The future of global oil production

WORLD'S OIL PRODUCTION: HISTORICAL REFERENCE AND PROJECTIONS

1. Background

The level of the oil production is influenced by a wide variety of factors. Following a basic principle, the demand is the reference element against which production (i. e. supply) is always analyzed.

Yet, apart from demand there are many other factors that influence, either directly or indirectly, the oil production. To quote only a few of such factors with direct influence one might mention: the fluctuating oil price, the socio-economic framework, the political stability, the fiscal and regulatory regime(s), the technological breakthroughs etc. On the axis listing the rather indirect factors, but also having a huge influence on the level of the world's oil production, are other factors: sustainable investment environment, availability of financial resources, evolution of the transportation sector, environmental concerns etc. For sure, not even a small portion of all factors with influence on the level of production has been exhausted.

In order to deal with such broad variety of factors (each having potentially substantial influence on the oil production and some of them having an intrinsic fluctuating nature) private companies, organizations (e. g. Organisation of Petroleum Exporting Countries), international bodies (e. g. International Energy Agency) or national monitoring bodies (e. g. US Energy Information Administration) put forward scenarios which are ultimately used for creating mid-term/ long-term strategies and/ or for making investment decisions in the dynamic arena of the oil and gas activity.

2. Oil demand to 2035

As in most of the current scenario planning methods, in the 2014 IEA's World Energy Outlook (" WEO-2014") several scenarios are envisaged (i. e. New Policies Scenario[1]which is the central scenario to WEO-2014, the Current Policies Scenario[2]and the 450 Scenario[3]).

During the 13 November 2014 Conference held in Vienna for promoting the release of the WEO-2014, IEA's Chief Economist Fatih Birol mentioned that one of the key questions analysts are trying to answer is whether oil production will keep up in the future with the oil demand. The reason for analyzing this aspect in great detail lies in the fact that the energy demand is estimated to grow with a staggering 37% till 2040 (compared against the year of 2012)[4]. Within the energy mix, oil demand is supposed to rise from 90. 1 mb/d in 2013[5]to 102. 8 mb/d in 2035[6]and even to 103. 9 mb/d till 2040 in the New Policies Scenario. In the Current Policies Scenario the oil demand increase is even more drastic: in 2040 the world demand will reach 116 mb/d! Both scenarios mentioned do not envisage a peak in the oil demand by 2040 which means that the mankind will actually need more oil to cover its needs in the years to follow after 2040. Only the 450 Scenario envisages a peak in the oil demand already by around 2020[7]as the efficiency on the CO2 emissions is supposed to exhibit its effects by then; following said period the oil demand will decline and revert to the 1990s levels.

Illustrating once more that the mankind's faith lies actually in our hands, more specifically, in the policies to be implemented (or not) by 2040, it is worthwhile highlighting the deviations in energy demand (so not just oil demand) from the reference scenario (i. e. New Policies Scenario): in the

Current Policies Scenario, the total energy demand will be higher with 10% (i. e. +1. 746 Mtoe) than in the New Policies Scenario, while the 450 Scenario envisages a lower energy demand by 15% (i. e. -2. 663 Mtoe) compared to the New Policies Scenario. In the energy mix envisaged in 2040, each of the three fossil fuels (i. e. oil, gas, coal) and the renewable sources play an equal role (i. e. each getting approx. a quarter), but with oil retaining its position as the largest single fuel in the global energy mix[8].

Similarly to IEA, OPEC's 2014 World Oil Outlook (" WOO") makes its own forecast, but the figures are slightly higher as it is envisaged in the reference case a steeper increase in the oil demand which is forecasted to reach 108 mb/ in 2035 and even 111 mb/d in 2040[9](i. e. slightly lower – with 0. 5 mb/d than forecasted in the WOO 2013). The figures provided by IEA WEO 2014, in terms of oil demand for the reference case are similar to the ones provided by OPEC's WOO 2014 for the lower economic growth scenario which refers to a 102 mb/d oil demand in 2035 and 104. 2 mb/d in 2040[10]. The higher economic growth scenario envisaged by WOO 2014 exhibits an oil demand of 112 mb/d in 2035 and almost 116 mb/d in 2040[11].

