The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

Oil Watch - OPEC Crude Oil Production (IEA)

Posted by Euan Mearns on November 28, 2012 - 2:45pm

Executive summary

OPEC is currently pumping at close to near term and historic highs of 31.2 mmbpd of crude oil. Outside of Saudi Arabia, the majority of spare capacity is deemed to lie in Iran and Nigeria. Iran could certainly pump more if permitted to do so by the international community. It is doubtful that Nigeria could. The UAE Kuwait, Qatar, Libya, Algeria and Venezuela are all pumping at close to capacity levels. Saudi Arabia alone has meaningful spare capacity of 2.1 mmbpd.

Embedded in the production stack (Figure 1) is an intriguing tale of general strike, international conflict, civil war and sanctions combined with masterly control of oil supply that has kept global markets in balance.

Figure 1 *Monthly crude oil production for 12 OPEC countries. All data published in this interim report are taken from the monthly IEA Oil Market Reports.*

From May 2007 to August 2010, Rembrandt Koppelaar published an e-report called Oil Watch Monthly that summarised global and national oil production and consumption data from the International Energy Agency (IEA) of the OECD and Energy Information Agency (EIA) of the USA. This is the second in a series of new Oil Watch reports, co-authored with Rembrandt and details crude oil production data for 12 OPEC countries (includes Angola and Ecuador, excludes Indonesia) as reported by the International Energy Agency. Earlier editions:

Oil Watch - World Total Liquids Production

Spare Capacity

The existence and size of OPEC spare capacity is the subject of some controversy and debate. The spare capacity data reported by the IEA are shown in Figure 2, exceeding 7 mmbpd in 2002 and reaching a low point of 1.2 mmbpd in September / October 2004 that coincided with the onset of rapidly rising oil prices. One thing is clear - at times of over-supply OPEC withholds production to support price illustrated by the >>5 mmbpd rise in production between January 2002 and October 2004 (Figure 1) with the corresponding decline in spare capacity (Figure 2). And again in 2008, following the financial crash, production was reined in by Saudi Arabia, the UAE, Kuwait, Qatar, Iran, Libya and Algeria to compensate for declining demand for oil (see following sections).

Figure 2 *Spare crude oil production capacity for 12 OPEC countries.*

Adding spare capacity to the production stack shows how spare capacity compensates for the ups and downs of OPEC production that aims to keep global oil markets in balance (Figure 3). Total capacity rose from 31.8 mmbpd in January 2002 to a plateau level of 35 mmbpd in June 2009.

Figure 3 *Total crude oil production capacity for 12 OPEC countries obtained by superimposing the spare capacity plotted in Figure 2 upon the production stack shown in Figure 1.*

Figure 3 shows how spare capacity is pinched out over the production highs and the question remains as to whether OPEC actually has real spare capacity at those times. Outside of Saudi Arabia the majority of spare capacity currently resides in Iran and Nigeria. The former is subject to sanctions and the latter to ongoing civil / tribal unrest and it does not seem likely that either country could or would be allowed to boost production to meet ongoing strong demand.

The total capacity chart (Figure 3) shows a remarkably smooth development considering the turmoil in many OPEC countries. The small dip in 2002 shows the impact of a national strike in Venezuela and the small dip in 2011 reflects the civil war in Libya. Loss of Iraqi production during the 2003 war was largely compensated by a rise in Saudi, UAE and Kuwaiti production.

Saudi Arabia

Saudi production data includes 50% of the Neutral Zone between Saudi Arabia and Kuwait which currently produces 600,000 bpd of mainly heavy oil. Total Saudi capacity remained remarkably constant from 2002 to 2008 at around 10.5 mmbpd. In 2009 / 10 capacity rose to a peak of 12.3 mmbpd in August 2010 as a result of new fields being developed and has since been in slow decline. Most recent announcements by Saudi Arabia on future developments is to maintain capacity at 12 mmbpd where new developments will simply compensate for declines in aging supergiants.

Figure 4 *Crude oil production data and spare capacity for Saudi Arabia. The reason for the dip in spare capacity shown in 2002 is unknown. The production peaks are annotated, the recent broad peak of 10.1 mmbpd comfortably beating the previous records.*

UAE, Kuwait and Qatar

The United Arab Emirates, Kuwait and Qatar all show a similar development in crude oil production and spare capacity since January 2002. Each country has shown only small growth in total capacity over the period. From 2002 to 2005 production grew in each country at the expense of spare capacity and from 2005 to 2008 spare capacity was small and likely non-existent. Each country reduced production following the 2008 financial crash but since then production has once again grown and spare capacity has been squeezed. Since 2008, Qatar is somewhat different since production has declined and the IEA now interpret Qatari spare capacity to be close to zero. This will be something to watch in the coming months and years.

