Energy Tidbits

Libya's Eastern Military Commanders Urge Haftar to Shut Down Libya Oil Exports

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April 10, 2022

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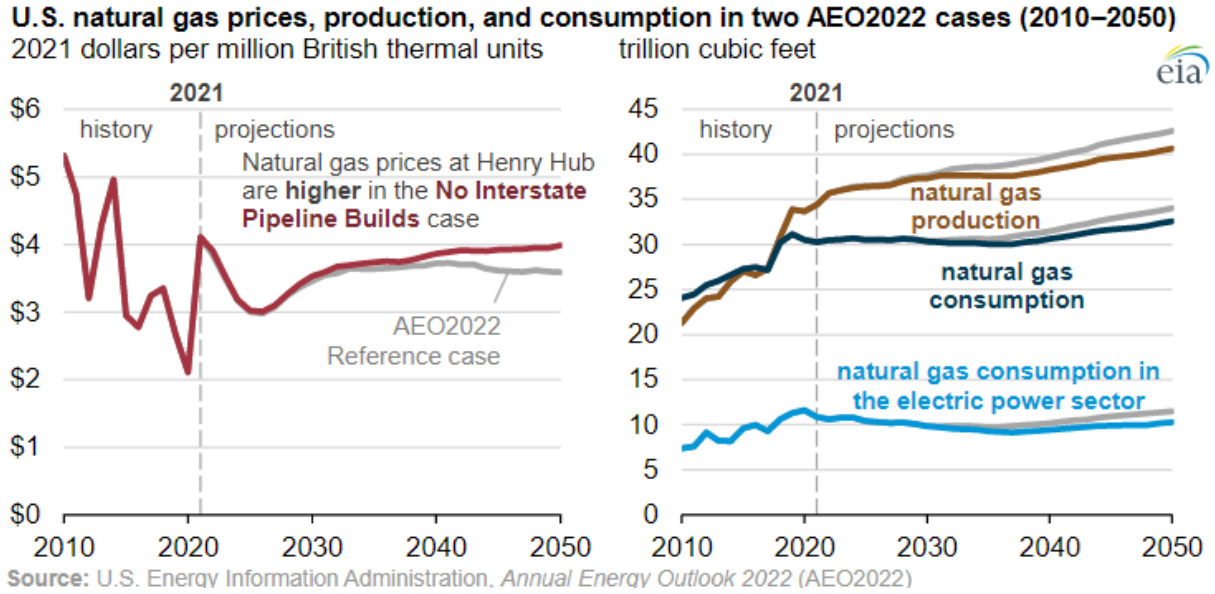
https://www.eia.gov/todayinenergy/detail.php?id=51898

APRIL 4, 2022

EIA explores effects of not building future interstate natural gas pipelines



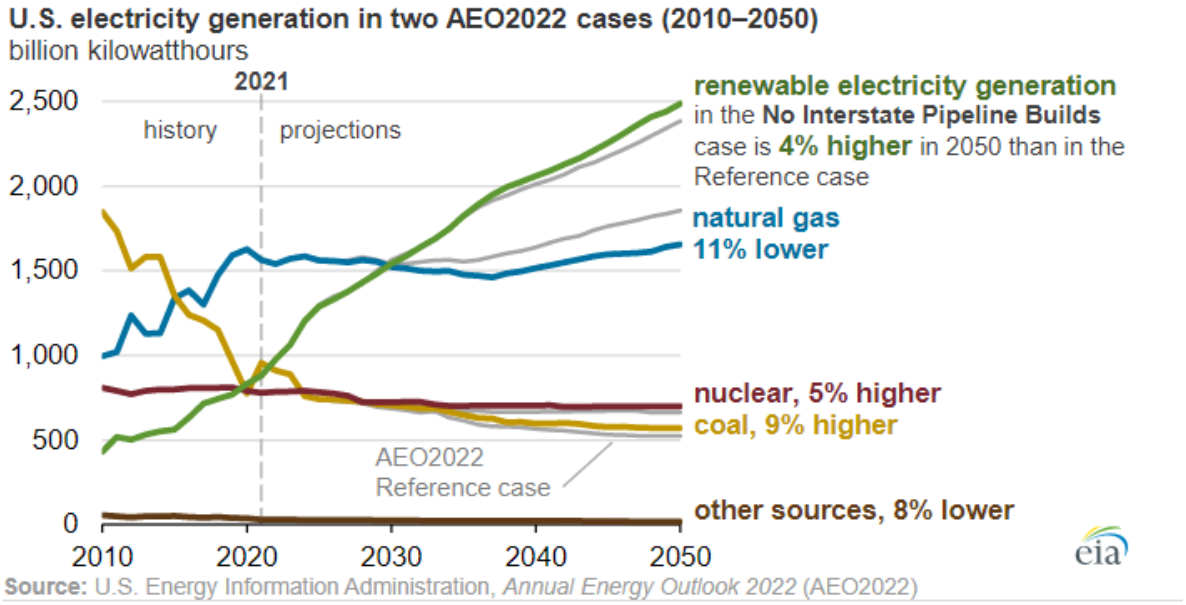
Source: U.S. Energy Information Administration, *Annual Energy Outlook 2022* (AEO2022)

In our *Annual Energy Outlook 2022* (AEO2022), *Issues in Focus: Exploration of the No Interstate Natural Gas Pipeline Builds*, we analyze the effects on the energy market if no additional U.S. natural gas pipeline capacity is built between 2024 and 2050. In the No Interstate Natural Gas Pipeline Builds case, we project 5% less natural gas production and 4% less natural gas consumption in 2050 compared with the Reference case. We also project that the Henry Hub spot price in 2050 would be 11% higher in that case than in the Reference case.

Restricting U.S. interstate pipeline builds in our projection results in 7.4 billion cubic feet per day (Bcf/d) less interregional capacity in 2050 than in the Reference case projection, which, for example, limits the amount of natural gas that can flow from the Appalachia production region to demand areas such as the Midwest.

The higher natural gas prices that result from capacity constraints primarily affect natural gas consumption in the U.S. electric power sector, which is more price-sensitive than the residential, commercial, and industrial sectors. In the No Interstate Natural Gas Pipeline Builds case, we project 11% less natural gas-fired generation in the United States during 2050 than in the Reference case. Higher natural gas prices make natural gas less economical for electric power generation compared with alternative sources, such as coal or renewables.

We project that natural gas's share of U.S. electricity generation would fall from 34% in 2050 in the Reference Case to 31% in the No Interstate Natural Gas Pipeline Builds case. To make up for less natural gas-fired generation in the No Interstate Natural Gas Pipeline Builds case, electricity generation from renewables, coal, and nuclear sources increase.

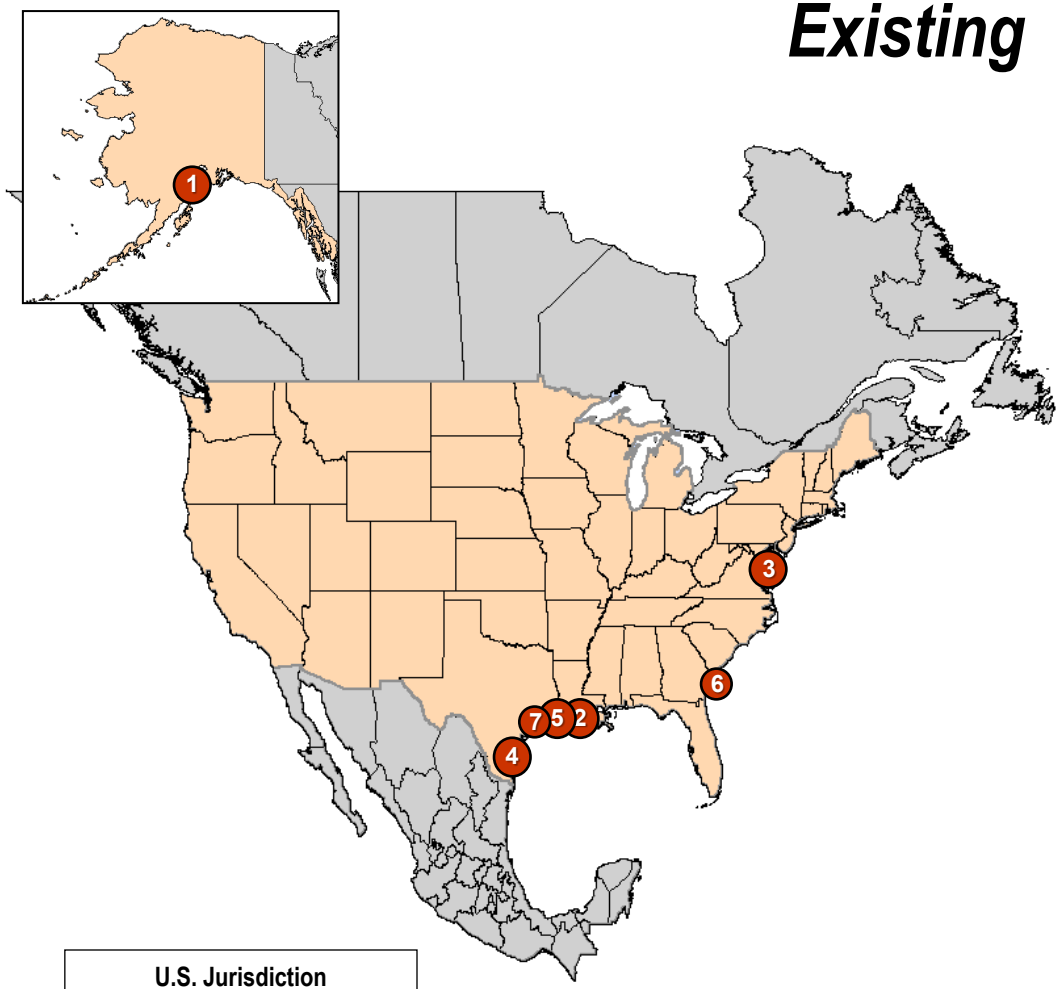


We project that restricting interstate U.S. natural gas pipeline capacity would only slightly lower energy-related carbon dioxide (CO_2) emissions in the United States relative to the Reference case. Total CO_2 from all fuel sources in 2050 are 4% lower in the No Interstate Natural Gas Pipeline Builds case than in the Reference case. The relatively small effect on CO_2 emissions, despite the decline in natural gas consumption and growth in electric power generation from renewable sources, is due to our forecast of increased coal-fired power generation, which would be more carbon intensive than the natural gas-fired generation it displaces.

Principal contributor: Stephen York

North American LNG Export Terminals

Existing



U.S. Jurisdiction

- FERC
- MARAD / U.S. Coast Guard

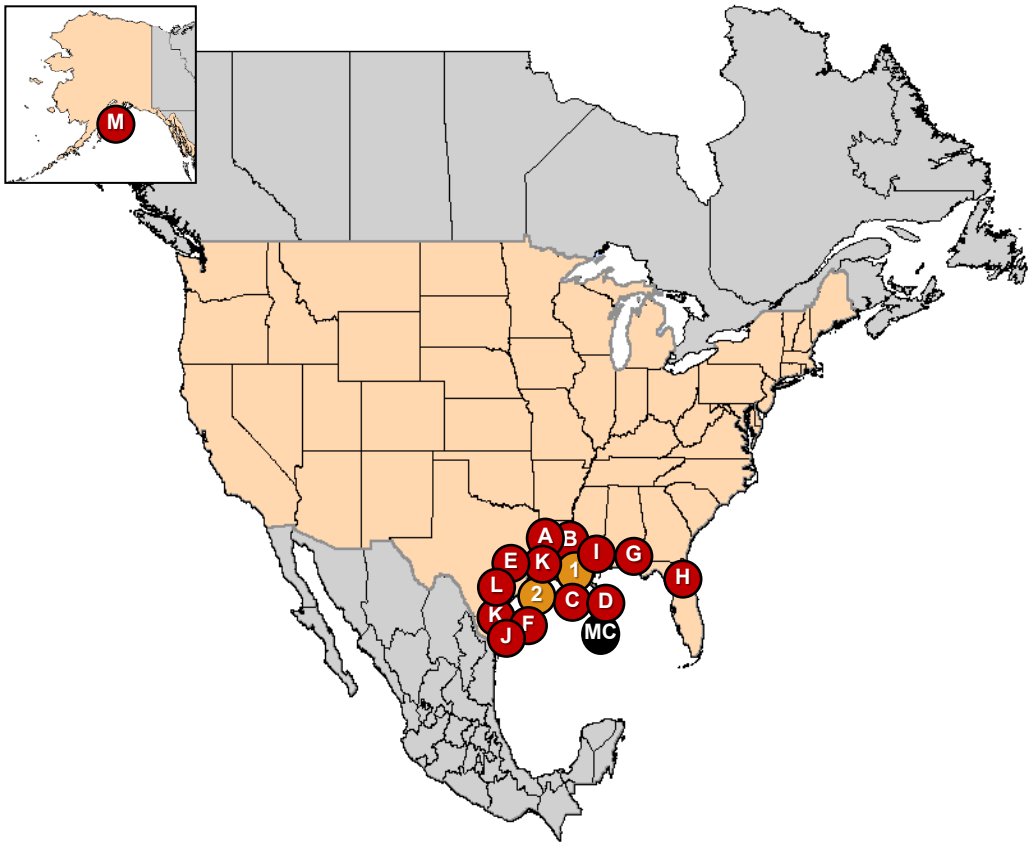
Export Terminals

UNITED STATES

1. **Kenai, AK:** 0.2 Bcfd (Trans-Foreland)
2. **Sabine, LA:** 4.55 Bcfd (Cheniere/Sabine Pass LNG – Trains 1-6)
3. **Cove Point, MD:** 0.82 Bcfd (Dominion–Cove Point LNG)
4. **Corpus Christi, TX:** 2.40 Bcfd (Cheniere – Corpus Christi LNG Trains 1-3)
5. **Hackberry, LA:** 2.15 Bcfd (Sempra–Cameron LNG, Trains 1-3)
6. **Elba Island, GA:** 0.35 Bcd (Southern LNG Company Units 1-10)
7. **Freeport, TX:** 2.13 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction Trains 1-3)

As of April 5, 2022
No updates since previous issuance

North American LNG Export Terminals
Approved, Not Yet Built



U.S. Jurisdiction & Status

- **FERC -** Approved, Under Construction
- **FERC -** Approved, Not Under Construction
- **MARAD / U.S. Coast Guard**

Export Terminals

UNITED STATES

FERC – APPROVED, UNDER CONSTRUCTION

1. **Cameron Parish, LA:** 1.41 Bcfd (Venture Global Calcasieu Pass) (CP15-550)
2. **Sabine Pass, TX:** 2.26 Bcfd (ExxonMobil – Golden Pass) (CP14-517, CP20-459)

FERC – APPROVED, NOT UNDER CONSTRUCTION

A. **Lake Charles, LA:** 2.2 Bcfd (Lake Charles LNG) (CP14-120)
B. **Lake Charles, LA:** 1.186 Bcfd (Magnolia LNG) (CP14-347)
C. **Hackberry, LA:** 1.41 Bcfd (Sempra - Cameron LNG Trains 4 & 5) (CP15-560)
D. **Calcasieu Parish, LA:** 4.0 Bcfd (Driftwood LNG) (CP17-117)
E. **Port Arthur, TX:** 1.86 Bcfd (Port Arthur LNG Trains 1 & 2) (CP17-20)
F. **Freeport, TX:** 0.72 Bcfd (Freeport LNG Dev Train 4) (CP17-470)
G. **Pascagoula, MS:** 1.5 Bcfd (Gulf LNG Liquefaction) (CP15-521)
H. **Jacksonville, FL:** 0.132 Bcf/d (Eagle LNG Partners) (CP17-41)
I. **Plaquemines Parish, LA:** 3.40 Bcfd (Venture Global Plaquemines) (CP17-66)
J. **Brownsville, TX:** 0.55 Bcfd (Texas LNG Brownsville) (CP16-116)
K. **Brownsville, TX:** 3.6 Bcfd (Rio Grande LNG – NextDecade) (CP16-454)
L. **Corpus Christi, TX:** 1.86 Bcfd (Cheniere Corpus Christi Stage III) (CP18-512)
M. **Nikiski, AK:** 2.63 Bcfd (Alaska Gasline) (CP17-178)

MARAD/USCG – APPROVED, NOT UNDER CONSTRUCTION

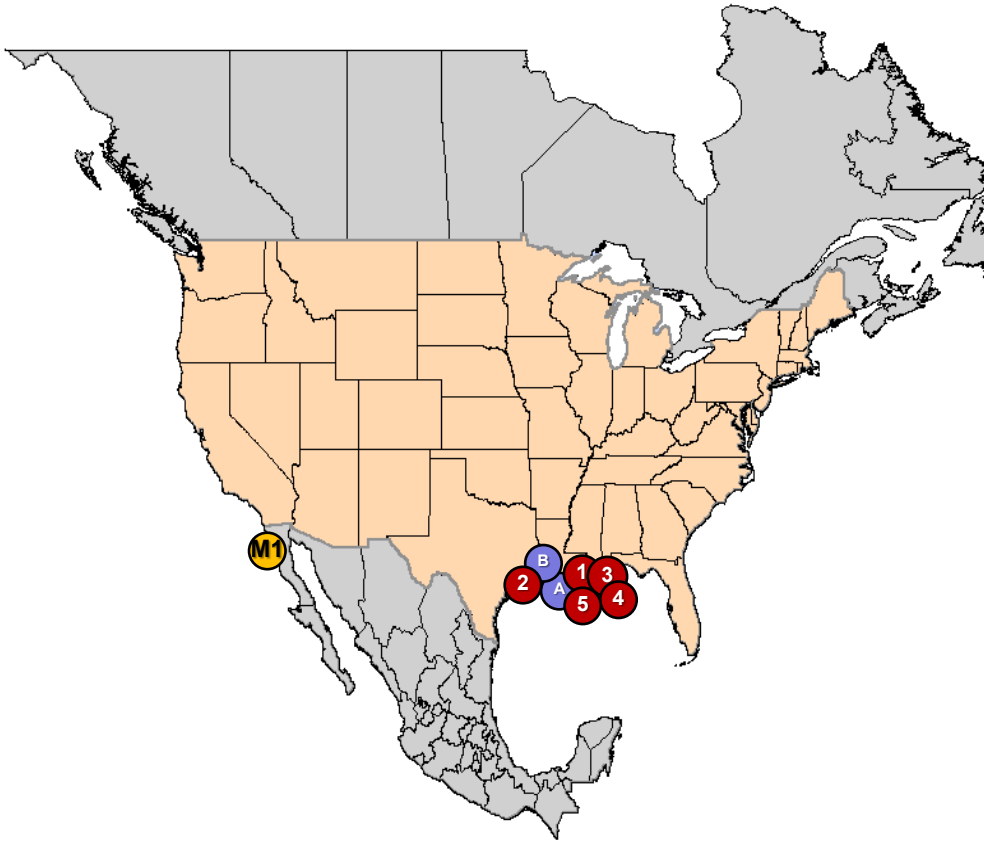
MC. **Gulf of Mexico:** 1.8 Bcfd (Delfin LNG)

CANADA - LNG IMPORT AND PROPOSED EXPORT FACILITIES

https://www.nrcan.gc.ca/energy/natural-gas/5683

As of April 5, 2022
No updates since previous issuance

North American LNG Export Terminals
Proposed



UNITED STATES

PROPOSED TO FERC
Pending Applications:
1. Cameron Parish, LA: 1.18 Bcfd (Commonwealth, LNG) (CP19-502)
2. Port Arthur, TX: 1.86 Bcfd (Sempra - Port Arthur LNG Trains 3 & 4) (CP20-55)
3. Cameron Parish, LA: 1.45 Bcfd (Venture Global CP2 Blocks 1-9) (CP22-21)
4. Cameron Parish, LA: .057 Bcfd (Venture Global Calcasieu Pass) (CP22-25)
5. Hackberry, LA: -0.45 Bcfd (Sempra - Cameron LNG Vacate T5 & modify T4) (CP22-41)

Projects in Pre-filing:
A. LaFourche Parish, LA: 0.65 Bcfd (Port Fourchon LNG) (PF17-9)
B. Plaquemines Parish, LA: 2.76 Bcfd (Delta LNG - Venture Global) (PF19-4)

CANADA
For Canadian LNG Import and Proposed Export Facilities:

https://www.nrcan.gc.ca/energy/natural-gas/5683

MEXICO (Projects in advanced planning/development stages)
M1. Baja California, MX: 0.4 Bcfd (Sempra – Energía Costa Azul Phase 1)

As of April 5, 2022
No updates since previous issuance

https://www.shell.com/media/news-and-media-releases/2022/shell-first-quarter-2022-update-note.html

Shell first quarter 2022 update note

Apr 7, 2022

The following is an update to the first quarter 2022 outlook. Impacts presented may vary from the actual results and are subject to finalisation of the first quarter 2022 results, published on May 5, 2022. Unless otherwise indicated, all outlook statements exclude identified items.

The prevailing volatility in commodity prices has led to larger ranges in the financial guidance for the quarter. Adjusted Earnings and Adjusted EBITDA updates are provided at a segment level while the CFFO update is provided at a Shell Group level.

This update note follows the 2021 segmentation to enable comparison with the fourth quarter 2021 results. From the first quarter results publication onwards we will align our reporting segments with our Powering Progress strategy and provide additional transparency in our Growth pillar. The Renewables & Energy Solutions business will be reported separately from Integrated Gas. Oil Products and Chemicals will be reorganised into two segments – Marketing and Chemicals & Products. The Shales assets in Canada will be reported as part of the Integrated Gas segment instead of the Upstream segment. There is no impact on a Shell Group level.

For the first quarter 2022 results, the post-tax impact from impairment of non-current assets and additional charges (e.g. write-downs of receivable, expected credit losses, and onerous contracts) relating to Russia activities are expected to be $4 to $5 billion. These charges are expected to be identified and therefore will not impact Adjusted Earnings. Details of the accounting treatment and impact of ongoing developments will be provided at the first quarter 2022 results announcement.

Integrated Gas (including Renewables and Energy Solutions)

Adjusted EBITDA

- Production is expected to be between 860 and 910 thousand barrels of oil equivalent per day (kboe/d) driven by maintenance activities, including the planned turnaround of one of the trains at Pearl GTL. The outlook includes ~ 50 kboe/d for the Canadian Shales assets.
- LNG liquefaction volumes are expected to be between 7.7 and 8.3 million tonnes.
- Trading and optimisation results for Integrated Gas (including Renewables and Energy Solutions) are expected to be higher compared to the fourth quarter 2021.
- Underlying Opex, for Integrated Gas (including Renewables and Energy Solutions) is expected to be between $1.7 and $1.9 billion.

Adjusted Earnings

- Pre-tax depreciation is expected to be between $1.2 and $1.4 billion.
- Taxation charge is expected to be between $700 and $1,100 million.
- Renewables and Energy Solutions segment results, which until now have been included in the Integrated Gas results, will be separately disclosed from the first quarter 2022 results announcement. Of the total Integrated Gas (including Renewables and Energy Solutions) Adjusted Earnings, Renewables and Energy Solutions contribution is expected to be between $100 and $600 million.

Upstream

Adjusted EBITDA

- Production is expected to be between 1,900 and 2,050 thousand barrels of oil equivalent per day. The outlook reflects a reduction of ~50 kboe/d related to the transfer of Canada Shales assets to Integrated Gas.
- Underlying Opex is expected to be between $2.3 and $2.7 billion.

Adjusted Earnings

- Pre-tax depreciation is expected to be between $2.8 and $3.1 billion.
- Taxation charge is expected to be between $2.8 and $3.3 billion.

Oil Products

Adjusted EBITDA

Marketing

- Marketing results are expected to be in line with the fourth quarter 2021.
- Underlying Opex is expected to be between $1.8 and $2.0 billion.
- Sales volumes are expected to be between 2,200 and 2,600 thousand barrels per day.

Products (Refining & Trading)

- Trading & Optimisation results are expected to be significantly higher than the fourth quarter 2021.
- The *indicative* refining margin is around $10.23/bbl, compared to $6.55/bbl in the fourth quarter 2021.
- Refinery utilisation is expected to be between 70% and 74%, better than the fourth quarter 2021 due to lower turnaround events.
- Underlying Opex is expected to be between $1.6 and $2.0 billion.
- Sales volumes are expected to be between 1,500 and 2,300 thousand barrels per day.

Adjusted Earnings

- Pre-tax depreciation is expected to be between $700 and $900 million of which approximately 50% for Marketing and 50% for Refining & Trading.
- Taxation charge is expected to be between $400 and $700 million of which approximately 20-30% for Marketing and 70-80% for Refining & Trading.
- As part of the ongoing re-segmentation efforts, the pipeline business is being transferred from Marketing to the Refining & Trading sub-segment as of the first quarter 2022.The pipelines business had earnings of approximately $150 million in the fourth quarter 2021. There is no impact on overall Oil Products Adjusted Earnings.

Chemicals

Adjusted EBITDA

- Chemicals margins are expected to be in line with the fourth quarter 2021 due to weaker unit margins from higher feedstock and utility costs offset by higher utilisation.
- Chemical sales volumes are expected to be between 3,100 and 3,600 thousand tonnes.
- Chemicals manufacturing plant utilisation is expected to be between 78% and 82%, better than the fourth quarter 2021 due to lower turnaround events.
- Underlying Opex is expected to be between $800 and $1,000 million.

Adjusted Earnings

- Pre-tax depreciation is expected to be between $250 and $300 million.
- Taxation charge is expected to be a credit of up to $100 million.
- Adjusted Earnings are expected to be in line with fourth quarter 2021 due to higher feedstock and utility costs offset by higher utilisation.

Corporate

- Corporate segment Adjusted Earnings are expected to be a net expense of $450 to $650 million for the fourth quarter. This excludes the impact of currency exchange rate effects.

Shell Group

CFFO

- Tax paid is expected to be between $1.8 and $2.3 billion.
- CFFO is expected to be negatively impacted by very significant working capital outflows as price increases impacting inventory have led to a cash outflow of around $7 billion. Reflecting the unprecedented volatility in commodity prices prevailing up to the end of the quarter, material additional movements could be seen in CFFO from margining effects on derivatives, changes in inventory volumes and in accounts payable and receivables.

Full-year price and margin sensitivities

The Adjusted Earnings and CFFO price and margin sensitivities are indicative and subject to change. These are in relation to the full-year results and exclude short-term impacts from working capital movements, production seasonality, cost-of-sales adjustments and derivatives. Sensitivity accuracy is subject to trading and optimisation performance, including short-term opportunities, depending on market conditions. These sensitivities are reviewed and updated annually.

$ million	Adjusted Earnings	CFFO
Integrated Gas		
+$10/bbl Brent	1,000	1,000
+$10/bbl Japan Customs-cleared Crude - 3 months	1,100	1,200
Upstream		
+$10/bbl Brent	2,500	3,000
+$1/mmbtu Henry Hub	250	325
+$1/mmbtu EU TTF	150	150
Refining		
+$1/bbl indicative refining margin	425	—

Indicative refining margin

The *indicative* margin is an approximation of Shell's global gross refining unit margin, calculated using price markers from third parties' databases. It is based on a simplified crude and product yield profile at a nominal level of refining performance. The actual margins realised by Shell may vary due to factors including specific local market effects, refinery maintenance, crude diet optimisation, operating decisions and product demand.

Gross refining unit margin is defined as the hydrocarbon margin net of purchased/sold utilities, additives and relevant freight costs, divided by crude and feedstock intake in barrels. It is only applicable to the impact of market pricing on refining business performance, excluding trading margin.

Actual historical indicative margins based on the 2021 indicative margin formula are available on the Refining & Trading page in the Quarterly Data Book.

Q1 2022: $10.23/bbl

Q4 2021: $6.55/bbl

Q3 2021: $5.70/bbl

Q2 2021: $4.17/bbl

Q1 2021: $2.65/bbl

The formula provided will be reviewed quarterly and typically updated annually, reflecting any changes in our refining portfolio.

UPDATED Calculation formula ($/bbl) - note that brackets indicate a negative sign

Brent*(29.0%) + MSW*(11.5%) + LLS*(16.0%) + Dubai*(33.5%) + Urals CIF EU*(7.5%) + NWE Naphtha (RDAM FOB Barge)*9.5% + NWE Mogas premium unleaded*13.0% + NWE Kero*12.0% + NWE AGO*27% + NWE Benzene*1% + Sing Fueloil 380 cst*7.5% + USGC Normal Butane*3.5% + USGC LS No 2 Gasoil*8.0% + USGC Natural Gas*(2.0%) +TTF Natural Gas*(1%)+ USGC CBOB*14.5% + RINS*(22.0%) + NWE Propylene Platts*1% – $0.92/bbl

Urals CIF EU benchmark weighting has reduced from 13% to 7.5% following the decision to stop buying Russian crude on the spot market. Shell has not renewed longer-term contracts for Russian oil, and will only do so under explicit government direction, but we are legally obliged to take delivery of crude bought under contracts that were signed before the invasion. The current volatile state of oil markets and the ongoing efforts to reduce term volumes of Russian sourced feedstock, may mean this formula will be updated on quarterly basis in 2022.

Consensus

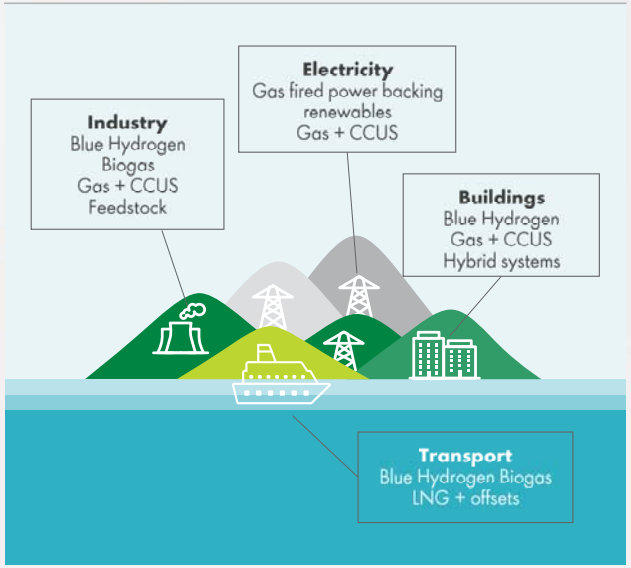
The consensus collection for quarterly Adjusted Earnings, Adjusted EBITDA according to the 2021 segmentation and CFFO & CFFO excluding working capital movements at a Shell group level, managed by Vara research, will be published on 28 April 2022. Second quarter 2022 consensus will be collected in July based on the revised (2022) segmentation.

LNG OUTLOOK

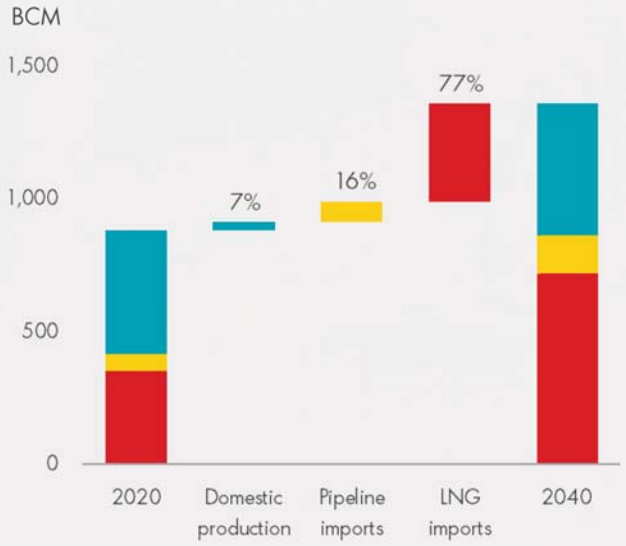
ENERGY SECURITY, EMISSIONS AND ECONOMIC GROWTH IN ASIA TO DRIVE FUTURE LNG DEMAND

- Gas has an important role in the journey to net-zero - as a partner to renewables for grid stability and an immediate option to lower emissions in hard-to-electrify energy demand sectors
- LNG needed for declining domestic gas production, coal to gas switching, substituting higher-emission energy sources, tackling air quality concerns – particularly in Asia

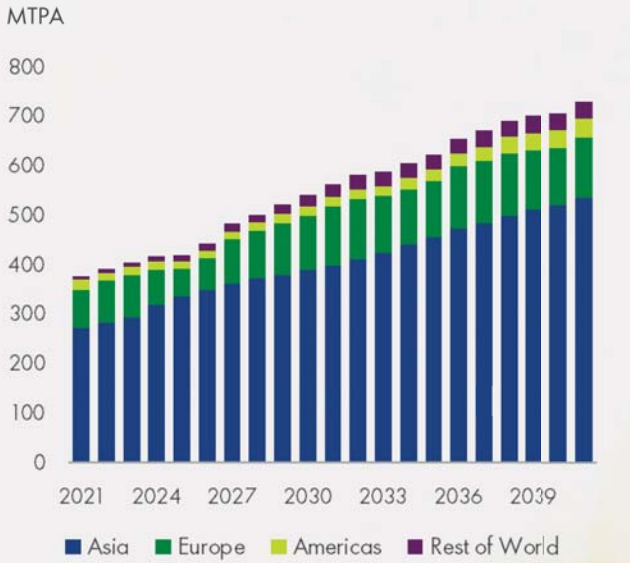
Use of gas in a decarbonised world



Asian gas demand by source



LNG imports by region



Source: Shell interpretation of Wood Mackenzie data

RUN THE BUSINESS

ACTIVELY ADDRESSING OPERATIONAL GREENHOUSE GAS EMISSIONS

Cutting operational emissions

- Pearl GTL, Qatar: significant emissions reductions already achieved, further reductions and other improvements planned through innovative catalysts
- QGC, Australia: reduced venting from dehydration units and improved efficiency on well workovers resulting in 2,500 tonnes lower methane emissions in 2021
- Real Time Production Optimisation saving fuel gas and improving efficiency across LNG sites

Managing GHG intensity

- Implementing carbon management framework for projects and operating assets
- The IG operated portfolio is well within the Group's 2025 target of ensuring methane emissions intensity is below 0.2%
- No routine flaring in IGs operated portfolio

Spearheading methane reduction initiatives

- Helping to deliver the Global Methane Pledge through oil and gas sector implementation working group
- Leading an industry working group to increase understanding of supply chain methane emissions data through detection and quantification field campaigns
- Joined industry project developing pioneering offshore North Sea drone-based methane emission quantification technology

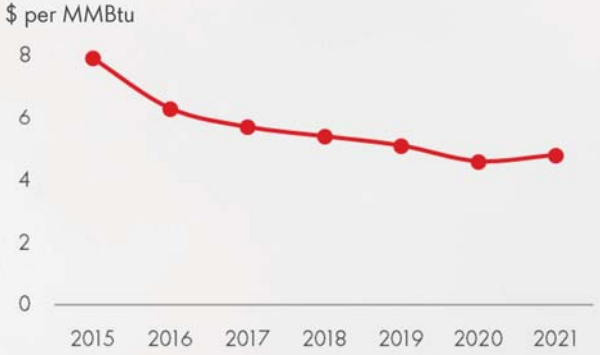
Picture credit: Flylogix

The improved efficiency on well workovers is relative to 2020.

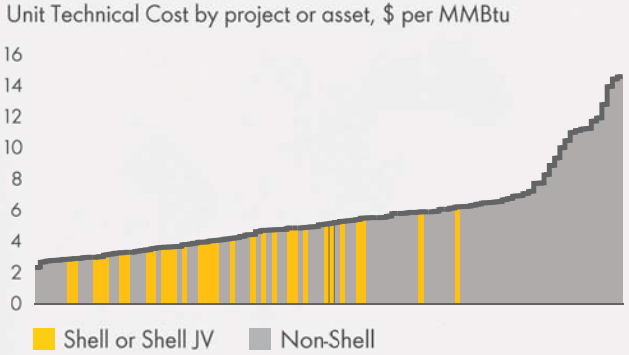
GROW THE BUSINESS

OPTIMISING CAPITAL TO CREATE VALUE

Unit technical cost reduced



Competitive project funnel



Robust project delivery

Structural decrease in cost

- UTC stable below target of $5/MMBtu set in 2015
- $4 billion per annum selective investment in competitive LNG assets, including backfill and expansion options
- Examples of competitive pre-FID projects: LNG Canada Expansion, Manatee

Commercially competitive

- Project funnel delivering LNG into Asia at total cost structure that is competitive in the industry
- We believe strong focus on scope 1 & 2 emissions reduction for new projects provides longer term competitive advantage and sustainability

Building new capacity

- LNG Canada will deliver 14 mtpa of supply into Asia. The LNG project is designed to have the lowest carbon intensity in the industry
- Nigeria LNG T7 will deliver 7.6 mtpa into Europe and Asia, with key supply from offshore assets
- Both projects to be onstream around the middle of the decade

Competitive funnel chart contains all projects and assets in the LNG industry. Non-Shell projects are a Shell interpretation of Wood Mackenzie data.

INTEGRATED GAS PORTFOLIO & MAJOR PROJECTS

KEY

- Liquefaction plants
- Liquefaction plants under construction
- Regasification terminals
- GTL
- On-stream gas projects

Project	Country	Shell share %	Peak production kboe/d	LNG capacity mtpa	Shell-operated
Under construction – Start-up 2022-2023					
Arrow - Surat Gas	Australia	50	backfill		
Colibri	Trinidad & Tobago	87	backfill		✓
Gorgon - Jansz	Australia	25	backfill		
QGC SW20+ Measure	Australia	62	backfill		✓
Oman Gas*	Oman	53	120		✓
Under construction – Start-up 2024+					
Gorgon - Jansz compression	Australia	25	backfill		
LNG Canada T1-2	Canada	40		14	
NLNG T7	Nigeria	26		7.6	
Pre-FID options					
Abadi	Indonesia	35	245	9.5	
East Med	Egypt	35	backfill		
LNG Canada Expansion	Canada	40		14	
Manatee	Trinidad & Tobago	100	backfill		✓
NWS - Browse	Australia	27	backfill		
Prelude - Crux	Australia	82	backfill		✓
Tanzania	Tanzania	25	[A]	15	✓

*FID of the project subject to the issuance of a Royal Decree by the government of the Sultanate of Oman confirming award of the Block 10 Concession Agreement.

Projects listed are a selection of our project portfolio. Peak production and LNG capacity are 100%. [A] to be confirmed.

INTEGRATED GAS

UPDATE SD21 TARGETS – PROGRESS MADE

Targets	Progress
~20% Opex reduction by 2022 vs 2019	Underlying 2021 IG Opex 15% lower than 2019
3 mtpa Develop new LNG markets by 2025	On track to deliver First LNG volumes supplied into Croatia
< $5/MMBtu Unit Technical Cost	Current project funnel average $4.8/ MMBtu
14% - 18% Average project IRR	Current project funnel average showing 14-18%

Targets	Progress
> 20% Market share in LNG bunkering sales by 2030	▪ 12 LNG fuelled crude and product tankers in operation, with a further 24 on order with expected delivery by end 2023 ▪ 5 bunker vessels in operation with a further 7 on order ▪ Completed over 700 global ship-to-ship bunkering at numerous ports in 10 countries ▪ First liquefied biomethane (BioLNG) bunkering trial in Rotterdam, together with CMA CGM
> 7 mtpa New LNG capacity onstream by the middle of the decade	Progress made on NLNG T7 and LNGC. 7.6 mtpa new capacity around middle of decade
GTL Uplift Aiming to grow value from GTL products	In Q3 2021 Pearl GTL achieved highest value uplift from GTL products on record

S**hell Integrated Business Deep Dive Feb 21, 2022 Wael Sawan.**

Items in "i*talics*" are SAF Group created transcript

Approx 9:18am MT. Analyst asks if the future equity percentage you have for the natural gas supply be less than the offtake percentage you have for the LNG? Wael, *".. typically, what I would say, as much as possible, having access across the entire value chain in as close of a percentage as you can, helps ensure that wherever value might rate at any point in time, you are capturing that value. So in general. Take our LNG Canada investment that you just referenced in the second question, we would look to be able to at least assure ourselves that we are not caught up by vagaries of one part of the market. let's say the gas supply, but we would want to have enough on the gas supply equity side to be able to make sure if gas prices go up there, we benefit from them while maybe disadvantaging the midstream or vice versa depending on where prices go. So we are not in the game of necessarily taking undue risk. we are in the game of creating integrated value chains that we can leverage as part of the broader portfolio*. "

Scotiabank asks on the media report of the infrastructure issue on LNG Canada? Wael " *on the issues around LNG Canada, a few things to say. Firstly, we're just, what is it 3 years, 3, 4 months since we have taken FID on that project. Just last oct we crossed the 50% completion on the site in Kitmat. Good progress and this was despite some real challenges with Covid. A lot of the modules coming from various yards in Asia being challenged. Credit to the team, I think some heroic efforts to be able to by and large continue to be on track. I think the challenge that you are referencing is more related to the pipeline – the Coastal GasLink pipeline. Multiple reasons for that which I won't get into in detail. This is a question better addressed to CGL themselves directly. But suffice it to say that we do have some concerns around the cost of the pipeline, we are having deep discussions with TCE, who oversee the pipeline and therefore tying to see how we can mitigate some of these cost increases. But so far, we see TCE getting back on the ball and making sure they are able to move at the pace that ensures that we have pipe before we have the plant. The last comment I will make on that pipeline. Some of you may have picked up the press the incredibly sad events of a couple days ago where we strongly, strongly condemn some of the violence that was shown. Thankfully, no one got hurt in Houston, British Columbia when a specific part of the pipeline around the Maurice River. 20 or so people attacked those who were earning a living at night and thankfully, they all came out well and safe. These events are unfortunate and I'm sure TCE and RCMP will be able to address the issue sufficiently*"

Sl 6. 8:36am MT. Sawan "*That brings me to the future. Our current integrated gas business is doing what we said we would do and is on the right trajectory. But we are not yet where we want to be. We have opportunities that we are pursuing to do even better, with our existing assets, but also to position our growth portfolio to one with even stronger returns with lower carbon emissions. Let me expand on that a bit more. For our capital spend, we need to be even more focused with a continued emphasis on value over volume. We have a capital budget of $4 to $5 billion a year in the short to medium term. We are making good progress on our two LNG capacity expansion projects under construction. In Canada, Canada LNG surpassed recently the 50% completion mark last October, after three years of construction. The project remains dedicated to have the first cargo by the middle of this decade*." He then speaks of Nigeria and that construction there is now firmly underway, and then says "*both these projects are competitively positioned for LNG growth markets in Asia. The same goes for most of our long term project funnel. We have several attractive expansion and backfill projects. A limited number of greenfield LNG projects and several promising low carbon new gaseous projects in early stages of development. For the pre-FID projects, we have an expected average internal rate of return of between 14% and 18%, and a unit technical cost below $5/mmbtu. With most of these projects clearly having lower costs than the average in the industry. These are good numbers, but you will understand that we strive to push the IRR to the higher end and to push the unit costs down even further. But the long term role of gas depends on efforts to abate emissions and develop cleaner pathways for gas. This is why we continually try to reduce the carbon intensity of our new projects. Take LNG Canada currently under construction. It will run on hydropower and is set to deliver the lowest carbon intensity in the entire industry."*

https://clubofmozambique.com/news/sadc-samim-de-escalation-in-cabo-delgado-to-begin-mid-april-213423/

SADC: SAMIM de-escalation in Cabo Delgado to begin mid-April

1:30 CAT | 04 Apr 2022

The Southern African Development Community Mission in Mozambique (SAMIM) is expected to begin its de-escalation to Scenario 5 of its deployment to combat acts of terrorism and violent extremism in the northern region of Cabo Delgado Province, in Mozambique.

The SAMIM mandate was extended for a further three months from 16 January to 15 April 2022 with additional capability requirements and additional integral personnel.

The Extraordinary meeting of the Ministerial Committee of the Organ Troika Plus the Republic of Mozambique took place on Sunday in Pretoria to continue discussions of the SADC member states regarding support to the Republic of Mozambique, in efforts to combat terrorism.

Delivering her opening remarks at the meeting, Minister of International Relations and Cooperation, Dr Naledi Pandor, said the Extraordinary SADC Summit in January 2022 made key decisions regarding the SAMIM deployment in Mozambique.

"The Summit extended the mandate of SAMIM with additional capability requirements and additional integral personnel for a further three months and thereafter de-escalation to Scenario 5 up to 15 July 2022.

"In that regard, member states made pledges of the required combat equipment and personnel to support SAMIM operations. An additional budget in support of the SAMIM operations was also approved," Pandor said.

The Minister commended the commitment and support of member states. She said that it signals "the premium we all attach to the fight against terrorism, which continues to threaten the gains that the region is making towards integration and socio-economic development".

Pandor said the Committee was supposed to make recommendations to the Extraordinary Organ Troika Summit Plus, planned for today.

"However, due to the unavailability of the Presidents of Botswana and Mozambique, the Summit segment had to be deferred to a later date," she said.

Additional Funding approved by EU

Other key decisions of the Summit were the approval of the Framework for Support to the Government of Mozambique in addressing terrorism, which encompasses the thematic areas of Politics and Diplomacy; Economic, Social Development and Humanitarian Assistance; Military, Information, and Intelligence; as well as Public Security, Law and Order.

“These are indeed key steps that would lead to the stabilisation of the affected areas in Cabo Delgado province. The magnitude of our work requires collaboration and support from our mother body the African Union, as well as our International Cooperating Partners,” the Minister said.

The European Union has also approved funding for SAMIM to benefit from the African Union Early Responses Mechanism under the auspices of the African Peace Facility.

“In this regard, we are pleased that the European Union has approved funding for SAMIM…also, the confirmation of the availability of non-lethal equipment at the Continental Logistics Base is welcomed,” Pandor said.

The Minister added that the Secretariat needs to make follow-ups on this matter as the equipment is urgently required in the theatre of operation.

The SAMIM Report has noted the encouraging progress made in its intervention, which has brought stability to most areas.

“We commend the cooperation amongst the forces on the ground. Despite this progress, there continues to be challenges, including the need for the fulfilment of pledged capabilities, and additional resources as this mandate will enter Scenario 5 phase,” the Minister said.

The SAMIM Report also provides an appraisal of the Framework for Support to the Government of Mozambique in Addressing Terrorism.

“There is indeed notable progress in all thematic areas, albeit with some challenges and capacity gaps. I trust that our deliberations today will assist in finding solutions, and closing the gaps,” she said.

Minister Pandor said that they were pleased with the inauguration of the Regional Counter-Terrorism Centre on 28 February 2022 in the United Republic of Tanzania, as an important step towards strengthening the regional security architecture, working in synergy with the Regional Early Warning Centre.

In her conclusion, the minister recognised and appreciated the presence of the SAMIM leadership whose input is critical to this work.

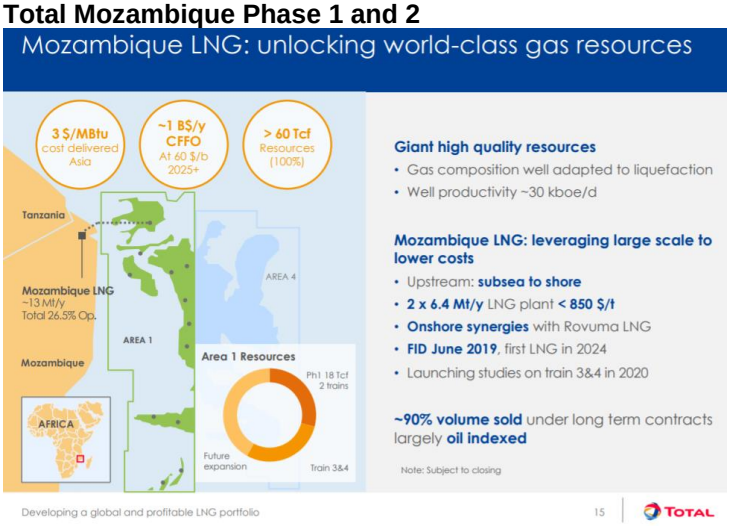
Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?

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



Source: Total Investor Day September 24, 2019

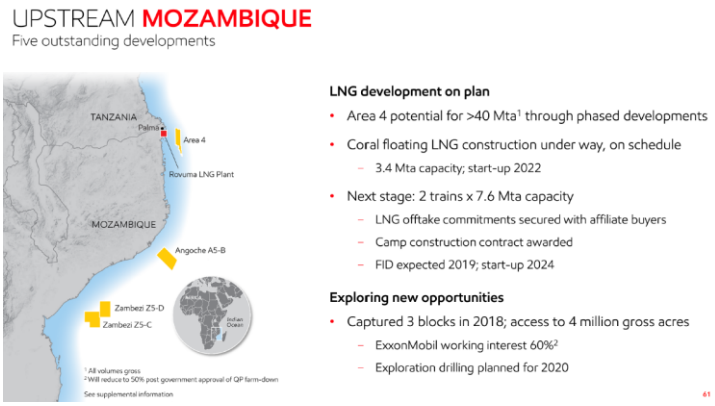
Total's Mozambique force majeure is no surprise, especially the need to the restoration of security and stability "in a sustained manner". Yesterday, Total announced [LINK] "*Considering the evolution of the security".* No one should be surprised by the force majeure or the sustained manner caveat. SAF 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 bf/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 timeline0 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



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

[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 wilt 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

Power	Renewable Power	Geothermal
	Solar PV	Ocean Power
	Onshore Wind	Nuclear Power
	Offshore Wind	Natural Gas-Fired Power
	Hydropower	Coal-Fired Power
	Bioenergy Power Generation	CCUS in Power
	Concentrating Solar Power	
Fuel Supply	Methane Emissions from O&G	Flaring Emissions
Industry	Chemicals	Pulp and Paper
	Iron and Steel	Aluminum
	Cement	CCUS in Industry and Transformation
Transport	Electric Vehicles	Transport Biofuels
	Rail	Aviation
	Fuel Consumption of Cars and Vans	International Shipping
	Trucks and Busses	
Buildings	Building Envelopes	Lighting
	Heating	Appliances and Equipment
	Heat Pumps	Data Centres and Data Transmission Networks
	Cooling	
Energy Integration	Energy Storage	Demand Response
	Hydrogen	Direct Air Capture
	Smart Grids	

Source: IEA

On Track More Efforts Needed Not on Track

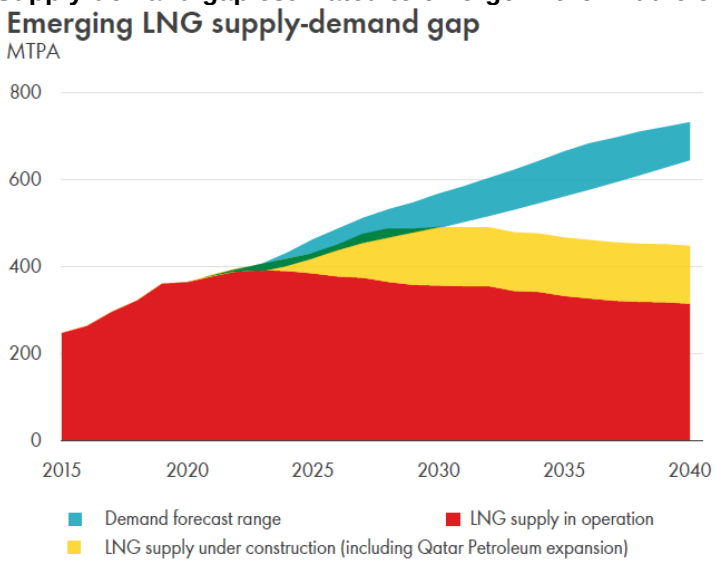
Source: IEA Tracking Clean Energy Progress, June 2020

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

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



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

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.

