

Alternative paths for large IOCs

Low oil prices may drive pervasive structural changes in upstream oil and gas



The financial health of the oil and gas industry has always been set by oil and gas prices, with major price inflections often leading to significant structural changes in the sector. After the price drop of 1986, WTI oil prices remained low for nearly 20 years, at about \$30-\$40 in 2015 Real terms (as shown in the Figure below). This low price environment not only drove a wave of project deferrals but also triggered a series of consolidations among international oil companies, seeing the demise of Arco, Amoco, Mobil, Fina, Texaco and Phillips, among others. The much higher prices of the past 10 years have ushered in an era of greatly accelerated oil and gas exploitation in often much more technically complex, deep-water and remote settings, with many smaller, emergent players now pursuing unconventional hydrocarbons and playing a much more influential role in price setting. With oil prices again now at around \$40 per barrel, a price-level which increasingly looks as if it may be sustained for many months if not years into the future, it is appropriate to ask what alternative future structural trends might come to dominate the sector over the next few years.

Oil price: Driving structural change in the sector

It is clear that many of the highest-cost and technically most complex oil and gas development projects, including remote and deep-water fields, are now being deferred or cancelled, as their economic outlook deteriorates.



This of course presents the International Oil Companies (the "majors," or "IOCs") with an increasing reserves replacement challenge, one that is not faced in the same way by many of the largest National Oil Companies ("NOCs").

These NOCs not only control over 58% of the world's current oil production but they also control around 90% of global oil reserves, the vast bulk of which comprises relatively low-risk, low-cost volumes, generally in brown-field settings. While some NOCs remain very dependent on external support, many of the more sophisticated NOCs are increasingly able to access their resources without needing IOC support and participation. These more capable NOCs have increasing access to all the technologies required – they have been rapidly expanding

their R&D budgets, and are building ever deeper, direct relationships with oil services companies, without a need for IOC intermediation. Indeed, an increasing trend over the past five to ten years involves services companies taking direct oil field equity positions from the NOCs. These more advanced NOCs are in fact acquiring ever more effective staff skills and competencies, often without needing to engage with IOCs at all. Further, many NOCs are also now able to raise funds in global capital markets in order to develop their resources.

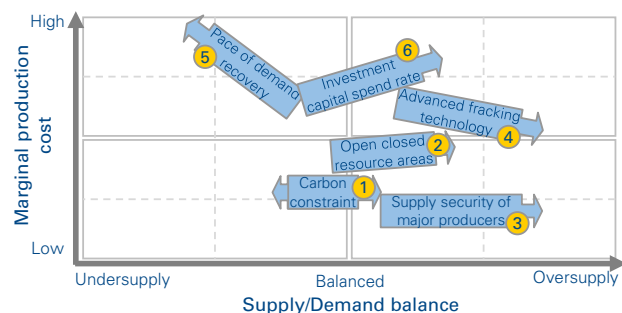
The IOCs have also recently been challenged by the rise of shale-oil and shale-gas, largely produced by a tier of relatively small, independent US oil and gas companies, having nimble operations and low-cost structures. These companies have changed the face of the industry, often leaving the IOCs stretching to catch up.

Developing scenarios for IOC development

In consequence, future access to economically viable resources by the traditional IOCs is becoming increasingly challenging, especially in this relatively low oil price environment and uncertain market. This presents the IOCs with a growing strategic dilemma. What are potential future winning strategies for the IOCs? What directions are plausible and how can they either pursue growth or maintain earnings? Might some or all of them need to rethink their business models? What types of future partnership or collaboration might be appropriate? The aim of this paper is to identify and evaluate a set of strategic options for the IOCs under each scenario formulated/considered. The

first step toward identifying these futures is to examine the key drivers of change in the sector, considering both their likelihood and impact, and then develop coherent combinations of these changes that can be developed into scenarios. These are as follows:

Key drivers of change in the sector



Source: Arthur D. Little analysis

Driver 1 – Carbon constraint

Current pressures for limits on carbon emissions are likely to become more severe. Displacement in the short term of first coal (5-10 years) and then some oil by gas will initially lead to a preferential pursuit of gas opportunities by the IOCs, with the Shell/BG merger being only a first indication of such a transition. In the longer term (10-15 years) there will be continued growth in renewable energy production, driven by both technology breakthroughs and policy pressures. This will then progressively lead to a further shift of gas-fired power from base-load to peak, then to material levels of transport electrification, perhaps with CNG/LNG as a partial bridging solution. The resulting shift and drop in gas and liquids demand will drive prices down and eliminate high-cost supply sources. **Likely/High Impact**

Driver 2 – Opening of closed resource areas

The reform and opening up of E&P provinces which are currently closed to IOCs, particularly those involving the less developed NOCs, could generate very attractive prospects for the IOCs. Mexico is the most obvious current example, but others may also follow, in Latin America, the Middle East and elsewhere.

