

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.



## The Road from Nadir to Zenith

by

**Charles T. Maxwell**

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Oil industry observers around the world have been taken aback by the speed, ferocity, and steadiness of the downtrend in global crude oil prices over the past twenty months. They went from roughly \$110 per bbl in June of 2014 to \$33 per bbl at the end of January, 2016. This is a 70% fall if we average the price of Brent and West Texas Intermediate (WTI) crudes. I am in the 'taken aback' camp myself. I would not have predicted such a precipitous drop.

Three main questions come to mind. What caused such a powerful price descent? What, if anything, will turn the trend around? And when? (If the markets are going to reverse, timing could be everything.)

The price collapse is commonly attributed to many coinciding factors:

- A slowing in the world economic recovery from the recession of 2008.
- Relatively high-priced crude (in 2011-2014) incentivized companies to invest heavily in new long-term capacity in safe areas of the world.
- Changing weather patterns.
- Energy efficiency advances in transport, industrial, and commercial sectors have caused a slow but steady drop in the growth rate of world oil demand.
- The recent (temporary?) resolution of Iran's nuclear weapons development threat, allowing sanctions to be lifted and oil long left in storage to proceed to market.

While all these points did play some part in the oil price collapse, I believe the greatest responsibility lies with two key elements not listed above.

First came a technology revolution in oil output as applied to US shale and tight sands reservoirs, using new fracking and horizontal drilling methods. US oil production began to move up quickly, rising from 5.6 million b/d (barrels per day) in 2011 to an estimated 9.3 million b/d in 2015 (p. 26, *Oil & Gas Journal*, Jan. 4<sup>th</sup> 2016). Almost all of these additional barrels originated in the new technologies. It was an unexpected development and it quickly tipped the scales toward greater increases in supply than demand, creating oil surpluses.

The second significant factor in the price downturn was a division among OPEC members along traditional lines between the Saudis (and their Gulf allies) and the rest of OPEC, who wanted only the wealthier members to bear production quotas. Not able to find a compromise and requiring OPEC's unanimous consent in any case, all members were free to go their own way. Thus began a period of open competition, leading to over-production. This has proved disastrous for OPEC members as well as anyone who produces, taxes or lends to oil operations. This drove prices down to perilous levels, three weeks ago dipping to \$27-28 per bbl, a new low for this cycle.

What, if anything, could turn this situation around? Of course, there is always the possibility of a political/military 'accident' that could solve the problem of oversupply in a day or two by causing major production cutoffs abroad. With some 95 million b/d of crude likely to be produced in 2016, the oil world only has about 3.0-3.5 million b/d left in unused capacity. By standards of the past, this is on the low side for a cushion against adversity because we must have at least 1.5 million b/d to operate the global distribution system. The remaining 2.0 million b/d of global capacity represents one of the lowest effective storage-to-production ratios I have ever seen. For example, a cutoff of Venezuela's output (2.4 million b/d), or Iran's (2.8 million b/d), or Nigeria's (1.8 million b/d) would leave global markets vulnerable to oil shortages. Certainly, cutoffs of oil supplies have already occurred many times. Investors also realize that these events are unpredictable, often mixed in their positive and negative effects, and they usually have only a temporary influence on oil availability and prices. As a solution to oversupply, this appears to be a nonstarter.

Fortunately, buried in our present oil pricing distress is a natural answer. I think it is important enough to eventually resolve the whole issue. It is oil field depletion combined with sharp cuts in capital expenditures (capex). A few separate words on depletion... The pressure that allows us to bring oil to the surface is supplied by natural gas, which is expelled up the borehole with the oil. Therefore, the more oil produced from a well, the less gas is left to power up the remaining oil. Consequently, wells lose an average volume of 6% per year in oil production. This is the rate of depletion. Oil field owners must spend more per well each year to combat this natural fall in output. This is accomplished by capital projects such as exploration for new fields, development of new discoveries, infill drilling, water floods, use of special chemicals, diluents and CO2 floods, and heat applied via electricity, steam or controlled combustion downhole.

Since the price crack, oil companies' capital budgets have become badly strained. Some 30-40% of these projects have been or are scheduled to be cancelled worldwide according to my service company sources. The cumulative effect of these cuts could expand depletion losses by cutting funds normally committed to sustaining field output and reducing the scope of efforts to find new barrels in new places.

With about 1.9 million b/d of world production today 'without a home' (i.e. being stored), the oil surplus appears to have already peaked this past summer in terms of quarterly additions at 2.3 million b/d. Despite the expected one-off surge in the next two quarters of Iranian exports after the lifting of sanctions, world surplus volumes should be continuing their downward trend to 0.4 million b/d by yearend 2016. Equilibrium between supply and demand would be close at hand, perhaps in the spring of 2017.