Executive summary

31.7 million metric tons

Projected global LNG imports in April 2022

32.9 million tons

Projected LNG imports to Northwest Europe and Italy for Summer 2022 (April-September)

-7.4%

Projected change in global LNG supply in April compared to March

Note: BNEF's JKM forecast will be updated in the May report.

Global LNG summer outlook (April – September)

- Global imports of liquefied natural gas (LNG) in April are forecast at 31.7 million metric tons, 7.1% lower than March. The end of winter will reduce gas demand for heating in Europe and North Asia. Yet, prices are likely to remain strong as Europe continues to attract LNG supply with enticing netbacks driven by Russian pipeline supply risks. High gas prices are leading to LNG demand destruction in North Asia, with China relying on cheaper domestic production and pipeline imports. Japan and South Korea could see lower LNG imports in April, possibly deferring their inventory rebuilds at current prices. South Asian demand is also being squeezed by high prices.
- Global LNG supply in April is forecast at 32.2 million tons, 7.4% lower than March. Maintenance at plants in Australia, the U.S. and Qatar will reduce supply. Nigerian production could fall further as pipeline sabotage could further hamper upstream gas supply. Output from Calcasieu Pass in the U.S. is expected to continue to grow through the summer given the rate of train start approvals. Shell's Prelude floating LNG facility off the coast of Australia is set to resume production in April.
- If Gazprom continues to meet its minimum pipeline gas contractual deliveries to European buyers and benchmark Dutch Title Transfer Facility (TTF) gas prices maintain their premium over Asian spot LNG prices to attract LNG flows, BloombergNEF projects Europe (Northwest Europe, Italy and Austria) could end the summer injection season with its gas storage 100% full.
- Weather risk to summer gas demand is higher for Asia than Europe. LNG demand in Asia could rise by 1.4 million tons in a hot summer and fall by 5.2 million tons in a cool summer. European demand varies much less, with a lower impact of temperatures on prices. All BNEF's weather scenarios result in full European gas storage at the end of the summer.

March in review

- Global LNG imports totaled 34.1 million tons in March, up 8.6% from February and 2.4% higher than March 2021. South Korea led the imports growth last month to support higher gas demand for heating as withdrawals from storage slowed down. Japan's imports fell most on lower heating demand. China saw a drop in imports as high prices and rising Covid cases reduced gas demand. Europe's imports stayed high as buyers offered high prices to attract cargoes.
- Total LNG exports reached 34.7 million tons in March, up 13% from February. Output from the U.S. reached record highs, incentivized by strong netbacks. Russian production stayed strong despite the prevailing sentiment around buyers shunning its cargoes. Malaysian and Indonesian output grew as upstream gas supply issues were resolved. Qatar's output in March reached five-year seasonal lows on the back of maintenance in February.
- Japan-Korea Marker (JKM) prices shot up in the first half of March due to heightened risk of lower pipeline gas supplies from Russia to Europe, on the back of Russia's invasion of Ukraine. LNG tanker spot-charter rates remained stable due to low cross-basin trade, as high prices reduced spot LNG demand in Asia.
- Shell signed a 20-year deal with Venture Global for supply from the proposed Plaquemines project in the U.S.

Summary Outlook summary

The gas market's view of the potential impact of the ongoing Ukraine war on Russian pipeline supplies to Europe will be the key driver of global LNG trade flows over summer 2022.

- BNEF sees the TTF futures market currently pricing in significant risk of a disruption to Russian gas pipeline supply over summer and winter 2022-23. Under the current outlook for futures gas prices, Northwest Europe and Italy will account for almost all the growth in LNG imports over the coming summer (April-September). BNEF's base-case scenario sees global LNG imports rising 6% year-on-year in summer 2022, reaching 193 million tons.
- If Gazprom meets its minimum contractual arrangements with European buyers – meaning there are no disruptions to Russian flows – and TTF prices continue to stay higher than Asian spot LNG prices, BNEF's base-case scenario projects that Europe* could end the summer injection season with gas storage levels reaching tank tops – 100% full.
- Asian LNG demand growth is at risk if European gas prices continue their trajectory and push up JKM spot prices. China is seeing multiple widespread Covid-19 outbreaks, slowing economic activity and a loss of appetite for LNG given high prices. LNG imports to China will see additional downside pressure from higher Russian pipeline imports and more local gas production. Japan and South Korea will see lower LNG imports over the summer period given higher coal and nuclear generation, respectively. South Asia and Southeast Asia, which were seen as LNG growth market hotspots for 2022, will now see lower demand as industry users switch to less pricey alternates such as fuel oil. Pakistan and Thailand could still see LNG growth, however, with Pakistan starting a new contract for Qatari supply and Thailand needing LNG imports as local gas production declines. Growth in India will be stagnant with these high prices.
- In a situation where gas traders start to get comfortable with growth in European gas storage levels over summer – without seeing a disruption to Russian gas supplies – TTF prices will start to fall rapidly from current levels and, in turn, so will JKM. Thus, demand destruction in Asia will ease, returning some of the LNG flows BNEF currently sees destined for Europe to Asia.

*Note: *Europe is defined as Northwest Europe, Italy, Austria unless stated otherwise.*

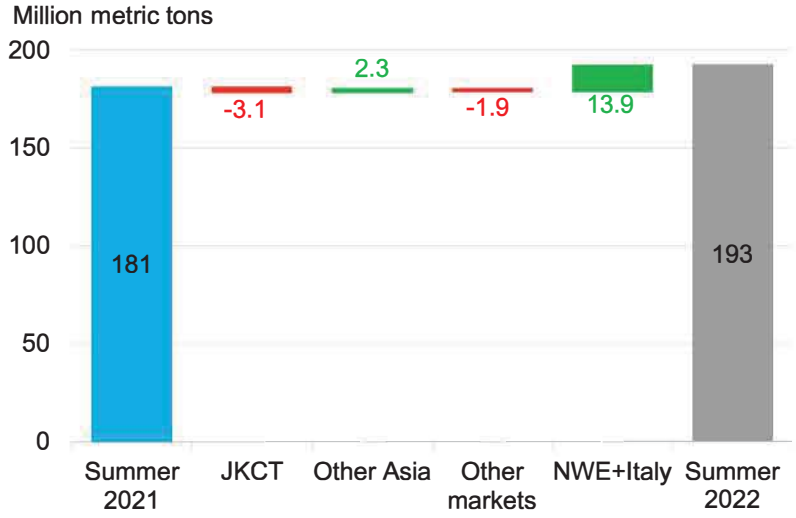
*For more, see BNEF's **Global Gas Summer Outlook** (web | terminal)*

32.9 million tons Northwest Europe and Italy's LNG needs this summer under BNEF's base-case scenario

6% Year-on-year growth in base-case global LNG demand in summer 2022

8% Year-on-year growth in global LNG supply in summer 2022

Change in global summer LNG imports



Source: BloombergNEF. Note: Summer here is the period from April to September. JKCT is Japan, Korea, China, Taiwan. NWE+Italy is Northwest Europe and Italy. Summer 2022 base-case forecast is based on normal weather, which is considered the 10-year seasonal average weather.

Summer Outlook summary

*For more, see BNEF's **Global Gas Summer Outlook** (web | terminal)*

Europe gas supply scenarios

- There are multiple downside risks to BNEF's base-case assumption of Russian gas flows to Europe. If Russian gas flows drop to 60% of BNEF's base case, Europe will end summer 2022 with its gas storage near the five-year average level. BNEF's base case currently assumes Europe will receive some diverted, Asia-bound U.S. LNG supply over the summer, given the wide TTF-JKM spread and reports of redirected cargoes. Should this not occur, Europe could see end-of-summer gas storage levels fall by 16 billion cubic meters (Bcm) versus the base case, ending the season 82% full.
- If Russia starts to reduce or even halt gas exports to Europe through the three-pipeline network, Europe could still meet its base-case LNG demand without having to encroach on LNG supply meant for Asia. If gas via Ukraine (Velke Kapusany, Slovakia) or Poland (Mallnow) stops flowing, there is enough LNG supply in the Atlantic to cover the backfill. However, if Nord Stream 1 stops exports to Europe, the region will need to actively capture Asia-bound LNG, which would be an expensive endeavor.

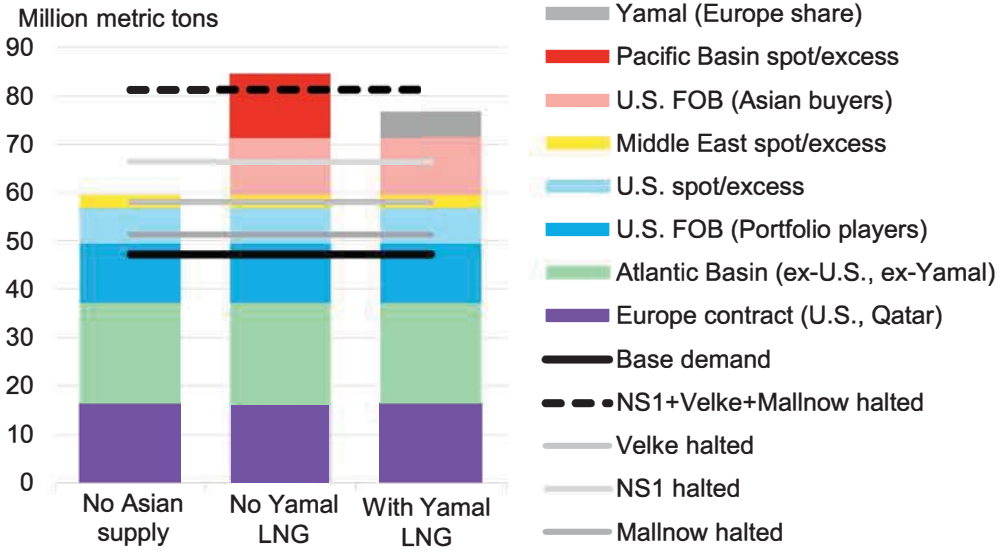
New projects and outage recoveries support summer LNG supply growth

- The U.S. will be the key source of LNG supply growth this summer, especially with strong output projected with attractive netbacks. Cheniere Energy's approval to boost LNG exports from its projects and the speedy commissioning of Venture Global LNG's Calcasieu Pass is adding to this upside volume in the LNG market.
- Norway's restart of LNG production at Hammerfest will drive additional growth in the Atlantic, while output from Qatar will be stable. Pacific Basin supply looks stronger than last summer, with Peru expected to run at normal capacity and resolution of upstream issues at Southeast Asian plants.

Weather variations over summer are a low risk for prices

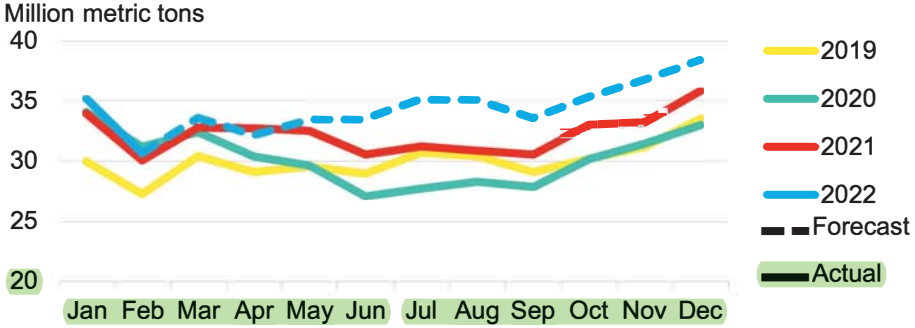
- Europe does not see wide variations in gas demand over the summer, with a lower impact of temperatures on prices. In contrast, a hot summer in Asia could raise North Asian LNG demand by 1.4 million tons from BNEF's base case, while a cool summer could see demand fall by 5.2 million tons. None of the weather combinations suggest a significant impact on Europe's end of summer storage.

Europe LNG demand and supply sources – with Russian piped gas scenarios



Source: BloombergNEF. Note: Europe includes Northwest Europe, Italy and Other Europe. FOB = free on board, NS1 = Nord Stream 1. NS1, Velke and Mallnow are the three key pipelines transporting Russian gas to Europe.

Global LNG supply seasonality



Source: BloombergNEF, Bloomberg Terminal's AHOY JOURNEY <GO>. Actuals as of February.

https://www.ft.com/content/b585ebc5-9dd1-4a7e-96a8-a1791894f140?shareType=nongift

Russia fears push Japanese gas importers to seek new suppliers

Sourcing gas from Malaysia, Australia and US could put Japan buyers in competition with Europe

The Sakhalin-2 project was developed by Russia's Gazprom and oil major Shell along with Japanese trading houses Mitsui and Mitsubishi, which respectively hold 12.5 and 10 per cent stakes in the project © Tass/Alamy

Antoni Slodkowski in Tokyo APRIL 9 2022

Japanese gas companies are preparing plans to source liquefied natural gas from Malaysia, Australia and the US in case of what they fear could be looming disruption of supply from LNG projects that Japan jointly developed with Russia.

The contingency plans could put the world's third-largest economy in direct competition with Europe for global gas supplies, highlighting Japan's focus on meeting its own energy needs despite its desire to show solidarity with Russia's western neighbours.

Japanese gas importers said that while some excess LNG cargos have been shipped to Europe since February, there was no prospect of major diversions from long-term contracts from producers such as Qatar because of Japan's energy security sensitivities.

The Japanese power companies are concerned about the security of supplies from Russia, despite pledges by Tokyo not to pull out of the 10mn-tonnes-a-year Sakhalin-2 LNG project and other joint developments with Russia on Sakhalin island north of Japan.

"In case of difficulties in procuring gas from Sakhalin, we are considering tapping our Malaysian suppliers to increase volume or to ask them to deliver supplies in advance," said Takayuki Yamane of Hiroshima Gas Co. The utility buys about 200,000 tonnes of its annual LNG from Sakhalin-2 in a contract that runs through March 2028.

Seeking new sources of LNG would put Japan in competition for scarce global supplies against European nations that are desperate to reduce their own heavy dependence on gas piped from Russia.

Japanese companies fear Russian supplies could be threatened by increasing international pressure to cut ties with Moscow over its invasion of Ukraine, or by potential Kremlin retaliation over other sanctions already imposed by Tokyo.

Japan on Friday banned Russian coal imports and vowed to follow the policy agreed on with G7 allies of reducing reliance on Russian energy overall.

Japan's regional gas utilities rely heavily on Russia to fuel some of the country's largest cities, including half of annual supplies used in Prime Minister Fumio Kishida's native Hiroshima, and about 10 per cent in Tokyo. In all, Russian LNG accounts for close to a tenth of Japanese gas imports.

In western Japan, Osaka Gas said it planned to bring forward gas procurement from suppliers in Australia and the US or buy on the spot market if there was disruption of shipments from Russia. The company serves Osaka, Japan's third largest city, which relies on Russia for about 4 per cent of its gas.

The worries over Russian gas highlight Japan's increased reliance on energy imports after the resource-poor nation idled most of its nuclear reactors following meltdowns at the Fukushima Daiichi plant in 2011.

The Sakhalin-2 project was developed by Russia's Gazprom and oil major Shell along with Japanese trading houses Mitsui and Mitsubishi, which respectively hold 12.5 and 10 per cent stakes in the project. Shell last month abandoned the venture, putting pressure on the Japanese stakeholders.

Koichiro Matsumoto, deputy cabinet secretary for public affairs at Kishida's office, said Japan would not abandon Sakhalin-2 and two other energy projects in Russia, even as it agreed with other G7 countries on the need to "reduce our reliance on Russian energy ".

"Whenever we talk about withdrawal, we always need to bear in mind who is going to backfill that," said Matsumoto, warning that companies of a "particular origin" could swoop in to take over Tokyo's stakes. Other Japanese officials have privately expressed concerns about Chinese companies replacing Japanese interests in the Russian far east.

It would cost at least Y1tn for Japan to replace Russian gas through spot market purchases, said a trade ministry official involved in oil and gas policy. "That is a crazy amount, and even then — because there's a global fight over LNG — it doesn't matter how much money you pay, you just can't buy those kinds of volumes," the official said.

Japan has been moving some of the surplus gas it has "overcontracted" for from suppliers to Europe, following a request by US President Joe Biden in February.

Since the start of this year, 29 LNG carriers chartered by Japanese companies have arrived at European import terminals, mostly from the US, according to Kpler, a commodity data firm. They unloaded an estimated 2mn tonnes of LNG, equivalent to about 6 per cent of the EU's LNG imports since the start of this year.

But people at major Japanese gas importers said any diversions would be limited.

"We are aware of the big risk which the import of Russian energy entails," Matsumoto at the PM's office said. Yet, he added, "we don't have the luxury of being able to produce oil or gas within our borders and that's why energy security is always on our minds."

Additional reporting by Harry Dempsey in London

https://investors.next-decade.com/news-releases/news-release-details/nextdecade-and-enn-execute-15-mtpa-lng-sale-and-purchase

APRIL 6, 2022

NextDecade and ENN Execute 1.5 MTPA LNG Sale and Purchase Agreement

BACK TO NEWS & EVENTS

HOUSTON--(BUSINESS WIRE)--Apr. 6, 2022-- NextDecade Corporation (“NextDecade”) (NASDAQ: NEXT) announced today the execution of a 20-year sale and purchase agreement (“SPA”) with ENN LNG (Singapore) Pte Ltd (“ENN LNG”), a wholly-owned subsidiary of ENN Natural Gas Co., Ltd. (“ENN”) for the supply of liquefied natural gas (“LNG”) from NextDecade’s Rio Grande LNG export project (“RGLNG”) in Brownsville, Texas.

Under the SPA, ENN LNG will purchase 1.5 million metric tonnes per annum (MTPA) of LNG indexed to Henry Hub on a free-on-board basis. The LNG supply will be from the first two trains at RGLNG with the first train expected to start commercial operations as early as 2026.

“We are pleased to announce this long-term LNG SPA with ENN, a premier Chinese energy company. As one of China’s largest private companies, ENN is a major participant in China’s energy market, and we look forward to a successful, long-term relationship with ENN,” said Matt Schatzman, NextDecade’s Chairman and Chief Executive Officer. “This SPA underscores the strength of NextDecade’s differentiated offering. The commercial momentum at RGLNG is accelerating and we believe the company is well placed to benefit from the strengthening LNG market.”

Zheng Hongtao, President of ENN Natural Gas Co., Ltd said, “This agreement secures additional volume for our LNG portfolio and helps ensure we can meet the growing demand for secure, flexible, and cleaner energy for our customers in the future. The signing of this SPA reflects ENN’s goal of promoting the global energy transition and is of significance given RGLNG’s low GHG emissions profile relative to other LNG supply sources. We look forward to working with NextDecade in the years to come.”

Assuming the achievement of further LNG contracting and financing, NextDecade anticipates making a positive final investment decision (“FID”) on a minimum of two trains of the Rio Grande LNG export project in the second half of 2022, with FIDs of its remaining three trains to follow thereafter.

About NextDecade Corporation

NextDecade Corporation is an energy company accelerating the path to a net-zero future. Leading innovation in more sustainable LNG and carbon capture solutions, NextDecade is committed to providing the world access to cleaner energy. Through our wholly owned subsidiaries Rio Grande LNG and NEXT Carbon Solutions, we are developing a 27 MTPA LNG export facility in South Texas along with one of the largest carbon capture and storage projects in North America. We are also working with third-party customers around the world to deploy our proprietary processes to lower the cost of carbon capture and storage and reduce CO_2 emissions at their industrial-scale facilities. NextDecade’s common stock is listed on the Nasdaq Stock Market under the symbol “NEXT.” NextDecade is headquartered in Houston, Texas. For more information, please visit www.next-decade.com.

About ENN Natural Gas

As one of the largest private energy companies in China, ENN Natural Gas Co., Ltd. (Stock code 600803.SH) operates over 250 city gas projects nationwide, has annual LNG distribution capacity over 10 bcm, and runs the first large-scale private LNG terminal in China -- Zhoushan LNG Terminal. Its business layout covers the entire natural gas value chain, including distribution, trading, storage and transportation, production, and engineering. Relying on industry best practice, ENN Natural Gas Co., Ltd. has built an intelligent operation platform for the natural gas industry – GreatGas.cn. It accelerates the aggregation of demand, resources, reserves, and delivery ecology of the natural gas industry, innovates and develops digital intelligence services, and promotes the digital intelligence upgrade of the natural gas industry. In 2021, ENN Natural Gas Co., Ltd.’s total natural gas sales volume was 37.2 bcm, accounting for approximately 10% of China’s total natural gas consumption.

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 bf/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

<u>One of the reasons why it went under the radar is that major LNG suppliers played stupid on the Mozambique impact.</u> 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 @olympe_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 to facilities. So we take care of a lot of what the customer needs".*

<u>There are other LNG supply delays/interruptions beyond Mozambique.</u> 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.*

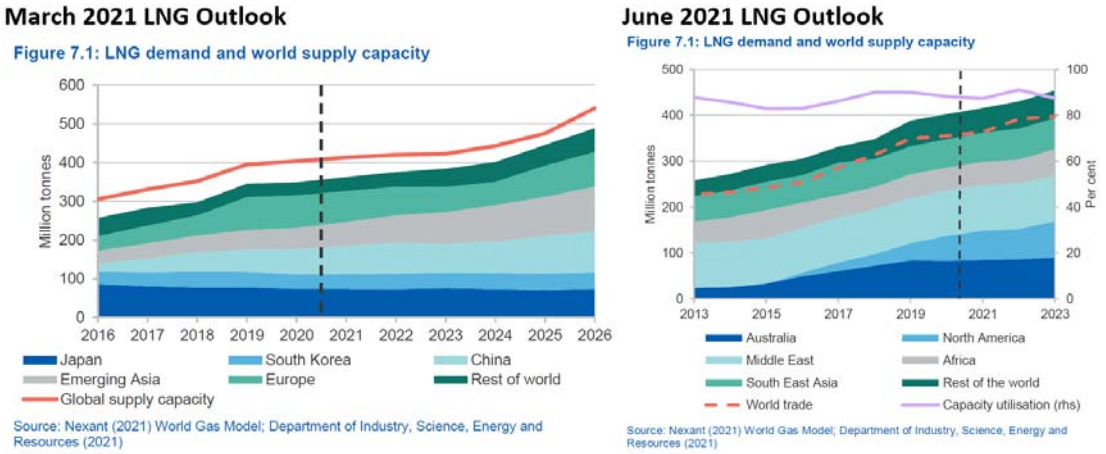
Common theme - new LNG supply is being delayed ie. [Total] Mozambique. Don't forget need capacity>demand due to normal maintenance, etc. Positive for LNG." (ii) Chevron's Gorgon. A big LNG story in H2/20 was the emergence of weld quality issues in the propane heat exchangers at Train 2, which required 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 Melkoeya 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 Melkoeya 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 Melkoeya 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

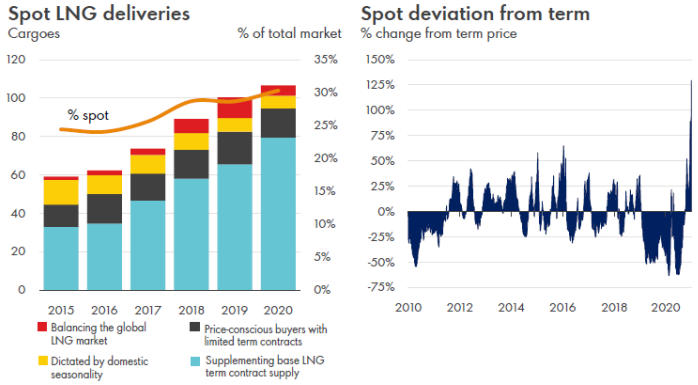


Source: Australia Resources and Energy Quarterly

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.

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 the 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.

Algeria to Expand Natural Gas Exports to Italy by Almost Half

2022-04-09 20:56:50.878 GMT

By Chiara Albanese and Alessandro Speciale

(Bloomberg) -- Algeria is set to boost its natural gas exports to Italy by almost 50% with a new deal due to be signed Monday, people familiar with the matter said.

The export boost will probably lead Algeria to replace Russia as Italy's largest natural gas supplier.

The north African country will boost its exports to Italy by 9 to 10 billion cubic meters per year by as early as the end of 2022, the people said, asking not to be named because the agreement isn't public.

Italy received around 21 billion cubic meters of gas from Algeria in 2021, compared to around 29 billion cubic meters from Russia.

A spokesman for Italy's government declined to comment.

The deal is due to be signed Monday, on the occasion of Italian Prime Minister Mario Draghi's visit to Algiers, where he is due to meet President Abdelmadjid Tebboune. The agreement includes increasing gas imports from Algeria and joint investments in renewables, Bloomberg reported Friday.

Read More: Italy to Boost Ties With Algeria in Rush to Shun Russian Gas

Italy, which relies on Russian imports for about 40% of its gas consumption, is seeking alternative supplies as European Union leaders consider taking a harsher stance against alleged Russian atrocities in the Ukraine war. Italy has said it would support a ban on Russian gas if the EU is united behind such a move.

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https://www.berliner-zeitung.de/news/soeder-will-der-ukraine-die-besten-waffen-liefern-li.221634

Söder wants to “supply the best weapons” to Ukraine

Bavarian Prime Minister warns against gas import stop "overnight".

AFP/kuri , 04/10/2022 - 06:43 am

listen to the article

Peter Kneffel/dpa

Markus Soder

CSU boss Markus Söder is pushing for an expansion of arms deliveries to Ukraine. "The best way to help Ukraine and end the inhumane atrocities is to deliver more and faster arms," the Bavarian Prime Minister told the Funke media group on Sunday. The federal government has so far provided insufficient material. "We have to deliver the best weapons and draw level with our NATO partners," demanded Söder.

"We have to scour the Bundeswehr's stocks, but also see what the industry could deliver immediately," said the CSU boss. "Weapons are the way to get quick and direct help." Ukraine fended off the large-scale Russian attack on Kyiv with drones and anti-tank weapons, "which were provided primarily by the Americans."

Söder called for Vladimir Putin to be brought to justice

At the same time, Söder warned of an import stop for Russian gas. "Our country is on the threshold of social and economic overload," he said. “We have to be careful that middle society does not fall into a downward spiral. If we now stop gas from Russia overnight, we will experience mass unemployment, social decline and democratic upheaval.”

It is necessary to become independent from Russia when it comes to energy. But the key is the schedule. "Skid marks for Germany are completely acceptable, but it must not take us out of the curve," warned the CSU leader. “I share the German government's view that we can do without oil and coal from Russia in the short term. With gas it is much more difficult. We have to consider the consequences for the majority of the population.”

Söder also called for Russian President Vladimir Putin to be brought to justice for the war of aggression against Ukraine. "Putin's breach of civilization is shocking for the entire world and a case for the war crimes tribunal in The Hague," he said.

https://www.zeit.de/politik/deutschland/2022-04/energiesicherheit-markus-soeder-fracking-atomkraft-russland?utm_referrer=https%3A%2F%2Fwww.google.com%2F

Markus Söder wants to "review fracking with an open mind"

Bavaria's Prime Minister wants to consider environmentally harmful fracking and let five nuclear power plants continue to run. In this way, Germany could become less dependent on Russian energy.

Apr 10, 2022 5:29 amSource: ZEIT ONLINE, AFP, ces 334 comments

hear article

Bavaria's Prime Minister Markus Söder (CSU) wants to reduce Germany's dependence on Russian gas. On the one hand, he wants to examine the fracking technology for gas production, which is banned in Germany. In addition, five nuclear power plants should continue to be operated, the CSU leader told the newspapers of the Funke media group: "We have to examine with an open mind what is possible and what makes sense. Bans could be lifted. As representatives of the people, we even have a constitutional duty to explore all options in such exceptional times of crisis to keep an unbiased eye on it."

Söder said that for Russian gas, Germany needed "the broadest possible replacement capacity - not just American liquid gas, which is of course more expensive than Russian". Germany must also look around in the Gulf region and among European partners. "And we have to examine the development of our own capacities," demanded Söder. "We must not completely rule out oil and gas production from existing capacities in Germany."

At the same time, Söder called for the continued operation of the German nuclear power plants. "It is a serious ideological mistake to shut down the three existing nuclear power plants at the end of the year. They supply electricity for ten million households," said the Bavarian Prime Minister. "We should keep five nuclear power plants running for five more years to have enough time to implement the ambitious renewable energy targets."

The Isar 2, Neckarwestheim 2 and Emsland power plants are currently still running . All are scheduled to be shut down by the end of the year.

The CSU leader expressed doubts about the assessment of Federal Minister of Economics Robert Habeck (Greens), according to which it would not be possible to continue operating the German nuclear reactors without interruption. "That seems to me to be an ideologically motivated position," said Söder. "We interviewed the operators and the supervisory authorities, and they clearly said that it is possible. If we want to make ourselves independent of Russian energy without damaging the German economy, then unfortunately we will need nuclear power as a bridge for a while."

The advocates of the nuclear phase-out argue, among other things, with missing fuel elements – they first have to be manufactured. According to a test report from the Ministry of Economic Affairs and the Environment, from which the Funke media group quotes, this could take until autumn 2023. In addition, there are doubts about the legality of a term extension.

https://www.trucking.org/news-insights/truth-about-trucking-turnover

Blog Post

The truth about trucking turnover

March 25 By ATA Staff

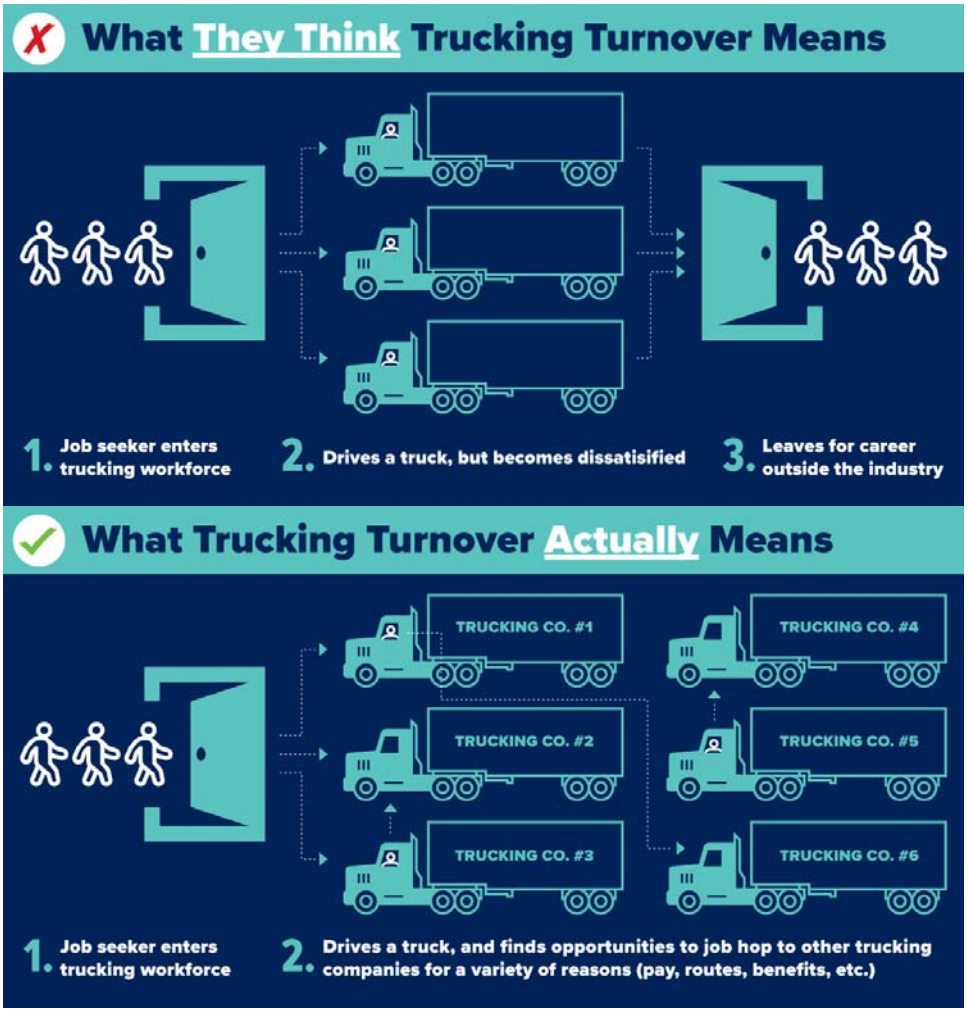
Many cite driver turnover rates, but few understand what they measure.

As post-pandemic supply-chain challenges have been thrust into the public consciousness, a new class of armchair experts has risen to explain all that ails America's trucking industry. Bureaucrats, essayists, and other cultural commentators—most of who have no real-world experience in trucking—are quick to explain why, for example, the industry faces a labor shortage as it strives to hire the next generation of professional drivers. They almost always point to high turnover rates as the empirical epicenter of trucking's labor woes.

Case in point: This recent New York Times essay, which oddly pinballs between saying the job is too dangerous on one hand, but that lifesaving technology is too Orwellian on the other hand. But setting these rhetorical contortions aside, the author also claims to have struck the nail on the head when it comes to driver turnover rates:

For decades, truckers have quit at alarming rates, leading to a chronic shortage. The turnover rate was at a staggering 91 percent in 2019, which means that for every 100 people who signed up to drive, 91 walked out the door. Plenty of people have the commercial driver's licenses needed to operate trucks, said Michael Belzer, a Wayne State University economist who has studied the industry for 30 years. "None of them will work for these wages," he added.

The problem? The author, Robin Kaiser-Schatzlein, fundamentally misunderstands what the annual truckload driver turnover rate measures. He, and many others before him, assume or imply the rate captures drivers leaving the industry and often cite poor pay or working conditions as the cause. That is wrong. If 91% percent of truck drivers were quitting the industry within a year, our economy would have collapsed a long time ago.



Turnover is not an indicator of people exiting the industry (we know, because ATA created and tabulated the metric). Rather, it more accurately measures drivers moving between carriers. It captures churn within the industry—not attrition from the industry. While retirements and exits account for a small percentage of turnover, by-in-large that is not what this figure is counting.

So why are drivers moving between fleets in such great numbers and frequency? There are many factors at play, but 1) demand and 2) opportunity are salient.

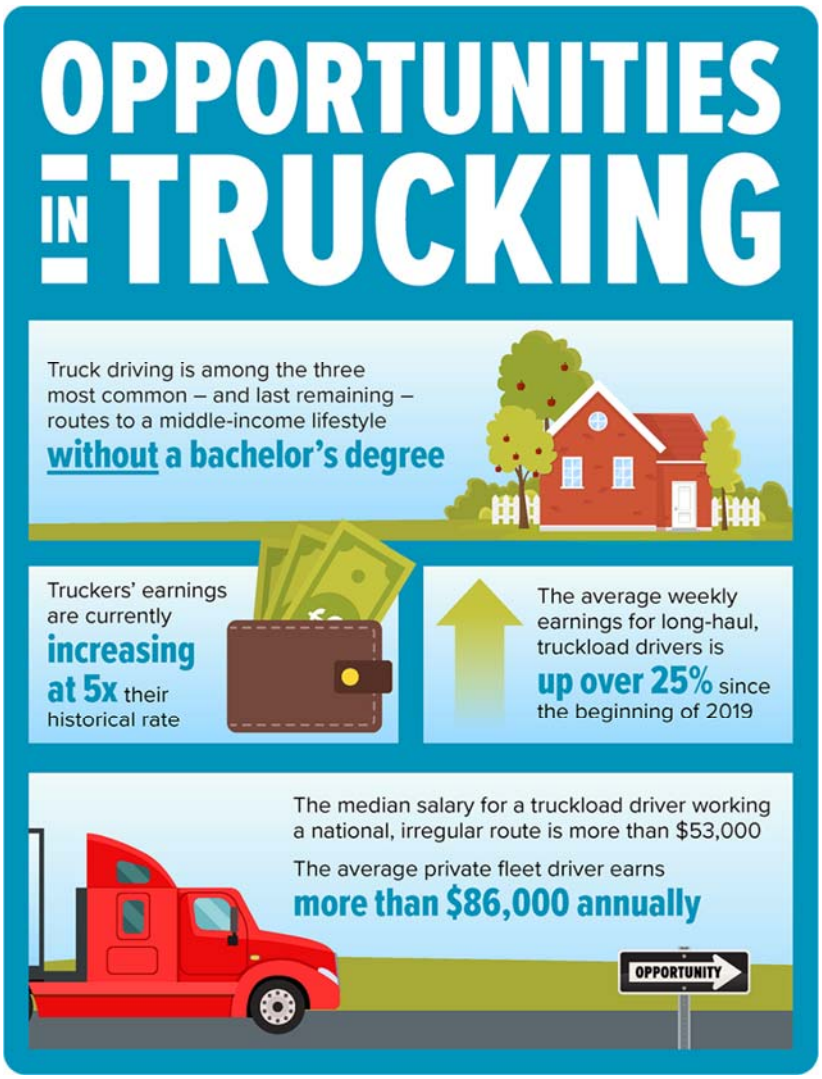
Trucking is an extremely tight labor market, for cyclical and structural reasons. Drivers are in high demand today—a fact exacerbated by COVID. To attract and retain drivers, fleets must increase pay, which is now happening at extraordinary levels. We're witnessing unprecedented pay increases across the industry, with weekly driver earnings surging at a rate more than 5x their historical average—up more than 25% for long-haul, truckload drivers since the beginning of 2019. Fleets are also offering sizable, five-figure sign-on bonuses and full benefits as they all compete for the same limited pool of drivers.

What does this mean for "turnover"? Driver A, who's been working for a fleet for only four months, knows he can jump to another carrier and get an immediate $15,000 sign-on bonus plus pay raise. Six months later, he can do the same thing again. This churn—or poaching, or whatever one wants to call it—is what inflates turnover in a tight labor market.

So when Kaiser-Schatzlein and others point to high turnover figures as a sign of truckers' job dissatisfaction, they're missing the mark. One could argue they're getting it backwards. In many respects, high turnover is an indicator of driver empowerment. When the labor market tightens, drivers find themselves in the driver's seat (pardon the pun), putting millions of hard-working men and women in control of their own destiny in ways they haven't been in years, if ever.

Many are seizing those opportunities that a booming freight economy present by moving to different companies for higher pay rates, bonuses, new routes or better benefits. No one can blame them, nor can anyone blame motor carriers who are competing vigorously with one another to hire good drivers and keep the ones they have.

The fact is truck driving remains one of the steadiest paths to the middle class without requiring a costly, four-year college degree. It cannot be off-shored, and its essentiality to our way of life and standard of living continue to grow over time. Kaiser-Schatzlein says high turnover exposes truck driving as a dystopian nightmare. For the millions of Americans who chose this profession, the ability to provide for their families without the burden of student loan debt is far from dystopian—it's the American Dream.



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The Canadian Press

'May not align:' Guilbeault pens letter to Suncor over oilsands mine expansion GHGs

Thursday

Federal Environment Minister Steven Guilbeault has warned Canada's biggest oilsands producer that its planned mine expansion may not meet climate targets.

In a letter released Wednesday to Mark Little, the head of Suncor Energy Inc., Guilbeault says the greenhouse gases that would be released by the company's proposed Base Mine expansion in northern Alberta may conflict with the government's carbon-reduction goals.

"Emissions at this level may not align with the pace and scale of emissions reductions required to achieve our targets," the letter says.

"I am of the opinion that the project, as currently proposed, would likely cause unacceptable environmental effects within federal jurisdiction."

Guilbeault also said the government is reviewing how fossil fuel projects are evaluated against each other.

"The government will develop guidance for how oil production projects subject to review ... should demonstrate that their emissions will be 'best in class,'" his letter says.

That statement came as the federal Liberals approved the Bay du Nord oil project off the coast of Newfoundland, which is projected to emit carbon dioxide at about one-eighth the rate of Suncor's proposal.

Suncor has been before the Impact Assessment Agency of Canada since July 2020 for its proposed extension. The project near Fort McMurray would continue to supply Suncor's upgraders with 25 years' worth of bitumen after the current mine is depleted.

Earlier this week, the company asked the agency for an extra nine months to file information required for the review. Suncor made the request, according to documents on the agency's website, to better align the project with Suncor's goals to be carbon-neutral by 2050 as well as the government's emissions reduction plan.

Related video: Australian court overturns ruling requiring mine approvals to weigh climate harm (Reuters)

"Some things have changed since we submitted the detailed project description," Suncor spokeswoman Sneh Seetal said in an email.

"We want the opportunity to ... review government initiatives and meet the requirements set out by the (assessment agency). We want the best project possible."

The letter from Guilbeault signals the government is serious about reducing emissions without necessarily reducing oil production, said Martin Olszynski, a University of Calgary law professor with long expertise in energy regulation. He points out the government is expected to soon reveal a cap on total emissions from the oil and gas sector.

"The question then becomes, Where are you going to get the best bang for your buck," he said.

It will be tough for oilsands projects to match the low carbon intensity of offshore production, Olszynski said, even if the carbon is stored underground or the energy to run them is carbon-free.

"Even with (carbon capture and storage) and small modular reactors, with all that money and risk you still don't get near the incredibly low GHG you get from the offshore. The business case seems pretty obvious."

Olszynski adds the government has yet to define what "best in class" means -- whether oilsands projects will be compared with each other or if all oil developments will be included.

Seetal said the mine extension project can be modified to meet both the government's new policy environment and the company's increased climate-change ambition.

"We're taking more time to improve the project in alignment with our strategy which includes meeting our emissions reduction ambition to be net-zero ... and meet the additional requirements set out by the (impact assessment) agency over the past year."

This report by The Canadian Press was first published April 7, 2022.

-- Follow Bob Weber on Twitter at @row1960

Bob Weber, The Canadian Press

https://www.canada.ca/en/environment-climate-change/news/2022/03/2030-emissions-reduction-plan--canadas-next-steps-for-clean-air-and-a-strong-economy.html

2030 Emissions Reduction Plan – Canada's Next Steps for Clean Air and a Strong Economy

From: Environment and Climate Change Canada

Backgrounder

On climate change, the science is clear—we must take action now to protect our planet and secure our children's future. But the economics are clear too: to build a strong, resilient economy for generations to come, we must harness the power of a cleaner future.

Canada's average temperatures are rising at twice the global average, and three times in the North. Polluting less and taking steps to remove excess carbon from the air will be one of the most important undertakings in Canada's history. Last year, Canada increased its ambition on climate change under the Paris Agreement. The 2030 Emissions Reduction Plan describes the many actions that are already driving significant reductions as well as the new measures that will ensure that we reduce emissions across the entire economy to reach our emissions reduction target of 40 to 45 percent below 2005 levels by 2030 and put us on a path to achieve net-zero emissions by 2050.

Reaching our climate goals will also help ensure that the conditions are right to seize the growing economic opportunities of a clean future. This Plan includes $9.1 billion in new investments, and reflects economy-wide measures such as carbon pricing and clean fuels, while also targeting actions sector by sector ranging from buildings to vehicles to industry and agriculture. These measures will drive reductions while creating jobs for workers and opportunities for businesses. The Government of Canada is working with Canadians in all parts of the country and all sectors of the economy to achieve Canada's climate goals and seize new economic opportunities.

In developing the 2030 Emissions Reduction Plan, we heard from over 30,000 Canadians—young people, workers, Indigenous Peoples, business owners, and more. Their key message to the Government of Canada is that climate action must go hand in hand with keeping life affordable for Canadians and creating good jobs. This plan reflects that vision.

The 2030 plan is designed to be evergreen—a comprehensive roadmap that reflects levels of ambition to guide emissions reduction efforts in each sector. As governments, businesses, non-profits, and communities across the country work together to reach these targets, we will identify and respond to new opportunities.

This is the first Emissions Reduction Plan issued under the *Canadian Net-Zero Emissions Accountability Act*. Progress under the plan will be reviewed in progress reports produced in 2023, 2025, and 2027. Additional targets and plans will be developed for 2035 through to 2050.

Publishing this Plan fulfills a requirement under the *Act*, and presents Canada's bold next steps forward as we keep our air clean and build a strong economy for everyone.

In the 2030 plan, the Government of Canada is taking action by:

Helping to reduce energy costs for our homes and buildings, while driving down emissions to net zero by 2050 and boosting climate resiliency through the development of the $150-million Canada Green Buildings Strategy. Working with provinces, territories, and other partners, the strategy will build off existing initiatives and set out new policy, programs, incentives, and standards needed to drive a massive retrofit of the existing building stock, and construction to the highest zero-carbon standards. Under the 2030 Emissions Reduction Plan, the Canada Greener Homes Loan program will receive an additional investment of $458.5 million. Together, these measures and others outlined in the 2030 Emissions Reduction Plan, will help Canadians reduce emissions, save money on renovations and heating and cooling costs, and stimulate well-paying jobs in the economy.

Empowering communities to take climate action by expanding the Low Carbon Economy Fund through a $2.2-billion renewal. The funding aims to leverage further climate actions from provinces and territories, municipalities, universities, colleges, schools, hospitals, businesses, not-for-profit organizations, and Indigenous communities and organizations. The renewed Low Carbon Economy Fund will also support climate action by Indigenous Peoples with a new $180-million Indigenous Leadership Fund. This will support clean energy and energy efficiency projects led by First Nations, Inuit, and Métis communities and organizations. In addition, the Government of Canada will support regional growth opportunities and energy systems transformation through a $25-million investment in Regional Strategic Initiatives that will drive economic prosperity and the creation of sustainable jobs in a net-zero economy.

Making it easier for Canadians to switch to electric vehicles through additional funding of $400 million for zero-emission vehicles (ZEVs) charging

stations, in support of the Government's objective of adding 50,000 ZEV chargers to Canada's network. In addition, the Canada Infrastructure Bank will also invest $500 million in ZEV charging and refueling infrastructure. The Government of Canada will provide $1.7 billion to extend the Incentives for Zero-Emission Vehicles (iZEV) program will make it more affordable and easier for Canadians to buy and drive new electric light-duty vehicles. The Government will also put in place a sales mandate to ensure at least 20 percent of new light-duty vehicle sales will be zero-emission vehicles by 2026, at least 60 percent by 2030 and 100 percent by 2035. To reduce emissions from medium- and heavy-duty vehicles (MHDVs), the Government of Canada will aim to achieve 35 percent of total MHDV sales being ZEVs by 2030. In addition, the Government will develop a MHDV ZEV regulation to require 100 percent MHDV sales to be ZEVs by 2040 for a subset of vehicle types based on feasibility, with interim 2030 regulated sales requirements that would vary for different vehicle categories based on feasibility, and explore interim targets for the mid-2020s.

Driving down carbon pollution from the oil and gas sector. The International Energy Agency's Net-Zero Scenario sees continued oil and gas use globally, but with demand declining significantly in the coming decades. Competing in this future means not only diversifying our energy mix, but also offering lower carbon oil and gas to the world. The Plan presents modelling of the most economically efficient pathway to meeting Canada's 2030 target. Drawing on that modelling, the Plan includes a projected contribution from the oil and gas sector of emission reductions to 31 percent below 2005 levels in 2030 (or to 42 percent below 2019 levels). This will guide the Government of Canada's work with industry, provinces, Indigenous partners, and civil society to define and implement the cap on oil and gas sector emissions. Following consultations, the cap will be designed to lower emissions at a pace and scale needed to achieve net zero by 2050. The government is also working to reduce oil and gas methane by at least 75 percent by 2030, supporting clean technologies to further decarbonize the sector, and working to create sustainable jobs.

Powering the economy with renewable electricity. Electrifying more activities—from vehicles to heating and cooling buildings to various industrial processes—will be needed for Canada to transition to net-zero emissions by 2050. To do that, Canada needs to both increase the supply of electricity and ensure that all electricity generation has net-zero emissions. While Canada already has one of the cleanest electricity grids in the world, with over 80 percent produced by non-emitting sources, transitioning the remaining generation to clean sources will reduce greenhouse gas (GHG) emissions, improve local air quality, and create jobs and economic growth with the construction of new power sources and retrofitting and fuel-switching existing power plants and buildings. To

ensure success, the Government of Canada will work with provinces and utilities to establish a Pan-Canadian Grid Council to promote clean electricity infrastructure investments. Additionally, the Government of Canada will invest an additional $600 million in the Smart Renewables and Electrification Pathways Program to support renewable electricity and grid modernization projects and $250 million to support predevelopment work for large clean electricity projects, in collaboration with provinces.

Helping industries develop and adopt clean technology in their journey to net-zero emissions. Canada is positioning its industries to be green and competitive. This includes developing a carbon capture, utilization, and storage (CCUS) strategy; introducing an investment tax credit to incentivize the development and adoption of this important technology; and investing $194 million to expand the Industrial Energy Management System to support ISO 50001 certification, energy managers, cohort-based training, audits, and energy efficiency–focused retrofits for key small-to-moderate projects.

Investing in nature and natural climate solutions with an additional $780 million for the Nature Smart Climate Solutions Fund to deliver additional emission reductions from nature-based climate solutions. The Fund supports projects that conserve, restore, and enhance Canada's vast and globally significant endowment of wetlands, peatlands, and grasslands to store and capture carbon. To stimulate demand for other projects across Canada that reduce GHG emissions, sequester carbon, and generate economic opportunities, Canada will continue to develop protocols under the Federal GHG Offset System, including for projects that focus on nature-based climate solutions.

