOC |
| 1972 | Norway | Statoil |
| 1974 | Qatar | QGPC |
| 1974 | Malaysia | Petronas |
| 1975 | Venezuela | PdVSA |
| 1975 | Vietnam | PetroVietnam |
| 1975 | Canada | Petro-Canada |
| 1975 | UK | BNO |
| 1976 | Angola | Sonangol |
| 2002 | Equatorial Guinea | GEPetrol |
| 2006 | Chad | SHT |

- Privatisation has moved some into private hands, while others have become hybrid semi-privatised state companies



The pros and cons of NOCs

Pros

- Useful when nationalising industry
- Control over strategic assets that are vital to the economy
- Political power, gained from controlling major revenues
- Monitoring role for overall industry operations
- Petroleum rent maximisation
- Socio-economic issues and priorities
- Foreign policy issues
- Sense of country pride and status
- Major source of employment
- Vehicle for technology acquisition

Cons

- Susceptible to political ideology and interference
- Economic cost of political control
- Inherent bureaucracy and inefficiency
- Risk of corruption
- Operational inefficiency
- Lack of competitive challenge
- Subsidies and non-commercial objective can undermine corporate goals
- Weak corporate governance
- Funding strategy and requirements
- Conflicts of interest and control



Russian Arctic development a classic NOC role

The Northern Sea Route set to become the “Cold Silk Road” to Asia

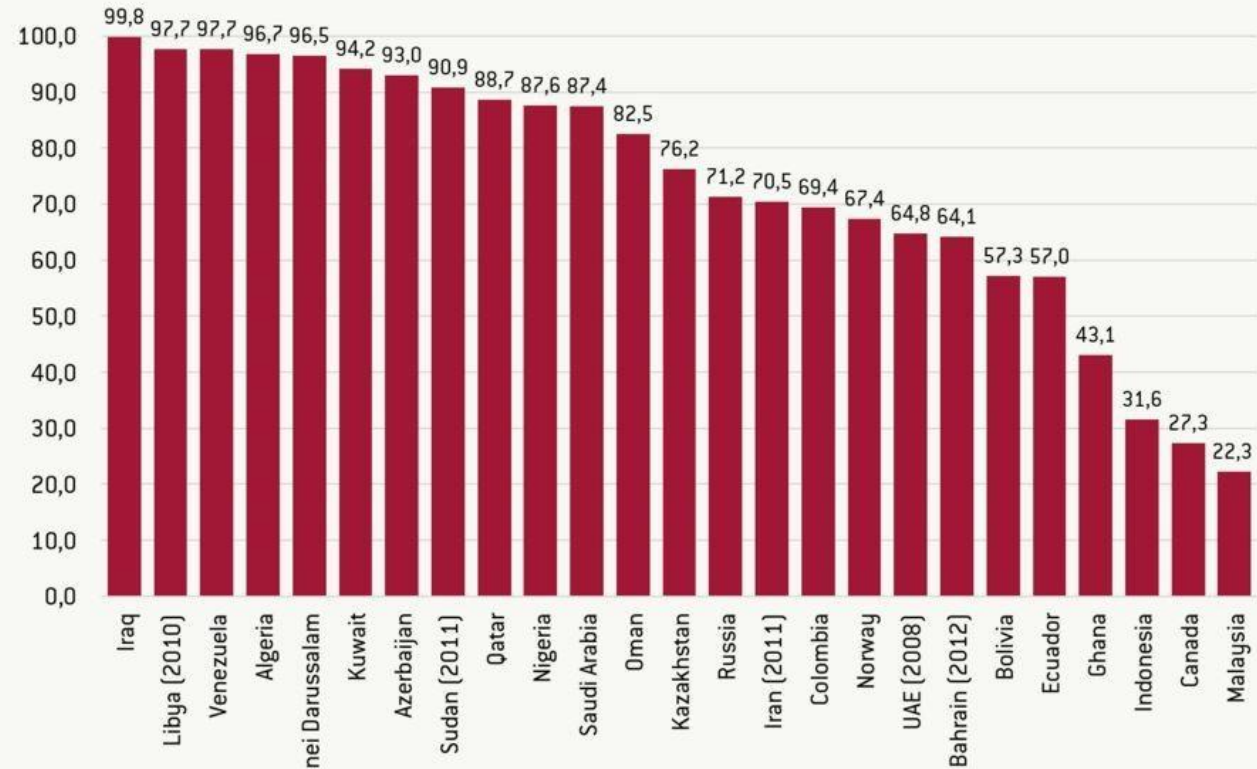


- The Russian Arctic holds vast hydrocarbon potential (240 billion boe), which could sustain the country’s oil output beyond 2030 and form the basis of an LNG hub
- The Russian government is keen to develop the economic potential of its Northern regions, and plans to use the oil and gas industry as a foundation for this
 - New tax regime based on sliding royalty to incentivise investment
- The Kremlin has clear geo-political ambition in the region, which goes beyond commercial logic – control of the northern sea route is a core strategy and Soviet military bases are being re-opened
- Oil production has started (2 fields), the Yamal LNG project is set to come online in 2017 and a major discovery has been made in the South Kara Sea



Countries most reliant on oil revenues

Figure 2: Fuel exports as percentage of merchandise exports, 2013 unless otherwise indicated

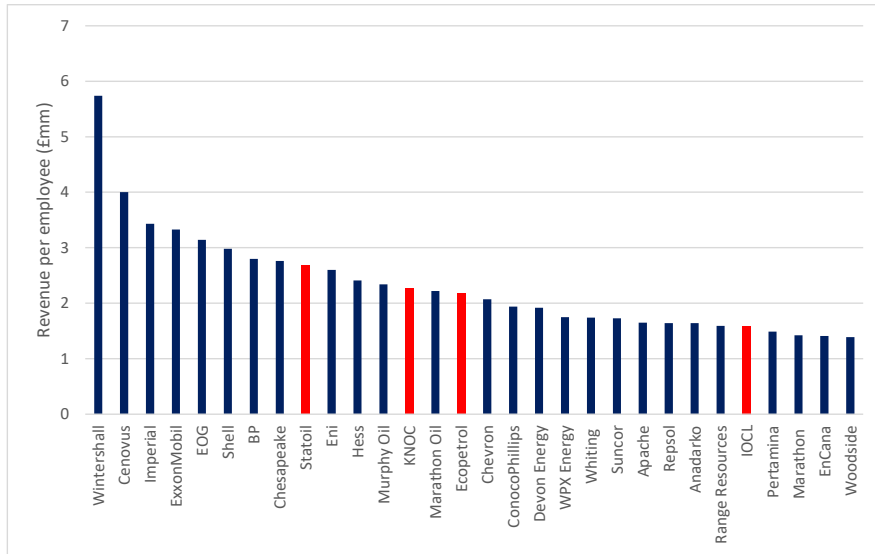


- All the countries in the chart above have state oil or gas companies, or both
- Hydrocarbons are viewed as a strategic asset that cannot be left in the hands of foreigners

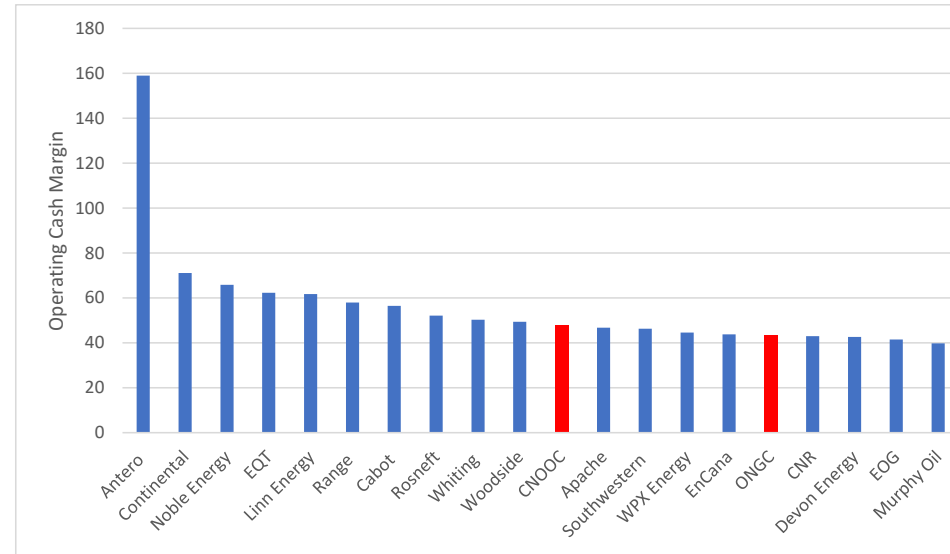


Efficiency is a key issue for NOCs

Revenue per employee



Cashflow margin



- NOCs are notoriously more inefficient than private companies, although this is partially to do with the constraints placed upon them
- NOC objectives include operational and financial efficiency, but also cover wider social and political goals
- However, corruption and bureaucratic disorganisation tend to be consistent themes in most oil producing countries
- The “resource curse” has become an often repeated theme, which argues that the presence of hydrocarbons can undermine political and economic development



Major oil companies known as IOCs

- Integrated global oil and gas companies
- Operations across the value chain from exploration to consumer sales
- Broad international operations
- Extensive experience of operating in different environments and political regimes
- Able to deal with significant risks across a broad range of parameters
- Huge financial resources

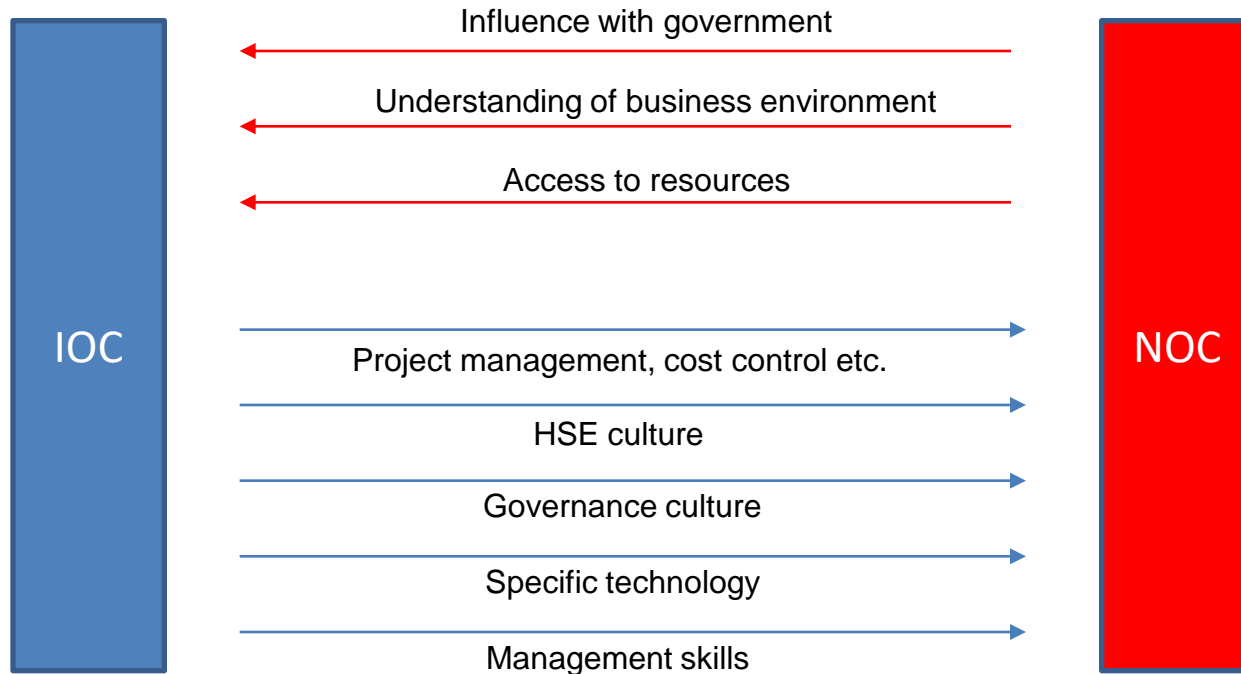


IOC business model being questioned, but competitive advantages are still relevant

