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ASPO USA PEAK OIL REVIEW
Association for the Study of Peak Oil & Gas USA

June 3, 2013

Contents

1. Oil and the Global Economy

Oil prices continued to fall last week and are now down roughly $5 a barrel since mid-May. Weak demand in the US and EU, adequate production, large inventories, expectations as to Federal Reserve actions, and little perception of a threat to oil exports from the turmoil in the Middle East have resulted in slipping prices. The decision by OPEC to maintain its 30 million b/d production quota was behind Friday's sharp decline which left NY oil just below $92 a barrel and London just above $100.

The EIA reported that US crude stocks grew another 3 million barrels the week before last and are now at the highest level since 1931, a big historical jump from the 1981 high reached only recently. US tight oil production is up 17 percent over last year with Eagle Ford production now over 500,000 b/d.

The outlook for the global economy and oil demand in the immediate future is generally not good. Unemployment in the Eurozone hit another record high last week. Nearly all forecasters are making downward adjustments to their outlooks for China, and despite incessant optimism in the financial press, the US economy does not seem to be rebounding in any significant way. The OECD said last week that protracted economic weakness in Europe "could evolve into stagnation with negative implications for the global economy."

Of long-term significance was last week's report that China's coal production fell 2 percent to 1.15 billion tons in the 1st quarter, while stockpiles climbed to 150 million tons above normal. China's coal imports climbed 25 percent to 110 million tons during the period. Rapid growth in China's coal production, which has been running at around 10 percent a year, has been the backbone of China's economic miracle and of course a primary reason for ever-increasing air pollution for the last 30 years. Without steady increases in coal production it is difficult to see how China can maintain spectacular economic growth rates in coming years by relying on renewables, nuclear, and increased efficiency.

US natural gas futures declined for five straight sessions to settle Friday at $3.98 on forecasts that milder weather will be returning to the East Coast. Analysts expect natural gas futures will trade within 50 cents of the $4 level for the rest of the summer depending on temperature forecasts. The IEA noted last week that if US exports of natural gas should drive prices up to the $5 level, there would be a major switch from gas to coal by power producers.

2. Middle East & North Africa

IRAN: The first televised debate of the Iranian Presidential election took a bizarre turn last week when the eight "mullah-approved" candidates took off after the sorry state of Iran's economy. They sounded more like dissident exiles than carefully selected regime candidates for the Presidency. The candidates spoke of high unemployment, huge government deficits, shuttered factories, and the Revolutionary Guard taking over an increasing share of the economy. The leading candidate for President seems to be Saeed Jalili, the hardline, anti-western, nuclear negotiator. No matter the outcome of the 14 June election, the major policy decisions -- Syria, nuclear weapons, and relations with the West --will remain firmly in the hands of Supreme Leader Khamenei. The best a new President can do to effect change is to slowly convince the Ayatollah that the situation is so bad that change must come.

In the meantime, Iran's crude shipments to Japan in April were down 97 percent over last year and the lowest since 1957. Tehran is believed to have some 30 million barrels of crude in floating storage that it can't sell.

Syria: The assault on the key town of Qusayr by government and Hezbollah forces continues into a second week of heavy fighting. The well-armed government and Hezbollah forces, said to number about 1,700 men, have the town surrounded and are shelling the insurgents and thousands of civilians trapped inside. The UN is becoming concerned about 1,500 wounded trapped in the city with no medical attention.

Reaction to Hezbollah's intervention against fellow Muslims is growing, with rockets being fired at Hezbollah cities and neighborhoods in Lebanon. A leading Sunni cleric based in Qatar has called for a Sunni holy war against Assad and Hezbollah. Hezbollah's leaders believe that keeping a Shiite-dominated government in power in Syria which will guarantee them access to Iranian weapons is worth risking a holy war with their co-religionists.

The proposed Geneva talks to settle the Syrian conflict seem to be going nowhere. There is much talk of Europe and the US supplying weapons directly to rebel forces if the talks do not take place.

Moscow says it is going to supply "defensive weapons," that had previously been ordered, to Syria – most likely air defense missiles and fighter aircraft. Whether or not these ever arrive or are effectively integrated into Syria's armed forces, the announcement has inspired President Assad to start threatening the Israelis with retaliation against any more air strikes into Syrian territory, even if they are only aimed at arms going the Hezbollah.

There seems to be no end to the conflict in sight as more neighboring countries are drawn deeper into the uprising. Over the weekend, there were even riots in Turkey that seem tangentially related to the Syrian conflict. Lebanon, Iraq, and Jordan are already deeply involved, as are Iran, Israel and the Gulf Arab States that are financing the rebels.