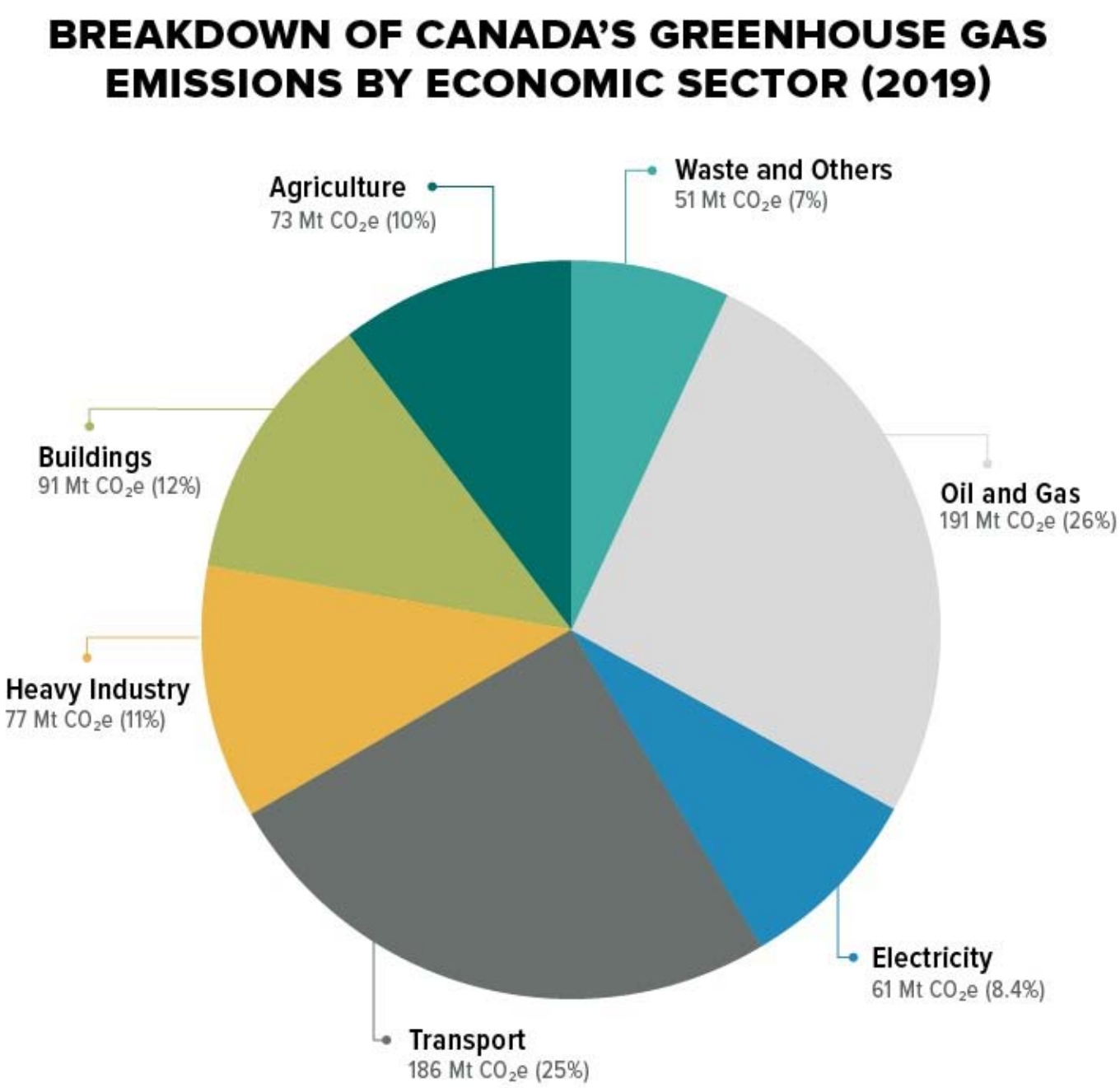
Supporting farmers as partners in building a clean, prosperous future. Farmers are key to reaching Canada's climate targets, making sure family businesses can succeed in a changing climate, and keep food on people's plates. That is why the Government of Canada is making a significant new investment to support a sustainable future for Canadian farmers. That includes an investment of $470 million in the Agricultural Climate Solutions: On-Farm Climate Action Fund to help farmers adopt sustainable practices such as cover crops, rotational grazing and fertilizer management. The Government is also investing $330 million to triple funding for the Agricultural Clean Technology Program which supports the development and purchase among farmers of more energy-efficient equipment. The Government will also invest $100 million in transformative science for a sustainable sector in a changing climate and to support the sector's role in the transition to a net-zero economy for 2050, including fundamental and applied research, knowledge transfer, and developing metrics.

Maintaining Canada's approach to pricing pollution. Putting a price on pollution is widely recognized as the most efficient means to reduce greenhouse gas emissions. Without a strong price on pollution, achieving Canada's environmental goals would require additional actions. To enhance long-term certainty, the 2030 Emissions Reduction Plan commits the Government of Canada to exploring measures that help guarantee the price of pollution. This includes investment approaches, like carbon contracts for differences, which enshrine future price levels in contracts between the Government and low-carbon project investors, thereby de-risking private sector low-carbon investments. This also includes exploring legislative approaches to support a durable price on pollution.

Canada's Emissions Profile

Canada's current emissions profile and historical trends are helpful for providing a clearer picture of where Canada needs to be by 2030 and 2050. As a party to the United Nations Framework Convention on Climate Change (UNFCCC), Canada is required to regularly develop, update, and publish its national inventory of human-sourced emissions. This is done through the Government of Canada's National Inventory Report (NIR), which is updated and submitted to the UNFCCC annually before April 15. Due to a data lag associated with GHG accounting and reporting, the most recent NIR (published in April 2021) documents Canada's annual GHG emissions estimates for the 1990–2019 period.

According to the NIR, total national greenhouse emissions were 730 million tonnes of carbon dioxide equivalent (Mt CO_2 eq) in 2019. Oil and gas and transportation continue to be Canada's largest sectoral emissions sources, with buildings, heavy industry, and agriculture following closely behind. Canada's 2019 emissions were approximately 9 Mt lower than in 2005. Since 2005, emissions in the oil and gas and transportation sectors have increased by 20 percent and 16 percent, respectively. Decreases in electricity (48 percent), heavy industry (12 percent) and waste and others (10 percent) have offset these increases.



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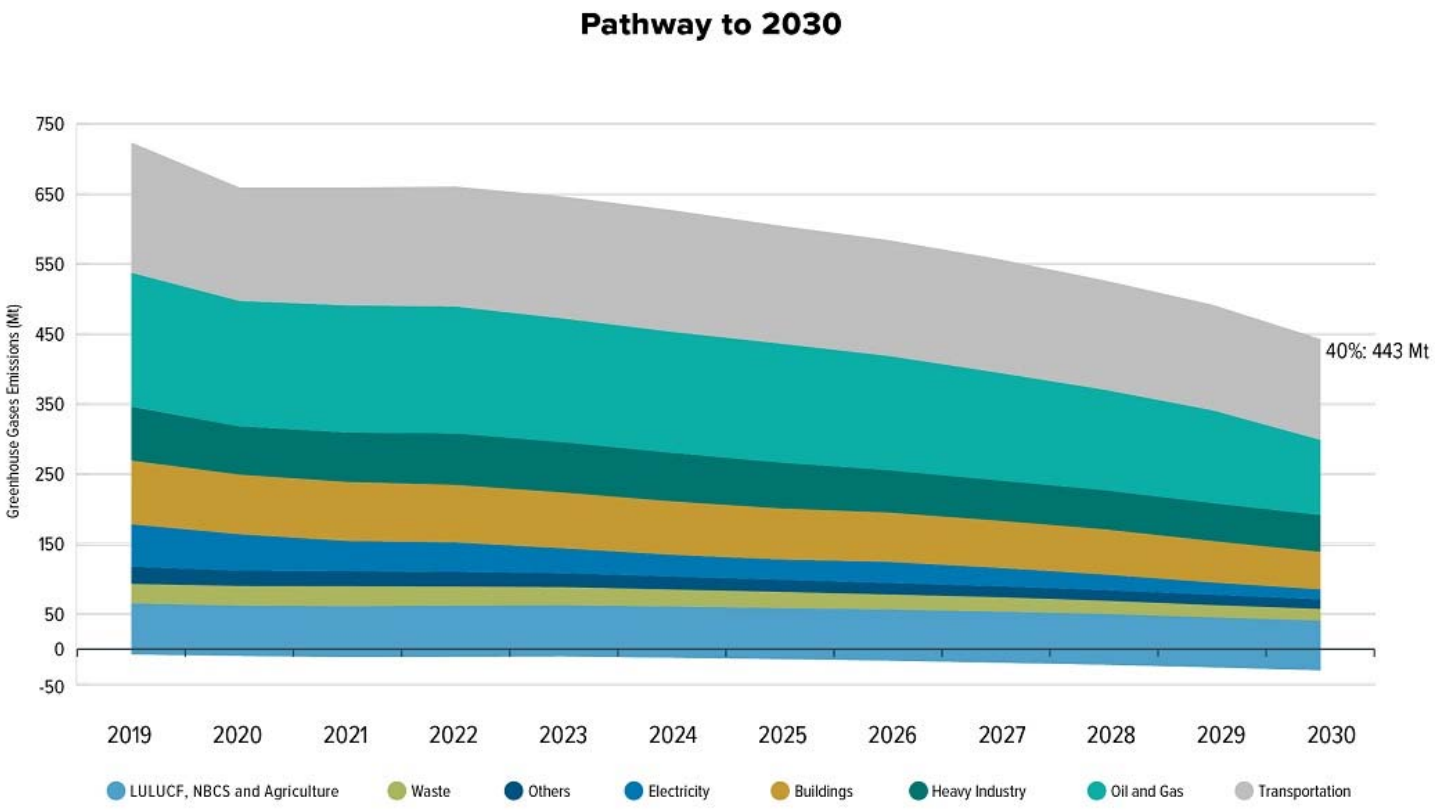

Long description

What does cutting emissions mean for Canadians?

- **Good, sustainable jobs:** The Royal Bank of Canada (RBC) analysis suggests that the clean economy could create between 235,000 and 400,000 new jobs in Canada by 2030. By 2025, clean tech's contribution to Canada's GDP is expected to grow to $80 billion from $26 billion in 2016. Trends show Canada has been able to grow its economic output while decreasing emissions from some industries.
- **A strong, resilient economy for everyone** by positioning Canada to succeed in a world moving to clean, net-zero options. There is a major market evolution taking place, and Canada has the choice now to lead or be left behind.
- **Making life more affordable for the middle class:** Programs such as the Climate Action Incentive payments, which put money back in the pockets of families, while ensuring homes and buildings are energy efficient, will help homeowners save money on monthly bills.
- **Clean air:** Everyone deserves clean air to breathe. Each year, poor air quality is costing Canadians their lives, not to mention $120 billion due to

illness and lost productivity. Reducing emissions improves air quality and quality of life.

- **Fighting inequality:** People marginalized through social, economic, cultural, gender, political or other factors are disproportionately impacted by climate change. Taking action to decarbonize the economy and fight climate change provides an opportunity to address these inequities.
- **More opportunities to enjoy nature:** Protecting nature such as through the Nature Smart Climate Solutions Fund not only helps fight climate change, but also means Canadians can enjoy the natural beauty of this country. From spending time with family to the benefits for mental health, this will boost Canadians' quality of life.
- **Climate resilience:** Nature-based solutions, such as the conservation of wetlands, pull carbon out of the air, while also mitigating flood risks, protecting Canadians and communities from climate risk.

How Canada's Emissions Modelling Works

The 2030 Emissions Reduction Plan uses economic modelling to show a pathway to achieving Canada's 2030 target, including the potential for each sector of the economy to reduce emissions by 2030. This modelling approach is widely used by other countries in charting their courses to net zero.

Broken down by sector, Canada's pathway to 2030 is based on today's understanding of the potential for each sector to reduce emissions by 2030. Given the economic interdependencies and interactions among sectors, the focus for further actions may shift in the future as Canada further decarbonizes, costs of abatement technologies change and other opportunities emerge.

The Government of Canada expects that the measures outlined in the 2030 Emissions Reduction Plan, together with complementary climate actions from the provinces and territories, municipalities, the financial community, Indigenous Peoples, innovators, and businesses—as well as with the acceleration of clean technology innovation and deployment—will lead to further emission reductions by 2030. Canada will continue to update its modelling projections, including in Canada's next Biennial Report in December 2022 and first 2030 Emissions Reduction Plan progress report expected in late 2023.

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https://www.transmountain.com/news/2022/update-april-2022-capacity-announcement-for-the-trans-mountain-pipeline-system?utm_source=Trans+Mountain+Updates&utm_campaign=f73a4b4e5c-EMAIL_CAMPAIGN_12_2_2021_15_6_COPY_01&utm_medium=email&utm_term=0_f287e4f791-f73a4b4e5c-30713878

Update: April 2022 Capacity Announcement for the Trans Mountain Pipeline System

Tags Operations

Apr. 5, 2022

Total system nominations for the Trans Mountain Pipeline system are apportioned by 11 per cent for April 2022.

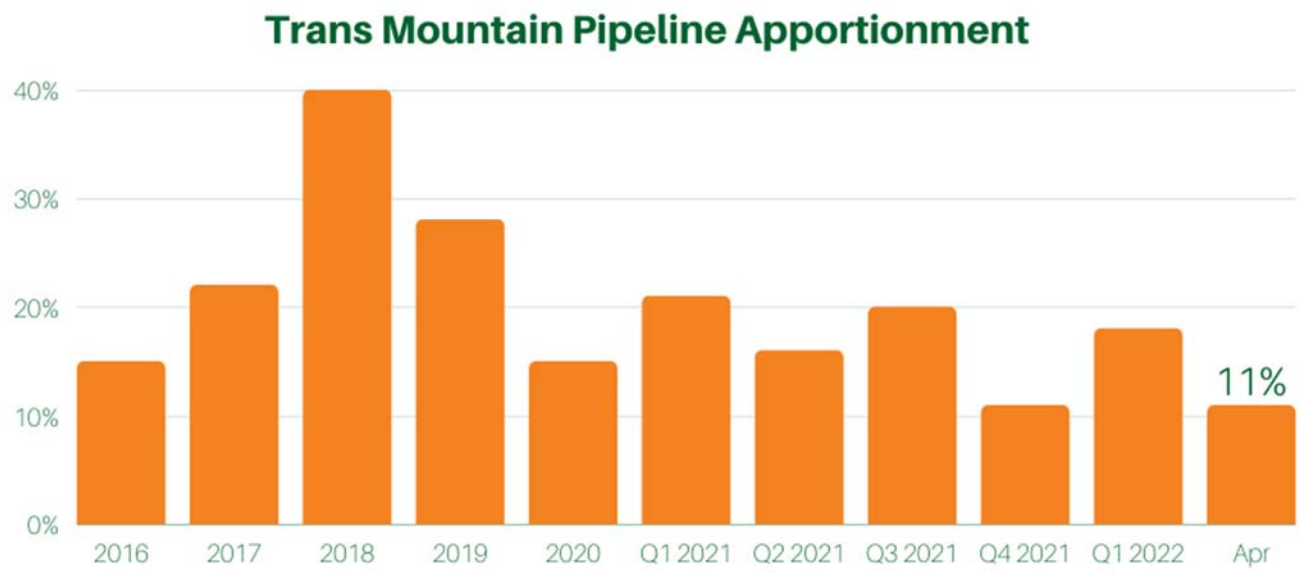
What is pipeline ‘apportionment’ and why is it important?

The energy sector around the world works on a monthly cycle. The Trans Mountain Pipeline is part of that cycle. Apportionment describes the amount of demand shippers place on the pipeline in excess of its available capacity. Here’s a step-by-step guide to the apportionment determination that’s carried out every month for the existing Trans Mountain Pipeline system.

- Each month our shippers submit requests for how much petroleum (crude oil and refined products) they want to ship through the pipeline to service their customers. These requests are called ‘nominations’.
- Based on shippers’ nominations, we then determine the ‘capacity’ available on the pipeline for the month. Determining pipeline capacity is complex. Capacity is affected by, among other things, the types of products that have been nominated, any pipeline system maintenance activities that will reduce flows that month and carry-over volumes that haven’t completed their transit of the pipeline by month’s end.
- Based on available pipeline capacity and the volume of shipper nominations we received, we calculate apportionment using a method accepted by the Canada Energy Regulator and forming part of our tariff. A tariff includes the terms and conditions under which the service of a pipeline is offered or provided, including the tolls, the rules and regulations, and the practices relating to specific services.
- If shipper nominations are less than pipeline capacity, the apportionment percentage to that destination is “zero” and all the product volumes nominated by shippers are accepted to be transported that month.
- If shipper nominations exceed pipeline capacity, the apportionment is a percentage greater than zero.

Trans Mountain Pipeline apportionment by the numbers

Apportionment of the Trans Mountain Pipeline system has been a regular monthly occurrence for the past decade. The chart below shows the apportionment for 2016, 2017, 2018, 2019, 2020, 2021 and apportionment to date for 2022.



When a pipeline experiences significant and prolonged apportionment like in the case of the existing Trans Mountain Pipeline, it's one signal that more capacity is needed. Apportionment can bring with it a discounting of prices as producers compete to sell what they can through the pipeline before having to use another pipeline or other modes of transport to another, less profitable market. It can also mean the buyers at the end of the pipeline are forced to source their shortfall of supply from alternate, less desirable sources.

Business case for expansion is strong

There is a strong and clear business case supporting the Trans Mountain Expansion Project. Our shippers have made long-term contract commitments ranging from 15 to 20 years that will underpin the cost of construction and the operating costs. The additional capacity offered by the expansion will be used to supply more crude oil and refined products markets in British Columbia and Washington State and to offshore markets in the Asia Pacific. Pipeline design and operations, including emergency response and preparedness for tanker movements are world-class, providing a safe and reliable supply of petroleum products to the markets served by the Trans Mountain Pipeline.

https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/oil/040722-opec-crude-production-falls-as-sanctions-take-bite-out-of-russia-s-p-global-survey

- 07 Apr 2022 | 23:59 UTC

OPEC+ crude production falls as sanctions take bite out of Russia: S&P Global survey

HIGHLIGHTS

OPEC output up 60,000 b/d, offset by 160,000 b/d non-OPEC drop

Gap between oil output, quotas grows to a record 1.24 mil b/d

Kazakhstan, Libya disruptions also contribute to OPEC+ decline

- Author Herman Wang Rosemary Griffin

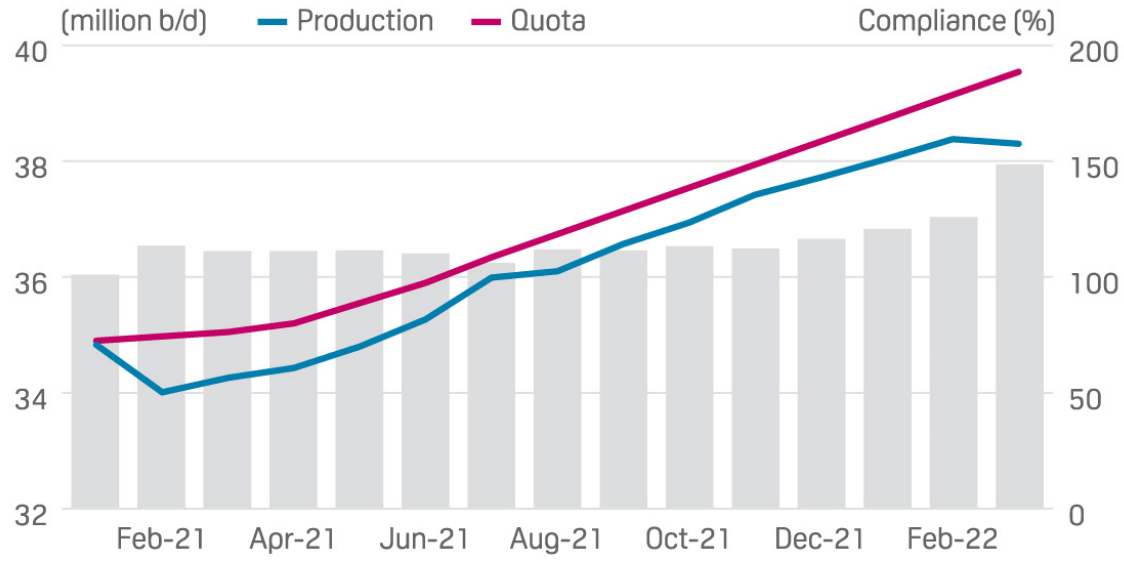
Crude oil production by OPEC and its allies fell in March from February for the first time in more than a year, the latest S&P Global Commodity Insights survey found, contributing to a tightening market thrown in flux by the Russia-Ukraine war.

Western sanctions began biting into primary non-OPEC partner Russia's oil flows, and sizable disruptions in Kazakhstan and Libya also led the coalition's production lower, the survey found.

OPEC's 13 members raised output by 60,000 b/d to 28.73 million b/d, but that was more than offset by a 160,000 b/d decline by the bloc's nine allies, who pumped 13.91 million b/d.

With the net decline of 100,000 b/d, the widening gap between the OPEC+ production and quotas jumped to a record-high 1.24 million b/d—casting further doubt on the group's ability to meet growing global oil demand, which many analysts expect to return to pre-pandemic levels in 2022.

OPEC+ QUOTA COMPLIANCE SOARS AS SHORTFALLS WIDEN



Source: Platts OPEC+ survey by S&P Global Commodity Insights

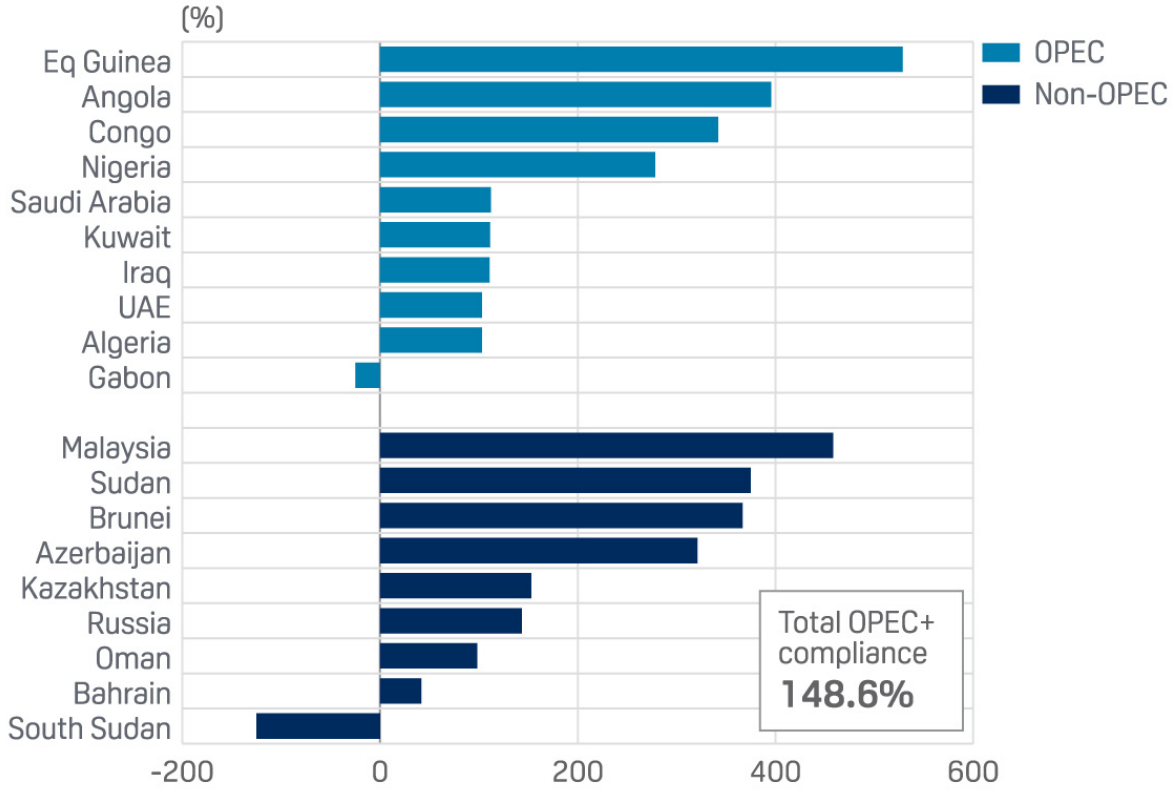
The drop was the first since February 2021, when Saudi Arabia instituted a unilateral voluntary 1 million b/d cut to help prop up the market that at the time was still wobbly from resurgent coronavirus cases.

Since August, with the global economy on firmer footing, the producer group has stuck to a plan of gradually raising quotas by 400,000 b/d each month but has faced mounting pressure from the US, India, Japan, and other major oil-consuming nations for accelerated supplies to cool off rising energy prices.

But several countries have not hit their output targets in months, and March's shortfall resulted in a compliance figure of 148% for the 19 members with quotas, according to S&P Global calculations. Iran, Libya, and Venezuela are exempt from quotas under the OPEC+ agreement.

Concerns over OPEC+ production capabilities, in combination with the Russia-Ukraine war and recovering oil demand, have helped lift the Platts Dated Brent benchmark to nearly $140/b in recent weeks, although it dropped to $98.28/b April 7 as the International Energy Agency announced a 120 million barrel stock release from strategic petroleum reserves, led by the US. OPEC+ officials have attributed the volatility to geopolitics, and not market fundamentals.

OPEC+ MARCH COMPLIANCE



Source: Platts OPEC+ survey by S&P Global Commodity Insights

Production woes

OPEC kingpin Saudi Arabia, one of just a handful of countries that appears to hold significant spare capacity, kept its production steady in March at 10.25 million b/d, the survey found. Ship-tracking data indicated its exports fell during the month, but several analysts surveyed cited increased refinery runs and said storage volumes may have also increased.

Non-OPEC leader Russia, hit by western sanctions targeting its financial sector, saw its crude production fall to 10.04 million b/d, the survey found. Many traders have stopped transacting with Russian commodities, and analysts expect production shut-ins to build up in April and May, though some flows are shifting to Asian customers.

Both Saudi Arabia and Russia had quotas of 10.33 million b/d for the month.

Neighboring Kazakhstan saw the biggest fall in production, with storm damage to the loading terminal of the CPC pipeline causing major disruptions. Kazakh output was 1.55 million b/d in March, and officials have warned of further impacts in April from the outage.

Libyan output fell 50,000 b/d in March, with the country's largest oil field, Sharara, shut from March 3-8 due to civil unrest. The Elephant, or El Feel, field remains offline due to sabotage, officials have said.

Iraq, Venezuela up

Among the gainers, Iraq saw the largest rise, pumping 4.34 million b/d, slightly under its quota of 4.37 million b/d.

The country brought back its giant West Qurna 2 field from maintenance about two weeks early in early March and also saw its Nassiriya field disrupted for a few days at the start of the month because of protests. Sources and satellite data indicated considerable inventory builds.

Venezuela posted a 40,000 b/d gain in March, the survey found, benefitting from the arrival of two cargoes of Iranian condensate that enabled a production rebound in the Orinoco Belt. Extracting the region's extra-heavy crude requires diluent, which US sanctions have made it difficult for Venezuela to obtain, although Iran has been sending cargoes under a bilateral agreement.

The survey figures, which measure wellhead production, are compiled using information from oil industry officials, traders, and analysts, as well as reviewing proprietary shipping, satellite, and inventory data.

OPEC+ crude production

OPEC	Mar-22	Change	Feb-22	March Quota	Compliance
Algeria	0.99	0.02	0.97	0.992	103.1%
Angola	1.16	-0.02	1.18	1.435	395.7%
Rep of Congo	0.26	-0.01	0.27	0.306	342.1%
Equatorial Guinea	0.09	0.00	0.09	0.12	528.6%
Gabon	0.19	0.00	0.19	0.175	-25.0%
Iraq	4.34	0.08	4.26	4.37	110.6%
Kuwait	2.62	0.02	2.60	2.639	111.2%
Nigeria	1.52	-0.03	1.55	1.718	278.4%
Saudi Arabia	10.25	0.00	10.25	10.331	112.1%
UAE	2.97	0.02	2.95	2.976	103.1%
OPEC MEMBERS WITH QUOTAS	24.39	0.08	24.31	25.06	141.5%
EXEMPT MEMBERS					
Iran	2.55	-0.01	2.56	exempt	exempt
Libya	1.07	-0.05	1.12	exempt	exempt
Venezuela	0.72	0.04	0.68	exempt	exempt
TOTAL OPEC	28.73	0.06	28.67	n/a	n/a

NON-OPEC	Mar-22	Change	Feb-22	March Quota	Compliance
Azerbaijan	0.58	-0.02	0.60	0.675	320.9%
Bahrain	0.20	0.02	0.18	0.193	41.7%
Brunei	0.08	-0.01	0.09	0.096	366.7%
Kazakhstan	1.55	-0.10	1.65	1.605	152.9%
Malaysia	0.43	0.01	0.42	0.559	458.3%
Oman	0.83	0.01	0.82	0.829	98.1%
Russia	10.04	-0.07	10.11	10.331	143.5%
Sudan	0.06	0.00	0.06	0.071	375.0%
South Sudan	0.14	0.00	0.14	0.122	-125.0%
TOTAL NON-OPEC	13.91	-0.16	14.07	14.48	161.0%

OPEC+ MEMBERS WITH QUOTAS	38.30	-0.08	38.38	39.54	148.6%
TOTAL OPEC+	42.64	-0.10	42.74	n/a	n/a

Unit: million b/d

Source: Platts OPEC survey by S&P Global Commodity Insights

https://www.aa.com.tr/en/economy/opec-does-not-have-capacity-to-boost-production-nigerian-minister/2558693

OPEC does not have capacity to boost production: Nigerian minister

Energy transition should be slower to ease prices while putting alternatives in place, says Timipre Marlin Sylva

Tuba Sahin |08.04.2022

ABUJA, Nigeria

The Organization of the Petroleum Exporting Countries (OPEC) is not in favor of high crude prices, but it does not have any extra capacity to boost production, according to the Nigeria's state minister for petroleum resources.

"It is not something that you can open a tap for at this point. You must have the additional capacity, the idle capacity to bring on, but it takes a lot of work and a lot of investment for it to have additional production," Timipre Marlin Sylva told Anadolu Agency.

Timipre Marlin Sylva, Minister of State for Petroleum Resources of Nigeria

The oil production of most countries, including Nigeria which is also an OPEC member country, is already at a peak, he said, emphasizing that criticism aimed at OPEC was misplaced.

"If there is anything we can do to produce more, OPEC will be the first to produce more. But unfortunately, this capacity doesn't exist in most OPEC countries," he said.

OPEC takes no pleasure in seeing high oil prices and wants them at a level that would be optimal for both consumers and producers, Sylva asserted.

A lack of investment in the sector was one of the reasons for the capacity limit, he said, defending a slower energy transition in a bid to ease prices.

Sylva underlined that investments were pulled out from the global oil and gas sector quickly without putting an alternative in place.

"We are not against energy transition, but let it be a gradual process. Let us carry on a little bit slowly. We will get there, but let's make sure we are able to take all factors into consideration before we move," he said.

Turning to ties between Turkiye and Nigeria in the field of energy, Sylva said Turkiye purchases a great deal of liquefied natural gas (LNG) from Nigeria thanks to agreements sealed in the past.

He said Nigeria is struggling to meet Turkiye's request for additional LNG supply as its production facilities are not operating at full capacity.

In the meantime, though, Nigeria is in talks with other international suppliers to ensure that Turkiye gets the additional amount before the end of this year, he added.

"We are actively working on how we can move up the production capacity of LNG. There is also an expansion project that is going to increase the output capacity from 22 million tons per year to 30 million tons, so we will have enough LNG to give Turkiye some additional volumes," Sylva said.

He also conveyed Nigeria's desire to attract more Turkish investors, saying there is a dire need of investment in the field of oil and gas.

Sylva explained that Nigeria discovered 206 trillion cubic feet (tcf) of gas reserves accidentally while looking for oil.

"We want to increase our gas reserves from 206 tcf to about 600 tcf, so there are a lot of opportunities for Turkish companies that can come in and get involved in the exploration of gas or in the up-stream side," he said.

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Russia Oil Output in Early April Drops Most in Almost Two Years

2022-04-07 12:50:11.443 GMT

By Bloomberg News

(Bloomberg) -- Russia's oil output dropped the most in almost two years in early April as some buyers looked elsewhere for their energy supplies following the invasion of Ukraine.

If this is maintained for the whole of the month, it would be a decline of about 500,000 barrels a day from March, the most profound drop in Russia's output since it made deep cuts alongside OPEC+ in the initial stages of the Covid-19 pandemic.

The country pumped an average 1.436 million tons a day of oil from April 1 to 6, according to data from the Energy Ministry's CDU-TEK unit that were seen by Bloomberg. That's equivalent to some 10.52 million barrels per day, a reduction of 4.5% from the March average of 11.01 million barrels per day, according to Bloomberg calculations.

In May 2020, the first month of the post-pandemic agreement between the Organization of Petroleum Exporting Countries and its allies, Russia cut production by a historic 17.1%.

Russia, which accounts for about 10% of global production, has been under severe economic pressure since the invasion of Ukraine. Sanctions have become tougher in recent days, with the European Union planning to ban coal imports from the country.

Only a few countries, including the U.S. and the U.K., have explicitly banned purchases of Russian oil and petroleum products. Some other traditional buyers are shunning the fuel, while others, notably in Asia, continue to purchase the country's energy supplies.

More Russian cargoes now heading to China, India, Korea and Japan, where customers either can't resist the temptation of cheaper crude, or are struggling to find replacement barrels.

Russia's domestic demand for oil-products has also dropped amid uncertainties over the country's economic growth. That double blow has forced refineries to reduce their processing volumes amid overstocking.

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Excerpt https://www.state.gov/briefings/department-press-briefing-april-8-2022/

Department Press Briefing – April 8, 2022

JALINA PORTER, PRINCIPAL DEPUTY SPOKESPERSON

APRIL 8, 2022

Let's take our last question from Elizabeth Hagedorn.

QUESTION: Hi, Jalina. One follow-up for you on Iran. Can you say whether the Biden administration shares General Milley's view that the IRGC's Qods Force specifically should remain on the U.S. list of terror organizations?
MS PORTER: Thanks, Elizabeth. I'd say that the President shares the chairman's view that IRGC Qods Forces are terrorists, and beyond that we aren't going to comment on any of the topics in the nuclear talks. But what I would say is out of the 107 Biden administration designations in relation to Iran, 86 have specifically targeted the IRGC-related persons as well as affiliates.

Thank you all so much for joining today. That concludes today's press briefing, and I hope you have a good weekend ahead.

Excerpt

SENATE ARMED SERVICES COMMITTEE HEARING TO RECEIVE TESTIMONY ON DOD BUDGET POSTURE IN REVIEW OF THE DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR 2023 AND THE FUTURE YEARS DEFENSE PROGRAM

APRIL 7, 2022

SULLIVAN: Let me -- I have one question, Mr. Chairman, and it'll be quick, just one final one. There are press reports that the -- the JCPOA consideration, one of the big red line debates right now, is for us to agree -- us, the United States -- to de-list the IRGC as an organization that sponsors terrorism. The Iranians want it. You gentlemen, unfortunately -- and -- have led troops, some of our finest, over 2,000 wounded and killed by the Quds Force-IRGC with the weapons they supplied to Iraqi Shia militias. I'm sure hundreds under your command were killed or wounded.

The IRGC has recently been responsible for missile attacks in coordination with the Houthis against UAE civilians, our longstanding ally in the region, UAE. Is there any universe in which the two of you could say you support the delisting of this terrorist organization with blood of American soldiers on its hands recently and de-list them as the state sponsor of terrorism because Iran wants it?

We should tell Iran to go pound sand, there's no way in hell that they shouldn't be delisted. What do you two, in your personal opinion, given how much experience you have with Iran and the Middle East, believe on that question?

AUSTIN: Senator, I -- respectfully, I -- I won't comment on --

on negotiations that are ongoing and -- and -- and speculate on what my -- my advice to the President's going to be. So I'll ...

SULLIVAN: In your personal opinion, we've asked you before that you can give us that, even though it might conflict with the administration's view. That's what you committed to do with this committee. So I'd ask you again, both of you, your personal opinion.

AUSTIN: And -- and my answer remains unchanged, Senator. Thank you.

SULLIVAN: General Milley? You've been asked in your personal opinion.

MILLEY: Yeah, Senator, just for clarity, political appointees are different than me. I have to sign a document that requires me to give you ...

SULLIVAN: You're right, and I'm sorry, Mr. Secretary. I didn't mean you, I meant General Milley.

MILLEY: So in my personal opinion, I believe the IRGC-Quds Force to be a terrorist organization and I do not support them being delisted from the foreign terrorist organization ...

SULLIVAN: Thank you for your honesty.

REED: Thank you, Senator Sullivan, thank you very much. Senator King please?

https://www.libyaobserver.ly/news/haftars-representatives-jmc-5-5-call-closing-oil-coastal-road-and-cutting-cooperation-gnu

Haftar's representatives in JMC 5 + 5 call for closing oil, coastal road and cutting cooperation with GNU

April 09, 2022 - 23:05

Written By: LibyaMohammed

Representatives of warlord Khalifa Haftar in the Joint Military Commission 5+5 (JMC) have advised him to stop oil exports, close the coastal road linking the eastern region with the western region, suspend flights between both regions, and stop all aspects of cooperation with the Government of National Unity (GNU).

The representatives have also suspended their participation in UN-brokered JMC talks.
In a statement issued on Saturday, they claimed that "the Prime Minister of the GNU, Abdel Hamid Dbeibah, had practised behaviours that are contrary to the political agreement and a flagrant violation of human rights in accordance with international and national standards".

"Dbeibah ignored the important national role that the armed forces have achieved in combating terrorism and guarding oil fields to support the Libyans and protect the borders," they added, in reference to the wars launched by Haftar in Benghazi, Derna, Murzuq, and finally in Tripoli.

"GNU's actions happened in full view of the United Nations, its mission and the international community, but it did not act on," the statement reads, adding that "Dbeibah did not comply with the legitimate decisions issued by the House of Representatives and refused the stability government headed by Fathi Bashagha."

https://www.reuters.com/world/africa/eastern-libyan-military-commanders-urge-closure-road-west-2022-04-09/

April 9, 202211:36 AM MDTLast Updated 9 hours ago

Eastern Libyan military commanders urge closure of road to west

Reuters

BENGHAZI, Libya, April 9 (Reuters) - Military commanders in eastern Libya said on Saturday they had suspended participation in a U.N.-backed joint military council, accusing the Tripoli-based government of failing to hand power to a new cabinet and calling for the road west to be closed.

Libya has had rival governments since last month when the eastern-based parliament appointed Fathi Bashagha to replace the Tripoli-based prime minister Abdulhamid al-Dbeibah, creating a new standoff between administrations in the east and west.

The eastern Libyan members of the so called 5+5 military council - set up as part of a peace process two years ago and comprising commanders from the east and west - called on military commander Khalifa Haftar to close the road linking east and west Libya and to shut off oil exports.

In a statement, they also called on Haftar to halt all cooperation with the Tripoli-based government.

Haftar wields major sway in the east and the forces he commands blockaded Libya's oil facilities for months in 2020 during a previous standoff with rivals in Tripoli.

There was no immediate comment from the Tripoli-based government to Saturday's statement.

Libya has had little peace since a 2011 NATO-backed uprising against Muammar Gaddafi and split in 2014 between warring eastern and western factions that backed rival governments.

The country had been due to hold an election in December as part of a peace process backed by the United Nations, but the vote was delayed amid factional disputes over the rules.

After the election process fell apart, the parliament said Dbeibah's government had expired and selected Bashagha to head a new transitional period towards elections next year - a move rejected by other factions.

Dbeibah has said he would only quit after an election.

The Tobruk-based parliament appointed Bashagha on March 1. He has not yet made it to Tripoli, being blocked on the road by forces aligned with Debeibah. read more

Both governments claim legitimacy and there are fears of new fighting or a territorial division between them. The U.N. and Western countries are trying to revive the failed election.

Reporting by Ayman al-Warfalli in Benghazi and Ahmed Elumami in Tripoli; Writing by Tom Perry; Editing By Mike Harrison

https://www.iea.org/news/iea-confirms-member-country-contributions-to-second-collective-action-to-release-oil-stocks-in-response-to-russia-s-invasion-of-ukraine

IEA confirms member country contributions to second collective action to release oil stocks in response to Russia's invasion of Ukraine

7 April 2022

Following an agreement on 1 April by IEA member countries for a new emergency release of oil stocks, the IEA Governing Board confirmed today that the total amount committed to date stands at 120 million barrels, making it the largest stock release in IEA history.

The unanimous agreement among IEA member countries on 1 April for a second collective action this year came in response to the significant strains in oil markets resulting from Russia's invasion of Ukraine. In the days since the decision, each IEA member country has been considering how much it could contribute to the announced response plan, given its domestic circumstances.

The commitments submitted by members reached 120 million barrels to be released over a six month period, demonstrating strong unity. The United States will contribute about 60 million barrels, which are part of the larger drawdown from its Strategic Petroleum Reserve (SPR) that was announced on 31 March.

Over the next six months, around 240 million barrels of emergency oil stocks, the equivalent of well over 1 million barrels per day, will be made available to the global market.

"The unprecedented decision to launch two emergency oil stock releases just a month apart, and on a scale larger than anything before in the IEA's history, reflects the determination of member countries to protect the global economy from the social and economic impacts of an oil shock following Russia's aggression against Ukraine," said IEA Executive Director Fatih Birol. "This latest collective action once again demonstrates the unity of IEA member countries in their solidarity with Ukraine and their determination to provide stability to the oil market during this challenging time. Events in Ukraine are becoming more distressing by the day, and action by the IEA at this time is needed to relieve some of the strains in energy markets."

At the start of Russia's invasion, IEA member countries held 1.5 billion barrels in public reserves and about 575 million barrels under obligations with industry. Therefore, the two IEA collective actions this year of 62.7 million barrels, which was agreed on 1 March, and 120 million barrels amount to 9% of total emergency reserves.

Emergency oil stocks in IEA member countries are either in the form of public stocks (government-owned or by specialised agencies), or stocks held by industry under an obligation of the government. In the case of public stocks, these can be released via tenders or loans to the market, which will be launched and released over the coming weeks and months, depending on the specific stockholding system and market needs in each country. In the case of obligated industry stocks, obligations will be

lowered, via legislative decrees or administrative mandates, to make the volumes available for consumption.

The following table shows the breakdown of the oil to be made available by each of the participating countries. More details will be made available in due course on the breakdown of the pledged barrels in crude and products, and public and obligated industry stocks.

Country	kb
Australia	1 608
Estonia	74
Finland	369
France	6 047
Germany	6 480
Greece	624
Hungary	531
Ireland	451
Italy	5 000
Japan	15 000
Korea	7 230
Lithuania	180
Netherlands	1 600
New Zealand	483
Poland	2 298
Spain	4 000
Turkey	3 060
United Kingdom	4 408
United States	60 559
Total IEA	**120 000**

Dan Tsubouchi

Oil price outlook – Snapshot: April 4, 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**	↑	• Refinery margins were mixed over the past week but retained most of their gains from recent weeks. Refinery margins in the U.S. Gulf Coast and Northwest Europe fell slightly due to weaker middle distillate cracks, while margins in Singapore rose as fuel oil cracks strengthened.
	Crude stocks	↑	• In the week ending March 25, land crude-oil storage levels in BloombergNEF's tracked regions (U.S., ARA, Japan) grew by 0.5% to 525.1 million barrels (m bbl). The stockpile **deficit** against its five-year average (2015-19) **widened from 84.2m bbl to 85.1m bbl**. • Including global floating crude stockpiles from the same week, total crude oil inventories increased by 0.3% to 617.8m bbl, with the stockpile **deficit widening from 43.8m bbl to 51.6m bbl.**
	Product stocks	↔	• In the week ending March 25, gasoline and light distillate stockpiles in BNEF's tracked regions (U.S., ARA, Singapore, Japan and Fujairah) were down 0.7% week-on-week to 279.8m bbl, with the stockpile **deficit** against its three-year average (2017-19) **widening from 0.4m bbl to 2.4m bbl**. Gasoil and middle distillate stockpiles in BNEF's tracked regions rose by 0.4% to 142.0m bbl, with the stockpile **deficit** against its three-year average **narrowing from 41.2m bbl to 39.1m bbl**. • Total oil product stockpiles in tracked regions decreased by 0.1% to 877.8m bbl, with the stockpile **deficit** against its three-year seasonal average **widening from 74.4m bbl to 74.6m bbl**. Altogether, crude and product stockpiles fell slightly by 0.7m bbl to 1,495.6m bbl, with the stockpile **deficit widening from 118.2m bbl to 126.2m bbl.**
	Demand indicators	↑	• In the week to March 29, global jet fuel demand from commercial passenger flights rose by 122,200 barrels per day (or 2.8%) week-on-week to 4.51 million barrels per day. Jet fuel consumption by international passenger departures was up by 185,900 barrels per day (or 8.3%) week-on-week, while consumption by domestic passenger departures fell by 63,700 barrels per day (or 3.0%). • Global mobility indices were mixed over the past week. Apple's global driving activity index decreased by 2.7% in the week to April 2, driven by declines in the Americas (-2.3%) and Asia Pacific ex-China (-4.0%). Google's global mobility index was up 1.6% in the week to March 30, reflecting growth in Asia Pacific ex-China (+3.8%) and the Americas (1.9%). Road congestion in China's key 15 cities increased by 2.5 percentage points to 96.9% of January 2021 levels in the week to March 30, according to BNEF's calculation based on Baidu data. Month-to-date, congestion is about 13% lower than March 2021. • Daily average Covid-19 cases fell by 12% to 1.4 million in the week to April 2. Europe was down 8.5% to 687,900 daily cases, Asia Pacific fell by 17% to 616,000 daily cases, and the Americas fell by 17% to 76,200 daily cases. Weather forecasts showed that temperatures in key Asian cities are becoming warmer. Temperatures in European cities, however, became colder.
Financial	**Macro indicators**	↔	• The dollar index averaged at 98.4 over the past week, and was 0.2% lower than the week before. Global manufacturing PMI fell to 53.0 in March from 53.7 in February, with the Caixin China manufacturing PMI falling to 48.1 in March from 50.4 in February.
	Hedge fund positioning	↓	• In the week to March 29, Managed Money net positioning in the oil complex decreased by 15.2m bbl (or 2.7%) week-on-week to 553.4m bbl, and fell to the 23rd percentile of the past five years (versus the 26th percentile last week).
	Options chains and volatility	↓	• There was a decline in open interest for Brent and WTI calls. Brent and WTI 1M volatility skews fell significantly over the past week.
Outlook	**Weekly call**	↑	• BNEF is bullish on oil prices for the week ahead, with Brent Jun-22 trading at $104.71/bbl and WTI May-22 trading at $99.73/bbl at the time of writing. On March 31, the U.S. announced its decision to release one million barrels per day (m b/d) of crude oil from its Strategic Petroleum Reserves (SPR) for 180 days starting in May, which a day later was followed by the 30 other IEA member countries agreeing to release more oil from their SPRs. While such a sizeable injection of supply could provide some near-term price relief, it does not address the structural supply issues in the market that can be better resolved by upstream investments to increase output. OPEC+ agreed last week to raise its recurring monthly output increases by just 32,000 b/d to 432,000 b/d starting in May, and several members are already struggling to keep up with the increase in production quotas. Meanwhile, as the market assesses the impact of high oil prices and China lockdowns on oil demand, the U.S. EIA had also revised down its domestic oil demand in January by 1.93m b/d or 8.9%, from 21.67m b/d to 19.73m b/d. The revision was due to the underestimation of oil exports.

Past outlooks

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

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
April 4	↑	↑	↔	↑	↓	↓	↑	Brent-**Jun**: 104.71 WTI-May: 99.73	
March 28	↑	↔	↔	↔	↑	↓	↔	Brent-Jun: 109.53 WTI-May: 105.58	
March 21	↔	↔	↔	↓	↓	↔	↔	Brent-May: 112.35 WTI-May: 107.56	
March 14	↑	↑	↑	↔	↓	↓	↔	Brent-May: 108.66 WTI-Apr: 104.77	
February 28	↔	↔	↔	↑	↔	↔	↔	Brent-May: 99.00 WTI-Apr: 96.38	
February 21	↔	↔	↑	↑	↔	↔	↑	Brent-May: 91.50 WTI-Apr: 90.17	
February 14	↑	↔	↑	↑	↓	↔	↑	Brent-Apr: 93.75 WTI-Mar: 92.46	
February 7	↑	↑	↔	↑	↔	↔	↔	Brent-Apr: 92.83 WTI-Mar: 91.43	
January 31	↑	↔	↔	↑	↓	↔	↑	Brent-Apr: 89.17 WTI-Mar: 87.55	
January 24	↔	↑	↔	↔	↑	↓	↑	Brent-Mar: 87.19 WTI-Mar: 85.25	
January 17	↑	↑	↔	↔	↑	↑	↔	Brent-Mar: 85.78 WTI-Mar: 83.22	
January 10	↑	↓	↔	↓	↑	↑	↔	Brent-Mar: 81.71 WTI-Feb: 78.82	
January 3	↔	↔	↑	↓	↔	↔	↑	Brent-Mar: 78.84 WTI-Feb: 76.14	
December 13	↑	↑	↔	↑	↓	↔	↑	Brent-Feb: 75.25 WTI-Jan: 71.62	

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

BloombergNEF

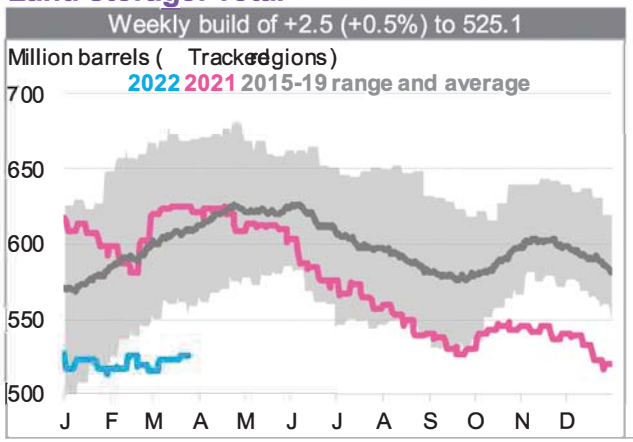
Crude stocks: Land

Note: We will continue to compare current inventory levels with the three-year (2017-19) seasonal average for the time being. Crude inventory data for Shandong teapots were excluded since January 10.

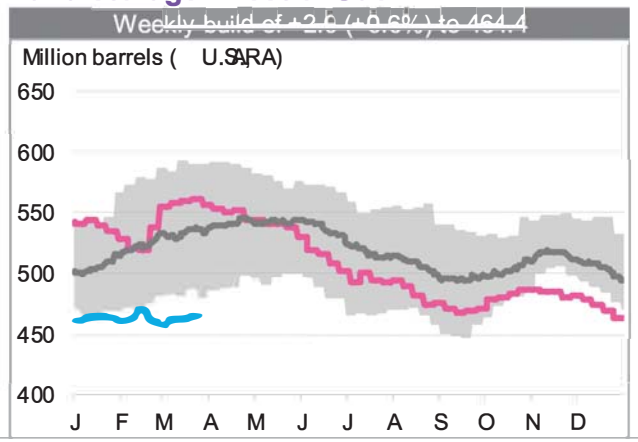
Neutral: Deficit widened from 84.2m bbl to 85.1m bbl against seasonal average

- 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.