This could prove to be a major turnaround for oil because of the depth of the previous pricing cycle. My guess is that oil prices may recover to as high as \$48 per bbl by yearend 2016 and \$64 per bbl by yearend 2017. However, moving through 2020, numbers beyond \$100 per bbl appear quite possible. But that is another story, for another day. For now we are enduring the nadir of the cycle.

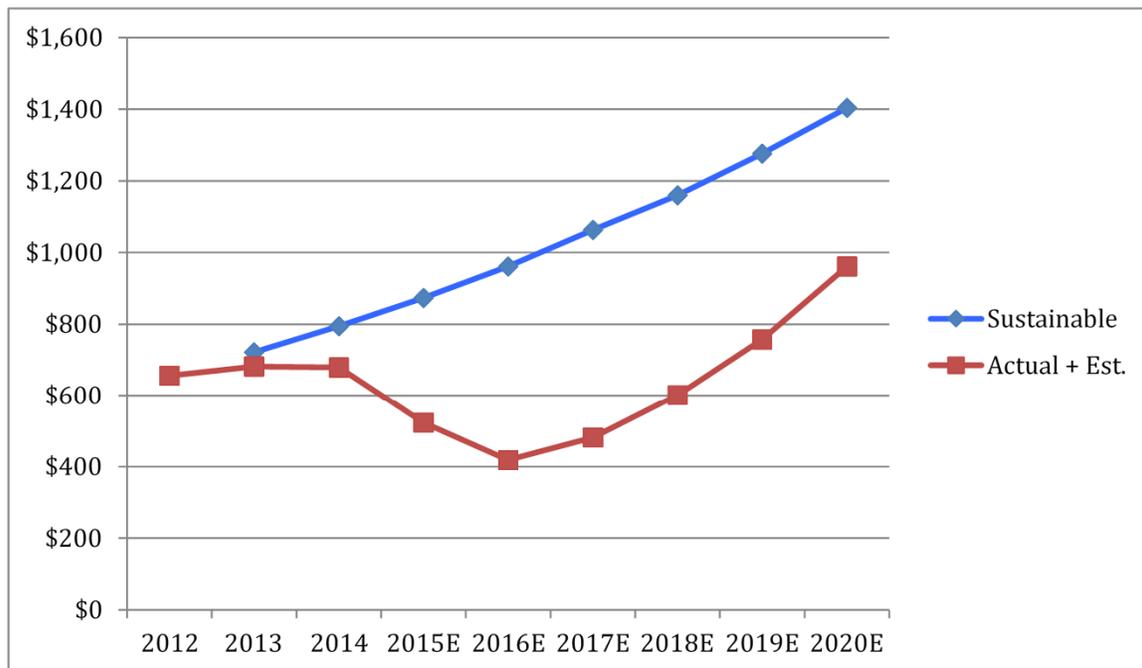
There are no accurate or timely statistics on the size and configuration of world oil inventory held in oil tanks, land and sea-based. Large supplies of oil ready to be produced are effectively being 'held in the ground' as inventory. The size and shape of our problem is expressed by the chart below (which unfortunately shows oil *and gas* capital expenditures instead of oil alone). But it clearly demonstrates the wide gap forming between the 10% per year capex growth that would sustain oil and gas output versus the actual E&P expenditures that we have made, and are likely to make, to the year 2020.

As the markets are a discounting mechanism, it is probable that a few investors will begin returning to oil company securities in the first half of 2016 in preparation for a solid move upwards in the second half of the year. Investors should consider the supermajors first. They should seek a strong oil reserve base per \$100 of capitalization (10 barrels and above). Look for high dividend yields in the 5-8% range. Supermajors would ideally own affiliated companies that are involved in the fastest growing energy source for the next decade, solar power. And investors should consider companies looking to a high tech future in other energy areas, including nuclear power and science, electricity generation, emissions controls, and energy efficiency. You will find companies that meet these criteria. They are out there.

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

	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015E</u>	<u>2016E</u>	<u>2017E</u>	<u>2018E</u>	<u>2019E</u>	<u>2020E</u>
E+P for Oil & Gas	\$656 B	\$682 B	\$679 B	\$523 B	\$418 B	\$481 B	\$601 B	\$757 B	\$961 B
Actual % change p.a.		+4%	-0.4%	-23%	-20%	+15%	+25%	+26%	+27%
E+P for Oil & Gas assuming + 10% change p.a.		\$722 B	\$794 B	\$873 B	\$961 B	\$1,063 B	\$1,160 B	\$1,276 B	\$1,404 B

## 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 spending to 2014 (courtesy of Barclays Bank) and my estimates after that.**

# C.J. Lawrence™

**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. He also served as a Director of Santos TYP Corp. 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 Political Sciences from Princeton University (1953) as a Jadwin Scholar, and Oxford University as a Marshall Scholar with a BA in Literature and History (1957).

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