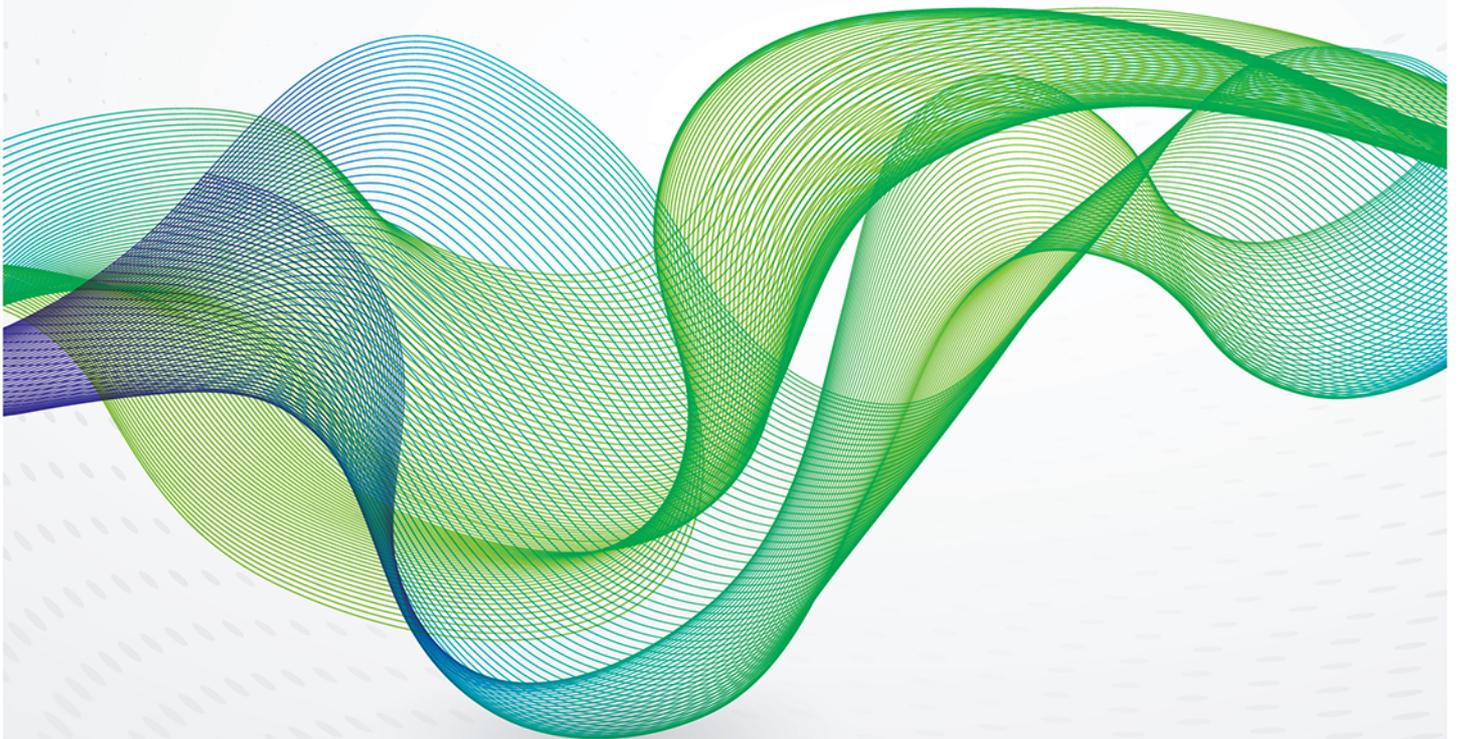




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# Russia-Ukraine crisis: Implications for global oil markets



OXFORD ENERGY COMMENT

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After weeks of tensions, Russian President Vladimir Putin ordered Russian troops to invade Ukraine. Brent futures, already trending higher before the crisis, hit \$105/b on February 24 before retreating and closing at \$99/b on the day as all the signals were indicating that the sanctions imposed on Russia would not target its crude oil and natural gas sales. But as sanctions on Russia intensified and as financial institutions started to refuse financing Russia-related transactions, including opening letters of credit or clearing payments and as some companies became reluctant to purchase Russian crude, Brent on March 2 (the time of writing) was trading above \$110 for the first time since 2014 (**Figure 1**).

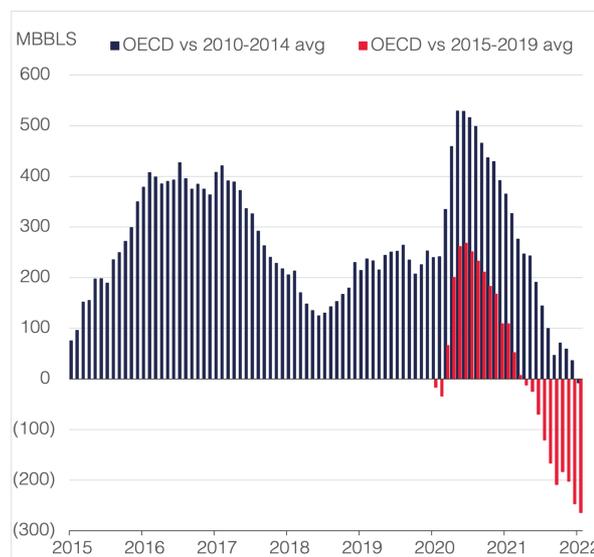
The rise in oil prices over the last few months reflects tighter market fundamentals with the recovery in oil demand surprising on the upside, OPEC+ returning fewer barrels than planned in their current agreement and OECD crude and products stocks continuing to fall (**Figure 2**). The upward pressure on oil prices also reflects heightened concerns about the size of spare production capacity in a deteriorating geopolitical environment and amid a higher probability of output disruptions. The Russia-Ukraine crisis adds a new layer of geopolitical uncertainty on top of a wide range of uncertainties surrounding the oil market and spillovers from other energy markets, particularly the gas market where high gas prices have created additional pressure on oil demand due to gas-to-oil substitution.