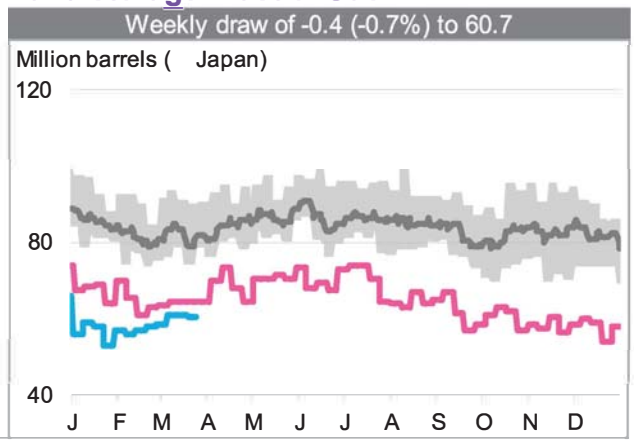
Land storage: Total



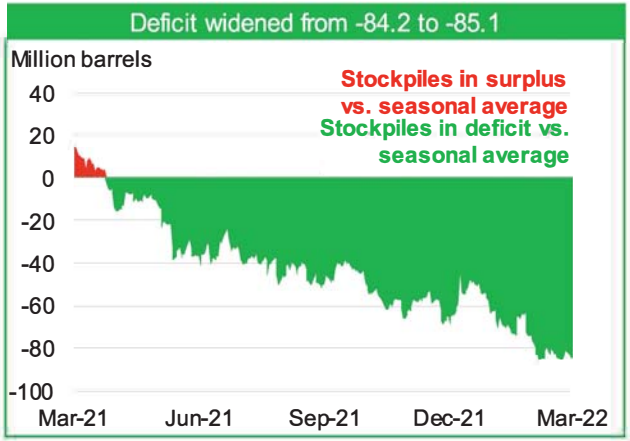
Land storage: West of Suez

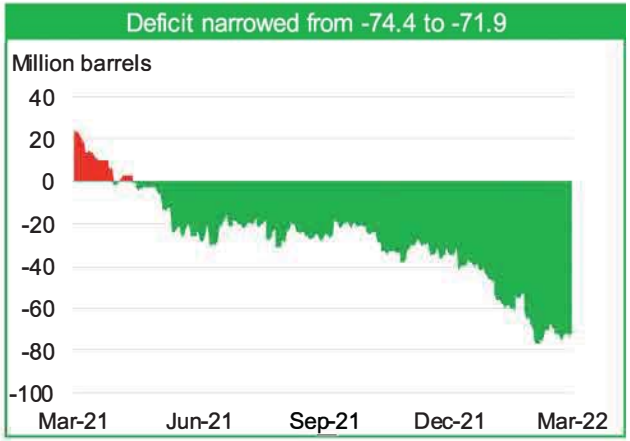


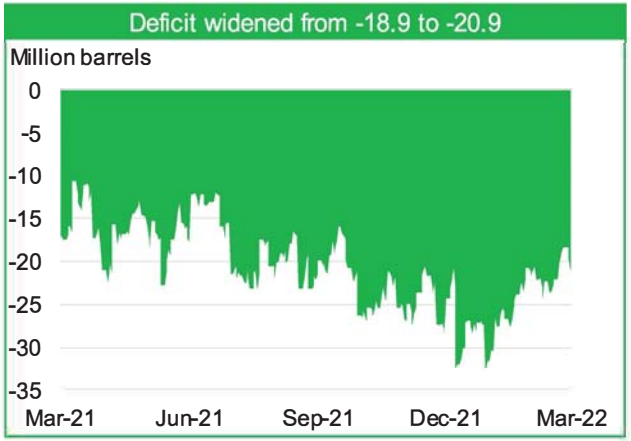
Land storage: East of Suez



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







*Source: BloombergNEF, U.S. EIA, Genscape, PAJ, SCIG. Note: As of the **week ending March 25.***

Crude stocks: Floating

Neutral: Surplus flat over the recent week

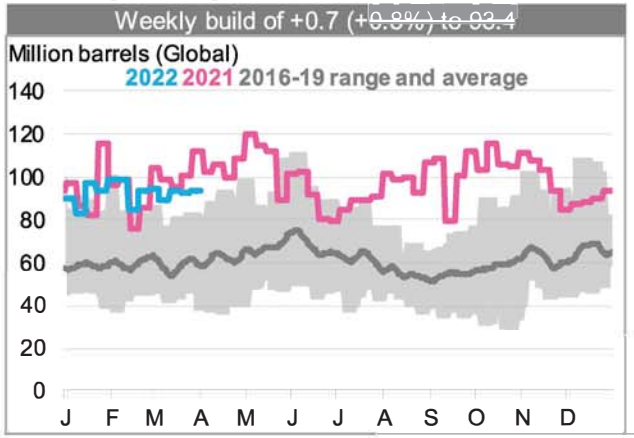
- Floating storage is only profitable if the strength of contango (future vs. prompt price) is greater than the tanker costs. Therefore, tankers become floating storage when the profit from a storage play exceeds the cost of the forward freight agreement (FFA).
- The floating storage data used in the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

Vortexa's revision to global floating crude inventories

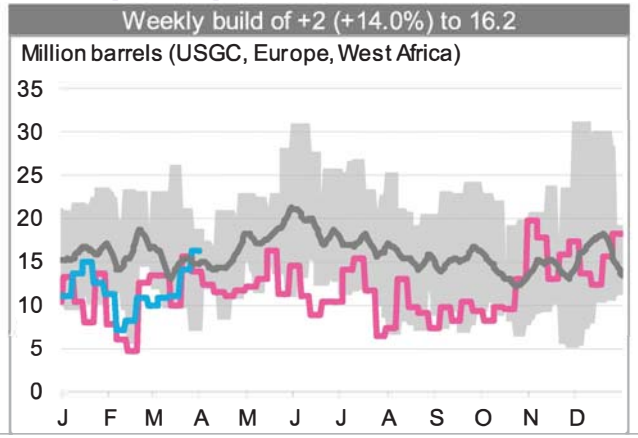
Million barrels	Previous report	Current report	Vortexa's revision
Inventories in week of Mar. 25	94.1	**92.7***	-1.4
Inventories in week of Mar. 18	97.9	93.6	-4.3

*Note: *Figure used to aggregate total oil inventories on page 12.*

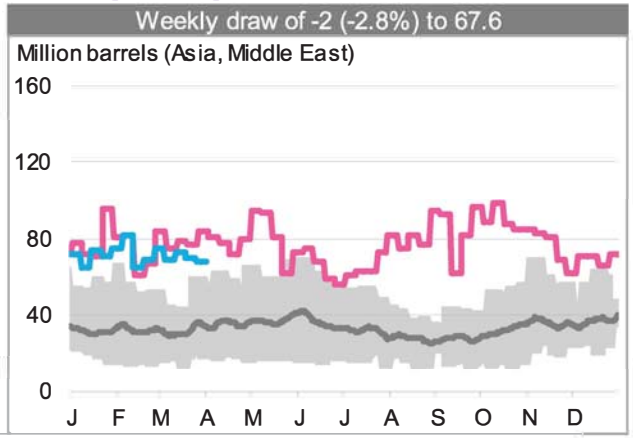
Floating storage: Total



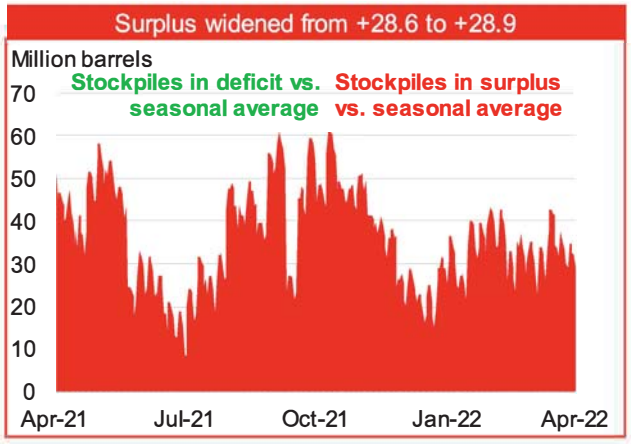
Floating storage: West of Suez

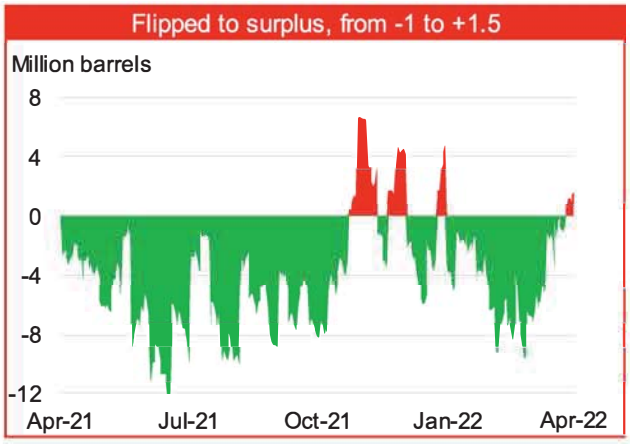


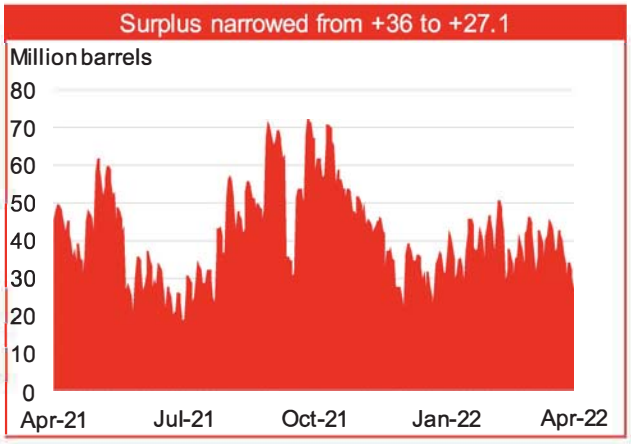
Floating storage: East of Suez



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







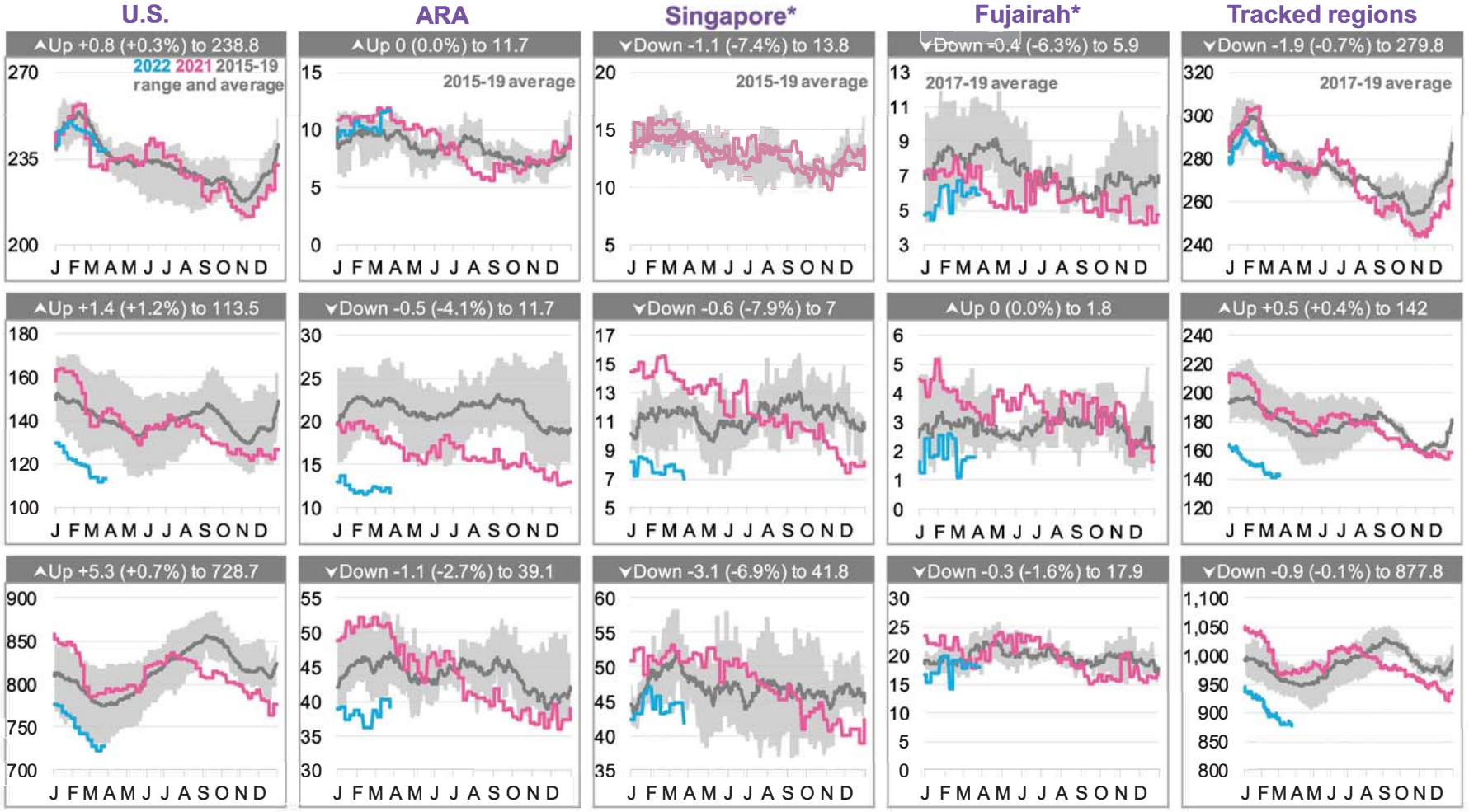
*Source: BloombergNEF, Vortexa. Note: As of the **week ending Apr 1**. ***Raw data from Vortexa are revised frequently, so the data in this report might change week-to-week.***

Product stocks: Current vs. seasonal average

Neutral: Oil product stockpiles in tracked regions fell by 0.1% week-on-week

- Chart legend are as follows: **2021**, **2020** and the **2015-19 range and average**. For Fujairah and tracked regions, the **2017-19 (three-year) seasonal range** is shown. Tracked regions include U.S., ARA, Singapore, Japan and Fujairah

**units are in million barrels*



*Source: BloombergNEF, U.S. EIA, PJK, IE Singapore, FEDCom/Platts, PAJ. Note: As of the **week ending March 25.***

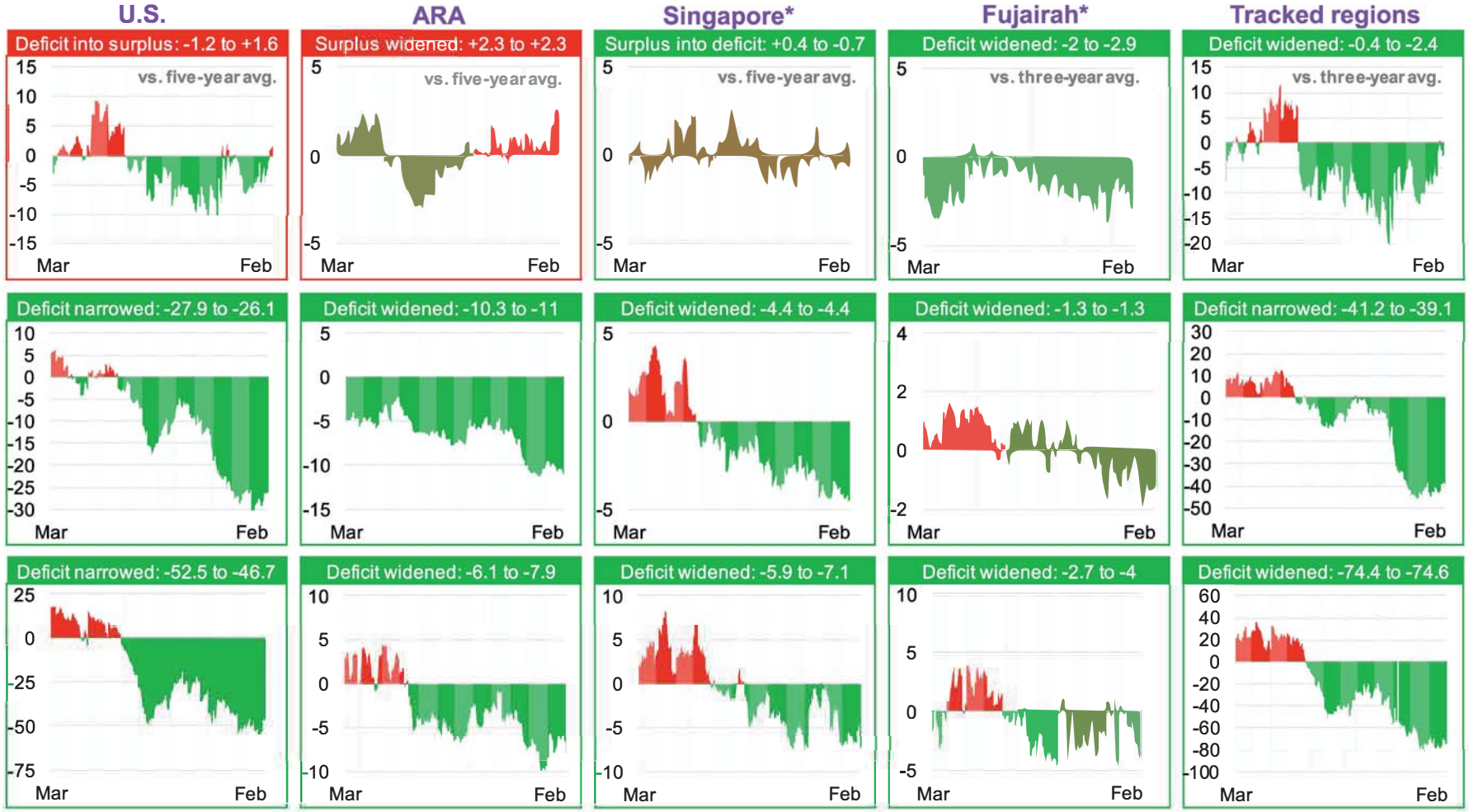
BloombergNEF

Product stocks: Current vs. seasonal average

Neutral: Oil product stockpile deficit against the seasonal average widened from 72.4m bbl to 74.6m 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*



*Source: BloombergNEF, U.S. EIA, PJK, IE Singapore, FEDCom/Platts, PAJ. Note: As of the **week ending March 25.***

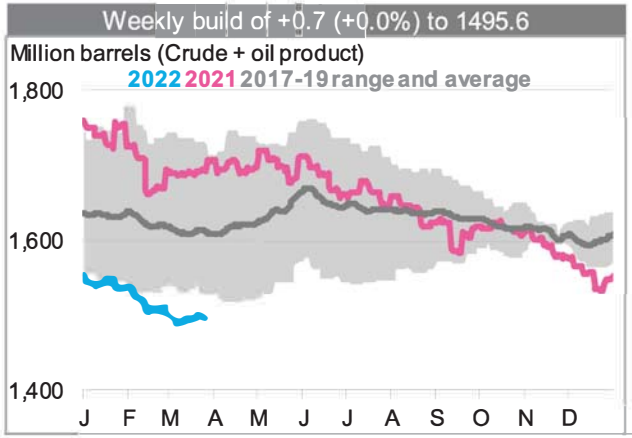
Aggregated oil stockpiles

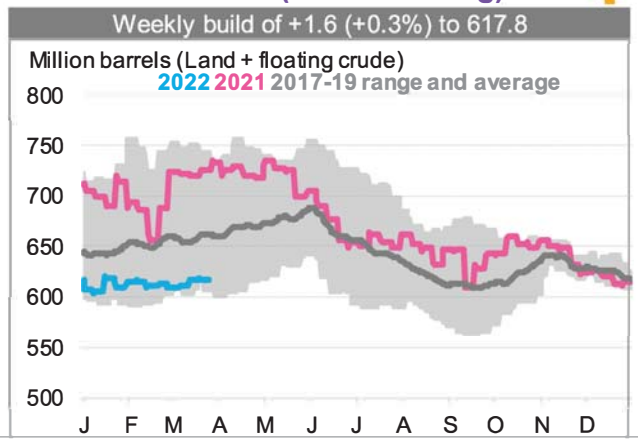
Note: We will continue to compare current inventory levels with the three-year (2017-19) seasonal average for the time being. Crude inventory data for Shandong teapots were excluded since January 10.

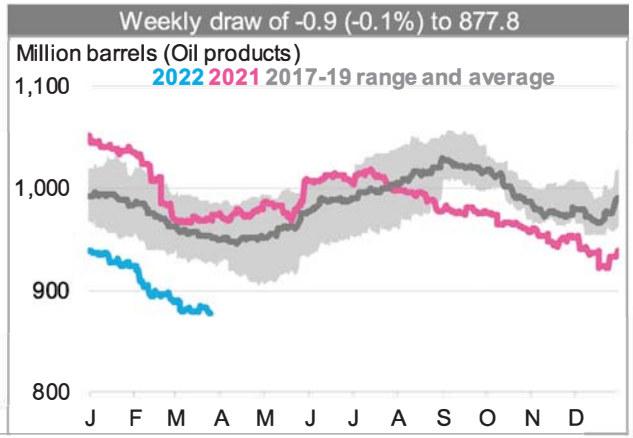
Bullish: Stockpiles deficit widened from 118.2m bbl to 126.2m bbl

- 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 might differ from the previous slides.
- Land crude inventories include the U.S., ARA, Japan and Shandong Teapots. Floating storage data are global. Oil product storage includes the U.S., ARA, Japan, Singapore, Shandong Teapots and Fujairah. Floating crude inventories may have been adjusted since the previous report – see slide 8 for further info.

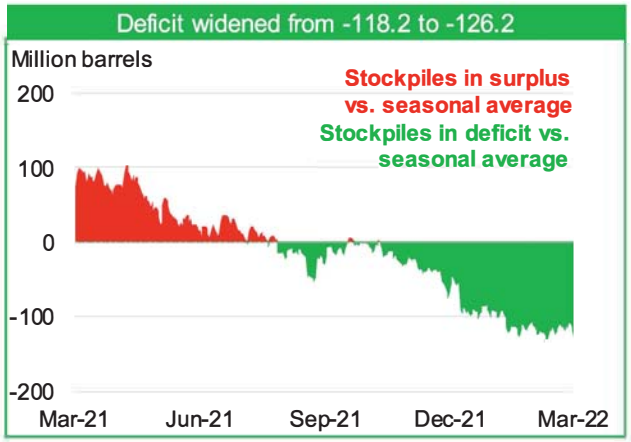
Total oil and product stocks = **Total crude stocks (land + floating)** + **Total oil product stockpiles**

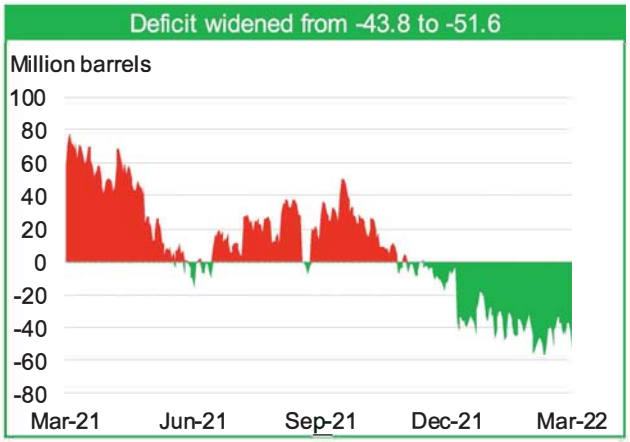


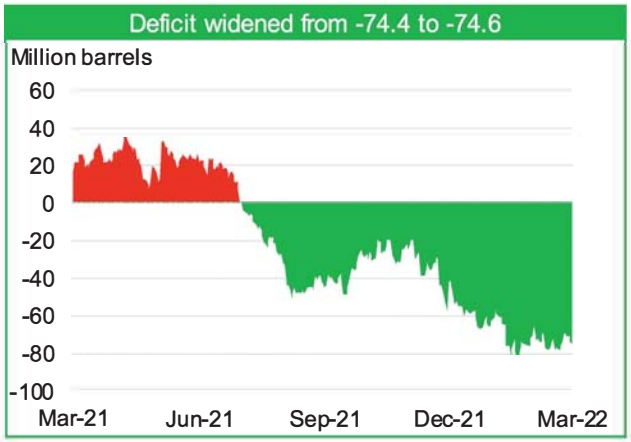




Charts below subtract current stockpiles by the 2017-19 (three-year) seasonal average







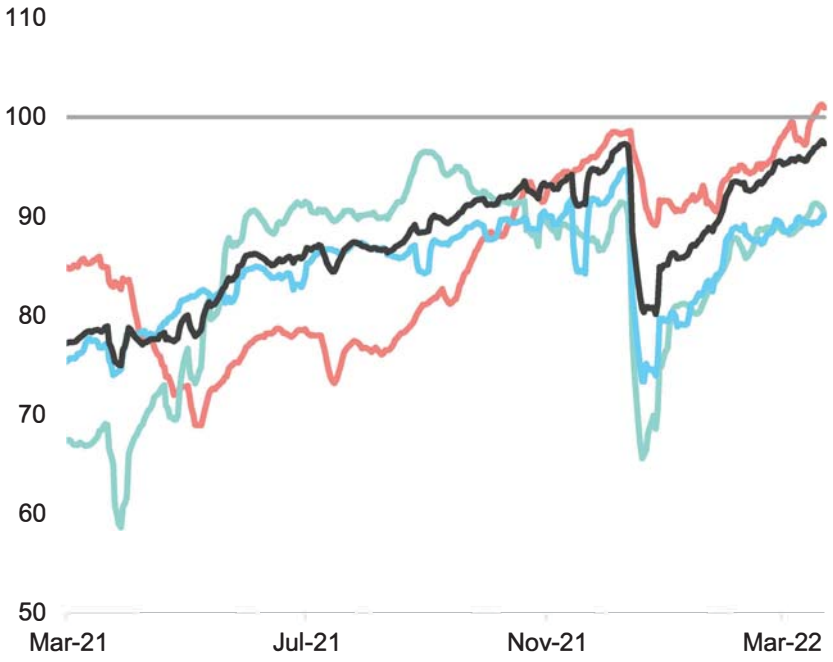
*Source: BloombergNEF, U.S. EIA, PJK, IE Singapore, FEDCom/Platts, PAJ ,Vortexa, Genscape, SCIG. As of the **week ending March 25.***

Comparing the three mobility indicators

Global activity was mixed over the past week

Google mobility index

Indexed to Jan – Feb 2020 (seven-day MA)

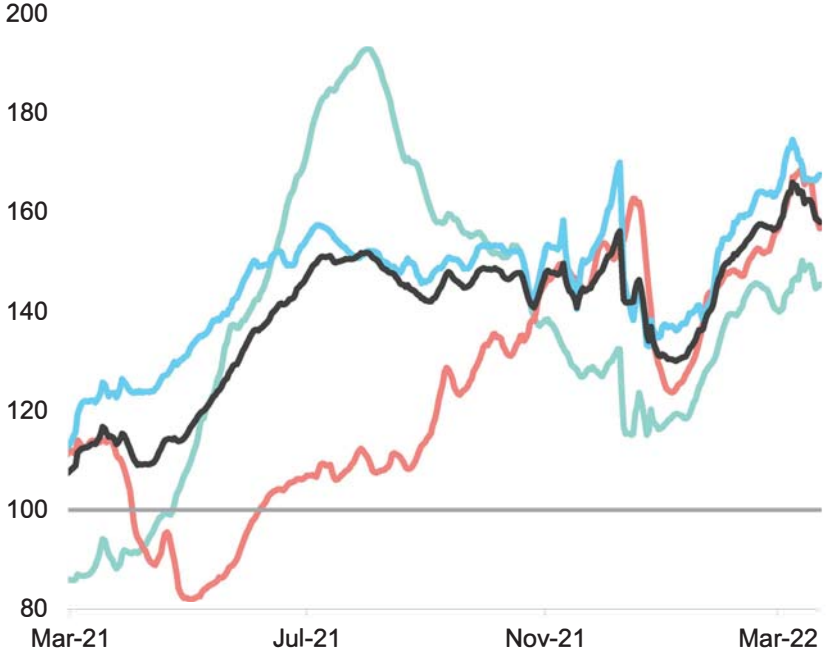


	Latest	Week Δ	Four-week Δ
Asia Pacific	**101.0**	1.4 (+1.4%)	5.4 (+5.6%)
World	**97.4**	1.0 (+1.1%)	3.0 (+3.2%)
Europe	**90.2**	-0.4 (-0.4%)	1.3 (+1.4%)
Americas	**90.1**	0.8 (+0.9%)	1.8 (+2.1%)

Source: Google Community Mobility Report, BloombergNEF. Note: ***Data excludes China and Russia.*** *Calculation includes retail and recreation, workplaces and transport hubs.* ***Data updated to April 2.*** *The world/regional index is weighted by the 2019 road fuels demand of each country.*

Apple mobility (driving) index

Indexed to Jan 13, 2020 (seven-day MA)



	Latest	Week Δ	Four-week Δ
Americas	**167.5**	0.7 (+0.4%)	3.7 (+2.3%)
World	**158.0**	-4.3 (-2.7%)	0.7 (+0.5%)
Asia Pacific	**156.7**	-9.7 (-5.8%)	4.6 (+3.1%)
Europe	**145.4**	-3.5 (-2.3%)	0.8 (+0.6%)

Source: Apple Mobility Report, BloombergNEF. Note: ***Asia Pacific excludes China. Data updated to April 5.*** *The world/regional index is weighted by the 2019 road fuels demand of each country.*

BloombergNEF

Country-level data (Google and Apple)

- Apple's mobility indicators are indexed to January 13, 2020. Google's mobility indicators are indexed to the same day of the week between January 3 to February 6, 2020. Data shown below are the seven-day moving average.
- Regional and world index calculations are weighted by each country's road fuels demand in 2019. Asia Pacific excludes China.

	Google mobility			Apple driving		
	90-day	Latest	Week Δ	90-day	Latest	Week Δ
Americas		90.1	0.9%		167.5	0.4%
U.S.		83.1	0.1%		173.2	0.7%
Brazil		108.8	0.1%		157.0	-2.1%
Canada		76.9	0.5%		158.0	2.2%
Mexico		111.8	5.4%		164.1	0.2%
Argentina		111.6	7.3%		113.4	-1.4%
Venezuela		125.3	1.7%			
Colombia		124.1	6.1%		155.8	-2.1%
Chile		113.0	2.2%		128.4	1.7%
Ecuador		122.0	0.9%			
Peru		99.3	-1.0%			
Guatemala		109.7	1.9%			
Bolivia		116.9	2.2%			
Dominican Republic		104.4	-0.9%			
Paraguay		106.7	5.1%			
Panama		102.3	1.2%			
Costa Rica		99.6	1.1%			
Uruguay		102.8	4.6%		104.3	-3.5%
Honduras		109.4	1.4%			
El Salvador		124.8	-2.4%			
Trinidad and Tobago		97.4	-2.0%			
Nicaragua		135.7	0.7%			
Haiti		133.3	-4.8%			
Europe		90.2	-0.4%		145.4	-2.3%
Germany		88.0	-0.8%		141.6	0.4%
France		90.3	-2.1%		126.2	-4.1%
U.K.		78.2	-1.7%		144.3	-3.1%
Spain		86.4	3.1%		163.7	6.6%
Italy		85.2	-1.7%		153.2	-2.5%
Turkey		118.4	3.3%		180.4	-16.4%
Poland		100.2	-2.0%		128.7	-6.6%
Netherlands		85.1	-1.1%		130.0	0.2%
Belgium		89.5	-2.2%		145.3	-2.7%
Austria		83.6	-0.7%		135.9	-2.8%
Sweden		84.8	-0.8%		154.0	0.0%
Switzerland		90.0	-1.4%		142.2	-3.8%
Romania		86.1	-0.1%		126.4	-2.3%
Greece		92.6	11.2%		159.1	3.0%
Czech Republic		96.2	-2.8%		143.8	-6.0%
Portugal		100.9	4.3%		187.8	9.3%
Finland		79.4	0.4%		148.9	2.6%
Hungary		100.8	-5.9%		148.0	-5.0%
Denmark		92.6	1.8%		156.7	2.8%
Norway		88.5	-0.5%		146.0	0.9%

	Google mobility			Apple driving		
	90-day	Latest	Week Δ	90-day	Latest	Week Δ
Ireland		87.0	1.2%		154.8	-1.2%
Bulgaria		97.4	1.9%		122.0	2.3%
Slovakia		97.1	-1.5%		134.1	-2.3%
Croatia		98.6	-1.3%		158.1	2.7%
Luxembourg		92.1	0.6%		111.8	-1.4%
Serbia		113.8	-1.0%		125.1	-6.0%
Slovenia		99.3	-2.6%		139.4	-8.2%
Bosnia and Herzegovina		98.1	-0.8%			
Albania					154.2	-10.0%
North Macedonia		99.6	0.4%			
Malta		95.6	-5.5%			
Iceland					186.3	5.2%
Asia Pacific		101.0	1.4%		156.7	-5.8%
India		118.1	-0.9%		226.5	-7.1%
Japan		89.0	4.2%		205.7	-5.5%
Indonesia		104.8	1.9%		127.4	-16.6%
Australia		80.4	-0.6%		128.7	-0.5%
South Korea		92.0	4.3%		53.4	10.2%
Thailand		86.6	1.8%		90.9	0.8%
Malaysia		88.2	4.8%		123.9	-8.7%
Vietnam		80.3	0.5%		164.1	-1.7%
Pakistan		164.2	1.5%			
Philippines		101.3	1.2%		100.3	-0.9%
Taiwan		87.0	-1.9%		116.7	12.3%
Singapore		85.7	1.9%		88.1	1.8%
Myanmar		89.0	3.1%			
Hong Kong		70.0	6.6%		55.1	14.5%
New Zealand		81.6	3.9%		103.7	0.2%
Bangladesh		168.8	1.6%			
Sri Lanka		114.5	-2.1%			
Cambodia		98.1	0.0%		69.6	2.5%
Nepal		158.7	0.9%			
Mongolia		215.9	3.0%			
Laos		91.9	-1.1%			
Middle East		123.8	2.7%		177.8	-14.9%
Saudi Arabia		119.0	1.5%		95.7	-12.6%
Iraq		185.6	8.2%			
United Arab Emirates		125.8	-1.2%		427.9	-21.7%
Kuwait		95.9	0.3%			
Israel		86.5	2.7%		152.2	1.2%
Lebanon		103.4	4.2%			
Oman		92.0	1.6%			
Qatar		117.2	1.4%			
Jordan		114.8	8.7%			

	Google mobility			Apple driving		
	90-day	Latest	Week Δ	90-day	Latest	Week Δ
Yemen		191.1	0.9%			
Bahrain		108.6	-0.3%			
FSU		100.9	4.8%		122.1	-3.1%
Russia					120.8	-3.9%
Kazakhstan		118.1	12.5%			
Ukraine					135.6	2.5%
Belarus		82.9	-7.8%			
Lithuania		94.2	-1.9%		115.9	-1.4%
Latvia		80.0	-1.3%		121.7	2.8%
Kyrgyzstan		84.9	5.4%			
Georgia		114.0	6.7%		191.7	0.1%
Estonia		87.1	-1.2%		144.3	5.0%
Moldova		91.1	-0.6%			
Tajikistan		97.9	17.9%			
Africa		150.2	2.9%		141.5	-12.3%
South Africa		117.5	8.5%		134.8	-1.2%
Egypt		135.4	-0.1%		154.9	-19.6%
Nigeria		158.8	0.5%			
Libya		238.0	3.4%			
Morocco					124.3	-17.4%
Angola		176.5	11.9%			
Kenya		161.2	2.0%			
Ghana		143.7	0.8%			
Benin		152.0	0.8%			
Tanzania		157.7	2.2%			
Cote d'Ivoire		164.6	1.5%			
Senegal		123.4	-0.8%			
Mozambique		146.8	1.7%			
Cameroon		154.3	0.7%			
Zimbabwe		197.5	2.0%			
Namibia		147.0	12.3%			
Jamaica		110.1	0.0%			
Botswana		172.5	4.3%			
Zambia		164.3	2.1%			
Mauritius		102.6	-1.2%			
Niger		230.4	1.2%			
Togo		144.3	0.5%			
Gabon		134.5	0.6%			

Source: BloombergNEF, Google Community Mobility Report, Apple mobility report, IEA. Note: Google's data covers 80% of global road fuels demand, while Apple's data covers around 76%. Gray shaded areas indicate that data is unavailable. Fuels demand includes gasoline and diesel.

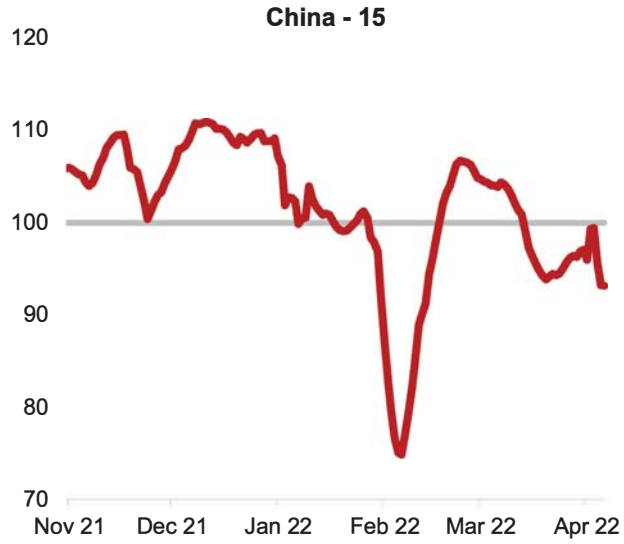
China (Baidu)

Sudden drop in congestion in China

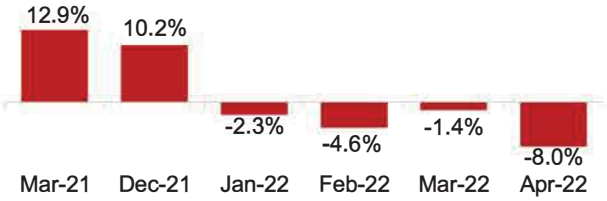
- City-level charts begin from November 1, 2021. They display, in alphabetical order, the 15 cities with the highest number of vehicle registrations (excluding two- and three-wheelers). The China-15 congestion level is calculated by taking the weighted average of the congestion levels in the 15 cities and their vehicle registration numbers.

China congestion index (calculated from Baidu data)

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



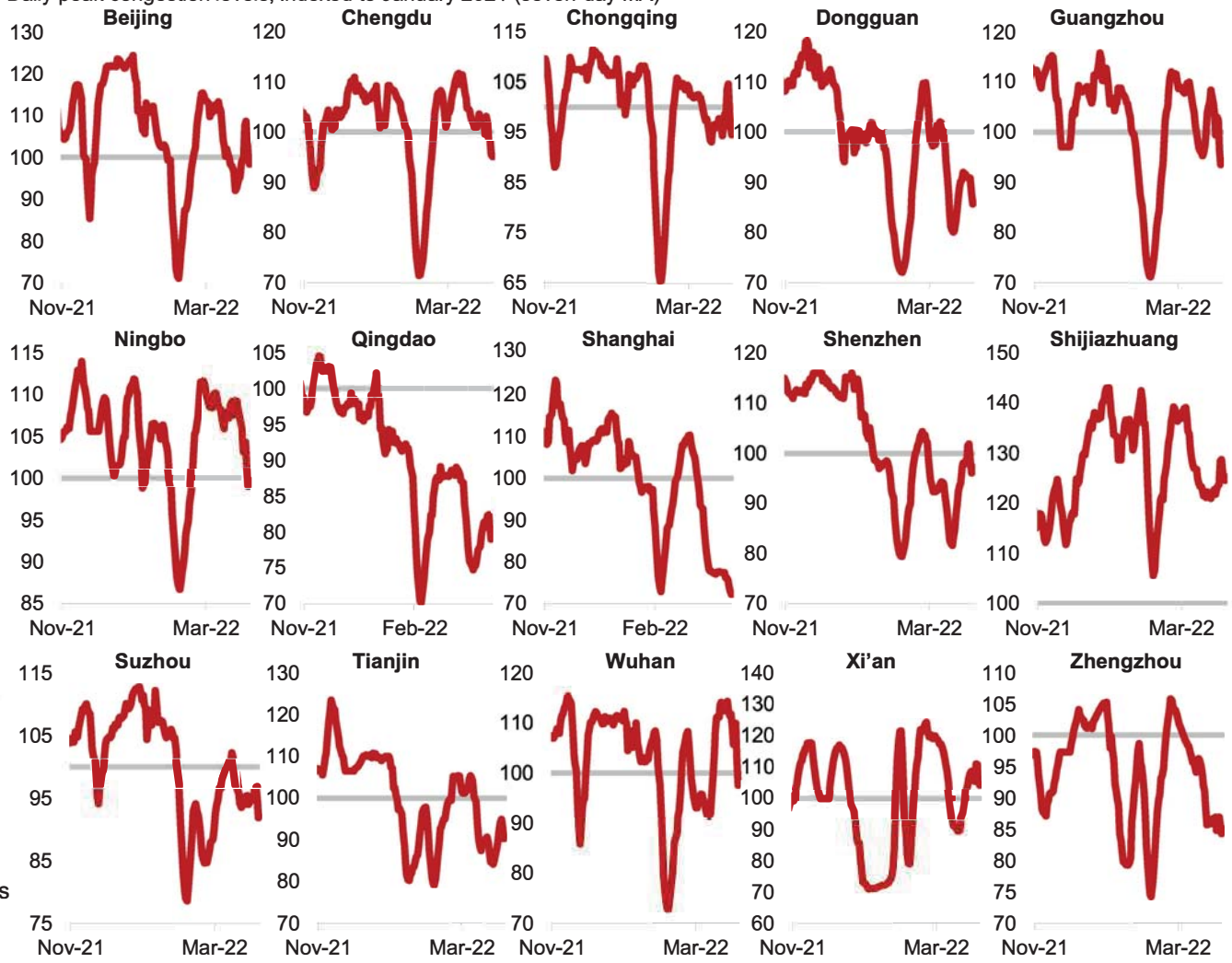
Monthly % change from January 2021 level



	Latest	Week Δ	Four-week Δ
China - 15	93.21	-3.7 (-3.8%)	-10.5 (-10.1%)

- In China, road traffic was down 3.7 percentage points to 93.2% of January 2021 levels. In April 2022, congestion levels are 8% lower than January 2021.

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



*Source: BloombergNEF, calculated from Baidu's data. Note: Data updated to **April 6**.*

BloombergNEF

China's city-level data (Baidu)

- China's city-level congestion data are shown below. Data are 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
Baoding	保定	96.76	-5.05	-4.96%
Beijing	北京	98.39	0.04	0.04%
Cangzhou	沧州	99.31	11.50	13.10%
Changchun	长春	[illegible]	-1.85	-2.38%
Changsha	长沙	84.91	-4.00	-4.50%
Changzhou	常州	101.53	2.00	2.01%
Chengdu	成都	95.02	-7.05	-6.91%
Chongqing	重庆	94.55	-1.64	-1.70%
Dali	大理	99.35	-0.32	-0.32%
Dalian	大连	91.65	0.87	0.96%
Datong	大同	99.60	-0.16	-0.16%
Dezhou	德州	91.52	-0.61	-0.66%
Dongguan	东莞	85.84	-5.65	-6.17%
Foshan	佛山	88.41	-9.40	-9.61%
Fuzhou	福州	85.67	-0.49	-0.57%
Ganzhou	赣州	104.14	0.58	0.56%
Guangzhou	广州	94.42	-11.12	-10.53%
Guilin	桂林	87.37	-2.99	-3.31%
Guiyang	贵阳	79.68	-9.45	-10.60%
Haikou	海口	[illegible]	-18.31	-19.37%
Handan	邯郸	98.38	-5.27	-5.08%
Hangzhou	杭州	100.72	-5.68	-5.34%
Harbin	哈尔滨	90.88	-1.92	-2.07%
Hefei	合肥	82.33	-2.55	-3.00%
Hengshui	衡水	93.68	-0.96	-1.02%
Hengyang	衡阳	86.51	-5.84	-6.32%
Huai'an	淮安	94.23	-1.37	-1.43%
Huhhot	呼和浩特	101.40	2.10	2.11%
Huizhou	惠州	92.66	-3.23	-3.36%
Huzhou	湖州	95.93	-3.77	-3.78%
Jiangmen	江门	97.16	-3.51	-3.49%
Jiaxing	嘉兴	80.78	-7.70	-8.70%
Jinan	济南	[illegible]3	-13.45	-14.93%
Jinhua	金华	102.94	-2.01	-1.92%
Jining	济宁	87.49	-3.16	-3.48%
Kunming	昆明	90.15	-1.83	-1.99%
Langfang	廊坊	81.89	-0.95	-1.15%
Lanzhou	兰州	89.72	1.31	1.48%
Lasa	拉萨	97.64	-0.60	-0.62%
Leshan	乐山	84.52	-7.15	-7.80%
Lianyungang	连云港	91.03	8.60	10.43%
Linyi	临沂	81.15	0.82	1.03%
Liuzhou	柳州	87.17	-4.45	-4.86%
Luoyang	洛阳	91.22	-1.18	-1.27%
Maoming	茂名	87.94	2.74	3.21%
Mianyang	绵阳	92.47	-3.66	-3.80%
Nanchang	南昌	85.04	0.92	1.10%
Nanchong	南充	94.50	0.57	0.61%
Nanjing	南京	81.81	-1.29	-1.56%
Nanning	南宁	91.74	-5.34	-5.50%
Nantong	南通	90.94	-7.74	-7.85%
Nanyang	南阳	93.45	-1.05	-1.11%
Ningbo	宁波	99.75	-6.82	-6.40%
Qingdao	青岛	80.54	-0.85	-1.04%
Qingyuan	清远	98.93	-3.38	-3.31%
Qinhuangdao	秦皇岛	97.10	6.33	6.97%
Quanzhou	泉州	76.21	-1.16	-1.50%
Sanya	三亚	88.79	-6.97	-7.28%
Shanghai	上海	72.31	-5.13	-6.62%
Shantou	汕头	91.15	-3.29	-3.48%
Shaoguan	韶关	85.92	-4.25	-4.72%
Shaoxing	绍兴	89.38	-2.79	-3.03%
Shenyang	沈阳	85.43	-0.35	-0.40%
Shenzhen	深圳	97.28	-0.53	-0.54%
Shijiazhuang	石家庄	[illegible]	1.61	1.31%
Suzhou	苏州	92.16	-2.43	-2.57%
Tai'an	泰安	91.97	-1.33	-1.42%
Taiyuan	太原	101.66	-9.48	-8.53%
Taizhou	台州	98.26	-2.26	-2.25%
Tangshan	唐山	79.12	-0.51	-0.64%
Tianjin	天津	90.91	2.82	3.20%
Urumqi	乌鲁木齐	88.76	-12.06	-11.96%
Weifang	潍坊	93.24	1.03	1.12%
Wenzhou	温州	99.88	-4.19	-4.02%
Wuhan	武汉	98.12	-13.59	-12.16%
Wuxi	无锡	88.86	-24.10	-21.34%
Xiamen	厦门	86.46	-4.94	-5.41%
Xi'an	西安	104.40	-4.43	-4.07%
Xianyang	咸阳	102.24	11.24	12.35%
Xingtai	邢台	104.36	-1.75	-1.65%
Xining	西宁	102.52	-3.31	-3.13%
Xinxiang	新乡	97.70	-1.80	-1.81%
Xuzhou	徐州	69.33	-13.50	-16.30%
Yancheng	盐城	94.24	-0.12	-0.12%
Yangquan	阳泉	96.79	-1.57	-1.60%
Yangzhou	扬州	83.85	-2.98	-3.43%
Yantai	烟台	91.67	-0.83	-0.89%
Yibin	宜宾	91.90	-0.94	-1.02%
Yinchuan	银川	100.12	-1.84	-1.80%
Yunfu	云浮	89.76	-2.51	-2.72%
Zhangjiakou	张家口	102.46	-1.10	-1.06%
Zhangzhou	漳州	95.02	1.83	1.96%
Zhanjiang	湛江	93.36	0.54	0.58%
Zhaoqing	肇庆	91.83	-5.21	-5.37%
Zhengzhou	郑州	85.18	-1.48	-1.61%
Zhenjiang	镇江	85.96	-3.79	-4.22%
Zhongshan	中山	103.55	-3.61	-3.37%
Zhuhai	珠海	89.74	-7.97	-8.16%
Zibo	淄博	87.98	-0.91	-1.03%

Source: BloombergNEF, calculated from Baidu's data. Note: Data updated to ***April 6****.*

EUROCONTROL
PRESS RELEASE

For immediate release, 6 April 2022

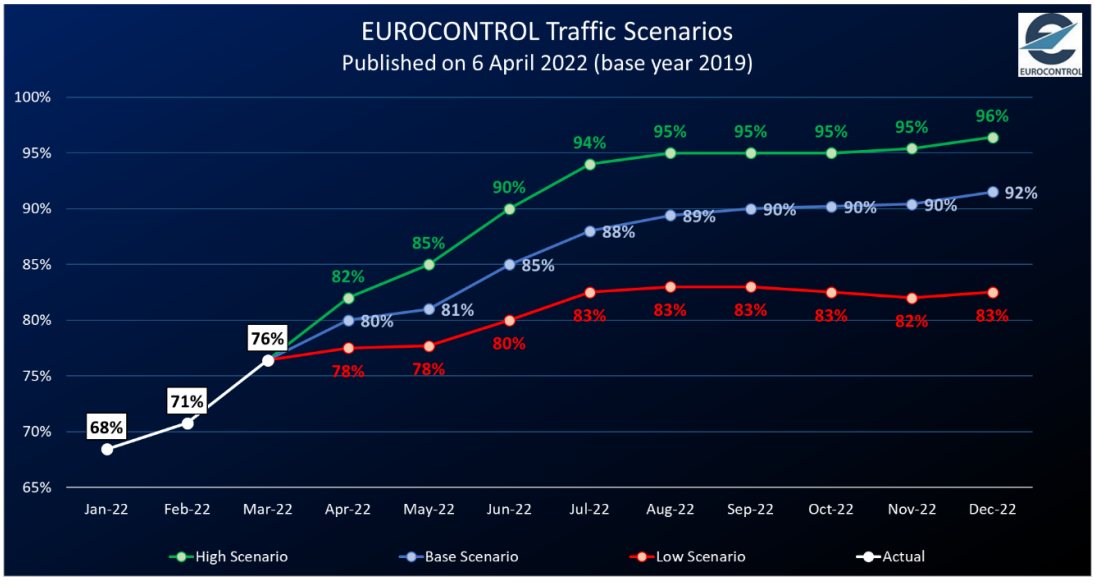
EUROCONTROL expects 9.3M flights in 2022
New Traffic Scenarios predict 2022 traffic to recover to 84% of pre-pandemic levels

The latest EUROCONTROL Traffic Scenarios for the period April to December 2022 predict steady growth between April and peak-summer, reaching 89% of 2019 traffic by August in our Base Scenario, with this level gently rising to end the year at 92%.

"Aviation has continued to recover well over the last few weeks, and there has been a steady climb from 68% in January rising to 79% by the start of April compared to 2019 levels, even factoring in the impact on the network and on fuel prices of the unprovoked aggression by Russia against Ukraine. Airlines are adding lots of capacity, and some airlines are already outperforming their pre-pandemic levels. People are showing that they are really keen to fly – many for the first time since before the pandemic began. Hitting 90% or more of 2019 traffic at peak summer moments is firmly on the cards, and we expect holiday destinations and some other parts of the network to exceed 100% of their 2019 levels.

Clearly, however, there are still some downside risks related to continued geopolitical tensions that could further impact fuel prices and economic conditions, as well as the possibility of new COVID variants. We're also seeing staff shortages in parts of the industry, particularly at airports in key roles such as airport screeners or ground handlers, and this needs to be carefully managed. Should any of these factors come into play, traffic could slide towards the levels envisaged in our Low Scenario."

