SAF GROUP

Energy Tidbits

March 28, 2021

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Supreme Court Carbon Tax Ruling Seems To Effectively Set No Limit As To How High It Can Go

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. Supreme Court is more than a carbon tax is constitution ruling, it seems to effectively set no limits as can be set to levels needed to "reduce global warming". (Click Here)

2. Liberals to introduce long awaited budget on April 19 ie. higher taxes. (Click Here)

3. Saudi Arabia announced its Green Initiative that targets renewable sources for electricity from <1% to 50% by 2030. (Click Here)

4. Saudi Aramco Q4 call reminded of the challenge to get hydrogen in scale off the ground, it will need long term offtake contracts like LNG in its early days. (Click Here)

5. EIA's Suez Canal and SUMED pipeline brief is an excellent reference document for crude, petroleum products and LNG flows by country or origin and destination. (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].

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Natural Gas – Natural gas draw of 36 bcf, storage now -263 bcf YoY deficit

YoY storage at -263 bcf YoY deficit

The EIA reported a 36 bcf draw (vs 21 bcf draw expectations) for the March 19 week, which was well below the 5-yr average draw of 51 bcf and larger than last year's draw of 26 bcf. Storage is 1.746 tcf as of Mar 19, increasing the YoY deficit to 263 bcf from 253 bcf last week and storage is now 78 bcf below the 5 yr average. HH gas prices have softened in the last week weeks with warmer weather but, its been a good winter for gas storage moving from ~200 bcf YoY surplus to start the winter to now being -263 bcf YoY. Below is the EIA's storage table from its Weekly Natural Gas Storage Report. [LINK]

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons			
					Year ago (03/19/20)		5-year average (2016-20)	
Region	03/19/21	03/12/21	net change	implied flow	Bcf	% change	Bcf	% change
East	307	328	-21	-21	400	-23.3	329	-6.7
Midwest	405	426	-21	-21	495	-18.2	424	-4.5
Mountain	112	114	-2	-2	93	20.4	106	5.7
Pacific	193	199	-6	-6	195	-1.0	186	3.8
South Central	730	715	15	15	827	-11.7	778	-6.2
Salt	215	197	18	18	256	-16.0	236	-8.9
Nonsalt	515	519	-4	-4	571	-9.8	542	-5.0
Total	**1,746**	**1,782**	**-36**	**-36**	**2,009**	**-13.1**	**1,824**	**-4.3**

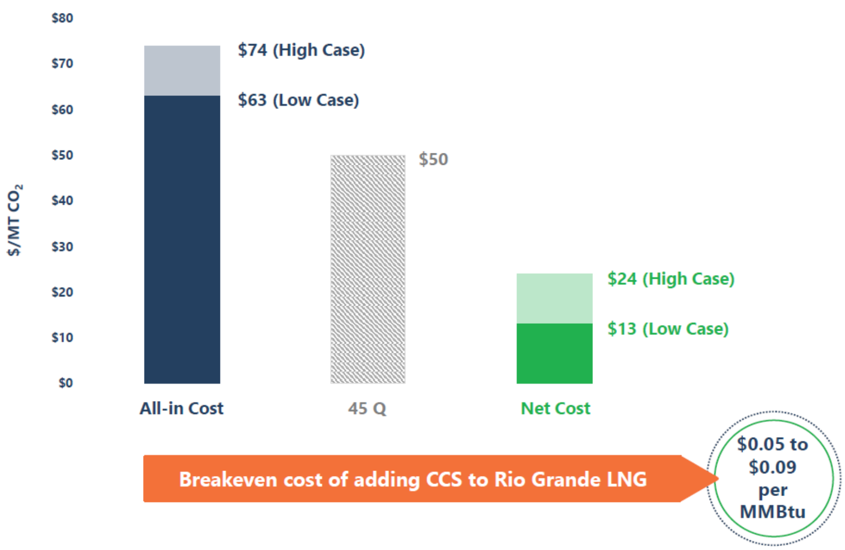
Source: EIA

Natural Gas – NextDecade plans 1st CCS with US LNG

CCS system to be built into Rio Grande LNG

We have been highlighting the push for lower emission LNG and that this will be leading to increased pressure on US natural gas supply to reduce emissions (ie. methane emissions, gas flaring) and that we will be seeing CCS in the Gulf of Mexico. NextDecade posted a good slide deck on its plan to integrate CCS into its Rio Grande LNG facility in Brownsville, Texas that is awaiting FID [LINK]. The CCS system would be constructed at the same time as the facility and is expected to capture 90% of CO2 emissions. The cost of the CCS system is expected to be $63-$74/MT CO2, however the expected application of tax credits is expected to drop those costs by $50 to $13 to $24. NextDecade wrote *"Breakeven cost of adding CCS to Rio Grande LNG is expected to be $0.05 to $0.09 per MMBtu on an LNG basis".* NextDecade has signed a CO2 offtake and transport agreement with Oxy Low Carbon Ventures (subsidiary of Occidental) which sequester the CO2 underground in the Rio Grande valley. Rio Grande is intended to be a 5-train facility with a capacity of 3.55 bcf/d, with each train having a capacity of 0.77 bcf/d. The initial FID on the first two trains is expected in 2021. Our Supplemental Documents package includes excerpts from the NextDecade slide deck.

Figure 2: CCS Project Cost Estimate



Source: NextDecade

Natural Gas – Mexico's natural gas production still stuck below 5 bcf/d, -1.8% YoY

Mexico natural gas stuck below 5 bcf/d

Pemex reported its Feb oil and gas data on Friday afternoon. One of the key Mexican energy themes for the past 3 years has been that Mexico has been unable to growth domestic natural gas production, which means the continued opportunity for increase exports of US natural gas to Mexico. Mexico natural gas production has been stuck at or below 5.0 bcf/d since Aug 2017. We believe Pemex is still in the natural gas production is stuck phase below 5 bcf/d as it has since Sept 2017. Pemex reported Feb natural gas production of 4.85 bcf/d, which was down 1.8% YoY and flat MoM. Pemex does not provide any commentary along with its production data. Below is our ongoing table of Pemex reported monthly natural gas production.