**Figure 1: Daily Brent price**



Source: EIA.

**Figure 2: OECD commercial stocks**



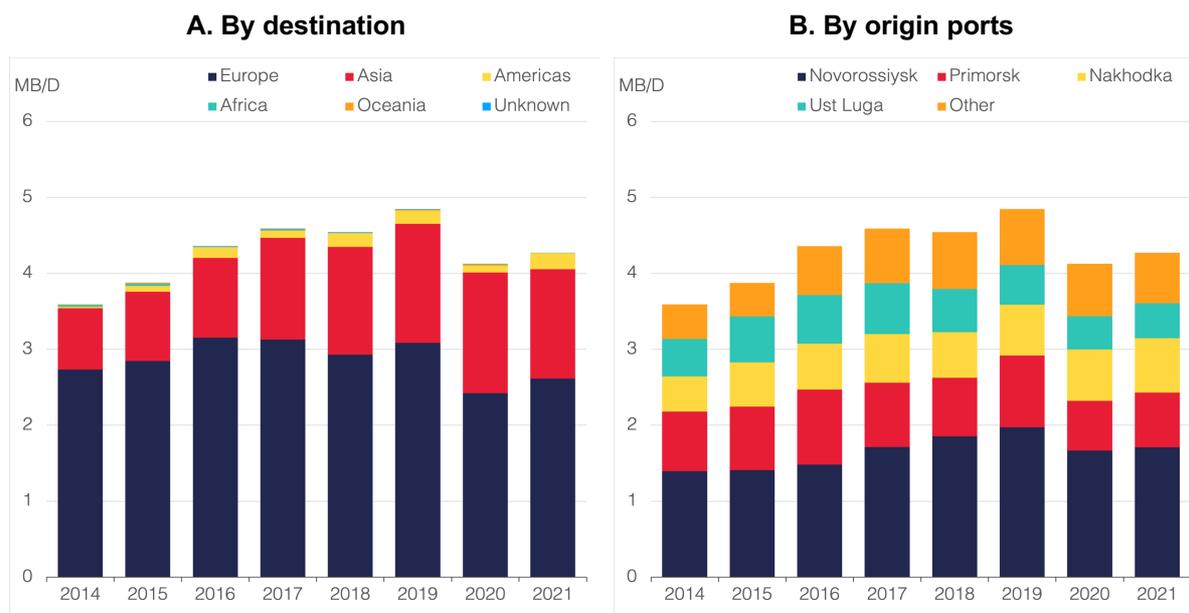
Source: IEA.

## Importance of Russia in the global oil system

Russia is one of the world's largest crude oil producers and exporters and in 2016 it joined the Declaration of Cooperation with OPEC. In 2021, Russia's production of crude and condensates averaged 10.5 mb/d, representing 14 per cent of global production. Russian crude exports that have global reach averaged 4.27 mb/d, with Europe accounting for around 60 per cent of Russia's total crude exports, followed by Asia accounting for nearly 35 per cent (**Figure 3A**). The key exportable grade is Urals blend, a medium sour crude with API of 30.6 and sulphur content of 1.48 per cent. One important outlet for Russian crude is the Druzhba pipeline: the Northern part runs through Belarus and delivers crude to refineries in Poland and Germany. The Southern branch delivers crude to refineries in Hungary, Slovakia and the Czech Republic. Russian crude is also shipped via many ports including Primorsk and Ust Luga on the Baltic Sea, Novorossiysk on the Black Sea and Nakhodka on the Sea of Japan (**Figure 3B**). Russia also has a pipeline route to markets in Asia through the Eastern Siberia Pacific Ocean (ESPO) pipeline which delivers blended crude loaded from Kozmino known as ESPO. Russia's crude exports to Asia reached 1.44 mb/d in 2021 with China importing 805,000 b/d (56 per cent of the total).

Russia does enter into long-term contracts with trading houses, but these are often resold immediately in the spot market. Russia is also an important refining center and exporter of refined products such as diesel, gasoline and fuel oil. In 2021, Russia's exports of refined products reached 2.69 mb/d. Like crude, exports of refined products have global reach with the EU constituting an important market for Russian diesel (548,000 b/d), naphtha/gasoline (234,000 b/d), fuel oil (223,000 b/d) and gasoil (214,000 b/d).

**Figure 3: Russia crude oil exports**



Source: Kpler.

## Russia under sanctions

Following the Russian invasion of Ukraine, the US, UK, European Union, Australia and some Asian nations immediately responded with international sanctions targeting Russia's economy. This first round of sanctions imposed on Russia however did not target oil supplies or energy payments. The US sanctions included exemptions which allowed companies to continue energy transactions even through sanctioned Russian banks. Initially, the US and the EU opted not to cut Russia off from the SWIFT global interbank payments system. As the conflict escalated, the US and its allies moved to sanction Russia's central bank and restrict its access to its sizable foreign exchange reserves (estimated at \$630 billion) and block certain Russian banks' access to the SWIFT international payment system. But the White House was quick to emphasize that this would not impact energy payments, and this could be achieved either by exempting energy payments or by targeting institutions that are not heavily involved with energy flows. A full ban of Russia from SWIFT would hit the country's banking network and its payment system and could result in the country ceasing its crude oil and refined products exports if it is not able to receive payment.

Although the US and the EU sanctions were designed not to impact energy trade flows and energy-related payments, the announcement that some Russian banks will be banned from the SWIFT system prompted some financial institutions to self-sanction, refusing to finance Russia-related transactions, including opening letters of credit or clearing payments. There is also evidence that some companies have been reluctant to purchase Russian crude as risks of exposure to Russian entities have increased. There are already reports of buyers struggling to open letters of credit and shipping companies struggling to call at Russian ports. Some European refiners –such as Neste– have also made public shifts in their crude procurement plans (retreating from Urals in favor of other grades). In the spot market, trading houses have been offering Urals cargos at a large discount to Dated Brent (around

\$18/b) but without securing buyers. As **Figure 4** shows, Urals crude relative to Dated Brent have fallen to historically very low levels. For regular spot sellers such as Surgutneftegaz (which typically offers monthly spot tenders for Urals and ESPO), the company withdrew tenders late last month due to a lack of bids.