Eamonn Brennan
Director General, EUROCONTROL



EUROCONTROL's Traffic Scenarios are generated in close collaboration with the airline sector, and draw on planned capacity levels as well as the latest actual data and historical trends produced by the EUROCONTROL Network Manager.

- Our Base Scenario foresees traffic returning to around 90% of 2019 levels by summer 2022 and remaining steady until the end of the year, with most intra-European flows back to normal or even exceeding pre-pandemic levels, and long-haul flows progressively returning.

- The Low Scenario envisages a slower recovery by the summer to a maximum of 83% of 2019 levels, with some risks materialising to create a post-summer dip, and only a partial recovery by year-end.

- The High Scenario assumes a rapid acceleration to 95% of 2019 levels over the summer, with most global travel flows resuming, no further adverse impacts post-summer, and traffic rising at year-end to head towards pre-pandemic levels.

For further information, please contact:
Email: press@eurocontrol.int
For more information via the website: www.eurocontrol.int/press-release/eurocontrol-expects-93m-flights-2022

EUROCONTROL:
EUROCONTROL is a pan-European, civil-military organisation dedicated to supporting European aviation. As Europe's Network Manager, we play a central coordination role, using our technical expertise to support Member States and a wide range of stakeholders (air navigation service providers, civil and military airspace users, airports and aircraft/equipment manufacturers). We strive to make European aviation safe, efficient, scalable, cost-effective and environmentally sustainable, partnering with the European Union to make the Single European Sky a reality.

Independent Statistics & Analysis
U.S. Energy Information Administration

Country Analysis Executive Summary: Egypt

Last Updated: April 4, 2022

Overview

- Egypt is the third-largest natural gas producer in Africa, following Algeria and Nigeria. Egypt operates the Suez Canal and the Suez-Mediterranean (SUMED) Pipeline, which are important transportation infrastructure in international energy markets. The Suez Canal is a transit route for oil and liquefied natural gas (LNG) shipments traveling northbound from the Persian Gulf to Europe and to North America. Shipments traveling southbound from North Africa and from countries along the Mediterranean Sea to Asia also move through the Suez Canal. Fees collected from these two transit points are significant sources of revenue for the Egyptian government.

Sector organization

- According to Egypt's Ministry of Petroleum, five state-owned enterprises (SOE) manage the petroleum sector:[1]
  - Egyptian General Petroleum Corporation (EGPC)
  - Egyptian Natural Gas Holding Company (EGAS)
  - Egyptian Petrochemicals Holding Company (ECHEM)
  - Egyptian Mineral Resources Authority (EMRA)
  - Ganoub El-Wadi Holding Company (Ganope)

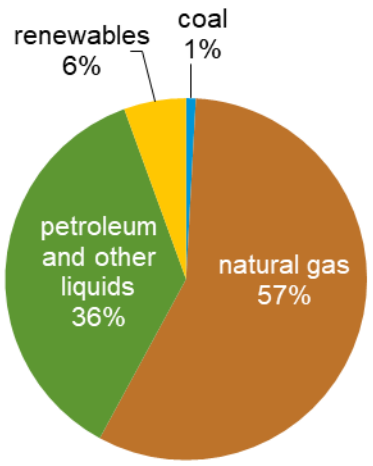
  ECHEM develops the petrochemical sector, and EMRA assesses mineral resources and geological mapping of the country.[2] EGPC and Ganope both manage upstream oil activities and issue upstream licenses. Ganope focuses on activity in the southern region, while EGPC manages development in the rest of the country.[3] EGAS oversees the development, production, and marketing of natural gas and also organizes international exploration bid rounds and awards natural gas exploration licenses. EGAS and EGPC work with international companies to establish joint venture companies that develop and operate oil and natural gas fields. The government earns revenue directly through royalty payments and indirectly through production-sharing agreements between the international companies and the relevant SOE (EGAS or EGPC).[4]
- In the petroleum sector, Eni and Apache Energy are significant international oil and gas companies in terms of overall production volume, according to Rystad Energy's estimates over the past 10 years. Eni and Apache compete alongside both domestic oil companies, such as EGPC and PICO Cheiron Group, as well as other national oil companies, such as Sinopec. Eni, BP, Apache, and Shell lead the natural gas sector. However, some SOEs such as Rosneft and Petronas also participate, although at smaller overall production volumes.[5]

- The Egyptian government is trying to attract more investors to develop underexplored areas and boost crude oil and natural gas production. In 2019, the government held a licensing round for 10 exploration blocks located in the Red Sea, but only awarded licenses for Blocks 1, 3, and 4 to Chevron, Shell, and jointly to Shell and Mubadala Petroleum, respectively.[6] In 2021, the government held another licensing round to award licenses for 24 exploration blocks located in the Western Desert, the Gulf of Suez, the Nile Delta, and the Mediterranean Sea, areas which already have significant production of crude oil and natural gas. The government announced bid winners in January 2022; however, it only awarded eight blocks. Eni received exploration licenses to five blocks, and the other bid winners were BP, Apex International Energy, and United Energy.[7]

Energy consumption

- According to the latest estimates in BP's *2021 Statistical Review of World* Energy, the most-consumed fuels in Egypt were petroleum and other liquids (36%) and natural gas (57%) in 2020. Renewable energy and coal accounted for 6% and 1%, respectively, of the country's total consumption for the same year (Figure 1). Coal is primarily used in Egypt's industrial sector.[8]

Figure 1. Primary energy consumption in Egypt, 2020



Source: Graph by the U.S. Energy Information Administration, based on data from BP's *2021 Statistical Review of World Energy*

Petroleum and other liquids

Exploration and production

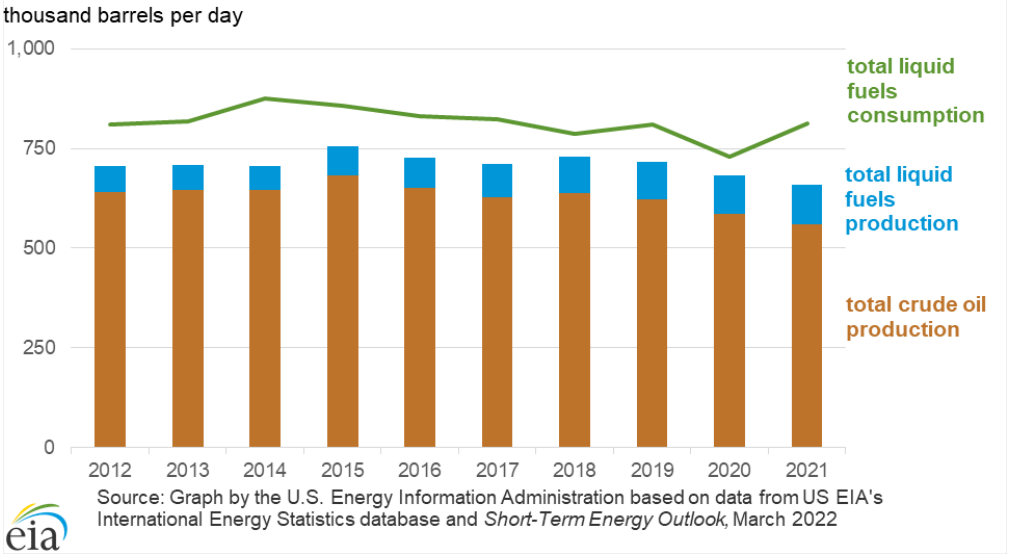
- According to the *Oil & Gas Journal* (OGJ), Egypt held proved oil reserves of 3.3 billion barrels as of January 2021.[9]
- Egypt has three main crude oil blends. The Suez and Belayim blends comes from aging offshore fields in the Gulf of Suez and are refined domestically, with only small quantities exported. The Suez and Belayim blends are medium, sour crude oil grades. The Western Desert blend comes from the newer onshore fields in the Western Desert and is a light, sweet crude oil (Table 1).[10]
- Total liquid fuels production in 2021 was an estimated 660,000 barrels per day (b/d), about 561,000 b/d was crude oil and lease condensate (Figure 2).[11]
- Egypt's total liquid fuels consumption currently outpaces its oil production. Egypt's total liquid fuels production has benefited from higher natural gas liquids production from the large offshore natural gas fields that came online in the mid-2010s. However, overall total liquid fuels production has been declining because of a lack of significant crude oil discoveries in recent years.[12]

Table 1. Selected crude oil blends from Egypt

Crude oil blend	API gravity	Sulfur content
Suez	30.4	1.65
Belayim	27.5	2.20
Western Desert	41.1	0.34

Source: Table by the U.S. Energy Information Administration, based on data from the Egypt Oil & Gas Group

Figure 2. Total annual liquid fuels production and consumption in Egypt, 2012–2021



Transport and storage

- The Suez Canal and the Suez-Mediterranean (SUMED) Pipeline are two major routes and transit chokepoints for crude oil and LNG shipments, and they give Egypt a significant role in global crude oil and natural gas trade. If both the Suez Canal and the SUMED Pipeline close, tankers would have to divert around the southern tip of Africa, adding approximately 8–15 days of transit to the United States or Europe and leading to increased shipping costs.[13]
- Egypt has crude oil storage facilities located at the Ain Sukhna and Sidi Kerir terminals, which are located at the beginning and the end of the SUMED pipeline. The Sidi Kerir terminal, located on the Mediterranean, has 27 storage tanks with a total capacity of 20 million barrels, while the Ain Sukhna terminal (located on the Red Sea) has 15 floating storage tanks with a total capacity of 10 million barrels.[14]

Refining and refined oil products

- According to the EGPC, eight refineries with a total nameplate capacity of approximately 762,000 b/d exist in Egypt (Table 2).[15]
- According to Egypt's Minister of Petroleum and Mineral Resources, the MIDOR refinery plans to expand and modernize by 60,000 b/d. This project is expected to be completed in the first quarter of 2022, adding an additional crude oil distillation unit, a vacuum distillation unit, a diesel hydrotreater, and a hydrogen unit. This project, which will cost about $2.3 billion, will also increase operational efficiency and production capacity by upgrading and integrating other existing units. TechnipFMC received the engineering, procurement, and construction contract in 2018.[16]
- The Assiut refinery plans to expand and modernize its facilities to add a new naphtha complex and hydrocracking complex. According to *NS Energy Business*, this project is scheduled to be completed by 2022 and will likely require an investment of about $2.5 billion.[17]

- The Mostorod refinery began operating commercially in 2019, and it was officially inaugurated in September 2020. The refinery has a number of different processing units, including a delayed coker unit, a naphtha and a diesel hydrotreating unit, a hydrocracker, and a sulfur recovery unit. The refinery was originally slated to begin operations in 2017 but experienced delays during its construction phase.[18]
- In April 2021, the Egyptian government and the state-owned Red Sea National Refining and Petrochemicals Company signed an agreement to build an integrated refining and petrochemicals complex in the Suez Canal Economic Zone at Ain Sukhna. The refining and petrochemicals complex will be used to produce a variety of petroleum and chemical products, including polyethylene, polyesters, and bunker fuel, and, when completed, will be the first and largest integrated facility in Africa. The proposed refining and petrochemicals project requires an overall investment of $7.5 billion and, according to Egypt's Ministry of Petroleum and Mineral Resources, construction will likely be finished by the end of 2024.[19]

Table 2. Egypt's existing refineries

Refinery name	Operator	Location	Nameplate capacity (barrels per day)
El-Nasr refinery	El-Nasr Petroleum Company	El Suez	131,000
Mostorod refinery	Egypt Refining Company	Mostorod (Cairo)	161,000
Alexandria refinery	Alexandria Petroleum Company	Alexandria	100,000
MIDOR refinery	Middle East Oil Refinery	Alexandria	100,000
Ameriya refinery	Ameriya Petroleum Refining Company	Ameriya	80,000
Suez refinery	Suez Petroleum Processing Company	El Suez	60,000
Assiut refinery	Assiut Petroleum Refining Company	Assiut	90,000
Tanta refinery	Cairo Petroleum Refining Company	Tanta	40,000
Total			**762,000**

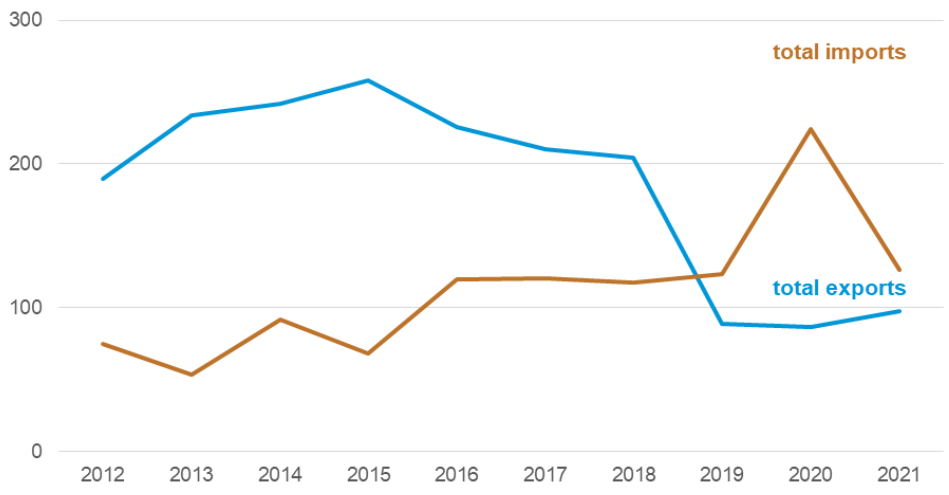
Source: Table created by the U.S. Energy Information Administration, based on data from the Egyptian General Petroleum Corporation company website

Petroleum and other liquids exports

- In 2021, Egypt imported about 127,000 b/d of crude oil and condensate and exported about 98,000 b/d (Figure 3). Over half of Egypt's crude oil exports went to India, and the remainder went to China and countries in Europe (Figure 4).[20]

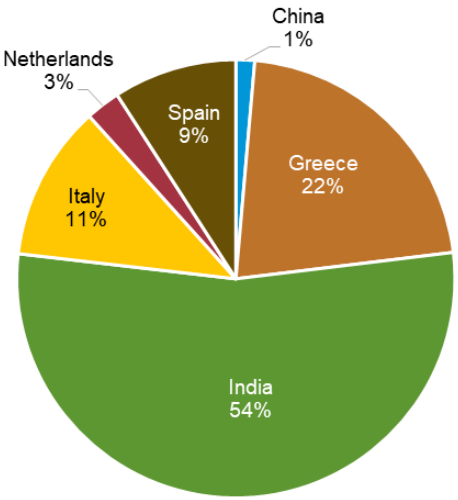
Figure 3. Egypt's total annual exports and imports of crude oil and condensate, 2012–2021

thousand barrels per day



Source: Graph by U.S. Energy Information Administration based on US EIA's International Energy Statistics database and data provided by Global Trade Tracker

Figure 4. Total crude oil and condensate exports from Egypt by country, 2021



Source:Graph by U.S. Energy Information Administration based on Global Trade Tracker data

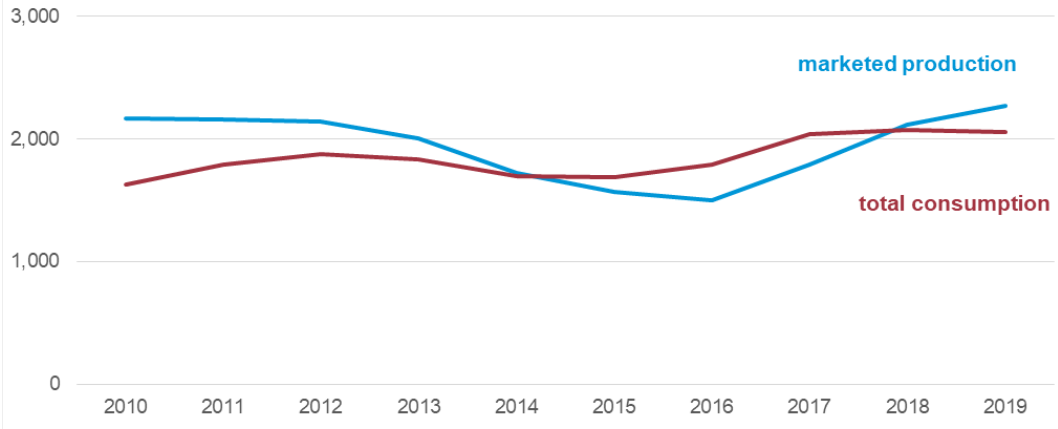
Natural gas

Exploration and production

- According to OGJ, Egypt held 63 trillion cubic feet (Tcf) of proved natural gas reserves as of January 2021.[21]

- Egypt produced about 2.3 Tcf of dry natural gas in 2019 and consumed about 2.1 Tcf in that same year[22] (Figure 5). Egypt's natural gas production rose significantly as a result of large natural gas discoveries in the mid-2010s, such as the Zohr, Atoll, and West Nile Delta projects that were fast-tracked for development. Natural gas consumption, meanwhile, has remained relatively flat, allowing Egypt to export some of its surplus natural gas via pipelines and as LNG.[23]
- Egypt's Zohr field reached its peak production of 1.1 Tcf per year in February and March 2021, but technical problems have decreased its production; water breakthrough issues decreased output at the field to about 876 Bcf–912 Bcf per year. Eni (the operator) and its concession partners (Rosneft, BP, and Mubadala Petroleum) plan to drill additional wells to increase capacity, but the outcome remains uncertain. The West Nile Delta development's Raven project, brought online in April 2021, also has not reached its stated capacity of 329 Bcf per year, producing about 219 Bcf per year as of June 2021. The lower-than-expected output from Egypt's recent natural gas discoveries may slow natural gas production growth.[24]
- In July 2020, Eni announced a new natural gas discovery at the Bashrush well in the North El Hammad concession, Greater Nooros area, located offshore in the Mediterranean. Initial testing at the well placed production estimates at about 11.7 Bcf per year. Eni is planning to coordinate with its concession partners—BP, TotalEnergies, and EGAS—to quickly develop the field and bring its production online. The Bashrush discovery is the latest significant addition to some of the offshore discoveries made in the last decade in the Mediterranean that have boosted Egypt's total natural gas production.[25]

Figure 5. Annual natural gas production and consumption in Egypt, 2010–2019



Source: Graph by U.S. Energy Information Administration based on data from US EIA's International Energy Statistics database

Transport and storage

Pipelines

- The Arab Gas Pipeline (AGP) is a natural gas pipeline that originates in Arish, Egypt, and connects to Israel, Jordan, Syria, and Lebanon. Sabotage or attacks by militant groups have repeatedly disrupted AGP's transport of natural gas since its construction. The AGP, which

has a reported capacity of 234 Bcf per year, currently supplies natural gas from Egypt to Jordan at between 26 Bcf and 44 Bcf per year. Lebanon is currently repairing its connection to the pipeline to restart natural gas imports from Egypt and plans to complete the repairs by March 2022.[26]

- Israel and Egypt are reportedly planning to build a natural gas pipeline onshore that could provide up to an additional 177 Bcf per year. The proposed natural gas pipeline would be the second between the two countries—the first being the subsea Eastern Mediterranean Gas (EMG) Pipeline that runs from Ashkelon in Israel to Arish in Egypt. The EMG pipeline has a nameplate capacity of about 318 Bcf and transports natural gas from Israel's offshore fields to Egypt for domestic consumption or export.[27]

LNG

- Egypt currently has two LNG export facilities, the Spanish-Egyptian Gas Company (SEGAS) LNG facility and the Egyptian LNG facility (ELNG). SEGAS LNG is a single LNG train located in Damietta on the Mediterranean coast. Since the start of commercial operations in 2004, Egypt underutilized SEGAS LNG, leading to the plant's closure in December 2012 as a result of growing domestic energy demands. The plant restarted LNG exports in February 2021 after Eni, Naturgy, and the government of Egypt and its SOEs reached an agreement to restart the plant.[28] ELNG is located at Idku and has two LNG trains. ELNG began production in May 2005, but like the SEGAS LNG, the facility experienced a temporary shut-in in 2015 as a result of high domestic demand for natural gas and insufficient feedstock for the facility to export (Table 3).[29]
- Egypt has one floating storage and regasification unit (FSRU), provided by BW Gas, and it is located at the SUMED port. BW Gas FSRU began operating commercially in September 2015. Egypt's other FSRU, provided by Höegh, left the country in October 2018 after Egypt terminated its charter. Egypt reportedly maintains one FSRU to ensure security of natural gas supplies.[30]

Table 3. Egypt's liquefaction terminals

Project Name	Ownership	Start date	Location	Capacity (billion cubic feet per year)
SEGAS LNG	Eni (50%); EGAS (40%); EGPC (10%)	2004	Damietta	266
Egyptian LNG	Train 1 - Shell (35.5%); Petronas (35.5%); EGAS (12%); EGPC (12%); TotalEnergies (5%) Train 2 - Shell (38%); Petronas (38%); EGAS (12%); EGPC (12%);	2005	Idku	346
Total				**612**

Source: Table by the U.S. Energy Information Administration, based on data from the Global Energy Monitor, Hydrocarbons Technology, NS Energy Business, Eni company website

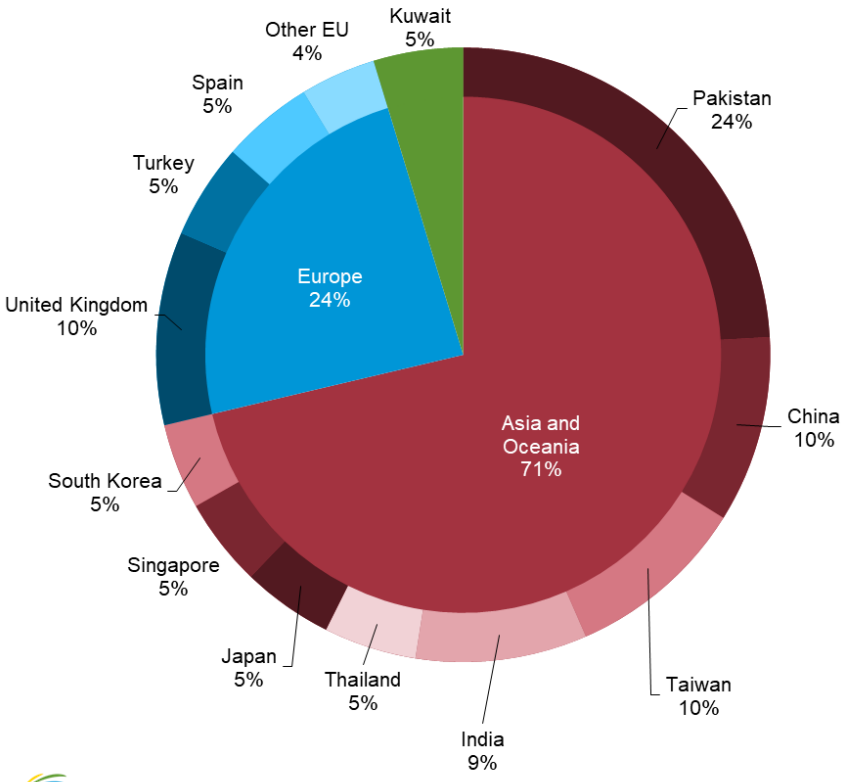
Natural gas exports

- Egypt primarily exports its natural gas as LNG, although in 2018, it began exporting natural gas to Jordan via the AGP. Historically Egypt has been a net exporter of natural gas, but in the mid-2010s, Egypt had to import natural gas to meet increasing domestic consumption. Egypt's total natural gas exports have steadily increased since 2016, after some of its recent

natural gas discoveries began producing, which created a surplus of natural gas for the country to export. Egypt's natural gas imports declined to nearly zero by 2019 after reaching a record high of 294 Bcf in 2016; Egypt exported about 177 Bcf in 2019, according to US EIA's latest estimates.[31]

- Egypt exported about 64 Bcf of LNG in 2020, according to the latest estimates provided by BP's *2021 Statistical Review of World Energy*. Most of Egypt's LNG went to countries in the Asia Pacific region, with Pakistan, China, and Taiwan as the three largest importers. The United Kingdom also imported about 6 Bcf, or 10%, of Egypt's total exports in 2020 (Figure 6).[32]

Figure 6. Egypt's LNG exports by destination, 2020



Source: Graph by U.S. Energy Information Administration based on data from BP's *2021 Statistical Review of World Energy*

Electricity

Sector organization

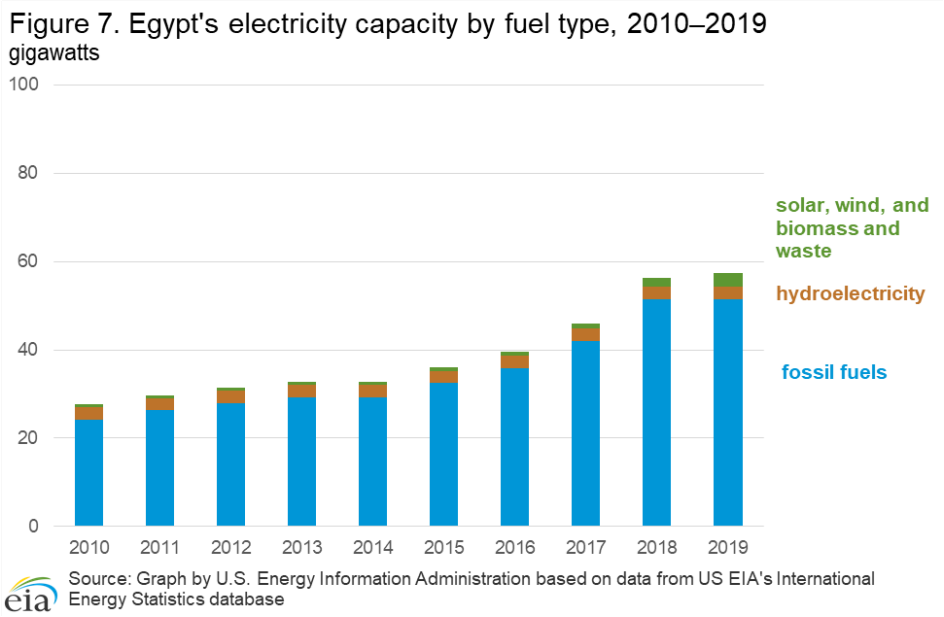
- The Ministry of Electricity and Renewable Energy (MOEE) oversees the generation, transmission, and distribution segments. The Egyptian Electricity Holding Company (EEHC) SOE oversees activities in the power sector through its subsidiaries. Five of EEHC's subsidiaries manage the generation segment, and the EEHC and the Egyptian Electricity Transmission Company (EETC) manage the transmission segment. Nine other subsidiaries of the EEHC manage the distribution segment. The Egyptian Electricity Utility and Consumer Protection Regulatory Agency is the main power market regulator responsible for setting electricity tariffs, and the MOEE provides oversight on the other authorities operating in the

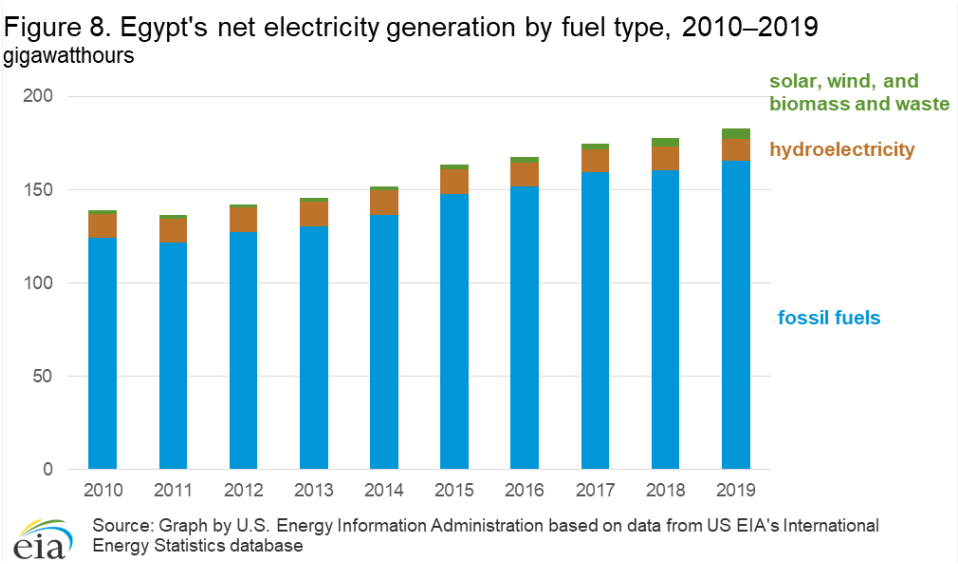
electricity sector, such as the New and Renewable Energy Authority, the Atomic Energy Authority, and the Hydropower Plant Executive Authority.[33]

- In February 2015, the government approved a law (the Electricity Law No. 87 of 2015, or the *2015 Electricity Law*) that aimed to encourage transparency in the power market and attract private sector participation in the generation, transmission, and distribution segments. The 2015 Electricity Law shifts the power sector from state-directed management to regulatory management, which could potentially increase private-sector investment. The 2015 Electricity Law grants an initial period of eight years to develop and implement these measures, which recently was extended to 2025.[34]
- Egypt can develop renewable energy resources given its solar potential and high wind speeds, particularly in the Gulf of Suez and the Nile Valley. The Egyptian government looks to capitalize on these potential resources with renewable energy power projects in its latest energy policy plan, the 2035 Integrated Sustainable Energy Strategy. The 2035 Strategy emphasizes developing renewable energy sources and sets a long-term goal to increase renewables' share, particularly solar and wind, to 42% by 2035.[35]

Power generation and capacity

- Egypt has a total installed capacity of 57 gigawatts (GW) and generated about 183 gigawatthours (GWh) in 2019. Fossil fuel-derived sources accounted for approximately 90% of total power generation capacity in Egypt, and hydropower and renewable sources made up the remainder, at about 5% each of total capacity. Egypt does not use any coal for power generation. (Figure 7 and Figure 8).[36]
- Egypt's electricity grid connects to transmission grids in Libya, Jordan, and Syria under the Eight Countries Electric Interconnection Project. This project is still under development, and on completion, will connect the remaining partner countries involved in the project—Iraq, Lebanon, Palestine, and Turkey.[37]
- The government also seeks to develop additional cross-border transmission interconnections to electricity grids to enable Egypt to become a regional hub for electricity. The governments of Egypt and Jordan signed an agreement to double the current interconnection capacity of 500 MW to enable Egypt to begin supplying electricity to Iraq through its connection with Jordan. Egypt and Saudi Arabia are also planning to construct a 3 GW electricity cable between the two countries and awarded contracts to build out some of the infrastructure in October 2021. The first phase of the Egypt-Saudi Arabia interconnector cable is expected to be completed by 2024 and to reach full capacity in 2025.[38]





Hydropower

- Hydropower is Egypt's third-largest energy source after fossil fuel-derived sources. Most of the country's hydroelectricity comes from the Aswan High Dam and the Aswan Reservoir Dams across the Nile River. The Egyptian government plans to replace some of the turbines at the Aswan High Dam and Aswan Low Dam to rehabilitate the infrastructure and to improve efficiency at the facility.[39]
- Ethiopia's plans to build the 5.2 GW Grand Ethiopian Renaissance Dam (GERD) on the Blue Nile River have prompted concerns about water shortages to Egypt's Aswan High Dam and the effects on industries that depend on the Nile River as a water source in Egypt. GERD can hold up to 2.6 trillion cubic feet of water, and once completed and operational, GERD will be the largest hydropower plant in Africa. Interstate dialogue between Ethiopia and downstream nations Egypt and Sudan has failed to resolve the issues surrounding the

construction of GERD and the resulting economic and environmental impact the dam will have once it becomes fully operational.[40]

Solar and Wind

- According to the International Trade Administration, Egypt has developed a series of large-scale wind farms in the past two decades, with a total capacity of 1.2 GW, and plans to develop additional wind power projects in the Gulf of Suez and Nile Banks area, allocating approximately 4,900 square miles to construct wind farms. In August 2020, the government awarded a contract to Vestas Wind Systems to construct a 250 MW wind farm located in the Gulf of Suez. Hitachi Energy, which is building the infrastructure to integrate the wind farm into the national power grid, expects this project to be completed by 2023.[41]
- Egypt's solar park in Benban in the Western Desert region was completed in 2019, and it has a total capacity of about 1.7 GW. A consortium led by the International Finance Corporation provided initial financing of $653 million for the construction of the initial 13 solar power plants in October 2017, and the European Bank for Reconstruction and Development has provided additional financing for the construction of more solar power plants at the Benban solar park.[42]

Nuclear

- Egypt maintains a nuclear research program and operates two research nuclear reactors although the nuclear research reactor at Inshas is shut down.[43]
- Egypt has no commercial nuclear power but seeks to add nuclear power to its energy mix. The Egyptian government has signed a preliminary agreement with Russia's state nuclear corporation, Rosatom, to build and operate Egypt's first commercial nuclear power plant in El-Dabaa. However, construction of the 4.8 GW plant has been delayed, and it is unlikely that the plant will be operational in the near or medium term.[44]

Notes

- Data presented in the text are the most recent available as of April 4, 2022.
- Data are EIA estimates unless otherwise noted.

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[1] "Organizational Structure of the Petroleum Sector," Arab Republic of Egypt, Ministry of Petroleum, accessed January 24, 2022.
[2] "About the Commission," the Egyptian General Authority for Mineral Resources, accessed January 24, 2022, http://www.petroleum.gov.eg/en/AboutMinistry/Pages/Heirarchy.aspx. Egyptian Petrochemicals Holding Company, accessed January 24, 2022.
[3] "About Us," South Valley Egyptian Petroleum Holding Company (Ganope), accessed January 24, 2022. "About EGPC," Egyptian General Petroleum Corporation, accessed January 24, 2022.
[4] "Vision and Mission," Egyptian Natural Gas Holding Company, accessed January 24, 2022. "About EGPC," Egyptian General Petroleum Corporation, accessed January 24, 2022. Girgis Abd El-Shahid and Asmaa Badawy, "The Oil and Gas Law Review: Egypt," *The Law Reviews*, November 3, 2021, accessed February 28, 2022. Olfat Kamel, Mostafa El Shazly, "The Egyptian upstream petroleum sector: legal analysis of joint operating companies," *Egypt Oil & Gas*, November 6, 2016.
[5] Analysis based on data taken from Rystad Energy UCube Browser, accessed January 28, 2022.
[6] "Supermajors take the lead in Egyptian Red Sea," *Rystad Energy*, December 30, 2019.
[7] "Egypt Oil & Gas Report, Q4 2021," *Fitch Solutions Country Risk & Industry Research*, November 2021. "Regional Trends Report: North Africa," *Rystad Energy*, November 2021. Nermina Kulovic, "Egypt launches new licensing round to keep up medium-term gas output," *Rystad Energy*, February 23, 2021. "Eni scoops up bulk of acreage in Egypt's first online licensing round," *Rystad Energy*, January 13, 2022. "Exploration Trends Report: February 2022," *Rystad Energy*, February 2022.

[8] BP 2020 Statistical Review of World Energy, accessed 9/25/2020. Sarah Matthews and Amanda Flint, "Egypt 2019 thermal coal imports rise 31% on cement sector demand," *S&P Global Platts*, January 16, 2020.
[9] *Oil &Gas Journal*, "Worldwide Look At Reserves and Production," [Table], December 7, 2020.
[10] "Light Crude vs. Heavy Crude: A Continuously Narrowing Gap," *Egypt Oil & Gas Group*, September 9, 2018. Crude blend qualities are defined as sweet or sour, and as light, medium, or heavy based on their API gravity and sulfur content utilizing our criteria on crude oil blend characteristics; see Corrina Ricker, et al. "Changing quality mix is affecting crude oil price differentials and refining decisions," *Today in Energy*, September 21, 2017.
[11] U.S. Energy Information Administration. International Energy Statistics database, accessed 6/10/2020.
[12] "Egypt Oil & Gas Report, Q4 2021," *Fitch Solutions Country Risk & Industry Research*, November 2021. "Egypt Oil Output Plumbs New 40-Year Low For August," *Middle East Economic Survey*, October 15, 2021.
[13] "World Oil Transit Chokepoints," U.S. Energy Information Administration, July 25, 2017. Lejla Villar and Mason Hamilton, "Three important oil trade chokepoints are located around the Arabian Peninsula," *Today in Energy*, U.S. Energy Information Administration, August 4, 2017.
[14] "Egypt Oil & Gas Report, Q4 2021," *Fitch Solutions Country Risk & Industry Research*, November 2021.
[15] "Refineries," Egyptian General Petroleum Corporation, accessed January 24, 2022.
[16] "Middle East Refinery Expansion," *NS Energy Business*, accessed January 25, 2022. "TechnipFMC awarded major contract for MIDOR refinery project," *Hydrocarbon Processing*, November 1, 2018. "Middle East Oil Refinery (Midor), Alexandria," *Hydrocarbons Technology*, accessed January 25, 2022. "Egypt's MIDOR refinery expansion will open in Q1 2022: Petroleum Minister," *Daily News Egypt*, March 22, 2021.
[17] "Assiut Oil Refinery Upgrade Project," *NS Energy Business*, accessed January 25, 2022. "Egypt firms to build atmospheric distillation facility at Assiut Refinery," *Offshore Technology*, October 13, 2021.
[18] "Project Overview," Egyptian Refining Company, accessed January 24, 2022. "ERC Mostorod Refinery," *NS Energy Business*, accessed January 24, 2022. "Al-Sisi Inaugurates New Mostorod Project Worth $4.3 B," *Egypt Oil & Gas Group*, September 28, 2020. "Egyptian Refining Company Delays Production to 2018Q2," *Egypt Oil & Gas Group*, March 2, 2017.
[19] "Egypt to build $7.5bn petrochemical complex in Ain Sokhna industrial zone," *NS Energy Business*, April 29, 2021. Robert Brelsford, "Egypt advances plan for new refining, petrochemicals complex," *Oil & Gas Journal*, May 5, 2021. Sam Hashmi, "Egypt signs deal to build $7.5bn petrochemical complex," *Argus Global Media,* April 29, 2021.
[20] Our analysis based on International Energy Statistics database and trade data provided by Global Trade Tracker, accessed February 10, 2022. Jasmine Shaheen, "Egypt Oil Imports Increase by 135.2% in February 2020," *Egypt Oil & Gas*, May 10, 2020. Egypt Country Profile, *Middle East Economic Survey,* accessed February 14, 2022.
[21] *Oil &Gas Journal*, "Worldwide Look At Reserves and Production," [Table], December 7, 2020.
[22] U.S. Energy Information Administration, International Energy Statistics database, accessed January 27, 2022.
[23] "Zohr Gas Field," *Offshore Technology*, accessed January 27, 2022. "Egyptian gas sector poised for growth," *Newbase*, *Afroil* Issue 721, Week 1, January 9, 2018. "Eni strikes Zohr sale deal," *Newbase*, *Afroil* Issue 730, Week 10, March 13, 2018. "BP begins production from Egypt's Atoll gas field seven months ahead of schedule," BP press release, February 12, 2018, accessed January 27, 2022. "BP announces start of production from West Nile Delta development achieving first gas eight months ahead of schedule and production 20 percent above plan," BP press release, May 10, 2017, accessed January 27, 2022.
[24] "Egypt's Zohr Struggles with Water Breakthrough," *Middle East Economic Survey*, June 11, 2021. "Egypt: Condensate Output Record as Gas Slumps," *Middle East Economic Survey,* June 11, 2021. "BP's Raven: Delayed Start Hikes Egypt Gas To New Highs," *Middle East Economic Survey*, April 30, 2021."Raven Gas Field: Egypt," *Offshore Technology,* May 10, 2021.
[25] "Eni expands Egypt's Great Nooros area with Bashrush discovery," *Rystad Energy*, July 2, 2020. "Eni successfully tests Egypt's Bashrush discovery in North El Hammad concession in Mediterranean Sea," *Oil & Gas Middle East*, July 30, 2020. "Eni: Bashrush discovery, in North El Hammad concession in Mediterranean Sea of Egypt, tested with success," Eni press release, July 28, 2020.

[26] Jennifer Gnana, "Explainer: what is the Arab Gas Pipeline and why it matters," *The National News*, September 8, 2021. "Repairs to Arab Gas pipeline should be completed by end-Feb, Lebanese minister says," *Reuters*, December 29, 2021.
[27] "Arish-Ashkelon Pipeline," *Global Energy Monitor*, accessed February 9, 2022. "Israel begins exporting natural gas to Egypt," *Al-Jazeera Media Network*, January 15, 2020. "Israel, Egypt plan new gas pipe that could boost Europe supplies: Israeli ministry," *Al-Arabiya News*, October 22, 2021.
[28] "Damietta Segas LNG Terminal," *Global Energy Monitor*, accessed February 10, 2022. "SEGAS Liquefied Natural Gas Complex, Damietta," *Hydrocarbons Technology*, accessed February 10, 2022. "Eni closes agreement with partners for restart of Damietta liquefied natural gas plant in Egypt and amicable settlement of Union Fenosa Gas disputes," Eni press release, March 10, 2021.
[29] "Egyptian LNG Terminal," *Global Energy Monitor*, accessed February 10, 2022. "Egyptian LNG Project: Idku," *NS Energy Business*, accessed February 10, 2022.
[30] "Egypt: BW Singapore FSRU moves to port in Sumed," *Offshore Energy Business*, June 7, 2017. "Hoegh Gallant LNG carrier leaves Egypt, sets U.S. destination," *Reuters*, October 18, 2017.
[31] U.S. Energy Information Administration. International Energy Statistics database, accessed February 11, 2022. Eric Han, "Offshore discoveries in the Mediterranean could increase Egypt's natural gas production," *Today in Energy*, U.S. Energy Information Administration, August 14, 2018. "Egypt officially became a net exporter of LNG, bringing our gas hub ambitions ever closer," *Enterprise*, February 16, 2020. Ahmed Fouad, "Egypt's future in the LNG market," Middle East Institute, September 21, 2021.
[32] BP 2021 Statistical Review of World Energy, accessed January 27, 2022.
[33] Egypt Power Report: Q4 2021, *Fitch Solutions Country Risk & Industry Research*, August 2021. "Affiliated Companies," Ministry of Electricity and Renewable Energy government website, accessed January 31, 2022. International Renewable Energy Agency, Renewable Energy Outlook: Egypt, October 2018.
[34] Mariam Fahmy and Nada Hussein, "Electricity Regulation in Egypt," *Thomson Reuters Practical Law*, November 1, 2020, accessed February 2, 2022.
[35] International Trade Administration, "Egypt Country Commercial Guide: Renewable Energy," September 15, 2020, accessed February 2, 2022. "El-Molla: Egypt to Stay Focused on Gas Despite Transition," *Energy Intelligence Group*, November 24, 2021.
[36] U.S. Energy Information Administration, International Energy Statistics database, accessed January 27, 2022.
[37] International Renewable Energy Agency, Renewable Energy Outlook: Egypt, October 2018."Egypt Power Report: Q1 2022," *Fitch Solutions Country Risk & Industry Research,* November 2021. "Electricity," Arab Fund for Economic & Social Development, accessed February 1, 2022. "Electricity Interconnection Projects," National Electrical Power Company (Jordan), accessed February 1, 2022.
[38] "Saudi-Egypt interconnection awards confirmed," *Power Technology*, October 15, 2021. "Egypt, Saudi Arabia sign contracts for $1.8B electrical interconnection project," *Egypt Today*, October 5, 2021. "Egypt and Jordan to double capacity of interconnection," *Energy & Utlities*, November 29, 2021.
[39] Mohamed Sabry, "Egypt to overhaul hydropower plants amid Nile dam crisis," *Al-Monitor*, September 22, 2021. "Aswan High Dam, River Nile, Sudan, Egypt," *Water Technology*, accessed February 3, 2022.
[40] Sonal Patel, ""Ethiopian GERD Mega-Dam Readying to Test Power Production," *Power Magazine,* January 6, 2022."Grand Ethiopian Renaissance Dam Project, Benishangul-Gumuz," *Water Technology*, accessed February 3, 2022. "Ethiopia's massive Nile dam explained," *Al-Jazeera*, July 8, 2021. John Mukum Mbaku, "The controversy over the Grand Ethiopian Renaissance Dam," The Brookings Institution, *Africa in Focus*, August 5, 2020.
[41] U.S. International Trade Administration, "Egypt Country Commercial Guide: Electricity and Renewable Energy," September 5, 2021, accessed February 2, 2022. "Egypt Power Report, Q1 2022," *Fitch Solutions Country Risk & Industry Research*, November 2021. "Gulf of Suez 1 wind farm project timeline and latest news," *Construction Review Online*, January 20, 2022, accessed February 2, 2022.
[42] International Trade Administration, "Egypt Country Commercial Guide: Electricity and Renewable Energy," September 5, 2021, accessed February 2, 2022. Andrew Raven, "A New Solar Park Shines a Light on Egypt's Energy Potential," International Finance Corporation, October 2017. "Benban Solar Park," *NS Energy Business*, accessed February 3, 2022. Al-Masry Al-Youm, "Ten facts on Egypt's Benban Solar Park, the largest solar power plant in the world," *Egypt Independent*, December 27, 2021.
[43] World Nuclear Association, "Nuclear Power in Egypt," World Nuclear Association Country Profiles, updated January 2022, accessed on February 1, 2022.

[44] World Nuclear Association, "Nuclear Power in Egypt," World Nuclear Association Country Profiles, updated January 2022, accessed on February 1, 2022.

