

# Energy Tidbits

1<sup>st</sup> China Spring Festival Without Covid Restrictions is Set Up for Q1 Herd Immunity Then Sustained Demand Recovery in 2023

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Freeport LNG Restart Likely Delayed Months, Consultant Says (1)  
2023-01-05 18:22:11.863 GMT

By Ari Natter and Anna Shiryayevskaya

(Bloomberg) -- The restart of Freeport LNG, a key US liquefied natural gas export terminal that has been shuttered since an explosion last summer, will likely be off line "for several more months," a Washington consulting firm said in a note to clients that conflicts with the company's stated goal of restarting in January.

The estimate from Rapidan Energy Group cited "extensive personnel training" requirements being implemented by federal regulators overseeing the facilities restart following a fire that led to its closure in June. Heather Browne, a spokeswoman for Houston-based Freeport LNG, said the company's goal of reopening in the second half of January still stands.

The restart of the plant has already been postponed several times. Another delay could mean less supply in the middle of the peak heating-demand season in Europe, which heavily relies on US LNG to fill gaps left by Russian pipeline gas supply. European gas prices rebounded on Thursday, settling 11% higher.

"Training is a time-intensive process, and regulators will demand a high standard before allowing Freeport to resume operations, suggesting a restart authorization will not come before" the second quarter of this year, Rapidan wrote in its note. "With more submissions to be made, documentation to be reviewed, and training to be completed, a January restart at Freeport LNG is highly unlikely."

Wood Mackenzie's View

Wood Mackenzie Ltd., which is also tracking the plant, said a restart in the second half of January was still possible. "Currently, we're anticipating a restart to operations at Freeport in the second half of January, with some risk potentially pushing back restart into February," Ian Heming, a research analyst at the firm, said in an email.

The required personnel training "has likely been ongoing as the facility moves through the regulatory process," Heming said, adding Freeport has been regularly filing updates to an information request from regulators that "should allow regulators to approve the facility for restart relatively quickly, though there is no definitive timeline for the approval process."

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## Ministers' joint statement on status of negotiations with Blueberry River First Nations

### Joint Statement

#### Victoria

Saturday, November 26, 2022 4:45 PM

Josie Osborne, Minister of Land, Water and Resource Stewardship; Murray Rankin, Minister of Indigenous Relations and Reconciliation; and Bruce Ralston, Minister of Energy, Mines and Low Carbon Innovation, have issued the following statement about the status of negotiations with Blueberry River First Nations:

“We continue to engage in respectful negotiations with Blueberry River First Nations in response to the BC Supreme Court’s direction in June 2021 to find a new approach to natural resource development that protects the Nations’ treaty rights and addresses cumulative impacts.

“Our negotiating teams have been working incredibly hard to develop solutions that address healing and restoration on the land and provide predictability for industry, while including Blueberry River First Nations in how natural resources are planned and authorized in their territory

“From the start, our joint focus has been on ensuring we arrive at an agreement that protects Blueberry River First Nations' Treaty 8 rights and that provides for a sustainable economy with good jobs and opportunity for people in northeastern B.C.

“We wish to affirm that we are very close to an agreement and are discussing final issues. As such, we have initiated early engagement with select industry groups and other Treaty 8 Nations on a proposed agreement to hear their feedback and consider adjustments

“Our commitment is to share more with British Columbians as soon as possible.”

# VENTURE GLOBAL AND INPEX ANNOUNCE LNG SALES AND PURCHASE AGREEMENT

**Arlington, Virginia**– Today, Venture Global LNG and INPEX CORPORATION (INPEX) announced the execution of a long-term Sales and Purchase Agreement (SPA) for the purchase of one million tonnes per annum (1MTPA) of liquefied natural gas (LNG) for 20 years. Under the agreement, INPEX Energy Trading Singapore Pte. Ltd. (IETS), a Singapore-based subsidiary of INPEX, will purchase 1MTPA of LNG from CP2 LNG, Venture Global’s third project which is expected to commence construction in 2023. INPEX joins other CP2 LNG customers including ExxonMobil, Chevron, EnBW and New Fortress Energy.

“Venture Global is delighted to welcome INPEX, Japan’s largest gas exploration and production company, as a customer at CP2 and expand our customer base in Asia,” said **Venture Global CEO Mike Sabel**. “We are honored to provide security of LNG supply to this key market and look forward to supporting INPEX as it delivers our competitive lower carbon energy to the region.”

“This agreement will enable the INPEX Group to procure LNG from the United States on a long-term basis, expand its LNG supply capacity, and diversify its supply sources to further contribute to the stable supply of energy,” said **Hiroshi Kato, Executive Officer and Senior Vice President of Global Energy Marketing at INPEX**.

## **About Venture Global LNG**

Venture Global is a long-term, low-cost provider of U.S. LNG sourced from resource rich North American natural gas basins. Venture Global’s first facility, Calcasieu Pass, commenced producing LNG in January 2022. The company is also constructing or developing an additional 60 MTPA of production capacity in Louisiana to provide clean, affordable energy to the world. The company is developing Carbon Capture and Sequestration (CCS) projects at each of its LNG facilities.

For more information, visit <https://www.venturegloballng.com>

## **About INPEX**

INPEX CORPORATION is Japan’s largest exploration and production (E&P) company, and is currently involved in projects across multiple continents, including the Ichthys LNG Project in Australia as Operator. By thoroughly making its oil and gas business cleaner while expanding its 5 net zero business areas, INPEX aims to provide a stable supply of diverse and clean energy sources including oil, natural gas, hydrogen and renewables as a pioneer in energy transformation.

For more information, visit <https://www.inpex.co.jp/english/index.html>

- [Press Release](#)
- [2022](#)

- Signing Key Term Sheet for the Sale and Purchase of LNG from the Oman LNG Project

## Signing Key Term Sheet for the Sale and Purchase of LNG from the Oman LNG Project

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2022/12/27

JERA Co., Inc. ("JERA") has signed a key term sheet for the sale and purchase of LNG with Oman Liquefied Natural Gas LLC ("Oman LNG").

Based on the key term sheet, JERA will purchase up to 12 cargoes (Approx. 0.8 million tons) per year of LNG produced from the Oman LNG project from 2025 for 10 years.

LNG procurement competition has been intensifying and thus, stable procurement of fuel in a timely manner in line with the domestic electricity supply-demand situation is needed to secure a stable supply of energy in Japan. This is an FOB contract, which has a high flexibility and is expected to enhance capability to respond uncertainties in the domestic LNG supply and demand.

JERA will strive for flexible procurement to contribute to fuel supply stability to secure a stable supply of energy in Japan.

### Outline of the Key Term Sheet

Seller	Oman Liquefied Natural Gas LLC
Buyer	JERA Co., Inc.
Contract period	10 years starting 2025
Contract volume	Up to 12 cargoes per year (Approx. 800,000 tons per year)
Delivery terms	FOB

## Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?

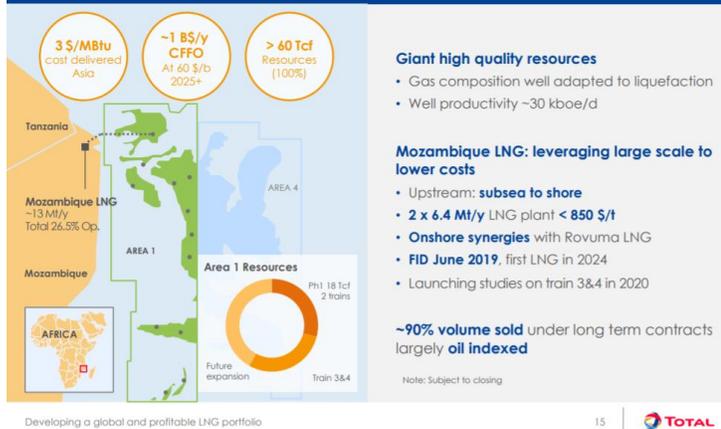
Posted Wednesday April 28, 2021. 9:00 MT

The next six months will determine the size and length of the new LNG supply gap that is hitting harder and faster than anyone expected six months ago. Optimists will say the Mozambique government will bring sustainable security and safety to the northern Cabo Delgado province and provide the confidence to Total to quickly get back to LNG development such that its LNG in-service delay is a matter of months and not years. We hope so for Mozambique's domestic situation, but will it be that easy for Total's board to quickly look thru what just happened? Total suspended LNG development for 3 months, restarted development on March 25, but then 3 days of violence led it to suspend development again on March 28, and announce force majeure on Monday April 26. Even if the optimists are right, Mozambique LNG is counted on for LNG supply and the major LNG supply project that are in LNG supply forecasts are now all delayed – Total Phase 1 of 1.7 bcf/d and its follow on Phase 2 of 1.3 bcf/d, and Exxon's Rozuma Phase 1 of 2.0 bcf/d. It is important to remember this 5.0 bcf/d of major LNG supply is being counted in LNG supply forecasts and starting in 2024. At a minimum, we think the more likely scenario is a delay of at least 2 years in this 5.0 bcf/d from the pre-Covid timelines. And this creates a much bigger and sooner LNG supply gap starting ~2025 and stronger outlook for LNG prices. Thermal coal in Asia will play a role in keeping a lid on LNG prices. But there will be the opportunity for LNG suppliers to at least review the potential for brownfield LNG projects to fill the growing supply gap. The thought of increasing capex was a non-starter six months ago, but there is a much stronger outlook for global oil and gas prices. Oil and gas companies are pivoting from cutting capex to small increases in 2021 capex and expecting for higher capex in 2022. We believe this sets the stage for looking at potential FID of brownfield LNG projects before the end of 2021 to be included in 2022 capex budgets. Mozambique is causing an LNG supply gap that someone will try to fill. And if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? Cdn natural gas producers hope so as this would mean more Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub.

Total declares force majeure on Mozambique LNG, Yesterday, Total announced [\[LINK\]](#) "Considering the evolution of the security situation in the north of the Cabo Delgado province in Mozambique, Total confirms the withdrawal of all Mozambique LNG project personnel from the Afungi site. This situation leads Total, as operator of Mozambique LNG project, to declare force majeure. Total expresses its solidarity with the government and people of Mozambique and wishes that the actions carried out by the government of Mozambique and its regional and international partners will enable the restoration of security and stability in Cabo Delgado province in a sustained manner". Total is working Phase 1 is ~1.7 bcf/d (Train 1 + 2, 6.45 mtpa/train) and was originally expected to being LNG deliveries in 2024. There was no specific timeline for Phase 2 of 1.3 bcf/d (Train 3 + 4, 5.0 mtpa/train), but was expected to follow Phase 1 in short order to keep capital costs under control with a continuous construction process with a potential onstream shortly after 2026.

## Total Mozambique Phase 1 and 2

### Mozambique LNG: unlocking world-class gas resources



Source: Total Investor Day September 24, 2019

Total's Mozambique force majeure is no surprise, especially the need to the restoration of security and stability "in a sustained manner". Yesterday, Total announced [\[LINK\]](#) "*Considering the evolution of the security*". No one should be surprised by the force majeure or the sustained manner caveat. SAF Group posts a weekly Energy Tidbits research memo [\[LINK\]](#), wherein we have, in multiple weekly memos, that Total had shut down development in December for 3 months due to the violent and security risks. It restarted development on Wed March 24, violence/attacks immediately resumed for 3 consecutive days, and then Total suspended development on Sat March 27. Local violence/attacks shut development down in Dec, the situation gets settled enough for Total to restart in March, only to be shut down 3 days thereafter. No one should be surprised especially with Total's need to see security and stability "in a sustained manner".

Does anyone really think Total will risk another quick 2-3 month restart or even in 2021? The Mozambique government will be working hard to convince Total to restart soon. We just find it hard to believe Total board will risk a replay of March 24-27 in 2021. Unfortunately, Mozambique has had internal conflict for years. It reached a milestone to the positive in August 2019. Our SAF Group August 11, 2019 Energy Tidbits memo [\[LINK\]](#) highlighted the signing of a peace pact between Mozambique President Nyusi and leader of the Renamo opposition Momade. This was the official end to a 2013 thru 2016 conflict following a failure to hold up the prior peace pact. At that time, FT reported [\[LINK\]](#) "Mr Nyusi has said that *"the government and Renamo will come together and hunt" rebels who fail to disarm. The government has struggled to stem the separate insurgency in the north, which has killed or displaced hundreds near the gas-rich areas during the past two years. While the roots of the conflict remain murky, it is linked to a local Islamist group and appears to be drawing on disaffection over sharing gas investment benefits, say analysts.*" This is just a reminder this is not a new issue. LNG is a game changer to Mozambique's economic future. It is, but also has been, a government priority to have the security and safety for Total and Exxon to move on their LNG developments. Its hard to believe the Mozambique government will be able to quickly convince Total and Exxon boards that they can be comfortable there is a sustained security/safety situation and they can send their people back in to develop the LNG. Total's board would allow any resumption of development before year end 2021. The last thing Total wants is a replay of March 24-27. The first question is how long will it take before the Total board is convinced its safe to restart. Could you imagine them doing a replay of what just happened? Wait three months, restart development and have to stop again right away? We have to believe that could lead the Total board to believe it is unfixable for years. We just don't think they are to prepared to risk that decision in 3 months. Its why we have to think there isn't a restart approval until at least in 2022 at the earliest ie. why we think the likely scenario is a delay of 2-3 years, and not a matter of months.

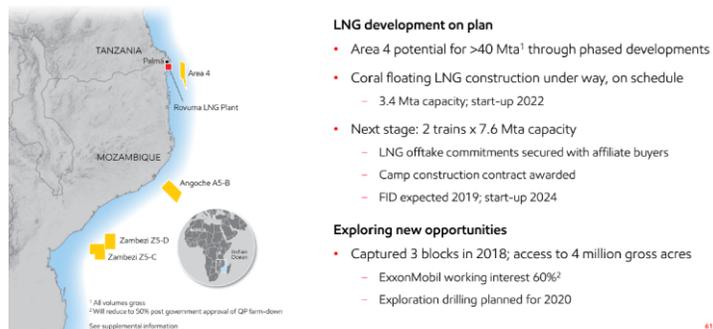
Mozambique's security issues pushes back 5.0 bcf/d of new LNG supply at least a couple years. The global LNG issue is that 5 bcf/d of new Mozambique LNG supply (apart from the Eni Coral FLNG of 0.45 bcf/d) won't start up in 2024 and

continuing thru the 2020s. And we believe all LNG forecasts included this 5.0 bcf/d to be in service in the 2020s as Mozambique had been considered the best positioned LNG supply to access Asia after Australia and Papua New Guinea. (i) Eni Coral Sul (Rovuma Basin) FLNG of 0.45 bcf/d planned in service in 2022. [\[LINK\]](#) This is an offshore floating LNG vessel that is still expected to be in service in 2022. (ii) Total Phase 1 to add 1.7 bcf/d with an in service originally planned for 2024. We expect the in service data to be pushed back to at least 2026 assuming Total gives a development restart approval in Dec 2021. In theory, this would only be a 1 year loss of time. However, Total has let services go, the project will be idle for 9 months, it isn't clear if the need to get people out quickly let them do a complete put the project on hold, and how many people will be on site maintaining the status of the development during the force majeure. Also what new procedures and safety will be put in place for a restart. These all mean there will be added time needed to get the project back to where it was when force majeure was declared ie. why we think a 12 month time delay will be more like an 18 month project delay. (iii) Exxon's Rozuma Phase 1 LNG will add 2.0 bcf/d and, pre-Covid, was expected to be in service in 2025. We believe the delays related to security and safety at Total are also going to impact Exxon. We find it highly unlikely the Exxon board would take a different security and safety decision than Total. Pre-pandemic, Exxon's March 6, 2019 Investor Day noted their operated Mozambique Rovuma LNG Phase 1 was to be 2 trains each with 1.0 bcf/d capacity for total initial capacity of 2.0 bcf/d with FID expected in 2019 and first LNG deliveries in 2024. The 2019 FID expectation was later pushed to be expected just before the March 2020 investor day. But the pandemic hit, and on March 21, 2020, we tweeted [\[LINK\]](#) on the Reuters story "Exclusive: Coronavirus, gas slump put brakes on Exxon's giant Mozambique LNG plan" [\[LINK\]](#) that noted Exxon was expected to delay the Rovuma FID. There was no timeline, but the expectation was that FID would now be in 2022 (3 years later than original timeline) and that would push first LNG likely to 2027. (iv) Total Phase 2 was to add 1.3 bcf/d. There was no firm in service date but it was expected to follow closely behind Phase 1 to maintain services. That would have put it originally in the 2026/2027 period. But if Phase 1 is pushed back 2 years, so will Phase 2 so more likely 2028/2029.. (v) Total Phase 1 + 2 and Exxon Rozuma Phase 1 total 5.0 bcf/d and would have been (and still are) in all LNG supply forecasts for the 2020s. (vi) We aren't certain if the LNG supply forecasts include Exxon Rozuma Phase 2, which would be an additional 2.0 bcf/d on top of the 5.0 bcf/d noted above. Exxon Rozuma has always been expected to be at least 2 Phases. This has been the plan since the Anadarko days given the 85 tcf size of the resource on Exxon's Area 4. There was no firm in service data for Phase 2, but it was expected they would also closely follow Phase 1 to maintain services. We expect that original timeline would have been 2026/2027 and that would not be pushed back to 2029/2030. (vii) It doesn't matter if its only 5 bcf/ of Mozambique that is delayed 2 to 3 years, it will cause a bigger LNG supply gap and sooner. The issue for LNG markets is this is taking projects that are in development effectively out of the queue for some period.

## Exxon Mozambique LNG

### UPSTREAM MOZAMBIQUE

Five outstanding developments



Source: Exxon Investor Day March 6, 2019

Won't LNG and natural gas get hit by Biden's push for carbon free electricity? Yes, in the US. For the last 9 months, we have warned on Biden's climate change plan that were his election platform and now form his administration's energy transition map. We posted our July 28, 2020 blog "[Biden To Put US On "Irreversible Path to Achieve Net-Zero Emissions, Economy-Wide" Is a Major Negative To US Natural Gas in 2020s](#)" [\[LINK\]](#) on Biden's platform "[The Biden Plan to Build a Modern, Sustainable Infrastructure and an Equitable Clean Energy Future](#)" [\[LINK\]](#). Biden's new American Jobs Plan

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[\[LINK\]](#) lines up with his campaign platform including to put the US “on the path to achieving 100 percent carbon-free electricity by 2035.” Our July 28, 2020 blog noted that it would require replacing ~60% of US electricity generation with more renewable and it could eliminate ~40% (33.5 bcf/d) of 2019 US natural gas consumption. If Biden is 25% successful by 2030, it would replace ~6.3 bcf/d of natural gas demand. It would be a negative to US natural gas and force more US natural gas to export markets. The wildcard when does US natural gas start to decline if producers are faced with the reality of natural gas being phased out for electricity. The other hope is that when Biden says “carbon-free”, its not what ends up in the details of any formal policy statement ie. carbon electricity will be allowed with Biden’s push for CCS.

Will Cdn natural gas be similarly hit by if Trudeau move to “emissions free” and not “net zero emissions” electricity? Yes and No. Our SAF Group April 25, 2021 Energy Tidbits memo [\[LINK\]](#) was titled ““Bad News For Natural Gas, Trudeau’s Electricity Goal is Now 100% “Emissions Free” And Not “Net Zero Emissions””. On Thursday, PM Trudeau spoke at Biden’s global climate summit [\[LINK\]](#) and looks like he slipped in a new view on electricity than was in last Monday’s budget and his Dec climate plan. Trudeau said “In Canada, we’ve worked hard to get to over 80% emissions-free electricity, and we’re not going to stop until we get to 100%.” Speeches, especially ones made on a global stage are checked carefully so this had to be deliberate. Trudeau said “emissions free” and not net zero emissions electricity. It seems like this language is carefully written to exclude any fossil fuels as they are not emissions free even if they are linked to CCS. Recall in Liberals big Dec 2020 climate announcement [\[LINK\]](#), Liberals said ““Work with provinces, utilities and other partners to ensure that Canada’s electricity generation achieves net-zero emissions before 2050.” There is no way Trudeau changed the language unless he meant to do so. And this is a major change as it would seem to indicate his plan to eliminate all fossil fuels used for electricity. If so this would be a negative to Cdn natural gas that would be stuck within Western Canada and/or continuing to push into the US when Biden is trying to switch to carbon free electricity. We recognize that there is still some ambiguity in what will be the details of policy and the Liberals aren’t changing to no carbon sourced electricity at all. Let’s hope so. But let’s also be careful that politicians don’t change language without a reason or at least with a view to setting up for some future hit. Plus Trudeau had a big warning in that same speech saying “we will make it law to respect our new 2030 target and achieve net-zero emissions by 2050”. They plan to make it the law that Canada has to be on track for the Liberals 2030 emissions targets. This means that the future messaging will be that the Liberals have no choice but to take harder future emissions actions as it is the law. They will be just obeying the law as they will be obligated to obey the law. Everyone knows the messaging will be we have to do more get to Net Zero, that in itself will inevitably mean it will be the law if he actually does move to eliminate any carbon based electricity. So yes it’s a negative, that is unless more Cdn natural gas can be exported via LNG to Asia. We believe this would be a plus to be priced against global LNG instead of Henry Hub.

Biden’s global climate summit reminded there is too much risk to skip over natural gas as the transition fuel. Apart from the US and Canada, we haven’t seen a sea shift to eliminating natural gas for power generation, especially from energy import dependent countries. There is a strong belief that hydrogen and battery storage will one day be able to scale up at a competitive cost to lead to the acceleration away from fossil fuels. But that time isn’t yet here, at least not for energy import dependent countries. One of the key themes from last week’s leader’s speeches at the Biden global climate summit – to get to Net Zero, the world is assuming there will be technological advances/discoveries that aren’t here today and that have the potential to immediately ramp up in scale. IEA Executive Director Faith Birol was blunt in his message [\[LINK\]](#) saying “Right now, the data does not match the rhetoric – and the gap is getting wider.” And “IEA analysis shows that about half the reductions to get to net zero emissions in 2050 will need to come from technologies that are not yet ready for market. This calls for massive leaps in innovation. Innovation across batteries, hydrogen, synthetic fuels, carbon capture and many other technologies. US Special Envoy for Climate John Kerry said a similar point that half of the emissions reductions will have to come from technologies that we don’t yet have at scale. UK PM Johnson [\[LINK\]](#) didn’t say it specifically, but points to this same issue saying “To do these things we’ve got to be constantly original and optimistic about new technology and new solutions whether that’s crops that are super-resistant to drought or more accurate weather forecasts like those we hope to see from the UK’s new Met Office 1.2bn supercomputer that we’re investing in.” It may well be that the US and other self sufficient energy countries are comfortable going on the basis of assuming technology developments will occur on a timely basis. But, its clear that countries like China, India, South Korea and others are not prepared to do so. And not prepared to have the confidence to rid themselves of coal power generation. This is why there hasn’t been any material change in the LNG demand outlook

We expect the IEA's blunt message that the gap is getting wider will be reinforced on May 18. We have had a consistent view on the energy transition for the past few years. We believe it is going to happen, but it will take longer, be a bumpy road and cost more than expected. This is why we believe the demise of oil and natural gas won't be as easy and fast as hoped for by the climate change side. The IEA's blunt warning on the gap widening should not be a surprise as they warned on this in June 2020. Birol's climate speech also highlighted that the IEA will release on May 18 its roadmap for how the global energy sector can reach net zero by 2050. Our SAF Group June 11, 2020 blog "[Will The Demise Of Oil Take Longer, Just Like Coal? IEA and Shell Highlight Delays/Gaps To A Smooth Clean Energy Transition](#)" [\[LINK\]](#) feature the IEA's June 2020 warning that the critical energy technologies needed to reduce emissions are nowhere near where they need to be. In that blog, we said "there was an excellent illustration of the many significant areas, or major pieces of the puzzle, involved in an energy transition by the IEA last week. The IEA also noted the progress of each of the major pieces and the overall conclusion is that the vast majority of the pieces are behind or well behind where they should be to meet a smooth timely energy transition. It is important to note that these are just what the IEA calls the "critical energy technologies" and does not get into the wide range of other considerations needed to support the energy transition. The IEA divides these "critical energy technologies" into major groupings and then ranked the progress of each of these pieces in its report "[Tracking Clean Energy Progress](#)" [\[LINK\]](#) by on track, more efforts needed, or not on track". Our blog included the below IEA June 2020 chart.

**IEA's Progress Ranking For "Critical Energy Technologies" For Clean Energy Transition**



Source: IEA

● On Track      ● More Efforts Needed      ● Not on Track

Source: IEA Tracking Clean Energy Progress, June 2020

We are referencing [Shell's long term outlook for LNG](#). We recognize there are many different forecasts for LNG, but are referencing Shell' LNG Outlook 2021 from Feb 25, 2021 for a few reasons. (i) Shell's view on LNG is the key view for when and what decision will be made for LNG Canada Phase 2. (ii) Shell is one of the global leaders in LNG supply and trading. (iii) Shell provides on the record LNG outlooks every year so there is the ability to compare and make sure the outlook fits the story. It does. (iv) Shell, like other supermajors, has had to make big capex cuts post pandemic and that certainly wouldn't put any bias to the need for more capex.

[Shell's March 2021 long term outlook for LNG demand was basically unchanged vs 2020 and leads to a LNG supply gap in mid 2020s](#). Shell does not provide the detailed numbers in their Feb 25, 2021 LNG forecast. We would assume they

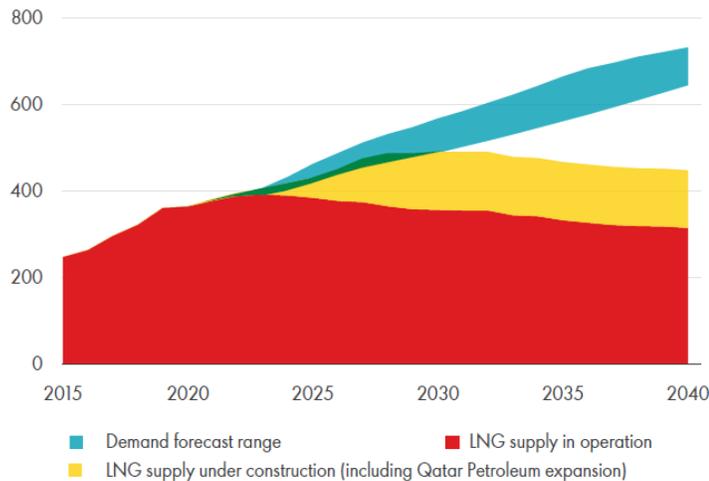
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would have reflected some delay, perhaps 1 year, at Mozambique but would be surprised if they put a 2-3 year delay in for the 5 bcf/d from Total Phase 1 +2 and Exxon Rozuma Phase 1. Compared to their LNG Outlook 2020, it looks like there was no change for their estimate of global natural gas demand growth to 2040, which looked relatively unchanged at approx. 5,000 bcm/yr or 484 bcf/d. Similarly, long term LNG demand looked unchanged to 2040 of ~700 mm tonnes (92 bcf/d) vs 360 mm tonnes (47 bcf/d) in 2020. In the 2021 outlook, Shell highlighted that the pandemic delayed project construction timelines and that the “*lasting impact expected on LNG supply not demand*”. And that Shell sees a LNG “*supply-demand gap estimated to emerge in the middle of the current decade as demand rebounds*”. Comparing to 2020, it looks like the supply-demand gap is sooner.

### Supply-demand gap estimated to emerge in the middle of the current decade

#### Emerging LNG supply-demand gap

MTPA



Source: Shell LNG Outlook 2021, Feb 25, 2021

Mozambique delays are redefining the LNG markets for the 2020s: Delaying 5 bcf/d of Mozambique new LNG supply 2-3 years means a much bigger supply gap starting in 2025.. Even if the optimists are right, there are now delays to all major Mozambique LNG supply from LNG supply forecasts. We don't have the detail, but we believe all LNG forecasts, including Shell's LNG Outlook 2021, would have included Total's Phase 1 and Phase 2 and Exxon Rozuma Phase 1. As noted earlier, we believe that the likely impact of the Mozambique security concerns is that these forecasts would likely have to push back 1.7 bcf/d from Total Phase 1 to at least 2026, 2.0 bcf/d Exxon Rozuma Phase 1 to at least 2027, and 1.3 bcf/d Total Phase 2 to at least 2028/2029 with the real risk these get pushed back even further. 5.0 bcf/d is equal to 38 mtpa. These delays would mean there is an increasing LNG supply gap in 2025 and increasingly significantly thereafter. And even if a new greenfield LNG project is FID's right away, it wouldn't be able to step in to replace Total Phase 1 prior startup timing for 2024 or likely the market at all until at least 2027. Its why the decision on filling the gap will fall on brownfield LNG projects.

And does this bigger, nearer supply gap force LNG players to look at what brownfield LNG projects they could advance?

A greenfield LNG project would likely take at least until 2027 to be in operations. Its why we believe the Mozambique delays will effectively force major LNG players to look to see if there are brownfield LNG projects they should look to advance. Prior to the just passed winter, no one would think Shell or other major LNG players would be considering any new LNG FIDs in 2021. All the big companies are in capital reduction mode and debt reduction mode. But Brent oil is now solidly over \$60 and LNG prices hit record levels in Jan and the world's economic and oil and gas demand outlook are increasing with vaccinations. And we are starting to see companies move to increasing capex with the higher cash flows. We would not expect any major LNG players to move to FID right away. But we see them watching to see if 2021 plays out to still support this increasing LNG supply gap. And unless new mutations prevent vaccinations from returning the world to normal, we suspect that major LNG players, like other oil and gas companies, will be looking to increase

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capex as they approve 2022 budgets. The outlook for the future has changed dramatically in the last 5 months. The question facing Shell and others, should they look to FID new LNG brownfield projects in the face of an increasing LNG supply gap that is going to hit faster and harder than expected a few months ago. We expect these decisions to be looked at before the end of 2021. LNG prices will be stronger, but we expect the limiting cap in Asia will be that thermal coal will be used to mitigate some LNG price pressure.

Back to Shell, does increasing LNG supply gap provide the opportunity to at least consider a LNG Canada Phase 2 FID over the next 9 months? Shell is no different than any other major LNG supplier in always knowing the market and that the oil and gas outlook is much stronger than 6 months ago. No one has been or is talking about this Mozambique impact and how it will at least force major LNG players to look at if they should FID new brownfield LNG projects to take advantage of this increasing supply gap. We don't have any inside contacts at Shell or LNG Canada, but that is no different than when we looked at the LNG markets in September 2017 and saw the potential for Shell to FID LNG Canada in 2018. We posted a September 20, 2017 blog "*China's Plan To Increase Natural Gas To 10% Of Its Energy Mix Is A Global Game Changer Including For BC LNG*" [\[LINK\]](#). Last time, it was a demand driven supply gap, this time, it's a supply driven supply gap. We have to believe any major LNG player, including Shell, will be at least looking at their brownfield LNG project list and seeing if they should look to advance FID later in 2021. Shell has LNG Canada Phase 2, which would add 2 additional trains or approx. 1.8 bcf/d. And an advantage to an FID would be that Shell would be able to commit to its existing contractors and fabricators for a continuous construction cycle following on LNG Canada Phase 1 ie. to help keep a lid on capital costs. No one is talking about the need for these new brownfield LNG projects, but, unless Total gets back developing Mozambique and keeps the delay to a matter of months, its inevitable that these brownfield LNG FID internal discussions will be happening in H2/21. Especially since the oil and gas price outlook is much stronger than it was in the fall and companies will be looking to increase capex in 2022 budgets

A LNG Canada Phase 2 would be a big plus to Cdn natural gas. A LNG Canada Phase 2 FID would be a big plus for Cdn natural gas. It would allow another ~1.8 bcf/d of Cdn natural gas to be priced against Asian LNG prices and not against Henry Hub. And it would provide demand offset versus Trudeau if he moves to make electricity "emissions free" and not his prior "net zero emissions". Mozambique may be in Africa, but, unless sustained peace and security is attained, it is a game changer to LNG outlook creating a bigger and sooner LNG supply gap. And with a stronger tone to oil and natural gas prices in 2021, the LNG supply gap will at least provide the opportunity for Shell to consider FID for its brownfield LNG Canada Phase 2 and provide big support to Cdn natural gas for back half of the 2020s. And perhaps if LNG Canada is exporting 3.6 bcf/d from two phases, it could help flip Cdn natural gas to a premium to US natural gas especially if Biden is successful in reducing US domestic natural gas consumption for electricity. The next six months will be very interesting to watch for LNG markets.

## Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs

Posted 11am on July 14, 2021

The last 7 days has shown there is a sea change as Asian LNG buyers have made an abrupt change in their LNG contracting and are moving to lock in long term LNG supply. This is the complete opposite of what they were doing pre-Covid when they were trying to renegotiate Qatar LNG long term deals lower and moving away from long term deals to spot/short term sales. Why? We think they did the same math we did in our April 28 blog “*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*” and saw a much bigger and sooner LNG supply gap driven by the delay of 5 bcf/d of Mozambique LNG that was built into most, if not all LNG supply forecasts. Asian LNG buyers are committing real dollars to long term LNG deals, which we believe is the best validation for the LNG supply gap. Another validation, Shell, Total and others are aggressively competing to invest long term capital to partner in Qatar Petroleum’s massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas.

