

Fourth IEA-IEF-OPEC Symposium on Energy Outlooks

**IEF Secretariat, Riyadh
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**Session I
OPEC medium- and long-term
oil outlook**

- Key assumptions
- Reference case projections
 - Medium-term to 2018
 - Long-term to 2035
- Scenarios
 - Upside supply
 - Economic growth
- Downstream issues
- Some important questions arising from the outlook

Reference Case: key assumptions

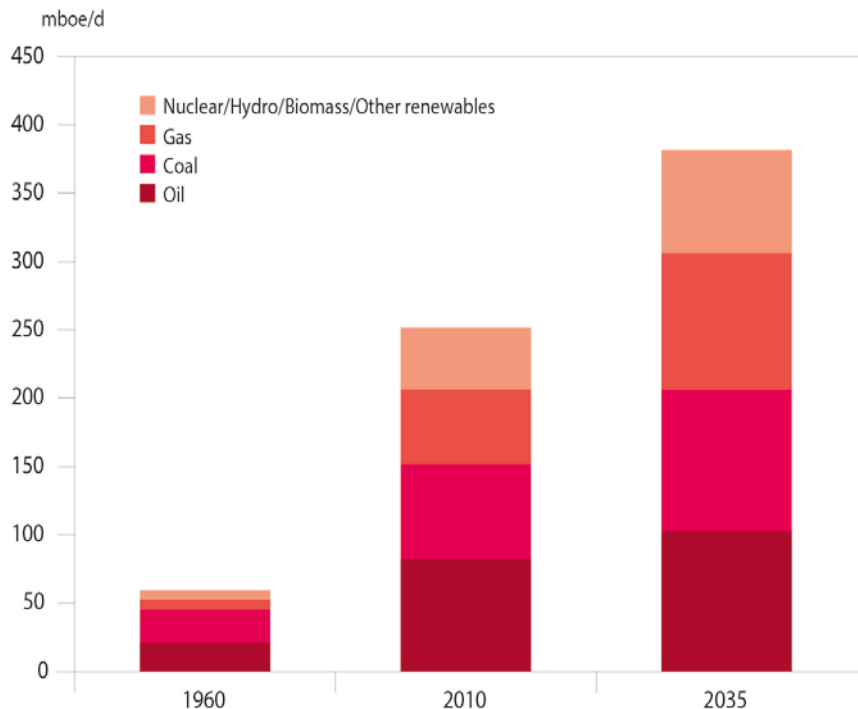


- Oil prices
 - Stable, \$110/b medium-term
 - In 2035, real price is \$100/b in 2012 prices
 - Cost of marginal barrel a key factor
- Economic growth
 - Medium-term
 - Slower recovery from recession, downside risks
 - High debt burden in developed countries
 - By 2015-18 global growth reaches 3.8-3.9% p.a.
 - Developing Asia economy share: 28% in 2012 to 44% in 2035
 - Long-term
 - Demographics and productivity trends
 - Average global growth 2013-35 of 3.5% p.a.
- Energy policies also shape the Reference Case

Energy use will continue to rise, oil will remain the leading fuel for some time, gas use rises strongest



World supply of primary energy by fuel type



- Energy use rises by 52%
- Fossil fuels remain above 80% of supply
- Oil initially retains largest share
- Each fossil fuel converges to 26–27%

World supply of primary energy in the Reference Case

	Levels mboe/d			Growth % p.a. 2010–35	Fuel shares %		
	2010	2020	2035		2010	2020	2035
Oil	81.2	89.7	100.2	0.8	32.2	30.0	26.3
Coal	69.8	84.9	104.0	1.6	27.7	28.4	27.2
Gas	54.8	69.0	99.8	2.4	21.7	23.1	26.0
Nuclear	14.3	16.0	21.6	1.7	5.7	5.4	5.7
Hydro	5.8	7.4	10.1	2.3	2.3	2.5	2.6
Biomass	24.4	28.0	35.2	1.5	9.7	9.4	9.2
Other renewables	1.8	3.6	10.7	7.5	0.7	1.2	2.8
Total	251.9	298.6	381.7	1.7	100.0	100.0	100.0

- Shale gas increasingly important as a source of energy...
- ...but many potential barriers to rise in supply

