Rosy Forecast of Cheap Oil Abundance, Economic Boom a Myth
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A ground flare burns gas at a pad in Belfield, North Dakota, September 3, 2011. About 30 percent of the natural gas produced in North Dakota is burned as waste, in an attempt by oil companies to rush the extraction of oil from the Bakken shale field and take advantage of the high price of crude. (Photo: Jim Wilson / The New York Times)

Headlines about this year's "World Energy Outlook" (WEO) from the International Energy Agency (IEA), released mid-November, would lead you to think we are literally swimming in oil.

The report forecasts that the United States will outstrip Saudi Arabia as the world's largest oil producer by 2017, becoming "all but self-sufficient in net terms" in energy production - a notion reported almost verbatim by media agencies worldwide, from BBC News to Bloomberg. Going even further, Damien Carrington, head of environment at The Guardian, titled his blog: "IEA report reminds us peak oil idea has gone up in flames."

The IEA report's general conclusions have been backed up by several other reports this year. Exxon Mobil's 2013 Energy Outlook projects that demand for gas will grow by 65 percent through 2040, with 20 percent of worldwide production from North America, mostly from unconventional sources. The shale gas revolution will make the US a net exporter by 2025, it concludes. The US National Intelligence Council also predicts US energy independence by 2030.
This last summer saw a similar chorus of headlines around the release of a Harvard University report by Leonardo Maugeri, a former executive with the Italian oil major Eni SpA. "We were wrong on peak oil," read environmentalist George Monbiot's Guardian headline. "There's enough to fry us all." Monbiot's piece echoed a spate of earlier stories. In the preceding month, the BBC had asked "Shortages: Is 'Peak Oil' Idea Dead?" The Wall Street Journal pondered, "Has Peak Oil Peaked?" while the New York Times's leading environmental columnist Andrew Revkin took "A Fresh Look At Oil's Long Goodbye."

The gist of all this is that "peak oil" is now nothing but an irrelevant meme, out of touch with the data and soundly disproven by the now self-evident abundance of cheap unconventional oil and gas.

**Burning our Bridges**

On the one hand, it's true: There are more than enough fossil fuels in the ground to drive an accelerated rush to the most extreme scenarios of climate catastrophe.

The increasing shift from conventional to unconventional forms of oil and gas - tar sands, oil shale, and especially shale gas - heralds an unnerving acceleration of carbon emissions, rather than the deceleration promised by those who advocate shale as a clean 'bridge fuel' to renewables. According to the CO2 Scorecard Group, contrary to industry claims, shale gas "cannot be credited" with US emissions reductions over the last half decade. Nearly 90 percent of reductions were caused not by switching to shale gas, but by a "decline in petroleum use" linked to the "replacement" of coal "by wind, hydro and other renewables."

To make matters worse, where natural gas saved 50 million tons of carbon by substituting for coal in electricity, increased gas use in commercial, residential and industrial sectors generated 66 million additional tons of carbon.

In fact, studies show that when methane leakages are incorporated into an assessment of shale gas' CO2 emissions, natural gas could even surpass coal in terms of overall climate impact. As for tar sands and oil shales, emissions are 1.2 to 1.75 times higher than for conventional oil. No wonder the IEA's chief economist Fatih Birol remarked pessimistically that "the world is going in the wrong direction in terms of climate change."

But while the new evidence roundly puts to rest the "doomer" scenarios advocated by staunch "peak oil" pessimists, the global energy predicament is far more complicated.

**Scaling the Peak**

Delving deeper into the available data shows that despite being capable of triggering dangerous global warming, we are already in the throes of a global energy transition for which the age of cheap oil is well and truly over. For most serious analysts, far from signifying a world running out of oil, "peak oil" refers simply to the point when, due to a combination of below-ground geological constraints and above-ground economic factors, oil becomes increasingly and irreversibly more difficult and expensive to produce.

That point is now. US Energy Information Administration (EIA) data confirms that despite the US producing a "total oil supply" of 10 million barrels per day, up by 2.1 mbd since January 2005, world crude oil production and lease condensate - conventional production - remains on the largely flat, undulating plateau it has been on since it stopped rising that very year at 74 million barrels per day (mbd).
According to John Hofmeister, former president of Shell Oil, “flat production for the most part” over the last decade has dovetailed with annual decline rates for existing fields of about "4 to 5 million bpd." Combined with "constant growing demand" - particularly from China and emerging markets - he argues, this will underpin higher oil prices for the foreseeable future.

