# World oil supply

according to **Stated Policies Scenario** of
World Energy Outlook 2019, International Energy Agency

(now even better concealed)

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# World Energy Outlook 2019

A case for trained readers of Prawda

## Stated Policies Scenario (SPS) = the new Lead Scenario

- a scenario with *today's* »policy intentions and targets«
- it replaces the previous New Policies Scenario (WEO 2018)
  a scenario with »announced policies and targets«

- IEA emphasizes that a *scenario* is not a *forecast,*
  *but* the SPS *is* treated as the probable development

- data: only in tables, without graphical representation
- the presentation file of IEAs CEO Fatih Birol does not contain any statements on the future of world oil supply

# Change of entities and designations

| WEO 2018 | WEO 2019 |
|---|---|
| oil from existing fields | conventional oil |
| oil from fields yet to be found<br>oil from fields yet to be developed | new fields |
| light tight oil | tight oil* |
| | |
| biofuels | not mentioned |
| enhanced oil recovery | not mentioned |

*Not all oils are the same, differences in quality play a significant role. Unconventional tight oil can only replace conventional oil to a very limited extent.

# World oil supply by type in the Scenarios

World Energy Outlook 2019 – clipping from Table 3.1

**Table 3.1** Global oil production by scenario (mb/d)

| | | | Stated Policies | | Sustainable Development | | Current Policies | |
|---|---|---|---|---|---|---|---|---|
| | 2000 | 2018 | 2030 | 2040 | 2030 | 2040 | 2030 | 2040 |
| Conventional crude oil | 64.5 | 67.1 | 65.1 | 61.9 | 52.7 | 36.9 | 68.5 | 70.6 |
| Existing fields | 64.5 | 67.1 | 39.6 | 25.9 | 39.6 | 25.9 | 39.6 | 25.9 |
| New fields | - | - | 25.5 | 36.0 | 13.1 | 11.0 | 28.9 | 44.7 |
| Tight oil | - | 6.3 | 12.0 | 13.4 | 10.1 | 9.2 | 13.1 | 15.5 |
| Natural gas liquids | 9.0 | 17.3 | 20.4 | 21.7 | 17.7 | 14.8 | 21.2 | 23.1 |
| Extra-heavy oil and bitumen | 1.0 | 3.8 | 4.0 | 4.9 | 3.3 | 2.9 | 4.3 | 6.3 |
| Other production | 0.6 | 0.8 | 1.3 | 1.6 | 1.2 | 1.2 | 1.5 | 2.2 |
| **World oil production** | **75.1** | **95.4** | **102.8** | **103.5** | **85.0** | **65.1** | **108.7** | **117.7** |
| *OPEC share* | *41%* | *39%* | *37%* | *39%* | *37%* | *37%* | *37%* | *39%* |
| World processing gains | 1.8 | 2.3 | 2.6 | 2.9 | 2.2 | 1.8 | 2.8 | 3.3 |
| **World oil supply** | **76.9** | **97.7** | **105.4** | **106.4** | **87.1** | **66.9** | **111.5** | **121.0** |
| **IEA crude oil price** ($2018/barrel) | **40** | **68** | **88** | **103** | **62** | **59** | **111** | **134** |

Notes: Other production includes coal-to-liquids, gas-to-liquids, additives and kerogen oil. Historical supply and demand volumes differ due to changes in stocks. See Annex C for definitions.

- The impression of continuously rising oil supply until 2040 is aroused.
- Biofuels and enhanced oil recovery (EOR)are not included in this (and the following) table.

# World oil supply in the Stated Policies Scenario

World Energy Outlook 2019, clipping from Table A.1

## Table A.1: Fossil fuel production

| | Stated Policies Scenario | | | | | | | Shares (%) | | CAAGR (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2017 | 2018 | 2025 | 2030 | 2035 | 2040 | 2018 | 2040 | 2018-40 |
| **Oil production and supply** (mb/d) | | | | | | | | | | |
| North America | 14.2 | 20.5 | 23.0 | 28.4 | 29.6 | 29.7 | 28.6 | 24 | 28 | 1.0 |
| Central and South America | 6.8 | 7.2 | 6.6 | 7.5 | 8.1 | 8.7 | 9.7 | 7 | 9 | 1.8 |
| Europe | 7.1 | 3.7 | 3.7 | 4.0 | 3.3 | 2.8 | 2.6 | 4 | 3 | -1.5 |
| European Union | 3.6 | 1.6 | 1.7 | 1.5 | 1.1 | 0.9 | 0.7 | 2 | 1 | -3.6 |
| Africa | 7.8 | 8.2 | 8.4 | 7.9 | 8.0 | 8.1 | 8.2 | 9 | 8 | -0.1 |
| Middle East | 23.5 | 31.2 | 31.7 | 32.2 | 33.6 | 34.6 | 35.6 | 33 | 34 | 0.5 |
| Eurasia | 7.9 | 14.2 | 14.5 | 14.1 | 13.6 | 13.0 | 12.4 | 15 | 12 | -0.7 |
| Asia Pacific | 7.8 | 7.8 | 7.6 | 6.9 | 6.5 | 6.4 | 6.4 | 8 | 6 | -0.8 |
| non-OPEC | 44.5 | 55.3 | 58.0 | 64.8 | 65.2 | 64.6 | 63.4 | 61 | 61 | 0.4 |
| OPEC | 30.6 | 37.5 | 37.4 | 36.2 | 37.6 | 38.7 | 40.1 | 39 | 39 | 0.3 |
| **World production** | **75.1** | **92.8** | **95.4** | **101.0** | **102.8** | **103.2** | **103.5** | **100** | **100** | **0.4** |
| Conventional crude oil | 64.5 | 66.9 | 67.1 | 66.1 | 65.1 | 63.0 | 61.9 | 69 | 58 | -0.4 |
| Tight oil | - | 4.9 | 6.3 | 10.5 | 12.0 | 13.2 | 13.4 | 6 | 13 | 3.5 |
| Natural gas liquids | 9.0 | 16.5 | 17.3 | 19.4 | 20.4 | 21.2 | 21.7 | 18 | 20 | 1.0 |
| Extra-heavy oil and bitumen | 1.0 | 3.8 | 3.8 | 3.9 | 4.0 | 4.3 | 4.9 | 4 | 5 | 1.1 |
| Other | 0.6 | 0.7 | 0.8 | 1.1 | 1.3 | 1.5 | 1.6 | 1 | 1 | 3.1 |
| Processing gains | 1.8 | 2.3 | 2.3 | 2.5 | 2.6 | 2.8 | 2.9 | 2 | 3 | 1.0 |
| **World supply** | **76.9** | **95.1** | **97.7** | **103.5** | **105.4** | **106.0** | **106.4** | **100** | **100** | **0.4** |

