Key insights (1/2)

- **Global oil demand** is seen moving past the COVID shock in 2023 and is forecast to grow by 1.6 mb/d.

  The 2023 demand growth is mainly driven by a cautious rather than excessive optimism in Chinese demand that is expected to register a strong recovery in H2.

- **Global oil supply** growth is expected to slow in 2023 closer to its 2010-2019 average and grow y/y by 1.6 mb/d.

  Russian crude production is forecast to fall y/y by 530,000 b/d to 10.1 mb/d by year-end, from 10.9 mb/d in Dec-22, with disruptions peaking at 1 mb/d in Q2 from 200,000 b/d currently (vs Jan/Feb-22).

  We expect the disruptions in Russia’s total crude and products exports to rise to 850,000 b/d compared to pre-war levels, of which 62% of the total will originate from the products-side and 38% from the crude-side. Refinery runs are expected to fall to 4.9 mb/d in 2023 from 5.4 mb/d in 2022.
**Key insights (2/2)**

- The oil market is projected to remain relatively balanced in 2023, building a small 300,000 b/d surplus. 2023 is shaping up to be a year of two halves but market uncertainty remains elevated.

  Global oil demand outcomes and the eventual realization of Russian supply disruptions remain the key sources of uncertainty.

- The **Reference forecast for Brent** stands at $95.7/b in 2023 from $99.8/b in 2022, but the balance of risks remains tilted to the downside.

  The Brent price band ranges between $79.9/b and $107.6/b annually, with downside demand-risks remaining dominant throughout the outlook but easing as we move towards H2.

  Q2 appears the most at risk as the weakest quarter to the balance in 2023 with prices dragged to the mid-$70s, but $100/b could still return by May if balances tighten faster.
China oil outlook
A strong recovery in H2

China’s oil demand is projected to grow by 670,000 b/d in 2023, following a contraction by 400,000 b/d in 2022, as growth is expected to accelerate in H2.

China oil demand

Source: OIES
A pro-growth policy environment

China GDP growth

Source: Oxford Economics, IMF
But confidence will be key

Growth rate of investment in real estate development

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan to Dec 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>21*</td>
<td>(% vs JAN-22)</td>
</tr>
<tr>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Feb</td>
<td>4</td>
</tr>
<tr>
<td>Mar</td>
<td>2</td>
</tr>
<tr>
<td>Apr</td>
<td>(2)</td>
</tr>
<tr>
<td>May</td>
<td>(4)</td>
</tr>
<tr>
<td>Jun</td>
<td>(6)</td>
</tr>
<tr>
<td>Jul</td>
<td>(8)</td>
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<tr>
<td>Aug</td>
<td>(10)</td>
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<tr>
<td>Sep</td>
<td>(12)</td>
</tr>
<tr>
<td>Oct</td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td></td>
</tr>
<tr>
<td>Dec</td>
<td></td>
</tr>
</tbody>
</table>

Source: NBS

Per capita disposable income

<table>
<thead>
<tr>
<th>Year</th>
<th>Per Capita disposable income</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>Nationwide</td>
</tr>
<tr>
<td>2022</td>
<td>Urban households</td>
</tr>
<tr>
<td></td>
<td>Rural households</td>
</tr>
</tbody>
</table>

Source: NBS

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Broad based demand recovery: is diesel really that strong?

China apparent demand by product

Source: Argus, OIES

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More refinery starts in a pro-growth environment

China refinery runs

- MB/D
- 2017-2021 range
- 2022
- 2021
- 2020
- 2019

Source: Argus

China refinery expansions

- KB/D, Y/Y
- Net refinery capacity expansions

Source: Argus, OIES

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A softer approach to Shandong?

Shandong refinery runs

- Units: MB/D
- Data sources: Argus

China crude import quotas

- Units: MBBLs
- Data sources: Argus

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Front loading growth or a policy reversal?