Uncertain/Moderate Impact

Driver 3 – Supply security of major producers

Changes to either the political or security environment which impact a major oil or gas producer may have a critical impact on supply levels and pricing in the global market. Expanded disruption in the Middle East, blockades, the resolution and re-emergence of Iran or Libya, etc., could all have very significant effects, changing both prices and the extent of access opportunities for the IOCs. **Likely/High Impact**

Driver 4 – Advances in fracking technology

Some of the current shale-oil/shale-gas production companies will be driven out of business by the twin pressures of rising

debt and falling prices. Nevertheless, break-even development costs for shale oil/gas production will continue to drop, as they have done in recent years, enabled by progressive technology improvements. This trend, if sufficiently pronounced, will enable the lowest cost and most flexible of the remaining US shale oil/gas companies to grow their unconventional production. The increasingly low-cost gas volumes that result will displace gas from conventional projects elsewhere in the world and set a cap to gas prices. Several IOCs may, as a result, attempt to re-establish a more significant position in the unconventional sector, either in the US or elsewhere. **Certain/High Impact**

Driver 5 – Pace of demand recovery

Given current production overcapacity in both oil and gas, and significant current levels of oil overstocking, it may be several years before demand growth leads to a re-balancing of supply and demand. While we assume that overall demand will continue to increase slowly, not peaking before at least 2040, the pace and timing of that increase is highly uncertain, with continued economic volatility and downturns likely in all key markets. When supply is more reliably balanced by growing future demand, thus tightening the existing gap, the resultant more stable oil price foundation will give IOCs greater opportunity to pursue the more challenging and complex plays that have formed much of their reserves growth over the past 10 years. **Uncertain/High Impact**

Driver 6 – Investment capital spend rate

The uncertain timing of a future tightening of supply and demand is also governed, to a significant degree, not only by the rate of natural production decline in existing fields but also by the depth and duration of the current slow-down in investment in new production capacity. This will be influenced to a large degree by the level of investor confidence in the sector. Though a full-scale “investor strike” is unlikely, the capital markets may increasingly view much of the oil and gas sector as the holders of “stranded assets” as the carbon agenda gains more traction. The result, in combination with heightened price volatility, may be a need for much higher project rates of return in the sector, to compensate the market for the higher equity risks being taken. In consequence, while companies will continue to cut costs, improving development and production economics, many plays and projects, and the companies that own them, may increasingly become unviable. In this event, with potential constraints on supply, prices would rise, presenting opportunities to those IOCs with the highest quality assets, at the same time that other companies see only shrinking potential. **Uncertain/Moderate Impact**

Scenarios for IOC development

By combining potential outcomes from the above drivers, to form discrete and internally consistent scenarios for the sector’s

development, we form a series of alternative future visions for environments in which IOCs may come to live. These outcomes also describe the strategic responses that the IOCs may have to make. In its advice to clients, Arthur D. Little is often asked to produce industry scenarios which, though relatively extreme and highly challenging for the companies involved, are nevertheless recognizable, credible and requiring of a response. Illustrative current scenarios are as follows:

Scenario 1 – “Carbon controlled”

This is a world in which effective policies to reduce worldwide carbon emissions are both put in place and enforced. There is continued rapid growth in renewable energy sources, driven by technology breakthroughs and progressive policy pressures, with an early and progressive displacement, by gas, of most current coal demand, except in India and China, where reduction will be rather less. In the longer term there will be continued and even greater growth in renewable energy production, together with a slow expansion of nuclear capacity. Progressive transport electrification and a shifting of gas-fired power from base-load towards mid-merit and peak will lead to an eventual erosion of both gas and liquids demand, but particularly of oil. This reduced oil and gas demand growth will suppress prices and eliminate high-cost supply sources.

The early increase in demand for gas, as coal is displaced over the next 10-15 years, will strengthen gas prices sufficiently to stimulate major new gas projects. These will mostly be pursued by the IOCs worldwide, together with expanded unconventional gas capacity in the US. This will be stimulated by continued fracking technology improvement, with the resulting associated gas liquids having the effect of dampening further any oil price rise.

Oil prices will be even further dampened by slower demand recovery, as energy efficiency is also significantly strengthened along the energy value chain. As a result, though the IOCs will see only very limited scope for oil resource replacement, there will be significant potential for the preferential pursuit of gas opportunities, some organic but also by M&A. While no new NOC oil provinces are opened up to the IOCs there are progressive but generally limited attempts by the major NOC producers to increase output. This further reduces oil prices and further weakens the financial robustness of many of the mid-sized IOCs and larger independents.

In consequence, though there will be some M&A activity among oil firms, it will be more common, as the availability of project finance becomes more difficult for major new developments, for the IOCs to shift towards being more strongly gas-dominated, led by gas development projects and gas mid-stream infrastructure.

