



Energy majors in the 21st century

SUGAR



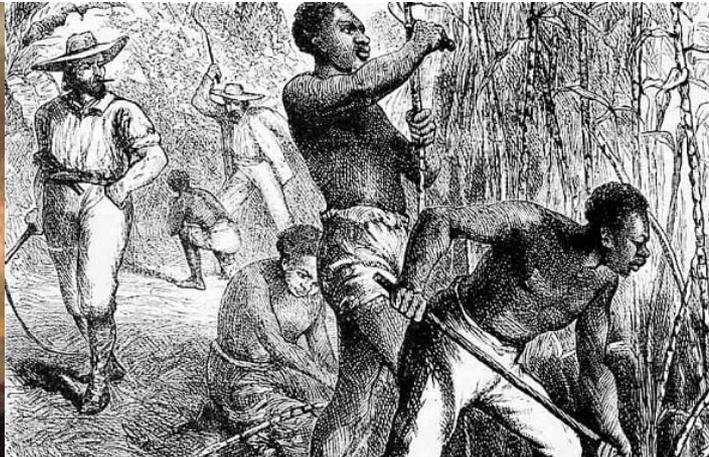
We don't fight wars over sugar any more

“For over a hundred years... [the West Indies] had been the very treasury of empire, pouring sugar into the mother country and making fortunes for slave traders, sugar plantation owners, and merchants... the “sugar interest” constituted a constant nuisance, and in every war, at their behest, Britain shoveled troops into the islands, to die by the thousands from malaria and yellow fever.” – [James L. Stokesbury](#)

- For 1700s Europe, sugar was:
 - A vital feedstock for valuable products including molasses and rum
 - A luxury, then commodity, whose demand grew in lockstep with supply
 - A singular source of great wealth for those with rights to its source

Sugar distorted major markets and policies...

- The West Indies were perversely located:
 - Far from power and susceptible to takeover and control by major powers; it worsened and even caused wars
 - Far from ready labor: fueled a highly active slave trade
 - Back home, even a growing but limited supply was met with essentially unlimited unmet demand



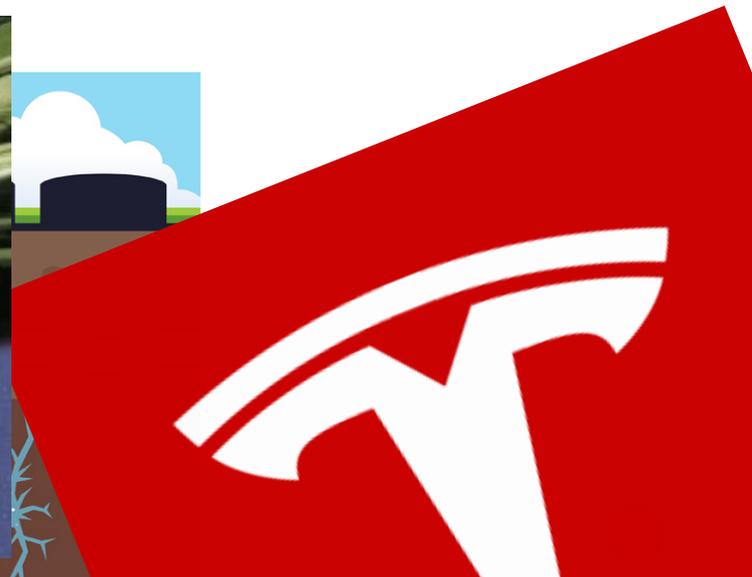
Is oil today's all-powerful "sugar"?