Sea change in Asian LNG buyers is also the best validation of the LNG supply gap and big to LNG supply FIDs. Has the data changed or have the market participants changed in how they react to the data? We can’t recall exactly who said that on CNBC on July 12, it’s a question we always ask ourselves. In the LNG case, the data has changed with Mozambique LNG delays and that has directly resulted in market participants changing and entering into long term contracts. We can’t stress enough how important it is to see Asian LNG buyers move to long term LNG deals. (i) Validates the sooner and bigger LNG supply gap. We believe LNG markets should look at the last two weeks of new long term deals for Asian LNG buyers as being the validation of the LNG supply gap that clearly emerged post Total declaring force majeure on its 1.7 bcf/d Mozambique LNG Phase 1 that was under construction and on track for first LNG delivery in 2024. Since then, markets have started to realize the Mozambique delays are much more than 1.7 bcf/d. They have seen major LNG suppliers change their outlook to a more bullish LNG outlook and, most importantly, are now seeing Asian LNG buyers changing from trying to renegotiate long term LNG deals lower to entering into long term LNG deals to have security of supply. Asian LNG buyers are cozying up to Qatar in a prelude to the next wave of Asian buyer long term deals. What better validation is there than companies/countries putting their money where their mouth is. (ii) Provides financial commitment to help push LNG suppliers to FID. We believe these Asian LNG buyers are doing much more than validating a LNG supply gap to markets. The big LNG suppliers can move to FID based on adding more LNG supply to their portfolio, but having more long term deals provides the financial anchor/visibility to long term capital commitment from the buyers. Long term contracts will only help LNG suppliers get to FID.

It was always clear that the Mozambique LNG supply delay was 5.0 bcf/d, not just 1.7 bcf/d from Total Phase 1. LNG markets didn’t really react to Total’s April 26 declaration of force majeure on its 1.7 bcf/d Mozambique LNG Phase 1. This was an under construction project that was on time to deliver first LNG in 2024. It was in all LNG supply forecasts. There was no timeline given but, on the Apr 29 Q1 call, Total said that it expected any restart decision would be least a year away. If so, we believe that puts any actual construction at least 18 months away. There will be work to do just to get back to where they were when they were forced to stop development work on Phase 1. Surprisingly, markets didn’t look the broader implications, which is why we posted our 7-pg Apr 28 blog “*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*” [\[LINK\]](#) We highlighted that Mozambique LNG delays were actually 5 bcf/d, not 1.7 bcf/d. And this 5 bcf/d of Mozambique LNG supply was built into most, if not all, LNG supply forecasts. The delay in Total Phase 1 would lead to a commensurate delay in its Mozambique LNG Phase 2 of 1.3 bcf/d. Total Phase 2 was to add 1.3 bcf/d. There was no firm in service date, but it was expected to

follow closely behind Phase 1 to maintain services. That would have put it originally in the 2026/2027 period. But if Phase 1 is pushed back at least 2 years, so will the follow on Phase 2, so more likely, it will be at least 2028/2029. The assumption for most, if not all, LNG forecasts was that Phase 2 would follow Phase 1. Exxon Rozuma Phase 1 of 2.0 bcf/d continues to be pushed back in timeline especially following Total Phase 1. Exxon's Mozambique Rozuma Phase 1 LNG will add 2.0 bcf/d and, pre-Covid, was originally expected to be in service in 2025. The project was being delayed and Total's force majeure has added to the delays. Rozuma onshore LNG facilities are right by Total. On June 20, we tweeted [\[LINK\]](#) on the Reuters report "*Exclusive: Galp says it won't invest in Rovuma until Mozambique ensures security*" [\[LINK\]](#). Galp is one of Exxon's partners in Rozuma. Reuters reported that Galp said they won't invest in Exxon's Rozuma LNG project until the government ensures security, that this may take a while, they won't be considering the project until after Total has reliably resumed work on its Phase 1, which likely puts any Rozuma decision until at least end of 2022 at the earliest. Galp has taken any Rozuma Phase 1 capex out of their new capex plans thru 2025 and will have to take out projects in their capex plan if Rozuma does come back to work. This puts Rozuma more likely 2028 at the earliest as opposed to before the original expectations of before 2025. Pre-pandemic, Exxon's March 6, 2019 Investor Day noted their operated Mozambique Rovuma LNG Phase 1 was to be 2 trains each with 1.0 bcf/d capacity for total initial capacity of 2.0 bcf/d with FID expected in 2019 and first LNG deliveries sometime before 2025. LNG forecasts had been assuming Exxon Rozuma would be onstream around 2025. The 2019 FID expectation was later pushed to be expected just before the March 2020 investor day. But the pandemic hit, and on March 21, 2020, we tweeted [\[LINK\]](#) on the Reuters story "*Exclusive: Coronavirus, gas slump put brakes on Exxon's giant Mozambique LNG plan*" [\[LINK\]](#) that noted Exxon was expected to delay the Rovuma FID. There was no timeline, but now, any FID is not expected until late 2022 at the earliest, that would push first LNG likely to at least 2028. What this means is that the Mozambique LNG delays are not 1.7 bcf/d but 5.0 bcf/d of projects that were in all, if not most, LNG supply forecasts. There is much more in our 7-pg blog. But Mozambique is what is driving a much bigger and sooner LNG supply gap starting ~2025 and stronger outlook for LNG prices

One of the reasons why it went under the radar is that major LNG suppliers played stupid on the Mozambique impact. It makes it harder for markets to see a big deal when the major LNG suppliers weren't making a big deal of Mozambique or playing stupid in the case of Cheniere in their May 4 Q1 call. In our May 9, 2021 Energy Tidbits memo, we said we had to chuckle when we saw Cheniere's response in the Q&A to its Q1 call on May 4 that they only know what we know from reading the Total releases on Mozambique and its impact on LNG markets. It's why we tweeted [\[LINK\]](#) "*Hmm! \$LNG says only know what we read on #LNG market impact from \$TOT \$XOM MZ LNG delays. Surely #TohokuElectric & other offtake buyers are reaching out to #Cheniere. MZ LNG delays is a game changer to LNG in 2020s, see SAF Group blog. Thx @olymppe\_mattei @TheTerminal #NatGas*". How could they not be talking to LNG buyers for Total and/or Exxon Mozambique LNG projects. In the Q1 Q&A, mgmt was asked about Mozambique and didn't know any more than what you or I have read. Surely, they were speaking to Asian LNG buyers who had planned to get LNG supply from Total Mozambique or Exxon Rozuma Mozambique or both. Mgmt is asked "*wanted to just kind of touch on the color use talking about for these supply curve. And are you able to kind of provide any thoughts on the Mozambique and a deferral with the project of that size on 13 and TPA being deferred by we see you have you noticed any impact to the market has is there any impact for stage 3 with that capacity? Thanks.*" Mgmt replies "*No. Look, I only know about the Mozambique delay with what I read as well as what you read that from total and an Exxon. And it's a sad situation and I hope everybody is safe and healthy that were there to experience that unrest but no I don't think it's, again it's a different business paradigm than what we offer. So, we offer a full value product, the customer doesn't have to invest in equity, customer doesn't have to worry about the E&P side of the business because, we've been able to both the by at our peak almost 7 Dee's a day of US NAT gas from almost a 100 different producers on 26 different pipelines and deliver it to our facilities. So we take care of a lot of what the customer needs*".

There are other LNG supply delays/interruptions beyond Mozambique. There have been a number of other smaller LNG delay or existing supply interruptions that add to Asian LNG buyers feeling less secure about the reliability of mid to long term LNG supply. Here are just a few examples. (i) Total Papua LNG 0.74 bcf/d. On June 8, we tweeted [\[LINK\]](#) "*Timing update Papua #LNG project. \$OSH June 8 update "2022 FEED, 2023 FID targeting 2027 first gas". \$TOT May 5 update didn't forecast 1st gas date. Papua is 2 trains w/ total capacity 0.74 bcf/d.*" We followed the tweet saying [\[LINK\]](#) "*Bigger #LNG supply gap being created >2025. Papua #LNG originally expected FID in 2020 so 1st LNG is 2 years delayed.*"

*Common theme - new LNG supply is being delayed ie. [Total] Mozambique. Don't forget need capacity > demand due to normal maintenance, etc. Positive for LNG." (ii) Chevron's Gorgon. A big LNG story in H2/20 was the emergence of weld quality issues in the propane heat exchangers at Train 2, which required additional downtime for repair. Train 2 was shut on May 23 with an original restart of July 11, but the repairs to the weld quality issues meant it didn't restart until late Nov. The same issue was found in Train 1 but repairs were completed. However extended downtime for the trains led to lower LNG volumes. Gorgon produced ~2.3 bcf/d in 2019 but was down to 2.0 bcf/d in 2020. (iii) Equinor's Melkøya 0.63 bcf/d shut down for 18 months due to a fire. A massive fire led to the Sept 28, 2020 shutdown of the 0.63 bcf/d Melkøya LNG facility in Norway. On April 26, Equinor released "Revised start-up date for Hammerfest LNG" [\[LINK\]](#) with regard to the 0.63 bcf/d Melkøya LNG facility. The original restart date was Oct 1, 2021 (ie. a 12 month shut down), but Equinor said "Due to the comprehensive scope of work and Covid-19 restrictions, the revised estimated start-up date is set to 31 March 2022". When we read the release, it seemed like Equinor was almost setting the stage for another potential delay in the restart date. Equinor had two qualifiers to this March 31, 2022 restart date. Equinor said "there is still some uncertainty related to the scope of the work" and "Operational measures to handle the Covid-19 situation have affected the follow-up progress after the fire. The project for planning and carrying out repairs of the Hammerfest LNG plant must always comply with applicable guidelines for handling the infection situation in society. The project has already introduced several measures that allow us to have fewer workers on site at the same time than previously expected. There is still uncertainty related to how the Covid-19 development will impact the project progress."*

Cheniere stopped the game playing the game on June 30. Our July 4, 2021 Energy Tidbits memo noted that it looks like Cheniere has stopped playing stupid with respect to the strengthening LNG market in 2021. We can't believe they thought they were fooling anyone, especially their competitors. Bu that week, they came out talking about how commercial discussions have picked up in 2021 and it's boosted their hope for a Texas (Corpus Christi) LNG expansion. On Wednesday, Platts reported "*Pickup in commercial talks boosts Cheniere's hopes on mid-scale LNG project*" [\[LINK\]](#) Platts wrote "*Cheniere Energy expects to make a "substantial dent" by the end of 2022 in building sufficient buyer support for a proposed mid-scale expansion at the site of its Texas liquefaction facility, Chief Commercial Officer Anatol Feygin said June 30 in an interview.*" "As a result, he said, "The commercial engagement, I think it is very fair to say, has really picked up steam, and we are quite optimistic over the coming 12-18 months to make a substantial dent in that Stage 3 commercialization." Platts also reported that Cheniere noted this has been a tightening market all year (ie would have been known by the May 4 Q1 call). Platts wrote "*We obviously find ourselves at the beginning of this year and throughout in a very tight market where prices today into Asia and into Europe are at levels that we frankly haven't seen in a decade-plus,*" Feygin said. "*We've surpassed the economics that the industry saw post the Fukushima tragedy in March 2011, and that's happened in the shoulder period.*" It's a public stance as to a more bullish LNG outlook

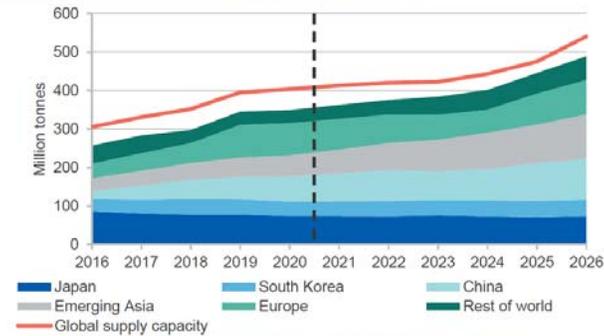
But we still see major LNG suppliers like Australia hinting but not outright saying that LNG supply gap is coming sooner. We have to believe Australia will be unveiling a sooner LNG supply gap in their September forecast. On June 28, we tweeted [\[LINK\]](#) on Australia's Resources and Energy Quarterly released on Monday [\[LINK\]](#) because there was a major change to their LNG outlook versus their March forecast. We tweeted "*#LNGSupplyGap. AU June fcast now sees #LNG mkt tighten post 2023 vs Mar fcast excess supply thru 2026. Why? \$TOT Mozambique delays. See below SAF Apr 28 blog. Means brownfield LNG FID needed ie. like #LNGCanada Phase 2. #OOTT #NatGas*". Australia no longer sees supply exceeding demand thru 2026. In their March forecast, Australia said "*Nonetheless, given the large scale expansion of global LNG capacity in recent years, demand is expected to remain short of total supply throughout the projection period.*" Note this is thru 2026 ie. a LNG supply surplus thru 2026. But on June 28, Australia changed that LNG outlook and now says the LNG market may tighten beyond 2023. Interestingly, the June forecast only goes to 2023 and not to 2026 as in March. Hmmm! On Monday, they said "*Given the large scale expansion of global LNG capacity in recent years, import demand is expected to remain short of export capacity throughout the outlook period. Beyond 2023, the global LNG market may tighten, due to the April 2021 decision to indefinitely suspend the Mozambique LNG project, in response to rising security issues. This project has an annual nameplate capacity of 13 million tonnes, and was previously expected to start exporting LNG in 2024.*" 13 million tonnes is 1.7 bcf/d so they are only referring to Total Mozambique LNG Phase 1. So no surprise the change is Mozambique LNG driven but we have to believe the reason why they cut their forecast off this time at 2023 is that they are looking at trying to figure out what to forecast beyond 2023 in addition to Total Phase 1. And, importantly, we believe they will be changing their LNG forecast for more than Mozambique ie. India

demand that we highlight later in the blog. They didn't say anything else specific on Mozambique but, surely they have to also be delaying the follow on Total Phase 2 of 1.3 bcf/d and Exxon Rozuma Phase 1 of 2.0 bcf/d.

## Australia's LNG Outlook: March 2021 vs June 2021 Forecasts

### March 2021 LNG Outlook

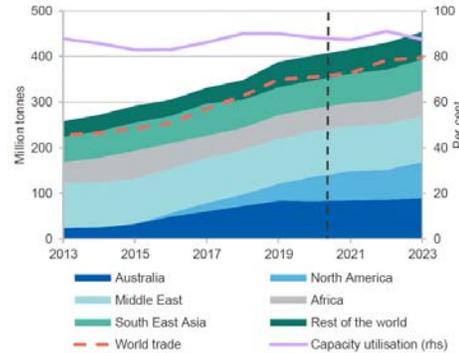
Figure 7.1: LNG demand and world supply capacity



Source: Nexant (2021) World Gas Model; Department of Industry, Science, Energy and Resources (2021)

### June 2021 LNG Outlook

Figure 7.1: LNG demand and world supply capacity



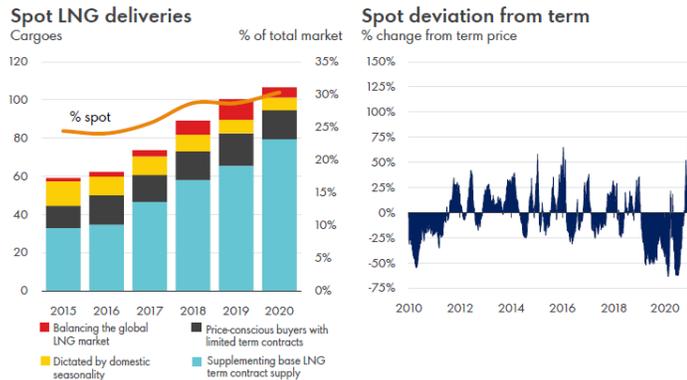
Source: Nexant (2021) World Gas Model; Department of Industry, Science, Energy and Resources (2021)

Source: Australia Resources and Energy Quarterly

Clearly Asian LNG buyers did the math, saw the new LNG supply gap and were working the phones in March/April/May trying to lock up long term supply. We wrote extensively on the Total Mozambique LNG situation before the April 26 force majeure as it was obvious that delays were coming to a project counted on for first LNG in 2024. Total had shut down Phase 1 development in December for 3 months due to the violence and security risks. It restarted development on Wed March 24, violence/attacks immediately resumed for 3 consecutive days, and then Total suspended development on Sat March 27. That's why no one should have been surprised by the April 26 force majeure. Asian LNG buyers were also seeing this and could easily do the same math we were doing and saw a bigger and sooner LNG supply gap. They were clearly working the phones with a new priority to lock up long term LNG supply. Major long term deals don't happen overnight, so it makes sense that we started to see these new Asian long term LNG deals start at the end of June.

A big pivot from trying to renegotiate down long term LNG deals or being happy to let long term contracts expire and replace with spot/short term LNG deals. This is a major pivot or abrupt turn on the Asian LNG buyers contracting strategy for the 2020s. There is the natural reduction of long term contracts as contracts reach their term. But with the weakness in LNG prices in 2019 and 2020, Asian LNG buyers weren't trying to extend long term contracts, rather, the push was to try to renegotiate down its long term LNG deals. The reason was clear, as spot prices for LNG were way less than long term contract prices. And this led to their LNG contracting strategy – move to increase the proportion of spot LNG deliveries out of total LNG deliveries. Shell's LNG Outlook 2021 was on Feb 25, 2021 and included the below graphs. The spot LNG price derivation from long term prices in 2019 and 2020 made sense for Asian LNG buyers to try to change their contract mix. Yesterday, Maeil Business News Korea reported on the new Qatar/Kogas long term LNG deal with its report "*Korea may face LNG supply cliff or pay hefty price after long-term supplies run out*" [\[LINK\]](#), which highlighted this very concept – Korea wasn't worried about trying to extend expiring long term LNG contracts. Maeil wrote "*Seoul in 2019 secured a long-term LNG supply contract with the U.S. for annual 15.8 million tons over a 15-year period. But even with the latest two LNG supply contracts, the Korean government needs extra 6 million tons or more of LNG supplies to keep up the current power pipeline. By 2024, Korea's long-term supply contracts for 9 million tons of LNG will expire - 4.92 million tons on contract with Qatar and 4.06 million tons from Oman, according to a government official who asked to be unnamed.*"

## Spot LNG deliveries and Spot deviation from term price



Source: Shell LNG Outlook 2021 on Feb 25, 2021

Asian LNG buyers moving to long term LNG deals provide financing capacity for brownfield LNG FIDs. We believe this abrupt change and return to long term LNG deals is even more important to LNG suppliers who want to FID new projects. The big LNG players like Shell can FID new LNG supply without new long term contracts as they can build into their supply options to fill their portfolio of LNG contracts. But that doesn't mean the big players don't want long term LNG supply deals, as having long term LNG contracts provide better financing capacity for any LNG supplier. It takes big capex for LNG supply and long term deals make the financing easier.

Four Asian buyer long term LNG deals in the last week. It was pretty hard to miss a busy week for reports of new Asian LNG buyer long term LNG deals. There were two deals from Qatar Petroleum, one from Petronas and one from BP. The timing fits, it's about 3 months after Total Mozambique LNG problems became crystal clear. And as noted later, there are indicators that more Asian buyer LNG deals are coming.

Petronas/CNOOC is 10 yr supply deal for 0.3 bcf/d. On July 7, we tweeted [\[LINK\]](#) on the confirmation of a big positive to Cdn natural gas with the Petronas announcement [\[LINK\]](#) of a new 10 year LNG supply deal for 0.3 bcf/d with China's CNOOC. The deal also has special significance to Canada. (i) Petronas said "This long-term supply agreement also includes supply from LNG Canada when the facility commences its operations by middle of the decade". This is a reminder of the big positive to Cdn natural gas in the next 3 to 4 years – the start up of LNG Canada Phase 1 is ~1.8 bcf/d capacity. This is natural gas that will no longer be moving south to the US or east to eastern Canada, instead it will be going to Asia. This will provide a benefit for all Western Canada natural gas. (ii) First ever AECO linked LNG deal. It's a pretty significant event for a long term Asia LNG deal to now have an AECO link. Petronas wrote "The deal is for 2.2 million tonnes per annum (MTPA) for a 10-year period, indexed to a combination of the Brent and Alberta Energy Company (AECO) indices. The term deal between PETRONAS and CNOOC is valued at approximately USD 7 billion over ten years." 2.2 MTPA is 0.3 bcf/d. (iii) Reminds of LNG Canada's competitive advantage for low greenhouse gas emissions. Petronas said "Once ready for operations, the LNG Canada project paves the way for PETRONAS to supply low greenhouse gas (GHG) emission LNG to the key demand markets in Asia."

Qatar Petroleum/CPC (Taiwan) is 15 yr supply deal for 0.16 bcf/d. Pre Covid, Qatar was getting pressured to renegotiate lower its long term LNG contract prices. Now, it's signing a 15 year deal. On July 9, they entered in a new small long term LNG sales deal [\[LINK\]](#), a 15-yr LNG Sale and Purchase Agreement with CPC Corporation in Taiwan to supply it ~0.60 bcf/d of LNG. LNG deliveries are set to begin in January 2022. H.E. Minister for Energy Affairs & CEO of Qatar Petroleum Al-Kaabi said "We are pleased to enter into this long term LNG SPA, which is another milestone in our relationship with CPC, which dates back to almost three decades. We look forward to commencing deliveries under this SPA and to continuing our supplies as a trusted and reliable global LNG provider." The pricing was reported to be vs a basket of crudes.

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BP/Guangzhou Gas, a 12-yr supply deal for 0.13 bcf/d. On July 9, there was a small long term LNG supply deal with BP and Guangzhou Gas (China). Argus reported [\[LINK\]](#) BP had signed a 12 year LNG supply deal with Guangzhou Gas (GG), a Chinese city's gas distributor, which starts in 2022. The contract prices are to be linked to an index of international crude prices. Although GG typically gets its LNG from the spot market, it used a tender in late April for ~0.13 bcf/d starting in 2022. BP's announcement looks to be for most of the tender, so it's a small deal. But it fit into the trend this week of seeing long term LNG supply deals to Asia. This was intended to secure deliveries to the firm's Xiaohudao import terminal which will become operational in August 2022.

Qatar/Korea Gas is a 20-yr deal to supply 0.25 bcf/d. On Monday, Reuters reported [\[LINK\]](#) "South Korea's energy ministry said on Monday it had signed a 20-year liquefied natural gas (LNG) supply agreement with Qatar for the next 20 years starting in 2025. South Korea's state-run Korea Gas Corp (036460.KS) will buy 2 million tonnes of LNG annually from Qatar Petroleum". There was no disclosure of pricing.

More Asian buyer long term LNG deals (ie. India) will be coming. There are going to be more Asian buyer long term LNG deals coming soon. Our July 11, 2021 Energy Tidbits highlighted how India's new petroleum minister Hardeep Singh Puri (appointed July 8) hit the ground running with what looks to be a priority to set the stage for more India long term LNG deals with Qatar. On July 10, we retweeted [\[LINK\]](#) "New India Petroleum Minister hits ground running. What else w/ Qatar but #LNG. Must be #Puri setting stage for long term LNG supply deal(s). Fits sea change of buyers seeing #LNGSupplyGap (see SAF Apr 28 blog <http://safgroup.ca>) & wanting to tie up LNG supply. #OOTT". It's hard to see any other conclusion after seeing what we call a sea change in LNG buyer mentality with a number of long term LNG deals this week. Puri tweeted [\[LINK\]](#) "Discussed ways of further strengthening mutual cooperation between our two countries in the hydrocarbon sector during a warm courtesy call with Qatar's Minister of State for Energy Affairs who is also the President & CEO of @qatarpetroleum HE Saad Sherida Al-Kaabi". As noted above, we believe there is a sea change in LNG markets that was driven by the delay in 5 bcf/d of LNG supply from Mozambique (Total Phase 1 & Phase 2, and Exxon Rozuma Phase 1) that was counted on all LNG supply projections for the 2020s. Puri's tweet seems to be him setting the stage for India long term LNG supply deals with Qatar.

Supermajors are aggressively competing to commit 30+ year capital to Qatar's LNG expansion despite stated goal to reduce fossil fuels production. It's not just Asian LNG buyers who are now once again committing long term capital to securing LNG supply, it's also supermajors all bidding to be able to commit big capex to part of Qatar Petroleum's 4.3 bcf/d LNG expansion. Qatar Petroleum received a lot of headlines following their June 23 announcement on its LNG expansion [\[LINK\]](#) on how they received bids for double the equity being offered. And there were multiple reports that these are on much tougher terms for Qatar's partners. Qatar Petroleum CEO Saad Sherida Al-Kaabi specifically noted that, among the bidders, were Shell, Total and Exxon. Shell and Total have two of the most ambitious plans to reduce fossil fuels production in the 2020's, yet are competing to allocate long term capital to increase fossil fuels production. And Shell and Total are also two of the global LNG supply leaders. It has to be because they are seeing a bigger and sooner LNG supply gap.

Remember Qatar's has a massive expansion but India alone needs 3x the Qatar expansion LNG capacity. In addition to the competition to be Qatar Petroleum's partners, we remind that, while this is a massive 4.3 bcf/d LNG expansion, India alone sees its LNG import growing by ~13 bcf/d to 2030. The Qatar announcement reminded they see a LNG supply gap and continued high LNG prices. We had a 3 part tweet. (i) First, we highlighted [\[LINK\]](#) "1/3. #LNGSupplyGap coming. big support for @qatarpetroleum expansion to add 4.3 bcf/d LNG. but also say "there is a lack of investments that could cause a significant shortage in gas between 2025-2030" #NatGas #LNG". This is after QPC accounts for their big LNG expansion. The QPC release said "However, His Excellency Al-Kaabi voiced concern that during the global discussion on energy transition, there is a lack of investment in oil and gas projects, which could drive energy prices higher by stating that "while gas and LNG are important for the energy transition, there is a lack of investments that could cause a significant shortage in gas between 2025-2030, which in turn could cause a spike in the gas market." (ii) Second, this is a big 4.3 bcf/d expansion, but India alone has 3x the increase in LNG import demand. We tweeted [\[LINK\]](#) "2/3. Adding 4.3 bcf/d is big, but dwarfed by items like India. #Petronet gave 1st specific forecast for what it means if #NatGas is to be 15%

of energy mix by 2030 - India will need to increase #LNG imports by ~13 bcf/d. See SAF Group June 20 Energy Tidbits memo.” (iii) Third, Qatar’s supply gap warning is driven by the lack of investments in LNG supply. We agree, but note that the lack of investment is in great part due to the delays in both projects under construction and in FIDs that were supposed to be done in 2019. We tweeted [\[LINK\]](#) “3/3. #LNGSupplyGap is delay driven. \$TOT Mozambique Phase 1 delay has chain effect, backs up 5 bcf/d. See SAF Group Apr 28 blog Multiple Brownfield LNG FIDs Now Needed To Fill New #LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2? #NatGas.”

Seems like many missed India’s first specific LNG forecast to 2030. Our June 20, 2021 Energy Tidbits memo highlighted the first India forecast that we have seen to estimate the required growth in natural gas consumption and LNG imports if India is to meet its target for natural gas to be 15% of its energy mix by 2030. India will need to increase LNG imports by ~13 bcf/d or 3 times the size of the Qatar LNG expansion. Our June 6, 2021 Energy Tidbits noted the June 4 tweet from India’s Energy Minister Dharmendra Pradhan [\[LINK\]](#) reinforcing the 15% goal “We are rapidly deploying natural gas in our energy mix with the aim to increase the share of natural gas from the current 6% to 15% by 2030.” But last week, Petronet CEO AK Singh gave a specific forecast. Reuters report “LNG’s share of Indian gas demand to rise to 70% by 2030: Petronet CEO” [\[LINK\]](#) included Petronet’s forecast if India is to hit its target for natural gas to be 15% of energy mix by 2030. Singh forecasts India’s natural gas consumption would increase from current 5.5 bcf/d to 22.6 bcf/d in 2030. And LNG shares would increase from 50% to 70% of natural gas consumption ie. an increase in LNG imports of ~13 bcf/d from just under 3 bcf/d to 15.8 bcf/d in 2030. Singh did not specifically note his assumption for India’s natural gas production, but we can back into the assumption that India natural gas production grows from just under 3 bcf/d to 6.8 bcf/d. It was good to finally see India come out with a specific forecast for 2030 natural gas consumption and LNG imports if India is to get natural gas to 15% of its energy mix in 2030. Petronet’s Singh forecasts India natural gas consumption to increase from 5.5 bcf/d to 22.6 bcf/d in 2030. This forecast is pretty close to our forecast in our Oct 23, 2019 blog “Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030”. Here part of what we wrote in Oct 2019. “It’s taken a year longer than we expected, but we are finally getting visibility that India is taking significant steps towards India’s goal to have natural gas be 15% of its energy mix by 2030. On Wednesday, we posted a SAF blog [\[LINK\]](#) “Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030”. Our 2019 blog estimate was for India natural gas demand to be 24.0 bcf/d in 2030 (vs Singh’s 22.6 bcf/d) and for LNG import growth of +18.4 bcf/d to 2030 (vs Singh’s +13 bcf/d). The difference in LNG would be due to our Oct 2019 forecast higher natural gas consumption by 1.4 bcf/d plus Singh forecasting India natural gas production +4 bcf/d to 2030. Note India production peaked at 4.6 bcf/d in 2010.

Bigger, nearer LNG supply gap + Asian buyers moving to long term LNG deals = LNG players forced to at least look at what brownfield LNG projects they could advance and move to FID. All we have seen since our April 28 blog is more validation of the bigger, nearer LNG supply gap. And now market participants (Asian LNG buyers) are reacting to the new data by locking up long term supply. Cheniere noted how the pickup in commercial engagement means they “are quite optimistic over the coming 12-18 months to make a substantial dent in that Stage 3 commercialization.” Cheniere can’t be the only LNG supplier having new commercial discussions. It’s why we believe the Mozambique delays + Asian LNG buyers moving to long term deals will effectively force major LNG players to look to see if there are brownfield LNG projects they should look to advance. Prior to March/April, no one would think Shell or other major LNG players would be considering any new LNG FIDs in 2021. Covid forced all the big companies into capital reduction mode and debt reduction mode. But Brent oil is now solidly over \$70, and LNG prices are over \$13 this summer and the world’s economic and oil and gas demand outlook are increasing with vaccinations. And we are starting to see companies move to increasing capex with the higher cash flows. The theme in Q3 reporting is going to be record or near record oil and gas cash flows, reduced debt levels and increasing returns to shareholders. And unless new mutations prevent vaccinations from returning the world to normal, we suspect that major LNG players, like other oil and gas companies, will be looking to increase capex as they approve 2022 budgets. The outlook for the future has changed dramatically in the last 8 months. The question facing major LNG players like Shell is should they look to FID new LNG brownfield projects in the face of an increasing LNG supply gap that is going to hit faster and harder and Asian LNG buyers prepared to do long term deals. We expect these decisions to be looked at before the end of 2021 for 2022 capex budget/releases. One wildcard that could force these decisions sooner is the already stressed out global supply chain. We have to believe that discussion there will be pressure for more Asian LNG buyer long term deals sooner than later.

For Canada, does the increasing LNG supply gap provide the opportunity to at least consider a LNG Canada Phase 2 FID over the next 6 months? Our view on Shell and other LNG players is unchanged since our April 28 blog. Shell is no different than any other major LNG supplier in always knowing the market and that the oil and gas outlook is much stronger than 9 months ago. Even 3 months post our April 28 blog, we haven't heard any significant talks on how major LNG players will be looking at FID for new brownfield LNG projects. We don't have any inside contacts at Shell or LNG Canada, but that is no different than when we looked at the LNG markets in September 2017 and saw the potential for Shell to FID LNG Canada in 2018. We posted a September 20, 2017 blog "*China's Plan To Increase Natural Gas To 10% Of Its Energy Mix Is A Global Game Changer Including For BC LNG*" [\[LINK\]](#). Last time, it was a demand driven supply gap, this time, it's a supply driven supply gap. We have to believe any major LNG player, including Shell, will be at least looking at their brownfield LNG project list and seeing if they should look to advance FID later in 2021. Shell has LNG Canada Phase 2, which would add 2 additional trains or approx. 1.8 bcf/d. And an advantage to an FID would be that Shell would be able to commit to its existing contractors and fabricators for a continuous construction cycle following on LNG Canada Phase 1 ie. to help keep a lid on capital costs. We believe maintaining a continuous construction cycle is even more important given the stressed global supply chain. No one is talking about the need for these new brownfield LNG projects, but, unless some major change in views happen, we believe its inevitable that these brownfield LNG FID internal discussions will be happening in H2/21. Especially since the oil and gas price outlook is much stronger than it was in the fall and companies will be looking to increase capex in 2022 budgets.

A LNG Canada Phase 2 would be a big plus to Cdn natural gas. LNG Canada Phase 1 is a material natural gas development as its 1.8 bcf/d capacity represents approx. 20 to 25% of Cdn gas export volumes to the US. The EIA data shows US pipeline imports of Cdn natural gas as 6.83 bcf/d in 2020, 7.36 bcf/d in 2019, 7.70 bcf/d in 2018, 8.89 bcf/d in 2017, 7.97 bcf/d in 2016, 7.19 bcf/d in 2015 and 7.22 bcf/d in 2014. A LNG Canada Phase 2 FID would be a huge plus for Cdn natural gas. It would allow another ~1.8 bcf/d of Cdn natural gas to be priced against pricing points other than Henry Hub. And it would provide demand offset versus Trudeau if he moves to make electricity "emissions free" and not his prior "net zero emissions". Mozambique has been a game changer to LNG outlook creating a bigger and sooner LNG supply gap. And with a stronger tone to oil and natural gas prices in 2021, the LNG supply gap will at least provide the opportunity for Shell to consider FID for its brownfield LNG Canada Phase 2 and provide big support to Cdn natural gas for the back half of the 2020s. And perhaps if LNG Canada is exporting 3.6 bcf/d from two phases, it could help flip Cdn natural gas to a premium vs US natural gas especially if Biden is successful in reducing US domestic natural gas consumption for electricity. The next six months will be very interesting to watch for LNG markets and Cdn natural gas valuations. Imagine the future value of Cdn natural gas is there was visibility for 3.6 bcf/d of Western Canada natural gas to be exported to Asia.

## Factbox: China's energy output in high gear in 2022

Source: Xinhua

Editor: huaxia

2023-01-08 00:45:15

BEIJING, Jan. 7 (Xinhua) -- China has seen steady increases in a variety of energy resources in 2022 as the country stepped up efforts to ensure energy security against a volatile global market.

The following is the output of the world's largest energy consumer's fossil fuel as well as clean energy in 2022:

China produced some 4.45 billion tonnes of coal last year, up 8 percent year on year.

Natural gas output topped 217 billion cubic meters, registering an annual increase of over 10 billion cubic meters for a sixth straight year.