- No data for 2020 and 2025

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# Terms – scenarios – volume units

# Oil categories

## Conventional Crude Oil
- formerly termed as 'Existing Fields'

## Unconventional fields
- with unconventional crude oil production
  1. tight oil (formerly *light* tight oil)
  2. extra-heavy oil & bitumen
  3. other oil

## Natural Gas Plant Liquids (NGL)
= by-product from natural gas production
- not oils, but liquid natural gas components (mainly propane, butane) at low pressure
- not suitable for refining gasoline or diesel; oil substitutes (e. g. LPG)
- energy content based on volume is ≈ 70 % of crude oil

## New fields
- formerly termed as fields *yet-to-be-developed* and *yet-to-be-found*
- actually, they are fields of hope

## Processing Gains (Refinery Gains)
- volume increase of long hydrocarbon chains by splitting and addition of hydrogen,
- driven by the supply of thermal energy (from natural gas or NGL)

→ an energy consuming process and therefore ***no*** additional oil

## Former categories: EOR, biofuels
- not mentioned in oil supply tables (3.1., A.1)

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# Units: Volumes versus energy content of oil

- Typical values are in Mb/d (Megabarrel per day)
- **Natural Gas Plant Liquids** do have, in terms of volume, 30 % less energy content than the other liquids
- in the following:
  conversion of NGL production volumes into energy equivalent values: Mboe/d (Megabarrel oil equivalent per day)

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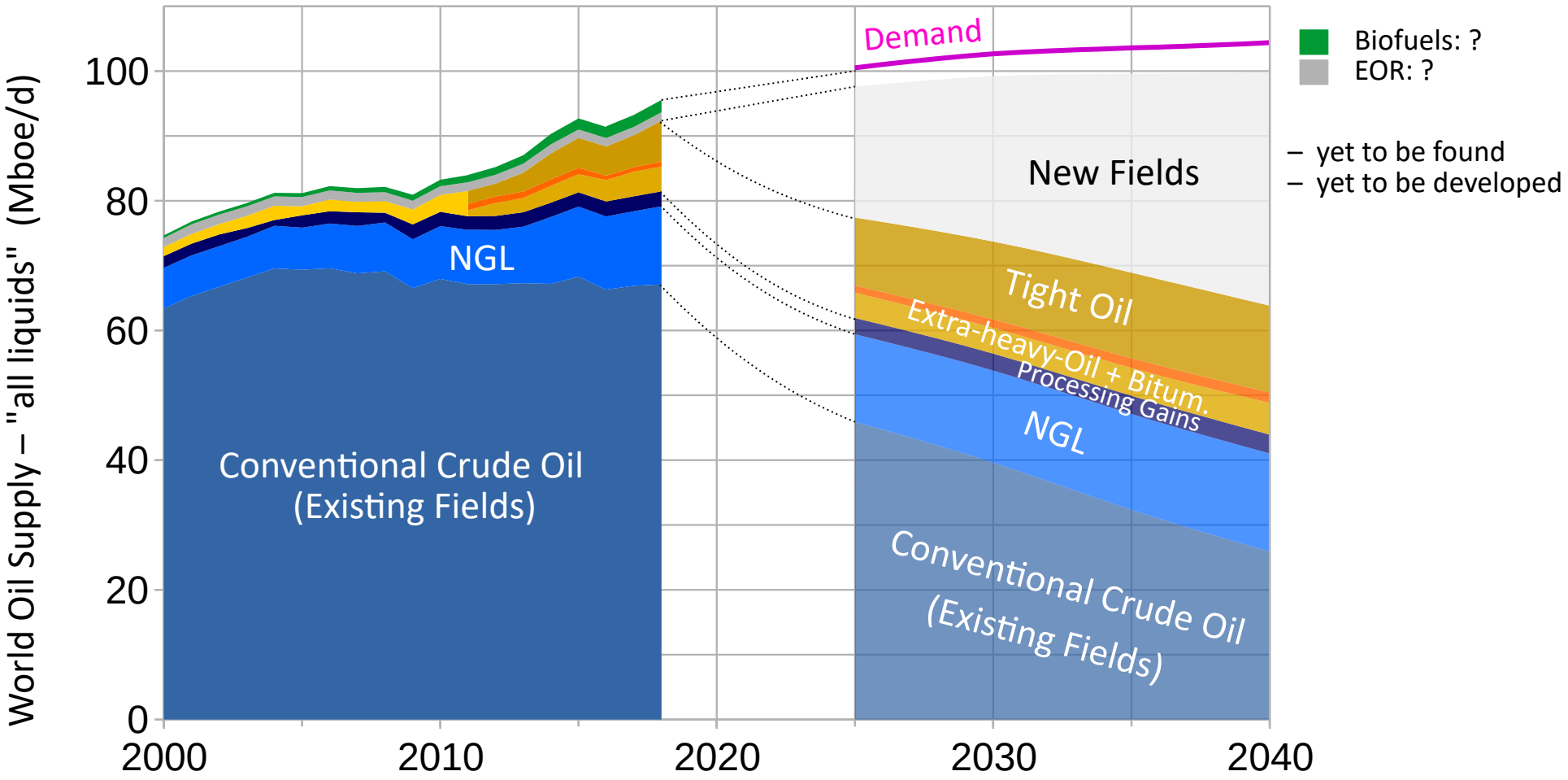
# Graphical analysis of the world oil supply