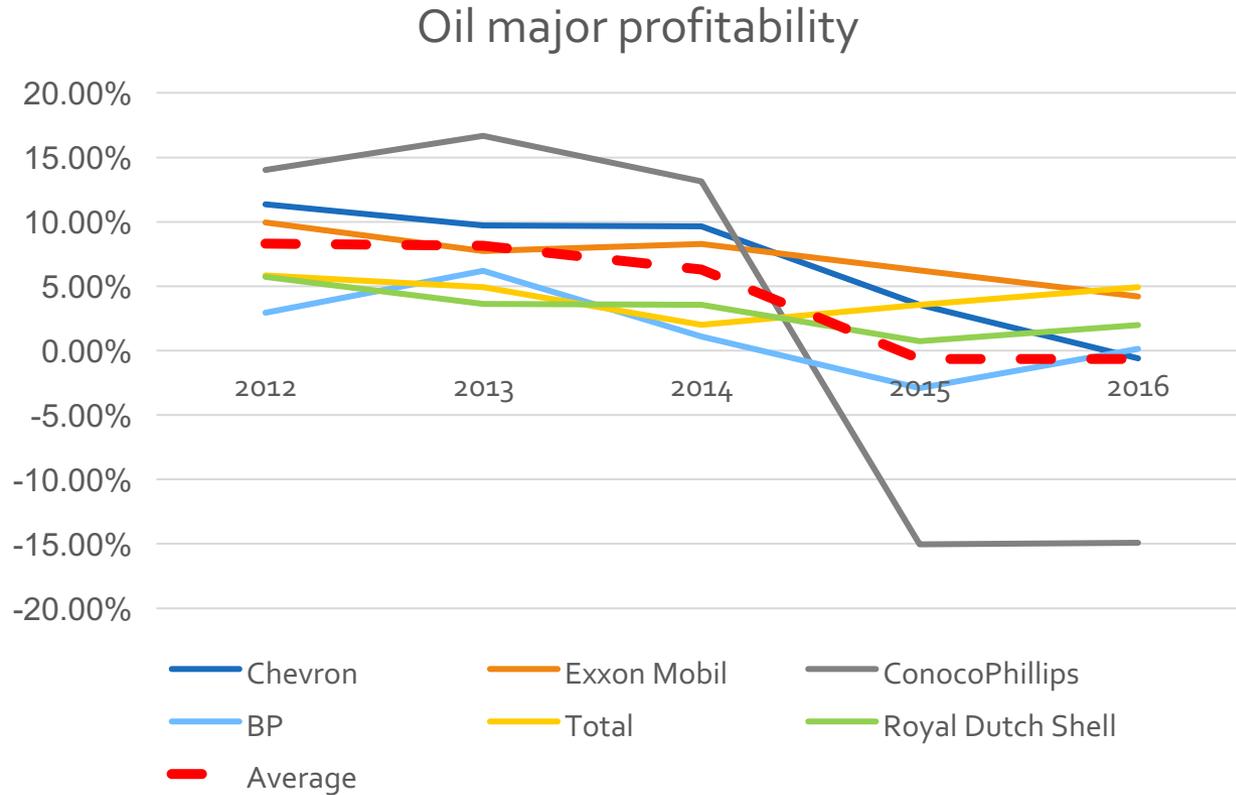
Sugar's inevitable decline

- Gradually sugar became just another commodity:
 - Cultivation in new regions like India began to reduce the power of specific sources
 - Sugar beets, grown close to target markets, went from 5% to 50% of the supply from 1840 to 1880
 - Alternatives like high fructose corn syrup and low calorie sweeteners gradually moved into the market

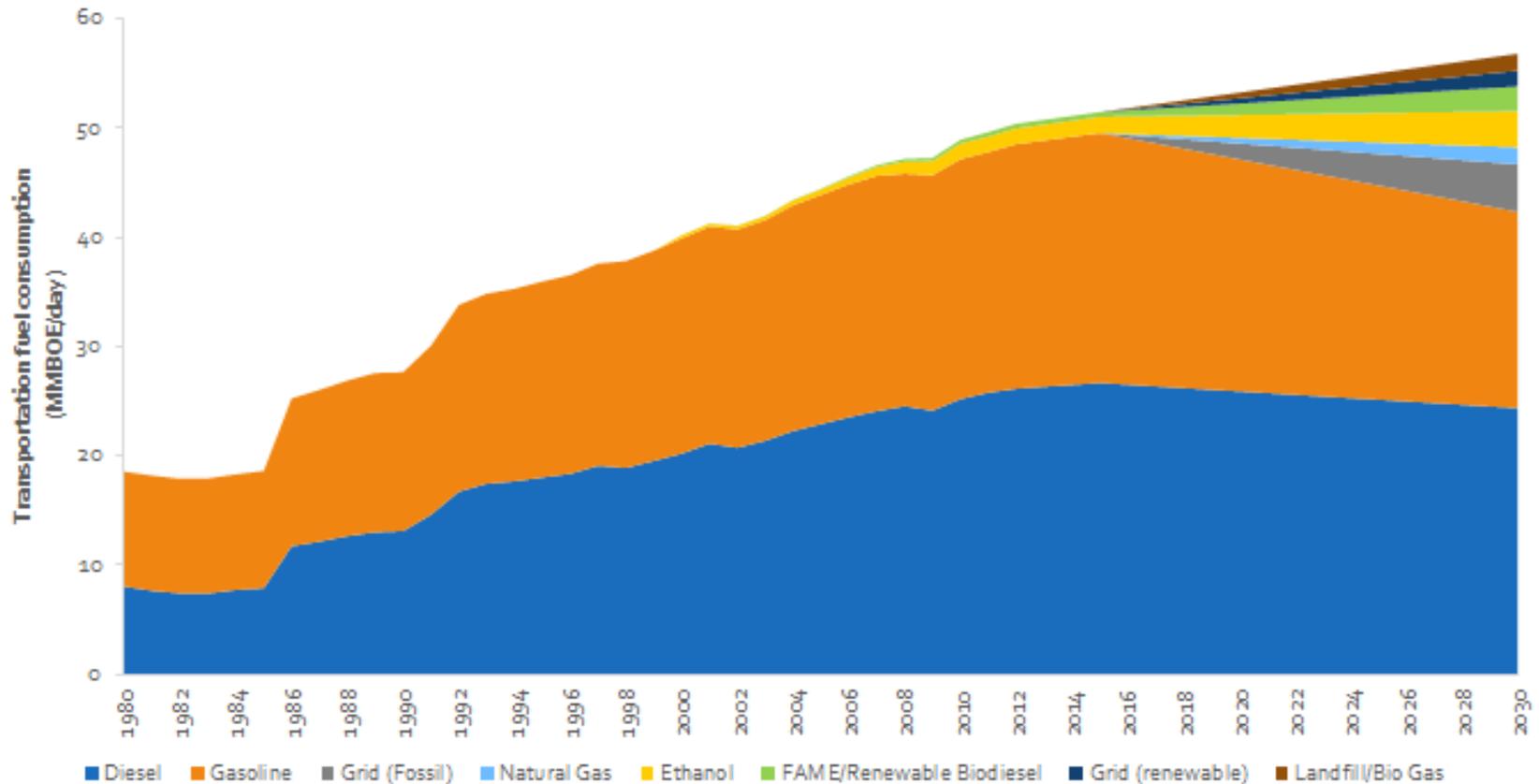
COMMODITIES | Fri Mar 31, 2017 | 2:32pm EDT
Brazil's oil exports set to weaken OPEC curbs
by Marta Nogueira and Marcelo Teixeira | RIO DE JANEIRO/SAO PAULO
Oil is poised to sharply increase oil exports this year as heavy
d for its lighter crudes win more buyers, especially in China
n is projected to rise 210,000 barrels per day (bpd) in 2017, s
upply to the United States among non-OPEC producers
among the factors impeding an OPEC-led effort
should continue in fut
of the large