Figure 3: Mexico Natural Gas Production (bcf/d)

Natural Gas Production bcf/d	2015	2016	2017	2018	2019	19/18	2020	20/19	2021	21/20
Jan	6.584	6.162	5.326	4.910	4.648	-5.3%	5.005	7.7%	4.848	-3.1%
Feb	6.676	6.122	5.299	4.853	4.869	0.3%	4.942	1.5%	4.854	-1.8%
Mar	6.558	6.030	5.383	4.646	4.857	4.5%	4.946	1.8%		
Apr	6.257	5.921	5.334	4.869	4.816	-1.1%	4.827	0.2%		
May	6.202	5.841	5.299	4.827	4.841	0.3%	4.460	-7.9%		
June	6.390	5.881	5.253	4.840	4.843	0.1%	4.754	-1.8%		
July	6.374	5.785	5.216	4.856	4.892	0.7%	4.902	0.2%		
Aug	6.366	5.686	5.035	4.898	4.939	0.8%	4.920	-0.4%		
Sept	6.477	5.619	4.302	4.913	5.017	2.1%	4.926	-1.8%		
Oct	6.397	5.583	4.759	4.895	4.971	1.6%	4.928	-0.9%		
Nov	6.316	5.515	4.803	4.776	5.015	5.0%	4.769	-4.9%		
Dec	6.236	5.380	4.811	4.881	5.024	2.9%	4.846	-3.5%		

Source: Pemex

Natural Gas – No surprise, Total stops work again on Mozambique LNG development

More violence in Mozambique

No one was surprised by the Total announcing on the weekend that it was, once again, suspending development work on its Mozambique LNG project. The project is ~1.7 bcf/d with planned start up in 2024. On Wed, Total press released [LINK] "*The Mozambique LNG Project operated by Total E&P Mozambique Area 1 (TEPMA1), and the Government of Mozambique, announce that the Project will progressively resume construction activities at the Afungi site, following the implementation of additional site security measures. After the* *security events that occurred in December 2020 near the Mozambique LNG project site and led to the temporary demobilization of the project workforce, Total and the Government of Mozambique have worked together to define and implement an action plan with the objective of reinforcing, in a sustained manner, the security of the Afungi site and of the surrounding area and neighboring villages."* The insurgents response was for 3 days of violence/attacks. Early Sat morning, Bloomberg reported "*The town of Palma in northern Mozambique remained under attack from insurgents for a third day Friday, with residents trying to flee to safety and most communications cut off."* No surprise that, on Saturday, Total reacted to the return of violence immediately after resuming their work. Yesterday, we tweeted [LINK] "*$TOT suspends development work at Mozambique #LNG project, target is ~1.7 bcf/d start in 2024. Had just resumed work on Mar 24. Surely the timeline delay isn't just a matter of months. What about other MZ LNG like $XOM? Positive for LNG in mid 2020s*." Total was shut down for 3 months waiting for Mozambique to fix the security risk, restarts development on Wed, 3 days of violence/attacks immediately follow, and Total suspends operations again on Sat. Surely the insurgents see that their We find it hard to believe that Total will just wait a short period of weeks or a month or two and then restarts development again. Rather we expect Total will need a much higher level of confidence in the situation. If so, we think the risk is that an early restart of development is towards the end of 2021 ie. they effectively lose a year on their timeline. The next question for Mozambique becomes the subsequent LNG projects like Exxon. Mozambique has long been considered one of the low cost LNG areas that was fully expected to be in the LNG supply forecast for the mid 2020s. We believe that a push back is positive for LNG in the 2020s. Our Supplemental Documents package includes the Total March 24 restart release, the Bloomberg Sat story on new violence, and the Reuters story on the Sat suspension.

Natural Gas – Qatar's continued focus on Asia for long term LNG customers

Qatar/Sinopec long term LNG deal

Qatar Petroleum announced this week that they have finalised a 10-year LNG supply agreement with Sinopec, supplying 0.26 bcf/d with deliveries beginning in Jan 2022 [LINK]. As we saw in the Saudi Aramco comments this week on prioritizing China for its oil customers long term, no one should be surprised to see Qatar focus on increasing long term sales to China. Unfortunately, the Qatar release did not include any details on pricing. But even though LNG prices were strong this winter, we have to believe it would be tough for Qatar to get substantially tougher terms than it was getting in H2/20 from the same purchaser. At that time, Qatar's LNG deals were moving to lower slope deals. Our Sept 27, 2020 Energy Tidbits wrote "*Qatar. Last Sunday night, we noted a good Bloomberg story "Qatar flexes muscles with cuts to gas prices" and we tweeted [LINK] "Good reminder of challenge for greenfield (and even brownfield) #LNG supply wanting to go FID. Qatar reportedly did 10.19 slope with Sinopec, also similar slope with Pavilion (Singapore). Slope is basically same as % of #Oil price. Thx @angelamacd". This is not unexpected and we have been highlighting this risk, most recently in our May 31, 2020 Energy Tidbits that noted Qatar's willingness to renegotiated its long term India deals lower and we concluded this "likely signifies the tipping point for long term contracts ie. others to follow."* Our Supplemental Documents package includes the Qatar Petroleum release.