based on Tab. 3.1 and A.1 in mboe/d

# World oil supply 2000 - 2050

Stated Policies Scenario, World Energy Outlook 2019,IEA

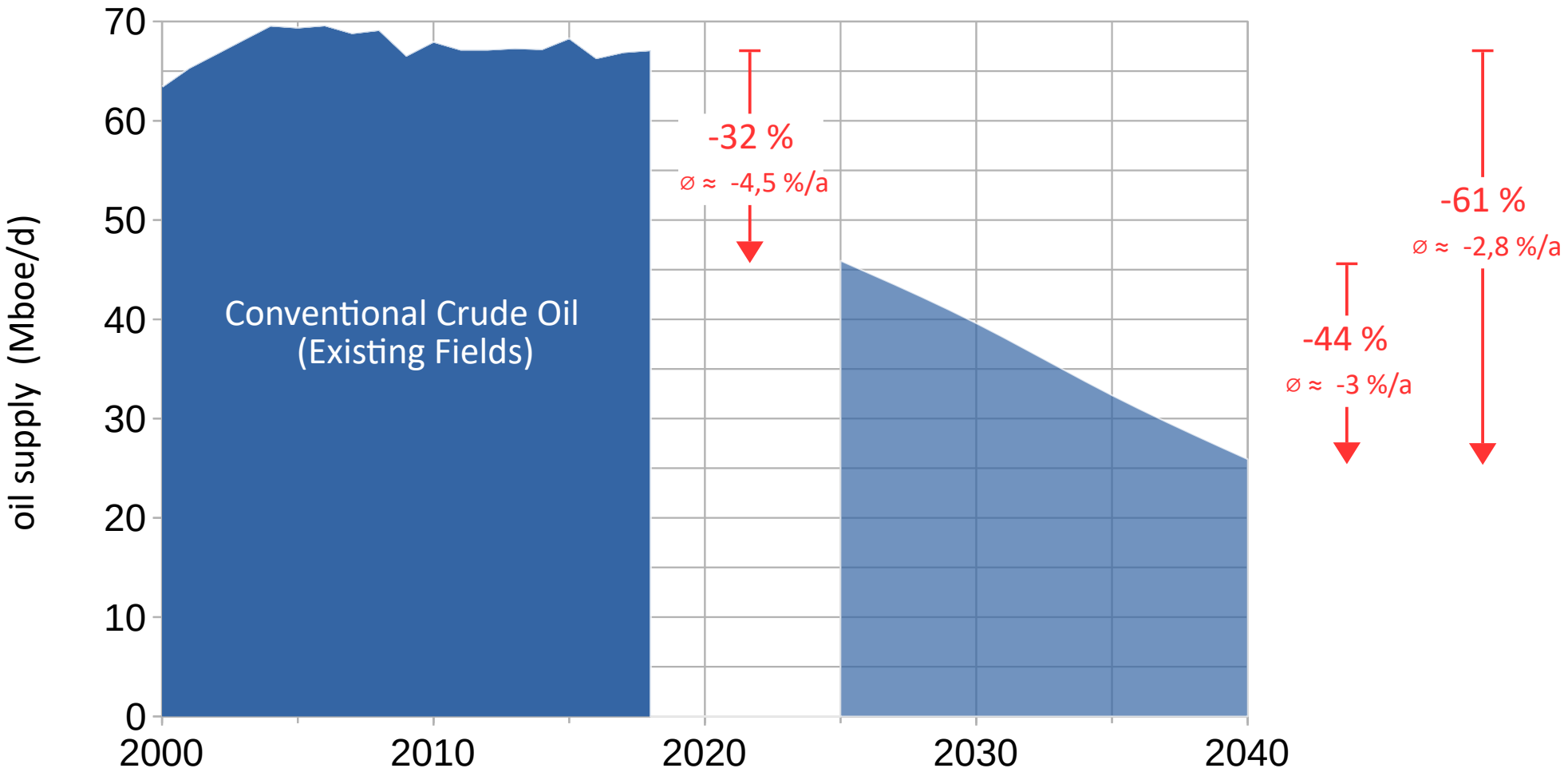



- Oil production from exisiting fields in 2025 not listed in tables; here taken from WEO 2017.
- Meeting demand appears to be possible … if New Fields will deliver.
- Obviously the peak is imminent and tables 3.1 and A.1 are a deliberate concealment.

# Some details of oil production

# Global oil supply – unconventional oil

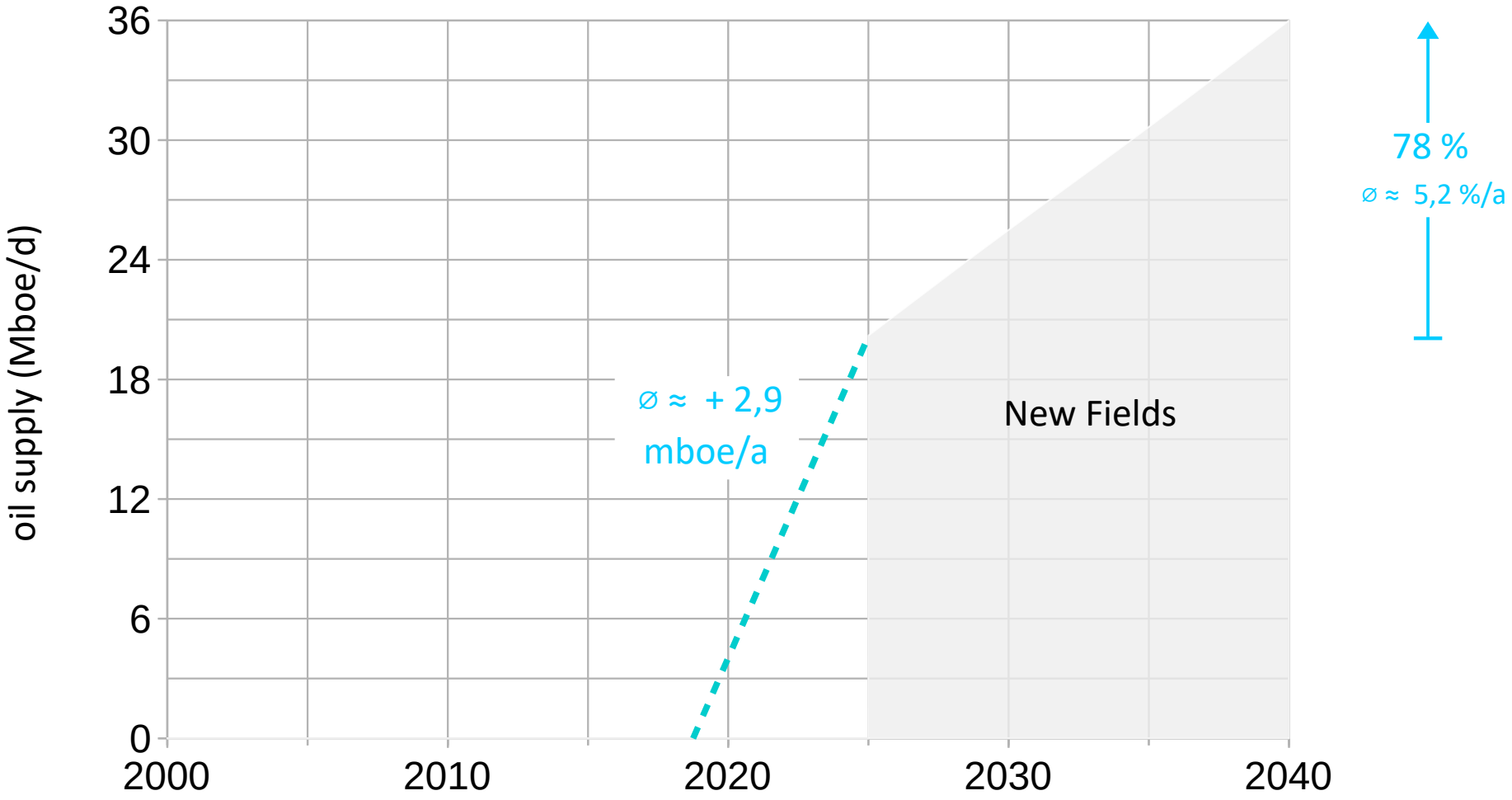
Stated Policies Scenario, World Energy Outlook 2019