- Extensive management experience on large industrial projects
- Broad geographical experience – diversified portfolios both vertically and horizontally
- Significant technical experience built up from years of research and development work
- Ability to raise finance and share risk in global partnerships
- Ability to co-ordinate a wide range of contractors and partners to develop large projects on schedule and on budget
- Long history of M&A activity which has provided synergy benefits through consolidation of companies into “supermajors”



Technology transfer is a key selling point for IOCs, and most host governments insist on it



- Part of the entry fee for IOCs is to ensure a number of forms of technology transfer
- These range from specific technical skills to softer governance issues
- In return, they receive access to assets and the ability to operate in a new domestic environment



Key issues for IOCs

- Historical baggage of colonial past
 - OPEC was formed to fight back against western companies seeking to dominate the world's oil resources
 - IOCs still sometimes seen as vehicles for western power
- Access to resources now a major issue
 - NOCs tend to dominate, especially in the home countries
- Increasing competition from NOCs and Independents
- Rise of contractors who can bring expertise to NOCs without asking for access to resources
- Reputation sullied by accidents such as Macondo and Exxon Valdez
- Challenge of new energy environment



Upstream “Independent” Oil and Gas Sector

- Also called Exploration and Production companies
- Main objective is to find and also to produce oil and gas
- Take higher risks to increase asset base
- Monetisation can also take the form of exit via sale of assets or company, if discoveries are too large to finance
- Often involved in “wildcat” exploration – high risk drilling in new virgin territory
- Very innovative, both scientifically and financially
- Early operations almost always financed by equity rather than debt, especially in the early stages
 - US shale companies the exception (again)

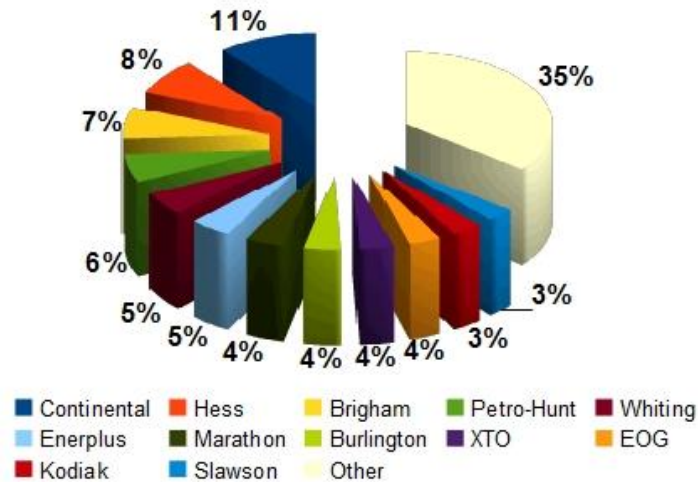


Independent oil companies drive the US oil industry

groundbreakingenergy.com

Bakken: Well Permits by Operator

As of 1/15/12

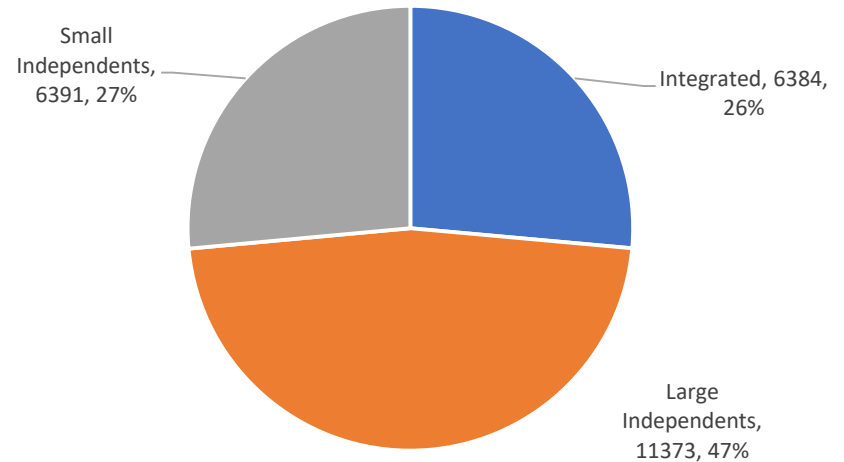


Source: North Dakota Department of Mineral Resources

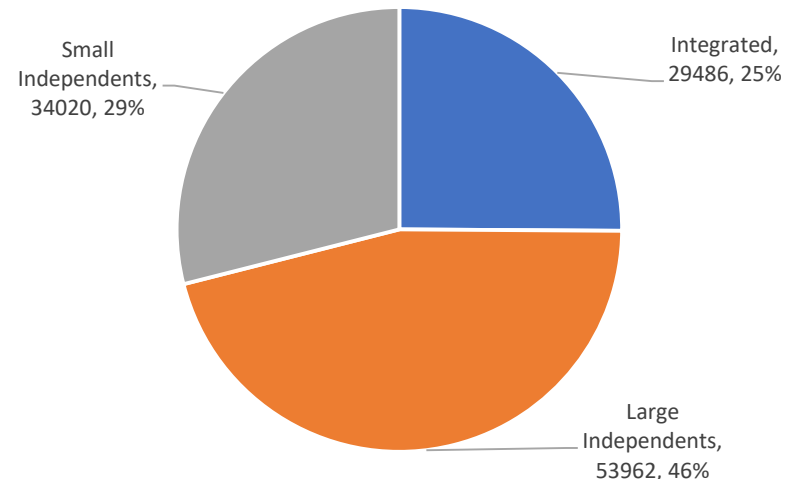
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- Small oil companies dominate US shale development
- They have been innovative and highly efficient

US reserves by company type (mmbbls)



US net cashflow by company type (US\$mm)



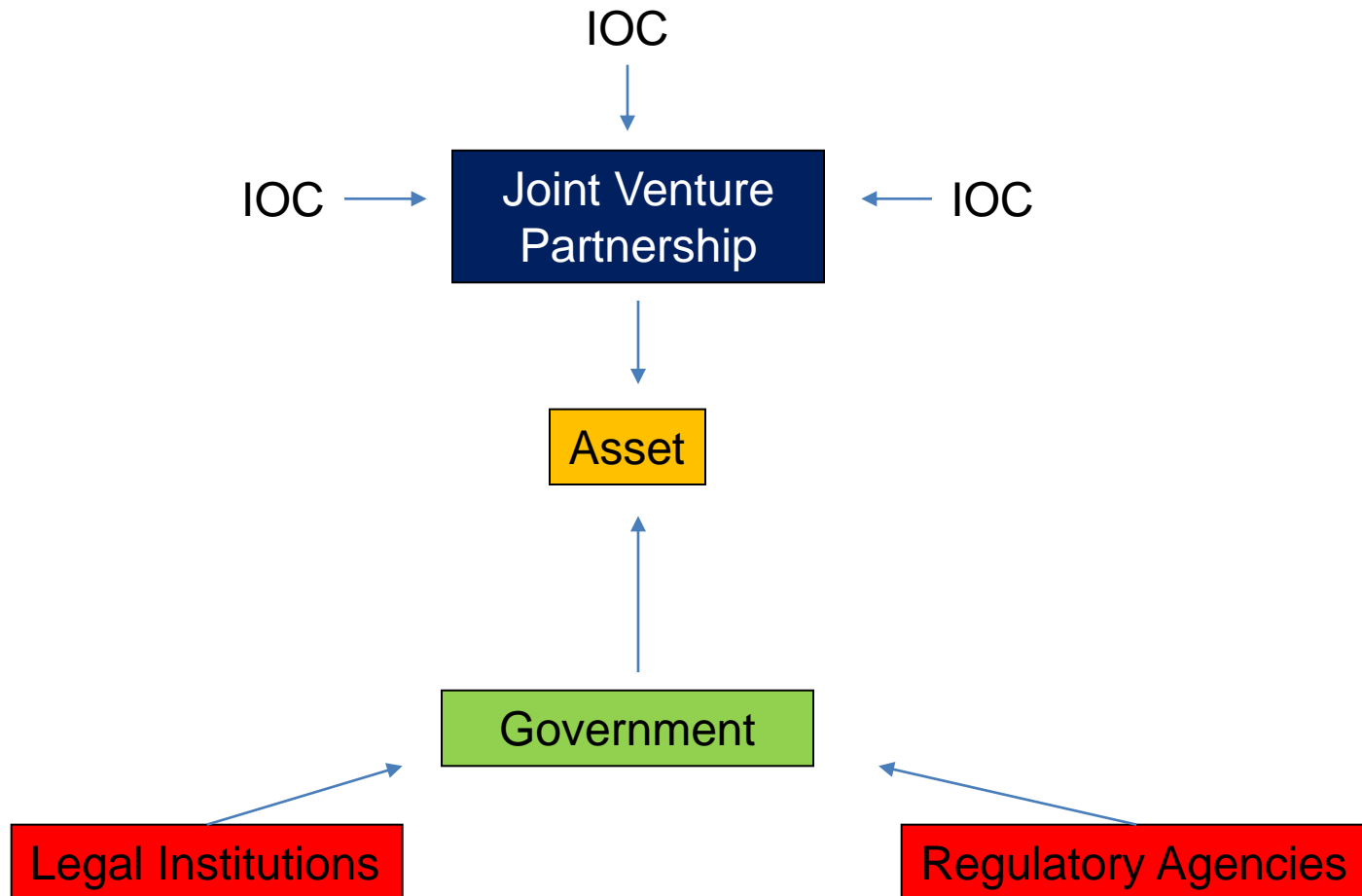
Key Risks for Oil Companies

- Geological
- Technical
- Price
- Costs / inflation
- Commercial / Economic
- Legal
- Levels of taxation
- Business environment
- Macro-economic (global GDP, foreign exchange)
- Geo-political

