

## US Shale Oil Debate

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Many debates had taken places in the last few months in the social and technical media with respect to the US Shale Oil boom and its potential impact on OPEC future. Indeed, the best I had read about this matter is an article that was published in the Forbes news by **Christopher Helman** back on June 13, 2013 titled '**Why America's Shale Oil Boom Could End Sooner Than You Think**'. The article indicated that although US oil production is up by 43% since 2008, the majority of the additional production in the last 5 years came out of few large scale shale oil fields at extremely high cost. The report indicated that the cost of developing the shale oil fields in the US in 2012 alone was around \$186 billion with 20% increase over 2011. I expect this annual cost increase to continue.

Unfortunately most of the reports and debates related to shale oil focus on reserves. The challenging question here is not how much shale oil reserves exists today in the US/world. The question is how much can be produced and at what cost? The development cost of US shale oil fields with its complicated logistics especially rig availability and hydraulic fracturing varies from a field to another depending on how marginal and deep the reservoir is, with as high as ~\$100 a barrel from small marginal complex-geology fields to as low as \$65 a barrel from large scale shale oil fields. According to **Helman**, what makes this business still continuing in the US is the current high oil price >\$100. I add also the relatively moderate environmental debates.

The Forbes report indicated that the average production from a typical US shale oil well (horizontal & hydraulically fractured) is approximately 600 bpd of oil equivalent (oil & gas) with expected annual decline rate of 40%. This means that if we have a shale oil field producing 600,000 bpd from 1000 wells, we need to drill and hydraulically fracture 400 new wells every year to maintain the production plateau. This can be easily translated into huge investment with big number of drilling rigs and abundant amount of water. Furthermore, we need to answer the question: for how long this mode of complex logistics, high development cost and environmental risk can be sustained by the financial and environmental institutions? With the expected cost increase, high land acquisition and environmental awareness, many, including myself, believe that the boom will end sooner than expected.

Having said that, do we still see US shale oil as a potential threat to OPEC? It is not secret that OPEC has the option to knockdown shale oil out the global oil map by increasing its production that reduces the price <\$70. **Though I strongly do not**

**recommend this option and I do not think that OPEC will do it.** In contrast, I personally look at the US shale oil from a **positive** side at least in the short to mid-term considering the following:

- The development cost of this unconventional oil will increase with time since the easy fields and sweet geologic spots have already been developed leaving only small marginal complex fields.
- Any decline of OPEC exports to the US due to its shale oil production can be easily shifted to Asia and Far East countries. The latest International Energy Agency (Oct 3rd 2013) indicated that energy demand in Southeast Asia has doubled by 2 ½ folds since 1990. Economic trends point to further future growth in this region.
- The 2 million additional barrels in the US production since 2008 did not have so far any impact on OPEC production or price. In contrast, the latest OPEC monthly report showed an increase in OPEC production indicating that the market is capable of absorbing any increase due to the positive economic growth especially in developing countries. It also relieved the pressure on major OPEC countries to increase its production capacity to meet the global increasing energy demand.

Finally, the only non-shale oil related threat to OPEC that I see today is the potential decline in the US, European, and global economy which can cause a significant drop in the oil demand and price. If this happened, our least worry will be shale oil, because the low oil prices will automatically knockdown shale oil out the global oil map.