- Conventional oil is expected to decline dramatically between 2018 and 2040

# Global oil supply – New Fields

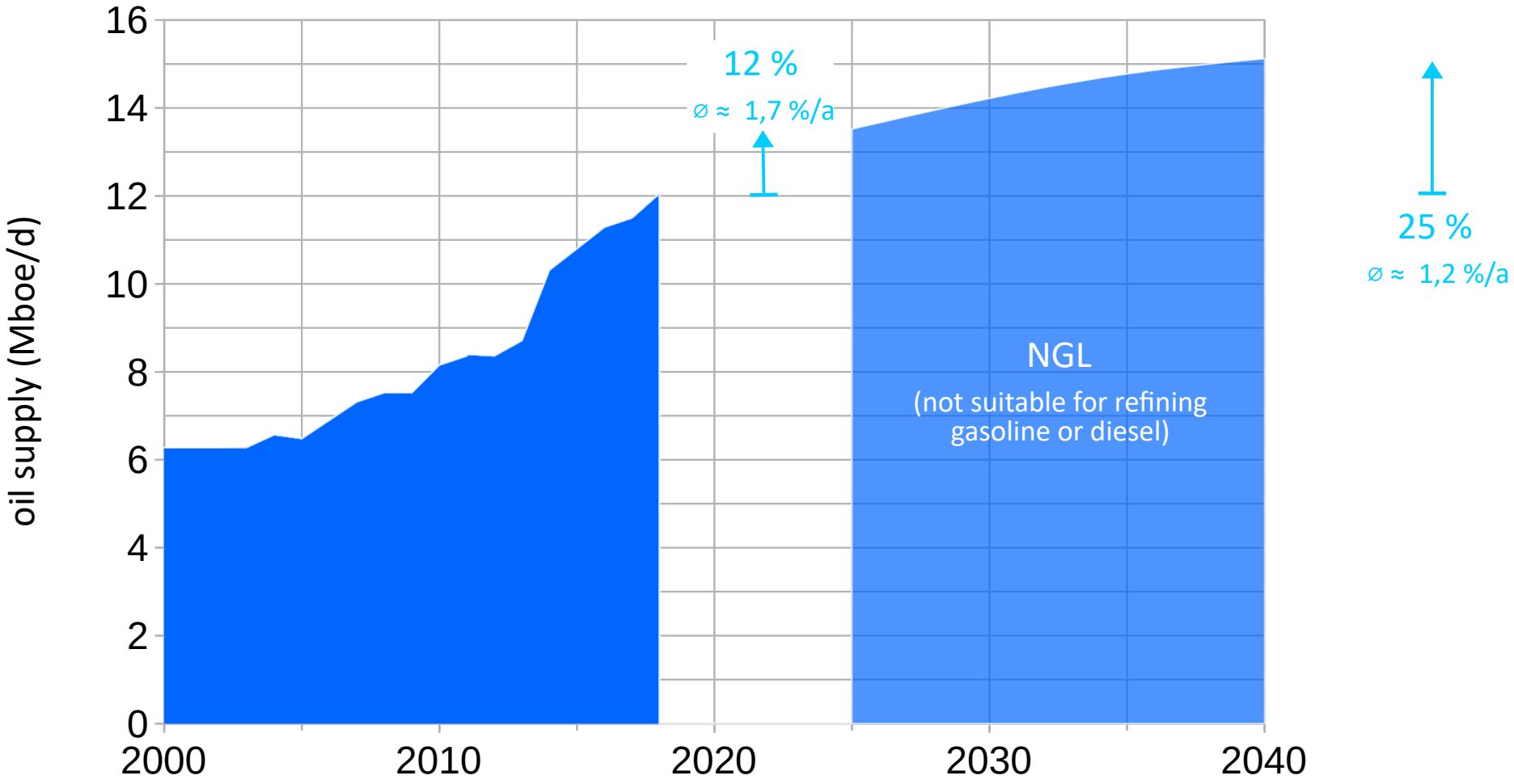
Stated Policies Scenario, World Energy Outlook 2019




- Production of New Fields is expected to rise with + 2,9 mboe/a between 2018 and 2025 and afterwards to rise with ≈ 1,1 mboe/a for 15 years.
- Production of new fields in 2025 = production of 2 Saudi Arabias!