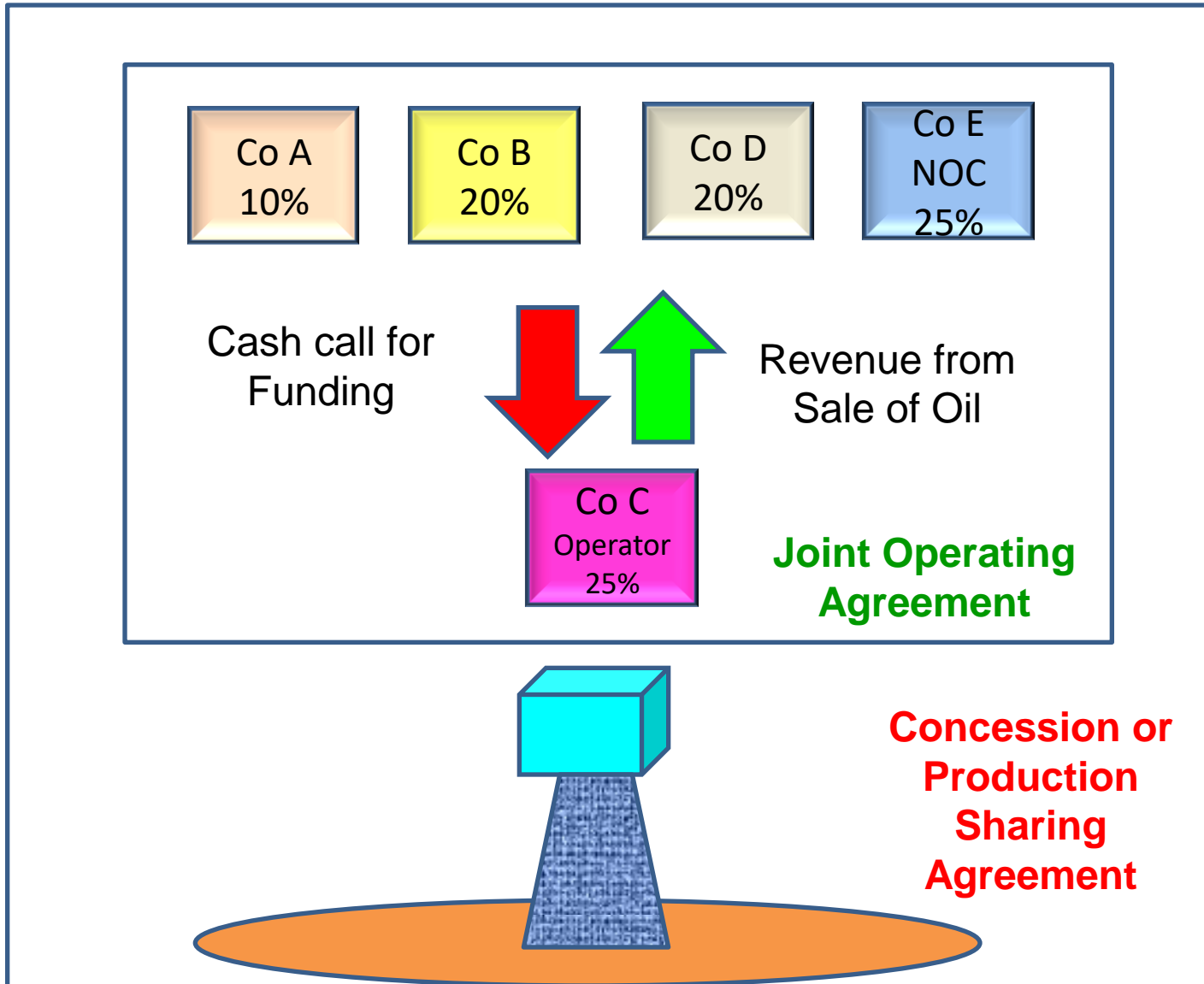
A risk shared is a risk mitigated, especially if your partners can influence some of the outcomes



Standard JV model

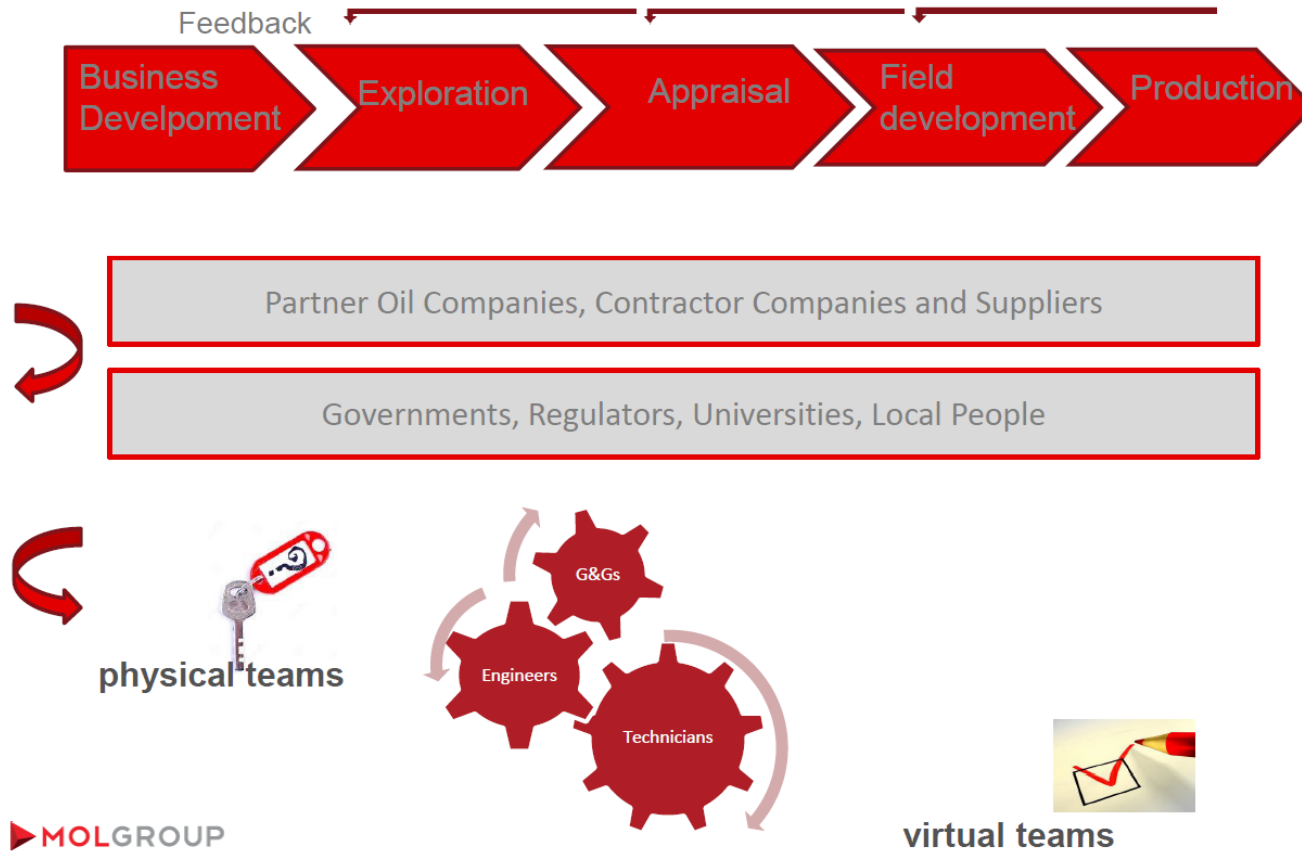


Joint Venture Groupings



Typical IOC view of partnership

Industry Collaboration Model



- Focus on operational issues, standard industry practices and assumption of a strong regulatory and legislative environment



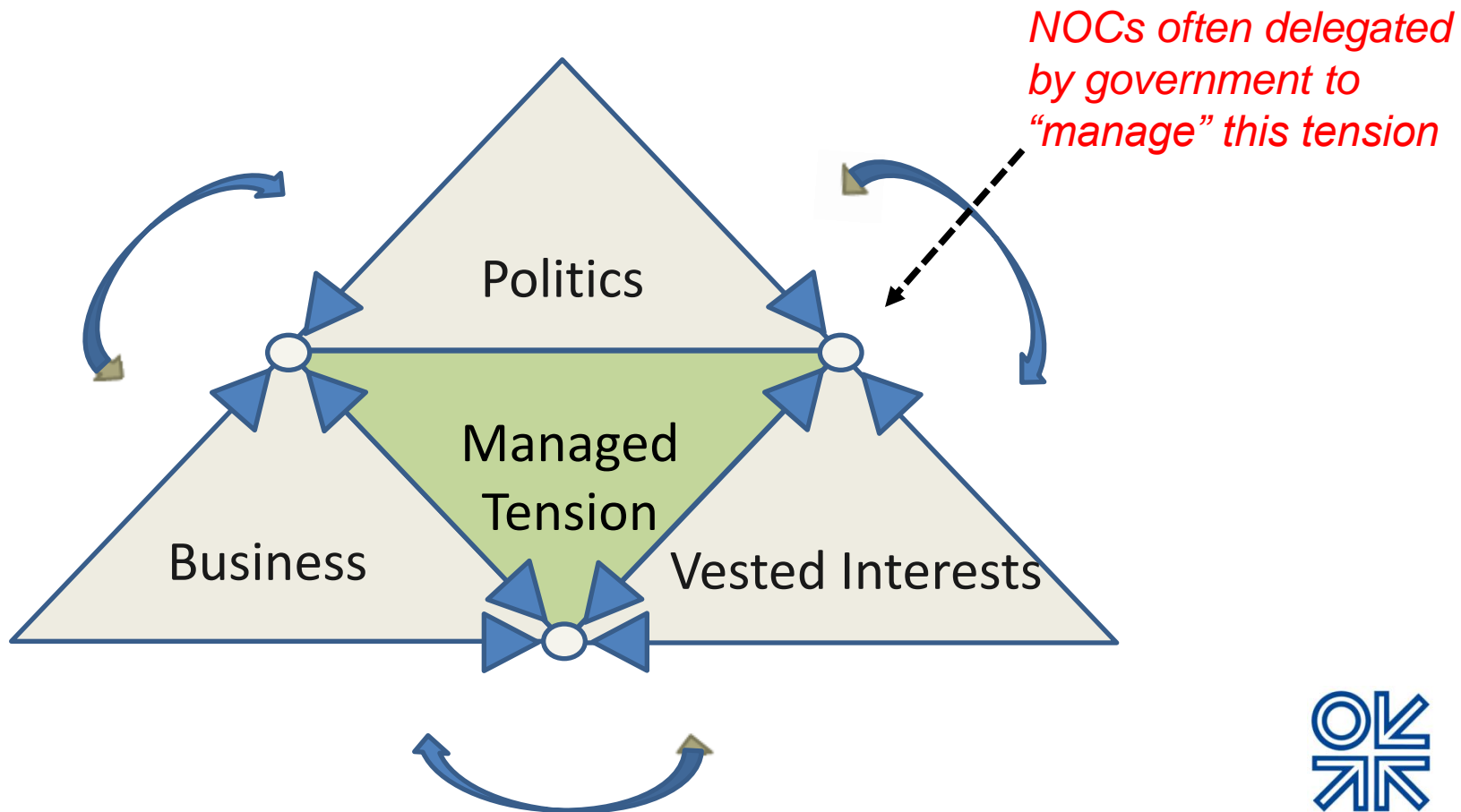
Key issues generally addressed by foreign partners