Explaining "slope" in LNG contracts

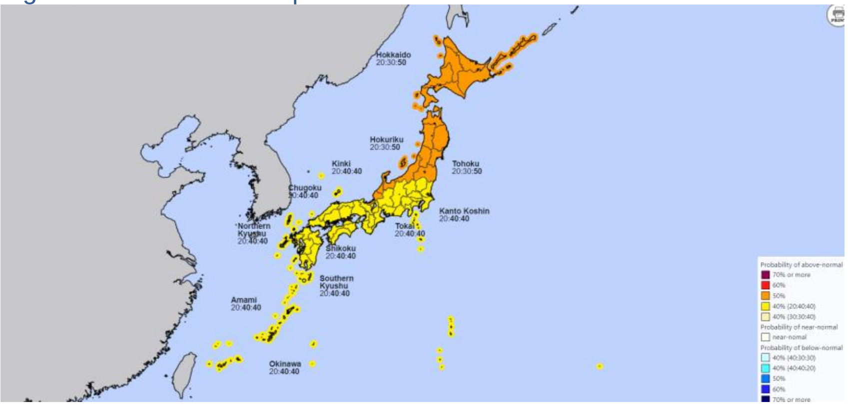
Our Sept 27, 2020 Energy Tidbits item noted above reference the slope of 10.19. Look at the slope very simply as a % of a reference oil price. Take whatever the reference price is and divide by the slope. The original Qatar and most other long term LNG supply deal were done at a slope of 16.7, or 1/6 the price of oil. So when Qatar negotiated a lower slope (in this case 10.19), it means the LNG price would be 1/10.19 the price of oil. At $60 oil, the LNG price was $10 and would be ~$6.

Natural Gas – Japan sees it getting warmer going into peak summer

Japan expecting a warm start to summer

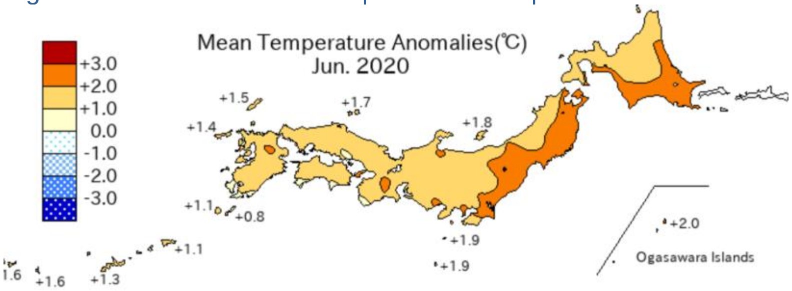
Initial forecasts for Japan continue to point to a warmer than normal summer. The Japan Meteorological Agency updated their temperature forecasts for AMJ forecast on Thursday [LINK]. The JMA forecasts slightly warmer than normal for April and May, and getting even warmer for June. The JMA did not update its summer forecast this week. This is following a rather warm March which brought on record early cherry blossoms in Tokyo and Kyoto as we noted last week. We should note that last June was hot. Below is the current JMA forecast for June and its recap of June 2020 temperatures.

Figure 4: JMA June Temperature Forecast



Source: Japan Meteorological Agency

Figure 5: JMA June 2020 Temperature Recap



Source: Japan Meteorological Agency

Natural Gas – Nord Stream 2 will be completed this year, says Gazprom

Nord Stream 2 will be completed this year

We have been highlighting how the expected timeframe for Nord Stream 2 to deliver natural gas to Europe is delayed and that it isn't looking like it will be in operation to deliver gas to rebuild Europe gas storage ahead of the start of winter 2021/2022. TASS reported on comments from chairman of the board of directors of Gazprom, Viktor Zubkov this week [LINK]. The construction of the Nord Stream 2 gas pipeline will be completed this year, and the work is "90-92%" finished. TASS wrote *"The work is actively going on, there is very little left," he said. "Of course, this year it will be finished, definitely. It's a pity for the lost time, but it happened".* While Gazprom continues to push construction on the line ahead, sanctions at least for the time being remain. A concern has been that sanctions are lifted in time for the pipeline to begin deliveries to Europe this summer. The pipeline is currently being laid in the territorial waters of Denmark. Our Supplemental Documents review includes the translated news report.

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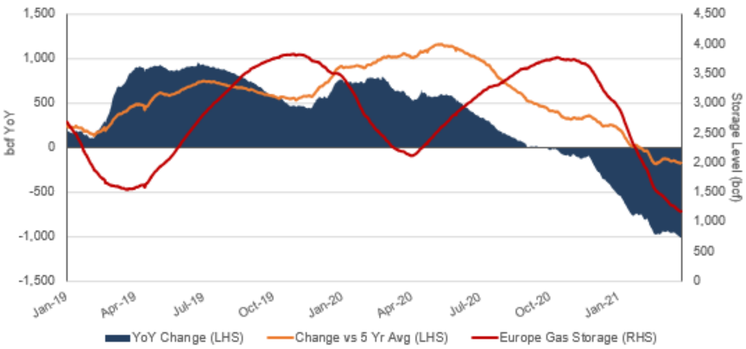
Natural Gas – Europe storage 29.72% full vs 5 year average of 35.13%

Europe gas storage 29.72% full

Winter is coming to an end in Europe and our focus for Europe gas storage will be turning to how quickly it fills off the low point this winter. Its been cold through March and this has delayed the refill push. This winter has been another good reminder that Europe gas storage is the key indicator for the near term strength of global LNG markets. The big draw in Europe gas storage this winter was the indicator that it has been a good winter for LNG prices. Europe gas storage started the winter (Nov 1) at basically full levels at 94.66% and has dropped by 64.94% to be 29.72% at Mar 25. This 64.94% decline since Nov 1 compares to the 5 yr average that would be down 54.22% in the same period or to last winter that was only down 42.47% in the same period. Storage at Mar 25 of 29.72% is 25.13% less than last year and 5.44% less than the 5 yr average. Europe storage levels this summer will be the key item to watch for indications on LNG markets going into the winter. Below is our graph of Europe gas storage utilization and our graph of YoY change in net LNG flows to NW Europe.

