

# Why the global energy transition does not mean the end of the petrostate

Short version of title: energy transition and petrostates

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## Abstract

The world going low carbon is believed to put an end to petrostates, and to force incumbent oil producers to diversify their economies away from fossil fuels. This article challenges this assumption. Whether petrostates are in for the long game or end up with a ‘panic and pump’ strategy, it is argued, is a function of the lifting costs and the social costs of producing oil. What is more, the low carbon energy transition may well throw petrostates an additional lifeline, as fast decarbonizing OECD countries will shed some of their most energy-intensive sectors, including refineries and petrochemicals, which opens up new export opportunities. Particularly for Middle Eastern petrostates it may therefore be very rational to further specialize in the high-carbon segment. The policy challenge, therefore, will be two-fold: managing a rapidly changing energy system in order to secure the transformation dividends it will bring, for human security and economic welfare; and balancing the (geo)political afterpains of the incumbent fuels leaving the system.

## Petrostates and the low carbon energy world

The global energy transformation is believed to fundamentally threaten incumbent oil producers. Not only will the Paris climate targets require a third of all oil reserves to stay in the ground and leave the balance sheets for good (along with 80 percent of current coal reserves and half of natural gas) (McGlade and Ekins 2015). Global oil output is also projected to decrease to less than half of today’s level, as cars go electric and the chemical industry switches to different types of feedstock (IEA / IRENA 2017). This, as observers have widely argued, spells trouble for petrostates, i.e. countries that rely on oil exports for their main income (Arezki 2017; Goldthau 2017; The Economist 2018; Van de Graaf and Bradshaw, 2018). And indeed, petrostates may be seriously impacted by the world going low carbon. As they typically rely on one dominant industry – the extractive sector – their economic base is less resilient to an external shock in the shape of a fundamental demand slump for their main export product.

To be sure, economic diversification has been high on the agenda of many oil producing countries. As the International Energy Agency stresses in its recent report on oil producing countries, a rapidly changing global energy system creates an “imperative for reform [...] even in a relatively benign context” (IEA 2018c), 11). Yet, results so far have been mixed at best and disappointing overall. Attempts by petrostates to wean themselves off oil are hampered by the strong path-dependency characterizing carbon-intensive economies (Friedrichs and Inderwildi 2013), and economic monocultures resulting from a decade-long Dutch Disease (Corden and Neary 1982). Even if petrostates embark on a post-oil

development pathway, the domestic political economy and the implicit social contract may be against them: many oil-rich countries feature authoritarian regimes who cannot afford rocking the boat and risking turmoil, as this would deprive them of the output legitimacy their rule is built on (Beblawi 1987; Ross 2001).

It has been argued that the global low carbon transition might also shift producer-consumer relations, and possibly tilt market power towards oil importers (O’Sullivan, Overland, and Sandalow 2017). Couple this with a soft market, due to faltering demand, and the result is a perilous race for buyers among exporters (Fattouh and Dale 2018), with prices coming under significant downward pressure. To be sure, the new ‘geopolitics of renewables’ arising from the ashes of the old energy world might come with their own and distinct challenges (Scholten 2018). Petrostates, for their part however, are not assumed to come out well.

### **Not all petrostates are alike**

The global energy transition will impact oil-rich countries quite differently depending on geography, geology and economically-optimal solutions. For instance, McGlade and Ekins (2015) calculate that reserves becoming unburnable before 2050 without CCS are unevenly distributed, with the Middle East holding half of unburnable global oil reserves, of which 38% will stay in the ground. Canada’s bitumen reserves display the highest rate of non-utilization with 75%, whereas the Former Soviet Union and the US feature among the lowest non-utilization rates with 19% and of 9% respectively (189).

Moreover, as much as there is an imperative to globally decarbonize, the resource-rich countries affected by that very decarbonization still have a lot of agency. In fact, the options available to Saudi Arabia for dealing with the ‘unburnable carbon’ (Carbon Tracker 2011) problem will differ from those available to Angola, and so will arguably also their respective strategies.