World oil demand outlook in the Reference Case



Medium-term oil demand outlook in the Reference Case

mb/d

	2012	2013	2014	2015	2016	2017	2018
OECD	46.0	45.6	45.4	45.2	45.0	44.8	44.6
Developing countries	37.8	38.9	40.1	41.1	42.2	43.3	44.4
India	3.7	3.8	3.9	4.0	4.2	4.4	4.6
China	9.7	10.1	10.4	10.8	11.1	11.5	11.9
Eurasia	5.0	5.1	5.2	5.3	5.3	5.4	5.4
World	88.9	89.6	90.7	91.6	92.5	93.5	94.4

- Medium-term oil demand rises by an average of 0.9 mb/d p.a.
- Similar to WOO 2012
- Developing countries key to growth

- Long-term oil demand reaches 108.5 mb/d by 2035
- 88% of increase in demand is in developing Asia
- Transportation sector is key
- Diesel: the dominant product growth

Long-term oil demand outlook in the Reference Case

mb/d

	2012	2015	2020	2025	2030	2035
OECD	46.0	45.2	44.2	43.1	41.8	40.4
Developing countries	37.8	41.1	46.6	51.8	57.0	62.1
India	3.7	4.0	5.0	6.2	7.6	9.3
China	9.7	10.8	12.7	14.4	16.0	17.5
Eurasia	5.0	5.3	5.5	5.7	5.8	6.0
World	88.9	91.6	96.3	100.7	104.6	108.5

World liquids supply outlook in the Reference Case

Medium-term liquids supply outlook in the Reference Case

mb/d

	2012	2013	2014	2015	2016	2017	2018
OECD	21.1	21.7	22.3	22.8	23.0	23.3	23.3
<i>of which: tight oil</i>	<i>2.5</i>	<i>3.3</i>	<i>3.9</i>	<i>4.4</i>	<i>4.7</i>	<i>4.9</i>	<i>4.9</i>
DCs, excl. OPEC	16.3	16.5	16.9	17.4	17.8	18.4	18.7
Eurasia	13.4	13.5	13.7	13.9	14.0	14.1	14.2
Total Non-OPEC inc. proc. gains	52.9	53.9	55.1	56.4	57.3	58.2	58.6
OPEC (incl. NGLs)	36.8	36.2	35.9	35.5	35.6	35.6	36.0
<i>OPEC crude</i>	<i>31.1</i>	<i>30.3</i>	<i>29.9</i>	<i>29.2</i>	<i>29.0</i>	<i>28.8</i>	<i>29.2</i>

- Primary recent driver: tight oil...
- ...but tight oil plateaus (decline rates, environmental concerns)
- Non-OPEC supply rises by almost 6 mb/d 2012-2018
- OPEC crude stabilizes around 29 mb/d, then rises again from 2018

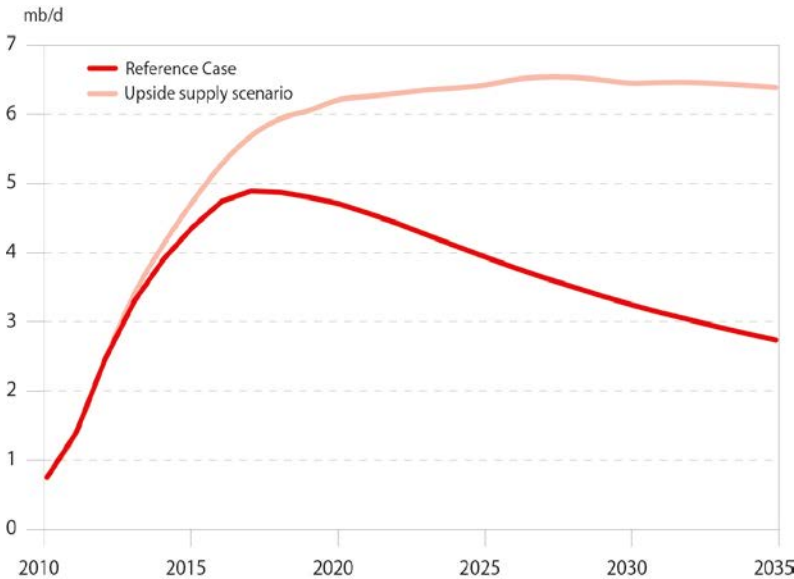
- Non-OPEC rises to 62 mb/d by 2035: Brazil, Caspian, biofuels, oil sands are key to growth
- Increase of non-crude liquids supply 75% of increase in demand
- OPEC crude share stays in the range 31–35%, below 2012 levels