Crude oil production climbed back to over 200 million tonnes.

The newly installed capacity of renewable energy reached 140 million kW, bringing the tally of total installed capacity to exceed 1.2 billion kW.

Wind and solar power saw their newly installed capacity surpass 120 million kW, a record high.

Major energy projects completed a total investment of about 2 trillion yuan (about 290.2 billion U.S. dollars), lending strong steam to the country's economic growth.

China also saw several landmark energy projects completed in 2022, including the world's largest clean energy corridor, and the most efficient compressed air energy storage station.

For 2023, China expects to produce 205 million tonnes of crude oil and secure an annual natural gas output growth of over 6 billion cubic meters.

By the end of this year, the installed capacity of wind power, solar power, and hydropower might reach about 430 million kW, 490 million kW, and 423 million kW, respectively. ■

Japan PM visit could highlight LNG needs, as Tokyo pushes away

2023-01-07 12:01:08.400 GMT

(The Canadian Press)

OTTAWA — Japanese Prime Minister Fumio Kishida's first official visit to Canada will take place next week, as Tokyo looks to Canada to provide much-needed liquefied natural gas.

Japan takes over the rotating presidency of the Group of Seven this year and Kishida is embarking on a multi-country tour.

The G7 started as a forum for the world's largest economies to co-ordinate economic policy, but has broadened its role in recent years to take a key role in punishing Russia for its invasion of Ukraine.

The group includes Britain, Canada, France, Germany, Italy, Japan and the United States, plus the European Union.

Kishida is set to arrive Wednesday in Ottawa from London, and will leave Thursday for Washington.

It will be the first Canadian visit by an Asian head of government since Ottawa launched its Indo-Pacific strategy last November, which called for closer ties with countries that can counterbalance China's influence.

Japan is similarly trying to pivot away from a reliance on China and Russia for electricity and food.

To that end, Kishida has created the position of a minister of state for economic security, and is trying to bring nuclear reactors back online after dozens were halted following the 2011 Fukushima disaster.

The country is so reliant on Russian fuel that G7 countries gave Japan an exemption on a measure that caps the price of Russian oil below market rates, to avoid Japan facing the same scramble for energy that Europe undertook last year.

Trevor Kennedy, the Business Council of Canada vice-president for international policy, said Kishida will likely seek a further commitment from Canada to sell liquefied natural gas, and mention an ongoing interest in hydrogen.

"They're stuck in a situation where they're sourcing their LNG from Russia, and they don't have another option," said Kennedy, who has worked in Japan.

Japan and South Korea have invested in Canada's first LNG export terminal in Kitimat, B.C., which is set to come online in 2025.

Kennedy said both countries and Canadian firms are watching to see whether the terminal meets that timeline, given the delays other large energy projects in Canada have faced.

He said the energy sector, Tokyo and Seoul also want Ottawa to boost the LNG sector by expanding the terminal or launching more of them. Otherwise, Japan and South Korea will have to rely on gas from Russia, or ask faraway countries to send supplies through waters China is trying to control.

Last month, Foreign Affairs Minister Mélanie Joly said Canada's goal is to be as close to South Korea and Japan as Ottawa is to Germany, France and the U.K.

Kennedy said it's an obvious decision, given the pair are democratic countries who share the same values. But he said it requires a sense of urgency.

"We need to be more deliberate about how we engage," he said.

"A lot of it is a mindset, and just understanding that these are our neighbours."

Kennedy said Canadian businesses have been looking past Japan for the last three decades. The country's economic bubble burst in 1991, just as other Asian countries started posting stronger growth. Japan's population is also aging at one of the fastest rates in the world.

Yet the country remains the world's third-largest economy, Kennedy noted, and it's flush with capital that firms are seeking to invest abroad.

Railways and telecommunications companies, for example, have barely any room to develop more services within Japan, and have been focusing on investments elsewhere.

The CPTPP trade deal, which spans most of the Pacific Rim, has helped boost Canadian exports to Japan, particularly pork and canola products.

Japanese companies are now looking to expand electric-vehicle production in North America, and Ottawa is under pressure to match American subsidies on the production of green vehicles and components.

Last month, Japan's new defence strategy called for working with allies to ward off threats from North Korea and China, and has made it legal for Japan to strike enemy bases. Tokyo is also boosting military spending by 26 per cent in just one year.

Next week, Prime Minister Justin Trudeau and Kishida will likely take stock of a plan both countries issued last October, spanning everything from fighting illegal fishing to implementing a military intelligence sharing deal.

Kishida might also publicly endorse Canada's desire to join the Indo-Pacific Economic Framework for Prosperity, a forum for co-ordinating supply chains and tax policy. Ottawa claims that all members of that group want Canada to join.

At a Thursday speech in Washington, Japanese trade minister Yasutoshi Nishimura said his country plans to use its year leading the G7 to encourage allies to lessen their dependence on rogue states like Russia and China.

He told the Center for Strategic and International Studies think tank that rich countries assumed that economic ties with poorer states would have made them less volatile.

"It was poverty that sparked violence and conflict; prosperity was a seabed of peace," Nishimura said. "Our assumption was unmistakably an illusion."

He argued that like-minded countries need to identify the states that undertake "economic coercion" and have clear strategies to lessen their effect.

"By making economic growth possible, the free-trade system ended up increasing the legitimacy of authoritarian regimes," he said.

Nishimura noted that Russia has cut off gas exports to punish countries. He chastised China for arbitrarily banning agricultural imports such as pineapples from Taiwan, an example reminiscent of China's past ban on Canadian canola.

"There is a risk involved in relying excessively upon a single country economically and we now fear that risk more intensely than ever," Nishimura said.

He said countries need to put up cash for innovation, such as producing semiconductors and recycling the rare minerals found in electronic waste. "We must make bold investments at a scale never seen before."

Experts will watch for large-ticket announcements at the G7 leaders summit this May in Hiroshima. Kishida has hinted he might also use the summit to try furthering the cause of nuclear disarmament, given the host city was devastated by an atomic bomb in the Second World War.

This report by The Canadian Press was first published Jan. 7, 2023.

Dylan Robertson, The Canadian Press

## Fjord Line is rebuilding LNG-ships to resolve the impact of the energy crisis

Fjord Line has decided to rebuild the two LNG-ships MS Stavangerfjord and MS Bergensfjord from single-fuel LNG-engines to dual-fuel LNG/MGO-engines.



After two years of a global pandemic and government-imposed travel restrictions, Fjord Line had the best-ever high season revenue wise in 2022. Unfortunately, increases in the LNG (Liquified Natural Gas) fuel costs has led to a non-sustainable financial situation for Fjord Line.

The energy crisis, caused by the Russian invasion of Ukraine, has led to extraordinary volatility and significant price increases in LNG – and the price increases have been far higher than for traditional and less sustainable energy sources at sea. In addition, Fjord Line receives no governmental financial energy-aid. This has led to a dramatic increase in the energy costs for Fjord Line's two LNG-operated ships, and significantly above a financially sustainable level.

Since early Fall, the LNG-ship departures from Vestlandet in Norway, Denmark, and Langesund in Norway have been reduced as well as the crossing time has been increased. This is of course not the way Fjord Line intend to operate our routes or the desired customer offering. However, adjustments to our route operations were necessary as a consequence of the extraordinary high fuel costs especially on LNG. In addition, we have worked immensely hard to develop and evaluate long-term alternatives enabling a return to our ordinary route operation on the routes between Vestlandet in Norway and Denmark and the route between Langesund and Hirtshals. Fjord Line has now decided to rebuild the two LNG-ships MS Stavangerfjord and MS Bergensfjord from single-fuel LNG-engines to dual-fuel LNG/MGO-engines during Spring 2023.

The engine conversion enables the two LNG-ships to switch between LNG and MGO (Marine Gas Oil), which will ensure a financially sustainable operation until the LNG-price level is normalized. Fjord Line is a pioneer within LNG-ship operation and our award-winning LNG-ships had the most innovative and sustainable fuel solution when launched in operation

during 2013 and 2014. We are saddened by the need for the conversion towards use of MGO, despite Marine Gas Oil having a significant reduced emissions of sulphur than traditional fuel such as HFO (Heavy Fuel Oil). The conversion is however critical to maintain our customer offering, secure workplaces, and to secure the continued development of Fjord Line, says CEO, Brian Thorsted Hansen.

#### Rebuilding of LNG-ships

Rebuilding of MS Stavangerfjord will start in January 2023 and will be finalized by the end of May 2023. MS Bergensfjord will be rebuilt during February to medio June 2023. The routes affected by the rebuilding are Bergen – Stavanger – Hirtshals, and Hirtshals – Langesund. Fjord Line's other routes Sandefjord – Strömstad, and Kristiansand – Hirtshals are not affected by the changes and will operate as normal.

The ships are being rebuilt at Fosen Yard and the engines will be delivered by Wärtsilä.

Fjord Line has concluded a refinancing as part of the rebuilding of the two ships and due to the current energy crisis. A refinancing where our owners and lenders jointly have secured the continued development of Fjord Line's strong position.

During the COVID-19 pandemic and the energy crisis the owners have contributed with new capital in the amount of 500 million NOK to Fjord Line.

#### Our sincere apologizes to our customers

As a result of the engine conversion plan, Fjord Line will unfortunately not be able to maintain our customer offering on the routes Bergen – Stavanger – Hirtshals, and Hirtshals – Langesund during February 8<sup>th</sup> till May 25<sup>th</sup>, 2023. We sincerely apologies to our private- and business-/freight customers using Fjord Line on these critical ferry routes between Norway and the continent, and consequently being affected by the changes, says Brian Thorsted Hansen.

Customers who have booked with Fjord Line and are affected by the changes will be refunded, or can choose to be rebooked, or receive a voucher.

During the time of conversion, Fjord Line will invest in our employees by continued competences development to secure our strong foundation and development, and we look forward to welcoming our passengers and freight customers back to our ships when the rebuilding is completed.

Fjord Line has led the way in the green transition and is the only Norwegian shipping company that transports passengers as well as cargo, internationally, on two ships powered by LNG. This enables up to 25% CO<sub>2</sub>-savings and greatly reduced emissions of sulphur- and nitrogen oxides. We are proud of our contribution towards responsible business operations and our ambitions to be a leading contributor towards sustainable and innovative ferry operations remain.

FEATURED

## Williston oil and ag producers look forward to growth in 2023

- [By Eric Gill egill@willistonherald.com](mailto:egill@willistonherald.com)

Dec 21, 2022 Updated Jan 3, 2023

The outlook for two of the Bakken region's most important industries appears bright for 2023. Both oil and agriculture are experiencing growth in northwestern North Dakota and eastern Montana.

Two reports published in December shed light on the oil and ag sectors in the Bakken region.

The first, titled "Monthly Update Pipeline Authority," authored by N.D. Pipeline Authority Director Justin J. Kringstad, shows month-over-month increases for Williston Basin Oil Production in North Dakota and eastern Montana from January through October 2022.

The report estimates 88% of Williston Basin oil is transported through pipeline exports, compared to an estimated 6% transported via rail for October 2022.

The second report — published by NDSU Extension and titled "North Dakota Agriculture Industry: Economic Contribution Analysis" — offers highlights for crop and livestock production from 2015–2020.

The ag report estimates N.D. received \$30.8B in gross business volume from agriculture. The December 2022 report also credits agriculture with contributing 28.4% to North Dakota's gross business volume. Of that total, 52% comes from crop production, according to the NDSU report.

The biggest concerns among some industry experts involve labor shortages. Each industry is experiencing labor pains, but for different reasons.

The oil and natural-gas industry is currently experiencing a pause in hiring partly because of recent snow storms and partly due to lower prices. Some experts believe current oil prices are artificially low because of global events such as the war between Russia and Ukraine.

Conversely, the ag business in the Mondak region is having difficulty competing with wages paid to workers in the oil and natural-gas industry.

There seems to be no shortage of oil to drill in the northwestern part of North Dakota, as well as eastern Montana. However, volatile prices due to global events that negatively impact the oil industry are causing companies to re-evaluate priorities.

Lawmakers and state officials like Dr. Lynn Helms, director of the N.D. Department of Mineral Resources, are looking at future job opportunities for new oil-rig workers. To ensure hiring of qualified workers, North Dakota is working with educators at state universities and community colleges to recruit students into the oil industry.

"That's a big deal — the labor shortage," said Helms.

An engineer with a master's degree from S.D. School of Mines and Technology and a PhD. from the University of North Dakota, Helms said the oil industry has faced labor shortages for the past year.

He noted there is plenty of oil in North Dakota but not enough people to "fill out the crews."

"There's a major effort within the state to start driving our drilling and fracking crews," Helms added.

He credited technology, including fracking, with dramatically increasing job growth in northwestern North Dakota.

"Today, they've made so many improvements in how these wells are drilled, they can drill a well in 8 to 10 days," Helms said.

In other words, one crew can accomplish the same amount of work it took four crews to drill 10 years ago.

Unfortunately, socio-political decisions make it more difficult for oil companies to take advantage of advancements in oil-drilling technologies, especially during the past decade, according to Helms.

"At today's oil price, one would expect there to be 10 to 15 more rigs operating [in the Mondak] than there are," he said, emphasizing there should be a dozen more oil-rig crews in the region today.

That represents at least 1,500 more well-paying jobs.

One avenue North Dakota is opting to take, in terms of mitigating federal laws that make it more difficult to drill for oil, entails filing lawsuits.

"The state is going to litigate the lack of quarterly lease sales," Helms said, referring to the Biden Administration's decision to limit leasing federal lands for oil drilling. "It's costing [N.D.] millions of dollars a month."

According to Helms, the federal government has overstepped its boundary to regulate emissions standards through various U.S. agencies that are not legally authorized to enforce oil-leasing contracts.

"There's so much market interference going on," he said.

"You can see why the investment decisions are tough for oil and gas companies right now," Helms continued. "It's tending to hold up investment and activity."

Another concern among the region's oil companies is the possibility of a looming recession in 2023, which could drive down demand for oil, according to Helms, thereby impacting prices.

In addition to drilling and transportation costs, Helms said infrastructure expenditures and supply-chain issues have a significant impact on the oil industry. In particular, he cited the rising costs of quality cement and high-end steel necessary to build rigs.

For example, a typical well in the Bakken region in 2021 cost an estimated \$6.9M to build, Helms said. In 2022, that same well cost an estimated \$8.3M to build, he said, pointing to increased competition for high-quality cement and steel to accommodate other in-demand infrastructure projects like roads and bridges.

Similar to oil company executives, ag producers worry about costs required to produce healthy crops that command higher prices.

"Fertilizer, fuel, chemicals, those are going to be the big ones," said NDSU Extension Agent Travis Binde, who directs the program's Agriculture and Natural Resources for Divide County. "On the farming side, I'm assuming fertilizer prices are going to be at the top of people's minds."

Chemicals include pesticides, herbicides and insecticides, said Binde, who noted Mondak farmers saw significant increases in fertilizer prices from Ukraine and Russia, where much of today's industrial-use fertilizer originates.

"It's a supply-and-demand issue," he said, noting that some farmers had the foresight to pre-book orders for fertilizer in 2022 to help offset anticipated rising prices in 2023.

Fortunately, ag growers and livestock producers have enjoyed robust markets in recent years.

"We've had really good markets for both crops and livestock," said Binde, 26. "People are asking, 'When is the ball gonna drop?' [because] markets will go down eventually.... When will that happen? We just don't know."

The region's farmers can find some encouragement heading out of a relatively dry autumn, because crops currently in storage facilities are experiencing less rot.

"We had ideal conditions in the fall," said Binde, who has dual B.S. degrees in general agriculture and animal science. "We had a pretty late harvest. If it would have been a wet fall, now is when you see storage issues."

"We always encourage people to go check their grain to make sure it's not heating up," he added, noting that even with freezing temperatures, grain can spoil.

Although recent cold temps are good for storing grain, there is no guarantee that spring 2023 will bring moisture. In fact, drought is an annual concern among farmers.

"Some nice moisture is going to be critical to make sure those crops have good growing conditions to germinate," said Binde, a native of Crosby, N.D.

On the labor side, the NDSU extension agent said it's challenging for Bakken farmers to match high wages paid to oil and natural-gas workers.

Because the ag industry cannot compete with oil companies in terms of wages, many local farmers are bringing in laborers from outside the state — and the country.

"They're looking elsewhere for maybe cheaper labor," Binde said. "Typically, in this area, we have a lot of oil fields and it's hard for farmers to compete with the wages and benefits, too."

Declining wages in the farming sector may explain why jobs data within the agriculture industry is relatively unimpressive in the City of Williston's most recent "Economic Strategic Plan."

Mining (2,472), Health Care (2,022) and Construction (1,534) top the list of number of jobs among Williston residents compared to Agriculture, which rests near the bottom third of the list at 472.

Much of the decline in regional ag jobs can be attributed to changes over the past few decades. No longer a legacy business — automatically passed from generation to generation — farming is a difficult industry to enter and thrive in today.

"It's really hard to get into farming if you're young and you don't have someone there to guide you," Binde said. "It's a business."

It's also Big Business, with big conglomerates that make competition tough for smaller farms.

As Binde

Chevron Poised to Ship 800,000 Barrels from Venezuela This Month  
2023-01-05 21:40:45.429 GMT

By Lucia Kassai and Fabiola Zerpa

(Bloomberg) -- Chevron Corp. is preparing to ship 800,000 barrels of Venezuelan crude to its refinery in Mississippi this month as it resumes exports from the country after a hiatus of four years.

The ship Caribbean Voyager is loading about 500,000 barrels of Hamaca crude at the government-controlled port of Jose while the Kerala is receiving no more than 300,000 barrels of Boscan, according to people with knowledge of the situation. The oil will be processed at the Pascagoula refinery in Mississippi, which was designed to handle thick, sulfurous Venezuelan oil, said the people, who didn't want to be identified because the information isn't public.

Chevron is also sending 600,000 barrels of heavy naphtha from the US to Venezuela this month. The San Ramon, California-based oil driller declined to comment on commercial matters.

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Read more:  
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Reviving Venezuelan Oil Supplies to Take Years, Chevron CEO Says  
Chevron to Resume Venezuela Oil Sales as US Rules Ease

\*T

Sanctions imposed in 2019 accelerated the collapse of oil production in Venezuela by starving the founding OPEC member of the chemicals and equipment needed to maintain operations. Production at Chevron's projects there reached no more than 85,000 barrels a day last year, from over 180,000 barrels before sanctions, according to people familiar with the operations. Production should ramp back up after the US granted a temporary operating license to Chevron in November. On Dec. 21 the explorer resumed drilling at the Boscan oil field, where it first struck oil more than a hundred years ago. Initial production at the oil field is seen at 11,000 barrels a day, according to PDVSA internal documents seen by Bloomberg.

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## Chevron, Waiting It Out in Venezuela, Tells U.S. Now Is the Time to Pump Oil

An oil refinery in Venezuela, where the U.S. has banned American oil companies from operating since 2019. YURI CORTEZ/AFP/GETTY IMAGES

By [Christopher M. Matthews](#) and [José de Córdoba](#)

March 22, 2022 10:27 am ET

HOUSTON—For months, Biden administration officials snubbed top executives and lobbyists for [Chevron](#) Corp. who had pressed officials in Washington to ease sanctions so the company could boost production in Venezuela, where the U.S. has banned such activities since 2019.

Then [Vladimir Putin invaded Ukraine](#).

Now the Biden administration is listening closely to Chevron, say people familiar with the conversations, which says it can help double Venezuela's 800,000 barrels-a-day production within months. That could replace the loss of roughly 700,000 barrels a day the U.S. was importing from Russia before [it attacked Ukraine](#). And it could help lower gasoline prices—a major concern for the Biden administration in [a tough election year](#).

“Chevron came in November, they pitched it around, but got laughed out of town,” said Juan Cruz, a former National Security Council official in charge of the Western Hemisphere who has closely followed the Biden administration's policy toward Venezuela. “But what was really funny in November is a plan today.”

Since the Russians invaded on Feb. 24 and Mr. Biden [canceled Russian oil imports](#), Chevron Chief Executive Officer Mike Wirth has offered the company's help to Secretary of Energy Jennifer Granholm in shoring up U.S. energy supplies by ramping up production in Venezuela, according to people briefed on the talks. Chevron is the only major U.S. producer to retain assets in Venezuela following nationalizations by the Socialist government and, much later, U.S. sanctions.

Granting the San Ramon, California-based company and other U.S. producers permits to operate could boost Venezuelan production while keeping other sanctions in effect. Broadly easing sanctions on Venezuela faces stiff opposition in the U.S. over concerns it would prop up the country's autocratic regime. U.S. officials are divided over the issue, say people familiar with the situation.

A few days after the March 5 meeting in Caracas with U.S. officials, the Maduro government [freed two American captives](#), one of them an executive of Citgo, the U.S. refining subsidiary of state-run oil company Petróleos de Venezuela SA, or PdVSA. The government also agreed to restart negotiations in Mexico with representatives of Venezuela's opposition, who want officials to agree to free and fair presidential elections in 2024.

News of the meeting in Caracas, though, has [caused a political backlash](#) in Washington and in Florida, where exiled Venezuelans live and have forged links to the state's powerful and conservative Cuban American community.

"The democratic aspirations of the Venezuelan people, much like the resolve and courage of the people of Ukraine, are worth much more than a few thousand barrels of oil," New Jersey Sen. Robert Menendez, the Democratic chairman of the Senate Foreign Affairs Committee, wrote in a statement. Those sentiments were echoed by both Democratic and Republican lawmakers in Florida.

SHARE YOUR THOUGHTS

*Should the U.S. ease sanctions on Venezuela to get more oil? Why or why not? Join the conversation below.*

Venezuelan opposition leader Juan Guaidó, whom the U.S. recognizes as Venezuela's legitimate president, was told of the U.S.-Venezuela meeting after it had taken place. Mr. Guaidó wrote a letter to Mr. Biden, according to a person with knowledge of the matter, saying that lifting sanctions on Venezuela would do little to ease the world's crude supply shortages while rewarding Mr. Maduro, a Putin ally whose rule is blamed for leading six million Venezuelans to flee the country.

"Today, more than ever we should be firm and morally consistent," said Mr. Guaidó in a video press conference from Caracas last week. He said any lifting of sanctions on Venezuela or permission for Chevron to pump oil there should only come in exchange for democratic concessions by the regime.

Answering reporters' questions last week White House press secretary Jen Psaki said, "There is no dialogue between us and the regime." She said the administration would consider lifting sanctions on the basis of progress in talks between Mr. Maduro and the opposition.

Chevron officials still say the company could win a license permitting it, along with European oil companies such as [Eni Spa](#) and [Repsol SA](#), to operate in Venezuela.

A refinery of state-owned Petróleos de Venezuela in El Palito. Venezuelan oil production has plummeted since the 1990s due to mismanagement.

PHOTO: MANAURE QUINTERO/BLOOMBERG NEWS

Venezuela claims to have the world's largest proven oil reserves. But years of mismanagement, corruption and nationalization of oil ventures led production to fall from 3.2 million barrels a day in

Asked recently by CNN about the outreach to Venezuela and Saudi Arabia for more oil, Ms. Granholm, said, “I think Americans should see the administration calling right now for an increase in supply as something that helps them,” naming the benefit of reducing costs at the pump.

Shortly after Mr. Wirth talked to the energy secretary, three senior U.S. officials—Juan Gonzalez, the senior National Security Council official in charge of Latin America; James Story, the U.S. ambassador to Venezuela; and Roger D. Carstens, a special envoy—[flew to Caracas](#) on March 5 and met with President Nicolás Maduro and other top Venezuelan officials.

Another person who spoke with senior Venezuelan officials after the invasion was Ali Moshiri, a charismatic Iranian-American who had headed Chevron’s Latin America division and was considered a “dear friend” by the late Hugo Chávez, the founder of the political movement now led by Mr. Maduro, with whom Mr. Moshiri also has close a close relationship. Mr. Moshiri retired from Chevron in 2017 but now consults for the company in Venezuela, where he has deep ties with senior officials, say people familiar with the matter.

Many oil industry executives say that Mr. Moshiri was essential to Chevron’s controversial decision to [stay in the country](#) even as other Western oil companies exited after the Venezuelan government in 2007 [nationalized billions of dollars of assets](#) owned by [ConocoPhillips](#), [Exxon Mobil](#) Corp. and others. He has also lobbied Biden officials to loosen sanctions on Venezuela, where Chevron has operated for nearly a century.

“You cannot ignore Venezuela,” Mr. Moshiri said in an interview last week. “Venezuela will always be part of our energy security.”

The White House declined to comment about Chevron’s possible role or its own talks in Venezuela. The Energy Department declined to comment.

People briefed on the talks say Mr. Moshiri has argued to U.S. officials that the U.S. can’t cede influence of Venezuelan energy to rivals like China and Russia, which have increased their activities in the country in recent years. He has also spoken with Venezuelan officials for months to try to win the release of Americans imprisoned in Venezuela, these people said.

A Chevron spokesman said Mr. Moshiri isn’t representing the company in negotiations with the U.S. or with Venezuelan officials. Mr. Moshiri declined to provide details about his contract with Chevron. After leaving Chevron, he founded a firm, Amos Global Energy, which seeks investment opportunities in Venezuela, people familiar with the matter said.

the 1990s to a 10th of that in 2020. Since then, production has more than doubled as Venezuela turned to opaque foreign companies to boost production, say industry executives. Chevron's lobbyists assert that the recent production increases show that the U.S. sanctions aren't working as intended.

But though Chevron has told U.S. officials it could jack up production quickly, some oil analysts who closely track Venezuela [doubt the company could deliver](#). Even in good times, Venezuela had never increased production anywhere near the level of recent optimistic projections, according to Francisco Monaldi, director of the Latin America Energy Program at Rice University's Baker Institute.

Chevron's perseverance in Venezuela has come as the company has tried to get Venezuela to pay money owed under production-sharing agreements. The company wrote down all of its assets there in 2020, taking a charge of \$2.6 billion. Nonetheless, it stayed, receiving periodic licenses from the U.S. government to retain but not operate assets.

—*Timothy Puko in Washington contributed to this article.*

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# High hurdles to grow Chevron's Venezuela oil output

Published date: 21 December 2022

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An internal Chevron plan to increase Venezuelan oil production to 200,000 b/d by mid-2023 relies on efforts to rehabilitate some 18,000 wells in various states of disrepair in the country's once-prolific Occidente region.

According to a report from Venezuela state-owned PdV obtained by *Argus*, about 7pc of existing wells in Occidente are operating. The 1,400 or so "Category 1" wells are producing oil, but many at declining rates.

About 8,700 wells fall into Category 2, which includes non-operating wells that may just need minor work to become operational. These wells may need around \$500,000 each in new investment to be viable, according to sources familiar with the field.

In Category 3 are more than 7,900 wells that need between \$5mn-\$6mn of investment each to be commercially viable.

Hundreds of wells in the PdV report are reportedly shut down just for a lack of reliable electricity, which plagues many parts of the country. Many more have been stripped bare of any surface equipment by thieves.

Production in Occidente has declined from 150,000 b/d earlier this year to around 90,000 b/d in November.

Much of Chevron's work in Venezuela has been curtailed in recent years by US sanctions. The US eased some sanctions in late November when the government agreed to resume talks with the opposition about new elections, which will allow Chevron to sell crude from its Venezuela joint ventures.

Chevron was expected to send its first cargo of Venezuelan crude to a US Gulf coast refiner since 2018 by the end of December, but it is not yet clear if that will happen. Government officials are anxious to send a symbolic message with a cargo before the new year, while Chevron appears less concerned with rushing any shipments.

Chevron plans to increase its global spending in 2023 to \$17bn, up from around \$15bn in 2022, but has not disclosed any specific plans for Venezuela.

By Carlos Camacho

Yemen's Houthis accuse Saudi-led coalition of launching drone strikes on port city  
2023-01-08 12:00:24.69 GMT

Yemen's Houthis accuse Saudi-led coalition of launching drone strikes on port city

Jan. 8, 2023 (Xinhua) --

Houthi-run al-Masirah TV reported on Sunday that the Saudi-led coalition launched 12 drone strikes on the Houthi positions in Yemen's Red Sea port city of Hodeidah in the past 24 hours.

The attacks were among "164 breaches of the truce in the city committed by the coalition forces, including an attempted advance by the ground forces on Hays district in the southern part of the city," it said.

The Saudi-led coalition and the Yemeni government have not commented yet on the allegation.

Hodeidah has witnessed a shaky cease-fire between the coalition-backed Yemeni government forces and the Houthi militia since they reached a UN-sponsored truce in Stockholm in December 2018.

The strategic city is controlled by the Houthis, while the government forces have advanced to the southern districts.

Yemen has been mired in a civil war since late 2014 when the Iran-backed Houthi militia stormed several northern cities and forced the Saudi-backed Yemeni government out of the capital Sanaa.

The Saudi-led coalition intervened in the Yemeni conflict in 2015 to support the Yemeni government.

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-0- Jan/08/2023 12:00 GMT

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Yemen News Agency (SABA)

<https://www.saba.ye/en/news3218239.htm>

"siege is war" the million marches. Warning messages to aggression forces

[07/January/2023]

SANA'A January [07.2022](#) (Saba) - The aggression States have expanded their economic war against the Yemeni people, this was demonstrated by the denial of access to oil derivatives vessels, foodstuffs and medicine through the port of Hodeidah and the continued refusal to pay State employees' salaries from Yemen's oil and gas revenues and wealth.

All this comes after the aggression States failed to achieve any military victory on the fronts and arenas of confrontation in various fields.

This illegal measure affects the details of Yemeni citizens' daily lives and affects key sectors such as agriculture, industry, health and trade by the complete paralysis incomprehensible, only in the sense of the United States-Saudi-UAE aggression coalition's inability of military confrontation in various fields to resort to such a vile method of narrowing Yemenis in their daily lives.

Sana'a has repeatedly warned through its officials about the gravity of this issue and the consequent suffering of the population, The United Nations called for intervention and action to resolve the issue of the embargo as a war against humanity, for its direct impact on the daily lives of millions of Yemenis and the departure of economic sectors from work.

However, as is known, the United Nations, which has failed to resolve any issue at the international level, as an organization by colonial Powers, conducts its work in accordance with the interests and aspirations of those States, how else do we understand this suspicious silence by the officials of this international Organization in addressing and resolving an issue affecting the lives of an entire people? And where is humanity from that? Are human rights principles only for media consumption?

A million marches have warned yesterday in the capital Sana'a and Yemen's governorates, one of the consequences of the continued blockade, which must be met with an unprecedented military response.

Yemenis affirmed that the unconditional opening of Yemen's ports and airports is a legitimate and bargain-free demands, Yemen's citizens in the north, south, east and west of the country are agreed-upon and the States of aggression must bear the consequences.

E.M

<https://www.globaltimes.cn/page/202301/1283383.shtml>

## China ramps up efforts to ensure safe travel amid surging passenger numbers on first day of Chunyun

By Global Times Published: Jan 07, 2023 10:36 PM



Photo: Li Hao/GT

From Chinese transportation authorities to railways and airlines, the nation has gone all out in ramping up efforts to ensure safe and smooth travel over the 40-day *Chunyun* or Spring Festival travel rush starting on Saturday, with passenger numbers expected to surge significantly following the continuous optimization of COVID-19 measures.

Some 6.3 million trips are expected to be made using China's railways on Saturday, according to China Railway. More than 10,000 domestic flights are scheduled on Saturday, a year-on-year increase of 13 percent, while the daily passenger volume is forecasted to exceed one million, reaching a peak unseen in several months, Caacnews.com reported, citing data from Umetrip.

China's 40-day Chunyun, the world's largest human migration, is expected to see about 2.095 billion passenger trips made this year, up 99.5 percent from the 2022 level, Xu Chengguang, an official with China's Ministry of Transport (MOT), told a State Council Information Office press conference on Friday.

Passenger volume on air, rail and road is set to reach 70.3 percent of the pre-epidemic level in 2019, according to Xu.

In the light of surging travel demand, relevant departments and transportation operators have stepped up efforts with an increased deployment of added transport capacity.

China Eastern Airlines said it plans to allocate 753 aircraft for the upcoming travel rush, with average planned daily flights of more than 2,900, and the planned passenger seat kilometers returning to 87 percent of the pre-epidemic level in 2019, the company said in a statement sent to the Global Times on Saturday.

Air China plans to arrange 58,633 flights for the Spring Festival travel rush, an increase of 75.9 percent year-on-year with a significant growth in domestic routes, the company told the Global Times on Saturday. An average of 1,445 flights have been scheduled per day, an increase of 620 flights compared with 2022.

Air transportation volume is expected to return to 73 percent of the 2019 level, with the number of daily arranged passenger flights reaching 11,000, Wan Xiangdong from the Civil Aviation Administration of China (CAAC) said on Friday.

The passenger volume for flying home and traveling domestically will be able to return to near normal levels, Qi Qi, an independent market watcher told the Global Times on Saturday, adding that it will still take time for the number of flights to fully recover for the Spring Festival travel rush which has been affected by recent epidemic outbreaks.

Meanwhile, China Railway said that 6,077 trains with a passenger capacity of 9.04 million will be operated during peak periods before the holiday, while 6,107 trains carrying 9.14 million passengers are arranged for the returning peak. Maximum passenger capacity is 11 percent higher than the same period of 2019.

The Ministry of Transport held a meeting on Wednesday, which is aimed at guiding authorities across the nation to fully prepare for the Spring Festival travel rush. During the meeting, Transport Minister Li Xiaopeng outlined six major tasks, including guaranteeing logistics, especially targeting the transportation of crucial materials including medication and coal, further strengthening the quality of services, enhancing prevention and protection mechanisms in response to possible risks along with other aspects.