On a more mundane note, Syria's oil minister said last week that production is down to 20,000 b/d from 380,000 b/d two years ago and that natural gas production is about half pre-war levels.

Iraq: The UN announced last week that some 1,000 Iraqis were killed and 2,300 wounded in bomb and other terrorist attacks during May. These numbers which are the highest since June 2008 are approximately double what the wire services have been reporting, but the UN says it has better numbers. Last Monday more than 70 were killed in a wave of bombing in Baghdad's Shiite neighborhoods. Bombings somewhere in Iraq is now a daily occurrence and fears of still more violence or an open civil war are growing. Old Middle Eastern analysts, however, point out that Iraq has been in turmoil for over 50 years and there is no reason to believe that the current round of troubles will slow or stop oil exports. The loss of 2 million b/d of exports would be noticeable however.

Last week the government announced it had foiled an al Qaeda plot to use explosive-filled oil tankers to blow up a major Baghdad oil facility. No one knows how many Iraqis are fighting, on both sides, in Syria, but the number of bodies being returned to Iraq for burial is on the rise.

Egypt: Ethiopia has begun diverting water from the Blue Nile to build and fill its $4.7 billion "Grand Renaissance" hydroelectric dam. The dam which is supposed to be completed by 2015 is to hold 63 billion cubic meters of water – which will not reach Egypt and Sudan. The announcement came the day after the Ethiopian prime minister had met with Egyptian President Morsi to discuss the issue.

The current water-sharing agreement for the Nile which was brokered by the UK in 1959 gives Egypt 55 billion cubic meters a year and Sudan 18.5 million out of the river's annul flow of 85 million cubic meters per year. Egypt currently needs about 47 billion cubic meters per year to feed its population of 82 million which continues to increase.

Addis Ababa say an independent panel has concluded that the dam will not reduce the flow of water going into Sudan and Egypt. In the past, Cairo has threatened to go to war over the issue, but for now both sides are downplaying the possibility of conflict.

3. OPEC

The Organization of Petroleum Exporting Countries has fallen on hard times. The price of oil has been falling; increases in US tight oil production has markedly reduced US imports from Algeria, Nigeria, and Angola; the sanctions on Iran have cut its exports and are turning its economy into a basket case; the Syrian insurrection is raising hatreds between Sunnis and Shiites; several OPEC members, such as Nigeria, Libya and Algeria, have active or incipient insurgencies that threaten oil production; the post-Chavez Venezuelan economy is a mess; and to top it all off rising global temperatures are forcing the Arab Gulf monarchies to divert increasing amounts of oil to keeping their people cool in the summer and off the streets.

With all these problems, it is little wonder that all the cartel could do was vote last Friday to maintain the meaningless 30 million b/d production cap. Several OPEC members, for a variety of reasons, can no longer produce at their authorized quotas, while others routinely exceed them at will. About the only substantive development was to abolish its Production Monitoring Committee that oversaw member compliance with their quotas.

While the threat of "shale" oil dominated the Vienna meeting, the members kept a united front during the public sessions, but after the press left, spoke out in their own interests. Iran and Venezuela would like production cuts to prop up prices, while the African states that are suffering from the drop in US imports would like some kind of relief.

The Gulf Arabs, who dominate the cartel and are reasonably happy with the status quo, told the Africans to go find other customers, and have not the slightest interest in helping out the Iranians who are fast becoming their mortal enemies.

The meeting did agree to study the "shale" oil question and its possible impact on oil exports.

4. Quote of the Week

- "We have reached…a period of complacency in the perception of the coming of Peak Oil. We are in a period where, as recent posts have shown, the promises of bountiful supply are built on increasingly tenuous propositions."

−− The Oil Drum (5/27 #18)

