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by Richard Norris
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POLICY PERSPECTIVE

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In the 2000s, peak-oil scares were all about the peak of supply and how the world would implode as demand surged and supply couldn't keep up. We now face a global over-supply of oil and gas and all the talk is about peak demand. It is now when – not if – oil in the ground becomes stranded. In this new normal, it is argued that as demand decreases so oil prices will decrease and only those able to produce at the lowest end of the cost curve will survive – with the last drop of oil to be produced coming most likely from Saudi Arabia.

What if this were not true and the last oil we use would actually come from Canada? Impossible, given the perception that Canadian oil is expensive and unwanted? Maybe not.

Cost of Extraction

While the conventional narrative has merit, there is a huge and – to my mind – fatal flaw in the argument. This flaw is in the definition of break-even costs. In most resource projects there are two ways of looking at costs:

- (1) Break-even operating costs
- (2) Full-cycle break-even: construction, operating and abandonment costs

Generally, we compare the costs with the life of use and total energy output.

Operating costs are the most straightforward and they are the metric that puts Saudi oil at the lowest end of the cost curve. Onshore production with highly prolific reservoirs – albeit with many now using enhanced oil recovery techniques – remain very cheap on a per barrel basis. Numbers quoted historically have been single-digit \$/barrel. In this situation it is easy to understand that even with oil prices in the \$30s or \$40s/barrel, these are very profitable. Perhaps surprisingly, some of the best deep-water production (Brazil, GOM, Nigeria, etc.) can have similar operating break-evens, despite the enormous complexity of operating far offshore. Again, the main reason is the great quality of the producing assets which makes the costs low on a per barrel basis. These deep-water offshore projects do, however, come at a very significant up-front cost. The Total operated Egina field in Nigeria cost roughly US\$15 billion for the field development.

To account for these costs, a different break-even is considered – one that includes the construction, operating and abandonment costs. This gives a full-cycle break-even value for an energy development that is usually most pertinent to project finance, because in many cases (especially oil and gas) most of the energy production is front-loaded and the abandonment costs are distant. Thus, the net-present value minimizes the abandonment.

This does not mean that abandonment (including all remediation costs) is not included, just that its time-discounted value is low. One case where this was massively misunderstood was in the



early nuclear industry – where the upfront and operating costs seemed to be so small in terms of energy output that it was claimed that nuclear power would be “too cheap to meter”.

When all costs are correctly accounted for, nuclear energy is cheap, but not that cheap!

Social Break-Even

However, there is a third break-even that is extremely important but usually overlooked. This is the break-even societal cost – and here, to be clear, we are not talking about any costs or externalities associated with the product’s use. The break-even of societal cost is specific to certain countries whose economies are dominated by revenues derived from oil and gas production. When oil or gas are produced and become the major export products, the state becomes dependent upon the tax revenues. Nigeria, for example, has a reasonably diversified economy; oil is 10 per cent of GDP but is 85 per cent of export revenues and north of 65 per cent of government revenues. In Iraq, [oil is 60 per cent](#) of GDP, 99 per cent of export revenues and 90 per cent of government revenues.

The countries of the Gulf (Saudi Arabia, Kuwait, United Arab Emirates, Iraq and Iran) have state finances built on the revenues from hydrocarbon production. These countries often have little or no income tax, sales tax or corporation tax – yet the state provides a very generous program with large numbers of government employees as well as all normal services provided for free. Everything is paid for out of hydrocarbon revenues. In addition, hydrocarbon products (petrol, and in many cases electricity produced by burning gas or even oil) are at or below cost.

The net result after decades of living off this fat is that these systems have become so ingrained and so generous that they are unaffordable when oil prices drop. Indeed, the break-even oil prices needed for these countries to balance their budgets are estimated as follows:

For the leading Middle Eastern countries, the fiscal break-even oil prices needed to balance their budgets are the following: Saudi Arabia at \$91, Oman at \$82, Abu Dhabi at \$65, Qatar at \$55, Bahrain at \$96, Iraq at \$60 and Iran at \$195, [according to Fitch Ratings](#).

When discussing these figures, it is not uncommon to hear that “it’s their problem”. Given that oil is a globally traded commodity this is not a local problem, but why?

As Margaret Thatcher said when she was prime minister of the U.K. in the 1980s, a country’s budget is not unlike a household’s – you shouldn’t spend more than you earn. If you do, you need to have significant savings to bridge the gap, or willing creditors. This is the case of Saudi Arabia and neighbouring Gulf States which have sovereign wealth funds and credit ratings, but not the case in Iraq, Iran, Libya, Venezuela, Nigeria and many other producing countries.

For example, in the second quarter of 2020 [Saudi Arabia had a 45 per cent drop](#) in income from oil due to COVID-19-induced global low prices. It cut its state social spending by 17 per cent but still ended up with a US\$29 billion deficit for the quarter. To pay for this, the government



increased borrowing and it also dipped into the reserves to the tune of US\$13 billion. Meanwhile, the state removed a cost-of-living allowance for state employees and tripled value-added tax to 15 per cent.

Persistent low oil prices will lead to increasing pressure on public services – perks go first, but when people stop being paid it leads to unrest. To balance the books, states look at alternative revenues (as in the case of the sales (value-added) tax mentioned above). When the people not being paid are teachers and civil servants, you have unrest; when it is the police and army, you can quickly have societal breakdown. In these conditions, it is all but impossible to keep the oil and gas industry operational and there is often a rapid drop in production. Venezuela is an unhappy example.

Not ironically, losing production contributes to a rebalancing of the global supply-demand equation. A rather crude expression of this is that “low oil prices fix low oil prices.”

It has been argued that the Arab Spring stemmed in part from depressed oil prices in 2008-2009 after the Great Financial Crisis. Production from Libya, Yemen and Syria [has not recovered](#).