# Oil price outlook – Snapshot: January 3, 2022

**Disclaimer: Please note that BNEF does not offer investment advice. Clients must decide for themselves whether current market prices fully reflect the issues discussed in this note.**

Category	Indicator	Signal	Comment
Fundamentals	Refinery margins	↑	<ul style="list-style-type: none"> <li>Global refinery margins were higher over the past week, as oil product cracks across the barrel strengthened and natural gas prices fell.</li> </ul>
	Crude stocks	↓	<ul style="list-style-type: none"> <li>In the week ending December 23, land crude-oil storage levels in BloombergNEF's tracked regions (the US, ARA and Japan) fell 0.7% to 540.3 million barrels (m bbl). The stockpile <b>deficit</b> against the five-year average (2015-19) <b>widened from 46.4m bbl to 47.8m bbl</b>.</li> <li>Including global floating crude stockpiles from the same week, total crude oil inventories increased by 3.1% to 628.8m bbl, while the stockpile <b>deficit narrowed from 21.4m bbl to 2.6m bbl</b>.</li> </ul>
	Product stocks	↑	<ul style="list-style-type: none"> <li>In the week ending December 23, gasoline and light distillate stockpiles in BNEF's tracked regions (the US, ARA, Singapore, Japan and Fujairah) dropped by 1.2% week-on-week to 267.8m bbl, with the stockpile <b>deficit</b> against the three-year average (2017-19) <b>widening from 0.3m bbl to 10.5m bbl</b>. Gasoil and middle distillate stockpiles in BNEF's tracked regions were up 0.3% to 154.0m bbl, with the stockpile <b>deficit</b> against the three-year average <b>widening from 9.4m bbl to 18.7m bbl</b>.</li> <li>Oil product stockpiles in tracked regions fell by 1.6% to 962.0m bbl, with the stockpile <b>surplus</b> against the three-year seasonal average of <b>10.8m bbl flipping to a deficit of 15.9m bbl</b>. Altogether, crude and product stockpiles increased by 0.2% to 1,590.8m bbl, with the stockpile <b>deficit widening from 10.6m bbl to 18.5m bbl</b>.</li> </ul>
	Demand indicators	↔	<ul style="list-style-type: none"> <li>In the week to January 9, global jet fuel demand from commercial passenger flights is set to rise by 0.7% to 5.42 million barrels per day. Jet fuel consumption by international passenger flight departures is on course to rise 53,100 barrels per day (or +1.7%) week-on-week, while consumption by domestic passenger flight departures will decline by 14,900 barrels per day (or -0.7%). In the week to December 31, flight departures in the Eurocontrol area fell to 85.6% of the equivalent week in 2019, down from 100.3% last week. The four-week moving average also slipped to 88.5%, from 88.6%. Meanwhile, in the same week, US passenger throughput dropped to 92.6% of the average week in 2019, down from 95.2% last week. The four-week moving average rose to 93.7%, from 93.6%.</li> <li>In the week to December 28, TomTom's peak congestion data showed strong declines in Europe (-36.6%), Asia Pacific excluding China (-12.6%) and North America (-36.3%). The weakness in congestion levels is largely driven by the holiday season. Versus the same week in 2021, North America was down 11.0 points week-on-week to 90.9%, Asia Pacific ex-China was down by 1.4 points to 91.7%, while Europe grew by 1.6 points to 102.3%. In the week to January 2, road congestion in China's 15 key cities surged by 32.0 percentage points to 86.7% of January 2021 levels, according to BNEF's calculation based on Baidu data.</li> <li>Weather in several cities across Western Europe turned warmer over the past week.</li> </ul>
Financial	Macro indicators	↔	<ul style="list-style-type: none"> <li>The dollar index averaged 104.0 in the week to December 30 and was 0.3% lower than the week before. The China Manufacturing PMI fell to 49.0 in December, from 49.4 in November. The India Manufacturing PMI rose to 57.8 from 55.7 in the same time period.</li> </ul>
	Hedge fund positioning	↑	<ul style="list-style-type: none"> <li>In the week to December 27, Managed Money net positioning in the oil complex was up by 58.6m bbl (or +15.2%) week-on-week to 445.4m bbl, and stood at the twelfth percentile of the past five years.</li> </ul>
	Options and volatility	↔	<ul style="list-style-type: none"> <li>There was a significant increase in open interest for Brent Mar-23 \$80/bbl puts, as well as WTI \$100-105/bbl calls. Brent and WTI 1M volatility skews were mixed over the past week.</li> </ul>
Outlook	Weekly call	↔	<ul style="list-style-type: none"> <li>BNEF is neutral on oil prices for the week ahead, with Brent Mar-23 trading at \$85.00/bbl and WTI Feb-23 trading at \$79.39/bbl at the time of writing.</li> <li>In the week to January 2, the seven-day moving average of road congestion in China's key 15 cities (weighted by vehicle registration count) saw a strong 32 percentage point rebound to 86.7% of 2021 levels. Eight of the fifteen cities drove the recovery, while congestion levels in the other seven cities remained suppressed. Of all 99 cities tracked by BNEF, 74 cities registered growth in road congestion, with the mean congestion level growing by 15.8 percentage points to 76.6% of January 2021 levels.</li> <li>Outside of China, road congestion levels saw strong declines due to the holiday season. The US four-week average motor gasoline and distillate fuel supplied saw a strong uptick in the week to December 23, inching closer to their respective 2017-2021 seasonal averages.</li> <li>Oil inventories saw a net bullish move in the week ending December 23. Oil product inventories switched from a surplus to a deficit against their 2017-19 seasonal averages, and nullified the bearish move of crude inventories which saw its stockpile deficit shrink significantly. However, initial data from Vortexa in the week to December 30 suggests that the floating crude stockpile surplus has swelled significantly.</li> </ul>

# Past outlooks

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Date of report	Refinery margins	Crude stocks	Product stocks	Demand indicators	Commitment of traders	Options chain and volatility	BNEF week ahead call	Brent/WTI price at time of writing (\$/bbl)	Web Link
January 3	↑	↓	↑	↔	↑	↔	↔	Brent-Mar: 85.00 WTI-Feb: 79.39	
December 20	↑	↔	↓	↓	↓	↑	↓	Brent-Feb: 80.56 WTI-Feb: 76.42	
December 13	↓	↑	↔	↔	↓	↑	↔	Brent-Feb: 79.12 WTI-Jan: 74.19	
December 6	↓	↔	↓	↓	↓	↔	↓	Brent-Feb: 81.80 WTI-Jan: 76.04	
November 28	↔	↓	↓	↓	↓	↔	↔	Brent-Feb: 81.42 WTI-Jan: 74.17	
November 21	↑	↔	↓	↓	↓	↔	↓	Brent-Jan: 83.07 WTI-Jan: 76.03	
November 16	↔	↑	↔	↔	↑	↑	↔	Brent-Jan: 93.91 WTI-Dec: 86.81	
November 2	↔	↔	↓	↔	↑	↑	↔	Brent-Jan: 94.43 WTI-Dec: 88.22	
October 26	↔	↓	↔	↓	↓	↔	↔	Brent-Jan: 91.89 WTI-Dec: 85.77	
October 19	↔	↓	↔	↓	↑	↔	↓	Brent-Dec: 90.28 WTI-Dec: 82.78	
October 4	↔	↔	↑	↔	↓	↓	↔	Brent-Dec: 90.71 WTI-Nov: 85.26	
September 27	↔	↓	↓	↓	↓	↓	↔	Brent-Dec: 94.06 WTI-Nov: 87.83	
September 6	↓	↑	↔	↓	↔	↑	↓	Brent-Nov: 101.00 WTI-Oct: 95.40	
August 30	↔	↔	↓	↑	↑	↑	↑	Brent-Oct: 93.65 WTI-Sep: 87.83	

To view past reports on terminal, go to [NI BNEFOIL](#), search for the report and click on the icon to the far right:

24 ✓ Oil Price Indicators Weekly

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11/30

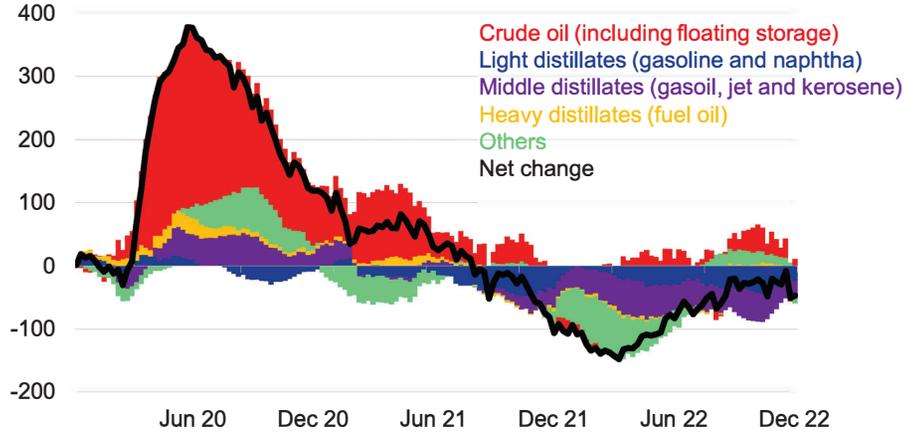


# Weekly oil inventories

Oil inventories rose by 0.2% over the past week

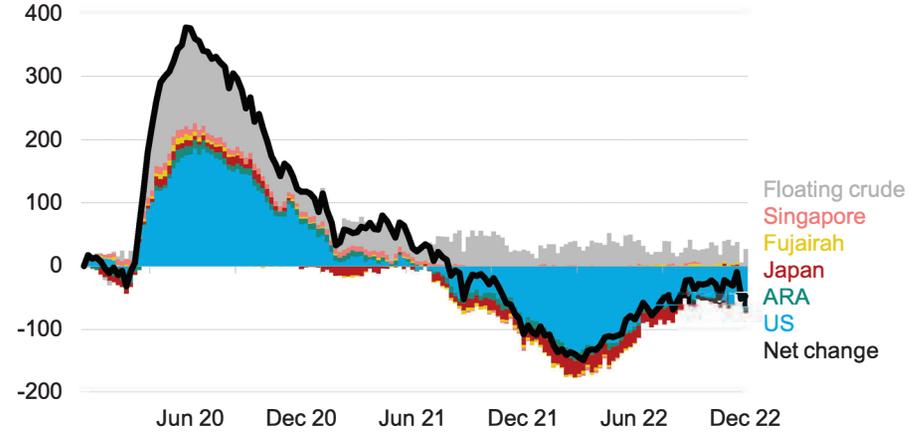
## Weekly oil inventories by type

Million barrels (indexed to January 1, 2020)



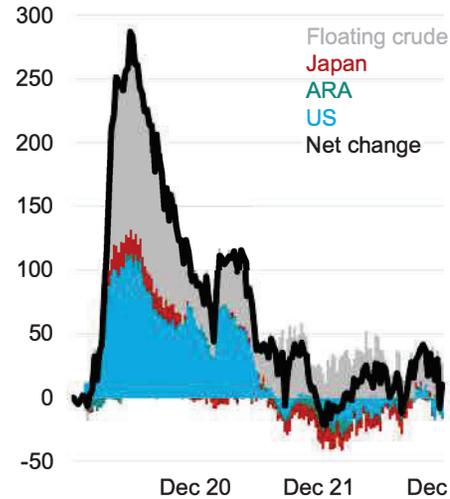
## Weekly oil inventories by region

Million barrels (indexed to January 1, 2020)



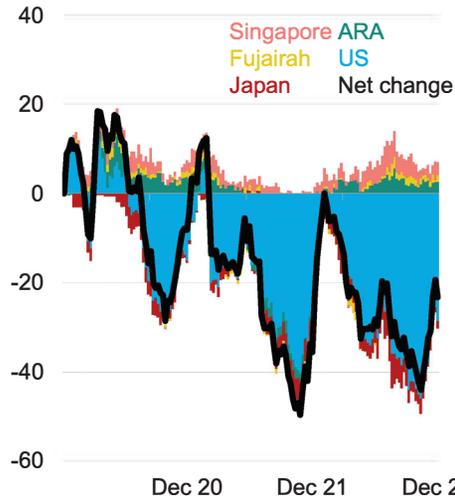
## Crude inventories

Million barrels (indexed to January 1, 2020)



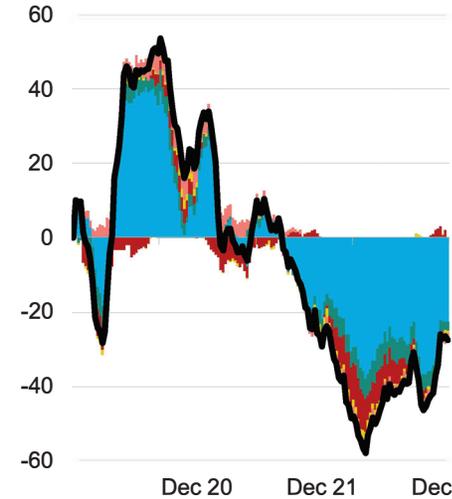
## Light distillate inventories

Million barrels (indexed to January 1, 2020)



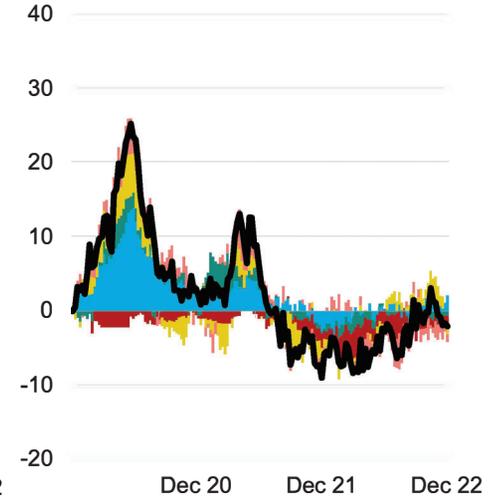
## Middle distillate inventories

Million barrels (indexed to January 1, 2020)



## Heavy distillate inventories

Million barrels (indexed to January 1, 2020)



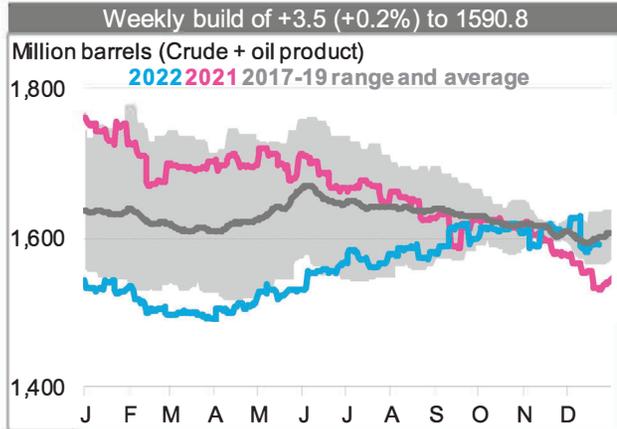
Source: BloombergNEF, US EIA, PJK, IE Singapore, FEDCom/Platts, PAJ, Vortexa, Genscape. Note: As of the week ending **December 23, 2022**.

# Aggregated oil stockpiles

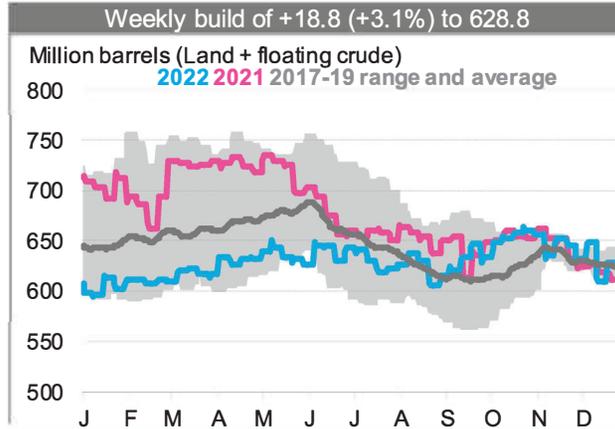
## Bullish: Stockpile deficit widened from 10.6m bbl to 18.5m bbl

- Charts below use the **2017-19** (three-year) seasonal stockpiles. All calculations are recalibrated to measure against their respective three-year seasonal averages, so the values below may differ from the previous slides.
- Land crude inventories include the US, ARA, Japan and Shandong Teapots. Floating storage data are global. Oil product storage includes the US, ARA, Japan, Singapore, Shandong Teapots and Fujairah. Floating crude inventories may have been adjusted since the previous report – see slide 8 for further info.

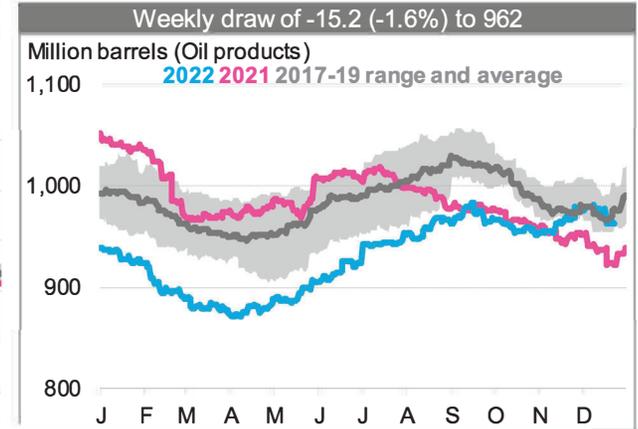
### Total oil and product stocks



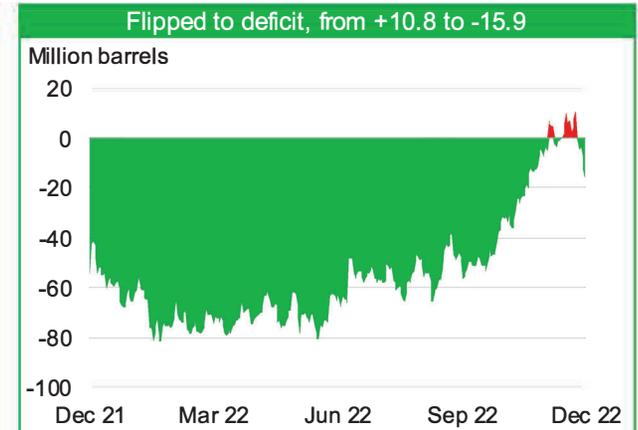
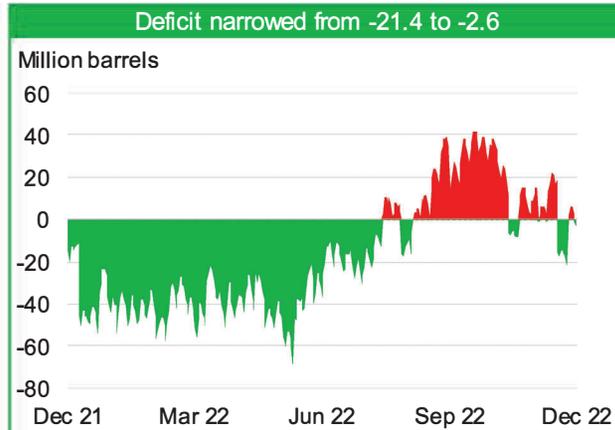
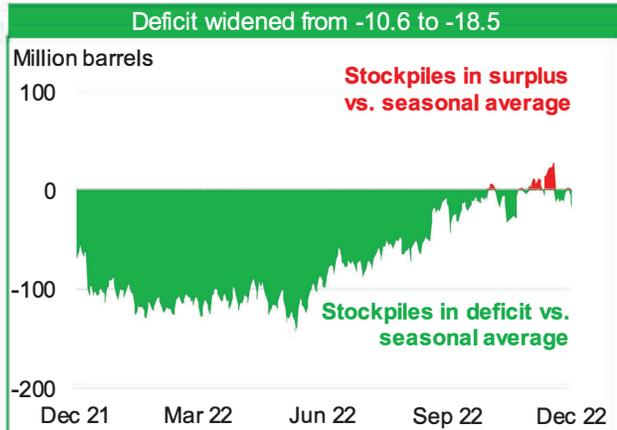
### Total crude stocks (land + floating)



### Total oil product stockpiles



----- Charts below subtract current stockpiles by the 2017-19 (three-year) seasonal average -----



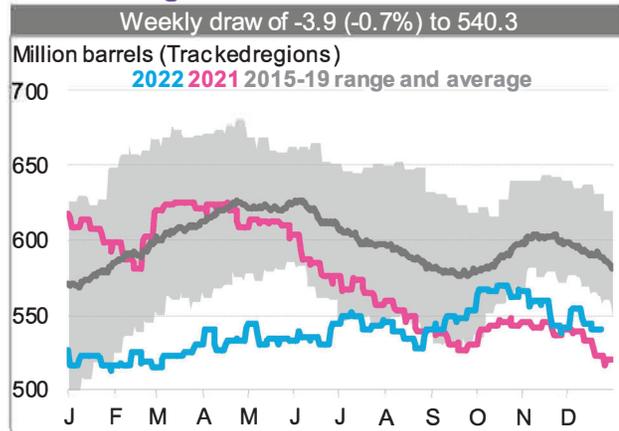
Source: BloombergNEF, US EIA, PJK, IE Singapore, FEDCom/Platts, PAJ, Vortexa, Genscape. Note: As of the week ending December 23, 2022.

# Crude stocks: Land

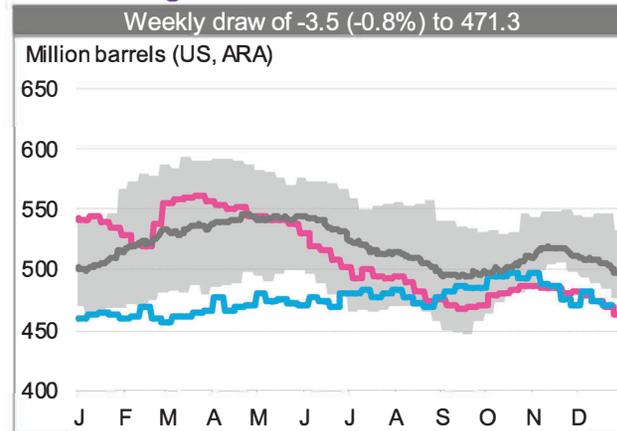
## Neutral: Stockpile deficit widened from 46.4m bbl to 47.8m bbl

- Crude inventory rises when supply outstrips demand (meaning more physical oil is available than is needed). High or rising inventories are therefore a bearish factor for oil prices. Every year, storage levels fluctuate due to seasonal demand trends. The intra-year directional movement of stockpile levels is somewhat predictable, yet the magnitude of movement can differ significantly from expectations.
- A useful way to gauge if the intra-year storage levels differ from the norm is to measure the difference between the current and seasonal average inventory levels.

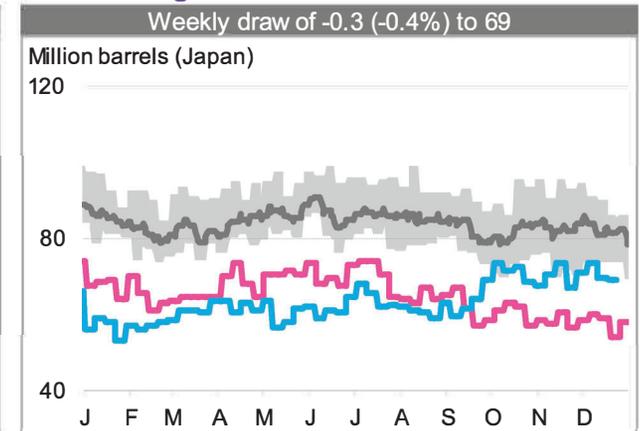
### Land storage: Total



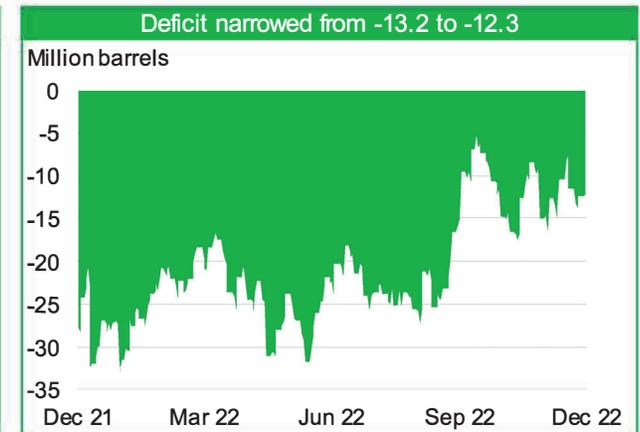
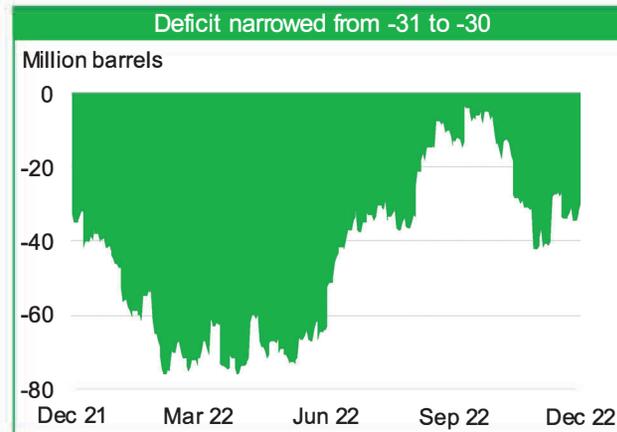
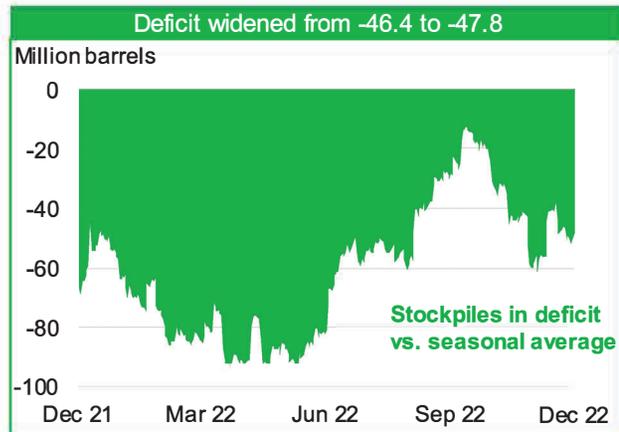
### Land storage: West of Suez



### Land storage: East of Suez



Charts below subtract current stockpiles by the 2015-19 (five-year) seasonal average



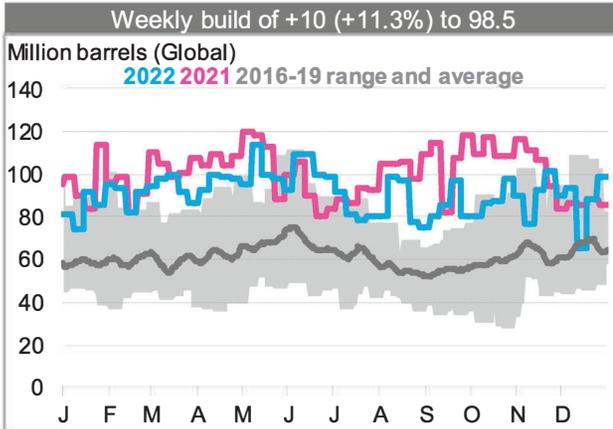
Source: BloombergNEF, US EIA, Genscape, PAJ. Note: As of the week ending December 23, 2022.

# Crude stocks: Floating

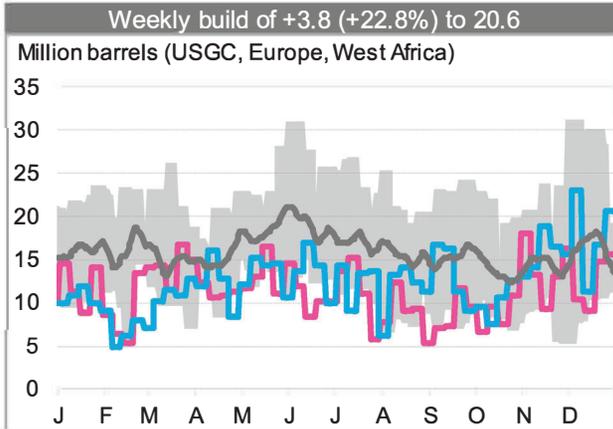
## Bearish: Stockpile surplus widened from 12.9m bbl to 33.9m bbl

- Floating storage is only profitable if the strength of contango (future versus prompt price) is greater than the tanker costs. Therefore, tankers become floating storage when the profit from a storage play exceeds the cost of the forward freight agreement (FFA).
- The floating storage data used in the "Oil Price Outlook" slide is for the previous week (ie, the week before the latest data shown below).

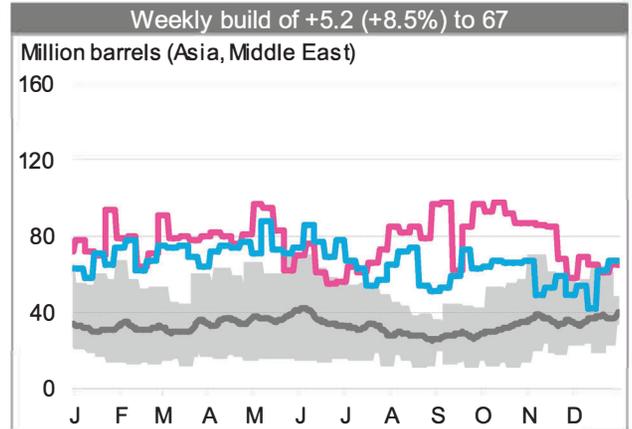
### Floating storage: Total



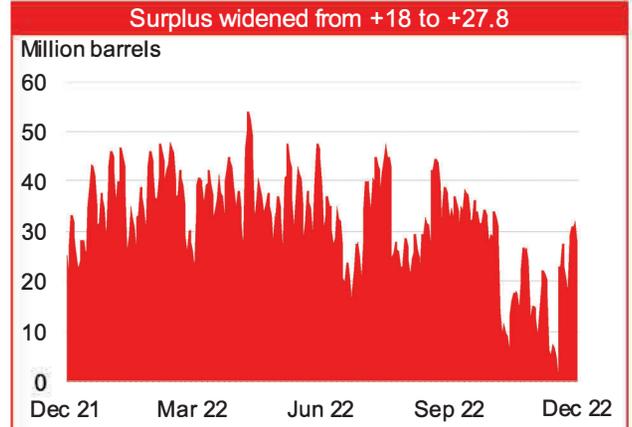
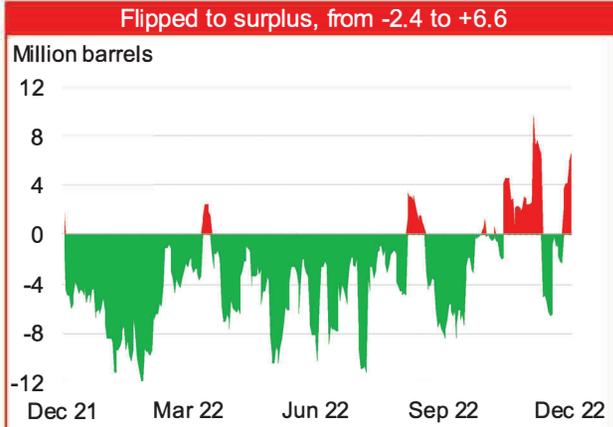
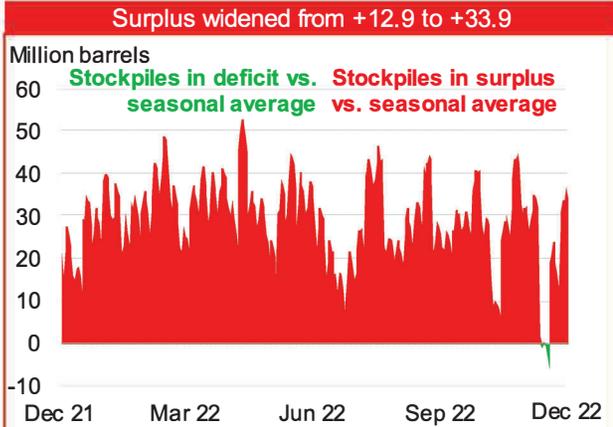
### Floating storage: West of Suez



### Floating storage: East of Suez



----- Charts below subtract current stockpiles by the 2016-19 (four-year) seasonal average -----



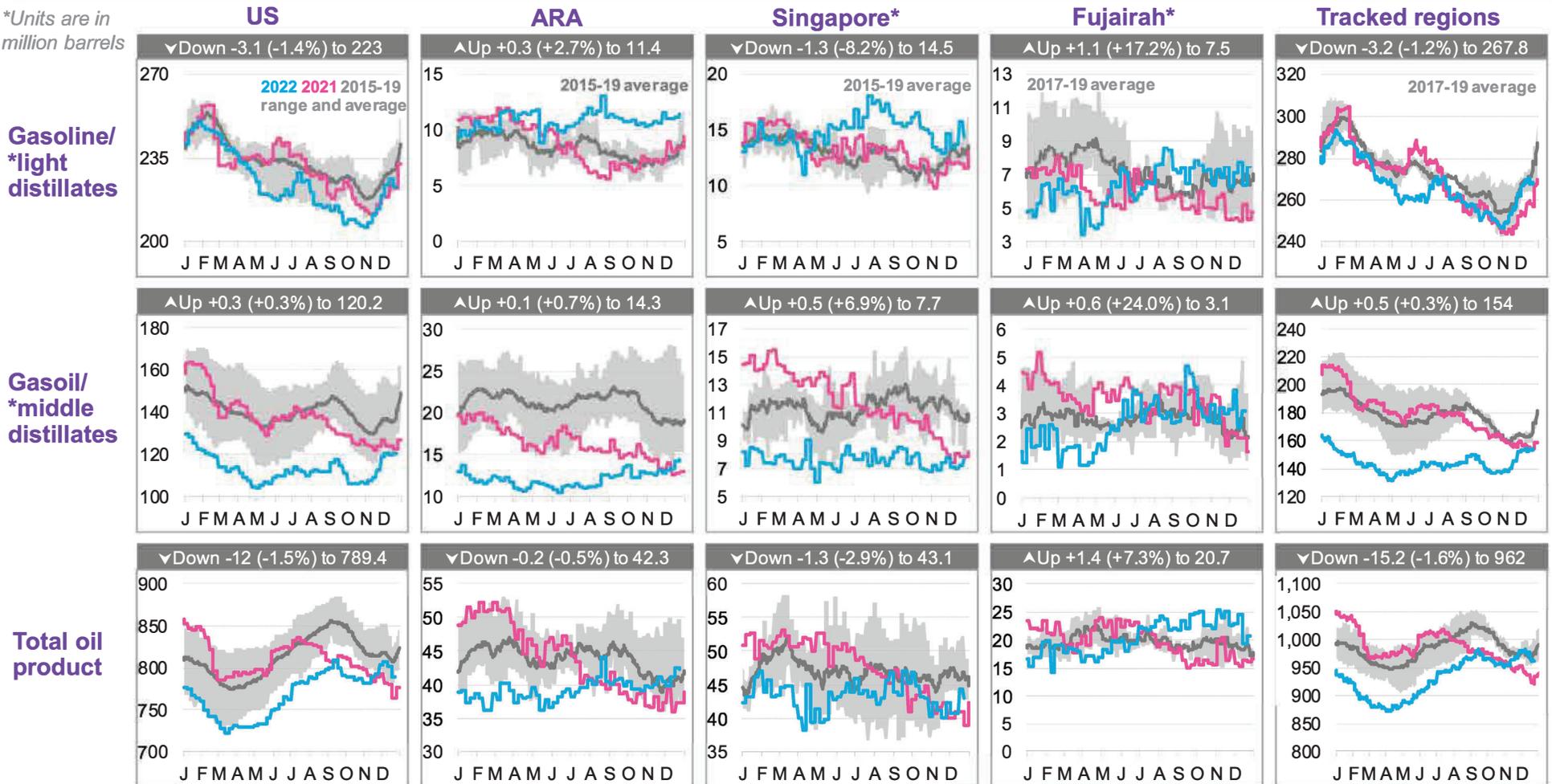
Source: BloombergNEF, Vortexa. Note: As of the week ending December 30, 2022. \*Raw data from Vortexa are revised frequently, so the data in this report might change week-to-week.