Long-term liquids supply outlook in the Reference Case

mb/d

	2012	2015	2020	2025	2030	2035
OECD	21.1	22.8	23.4	23.7	23.9	24.1
<i>of which: tight oil</i>	<i>2.5</i>	<i>4.4</i>	<i>4.7</i>	<i>3.9</i>	<i>3.3</i>	<i>2.7</i>
DCs, excl. OPEC	16.3	17.4	19.1	19.4	19.2	19.2
Eurasia	13.4	13.9	14.3	14.6	14.9	15.3
Total Non-OPEC inc. proc. gains	52.9	56.4	59.3	60.4	60.9	61.6
OPEC (incl. NGLs)	36.8	35.5	37.2	40.5	43.9	47.1
<i>OPEC crude</i>	<i>31.1</i>	<i>29.2</i>	<i>29.9</i>	<i>32.3</i>	<i>34.8</i>	<i>37.5</i>

Upside supply scenario explores impacts upon OPEC

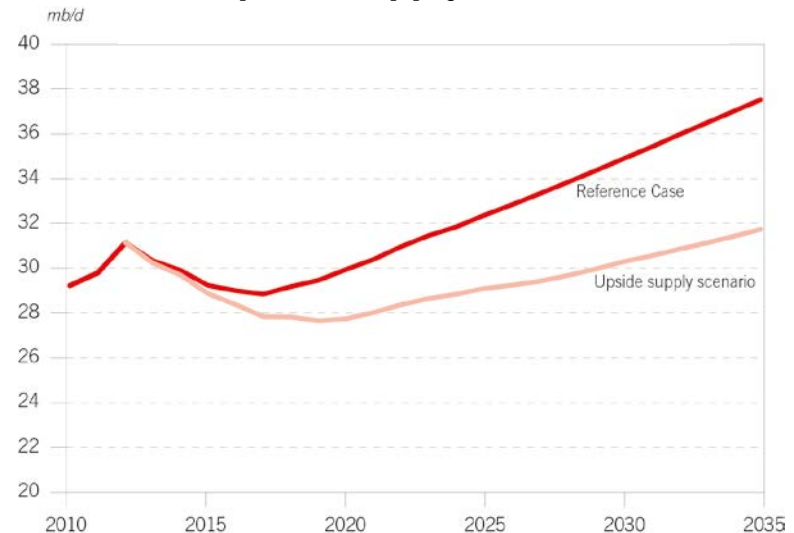


Global tight oil supply in the upside supply scenario

- OPEC crude supply would be below 28 mb/d until 2021 and 32 mb/d by 2035
- This path may not be sustainable

- Higher tight oil supply in North America and in other countries
- Higher supply from other crude oil and NGLs, especially Brazil and Russia
- Higher supply from biofuels
- 5.7 mb/d additional non-OPEC supply by 2035

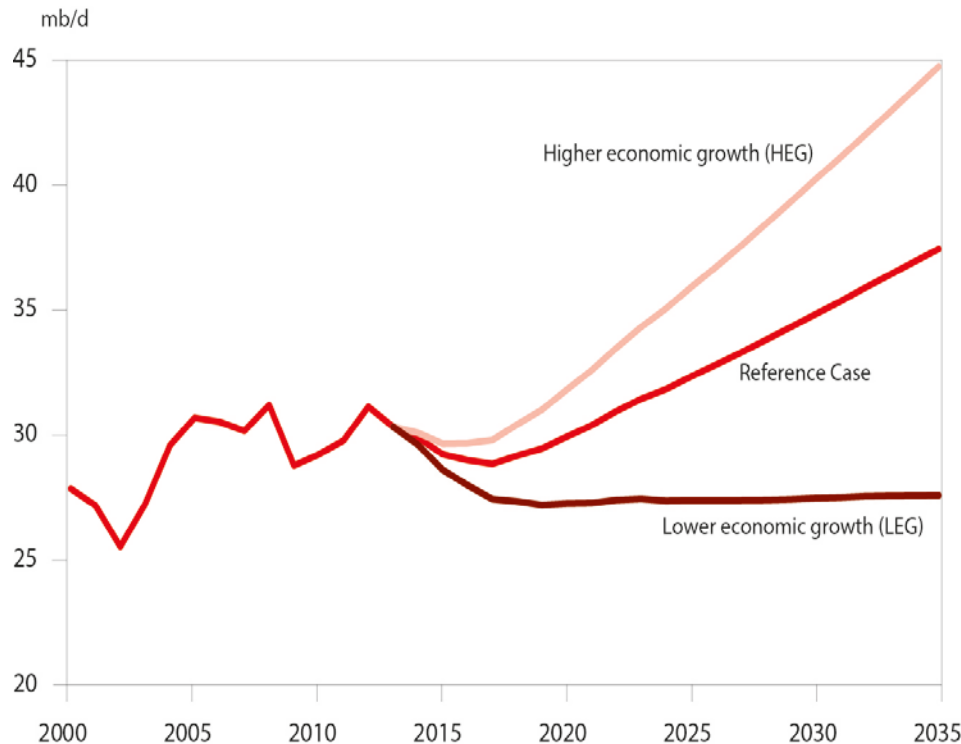
OPEC supply in the upside supply scenario