# Global oil supply – Natural Gas Plant Liquids

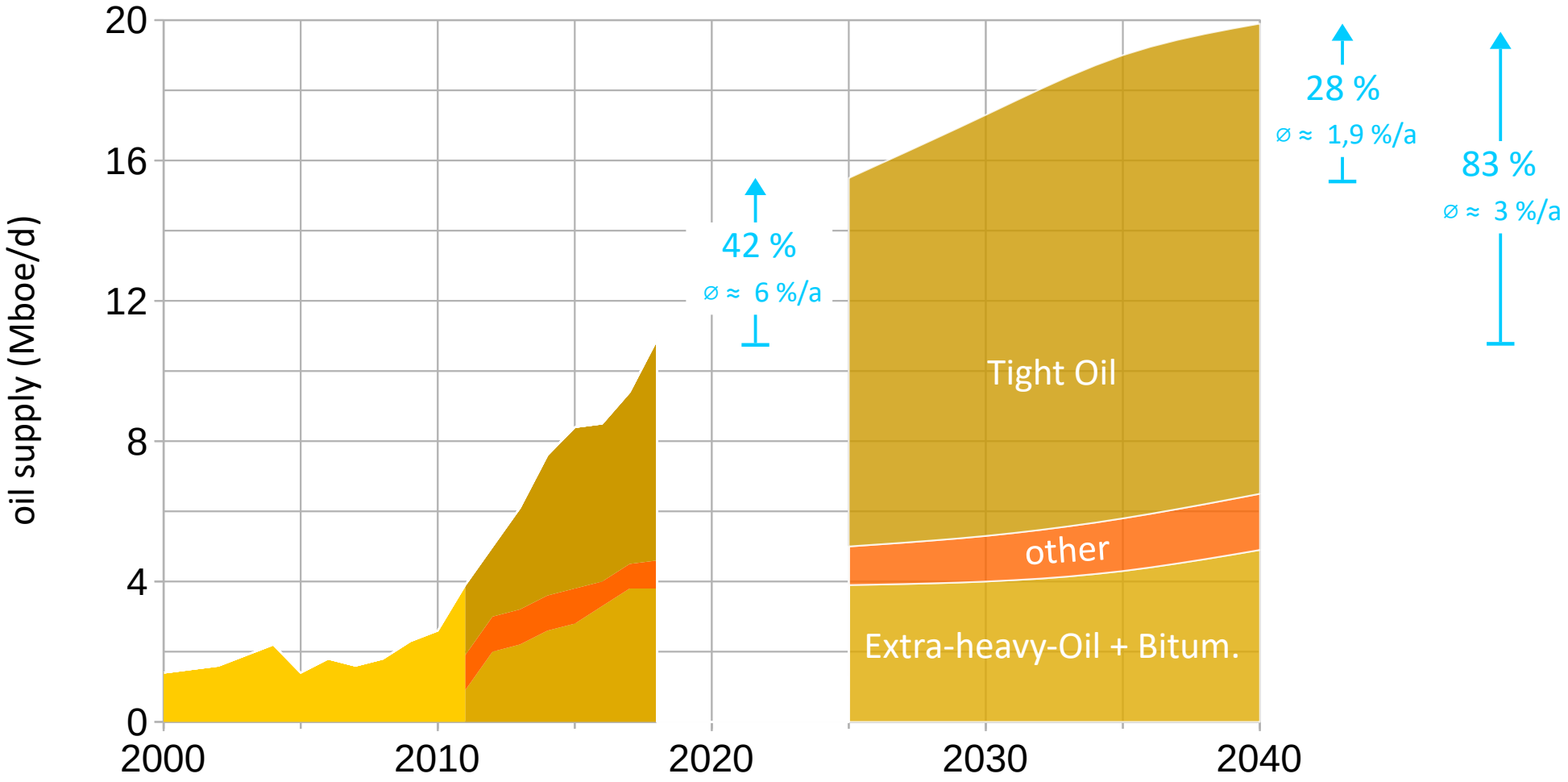
Stated Policies Scenario, World Energy Outlook 2019




- NGL production is expected to rise moderately between 2018 and 2025 and a little bit less between 2025 and 2040.

# Global oil supply – unconventional oil

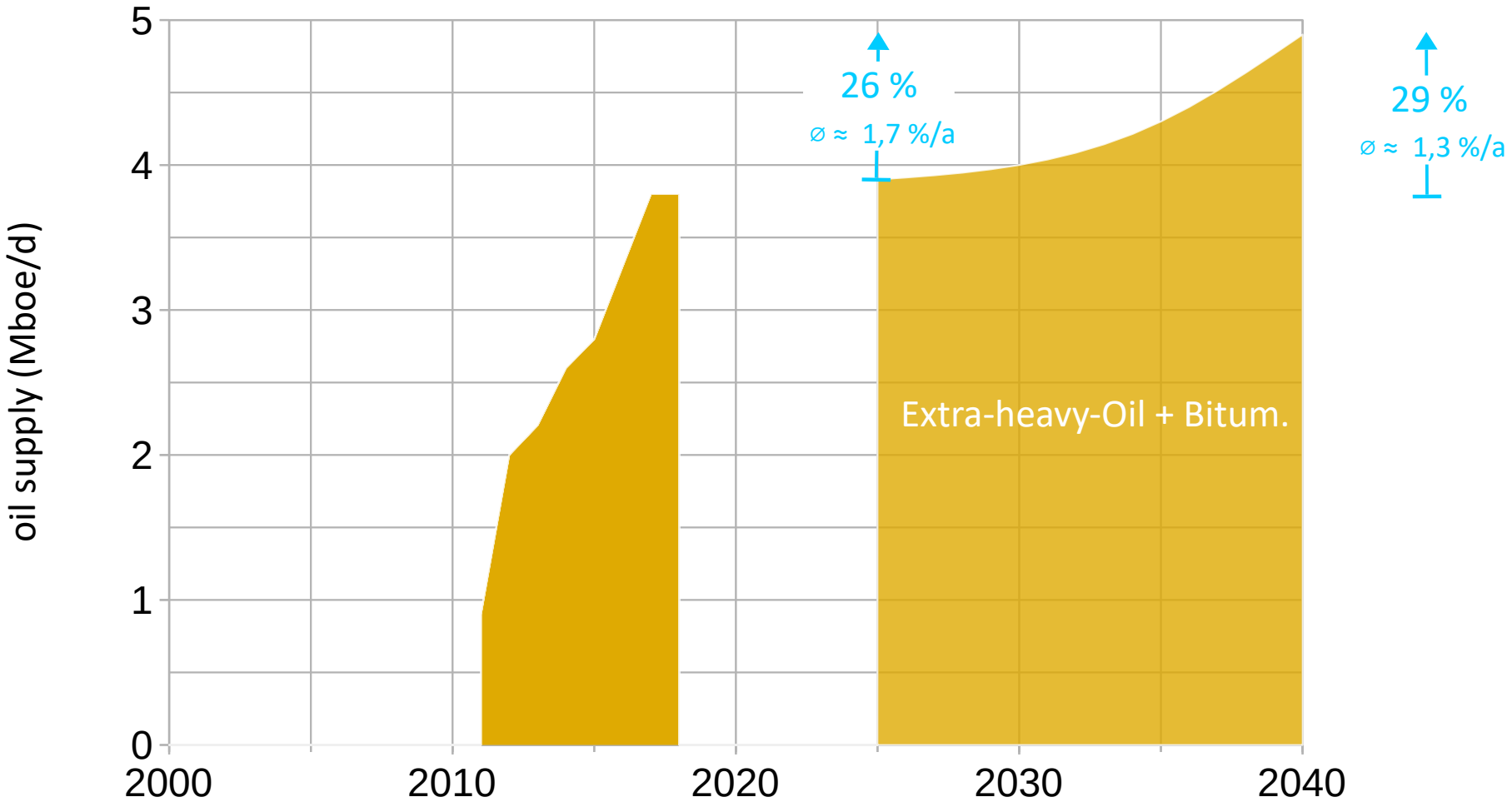
Stated Policies Scenario, World Energy Outlook 2019




