World Oil Outlook 2015

Presented by:

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Outline

- Reference Case: main assumptions
- Energy demand
- Oil demand outlook
- Liquids supply outlook
- Downstream issues
- Take aways
2015: a challenging year

- Significant drop in oil prices
- The new oil price environment
  - impact on both demand and supply prospects in the short- and medium-term
  - robust demand growth together with slowdown non-OPEC supply growth
- Large reductions in E&P capital expenditures, some projects deferred or cancelled
- Job lay-offs in the industry
- Gloomier economic picture in the non-OECD region compared to last year’s Outlook
- All in all, 2015 has been a challenging year for the industry
- The WOO emphasizes the medium- to long-term trends in the industry
Reference Case: main assumptions

- **Economy**
  - Global GDP growth projected to reach 3.8% p.a. in 2018 and 2019
  - Average medium-term growth: 3.6% p.a. (2014–2020)
  - Average long-term growth: 3.5% p.a. (2014–2040)

- **Demographics**
  - World population will increase from 7.2 billion in 2014 to 9 billion in 2040
  - Increasing urbanization and ageing population

- **Oil price assumptions (OPEC Reference Basket)**
  - Reaching $80/b in 2020 and $163/b in 2040 in nominal terms
  - In 2040 price is $95/b in 2014 prices
  - Cost of marginal barrel a key factor

- **Energy policies shape the Outlook**
  - Recent changes in energy policies primarily focus on emissions reduction
Energy demand is set to grow by 49%, reaching 399 mboe/d by 2040.

 Much of the energy demand growth will continue to be in the developing world.

 Fossil fuels dominate the mix with a 78% share by 2040.

 Oil will remain the fuel with the largest share in the next 20 years.

 By 2040, natural gas is expected to have the largest share (28%).

 Fast growth of renewables, supported by policies, set to continue, albeit from a low base.

 Combined, oil and gas to supply 53% of the global energy by 2040.

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### World primary energy demand in the Reference Case

<table>
<thead>
<tr>
<th></th>
<th>Levels mboe/d</th>
<th>Growth % p.a.</th>
<th>Fuel shares %</th>
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<tr>
<td></td>
<td>2013</td>
<td>2020</td>
<td>2030</td>
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<tr>
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<td>Total</td>
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<td>298.0</td>
<td>344.6</td>
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Medium-term oil demand revised upward, but long-term demand is down

- Oil demand increases from 91.3 mb/d in 2014 to 97.4 mb/d in 2020
- Compared to WOO 2014, demand has been revised upwards by 0.5 mb/d in 2020
- Demand in developing countries will surpass that of the OECD by 2020

### Medium-term oil demand outlook in the Reference Case

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### Long-term oil demand outlook in the Reference Case

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</table>

- For the long-term, demand increases by more than 18 mb/d reaching 109.8 mb/d in 2040
- Demand in the OECD declines by 8 mb/d while in developing countries it increases by 26 mb/d
- Key growth sectors:
  - road transportation
  - petrochemicals
  - aviation
Lower oil prices limit non-OPEC supply growth, especially in the medium-term

- Total non-OPEC supply increases from 56.5 mb/d in 2014 to more than 60 mb/d in 2020
  - Downward revision of 1 mb/d compared to WOO 2014 due to the lower oil price and investment cuts

- Non-OPEC supply increases further to 61.5 mb/d in 2025, but then declines below 60 mb/d by 2040
  - Main supply additions in the long-term from oil sands in Canada, biofuels, NGLs and crude from Latin America and the Caspian region
  - Global tight crude growth to face limitations that lead to a plateau of 5.6 mb/d in 2025, followed by a gradual decline

- OPEC crude supply increases from 30 mb/d in 2014 to 40.7 mb/d in 2040, accounting for 37% of the total world liquids supply by 2040
The outlook is clouded with uncertainty: economic growth

Alternative GDP growth scenarios:

- Alternative average GDP growth assumptions in the period 2014–2040
  - Higher economic growth: 3.7% p.a.
  - Lower economic growth: 3.1% p.a.

- By 2040 demand could reach 115 mb/d in the higher economic growth scenario or 102 mb/d in the lower one

- Impact on OPEC crude
  - Up to 45.4 mb/d in 2040 under the higher economic growth assumption
  - It could decline to around 28 mb/d by 2024, then increase up to 33.5 mb/d in 2040 under the lower economic growth assumption
Alternative non-OPEC supply scenarios

- Above- and/or below-ground factors could result in upside and downside outcomes for non-OPEC supply
  - Upside supply scenario: 6.1 mb/d added to the non-OPEC liquids in the Reference Case by 2040
    - Additional tight crude and unconventional NGLs, crude, biofuels, GTLs and CTLs
  - Downside supply scenario: non-OPEC supply by 2040 is 3.3 mb/d lower than in the Reference Case
  - In the downside non-OPEC supply scenario, OPEC crude rises to 44 mb/d in 2040 while in the upside scenario OPEC crude is estimated at below 35 mb/d

The outlook is clouded with uncertainty: non-OPEC supply
Medium-term refining capacity expansion still larger than that required by demand

- Refining projects add 7.1 mb/d of new distillation capacity in the period 2015–2020
- Vast majority of it in the Middle East, China and Other Asia-Pacific
- Incremental crude runs open up a 2.1 mb/d excess capacity versus required level based on demand increases by 2020
- Need for additional closures still exists – but somewhat under less pressure than last year

* Potential: based on expected distillation capacity and closures.
** Required: based on projected demand increases.
Need to increase conversion capacity relative to distillation in the long-term

- Total crude distillation capacity additions to 2040 estimated at 20 mb/d
- Required additional conversion capacity: 12.5 mb/d
- Post-2020: conversion additions at somewhat above 70% of new distillation capacity
- Tighter product quality specifications lead to high additions in desulphurization capacity: 25.5 mb/d
Oil trade: Middle East leads export growth

- Inter-regional crude oil movements are projected to stay level at around 36 mb/d through to 2020, before growing to over 44 mb/d by 2040.
- The projections underscore the role of the Middle East as the major crude oil exporter.
- Total crude exports from the Middle East are projected to reach 24 mb/d by 2040, over 6 mb/d higher than in 2013.
- In terms of destination, the dominant flow and major increases are to Asia-Pacific, attracted by this region’s rising demand.
Oil trade: Asia-Pacific leads import growth

- Imports to the US & Canada will decline from 5.8 mb/d in 2013 to below 4 mb/d by 2040
- Crude oil imports to Europe drop by more than 2 mb/d between 2013 and 2040
- Imports to Asia-Pacific rise steadily between 2013 and 2040, by over 11.5 mb/d, reaching a level of 30 mb/d by 2040
Main take aways

- Energy demand will increase by almost 50% in the period up to 2040
- Oil will remain the fuel with the largest share in the next 20 years and oil and gas will supply half of the global energy demand by 2040
- Oil demand reaches almost 110 mb/d, with developing countries accounting for most of the growth
- Total non-OPEC supply peaks at 61.5 mb/d in 2025, but declines below 60 mb/d by 2040
- OPEC crude increases from 30 mb/d in 2014 to 40.7 mb/d in 2040
- The Outlook is clouded with uncertainty stemming, in particular, from economic growth uncertainties and non-OPEC supply prospects
- In the downstream, the need for additional refinery closures still exists – but somewhat under less pressure than last year
- Eastward shift in oil movements is set to continue
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