**Figure 4: Urals NWE v Dated Brent**

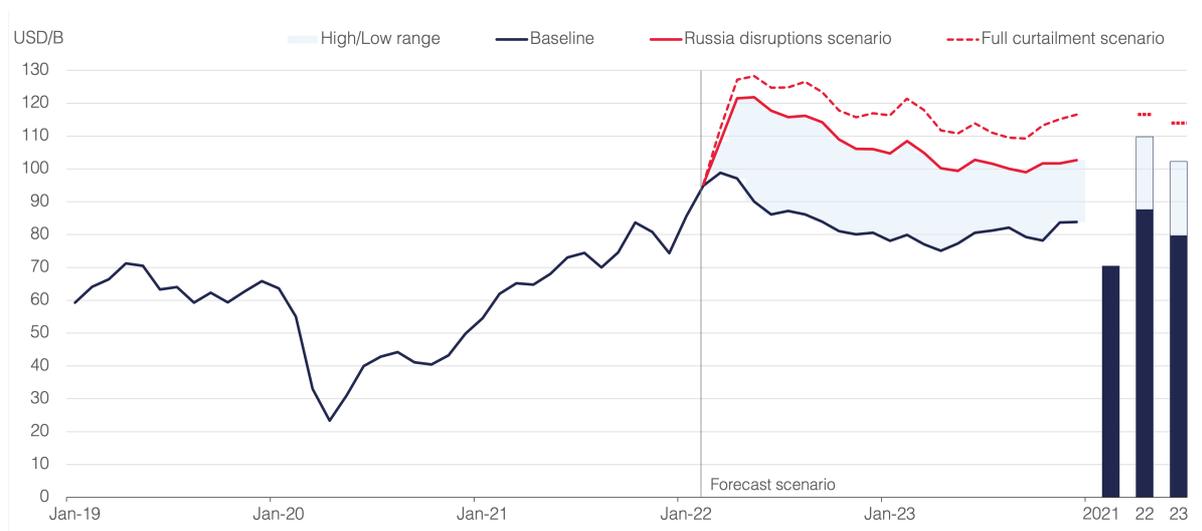


Source: S&P Global Platts.

This 'self-sanctioning' is already having an impact on oil supplies. At its peak impact, such a scenario could result in a disruption between 3 mb/d to 4 mb/d of Russian crude oil production from current levels of 11 mb/d (including condensate). Assuming a gradual disruption of 3.2 mb/d in March and April which accounts for 70% of total Russia crude oil exports, our modelled results show that in the current market context a supply shock of such a magnitude would add nearly \$25/b to the Brent price (relative to our base case), lifting the monthly price to \$122/b by April before retreating towards \$106/b year-end to average \$110/b for 2022 as a whole (*Russia disruptions scenario*; **Figure 5**). Under the extreme case in which Russian crude exports are fully seized (output disruption is assumed at 4.2 mb/d), prices are projected to rise further towards \$130/b and hold above \$120/b well into Q3 2022, to average \$116/b for the year (*Full curtailment scenario*; see **Figure 5**). Under both scenarios, the Brent price in 2023 is sustained above \$100/b and it is projected to range between \$102/b and \$114/b on annual average. Given the potential impact of such high prices on the global economy, the US and its allies would want to avoid such scenarios, though Russia in retaliation to current sanctions may also decide to restrict energy supplies. In fact, our forecast scenarios show that the negative impact on oil demand is the principal driver of the price retreat in both cases following the peak impact of the supply disruptions.

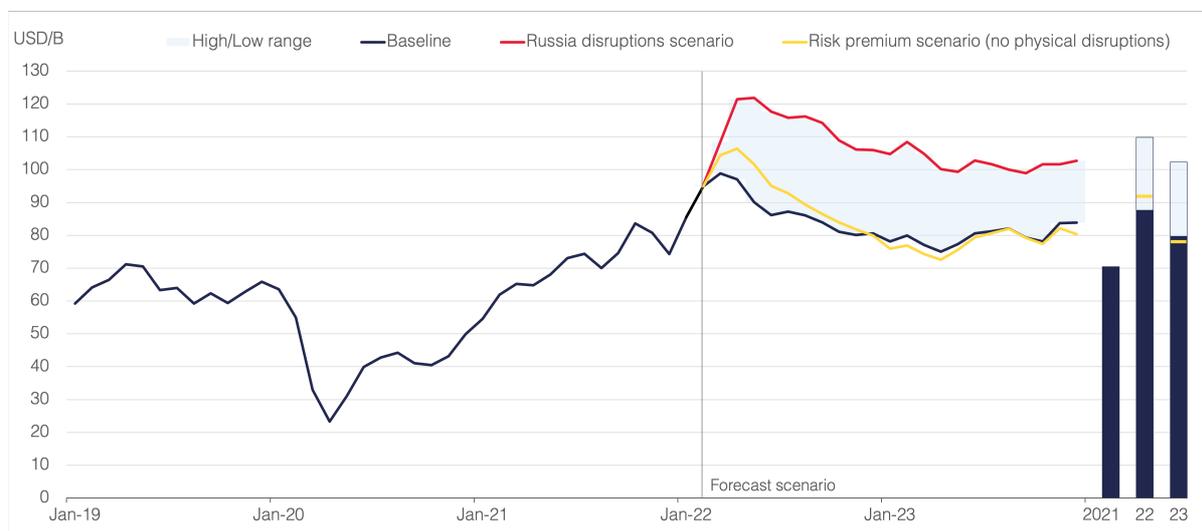
However, even if physical supplies are not impacted, the oil price still contains a speculative premium, which is often reflected in the desire to hold stocks in an environment of increased uncertainty and low stock buffers. This is estimated that it can reach as high as \$12/b implying that if the current tensions continue, the upward pressure on oil price could be maintained and Brent could be sustained above \$100/b depending on the duration of the crisis, even if market fundamentals ease as oil demand and oil supply responses to higher oil prices accelerate (**Figure 6**).