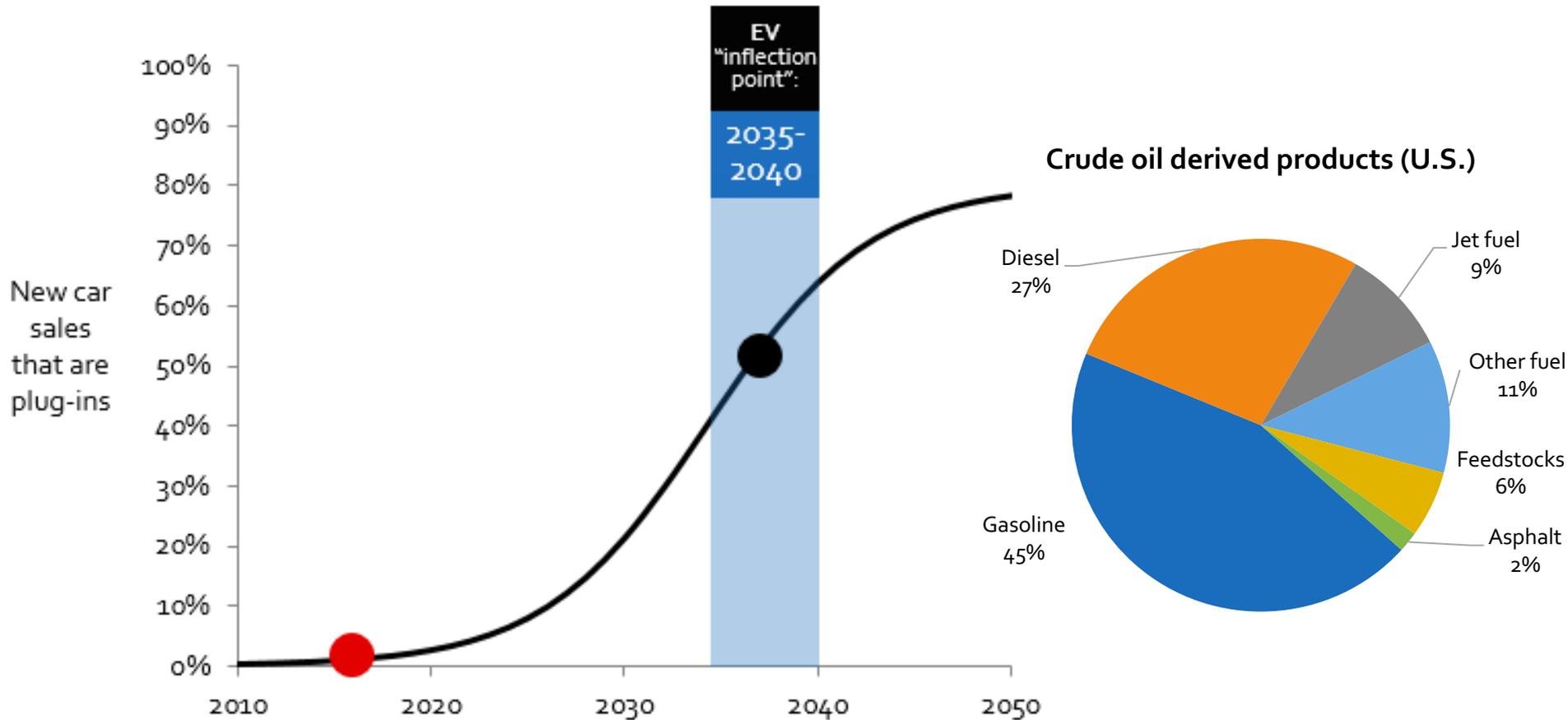
Oil major profitability is sharply down



New oil sources and alternatives are rapidly multiplying



Oil's dominance in transportation fuel fading



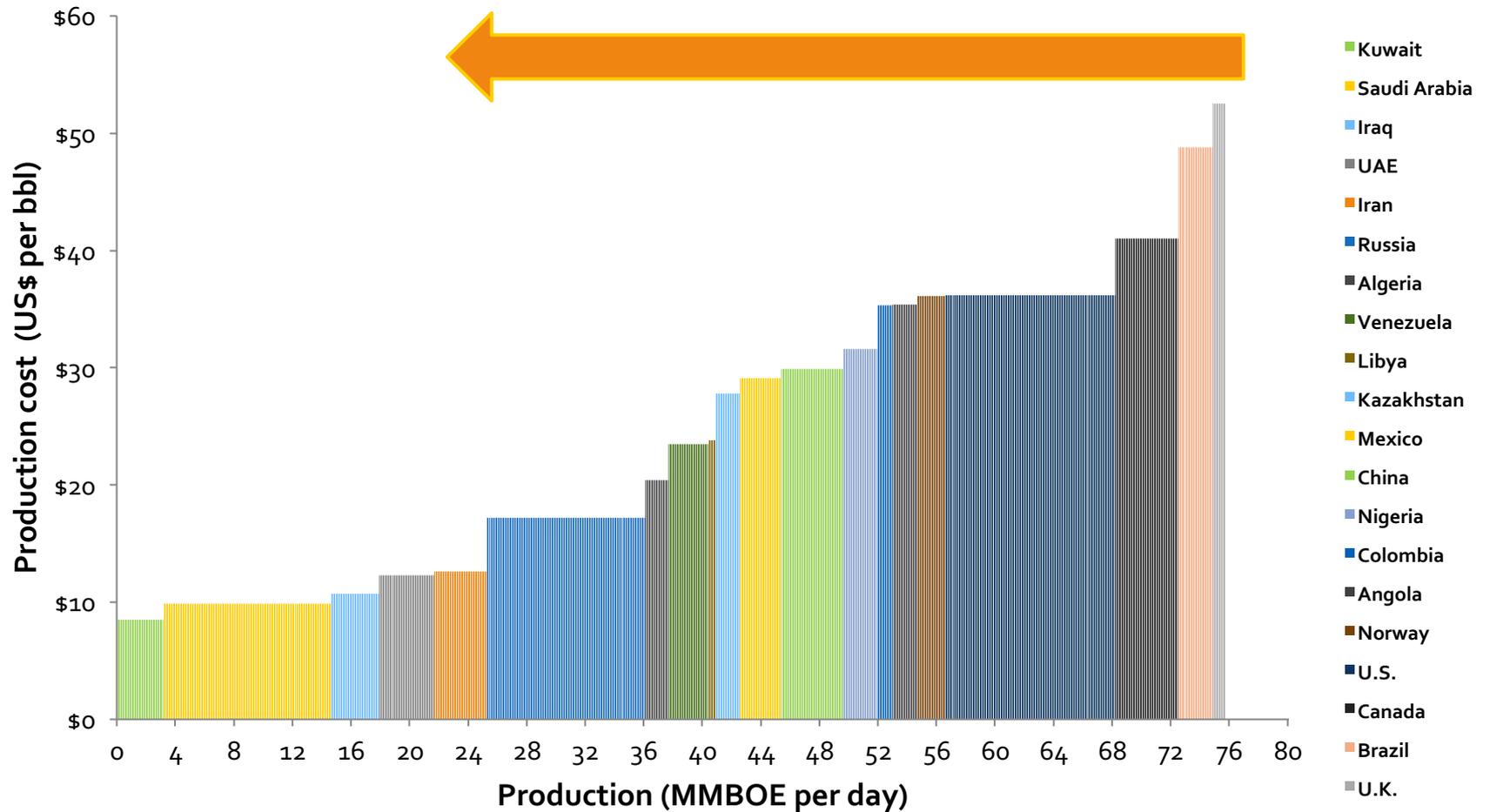
Rumors of oil's demise

“Unlike many of the big utilities, none of the oil majors has yet... told stakeholders that the game is up. That oil and gas will be over by year X, and strategy is no being based on back-mapping from that year.” – Jeremy Leggett, SolarCentury