The IEA's "World Energy Outlook" actually corroborates this picture - but the devil is in the largely overlooked details. **Firstly**, the main reason US oil supply will overtake Saudi Arabia and Russia is because Saudi and Russian output is projected to decline, not rise as previously assumed. So while US output creeps up from 10 to 11 mbd in 2025, post-peak Saudi output will fall to 10.6 mbd and Russia to 9.5 mbd.

**Secondly**, the report's projected increase in "oil production" from 84 mbd in 2011 to 97 mbd in 2035 comes not from conventional oil, but "entirely from natural gas liquids and unconventional sources" (and half of this from unconventional gas including shale) - with conventional crude oil output (excluding light tight oil) fluctuating between 65 mbd and 69 mbd, never quite reaching the historic peak of 70 mbd in 2008 and falling by 3 mbd sometime after 2012. The IEA also does not forecast a return to the cheap oil heyday of the pre-2000 era, but rather a long-term price rise to about $125 per barrel by 2035.

**Thirdly**, oil prices would be much higher if not for the fact that governments are heavily subsidizing fossil fuels. The WEO revealed that fossil fuel subsidies increased 30 percent to $523 billion in 2011, masking the threat of high prices.

Therefore, world conventional oil production is already on a fluctuating plateau, and we are now increasingly dependent on more expensive unconventional sources. *The age of cheap oil abundance is over.*

**Fudging the Figures**

But there are further reasons for concern. For how reliable is the IEA’s data? In a series of investigations for the The Guardian and Le Monde, Lionel Badal exposed in 2009 how key data was deliberately fudged at the IEA under US pressure to artificially inflate official reserve figures. Not only that, but Badal later discovered that as early as 1998, extensive IEA data exploding assumptions of "sustained economic growth and low unemployment," had been systematically suppressed for political reasons, according to several whistleblowers.

With the IEA's research under such intense US political scrutiny and interference for 12 years, its findings should perhaps not always be taken at face value.

The same goes, even more so, for Maugeri’s celebrated Harvard report. By any meaningful standard, this was hardly an independent analysis of oil industry data. Funded by two oil majors - Eni and British Petroleum (BP) - the report was not peer-reviewed and contained a litany of elementary errors. So egregious are these errors that Dr. Roger Bentley, an expert at the UK Energy Research Centre, told ex-BBC financial journalist David Strahan: "Mr. Maugeri's report misrepresents the decline rates established by major studies; it contains glaring mathematical errors. . . . I am astonished Harvard published it."
What the Scientists Say

In contrast to the blaring media attention generated by Maugeri's report, three peer-reviewed studies published in reputable science journals from January through to June this year offered a less than jubilant perspective. A paper published in *Nature* by Sir David King, the UK's former chief government scientist, found that despite reported increases in oil reserves, tar sands, natural gas and shale gas production via fracking, depletion of the world's existing fields is still running at 4.5 percent to 6.7 percent per year. They firmly dismissed notions that a shale gas boom would avert an energy crisis, noting that production at shale gas wells drops by as much as 60 to 90 percent in the first year of operation. The paper received little, if any, media fanfare.

In March, Sir King's team at Oxford University's Smith School of Enterprise & the Environment published another peer-reviewed paper in *Energy Policy*, concluding that the industry had overstated world oil reserves by about a third. Estimates should be downgraded from 1150-1350 billion barrels to 850-900 billion barrels. As a consequence, the authors argued:

"While there is certainly vast amounts of fossil fuel resources left in the ground, the volume of oil that can be commercially exploited at prices the global economy has become accustomed to is limited and will soon decline."

The study was largely blacked out in the media - bar a solitary report in the *Telegraph*, to its credit.

In June - the same month as Maugeri's deeply flawed analysis - *Energy* published an extensive analysis of oil industry data by US financial risk analyst Gail Tverberg, who found that since 2005, "world [conventional] oil supply has not increased," that this was "a primary cause of the 2008-2009 recession" and that the "expected impact of reduced oil supply" will mean the "financial crisis may eventually worsen." But all the media attention was on the oilman's oil-funded report - Tverberg's peer-reviewed study in a reputable science journal, with its somewhat darker message, was ignored.