5. The Briefs

- **North Africa's oil production** recovered faster than expected from the "Arab spring" of 2011 - but the delayed impact of the revolutions that swept across the region is now hurting its supply growth forecasts. IEA anticipates that oil production from Algeria, Angola, Libya and Nigeria will stagnate over the next five years at 7.12m barrels a day, posting virtually zero growth from 2012 to 2018, down 685,000 b/day from last year's forecast. (6/1 #4)
- **Iraq** is due to start pumping crude from two of its largest oil fields within weeks, creating a possible obstacle to future efforts by OPEC to curb supplies in the event of a drop in prices. The Gulf state plans to start production at Majnoon within days, followed by Gharraf in July and West Qurna-2 by year-end, lifting capacity by 400,000 barrels a day. (5/31 #9)
- **Iran** Monday asked New Delhi to increase its purchase of crude oil from the Persian Gulf country, and promised to step up its imports from India, as the two nations discussed ways to balance bilateral trade. Iran's crude-oil shipments to India fell 26.5% in the financial year ended March 31 because of U.S. and European sanctions against Tehran. (5/29 #7)
- **The Obama administration** on Friday escalated efforts to isolate Iran economically, blacklisting Iranian companies in the petrochemical industry for the first time and punishing five businesses in four other countries for conspiring to evade American sanctions aimed at restricting Iranian oil sales and air transportation. (6/1 #11)
- **Saudi Arabian** production rose to a record 9.51 million barrels a day of oil last year, the company said in its annual review. (5/28 #10)
- **Royal Dutch Shell** is returning its exploration focus to the West African heartlands after a second attempt to gain a foothold in massive new gas discoveries off Africa's East Coast failed because the asking price from Anadarko was too high. Last year Shell replaced just 44% of the oil and gas it produced during the period with new resources, hence its effort to break into the growing East African offshore arena. (5/27 #16)
- **Chinese oil companies** were the biggest spenders on oil and gas acquisitions in 2012, a trend that is expected to continue this year. In contrast, IOC spending on assets in 2012 was the lowest in eight years. This shift demonstrates that it is very hard to find bargains; high-quality assets are also high-priced. Largely shut out of acquisitions, companies have instead ramped up their spending on exploration. For example, Shell expects to spend $7 billion searching for oil and gas, a nearly 10% increase from 2012 and almost double the $3.7 billion spent in 2011. (5/27 #16)
- Concern over **Argentina**'s mercurial policy on foreign investments is pushing regional business entrepreneurs toward caution and keeping them away from the Latin American country. Argentina nationalized Spanish oil major Repsol's majority stake in local energy giant YPF last year, triggering alarm in the international investor community. (6/1 #17)
- The boom in **Alberta's oil sands** was initially hailed as a hugely promising development for Canada's economy. But major threats challenging the economic viability of oil sands projects have emerged. The main culprits are spiraling operating costs, depressed pricing for Western Canadian crude oil, and increased competition from US shale plays. (6/1 #25)
- **In Canada,** the estimated cost of producing bitumen has increased by 6.3-13.2% in the past year, depending on the production method, according to the Canadian Energy Research Institute. In 2012, total production from Canadian oil sands areas is estimated to have increased by 13% from the prior

year to 1.9 million b/d. CERA projects production, which totaled 1.5 million b/d in 2011, will reach 3.1 million b/d by 2020 (5/30 #12)

- Growth prospects for smaller **oil-sands** producers including Black Pearl Resources and Southern Pacific Resource Corp. are fading as political wrangling over the Keystone XL pipeline and rising U.S. supply slow deals in the Canadian energy industry. (5/31 #22)
- **The high Arctic**, once the irresistible frontier for oil and gas exploration, is quickly losing its appeal as energy firms grow fearful of the financial and public relations risk of working in the pristine icy wilderness. The Arctic may hold 13 percent of the world's undiscovered oil and 30 percent of its gas, but a series of blunders and failures there are making executives fight shy of such a sensitive area. (6/1 #7)
- **US crude** oil imports fell 14.9% in March from a year earlier, to 7.46 million barrels a day, as rising domestic output continued to cut the need for foreign oil. (5/31 #18)
- News from two of the country's less developed **shale oil plays** in Colorado and Ohio last week offer a reality check for the wave of euphoria that has washed across the industry. Recent data indicate that production from Ohio’s Utica shale play averaged less than 2,000 barrels a day last year. Colorado’s Niobrara has also lagged expectations. (5/28 #17)
- **Crude oil deliveries by rail** in the US reached a record 97,135 carloads--about 58 million barrels--were delivered during the first quarter of the year, up 20 percent from fourth quarter 2012 and more than 160 percent higher than the same time last year. (6/1 #22)
- **Natural-gas output** in the lower 48 US states fell 0.6% in March from a downwardly revised February figure, to 72.71 billion cubic feet per day. (6/1 #23)
- The US will not be able to maintain its **current gas production** without continued incredibly intensive drilling. The laws of nature being what they are, however, they will not permit a continuation of the past exponential increase of production rate (5/30 #15)
- **Cheniere’s construction** on Trains 1 and 2 of their Sabine Pass LNG export facility began in August 2012 and is about 30% complete. Construction on Trains 3 and 4 will "start immediately." First LNG is to be delivered by late 2015. Cheniere expects to apply to the US FERC by September for Trains 5 and 6. (5/31 #21)
- **Pakistan’s** persistent electricity generation shortages have led to blackouts and brownouts, spurring social unrest as more than 18 hours of blackouts are being enforced in some urban areas and more than 20 hours in the nation's rural regions. (5/29 #10)
- **Nigeria’s** transmission company has said the May 24 nationwide blackout in supply of electricity was caused by a major collapse of the transmission grid. (5/28 #14)
- **In India,** of all the problems blamed for the slowdown over the past two years – recession in Europe, lack of skills in India, burdensome labor laws, port congestion, corruption and bureaucracy – the electricity shortage is now regarded by government and business alike as among the most serious. (5/30 #11)
- **India's economy** grew at 5 per cent in the financial year to March, the slowest rate in a decade of rapid expansion. (5/31 #17)
- **The OECD** again slashed its economic forecast for the 17 European Union countries that use the euro, saying it will shrink by 0.6 percent this year, after 0.5 percent drop in 2012. The OECD had predicted a

