Global Energy Weekly

Non-OPEC supply low cost but not low risk

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Commodities
Global

Global Commodity Research
BofA Europe (Madrid)

Warren Russell, CFA
Commodity Strategist
BofAS
+1 646 855 5211

Francisco Blanch
Commodity & Deriv Strategist
BofA Europe (Madrid)
+34 91 514 3070

Rachel Wiser
Commodity Strategist
BofAS
+1 646 743 4069

Michael Widmer
Commodity Strategist
MLI (UK)
+44 20 7996 0694

See Team Page for List of Analysts

Non-OPEC project pipeline looks robust on the surface…

Oil prices have fallen from the highs of 2022 but remain elevated on a spot and forward basis versus the past decade. With 5-year forward Brent trading near $70/bbl, oil producers are economically incentivized to continue drilling activity at existing fields and to move forward with new upstream projects. Drilling activity has recovered steadily since 2020, and now the global rig count is just 15% below pre-Covid levels, led by a recovery in non-OPEC. The rebound in activity brought non-OPEC decline rates down from high levels of ~9% in 2020 to ~2% in 2022 and 2023. Yet, new, long-cycle upstream projects and activity in the short-cycle shale basins also play important roles in offsetting base production declines and determining the path of global supply.

…driven by Latin America and deepwater oil projects…

Since 2021, energy companies sanctioned development of major non-OPEC projects with more than 28bn bbl of liquids reserves, a pace comparable to the previous six years combined. These FID'd projects and anticipated future projects could deliver 2mn b/d of new non-OPEC capacity additions (peak) annually in 2024-29, up from 1.84mn b/d during 2018-23 but down from 2.1mn b/d during 2012-17. Brazil accounts for roughly 460k b/d or 23% of the total, thanks to an extensive lineup of pre-salt projects. Guyana is also set to add 200k b/d of capacity annually from the prolific Stabroek block. Other noteworthy capacity additions come from the US (ex-shale), Russia, and Mexico, which could add 230k b/d, 270k b/d, and 100k b/d, respectively. Deepwater projects account for ~56% of capacity additions in 2024-29, up from 48% in 2018-23 and 26% during 2012-17.

…but geopolitics, project complexity are understated risks

Project timelines frequently change, with some projects delayed and others fast tracked. Thus, supply has a way of surprising to the upside in some places and to the downside in others over the medium term. Rising dependence on deepwater projects, which are technically challenging, creates downside supply risk. Indeed, Brazil has fallen behind its pre-salt FPSO start-up timelines on multiple occasions since 2010. US GoM producers are pioneering development of ultra-high-pressure reservoirs, which could also lead to unexpected delays. Geopolitical tensions create risk too. Venezuela's challenge to Guyana's borders creates risk to its offshore prospects, even if escalation is unlikely.

Middle East tensions, Russia sanctions dislocate oil flows

Also, Russia sanctions already triggered a major re-routing of oil flows away from the Mediterranean (Europe) into the Red Sea (Asia), expanding global supply chains. Plus, recent Houthi attacks on vessels have been tempered by spare shipping capacity (see our Freight Fright report), although we see growing upside risks in petroleum fuels, such as diesel. Should Middle East tensions persist throughout 2024, oil shipping routes may lengthen further. Oil output and developments could be disrupted altogether (see our report, Will geopolitics Trump fundamentals?). If global balances go on to shift from a projected surplus into a deficit, Brent crude prices would exceed our projected averages for $80/bbl in 2024 and 2025.

For abbreviations and acronyms, see the end of this report.

Timestamp: 29 January 2024 02:56PM EST

Exhibit 1: BofA Commodity Research Themes and Outlook
Key takeaways

	View	Recent reports
Macro outlook	▪ Our economists see world GDP rising 3% in 2023 and expanding by 2.8% in 2024.	
WTI and Brent crude oil	▪ We project Brent and WTI to average $80/bbl and $75/bbl, respectively, in 2024. ▪ The global oil balance should remain in a mild surplus during 2024, as OPEC+ withholds more supply from the market to counteract slowing demand growth ▪ We forecast global demand growth of 2.3mn b/d YoY in 2023 and 1.2mn b/d in 2024. ▪ Non-OPEC supply should grow roughly 2.24mn b/d YoY in 2023 and 1.35mn b/d in 2024. ▪ We project total US crude and NGL supply to rise 1.5mn b/d in 2023 and 700k b/d in 2024. ▪ OPEC crude oil supplies are set to fall 470k b/d in 2023 and 260k b/d in 2024 as OPEC+ actively manages balances	• Can (geo)politics Trump fundamentals? 04 January 2024 • The grind of the oil bulls 26 September 2023 • Money breaks oil's back 08 May 2023 • OPEC+'s whatever it takes moment 05 April 2023 • Global Energy Paper: Medium-term oil outlook 26 February 2023
Atlantic Basin oil products	▪ Refined product markets face risks from OPEC+ cuts, a looming recession, and the pace of global refining capacity growth. ▪ We forecast RBOB-Brent to average $13/bbl in 2024, and we see ULSD-Brent cracks averaging $26/bbl over the same period. ▪ OPEC+ cuts, rising complex refining capacity, lower gasoline and diesel cracks create upside for 3.5% fuel oil cracks, which we see averaging -$12/bbl in 2024.	• Waiting for Dangot(e) 31 October 2023 • Diesel weasels out of a cyclical downturn 29 August 2023 • In the fuel oil market, high sulfur is king 31 July 2023
US natural gas	▪ US gas supply and demand growth should hit 1.6Bcf/d and 2.6Bcf/d YoY in 2024, pushing stocks to 3.95Tcf by October. ▪ We forecast US Henry Hub natural gas prices will average $3/mmbtu in 2024	• US nat gas rollercoaster nears the bottom 17 February 2023
LNG	▪ LNG supply growth is manageable from historical view at 10MMT in 24 and 16MMT in 25, leaving demand to dictate future price path ▪ JKM and TTF should average $15/MMBtu and €50/MWh in 2024, but they could easily hit $25/mmbtu or €100/MWh on cold weather	• Liquid gas can float and fly. So can oil 17 October 2023 • LNG is now a buyer's market 17 April 2023
Thermal coal	▪ Seaborne coal prices pulled back on softer balances. Yet, China has come back in earnest, more than doubling thermal coal imports ▪ We are constructive in 2024 on strong Asian demand and declining Russian supply	• China coal floors global gas 05 September 2023 • King coal loses its crown 31 March 2023

Source: BofA Global Research estimates

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Exhibit 2: BofA Global Research Commodity Price Forecasts
(period averages)

	units	1Q23F	2Q23F	3Q23F	4Q23F	2023F	1Q24F	2Q24F	3Q24F	4Q24F	2024F
WTI Crude Oil	($/bbl)	76	74	82	82	**78**	73	75	77	75	**75**
Brent Crude Oil	($/bbl)	82	78	86	86	**83**	78	80	82	80	**80**
US NY Harbor ULSD (HO) Cracks to Brent Crude Oil	($/bbl)	41	25	40	37	**36**	30	25	25	25	**26**
US RBOB Cracks to Brent Crude Oil	($/bbl)	23	31	29	7	**22**	11	21	14	7	**13**
NWE Low Sulphur Gasoil Cracks to Brent Crude Oil	($/bbl)	31	17	32	29	**27**	23	20	20	19	**21**
NWE Eurobob Cracks to Brent Crude Oil	($/bbl)	15	22	27	7	**18**	5	14	10	3	**8**
NWE 1% Residual Cracks to Brent Crude Oil	($/bbl)	-13	-8	-3	-7	**-8**	-6	-5	-5	-5	**-5**
NWE 0.5% Residual Cracks to Brent Crude Oil	($/bbl)	2	2	4	3	**3**	2	2	2	2	**2**
NWE 3.5% Residual Cracks to Brent Crude Oil	($/bbl)	-23	-11	-4	-14	**-13**	-13	-12	-12	-12	**-12**
US Natural Gas	($/MMBtu)	2.74	2.32	2.66	3.15	**2.72**	2.90	2.50	3.00	3.60	**3.00**
Thermal coal, Newcastle FOB	($/t)	253	160	147	145	**176**	148	148	151	153	**150**
Aluminium	$/t	2,401	2,260	2,160	2,250	**2,268**	2,250	2,500	2,750	2,750	**2,563**
Copper	$/t	8,941	8,461	8,367	8,000	**8,442**	8,000	8,500	8,750	9,250	**8,625**
Lead	$/t	2,137	2,118	2,171	2,200	**2,156**	2,000	2,000	2,000	2,000	**2,000**
Nickel	$/t	25,973	22,277	20,392	18,500	**21,786**	18,500	18,500	19,000	19,000	**18,750**
Zinc	$/t	3,132	2,527	2,435	2,500	**2,648**	2,500	2,500	2,250	2,250	**2,375**
Gold	$/oz	1892	1977	1927	1900	**1924**	1950	1950	2000	2000	**1975**
Silver	$/oz	23	24	24	23	**23**	23	23	24	24	**23**
Platinum	$/oz	995	1,027	932	950	**976**	1,000	1,000	1,100	1,100	**750**
Palladium	$/oz	1,568	1,445	1,254	1,250	**1,379**	900	800	700	600	**750**