# Product stocks: Current versus seasonal average

**Bullish: Oil product stockpiles in tracked regions fell by 1.6% over the past week**

- Chart legend are as follows: **2022**, **2021** and the 2015-19 range and average. For Fujairah and tracked regions, the **2017-19 (three-year) seasonal range** is shown. Tracked regions include US, ARA, Singapore, Japan and Fujairah

\*Units are in million barrels



Source: BloombergNEF, US EIA, PJK, IE Singapore, FEDCom/Platts, PAJ. Note: As of the week ending December 23, 2022.

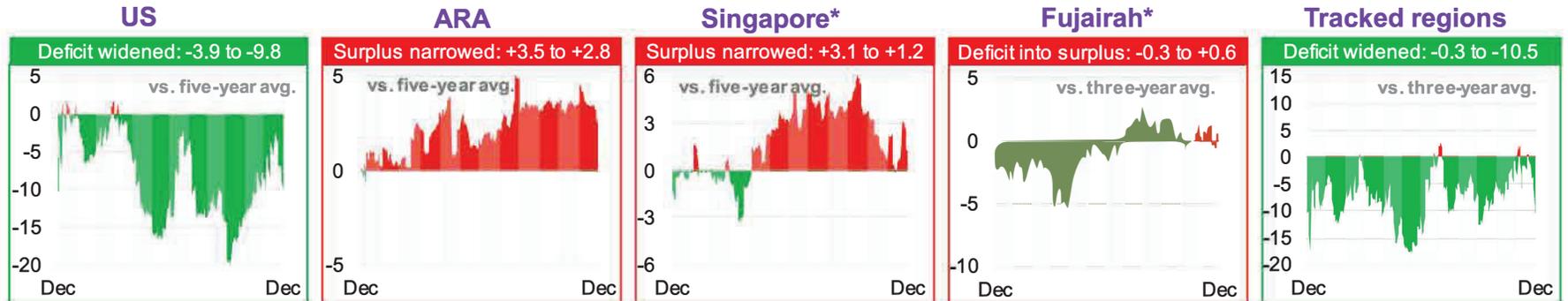
# Product stocks: Current versus seasonal average

**Bullish: Oil product stockpile against the seasonal average flipped from a surplus of 10.8m bbl to a deficit of 15.9m bbl**

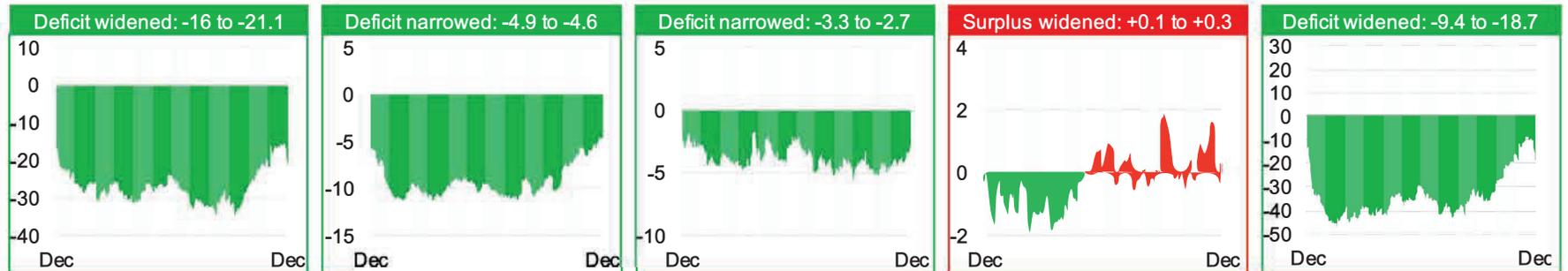
- The charts below compare each respective regional product stockpile level against the seasonal average defined in the previous slide.
- Red** signifies that the current stockpile levels are higher (in surplus) than the seasonal average, while **green** signals that the current stockpiles are lower (in deficit).

\*Units are in million barrels

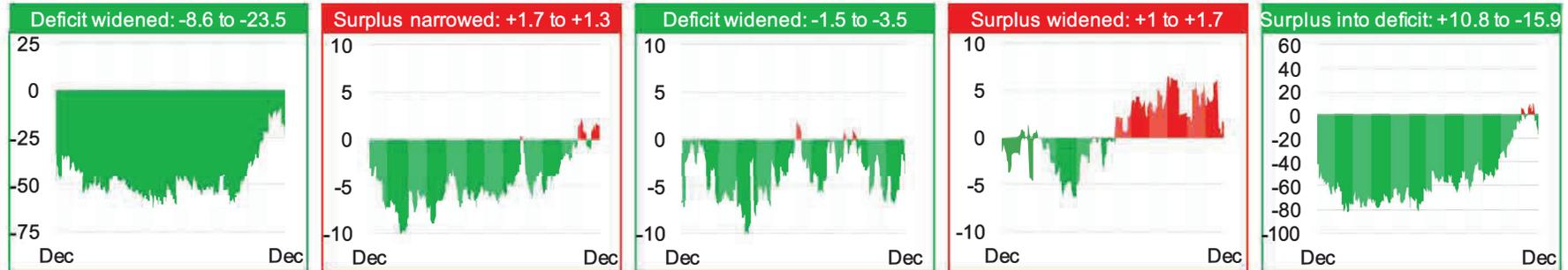
Gasoline/  
\*light  
distillates



Gasoil/  
\*middle  
distillates



Total oil  
product



Source: BloombergNEF, US EIA, PJK, IE Singapore, FEDCom/Platts, PAJ. Note: As of the week ending December 23, 2022.



# Caixin China General Manufacturing PMI™

## COVID-19 containment continues to dampen output at end of 2022

Chinese manufacturers signalled a further slight deterioration in overall business conditions at the end of 2022, as efforts to stop the spread of COVID-19 continued to disrupt operations and dampen client demand. While output fell at a softer rate compared to November, total new orders fell at a quicker pace as firms cited relatively weak market conditions. As a result, companies cut back on purchasing activity and reduced their headcounts further.

Encouragingly, business confidence around the 12-month outlook for output improved to the highest since February. Inflationary pressures meanwhile remained muted, as input costs rose modestly and prices charged fell slightly.

The headline seasonally adjusted *Purchasing Managers' Index™ (PMI™)* – a composite indicator designed to provide a single-figure snapshot of operating conditions in the manufacturing economy – edged down from 49.4 in November to 49.0 in December. The reading signalled a fifth successive monthly deterioration in operating conditions. Although quickening on the month to its strongest since September, the pace of decline remained marginal overall.

Weighing on the headline index was a quicker fall in overall new business during December. Though modest, the latest reduction in sales was the fastest seen for three months, with companies citing relatively weak demand conditions amid the ongoing pandemic. Foreign demand for Chinese manufactured goods also fell, and at a quicker pace than in November. Lower amounts of export work was often blamed on sluggish global economic conditions and the pandemic.

COVID-19 containment measures, including temporary factory closures, combined with softer customer demand to drive a further fall in manufacturing production at the end of the fourth quarter. The pace of contraction was the softest for four months and mild, however, with some firms noting a relative improvement in their operations compared to November.

In line with the trend observed for new orders, companies trimmed their purchasing activity at a quicker pace during December. Notably, the rate of decline was the strongest seen since April. At the same time, inventories of both purchased items and finished goods fell further.

The ongoing implementation of COVID-19 containment measures continued to impact logistics, with suppliers delivery times lengthening for the sixth month running. Though not as severe as that seen in November, the rate of deterioration was nonetheless solid overall.

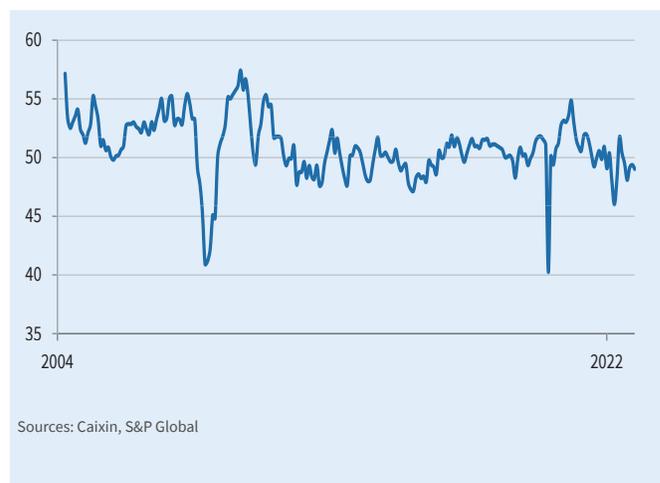
Lower production requirements and difficulties sourcing workers due to pandemic-related disruption led to a further fall in employment. The rate of reduction was only fractionally slower than November's 33-month record. Firms signalled little pressure on capacity though, as backlogs of work fell slightly for the third time in four months.

On the costs front, average input prices rose only slightly in December, with some firms noting an increase in expenses for some materials (notably metals). However, firms continued to lower their selling prices slightly as part of efforts to boost competitiveness and gain new business.

Chinese manufacturers expressed stronger optimism towards the year-ahead outlook for production in December. The level of positive sentiment improved to the highest for ten months, with companies often anticipating output to increase as the pandemic situation improves and market conditions strengthen.

### China General Manufacturing PMI

sa, >50 = improvement since previous month

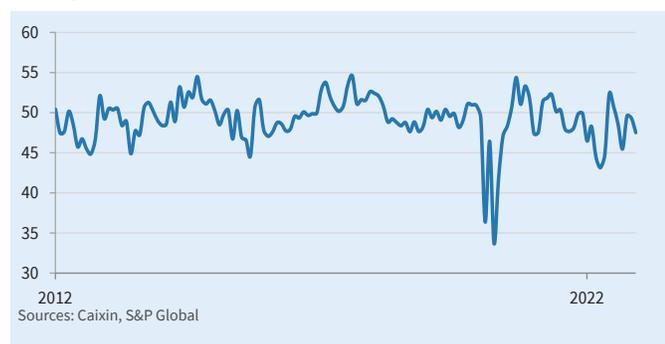


#### Key findings:

- Production declines further, albeit at slower rate
- Steeper fall in new orders
- Business confidence improves to 10-month high

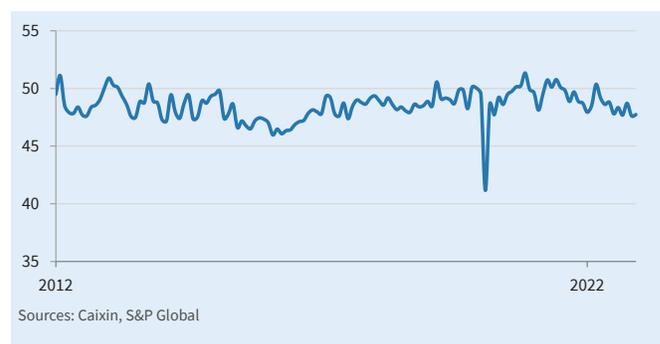
## New Export Orders Index

sa, >50 = growth since previous month



## Employment Index

sa, >50 = growth since previous month



Commenting on the China General Manufacturing PMI™ data, Dr. Wang Zhe, Senior Economist at Caixin Insight Group said:

*“The Caixin China General Manufacturing PMI in December fell 0.4 points from the previous month to 49, remaining in contractionary territory for the fifth consecutive month as Covid-19 outbreaks curtailed manufacturing activity.*

*“Both manufacturing supply and demand continued to shrink last month. Fallout from the pandemic was a drag on production and sales, with the subindexes for output and total new orders staying below 50 for the fourth and fifth straight months, respectively. Due to the economic downturn and weak demand overseas, the reading for new export orders also remained in contraction for the fifth straight month.*

*“Employment continued to shrink. The labor market was under pressure from both sluggish supply and demand. The corresponding subindex remained in contractionary territory for the ninth month running without sign of a significant rebound, logging the second-worst performance in 34 months. Due to weak demand, the sluggish hiring didn’t cause backlogs of work to rise. The gauge for backlogs fell into contraction in December.*

*“The gauges for input and output prices diverged amid modest inflationary pressure. Elevated prices of metals pushed up input costs, with the related measure staying slightly above 50 in December. Manufacturers’ bargaining power remained constrained given the limited demand. In December, the gauge for surveyed manufacturers’ output prices came in below 50 for the eighth straight month.*

*“Suppliers’ delivery times grew significantly, with the pandemic remaining the primary factor restricting the supply chain. The measure for suppliers’ delivery times rose modestly from November but stayed at a low level, indicating relatively sluggish logistics. In December, the quantity of purchases, stocks of raw materials, and inventories of finished products all*

*shrank for a second consecutive month.*

*“Optimism improved significantly among businesses. The reading for manufacturers’ expectations for future output reached the highest since February. Firms expressed strong confidence in an economic recovery following the easing of Covid containment measures.*

*“Overall, the pandemic continued to take a toll on the economy in December. Supply contracted, total demand remained weak, overseas demand shrank, employment deteriorated, logistics was sluggish, manufacturers faced growing pressure on their profitability, and the quantity of purchases as well as inventories stayed low. But optimism in the sector significantly improved thanks to further optimized Covid controls.*

*“Covid outbreaks rapidly spread across China in November, causing a number of macroeconomic indicators to fall sharply and adding to pressure on the economy. On Dec. 7, China announced 10 new measures to further optimize Covid containment. In the short term, infections are expected to explode, which will severely interfere with production and everyday life. How to effectively coordinate Covid controls with economic and social development has once again become a crucial question.*

*“Under pressure from shrinking demand, weakening expectations and a supply shock, the annual Central Economic Work Conference stated that the foundation for an economic recovery is not solid. Policymakers have made it clear that priority must be given to the recovery and expansion of domestic consumption. This requires not only elevated social expectations and confidence in development, but various policies to work in tandem in stabilizing the job market and effectively increasing the disposable income of residents.”*



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## Survey methodology

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The Caixin China General Manufacturing PMI™ is compiled by S&P Global from responses to questionnaires sent to purchasing managers in a panel of around 650 private and state-owned manufacturers. The panel is stratified by detailed sector and company workforce size, based on contributions to GDP. For the purposes of this report, China is defined as mainland China, excluding Hong Kong SAR, Macao SAR and Taiwan.

Survey responses are collected in the second half of each month and indicate the direction of change compared to the previous month. A diffusion index is calculated for each survey variable. The index is the sum of the percentage of 'higher' responses and half the percentage of 'unchanged' responses. The indices vary between 0 and 100, with a reading above 50 indicating an overall increase compared to the previous month, and below 50 an overall decrease. The indices are then seasonally adjusted.

The headline figure is the Purchasing Managers' Index™ (PMI). The PMI is a weighted average of the following five indices: New Orders (30%), Output (25%), Employment (20%), Suppliers' Delivery Times (15%) and Stocks of Purchases (10%). For the PMI calculation the Suppliers' Delivery Times Index is inverted so that it moves in a comparable direction to the other indices.

Underlying survey data are not revised after publication, but seasonal adjustment factors may be revised from time to time as appropriate which will affect the seasonally adjusted data series.

For more information on the survey methodology, please contact: [economics@ihsmarkit.com](mailto:economics@ihsmarkit.com).

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## Survey dates and history

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Data were collected 06-15 December 2022.

Data were first collected April 2004.

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## About PMI

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Purchasing Managers' Index™ (PMI™) surveys are now available for over 40 countries and also for key regions including the eurozone. They are the most closely watched business surveys in the world, favoured by central banks, financial markets and business decision makers for their ability to provide up-to-date, accurate and often unique monthly indicators of economic trends.

<https://ihsmarkit.com/products/pmi.html>

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## About Caixin

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Caixin is an all-in-one media group dedicated to providing financial and business news, data and information. Its multiple platforms cover quality news in both Chinese and English. Caixin Insight Group is a high-end financial research, data and service platform. It aims to be the builder of China's financial infrastructure in the new economic era.

Read more: <https://www.caixinglobal.com/index/>

For more information, please visit

[www.caixin.com](http://www.caixin.com)

[www.caixinglobal.com](http://www.caixinglobal.com)

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S&P Global (NYSE: SPGI) S&P Global provides essential intelligence. We enable governments, businesses and individuals with the right data, expertise and connected technology so that they can make decisions with conviction. From helping our customers assess new investments to guiding them through ESG and energy transition across supply chains, we unlock new opportunities, solve challenges and accelerate progress for the world.

We are widely sought after by many of the world's leading organizations to provide credit ratings, benchmarks, analytics and workflow solutions in the global capital, commodity and automotive markets. With every one of our offerings, we help the world's leading organizations plan for tomorrow, today.

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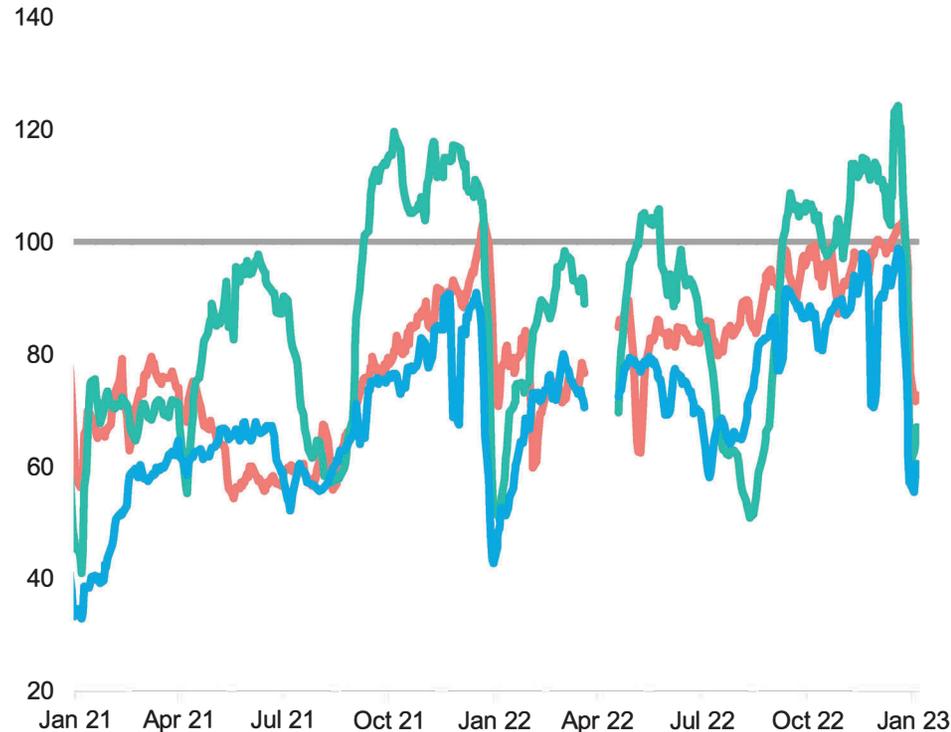
**PMI™**  
by **S&P Global**

# Comparing the two mobility indicators

## China's traffic levels continue to rise, North America and Europe fall

### TomTom congestion index

Indexed to the peak congestion of the average week in 2019 (five-day weekday moving average)



	Latest	Week $\Delta$	Four-week $\Delta$
Europe	67.1	-9.2 (-12.0%)	-43.0 (-39.1%)
Asia Pacific	72.9	-16.9 (-18.8%)	-26.3 (-26.6%)
North America	60.5	-1.6 (-2.6%)	-30.8 (-33.7%)

Source: TomTom road congestion data, BloombergNEF. Note: **Asia Pacific excludes China**. Data updated to January 4, 2023.  $\Delta$  = change.

### China-15 (Baidu) congestion index

Daily peak congestion levels, indexed to January 2021 (seven-day moving average)



Methodology change: Moving ahead, we will deduct a constant value of 1 from the raw values from Baidu before performing any calculation. Previously, we did not make any adjustment to the raw value. A raw value of "1" indicates no congestion, while a raw value of "1.25" indicates that it takes 25% more time to travel than if there were no congestion.

	Latest	Week $\Delta$	Four-week $\Delta$
China-15	94.22	23.32 (+32.90%)	-3.37 (-3.46%)

Source: BloombergNEF, calculated from Baidu data. Note: Data updated to January 4, 2023.  $\Delta$  = change.

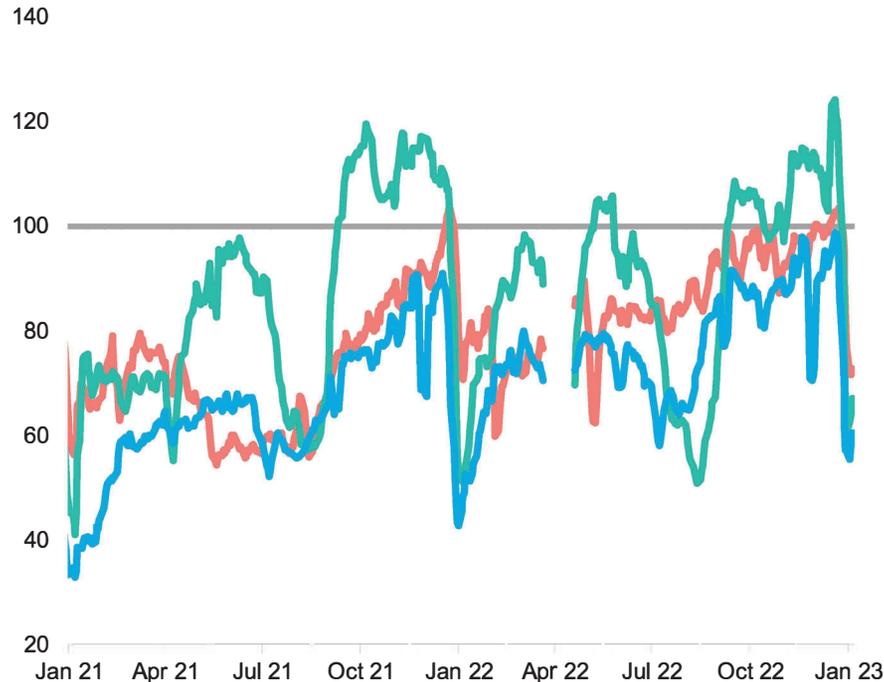
Apple Mobility reports were discontinued on April 14, 2022. We have resumed updating TomTom congestion data, which was previously updated to March 16.

# TomTom congestion index

## Downward trend extended around world amid holiday season

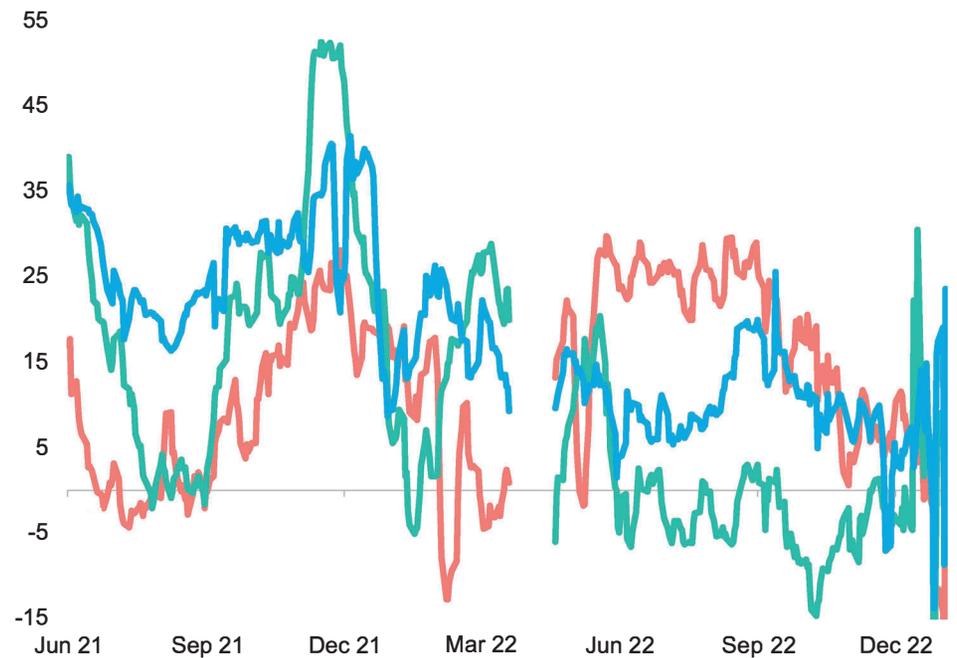
### Regional road-congestion index

Indexed to the peak congestion of the average week in 2019 (five-day weekday moving average)



### Index point change versus the previous year

Percentage point change vs the year before (seven-day moving average)



	Latest	Week $\Delta$	Four-week $\Delta$
Europe	67.1	-9.2 (-12.0%)	-43.0 (-39.1%)
Asia Pacific	72.9	-16.9 (-18.8%)	-26.3 (-26.6%)
North America	60.5	-1.6 (-2.6%)	-30.8 (-33.7%)

Index point $\Delta$ vs year before	Index point $\Delta$ vs year before (last week)
-3.86	-9.12
+14.32	-8.29
+14.89	2.32

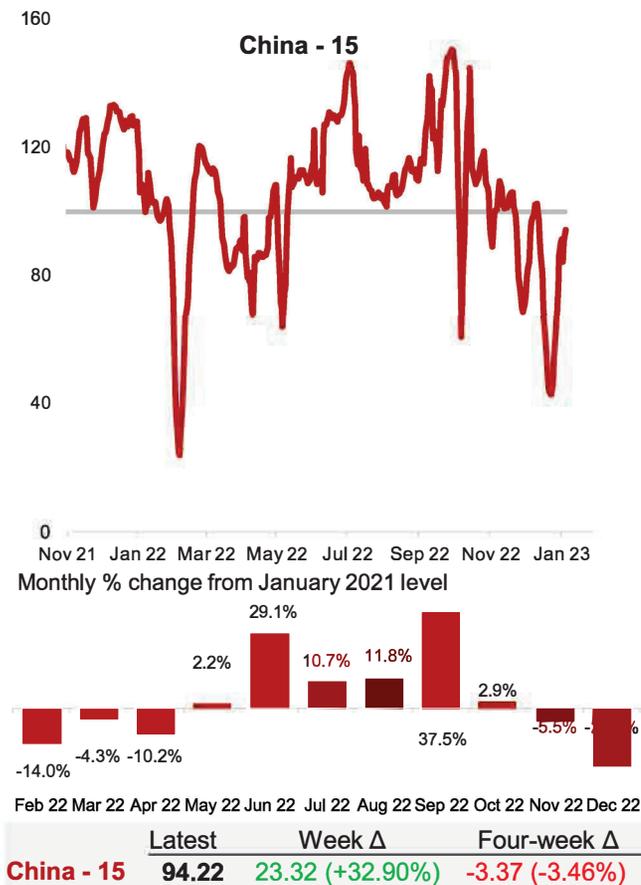
Source: TomTom Traffic Index, BloombergNEF. Note: **Asia Pacific excludes China. Data updated to January 4, 2023, with weekly addition from December 21, 2022. Index point change versus the previous year is obtained by averaging the latest weekly values.  $\Delta$  = change.**

# China (Baidu) congestion index

## Traffic levels in China on upward trajectory despite surge in Covid cases

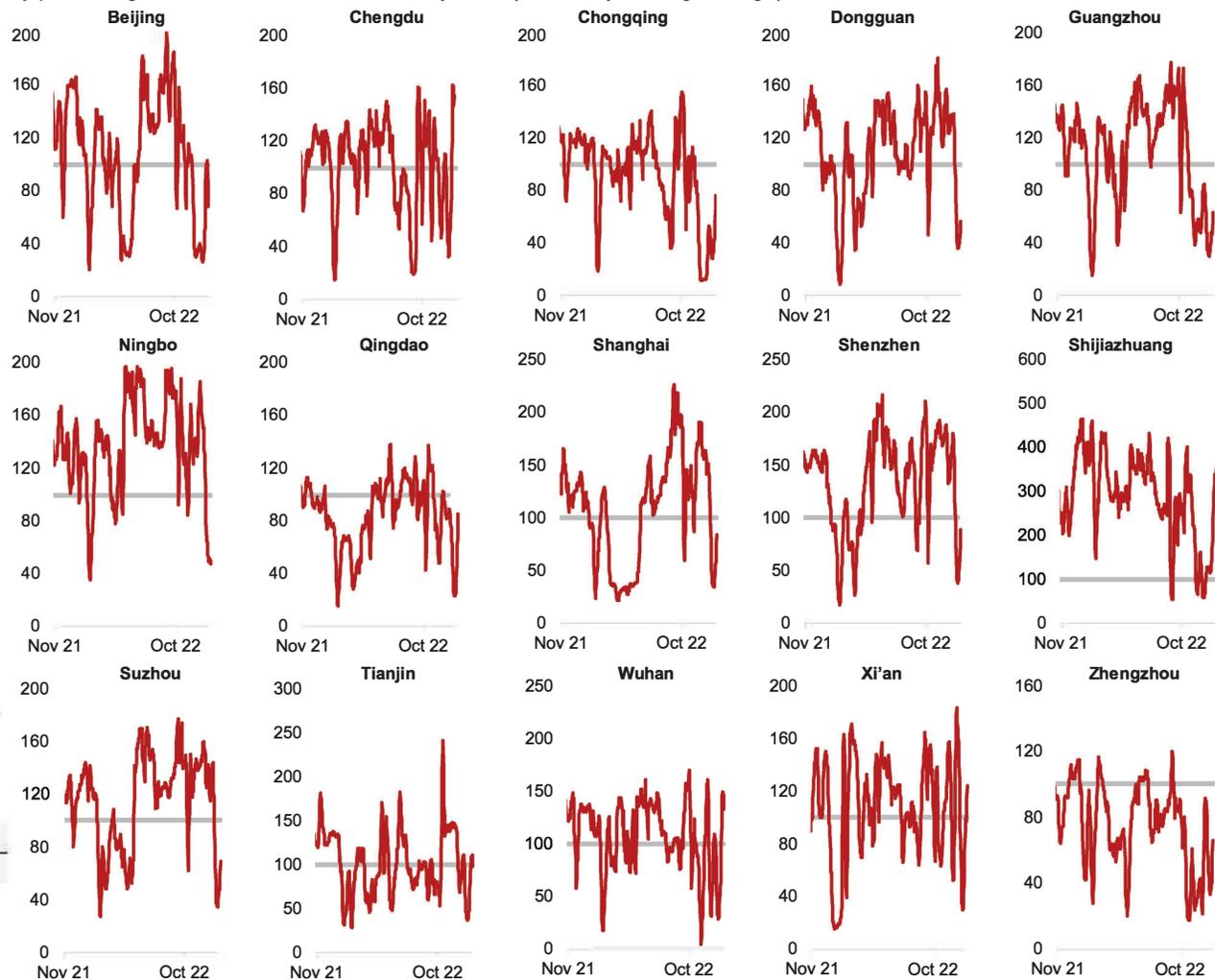
### China congestion index (calculated from Baidu data)

Daily peak congestion levels, indexed to January 2021 (seven-day moving average)



Road traffic in China in the week ending January 5 was up 32.9 percentage points to 94.22 of January 2021 levels.

Daily peak congestion levels, indexed to January 2021 (seven-day moving average)



Source: BloombergNEF, calculated from Baidu's data. Note: **Data updated to January 4, 2023.** City-level charts display the 15 cities with the highest number of vehicle registrations (excluding two- and three-wheelers). The China-15 congestion level is calculated by taking the weighted average of the congestion levels in the 15 cities and their vehicle registration numbers. Δ = change.

# China's city-level data (Baidu)

- China's city-level congestion data is shown below. Data is available in the accompanying Excel sheet.
- Congestion levels are compared against January 2021 levels. An index value below 100 indicates a decrease from January 2021 levels.
- Sparklines reflect the weekly congestion indices dating back to August 2021.