*“The only realistic option for...
No Combustion-Engine Cars Sold in Germany After 2030, Parliament Says
On Jan. 29, 1886, Carl Benz—who had invented the first stationary gasoline engine seven years earlier—patented a “vehicle powered by a gas engine,” which he had built in Mannheim, Germany. By 2030, the country may ban his invention.
...negative for the oil sector’s credit profile. – Fitch*

“It’s not Teslas and the U.S. It’s the fact that two billion people, much of that in Asia, are moving to middle incomes, can buy their first motor car and that drives up oil demand. That’s the stuff that really matters.” – Spencer Dale, BP chief economist

As alternatives manifest, only the cheapest oil will be profitable...



Who knows the price of a barrel of sugar?

- A sugar mill is a marginal affair
- Sugar barons went to downstream products like rum to remain profitable



Are oil majors adjusting to the new reality?

Shell's Titanic Bet: Can Deep-Water Drilling Be Done on the Cheap?

In the future, Royal Dutch Shell is learning to rein in costs and by using drilling techniques from onshore

Statoil wins offshore wind lease in New York

December 16

Total to Buy Battery Maker Saft in Push to Expand Clean Energy

ExxonMobil, Saudi Aramco Produce Chemicals Directly from Crude Oil, Cutting Refining Costs

by Angelina Rascouet, Francois De Beze
May 9, 2016, 3:29 AM EDT Updated on May 9, 2016, 3:29 AM EDT

Total SA agreed to buy Saft for \$1.1 billion deal ratcheting up directly from

July 7, 2016 by Jessica Lyons Hardcastle
New technologies developed directly from

Saudi Aramco IPO: The Biggest Fee Event in Wall Street History

The IPO of the state-owned oil giant could generate as much as \$1 billion in fees