**Figure 5: Russia oil disruption scenario impact on Brent price**



Notes: *Baseline* assumes a de-escalation of the crisis in March 2022. *Russia disruptions scenario* assumes the loss of 3.2 mb/d of Russian production by April 2022. *Full curtailment scenario* assumes the complete halt of Russian crude exports, leading to the loss of 4.2 mb/d of Russian oil production. Analysis of the forecast scenarios is based on the 5-variable structural VAR model of the global oil market due to Economou et al. 2017<sup>1</sup>. Source: OIES.

**Figure 6: Risk premium scenario impact on Brent price**



Notes: *Risk premium scenario* assumes no physical disruptions in Russian oil production and the Russia-Ukraine tensions peaking in March 2022, followed by a de-escalation of the crisis by the end of H1 2022. Source: OIES.

<sup>1</sup> A. Economou, P. Agnolucci, B. Fattouh, B. and V. De Lipsis (2016). 'A Structural Model of the World Oil Market: The Role of Investment Dynamics and Capacity Constraints in Explaining the Evolution of the Real Price of Oil', OIES Paper: WPM 75.

Unlike piped natural gas, there are theoretically more avenues for Russia to redirect some of its European crude flows to other parts of the world, including Asia, though this would involve a massive shift in trade flows with wide implications for pricing and the freight market. Last month, Indian Oil Corporation (IOC), India's largest refiner, bought around 3 mbbls of Russian Urals in spot tenders, taking advantage of the discounts on offer amid rising product demand; however, on March 1, 2022, IOC announced it would halt Russian crude purchases on FOB basis, due to insurance risks. China's refineries will also be looking for opportunities to procure discounted Russian crudes. China is currently in stockpiling mode (shown by Unipet's strong buying appetite last month) and Chinese cracking margins have been very healthy recently. However, freight costs from the Black Sea are soaring in part due to higher risk premiums and higher fuel costs, reducing the attractiveness of Urals.

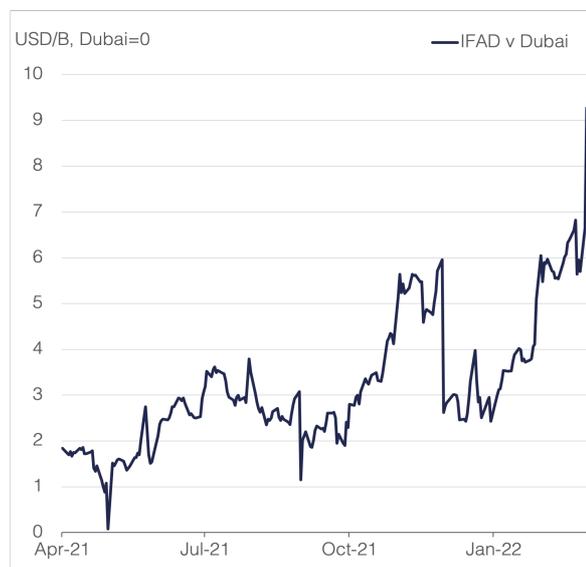
Asian refineries may also decide to wait until there is more clarity about the extent of sanctions and how these would impact the financing of Russian oil cargoes. For instance, China's largest two state-owned banks are restricting financing for the purchase of Russian commodities and have stopped issuing dollar-dominated letters of credit. More are expected to follow. While other payment term may be used, this will increase cargo financing costs (impacting margins). This is affecting ESPO prices in Asia, whose premium over Dubai has fallen sharply from its peak in February of \$7.24/b to \$3.11/b (**Figure 7**). The impact is also having a knock-on effect on Middle East crude pricing, where IFAD Murban on first day of March was trading at record high of \$9.27 versus Dubai futures (see **Figure 8**). DME Oman has also surged in recent days, with front-month Oman difference to Dubai swaps surging to \$9.45/b on March 1, 2022, from \$0.9/b on February 25, 2022. This reflects China buying on exchange due to ESPO being shunned in the spot market.

**Figure 7: ESPO Blend v Dubai**



Source: Argus.

**Figure 8: Murban IFAD v Dubai**



Source: S&P Global Platts.

If discounts widen enough and freight rates ease, Asian refineries may be tempted to pick up higher volumes of Russian crude (with some Chinese refiners potentially using Urals to displace longer-haul crudes). Indeed, with Russian refinery maintenance scheduled for April (and the prospect for an escalation in self-sanctioning/increased pressure on traders holding Russian-origin crude on their books), the maintenance will give Russia higher volumes of crude to export in April loading program – with the potential for discounts to widen up to \$20-25/b versus Dated Brent. If China increases Urals buying, this could further widen the Brent-Dubai spread which has recently hit record levels with the front-month April Brent–Dubai EFS reaching \$9/b, slowing down Dated-linked cargoes being exported to Asia-Pacific (**Figure 9**). Sour crudes like Johan Sverdrup and Forties, which could act as substitutes for Russian crude, could thus be expected to receive a strong bid. But North Sea grades will not be

enough to cover for the potential loss of Russian supplies and sour crudes from West Africa, the Middle East (particularly Iraqi Basrah) and/or the US (particularly Mars) could also receive strong bid from European refineries if Urals becomes less attractive due to stricter sanctions or if buyers show increased reluctance to purchase Russian crude. There is already chatter, for example, of the prospect for Iraqi spot cargoes to be offered via private tender to Med buyers, to take advantage of the dislocation.