APRIL 2022 PRECISION MARKET UPDATE

- New capital allocation framework through 2025
  - Pay down additional $400 million of debt over 4 years (leverage below 1.5x)
  - Allocate 10% to 20% of free cash flow for return of capital to shareholders
  - 2022 debt reduction target of $75 million

- Drilling activity updates for Q1
  - Canada peak activity of 72 rigs, extended winter drilling season in March
  - U.S. activity trending towards 55 rigs in April
  - International activity steady at 6 rigs with opportunity to add rigs later in the year

- North American dayrate momentum is strong with leading-edge rates moving up several thousands of dollars per day

- Demand for Alpha™ technologies and EverGreen™ solutions continues to increase
  - Paid Alpha™ days in Q4 increased 50% from Q3
  - 47 installed Alpha™ systems, an increase of 26% from beginning of year
  - Strong uptake of EverGreen™ Battery Energy Storage Systems and GHG emissions monitoring systems

ALPHA™ PORTFOLIO IS EXPANDING & SCALABLE

AlphaAutomation™ *($1,500/day)*

- **Process Automation Control Platform**
  Open Platform Hosts 3rd Party Apps
- **Delivers Record Well Times with Consistency**
- **Eliminates Human Variance from Operation**

AlphaApps™ *($250/day – $1,000/day)*

- **Specialized Apps to Maximize Drilling Efficiencies**
- **Multiple Drilling, Cost Efficiency & Equipment Optimization Apps**

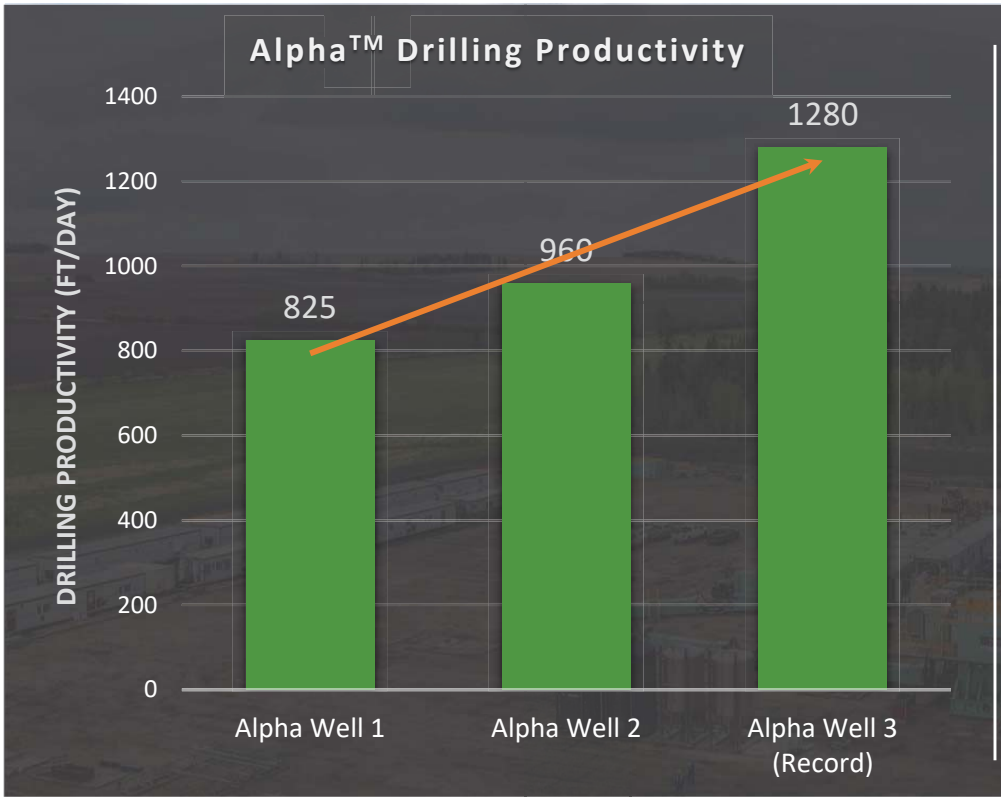
AlphaAnalytics™ *($250/day – $2,000/day)*

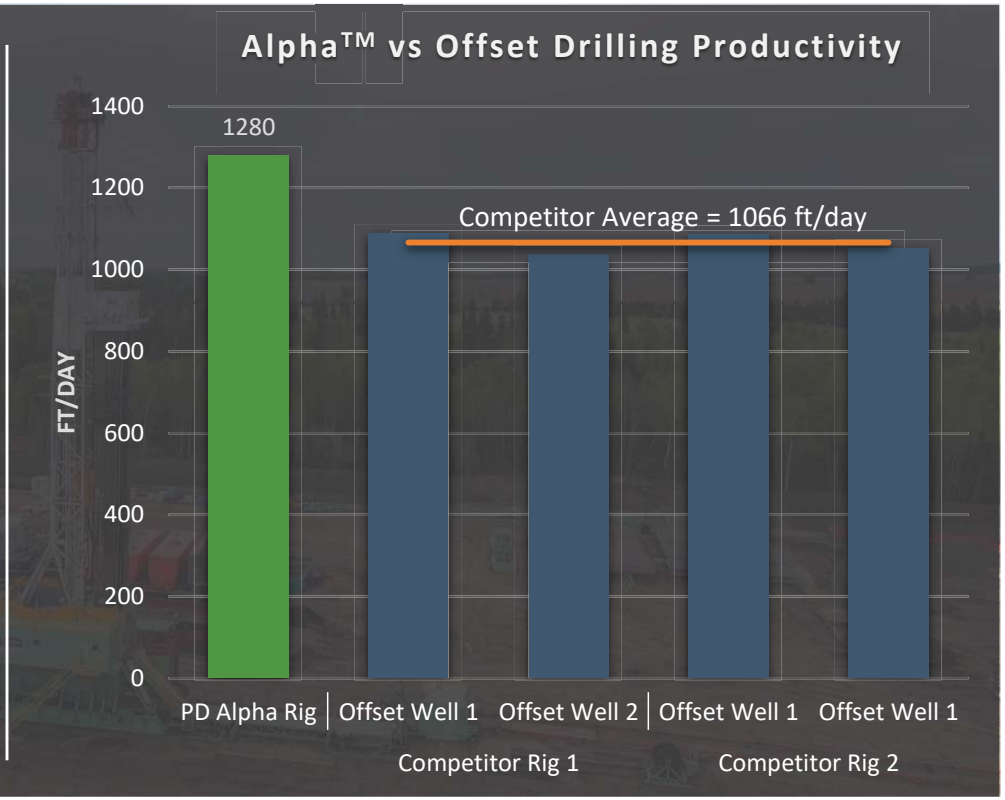
- **High Definition, Real-Time Data Analytics to Drive Performance & Customer KPI's**
- **Drilling Engineering & Drilling Risk Mgmt Services**

AlphaAutomation™ RECORD PERFORMANCE

CASE STUDY #20-06: Delaware Basin

AlphaAutomation™





6 DAYS
IMPROVEMENT OVER OPERATOR TARGET

$147K
AVG AFE SAVINGS PER WELL FOR THE OPERATOR

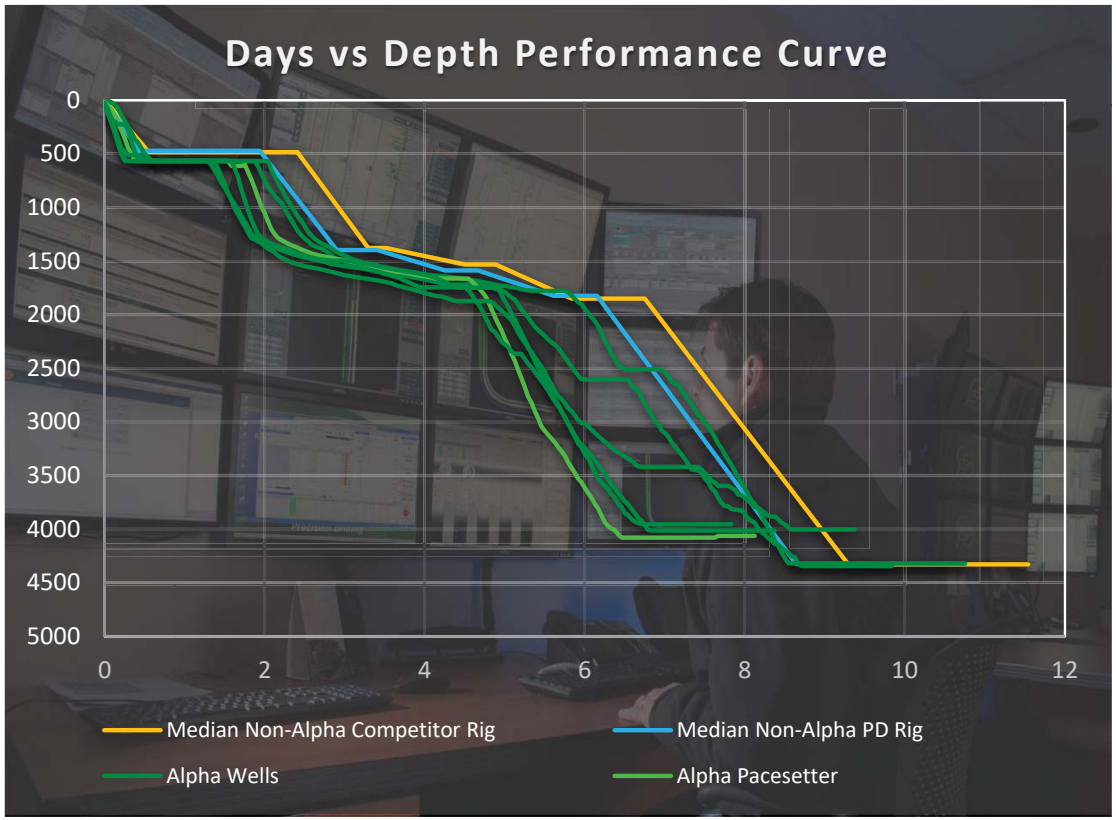
55%
PRODUCTIVITY IMPROVEMENT OVER NON-ALPHA OFFSETS

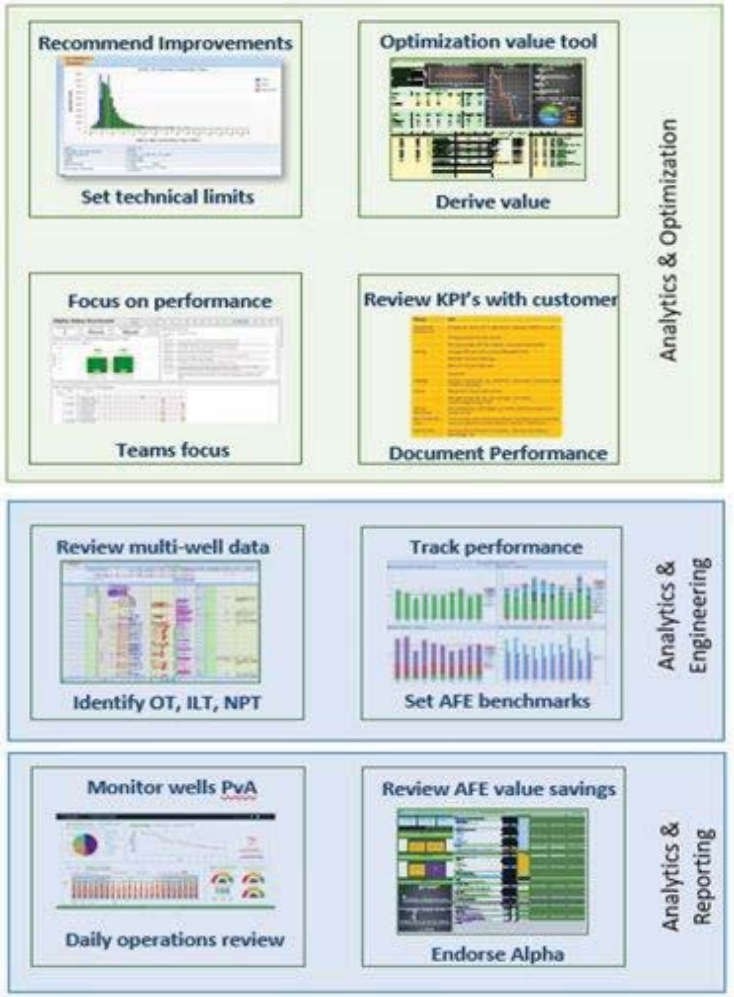
$65K
ALPHA™ GENERATED REVENUE

ALPHA™ SETS NEW BENCHMARK

CASE STUDY #20-08: MONTNEY DRILLING PROGRAM

AlphaAutomation™ AlphaAnalytics™ AlphaApps™





3 DAYS
IMPROVEMENT OVER OPERATOR TARGET

$165K
AVG AFE SAVINGS PER WELL FOR THE OPERATOR

27%
PRODUCTIVITY IMPROVEMENT OVER NON-ALPHA OFFSETS

$74K
ALPHA™ GENERATED REVENUE

U.S. MARKET FOR HIGH SPEC RIGS IS TIGHT

- Precision has a presence in every major unconventional oil and gas basin in the U.S.
  - Achieved average market share of approximately 9% in 2021.
  - Operates fleet of 104 drilling rigs, including 68 AC Triple rigs.
  - Benefit from geographic scale and operating leverage
- Precision's AC Triple utilization is expected to exceed 80% in Q2 2022
  - Industry utilization of "super spec" rigs has meaningfully tightened
  - Scarcity of high-quality AC Triple drilling rigs driving leading-edge dayrates higher
- Modest increases in U.S. land rig count could result in full utilization of "super spec" rigs in 2022
- Precision's Alpha™ and EverGreen™ capabilities driving growth in 2022
- Precision has earned share growth across Lower 48 with average share of 9% for 2021.

Precision U.S. Activity[1]

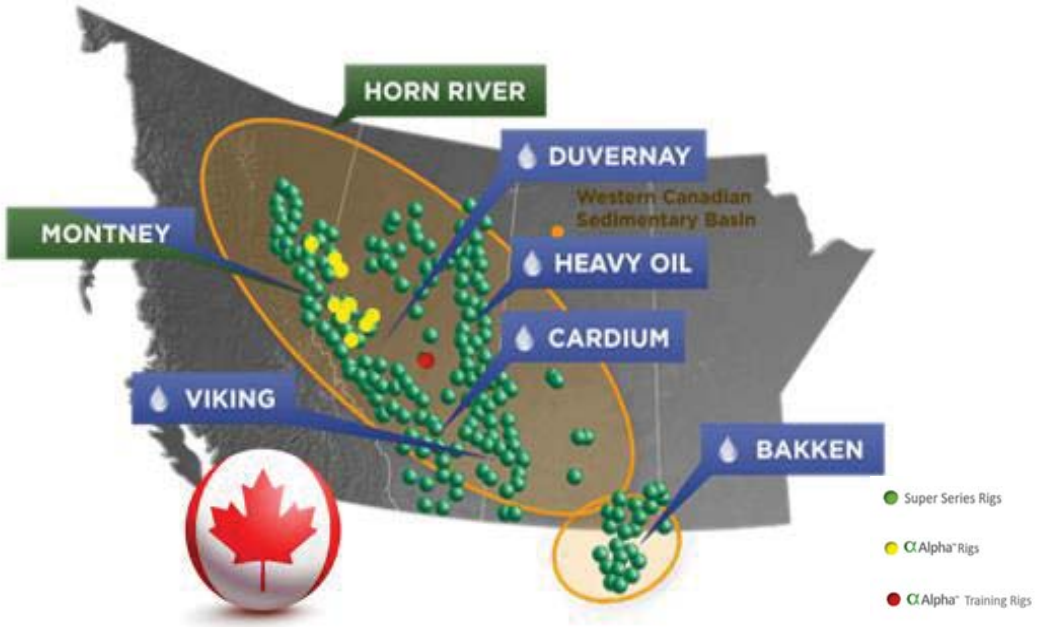
U.S. Industry Rig Count

1. Dots on map representative of areas where Precision has had operations since 2017.

CANADIAN FUNDAMENTALS STRONGEST IN NEARLY A DECADE

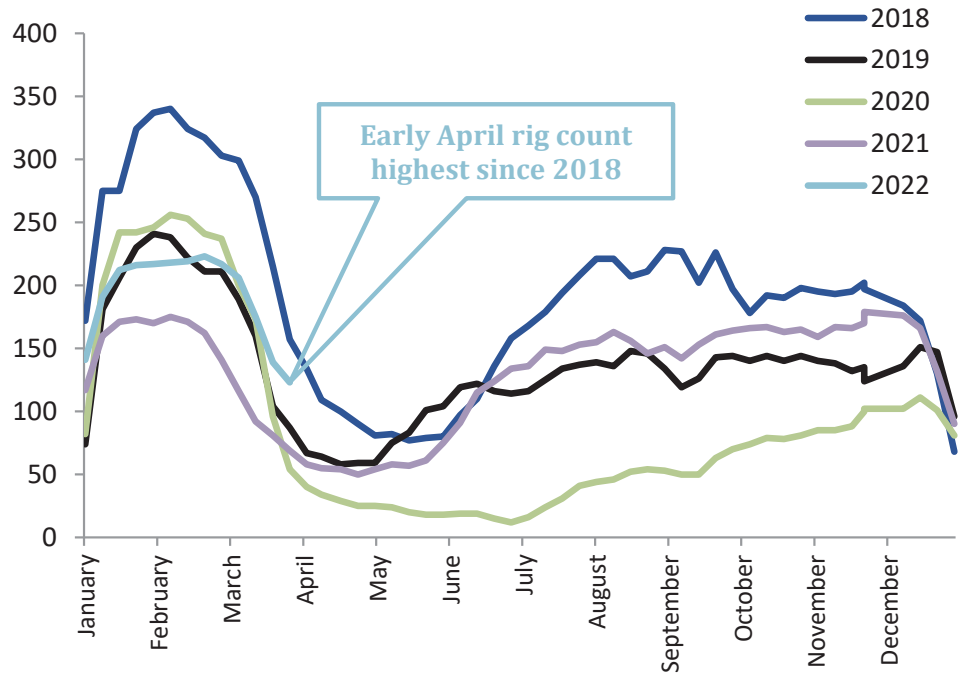
- Precision is an integral service provider in every oil and gas basin in Western Canada
  - Achieved average market share of 33% in 2021
  - Operates fleet of 109 drilling rigs, including 28 AC Super Triple rigs and [60] Super Single rigs.
  - Precision's AC Triple is the preferred rig in Montney region and Super Single is preferred rig in oil sands and Clearwater heavy oil plays.
- Existing High Performance fleet, operating scale and minimal growth capital requirements support operating leverage and cash flow generation from Precision's Canadian operations.
- Canadian industry rig count reflecting strong customer demand with April active rigs at highest level since 2018.
  - Expectations for industry levels to meet or exceed Q1 this fall.

Precision Canada Activity[1]



1. Dots on map representative of areas where Precision has had operations since 2017.

Canada Industry Rig Count



INTERNATIONAL MARKET POISED FOR GROWTH

- Precision's international strategy is focused on establishing operations at scale at in the most attractive regions with customers who value High Performance services.
- Precision has established operations in Kuwait and the Kingdom of Saudi Arabia
  - Saudi Arabia: 3 active rigs and 1 idle
  - Kuwait: 3 active rigs and 3 idle rigs
  - Kurdistan and Georgia: 3 idle rigs
- Upcoming tenders and expected contract extensions have potential to increase activity and contract coverage in the region.
- Precision operates one of the newest fleets in the region with seven newbuild rigs delivered since 2014.

Precision International Activity[1]

1. Dots on map representative of areas where Precision has had operations since 2017.

High Performance Rigs

EXTENDED RANGE FORECAST OF ATLANTIC SEASONAL HURRICANE ACTIVITY AND LANDFALL STRIKE PROBABILITY FOR 2022

We anticipate that the 2022 Atlantic basin hurricane season will have above-normal activity. Current weak La Niña conditions look fairly likely to transition to neutral ENSO by this summer/fall, but the odds of a significant El Niño seem unlikely. Sea surface temperatures averaged across the eastern and central tropical Atlantic are currently near average, while Caribbean and subtropical Atlantic sea surface temperatures are warmer than normal. We anticipate an above-average probability for major hurricanes making landfall along the continental United States coastline and in the Caribbean. As is the case with all hurricane seasons, coastal residents are reminded that it only takes one hurricane making landfall to make it an active season for them. They should prepare the same for every season, regardless of how much activity is predicted.

(as of 7 April 2022)

By Philip J. Klotzbach[1] and Michael M. Bell[2]

In Memory of William M. Gray[3]

This discussion as well as past forecasts and verifications are available online at http://tropical.colostate.edu

Jennifer Dimas, Colorado State University media representative, is coordinating media inquiries into this verification. She can be reached at 970-491-1543 or Jennifer.Dimas@colostate.edu

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ATLANTIC BASIN SEASONAL HURRICANE FORECAST FOR 2022

Forecast Parameter and 1991–2020 Average (in parentheses)	Issue Date 7 April 2022
Named Storms (NS) (14.4)	19
Named Storm Days (NSD) (69.4)	90
Hurricanes (H) (7.2)	9
Hurricane Days (HD) (27.0)	35
Major Hurricanes (MH) (3.2)	4
Major Hurricane Days (MHD) (7.4)	9
Accumulated Cyclone Energy (ACE) (123)	160
Net Tropical Cyclone Activity (NTC) (135%)	170

PROBABILITIES FOR AT LEAST ONE MAJOR (CATEGORY 3-4-5) HURRICANE LANDFALL ON EACH OF THE FOLLOWING COASTAL AREAS:

1) Entire continental U.S. coastline - 71% (average for last century is 52%)

2) U.S. East Coast Including Peninsula Florida - 47% (average for last century is 31%)

3) Gulf Coast from the Florida Panhandle westward to Brownsville - 46% (average for last century is 30%)

PROBABILITY FOR AT LEAST ONE MAJOR (CATEGORY 3-4-5) HURRICANE TRACKING INTO THE CARIBBEAN (10-20°N, 88-60°W)

1) 60% (average for last century is 42%)

ABSTRACT

Information obtained through March 2022 indicates that the 2022 Atlantic hurricane season will have activity above the 1991–2020 average. We estimate that 2022 will have 9 hurricanes (average is 7.2), 19 named storms (average is 14.4), 90 named storm days (average is 69.4), 35 hurricane days (average is 27.0), 4 major (Category 3-4-5) hurricanes (average is 3.2) and 9 major hurricane days (average is 7.4). The probability of U.S. major hurricane landfall is estimated to be about 135 percent of the long-period average. We expect Atlantic basin Accumulated Cyclone Energy (ACE) and Net Tropical Cyclone (NTC) activity in 2022 to be approximately 130 percent of their long-term averages.

This forecast is based on an extended-range early April statistical prediction scheme that was developed using~40 years of past data. Analog predictors are also utilized. We are also including statistical/dynamical models based off of 25–40 years of past data from the European Centre for Medium Range Weather Forecasts, the UK Met Office and the Japan Meteorological Agency as three additional forecast guidance tools. Our statistical model, our statistical/dynamical models and our analog model all call for an active Atlantic hurricane season in 2022.

The tropical Pacific is currently characterized by weak La Niña conditions. We believe that it is relatively likely that the tropical Pacific will revert to neutral ENSO conditions during this summer, but it seems unlikely that El Niño conditions will occur during this year's hurricane season. El Niño typically reduces Atlantic hurricane activity through increases in vertical wind shear. The eastern and central tropical Atlantic are currently have near average sea surface temperatures, while the Caribbean and most of the subtropical Atlantic are warmer than normal.

Coastal residents are reminded that it only takes one hurricane making landfall to make it an active season for them, and they need to prepare the same for every season, regardless of how much activity is predicted.

The early April forecast is the earliest seasonal forecast issued by Colorado State University and has modest long-term skill when evaluated in hindcast mode. The skill of CSU's forecast updates increases as the peak of the Atlantic hurricane season approaches. We also now present probabilities of exceedance for hurricanes and Accumulated Cyclone Energy to give interested readers a better idea of the uncertainty associated with these forecasts.

The Canada Growth Fund will be a new public investment vehicle that will operate at arms-length from the federal government. It will invest using a broad suite of financial instruments including all forms of debt, equity, guarantees, and specialized contracts. The fund will be initially capitalized at $15 billion over the next five years. It will invest on a concessionary basis, with the goal that for every dollar invested by the fund, it will aim to attract at least three dollars of private capital.

In standing up the Canada Growth Fund, the government intends to seek expert advice from within Canada and abroad. Following these consultations, details about the launch of the fund will be included in the 2022 fall economic and fiscal update. Funding for the Canada Growth Fund will be sourced from the existing fiscal framework.

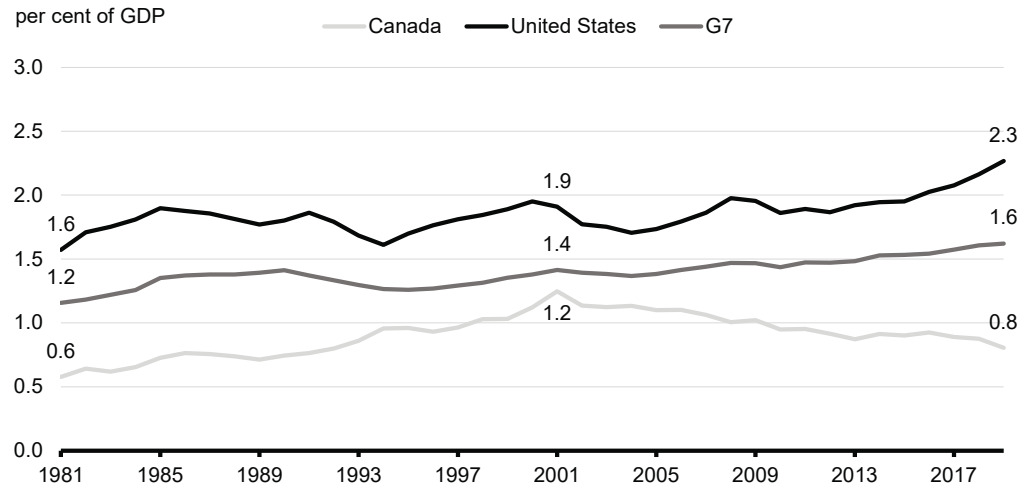
Creating a Canadian Innovation and Investment Agency

Canadians are a talented, creative, and inventive people. Our country has never been short on good ideas.

But to grow our economy, invention is not enough. Canadians and Canadian companies need to take their new ideas and new technologies and turn them into new products, services, and growing businesses.

However, Canada currently ranks last in the G7 in R&D spending by businesses. This trend has to change.

Chart 2.3
Business R&D Relative to Peers



Source: Organisation for Economic Co-operation and Development, Main Science and Technology Indicators.

In Budget 2022, the federal government intends to make significant investments that would focus on priority critical mineral deposits, while working closely with affected Indigenous groups and through established regulatory processes. These investments will contribute to the development of a domestic zero-emissions vehicle value chain, including batteries, permanent magnets, and other electric vehicle components. They will also secure Canada's place in important supply chains with our allies and implement a just and sustainable Critical Minerals Strategy.

In total, Budget 2022 proposes to provide up to $3.8 billion in support over eight years, on a cash basis, starting in 2022-23, to implement Canada's first Critical Minerals Strategy. This will create thousands of good jobs, grow our economy, and make Canada a vital part of the growing global critical minerals industry.

Supporting Critical Minerals Projects in Canada

Critical mineral mining projects are expensive and come with a unique set of challenges that can often include remote locations, changing prices, and lengthy regulatory processes. Making these projects a less risky undertaking for companies will help grow both Canada's critical mineral industry and secure the good resource jobs of the future. Specific measures proposed in Budget 2022 to support critical mineral projects include:

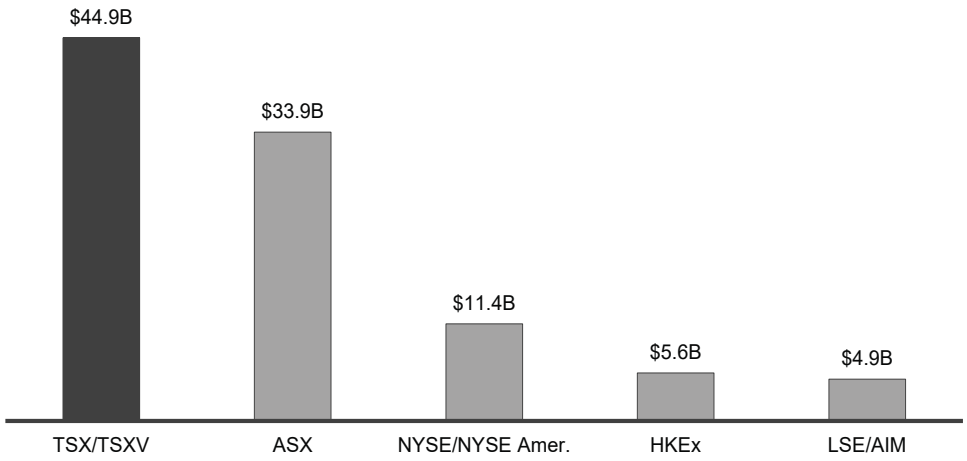
- Up to $1.5 billion over seven years, starting in 2023-24, for infrastructure investments that would support the development of the critical minerals supply chains, with a focus on priority deposits;
- $79.2 million over five years on a cash basis, starting in 2022-23, for Natural Resources Canada to provide public access to integrated data sets to inform critical mineral exploration and development; and
- The introduction of a new 30 per cent Critical Mineral Exploration Tax Credit for specified mineral exploration expenses incurred in Canada and renounced to flow-through share investors.

The tax credit would apply to certain exploration expenditures targeted at nickel, lithium, cobalt, graphite, copper, rare earths elements, vanadium, tellurium, gallium, scandium, titanium, magnesium, zinc, platinum group metals, or uranium, and renounced as part of a flow-through share agreement entered into after Budget Day and on or before March 31, 2027.

These measures will build upon Canada's strong capital markets position for mining companies.

The Toronto Stock Exchange (TSX) and TSX Venture Exchange (TSXV) are the world's primary listing venues for mining and mineral exploration companies, with more than 1,170 issuers in 2021. Between 2017 and 2021, almost $45 billion of the world's total equity capital for these mineral exploration and mining companies was raised by companies listed on the TSX or TSXV.

Chart 2.4
Global Mining Equity Capital Raised
(5-Year Total = 101 Billion CAD)



Source: TSX/TSXV Market Intelligence Group, S&P Capital IQ and S&P Global Market Intelligence.
As at December 31, 2021.

Attracting Global Critical Minerals Supply Chains

Budget 2022 proposes significant funding to make Canada a more attractive destination for critical minerals investment and to secure valuable agreements that would increase production of goods like electric vehicles and batteries.

- Budget 2022 proposes to provide up to $1 billion over six years on a cash basis, starting in 2024-25, to Innovation, Science and Economic Development Canada for the Strategic Innovation Fund. Combined with $500 million drawn from existing program funding, this will provide $1.5 billion in targeted support towards critical minerals projects, with prioritization given to manufacturing, processing, and recycling applications. Support for innovative projects through the Strategic Innovation Fund will complement other proposed investments in the sector, including a proposed $1.5 billion investment in infrastructure.

The government will also explore potential opportunities to support the growth of the solar panel industry through this envelope.

Chapter 3
Clean Air and a Strong Economy

Climate change is real and the path forward is clear. To protect our planet—and to build a stronger economy—we must do even more on climate action.

The climate crisis is more urgent than ever. Canada is already experiencing an increase in heat waves, wildfires, and heavy storms. These impacts—and the economic and health repercussions that come with them—will continue to accelerate if we do not act now.

Since 2015, the federal government has invested more than $100 billion to help lead the way in fighting climate change and protecting the environment. We have introduced a world-leading price on pollution, and on March 29, 2022, the federal government unveiled its Emissions Reduction Plan, which set out an ambitious and achievable plan to reduce greenhouse gas emissions by 40 per cent by 2030 compared to 2005 levels, and puts Canada on a path to reach net-zero emissions by 2050.

Even still, we need to do more. And that is what we will do.

Smart climate investments today are good for Canadian workers, good for the Canadian economy, and good for the planet. With the largest mobilization of global capital since the Industrial Revolution already underway, Canada has the chance to become a leader in the clean energy of the future.

Our allies have been clear: their short-term focus is on eliminating their reliance on Russian oil and gas, while they shift to renewables and clean hydrogen as quickly as they can. Canada is working with our partners in Europe and around the world to assist them in doing so.

Budget 2022 will help Canada continue to lead in global efforts to fight climate change, to protect our nature, and to build a clean economy that will create the good-paying middle class jobs of today and tomorrow.

3.1 Reducing Pollution to Fight Climate Change

Canada is taking significant steps towards reducing our emissions by 40-45 per cent below 2005 levels by 2030, and towards reaching net-zero by 2050.

Budget 2022 introduces new measures that will make it easier and more affordable for Canadians and Canadian businesses to adopt clean technologies. The measures below build upon important investments announced in Chapter 1 to green our housing stock and support net-zero new builds in communities across Canada. Measures announced in Chapter 2 will also help position Canada as a leader in the critical minerals that will power the clean technologies required for our net-zero emissions future.

Reducing Emissions on the Road

On-road transportation accounts for 20 per cent of Canada's greenhouse gas emissions.

- To accelerate the manufacturing and adoption of cleaner cars, the federal government will put in place a sales mandate to ensure at least 20 per cent of new light-duty vehicle sales will be zero-emission vehicles (ZEVs) by 2026, at least 60 per cent by 2030 and 100 per cent by 2035.
- To reduce emissions from medium- and heavy-duty vehicles (MHDVs), the federal government will aim to achieve 35 per cent of total MHDV sales being ZEVs by 2030.
- In addition, the federal government will develop a medium- and heavy-duty ZEV regulation to require 100 per cent MHDV sales to be ZEVs by 2040 for a subset of vehicle types based on feasibility, with interim 2030 regulated sales requirements that would vary for different vehicle categories based on feasibility, and explore interim targets for the mid-2020s.

Making the Switch to Zero-Emission Vehicles More Affordable

To help make ZEVs more affordable for Canadians, the federal government has offered purchase incentives of up to $5,000 for eligible vehicles since 2019. This program has helped Canadians purchase or lease over 136,000 new ZEVs, but more support is needed to help Canadians get behind the wheel of zero-emission vehicles.

- Budget 2022 proposes to provide $1.7 billion over five years, starting in 2022-23, with $0.8 million in remaining amortization, to Transport Canada to extend the Incentives for Zero-Emission Vehicles (iZEV) program until March 2025. Eligibility under the program will also be broadened to support the purchase of more vehicle models, including more vans, trucks, and SUVs, which will help make ZEVs more affordable. Further details will be announced by Transport Canada in the coming weeks.

Building a National Network of Electric Vehicle Charging Stations

Since 2015, the federal government has helped build almost 1,500 charging stations across the country. As more and more Canadians adopt zero-emission vehicles, we need to build the charging infrastructure that drivers can rely on, no matter where they're going.

- Budget 2022 announces that the Canada Infrastructure Bank will invest $500 million in large-scale urban and commercial ZEV charging and refuelling infrastructure. Funding will be sourced from the Canada Infrastructure Bank's existing resources under its green infrastructure investment priority area.
- Budget 2022 proposes to provide $400 million over five years, starting in 2022-23, to Natural Resources Canada to fund the deployment of ZEV charging infrastructure in sub-urban and remote communities through the Zero-Emission Vehicle Infrastructure Program (ZEVIP).
- Budget 2022 proposes to provide $2.2 million over five years, starting in 2022-23, to Natural Resources Canada to renew the Greening Government Operations Fleet Program, which will continue to conduct readiness assessments of federal buildings required to facilitate the transition of the federal vehicle fleet to ZEVs.

Helping Businesses Switch to Medium- and Heavy-Duty Zero-Emission Vehicles

Businesses across Canada want to upgrade their fleets to be part of the solution to climate change. However, those upgrades can be expensive, and businesses need to be confident that ZEVs can reliably transport their goods to market.

- Budget 2022 proposes to provide $547.5 million over four years, starting in 2022-23, to Transport Canada to launch a new purchase incentive program for medium- and heavy-duty ZEVs.
- Budget 2022 proposes to provide $33.8 million over five years, starting in 2022-23, with $42.1 million in remaining amortization, to Transport Canada to work with provinces and territories to develop and harmonize regulations and to conduct safety testing for long-haul zero-emission trucks.
- To help decarbonize vehicles already on the road, Budget 2022 proposes to provide $199.6 million over five years, starting in 2022-23, and $0.4 million ongoing, to Natural Resources Canada to expand the Green Freight Assessment Program, which will be renamed the Green Freight Program. This will support assessments and retrofits of more vehicles and a greater diversity of fleet and vehicle types.

With these investments, the government is taking a significant step towards reducing pollution on our roads, and is on track to meet its commitment to add 50,000 new ZEV chargers and hydrogen stations across Canada.

Sustainable Agriculture to Fight Climate Change

Agriculture plays an essential role in Canada's economy, and our farmers help feed the world. At a time of geopolitical uncertainty and rising costs, ensuring that Canada's agricultural production continues to grow will be vitally important.

However, agriculture also represents approximately 10 per cent of our greenhouse gas emissions. Farmers across the country are experiencing the impacts of climate change like floods and droughts, and have already been leading the adoption of climate-friendly practices, like precision agriculture technology and low-till techniques. These technologies can help reduce emissions and save farmers both time and money.

- Budget 2022 proposes to provide a further $329.4 million over six years, starting in 2022-23, with $0.6 million in remaining amortization, to triple the size of the Agricultural Clean Technology Program.
- Budget 2022 proposes to provide $469.5 million over six years, with $0.5 million in remaining amortization, starting in 2022-23, to Agriculture and Agri-Food Canada to expand the Agricultural Climate Solutions program's On-Farm Climate Action Fund.
- Budget 2022 proposes $150 million for a resilient agricultural landscape program to support carbon sequestration, adaptation, and address other environmental co-benefits, to be discussed with provinces and territories.
- Budget 2022 proposes to provide $100 million over six years, starting in 2022-23, to the federal granting councils to support post-secondary research in developing technologies and crop varieties that will allow for net-zero emission agriculture.

Expanding the Nature Smart Climate Solutions Fund

Investing in protecting nature is among the most affordable climate action that governments can take. The existing Nature Smart Climate Solutions Fund provides $631 million from 2021-22 to 2031-32 to support projects that conserve, restore and enhance wetlands, peatlands, and grasslands to capture and store carbon.

- To enhance the potential for the natural environment to store carbon and reduce emissions, Budget 2022 proposes to provide $780 million over five years, starting in 2022-23, to Environment and Climate Change Canada to expand the Nature Smart Climate Solutions Fund.

A New Tax Credit for Investments in Clean Technology

The expansion of clean technology will need to accelerate if Canada's economy is going to reach net-zero. Helping Canadian companies adopt clean technologies will create jobs, keep Canadian businesses competitive, and reduce Canada's emissions at the same time.

- Budget 2022 announces that the Department of Finance Canada will engage with experts to establish an investment tax credit of up to 30 per cent, focused on net-zero technologies, battery storage solutions, and clean hydrogen. The design details of the investment tax credit will be provided in the 2022 fall economic and fiscal update.

Returning Fuel Charge Proceeds to Small and Medium- Sized Enterprises

Since 2019, it has no longer been free to pollute anywhere in Canada, and provincial and territorial governments have been able to design and implement their own pollution pricing systems that meet a standard, federal benchmark. Most have done so. But in provinces that have decided not to implement a system that meets the benchmark—specifically Alberta, Saskatchewan, Manitoba, and Ontario—a federal backstop applies.

In these provinces, all direct proceeds of pollution pricing are returned to households, small businesses, Indigenous groups, and farmers.

In the 2021 *Economic and Fiscal Update*, the government announced its intention to return a portion of the proceeds from the price on pollution to small and medium-sized businesses through new federal programming in backstop jurisdictions. Beginning in 2022-23, these businesses will receive an estimated $1.5 billion in fuel charge proceeds collected between 2020-21 and 2022-23. This new program will also be used to return outstanding 2019-20 fuel charge proceeds, amounting to approximately $120 million, that have not already been returned through the Climate Action Incentive Fund.

- Budget 2022 proposes to provide up to $30 million over two years, starting in 2022-23, to Environment and Climate Change Canada to administer direct payments to support emission-intensive, trade-exposed small and medium-sized enterprises in those jurisdictions.

Expanding the Low Carbon Economy Fund and Supporting Clean Energy in Yukon

Greater collaboration on climate action between all orders of government is important for helping to build a clean economy and create good jobs. Through the Low Carbon Economy Fund, the federal government has worked with provinces and territories on funding projects that are reducing emissions from coast-to-coast-to-coast.

The Low Carbon Economy Fund currently provides up to $2 billion to provinces and territories to reduce emissions, build resilient communities, and generate good jobs for Canadians. It has supported the installation of emission-reducing technologies like wind power, solar power, and electric heating in buildings. Since 2017, the Low Carbon Economy Fund has supported approximately 132 projects across Canada.

- Budget 2022 proposes to provide $2.2 billion over seven years, starting in 2022-23, to Environment and Climate Change Canada to expand and extend the Low Carbon Economy Fund.
- Budget 2022 announces $32.2 million over two years, starting in 2022-23, from the expanded Low Carbon Economy Fund to support the Atlin Hydro Expansion project in British Columbia, which will provide clean electricity to the Yukon and help reduce greenhouse gas emissions. The federal government has previously committed $83.9 million to this project.

Support for Business Investment in Air-Source Heat Pumps

Buildings account for 12 per cent of Canada's greenhouse gas emissions, arising mostly from space and water heating. Air-source heat pumps are an energy efficient, zero-emission heating alternative that can help support Canada's climate goals if widely adopted.

- Budget 2022 proposes to expand the accelerated tax deductions for business investments in clean energy equipment to include air-source heat pumps.
- To support job creation and growth in clean technology manufacturing in Canada, the government proposes to extend the 50 per cent reduction of the general corporate and small business income tax rates for zero-emission technology manufacturers to include manufacturers of air-source heat pumps.

These measures are expected to reduce federal revenues by $53 million over five years starting in 2022-23.

Building Capacity to Support Green Procurement

With more than $20 billion in purchasing requirements every year, the federal government can use its significant buying power to accelerate the transition to a net-zero economy by purchasing goods and services with a reduced environmental impact, and by adopting new, clean technologies.

- In Budget 2022, the federal government is announcing that Public Services and Procurement Canada (PSPC) will develop new tools, guidelines, and targets to support the adoption of green procurement across the federal government. Additional details will be announced by PSPC in the months ahead.

Industrial Energy Management

Helping industrial sectors adopt clean technology will play an important role in the transition to a low carbon economy and in achieving Canada's goal of net zero emissions by 2050.

- Budget 2022 proposes to provide $194 million over five years, starting in 2022-23, to Natural Resources Canada to expand the Industrial Energy Management System program. This will to support ISO 50001 certification, energy managers, cohort-based training, audits, and energy efficiency-focused retrofits for key small-to-moderate projects that fill a gap in the federal suite of industrial programming.

3.2 Building a Clean, Resilient Energy Sector

Since 2015, Canada has begun an ambitious green transformation of our energy sector—an important sector of our economy that directly represents 7.6 per cent of our GDP and 257,000 jobs for Canadians.

Canada has already introduced a carbon-pricing system and a commitment to phase out unabated coal-fired electricity by 2030. In addition to these measures, the federal government recently committed to achieving a net-zero electricity system by 2035 and to introducing a cap on emissions from the oil and gas sector.

Budget 2022 proposes new measures to increase investments in clean power, to support clean electricity projects, to encourage the decarbonization of our energy sector, and to mobilize new capital to establish hydrogen hubs.

Investment Tax Credit for Carbon Capture, Utilization, and Storage

Carbon capture, utilization, and storage (CCUS) is a suite of technologies that capture carbon dioxide (CO_2) emissions—whether from fuel combustion, industrial processes, or directly from the air—to either store the CO_2 typically deep underground, or to use it in other industrial processes such as permanent mineralization in concrete.

CCUS technologies are an important tool for reducing emissions in high-emitting sectors where other pathways to reduce emissions may be limited or unavailable. Examples of industries where CCUS has helped to reduce emissions include oil and gas, chemical production, and electricity generation.

In Budget 2021, the federal government proposed an investment tax credit for CCUS with the intention of both securing Canada's place as a leader in CCUS and supporting the Canadian innovators and engineers advancing the technology. By lowering the carbon footprints of Canada's traditional energy producers, the credit aims to ensure that they are a stable source of cleaner energy both domestically and internationally.

The CCUS investment tax credit is a key part of the government's broader plan to work with industry towards the goal of decarbonization, including through initiatives like the Canada Growth Fund in Chapter 2 and the Net-Zero Accelerator.

The government has consulted the public, stakeholders, and provinces on the design of the investment tax credit for CCUS, and used the input received to inform its final design.

- Budget 2022 proposes a refundable investment tax credit for businesses that incur eligible CCUS expenses, starting in 2022. The investment tax credit would be available to CCUS projects to the extent that they permanently store captured CO_2 through an eligible use. Eligible CO_2 uses include dedicated geological storage and storage of CO_2 in concrete, but does not include enhanced oil recovery.
- From 2022 through 2030, the investment tax credit rates would be set at:
  - 60 per cent for investment in equipment to capture CO_2 in direct air capture projects;
  - 50 per cent for investment in equipment to capture CO_2 in all other CCUS projects; and
  - 37.5 per cent for investment in equipment for transportation, storage and use.
- To encourage the industry to move quickly to lower emissions, these rates will be reduced by 50 per cent for the period from 2031 through 2040.

The proposed refundable tax credit is expected to cost $2.6 billion over five years starting in 2022-23, with an annual cost of about $1.5 billion in 2026-27. Going forward, it is expected that the measure will continue to cost approximately $1.5 billion annually until 2030.

The government will engage with relevant provinces in the expectation that they will further strengthen financial incentives to accelerate the adoption of CCUS technologies by industry.

The government will also undertake a review of investment tax credit rates before 2030 to ensure that the proposed reduction in the level of tax support from 2031 to 2040 aligns with the government's environmental objectives.

Other CO_2 uses could be made eligible in the future, if permanence of storage can be demonstrated and no incremental CO_2 emissions result from the use of the product that is produced.

Clean Electricity

Canada has one of the cleanest electricity power grids in the world, but the clean energy it generates does not reach all parts of the country. To achieve the government's commitment to a net-zero electricity system by 2035, approximately $15 billion has been made available since 2016 to support investments in clean power generation and transmission, with Budget 2022 announcing further investments to support the expansion of clean electricity in Canada.

- Budget 2022 proposes to provide $250 million over four years, starting in 2022-23, to Natural Resources Canada to support pre-development activities of clean electricity projects of national significance, such as inter-provincial electricity transmission projects and small modular reactors. The federal government is already advancing similar work on the Atlantic Loop and Prairie Link projects. Projects like the Atlantic Loop will be critical as we move towards a net-zero emissions electricity system, while also supporting economic development through investments in new infrastructure and the enhanced security and reliability of our clean energy supply.
- Budget 2022 proposes $600 million over seven years starting in 2022-2023 to Natural Resources Canada for the Smart Renewables and Electrification Pathways Program to support additional renewable electricity and grid modernization projects.
- Budget 2022 proposes to provide $2.4 million in 2022-23 to Natural Resources Canada to establish a Pan-Canadian Grid Council, which would provide external advice in support of national and regional electricity planning.
- Budget 2022 provides $25 million starting 2022-23, to Natural Resources Canada to establish Regional Strategic Initiatives to work with provinces, territories, and relevant stakeholders to develop net-zero energy plans.

Small Modular Reactors

Small modular reactors offer a promising pathway to support Canada's low-carbon energy transition and they are less complex, easier to operate, and more cost effective than current nuclear technology. For example, a 300-megawatt small modular reactor could supply enough clean power for an estimated 300,000 homes. With approximately 76,000 hard-working Canadians employed across its supply chain, Canada's nuclear industry is well positioned to leverage its more than 60 years of science and technology innovation to become a leader in the development and deployment of small modular reactor technology.

Support to develop this technology can position Canada as a clean energy leader; support the decarbonization of provincial electricity grids in places like New Brunswick and Saskatchewan; facilitate the transition away from diesel power in remote communities; and help decarbonize heavy emitting industries.

- Budget 2022 proposes to provide $120.6 million over five years, starting in 2022-23, and $0.5 million ongoing, as follows:
  - $69.9 million for Natural Resources Canada to undertake research to minimize waste generated from these reactors; support the creation of a fuel supply chain; strengthen international nuclear cooperation agreements; and enhance domestic safety and security policies and practices; and,
  - $50.7 million, and $0.5 million ongoing, for the Canadian Nuclear Safety Commission to build the capacity to regulate small modular reactors and work with international partners on global regulatory harmonization.

Phasing Out Flow-Through Shares for Oil, Gas, and Coal Activities

The federal government committed to phase out or rationalize inefficient fossil fuel subsidies—and has recently accelerated the previous timeline for doing so from 2025 to 2023.

- Budget 2022 proposes to eliminate the flow-through share regime for fossil fuel sector activities. This will be done by no longer allowing expenditures related to oil, gas, and coal exploration and development to be renounced to flow-through share investors for flow-through share agreements entered into after March 31, 2023.

This measure is expected to increase federal revenues by $9 million over five years, starting in 2022-23.

British Columbia Old Growth Nature Fund

British Columbia's iconic old growth forests have deep-rooted cultural significance to Indigenous communities and are important to all British Columbians. They are also critical habitats for dozens of species at risk and migratory birds and are important natural stores of carbon.

- To conserve and protect these forests, Budget 2022 proposes to provide $55.1 million over three years, starting in 2022-23, to Environment and Climate Change Canada and Natural Resources Canada to establish an Old Growth Nature Fund in collaboration with the Province of British Columbia, non-governmental organizations, and Indigenous and local communities. This funding will be conditional on the Government of British Columbia making a matching investment.

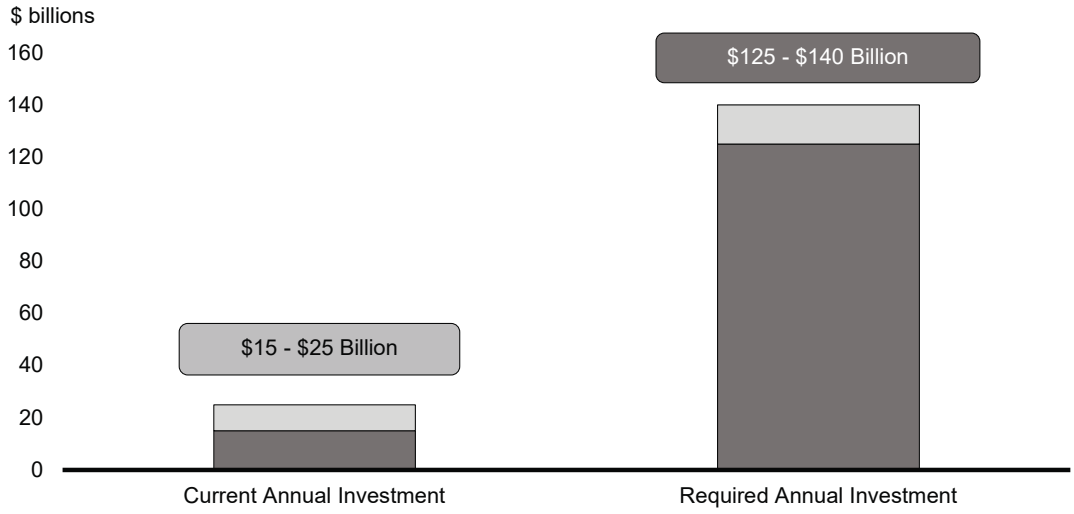
3.4 Building Canada's Net-Zero Economy

Governments around the world will not be able to finance the transition to a net-zero economy and fight climate change alone. Thankfully, the transition to net-zero represents a significant opportunity for businesses and investors looking to invest in the economy of the future and trillions of dollars in private capital have already been assembled for investments in green infrastructure and technology around the world.

Budget 2022 takes a number of important steps to mobilize the substantial private capital that will build a cleaner economy, fight climate change, and create new, good-paying middle class jobs for Canadians.

A major component of building Canada's net-zero economy is the Canada Growth Fund—a significant new $15 billion government investment fund that will accelerate the investment of private capital into decarbonization and clean technology projects; help to promote the diversification of Canada's economy; play a key role in helping to meet Canada's climate targets; and strengthen both Canada's economic resilience and capacity. More information on the Canada Growth Fund can be found in Chapter 2.

Chart 3.1
Annual Investment to Attain Net-Zero Emissions in Canada by 2050
(Total Private and Government Investment)



Sources: Global Financial Markets Association and Boston Consulting Group, *Climate Finance Markets and the Real Economy* (2020); United Nations Framework Convention on Climate Change (2018).

Increasing the Impact of the Canada Infrastructure Bank

The Canada Infrastructure Bank (CIB) was created in 2017 to attract private capital to major infrastructure projects and help build more of the infrastructure that we need across the country.

In 2020, the CIB announced its three-year, $10 billion Growth Plan, which included a goal of helping Canada achieve its emissions reduction targets. Since then, the CIB has identified opportunities to work with private sector and institutional investors to do even more to help Canada reach a net-zero emissions future.

› To increase the CIB's impact, Budget 2022 announces a broadened role for the CIB to invest in private sector-led infrastructure projects that will accelerate Canada's transition to a low-carbon economy. This will allow the CIB to invest in small modular reactors; clean fuel production; hydrogen production, transportation and distribution; and carbon capture, utilization and storage. These new areas fall under the CIB's existing clean power and green infrastructure investment areas. The CIB will continue to invest in its public transit, broadband, and trade and transportation investment areas.

As noted in section 3.1, the CIB will also invest $500 million in large-scale, zero-emission vehicle (ZEV) charging and refueling infrastructure to help accelerate the adoption of ZEVs and reduce Canada's transportation emissions.

By investing in public and private-sector led infrastructure projects, the CIB will complement the Canada Growth Fund to reduce emissions, fight climate change, and build Canada's net-zero economy.

Net-Zero Capital Allocation Strategy

Last year, the government created the Sustainable Finance Action Council, convening 25 of Canada's largest financial institutions and pension funds, which together represent more than $10 trillion in assets. While public investment can provide some of the capital required to support the net-zero transition, the massive spending power of the private sector—both in Canada and around the world—will play a vital role in the transition to a low-carbon global economy.

› Budget 2022 announces that the Sustainable Finance Action Council will develop and report on strategies for aligning private sector capital with the transition to net-zero, with support from the Canadian Climate Institute and in consultation with the Net-Zero Advisory Body.

Climate Disclosures for Federally Regulated Institutions

The federal government is committed to moving towards mandatory reporting of climate-related financial risks across a broad spectrum of the Canadian economy, based on the international Task Force on Climate-related Financial Disclosures (TCFD) framework.

The Office of the Superintendent of Financial Institutions (OSFI) will consult federally regulated financial institutions on climate disclosure guidelines in 2022 and will require financial institutions to publish climate disclosures—aligned with the TCFD framework—using a phased approach, starting in 2024.

OSFI will also expect financial institutions to collect and assess information on climate risks and emissions from their clients.

As federally regulated banks and insurers play a prominent role in shaping Canada's economy, OSFI guidance will have a significant impact on how Canadian businesses manage and report on climate-related risks and exposures.

Separately, the government will move forward with requirements for disclosure of environmental, social, and governance (ESG) considerations, including climate-related risks, for federally regulated pension plans.

Supporting the International Sustainability Standards Board's Montreal Office

The federal government welcomed the International Financial Reporting Standards (IFRS) Foundation's selection of Montreal to host one of the two central offices of the new International Sustainability Standards Board (ISSB). The ISSB will develop global sustainability standards to enhance the quality and comparability of international corporate reporting on environmental, social and governance (ESG) factors. The government is committed to supporting the start-up of the Montreal office and positioning Canada as a leader in sustainability reporting.

Requiring Financial Institutions to Help Pay for the Recovery

The COVID-19 pandemic has been the greatest public health challenge in a generation. It has threatened the lives and livelihoods of Canadians, and it posed an existential threat to the Canadian economy.

To protect Canadians and keep our economy afloat through the darkest days of the pandemic, the federal government provided unprecedented financial support. Significant investments in our health care system and a world-leading vaccination campaign saved thousands of Canadian lives. Programs like the Canada Emergency Response Benefit (CERB), the Canada Emergency Business Account (CEBA), and the Canada Emergency Wage Subsidy (CEWS) helped millions of Canadians make ends meet, and tens of thousands of our small businesses to remain open.

While the federal government's support worked, it came at a high price—more than $350 billion in total for health and safety and direct support measures.

While many sectors continue to recover, Canada's major financial institutions made significant profits during the pandemic and have recovered faster than other parts of our economy—in part due to the federal pandemic supports for people and businesses that helped de-risk the balance sheets of some of Canada's largest financial institutions. The federal government is accordingly proposing two measures to ensure those large financial institutions help support Canada's broader recovery.