Figure 6: Europe Gas Storage Level



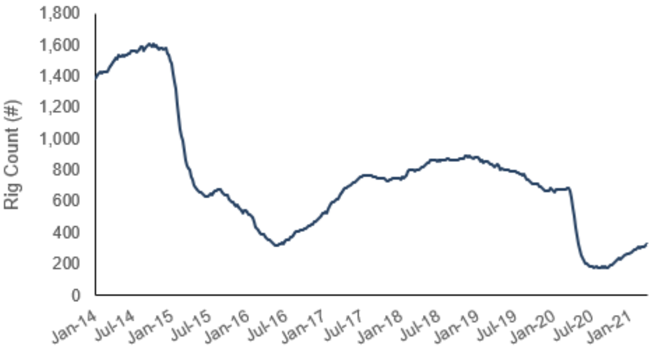
Source: Bloomberg

Oil – US oil rigs up 6 to 324 oil rigs

US oil rigs up 6 this week

Baker Hughes reported its weekly rig data on Friday. US oil rigs were up 6 to 324 oil rigs as of Mar 26. The increases were in the Permian +5, Williston +1, and Cana Woodford +1. The only decrease was in Eagle Ford -1. Oil rigs are +152 off the bottom of 172 in the Aug 14 week. New Mexico rigs were flat this week, but were +7 in the previous week, which we believe was related to the DOI "fossil fuels" review process kickoff. We believe that operators are likely trying to drill ahead of any results from this process. US oil rigs have been modestly increasing, but the key will be the next several weeks to see if there is stronger increases in rigs now that WTI has been at or over $60 for almost a month. The rise has been quick with WTI below $50 to end Dec, hitting $55 in early Feb, and then over $60 in mid Feb. We doubt that any companies went into their Feb board meetings to discuss year end results assuming WTI would be over $60 before the end of Feb. Its why we think companies are now figuring out what they do with higher oil prices. And we expect to see privates and some publics move to higher drilling 2021 budgets. Its why we expect to see US oil rigs increase at modestly higher rates. US oil rigs hit their 2020 peak at 683 on March 13 and have since fallen by 359 to 318 oil rigs (-52.2%). Below is our graph of Baker Hughes US oil rigs.

Figure 7: Baker Hughes Total US Oil Rigs



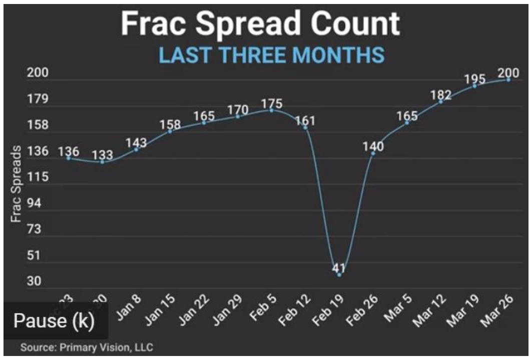
Source: Baker Hughes

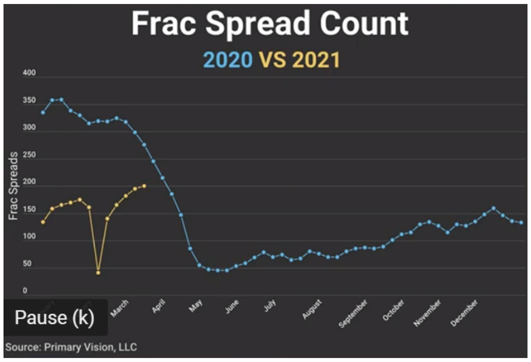
Oil – Frac spreads +5 to 200 for week ending March 26

Frac spreads +5 to 200

Every week, Mark Rossano posts a YouTube recap of frac spreads for the week on the Primary Vision Network [LINK]. For the week ending March 26 US frac spreads were +5 to 200. Seeing some increases in the Permian and Bakken. He expects the increases to slow down and there is a need for rigs to catch up. He used the example of the Eagle Ford and Bakken as two areas that he expects rigs to pick up as there is a need to replenish DUCs. Looking forward, the forward curve for oil continues to support increased frac spread activity. Below are his two key frac spread graphs.

Figure 8: Active Frac Spreads for Week Ending March 26, 2021





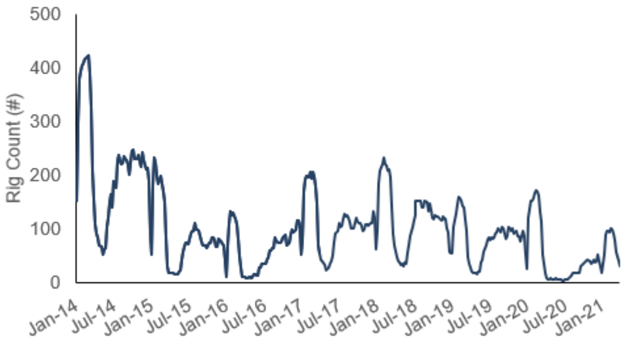
Source: Primary Vision

Oil – Total Cdn rigs down 11 to 81 total rigs and up 27 YoY

Cdn rigs -11 this week

Baker Hughes reported total Cdn rigs were down 11 this week to 81 total rigs. The big decline this week was expected and will likely continue next week with breakup and the end of winter drilling. Cdn oil rigs were down 11 to 30 rigs. Cdn gas rigs were down 1 to 50 gas rigs. Total rigs are now +68 since the June 26 all-time low. Cdn drilling is up YoY, but still down big vs 2019 - Cdn rigs are down 8% vs two years ago. Cdn drilling has recovered vs a year ago levels when oil rigs were 31 and Cdn gas rigs were 50 for a total Cdn rigs of 81, meaning total Cdn rigs are +27 YoY. Below is our graph of Baker Hughes Cdn oil rigs.