Economic growth scenarios stress uncertainties



OPEC crude oil supply in the lower and higher economic growth scenarios



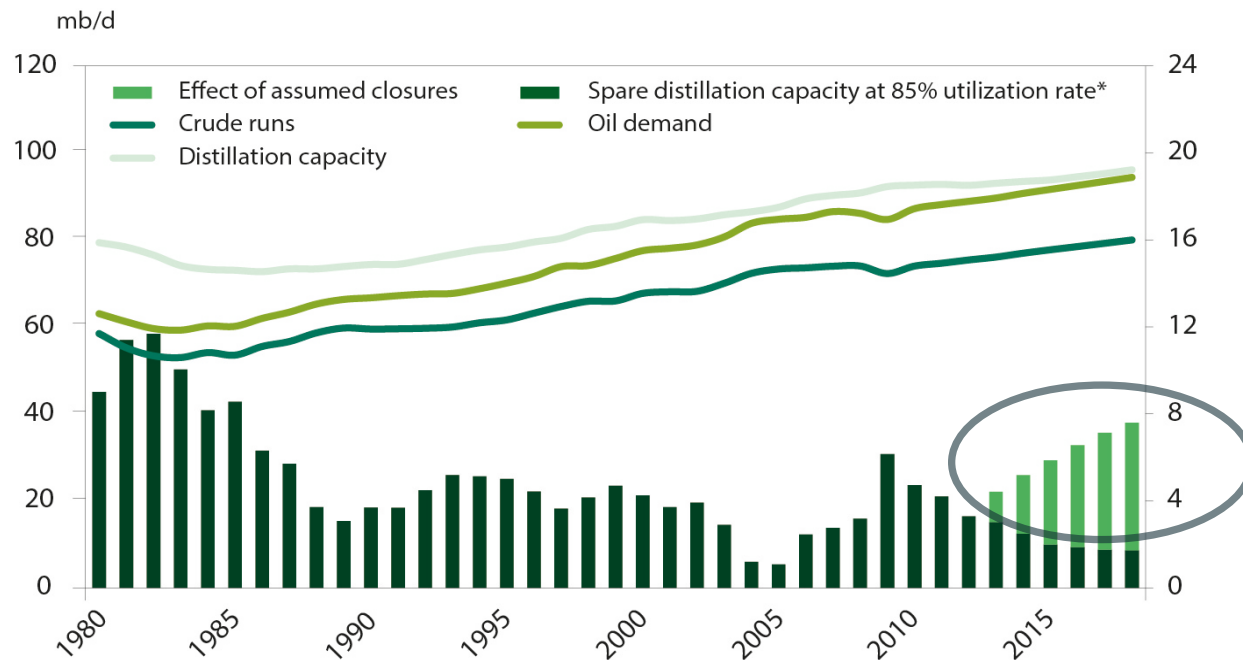
- Downside risks and upside potential for economic growth
- In downside scenario, oil demand remains below 100 mb/d
- Main decline in developing countries
- Future need for OPEC crude would be less than today in downside growth scenario
- But there is also upside potential, with demand reaching 116 mb/d by 2035

Restoring refining margins may mean closing over 10 mb/d of crude distillation capacity



- More than 9 mb/d of new distillation capacity globally in the period to 2018
- New refining projects exceed the incremental 'call on refining'
- Closures of around 8 mb/d are needed by 2018 and 10 mb/d by 2020 (assuming utilization rates of 85%)