Source: BofA Global Research estimates

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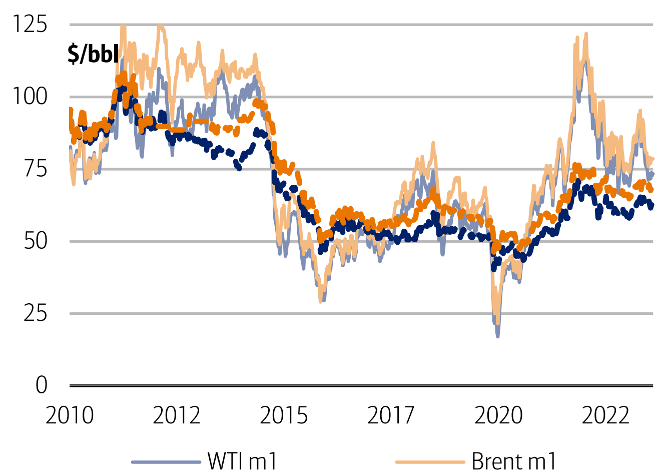
Global oil prices are on par with 2023 average levels…

Oil prices have receded from the highs of 2022 but remain relatively healthy, with front-month Brent trading around $83/bbl compared to the previous 10-year average of $68/bbl (Exhibit 3). Long-dated oil prices have historically been much less volatile, but here too, prices are higher. 5-year forward Brent is currently trading near $70/bbl, up from the 10-year average of $64/bbl. Elevated prices across the oil curve (Exhibit 4) should help support near-term cashflows for oil companies and also provide the price deck needed to encourage project sanctioning and boost upstream capex.

Exhibit 3: WTI and Brent front-month and long-dated oil prices
Oil prices have fallen from the highs of 2022 but remain elevated on a spot and forward basis versus the past decade



Source: Bloomberg

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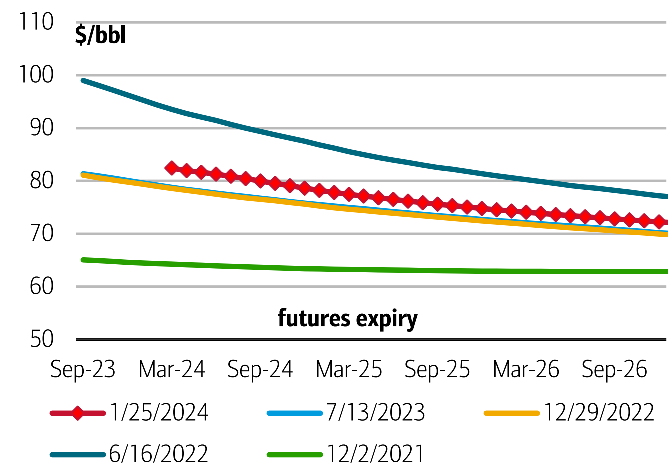
Exhibit 4: Brent forward curve
Elevated prices across the oil curve should support project sanctioning and increase upstream capex this year



Source: Bloomberg

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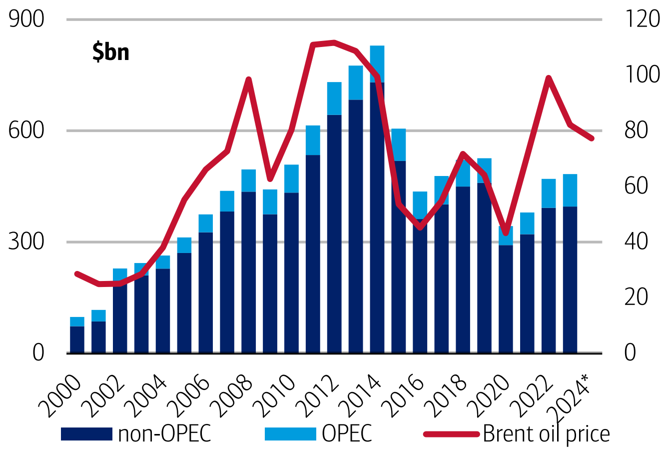
…which support rising international O&G capex in 2024

Upstream capex continued its rise in 2023, even as prices fell due to the lagged effect of capex tied to projects sanctioned in prior years (Exhibit 5 and Exhibit 6). In 2024, drilling and completion capex is expected to rise (+12%), led by offshore, according to BofA Global Research equity analysts (see the report, 2024 Outlook: INTL/Offshore OFS shines bright in a dark macro). Spending in Middle East OPEC countries should remain strong as capacity expansion continues apace, while spending in non-OPEC should continue apace, thanks to development in Brazil and Guyana. Capex growth is likely to be driven by increases in spend on deepwater projects while shale capex declines YoY.

Exhibit 5: Global oil and gas capex
Upstream capex continued its rise in 2023, even as prices fell…



Source: Woodmac

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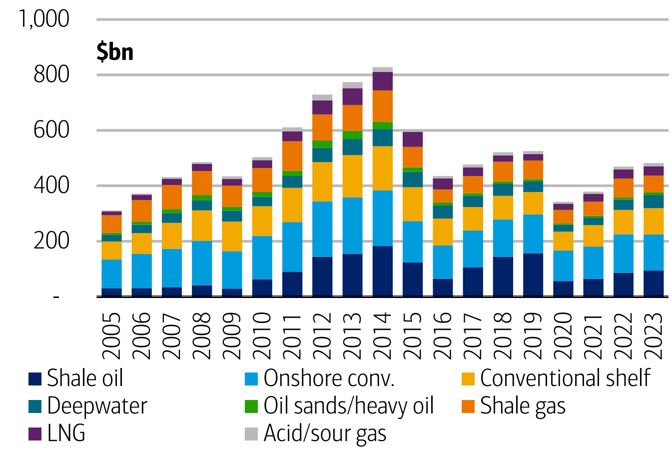
Exhibit 6: Global oil and gas capex by resource theme
…due to the lagged effect of capex tied to projects sanctioned in prior years



Source: Woodmac

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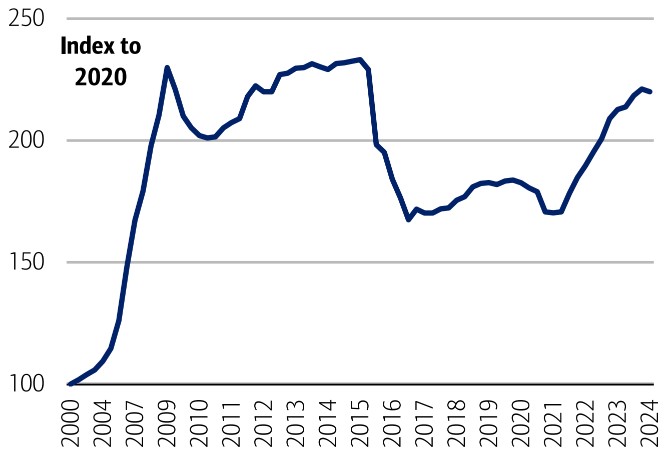
Rising upstream costs have been partially offset by innovation

Many cite the decline in global upstream capex since 2014 as a reason for a looming production shortfall. However, this narrative is less compelling when service cost trends are considered. S&P Global Commodity Insights' Upstream Capital Cost Index (UCCI) attempts to capture these trends by tracking the cost of rigs, materials, subsea equipment, etc. In the aftermath of the 2014-15 oil price collapse, demand for oilfield services slowed substantially, as evidenced by the drop in capex. Falling demand loosened up the market for many OFS subsectors, resulting in a nearly 30% decline in the UCCI between 1Q14 and 1Q16 (Exhibit 7). After six years of fairly stable pricing, oilfield service inflation started to tick higher in 2020 and has since risen nearly 30%, driven by OFS attrition and a ramp-up in demand. Now, the UCCI is just 6% below the highs of 2014. Operating costs, which include operations, engineering, labor, etc., have followed a similar trend, which suggests that new project breakevens should resemble something closer to what they would have during 2014. However, the oil and gas industry radically overhauled how it designs and develops projects since 2014, which has helped depress project breakevens as input costs rise. The Upstream Innovation Index (UII) attempts to capture this dynamic and has declined 24% since 2014, helping counter much of the recent rise in UCCI (Exhibit 8).