Figure 9: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

Oil – US weekly oil production +0.1 mmb/d to 11.0 mmb/d

US oil production +0.1 mmb/d

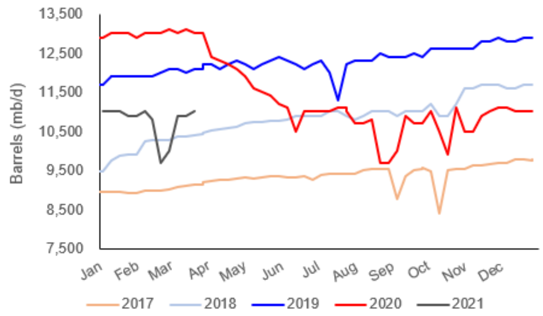
US oil production was up 0.1 mmb/d to 11.0 mmb/d for the March 12 week, and Lower 48 was up 0.1 mmb/d to 10.5 mmb/d. This puts US oil production down 2.0 mmb/d YoY, and is down 2.1 mmb/d since the 2020 peak of 13.1 mmb/d on March 13. The EIA DPR released last week has the expectation of continued MoM declines in March and April, which we believe is due to the Texas freeze hammering completions for two weeks. The EIA forecasts April at 7.458 mmb/d which is -47,000 b/d MoM. The EIA March STEO slightly lowered Q1/21 production mainly due to the freeze with Feb production averaging 10.4 mb/d, 0.5 mmb/d lower than Jan production. However, the EIA revised up the remainder of 2021 and is continuing to show modest growth thru 2021 with the 2021 exit at 11.46 mmb/d, down 1.32 from Q4/19 peak of 12.78 mmb/d. YoY growth returns in 2022 with average production of 12.02 mmb/d, +0.90 mmb/d YoY with Q4/22 production of 12.41, down 0.34 mmb/d vs Q4/19. The EIA Form 914 actuals for December came in 38,000 b/d higher than the EIA weekly estimates for December, much closer than the 246,000 b/d overestimate in the actuals for November which had been due to hurricane activity in early Nov.

Figure 10: EIA's Estimated Weekly US Oil Production

	Week 1		Week 2		Week 3		Week 4		Week 5	
Year-Month	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
2019-Jan	01/04	11,700	01/11	11,900	01/18	11,900	01/25	11,900		
2019-Feb	02/01	11,900	02/08	11,900	02/15	12,000	02/22	12,100		
2019-Mar	03/01	12,100	03/08	12,000	03/15	12,100	03/22	12,100	03/29	12,200
2019-Apr	04/05	12,200	04/12	12,100	04/19	12,200	04/26	12,300		
2019-May	05/03	12,200	05/10	12,100	05/17	12,200	05/24	12,300	05/31	12,400
2019-Jun	06/07	12,300	06/14	12,200	06/21	12,100	06/28	12,200		
2019-Jul	07/05	12,300	07/12	12,000	07/19	11,300	07/26	12,200		
2019-Aug	08/02	12,300	08/09	12,300	08/16	12,300	08/23	12,500	08/30	12,400
2019-Sep	09/06	12,400	09/13	12,400	09/20	12,500	09/27	12,400		
2019-Oct	10/04	12,600	10/11	12,600	10/18	12,600	10/25	12,600		
2019-Nov	11/01	12,600	11/08	12,800	11/15	12,800	11/22	12,900	11/29	12,900
2019-Dec	12/06	12,800	12/13	12,800	12/20	12,900	12/27	12,900		
2020-Jan	01/03	12,900	01/10	13,000	01/17	13,000	01/24	13,000	01/31	12,900
2020-Feb	02/07	13,000	02/14	13,000	02/21	13,000	02/28	13,100		
2020-Mar	03/06	13,000	03/13	13,100	03/20	13,000	03/27	13,000		
2020-Apr	04/03	12,400	04/10	12,300	04/17	12,200	04/24	12,100		
2020-May	05/01	11,900	05/08	11,600	05/15	11,500	05/22	11,400	05/29	11,200
2020-Jun	06/05	11,100	06/12	10,500	06/19	11,000	06/26	11,000		
2020-Jul	07/03	11,000	07/10	11,000	07/17	11,100	07/24	11,100	07/31	11,000
2020-Aug	08/07	10,700	08/14	10,700	08/21	10,800	08/28	9,700		
2020-Sep	09/04	10,000	09/11	10,900	09/18	10,700	09/25	10,700		
2020-Oct	10/02	11,000	10/09	10,500	10/16	9,900	10/23	11,100	10/30	10,500
2020-Nov	11/06	10,500	11/13	10,900	11/20	11,000	11/27	11,100		
2020-Dec	12/04	11,100	12/11	11,000	12/18	11,000	12/25	11,000		
2021-Jan	01/01	11,000	01/08	11,000	01/15	11,000	01/22	10,900	01/29	10,900
2021-Feb	02/05	11,000	02/12	10,800	02/19	9,700	02/26	10,000		
2021-Mar	03/05	10,900	03/12	10,900	03/19	11,000				

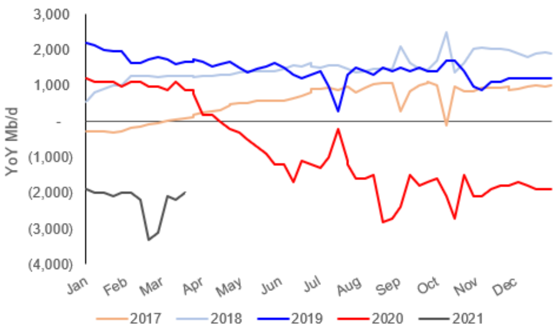
Source: EIA

Figure 11: US Weekly Oil Production



Source: EIA, SAF

Figure 12: YoY Change in US Weekly Oil Production



Source: EIA, SAF

Oil – Dallas Fed Survey, 58% worried new federal regs to make business unprofitable

