World Crude Oil Production Forecast using Current Fields and Future Megaprojects

Posted by Sam Foucher on December 28, 2006 - 1:18pm
Topic: Supply/Production
Tags: chris skrebowski, megaprojects [list all tags]

This is a guest post by the ace.

Being an oil and gas investor, I have a keen interest in forecast world oil production and its impact on oil prices and the global economy. After reading Khebab's story about many different production forecasts, I decided to build my own model using Chris Skrebowski's megaprojects (each project > 50,000 bpd) database and some decline rate assumptions. The annual decline rates vary from 4% for new fields, 6% for mature field workovers, 7% for mature fields to 14% (for specific field decline rates eg Cantarell). The model has 95 new megaprojects/workovers and 120 existing fields.

Each production forecast for a megaproject assumes simplistically that peak production starts on day 1 and decreases according to the corresponding annual decline rate. The annual decline rate is converted into a monthly decline rate.

I update the model for new EIA monthly data and new/revised project info. For example in Iran, Yadavaran and Kushk/Hosseinieh were counted as two projects on Skrebowski's database. Only Yadavaran is counted. Upstreamonline stated that they were different names for the one project. Indonesia's Jeruk which is on Skrebowski's list is not on my model as it's reserves have been downgraded recently to at most 50 mb and economic viability is no longer assured (link). Angola's block 31 NE was on Skrebowski's potential megaproject list. It is included in the model as Upstreamonline has recently stated that it will start production in 2010 at 180,000 bpd.

EIA actual data for crude oil and lease condensate (C&C) production are used. These data show a first peak of 74.06 mbpd on May05 as the beginning of the down trend.
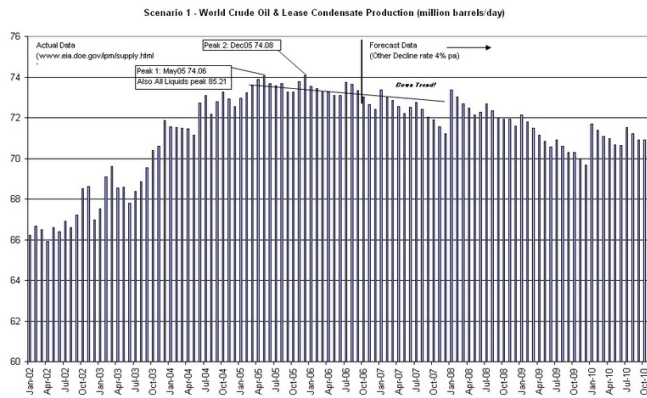
Scenario 1: A Slow Irreversible Decline

Fig.1 A Slow Irreversible Decline. Click to enlarge.

This scenario assumes that "Other" oil production declines at 4%/year. "Other" oil production is from oil fields not on Chris Skrebowski's database and not from the 120 specified existing fields above. The "Other" category includes small field projects and small enhanced oil recovery projects. This scenario forecasts that world C&C production declines at about 1% per year from May05 to Nov10. The production on Nov10 is forecast to be 70.6 mbpd.
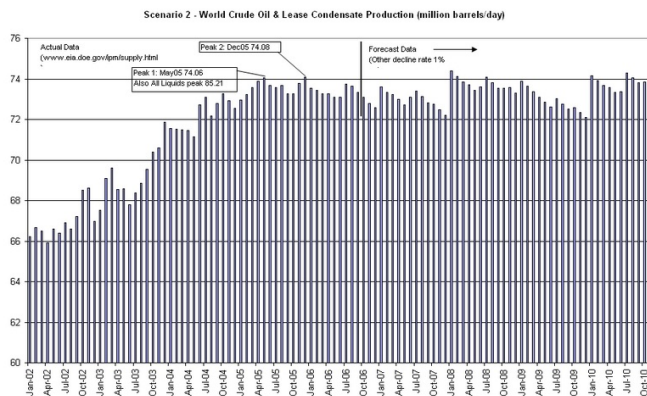
Scenario 2: A Long Plateau

Fig. 2 A Long Plateau. Click to Enlarge

This scenario assumes an optimistic decline rate for "Other" at 1% per year which gives some upside for yet to be discovered fields which are developed prior to Nov10. The production on Nov10 is forecast to be 73.6 mbpd which represents no change from Aug06.

Key Points:

Based on optimistic Scenario 2:

- **Saudi Arabia is forecast to produce only 8.4 mbpd on Nov10. This assumes that the large new projects (mostly mature field workovers) of AFK (Abu Hadriya, Fadhili, Khursaniyah), Haradh, Khurais expansion, Nuayyim and**

Shaybah expansion are developed on time and production targets are achieved. Given Saudi Arabia's lack of recent oil exploration success, the forecast above implies that Saudi Arabia will never produce over 9 mbpd again.

- **Iran is forecast to produce 4.1 mbpd on Nov10.**
- **World C&C production is on a plateau until at least Nov10.**

Based on Scenario 1:

- **The increased forecast production from Nigeria, Qatar, Angola, Brazil, Canada, Kazakhstan and Azerbaijan is not enough to offset the forecast declines from Saudi Arabia, Russia, North Sea, Mexico, Indonesia, Iraq, China, India, Malaysia and the USA.**
- **Given lag times of at least five years for new megaprojects to start production, world C&C production has begun a slow irreversible decline which started on May 2005.**

Comments or questions would be appreciated!