Exhibit 7: Upstream Capital Cost Index (UCCI)
After six years of fairly stable pricing, oilfield service inflation started to tick higher in 2020 and has since risen nearly 30%



Source: S&P Global Commodity Insights.

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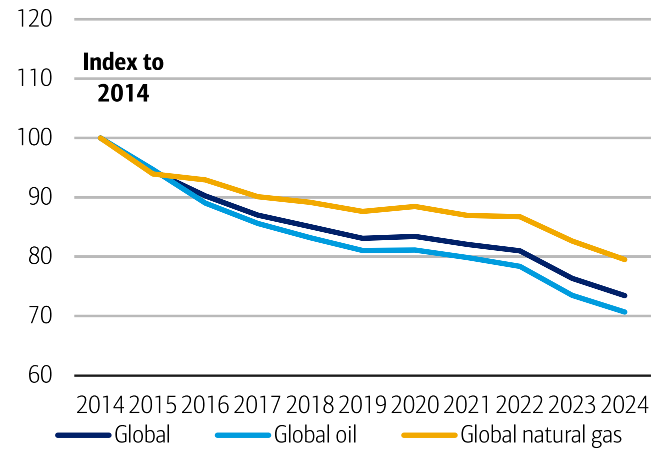
Exhibit 8: Upstream Innovation Index
Upstream innovation is estimated to have helped cut overall project costs by 24% since 2014



Source: S&P Global Commodity Insights.

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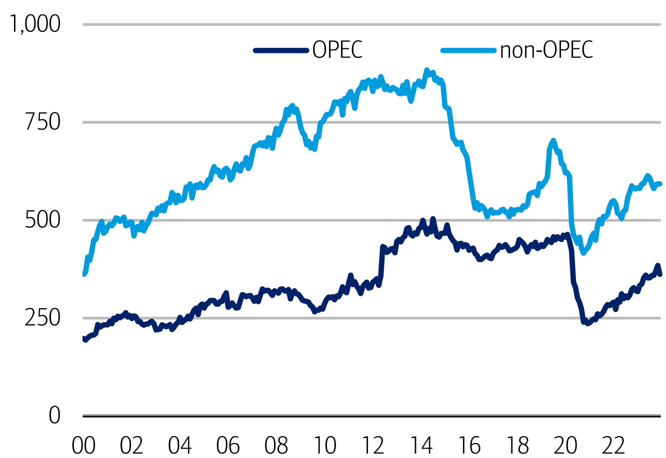
International drilling activity has steadily risen since 2020…

Drilling activity collapsed in the aftermath of the pandemic, with rigs deployed in OPEC countries falling 50% from December 2019 to December 2020 and rigs operating in non-OPEC countries (excluding North America) falling by roughly 1/3rd over the same period (Exhibit 9). As prices recovered, so did drilling activity. As of December 2023, rigs in OPEC and non-OPEC (excluding North America) countries stood at 362 and 593, respectively, or 22% and 8% below pre-Covid levels. The recovery in drilling has varied by region, led by Canada (+30% versus 2019 levels) and followed by Asia and Latin America (roughly -5% versus 2019 levels) (Exhibit 10).

Exhibit 9: Global oil and gas rig count (ex NAM)
As of December 2023, rigs in OPEC and non-OPEC (excluding North America) stood at 362 and 593, respectively, or 22% and 8% below pre-Covid levels



Source: Bloomberg

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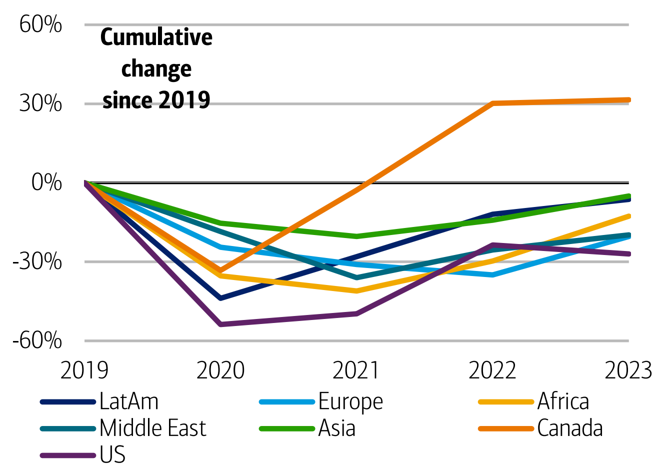
Exhibit 10: Cumulative change in rig count by region since 2019
The recovery in drilling has varied by region, led by Canada followed by Asia and Latin America



Source: Bloomberg

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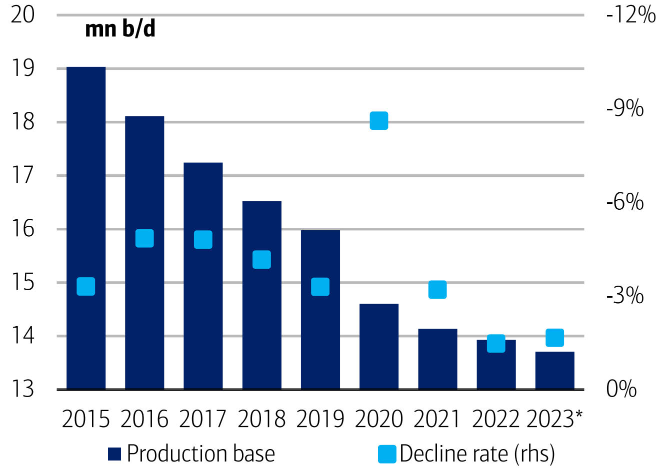
…which contributed to lower decline rates for many countries

The crash in drilling activity coincided with a sharp acceleration in field-level decline rates, but the subsequent recovery has pushed decline rates to some of the lowest levels seen the past decade (Exhibit 11). Indeed, fields and regions where production peaked prior to 2010 saw decline rates fall from highs of 8-9% in 2020 to just 1-2% in 2022-23. Decline rates accelerated in the US, Norway, and UK, eased in Mexico and Brazil, and shrank to nearly zero in China (Exhibit 12).

Exhibit 11: Estimated decline rates for select non-OPEC fields and regions peaking by 2010 (%YoY)
Fields and regions where production peaked prior to 2010 saw decline rates fall from highs of 8-9% in 2020 to just 1-2% in 2022-23



Note: 2023 data through 3Q. Source: IEA, BofA Global Research estimates

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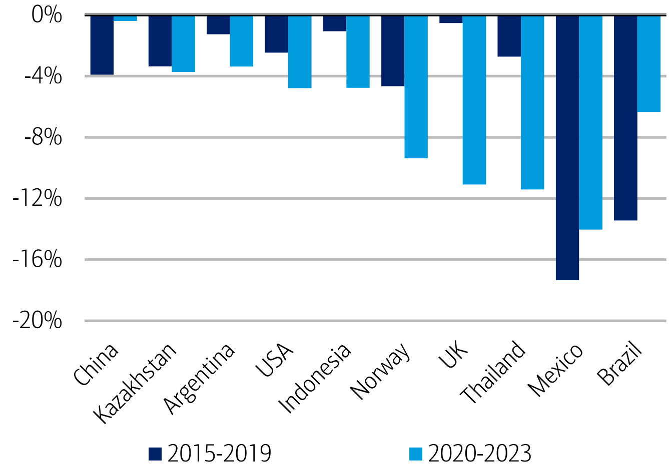
Exhibit 12: Estimated decline rates by country for select non-OPEC fields and regions peaking by 2010 (%YoY)
Decline rates accelerated in the US, Norway, and UK, eased in Mexico and Brazil, and shrank to nearly zero in China