		January 2021 = 100	Weekly point Δ	Weekly percent Δ			January 2021 = 100	Weekly point Δ	Weekly percent Δ			January 2021 = 100	Weekly point Δ	Weekly percent Δ
Baoding	保定	124.28	-13.82	-10.01%	Kunming	昆明	83.24	28.00	50.68%	Tianjin	天津	110.33	29.75	36.92%
Beijing	北京	68.48	-32.53	-32.21%	Langfang	廊坊	65.28	-35.26	-35.07%	Urumqi	乌鲁木齐	59.05	-24.19	-29.06%
Cangzhou	沧州	100.11	10.17	11.31%	Lanzhou	兰州	98.80	-6.43	-6.11%	Weifang	潍坊	65.97	9.45	16.71%
Changchun	长春	98.20	-4.47	-4.35%	Lasa	拉萨	117.87	21.96	22.89%	Wenzhou	温州	96.44	49.20	104.16%
Changsha	长沙	68.29	27.93	69.18%	Leshan	乐山	72.47	16.18	28.75%	Wuhan	武汉	146.08	32.17	28.24%
Changzhou	常州	92.71	25.19	37.30%	Lianyungang	连云港	55.30	5.82	11.76%	Wuxi	无锡	67.49	26.94	66.45%
Chengdu	成都	154.11	45.77	42.25%	Linyi	临沂	37.79	8.92	30.90%	Xiamen	厦门	67.26	31.08	85.93%
Chongqing	重庆	94.95	18.86	24.78%	Liuzhou	柳州	59.90	10.92	22.30%	Xi'an	西安	123.42	59.62	93.46%
Dali	大理	87.80	8.68	10.96%	Luoyang	洛阳	101.67	7.02	7.42%	Xianyang	咸阳	51.20	10.27	25.10%
Dalian	大连	95.51	35.98	60.43%	Maoming	茂名	50.24	-3.75	-6.94%	Xingtai	邢台	183.55	1.82	1.00%
Datong	大同	81.44	16.77	25.93%	Mianyang	绵阳	41.39	-25.23	-37.87%	Xining	西宁	78.12	17.08	27.98%
Dezhou	德州	66.92	14.41	27.45%	Nanchang	南昌	73.72	23.37	46.41%	Xinxiang	新乡	97.61	-1.30	-1.32%
Dongguan	东莞	57.00	20.13	54.59%	Nanchong	南充	119.78	31.16	35.16%	Xuzhou	徐州	45.82	9.52	26.22%
Foshan	佛山	33.58	2.01	6.38%	Nanjing	南京	73.80	37.08	100.96%	Yancheng	盐城	59.36	9.36	18.71%
Fuzhou	福州	61.69	22.91	59.10%	Nanning	南宁	97.61	44.00	82.06%	Yangquan	阳泉	61.89	-10.59	-14.61%
Ganzhou	赣州	200.59	107.45	115.37%	Nantong	南通	56.75	16.51	41.03%	Yangzhou	扬州	39.19	6.07	18.33%
Guangzhou	广州	63.71	21.80	52.03%	Nanyang	南阳	53.29	-34.46	-39.27%	Yantai	烟台	47.82	-11.64	-19.58%
Guilin	桂林	103.19	53.36	107.09%	Ningbo	宁波	50.62	-2.95	-5.52%	Yibin	宜宾	72.64	15.88	27.98%
Guiyang	贵阳	39.31	10.57	36.77%	Qingdao	青岛	85.92	59.65	227.06%	Yinchuan	银川	66.41	4.09	6.57%
Haikou	海口	25.84	-4.00	-13.41%	Qingyuan	清远	105.01	60.00	133.27%	Yunfu	云浮	44.14	-0.70	-1.56%
Handan	邯郸	97.90	-4.06	-3.98%	Qinhuangdao	秦皇岛	100.55	14.70	17.12%	Zhangjiakou	张家口	133.67	28.81	27.47%
Hangzhou	杭州	52.12	12.21	30.61%	Quanzhou	泉州	37.85	-6.57	-14.78%	Zhangzhou	漳州	84.20	16.32	24.04%
Harbin	哈尔滨	107.40	4.44	4.32%	Sanya	三亚	94.06	21.78	30.13%	Zhanjiang	湛江	52.08	10.84	26.28%
Hefei	合肥	32.24	-4.86	-13.10%	Shanghai	上海	84.06	48.90	139.09%	Zhaoqing	肇庆	63.79	4.12	6.90%
Hengshui	衡水	70.31	11.92	20.41%	Shantou	汕头	81.77	42.14	106.36%	Zhengzhou	郑州	45.14	-21.27	-32.03%
Hengyang	衡阳	125.89	63.80	102.74%	Shaoguan	韶关	60.25	7.91	15.10%	Zhenjiang	镇江	58.94	33.26	129.48%
Huai'an	淮安	71.31	14.83	26.25%	Shaoxing	绍兴	66.82	37.33	126.56%	Zhongshan	中山	214.94	129.01	150.12%
Huhot	呼和浩特	110.41	43.42	64.82%	Shenyang	沈阳	72.47	-18.42	-20.26%	Zhuhai	珠海	122.06	88.18	260.30%
Huizhou	惠州	87.66	42.23	92.98%	Shenzhen	深圳	88.55	49.20	125.00%	Zibo	淄博	46.64	12.36	36.05%
Huzhou	湖州	20.32	-30.73	-60.20%	Shijiazhuang	石家庄	352.77	55.18	18.54%					
Jiangmen	江门	64.99	11.57	21.66%	Suzhou	苏州	69.18	33.19	92.22%					
Jiaxing	嘉兴	39.14	3.28	9.14%	Tai'an	泰安	74.06	7.38	11.06%					
Jinan	济南	28.71	-10.61	-26.98%	Taiyuan	太原	106.02	39.24	58.77%					
Jinhua	金华	84.80	4.03	4.99%	Taizhou	台州	59.50	6.78	12.86%					
Jining	济宁	58.30	10.41	21.73%	Tangshan	唐山	94.76	-10.80	-10.23%					

Source: BloombergNEF, calculated from Baidu data. Note: Data updated to January 4, 2023. Δ = change.

An activist in office: Steven Guilbeault's first year as  
2023-01-02 11:00:37.850 GMT

(The Canadian Press)

OTTAWA — Five days after Steven Guilbeault was appointed Canada's environment minister in October 2021, he headed to Scotland for the annual United Nations climate talks being held in Glasgow.

But Guilbeault, who says he prefers "trains to planes whenever possible," would only agree to fly as far as London. His team made the remaining 555 km of the journey by train, producing less than a sixth of the carbon dioxide than if they had flown.

It was a sign to his slightly surprised staff that things were going to be done a little differently now that they had an activist in office.

Guilbeault, 52, is the first professional environmental activist to go from lobbying the government to move faster against global warming to being the one controlling the speed of the bus.

"I think that the prime minister wanted to have an activist in this position because he believes that is what is needed to do what we told Canadians we would do during the last election on climate, on nature, on environmental issues, which is to do more and to do it faster," he said in an interview with The Canadian Press.

The appointment brought hope to his compatriots in the environmental movement.

"He kind of understands what the scale of the challenge is," said Timothy Gray, executive director at Environmental Defence Canada.

"You don't need to spend hours briefing him, and so that makes a huge difference."

Since taking on the role, Guilbeault oversaw progress on at least eight major environment policy promises, including on electric vehicles, plastic pollution, clean electricity, updated regulations to curb methane emissions, clean fuel standards, an emissions cap on the oil and gas sector and the publication of a long-promised national adaptation strategy.

In April, he published Canada's first national emissions reduction plan, the first to map out what needs to be done to meet greenhouse gas emissions targets by 2030.

And in the final weeks before Christmas, Guilbeault helped host the world in Montreal, where 196 countries reached a landmark agreement to halt the destruction of nature.

"This is an unprecedented rate of deploying, flexing basically, our regulatory muscles to ensure that we're both using carrots and sticks to to achieve our targets," he said.

He is quick to agree the heavy lifting isn't done. Most of his files are works in progress, with final regulations still to be developed or implemented.

That includes making a decision on how the government will cap emissions from oil and gas production, which will involve more political bickering with the government of Alberta.

Oil and gas industry representatives declined to comment for this story, though they meet with Guilbeault regularly and have told him they can't meet the targets he has tentatively set for them by 2030.

The minister has chastised companies for raking in record profits because of the effects of the Russian invasion in Ukraine on world oil prices. But he has listened to their concerns, opened the door to some flexibility on targets and even approved a new oil production project in April — the kind of thing he had spent an entire career lobbying against.

"The most difficult decision I had to make, by far, was Bay du Nord. There's no doubt about that," Guilbeault said. "That particular day was extremely difficult."

The mega offshore project in Newfoundland and Labrador is expected to produce more than 300 million barrels of oil over its lifespan.

Caroline Brouillette, the national policy director at Climate Action Network Canada, said its approval is proof that having "one of the most reputable community and environmental activists" in cabinet is not enough to prevent the exploitation of oil.

"It was really a heartbreaking moment," she said, calling Guilbeault "someone who, in theory, should have said no to that project."

In May, an alliance of environment groups launched a lawsuit to overturn the approval. Among the groups involved is Équiterre, the very same organization Guilbeault helped found in 1993.

Though Guilbeault said he hasn't lost friends over it, he has heard their loud disappointment over the decision — one he said he made with extreme reluctance.

He said that while coal will disappear, every projection shows some oil and gas will be needed over the coming decades. This proposal followed a federal approval process, and after the required reviews it was recommended that Bay du Nord should proceed under strict environmental conditions, including that its emissions be net-zero by 2050.

The technology to achieve that is another source of friction between Guilbeault and his former colleagues.

In April, the Liberals introduced a major tax credit to help oil and gas companies install carbon capture, storage and utilization systems on their operations, which are supposed to trap greenhouse gas emissions produced as oil and gas are pulled out of the ground and return those gases back into the

## Mercedes-Benz to launch global branded high-power charging network, starting in North America

Las Vegas/Stuttgart, January 05, 2023

- **All-electric strategy:** High-power charging network supports going all electric by end of decade by ensuring effortless and rapid charging
- **Global reach:** Establishment of more than 10,000 high-power chargers worldwide across North America, Europe, China and other main markets
- **Mercedes-Benz customers can pre-book a charging station from their car, but network will be open and accessible to all brands to encourage rapid uptake of electric vehicles**
- **Sustainable operation:** Focus on renewable energy, green charging via Mercedes me Charge
- **Focused investment:** Leveraging capital, development and site management proficiency of partners, including support in North America by MN8 Energy, a leading renewable energy and battery storage owner-operator in the US
- **Technology partners:** In North America Mercedes-Benz partners with expert partners such as ChargePoint, a leading specialist in charging network design and provision



Mercedes-Benz announces far-reaching plans to launch a global high-power charging network across North America, Europe, China and other key markets. **It will begin to be built this year in the US and Canada, followed by other regions around the globe.** The aim is to have the full network in place before the end of the decade, when Mercedes-Benz intends to go all-electric wherever market conditions allow. The Mercedes-Benz high-power charging network will greatly enhance customers' charging experience, accelerate the journey towards the all-electric future and create a global infrastructure asset with future value-creation potential. **The Mercedes-Benz charging hubs will be located in key cities and urban population centres, close to major arteries, convenient retail and service destinations,** including participating Mercedes-Benz dealership sites.

The company believes this strategic move will significantly enhance the usability and convenience of its new generation of electric vehicles, differentiate the Mercedes-Benz ownership experience and accelerate the EV transformation. The charging network will focus first and foremost on Mercedes-Benz customers, who will enjoy preferential access via a reservation function and other benefits. However, it will also be open to drivers of all other brands with compatible technology. This comprehensive initiative, alongside ongoing support for shared networks such as IONITY, also aims to drive global adoption of electric mobility.

### Mercedes-Benz kicks off charging rollout in North America

At CES 2023 in Las Vegas, Mercedes-Benz announced that the rollout of its high-power charging network will start this year in North America. The collaboration partners here include MN8 Energy, one of the largest solar energy and battery storage owners and operators in the US, and ChargePoint, a leading EV charging network technology company. By 2027, a network totalling more than 400 hubs across North America with more than 2,500 high-power chargers is planned to offer a premium, sustainable and reliable charging experience.

ground.

Most major Canadian climate activists insist it is an unproven technology and point out that it doesn't mitigate the emissions be produced when the fuels are used.

Gray said the government shouldn't prop it up.

"You know, if you're really going to decarbonize by bringing all these 'gee whiz' technologies that no one else seems to think will work, then you'll put up your own money. Don't ask the public to pay for it," he said.

Despite the Bay du Nord heartbreak, Brouillette said it's unlikely any other minister would have made as much progress in a year as Guilbeault has.

"The amount of regulations, and which regulations we are seeing at this point, it really is a tribute to how active and convincing the minister has been and it needs to be highlighted," she said.

She said Guilbeault's experience has played a "significant" role at global climate and nature talks. He is well known and has probably been to more such meetings than anyone else in the country, she said.

Guilbeault's roots in environmental activism run deep.

Growing up in the town of La Tuque, around 250 kilometres northwest of Quebec City, he was just five years old when he staged his first protest, climbing a tree behind his house that a local developer wanted to chop down.

Twenty-six years later, in 2001, he and another Greenpeace activist scaled the CN Tower using steel maintenance cables to criticize Canada and the U.S. for not ratifying the Kyoto accord.

About 18 months later, then-prime minister Jean Chrétien did ratify the deal. While his successor, Stephen Harper, pulled Canada out of the agreement and the country missed the Kyoto targets, Guilbeault said he still feels the stunt made a difference.

He is not backing the latest trend in climate stunts, though, which have seen as many as 20 artistic masterpieces attacked with everything from tomato soup to maple syrup. Most often the damage was not permanent, but Guilbeault said his civil disobedience was non-violent and non-damaging and never went after art.

"That's not how I practised my activism," he said. "I don't understand this contrast that some are trying to play between environment and culture."

Heading into 2023, Guilbeault expects movement on the oil and gas emissions cap, clean electricity regulations, electric vehicle mandates and legislation to enshrine Canada's nature conservation goals into law.

He said he also recognizes a need to better communicate with Canadians.

For years, the Conservatives have dined out on the Liberal carbon-pricing scheme, focusing on its costs and largely ignoring rebates, which, for most Canadians, amount to more than they paid.

The government moved this year to separate the rebates from annual tax returns and send them quarterly, trying to make them more visible.

But there's more to do, and Guilbeault said his office is working with "some of Canada's foremost experts on climate and environmental communications to change the way we do things."

He said there is an inherent tension in communicating a sense of urgency without depressing people.

"And I think where we've collectively failed in our communications is helping people see the hope, and see what we're trying to do," he said.

"And what we're trying to do is to build a better world for all."

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Mia Rabson, The Canadian Press

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To view this story in Bloomberg click here:

<https://blinks.bloomberg.com/news/stories/RNUUL1C6YGW0>

# Varcoe: Ottawa's 'just transition' rhetoric adds to oilpatch labour crunch

Author of the article:

[Chris Varcoe](#) • Calgary Herald

Published Jan 06, 2023 • 5 minute read



Precision Drilling president and CEO Kevin Neveu talks to shareholders before the start of the company's annual general meeting in Calgary, Alberta, on May 13, 2015. PHOTO BY TODD KOROL/REUTERS

Precision Drilling Corp. ended last year on a high note, announcing Thursday that drilling activity increased 27 per cent during the final three months of 2022 — and continues to rise in January — while the company exceeded its own debt-repayment target.

One of the country's largest drillers, Precision now employs 5,600 workers across the world, up about 25 per cent from a year ago.

As it looks to hire people needed to drill and maintain wells, the company — along with the country's oilfield services industry — also faces a labour challenge: federal talk about "just transition" legislation to help oil and gas workers shift into other sectors.

"The energy transition is a great political headline. It's going to take decades, not years, decades," Precision Drilling CEO Kevin Neveu said in an interview.

"The tone of some of the charismatic political leaders . . . does not encourage new entrants into the workforce. So, we've had to combat that by aggressively marketing our Evergreen (environmental) products, and the things we're doing to be part of the solution. But it does mean extra costs, extra resources."

On Thursday, Precision Drilling announced it paid down \$106 million of total debt in 2022, topping its earlier target for the year of \$75 million.

The company also indicated the winter drilling season is heating up. It now has 78 rigs working across Western Canada, eclipsing last year's peak of 72.

Neveu expects the company's rig count will reach about 80 within the coming weeks and stressed the industry is focused on a "disciplined rebound," unlike some of the past boom-bust cycles.

The oilfield services industry has regained its footing after a long downturn last decade and a painful period of layoffs. It was also pounded by the pandemic and a collapse in oil prices, which saw petroleum producers slash budgets almost three years ago.

However, activity levels have been coming back during the past year as both oil and gas prices have taken off.

By mid-December, the number of rigs working in Canada was up about 35 per cent from a year earlier, according to the Canadian Association of Energy Contractors (CAOEC).

The group forecasts more than 6,400 oil and gas wells will be drilled this year, a 15 per cent bump from 2022, leading to an additional 5,400 jobs in the industry.

"The big challenge, and what is going to really prohibit additional growth beyond 15 per cent, is just the staffing challenges," CAOEC president Mark Scholz said Thursday.

BMO Capital Markets analyst John Gibson expects petroleum producers will increase capital expenditures by about 10 per cent this year over 2022 levels, even with oil and gas prices dropping recently.

"During COVID, people were worried about all these companies going under, and now the outlook for all their balance sheets is extremely strong, especially as we get into the end of this year," he said.

Yet, one of the continuing issues confronting the industry is finding enough workers, as thousands of people left the sector over the past decade.

By November, the oil and gas industry employed about 188,500 Canadians, up 1.3 per cent — or 2,500 positions — from the same time a year earlier, according to the PetroLMI division of Energy Safety Canada.

During the same period, the industry's total labour force shrank by 1.5 per cent.

While jobs are available, prospective employees worry about the industry's longer-term future in an era of decarbonization.

Federal Natural Resources Minister Jonathan Wilkinson told CBC this week that the Liberal government will proceed with its planned just transition legislation early this year, an effort designed to help workers pivot to new jobs in a low-carbon economy.

"I am actually quite worried that there are so many opportunities . . . we will not have enough workers to fill the jobs," Wilkinson told CBC.

An energy transition is occurring, yet it will take many, many years for the shift to unfold. In the meantime, workers are needed now in the oil and gas sector.

"It doesn't help when we keep hearing 'just transition' and that automatically goes to being understood as we're transitioning away from oil and gas and there are no jobs to be had, which is not

the case,” said Gurpreet Lail, CEO of Enserva, formerly known as the Petroleum Services Association of Canada.

“The reality of the matter is you need jobs in oil and gas today to transform into any other form of energy, otherwise that is not going to happen.”

Scholz points out a transition is already happening, with many workers who drill for oil or gas also using their skills in areas such as geothermal, helium and lithium extraction.

And discussions about transitioning oilpatch workers, along with other signals being sent by Ottawa about the future of the energy sector, aren’t helping, say provincial leaders.

“This is not their jurisdiction,” Alberta Energy Minister Peter Guthrie said in a statement.

“If they are saying they have a ‘transition plan’ for our oil and gas workers, that means they are essentially saying, ‘We will be phasing out your oil and gas industry.’ This is unacceptable.”

Neveu pointed out the drilling industry is making strides to lower its emissions. The sector can likely meet federal targets with technology that already exists today, although it will require capital investment and time.

“Likely every worker in the industry today could probably retire from this industry in 20 or 30 years and complete their career here — if we manage this and balance both the environmental issues with the security of energy,” he added.

“It means we have to work harder to combat that messaging. It just frustrates me that we have a company strategy and company resources and company costs tied to combating federal government narratives.”

*Chris Varcoe is a Calgary Herald columnist.*

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<https://www.faz.net/aktuell/politik/volker-wissing-will-akw-laufzeiten-von-experten-festlegen-lassen-18574367.html>

F.A.Z. EXCLUSIVE: Wissing wants experts to determine nuclear power plant operating times

- FROM CORINNA BUDRAS, BERLIN
- -UPDATED ON 02.01.2023 17:29 -



[Show image description](#)

The Federal Minister of Transport reopens the settled dispute over nuclear power. And justifies this with electric cars.

Transport Minister [Volker Wissing](#) (FDP) proposes that an independent commission of experts decide on a further extension of the lifetime of the three nuclear power plants. The minister contradicted Bundestag President Bärbel Bas (SPD), who had previously called for an end to the debate. "We do not need a political dispute and no dogmatism, but we need a technical answer to the question of how we can ensure a stable and affordable energy supply and at the same time achieve our climate protection goals," he told the F.A.Z. "If we do not want to discuss it politically, then we have to clarify it scientifically."

## Corinna Budras

Business correspondent in Berlin.

In doing so, Wissing wants to revive a debate within the coalition, which the chancellor had initially ended last autumn with a word of power. Accordingly, the three remaining [nuclear power plants](#) will be taken off the grid in mid-April. Wissing is concerned about this because his department will only be able to meet the legally stipulated climate protection targets with many more electric cars.

## The carbon footprint of electric cars is deteriorating

According to calculations of Karlsruhe Institute of Technology (KIT), CO<sub>2</sub> deteriorates. The balance of electric cars is also clear when nuclear power plants are shut down and, in addition to electricity from wind power and solar plants, coal-fired electricity is used for charging. "In the transport sector, we cannot do anything for climate protection with electromobility if we use coal-fired electricity for charging," said Wissing. "We are currently organizing the ramp-up of electromobility. If people experience that electric cars are not only expensive, but bad for the climate, the transformation becomes a fiasco."

Wissing criticized that Germany had not progressed fast enough with the expansion of [renewable energies](#). "We can't just opt for coal as a bridging technology now, because that's the only way we haven't obstructed ourselves. That doesn't fit in with climate protection."

The SPD politician [Bas](#), referring to France, had cited "high risks" of nuclear power and told the Neue Osnabrücker Zeitung: "Let's not kid ourselves: If we were to buy new fuel rods now, the old nuclear power plants might run for another 20 years." The energy transition had been blocked for far too long "because we relied on Putin's cheap gas and oil." A further extension of the term "would once again slow down the necessary transformation".

Source: F.A.Z.

“Mercedes-Benz already offers what we believe to be the finest EVs in the market. But to accelerate the electric transformation, we need to ensure that the charging experience keeps pace as well. Our customers deserve a compelling charging experience that makes electric vehicle ownership and long-distance travel effortless. We won't take a wait-and-see approach for this to be built. That's why we are launching a global high-end charging network. It's designed to become another differentiator of Mercedes-Benz ownership for our customers and an asset with value creation potential for our company. We are excited to start right here in North America with strong and experienced partners like MN8 Energy and ChargePoint.”

Ola Källenius, Chairman of the Board of Management of Mercedes-Benz Group AG

**An elevated charging experience the Mercedes-Benz way – seamless and secure**

For those traveling long distances, Mercedes-Benz Electric Intelligence navigation makes life easy by automatically optimising route planning, incorporating the best charging points and reserving spaces in advance. The system knows the capacity utilisation at the respective locations and ensures customers can gain immediate access to the reserved charging point at the required time. This means no waiting for Mercedes-Benz customers. The seamless experience will be further enhanced by the easy and convenient “Plug & Charge” function<sup>[1]</sup>. The charging station communicates directly with the vehicle via the charging cable. Manual authentication via card, app or head unit will not be required<sup>[2]</sup> but possible. Mercedes-Benz customers can use this function via the Mercedes me connect service Mercedes me Charge<sup>[3]</sup>. All other customers will have straightforward access to a wide array of payment functions. After a smooth, fast and relaxing charging experience, users will be able to continue effortlessly on their way.

Depending on region and location, the hubs will offer 4 to 12, and ultimately as many as 30, high-power chargers (HPC) with up to 350 kW of charging power. Intelligent charge-load management will allow each vehicle to charge at its maximum capacity keeping waiting times to an absolute minimum. The optimised station layout will ensure plenty of space around the vehicle as well as unhindered charging from either side. Where feasible, charging points will be covered for protection from the weather.

The locations and surroundings of the Mercedes-Benz charging hubs will be carefully selected with wider customer needs in mind. The best possible charging experience will therefore come with food outlets and restrooms situated nearby. Facilities will also be equipped with surveillance cameras and other measures to provide a safe and secure charging environment.

**More sustainable with green charging**

In line with its sustainable “Ambition 2039” business strategy, Mercedes-Benz strives to enable its customers to charge with green energy at its own charging network. Preferably ensured via green electricity supply contracts or by using renewable energy certificates from an accredited supplier. Selected Mercedes-Benz charging hubs will also be equipped with photovoltaic systems to provide electricity for lighting and video surveillance, for example.

**Focused capital spending, paced over the remainder of the decade**

The total investment cost for the North American network will be just over 1 billion Euros, deployed over the next 6-7 years. The capital for this will be provided by Mercedes and MN8 in a roughly 50:50 split.

The setup of the stations itself is favoured by the high degree of commonality in the network and a modular, scalable site design. The company believes the global reach and prime locations of its charging network means it is also likely to become an asset in its own right. This has the potential to create additional value for the company's shareholders.

The Mercedes-Benz high-power charging network is the next essential step forward in the company's electrification strategy. All business linked to its charging ecosystem will be bundled within Mercedes-Benz Mobility.

**Accelerating the expansion of the Mercedes-Benz high-power charging network with strong partners**  
By selecting MN8 Energy and ChargePoint as partners in North America, Mercedes-Benz is working with two of the leaders in their respective fields.

MN8 Energy is one of the largest solar energy and battery storage owners and operators in the US. By providing comprehensive, end-to-end project development, energy management, and exceptional maintenance and operations support to the Mercedes-Benz branded high-power charging network in the US, the company continues to focus on accelerating the transition to sustainable mobility. MN8 Energy is strategically well-aligned with the Mercedes-Benz “Ambition 2039,” and MN8 Energy supports Mercedes-Benz’s aim to maximise access to green charging for its customers throughout the US.

“MN8 Energy is on a mission to provide enterprise customers, such as Mercedes-Benz, with renewable energy and related solutions on their journey to an electrified, decarbonized world. Supporting the development of this exceptional charging experience helps address one of the most significant barriers to EV adoption—range anxiety. With each party playing to their strengths, we are thrilled to embark on this collaboration to expand charging access with Mercedes-Benz and ChargePoint.”

Jon Yoder, President & Chief Executive Officer, MN8 Energy

ChargePoint has powered approximately five billion electric miles so far. By leveraging ChargePoint’s expertise, Mercedes-Benz, a long standing shareholder, aims to deliver first-class convenience and reliability for its customers. ChargePoint already serves as the Mercedes-Benz backend provider in the US for Mercedes me Charge and has demonstrated a strong track record in software stability and hardware provision.

“Automotive leaders like Mercedes-Benz continue to lead the transition to electric mobility by bringing new EVs to market, and ChargePoint remains committed to enabling charging for all drivers whenever and wherever they want. With this partnership, we are expanding upon our existing relationships with Mercedes-Benz and MN8 to deliver a seamless charging experience for drivers, and turnkey charging solutions at no upfront cost to site hosts. By establishing charging hubs in convenient locations across the U.S. and Canada, we’re able to provide a superior experience for more drivers who want to charge quickly and easily.”

Pasquale Romano, CEO, ChargePoint

The establishment of the Mercedes-Benz high-power charging network marks an expansion of existing charging offers. Through Mercedes me Charge, the company already offers its customers access to around one million charging points worldwide, including the pan-European fast charging network IONITY, which is operated by Mercedes-Benz and other OEMs.

<sup>[1]</sup> Plug & Charge is available with EQS, EQS SUV, EQE, EQE SUV, current plug-in hybrids C- and S-Class and GLC with optional direct-current charging system (DC charging). The customer needs to activate the Plug & Charge service in the overview of services.

<sup>[2]</sup> Only available with EQE, EQE SUV, EQS, EQS SUV and latest plug-in hybrids of C- and S-Class and GLC, the plug-in hybrids need to be equipped with the optional direct-current charging system (DC charging) and the customer needs to activate the Plug & Charge service in the overview of services.

<sup>[3]</sup> In order to use the Mercedes me connect service Mercedes me Charge, a personal Mercedes me ID and agreement to the Mercedes me connect Terms of Use are required. Furthermore, a charging contract is required.

White Paper



# Electric Highways:

## Accelerating and Optimizing Fast-Charging Deployment for Carbon-Free Transportation

November 2022

nationalgrid



ARM I

 **Stable**

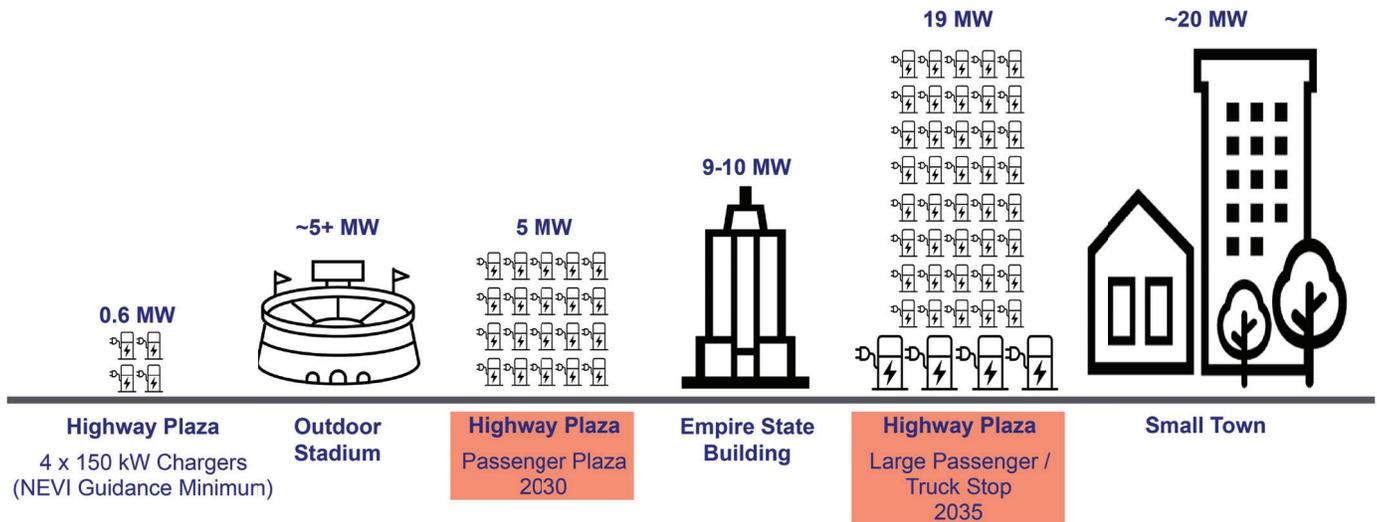
 **GEOTAB ITS**

## IV. Conclusion and Implications

A typical highway site will eventually need 20+ fast-chargers to serve expected traffic. As a result, these sites will see drastic increases in power demand compared to usage today. Highway charging sites will bring about significant electric loads. At many sites, these loads will begin to exceed distribution line capacity in the next 5-10 years.

For perspective, the Mixed Use Traffic Plaza and Passenger Plaza will each require about 5 MW of charging capacity by 2030—about the amount of power used by an outdoor professional sports stadium. By 2035, the nameplate charging capacity required at the Large Passenger/Truck Stop site will be roughly equivalent to the electric load of a small town (Figure 21). Note that the other large energy users' loads depicted in the figure below are approximate based on a range of loads.

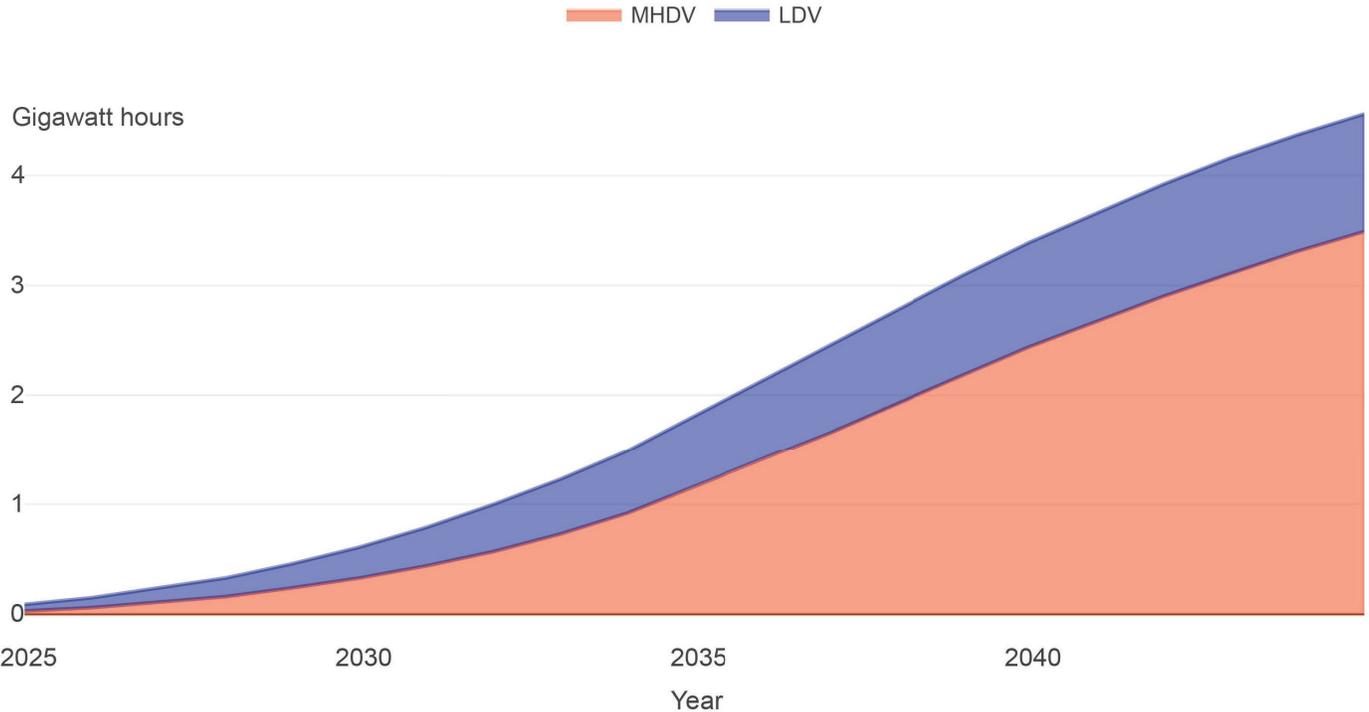
**Figure 21. Comparative Peak Loads for Illustrative Sites and Other Major Users<sup>35</sup>**



While LDVs will drive load increases in the near term, MHDV electrification will magnify charging needs over the mid to long term. As of June 2022, the United States had more than 2.7 million electric LDV registrations.<sup>36</sup> For comparison, as of June 2022, 1,895 electric trucks were registered in the country.<sup>37</sup> As a result, LDV charging demand will likely be a focus of site operators and policymakers in the near term, and LDVs will account for a large portion of total energy demand across highway sites.