Dallas Fed Survey Respondents: Outlook improves dramatically

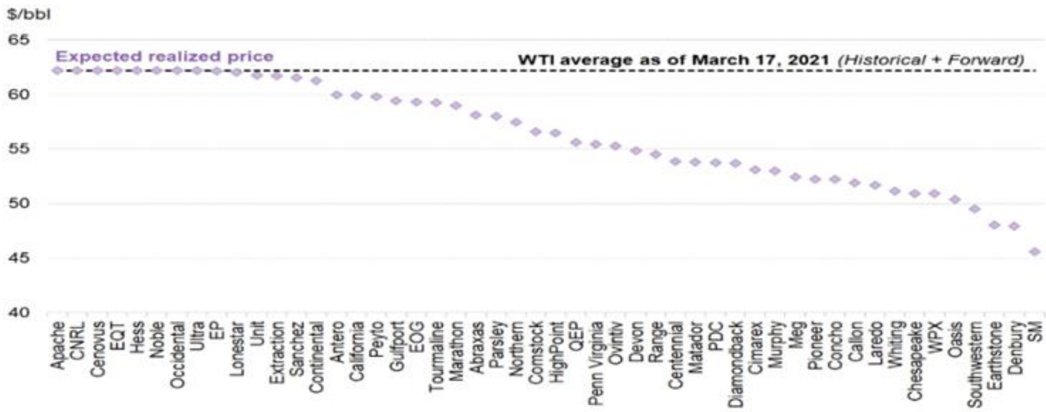
The Dallas Fed released their quarterly energy survey this week [LINK]. The data for this survey was collected March 10-18 from a total of 155 firms, 104 E&P and 51 oilfield services. (i) The headlines were on the overall bullish outlook from oil and gas producers and service companies. This was expected given the stronger oil and natural gas prices. (ii) Activity expanded in Q1, the Dallas Fed wrote *"The business activity index – the survey's broadest measure of conditions facing Eleventh District energy firms – soared from 18.5 in the fourth quarter to 53.6 in first quarter 2021, reaching its highest reading in the survey's five-year history. Exploration and production (E&P) and oil field services firms both experienced a strong expansion in activity".* (iii) Six-month outlooks improved significantly- the index rose from 21.6 in Q4 2020 to 70.6, which is the highest reading in the survey's five-year survey. (iv) On average, respondents expect a WTI oil price of $61.13 per barrel at YE 2021, and HH price of $2.80 per MMBtu. (v) One big red flag in the survey is the overall concern on Biden's expected federal regulations. The survey found that 58% of executives said they are worried that increased federal regulation will make their business unprofitable. The Dallas Fed also included some respondent comments on this question. Not surprisingly, the comments mostly were concerned with federal lands restrictions in New Mexico along with concerns over energy transition policies from Biden. This should be a reminder to those outside the oil patch that Biden's expected impact on the oil and gas sector is much more significant that many realize. (vi) One other overlooked item is that respondents said they needed a price of at least $52 per barrel of WTI to profitably drill a new well, which is $3 higher than when the question was asked last year. This doesn't mean quick payouts ie. less than 2 years, its "profitable" so likely assume something that gets more than 10% IRR. This is another reminder of how challenging it is to be a self-funding business. Our Supplemental Documents package includes excerpts from the Dallas Fed survey.

Oil – Hedging means many barrels are not getting $60 price

Hedging means many barrels not getting $60 price

One of the big US and global oil questions is by how much and when will US oil producers ramp up drilling and therefore oil production in response to ~$60 oil. On Wed, we tweeted [LINK] on a key factor for not seeing the big increase in excess cash flow from higher oil prices translating into big step up in drilling. We tweeted "*Not all US oil producers realizing benefit of $60 #Oil. @BloombergNEF Anastacia Dialynas reports combined hedging losses $8b of 50 producers tracked. A good tidbit from @TheTerminal TOPLive coverage of EIA weekly oil inventory data. #OOTT".* There was an excellent BloombergNEF comment this week but, it wasn't in a separate story. Rather, we only saw it because it was in the Bloomberg terminal TOPLive coverage of the EIA weekly oil inventory data. Bloomberg has a team that is feeding in short bits relevant to the oil call and one of the bits this week was a comment from BloombergNEF that their tracking of the 50 US producers and how their hedging meant that many oil barrels are not getting the benefit of higher than expected oil prices. Bloomberg wrote "*of the 50 producers tracked by BNEF, combined hedge losses have reached $8 billion, and only 14 firms are expected to realize prices above $60 on their 2021 production as a result."* Bloomberg also included the below graph. Our Supplemental Documents package includes the Bloomberg report.

Figure 13: BNEF: Expected Price Realization With Hedging



Source: BloombergNEF

Oil – Potential boost to summer paving season from Biden

Potential boost to paving season from Biden

President Biden had his first press conference on Thursday. He did not comment on anything specific regarding oil and natural gas hotspots, i.e. Iran, Houthis, Nord Stream 2, but had some other good insights. (i) Biden will be announcing the infrastructure plan next Friday in Pittsburgh. Infrastructure should provide support for heavy oil, as the inference is a big portion of the plan will tackle road repair. He also included his comments that oil and mining guys can work on capping wells. Biden said *"In terms of infrastructure, we have -- we rank 13th globally in infrastructure. China's investing three times more in infrastructure than the United States is. Bridges --more than one third of our bridges, 231,000 of them need repairs. Some are physical safety risks or reservation work. One in five miles of our highways and major roads are in poor condition. That's 186,000 miles of highway. Aviation -- 20 percent of all flights --20 percent of all flights weren't on time, resulting in 1.5 million hours lost in production. Six- to 10 million homes in America still have lead pipes servicing their water* *lines. We have over 100,000 wellheads that are not capped, leaking methane. What are we doing?*" (ii) He also reminded that building efficiency will be a push, saying *"How many schools, buildings, office complexes are wasting billions of barrels of oil over time because they can't hold in the heat or the air conditioning, cause that's -- leaks through the windows that are so porous in the connections? It's amazing*". Our Supplemental Documents review includes the press conference transcript.