- Governance and control
- Compliance with various legal requirements
- Appointment of senior executives
- Valuation
- Dividend policy and other financial issues
- Management responsibility or independence
- Operational issues
- Non-compete issues
- Export rights
- Technology and technology transfer
- Training and employment of local staff



Corruption and Politics are often problems in oil producing countries:

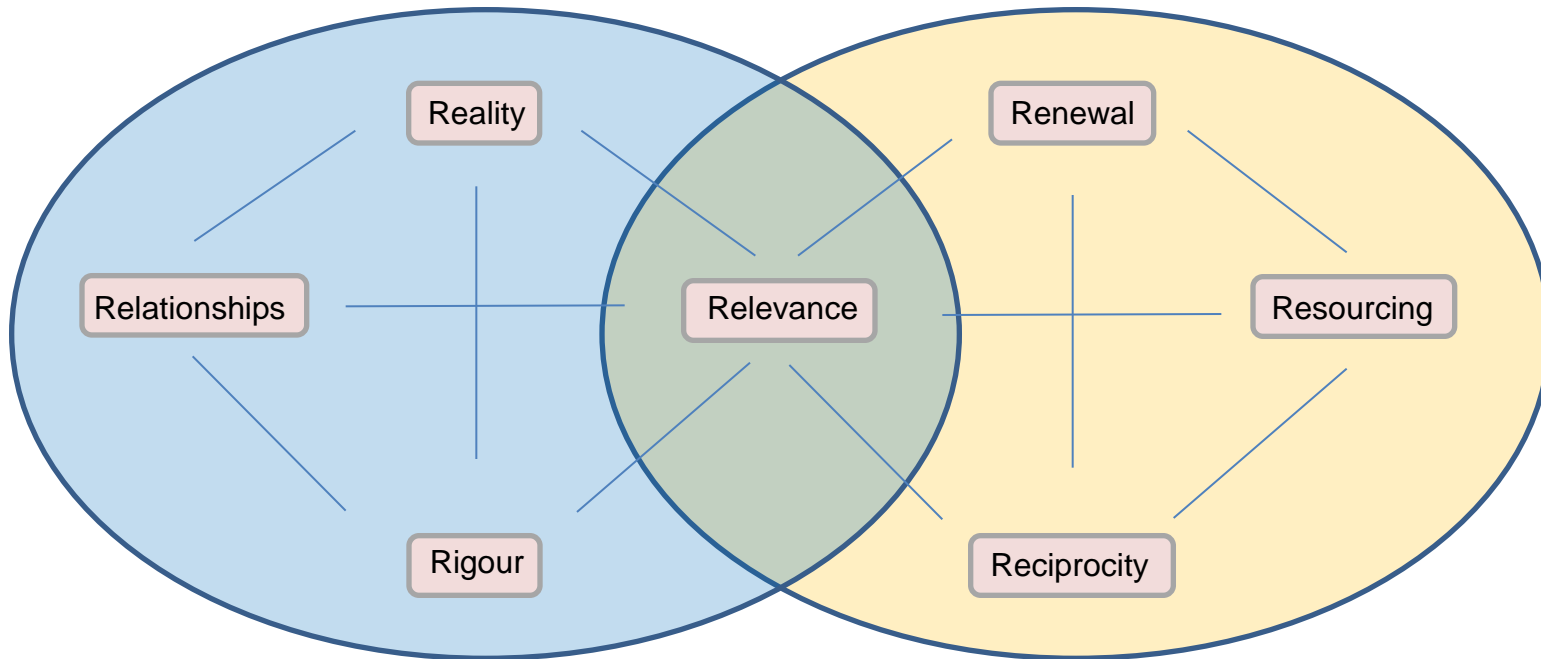
The “Triangle of Tension”



IOC Engagement Strategy

Protection

Proactivity



Everything revolves around Foreign Partner **Relevance**



Government control

- Thanks to their geographical and geological good fortune, hydrocarbon owning countries have control over a major strategic asset
- Host governments have to make key decisions over:
 - Allocation of licences for exploration and development
 - Terms for finding and exploiting any resources
 - Terms for rent-sharing (in other words the tax regime)
 - Partnership rules
 - Depletion strategy
 - Abandonment rules (the cost of removing fully-utilised equipment)
 - The social contract for oil industry operations
- The bargaining strength of oil companies and host governments shifts over time
 - When the risk is highest (no oil has been found) the company can extract good terms
 - When the oil is flowing, the government has a strong case for increasing its share of revenues





United Nations Declaration on Natural Resources 1952, 1958, 1962

1. The right of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development and of the well-being of the people of the State concerned.
 2. The exploration, development and disposition of such resources, as well as the import of the foreign capital required for these purposes, should be in conformity with the rules and conditions which the peoples and nations freely consider to be necessary or desirable with regard to the authorization, restriction or prohibition of such activities.
 3. In cases where authorization is granted, the capital imported and the earnings on that capital shall be governed by the terms thereof, by the national legislation in force, and by international law. The profits derived must be shared in the proportions freely agreed upon, in each case, between the investors and the recipient State, due care being taken to ensure that there is no impairment, for any reason, of that State's sovereignty over its natural wealth and resources.
-(continues).....

<http://www.ohchr.org/Documents/ProfessionalInterest/resources.pdf>



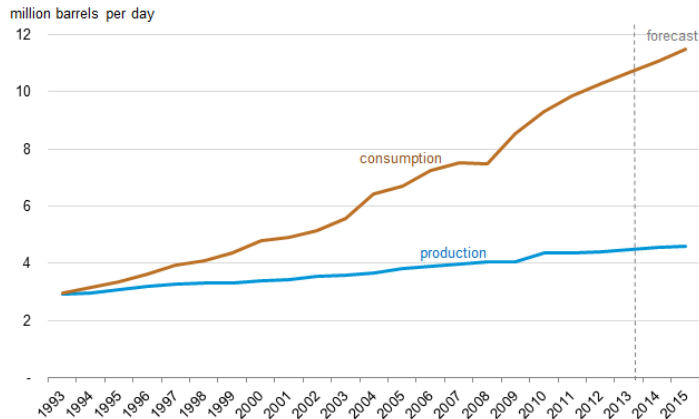
Depletion policy – how fast to exploit a resource

- The “net present value” of an investment diminishes the longer it takes to exploit
- IOCs are motivated to explore and produce oil as fast as possible
- Governments have other motivations
 - Long-term future of oil resource
 - Preserving rent for future generations
 - Maximising returns over the long-term in the belief that oil prices would rise inexorably
 - Retain control over oil revenues to prevent undermining the rest of the economy (Dutch disease)
 - Slower development of oil resources to allow for technology transfer to domestic companies
 - Slower development allows more potential control of oil market – both prices and costs
- Depletion policy ideas are changing as neither oil nor gas longer appear to be a finite resource



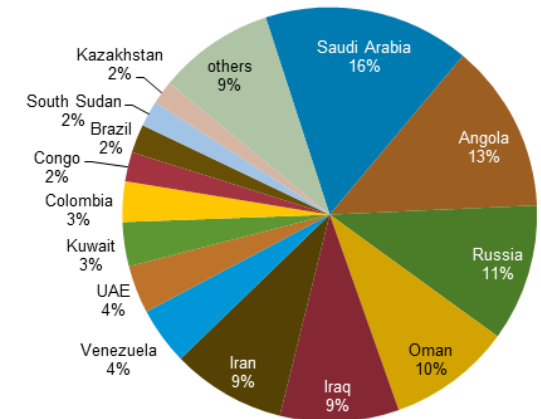
Security of supply and security of demand

China's oil production and consumption, 1993-2015



Source: EIA International Energy Statistics and Short-Term Energy Outlook, January 2014.

China's crude oil imports by source, 2014

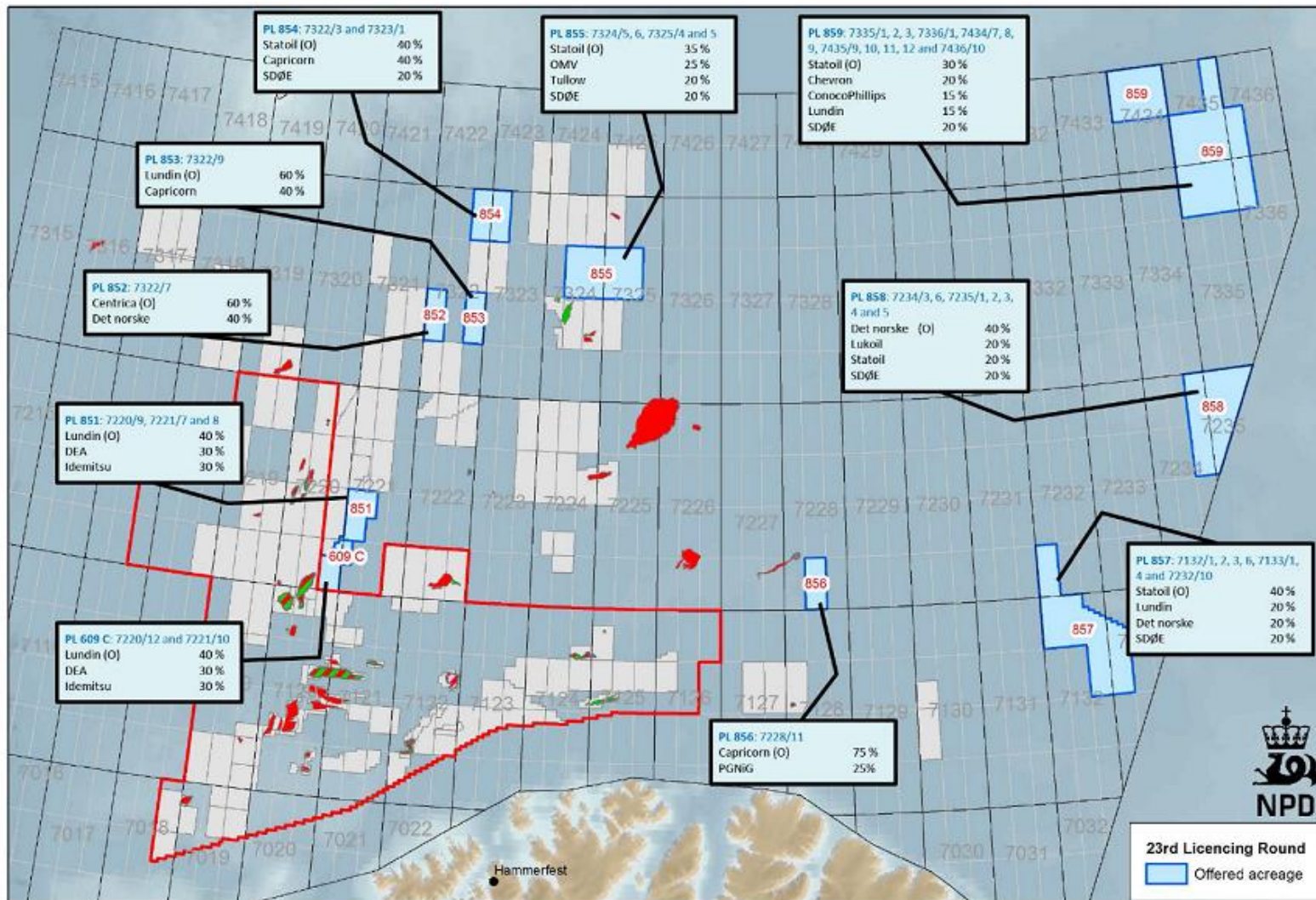


Sources: FACTS Global Energy, Global Trade Information Services, Inc.