Global oil demand, refining capacity and crude runs, 1980–2018

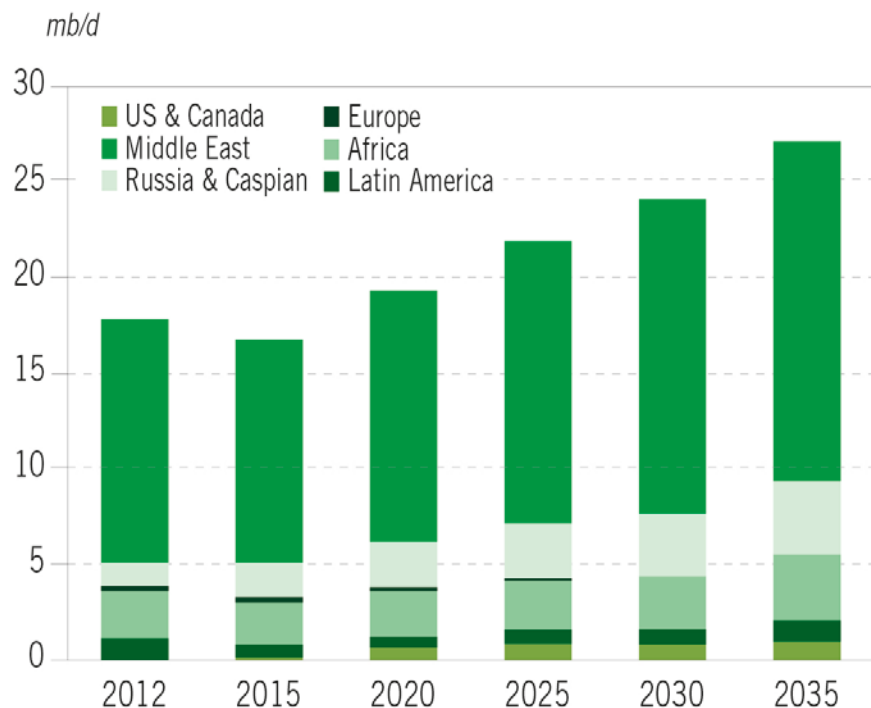


* Spare capacity based on assumed 85% utilization rate,, accounting for already closed capacity.

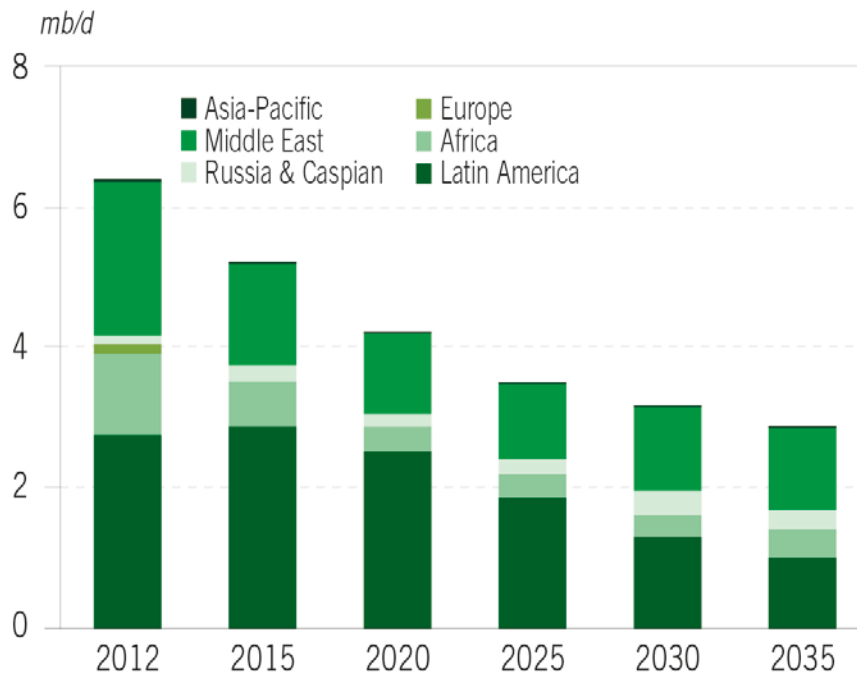
Demand increases in Asia-Pacific will re-distribute the flow of crude oil and refined products



*Crude oil imports to Asia-Pacific
by origin, 2012–2035*



*Crude oil imports to the US &
Canada by origin, 2012–2035*



- Growing Asian crude oil imports offset import declines of the US & Canada and Europe
- Projections underscore the Middle East's future role as the major crude oil exporter
- Overall eastward shift of future oil movements

Some key questions



Economy

- What are the scars of the recession?
- Is downside risk greater than upside potential?
- Sustainability of high growth in emerging economies

Demand

- How will efficiency, technology, policies, affect oil use in the transportation sector?
- Is LNG set to become a fuel for trucks and large vessels?
- How will oil use evolve in the petrochemicals sector?

Supply

- How will shale gas and tight oil supply potential play out?
- How rapidly can advanced biofuels become commercial?

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Thank you