Note: 2023 data through 3Q. Source: IEA, BofA Global Research estimates

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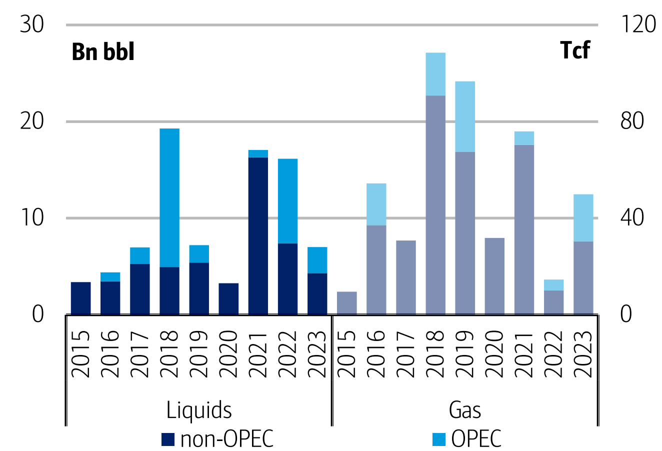
Project sanctioning slowed YoY in 2023 as oil prices softened…

Rising oil prices over 2021-22 led to a surge in upstream oil project FIDs, with over 33bn bbl of liquid reserves sanctioned (Exhibit 13). The amount of reserves sanctioned fell to just 7bn bbl in 2023, driven in part by lower oil prices. Notable projects sanctioned last year included Qatar's North Field South, an LNG project with nearly 1bn bbl of liquids reserves, Iraq's Eridu field (1.2bn bbl), UAE's Hail and Ghasha project (950mn bbl), and Exxon's Uaru FPSO in Guyana, which is tied to roughly 1bn bbl of liquid reserves. These larger projects are expected online during 2026-28, but between now and then, a significant amount of new project starts are expected tied to sanctioning decisions made during the 2015-23 timeframe (Exhibit 14).

Exhibit 13: Oil and gas project FIDs by reserves and sanction year
Rising oil prices over 2021-22 led to a surge in upstream oil project FIDs, with over 33bn bbl of liquid reserves sanctioned…



Source: Woodmac

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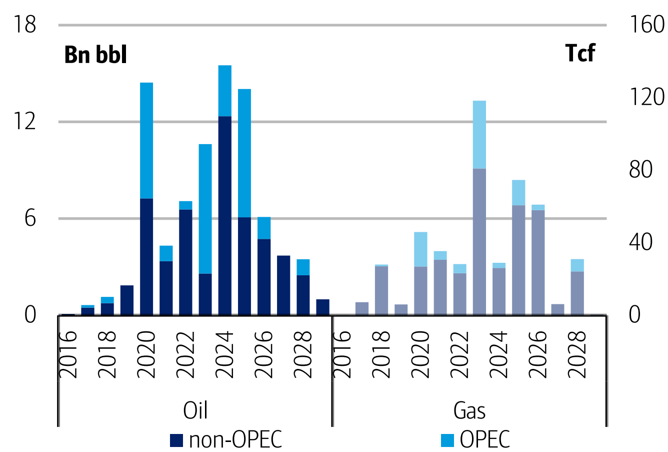
Exhibit 14: Oil & gas project FIDs (2015-23) by reserves and start year
These larger projects are expected online during 2026-28 but between now and then, we expect a significant amount of new project starts tied to sanctioning decisions made during the 2015-23 timeframe



Source: Woodmac

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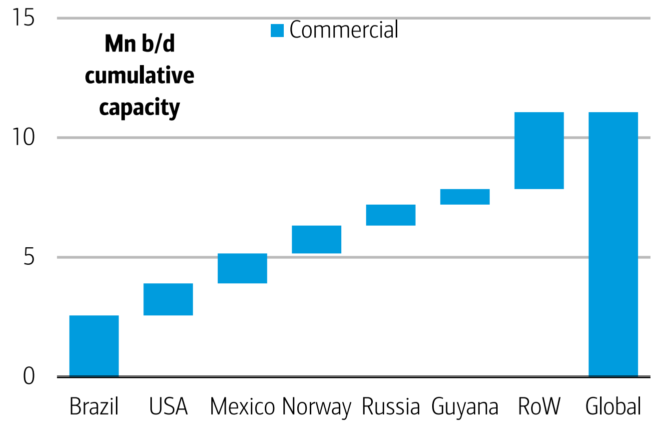
…but the medium-term pipeline of projects still looks healthy…

During the past six years, major non-OPEC oil projects with nearly 11.1mn b/d of peak production capacity commenced operations, driven by Brazil (2.6mn b/d of capacity additions), while the USA, Mexico, Norway and others delivered much smaller contributions (Exhibit 15). Over the next six years (2024-29), there is potential for non-OPEC to deliver upwards of 12mn b/d of cumulative capacity additions (Exhibit 16), but geopolitical and technical challenges threaten to thin the project pipeline. In Brazil, capacity additions are expected to be higher than the 2018-23 timeframe at nearly 2.8mn b/d, followed by Russia, which is expected to see first oil from fields tied to its massive Vostok oil project late in the decade. Meanwhile, the US and Guyana are expected to deliver close to 1.4mn b/d and 1.2mn b/d of new project starts.

Exhibit 15: Realized non-OPEC capacity starts 2018-23

Over the past six years, major non-OPEC oil projects with nearly 11.1mn b/d of peak production capacity commenced operations



Source: Woodmac, BofA Global Research estimates

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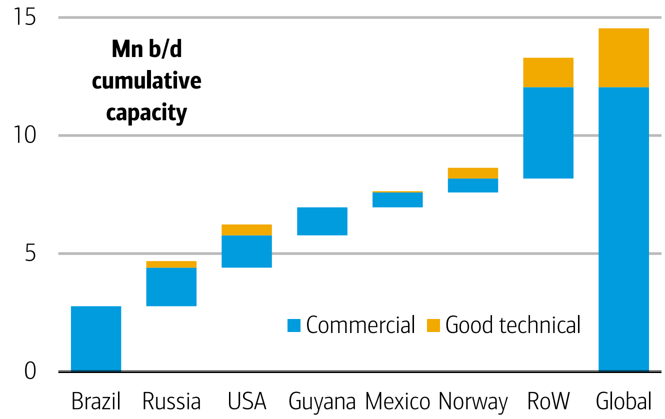
Exhibit 16: Potential Non-OPEC capacity starts 2024-29

Over the next six years (2024-29), there is potential for non-OPEC to deliver upwards of 12 mn b/d of cumulative capacity additions



Source: Woodmac, BofA Global Research estimates

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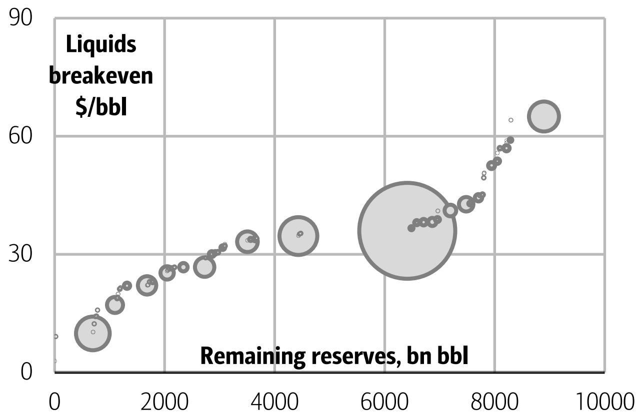
…partly because the economics for many projects are still attractive

Many projects to be commissioned during the 2024-29 have exceptionally low forward looking breakevens, and those that don't still appear to have positive economics at the current forward strip (Exhibit 17). Very strong forward-looking economics are partly a result of capital already sunk into the projects. Even if some of these projects don't breakeven on full cycle basis at future oil prices, they still look attractive given the remaining capital required to bring production onstream. In the shale basins, the cost curve also looks very attractive due to efficiency and productivity gains achieved over the past decade (Exhibit 18).