0.1 percent decline for the eurozone in its report six months ago - and this time last year, it forecast growth of nearly 1 percent for 2013. (5/29 #19)

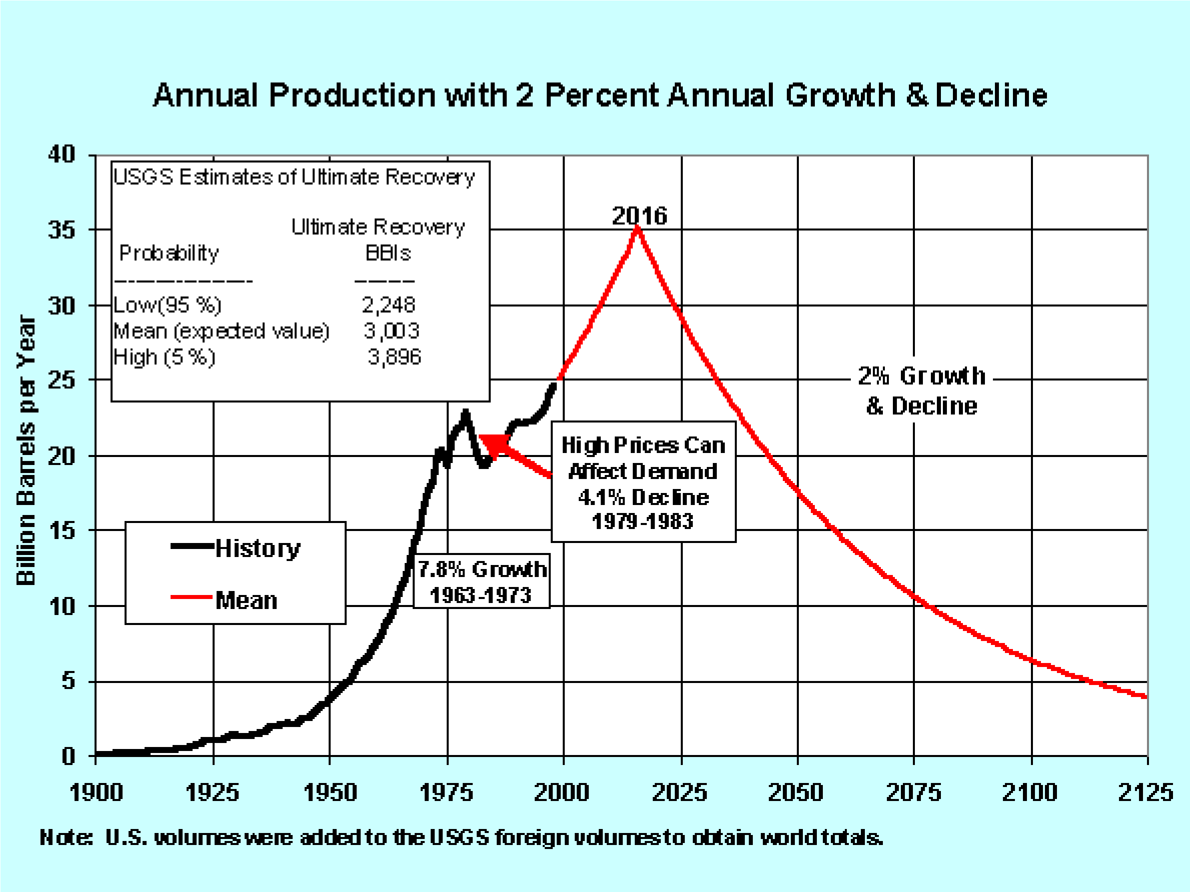
- **Network security and cybersecurity** are becoming top concerns for the energy sector. In what Ernst and Young refers to as an "invisible" threat, the issue emerged for the first time this year in the firm's recurring survey of most important concerns of energy executives, ranking ninth on the list. (6/1 #21)
- **French supermajor Total** said it agreed to pay nearly $400 million in an agreement with the US government over petroleum contracts in Iran. Total said the payments put "an end to an investigation initiated in 2003 concerning petroleum contracts awarded in Iran in the 1990s." The Justice Department accused Total of paying $60 million in bribes to Iranian officials from 1995-2004 to get oil and natural gas rights in the country. (5/31 #7)
- Prosecutors recommended sending **oil company Total** SA's chairman and chief executive, Christophe de Margerie, to trial in Paris to face corruption and embezzlement charges related to deals in Iran dating back to the 1990s. (5/30 #13)
- In the last 10 years the world's **annual car production** increased 52%--almost 2/3 of this growth came from China—while in the same period, global liquid supplies went up only 16%, an obvious mismatch. (5/30 #14)
- Billionaire Philip Anschutz aims to build the **largest U.S. wind farm** on his 500-square-mile cattle ranch near Rawlins (WY) and send the energy to the Southwest via a proposed $3 billion power line dubbed the TransWest Express. Roughly 150 miles east, near Chugwater, a consortium of investors, ranchers and utilities are planning a comparably sized wind farm and transmission line named Zephyr. (5/29 #18)
- British Energy Secretary Ed Davey stated firm commitment to the European Commission's goal of **cutting greenhouse gas emissions** 40 percent from 1990 levels by 2030 -- but rejected increased mandatory levels for the percentage of wind, solar and other types of renewable power sources in the energy mix. (5/29 #20)