China crude imports by origin

China product exports

Source: Kpler

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Ongoing debate about product exports

China product exports to EU-27

China products export quotas

Source: Argus

Source: Kpler
Russia supply outlook
Russia’s supply disruptions in 2023 could undershoot consensus

Russia’s crude oil production is expected to decline by 530,000 b/d to 10.2 mb/d in 2023, from 10.7 mb/d in 2022, with disruptions averaging 850,000 b/d for the year compared to pre-war Jan/Feb-22 levels.

Russia oil production scenarios

Source: OIES
Disruptions in product flows and Druzhba crude will be the main source of the expected curbs

The disruption in product exports aggravated by a small contraction in domestic demand are expected to account for roughly 60% of total disrupted supplies in 2023, while crude exports for the remaining 40%.

**Russian supply disruptions by source**

<table>
<thead>
<tr>
<th>Source</th>
<th>MB/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seaborne crude</td>
<td>0.45</td>
</tr>
<tr>
<td>Pipeline crude</td>
<td>0.27</td>
</tr>
<tr>
<td>Seaborne products</td>
<td></td>
</tr>
<tr>
<td>Domestic products</td>
<td>0.10</td>
</tr>
<tr>
<td>Total</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Notes: Estimated disruptions as compared to pre-war Jan/Feb-22 levels.
Source: OIES
Russia’s seaborne crude exports will remain resilient

Russia seaborne crude oil exports by destination

Source: Kpler, OIES

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With China and India remaining the two main customers but the Chinese pivot potentially accelerating in 2023

Russia seaborne crude oil exports shifts

Source: OIES

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The size of shadow tanker fleet a catalyst in 2023

Global shadow tanker fleet by type

- VLCC
- Suezmax
- Aframax
- LR2
- Panamax
- LR1
- MR2
- MR1
- Flexy
- Intermediate
- Small
- Total

Source: BRS/AXSMarine

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2020 was a particularly tough year for US shale producers.

**Russia pipeline crude exports**

- Germany
- Poland
- Czech Rep.
- Slovakia
- Hungary
- China

**Druzhba pipeline crude exports**

- Druzhba Urals

Source: Argus, OIES

Druzhba exports expected to be halved

Source: Argus

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Russia will find it more difficult to market its products than crude, while losing access to a key market.
The main off-takers of Russian products will be Asia and Africa, with Turkey becoming a wildcard.

Russia seaborne products export shifts

Source: OIES

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FO and gasoil/diesel account for 75% of total product shifts rerouted mainly to Asia and Northern Africa respectively.

Russia seaborne products export shifts by product/destination

Source: Kpler, OIES
Russia will struggle to redirect half of the total EU banned volumes of product exports to new buyers.

Notes: Other Europe (EUR) includes Turkey. Based on Russian product exports to EU-27 as of Jan-23.
Source: OIES
Russian refinery runs to decline with expected demand pick-up in H2 to set a floor

We project Russian refinery runs to fall y/y by 510,000 b/d to 4.9 mb/d in 2023, after a 170,000 b/d y/y decline to 5.4 mb/d in 2022.

Russia refinery runs

Source: Argus, OIES
Clean products except gasoil are expected to see the largest disruptions with FO output expected to hold. 2020 was a particular tough year for US shale producers.

Russia refinery output by selected products

Source: Argus, OIES

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Russian supply disruptions to accelerate through May with a slow-moving reversal likely in H2
Oil market outlook
Key assumptions: OPEC+ policy remains unchanged

OPEC+ target supply remains unchanged until the end of 2023, with OPEC crude forecast to grow only by 300,000 b/d in 2023 compared to 2.6 mb/d in 2022.

Notes: Missing drilling activity data for Iran and Equatorial Guinea.
Source: Baker Hughes, OIES
Key assumptions: No Iranian return

Our reference case assumes no progress in the Iranian nuclear negotiations in 2023 and sanctions remaining in effect for the year, with Iran crude output averaging 2.6 mb/d up by 100,000 b/d y/y.