- Unconventional oil production is expected to rise strongly between 2018 and 2025.
- Details: see following pages

# Global oil supply – unconventional oil

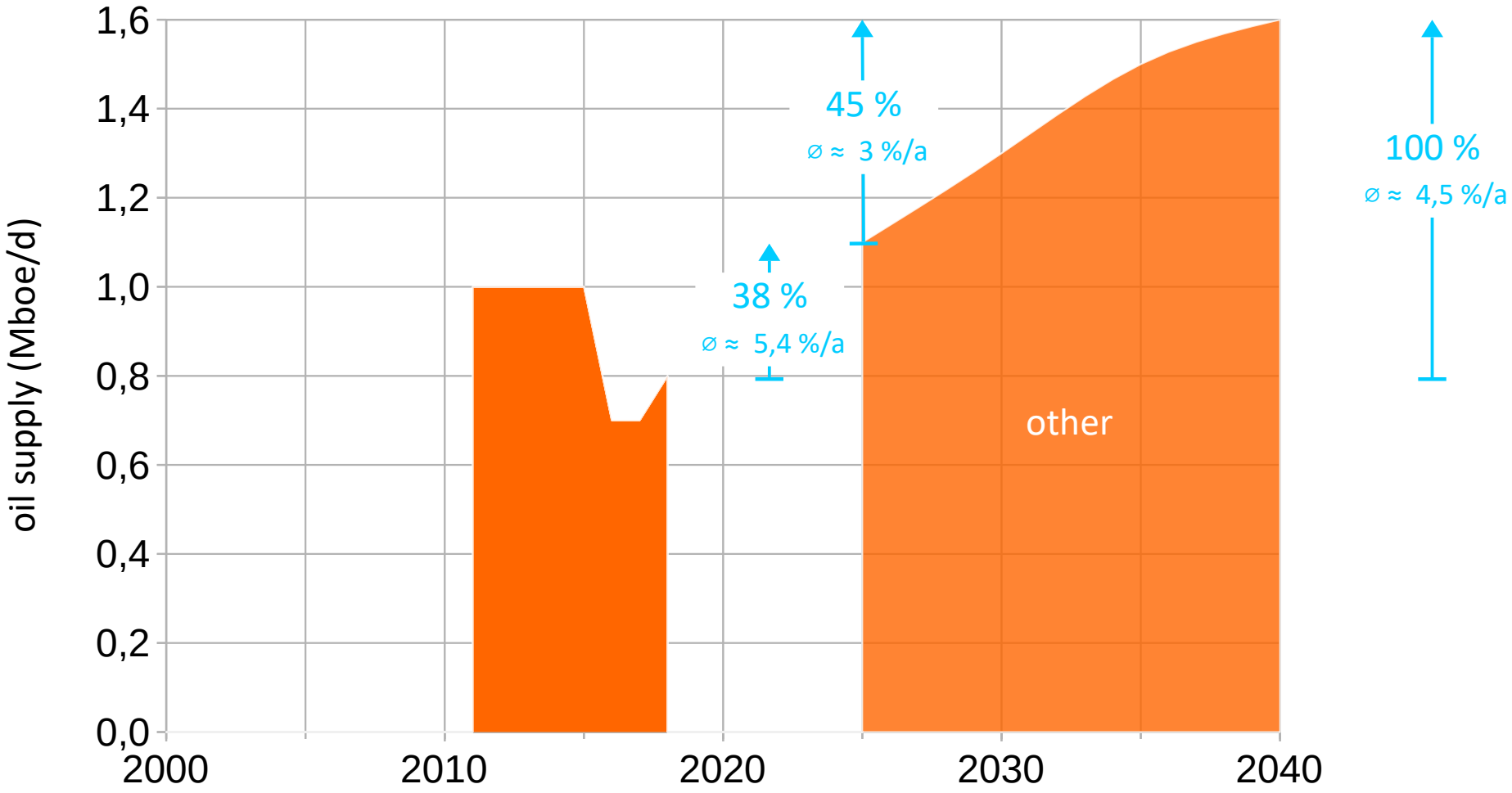
Stated Policies Scenario, World Energy Outlook 2019




- Extra heavy oil and bitumen production is expected to rise very slowly between 2018 and 2025 and moderatly between between 2025 and 2040.

