

In this special report we are delighted to provide you with thoughts on the global energy markets from legendary energy analyst, and former C.J. Lawrence Inc. Vice Chairman, Charley Maxwell.



### **OPEC Discord and the Oil Shale Breakout Created the Surplus: Now... What is Turning It Around?**

by

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Oil stocks have sharply underperformed the general market from mid-2014 to early 2016. On balance, during the last decade, the oil industry has not been an attractive place to add new investment funds. I believe this will significantly change in the course of 2017.

Oil and gas companies today constitute about 8% of the stock market's capitalization. This is down from a peak of around 22% in the early 2000s. I am expecting that the 'new normal' will be in the 10-12% range of market capitalization, and that we will reach this in 2018-2020.

Oil's fall from investor favor is based on its price descent from over \$100 per bbl in mid-2014 to a \$26.21 per bbl bottom on 2/11/16. Oil prices have recently made a modest recovery to a new range at \$45-\$55 per bbl. While there is still an oversupply, both inventories and output of crude have been cut back. And demand is holding steady at about 1.3-1.4 million b/d, as generally projected. So there is support for a trend of gradual improvement.

The causes of this oversupply are various. Few analysts agree on their ranking, but I would list them in descending influence as: OPEC's lack of cohesion (in particular, the political rift between the Saudis and the Iranians), the US shale oil breakout, and increased global energy efficiency combined with a slowing global economy.

To be specific, I believe that the Saudis wanted to avoid, at any cost, their traditional role as 'swing producer'. When the other OPEC countries balked at the Saudi proposal that everyone share in the pain of reducing quotas, the Saudis decided on a powerful and damaging strategy: allow every member of the cartel to sell all the barrels they could. This would show the other members that they didn't have as much leverage (in unused barrel capacities) as they assumed; they could not make up in modest extra volumes the huge effect of sharply lower prices. In their resulting heavy losses, members would come to understand who remains the real master of OPEC.

The strategy worked. The lesson was driven home. Member budgets were dangerously skewed in some cases and nearly broken in others. The Saudis put something close to the original proposal to them again. This time they took it. This is the basis of my own belief that OPEC's cohesion will be sustained and will further prove the case for members following Saudi leadership rather than the policies proposed by Tehran.

Currently global oil production is closing in on the equilibrium point between supply and demand. We have survived the Iranian one-off export of some 80 million barrels of stored volumes into the market over the past nine months, and we've noted their production rise from 2.3 million b/d to over 3 million. This dumping of barrels may have delayed world supply/demand equilibrium well into 2017, but we have essentially absorbed a very large inventory release; the US took the blow this time with a 750,000 b/d production cut over the past year.

Therefore the risks of another major descent in price are reducing quickly. More, traders are beginning to look over their shoulders at the created deficiencies in future production implied by announcements like Chevron's news of a further 17% drop in capital spending for 2017 (a 45% cut in all since 2014). Political/military risks are also on the rise, with Libya in a state of constant violence, Venezuela holding even on its 2.3 million b/d figure despite impending social chaos, and Nigeria, unable to break Boko Haram, still uncertain as to its production schedule each quarter.

These factors underline the bare bones of the world oil liquidity problem; there is only some 2.5 million b/d of capacity left unused by OPEC in the trading market. This barely covers what the system requires as benchmark storage against weather and accidents disrupting global distribution.

With price risk coming down, oversupply sharply reduced, and large amounts of future capital being diverted away from commitment to additional oil production 5-6 years down the road, now would seem to be a good time to re-enter the oil securities market, searching for majors with the strongest balance sheets, largest reserves (per dollar of capitalization), production growth potential, and highest dividends.

In addition to improving fundamentals, the oil companies' strong balance sheets, particularly in the case of the larger majors, are allowing them to cut back their output in order to bring the market into supply/demand equilibrium and still continue to pay relatively high dividends. (These dividends are often not currently earned but are paid out of accumulated capital from past years.) I believe that global investors will continue to put a premium on low risk assets, such as oil in the ground.

Why is this fundamental turn in the oil companies' fortunes occurring? Here is a summary of what I see: Depletion around the world is currently growing at about 7% per year. Population growth is about 1% per year. On this calculation, the industry must produce some 8% more crude oil per year to keep supply in line with demand. In addition, the cost of doing this involves drilling much deeper below both sea and land. With easy and known places to find oil already largely utilized, we are now running out of significant low-cost prospects. This means that the cost of finding oil is increasing in real terms at about 2-3% per year (I will use 2%). This brings total cost increases to about 10% per year, without accounting for inflation or any future volume growth requirements. As it takes about 5-6 years of commitment for the average exploration and production (E&P) project to move from board approval to full output, oil companies are cutting back today on the means to supply our future oil needs in 2020-2025, new discoveries in the Permian Basin notwithstanding.