- Governments are concerned to secure energy supply in order to maintain economic and political stability
- Equally, producing countries need to find sources of demand, in competition with other countries
- IOCs are often caught between the two, and need to find a way to satisfy both
- This can often lead to difficult political negotiations



Licensing rounds used to award exploration acreage

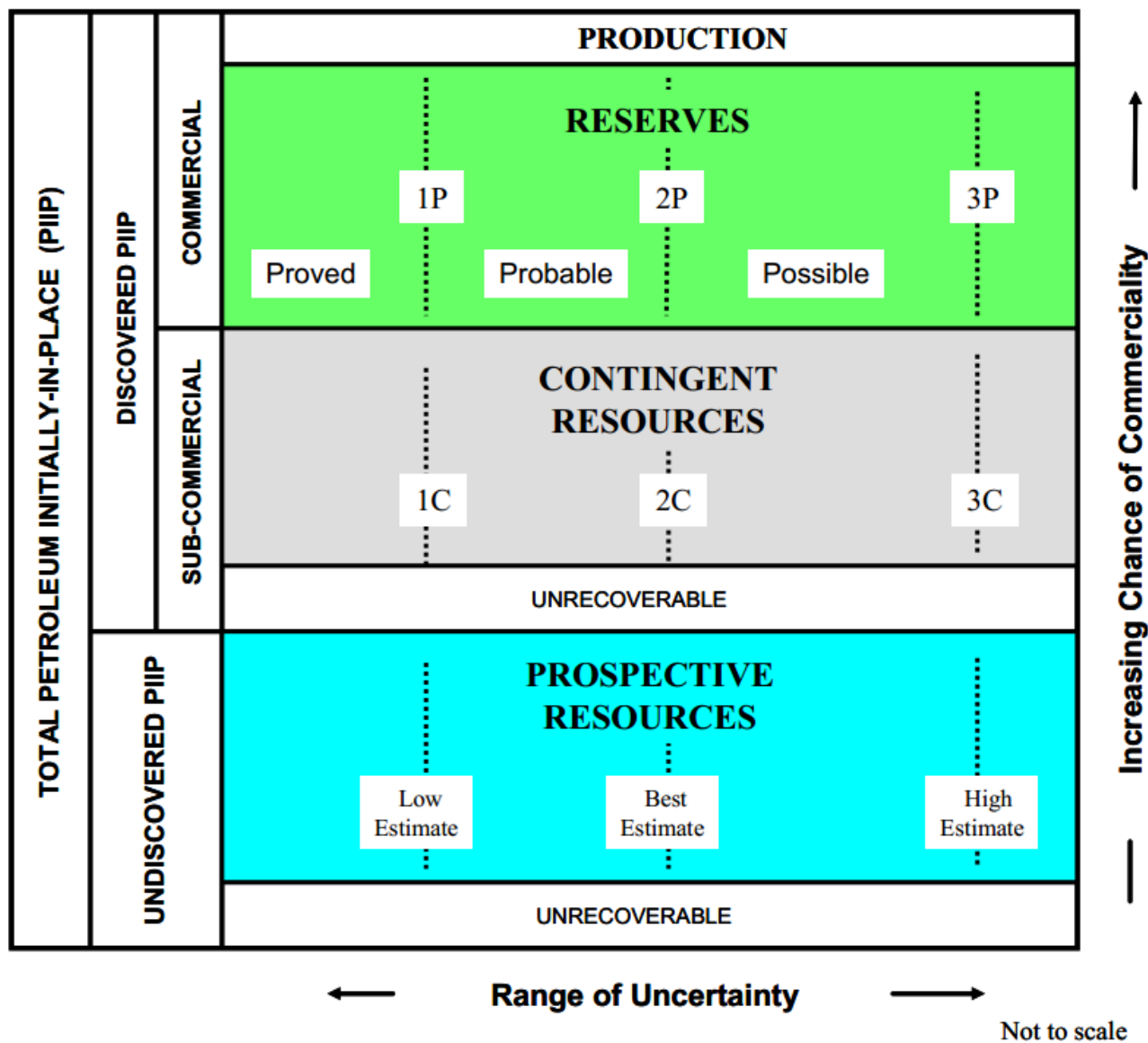


- Government confidence in companies, and company confidence in future government policy are key elements for long-term relationship





Reserves and Resources





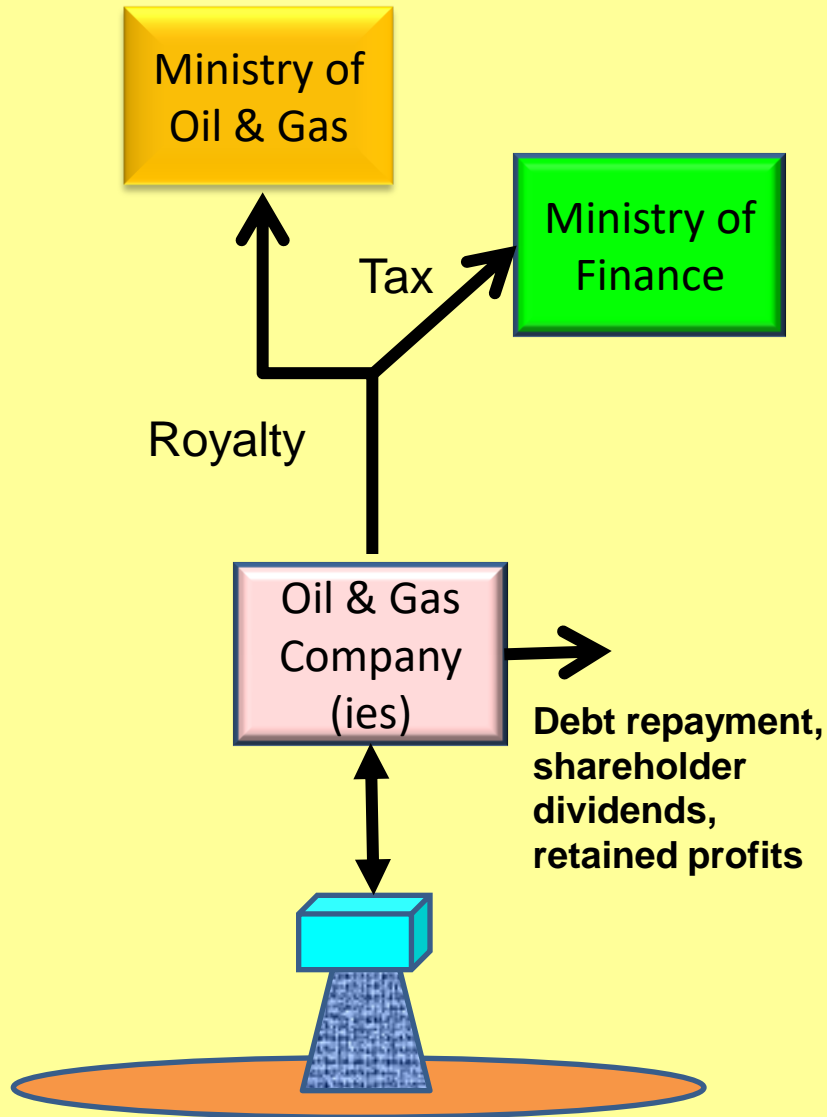
Country and Company Reserves Booking

- Country level reserves are collated by organisations such as the IEA, EIA and others. Many countries do not provide supporting technical 'evidence' for their declared reserves. There is significant scepticism regarding those of some OPEC countries in particular.
- Companies, certainly those listed on major stock exchanges are required to comply with rules and guidelines:
 - BP estimates proved reserves in accordance with SEC Rule 4-10 (a) of Regulation S-X and relevant Compliance and Disclosure Interpretations (C&DI) and Staff Accounting Bulletins as issued by the SEC staff
- Companies are always keen to book reserves, as these then sit as assets on their balance sheet and provide a basis for valuation by shareholders

