



A closer IEA look at Saudi Arabian production

Posted by [Heading Out](#) on November 8, 2005 - 1:43am

Topic: [Supply/Production](#)

Tags: [iea](#), [peak oil](#), [saudi arabia](#) [[list all tags](#)]

Certainly the World Energy Outlook 2005, Middle East and North Africa (MENA) Highlights, which the [IEA](#) issued on Monday morning is full of much detail. For example, in discussing the numbers of rigs that are required for exploration and oilfield development as I did the other day I assumed that virtually all wells in Saudi Arabia were successful. From page 132 of the report I read that the success rate for wells in MENA is around 65%, against a current world average of 40%, although Kuwait is apparently at 40%, while Iran runs at around 60-65%. Moving to overall energy balance, the IEA anticipate that production will increase by some 4 mbd by 2010, while domestic demand in MENA will grow 1.4 mbd, leaving some 2.7 mbd for export growth in that time frame.

They see a peak in non-OPEC conventional oil production between 2010 and 2015 (page 140) but global oil production will not peak until after 2030. Since there is a tad much information to squeeze into a single post, let us therefore begin by looking just at the predictions for Saudi Arabia - with the beginning note that Ghawar (of which they consider Haradh III a part - p 510) will continue to increase in production until 2010, when it will start a decline, but at a rate that takes it down to 3.7 mbd in 2030. They point to a Saudi statement that their wells naturally are declining at around 6%, which is approximated to the 600,000 bd that Rembrandt asked about earlier today (p 146).

Skimming though there is a paragraph on the growth of the petro-chemical industry in Saudi Arabia, and the growing shortage of ethane.

Saudi Aramco has already allocated the majority of its feedstock supply and no new round of supplies is expected before 2007. Liquids extracted from any non-associated gas discovered by international oil companies in partnership with Saudi Aramco under recent deals will not be available before the end of the decade. Associated gas from the planned development of oilfields in the eastern region will similarly not become available until the next decade.

Since ten plants are in construction (page 496), the IEA notes that these are going to have to be converted to use another feedstock. And in passing it notes that the aquifers may not last more than 15 to 20 years at current rates of extraction (page 500).

In discussing the projected oil performance natural gas liquids (NGL) are included at around 1.3 mbd and 0.3 mbd from the Neutral Zone (which SA shares with Kuwait). Interestingly the IEA does not include production from Abu Sa'fah which is shared with Bahrain.

If reserves are indeed as large as official estimates show, production increases will depend critically on the pace of investment, which is largely a matter of government policy.

The current spare capacity that SA retains is seen as being at Safaniyah, Zuluf and Marjan, all three offshore and producing medium or heavy crude. They note that Shaybah (the oilfield in the Empty Quarter) and which can produce 600,000 bd had helped offset most of a drop in production from Ghawar and Safaniyah in the 1990s.

And I will note that the report says

It has a very conservative approach to managing its reservoirs, generally aiming for fairly low depletion rates - less than 5% a year - in an attempt to maximize long-term recovery factors.

The difference between this and the 6% natural decline rate is being overcome, by maintenance and drilling additional wells (p 511). The use of water flood to maintain reservoir pressure has been changed so that instead of using a "five spot pattern" where production and water injection wells alternate, Aramco uses a perimeter flood where water is only added at the edge of the field, forcing the oil up and in towards the center. They also point out that the industry, on average, produces four barrels of water for every barrel of oil (p 513) and that "in mature provinces such as the US and the North Sea, many oil fields have a water cut of more than 90%." I wonder who that was aimed at? (Grin).

They list four projects to come on stream between now and 2010 - Haradh-III at 300 kbd (2006); Khursaniyah at 500 kbd (2007); Shaybah 300 kbd (2008) and Khurais/Manifa at 1.2 mbd in 2010. It is the last of these that is also a clarification. At present the Manifa oil is not refinable and thus part of the wait on this will be for a refinery to be built in Saudi Arabia to handle the oil, which has a high metal (vanadium) and H₂S content. Khurais will also need a heavy water flood program. They list four other fields Abu Hadriyah; Abu Jifan; Fadhili and Harmaliyah that are currently mothballed and that could be brought back into production at low cost. Their list of current production (at least 2004) is also a little different from other lists I have seen. It goes

Abqaiq . . . . .	.434,000 bd*
Abu Sa'fah. . . . .	.189,000 bd
Berri. . . . .	.213,000 bd*
Fadhili. . . . .	.50,000 bd
Ghawar. . . . .	.5,772,000 bd
Ghinah. . . . .	.41,000 bd
Harmaliyah. . . . .	.28,000 bd
Hawtah. . . . .	.26,000 bd*
Hazmiyah. . . . .	.59,000 bd*
Manifa. . . . .	.50,000 bd
Marjan. . . . .	.223,000 bd
Qatif.	100,000 bd
Safaniyah.	1,728,000 bd*
Shaybah. . . . .	.492,000 bd
Umm Jurf. . . . .	.10,000 bd
Zuluf. . . . .	.407,000 bd

Others.530,000 bd

Those marked with an asterisk show less production in 2004 than in 2000. The most critical being Safaniyah, which shows around a 300,000 bd drop.

There are some 70 fields that are currently not developed, holding about 10% of the country's proved and probably reserves. Of these Nuayyim, may be the next to be developed with a production of around 100,000 bd.

I have not dwelt on the fact that their "rosy" scenario will only come to pass if the world invests \$17 trillion in research and exploration - something which seems to be less likely, but which also an opportunity for a later post, or comment.



This work is licensed under a [Creative Commons Attribution-Share Alike 3.0 United States License](http://creativecommons.org/licenses/by-sa/3.0/).