Oil – CNQ begins 30-day Horizon turnaround today

CNQ Horizon turnaround starts

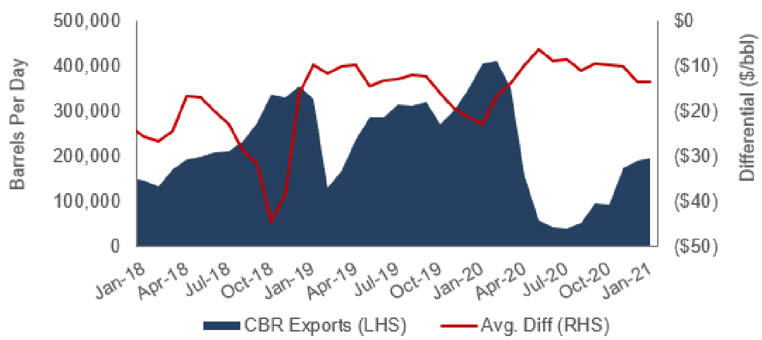
Our March 7, 2021 Energy Tidbits we noted that there will be ~450,000 b/d of Cdn oil sands offline at various times in Q2, which includes turnarounds at Suncor's 130,000 b/d U2 upgrader beginning in April, Syncrude's 70,000 b/d 8-3 coker, and 250,000 b/d from CNRL's Horizon upgrader in April. The CNQ Horizon turnaround starts today and is expected to take 250,000 b/d offline for 30 days. CNQ 's March 25 letter to its unions was made public [LINK] and confirmed that the Horizon turnaround starts today. Our Supplemental Documents package includes the CNQ letter to the union.

Oil – Cdn crude by rail exports up 5,077 b/d MoM in January, down 58% YoY

Cdn crude by rail exports increase MoM

The Canadian Energy Regulator (successor to NEB) reported Canadian crude by rail exports were +5,077 b/d MoM in January to 195,531 b/d vs 190,454 b/d in December [LINK]. This puts January export volumes at -208,236 b/d YoY (-58%) vs January 2020 of 403,767 b/d. This is the third consecutive MoM increase. CBR volumes are +156,683 since the July bottom of 38,867 b/d. We expect CBR volumes to be similar in Feb, though the average WCS-WTI differential had lessened slightly. Below is our graph of Cdn crude by rail exports compared to the WCS – WTI differential.

Figure 14: Cdn Crude By Rail Exports vs WCS Differential



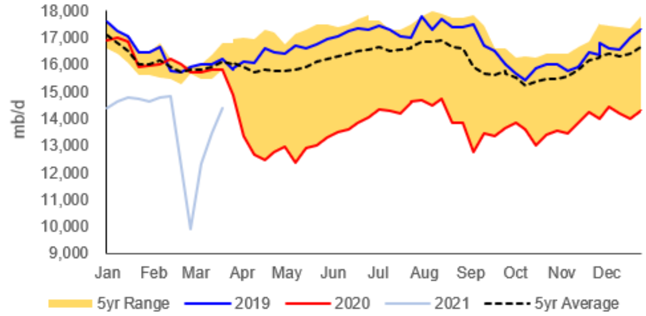
Source: Canadian Energy Regulator, Bloomberg

Oil – Refineries continue to recover, up +0.957 mmb/d YoY to 14.389 mmb/d

Refineries continuing to ramp up

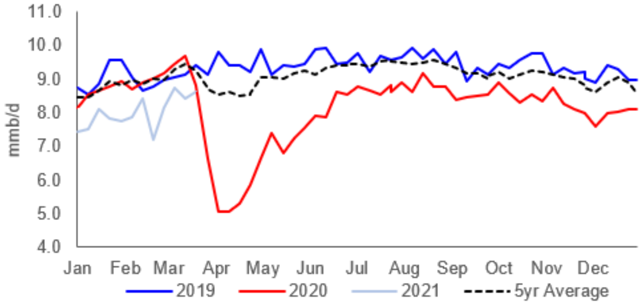
Crude inputs to refineries continued to ramp up this week and were +0.957 mmb/d to 14.389 mmb/d, but are still -1.448 mmb/d YoY. Refinery utilization increased this week, being +5.5% to 81.6%, which is -5.7% YoY. Total products supplied (ie demand) decreased this week and was -0.231 mmb/d to 18.702 mmb/d for the Mar 19 week, and motor gasoline demand increased, being +0.174 mmb/d to 8.616 mmb/d. Below is our graph of crude inputs to US refineries and our graph of US motor gasoline supplied. Below is our graph of crude inputs to US refineries and our graph of US motor gasoline supplied.

Figure 15: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA, SAF

Figure 16: US Motor Gasoline Supplied (mmb/d)



Source: EIA, SAF

Oil – US "net" oil imports up 0.338 mmb/d to 3.141 mmb/d

US "NET" imports were up 0.338 mmb/d to 3.141 mmb/d for the Mar 19 week. US imports were up 0.299 mmb/d to 5.622 mmb/d and US exports were down slightly, being -0.039 mmb/d to 2.481 mmb/d. The WoW increase in US oil imports was driven by increases from Mexico and Nigeria. Some items to note on the by country data. (i) Canada was down slightly this week and was -0.030 mmb/d to 3.418 mmb/d for the Mar 19 week, which is now ~280,000 b/d below the average levels in Jan/Feb of 2020. Also note that PADD 2 imports were also down, being -141,000 b/d and Canada is almost all of this market. (ii) Saudi Arabia was down 0.028 mmb/d to 0.280 mmb/d this week. (iii) Colombia up 92,000 b/d off zero this week. (iv) Ecuador was basically flat at 132,000 b/d. (v) Iraq was down 60,000 b/d to 105,000 b/d. (v) Venezuela remained at 0 due to US sanctions. (vi) Mexico increased 340,000 b/d to 0.618 mmb/d.