Figure 5 *Crude oil production data and spare capacity for the UAE.*

Figure 6 *Crude oil production data and spare capacity for Kuwait including 50% of the neutral zone production.*

Figure 7 *Crude oil production data and spare capacity for Qatar.*

Figure 8 *Crude production and spare capacity for the UAE, Kuwait and Qatar.*

Iraq

According to BP, the historic high for Iraqi C+C+NGL production was 3.49 mmbpd in 1979 prior to the Iran-Iraq war. Pre-2003 war and invasion Iraqi total capacity was interpreted to have dropped to 2.8 mmbpd and during the subsequent years of occupation capacity settled on a lower figure of 2.5 mbpd. Decades of conflict have scarred the Iraqi oil industry.

A post war oil production low of 1.5 mmbpd was recorded in January 2006 but since then production has grown steadily to a recent high of 3.12 mmbpd recorded in September 2012. This growth at first came from reinstating production from spare capacity but since January 2008 it has come from building new capacity. It is difficult to predict where Iraqi oil production is headed but the IEA forecast 6.1 mmbpd by 2020.

Figure 9 *Crude production and spare capacity for Iraq. The sharp decline in production during 2003 was caused by the 2003 war and invasion. The loss of 2 mmbpd from Iraq was compensated by a rise in production in Saudi Arabia, the UAE and Kuwait.*

Iran

Figure 10 *Crude oil production and spare capacity for Iran.*

Iranian crude oil production capacity remained constant at around 4 mmbpd from January 2002 to around September 2010, producing close to capacity for much of this period. Since September 2010 the impact of sanctions have begun to bite and as of September 2012 production stood at 3.2 mmbpd and falling fast. It is worth noting that declining Iranian production is matched by rising Iraqi production. Should Iranian production continue to fall and Iraqi production continue to rise, at some point the global oil supply system should be able to absorb the loss of Iranian production all together.

Libya

From January 2002 to 2008 Libyan oil production was rising owing to the participation of OECD companies in that country. Production was cut following the financial crash of 2008 but then in March 2011 Libya went off line during the civil war with over 1.5 mmbpd lost. Libya was offline for about 11 months and production has not yet recovered to pre-conflict levels. It seems possible that without the participation of foreign companies and capital that Libyan production may enter a prolonged period of decline.

Figure 11 *Crude oil production and spare capacity for Libya.*

Algeria

Algeria has also permitted the participation of foreign companies in exploration and field developments and it has an overall production history similar to its N African near neighbor

Libya, apart from the absence of a civil war. Algerian production rose at the beginning of the period, produced at capacity from 2005 to 2008, cut production following the financial crash but has not managed to regain the pre-crash highs. Production took a 150,000 bpd step down in early 2012 and spare capacity is currently deemed to be close to zero. It seems that Algeria may be struggling to maintain the pre-2008 production levels.

Figure 12 *Crude oil production and spare capacity for Algeria.*

Nigeria

The Nigerian oil industry is to large extent operated by the International Oil Companies within a framework prescribed by the Nigerian government, OPEC and tribal anarchy. Production has been largely flat over the decade, either side of 2 mmbpd. In September 2012 spare capacity was logged at 510,000 bpd and it seems unlikely that Nigeria could call on that capacity at short notice.

Figure 13 *Crude oil production and spare capacity for Nigeria.*

Angola

Angola joined OPEC in 2007. Most of Angola's oil production is off shore and is operated by the International Oil Companies. As new offshore fields came on stream, Angola's production rose from 920.000 bpd in January 2002 to 1.9 mmbpd in July 2008. Since then, production has fluctuated moving sideways and down. The IEA has progressively cut their view of spare capacity and it seems doubtful that Angola actually has withheld production at the present time.

Figure 14 *Crude oil production and spare capacity for Angola.*

Venezuela

OPEC stalwart and heavy weight Venezuela has had flat production over the decade of between 2 and 2.5 mmbpd. The impact of the 2002/ 03 general strike upon production is clear to see. Production has been hitting near term highs over 2.5 mmbpd and spare capacity is essentially zero.

Figure 15 *Crude oil production and spare capacity for Venezuela.*

Ecuador

Ecuador rejoined OPEC in 2007 and with production of only 500,000 bpd is the baby of the bunch. Production appears to be on plateau / slow decline.

Figure 16 *Crude oil production and spare capacity for Ecuador.*

Natural Gas Liquids

Finally, to complete the OPEC picture, we need to look at natural gas liquids (NGL). The IEA

report country specific crude oil data for OPEC members but only aggregate NGL data for the OPEC group. I am unsure whether OPEC condensate is monitored by the IEA.

OPEC NGL production has grown from 3.0 mmbpd in February 2002 to 6.3 mmbpd in September 2012. A significant component of that growth likely comes from North Field gas production in Qatar.

Figure 17 *OPEC12 crude oil and NGL production.*