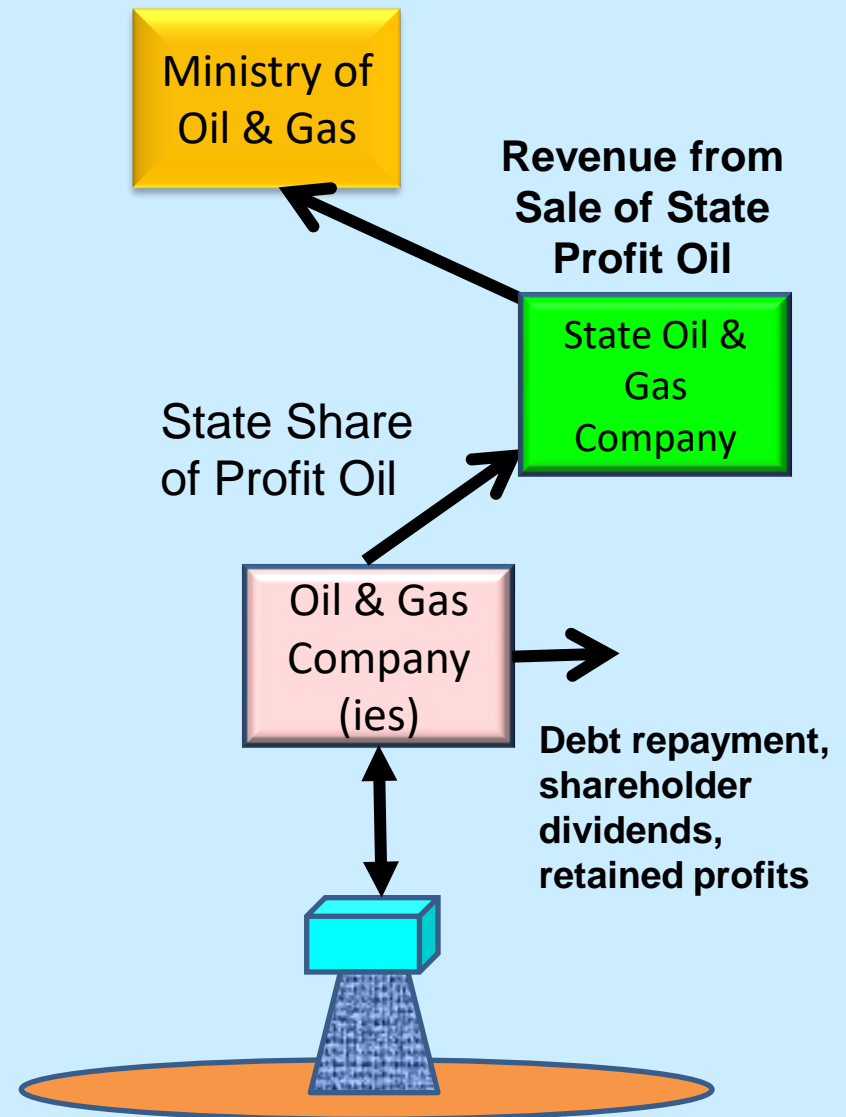


Oil and Gas Upstream Investment Frameworks

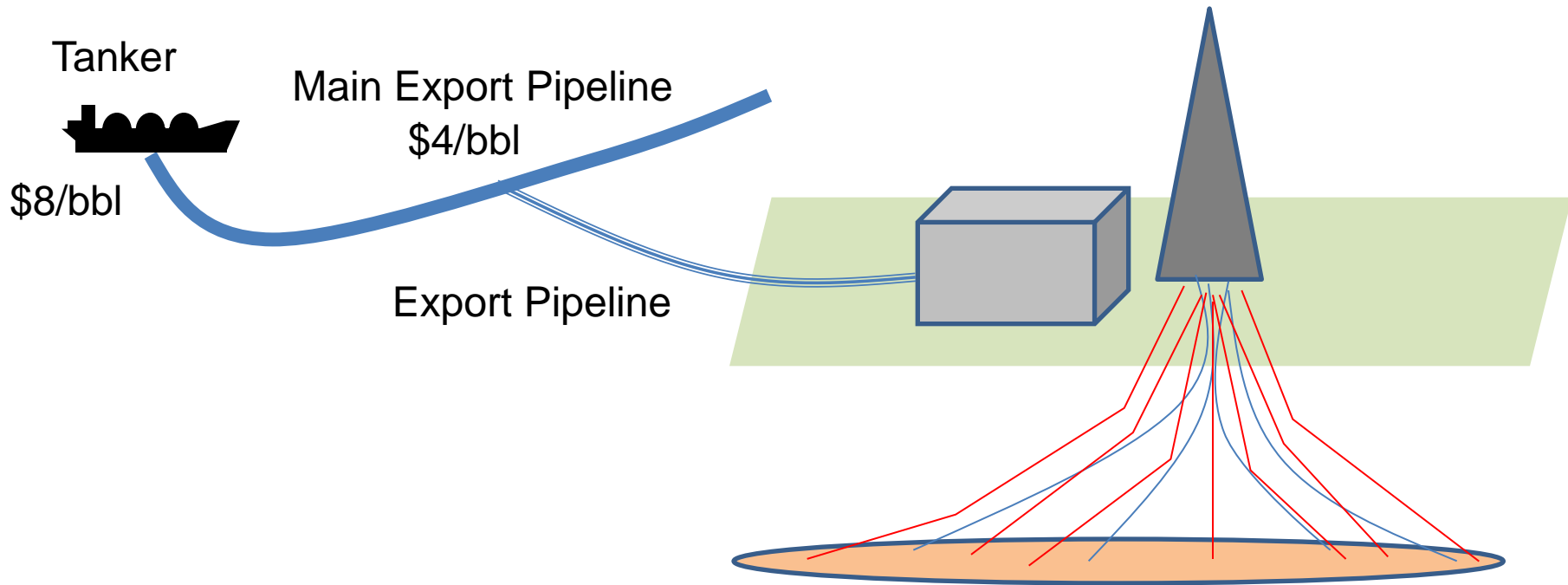
Concession (Tax & Royalty) Agreement



Production Sharing Agreement



Assessing the cost of a new development



\$ Millions

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|----------------------------|------|-----------------------|------------|--------------|--------------|--------------|------------|------------|------------|
| Capital Costs | | | | | | | | | |
| Appraisal Wells | | 100 | 100 | | | | | | |
| Export Pipeline | | | | | 500 | 500 | | | |
| Production Facilities | | | | 1,000 | 2,000 | 2,000 | | | |
| Development Drilling | | | | | | 500 | 500 | 500 | 500 |
| Abandonment | | | | | | | | | |
| Total Capital Costs | | 100 | 100 | 1,000 | 2,500 | 3,000 | 500 | 500 | 500 |
| | | \$8.2 bn Capex | | | | | | | |

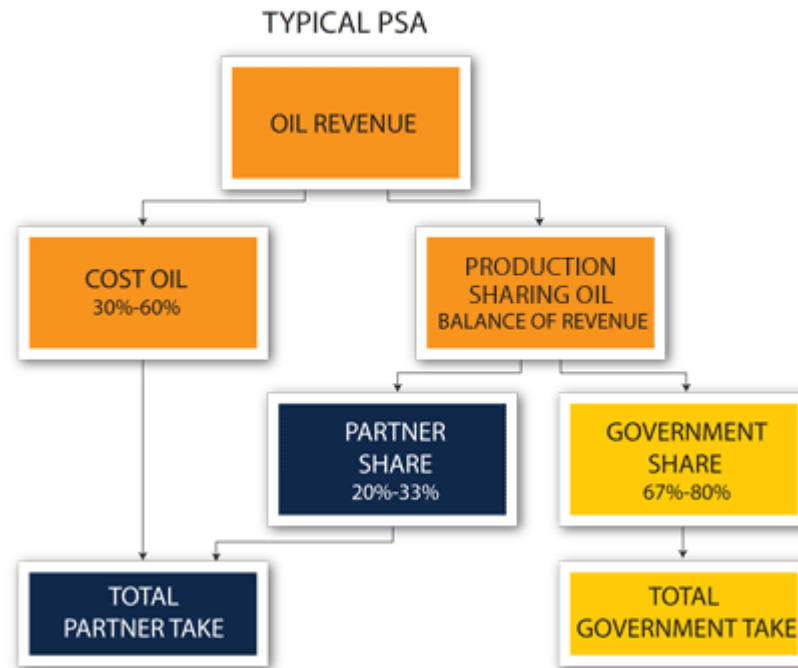


Concessionary tax scheme

- Company is granted rights to reserve base via a fixed term lease
- Tax system based on a royalty paid on extraction, plus profit tax
- Countries occasionally impose additional taxes to supplement the royalty payment
- Companies can book the reserves in the fields which they are developing – they effectively “own” the reserves
- Russian example of a tax and royalty scheme:
 - Revenue – (royalty + export tax + social taxes) – operating costs = operating profit
 - Operating profit – depreciation – profit tax = Net Profit
- Key issue for oil companies here is cost recovery and exposure to oil price
 - Royalties often have a sliding scale to reduce impact of lower prices



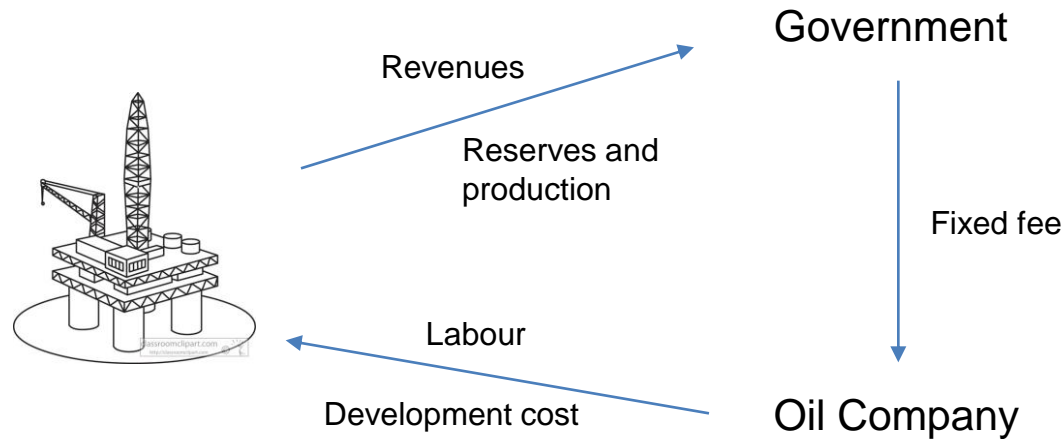
Production Sharing Agreements – a unique legal framework



- Companies recover costs and share in profit
- Government share increases once costs have been paid off
- Individual legal document that provides reduced risk for both parties, as the commitment is typically for the life of an investment
- Title to the oil and gas reserves remain with the state