A simple matrix may help identify why. A first factor to pay attention to is the reserves to production ratio, which may serve as a proxy for the time horizon of a country. Put simply, a high R/P ratio means a producer is in for the long game and has an interest in selling its products for years to come. A low R/P ratio, by contrast, suggests it is rational to adopt a faster depletion path. Iraq, for instance, sits on 90 years of reserves (if produced at today’s rate), Saudi Arabia on 61 years, Russia on 26 years, and Mexico on 9 years. Due to a significantly lower production skewing the ratio, Libya’s R/P is at 153.3 years, and Venezuela’s even at 393.6 years (BP 2018). To be sure, it might still make sense to “cash in” even for a country potentially sitting on decades of production yet to come. As Fattouh and Dale (2018) pointedly put it, it might be “[b]etter to have money in the bank than oil in the ground” (7), notably in the event of oil demand peaking before available supply (Van de Graaf 2018), 110). See table 1.

**Table 1: Oil reserves to production ratio, select net-exporting countries**

<b>Country</b>	<b>Years</b>
Canada	95.8
Kuwait	91.9
Iraq	90.2
Iran	86.5
UAE	68.1
Saudi Arabia	61
Nigeria	51.6
Qatar	36.1
Russia	25.8
Azerbaijan	24.1

Algeria	21.7
Angola	15.6
Brazil	12.8
Mexico	8.9

Source: (BP 2018)

Whether cashing in becomes the preferred strategy for high R/P countries depends, however, on a second factor: the costs of production. Judging by 2016 data, high cost producers such as Nigeria (USD 28.99 a barrel) or Venezuela (USD 27.62) a barrel (Wall Street Journal 2016) may well anticipate their economic opportunities fading away in a softening oil market going forward. For them, it is rational to cash in quickly, possibly with a view to sustaining ongoing economic reform at home, and to re-investing oil rents into a more sustainable economic model. But even for high cost producers that already have diversified economies, such as Norway, a faster depletion strategy may make much sense, notably against the backdrop of production costs reported at USD 21.1 a barrel (Wall Street Journal 2016) and the incremental petrodollars filling well-managed pension funds relying on a green investment strategy. Producers lifting their barrels at around 2-3 dollars by contrast, such as Iran, Iraq or Saudi Arabia, will arguably aim at using their competitive cost advantage to stay in the market as long as they can. Over the past years, some countries also managed to realize significant efficiency gains in producing a barrel of oil, bringing down overall costs. As taxes, capital spending, administration and transportation add additional cost structures, petrostates have additional leeway. Russia, for instance, benefited from the devaluation of the Ruble, which contributed to lower production costs, and focused on production from brown fields.

To make things even more complex, the question whether countries indeed ‘panic and pump’ depends on yet an additional factor: the social cost of production. For many energy-rich countries, the social price of oil is significantly higher than the mere lifting costs. This is due to expenditures on social policies, subsidies keeping gas prices low, or an inflated public administration serving the purpose of dampening rampant youth unemployment. Countries like Iran, Saudi Arabia or Nigeria face strong population growth, which perpetuates these expenditure structures and hardwires them into state budgets, as they ensure the stability particularly of authoritarian regimes. In addition, military expenditures tend to add a significant cost, owing to internal and external threats facing such regimes – not the least in the wake of the Arab Spring (Steinberg and Werenfels 2018). It is telling that the budgets of almost all major oil producers firmly remain in the red even during times of rebounding crude prices, with deficits going back at least to the oil price slump in 2014. The IMF projects that Middle Eastern producers will on average face a fiscal deficit of 3.5% of GDP in 2018, albeit down from more than 9% of GDP in 2016 (IMF 2018b).

