



Geopolitical Feedback Loops in Resource and Oil Depletion

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This is a repost of an article that ran a [few weeks ago](#). It was linked to by [Professor Deffeyes](#), so it seemed a good time to bring it forward again.

It is quite common to hear [experts](#) explain that the current tight oil markets are due to “above-ground factors,” and not a result of a global peaking in oil production. In reality, geological peaking is driving the geopolitical events that constitute the most significant “above-ground factors” such as the chaos in Iraq and Nigeria, the nationalization in Venezuela and Bolivia, etc. Geological peaking spawns positive feedback loops within the geopolitical system. Critically, these loops are not separable from the geological events—they are part of the broader “system” of Peak Oil.

Existing peaking models are based on the logistic curves demonstrated by past peaking in individual fields or oil producing regions. Global peaking is an entirely different phenomenon—the geology behind the logistic curves is the same, but global peaking will create far greater geopolitical side-effects, even in regions with stable or rising oil production. As a result, these geopolitical side-effects of peaking global production will accelerate the rate of production decline, as well as increase the impact of that production decline by simultaneously increasing marginal demand pressures. The result: the right side of the global oil production curve will not look like the left...whatever logistic curve is fit to the left side of the curve (where historical production increased), actual declines in the future will be sharper than that curve would predict.

Here are five geopolitical processes, each a positive-feedback loop, and each an accelerant of declining oil production:

1. Return on Investment: Increased scarcity of energy, as well as increased prices, increase the return on investment for attacks that target energy infrastructure. Whether the actor is an ideologically driven group (al-Qa’ida), or a privateer (youth gangs in the Niger Delta), the geologically-driven declines increase the ROI for [attacks](#) on [energy](#), which will drive both decisions to act, as well as targeting decisions for that action. This is a positive feedback-loop because attacks on energy infrastructure and supply drive up the price, which further increases the ROI for such attacks. [John Robb has calculated](#) the Return on Investment for the most recent bombings of oil and natural gas pipelines in Mexico this September at as high as 1.4 million percent.

2. Mercantilism: To avoid the dawning “bidding cycles” between crude oil price increases and demand destruction, Nation-States are increasingly returning to a mercantilist paradigm on energy. This is the attitude of “there isn’t enough of it to go around, and we can’t afford to pay the

market price, so we need to lock up our own supply.” Whether it’s the direction of a pipeline flow out of Central Asia, defending only specified sea lanes, or influencing an occupied nation’s laws on Production Sharing Agreements, there are signs of a [new energy mercantilism](#) all around us. This is a positive feedback-loop because, like an iterated “prisoner’s dilemma” game, once one power adopts or intensifies a mercantilist attitude all others must follow suit or lose energy share. It will act to accelerate oil production declines because mercantilism prevents the most economically efficient production of a resource, accelerating the underlying problem of diminishing marginal returns. This issue of energy mercantilism has recently hit the headlines again with the intensification of the [race](#) by several nations to to lay claim to the [Arctic](#) with its uncertain but possibly vast oil and gas potential.

3. “Export-Land” Model: Jeffrey Brown (westexas on The Oil Drum), has proposed a geopolitical feedback loop that he calls the [export-land model](#) (most recently discussed in his [Iron Triangle](#) post). In a regime of high or rising prices, a state’s existing oil exports brings in great revenues, which trickles into the state’s economy, and leads to increasing domestic oil consumption. This is exactly what is happening in most oil exporting states. The result, however, is that growth in domestic consumption reduces oil available for export. In states, such as Mexico, where oil production is also in decline, the “export-land” model predicts that oil exports will decline much faster than oil production—and this is exactly what is happening, with the [latest PEMEX report](#) showing 5% production decline year-on-year, but 11% export decline.

4. Nationalism: Because our Westphalian system is [fundamentally broken](#), the territories of nations and states are rarely contiguous. As a result, it is often the case that a nation is cut out of the benefits from its host state’s oil exports. This will be especially apparent when the “export-land” effect reduces the total size of the pie to be divided. As a result, nations or sectarian groups within states will increasingly agitate for a larger share of the pie. We see this already within [Iraq](#), [Iran \(Khuzestan\)](#), Nigeria (Delta State), Bolivia (indigenous groups), even places not normally associated with oil production such as [Nagaland in India](#). This process will continue the spread and advancement of the tactics of infrastructure disruption, as well as desensitize energy firms to ever greater rents for the security of their facilities and personnel—both of which will drive the next loop...

5. Privateering: Nationalist insurgencies and economies ruined by the downside of the “export-land” effect will leave huge populations with no conventional economic prospects. High oil prices, and the willingness to make high protection payments, will drive those people to become energy privateers. We are seeing [exactly this effect in Nigeria](#), where a substantial portion of the infrastructure disruption is no longer carried out by politically-motivated insurgents, but by profit-motivated gangs. This is the ultimate positive feedback-loop: infrastructure disruption further degrades any remnants of a legitimate economy, increasing the incentive to engage in energy Privateering, and compensating for any diminishing marginal returns in Privateering caused by enhanced security or competition from other privateers.

We may see some or all of these effects in any given area, and are already seeing this in some trouble spots. Some states, like Iraq, have been thrown into full-fledged “Nationalism” and “Privateering”-driven geopolitical disruption by the actions of an outside power—in this case, the US invasion was itself largely the byproduct of a shift towards energy mercantilism. This is just one illustration of the synergistic interrelationship of these processes.

The big-picture effect of these geopolitical feedback-loops is this:

Peak Oil theory takes the logistic curve decline of oil from individual fields and producing regions and extrapolates those effects to the world. The result of that extrapolation is that world oil

production will follow a geologically-driven logistic curve, and that it will peak and decline in a manner similar to individual fields or producing regions. The decline of a logistic curve gradually tails off in a "long tail" of oil production. The result is a phrase that has become virtual dogma: "Peak Oil is not the end of oil production, but rather the beginning of an inexorable decline in production." Geopolitical positive feedback-loops, however, do not act like logistic curves. They are positive feedback loops that are both self-intensifying and intensified by geologically-driven declines in production. While the geologically-dictated baseline in oil production decline may exhibit a long tail of ongoing production, geopolitical forces may abruptly chop off that tail. Commercial oil production requires some threshold level of security, rule of law, etc. to operate at all. Below that threshold, oil production does not gradually decline, but rather stops completely. Will geopolitical forces, combined with geologically-driven decline, be sufficient to bring oil production to a total halt in the near-term, at least regionally?



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