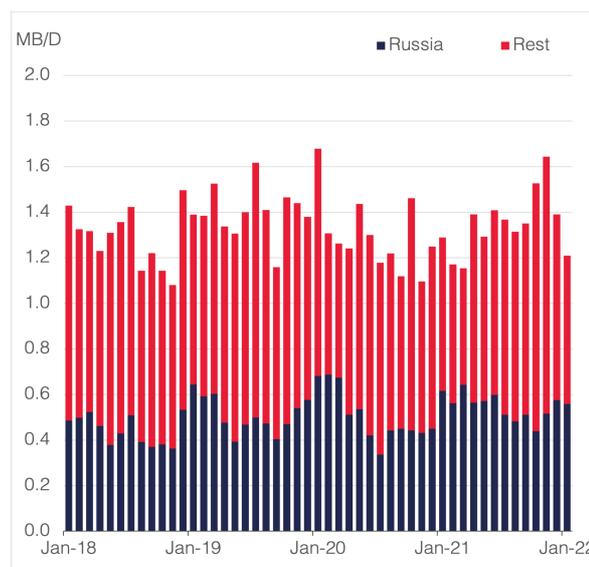
Russia is also the most important supplier of diesel to Europe supplying nearly 600,000 b/d or more than 40 per cent of its total diesel imports (**Figure 10**). The European diesel market has already been showing signs of tightness as reflected in the deep backwardation of ICE gasoil futures, high diesel margins and a fall in European middle distillate stocks. This reflects both stronger demand as economies continue to open, but also supply constraints as refineries have not been increasing runs fast enough as they were facing higher costs even before the escalation of the Russia-Ukraine crisis, especially the rise in the cost of hydrogen needed for desulphurization. Any loss of Russian diesel imports would further tighten diesel balances in Europe. Like crude, some European buyers may be reluctant to buy Russian products, but unlike crude, it may be much more difficult to find substitutes for Russian diesel. For example, Europe may find no relief from Asia, where gasoil balances also remain tight, driven by reduced Chinese product exports and recovering consumption in key diesel-producing countries such as India. As shown in **Figure 11** this tightness is also being reflected in gasoil time spreads that carry on into a steep backwardation since the beginning of 2022.

**Figure 9: Brent-Dubai EFS**



Source: S&P Global Platts.

**Figure 10: Europe imports of diesel by origin**



Source: Kpler.

Increasing diesel production faces many challenges including securing Russian crude which constitutes a high proportion of European refineries' diet but also the increased cost of refining, especially as the sharp rise in gas prices has increased the cost of desulphurizing products. This may cause European refineries to source more light sweet crude providing support for these crudes, particularly West African (WAF) crudes. Russia is also an important exporter of feedstocks such as vacuum gasoil (VGO) and fuel oil which are important feedstocks for refineries and the supply of these fuels may also be affected. Indeed, in late February, BP cancelled all fuel oil loadings from the Black Sea (the cargo – originating from Rosneft's refinery – was due to load on 5 March).

Although Russia's fuel oil output has declined in recent years, so has its domestic demand for the fuel and Russia has a large exportable surplus. US imports of Russian crude and products have been rising in recent years as crude imports from Venezuela fell (**Figure 12**). These imports from Russia are classified as unfinished oil and consist of high and low sulphur fuel oil and high sulphur and low sulphur vacuum gasoil. These are essential feedstocks in secondary units of complex refineries where fuel oil

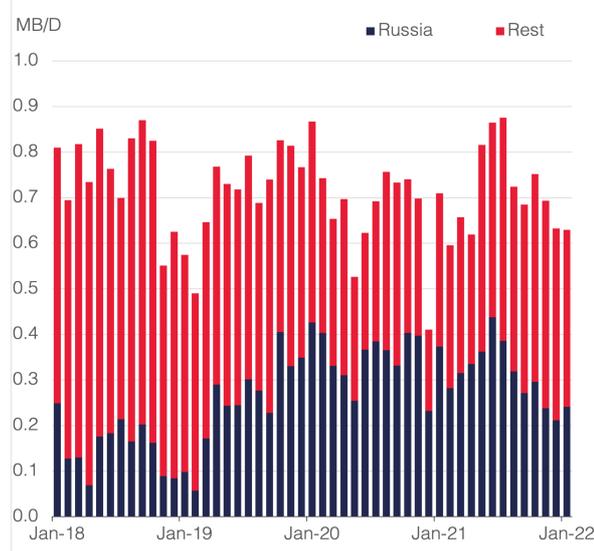
could be blended with sweet crude. Any disruption in these flows will be difficult to replace at times when refineries in the US are ramping up production.

**Figure 11: Singapore gasoil time spread**



Source: S&P Global Platts.

**Figure 12: US imports of fuel oils by origin**



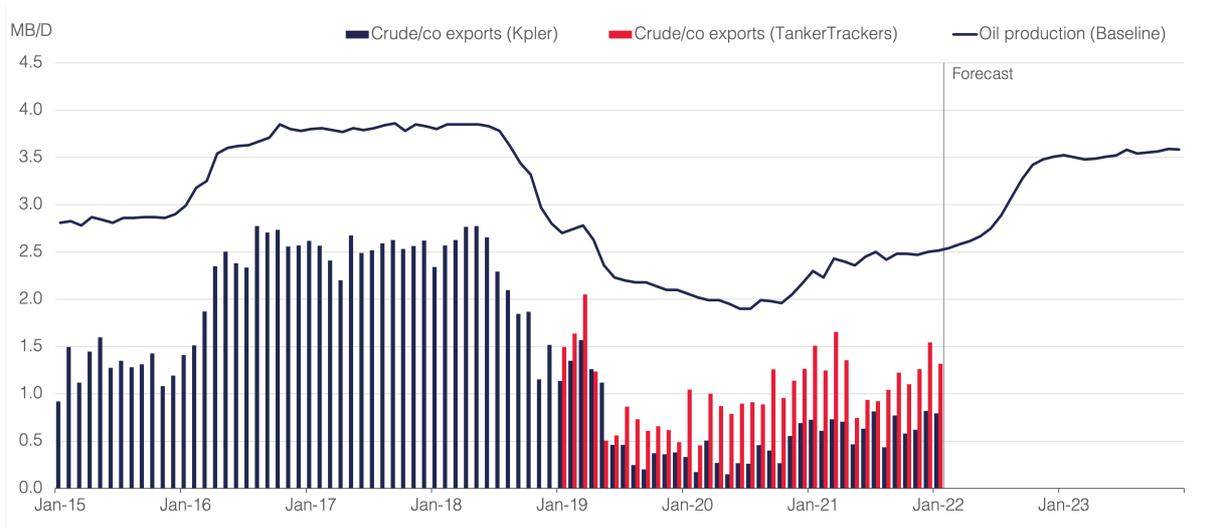
Source: Kpler.