Iran supply

Source: Kpler, TankerTrackers, OIES

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Key assumptions: A deeper and prolong global economic recession will be avoided

Baseline global GDP growth forecast for 2023 stands at 2% from 3.2% in 2022, on a PPP-weighted basis, 0.9% lower compared to IMF’s January update to 2.9% from 2.7% previously.

Global GDP growth

Notes: Global GDP forecasts are reported on a purchasing-power-parity (PPP) weighted basis. Source: Oxford Economics, IMF
Demand outlook is upgraded on less pessimism and China’s faster than anticipated reopening.

Global oil demand growth outlook is upgraded by 150,000 b/d to 1.6 mb/d in 2023, from 1.5 mb/d anticipated previously.

**Global oil demand**

Source: OIES

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Chinese demand to return as the main engine of growth in 2023, with India’s robust growth supporting the outlook.

Global oil demand growth

- Americas: 0.2 0.2
- Europe: (0.0) 0.3
- APAC: 0.1 0.1
- OECD: 0.3 0.3
- China: 0.7 0.7
- India: 0.7 0.7
- Other: 0.4 0.4
- Non-OECD: 1.3 1.3
- World: 1.6 1.6

Source: OIES
After rising 4.7 mb/d in 2022, global oil supply growth is projected to slow to 1.6 mb/d in 2023, with non-OPEC crude outside OPEC+ accounting for most of the gains.
US crude will account for over 60% of the growth gains, with Brazil, Canada and Norway also contributing.

2020 was a particular tough year for US shale producers.

Global oil supply growth

Source: OIES

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The oil market to remain relatively balanced in 2023

2023 is shaping up to be a year of two halves with an expected 1.5 mb/d surplus in H1 offset by a -900,000 b/d deficit in H2, leaving the market to a 300,000 b/d surplus for the year as a whole.

Global balance

Source: OIES

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Market uncertainty remains elevated with global balance risks favoring weaker market conditions

Global balance risks

Source: OIES
Global oil demand growth prospects remain a key wildcard but downside risks ease

Risks to the reference demand outlook remain tilted to the downside, particularly in the near-term, but the low/high range for 2023 is uplifted between 1 mb/d and 1.9 mb/d.

Global oil demand prospects in 2023
OECD stock builds are accelerating but commercial stocks are not expected to clear above their 5-year average in 2023.

OECD commercial stocks vs 5-year average

Source: OIES
Price outlook
Price outlook strengthens further ahead in 2023

Our Reference forecast for Brent in 2023 stands at $95.7/b, from $99.8/b in 2022, but the Brent Prospect that takes into account the uncertainty underlying the reference outlook remains $5.1/b lower at $90.6/b.

Brent price outlook

Source: OIES
The balance of risks remains tilted to the downside

The Brent price band in 2023 ranges between $79.9/b and $107.6/b annually, with downside demand-risks remaining dominant throughout the outlook but easing as we move towards H2.

Balance of risks

Notes: Brent price.
Source: OIES
Q2 appears the most at risk as the weakest quarter to the balance in 2023 with prices dragged to the mid-$70s.

Downside risks are mainly associated with a longer period of global growth weakness and/or a slower pace of China’s recovery, but also a lower realization of Russian supply disruptions on the supply side.

**Decomposition of downside price risks**

**Notes:** Brent price.

*Source: OIES*
$100/b could still return by May if balances tighten faster

Upside risks reflect a stronger V-shaped Chinese recovery amid tighter supplies on larger-than-anticipated Russian disruptions or a surprise weakness in non-OPEC crude, while geopolitical risks remain elevated.

**Decomposition of upside price risks**

Notes: Brent price.
Source: OIES.
Azerbaijan - Armenia conflict: energy implications of a potential escalation

Bassam Fattouh
Director, OIES

Andreas Economou
Head of Oil Research

Michal Meidan
Head of China Energy Research