Without going as far as societal breakdown, there will always be a tendency to seek to prop up revenues with short-term solutions, rather than risk societal and political upheaval. In October 2020, Iraq toyed with the idea of producing more than its OPEC+ quota. The objective was very simply to shore up its revenues by increasing volume. It is not hard to see how increasing production into a world that is already over-supplied and going into a second wave of COVID lockdowns would tip the market into serious over-supply and tank prices. It would be a very short-term fix if enacted!

Less visible, but more insidious, is a tendency to try to milk the golden goose through additional rent seeking. Sometimes this is via increased or new taxes, sometimes via laudable schemes for local content or sharing in offshore sales proceeds. While these are understandable and well within any sovereign nation’s rights, the net result is that globally mobile capital will consider the risk-reward equation unfavourably. For example, as oil prices collapsed in 2014-2015, Norway adjusted its petroleum tax code to encourage investment in the sector. Likewise, when oil prices rose in 2010-2014, the U.K. imposed windfall taxes but flexed them as oil prices dropped. In stark contrast, many oil-dependent emerging market countries increased tax burdens in the period 2014-2020 (consent fees for asset sales, VAT, withholding taxes, government entity carry and/or back-in rights, etc.) getting the timing perfectly wrong.

In a sector that has always struggled with image, capital is leaving the riskier end of the market. There have been high-profile cases of corruption generating very real losses for equity and debt holders as well as reputational risk and prosecutions. Countries which are characterized by a limited rule of law, problematic enforcement of contracts and/or nationalization (direct or indirect), an increase in layered rent-seeking and unpredictable, unmanageable delays have become almost uninvestable. If we add political unrest to the equation, it becomes clear-cut.



In addition, across geographies, ESG headwinds affect the whole sector as the “keep it in the ground” movement gains traction.

All of this has led to both equity and debt drying up in emerging markets. This leads to an increase in the cost of capital, and consequently, projects have to be the best of the best to pass simple investment hurdles. Add in the poorly timed rent-seeking, and it is easy to see why capital flows away from emerging markets and into OECD countries where projects may be a little less attractive, but are massively more attractive on a risk-reward balance. Given that the debt markets are more or less still open for oil companies operating in these countries, the cost of capital will be lower also.

Angola and Nigeria

Angola and Nigeria used to compete for the title of biggest oil producer in Africa. Angola’s production has been declining since mid-2016, when it started a precipitous drop as the fields discovered in the 1990s reached maturity. Today, Angola is playing second fiddle, with production having fallen from 1.8mmbbls/d to about 1.35 mmbbls/day – and that includes the recent addition of 235k bbls/d from a new field brought on in April 2019.

Nigeria is top producer in Africa, but is facing a [production cliff edge](#). As deep-water fields start to decline rapidly, there is only very limited activity onshore and in shallow water. Barriers to M&A activity and to new investments are appearing at a time when capital is looking elsewhere. On top of this, existing field-development projects which could add several hundred thousand barrels of oil per day are on hold while the licence renewal and other fiscal debates play out.

Despite the obvious oil and gas riches of these countries, there is a major investment hiatus or even drought, and no obvious path to reversing this trend. Thus, without going as far as evoking social and economic collapse leading to production decline, the same drivers are seen to be negatively affecting production volumes in many traditional producing nations.

Future Shock

The recent history of a very strong pull-back from financing oil and gas projects in emerging markets may well be a harbinger of how a decreasing oil-demand world will look. Lower demand will depress prices, and countries that cannot maintain civil society at such low prices will become unstable and uninvestable. Capital will deploy in stable and safe jurisdictions.

Projects with huge sunk costs, low operating break-evens and low depletion could well be the areas of production that survive to satisfy the declining demand.



When considering the oil reserves and resources that will contribute to world supply if/when oil demand decreases, we should not pay too much attention to the operating break-even or the full-cycle break-even cost curves – we should look at areas which have fiscal and political security, rule of law, access to capital and long-life reserves.

Currently, it is fashionable to conflate peak-oil demand with the end of oil. Through this lens, the provenance of the residual oil we will use is of little consequence. We have forgotten the oil shocks of the 1970s and believe they are historical anecdotes as Tesla's share price goes stratospheric.

Yet if we believe that oil demand will decrease and depress prices, we should consider the security of supply in a world that will be deeply destabilized as the petro-dollar economies of whole regions get disrupted. In this case, we should be conscious of the value of domestic reserves and production in ensuring energy security.

If security of supply and relative affordability increase in importance, the Canadian conventional and unconventional should benefit. The last drop of oil (if there is ever any such thing) may come from resource plays in politically and economically stable countries and not from Saudi Arabia.

► About the Author

*Dr. **Richard Norris** has over 30 years energy related experience in both industry and finance, including roles with large and small oil companies, as well as roles in debt and equity financing. He is currently managing director of Pandreco Energy Advisors, whose clients include IOCs, banks and public policy centres. He writes and presents extensively on the relationship of energy, economics and society.*

Until recently Richard was a Consulting Partner with Helios Investment Partners where he co-managed energy investments in Africa.

Richard started his career as a Reservoir Engineer at Elf Aquitaine, (subsequently Total), covering geostatistics, upstream operations, reserves, new ventures and economic strategy over a ten-year period in France and Angola. Subsequently he established the Technical Director role at BNP Paribas in its European oil and gas structured finance group. Following almost a decade in banking he became General Operations Manager for Geopetrol managing assets in SE Asia and Yemen and followed by being named CEO and President of the TSX listed Candax Energy.

Richard holds a PhD in Petroleum Engineering and an MSc in Petroleum Geology from Imperial College London as well as a BSc in Geology.

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