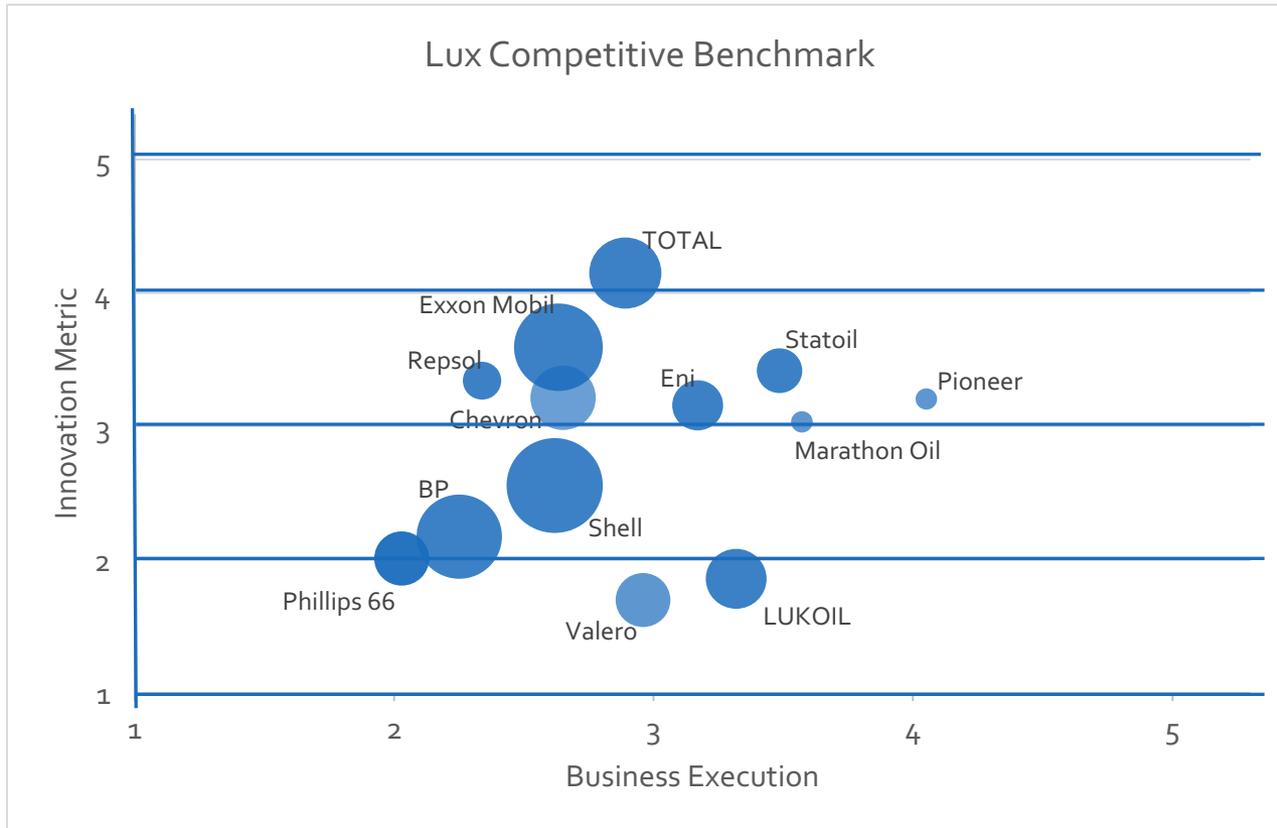
By MAUREEN FARRELL and NICOLAS PARASIE

63 COMMENTS

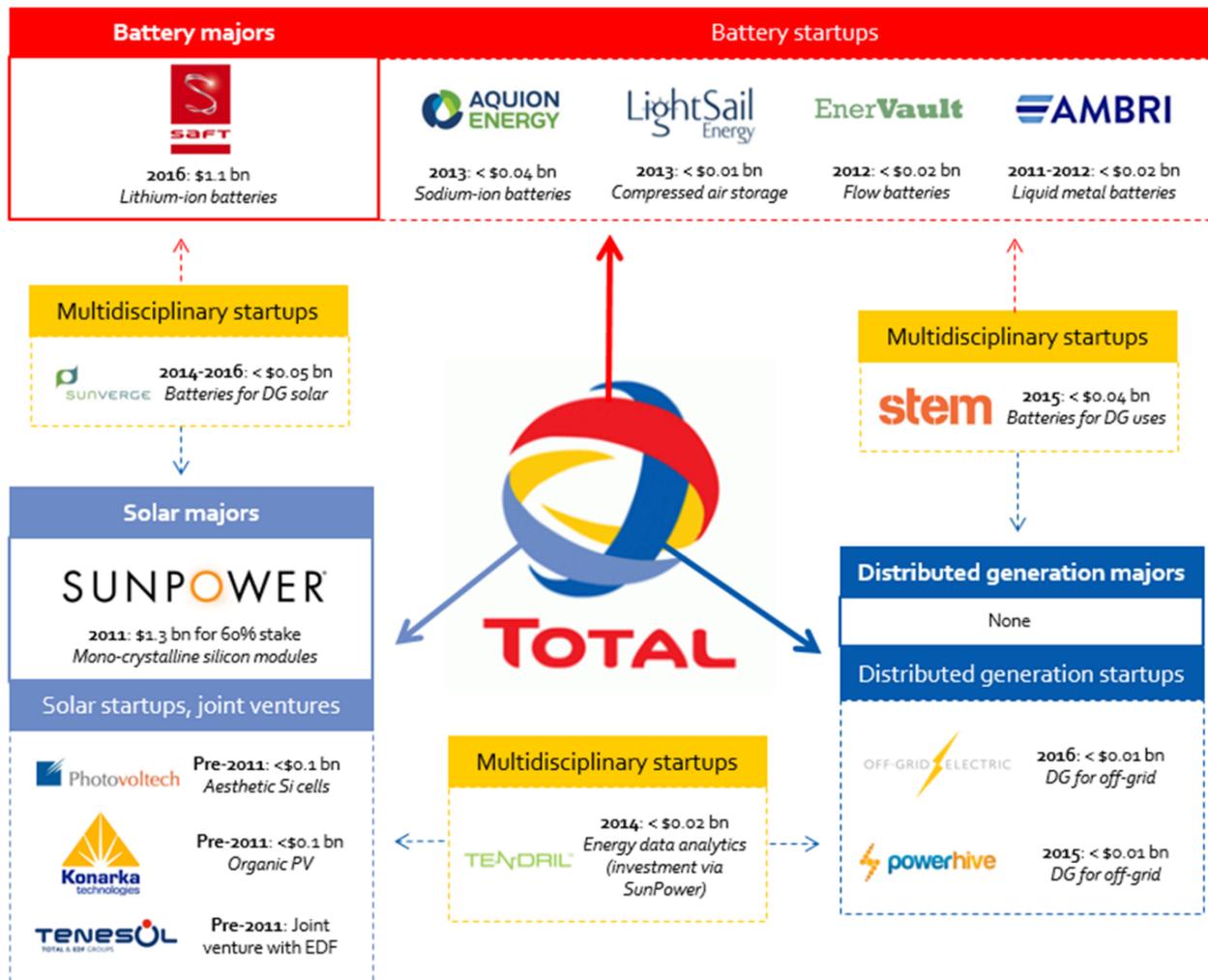
Are oil majors adjusting to the new reality?