# Global oil supply – unconventional oil

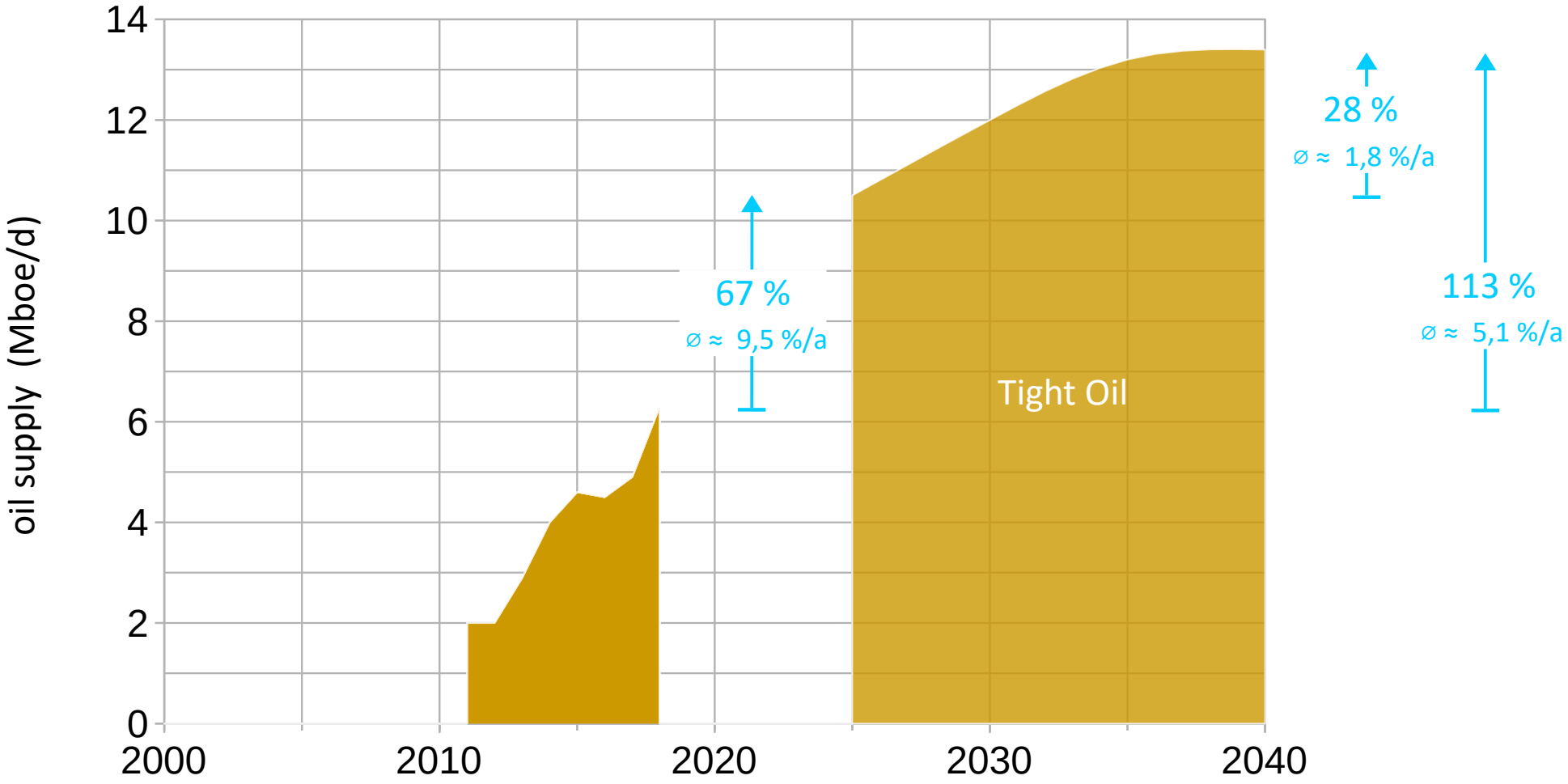
Stated Policies Scenario, World Energy Outlook 2019




- Other oil production is expected to rise strongly between 2018 and 2025 and moderately between 2025 and 2040.

# Global oil supply – unconventional oil

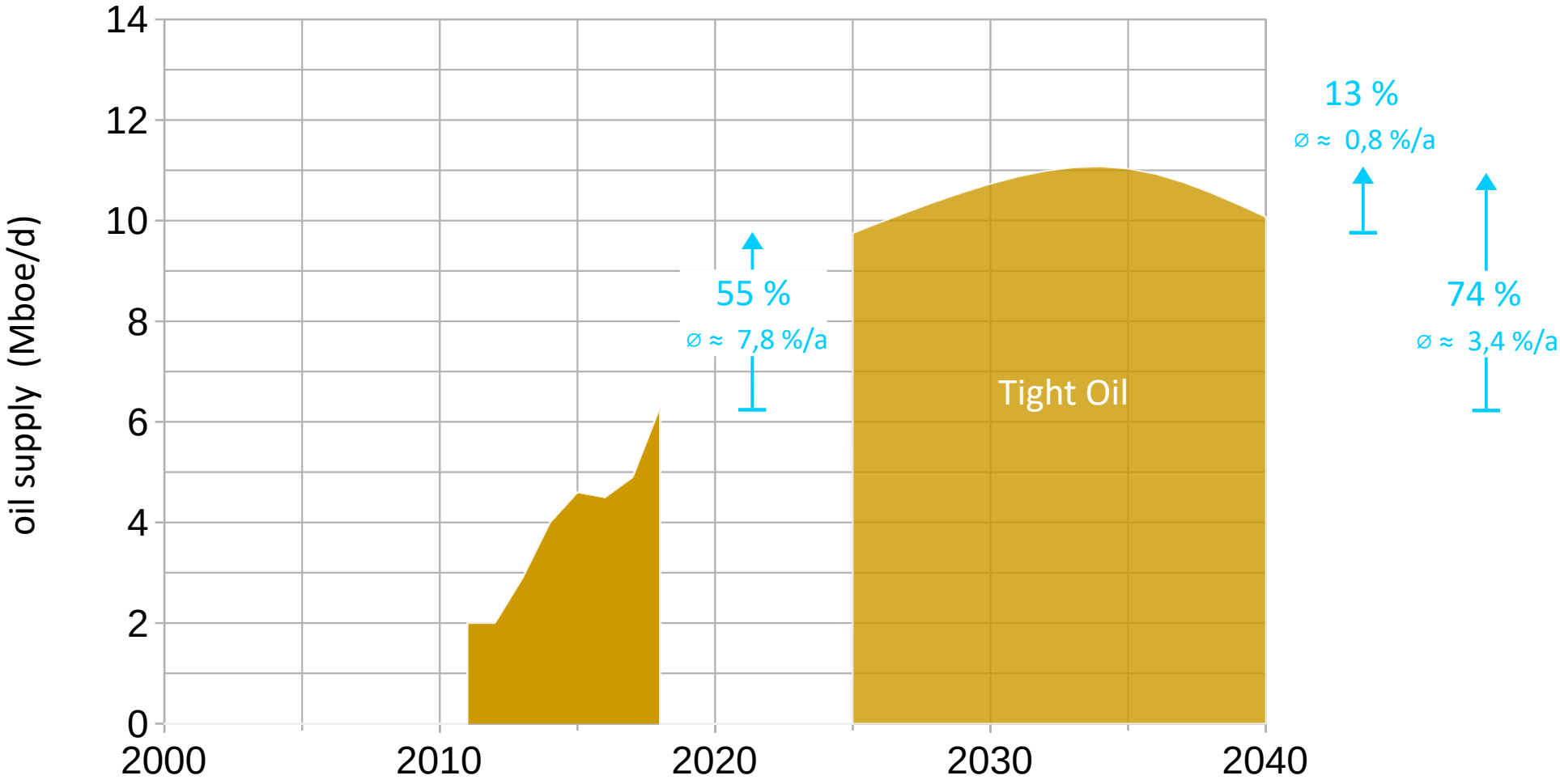
Stated Policies Scenario, World Energy Outlook 2019 – according to Tab. A.1