Exhibit 17: Forward-looking breakeven economics for select non-OPEC projects (2024-29)

Many non-OPEC projects to be commissioned during the 2024-29 have exceptionally low forward-looking breakevens



Source: Woodmac

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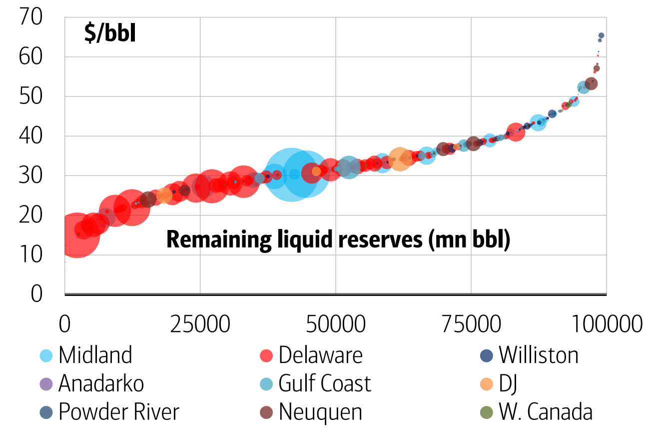
Exhibit 18: Shale oil breakeven cost curve

In the shale basins, the cost curve also looks very attractive due to efficiency and productivity gains achieved over the past decade



Source: Woodmac

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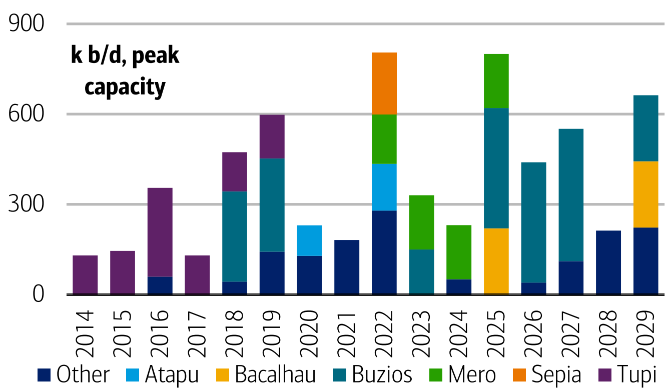
Significant pre-salt project startups drive Brazilian output higher…

In Brazil, development of pre-salt fields continues at a rapid pace, and we see more than 2.7mn b/d of new capacity starting up in the medium term, with Buzios FPSOs accounting for more than half of the total (Exhibit 19). Furthermore, the start-up of projects like Equinor and Exxon's Bacalhau and Bacalhau Norte FPSOs will add about 220k b/d of capacity each when they are commissioned in 2025 and 2029. The laundry list of large offshore projects planned over the medium term should drive Brazil's production comfortably above 4mn b/d during the second half of the decade (Exhibit 20), and more FPSO projects could extend growth into the early 2030s too.

Exhibit 19: Realized and potential Brazil upstream project starts

We see more than 2.7mn b/d of new capacity starting up in the medium term for Brazil, with Buzios FPSOs accounting for more than half of the total



Source: Woodmac, BofA Global Research estimates

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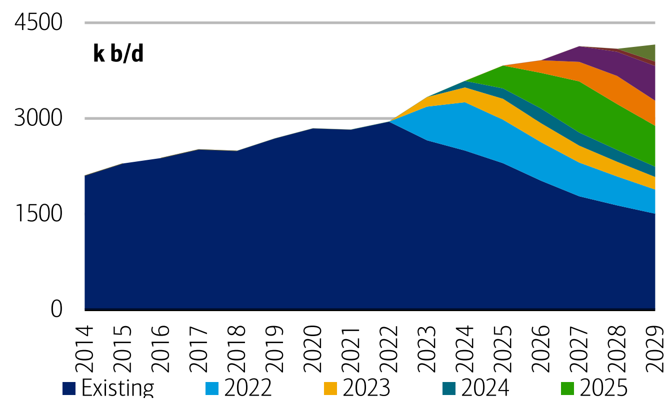
Exhibit 20: Brazil offshore oil production forecast

The laundry list of large offshore projects should drive Brazil's production comfortably above 4mn b/d during the second half of the decade



Source: IEA, BofA Global Research estimates

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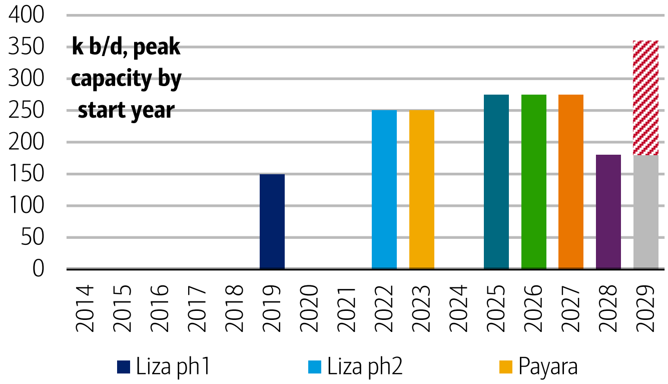
…while Guyana's crude oil production ramp is just getting started

Guyana could be the largest source of non-OPEC (ex-US) growth in the medium term. Nearly 15bn boe of reserves have been discovered in Guyana's offshore since 2015, and projects have been fast tracked with first oil delivered in 2019 (Exhibit 21) (see Budget 2024: Capex guide in line, momentum & asset visibility defensive). Exxon and its partners already commissioned 3 FPSOs and could deliver upwards of 6 more by the end of 2029. Already, Guyanese oil production has soared to more than 500k b/d as of December, according to IEA estimates, but the country's project pipeline could push output toward 1.9mn b/d by the end of 2029 (Exhibit 22) if development stays on schedule.

Exhibit 21: Realized and potential Guyana upstream project starts
Guyana could be the largest source of non-OPEC (excluding US) growth in the medium term, with at least five new developments expected before 2030



Source: BofA Global Research estimates

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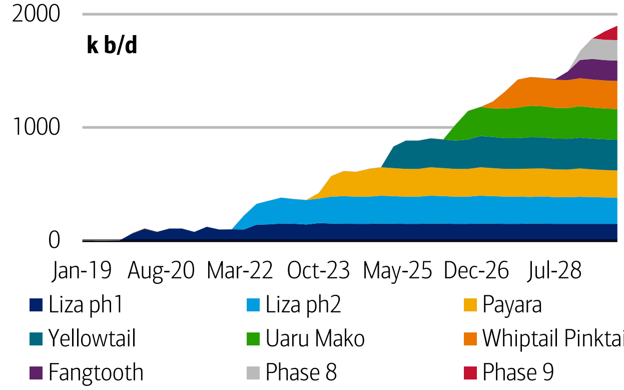
Exhibit 22: Guyana offshore oil production forecast
Guyana's project pipeline could drive output toward 1.9mn b/d by the end of 2029 if development stays on schedule



Source: BofA Global Research estimates

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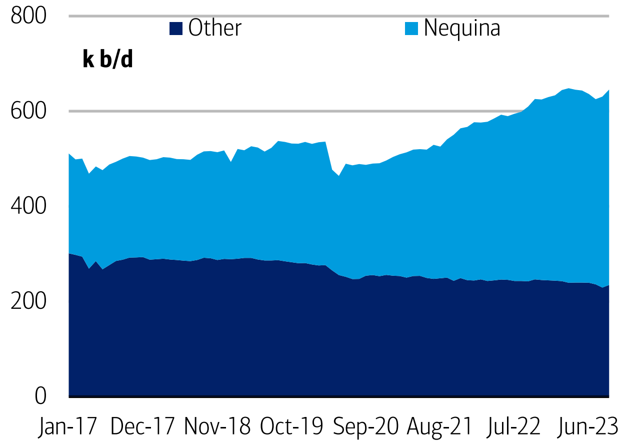
In Argentina, new pipelines should give Vaca Muerta room to run

The Vaca Muerta shale formation has garnered significant attention in the past decade, but the pace of production growth there has lagged the American shales. At the end of 2023, production in the Neuquen basin (Vaca Muerta) was estimated at just 400k b/d (Exhibit 23). Vaca Muerta growth has more than offset declining output elsewhere in Argentina, leading to 50k b/d of production growth at a country level. Growth in the Vaca Muerta has been constrained at times by political/labor issues and pipeline bottlenecks. Fortunately, the political climate is favorable for growth, and incremental brownfield and greenfield pipeline capacity should allow Argentina's production to exceed 1mn b/d over the medium term. After all, Argentina's resource base is nearly 50% larger than the US DJ basin, but output is 33% less. Looked at differently, we note that the Vaca Muerta has ~45 years of inventory at current production levels, or more than double that of most major US and Canadian shale basins (Exhibit 24)