- Oil companies' strategies fall into a few categories:
 1. Reduce production costs
 2. Invest in renewables and the grid; move laterally in "energy"
 3. Move downstream into chemicals
 4. Sell assets
- These are all decent strategies, but a deep-pocketed company could really move into any industry it liked

How oil companies really stack up in innovation



Total's Investments in the Future of Electrical Power Span Batteries, Solar, Distributed Generation



Knock-on effects from just electric vehicles will be profound...

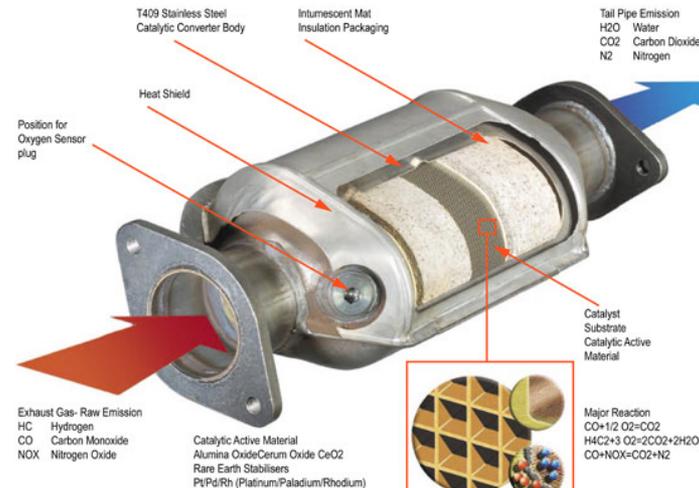


Lithium



Steel?