- Production is expected to rise enormously between 2018 and 2025, peak after 2036 ≈ 13,3 mb/d
- Tight oil can only replace conventional oil to a very limited extent.
- Unlikely scenario: ther are many indications for a peak in US in 1 to 3 years followed by a decline

# Global oil supply – unconventional oil

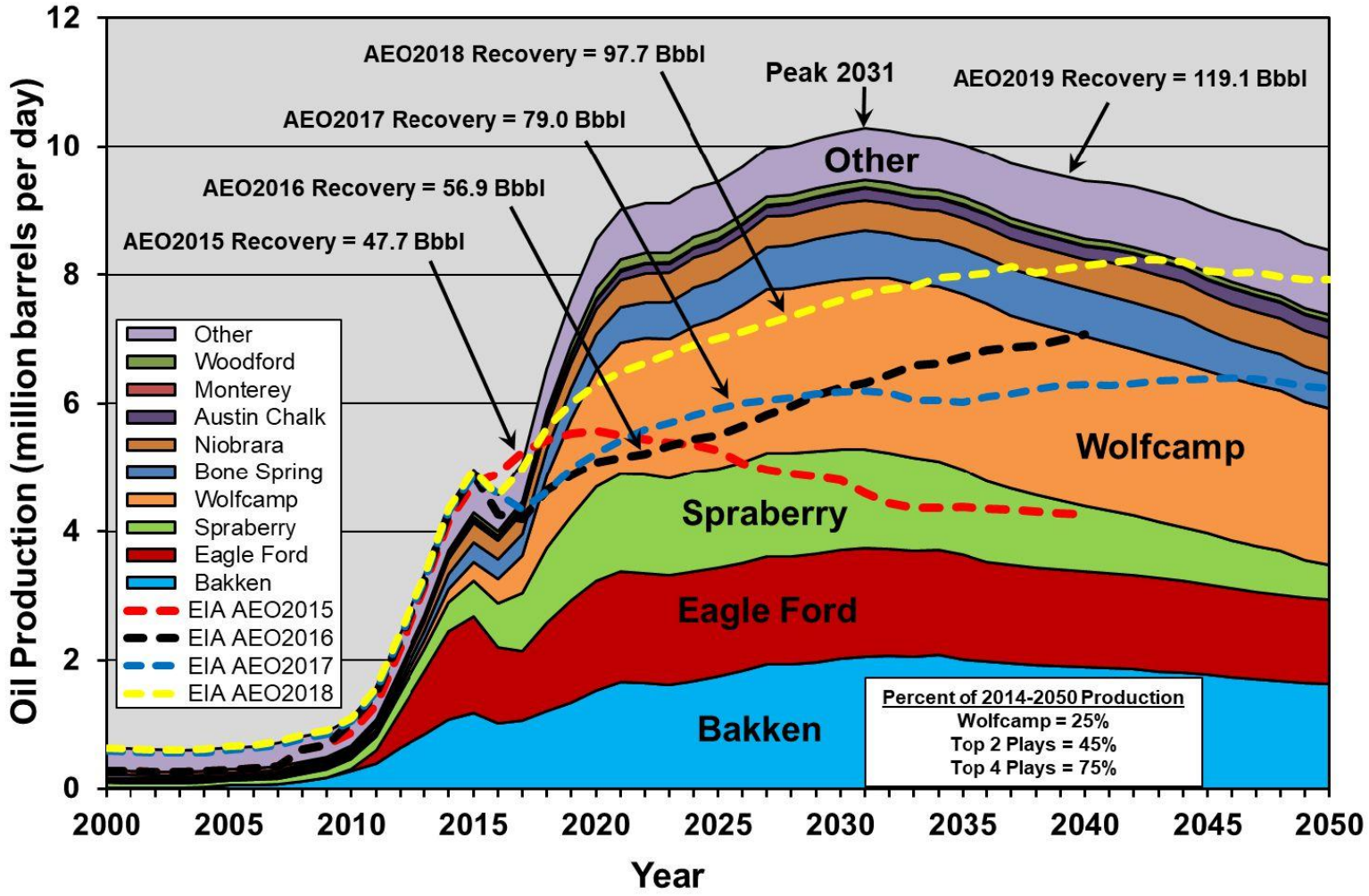
Stated Policies Scenario, World Energy Outlook 2019 – according to Fig. 3.12




- An alternative projection in the same report
- Peak 2036 ≈ 11 mb/d (less than in table 3.1 – how come?), followed by a decline

# U.S. tight oil production by play in EIA AEO2019 reference case forecast compared to earlier forecasts.

Shale Reality Check 2019, Fig. 4 – J. David Hughes

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*(data from EIA AEO2015, AEO2016, AEO2017, AEO2018 and AEO2019)*

- … another projection (only for comparisson)
- Peak 2031 ≈ 10,2 mb/d followed by a decline.

# Conclusions

**Impression delivered by the Stated Policies Scenario in 2 tables**

- »Global oil demand will be met until 2040!«

**Graphical analysis shows**

- the peak is imminent
- conventional crude oil will have
  - a strong decline between 2018 and 2025
  - and a lower decline between 2015 and 2040
- therefore ‘New Fields’ and ‘(Light) Tight Oil’
  - require high growth rates between 2018 and 2025
  - require lower growth rates between 2025 and 2040
- Production of New Fields 2025 = production of 2 Saudi Arabias

- The signs are on the wall, but the IEA doesn't want to publish them!