The main driving forces behind such steep demand increase are stemming from the developing economies (particularly China, India and Middle East[12]). In OECD countries, it is envisaged that the energy efficiency policies will come into play with a more significant impact than so far and, consequently, OECD oil demand will drop by almost 25% from 41 mb/d in 2013 to 31 mb/d in 2040 (OECD oil demand peaked already in 2005) with the US seeing the largest fall in absolute terms.

3. Will oil production peak?

After looking at the estimations of what oil quantities the world will need in the following decades, can it be stated that the production will keep up with such high demand?

The good news is that the remaining technically recoverable resources of oil are sufficient to meet anticipated demand in all three scenarios[13]. The 2013 registered oil production was of 89. 4 mb/d[14], according to IEA. As a significant milestone, all scenarios highlight the period around the 2020s when the North American unconventional production peaks (and subsequently it starts to decline). Yet, in the New Policies Scenario, the oil production growth will be supported mainly by the Middle East countries (i. e. OPEC's quota raises from 36. 8 mb/d in 2013 to 49. 5 mb/d in 2040 when it will account for 49% of the total output) as well as by Canada and Brazil. Only the 450 Secenario, similar to the demand related projection, shows a production that will peak around 2020s when it will reach 93. 4 mb/d[15]. By 2040, the 450 Scenario reflects an oil production declined up to 71. 9 mb/d.

OPEC's WOO 2014[16]projects an oil production growth up to 108 mb/d by 2035 and even 111 mb/d by 2040.

In its projection released on 9 September 2014, the US Energy Information Administration forecasts, in its reference case, an overall oil output increase reaching 99. 1 mb/d[17]by 2040 (rather close to IEA's 2014 New Policies Scenario).

4. Conclusion

All scenarios show that *on a mid-term* perspective oil supply and demand will both grow. All scenarios (except the 450 Scenario) show that *on a long term* oil supply and demand will grow. The 450 Scenario envisages a peak demand and supply around the 2020s. Some elements present high uncertainty (e. g. US tight oil, Brazil deepwater development, Canadian oil sands, Middle East stability etc) and their evolution over the next decades will be of utmost interest. Another heavy weight factor for the interdependency with the oil production supply and demand will be the evolution of the oil price. And another element which may produce positive surprises which will be worth following are the technological breakthroughs (if any). Therefore, the world's business community will have to closely monitor all these elements and will have to factor them into the strategic business decisions to be made in the following years!

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[1]The New Policies Scenario takes into consideration the policies and implementing measures that have been adopted as of mid 2014 as well as the implementation of the policy proposals (even if they are yet to be formally approved).

[2]The Current Policies Scenario takes into consideration only the policies enacted until mid 2014.

[3]The 450 Scenario is not purely a scenario, but it rather sets a final target (i. e. limiting the temperature increase over the next years to only 2 degrees Celsius) and works out backwards to identify the decisions/ actions that have to be accomplished in order to meet this threshold.

[4]World Energy Outlook 2014, page 55

[5]Idem, page 98

[6]Ibidem

[7]Idem, page 97

[8]IEA WEO 2014, page 96

[9]OPEC World Oil Outlook 2014, page 72, available athttp://www. opec. org/opec_web/static_files_project/media/downloads/publications/WOO_2014. pdf

[10]Idem, page174

[11]Ibidem.

[12]See Figure 3. 2 in the IAE’s WEO 2014, page 100

[13]IEA, WEO 2014, page 110

[14]Idem, page 115. The OPEC WOO 2014 refers (under page 79) to an oil production of 90 mb/d. In both cases, the “ oil production” includes, apart from the crude oil production, the NGL as well as the unconventional oil production.

[15]IEA, WEO 2014, page 115.

[16]WOO 2014, page 82

[17]See “ Table A5. World crude and lease condensate production by region and country” available athttp://www. eia. gov/forecasts/ieo/ieo_tables. cfm