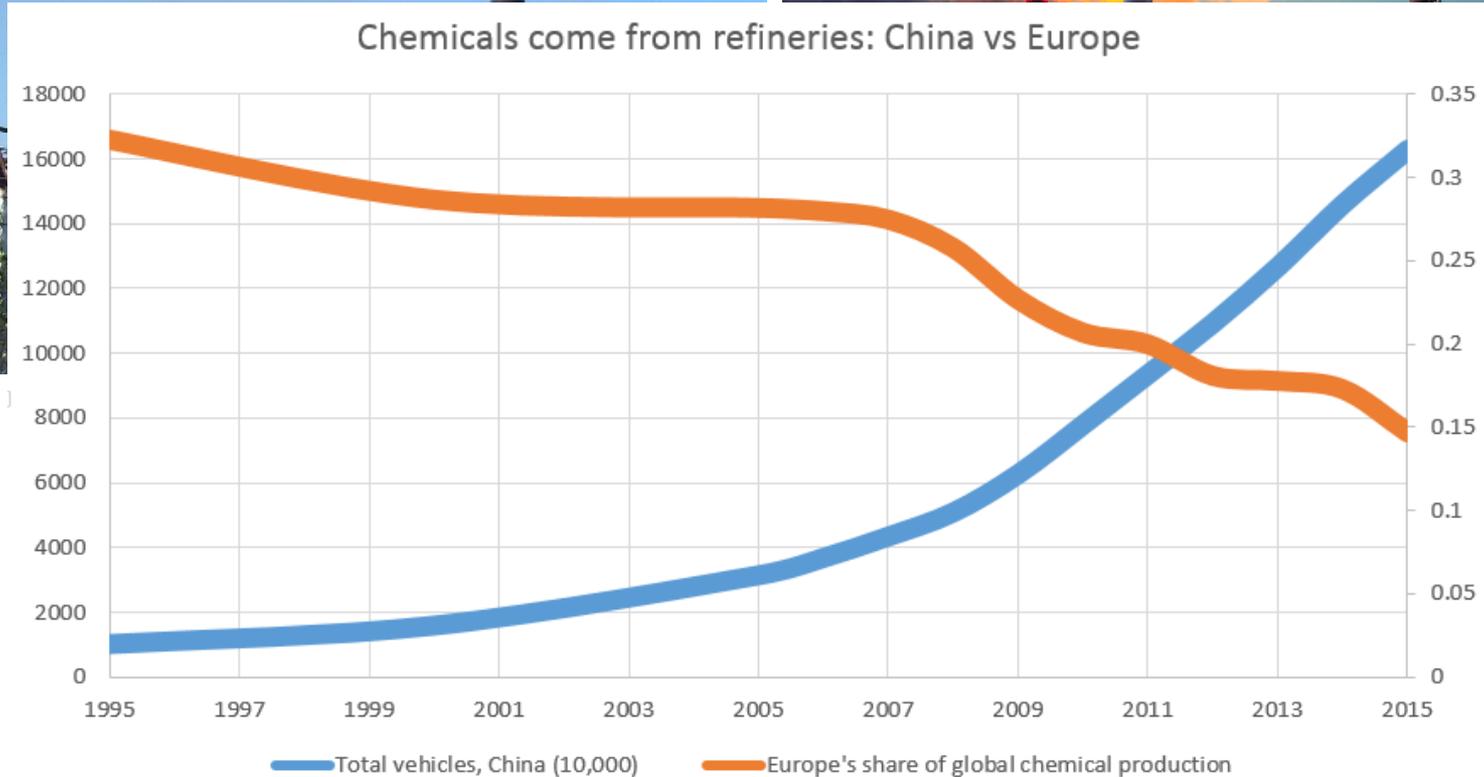
Platinum



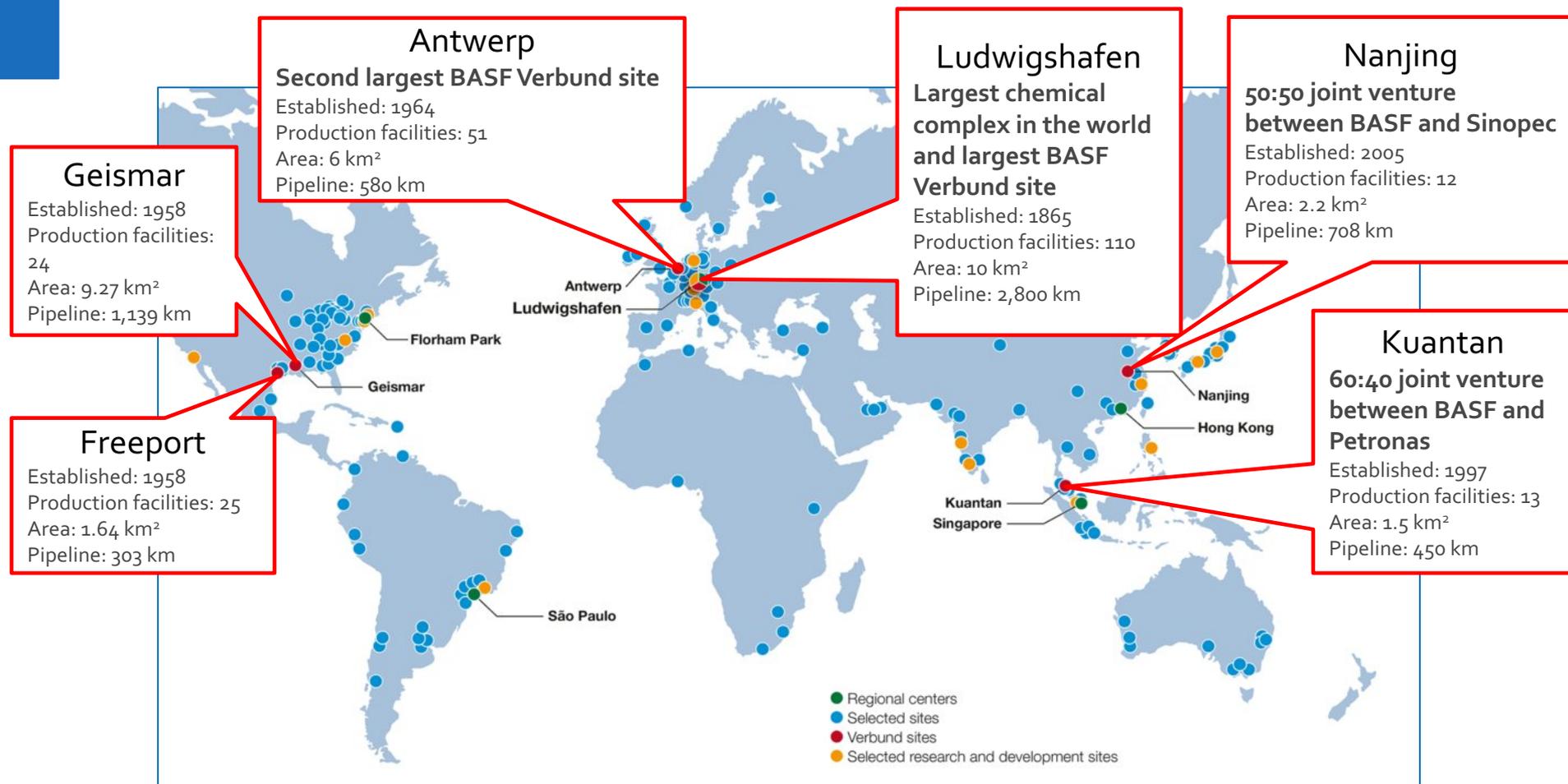
Carbon fiber?



Today, we make chemicals where we refine oil



BASF integrated facilities



➤ BASF's largest integrated sites are in Europe, using crude oil imported from across the world for transportation fuel as feedstock for their plastics and other petrochemicals

Key takeaways

- Oil is well on its way to becoming the next sugar
- The consequences will broadly affect both the majors and related industries
- The time to act is now



Thank you



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