- Budget 2022 proposes to introduce a temporary Canada Recovery Dividend, under which banking and life insurers' groups (as determined under Part VI of the *Income Tax Act*) will pay a one-time 15 per cent tax on taxable income above $1 billion for the 2021 tax year. The Canada Recovery Dividend will be paid in equal installments over five years.
- Budget 2022 also proposes to permanently increase the corporate income tax rate by 1.5 percentage points on the taxable income of banking and life insurance groups (as determined under Part VI of the *Income Tax Act*) above $100 million, such that the overall federal corporate income tax rate above this income threshold will increase from 15 per cent to 16.5 per cent.

Together, these measures are expected to raise $6.1 billion over five years, with the 1.5 per cent permanent tax on banking and life insurance groups expected to raise $445 million ongoing.

Preventing the Use of Foreign Corporations to Avoid Canadian Tax

Currently, some people are manipulating the Canadian-controlled private corporation (CCPC) status of their corporations to avoid paying the additional refundable corporate income tax that they would otherwise pay on investment income earned in their corporations. This may be done in a number of ways, such as by moving a corporation into a foreign low-tax jurisdiction, by using foreign shell companies, or by moving passive portfolios to an offshore corporation.

- Budget 2022 proposes targeted amendments to the *Income Tax Act* to ensure that, for taxation years that end on or after April 7, 2022, investment income earned and distributed by private corporations that are, in substance, CCPCs is subject to the same taxation as investment income earned and distributed by CCPCs.

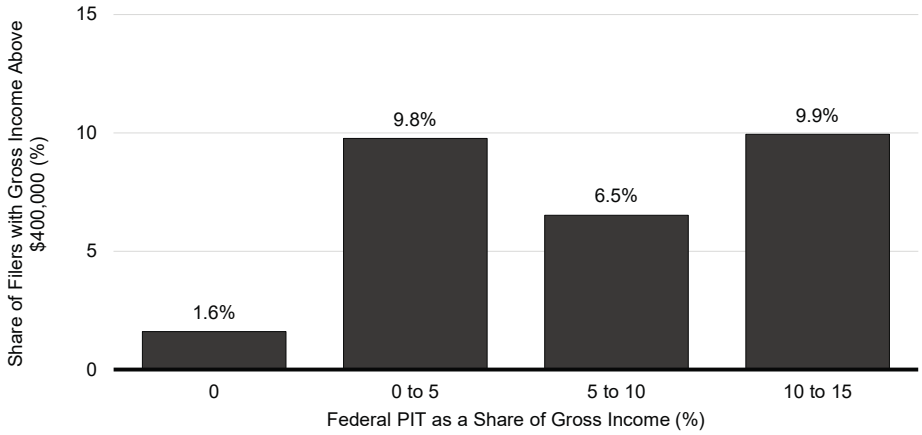
This measure would increase federal revenues by $4.2 billion over five years starting in 2022-23.

Next Steps Towards a Minimum Tax for High Earners

The federal government has taken significant steps to increase the fairness of the tax system, including by increasing taxes on the wealthiest one per cent of Canadians. However, some high-income Canadians still pay relatively little in personal income tax (PIT) as a share of their income—28 per cent of filers with gross income above $400,000 pay an average federal PIT rate of 15 per cent or less, which is less than some middle class Canadians pay. These Canadians make significant use of deductions and tax credits, and typically find ways to have large amounts of their income taxed at lower rates.

Chart 9.1

Proportion of People With Gross Income Over $400,000 Who Are Paying Less Than 15 Per Cent in Federal Tax, 2019



Source: Department of Finance Canada calculations using 2019 T1 Universe File. Chart excludes 72 per cent of filers with gross income above $400,000 whose effective federal PIT rates are above 15 per cent. Gross income includes 100% of realized capital gains and uses the cash value of dividend income. The 99.5th percentile of gross income in 2019 was approximately $400,000.

The Alternative Minimum Tax (AMT), which has been in place since 1986, plays a role in ensuring that the wealthiest Canadians do not take advantage of the tax system to lower their federal tax bill.

However, the AMT has not been substantially updated since its introduction, and there are still thousands of wealthy Canadians who pay little to no personal income tax each year. That is unfair, and the federal government is committed to changing it.

› Budget 2022 announces the government's commitment to examine a new minimum tax regime, which will go further towards ensuring that all wealthy Canadians pay their fair share of tax. The government will release details on a proposed approach in the 2022 fall economic and fiscal update.

Limiting Aggressive Tax Avoidance by Financial Institutions

The government expects federally regulated financial institutions to demonstrate an exemplary level of corporate behaviour.

› Budget 2022 proposes to examine potential changes to the financial transaction approval process to limit the ability of federally regulated financial institutions to use corporate structures in tax havens to engage in aggressive tax avoidance.

Closing the Double-Deduction Loophole

Some Canadian financial institutions have been using hedging and short selling arrangements in aggressive tax planning strategies. Put simply, two different parts of an institution take different positions in relation to a Canadian dividend-paying stock—one short, or betting against the stock; one long, or betting on the stock—to take advantage of special treatment that those Canadian stocks receive.

- Budget 2022 proposes to amend the *Income Tax Act* to deny the deduction for a dividend received where the taxpayer has entered into such transactions.

This measure would increase federal revenues by $635 million over five years starting in 2022-23, and by $150 million ongoing.

Expanding Anti-Avoidance Tax Rules

Interest coupon stripping is a way that some taxpayers avoid paying tax on cross-border interest payments. Due to differences between Canada's various tax treaties, the interest received from Canadian residents is often subject to different tax rates depending on where the recipient resides. Interest coupon stripping arrangements exploit these differences and allow some to pay less in taxes.

- To improve the fairness of Canada's international tax system, Budget 2022 proposes to create a specific anti-avoidance rule in the *Income Tax Act* to ensure that the appropriate amount of tax is paid when an interest coupon stripping arrangement is used.

This measure will increase federal revenues by $640 million over the next six years, and by $150 million ongoing.

Strengthening the General Anti-Avoidance Rule

The general anti-avoidance rule (GAAR) is intended to prevent abusive tax avoidance transactions, while not interfering with legitimate commercial and family transactions. If abusive tax avoidance is established, the GAAR applies to deny the tax benefit that was unfairly created.

- Budget 2022 proposes to amend the *Income Tax Act* to provide that the GAAR can apply to transactions that affect tax attributes that have not yet been used to reduce taxes.
- The government intends to release in the near future a broader consultation paper on modernizing the GAAR, with a consultation period running through the summer of 2022, and with legislative proposals to be tabled by the end of 2022.

Pillar Two (Global Minimum Tax)

Pillar Two would ensure that large multinational enterprises are subject to a minimum effective tax rate of 15 per cent on their profits in every jurisdiction in which they operate. This will help end the race to the bottom in corporate taxation.

The Pillar Two framework is now largely finalized and countries are taking steps towards their own domestic implementation. The members of the European Union are discussing a draft directive that would require member states to implement Pillar Two in their own countries in 2023. The U.K. has similarly announced its intention to implement Pillar Two in 2023. Recent U.S. legislative proposals would more closely align its minimum tax with Pillar Two, ensuring a more level playing field.

- In light of these developments, Budget 2022 proposes to implement Pillar Two in Canada, along with a domestic minimum top-up tax. The primary charging rule and domestic minimum top-up tax would be effective in 2023, with the secondary charging rule effective not before 2024.
- Budget 2022 is also launching a public consultation on the implementation of Pillar Two and the domestic minimum top-up tax in Canada. Details can be found in Supplementary Information: Tax Measures.

International Accounting Standards for Insurance Contracts

On January 1, 2023, IFRS 17—a new international accounting standard for insurance contracts—will substantially change the financial reporting for Canadian insurers. Changes to the *Income Tax Act* are required to address the impact of the new international accounting standard, and are consistent with the proposals for implementation that were consulted on last year. These changes will ensure income is recognized when key economic activities occur, as under the current rules generally.

- Budget 2022 proposes legislative amendments to confirm support of the use of IFRS 17 accounting standards for income tax purposes, with the exception of a new reserve known as the contract service margin, subject to some modifications. Without this exception, profits embedded in the new reserve would be deferred for income tax purposes.

It is estimated that this measure will increase federal revenues by $2.35 billion over the next five years. Relieving transitional rules and consequential changes to protect the minimum tax base are also proposed.

Reducing Planned Spending in the Context of a Stronger Recovery

Supporting Canadians and businesses through the COVID-19 pandemic required extraordinary, time-limited government supports and programs. The government remains committed to unwinding COVID-related special measures and normalizing the overall level of program spending. In this context, the government will launch a process to re-examine previously announced spending plans to ensure government programs are fit to changing circumstances, including a stronger than anticipated economic recovery.

- In this context, Budget 2022 announces the government's intention to review previously announced spending plans with a view to reducing the pace and scale of spending that has yet to occur by up to $3 billion over the next four years.

An update on the progress of this initiative will be outlined in the 2022 fall economic and fiscal update.

Strategic Policy Review

The government remains focused on managing public finances in a prudent and responsible manner. This requires ongoing review to ensure Canadians' tax dollars are being used effectively and to ensure that government programs are delivering the intended results.

- To support these efforts, Budget 2022 announces the launch of a comprehensive Strategic Policy Review. Led by the President of the Treasury Board, the review will include two streams:
  - Stream 1 will assess program effectiveness in meeting the government's key priorities of strengthening economic growth, inclusiveness, and fighting climate change.
  - Stream 2 will identify opportunities to save and reallocate resources to adapt government programs and operations to a new post-pandemic reality. Further areas of focus could include real property, travel, and increased digital service delivery, based in part on key lessons taken from how the government adapted during the pandemic, such as through increased virtual or remote work arrangements.

These efforts would target savings of $6 billion over five years, and $3 billion annually by 2026-27. Budget 2023 will provide an update on the review's progress.

Following a strong rebound of 4.6 per cent in 2021, private sector economists expected real gross domestic product (GDP) growth at a still solid 3.9 per cent for 2022. Growth for 2022 has been revised down from 4.2 per cent expected in the 2021 *Economic and Fiscal Update* (EFU 2021), reflecting slower expected growth in the first quarter of this year resulting from renewed restrictions in most provinces due to the fast spread of the Omicron variant. The outlook for real GDP growth has been revised up for 2023, from 2.8 per cent in EFU 2021 to 3.1 per cent. Overall, the revisions leave the level of real GDP roughly unchanged relative to EFU 2021 by 2023. Real GDP growth is then expected to moderate to near 2 per cent on average per year over the remaining years of the forecast horizon, reflecting a return to trend long-run growth rates.

This forecast for real GDP is generally in line with recent estimates from the International Monetary Fund, which in January 2022, projected Canada as having the second fastest growth this year and the fastest growth next year, of all G7 countries. Indeed, private sector economists foresee Canada experiencing faster GDP growth than the United States in both 2022 and 2023.

The outlook for the unemployment rate has substantially improved relative to EFU 2021 and was expected to average 5.8 per cent in 2022 and to decline further to 5.5 per cent in 2023, remaining at that historically low level over the remaining years of the forecast horizon.

Private sector economists expected the recent price pressures to continue for some time. Consistent with global trends, the outlook for Consumer Price Index (CPI) inflation has been revised significantly, up to 3.9 per cent in 2022 compared to 3.1 per cent in EFU 2021. CPI inflation was then expected to gradually normalize to around 2 per cent over the remainder of the forecast horizon, which is consistent with the average rate of inflation in Canada over the last 30 years.

Reflecting recent strength in commodity prices, the outlook for West Texas Intermediate crude oil prices has been revised up to US$80 per barrel for 2022 and to US$74 per barrel for 2023, about US$6 to US$7 per barrel higher on average than in EFU 2021. Going forward, crude oil prices were expected to remain higher than in EFU 2021 by about US$3 per barrel on average per year.

While private sector economists forecast the average for 2022 as lower than prices exhibited in the last several weeks, current price levels are operating in an environment of both high volatility and uncertainty. The alternative economic scenarios developed by the Department provide a useful illustration of how a sustained increase in commodity prices could affect the overall economic and fiscal outlook.

	2021–2022	2022–2023	2023–2024	2024–2025	2025–2026	2026–2027
Tax and Financial Sector Policy	**24**	**496**	**280**	**120**	**-195**	**-140**
Expanding Immediate Expensing to a Broader Range of Taxpayers	-10	420	265	110	-210	-155
As announced on February 4, 2022, the government proposed to expand eligibility for the immediate expensing measure announced in Budget 2021 to include unincorporated businesses and certain partnerships. Technical amendments were also proposed in relation to certain passenger vehicles (i.e., Class 10.1 assets).						
Luxury Tax	34	140	140	145	145	145
Less: Projected Revenues	*0*	*-79*	*-140*	*-145*	*-145*	*-145*
Budget 2021 proposed the introduction of a tax on the sale of new luxury cars and aircraft with a retail sale price over $100,000, and new boats over $250,000, effective as of January 1, 2022. The tax would be calculated at the lesser of 20 per cent of the value above these price thresholds or 10 per cent of the full value of the luxury vehicle, aircraft or vessel. On March 11, 2022, the Department of Finance Canada launched a public consultation on draft legislative proposals to implement the proposed tax framework. Subject to Parliamentary approval, this tax would now come into effect on September 1, 2022.						
Changes to the Automobile Deduction Limits	0	15	15	10	15	15
On December 23, 2021, the government announced changes to the automobile deduction limits that would apply in 2022: (1) the ceiling applicable to capital cost allowances (CCA) for zero-emission passenger vehicles was increased from $55,000 to $59,000, before tax, in respect of vehicles (new and used) acquired on or after January 1, 2022; (2) the ceiling applicable to CCA for passenger vehicles was increased from $30,000 to $34,000, before tax, in respect of vehicles (new and used) acquired on or after January 1, 2022; and (3) the ceiling applicable to deductible leasing costs was increased from $800 to $900 per month, before tax, for new leases entered into on or after January 1, 2022.						
(Net) Fiscal Impact of Non-Announced Measures Since Budget 2021	-855	-895	-211	-588	-222	-215
The net fiscal impact of measures that are not announced is presented at the aggregate level, and would include provisions for anticipated Cabinet decisions not yet made (including the use of such provisions from previous budgets or updates) and funding decisions related to national security, commercial sensitivity, contract negotiations, and litigation issues.						
Net Fiscal Impact – Total Policy Actions Taken Since the 2021 *Economic and Fiscal Update*	**3,147**	**1,310**	**614**	**-556**	**-412**	**-339**

Note: Totals may not add due to rounding.

[1]Funding profile has since been revised to $19 million in 2021-22 and $6 million in 2022-23.

https://www.facebook.com/NWSSPC?fref=nf

NOAA NWS Storm Prediction Center

21 hrs ·

March 2022 Month in Review:

1. March 2022 had the most tornadoes on record (218). The previous record was 192 from 2017.

2. This is the 4th consecutive year with at least 1 violent (EF4+) tornado in March. The record longest streak on record was 1963 to 1967 with 5 consecutive years.

3. The US tornado count is above the 75th percentile through the first 3 months of 2022.

4. There were 5 days with 3 or more strong (EF2+) tornadoes. These dates were:

March 5

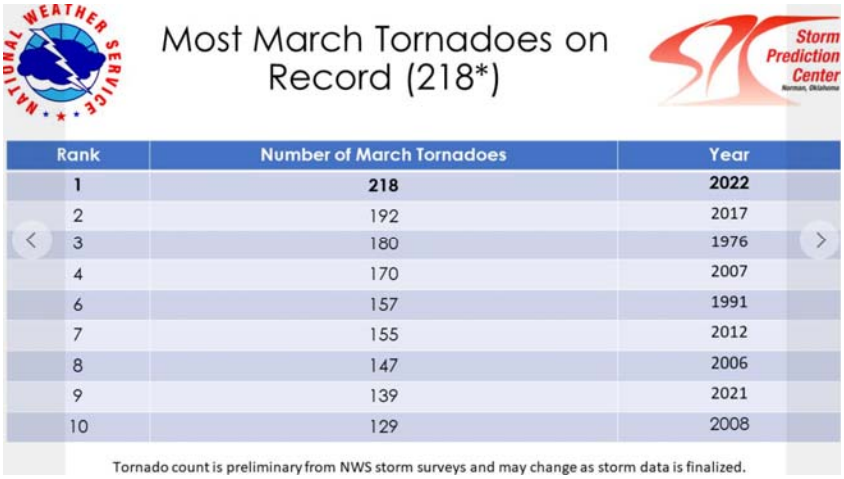
March 21

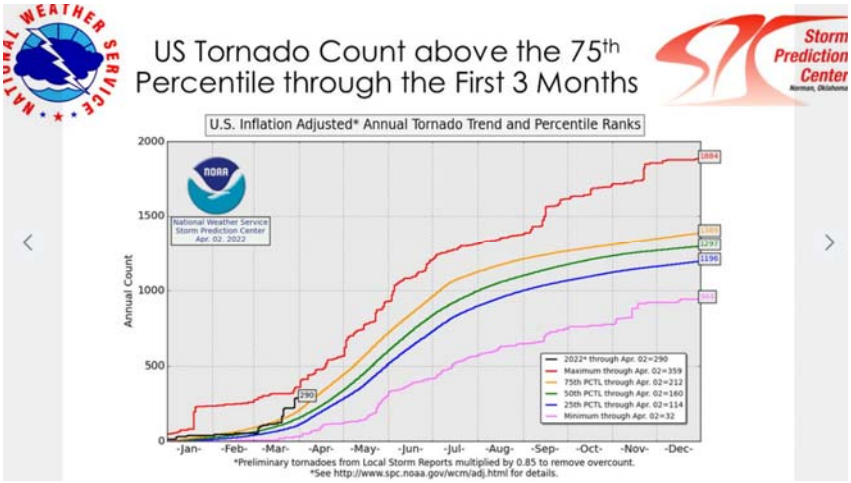
March 22

March 30

March 31

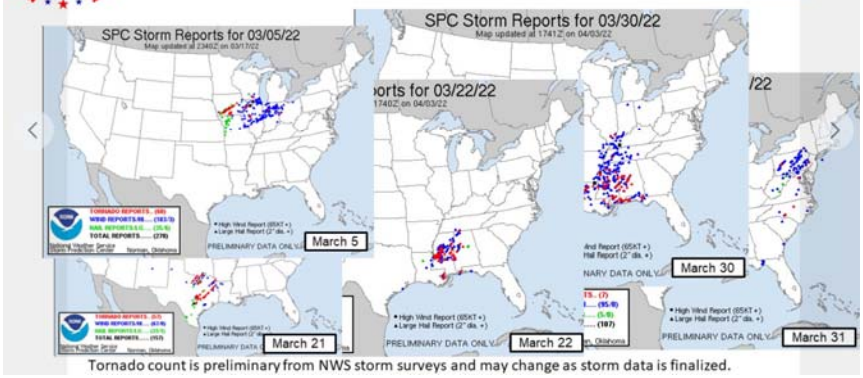
5. March 2022 had 41 tornado watches issues which ties 2008, 2002, and 1976 as the 8th most March tornado watches on record.





5 Days with 3 or more EF2+ tornadoes

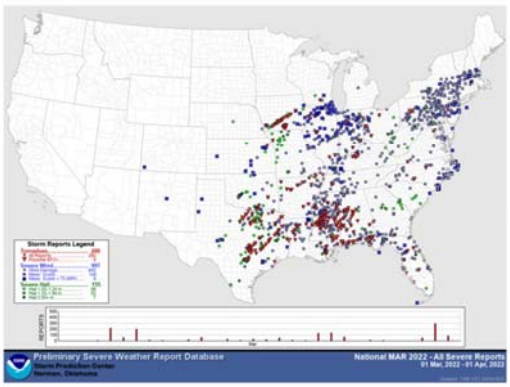
March 5, 21, 22, 30, 31



Tornado count is preliminary from NWS storm surveys and may change as storm data is finalized.

1,432 March Severe Weather Reports

Above the 2012-21 average of 1,093



T-8th Most March Tornado Watches (1970-present)

Rank	Number of March Tornado Watches	Year
1	67	1991
2	51	1996
3	48	2006
4	45	1973
T-5th	44	1975
	44	2007
7	43	1998
T-8th	**41**	1976, 2002, 2008, **2022**

https://www.weather.gov/oun/efscale

Norman, OK
Weather Forecast Office

The Enhanced Fujita Scale (EF Scale)

Appendix: Fujita Scale (or F Scale) and Enhanced Fujita Scale (or EF Scale) of Tornado Damage Intensity

The Fujita Scale

Fujita Scale (or F Scale) of tornado damage intensity. The F Scale was developed based on damage intensity and not wind speed; wind speed ranges given are estimated, based on the extent of observed damage.

F Scale	Character	Estimated winds	Description
Zero (F0)	Weak	40-72 mph	**Light Damage.** Some damage to chimneys; branches broken off trees, shallow-rooted trees uprooted, sign boards damaged.
One (F1)	Weak	73-112 mph	**Moderate damage.** Roof surfaces peeled off; mobile homes pushed foundations or overturned; moving autos pushed off road.
Two (F2)	Strong	113-157 mph	**Considerable damage.** Roofs torn from frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light objects become projectiles.
Three (F3)	Strong	158-206 mph	**Severe damage.** Roofs and some walls torn from well- constructed houses; trains overturned; most trees in forested area uprooted; heavy cars lifted and thrown.
Four (F4)	Violent	207-260 mph	**Devastating damage.** Well- constructed houses leveled; structures with weak foundation blown some distance; cars thrown; large missiles generated.
Five (F5)	Violent	260-318 mph	**Incredible damage.** Strong frame houses lifted off foundations, carried considerable distances, and disintegrated; auto-sized missiles airborne for several hundred feet or more; trees debarked.

The Enhanced Fujita Scale (EF Scale)

The Enhanced Fujita Scale or EF Scale, which became operational on February 1, 2007, is used to assign a tornado a 'rating' based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators (DIs) and Degrees of Damage (DoD) which help estimate better the range of wind speeds the tornado likely produced. From that, a rating (from EF0 to EF5) is assigned.

The EF Scale was revised from the **original Fujita Scale** to reflect better examinations of tornado damage surveys so as to align wind speeds more closely with associated storm damage. The new scale has to do with how most structures are designed.

EF SCALE	
EF Rating	**3 Second Gust (mph)**
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

***** IMPORTANT NOTE ABOUT EF SCALE WINDS**: The EF scale still is a set of wind estimates (not measurements) based on damage. Its uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to the 28 indicators listed below. These estimates vary with height and exposure. Important: The 3 second gust is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured, "one minute mile" speed.

Assigning a Tornado Rating Using the EF Scale

The NWS is the only federal agency with authority to provide 'official' tornado EF Scale ratings. The goal is assign an EF Scale category based on the highest wind speed that occurred within the damage path. First, trained NWS personnel will identify the appropriate damage indicator (DI) [see list below] from more than one of the 28 used in rating the damage. The construction or description of a building should match the DI being considered, and the observed damage should match one of the 8 degrees of damage (DOD) used by the scale. The tornado evaluator will then make a judgment within the range of upper and lower bound wind speeds, as to whether the wind speed to cause the damage is higher or lower than the expected value for the particular DOD. This is done for several structures not just one, before a final EF rating is determined.

Enhanced Fujita Scale Damage Indicators

NUMBER (Details Linked)	DAMAGE INDICATOR	ABBREVIATION
1	Small barns, farm outbuildings	SBO
2	One- or two-family residences	FR12
3	Single-wide mobile home (MHSW)	MHSW
4	Double-wide mobile home	MHDW
5	Apt, condo, townhouse (3 stories or less)	ACT
6	Motel	M
7	Masonry apt. or motel	MAM
8	Small retail bldg. (fast food)	SRB
9	Small professional (doctor office, branch bank)	SPB
10	Strip mall	SM
11	Large shopping mall	LSM
12	Large, isolated ("big box") retail bldg.	LIRB
13	Automobile showroom	ASR
14	Automotive service building	ASB
15	School - 1-story elementary (interior or exterior halls)	ES
16	School - jr. or sr. high school	JHSH
17	Low-rise (1-4 story) bldg.	LRB
18	Mid-rise (5-20 story) bldg.	MRB
19	High-rise (over 20 stories)	HRB
20	Institutional bldg. (hospital, govt. or university)	IB
21	Metal building system	MBS
22	Service station canopy	SSC
23	Warehouse (tilt-up walls or heavy timber)	WHB
24	Transmission line tower	TLT
25	Free-standing tower	FST
26	Free standing pole (light, flag, luminary)	FSP
27	Tree - hardwood	TH
28	Tree - softwood	TS

https://www.grtgaz.com/en/node/860

Decree on the conditions for any load shedding

GRTgaz is preparing the implementation of the decree defining the conditions for any load shedding of gas consumption in France.

GRTgaz, the main gas transmission operator in France, carries out a public service mission aimed at ensuring the daily balance of the network and gas flows on the French market. Since the beginning of the war in Ukraine, the company has not encountered any particular difficulties in carrying out this mission. Gas inflows via pipelines continue from the North-East of France, even if their levels are lower than the values of recent years. On the other hand, the LNG terminals are very heavily used and close to their technical maximum. In addition, gas injections into French storage facilities in anticipation of next winter started in mid-March, i.e. around 15 days earlier than usual, when their level had reached a low point of 19% ,

In the event of an interruption in supplies from Russia, simulations made by GRTgaz show that France, which consumes around 17% Russian gas in its gas mix, would be less affected than its European neighbours. However, in such a situation, it should be prepared for reductions in consumption, in particular in the event of a cold winter or a cold spell during the winter.

"As of now, in response to the publication of this decree, I call on shippers to fill underground storage as much as possible in order to approach next winter in the best possible conditions. I also recommend putting in place all the mechanisms to accelerate the production of renewable gases..."
Thierry Found
CEO of GRTgaz
For Thierry Trouvé, CEO of GRTgaz

"Since the end of February, measures have been taken in France and in Europe to strengthen the resilience of the gas system. New LNG reception capacities at the LNG terminals are planned from next September at Fos Cavaou for a volume of 11 TWh in 2022; at the Dunkirk LNG terminal, additional unloading capacity should also come into service in 2022. In addition, GRTgaz has received CRE's agreement to launch studies on the possibilities of connecting a floating LNG terminal and to acquire equipment required. Exchanges on potential locations are continuing with the authorities. A collective mobilization will be very necessary to achieve the commissioning of this new entry point as soon as possible.

As of now, in response to the publication of this decree, I call on shippers to fill underground storage as much as possible in order to approach next winter in the best possible conditions. I also recommend putting in place all the mechanisms to accelerate the production of renewable gases: these already represent a production capacity equivalent to 1 nuclear reactor and France can achieve a national capacity equivalent to 2 nuclear reactors by 2024 if it gives itself the means".

The decree which has just been published completes the already existing provisions aimed at securing the supply of sensitive sites (hospitals, school buildings, military installations, etc.), as well as gas heating for individuals, while controlling the best possible impact of possible load shedding on large French consumers.

Large French gas consumers, whose consumption exceeds 5 GWh per year, are primarily concerned according to the following load shedding order:

- Combined cycle gas power plants of more than 150 MWe, provided that the security of the electricity network remains maintained;

- Large industrial sites (chemicals, refineries, petrochemicals, glassmakers, etc.) and large tertiary buildings such as shopping centers, performance halls, stadiums, etc.

The other gas consumers consuming less than 5 GWh (collective residential building, individual residential, tertiary sector, shops, small industrialists, etc.) would only be concerned lastly.

Depending on the gas supply-demand balance in France, GRTgaz may issue orders to reduce or interrupt gas consumption to be carried out within two hours with large consumers connected to its network and ask network operators to distribution to do the same with their own affected customers. The public authorities will be able to impose pecuniary sanctions in the event of non-compliance with the requests of the network operators.

Methods of implementation

The decree asks GRTgaz and the other network operators to carry out a “shedding survey” every year among major customers who have consumed more than 5 GWh the previous year in order to find out the economic consequences that shedding would entail.

The prefects of the departments will then be responsible, on the basis of the answers collected by GRTgaz and by the other network operators, of establishing by prefectural decree, lists of customers who will benefit from additional protection in the event of load shedding. .

The objective being to be ready as soon as possible, and in particular before next winter, the responses to the questionnaires sent by GRTgaz to its 650 customers concerned will be sent to the prefectures by the summer.

A last resort device that complements existing devices

This new system will only be activated when all the other means available to ensure continuity of supply have been exhausted.

Before triggering a load shedding plan, GRTgaz can in particular use various levers: incentive to reduce gas consumption, use of stocks, interruption of supply for certain industrial customers who have signed a commitment to reduce their consumption on demand against a financial compensation (interruptibility contracts). Thus, among the 650 major consumption sites directly connected to its network, 71 sites have signed such contracts representing a demand response potential of around 45 GWh/day, i.e. 5% of their consumption

In order to give visibility to market players, GRTgaz will communicate before the summer on the evolution of the situation and in particular on the conditions for the correct filling of the storage facilities before the start of winter.

https://mlafrance.fr/programme

22 MEASURES FOR 2022

1 Stop uncontrolled immigration by giving the floor to the French by referendum.
End settlement immigration and family reunification.
Dealing with asylum applications only abroad.
Reserve social aid for the French, and make access to solidarity benefits conditional on 5 years of work in France.
Ensure the national priority of access to social housing and employment.
Remove the residence permit for any foreigner who has not worked for a year in France.
Systematically expel foreign illegals, delinquents and criminals.
Abolish the jus soli and limit access to nationality to naturalization only on merit and assimilation criteria.

2 Eradicate Islamist ideologies and all of their networks from the national territory.
Bill aimed at combating Islamist ideologies

3 Make safety everywhere and for everyone a priority for the five-year term.
Restore minimum sentences so that all criminals and offenders have a sanction.
Eliminate any possibility of reduction and adjustment of sentences, in particular for violence against persons.
Establish a presumption of self-defense for law enforcement.
Speed up legal proceedings by doubling the number of magistrates.
Add street harassers to the sex offender registry.
Reach 85,000 prison places in 2027.
Establish real perpetuity.

4 Reduce VAT from 20% to 5.5% on energy products (fuel, oil, gas and electricity) as basic necessities.

5 Allow companies a 10% wage increase (up to 3 minimum wage) by exempting this increase from employer contributions.

6 Renationalise motorways to lower tolls by 15% and privatize public broadcasting to eliminate the €138 fee.

7 Encourage young people's projects and their entry into working life.
Create a monthly training voucher of €200 to €300 for apprentices, work-study trainees and their employers.
Exempt from income tax all young workers up to the age of 30 so that they can stay in France and start their families here.
Eliminate corporate tax for entrepreneurs under 30 for the first 5 years to prevent them from going abroad.

8 Support French families.
Establish a full tax share from the second child.
Double support for single mothers raising children while strengthening controls to prevent fraud.
Create a 0% loan for young French families transformed into a subsidy for couples who will have a 3rd child.
Build 100,000 new student accommodations in five years.
Eliminate direct inheritance taxes for low-income and middle-class families.
Exempt donations from parents but also from grandparents to their children and grandchildren up to €100,000 per child every ten years.

9 Guarantee our seniors a peaceful and dignified retirement.

Re-index pensions on inflation for purchasing power that respects a working life.
Raise the minimum old age to €1,000 per month and increase small pensions.
Reject any extension of the retirement age.
Allow those who started working before age 20 for 40 years to retire at age 60.
Restore the tax half-share in favor of widows and widowers.
Create an enforceable right to visits to establishments and greatly increase the presence of medical personnel in EHPADs.

10 Finally, ensure the rights of our compatriots with disabilities.
Deconjugalize and upgrade the Disabled Adult Allowance.
Launch a major plan on access to schooling for children with disabilities.
Apply the law on access to all places and public transport.
Revalue and increase the duration of aid intended for family caregivers.

11 Introduce the Citizen Initiative Referendum and introduce proportional representation.

12 Ensure our energy independence to lower the French bill.
Return to households the 5 billion in subsidies paid in particular to wind turbines.
Stop wind projects and gradually dismantle existing farms.
Relaunch the nuclear and hydroelectric sectors and invest in the hydrogen sector.
Get out of the European electricity market to find decent prices.

13 Defend our farmers and quality food for all.
Guarantee farmers prices that respect their work and put an end to the abusive margins of large retailers.
Prohibit imports of agricultural products that do not meet French production standards.
Force canteens to use 80% French agricultural products.
Set up a “slaughterhouse plan” to ensure dignified conditions and prohibit slaughter without stunning.
Generalize labeling on the origin and quality of food products.

14 Launch a €20 billion emergency health support plan.
Stop the closures of beds in public hospitals and maternity wards.
Raise the salaries of caregivers in line with their work.
Invest in health technologies and repatriate the manufacture of medicines.
Create geriatric emergencies dedicated to our seniors.
Remove ARS and reduce administrative positions in hospitals to 10% to free up resources for caregivers.
Take action against medical deserts through strong financial incentives for caregivers and increase the number of nursing homes.
Give more importance to prevention, in particular thanks to school medical visits which will become systematic again.

15 Restore our education system so that it regains its mission of transmitting knowledge.
Putting the teaching of French, mathematics and history back at the heart of the programs.
Increase teachers' salaries and restructure their training.
Restore the authority of the school institution by introducing a uniform in primary and middle school while sanctioning absences and incivilities.
Eliminate the bureaucracy of National Education to free up financial means, reduce class sizes and stop school closures.

16 Remove the IFI which taxes rooting and create an IFF, tax on financial wealth, to tax speculation.

17 Promote access to property and housing for French people.
Build 100,000 social housing units per year, including 20,000 for students and young workers.
Launch a rehabilitation plan for old housing thanks to effective aid.
Create a Rent Guarantee Fund to protect landlords.

18 Establish economic patriotism to reindustrialize and produce wealth in France.
Prioritize SMEs for public procurement.
Make subsidies conditional on job creation under a regional planning policy.
Remove the Business Property Contribution (CFE) which penalizes local SMEs and VSEs and production taxes which are detrimental to relocation.
Protect our economy from unfair competition and review free trade agreements that do not respect France's interests.

19 Create a "French sovereign wealth fund" to increase the remuneration of French savings and direct it towards strategic sectors and innovation.

20 Increase the defense budget to 55 billion euros by 2027.
Strengthen our sovereignty and independence.
Guaranteeing our soldiers the equipment and means necessary to guarantee and protect national interests.

21 Create a Ministry of State for the Sea and Overseas.

22 Create a ministry for the fight against fraud (tax, social contributions and benefits, imports, agreements, etc.).

https://www.freep.com/story/money/cars/general-motors/2022/04/06/chevy-restarts-bolt-production-aims-set-sales-record-year/9490203002/

Chevrolet boss: Bolt to hit record sales this year as GM rolls out ad campaign

Jamie L. LaReau
Detroit Free Press

Gordon Chevrolet in Garden City delivered its first 2022 Chevrolet Bolt EV to a customer last week — after an eight-month dry spell.

The Bolt had a stop-sale on it as part of a global recall GM made last summer due to defective batteries that posed a fire risk. GM stopped building new Bolts late last year to focus on fixing the batteries in 2017-22 model vehicles in that recall.

But now that GM has the fix under control and enough new batteries to also restart production, there is pent-up consumer demand, said Gordon Stewart, owner of Gordon Chevrolet. Car buyers are especially interested in the SUV styling of the Bolt called the EUV.

"We’re going to be fine once they get production volume up," Stewart said. "I don’t know if the Bolt is as well-known as we wish it was. People have to see them on the road, so they have to build up the desire. But it’s going to be a fine car."

GM recognizes the task it faces to transition the long-idled Orion Assembly plant in Orion Township where GM builds the Bolt to full-out production as well as to get the EV back in the car buyer's psyche after the widely publicized recall that affected 140,000 Bolts worldwide.

So starting Thursday, GM will launch an aggressive ad campaign for the Bolt during all Major League Baseball broadcasts. After that, look for ads across "various media

properties" throughout the year as Chevrolet plans to set a production and sales record that tops 24,000 Bolts this year, said Steve Majoros, Chevrolet's marketing director.

"We're coming strong with this product," Majoros said. "This may shape up to be the number two product as far as the amount of spend that we put nationally behind our products this calendar year."

Surpassing record

GM restarted Bolt production on Monday at Orion Assembly and has about 800 Bolts built that are being shipped to dealers for sale, Majoros said.

"Our goal is to get back to and, quite frankly, increase all of our business metrics whether that's production, whether that's retail sales," Majoros said. "We all see what's happening in the marketplace and we think both Bolt EV and Bolt EUV can catapult to their highest levels ever in both production and sales."

The most Bolts Chevrolet ever sold in one year was 24,000 and Chevrolet will surpass that "pretty significantly," said Chevrolet spokesman Kevin Kelly.

But it comes down to how quickly GM can ramp up production, Majoros said, noting that there are complexities in the supply chain as well as shipping.

"We'll see how it shapes up," Majoros said. "Let's treat April as a transitionary month."

He said Chevrolet had about 6,700 Bolts in dealer inventory prior to the stop-sale last year. Chevrolet has not shipped the replacement batteries to all 6,700 yet, Majoros said. It is making sure first to take care of the recalled vehicles, using excess capacity for startup production at Orion and then dealer inventory.

'Return to commerce'

GM had stopped building the vehicles so that it could focus on fixing defective batteries — which could pose a fire risk — with its battery supplier LG Electronics Inc. LG has said it would reimburse GM for $1.9 billion in costs associated with the Bolt recall for making defective battery modules.

There have been 18 suspected battery fires in Bolt EVs globally. GM has confirmed 15 of them; none involved major injuries.

Kelly declined to say how many of the 140,000 recalled Bolts have received the fix — which is new battery modules. He also declined to disclose how many of the Bolts GM repurchased during the recall.

But those who own 2017-18 model year Bolts will get an extra 20 miles of range with the battery fix and an extended warranty, Majoros said.

More: Frustrated Chevy Bolt owners want their money back after massive recall

Majoros said GM has an ample supply of new batteries and has performed enough fixes on the recalled vehicles to start building new Bolts while fixing Bolts that are part of the recall.

"It's about concurrent activity of our replacement of the battery packs in the situation we're all well aware of, in addition to what's called a return to commerce," Majoros said. "It's a big thing for our customers, it's a big thing for our dealers, a big thing for Chevrolet and General Motors. But again it's a bit of a transitionary period in April and we'll see how things unfold."

High gas, low car prices

Orion is presently building 2022 model year Bolts, Majoros said. It will start production of the 2023 model year later this summer.

Chevrolet leaders predict a record number of Bolt sales and production in 2022 "and more in 2023" in part due to higher gas prices and a growing interest in EVs among the public.

At Matick Chevrolet in Redford Township, demand for the Bolt has not surfaced yet, said Paul Zimmermann, vice president and co-owner.

“It is a niche vehicle … but demand for it increases parallel to gas prices,” Zimmermann said. “The gas spike is out there that no amount of marketing can outpace. So I’m optimistic because of that."

The Bolt EV is also holding its pricing lower than some other EVs on the market. The 2022 Bolt EV starts at $31,500 and the EUV at $33,500. By comparison the starting price of Tesla Model 3 is $46,990. The 2022 Ford Mustang Mach-E starts at $43,895.

The two ads

The ad campaign that starts Thursday will feature two 30-second spots intended to use humor to showcase the Bolt's range and ease of use.

One ad called "Mom" features a Bolt driver taking a phone call from his mom while driving and listening to her go on and on ... just like the Bolt's range. The Bolt can travel up to 259 miles on a full charge.

The second spot is called "Life Changes." It features a technician showing an expectant mother how to use her home charger on her Bolt. When the expectant mother says she hopes being a mom is that easy, the female technician laughs as to offer comfort and then says, "It's not."

Chevrolet will cover the cost of standard installation of Level 2 charging capability for eligible customers who buy or lease a 2022 Bolt EUV or Bolt EV, Majoros said.

Chevrolet has partnered with home EV-charger installation company Qmerit to give Bolt owners access to faster charging at their homes, a significant savings given that installation of a Level 2 charger could cost up to $2,000, according to Realtor.com.

Majoros said GM did the right thing by halting Bolt production to work on the battery fix.

"It allowed us to put all of our energy into the limited battery supply we had at the time also to ramp that battery production, along with our partners, up," Majoros said. "It's been a Herculean task in the entire organization to put us in the position where we are today."

More: Barra shares her struggle to define GM's purpose, says self-driving car goes on sale soon

More:GM reveals 2022 Bolt EUV, 2022 Bolt EV: How they're different

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https://news.yahoo.com/were-not-even-close-evs-175700417.html

We're Not Even Close to EVs Being as Cheap as Gas Cars, Mercedes Says

Mack Hogan

Mon, April 4, 2022, 11:57 AM·2 min read

The electric vehicle industry has seen a massive transformation over the last decade, in no small part thanks to massive reductions in the cost of large lithium-ion battery packs. Yet there's still a significant initial cost penalty to a battery-electric vehicle over an internal combustion car. According to Mercedes' Chief Technology Officer, that's not going away anytime soon. In fact, EVs may not get much cheaper at all over the next few years.

"Coming to [a battery price of] 50 U.S. dollars per kilowatt, which would lead to comparable cost basis to an I.C.E. engine, I would say this is far out there," Mercedes CTO Markus Schäfer told Road & Track. "I don't see that with the chemistry that we have today."

Reaching so-called "price parity," Schäfer said, just isn't possible with any current commercially available battery technology. The kind of affordable, high-density batteries required to make it possible either don't exist or only exist in tightly-controlled lab settings. Even once we know which one will work, adapting it for the automotive industry—with its high volumes and extremely challenging durability requirements—will be a years-long process. While we wait for a breakthrough, Schäfer says they can't promise that EVs will get any cheaper in the near term.

"It's a crystal ball thing to answer. And it will very much depend on mining capacity [for raw materials] and the global ramp-up of EVs. So these are the two main factors," he said. "But I would say, for quite a while we will see headwinds on the raw material side."

While increasing demand for large battery packs has helped through manufacturing advancements and economies of scale, it's this scale that is now posing a large challenge. Thanks to both the increasing popularity of EVs and continued growth in consumer electronics, the demand for lithium batteries is on pace to far outstrip the capacity of current rare-earth metal mines. The earth has more deposits of lithium, but bringing mines online is complicated and expensive. As of now, analysts don't expect the lithium shortage to be over by mid-decade.

"So the anticipated decrease well below 100 US dollars or Euros per kilowatt, that might take longer," Schäfer said. "The chemistry, honestly, if we're staying with the ingredients we have today... there's not that breakthrough foreseeable."

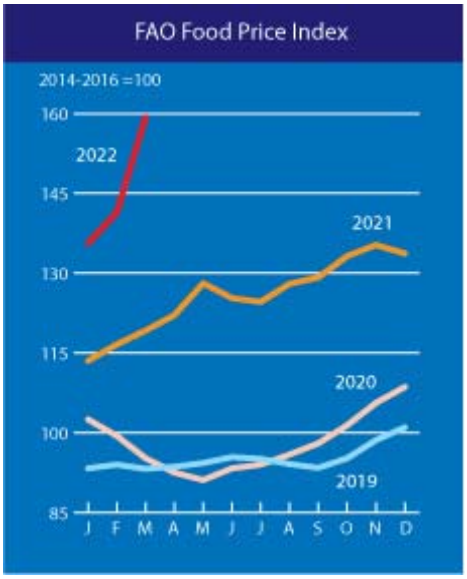
https://www.fao.org/worldfoodsituation/foodpricesindex/en/

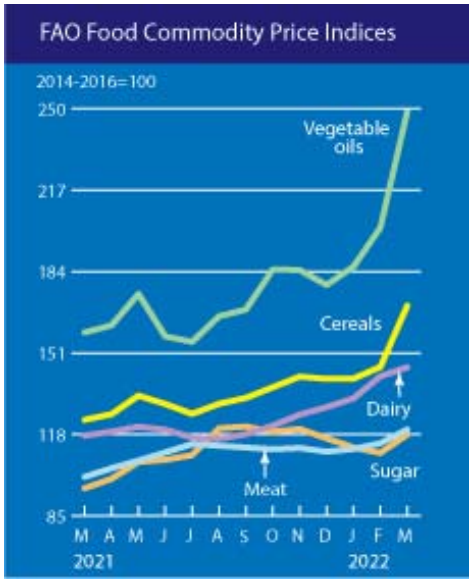
FAO Food Price Index

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.

The FAO Food Price Index makes a giant leap to another all-time high in March

Release date: 08/04/2022





» The **FAO Food Price Index*** (FFPI) averaged 159.3 points in March 2022, up 17.9 points (12.6 percent) from February, making a giant leap to a new highest level since its inception in 1990. The latest increase reflects new all-time highs for vegetable oils, cereals and meat sub-indices, while those of sugar and dairy products also rose significantly.

» The **FAO Cereal Price Index** averaged 170.1 points in March, up 24.9 points (17.1 percent) from February, marking its highest level on record since 1990. This month's increase reflected a surge in world prices of wheat and coarse grains, largely driven by conflict-related export disruptions from Ukraine and, to a lesser extent, the Russian Federation. The expected loss of exports from the Black Sea region exacerbated the already tight global availability of wheat. With concerns over crop conditions in the United States of America (USA) also adding support, world wheat prices rose sharply in March, soaring by 19.7 percent. After climbing upwards by 20.4 percent in March, international coarse grain prices marked a record high, with maize, barley, and sorghum prices all reaching their respective highest levels on record since 1990. Significantly reduced maize export expectations for Ukraine, a major exporter, on top of elevated energy and input costs, underpinned a 19.1-percent increase in world maize prices month-on-month. Strength in maize markets influenced other coarse grains, with sorghum prices increasing by 17.3 percent, while supply uncertainties added further pressure on already tight barley markets, pushing barley prices up 27.1 percent from February. Meanwhile, contrasting trends across the various origins and qualities kept the March value of FAO's Rice Price Index little changed from February levels and still 10 percent below its year-earlier value.

» The **FAO Vegetable Oil Price Index** averaged 248.6 points in March, up 46.9 points (23.2 percent) from February and hitting a new record high. The sharp rise of the index was driven by higher sunflower, palm, soy and rapeseed oil prices. International sunflowerseed oil quotations increased substantially in March, fuelled by reduced export supplies amid the ongoing conflict in the Black Sea region. In the meantime, palm, soy and rapeseed oil prices also rose markedly, buoyed by rising global import demand in the wake of sunflower oil supply disruptions. Moreover, while world palm oil values received additional support from lingering supply tightness in major producing countries, soyoil prices were underpinned by concerns over reduced export availabilities in South America. Noticeably, volatile and higher crude oil values also lent support to international vegetable oil prices.

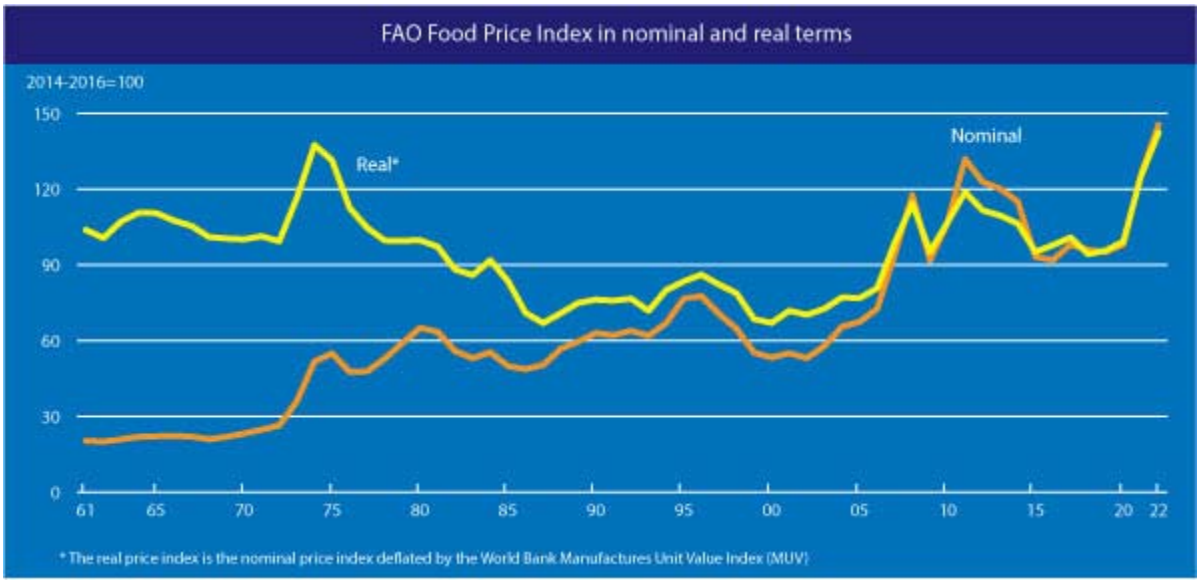
» The **FAO Dairy Price Index** averaged 145.2 points in March, up 3.7 points (2.6 percent) from February, marking the seventh consecutive monthly increase and lifting the index 27.7 points (23.6 percent) above its value a year ago. The upward trend of dairy product prices persisted, mainly supported by the tightening of global markets due to inadequate milk output in Western Europe and Oceania to meet global demand. Quotations for butter and milk powders rose steeply, underpinned by a surge in import demand for near- and long-term deliveries, especially from Asian markets, and solid

internal demand in Western Europe. Meanwhile, cheese markets were also facing a tight supply situation due to strong internal demand in Western Europe, but the index value eased marginally, reflecting the impacts of currency movements.

» The **FAO Meat Price Index*** averaged 120.0 points in March, up 5.5 points (4.8 percent) from February, also reaching an all-time high. In March, pig meat prices registered the steepest monthly increase on record since 1995, underpinned by supply shortfalls of slaughter pigs in Western Europe and a surge in internal demand in light of the upcoming Easter holidays. International poultry meat prices firmed, fuelled by reduced supplies from leading exporting countries following avian flu outbreaks, further impacted by Ukraine's inability to export poultry meat amid the ongoing conflict. Bovine meat prices also firmed as the tight supply of slaughter-ready cattle persisted in some key producing regions, while global demand remained solid.

» The **FAO Sugar Price Index** averaged 117.9 points in March, up 7.4 points (6.7 percent) from February, reversing most of the previous three months' decline and reaching levels more than 20 percent above those registered in the corresponding month last year. The March rebound in international sugar price quotations was mainly prompted by the sharp increase in international crude oil prices, which raised expectations of a greater use of sugarcane for ethanol production in Brazil in the upcoming season. Additional support to world sugar prices was lent by the sustained strengthening of the Brazilian Real against the US Dollar, which tends to restrain producer selling due to lower returns in local currency. However, the good harvest progress and favourable production prospects in India, a major sugar exporter, contributed to easing the price hike and prevented larger monthly price increases.