Exhibit 23: Argentina onshore crude oil production

At the end of 2023, production in the Neuquen basin (Vaca Muerta) was estimated at just 400k b/d, but output should continue to grow medium term



Source: Rystad Energy

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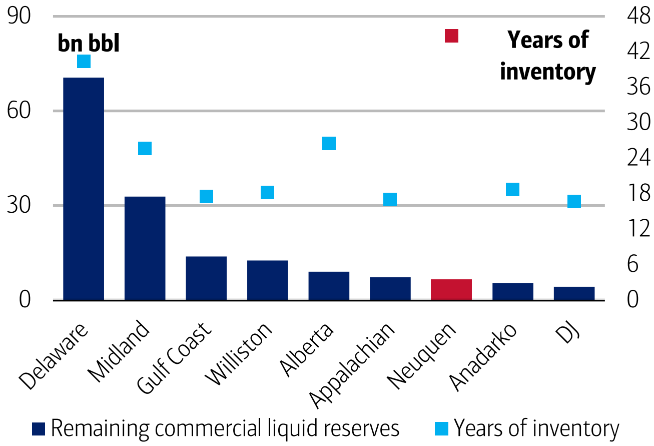
Exhibit 24: Commercial liquid resource reserves and years of inventory for select shale basins

The Vaca Muerta has ~45 years of inventory at current production levels, or more than double that of most major US and Canadian shale basins



Source: Woodmackenzie, BofA Global Research

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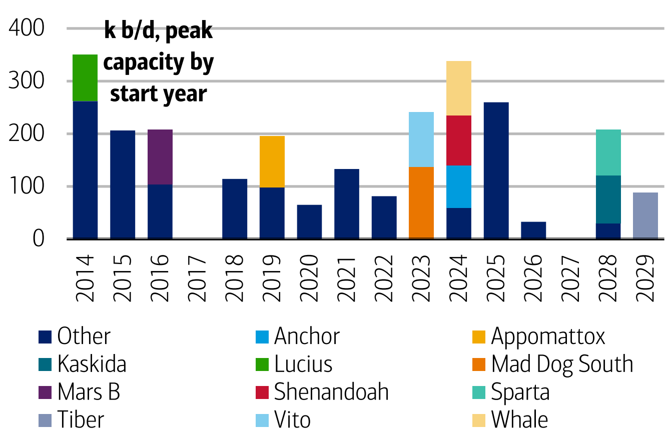
Deepwater to drive GoM growth, while Alaska's prospects mired by politics

In the US, we see opposite trends in the Gulf of Mexico and in Alaska. The former is set to grow into 2026 on the back of a slug of new capacity starts, including Mad Dog South and Vito, which started in 2023, and Appomattox, Anchor, Shenandoah, which start in 2024 (Exhibit 25). The project pipeline slows considerably from 2026 onward, with just a few notable projects, such as Sparta, Tiber, and Kaskida, seeing first oil in 2028-29. Alaska is only likely to see meaningful new project starts later in the decade, with the massive Willow project starting up by 2029 (Exhibit 25) and pushing up Alaska's production during the early 2030s. Given the political resistance to Willow's approval and the size of the project, it is possible that Willow's startup timeline slips into the 2030s.

Exhibit 25: Realized and potential Gulf of Mexico upstream project starts

Gulf of Mexico capacity additions are weighted towards 2024-25...



Source: Woodmac, BofA Global Research estimates

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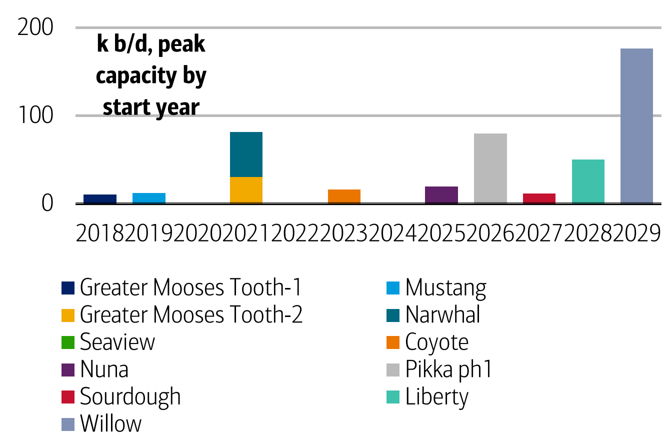
Exhibit 26: Realized and potential Alaska upstream project starts

...while Alaska's project pipeline is back half weighted and heavily dependent on the timing of Willow



Source: Woodmac, BofA Global Research estimates

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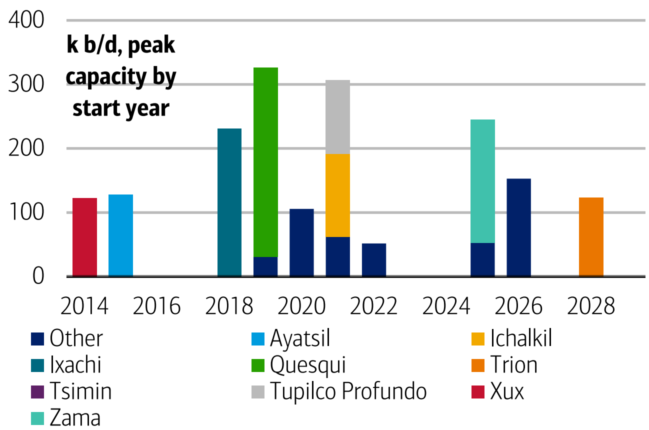
Mexico benefitted from recent projects, but supply should fall further medium term

Several large projects have ramped up over 2018-22 in Mexico (Exhibit 27), adding enough volume to halt production declines that persisted over the prior 15 years. Since 2020, Mexico's crude oil production has been rising (Exhibit 28), but with no major project starts expected in 2023-24, output seems poised to decline into 2025. Over the medium term, the project pipeline looks light, with just 500k b/d of capacity additions during 2024-29, down from more than 1mn b/d of additions during 2018-23. Furthermore, two offshore fields, Zama and Trion, are likely to account for more than 60% of new capacity additions, creating concentration risk should either project get delayed. We believe that a limited project pipeline will cap Mexico's recent growth and should drive output lower in the medium term.

Exhibit 27: Realized and potential Mexico upstream project starts
Several large projects have ramped up over 2018-22, halting 15 years of production declines in Mexico...



Source: Woodmac, BofA Global Research estimates

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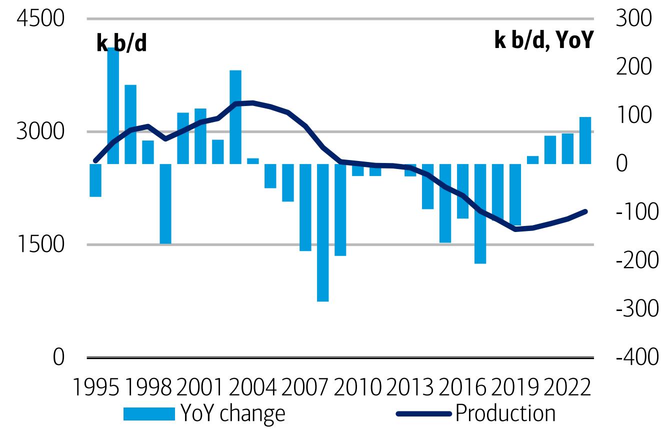
Exhibit 28: Mexico crude oil production
...but a limited project pipeline should cap Mexico's recent growth and drive output lower in the medium term



Source: IEA

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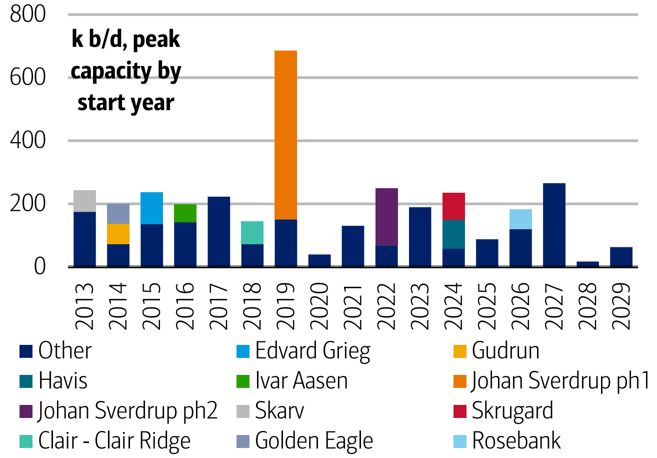
North Sea production should shift into reverse late this decade

UK and Norway production has struggled to meet expectations in recent years as high decline rates at mature fields erased gains from new projects. In the UK, this led to a production decline of nearly 100k b/d YoY in 2023, and in Norway, production growth totaled just 90k b/d. In the medium term, we see more limited capacity additions, with only one major project, Johan Castberg (190k b/d). This project, which includes Skarv, Skrugard, and other developments, should see first oil in 2024 (Exhibit 29). While we expect modest North Sea production growth through 2027, we think that production will roll over by 2028-29 (Exhibit 30).