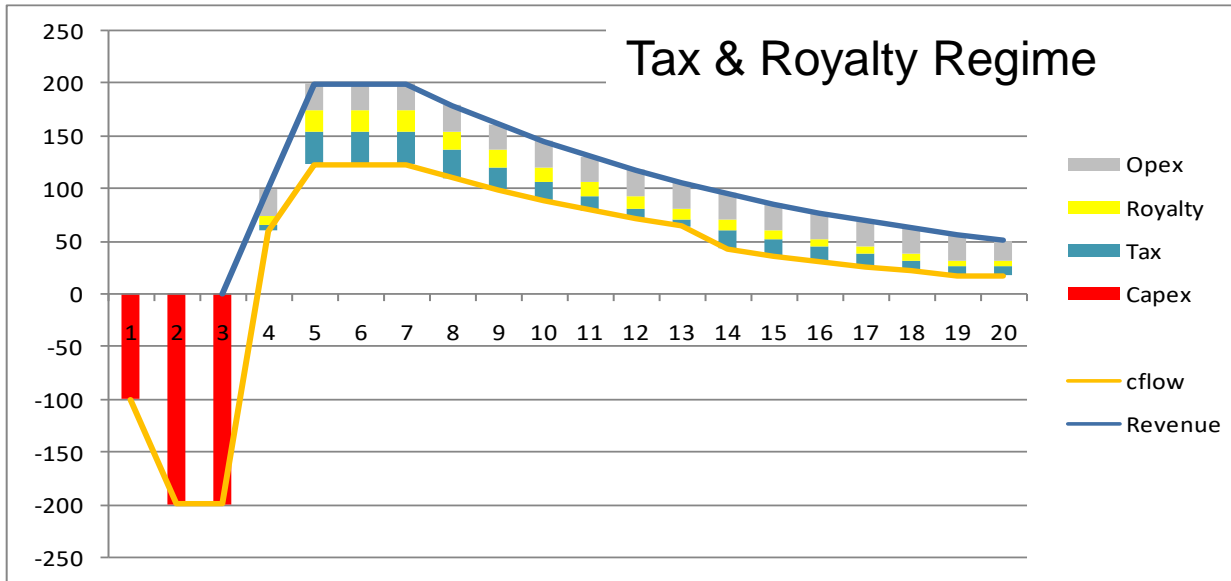
Service contract



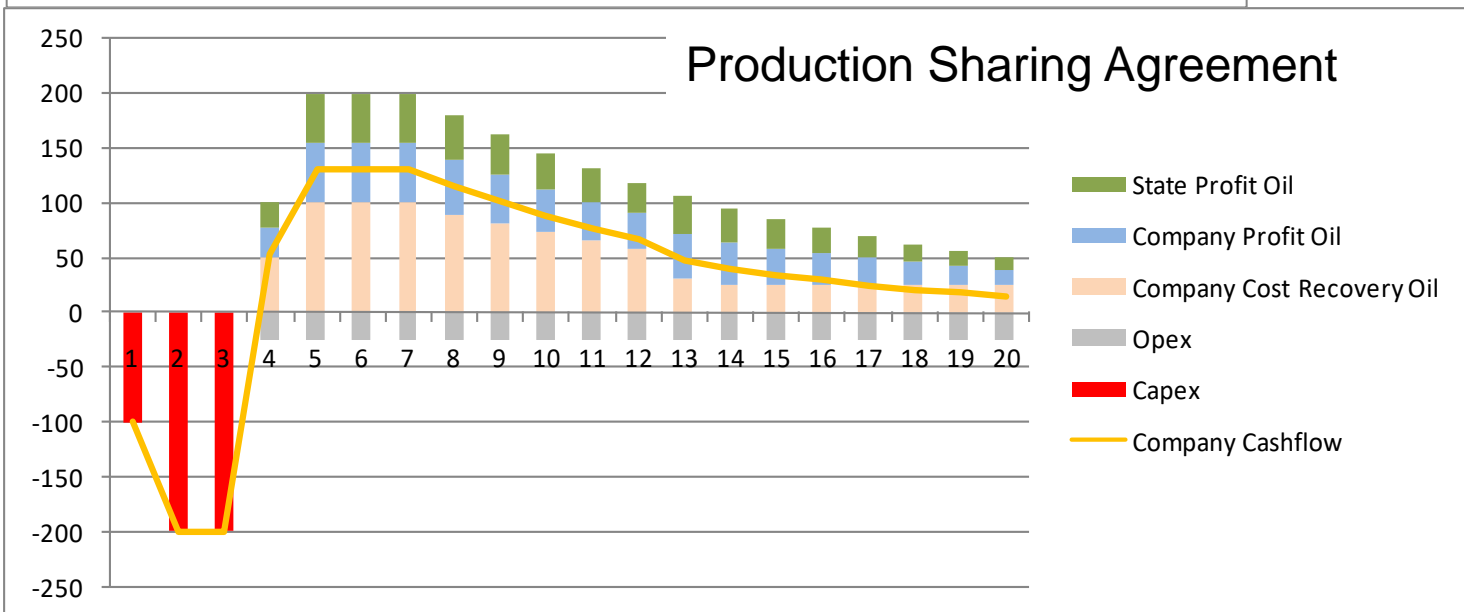
- Oil company pays for development of field
- Oil company paid a fixed fee for work done on a field
- May have some upside potential if targets are exceeded
- Company has no oil price exposure
- Government retains full ownership of field
- Much lower incentive for oil company to perform well



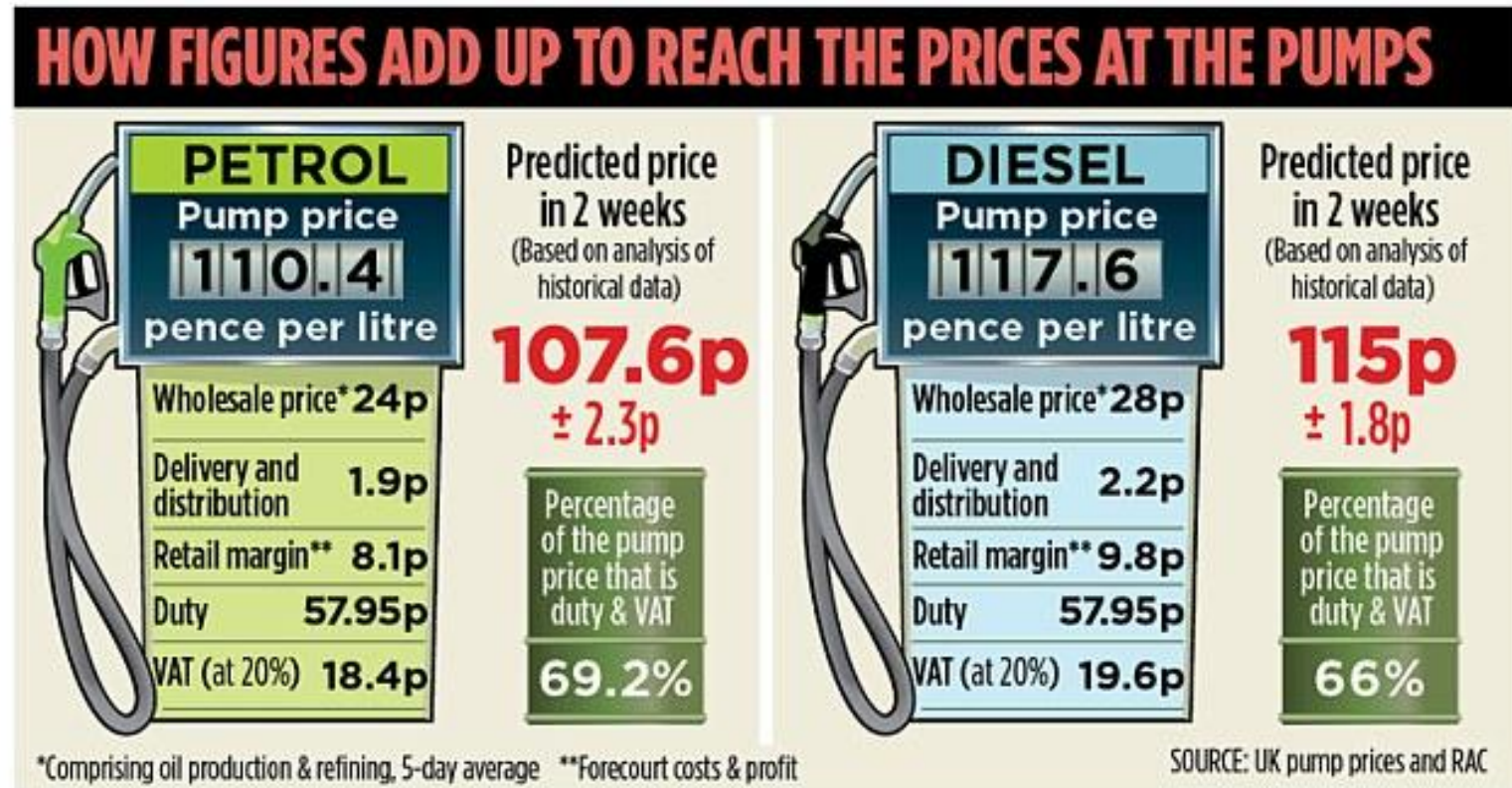
Upstream Investment Frameworks



IRR =
13.5%
in both
cases



Governments can generate significant revenues from the downstream business too

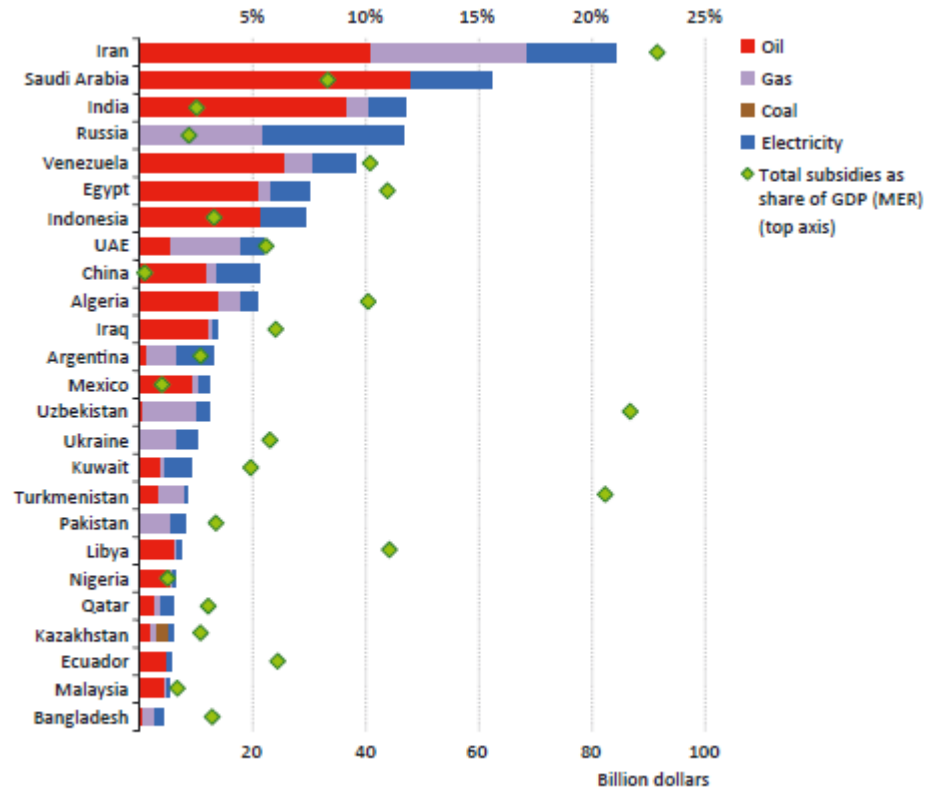


- Petrol and diesel prices often contain a high level of taxation
- In addition, governments often retain the right to limit price increases, or to insist on price declines, in times of perceived crisis



Governments subsidise domestic consumption with low fuel prices

Economic value of fossil-fuel consumption subsidies by fuel



Note: MER = market exchange rate.