The higher their fiscal break-even price – the estimated threshold above which the respective national budget is balanced and a rough but good-enough proxy for the social cost of production (Fattouh and Dale 2018) – the smaller arguably is the likelihood of oil producers to ‘keep calm and carry on’, even against the backdrop of relatively low production costs. The IMF’s 2018 projections range from a fiscal breakeven point of more than 170 USD per barrel for Nigeria to 132.8 for Libya to USD 87.9 USD per barrel for Saudi Arabia, USD 68 for Iran and USD 47.1 for Kuwait (IMF 2018a; IMF 2018c). As a corollary, these countries’ ability to deal with a changing international oil market environment differs significantly. Particularly for petrostates with high fiscal break-even points, securing short-term income will be imperative to ensure political survival, even if the resulting race to the bottom erodes the prospects of earning an adequate income from oil production in the longer run.

The above leaves us with a few cues on how the landscape of oil producers might look like in a world heading toward a Paris-inspired decarbonization. Countries ‘in for the long game’ comprise Saudi Arabia, Canada or Venezuela. If they are high cost producers, such as Canada, they may, however, fall off the cliff, should the market turn structurally soft as a result of low carbon policies. Moreover, Canadian tar sand producers may struggle to find the money for developing their vast but dirty reserves. So will the Arctic, which may not be developed due to high costs coupled with uncertain returns, or planned projects offshore Brazil (USD 34.99 per barrel). Saudi Arabia, by contrast, features some of the world’s lowest production cost (USD 9 in 2016) and also managed to lower its fiscal break-even point over the past years. Venezuela and Nigeria represent the upper end within the OPEC club, with lifting costs at around 28-29 USD. Both countries also face high social cost levels of oil, a function of domestic strife, notorious cronyism and a lack of good governance. Libya, with lifting costs similar to those of Venezuela and Nigeria, will find it hard to bring the social price of oil down to manageable levels, a function of it being a failed state.

Judging by our simple matrix consisting of reserves, costs of production and fiscal break-even price, some large reserve holders might well end up pumping and cashing in, either because of a lack of choice given their domestic pressures, or because of their high lifting costs, or both. Venezuela is likely to ‘panic and pump’, as are Canada, Nigeria and Libya. Neither Iran or Iraq are able to balance their budget at current oil price levels, let alone an assumed lower price environment going forward, although both are all reported to have average production costs of USD 8.98 to USD 10.57 per barrel of oil equivalent (Wall Street Journal 2016). Much will depend on whether both countries manage to solve challenges related to domestic political turmoil, or lingering regional or international conflicts, all of which push up the social price.

**Table 2: High R/P countries by comparison**

	<b>Lifting costs (low)</b>	<b>Lifting costs (high)</b>
<b>Social costs (low)</b>	Kuwait	Norway
	UAE	Canada
<b>Social costs (high)</b>	Iran	Nigeria
	Iraq	Venezuela
	Russia	Libya
	Saudi Arabia	

Russia might present a borderline case. Russia’s average lifting costs are at around USD 19 at present, a large part of which owes to taxes and levies. The country also sits on vast unconventional oil reserves, which enlarge their time horizon as a producer. At the same time, yet-to-be-developed unconventional reserves are costlier to lift, as are new conventional fields that need to be brought online to replace maturing ones, a reason why Russia prioritizes brownfield projects (IEA 2018b), 89). Russia’s political model suggests a significant social price of oil also going forward. That said, Russia is a relatively diversified economy, compared to most fellow OPEC+ members, and has successfully used the recent devaluation of the Ruble to foster import substitution by way of making the domestic production more competitive. While oil will represent an important revenue stream for the Russian leadership going forward, the carbon lock-in might therefore be less severe than in the case of ‘pure’ petro-states. This suggests that Russia might have less reason to hit the panic button. Instead, the country may adapt to

a changing market environment by lowering non-production related lifting costs in order to develop its reserves.

Overall, and as reflected in table 2, petrostates in the Middle East and Russia may indeed fare better than commonly assumed. If Iran and Iraq manage to come to grips with their domestic challenges, it may well put them into the 'safe zone' of the upper-left quadrant, together with Saudi Arabia. Producers featuring both high lifting and social costs, such as Venezuela or Libya, instead face a rocky road ahead. Struggling already in a 2018 price environment, they are likely to fall prey to fallout of low carbon policies, and end up in the 'red zone' of the lower right quadrant.