## Potential responses

In the short term, potential responses to ease the price pressure are likely to come from the supply side. One of the key dynamics shaping the oil market for 2022 is the potential increase in Iran's production if sanctions on the country are lifted. The signals about how fast a deal between Iran and P5+1 (the permanent members of the United Nations Security Council the United States, the United Kingdom, Russia, France, and China—plus Germany) could be reached are conflicting. While negotiators seem to have made significant progress, some key issues remain unresolved. It remains unclear whether the current Russia-Ukrainian crisis would increase pressure on the US to resolve the outstanding issues and conclude a deal. On the other hand, Iran could take advantage of the added pressure on oil markets and push harder to achieve its demands and/or reopen issues that had already been agreed, resulting in further delays. But regardless of when a deal is reached (with some suggesting a deal by next week), it is worth noting that Iran's oil exports have already been rising in recent months. According to Iran's oil minister, Iran's sales of petroleum products to foreign buyers reached a record high despite US sanctions. Latest estimates from companies that track Iranian flows put Iranian oil exports in 2021 at 1.2 mb/d, about 250,000 b/d higher than both 2020 and 2019 (**Figure 13**). This implies that Iran's production increase from the current level could be smaller than consensus, especially that Iran may have lost some productive capacity under sanctions.

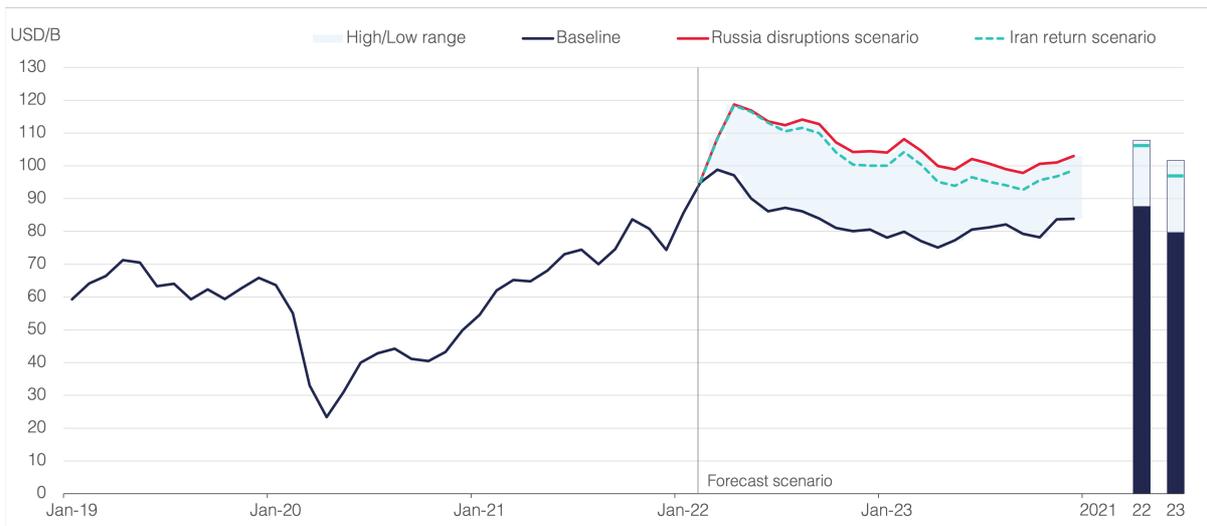
In our baseline case, Iran's production increases from 2.5 mb/d to 3.5 mb/d in H2 2022 and reaches a maximum capacity of 3.6 mb/d (compared to the headline level of 3.8 mb/d). Such an increase will moderate price increases by \$1.7/b in 2022 and \$4.8/b in 2023 relative to the *Russian disruption scenario*, notwithstanding the impact of sentiment and prices of the full return of a key OPEC producer to the market and the immediate release of crude and condensates in storage (*Iran return scenario*; **Figure 14**). In fact, looking at the Libyan experience back in 2020 is quite telling. Between September and December 2020, Libya ramped up its production by 1.03 mb/d, from 140,000 b/d to 1.17 mb/d, which was met by an initial decline in monthly Brent by 8 per cent (-\$3.8/b between October and August 2020) followed by a stark reversal of these losses by 23 per cent year-end (+\$9.4/b between December and October 2020). As to the OPEC+ dynamics and integrating Iran into the current quota system, Iran's increased production is less of an issue as Iran is unlikely to reach its implied maximum capacity of around 3.8 mb/d in 2022.

**Figure 13: Iran oil exports and production**



Source: Kpler, TankerTrackers, OIES.