However, it is important to plan for MHDV electrification today. Based on these results, MHDV electric demand will increase much quicker than may be expected. Some of the sites we analyzed required 5 MW of charging capacity for electric trucks *alone* by 2030. In fact, MHDV charging demands will exceed those of LDVs: by 2045, electric MHDVs will require over three-quarters of total energy demand at the 71 highway sites (Figure 22).

**Figure 22. Average Daily Energy Demand Across All Sites**



Through the NEVI program, the federal government is allocating funding to states to establish the beginnings of a national fast-charging network on major travel corridors. State policymakers should take the time today to plan charging infrastructure for both electric LDVs and MHDVs. Selecting sites that could host both LDVs and MHDVs will reduce the need for redundant interconnection infrastructure and create opportunities to future-proof infrastructure at high-demand sites. Considering MHDVs in highway fast-charging

planning now will also allow policymakers to provide market certainty for MHDV manufacturers and businesses that are considering converting their fleets to EVs.

This study's results demonstrate the importance of involving electric utilities in state and federal planning for highway charging deployment. By doing so, utilities and site operators can implement electric infrastructure that serves not only the immediate load at a site but the ultimate charging needs, which could be more than 50 times the charging capacity (four 150-kW chargers) required under the NEVI formula funding guidance.

**Anticipated levels of demand will require transmission interconnection at many highway fast-charging sites.** As shown in Figure 20, over a quarter of the sites studied will cross the 5-MW charging capacity threshold as soon as 2030. Sites begin to resemble small towns or even industrial manufacturers in terms of their electric demand. At a certain threshold, highway fast-charging sites will require interconnection to the high-voltage transmission system.

Transmission interconnections are well-suited for highway charging applications, as they can provide sufficient electrical capacity to satisfy all charging needs for decades to come. The transmission system often overlaps with highways, providing an opportunity to efficiently facilitate this interconnection. The sites detailed in this report are all within about one-third of a mile from existing transmission lines. Figure 23 depicts an example of one location (not previously discussed) with two large charging sites adjacent to each other; two transmission lines run between them. It may not be feasible to extend the transmission network to every site, particularly in locations where there would be impacts to local residents and the environment, but there are opportunities for minimal extensions or taps of transmission lines to many highway charging locations.

**Figure 23. Example Interconnection Location with Two Large Charging Sites**



Additionally, connection to the transmission system offers resiliency benefits: transmission lines are the least likely to go out and the first to be restored after a power outage. Implementing these capacity-creating upgrades can allow utilities to address the needs of multiple nearby sites at once. For example, truck stops that are situated next to each other (on opposite sides of the highway), or highway service plazas and fleet depots located in the surrounding area, could share the benefits of newly created capacity.

**Where feasible, we should bring chargers to the higher capacity wires that already overlap with the highway system.** This analysis highlights that access to electric infrastructure is a critical factor—along with traffic, expected utilization, and access to suitable land—in the identification of high-priority fast-charging sites. Placing charging demand where the electric grid can easily accommodate it will provide significant cost savings to operators (and thus drivers) and minimize roadblocks to site development. Some existing service plazas and truck stops are very close to substations and transmission infrastructure; new plazas have an opportunity to guarantee proximity to high-capacity grid infrastructure.

Utilities have historically been in a reactive position, responding to customer requests wherever new demand may appear. Here, there is an opportunity to steer electric demand to the most intelligent locations for long-term growth. By strategically planning for highway charging, we can guide electric demand where it makes the most sense for commerce, communities, and our electric network.

**Build the grid infrastructure once, and build it right.** High-voltage infrastructure takes years to develop, which is why it is so important to take a long-term view when planning for expected charging demand. At high-traffic sites, a series of small, distribution-based upgrades will likely result in stranded costs, since that infrastructure would eventually need to be replaced with a transmission interconnection to meet driver needs. If we prioritize short-term needs over the long-term need, we risk a situation where site operators—and drivers—have to wait years for upgrades to grid infrastructure before new chargers can be installed, which could frustrate drivers and negatively impact confidence in EV charging.

At many sites, a transmission interconnection will likely be needed in the next 10 years to serve LDVs alone. By taking future charging growth from LDVs and MHDVs into account when implementing these solutions, we can future-proof sites to not only meet growing demand for charging but accelerate charging deployment at strategically selected no-regrets sites.

**The electric highway future is happening now.** As discussed, the timelines required for grid infrastructure upgrades, particularly transmission, are much longer than those required for EV supply equipment installation. If many sites will see transmission-level loads in the next 5-10 years, it is imperative to get ahead of the demand and begin planning for those upgrades now.

By deploying these no-regrets upgrades at no-regrets sites, we can ensure that the electric grid becomes an enabler—even an accelerator—to the EV transition.

## Christian Sewing's keynote at the Handelsblatt Banken Summit 2022

- Check against delivery -

Dear Mr Matthes, Ladies and Gentlemen,

I am delighted to be with you today at a time that is more challenging than anything I have experienced in more than 30 years of banking. While the Covid pandemic proved to be a temporary shock to the world economy, **Russia's war against Ukraine has destroyed a number of certainties on which we built our economic system over the past decades.**

- **The brakes have been applied to globalisation and,** in the face of major geopolitical tensions, it is unlikely to pick up its old momentum any time soon.
- As a result, **many seemingly perfect global value and supply chains have been disrupted.**
- **The workforce, which for a long time was thought to be available without limit, has become a bottleneck factor worldwide.**
- **At the same time, electricity and gas have become scarce and extremely expensive. Energy is set to stay an expensive commodity in Europe for some time. This represents a structural competitive drawback and it is a threat to our economy. In the long term, we will need to respond with structural solutions.**

These points are the most important reasons for soaring inflation **As a result, we will no longer be able to avert a recession in Germany.**

Yet we believe that our economy is resilient enough to cope well with this recession – provided the central banks act quickly and decisively now. Right now many people still have their savings to fall back on to pay the higher prices; many companies are still sufficiently financed. **But the longer inflation remains high, the greater the strain and the higher the potential for social conflict.**

### Three lessons

This combination of short and longer-term challenges seems unique at this point. **And while it is essential we meet the short-term needs, we also have to explore what this means for our long-term ability to compete. The greatest complexity still lies ahead of us** when we begin to draw the real lessons of the past few years. In my view, there are three main lessons:

Firstly, we have seen how dangerous it is for us in Europe to become too dependent on individual countries or regions. **At the moment, the main focus is on energy and raw material imports from Russia – and rightly so.** We must do everything we can to ensure that our cars, our heating and our factories are not only able to run when an autocrat in the Kremlin is favourably disposed towards us. All efforts by politicians and companies to change this deserve unconditional support.

That is not enough, though. When it comes to dependencies, **we also have to face the awkward question of how to deal with China. Its increasing isolation and growing tensions, especially between China and the United States, pose a considerable risk for Germany.**

China is a cornerstone of our economy. About 8 percent of our exports go to China and 12 percent of our imports are from the country. More than a tenth of the sales of all DAX-listed companies are from China. At the latest during the pandemic it has become clear just how much our supply chains rely on China. **Reducing this dependency will require a change no less fundamental than decoupling from Russian energy.**

At the same time – **and this is my second lesson – we need to tackle the climate crisis with much more resolve than to date.** Climate change is already causing damage of gigantic proportions. In light of Covid and the war in Ukraine, the danger is that the topic will slip down the list of priorities. That would be the biggest mistake we could make, though.

**Fighting the climate crisis is a generational task that will radically change the economy and society.** Every company will have to face the issue – not just out of its responsibility to society, but to secure its own continued existence. Those who fail today to put sustainability firmly at the centre of their strategy will – in ten years – have trouble selling their products, finding employees or attracting investors. They will disappear from the market.

**The third lesson, I believe, is that we have been under the illusion for the past 30 years that we could live forever in an ever more globalised world with no major conflicts and with steady growth.** Francis Fukuyama has often been criticised for equating the end of the Cold War with the "end of history". But de facto we acted as if this thesis was correct; we have been acting as if the world was on its way to becoming one big village where everyone is interested in economic cooperation because, after all, everyone benefits from it. That has stopped being the case for some time now, though.

The truth is that 30 years of presumed calm will **now be followed by a period of heightened volatility with economic uncertainty, regular crises and geopolitical conflicts that are also likely to drag on for decades. Trouble spots are not cut off from the rest of the world: they impact other regions in a number of ways.** As such, we must come up with holistic solutions that take this degree of interplay into account. Dealing with this complexity will be a great challenge for us. **Good risk management is the order of the day.**

“We must not leave the playing field and with it the access to global capital markets largely to foreign banks. The past few months should have taught us this. **In Germany, we must not allow ourselves to add a further dependency – access to finance – to our current dependencies on gas, raw materials and supply chains.**” Christian Sewing, CEO

### **National feat of strength**

Let us not delude ourselves: we certainly have our work cut out for us if we are to accomplish these three tasks – reducing dependencies, dealing with permanently higher volatility and driving the historic transformation of our economy. We will only succeed through a concerted joint effort, with politics, business and society all working closely hand in hand. The financial sector must and can play a crucial role.

We need banks that are able to finance these mammoth tasks, while protecting their clients against risks and being reliable partners, accompanying clients worldwide.

And for this we need a domestic financial sector that stands on its own two feet and can assert itself against its global competitors. We must not leave the playing field and with it the access to global capital markets largely to foreign banks. The past few years should have taught us this. **In Germany, we must not allow ourselves to add a further dependency – access to finance – to our current dependencies on gas, raw materials and supply chains.**

We have the means to prevent this, but **we still have much to do.** As a financial sector, we have already achieved a lot: we are much more stable and resilient today than we were ten years ago. We are profitable. Our industry has foregone relatively little profit in the first half of the year and even managed to increase revenues. And the loan defaults that the industry faces in the coming months should remain manageable because banks have taken the necessary provisions.

### **Progress in the financial sector is far from sufficient**

That is far from enough, though, if the German financial sector is to play a leading role in the long term. What we need is:

- For our banks to work harder at becoming even more efficient and focusing even more on clients, especially in digital services.
- We need reliable regulation that does not always create higher hurdles and tie up more capital than necessary – capital that is needed right now to finance the economy.
- And sooner or later we will also need consolidation, not nationally, but Europe-wide. Size counts in banking – and if we don't want to hand over the playing field to the Americans, Europe must create the right conditions for big banks. I can only repeat what I've said before: both the European banking union and the capital markets union are essential here.

The above points are not new, but they are becoming more urgent. We are actually very well equipped so there is no reason to talk ourselves down. We are operating in an economy that has shown enormous resilience and that will also navigate the upcoming recession – because corporate balance sheets are strong, and debt is low by international standards. **This economy has great potential as long as we focus now on aligning ourselves for the long term and on how to minimise the threat of de-industrialisation: with less regulation, more courage and more pragmatism, this attitude is incredibly important.**

And that goes for banks, too. We have proven banks can be part of the solution. We can do much more, though. Before the financial crisis of 2007, just 15 years ago, Europe's banks were more profitable than their competitors in the US. Since then, the Americans have unrelentingly left us behind. We could, of course, agonise over this. Instead, we should rather see it as an incentive to buck the trend. **The dominance of American banks is no law of nature.**

At Deutsche Bank, we are convinced that the way to achieve this is by being a strong partner to our clients. They need a bank that supports them in all kinds of environments, in all markets and all over the world. This is what we emphasised when we formulated our Global Hausbank aspiration. We have radically transformed our business since 2019 and strategically repositioned ourselves in line with this aspiration.

We are convinced that this strategy will be especially effective in volatile times – because now is the moment when advice and expertise are highly sought after.

And this does not apply to us alone. Despite all the differences between the banks in Germany, we have one thing in common: we were there for our clients during the pandemic, we were there for our clients when Russia invaded Ukraine and we continue to be there – in these volatile times that urgently call for sustainable transformation. We have regained a great deal of trust. Let us work together to create the conditions for renewed dynamic growth across our entire economy.

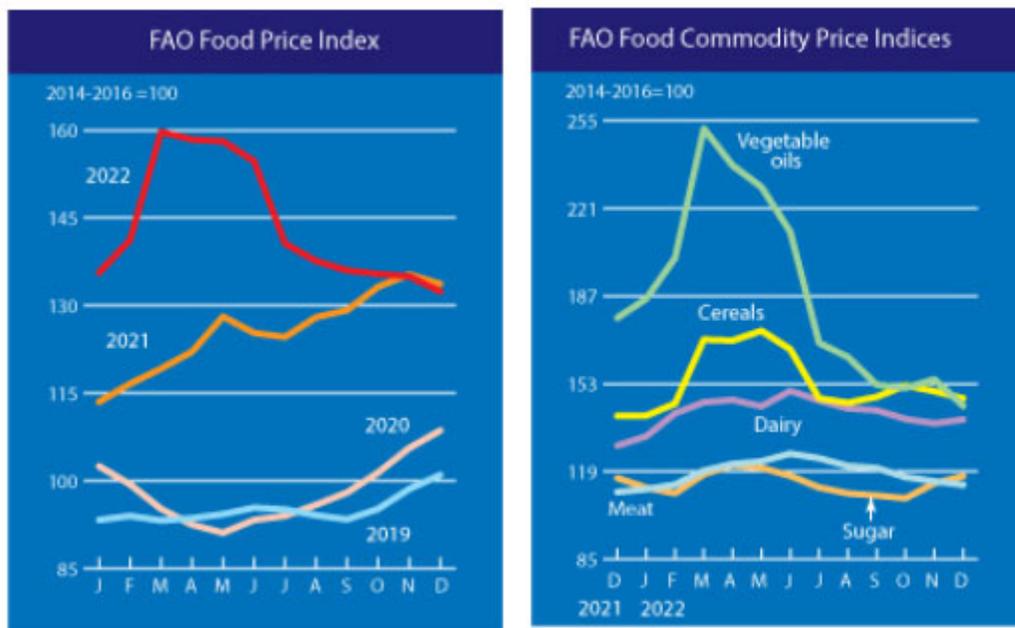
## FAO Food Price Index

The FAO Food Price Index (FFPI) is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices weighted by the average export shares of each of the groups over 2014-2016. [A feature article](#) published in the June 2020 edition of the Food Outlook presents the revision of the base period for the calculation of the FFPI and the expansion of its price coverage, to be introduced from July 2020. [A November 2013 article](#) contains technical background on the previous construction of the FFPI.

Monthly release dates for 2023: 6 January, 3 February, 3 March, 7 April, 5 May, 2 June, 7 July, 4 August, 8 September, 6 October, 3 November, 8 December.

## FAO Food Price Index continued to drop in December, however, it rose substantially on a yearly basis

Release date: 06/01/2023



» The **FAO Food Price Index\*** (FFPI) averaged 132.4 points in December 2022, down 2.6 points (1.9 percent) from November, marking the ninth consecutive monthly decline and standing 1.3 points (1.0 percent) below its value a year ago. The decline in the index in December was driven by a steep drop in the international prices of vegetable oils, together with some declines in cereal and meat prices, but partially counterbalanced by moderate increases in those of sugar and dairy. For 2022 as a whole, however, the FFPI averaged 143.7 points, up from 2021 by as much as 18 points, or 14.3 percent.

» The **FAO Cereal Price Index** averaged 147.3 points in December, down 2.9 points (1.9 percent) from November, but still 6.8 points (4.8 percent) above its December 2021 value. Wheat export prices fell in December, as ongoing harvests in the southern hemisphere boosted supplies and competition among exporters remained strong. World maize prices also eased month-on-month, mostly driven by strong competition from Brazil, although concerns over dryness in Argentina provided some support. Influenced by spillover from maize and wheat markets, world prices of both sorghum and barley also declined. By contrast, purchases by Asian buyers and currency appreciations against the United States dollar in some exporting countries kept international rice prices on the rise in December. For 2022 as a whole, the FAO Cereal Price Index reached a new record high of 154.7 points, up 23.5 points (17.9 percent) from 2021, surpassing by 12.5 points (8.8 percent) the previous annual average record registered in 2011. World prices of maize and wheat reached new record highs in 2022, averaging, respectively, 24.8 and 15.6 percent higher than their 2021 averages, while rice export prices were on average 2.9 percent above their 2021 levels. The increase in the FAO Cereal Price Index in 2022 was due

to a host of factors, including significant market disruptions, increased uncertainties, higher energy and input costs, adverse weather in a few key suppliers, and continued strong global food demand.

» The **FAO Vegetable Oil Price Index** averaged 144.4 points in December, down 10.3 points (6.7 percent) from November and hitting its lowest level since February 2021. The decrease in the index in December was driven by lower international quotations across palm, soy, rapeseed and sunflowerseed oils. World palm oil prices dropped by nearly 5 percent after a short-lived recovery in the previous month, chiefly underpinned by a sluggish global import demand, despite lower outputs in major palm oil producing countries due to excessive rainfalls. Meanwhile, world soybean prices fell markedly, largely due to positive prospects of seasonally rising production in South America. As for rapeseed and sunflowerseed oils, international prices dropped on account, respectively, of ample global supplies and subdued import demand, particularly from the European Union. Lower crude mineral oil prices also exerted downward pressure on world vegetable oil quotations. For 2022 as a whole, the FAO Vegetable Oil Price Index averaged 187.8 points, up 22.9 points (13.9 percent) from 2021 and marking a new record annual high.

» The **FAO Dairy Price Index** averaged 139.1 points in December, up 1.5 points (1.1 percent) from November, registering an increase after five months of consecutive declines and surpassing by 10.1 points (7.9 percent) its value a year ago. In December, international cheese prices rose, mainly reflecting a robust global import demand and somewhat tighter export availabilities amid high internal retail and services sector sales, especially in Western Europe. By contrast, international butter prices fell for the sixth consecutive month, underpinned by the continued sluggish global import demand and the availability of adequate domestic inventories to cover near-term needs. Meanwhile, international milk powder prices decreased slightly, as lower prices in Western Europe, driven mainly by sluggish demand for spot supplies, outweighed increases in quotations for supplies from Oceania, primarily reflecting active buying from Southeast Asia and currency movements. In 2022 as a whole, the FAO Dairy Price Index averaged 142.5 points, up 23.3 points (19.6 percent) from 2021 and registering the highest annual average on record since 1990.

» The **FAO Meat Price Index\*** averaged 113.8 points in December, down 1.4 points (1.2 percent) from November, marking the sixth consecutive monthly decline, but remained 2.8 points (2.5 percent) above its year-earlier level. The decrease in the index in December was driven by lower world prices of bovine and poultry meats, partially counterbalanced by higher pig and ovine meat prices. International prices of bovine meat fell, pressured by a higher supply of slaughter cattle in several large producing countries and lacklustre global demand for medium-term supplies. Meanwhile, poultry meat prices declined, as export availabilities were more than adequate to meet import demand for spot supplies, despite production setbacks due to intensified avian influenza outbreaks. By contrast, world pig meat prices increased, underpinned by solid, pre-Christmas internal demand, especially in Europe, whereas ovine meat prices rose due to currency movements. In 2022 as a whole, the FAO Meat Price Index averaged 118.9 points, up 11.2 points (10.4 percent) from 2021, marking the highest annual average registered since 1990.

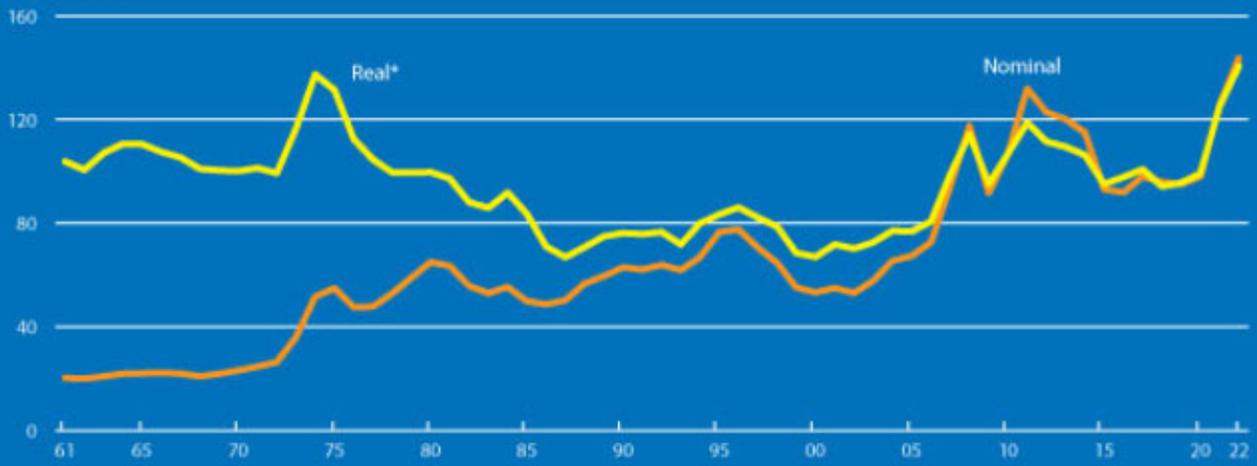
» The **FAO Sugar Price Index** averaged 117.2 points in December, up 2.8 points (2.4 percent) from November, registering the second consecutive monthly increase and reaching its highest level in the past six months. The December increase in international sugar price quotations was mostly related to concerns over the impact of adverse weather conditions on crop yields in India, the world's second largest sugar producer, and sugarcane crushing delays in Thailand and Australia. For 2022 as a whole, the FAO Sugar Price Index averaged 114.5 points, up 5.1 points (4.7 percent) from 2021 and reaching its highest annual average since 2012.

*\* Unlike for other commodity groups, most prices utilized in the calculation of the FAO Meat Price Index are not available when the FAO Food Price Index is computed and published; therefore, the value of the Meat Price Index for the most recent months is derived from a mixture of projected and observed prices. This can, at times, require significant revisions in the final value of the FAO Meat Price Index which could in turn influence the value of the FAO Food Price Index.*

*To access benchmark export quotations of various foodstuffs and national retail/wholesale prices of foods please visit [FAO's Food Price Monitoring and Analysis \(FPMA\) Tool](#)*

# FAO Food Price Index in nominal and real terms

2014-2016=100



\* The real price index is the nominal price index deflated by the World Bank Manufactures Unit Value Index (MUV)

## FAO food price index

	Food Price Index <sup>1</sup>	Meat <sup>2</sup>	Dairy <sup>3</sup>	Cereals <sup>4</sup>	Vegetables Oils <sup>5</sup>	Sugar <sup>6</sup>	
2005	67.4	71.8	77.2	60.8	64.4	61.2	
2006	72.6	70.5	73.1	71.2	70.5	91.4	
2007	94.3	76.9	122.4	100.9	107.3	62.4	
2008	117.5	90.2	132.3	137.6	141.1	79.2	
2009	91.7	81.2	91.4	97.2	94.4	112.2	
2010	106.7	91.0	111.9	107.5	122.0	131.7	
2011	131.9	105.3	129.9	142.2	156.5	160.9	
2012	122.8	105.0	111.7	137.4	138.3	133.3	
2013	120.1	106.2	140.9	129.1	119.5	109.5	
2014	115.0	112.2	130.2	115.8	110.6	105.2	
2015	93.0	96.7	87.1	95.9	89.9	83.2	
2016	91.9	91.0	82.6	88.3	99.4	111.6	
2017	98.0	97.7	108.0	91.0	101.9	99.1	
2018	95.9	94.9	107.3	100.8	87.8	77.4	
2019	95.1	100.0	102.8	96.6	83.2	78.6	
2020	98.1	95.5	101.8	103.1	99.4	79.5	
2021	125.7	107.7	119.1	131.2	164.9	109.3	
2022	143.7	118.9	142.5	154.7	187.8	114.5	
2021	December	133.7	111.0	129.0	140.5	178.5	116.4
2022	January	135.6	112.1	132.6	140.6	185.9	112.7
	February	141.2	113.9	141.5	145.3	201.7	110.5
	March	159.7	119.3	145.8	170.1	251.8	117.9
	April	158.4	121.9	146.7	169.7	237.5	121.5
	May	158.1	122.9	144.2	173.5	229.2	120.4
	June	154.7	125.9	150.2	166.3	211.8	117.3
	July	140.6	124.1	146.5	147.3	168.8	112.8
	August	137.6	121.1	143.4	145.6	163.3	110.5
	September	136.0	120.3	142.7	147.9	152.6	109.7
	October	135.4	116.8	139.3	152.3	151.3	108.6
	November	135.0	115.2	137.6	150.1	154.7	114.4
	December	132.4	113.8	139.1	147.3	144.4	117.2

**1 Food Price Index:** Consists of the average of 5 commodity group price indices mentioned above, weighted with the average export shares of each of the groups for 2014-2016: in total 95 price quotations considered by FAO commodity specialists as representing the international prices of the food commodities are included in the overall index. Each sub-index is a weighted average of the price relatives of the commodities included in the group, with the base period price consisting of the averages for the years 2014-2016.

**2 Meat Price Index:** Based on 35 average export unit values/market prices of four meat types (bovine, pig, poultry and ovine) from 10 representative markets. Within each meat type, export unit values/prices are weighted by the trade shares of their respective markets, while the meat types are weighted by their average global export trade shares for 2014-2016. Quotations for the two most recent months may consist of estimates and be subject to revision.

**3 Dairy Price Index:** Computed using 8 price quotations of four dairy products (butter, cheese, SMP and WMP) from two representative markets. Within each dairy product, prices are weighted by the trade shares of their respective markets, while the dairy products are weighted by their average export shares for 2014-2016.

**4 Cereals Price Index:** Compiled using the International Grains Council (IGC) wheat price index (an average of 10 different wheat price quotations), the IGC maize price index (an average of 4 different maize price quotations), the IGC barley price index (an average of 5 different barley price quotations), 1 sorghum export quotation and the FAO All Rice Price Index. The FAO All Rice Price Index is based on 21 rice export quotations, combined into four groups consisting of Indica, Aromatic, Japonica and Glutinous rice varieties. Within each varietal group, a simple average of the relative prices of appropriate quotations is calculated; then the average relative prices of each of the four rice varieties are combined by weighting them with their (fixed) trade shares for 2014-2016. The Cereal Price Index combines the relative prices of sorghum, the IGC wheat, maize and barley price indices (re-based to 2014-2016) and the FAO All Rice Price Index by weighing each commodity with its average export trade share for 2014-2016.

**5 Vegetable Oil Price Index:** Consists of an average of 10 different oils weighted with average export trade shares of each oil product for 2014-2016.

**6 Sugar Price Index:** Index form of the International Sugar Agreement prices with 2014-2016 as base.

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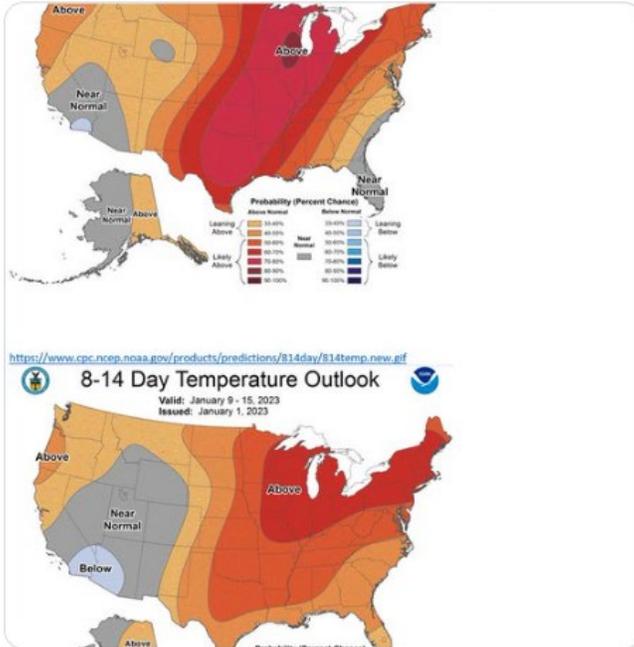
Dan Tsubouchi @Energy\_Tidbits · Jan 1  
Negative tone continues for HH #NatGas prices.

...

Anyone watching NFL knows its warm today in US + forecasts still expect warmer than normal temps across almost all the US thru mid-Jan, which is normally peak winter temperature driven demand period.

Thx @NOAA.

#OOTT



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Dan Tsubouchi @Energy\_Tidbits · Jan 2



Continued negative for EU #NatGas #LNG demand & prices.

Its still above normal temperatures across Continental Europe

See 📍 @business max temp map for 01/02 and 01/03.

#OOTT



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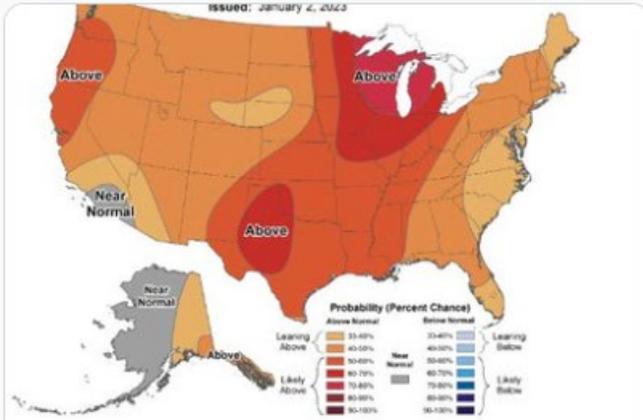
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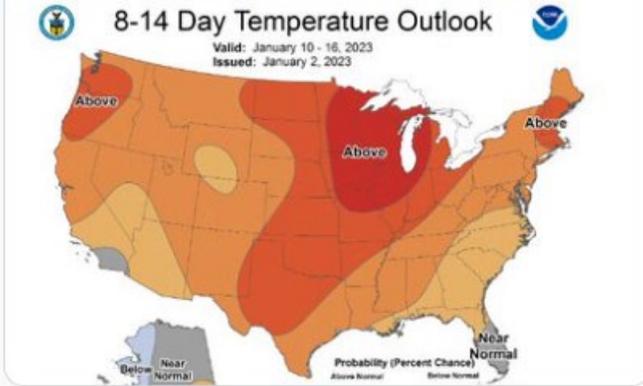
@NOAA continues to forecast warmer than normal temps across all the US thru AT LEAST Jan 16.

Never good when its warmer than normal in what should be peak winter temperature driven demand period.

#OOTT



<https://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php>



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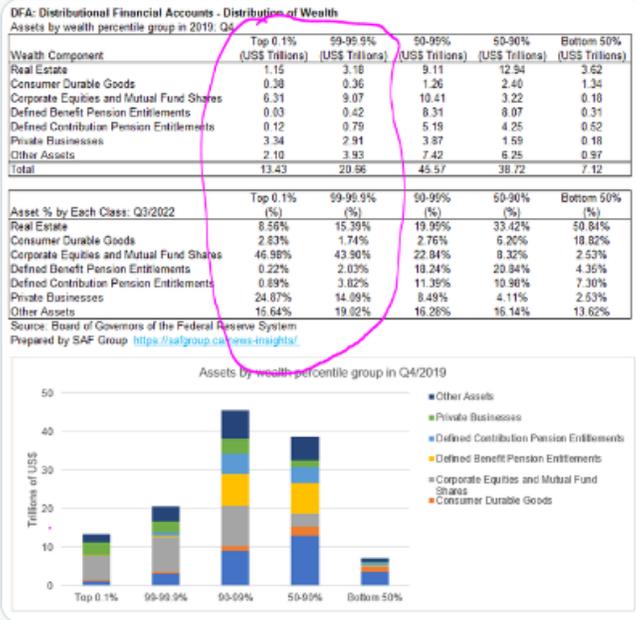
Dan Tsubouchi @Energy\_Tidbits · Jan 2

Here's why equities are always at risk for more taxation.

Hurts Top 1% the most, who own 27.2% of total assets, but 52.5% of equities/mutual funds.

also why risk for tax on jets, yachts, expensive homes as real estate/consumer durable goods only 14.9% of Top 1% assets.

#OOTT



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Dan Tsubouchi @Energy\_Tidbits · Jan 2

China Caixin PMI for Dec 49.0 v Est 49.1 & Nov 49.4, Oct 49.2, Sept 48.1. "In the short term, infections are expected to explode, which will severely interfere with production and everyday life". Yet "Optimism improved significantly among businesses" Thx @IHSMarkeitPMI #OOTT



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Dan Tsubouchi @Energy\_Tidbits · Jan 2

See 📍

HH #NatGas currently trading down \$0.33 to \$4.14 as 7pm MT based on @NOAA forecast for warmer than normal temperatures across all the US thru AT LEAST Jan 16. #OTT

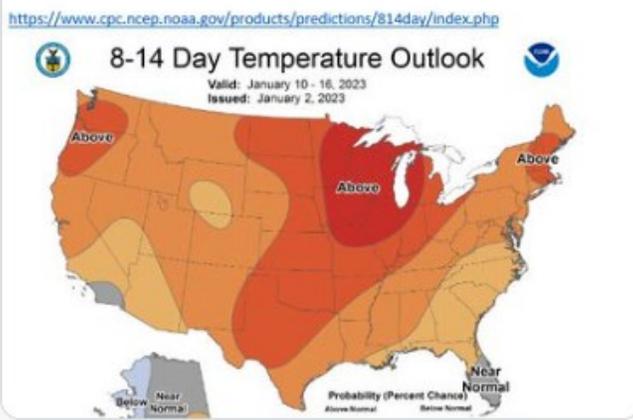
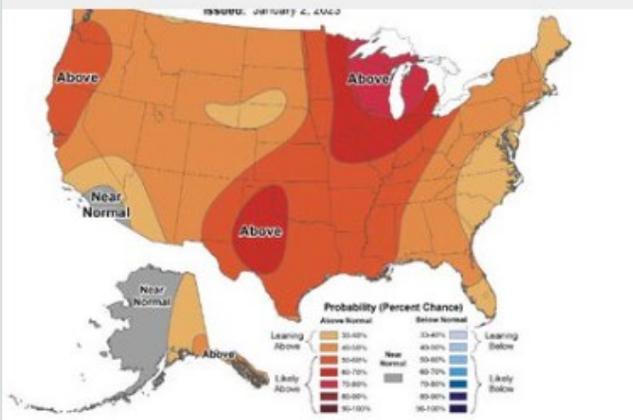
📍 Dan Tsubouchi @Energy\_Tidbits · Jan 2

Continued negative tone to HH #NatGas prices.