A substantial part of my case for future oil supplies tightening before we can get our production machine revved up again in the mid 2020s is based on a commonly used word in the oil industry: 'DEPLETION'. As many readers will not know the precise meaning of this word, and others will have heard it used incorrectly, a quick primer might be useful...

Most oil in the ground is produced from reservoirs containing both oil and natural gas (often with water at the bottom). Sometimes the gas is mixed with the oil in bubble form. Sometimes it is mixed into the oil as millions of tiny bubbles that are almost invisible to see. From your high school science courses you will remember that liquids like oil cannot be compressed. So the pressure that forces oil through the crevices in the rock and up the pipes to the surface is the compression of natural gas, which actually is doing all the lifting of oil to the surface. The pressure of natural gas has accumulated over millions of years of oil and gas creation down below. But from the moment oil and gas is extracted, natural gas pressure is being relieved as a small stream of gas mounts through the pipe to the atmosphere along with the oil. As years go by, the gas pressure necessarily becomes weaker until it loses sufficient strength to push oil up the pipe. (Then the field is often abandoned, or new and expensive extraction methods must be applied, like heating or running pressured gases down into the hole.) So natural depletion could be defined as the ever-increasing amount of oil and gas in a reservoir that becomes unavailable each year as gas is released to the surface.

At first, gas pressures in an oil/gas reservoir tend to come down slowly because the amount of daily release is so small and the amount of contained gas so large. In new and vital fields, depletion may cause production to be reduced by as little as 1-2% per year. (Saudi Arabia's Ghawar field or Abqaiq field may be seen as perfect examples of this in their early days.) But today annual losses of gas pressure are resulting in notably lower oil production results for many fields, now averaging 6-8% depletion per year worldwide. If steps are not taken to find new supplies or to replace or improve the chemistry/heat/pressure conditions applied to existing reservoirs, oil fields will deplete until they stop producing altogether.

Today some 65% of a field's oil in is left behind. Fortunately we are getting better at this, and in the future, might be leaving behind perhaps 30-40%. Depletion in the US is estimated to be running higher than world figures, at about 8%. From a planner's view in oil headquarters, at least 11% more money must be spent every year on production in the US to offset the effects of depletion (8%), population growth (1%), and the added difficulty of obtaining a barrel (2%). Again, that yields only flat production and does not take into account likely future inflation.

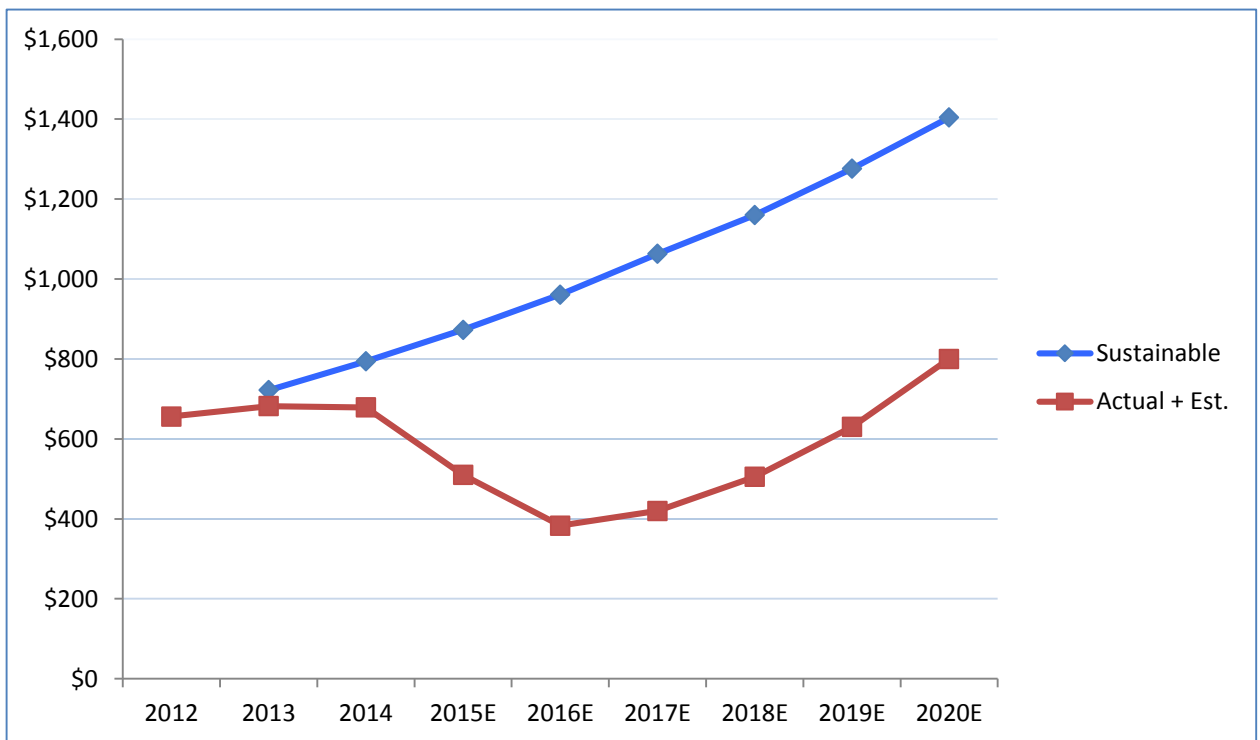
It is not easy to calculate exactly how much the oil industry should be spending to sustain production over the next 5-6 years. And it is not as easy as it should be to obtain accurate numbers for the past five years, covering all oil companies in the world. But, as best I could, I've put it all together, and it happens to show that between 2014 and 2017 we have averaged a 12% per year reduction in capital expenditures (capex). I also note that even if the liquidity-heavy majors began a capex spending spree in 2018 and onwards, the benefits of this would not begin to be felt until 2022, at best.