**Figure 14: Iran return scenario impact on Brent price**



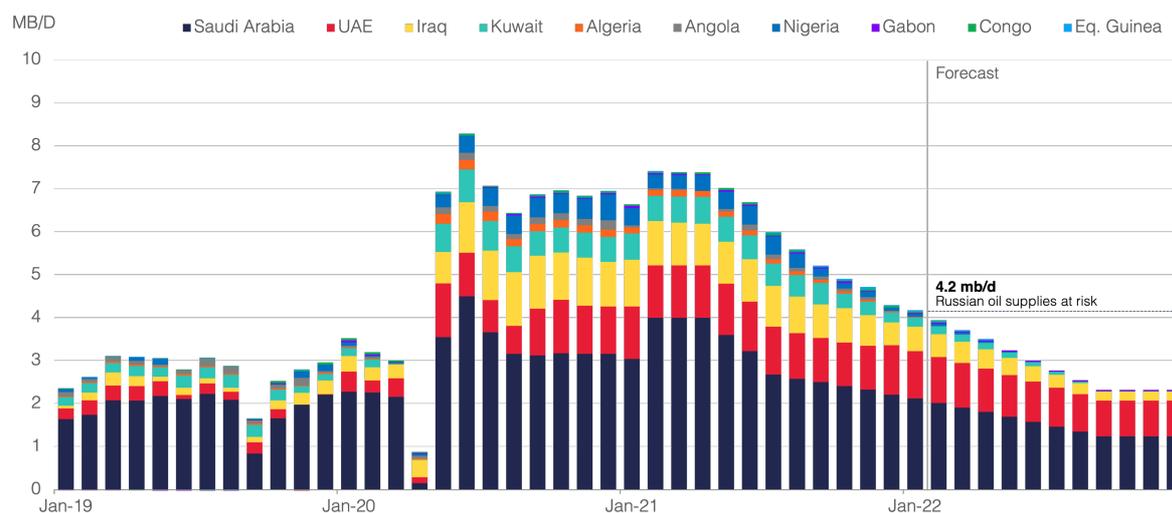
Notes: Iran return scenario assumes the revival of the nuclear deal in H1 2022 and the return of Iranian production as a result in H2 to reach at 3.5 mb/d year-end from 2.3 mb/d in January 2022.

Source: OIES.

Another potential supply response could come from OPEC+. But so far, there is no indication that OPEC+ will alter its current plan, especially since the Russia-Ukraine crisis has not yet resulted in any physical supply disruptions and until recently OPEC was still expecting surpluses to build in 2022. Any deviation from OPEC+'s current supply roadmap would also be seen as a gamechanger, as its decisions being influenced by non-technical factors and geopolitical outcomes (an untidy outcome given Russia's long-term importance to OPEC). It is also worth noting that OPEC continued functioning throughout the entire 1980-88 Iran-Iraq war. In the current context of Russia facing a marketing crisis (rather than supply shock), a more interesting decision to watch will be Saudi OSPs, specifically Arab Light pricing for NWE/Mediterranean and Iraqi pricing for Europe. Furthermore, an open question remaining is the volume of barrels that OPEC+ can bring back into the market. Having entered the last phase of the historic OPEC+ deal, producers are now set to return another 3.76 mb/d of restrained

production back into the market between January and September 2022. Some producers however were already struggling to meet their targets in 2021 (mainly the African OPEC producers) and we expect this situation to become more acute and spill over to more producers, in which case OPEC+ will struggle to return more than 2.3 mb/d. Also, with producers nearing maximum capacity, the spare capacity cushion alone offers little support in the event of a disruption to Russian supplies (**Figure 15**).

**Figure 15: OPEC(10) spare capacity**



Notes: Spare capacity estimates are based on IEA estimates of sustained productive capacity as of January 2022 and actual/baseline crude oil production levels.

Source: OIES.

Another potential supply response is a release of stocks from the Strategic Petroleum Reserve (SPR). On March 1, 2022, IEA announced an international coordinated release of 60 mmbbls of crude oil from emergency stock to moderate prices and ease any potential shortfalls as a result of the Russia-Ukraine crisis.<sup>2</sup> Although this is equivalent to 2 mb/d over 30 days, oil prices rose by nearly 4 per cent in the day despite the announcement and settled at \$104.97/b from \$101.01/b the day before. This reflects concerns over the size of the release compared to the potential disruptions in Russian oil production, the ability of pledging countries to actually release the pledged emergency stocks, as well as the extent to which SPR releases are effective in mitigating the impact of oil shocks on market and prices. In fact, in November 2021, the US government announced the planned release of 50 mmbbls of crude oil from SPR between December 16, 2021, and April 30, 2022,<sup>3</sup> but as of February 2022 and according to Kpler data they managed to release only 20 mmbbls, while prices in January surged m/m by 15 per cent or \$11.2/b (including the geopolitical risk premium) and global oil demand kept surprising the market. Having not fulfilled the November 2021 SPR pledge, the US will now be responsible for releasing half of the total amount of emergency stocks announced by the IEA, confirmed by the US President Biden during his State of the Union address.<sup>4</sup> Although the release if it occurs would send a signal that consuming countries are taking actions to prevent price from spiking, we expect the actual impact on prices to be minimal and shortlived.

The demand side responses are also important but are likely to become more visible later this year. A protracted military conflict will result in long period of instability, uncertainty and financial turmoil spilling over to Europe and potentially to the rest of the global economy. High energy costs will also have an adverse impact on industrial production (especially if high gas prices cause factories to shut down or

<sup>2</sup> IEA, 'IEA member countries to make 60 million barrels of oil available following Russia's invasion of Ukraine', 1 March 2022.

<sup>3</sup> Office of Fossil Energy and Carbon Management, 'Summary of 50 Million Barrel Release from the Strategic Petroleum Reserve', 23 November 2021.