Exhibit 29: UK and Norway realized and potential project starts
North Sea capacity additions appear limited over the medium term



Source: Woodmac, BofA Global Research estimates

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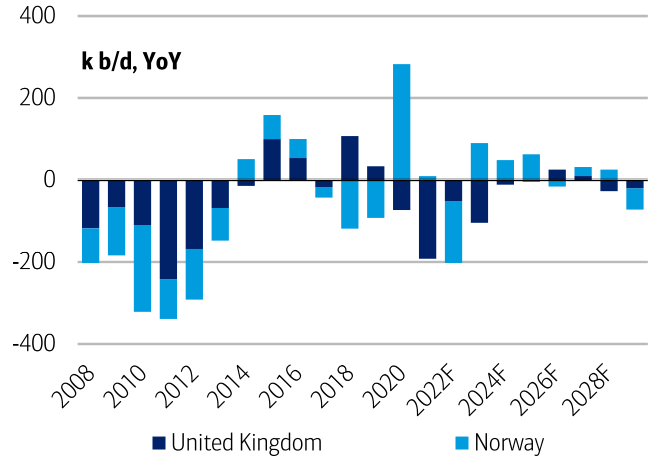
Exhibit 30: UK and Norway liquids production
While we expect modest North Sea production growth through 2027, we think that production will roll over by 2028-29



Source: IEA, BofA Global Research estimates

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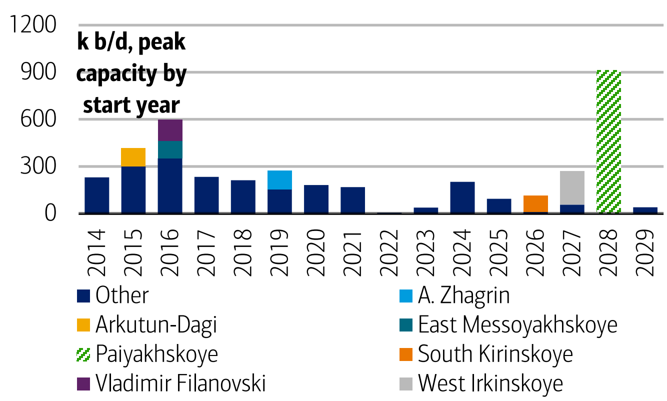
Russian outlook hinges on Vostok, production exposed to conflict

Historical capacity additions in Russia appear small relative to its production base (Exhibit 31), but output rose steadily through 2019 (Exhibit 32), helped by a steady ramp-up at fields already online. In the medium term, capacity additions are limited until 2028, when the Paiyakhskoye field, which ties into the 1+mn b/d Vostok oil project, is expected online. Yet we think that Russia has room to grow output from current levels if it wants to. Over the medium term, we expect output there to climb higher, accelerating in 2028-29, when Paiyakhskoye starts up. Russia's ongoing war with Ukraine has put its upstream and energy infrastructure at risk. Recent attacks on refineries, processing facilities, and other infrastructure have so far not led to any material loss of output, but the risk of outages appears to only be rising. Thus, we see the potential for a wide range of outcomes for Russian oil supply in the medium term.

Exhibit 31: Russia realized and potential project starts
Russia's project pipeline looks light and depends heavily on the timing of the Paiyakhskoye field



Source: Woodmac, BofA Global Research estimates

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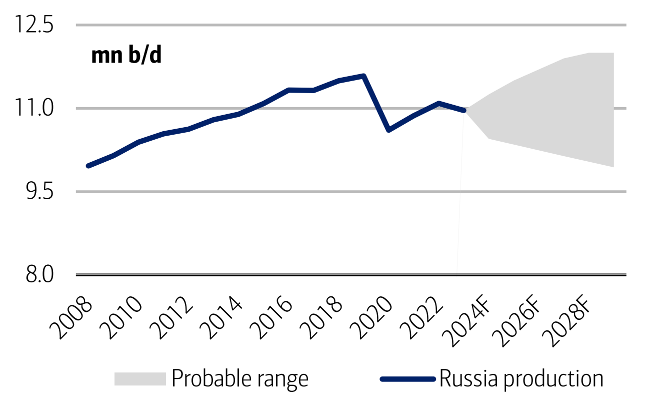
Exhibit 32: Russia total liquids production
The timing of the Vostok oil project and war with Ukraine create significant uncertainty for Russia's supply in the medium term



Source: EIA, BofA Global Research estimates

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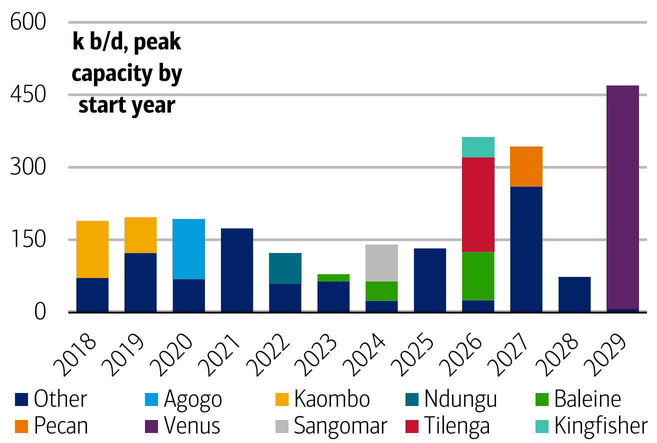
Non-OPEC Africa projects to hit late in the 2020s, FIDs still needed

The project pipeline for non-OPEC Africa, which now includes Angola, slowed for three consecutive years into 2023 (Exhibit 33), which helped perpetuate production declines across the continent (Exhibit 34). Fortunately, the pace of new project starts should accelerate, particularly in 2026-27. Major fields expected online over the medium term include Cote d'Iviore's Baleine field, Senegal's 75k b/d Sangomar project, Uganda's longawaited 200k b/d Tilenga project, the 85k b/d Pecan project, and the prolific 470k b/d Venus project in Namibia. Venus still requires a FID and is technically challenging. It is possible that even if this project is sanctioned in 2025, first oil might not occur until after 2029. While a delay for Venus may alter the 2029+ outlook, we still see potential for the existing projects to stabilize and grow non-OPEC African output in 2026-28.

Exhibit 33: Non-OPEC Africa realized and potential project starts
The pace of non-OPEC Africa's new project starts should accelerate, particularly in 2026-27...



Source: Woodmac, BofA Global Research estimates

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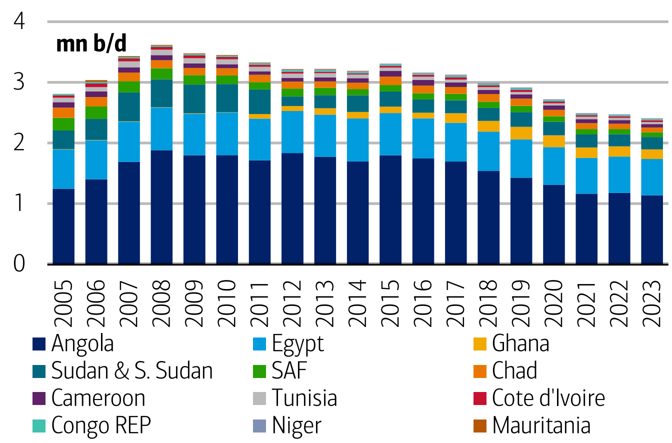
Exhibit 34: Non-OPEC Africa liquids production
...which should help push supply higher after underinvestment led to years of declines



Source: IEA, BofA Global Research estimates

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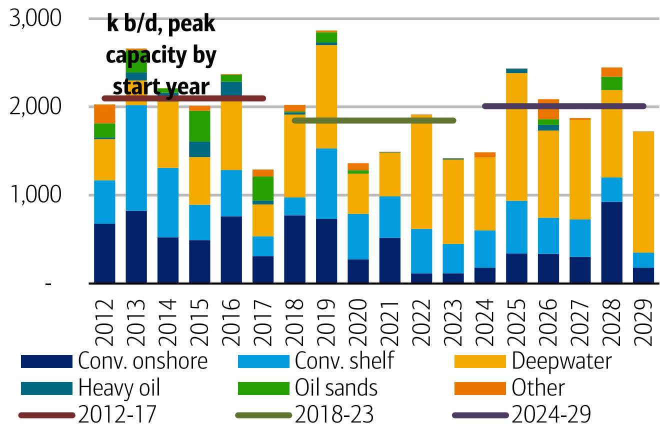
Non-OPEC pipeline healthy, but we see major technical, geopolitical risk...