This means that oil production must come to a temporary peak around 2022, from which it will descend modestly for a few years before it can rev back up again. But what counts is that peak volumes will not keep pace with rising demand combined with depletion. Even if the oil industry wanted to quickly turn this downward production trend around, history shows that it cannot. For example, when the oil companies have, in the past, pressured the service and equipment industry to achieve rapid production gains, increases above 25% resulted in such heavy operational inefficiencies that the effort became unprofitable. This makes the catch-up game no quick fix but a longer term process.

Now you see where I'm headed. In my opinion, we are approaching a period of tightening oil markets, rising oil prices, and expanding profitability because the oil industry is—wittingly or not—creating a shortage of a commodity we uniquely use to maintain our society. And if I am right, this trend will bring investor favor sharply back to the energy group within a year or so as others pick up on a similar vision.

Will the new Trump administration sense this problem and put a priority on its solution? Probably not. There is no evidence that we are yet in trouble. But investors will soon spot the outline I have described.

## Annual E + P Capex for the Oil and Gas Industry Worldwide (in \$ Billions)



The BLUE LINE shows capex increasing by 10% per annum to sustain current production levels.

The RED LINE is historical capex to 2014 (courtesy of Barclays Bank) and my estimates after that.

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**Mr. Charles T. Maxwell** is a renowned expert in the energy sector, with over 40 years' experience with major oil companies and investment banking firms. He has served as a Consultant to various oil companies and the United States Government on oil policy matters. Mr. Maxwell currently serves as Chairman of the Board of Directors for American DG Energy, Inc., and as a Director on the Boards of Tecogen, Inc. and Lescarden, Inc. Previously Mr. Maxwell was as a Senior Energy Analyst of Weeden & Co. Research. Mr. Maxwell joined Weeden in 1999, serving institutional clients in the U.S. and abroad, where he developed strategic data and forecasts on oil, gas and power markets. Mr Maxwell spent the bulk of his career at C.J. Lawrence Inc. then a Member firm of the New York Stock Exchange, where he became Vice Chairman and Senior Energy Strategist. Mr. Maxwell advised C.J. Lawrence's institutional and private clients on energy investments for over 29 years, until his retirement in 1997. Entering the oil and natural gas industry in 1957, he worked at Mobil Oil Corp., for twelve years in the U.S., Europe, the Middle East and Africa. In 1968, Mr. Maxwell joined C.J. Lawrence. His background has been in four traditional sectors of the industry - producing, refining, transportation, and marketing. As an Oil Analyst, he was ranked by Institutional Investor magazine as No. 1 in his field in 1972, 1974, 1977, and 1981 to 1986.

Mr. Maxwell served as a Director of Chesapeake Energy Corporation from September 16, 2002 to June 8, 2012. Since 1984, he has been an active member of an Oxford-based organization comprised of OPEC officials and oil industry executives from 30 countries who meet twice a year to discuss trends in the energy industry. Mr. Maxwell holds a Bachelor's Degree in Politics from Princeton University (1953) as a Jadwin Scholar, and Oxford University as a Marshall Scholar with a BA in Arabic and Farsi (1957).

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