** 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.*



FAO food price index

		Food Price Index [1]	Meat [2]	Dairy [3]	Cereals [4]	Vegetables Oils [5]	Sugar [6]
2004		**65.6**	**67.6**	**69.8**	**64.0**	**69.6**	44.3
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
2021	March	**119.2**	100.8	117.5	123.9	159.3	96.2
	April	**122.1**	104.3	119.1	126.2	162.2	100.0
	May	**128.1**	107.4	121.1	133.7	174.9	106.8
	June	**125.3**	110.7	119.9	130.3	157.7	107.7
	July	**124.6**	114.1	116.7	126.3	155.5	109.6
	August	**128.0**	113.4	116.2	130.4	165.9	120.5
	September	**129.2**	112.7	118.1	132.8	168.6	121.2
	October	**133.2**	112.0	121.5	137.1	184.8	119.1
	November	**135.3**	112.5	126.0	141.4	184.6	120.2
	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	**141.4**	114.4	141.5	145.3	201.7	110.5
	March	**159.3**	120.0	145.2	170.1	248.6	117.9

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.

https://www.forbes.com/sites/richardjchang/2022/04/05/here-are-the-biggest-gainers-on-the-2022-billionaires-list/?sh=1d1e72e9425f

Here Are The Biggest Gainers On The 2022 Billionaires List

Richard J. Chang

Forbes Staff

The top ten gainers include some familiar names, a cryptocurrency entrepreneur and a Latin American telecom tycoon.

Amid sliding stock markets, Russia's war on Ukraine and the ongoing Covid-19 pandemic, the collective wealth of the world's billionaires dropped by $400 billion from last year, according to *Forbes*' 2022 list. But not everyone had a rough year.

Just ask Elon Musk, whose fortune grew by $68 billion since the 2021 World's Billionaires list, to an estimated $219 billion, landing him as the world's richest person – his first time atop the annual *Forbes* ranking. Musk's fatter fortune comes even after he sold $16 billion worth of Tesla shares in late 2021 and paid taxes on his capital gains – as a result of a jump in the price of the stock over the past year. He's the biggest gainer, in dollar terms, this year.

The popularity of buying and selling cryptocurrencies in part fueled the rise of the second biggest gainer. Changpeng Zhao, known as CZ, cofounded cryptocurrency exchange Binance and is worth an estimated $65 billion–or $63.1 billion more than last year. That's quite a jump, but it's in part because *Forbes* got new information on CZ's stake in Binance (at least 70%, per sources, though the company won't comment), combined with a much higher revenue estimate since Binance's transaction volume has spiked.

The other big gainers range from Indian infrastructure tycoon Gautam Adani to Mexican telecom mogul Carlos Slim Helu to the cofounders of Google. *Forbes* calculated fortunes for the 2022 billionaires list using stock prices and currency exchange rates from March 11, 2022. Net worths can change dramatically within days or even hours.

Here are the top 10 billionaires with the biggest gains over the past year:

1.

Elon Musk

Net worth: $219 billion

Gain since April 2021: $68 billion

Source of wealth: Tesla, SpaceX

Country: U.S.

The wealth of the rocket and electric car entrepreneur grew by $68 billion in the past year. That followed a $126 billion gain between the 2020 and 2021 World's Billionaires lists. Early in 2022, Musk's fortune briefly surpassed $300 billion, only to fall back to $219 billion for the 2022 *Forbes* list. That was still enough to make him the world's richest person.

2.

Changpeng Zhao

Net worth: $65 billion

Gain since April 2021: $63.1 billion

Source of wealth: Cryptocurrency exchange

Country: Canada

Known as CZ, Changpeng Zhao is the CEO of the world's largest cryptocurrency exchange, Binance, of which he owns an estimated 70%. Zhao's net worth jumped in the past year due to new information about his stake and the success of the exchange. Zhao announced in January that Binance plans to spend $200 million to buy a minority stake in *Forbes* via a SPAC transaction.

3.

Gautam Adani

Net worth: $90 billion

Gain since April 2021: $39.5 billion

Source of wealth: Infrastructure

Country: India

With shares in six listed companies that outperformed India's benchmark index in 2021, Adani's net worth increased by more than $39 billion, making him the 11th richest person in the world and the second richest person in Asia, just behind fellow Indian Mukesh Ambani. Chairman of Adani Group, Adani has companies operating in power generation, coal and real estate. India's largest private port operator, Adani Group owns 74% of Mumbai International Airport.

4.

Rodolphe Saadé & family

Net worth: $41.4 billion

Gain since April 2021: $30.5 billion

Source of wealth: Shipping

Country: France

Saadé's wealth surged due to spiking demand for shipping logistics company CMA CGM, a private company in which he and his family have a 73% stake. The increase in value of the company makes Saadé France's third richest person.

5.

Michael Bloomberg

Net worth: $82 billion

Gain since April 2021: $23 billion

Source of wealth: Bloomberg

Country: U.S.

The net worth of the former NYC mayor increased by almost 40% since last year as estimated revenues of his financial information and media company, Bloomberg LP, have grown. He owns 88%.

6.

Steve Ballmer

Net worth: $91.4 billion

Gain since April 2021: $22.7 billion

Source of wealth: Microsoft

Country: U.S.

The former Microsoft CEO turned Los Angeles Clippers owner saw his wealth grow by one-third in the past year, largely due to the 32% increase in the value of Microsoft stock. The value of his NBA team also increased by 17%, to $3.3 billion.

7.

Warren Buffett

Net worth: $118 billion

Gain since April 2021: $22 billion

Source of wealth: Berkshire Hathaway

Country: U.S.

Despite giving away around $4 billion to the Bill & Melinda Gates Foundation and four other foundations in the middle of 2021, Buffett's wealth has increased by almost 23% in the past year. His conglomerate Berkshire Hathaway hit a $700 billion market valuation in January and just kept climbing.

8.

Larry Page

Net worth: $111 billion

Gain since April 2021: $19.5 billion

Source of wealth: Google

Country: U.S.

The Google cofounder is the sixth richest person in the world. In 2021, Page sold shares of Google-parent Alphabet for the first time since 2017. The stock rose by more than 26% in the past year.

9.

Carlos Slim Helu

Net worth: $81.2 billion

Gain since April 2021: $18.4 billion

Source of wealth: telecom

Country: Mexico

Mexico's richest person, who's moved up and down *Forbes'* billionaires list for many years, is now the 13th richest person in the world. The billionaire is $18.4 billion richer since last year after a 42% rise in shares of his Latin American telecom firm América Móvil. Slim sold his 10% stake in The New York Times in late 2020, when the stock was trading at more than $40 a share. He had exercised warrants to buy those shares in 2015 for over $6 each.

10.

Sergey Brin

Net worth: $107 billion

Gain since April 2021: $18 billion

Source of wealth: Google

Country: U.S.

The Google cofounder is funding the development of zero-emission airships. Like Page, he began selling shares of Alphabet in 2021 after a three year pause. The $18 billion increase in Brin's net worth was driven by the surging value of Alphabet stock; and follows a nearly $40 billion gain between the 2020 and 2021 Forbes lists.

HTTPS://WWW.FORBES.COM/SITES/KERRYADOLAN/2022/04/05/AMERICAS-10-RICHEST-BILLIONAIRES-2022/?SH=514B56325F42

America's 10 Richest Billionaires 2022

Kerry A. Dolan

Forbes Staff

The Americans atop *Forbes*' new list of the world's wealthiest people defied the downward trend. As a group, they're richer than ever.

A

fter breaking records a year ago, the world's billionaires have shrunk in number and overall wealth on *Forbes'* new 2022 list. But the uppermost ranks of this year's 735 American billionaires bucked that trend. The ten richest U.S. billionaires are worth a combined $1.2 trillion–up from $1.05 trillion a year ago–and account for just over 25% of American billionaire wealth. Talk about wealth concentration.

Eight of the 10 richest Americans are worth more than last year, led by Elon Musk–the new number one richest in the world and the biggest gainer in dollar terms on the list–who is up $68 billion from a year ago, to an estimated fortune of $219 billion. His increased wealth was fueled by a 33% rise in the price of electric vehicle maker Tesla's stock in the past year. The second biggest gainer among this group of ten: Steve Ballmer, whose Microsoft shares shot up a bit more than 20% over the year, contributing to a $22.7 billion jump in his fortune, to an estimated $91.4 billion.

The only two members of this elite group with smaller fortunes than in March 2021: Amazon founder and chairman Jeff Bezos, whose net worth dropped $6 billion since last year, to $171 billion, amid a dip in the e-commerce giant's share price; and Mark Zuckerberg, the cofounder and CEO of the company formerly known as Facebook, whose fortune fell by nearly $30 billion over the past year, to $67.3 billion, as shares of recently renamed Meta Platforms fell nearly 30%.

Nine of these 10 people were among the 10 wealthiest in the U.S. a year ago as well. The one change: Mike Bloomberg, the former New York City mayor and founder of financial data firm Bloomberg LP, who overtook Walmart heir Alice Walton this year.

The Ten Richest Americans

Forbes calculated net worths for the 2022 list of the World's Billionaires using stock prices and currency exchange rates from March 11, 2022.

1.

Elon Musk

Net worth: $219 billion

Source of wealth: Tesla, SpaceX

Residence: Austin, Texas

HANNIBAL HANSCHKE/AP

Musk overtook Jeff Bezos to become the world's richest person on *Forbes*' 2022 list of the World's Billionaires, buoyed by a rise in the share price of automaker Tesla. Musk, who ranked number two on *Forbes*' 2021 list, first debuted on the *Forbes* billionaires list a decade ago, in 2012, worth $2 billion. The Tesla chief unloaded more than $16 billion of the electric vehicle maker's shares over two months last year, likely resulting in the largest-ever one-year tax bill for an individual. What does he care? His fortune is still up $68 billion over the last 12 months.

2.

Jeff Bezos

Net worth: $177 billion

Source of wealth: Amazon

Residence: Seattle, Washington

MICHAEL PRINCE FOR FORBES

For the first time in four years, Bezos is not the world's richest. His fortune is $6 billion lower than a year ago, due to a 3% drop in Amazon stock and an uptick in his charitable donations. Since giving up the CEO role in July, he has focused on other endeavors: his commercial space company, Blue Origin, launched him into the heavens last summer; he has reportedly bought a superyacht; and he stepped up his charitable giving by donating more than $1 billion in 2021 to causes such as Barack Obama's foundation and environmental groups.

3.

Bill Gates

Net worth: $129 billion

Source of wealth: Microsoft, investments

Residence: Medina, Washington

EVAN VUCCI/AP

The now-divorced Microsoft cofounder has been busy writing, with a book out last year on how to battle climate change and another coming in May about preventing another pandemic. In March, the Bill & Melinda Gates Foundation joined a coalition to develop drug candidates to combat future global contagions.

4.

Warren Buffett

Net worth: $118 billion

Source of wealth: Berkshire Hathaway

Residence: Omaha, Nebraska

TIMOTHY ARCHIBALD FOR FORBES

Berkshire Hathaway shares sit at record highs after a string of deals. Last fall, Buffett made a well-timed bet on Activision Blizzard, plowing $1.1 billion into the video game maker’s shares three months before Microsoft agreed to acquire it for $69 billion. His Berkshire Hathaway has snapped up some $7 billion worth of Occidental Petroleum stock this year amid soaring oil prices. In March, he led the biggest acquisition in years when Berkshire agreed to purchase insurer Alleghany for $11.6 billion in cash.

5.

Larry Page

Net worth: $111 billion

Source of wealth: Google

Residence: Palo Alto, California

6.

Sergey Brin

Net worth: $107 billion

Source of wealth: Google

Residence: Los Altos, California

XAVIER COLLIN/IPA/SPLASH NEWS/NEWSCOM

Google cofounders Page and Brin (pictured above), who together retain a controlling stake and sit on the board of parent company Alphabet, began selling shares last year for the first time since 2017. Each has cashed out more than $1 billion since May 2021, *Forbes* estimates.

7.

Larry Ellison

Net worth: $106 billion

Source of wealth: Software

Residence: Lanai, Hawaii

JAMEL TOPPIN FOR FORBES

Oracle’s chairman and former CEO is more than $10 billion wealthier this year as shareholders cheered its transition into a cloud-based company. In September, Ellison snapped up a Lake Tahoe resort for

$345 million. His sprawling real estate portfolio includes the Hawaiian island of Lanai, which he bought for $300 million in 2012, and at least ten properties on Malibu's glitzy Carbon Beach.

8.

Steve Ballmer

Net worth: $91.4 billion

Source of wealth: Microsoft

Residence: Hunts Point, Washington

DAVID PAUL MORRIS/BLOOMBERG

The NBA's Los Angeles Clippers, which the former Microsoft CEO bought for a lofty $2 billion eight years ago, are now valued by *Forbes* at $3.3 billion. Not a bad return. But it's Microsoft stock that has really let Ballmer run up the score—its shares are up more than 600% over the same period, adding more than $65 billion to his net worth.

9.

Michael Bloomberg

Net worth: $82 billion

Source of wealth: Bloomberg LP

Residence: New York City

The man whose Bloomberg terminals power Wall Street pledged $120 million to combat drug overdoses in November and $750 million to support charter schools in December. New York's former mayor also spent $1.2 billion backing Democrats (including more than $1 billion on his own abortive White House run) in the 2020 election cycle. He's more bearish about 2022, warning Dems in a recent opinion piece that "absent an immediate course correction, the party is headed for a wipeout in November."

10.

Mark Zuckerberg

Net worth: $67.3 billion

Source of wealth: Facebook

Residence: Palo Alto, California

Facebook renamed itself Meta Platforms in October as Zuckerberg sets his sights on building a nebulously defined (and potentially undesired) techtopia called the “metaverse.” He has good reason to escape the physical world, in which Meta shares have dropped by 50% since their September peak. He’s out of the world’s 10 richest for the first time in six years.

With reporting by Matt Durot, John Hyatt, Rachel Sandler and Chase Peterson-Withorn

https://www.forbes.com/sites/daviddawkins/2022/04/05/heres-how-big-a-hit-russias-billionaires-have-taken-in-the-past-year/?sh=3e5539b227d2

Here's How Big A Hit Russia's Billionaires Have Taken In The Past Year

David Dawkins

Forbes Staff

War, sanctions and a weakened ruble wreaked havoc on the fortunes of the country's richest people.

Vladimir Putin's war in Ukraine, the cost of sanctions across the Russian elite and the weakened ruble took its toll on the wealth of Russia's billionaires. There are 83 Russians on the 2022 *Forbes* list of the World's Billionaires, down from 117 last year. The remaining Russian billionaires are worth a collective $320 billion–an eye-watering $263 billion less than a year ago.

These billionaires have lost, on average, 27% of their wealth–or $2 billion–apiece since last year. Six tycoons saw their wealth drop by a double-digit billion-dollar sum: Leonid Mikhelson (-$10.9 billion), Alexey Mordashov (-$15.9 billion), Gennady Timchenko (-$10.7 billion), Vagit Alekperov (-$14.4 billion), Suleiman Kerimov (-$11.4 billion) and Tatyana Bakalchuk (-$10.9 billion).

Thirty-five Russians who were billionaires last year fell out of the ranks in 2022. Among the most notable dropoffs: Russian banker Oleg Tinkov and tech giant Arkady Volozh.

Meanwhile, over the past year Russia minted just two new billionaire citizens: Denis Sverdlov of London-based EV startup Arrival and Egor Kulkov, one of the early partners in Pharmstandard, a Moscow-based pharmaceutical company, and now an investor in CMR Surgical, a maker of robot surgeons that raised $600 million in funding in 2021.

Russian billionaire and businessman Roman Abramovich

GETTY IMAGES

Here are six of the most notable Russians whose fortunes plunged, including the three biggest losers:

Net worths are as of March 11, 2022; comparisons are vs. March 5, 2021

Vladimir Lisin

2022 NET WORTH: $18.4 billion (DOWN $7.8 billion)

Lisin is Russia's richest person, but he is down $7.8 billion, or 30%, from a year ago. His NLMK Group is one of the largest steel producers in Russia. One of the first billionaires to publicly criticize the war, in a letter to staff, later published on LinkedIn in March, he said the "lost lives" in Ukraine were a "huge

tragedy that is impossible to justify." Unlike many other Russian oligarchs, Lisin has not been personally sanctioned.

Roman Abramovich

2022 NET WORTH: $6.9 billion (DOWN $7.6 billion)

Although the Chelsea owner made his first billions during the President Boris Yeltsin-era of post-Soviet entrepreneurialism, Abramovich today is the most recognizable face of the recent Putin-provoked sanctions. The oligarch was possibly poisoned while facilitating early peace talks between Russia and Ukraine. At least four of his assets, including a Gulfstream G650 jet, a 15-bedroom London mansion worth $140 million and his beloved Chelsea soccer team, have been frozen by Western governments. In fact, he was pushed to put Chelsea up for sale due to the sanctions. At the time he announced he would set up a charitable foundation and the U.K. government has reportedly made it clear that it will only approve a sale if Abramovich walks away without pocketing a penny. He also has stakes in two Russian commodities giants - Evraz and Norilsk Nickel, which have lost billions in value. Meanwhile, his two yachts, worth $900 million, are docked out of reach in Turkey.

Vladimir Potanin

2022 NET WORTH: $17.3 billion (DOWN $9.7 billion)

Potanin is now Russia's second richest person–but he has lost nearly $10 billion of estimated fortune since last year. Another of the oligarchs to survive the transition from Yeltsin to Putin, Potanin's 35% stake in nickel and palladium mining company Norilsk Nickel was hammered after the invasion of Ukraine by Russian forces, although shares have recovered in the weeks since.

Russian billionaire Vladimir Potanin

GETTY IMAGES

Russia's Biggest Billionaire Losers

Alexey Mordashov

2022 NET WORTH: $13.2 billion (DOWN $15.9 billion)

Russia's former richest person has lost over half of his estimated net worth since last year. Mordashov was sanctioned by the EU in February for his "links with Russian decision-makers." Mordashov is a majority shareholder in steel company Severstal, and TUI Group, one of the biggest travel and tourism companies in the world.

Vagit Alekperov

2022 NET WORTH: $10.5 billion (DOWN $14.4 billion)

Alekperov owns a stake in oil giant Lukoil, one of the largest companies in Russia after state companies Sberbank and Rosneft. The company broke ranks with the other giants in Russia by expressing its, "deepest concerns about the tragic events in Ukraine," and, "sincere empathy for all victims, who are affected by this tragedy." Alekperov, who was once an oil rig worker, has lost over half of his fortune since last year.

Suleiman Kerimov & family

2022 NET WORTH: $4.4 billion (DOWN $11.4 billion)

Gold tycoon Suleiman Kerimov is a member of Russia's upper house of parliament, his fortune comes from gold producer Polyus. Kerimov was first sanctioned by the U.S. in 2018 for alleged money laundering related to the purchase of villas in France; the EU sanctioned him on March 15, 2022.

Dan Tsubouchi @Energy_Tidbits · 12h

Positive for #Oil prices with risk to Libya oil exports. Libya unity looking like a fantasy. @Lyobserver says eastern military leaders leaving 5+5 & urge Haftar to stop oil exports, close key road, etc. Libya loaded ~1 mmbd in March. #OOTT

https://www.libyaobserver.ly/news/haftars-representatives-jmc-5-5-call-closing-oil-coastal-road-and-cutting-cooperation-gnu

Haftar's representatives in JMC 5 + 5 call for closing oil, coastal road and cutting cooperation with GNU

April 03, 2022 - 23:05

Written By: LibyaObserver

Representatives of warlord Khalifa Haftar in the Joint Military Commission 5+5 (JMC) have advised him to stop oil exports, close the coastal road linking the eastern region with the western region, suspend flights between both regions, and stop all aspects of cooperation with the Government of National Unity (GNU).

The representatives have also suspended their participation in UN-brokered JMC talks.
In a statement issued on Saturday, they claimed that "the Prime Minister of the GNU, Abdel Hamid Dbeibah, had practised behaviours that are contrary to the political agreement and a flagrant violation of human rights in accordance with international and national standards".

"Dbeibah ignored the important national role that the armed forces have achieved in combating terrorism and guarding oil fields to support the Libyans and protect the borders," they added, in reference to the wars launched by Haftar in Benghazi, Derna, Murzuq, and finally in Tripoli.

"GNU's actions happened in full view of the United Nations, its mission and the international community, but it did not act on," the statement reads, adding that "Dbeibah did not comply with the legitimate decisions issued by the House of Representatives and refused the stability government headed by Fathi Bashagha."

2 7

Dan Tsubouchi @Energy_Tidbits · 21h

#Vortexa crude #Oil floating storage for 04/08 est 87.30 mmb, +1.33 mmb WoW vs revsied down 85.97 mmb at 04/01. Floating storage has been fairly steady around the ~90-95 mmb range for past few months. Thx @Vortexa @TheTerminal #OOTT

Vortexa Crude Oil Floating Storage Estimated as of 1pm MT on April 9, 2022

Source: Bloomberg, Vortexa

Est as of Apr 9, noon MT

Date	FZWFST VTXA Indx Mid Px
Fr 04/08/2022	87295
Fr 04/01/2022	85965
Fr 03/25/2022	89581
Fr 03/18/2022	91542
Fr 03/11/2022	93402
Fr 03/04/2022	92397
Fr 02/25/2022	92181
Fr 02/18/2022	84472
Fr 02/11/2022	97403
Fr 02/04/2022	98271
Fr 01/28/2022	93433

Est as of Apr 2, 1pm MT

Date	FZWFST VTXA Indx Mid Px
Fr 04/01/2022	89501
Fr 03/25/2022	90194
Fr 03/18/2022	96062
Fr 03/11/2022	90367
Fr 03/04/2022	96009
Fr 02/25/2022	94149
Fr 02/18/2022	85687
Fr 02/11/2022	99352
Fr 02/04/2022	100.9k
Fr 01/28/2022	95887
Fr 01/21/2022	98802

Est as of Mar 26, 1pm MT

Date	FZWFST VTXA Indx Mid Px
Fr 03/25/2022	91143
Fr 03/18/2022	95618
Fr 03/11/2022	89990
Fr 03/04/2022	96966
Fr 02/25/2022	93293
Fr 02/18/2022	85019
Fr 02/11/2022	97292
Fr 02/04/2022	98869
Fr 01/28/2022	94032
Fr 01/21/2022	98387
Fr 01/14/2022	84489

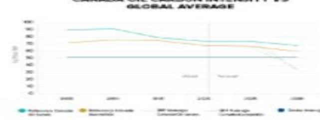
Source: Bloomberg, Vortexa

1 3

Dan Tsubouchi @Energy_Tidbits · Apr 9

Is #Guilbeault warning #Suncor's expansion will be 1st casualty of Liberals #EmissionsReductionPlan's still to be disclosed targets for emissions reductions for 2025 so #Oil #NatGas #OilSands sector is on track to hit 2030 targets? Thx @row1960. #OOTT

thestar.com/politics/2022/...

> **Dan Tsubouchi** @Energy_Tidbits · Mar 29
>
> Hmmm! One of the tidbits in 271-pg Liberals 2030 Emissions Reduction Plan. pg 197, #Oil #NatGas sector will need to develop new actions beyond existing proven solutions to meet still to be defined targets, even to meet 2025 & 2026 reduction targets. #OOTT canada.ca/content/dam/ec...
>
> Excerpts 2030 Emissions Reduction Plan https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/Canada-2030-Emissions-Reduction-Plan-eng.pdf
>
> Items in [italics] are from the ERP
>
> No change to the big picture target of oil and gas reductions, but still haven't defined the specific 2025 target or interim years prior to 2030. Pg 8 "*The Plan presents modelling of the most economically efficient pathway to meeting Canada's 2030 target. Drawing on that modelling, the Plan includes a projected contribution from the oil and gas sector of emission reductions to 31% below 2005 levels in 2030 (or to 42% below 2019 levels). This will guide the Government of Canada's work with industry, provinces, Indigenous partners, and civil society to define and implement the cap on oil and gas sector emissions. Following consultations, the cap will be designed to lower emissions at a pace and scale needed to achieve net-zero by 2050.*" Note their Pg 50 graph, the dotted line on the targets for any year are subject to what is defined, so the slope of emissions reduction are not yet known but the end point in 2030 is the target.
>
> 
>
>
> The oil and gas sector is being put on notice [warned] that they will need to develop new actions beyond existing proven solutions to meet the still to be defined oil and gas emissions reductions targets, even for 2025 and 2026. Pg 197 "*Drive new and more ambitious actions. Targets for the oil and gas sector should be ambitious and require new actions that go beyond what is already contemplated using existing proven solutions. Regulatory targets drive innovation. Targets should lead to a scale of emissions reductions that would not otherwise have occurred. At the same time, targets must be realistic and credible, while pushing the sector to go further than it would otherwise. Targets should result in visible leadership, innovation in technology and business models, and new investments. It is acceptable to set emissions reduction targets in the future for which there is not currently complete certainty on how to attain the target. The further away the target is (e.g., 2030 versus 2025 or 2026), the more this principle applies.*"
>
> Prepared by SAF Group https://safgroup.ca/news-insights/

3 3

Dan Tsubouchi @Energy_Tidbits · Apr 8

Nigeria states the obvious, "most" #OPEC members do not have spare ready capacity. still think the real question is how much sustainable, not temporary burst, spare #Oil capacity is there in Saudi and UAE? #OOTT

aa.com.tr
OPEC does not have capacity to boost production: Nigerian minister
Energy transition should be slower to ease prices while putting alternatives in place, says Timipre Marlin Sylva - Anadolu Agency

1 10 24

Dan Tsubouchi @Energy_Tidbits · Apr 8

"I'd say that the President shares the chairman's view that IRGC Qods Forces are terrorists" says US State Dept. Is #Biden's narrowing terrorist designation to Quds part of IRGC a trial balloon for Iran, US or both? Reinforces #Biden doesn't want to give up on #JCPOA. #OOTT

> Excerpt https://www.state.gov/briefings/department-press-briefing-april-8-2022/
> **Department Press Briefing – April 8, 2022**
> JALINA PORTER, PRINCIPAL DEPUTY SPOKESPERSON
> APRIL 8, 2022
> Let's take our last question from Elizabeth Hagedorn.
> **QUESTION:** Hi, Jalina. One follow-up for you on Iran. Can you say whether the Biden administration shares General Milley's view that the IRGC's Qods Force specifically should remain on the U.S. list of terror organizations?
> **MS PORTER:** Thanks, Elizabeth. I'd say that the President shares the chairman's view that IRGC Qods Forces are terrorists, and beyond that we aren't going to comment on any of the topics in the nuclear talks. But what I would say is out of the 107 Biden administration designations in relation to Iran, 86 have specifically targeted the IRGC-related persons as well as affiliates.
>
> https://en.wikipedia.org/wiki/Quds_Force
>
> **Quds Force**
>
> The **Quds Force** (Persian: ... "Jerusalem Force") is one of five branches of Iran's Islamic Revolutionary Guard Corps (IRGC) specializing in unconventional warfare and military intelligence operations. U.S. Army's Iraq War General Stanley McChrystal describes the Quds Force as an organization analogous to a combination of the CIA and the Joint Special Operations Command (JSOC) in the United States. Responsible for extraterritorial operations, the Quds Force supports non-state actors in many countries, including Hezbollah, Hamas, Palestinian Islamic Jihad, Yemeni Houthis, and Shia militias in Iraq, Syria, and Afghanistan.
>
> The Quds Force reports directly to the Supreme Leader of Iran, Ayatollah Khamenei. After Qassem Soleimani was killed, his deputy, Esmail Ghaani, replaced him. The U.S. Secretary of State designated the Islamic Revolutionary Guard Corps and Quds Force as a Foreign Terrorist Organization (FTO) in 2019 based on the IRGC's "continued support to and engagement in terrorist activity around the world." This was the first time that the U.S. ever designated another government's department as a FTO.

2 1

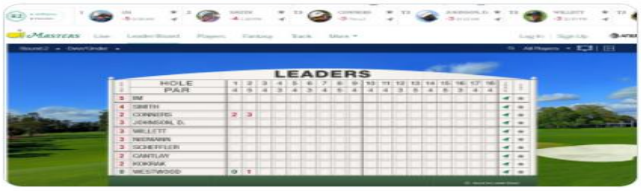
Dan Tsubouchi @Energy_Tidbits · Apr 8

"Stop #Wind projects & gradually dismantle existing farms", "return to households the 5b in subsidies in particular to wind turbines" "get out of EU electricity market to find decent prices" "relaunch the #Nuclear & hydroelectric sectors" Le Pen is closing gap on Macron. #OOTT

4 13

Dan Tsubouchi @Energy_Tidbits · Apr 8

Hope it's a quiet oil and gas markets day. Want to turn to @TheMasters coverage once it starts at 8am MT especially seeing @coreconn is off to a good start with a birdie at 2. i am an unabashed homer for 🇨🇦 @MacHughesGolf @mweirsy @coreconn

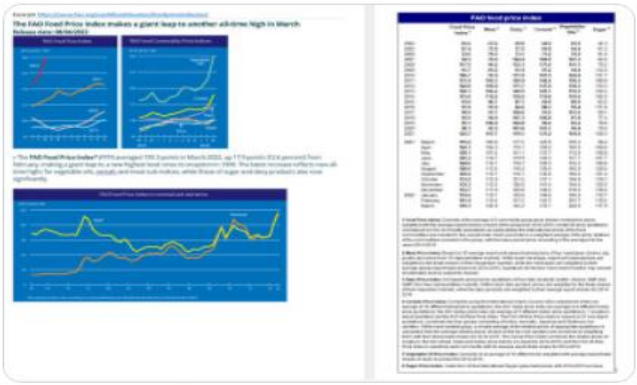


1

Dan Tsubouchi @Energy_Tidbits · Apr 8

Tragically, this is the forward indicator for massive food price increases & more imporantly, shortages in areas directly impacted by RUS/Ukraine. FAO Food Price Index "giant leap" to all time record, 159.3 in Mar, +12.6% MoM, +33.6% YoY.

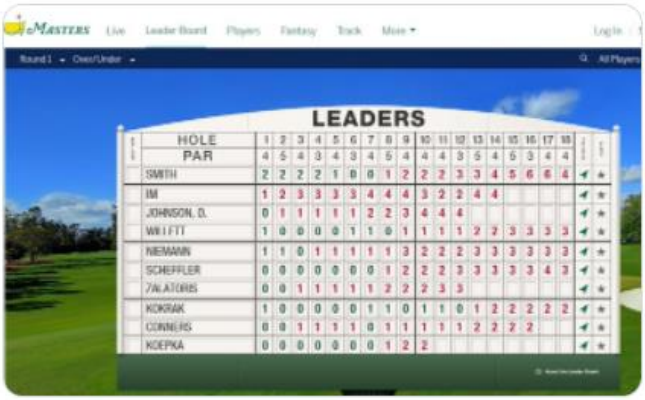
fao.org/worldfoodsitua...



6 5

Dan Tsubouchi @Energy_Tidbits · Apr 7

🇨🇦 Canadian golf fans, have you noticed how @coreconn is getting a fair share of TV coverage at @TheMasters because @GOLFonCBS is covering compared to regular PGA events that are covered by @NBCSports. I love cheering for our guys @MacHughesGolf @mweirsy @coreconn 🇨🇦



2 7

Dan Tsubouchi @Energy_Tidbits · Apr 7

Hmm! Clean up or set up? #Shell transfers ~50 kboed of Cdn shale assets from Upstream to Integrated Gas. Clean up for reporting? Or set up ahead of #LNGCanada Phase 2 FID? Should know by Q1 on 05/05. Would be big value to all Cdn #NatGas if FID another 1.8 bcf/d #LNG. #OOTT

https://www.shell.com/media/news-and-media-releases/2022/shell-first-quarter-2022-update-note.html

Shell first quarter 2022 update note

Apr 7, 2022

The following is an update to the first quarter 2022 outlook. Impacts presented may vary from the actual results and are subject to finalisation of the first quarter 2022 results, published on May 5, 2022. Unless otherwise indicated, all outlook statements exclude identified items.

The prevailing volatility in commodity prices has led to larger ranges in the financial guidance for the quarter. Adjusted Earnings and Adjusted EBITDA updates are provided at a segment level while the CFFO update is provided at a Shell Group level.

This update note follows the 2021 segmentation to enable comparison with the fourth quarter 2021 results. From the first quarter results publication onwards we will align our reporting segments with our Powering Progress strategy and provide additional transparency in low carbon value. The Renewables & Energy Solutions business will be reported separately from Integrated Gas. Oil Products and Chemicals will be reorganised into two segments – Marketing and Chemicals & Products. The shales assets in Canada will be reported as part of the Integrated Gas segment instead of the Upstream segment. There is no impact on a Shell Group level.

For the first quarter 2022 results, the post-tax impact from impairment of non-current assets and additional charges (e.g. write-downs of receivable, expected credit losses, and onerous contracts) relating to Russia activities are expected to be $4 to $5 billion. These charges are expected to be identified and therefore will not impact Adjusted Earnings. Details of the accounting treatment and impact of ongoing developments will be provided at the first quarter 2022 results announcement.

Integrated Gas (including Renewables and Energy Solutions)

Adjusted EBITDA

- Production is expected to be between 860 and 910 thousand barrels of oil equivalent per day (kboe/d), driven by maintenance activities, including the planned turnaround of one of the trains at Pearl GTL. The outlook includes ~50 kboe/d for the Canadian shales assets.
- LNG liquefaction volumes are expected to be between 7.7 and 8.3 million tonnes.
- Trading and optimisation results for Integrated Gas (including Renewables and Energy Solutions) are expected to be higher compared to the fourth quarter 2021.
- Underlying Opex for Integrated Gas (including Renewables and Energy Solutions) is expected to be between $1.7 and $1.9 billion.

Adjusted Earnings

- Pre-tax depreciation is expected to be between $1.2 and $1.4 billion.
- Taxation charge is expected to be between $700 and $1,100 million.
- Renewables and Energy Solutions segment results, which until now have been included in the Integrated Gas results, will be separately disclosed from the first quarter 2022 results announcement. Of the total Integrated Gas (including Renewables and Energy Solutions) Adjusted Earnings, Renewables and Energy Solutions contribution is expected to be between $100 and $600 million.

Upstream

Adjusted EBITDA

- Production is expected to be between 1,900 and 2,050 thousand barrels of oil equivalent per day. The outlook includes ~50 kboe/d for the Canadian shales assets to Integrated Gas.
- Underlying Opex is expected to be between $2.3 and $2.7 billion.

Dan Tsubouchi @Energy_Tidbits · Feb 21

Was #Shell showcasing #LNGCanada or just highlighting its positives today? @Shell expects average IRR of 14-18% for its pre-FID projects, which includes #LNGCanada Phase 2. #LNGCanada "is set to deliver the lowest carbon intensity in the entire ...

2 4 10

Dan Tsubouchi @Energy_Tidbits · Apr 7

Half full or half empty? @SecBlinken not "overly" optimistic at prospects of getting #JCPOA deal. Iran's Revolutionary Guard is a terrorist organization, asked "will they continue to be?", says "i'm not going to get into the details of where we are on the negotiations". #OOTT

Excerpt https://www.state.gov/secretary-antony-j-blinken-with-andrea-mitchell-of-nbc/

Secretary Antony J. Blinken with Andrea Mitchell of NBC

INTERVIEW

ANTONY J. BLINKEN, SECRETARY OF STATE

BRUSSELS, BELGIUM APRIL 6, 2022

QUESTION: Quick question on Iran before I let you go. You're talking about Iran here in Brussels. Is Iran's Revolutionary Guard – which has attacked Americans and our allies – a terrorist organization?
SECRETARY BLINKEN: So, they are. And –
QUESTION: Will they continue to be?
SECRETARY BLINKEN: I'm not going to get into the details of where we are on the negotiations. I would say simply that I'm not overly optimistic at the prospects of actually getting an agreement to conclusion, despite all the efforts we put into it and despite the fact that I believe we would be – our security would be better off. We're not there. We'd have to see if we can close –
QUESTION: Is time running out?
SECRETARY BLINKEN: Well time is getting extremely short. But this is something that we'll be talking to our European partners about this afternoon and then over the course of the next day. We've been working in very close coordination with the Europeans, with the European Union, with France, with Germany, with the UK. So we'll see where we get. I continue to believe it would be in the best interests of our country if we can get back into compliance with the deal, if Iran will do the same. We're not there.
QUESTION: Thank you very much, Mr. Secretary. Thanks for your patience.]
SECRETARY BLINKEN: Thanks, Andrea.

4 2

Dan Tsubouchi @Energy_Tidbits · Apr 6

#Yellen 2:24:30 mark "the demand for oil is highly inelastic in the short run. And so too large a restriction on supply could have very large price effects and that's what we're trying to balance." Hmm!, did she bring this up 2 mths ago? #OOTT youtube.com/watch?v=_6iWYZ...

Dan Tsubouchi @Energy_Tidbits · Apr 6

"the issue with blocking oil exports from Russia is that many countries, especially in Europe, are very dependent on that oil. And we're likely to see skyrocketing prices if we did put a complete ban on oil" says @SecYellen. #OOTT

youtube.com/watch?v=_6iWYZ...

Excerpt from Treasury Secretary Yellen before House Financial Services Committee April 6, 2022
https://www.youtube.com/watch?v=_6iWYZYzc9I

Items in "italics" are SAF Group created transcript

At 2:24:30 min mark. Yellen "the issue with blocking oil exports from Russia is that many countries, especially in Europe, are very dependent on that oil. And we're likely to see skyrocketing prices if we did put a complete ban on oil. And as I said at the outset, our concern has been in designing sanctions, we want to impose the maximum pain we can on Russia. But also taking care not to impose undue pain on Americans, or on our partners."

Prepared by SAF Group https://safgroup.ca/news-insights/

Treasury Secretary Janet Yellen testifies before House Financial Services Committee – 4/6/22

3 6

Dan Tsubouchi @Energy_Tidbits · Apr 6

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Prepared by SAF Group https://safgroup.ca/news-insights/

Treasury Secretary Janet Yellen testifies before House Financial Services Committee -- 4/6/22

1 4 1

Dan Tsubouchi @Energy_Tidbits · Apr 6

#Diesel prices hammering fuel costs for fishing industry & delivered seafood to Calgary. Yesterday, a couple of cooked lobsters >1.5 lbs each at ~$27/lb, but lobster is great right now. But DI passed on the King Crab today at $55/lb & that's at Costco.

3 2 8

Dan Tsubouchi @Energy_Tidbits · Apr 6

So far, no gotcha blows landed at House Energy grilling of #BigOil. Reminder from #Shell, they don't set retail gas station at the pump prices, that would be illegal. Rather, the retailers sets the #Gasoline price. #OOTT

youtube.com
Gouged at the Gas Station: Big Oil and America's ...
The Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce will ...

2

Dan Tsubouchi @Energy_Tidbits · Apr 6

For those not near their laptop, @EIAgov just released its weekly #Oil #Gasoline #Distillates inventory data as of April 1. Prior to release, WTI was $102.40. #OOTT
ir.eia.gov/wpsr/overview....

s Inventory April 1: EIA, Bloomberg Survey Expectations, A

els)	EIA	Expectations
	2.42	-2.80
	-2.04	-0.40
	0.77	-0.60
	1.15	-3.80

commercial so builds in impact of 3.7 mmb draw from SPR for A
ed in the oil data, Cushing had a build of 1.65 mmb for Apr 1 we

Bloomberg
SAF Group https://safgroup.ca/news-insights/

2

Dan Tsubouchi @Energy_Tidbits · Apr 6

It may not get a thank you, but a key revenue boost to Liberals budget tomorrow will be revenues from #Oil #NatGas #OilSands. Big revenue boost for Canada oil & gas exports to US. #OOTT

Dan Tsubouchi @Energy_Tidbits · Apr 4

Liberals should have $$$ in budget to fund NDP priorities & other big spending. Will @cafreeland say it's Liberals good management of finances, or will she thank Cdn #Oil #NatGas sector for the huge revenue boost? Huge $ upside vs 12/14 fiscal update with WTI...

2 14

Dan Tsubouchi @Energy_Tidbits · Apr 5

Still a significant initial cost penalty to a #BEV over an #ICE car, in fact #EVs may not get much cheaper at all over the next few yrs says #Mercedes reports @RoadandTrack. Can EVs meet growth fcasts if they don't get broad buying below high income? #OOTT
twitter.com/RoadandTrack/s...

Dan Tsubouchi @Energy_Tidbits · Mar 27

""Without any subsidies . . . the price of an [electric] truck will always, forever be higher than a [combustion engine] truck"says @DaimlerTruck CEO. Can #EVs meet growth fcasts if they don't get broad buying below high income? Thx @JoeMillerJr #OOTT ft.com/content/1ac7d6...

2 3

Dan Tsubouchi @Energy_Tidbits · Apr 5

Finally #OilDemand response? "implied [US] gasoline demand fell for a 3rd consecutive week, a sharp deviation from seasonal trends as record pump prices look to be hampering demand". US consumption, #Gasoline ~8.9 mmbd, #JetFuel ~1.6 mmbd. Thx @BloombergNEF Danny Adkins. #OOTT

4 5

Dan Tsubouchi @Energy_Tidbits · Apr 4

#JCPOA. "We still believe there is an opportunity to overcome our remaining differences" says @StateDeptSpox. Seems like neither US nor Iran want to give up on JCPOA, how much longer will they circle before someone giving in? #OOTT

Excerpt https://www.state.gov/briefings/department-press-briefing-april-4-2022/
Department Press Briefing – April 4, 2022
NED PRICE, DEPARTMENT SPOKESPERSON
APRIL 4, 2022

ESTION: I have a question about the nuclear negotiations with Iran. For weeks now and since the pause in the Vienna talks, you've been saying that a deal is within reach, is close, but there are issues still outstanding, and there's been progress made but the ball is in Iran's court, that they have to make this a political decision. Well, today, your Iranian counterpart said exactly the same thing, that the ball is in the U.S. court.

MR PRICE: I noticed that.

QUESTION: How much longer are these weeks going to go on, and how much longer are you going to be kicking the ball back and forth?

MR PRICE: Well, I don't know that this is what you might consider a genuine kicking of the ball back and forth, and I say that because anyone involved in the talks knows precisely who has made constructive proposals, who has introduced demands that are unrelated to the JCPOA, and how we reached this current moment. That said, it has been our consistent position: we won't negotiate these issues in public. We still believe there is an opportunity to overcome our remaining differences.

On the question of timeframe, this is something we've discussed at length before. We continue to believe – as of April 4th, today, 2022 – that a mutual return to compliance would be in our nonproliferation interests, in our broader national security interests. That is because today, and for as long as this remains the case, a mutual return to compliance would again place verifiable, permanent limits on Iran's nuclear program – in the vernacular, to put Iran's program back in the box – in a way that would be to our benefit and to the benefit of not only our European allies who are also members of the P5+1, but to the broader international community.

Now, Iran, since 2018 when the last administration walked away from the Iran deal, has made significant advancements in its nuclear program. And the continued pace of those advancements is slowly chipping away at the nonproliferation benefits that a mutual return to compliance with the JCPOA would convey to us and to our allies and partners around the world. As soon as it is no longer in our interests – that is to say, as soon as Iran's advancements in its nuclear program go beyond the nonproliferation benefits that we would otherwise accrue from a mutual return to compliance – that is when the deal would no longer be in our interest, and we would pursue other means of seeing to it that Iran cannot ever obtain a nuclear weapon.

QUESTION: Well, you have been saying this about Iran's progress in its nuclear activities, about its enrichment, but it seems like either the weeks are getting longer or being extended, or have they slowed down their progress maybe to give time? I don't know.

MR PRICE: I'm not in a position to offer an assessment of Iran's nuclear advancements from here beyond saying that when the deal was fully in effect at the outset of the deal, Iran's breakout time was close to a year. It went from a handful, small handful of months before the deal to about 12 months when the deal was fully in effect. And we know from our experts in this building, we know from our experts in the Intelligence Community, we know from our experts within – we know from experts, I should say, within the IAEA, that Iran was abiding by its commitments under the JCPOA and the protocols that were in place to prevent Iran verifiably and permanently from ever obtaining a nuclear weapon were working.

Now, since 2018, Iran has been in a position to accelerate its nuclear program in ways that would have been barred, would have been prevented by the JCPOA when it was in full effect. And with that, Iran has been able to shrink that breakout time from where it started to a point where we can measure it weeks rather than months. To us, that is unacceptable as a long-term proposition. The only long-term proposition that is acceptable to us is the fact that Iran must never be allowed to obtain a nuclear weapon. As I said before, we continue to believe that the best means to achieve that right now is through a mutual return to compliance with the Iran deal. Eventually that will no longer be the case when the Iranian nuclear program goes beyond the point at which the JCPOA would still work to our advantage.

QUESTION: One last one. Is the PMD, the possible military dimension, clarification of that issue a precondition to moving onto the deal? Or could that be something that can happen afterwards if JCPOA is revived?

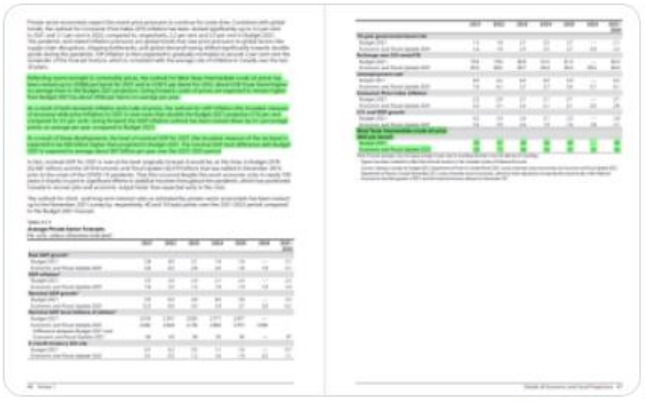
MR PRICE: We, as you know, defer to the IAEA on these questions. The IAEA must be satisfied, in terms of what it needs from Iran.

Yes.

1 2 1

Dan Tsubouchi @Energy_Tidbits · Apr 4

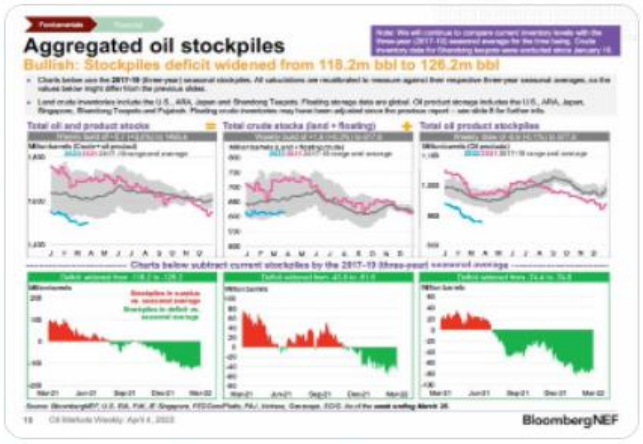
Liberals should have $$$ in budget to fund NDP priorities & other big spending. Will @cafreeland say it's Liberals good management of finances, or will she thank Cdn #Oil #NatGas sector for the huge revenue boost? Huge $ upside vs 12/14 fiscal update with WTI >$100/b. #OOTT



2 4 19

Dan Tsubouchi @Energy_Tidbits · Apr 4

Global #Oil and #PetroleumProducts stocks continue to be low, especially as oil demand increases seasonally after winter. Thx @BloombergNEF @WayneTanMing. #OOTT



4 9

Dan Tsubouchi @Energy_Tidbits · Apr 4

As EU cranks up more & lasting sanctions vs RUS, its logical short & long term replacement for RUS Urals oil is Iran light. Matches API and H2S very well. See SAF Group 03/13/22 Energy Tidbits excerpt below. Thx @sean_evers, Matt Stanley @starfuels, @SPGlobalPlatts. #JCPOA #OOTT

Excerpt from SAF Group March 13, 2022 Energy Tidbits Memo https://safgroup.ca/news-insights/

Oil – Iran's oil would be a good crude quality replacement for Urals crude to Europe

On Wednesday, we tweeted [LINK] on a good reminder from the Gulf Intelligence daily Podcast [LINK] that Iran's crude oil quality would be a good replacement for Russian Urals crude oil to Europe. We tweeted *"#JCPOA. Good reminder from @gulf_intel podcast. Matt Stanley @starfuels reminds Iran light matches API and H2S very well and is a good substitute #US Urals. See below @SPGlobalPlatts crude specs map. #OOTT"*. Our tweet included the below Platts map that noted crude qualities for Russia were Urals (Primorsk) 31.5 API 1.44% H2S, Urals (Ust Luga) 31.5 API 1.44% H2S, and Urals Gdansk 31.5 API 1.44% H2S, which compares to Iranian Light 33.4 API 1.36% H2S.

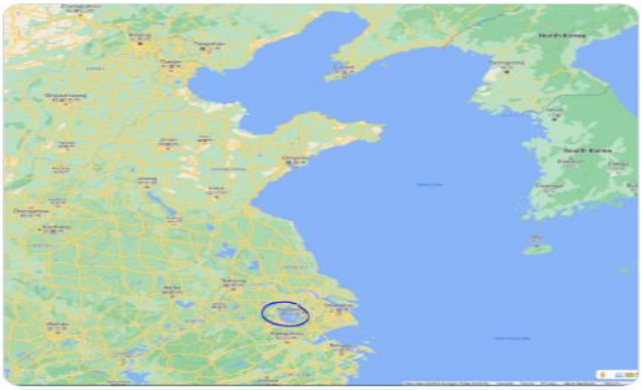
Figure 29: Platts Specifications Guide Europe and Africa Crude Oil

Source: Platts

1 2

Dan Tsubouchi @Energy_Tidbits · Apr 3

"China reports record-high five-digit daily infections with Shanghai worst hit, NEW variant found in Suzhou" reports @globaltimesnews. Should help hold back #Oil prices with concern on a broadening Covid impact on China. #OOTT globaltimes.cn/page/202204/12...



Stay informed

This Tweet links to a China state-affiliated media website.

Find out more

2 1 3

Dan Tsubouchi @Energy_Tidbits · Apr 3

Our weekly SAF Apr 3, 2022 Energy Tidbits memo is posted on our SAF Group website. This 56-pg energy research memo expands upon & covers more items than tweeted this week. See news/insights section of SAF website #Oil #OOTT #LNG #NatGas #EnergyTransition safgroup.ca/news-insights/

SAF GROUP

Energy Tidbits

April 3, 2022

Produced by: Dan Tsubouchi

Liberals Emissions Reduction Plan Is Setting Up the Oil & Gas Sector for Failure

Welcome to new Energy Tidbits memo readers. We are continuing to add new readers to our Energy Tidbits memo, energy blogs and tweets. The focus and concept for the memo was set in 1999 with input from PMs, who were looking for research (both positive and negative items) that helped them shape their investment thesis to the energy space, and not just focusing on daily trading. Our priority was and still is to not just report on events, but also try to interpret and point out implications therefrom. The best example is our review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector and not just a specific company results. Our target is to write on 48 to 50 weekends per year and to post by noon mountain time on Sunday.

This week's memo highlights:

1. The Liberals Emissions Reduction Plan (see pg 197) is setting up the Cdn oil and gas sector for failure (Click Here)
2. Biden's budget proposals takes away incentives to drill and maintain low rate oil and gas producing wells. (Click Here)
3. AMLO's "plan emergente" means Mexico will focus on keeping oil exports up and not reducing in 2022. (Click Here)
4. Two more Asian LNG buyers lock in 20-yr supply (Click Here)
5. Biden's big 180 mmb oil release from SPR is a 160 mmb "sale" and a previously 20 mmb "exchange" (Click Here)
6. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].

Dan Tsubouchi, Principal, Chief Market Strategist
Ryan Dunfield, Principal, CEO
Aaron Bunting, Principal, COO, CFO
Ryan Haughn, Principal, Energy

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