6. Commentary: Flashback Image

by Steve Andrews

The world oil supply curve pasted below appears to have been the first published by the US Energy Information Administration to illustrate the possible future timing of peak oil. The slide was #14 in a 20-slide deck presented by Jay Hakes, EIA's Administrator, on April 18, 2000, to the American Association of Petroleum Geologists. Title of the presentation, "Long Term World Oil Supply"; it is still accessible on EIA's website at http://www.eia.gov/FTPROOT/presentations/long_term_supply/sld001.htm

Question for readers: While the world's eventual oil production curve already doesn't look like the one below, how close might this Reference Case be to calling the eventual date for the peak and decline of world oil and/or world total liquids production? Most subsequent slides in the presentation showed peak-date scenarios ranging between 2026 and 2047. Assumptions applying to the slide below were described by the EIA in a Notes section and are pasted below.



1. To illustrate the effect of resource and production assumptions on production forecasts, EIA postulated 12 simple long-term world production rate scenarios designed to bracket the range of future production outcomes. The scenarios were based on the 95 percent probable, mean, and 5 percent probable USGS resource estimates (2,248 billion, 3,003 billion, and 3,896 billion barrels) and 4 annual production growth rates prior to the production peak (0, 1, 2, and 3 percent).

2. Each scenario addressed the question of when the peak year would occur for a given resource base and production growth rate.

3. A key assumption in estimating the peak production year is the shape of the production curve after the peak is reached (determined by the decline rate). The graph [above] shows what happens if production both grows and declines at a rate of 2 percent per year until the 3,003 billion barrel mean resource estimate is recovered. In this instance, production is projected to peak in 2016.

4. It is unlikely that any single constant growth or decline rate would persist before or after the year of peak production. World oil production has sometimes increased very rapidly in the past (e.g., 7.8 percent per year from 1963 - 1973), but the recent growth rate has been slightly less than 2 percent. EIA felt that a different decline rate methodology is called for, and the next page illustrates the decline rate [10%] that was used in the EIA scenarios.

Afterward note: Using a 10% decline rate for the entire world, as EIA did in subsequent slides, could also be referred to as the falling-off-the-cliff curve. It doesn't seem to be a reasonable assumption. Excluding offshore fields and nations impacted by wars or financial and/or political collapse, one would be hard-pressed to find major oil-producing basins which have shown 10% net decline rates over a long period of time.

An invitation to readers who have been involved in making world oil supply forecasts during roughly the time frame for the EIA above (say 1995 – 2005): send us a copy of the key world oil supply curve you created back then and attach a brief (150-word?) comment. If several are received, they will likely be run as a small group in a few weeks. Send to sbandrews@att.net