The pipeline of non-OPEC projects that started during the 2018-23 time horizon is estimated to be roughly 250k b/d lower annually than what was seen during 2012-17 (Exhibit 35). Over the next six years (2024-29), capacity additions could rise ~150k b/d annually versus 2018-23. On the surface, these figures are reassuring against a medium-term oil supply shortage, but the oil market will likely be even more dependent on complex deepwater projects to support global supply than during the last decade, which creates a higher risk of delays (Exhibit 36). Furthermore, the supply stack has significant capacity coming online in countries such as Guyana, whose borders are being disputed by its Venezuelan neighbor; Russia, which is fighting a war and has seen its infrastructure attacked; and Brazil, which just announced that it will join the OPEC+ cooperation charter (non-binding). Thus, we see a lot a of risk to non-OPEC's project pipeline.

Exhibit 35: Realized and potential non-OPEC capacity additions by resource type

We see ~2mn b/d of new non-OPEC capacity additions (peak) annually in 2024-29, up from 1.84mn b/d during 2018-23…



Source: Woodmac, BofA Global Research estimates

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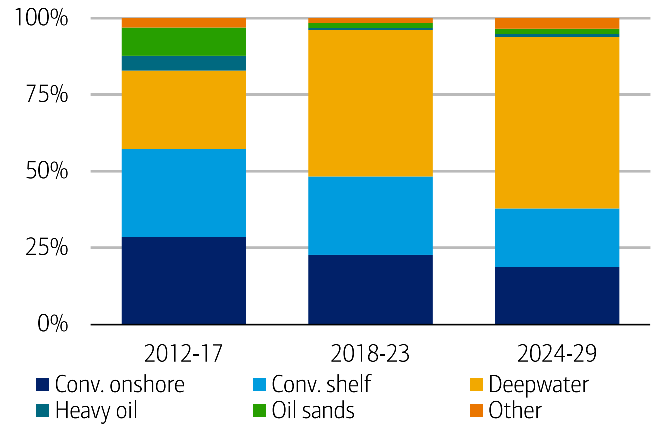
Exhibit 36: Composition of realized and potential Non-OPEC capacity additions by resource type

…but increased dependence on deepwater projects and rising geopolitical tensions create downside risks to supply



Source: Woodmac, BofA Global Research estimates

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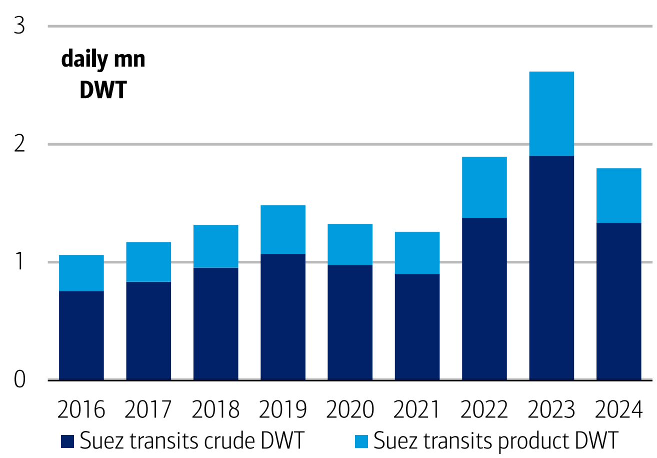
…especially as Middle East tensions, Russia sanctions dislocate oil flows

Russia sanctions already triggered a major re-routing of oil flows away from the Mediterranean (Europe) into the Red Sea (Asia), expanding global supply chains (Exhibit 37). Plus, recent Houthi attacks on vessels have been tempered by spare shipping capacity, although we see growing upside risks in petroleum fuels, such as diesel. Should Middle East tensions persist throughout 2024, oil shipping routes may lengthen further. Oil output and developments could be disrupted altogether. If global balances shift from a projected surplus into a deficit, Brent crude prices would exceed our projected averages for $80/bbl in 2024 and 2025.

Exhibit 37: Daily Suez Canal oil and product transits

Russia sanctions already triggered a major re-routing of oil flows away from the Mediterranean (Europe) into the Red Sea (Asia), expanding global supply chains



Source: Clarksons

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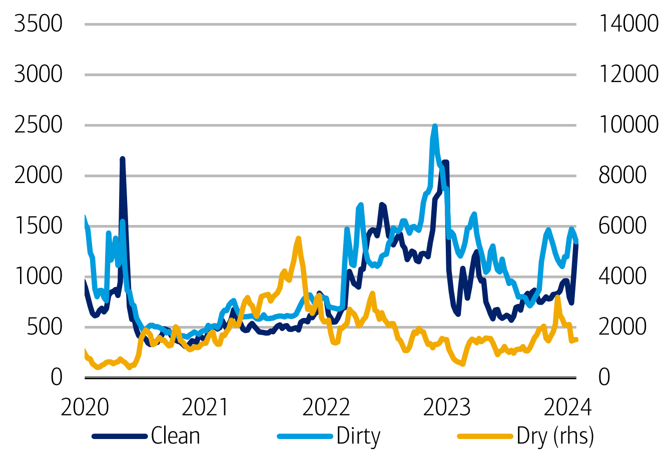
Exhibit 38: Baltic freight indices

Plus, recent Houthi attacks on vessels were tempered by spare shipping capacity, but we see growing upside risks in petroleum fuels, such as diesel



Source: Bloomberg

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Exhibit 39: Abbreviation and acronym list

Acronym	Definition
$/bbl	dollars per barrel
2H2023	Second half of 2023
avg	average
b/d	barrels per day
bbl	barrel
bn	billion
boe	barrel of oil equivalent
Btu	British thermal unit
CB	central bank
CPI	consumer price index
D&C	Drilling and completion
DM	developed market
E&P	Exploration and production
ECB	European Central Bank
EM	European market
EM	emerging market
EUAs	European Union Allowances
EUR	Euro
EV	electric vehicle
FID	Final Investment Decision
FPSO	Floating production storage and offloading
GoM	Gulf of Mexico
GWh	gigawatt hours
Hz	Horizontal
IEA	International Energy Agency
JKM	Japan Korea Marker
JPY	Japanese Yen
LNG	liquified natural gas
MA	moving average
mcm	million cubic meters
ME	Middle East
Mfg	manufacturing
MMBtu	million British thermal unit
mn	million
mt	metric ton
MWh	Megawatt hours
NBS	National Bureau of Statistics of China
ngl	natural gas liquids
NWE	North west Europe
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
OPEC+	OPEC countries plus ten additional countries
PMI	purchasing managers index
rhs	righthand side
SPR	Strategic Petroleum Reserve
TMX	Trans Mountain Expansion
TTF	Dutch TTF
TWh	terawatt hours
WCS	Western Canadian Select
WTI	West Texas Intermediate
YoY	year over year
yr	year

Source: BofA Global Research

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Research Analysts

Global Commodity Research
BofA Europe (Madrid)

Francisco Blanch
Commodity & Deriv Strategist
BofA Europe (Madrid)
+34 91 514 3070
francisco.blanch@bofa.com

Michael Widmer
Commodity Strategist
MLI (UK)
+44 20 7996 0694
michael.widmer@bofa.com

Warren Russell, CFA
Commodity Strategist
BofAS
+1 646 855 5211
warren.russell@bofa.com

Danica Averion
Commodity Strategist
MLI (UK)
+44 20 7996 2325
danica_ana.averion@bofa.com

Rachel Wiser
Commodity Strategist
BofAS
+1 646 743 4069
rachel.wiser@bofa.com