@NOAA continues to forecast warmer than normal temps across all the US thru AT LEAST Jan 16.

Never good when its warmer than normal in what should be peak winter temperature driven demand period.

#OTT



4,225 3 6



Dan Tsubouchi @Energy\_Tidbits · Jan 3



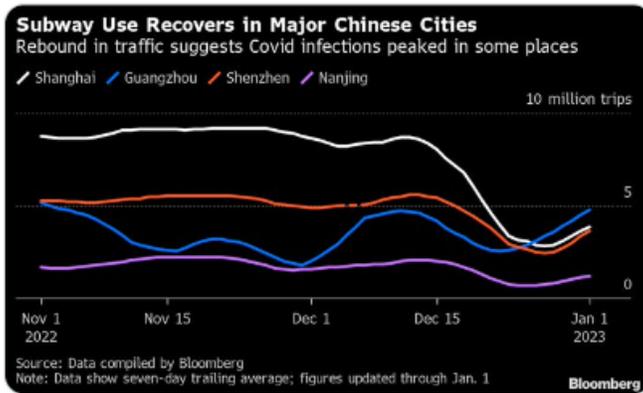
China activity picking up in most populous cities post Covid peak

Subway use recovers  
Shanghai #1 w/28 mm  
Guangzhou #5 w/14 mm  
Shenzhen #6 w/13mm  
Nanjing #8 w/9mm

Fits 📍 12/15 #Vitol @michaelwmuller J shaped recovery in CN fuels demand post herd immunity

Thx @business

#OOTT



📍 Dan Tsubouchi @Energy\_Tidbits · Dec 15, 2022

 Nike swoosh or J shaped recovery in China demand transportation fuels. See 📍 Vitol @michaelwmuller inbound international air travel to China as soon as Q2. Freedom of travel + population less scared of Virus = China move faster to herd immunity. @sean\_ever ...

📊 2,864    💬    ↻ 4    ❤️ 10    📤

SAF

Dan Tsubouchi @Energy\_Tidbits · Jan 3

...

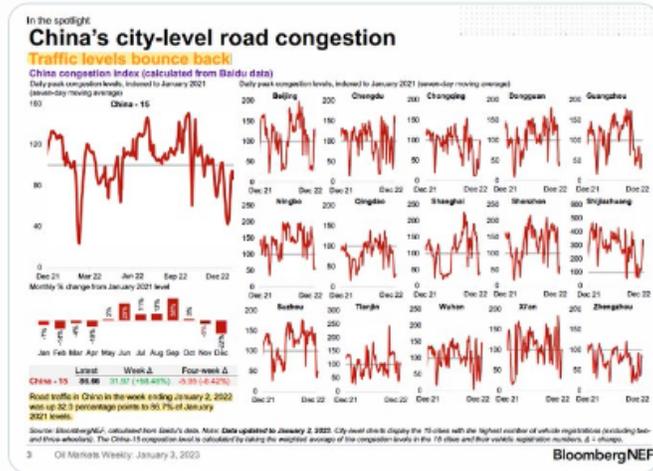
Peak Covid has hit China most populous cities: Beijing, Tianjin, Guangzhou, Chengdu

Means people getting back out and about, traffic levels bounce back

Sets up 12/15 tweet @michaelwmuller J shaped transportation fuels demand.

Thx @BloombergNEF Wayne Tan

#OOTT



SAF Dan Tsubouchi @Energy\_Tidbits · Jan 1



China speeding to herd immunity.

Covid peaked in most populous cities Beijing #2 w/ 21 mm, Tianjin #4 w/ 14 mm. Guangzhou #5 w/ 14 mm. Chengdu #7 w/ 9 mm....

3,804 3 12

SAF

Dan Tsubouchi @Energy\_Tidbits · Jan 3

...

#1 challenge for mass adoption of EVs, not just high income - they are expensive

DE Transport Minister @Wissing " If people realize that e-cars are not only expensive, but also bad for the climate, the transformation will become a fiasco"

#Oil will be needed for longer. #OOTT

**Volker Wissing** @Wissing · Jan 2

„Wir können mit der Elektromobilität nichts für den Klimaschutz tun, wenn wir Kohlestrom zum Laden nutzen. Wenn die Menschen erleben, dass E-Autos nicht nur teuer sind, sondern schlecht für das Klima, wird die Transformation zum Fiasko.“ 🚗🔌🌪️

👉 Gespräch mit @CBudras, @faznet. twitter.com/CBudras/status...

7,804 4 11



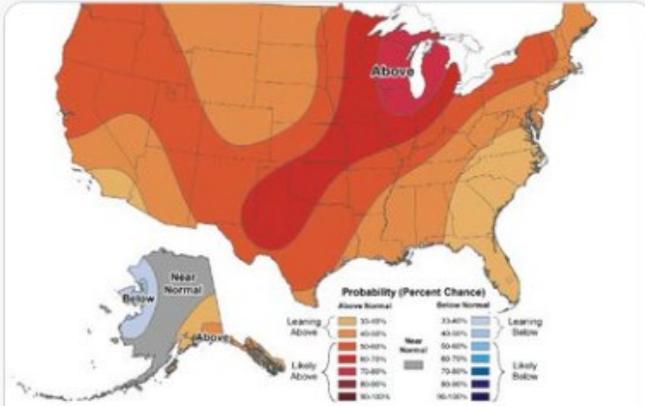
Dan Tsubouchi @Energy\_Tidbits · Jan 3  
 HH #NatGas hit hard today down to ~\$4

...

negative tone to continue with @NOAA still calling for warmer than normal temps across all the US until AT LEAST thru Jan 17.

A warm Jan is never a positive as Jan is normally peak month for winter driven demand.

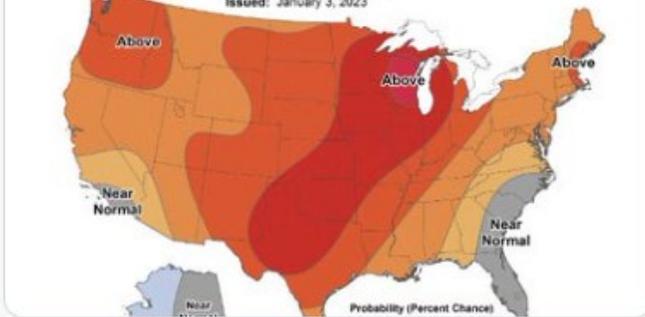
#OOTT



<https://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php>

**8-14 Day Temperature Outlook**

Valid: January 11 - 17, 2023  
 Issued: January 3, 2023



Dan Tsubouchi @Energy\_Tidbits · Jan 2



Continued negative tone to HH #NatGas prices.

@NOAA continues to forecast warmer than normal temps across all the US thru AT LEAST Jan 16.

...

6,555    1    8

SAF

Dan Tsubouchi @Energy\_Tidbits · Jan 3

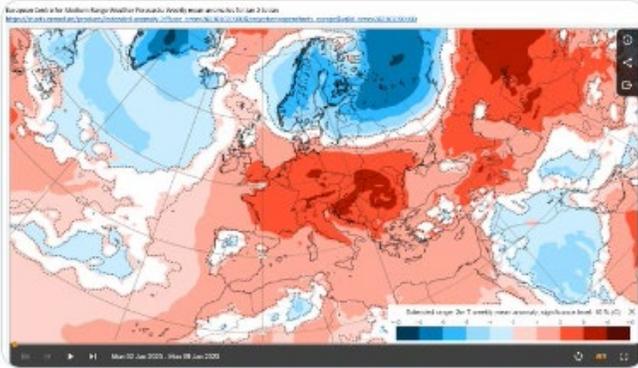
...

Continued negative for EU #NatGas #LNG demand & prices

It's hot across Continental Europe. @ECMWF Jan 2-9 temp probability forecast.

#OOTT

[charts.ecmwf.int/products/exten...](https://charts.ecmwf.int/products/extension)



DM Dan Tsubouchi @Energy\_Tidbits · Jan 2



Continued negative for EU #NatGas #LNG demand & prices.

Its still above normal temperatures across Continental Europe...

5,839

1

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↑





Dan Tsubouchi @Energy\_Tidbits · Jan 4



Why HH #NatGas is ~\$4.

Never a positive for natural gas to see very warm temps in Jan, which is normally the peak month for winter temperature driven consumption for residential/commercial.

#OOTT

**The Weather Channel** @weatherchannel · Jan 3  
220 MILLION of you are forecast to have highs above average tomorrow!

Get a look at your January temps on air today.



4,920 4 2 11



Dan Tsubouchi @Energy\_Tidbits · Jan 4



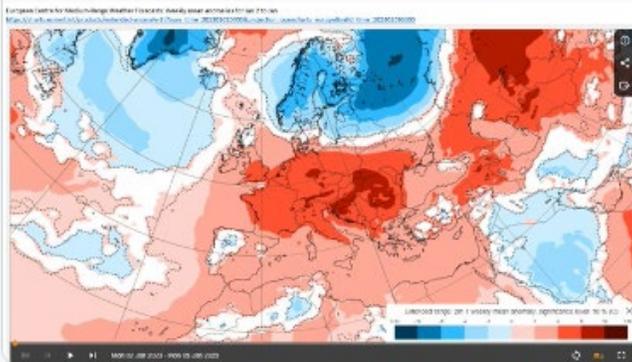
Why TTF #NatGas price and #LNG price have been weak. Its' really hot in Europe

#OOTT

**Dan Tsubouchi** @Energy\_Tidbits · Jan 3  
Continued negative for EU #NatGas #LNG demand & prices  
It's hot across Continental Europe. @ECMWF Jan 2-9 temp probability forecast.

#OOTT

[charts.ecmwf.int/products/extension...](https://charts.ecmwf.int/products/extension)



2,924 3



Dan Tsubouchi @Energy\_Tidbits · Jan 4

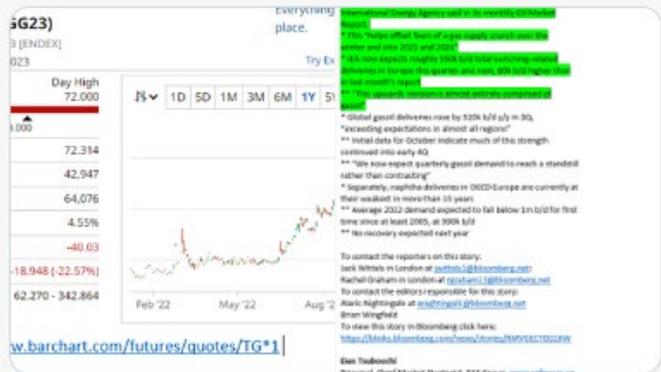


Expect gas-to-oil switching hit by big drop in #NatGas prices.

TTF #NatGas prices now down ~40% since 12/31/22, down ~80% since late Aug.

@IEA OMR Dec "expects roughly 550k b/d total switching related deliveries in EU this quarter and next"

Thx @JWittels @RefinedRachel #OOTT



3,027 4 17



Dan Tsubouchi @Energy\_Tidbits · Jan 5

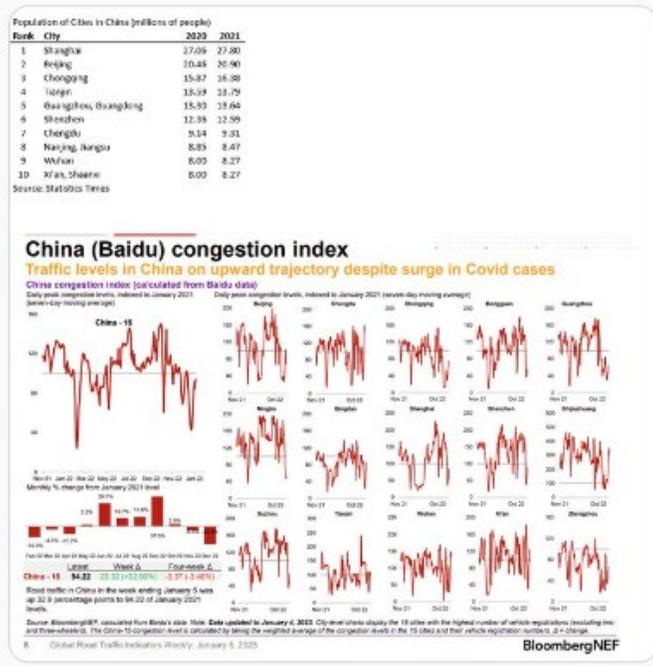
China moving to herd immunity.

Increasing traffic levels in all China major cities as Covid cases peak.

Fits 12/15 tweet on @vitolnews @michaelwmuller set up for J shaped fuels pickup as early as Q2.

Thx @BloombergNEF P Geurts, C Lubis, W Tan

#OOTT



Dan Tsubouchi @Energy\_Tidbits · Jan 5

For those not near their laptop, @EIAgov released #Oil #Gasoline #Distillates inventory as of Dec 30. Table below compares EIA data vs @business expectations as of 4:30am MT and vs @APIenergy yesterday. Prior to release, WTI was \$73.56. #OOTT

[ir.eia.gov/wpsr/overview...](https://www.eia.gov/wpsr/overview...)

Inventory Dec 30: EIA, Bloomberg Survey Expectations, API		
s)	EIA	Expectations
	1.69	1.50
	-0.35	-1.00
	-1.43	-1.17
	-0.09	-0.67

Commercial so builds in impact of 2.7 mmb draw from SPR for Dec 30 in the oil data, Cushing had a build of 0.24 mmb for Dec 30 week ending Dec 30 Bloomberg

SAF Group <https://safgroup.ca/news-insights/>

1,431 1 7



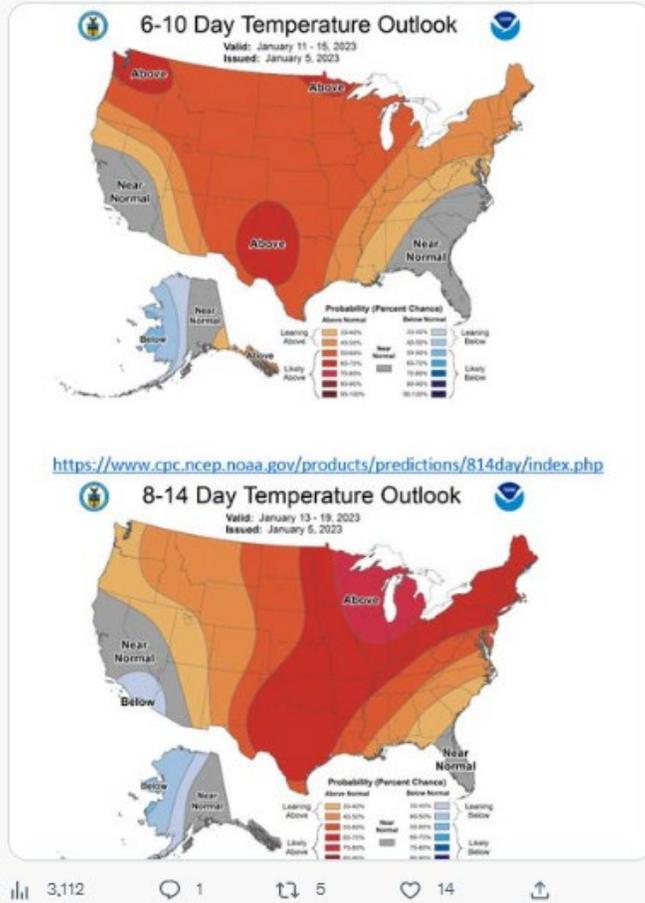
Dan Tsubouchi @Energy\_Tidbits · Jan 5  
 HH #NatGas continues weak at ~\$3.75

...

negative tone to continue with @NOAA still calling for warmer than normal temps across all the US until AT LEAST thru Jan 19.

A warm Jan is never a positive as Jan is normally peak month for winter driven demand.

#OOTT





**Dan Tsubouchi** @Energy\_Tidbits · Jan 6



China moving to herd immunity with surge of Covid infections.

Spring Festival travel will make sure it gets there.

Passenger trips +99.5% YoY, back to 70.3% of pre-Covid  
Daily civil flights back to 73% of pre-Covid

Sets up 2023 demand recovery

#OTT



wsj.com

China Estimates Passenger Trips to Almost Doubl...  
Passenger trips in China over the coming Lunar New  
Year holidays are expected to jump after Beijing's ...



4,931



6



14





Dan Tsubouchi @Energy\_Tidbits · Jan 6

...

See overlooked fundamental on Permian oil wells, and why there is the challenge for sustained strong Permian #oil growth.

Permian can certainly grow, but how much before they move to focus on keeping production flat?

#OTT

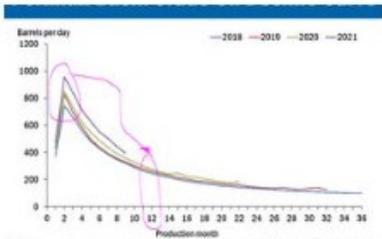
— Dan Tsubouchi @Energy\_Tidbits · Dec 13, 2022

Hmm!

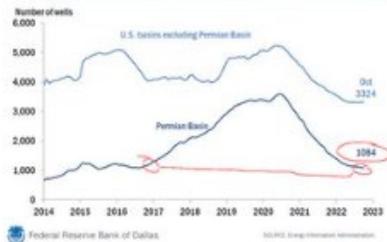
Overlooked @DallasFed: new high IP #Permian wells are down to same prod 12 mths out as lower IP wells ie. steeper decline/faster treadmill.

How can #Permian sustainably grow unless rigs crank up big as DUCs/rigs are ~5 yrs ago levels when oil prod was ~1/2 today.

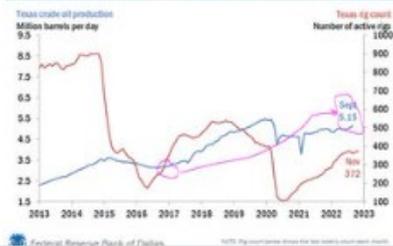
#OTT



### Drilled but Uncompleted Wells



### Texas Oil Production & Rig Count



6,091 6 22

SAF

Dan Tsubouchi @Energy\_Tidbits · Jan 6  
sun about to rise looking east over the Bow River in #Canmore. looks like another great day in the Cdn Rockies.



1,135 1 11

SAF

Dan Tsubouchi @Energy\_Tidbits · Jan 6  
1/2. It's all about having reliable, available, affordable #Electricity.

#MercedesBenz global #EV charge roll out starts in US/CAN, not DE/EU home market.

See 01/03 tweet, Germany is power short & dirtier. US/Can have 24/7 power.

#OOT

**Mercedes-Benz already offers what we believe to be the best EVs in the market. But to accelerate the electric transformation, we need to ensure that the charging experience keeps pace to suit. Our customers deserve a compelling charging experience that leaves them in a world of convenience and top-of-the-line service. We will do this and our approach for this is to build that. That's why we're investing in a global high-power charging network. It's designed to be more and more efficient as Mercedes-Benz networks for our customers and an asset with value creation potential for our company. We are excited to lead the way in North America with this roll-out. (Mercedes-Benz website)**

**Key highlights:**

- All sites to include high power charging network supporting up to 150kW for end of range charging
- Global reach: Rollout starts in over 10,000 high-power charging networks across North America, Europe, China and other regions
- More than 100 charging stations per site, providing a charging station for every car, but network will be able to accommodate up to 1000 cars per site
- 24/7 availability: Focus on renewable energy, green charging via Mercedes-Benz charging
- Forward investment: Investing capital, development and site management proficiencies of partners, including support to local owners by MIB Energy, a leading renewable energy and battery storage operator in the US
- Technology partners: We are excited Mercedes-Benz partners with expert partners such as ChargePoint, a leading specialist in charging network design and provision

The Mercedes-Benz already offers what we believe to be the best EVs in the market. But to accelerate the electric transformation, we need to ensure that the charging experience keeps pace to suit. Our customers deserve a compelling charging experience that leaves them in a world of convenience and top-of-the-line service. We will do this and our approach for this is to build that. That's why we're investing in a global high-power charging network. It's designed to be more and more efficient as Mercedes-Benz networks for our customers and an asset with value creation potential for our company. We are excited to lead the way in North America with this roll-out. (Mercedes-Benz website)

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Dan Tsubouchi @Energy\_Tidbits · Jan 3  
#1 challenge for mass adoption of EVs, not just high income - they are expensive

DE Transport Minister @Wissing " If people realize that e-cars are not only expensive, but also bad for the climate, the transformation will ...

3,075 1 2 3

SAF

Dan Tsubouchi @Energy\_Tidbits · Jan 6

...

2/2. #MercedesBenz #EV charge hubs in cities, not where most needed on highways further away from home.

11/14 tweet. highways don't have high voltage infrastructure, cities are already grid connected.

it's all about reliable, available, affordable #Electricity

#OOTT #NatGas

WOW! Bet most don't appreciate that a SINGLE large passenger/truck highway charging plaza will be ~equivalent to the electric load of a small town. SINGLE 20-fast charger #EV highway play = load of an outdoor stadium. Thx @nationalgrid. #NatGas #OOTT

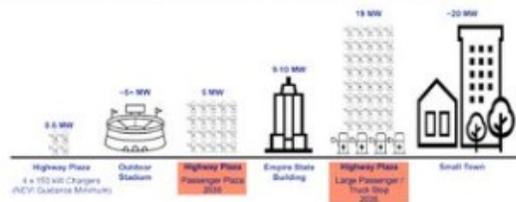
[nationalgrid.com/us/EVhighway?u...](https://nationalgrid.com/us/EVhighway?u...)

#### IV. Conclusion and Implications

A typical highway site will eventually need 20+ fast-chargers to serve expected traffic. As a result, these sites will see drastic increases in power demand compared to usage today. Highway charging sites will bring about significant electric loads. At many sites, these loads will begin to exceed distribution line capacity in the next 5-10 years.

For perspective, the Mixed Use Traffic Plaza and Passenger Plaza will each require about 5 MW of charging capacity by 2030—about the amount of power used by an outdoor professional sports stadium. By 2035, the nameplate charging capacity required at the Large Passenger/Truck Stop site will be roughly equivalent to the electric load of a small town (Figure 21). Note that the other large energy users' loads depicted in the figure below are approximate based on a range of loads.

Figure 21. Comparative Peak Loads for Illustrative Sites and Other Major Users<sup>11</sup>



1,650 1 2 3



Dan Tsubouchi @Energy\_Tidbits · Jan 7

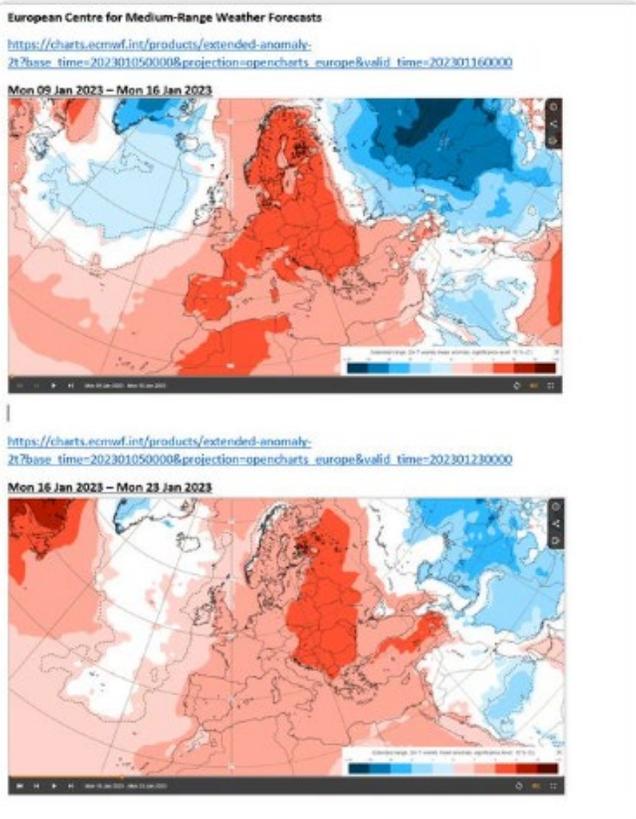
...

Continued negative for Europe TTF #NatGas prices and therefore on #LNG, the much warmer than normal temperatures expected to continue across all of continental Europe for balance of Jan.

Jan is normally the peak weather driven #NatGas demand period.

Thx @ECMWF

#OOTT



1,858



3

10



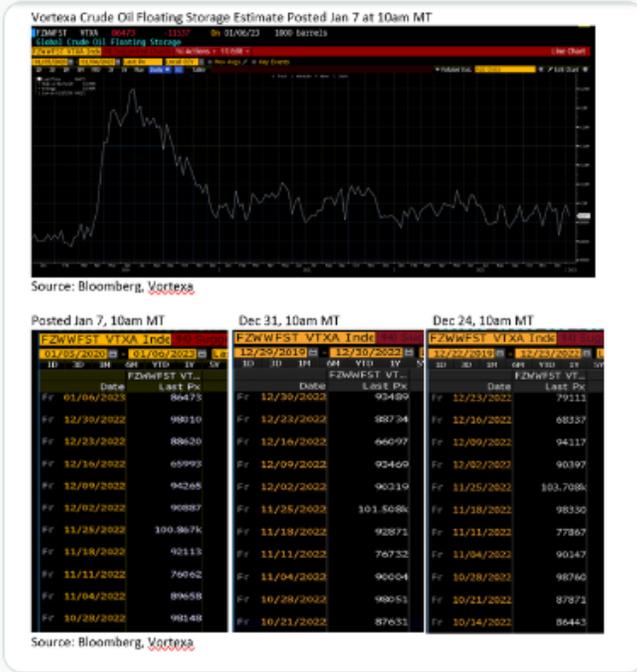




Dan Tsubouchi @Energy\_Tidbits · 23h

...

#Vortexa crude #Oil floating storage at 01/06 est 86.47 mmb, -11.54 mmb WoW vs revised up by +4.52 mmb 12/30 of 98.01 mmb. Last several weeks average 89.3 mmb (was 89.5 mmb). Thx @Vortexa @business. #OOT



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14

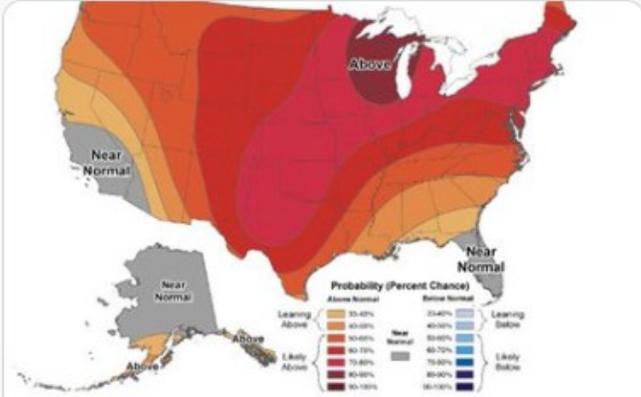


**SAF** Dan Tsubouchi @Energy\_Tidbits · 19h  
HH #NatGas continues weak at ~\$3.75

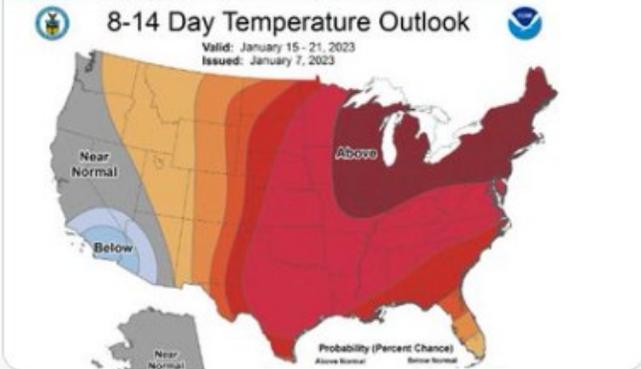
negative tone to continue with @NOAA Jan 7 update still calling for warmer than normal temps across all the US until AT LEAST thru Jan 21.

A warm Jan is never a positive as Jan is normally peak month for winter driven demand.

#OOTT



<https://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php>



2,552 3 2 13

**SAF** Dan Tsubouchi @Energy\_Tidbits · 18h  
Here's why temp is key for winter #NatGas demand & prices

@EIA average & range residential/commercial demand for last 10 yrs in bcfd  
Dec Ave 38.0, Range 30.4-43.0  
Jan Ave 46.7, Range 42.2-51.9  
Feb Ave 43.4, Range 33.7-50.9

Table in tomorrow's SAF Jan 8 Energy Tidbits memo

#OOTT

2,070 1 1 2



**Dan Tsubouchi** @Energy\_Tidbits · 15h



Biggest spreader event possible, Spring Festival travel rush kicked off today.

China will be speeding towards herd immunity.

May be bumpy over next month or so, but would seem to set up more sustained [#Oil](#) fuels demand recovery in Q2

[#OOTT](#)

re **Dan Tsubouchi** @Energy\_Tidbits · Jan 6

China moving to herd immunity with surge of Covid infections.

Spring Festival travel will make sure it gets there.

Passenger trips +99.5% YoY, back to 70.3% of pre-Covid  
Daily civil flights back to 73% of pre-Covid

Sets up 2023 demand recovery

[#OOTT](#)

[wsj.com/articles/china...](https://www.wsj.com/articles/china...)



2,335



1



1



11





Dan Tsubouchi @Energy\_Tidbits · 2h

...

Biggest spreader event possible, 1st Spring Festival without Covid restrictions.

Travel rush started yesterday.

China will be speeding towards herd immunity.

May be bumpy over next month or so, but would seem to set up more sustained #Oil fuels demand recovery in Q2

#OOT

<https://www.globaltimes.cn/page/202301/283383.shtml>  
**China ramps up efforts to ensure safe travel amid surging passenger numbers on first day of Chunyun**  
 By Global Times | Updated: January 28, 2023 10:39 PM



Photo: LHM001

From Chinese transportation authorities to railways and airlines, the nation has gone all out in ramping up efforts to ensure safe and smooth travel over the 40-day Chunyun or Spring Festival travel rush starting on Saturday, with passenger numbers expected to surge significantly following the continuous optimization of COVID-19 measures.

Some 6.3 million trips are expected to be made using China's railways on Saturday, according to China Railway. More than 10,000 domestic flights are scheduled on Saturday, a year-on-year increase of 13 percent, while the daily passenger volume is forecasted to exceed one million, reaching a peak unseen in several months. Airlines can report their data from Tuesday.

China's 40-day Chunyun, the world's largest human migration, is expected to see about 2.05 billion passenger trips made this year, up 9.6 percent from the 2022 level. Xu Chongqun, an official with China's Ministry of Transport (MOT), led a State Council Information Office press conference on Friday.

Passenger volume on air, rail and road is set to reach 70.2 percent of the pre-epidemic level in 2019, according to Xu.

In the light of surging travel demand, relevant departments and transportation operators have stepped up efforts with an increased deployment of added transport capacity.

China Eastern Airlines said it plans to allocate 753 aircraft for the upcoming travel rush, with average planned daily flights of more than 2,900, and the planned passenger seat kilometers returning to 87 percent of the pre-epidemic level in 2019, the company said in a statement sent to the Global Times on Saturday.

Air China plans to arrange 30,633 flights for the Spring Festival travel rush, an increase of 75.8 percent year-on-year with a significant growth in domestic routes, the company said the Global Times on Saturday. An average of 1,445 flights have been scheduled per day, an increase of 620 flights compared with 2022.

Air transportation volume is expected to return to 73 percent of the 2019 level, with the number of daily arranged passenger flights reaching 11,000, Yan Xiangdong from the Civil Aviation Administration of China (CAAC) said on Friday.

The passenger volume for flying home and traveling domestically will be able to return to near normal levels. Qi Qi, an independent market watcher told the Global Times on Saturday, adding that it will still take time for the number of flights to fully recover for the Spring Festival travel rush which has been affected by recent epidemic outbreaks.

Meanwhile, China Railway said that 6,077 trains with a passenger capacity of 9.04 million will be operated during peak periods before the holiday, while 6,107 trains carrying 9.14 million passengers are arranged for the remaining peak. Maximum passenger capacity is 11 percent higher than the same period of 2019.

The Ministry of Transport held a meeting on Wednesday, which is aimed at guiding authorities across the nation to fully prepare for the Spring Festival travel rush. During the meeting, Transport Minister Li Xiaopeng outlined six major tasks, including guaranteeing logistics, especially targeting the transportation of crucial materials including medication and coal, further strengthening the quality of services, enhancing prevention and protection mechanisms in response to possible risks along with other aspects.

Global Times

701 1 4



Dan Tsubouchi @Energy\_Tidbits · 2h



Ironic!  
western leaders know #Oil #NatGas prices drove high inflation/cost of living.

Yet, a key factor holding back supply is lack of young people entering oil & gas because they know same leaders are working to end the industry.

Thx @ChrisVarcoe #OOTT



ChrisVarcoe @ChrisVarcoe · 20h

Varcoe: The oilpatch needs workers. Ottawa's 'just transition' rhetoric adds to labour crunch.

"It just frustrates me that we have a company strategy...tied to combating federal government narratives," says Precision Drilling CEO Kevin Neveu.

[calgaryherald.com/opinion/column...](https://calgaryherald.com/opinion/column...) #cdnpoli

1,688 1 6



Dan Tsubouchi @Energy\_Tidbits · 38m



Should we expect a return to Houthi drone attacks on Saudi #Oil infra?

01/07: Houthis warn on "unprecedented military response" "States of aggression must bear the consequences"

01/08: Saudi response, reported 12 drone attacks on Houthis.

#OOTT

Research conducted by the RAND Corporation of leading global energy companies  
2023-01-01 13:00:00 UTC

Research conducted by the RAND Corporation of leading global energy companies  
2023-01-01 13:00:00 UTC

on 6, 2023 (PDF)



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