In addition, it is also likely that current firms will be progressively split up and disaggregated into separate, asset-cluster specific, individually owned and project-funded entities, sometimes linked to discrete demand hubs. The oil-dominated part of their portfolios may often be hived off into a separate business and a number of the major IOCs will invest heavily in renewable energy projects.

Scenario 2 – “Open-house; return to easy oil”

This is a world in which there is only a relatively slow adoption of fossil-fuel constraints, though the gradual changes that are made will dampen coal demand in particular. Partly as a result, oil demand growth is restored by continued Asian economic strength, with that demand being met by reinstated additional supply from markets such as Iran, Iraq, Libya and Mexico. These markets may have undergone not only a political, and in some cases a security settlement, but will also start to undergo a major capacity overhaul.

In most of these cases the local NOCs will still lack the strengths and capabilities to perform this capacity overhaul themselves. The unlocking of the currently untapped, low-cost potential in these areas can therefore only be carried out by the active engagement of the IOCs and service companies. There will thus be significant growth in the opportunities open to these companies.

The widespread pursuit of such opportunities, many of which will involve the upgrading of large brownfield assets, will keep oil prices relatively low for many years, inhibiting, canceling or substantially delaying most of the more challenging, complex and costly development projects currently being pursued whilst also slowing the penetration of new renewable assets and technologies.

This will result in the IOCs being left with a number of “stranded,” uneconomic assets. It will also result in them being compelled to accept much lower rates of project return from their host NOCs on the relatively lower-risk opportunities provided. Some of the companies involved will also start to face challenges securing the capital required for this investment however, because of the low returns involved.

Partly as a result, this scenario could see the acquisition by IOCs of oil field services or facilities development or management companies, or the creation with such entities of much closer partnering styles, marking a shift from transactional to more closely collaborative relationships as the IOCs increasingly undertake projects which no longer reflect the return expectations of their current shareholders.

This should result in opportunities for the IOCs to strengthen their involvement with unconventional gas and shale oil, both in North America and elsewhere, which will again provide a ceiling

on oil prices in the \$50/bbl range and will cap for gas prices at about \$4.50/mmbtu.

Scenario 3 – “Return to mega-projects”

A world in which there is an only very slow adoption of carbon constraints, with oil and gas demand growth only gradually being restored, particularly in Asian markets. This growth prompts a gradual strengthening of oil and gas prices over the next five years, at least partly the consequence of continuing security challenges or political instability in areas where this is currently an issue and the continued closure to IOCs of many NOC provinces.

The next few years of low prices however results in a cashflow crisis and low earnings which drives an extended and pervasive wave of M&A consolidation involving most IOCs, both majors and large independents (such as the recently mooted Anadarko/Apache tie-up, or the Shell/BG merger). Mergers, or fire-sales involving the debt-ridden smaller independents, are also very likely. As a result of these aggregations, the fewer, remaining, much larger entities are better able to take advantage of the slow oil price recovery.

The merged, stronger IOCs will have the greater technological and capital strengths needed to master the more complex, larger and deep-water play opportunities for major oil and gas projects at significantly lower overall costs. Some of these strengthened IOCs, delivering higher rates of return are also likely methodically to pursue unconventional oil and gas plays but only in the traditional US play areas, rolling up the shale-gas plays currently being exploited. They are likely to leave international shale-gas plays to other, smaller players.

Conclusions

The scenarios outlined above are not necessarily mutually exclusive: aspects of each can perhaps coexist at the same time. Nor indeed is it intended that this outline should comprise an exhaustive review of all possible future worlds.

It is however intended that these outlines should provide a selection of alternative possible visions of the future against which companies might stress-test their own portfolios, with the intention of identifying the most viable and profitable strategies for long-term growth. In this uncertain energy world, the best approach would be to develop strategies that are resilient under most plausible scenarios and that can be relatively easily adapted depending on which direction the energy world takes.

Arthur D. Little is often asked by clients for its views on the future direction of the sector on this centrally important strategic issue, a structural perspective which is perhaps more important now than ever.

Contacts

UK

Stephen Rogers
rogers.stephen@adlittle.com

Americas

Rodolfo Guzman
guzman.rodolfo@adlittle.com

China

Antoine Doyon
doyon.antoine@adlittle.com

France

Vincent Bamberger
bamberger.vincent@adlittle.com

Germany

Matthias von Bechtolsheim
bechtolsheim,matthias@adlittle.com

Italy

Katia Valtorta
valtorta.katia@adlittle.com

Japan

Yotaro Akamine
akamine.yotaro@adlittle.com

Netherlands

Martijn Eikelenboom
eikelenboom.martijn@adlittle.com

Spain

David Borrás
borras.david@adlittle.com

UAE

Jaap Kalkman
kalkman.jaap@adlittle.com

Authors

Stephen Rogers and Ondrej Sanislo

Arthur D. Little

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