What Happens When Shale Boom Goes Boom?

These scientific studies are not the only indications that something is deeply wrong with the IEA's assessment of prospects for shale gas production and accompanying economic prosperity.

Indeed, *Business Insider* reports that far from being profitable, the shale gas industry is facing huge financial hurdles. "The economics of fracking are horrid," observes US financial journalist Wolf Richter. "Production falls off a cliff from day one and continues for a year or so until it levels out at about 10 per cent of initial production."

The result is that "drilling is destroying capital at an astonishing rate, and drillers are left with a mountain of debt just when decline rates are starting to wreak their havoc. To keep the decline rates from mucking up income statements, companies had to drill more and more, with new wells making up for the declining production of old wells. Alas, the scheme hit a wall, namely reality."
Just four months ago, Exxon's CEO, Rex Tillerson, complained that the lower prices due to the US natural gas glut, although reducing energy costs for consumers, were depressing prices and, thus, dramatically decreasing profits. This problem is compounded primarily by the swiftly plummeting production rates at shale wells, which start high but fall fast. Although in shareholder and annual meetings, Exxon had officially insisted it was not losing money on gas, Tillerson candidly told a meeting at the Council on Foreign Relations: "We are all losing our shirts today. We're making no money. It's all in the red."

The oil industry has actively and deliberately attempted to obscure the challenges facing shale gas production. A seminal New York Times investigation last year found that despite a public stance of extreme optimism, the US oil industry is "privately skeptical of shale gas." According to the Times, "the gas may not be as easy and cheap to extract from shale formations deep underground as the companies are saying, according to hundreds of industry e-mails and internal documents and an analysis of data from thousands of wells."

The emails revealed industry executives, lawyers, state geologists and market analysts voicing "skepticism about lofty forecasts" and questioning "whether companies are intentionally, and even illegally, overstating the productivity of their wells and the size of their reserves." Though corroborated by independent studies, a year later such revelations have been largely ignored by journalists and policymakers.

But we ignore them at our peril. According to Arthur Berman, a 32-year veteran petroleum geologist who worked with Amoco (prior to its merger with BP), "the decline rates" for shale gas reserves are "are incredibly high." Citing the Eagleford shale - the "mother of all shale oil plays," he points out that the "annual decline rate is higher than 42 percent." Just to keep production flat, they will have to drill "almost 1000 wells in the Eagleford shale, every year. . . Just for one play, we're talking about $10 or $12 billion a year just to replace supply. I add all these things up, and it starts to approach the amount of money needed to bail out the banking industry. Where is that money going to come from?"

Chesapeake Energy recently found itself in exactly this situation, forcing it to sell assets to meet its obligations. "Staggering under high debt," reported the Washington Post, Chesapeake said "it would sell $6.9 billion of gas fields and pipelines - another step in shrinking the company whose brash chief executive had made it a leader in the country's shale gas revolution." The sale was forced by a "combination of low natural gas prices and excessive borrowing."

The worst-case scenario is that several large oil companies find themselves facing financial distress simultaneously. If that happens, according to Berman, "you may have a couple of big bankruptcies or takeovers, and everybody pulls back, all the money evaporates, all the capital goes away. That's the worst-case scenario." To make matters worse, Berman has shown conclusively that the industry exaggerated EURs (Estimated Ultimate Recovery) of shale wells using flawed industry models that, in turn, have fed into the IEA's future projections. Berman is not alone - writing in Petroleum Review, US energy consultants Ruud Weijermars and Crispian McCredie argued there remains strong "basis for reasonable doubts about the reliability and durability of US shale gas reserves," measures of which have been "inflated" under new Security & Exchange Commission rules.

The eventual consequences of the current gas glut, in other words, are more than likely to be an unsustainable shale bubble that collapses under its own weight, precipitating a supply collapse and price spike. Rather than fueling prosperity, the shale revolution will instead boost a temporary recovery masking deeper, structural instabilities.
Inevitably, those instabilities will collide, leaving us with an even bigger financial mess, on a faster trajectory toward costly environmental destruction.

**So when is crunch time?**

According to a new report from the [New Economics Foundation](https://www.neweconomics.org) out last month, the arrival of 'economic peak oil' - when the costs of supply "exceeds the price economies can pay without significantly disrupting economic activity" - will be around **2014-15**.

Black gold, it would seem, is not the answer to our problems.