### **Co-benefits of a different kind**

The global energy transition might, ironically, even throw some petrostates an additional lifeline. As the most committed and fast-moving countries decarbonize, they inevitably shed some of their most energy-intensive sectors. This includes refined products and petrochemicals – the fastest growing source of crude consumption (IEA 2018a). These will either no longer be produced at economic costs in the 'early decarbonizers' when factoring in significant carbon levies; or will have to go because of policy-induced climate targets. As it is mainly OECD economies leading the way, their remaining demand for such products will be satisfied by imports, at least for some time to come.

This presents an opportunity to countries that have already started to move up the energy value chain by building up refining capacity and developing a viable petrochemical industry – such as several Gulf states (IEA 2018b), 80). A combination of low feedstock costs, abundant availability of the raw products and a demand push by the early decarbonizers will likely prove a good business case for Saudi Arabia, the United Arab Emirates or Kuwait. It will also be a welcome hedging strategy against faltering revenues from raw commodity exports. In fact, given their comparative advantage, moving further into the high-carbon niche proves most rational for these petrostates. Accordingly, the IEA projects the Middle East to become a significant producer of petrochemical products by 2040 (IEA 2018c). While especially European companies have closed down or sold their refineries in the past two decades, Saudi Aramco, the UAE's ADNOC but also Rosneft have stepped up their engagement or are planning significant expansion (IEA 2018a; ) IEA 2018b),104f).

What is more, a changing market environment thanks to decarbonization also means that several incumbent, high-reserve but high-cost producers will leave the playing field. OPEC may well shrink, as some of its club members such as Venezuela or Libya may find it hard to retain their mid- to long-term status as a net exporter. This adds to Angola and other lower-reserve producers possibly adopting a short term 'panic and pump' strategy, resulting in them effectively abandoning the organization's collective decision-making procedures. The clear upside of the producer cartel shedding members is a smaller organization, stronger homogeneity and hence stronger internal cohesion. This raises the veritable possibility of market collusion at a so far unprecedented level. What looks like a rather remote option today – OPEC indeed speaking with one voice –, for reasons related to strong adverse incentives and collective action problems (Goldthau and Witte 2011), might become a reality thanks to the low carbon transition. Structurally, the global energy transformation might therefore strengthen the hands of precisely the countries that are commonly believed to lose out as part of the world waving goodbye to the crude politics surrounding oil.

### **A two-fold challenge**

The global energy transformation does not mean the end of the petrostate. The low carbon transition may in fact well facilitate new oligopolies, and a higher market concentration among fewer crude suppliers. As energy-intensive sectors dislocate from fast-decarbonizing OECD countries, this presents oil

producer countries with new export opportunities in refined oil products and in the fast-growing petrochemicals sector. 'Peak demand' will remain an OECD-centered phenomenon for the foreseeable future, with growth in oil consumption 'moving East' before eventually also flattening out there. For traditional oil exporters this opens inroads into the new demand centers in South East Asia (and Latin America). In the long run, oil will cease to play a role in a low carbon energy system. Until then, it will continue filling the pockets of a significant number of petrostates.

An important policy challenge will lie in dealing with the very high cost producers whose social contract obligations deprive them of viable alternatives to 'panic and pump', and whose short-term political outlook may include the possibility of collapse. Fast decarbonizers, i.e. mostly the rich world, will need to prepare for tipping points at which the rising spread between the social and the market price of oil fatally tilts the domestic politics against these countries incumbent regimes. The speed of the decarbonization pathway will play an important role in that regard.

The energy geopolitics of a low carbon future might for some time resemble the ones of the fossil past. Fast decarbonizers committed to making the bright clean energy future work will therefore need to prepare for a two-fold challenge: managing a rapidly changing energy system in order to secure the transformation dividends it will bring, for human security and economic welfare (Goldthau, Keim, and Westphal 2018); and balancing the (geo)political afterpains of the incumbent fuels leaving the system.

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