- Governments of fossil fuel producing countries reserve the right to subsidise prices for domestic consumers
 - This is a key political tool in many countries
- This strategy inflates demand and reduces returns for oil companies



The oil industry faces geo-political risk as a global strategic resource

Geopolitical disruptors

- Trump's America: unilateralism, protectionism, transactionalism
- China: escaping Thucydides Trap
- Russia: revising post-Cold War order
- EU: towards European disintegration
- MENA: Thirty Years' War
- North Korea: always the disruptor



- Energy companies are often caught up in geo-political conflict
- They can either be directly involved (their assets are affected) or can be caught up in the economic and political consequences



Sanctions on Russia have a direct link to energy

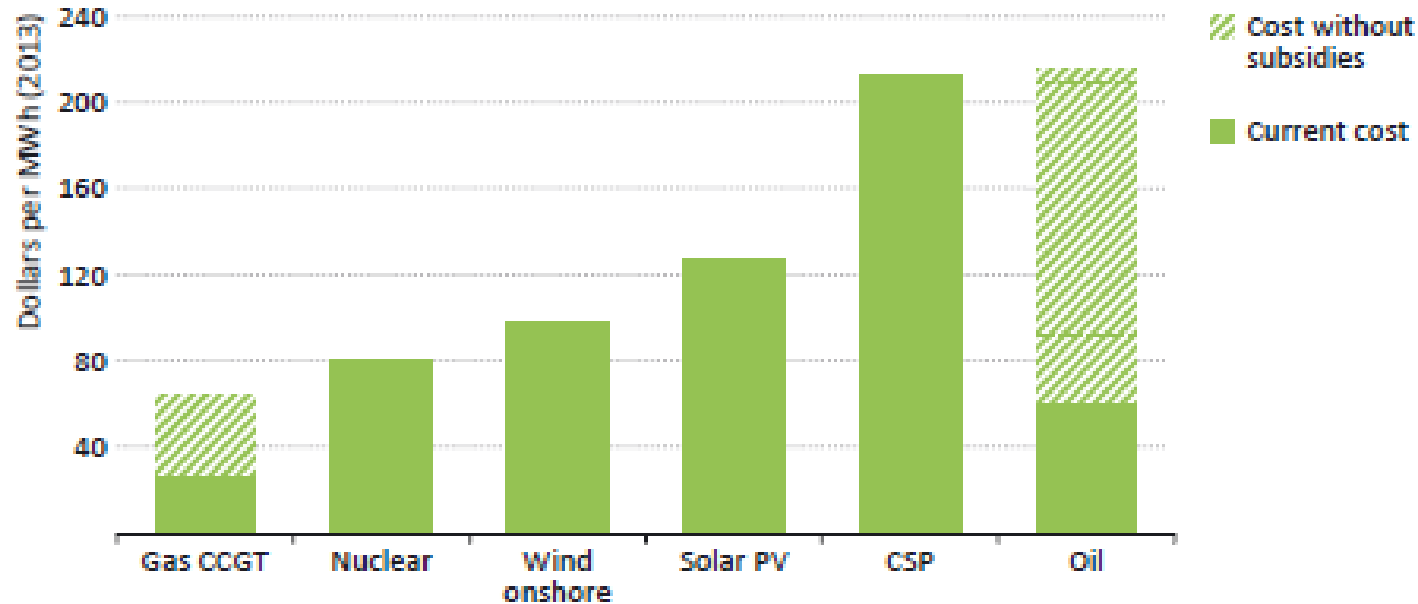
| | US Treasury EO 13662 Directive 2 (Financing) | US Treasury EO 13662 Directive 4 (Technology) | US Commerce Dept. Export Controls | EU Finance Restrictions | EU Technology Restrictions |
|--|--|---|---|----------------------------|-------------------------------|
| Transneft | Yes | | | Yes | Yes |
| Gazprom | | Yes | Yes | | |
| South Kirinskoye field (Sakhalin 3 - Gazprom) | | Yes | Yes | | |
| GazpromNeft | Yes | Yes | Yes | Yes | Yes |
| Lukoil | | Yes | Yes | | |
| Novatek | Yes | | | | |
| Rosneft | Yes | Yes | Yes | Yes | Yes |
| Surgutneftegas | | Yes | Yes | | |

- Activity in specific regions has been sanctioned
 - Arctic
 - Deep water offshore
 - Shale oil
- Finance has also been restricted
 - US and EU sanctions limit the duration of debt to 30-90 days
- Any companies with business in the US and EU must now think twice before doing any oil business in Russia



Impact of fossil fuel subsidies on renewable energy

Electricity generating costs in the Middle East



Notes: MWh = megawatt-hour; CCGT = combined-cycle gas turbine; PV = photovoltaic (utility-scale); CSP = concentrating solar power. Generating costs are for new plants coming online in 2020; assumptions are available at www.worldenergyoutlook.org/weomodel/investmentcosts.

- Fossil fuel subsidies undermine renewables by reducing the cost of gas and oil-fired power generation
- However, this may no longer be a viable strategy, given other constraints



Subsidising new energy

| Support method | Support mechanism | China | India | European Union | United States | Japan | Brazil | South Africa | Middle East |
|------------------------------|------------------------------|-------|-------|----------------|---------------|-------|--------|--------------|-------------|
| Providing additional revenue | Price premiums | ● | ● | ● | ● | ● | | | |
| | Cash grants | | ● | ● | ● | ● | ● | | ● |
| | Green certificates | | ● | ● | ● | | | | |
| | Net metering | | ● | ● | ● | ● | ● | | ● |
| Providing a guaranteed price | Feed-in tariffs | ● | ● | ● | ● | ● | | | ● |
| | Power purchase agreements | | ● | ● | ● | | ● | ● | ● |
| | Auction tenders | | ● | ● | ● | | ● | ● | ● |
| | Required share or amount* | ● | ● | ● | ● | | | | |
| Reducing total costs | Tax credits or exemptions | ● | ● | ● | ● | ● | ● | ● | ● |
| | Preferential financing rates | | ● | ● | ● | | ● | ● | ● |
| | Accelerated depreciation** | | ● | | ● | | | | |

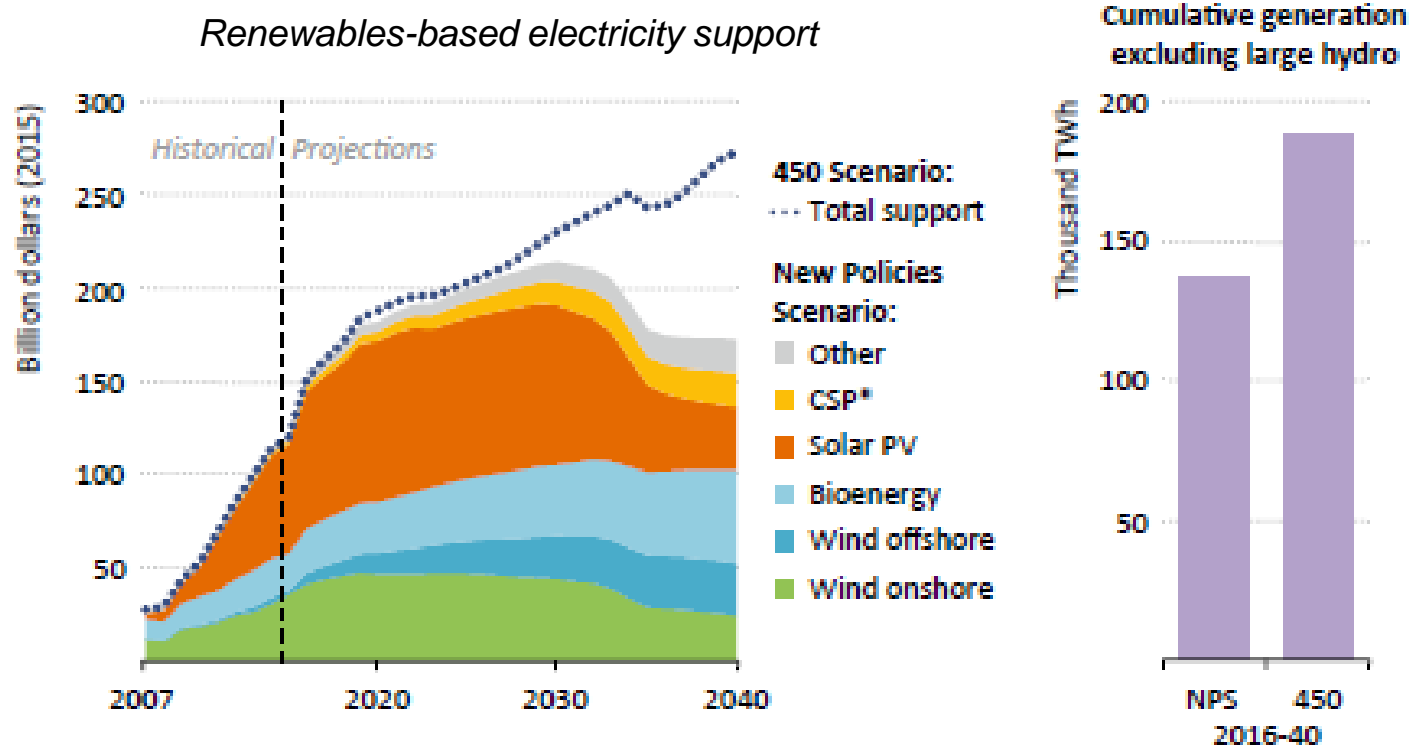
* Policies may specify a required share (e.g. renewables in total generation) or minimum amount of installed capacity or generation. **Accelerated depreciation lowers total discounted costs by delaying the tax burden.

Note: ● = primary driver of renewables deployment; ● = secondary driver of renewables deployment.

Sources: IEA/IRENA Joint Policies and Measures database; IEA analysis.



Global subsidies for renewables set to continue



While support for renewable electricity will be needed for years to come, transitioning to a low-carbon pathway can be achieved for just 15% more support

- Geographical spread of subsidies will broaden from OECD to non-OECD countries
- At the same time fossil-fuel subsidies are likely to fall to encourage increased energy efficiency



Saudi Arabia is diversifying – a sure sign of dramatic change



- Triple non-oil revenues by 2020
- Privatise Saudi Aramco, the state oil company
- Rationalise subsidies across the economy
- Increase domestic production of renewable energy
- Improve the business environment for domestic and international companies



Conclusions

- The role of NOCs is increasing – IOCs are increasingly struggling to find a unique selling point
- Governments of hydrocarbon producing countries are finding it more difficult to balance tax with financial incentive
 - Really need more oil revenues
 - Still need companies to invest in new production
 - Can't afford continuing subsidisation of domestic fuel prices
 - Need to incentivise new investment in renewables
- Partnership is increasingly taking place between IOCs and NOCs, but this carries greater governance risk for IOCs
- Geo-political risk to energy economy is increasing
- Even Middle Eastern countries are having to anticipate an increased role for renewables and a diversification away from oil and gas