<sup>4</sup> Bloomberg, 'IEA will deploy emergency oil stocks to ease soaring prices', 1 March 2022.

reduce operations), consumer spending and consumer sentiment. Higher inflation due to rising energy costs could induce central banks in most parts of the world to tighten their monetary policy sooner than planned. Inevitably, such factors will cause downward revisions in economic growth forecasts and lower oil demand growth projections for 2022 and 2023<sup>5</sup>. Our latest oil demand forecast in March has already seen a downward revision in our growth projections for 2022 by 0.21 mb/d and another in 2023 by 0.15 mb/d, most of which are confined to the OECD and in particular Europe relative to our previous no conflict/no sanctions case. On the other hand, high natural gas prices could induce gas-to-oil substitution providing some support for oil demand but with oil prices rising, further substitution is likely to be more limited.

## What next?

Looking forward the market focus should not only be on whether the oil sector will be directly targeted by sanctions, but also the crescendo effect of self-sanctioning along the oil supply chain all the way from marketing to financing to shipping. Fears over energy sanctions and the ambiguity over the banking sanctions have already seen companies avoid purchasing Russian barrels, pushing prices to new multiyear highs and shaving-off shock mitigation policies such as the SPR releases. Also, it has become clear that traders holding Russian crude on their books are struggling to clear cargoes and this has been reflected in widening differentials and rising shipping and insurance costs. The next stages for Russian crude supplies are highly uncertain but some possible impacts include:

- Massive shifts in trade flows and sharp adjustments in price differentials to reflect shifts in Russian crude exports. Particularly, there could be a greater re-redirecting of flows from Europe to Asia, but there are limits to such re-direction and not all Urals previously destined to Europe will flow into Asia.
- Russian oil companies could offer sweeteners to buyers to make their barrels more attractive, for instance shifting cargoes from FOB to CFR basis. Also, in response to more extensive self-sanctioning, Urals and ESPO could be offered at discounts so large that cargoes would eventually clear, potentially as masked cargoes or via ship-to-ship transfers. But there are limits to this strategy given the large volumes of Russian exports and the intensification and widening of sanctions.
- Self-sanctioning escalates over the coming weeks leading to a reduction in Russian production and supply disruptions at a larger scale.

In the current environment of ever rising tensions, one should also not also exclude the possibility that in an escalation situation where Russia struggles to clear its barrels, weaponizing energy becomes the next chapter in Russia's ongoing standoff with the West. As these are still early days, a scenario in which Russian oil supplies get disrupted in a sudden manner should also be considered. This will exert significant pressure on both market balances and prices in the near-term and for most of 2022.

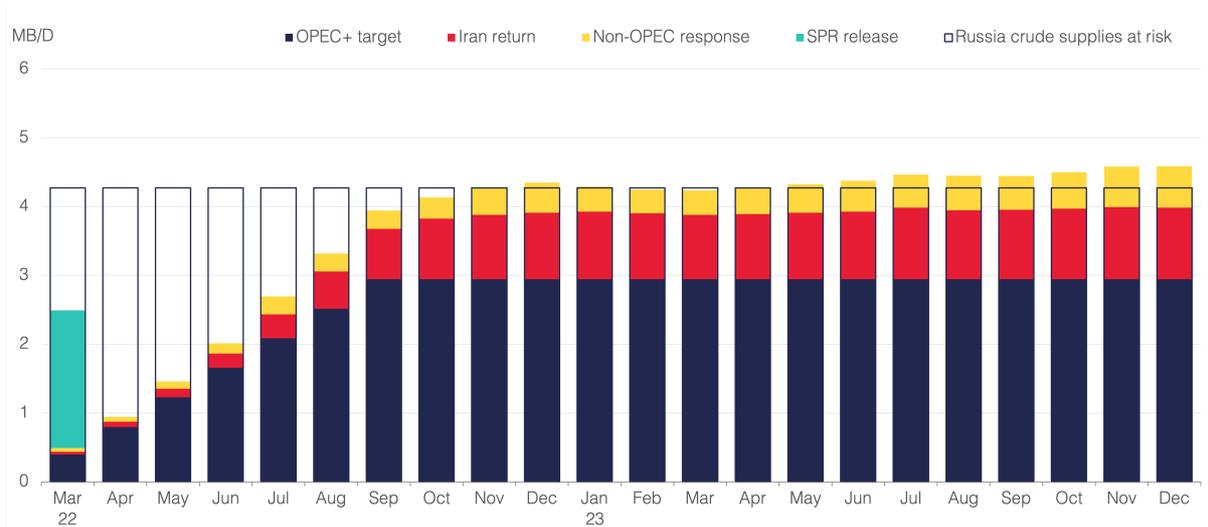
Estimating that 4.2 mb/d of Russian crude supplies are at an immediate risk, the current plan of OPEC+ plan of returning production of 2.94 mb/d between March and December, Iran fully returning to the market (+1 mb/d) and non-OPEC production growth particularly in North America accelerating (+0.6 mb/d), these combined supply responses can help fill the potential supply gap but only by the end of the year (see **Figure 16**). The planned SPR releases will offer little support to a potential shortfall. But in such scenario, demand responses will also play their role. Based on our analysis, we estimate some 1.18 mb/d of global demand to be at risk between 2022 and 2023 (excluding oil substitution), with the negative impacts of the Russia-Ukraine crisis on global growth and oil demand extending beyond the short-term. In terms of products, the market and refiners appear less flexible faced with constraints both in terms of costs and feedstock availability. Also, the impacts of the current shock will extend beyond the short-term and beyond balances and prices. The recent crisis will elevate energy security (including

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<sup>5</sup> Financial Times, 'How will Russia's invasion of Ukraine hit the global economy?', 25 February 2022.

oil security) in policy makers' agenda with long-term consequences for governments' energy policies including their energy transition.

**Figure 16: Replacement barrels versus Russian crude supplies at risk**



Notes: OPEC+ excludes Russia and assumes the return of 2.9 mb/d of withheld crude supplies from rest OPEC+ producers according to deal targets, which is associated with the release of 1.2 mb/d from OPEC spare capacity in response to the disruption in Russia production. This leaves the system with a spare capacity buffer of 1 mb/d. Source: OIES.