US "net" oil imports +0.338 mmb/d WoW

Figure 17: US Weekly Preliminary Oil Imports By Major Countries

	Jan 22/21	Jan 29/21	Feb 5/21	Feb 12/21	Feb 19/21	Feb 26/21	Mar 5/21	Mar 12/21	Mar 19/21	WoW
Canada	3,115	4,238	3,730	3,681	2,831	3,648	3,635	3,448	3,418	-30
Saudi Arabia	206	180	282	237	143	368	251	308	280	-28
Venezuela	0	0	0	0	0	0	0	0	0	0
Mexico	463	723	446	471	355	602	362	278	618	340
Colombia	73	305	336	346	200	285	286	0	92	92
Iraq	115	90	114	227	0	68	141	165	105	-60
Ecuador	258	100	105	186	55	114	59	127	132	5
Nigeria	116	175	0	70	50	89	0	44	161	117
Kuwait	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0
Top 10	4,346	5,811	5,013	5,218	3,634	5,174	4,734	4,370	4,806	436
Others	718	696	844	680	965	1,118	921	953	816	-137
Total US	5,064	6,507	5,857	5,898	4,599	6,292	5,655	5,323	5,622	299

Source: EIA, SAF

Oil – Mexico Feb production of 1.669 mmb/d, down 3.5% YoY, nowhere near forecast

Pemex Feb production down 3.5% YoY

Mexico's oil production continues to look to have no chance of reaching their 2021 forecast, but it looks to be stable, just not growing. On Friday, Pemex reported its crude oil production for Feb was 1.669 mmb/d, up slightly MoM from 1.651 mmb/d in Jan. However, our Dec 20, 2020 Energy Tidbits noted Pemex's then new corporate presentation. The presentation did not make any changes to their 2021 forecast of 1.944 mmb/d, which is +230,000 b/d YoY. There was an immaterial revision to their 2020 forecast of -18,000 b/d to 1.714 mmb/d. Pemex hasn't hit its forecasts and, based on Feb actuals, looks like that will happen again in 2021.

Figure 18: Pemex Mexico Oil Production

Oil Production (thousand b/d)	2015	2016	2017	2018	18/17	2019	19/18	2020	20/19	YTD 2020	2021	21/20
Jan	2,251	2,259	2,020	1,909	-5.5%	1,623	-15.0%	1,724	6.2%	1,724	1,651	-4.2%
Feb	2,332	2,214	2,016	1,876	-6.9%	1,701	-9.3%	1,729	1.6%	1,726	1,669	-3.5%
Mar	2,319	2,217	2,018	1,846	-8.5%	1,691	-8.4%	1,745	3.2%	1,714		
Apr	2,201	2,177	2,012	1,868	-7.2%	1,675	-10.3%	1,703	1.7%	1,711		
May	2,227	2,174	2,020	1,850	-8.4%	1,663	-10.1%	1,633	-1.8%	1,695		
June	2,247	2,178	2,008	1,828	-9.0%	1,671	-8.6%	1,605	-3.9%	1,680		
July	2,272	2,157	1,986	1,823	-8.2%	1,671	-8.3%	1,595	-4.5%	1,668		
Aug	2,255	2,144	1,930	1,798	-6.8%	1,683	-6.4%	1,632	-3.0%	1,663		
Sept	2,271	2,113	1,730	1,808	4.5%	1,705	-5.7%	1,643	-3.6%	1,667		
Oct	2,279	2,103	1,902	1,747	-8.1%	1,655	-5.3%	1,627	-1.7%	1,663		
Nov	2,277	2,072	1,867	1,697	-9.1%	1,696	-0.1%	1,633	-3.7%	1,660		
Dec	2,275	2,035	1,873	1,710	-8.7%	1,706	-0.2%	1,650	-3.3%	1,659		

Source: Pemex

Oil – Mexico Feb oil exports -8.0% YoY to 1.006 mmb/d

Mexico oil exports -8.0% YoY in Feb

Pemex also reported its Feb crude oil exports on Friday afternoon. Mexico oil exports in Feb were 1.006 mmb/d, which is -8.0% YoY, up 0.027 mmb/d from Jan of 0.979 mmb/d. Exports will be an important item to watch in 2021 given one of Pemex and AMLO's big pushes is for a rapid increase in domestic refining volumes, leading to a drop in exports. We noted in our Mar 7, 2021 Energy Tidbits that Pemex stated at CERAWeek that there was no need to reduce exports currently, but we have to wonder if that is because refinery inputs are vastly below targets. Pemex has not updated their refinery input forecasts since Oct 5 which was for 2020 of 681,000 b/d and 2021 of 1.114 mmb/d and 2020 was well below forecast at 591,000 b/d. Mexico crude oil exports in 2020 ranged from 0.908 mmb/d to 1.260 mmb/d, with an average of 1.126 mmb/d. Below is our table of the Pemex oil export data.

Figure 19: Mexico Crude Oil Exports

Oil Exports (thousand b/d)	2015	2016	2017	2018	2019	19/18	2020	20/19	YTD 2020	2021	21/20
Jan	1,261	1,119	1,085	1,107	1,071	-3.3%	1,260	17.6%	1,260	979	-22.3%
Feb	1,305	1,241	1,217	1,451	1,475	1.7%	1,093	-25.9%	1,179	1,006	-8.0%
Mar	1,228	1,062	1,001	1,176	1,150	-2.2%	1,144	-0.5%	1,167		
Apr	1,035	1,081	1,017	1,266	1,023	-19.2%	1,179	15.2%	1,180		
May	1,114	1,204	958	1,222	1,205	-1.4%	1,062	-11.9%	1,156		
June	1,047	1,098	1,157	1,110	995	-10.4%	1,114	12.0%	1,149		
July	1,187	1,146	1,255	1,156	1,079	-6.7%	1,051	-2.6%	1,135		
Aug	1,261	1,261	1,114	1,181	1,082	-8.4%	1,190	10.0%	1,142		
Sept	1,169	1,425	1,159	1,206	995	-17.5%	1,023	2.8%	1,132		
Oct	1,280	1,312	1,342	1,027	963	-6.2%	908	-5.7%	1,110		
Nov	1,178	1,273	1,388	1,135	1,114	-1.9%	1,171	5.1%	1,115		
Dec	1,008	1,115	1,401	1,198	1,115	-6.9%	1,243	11.5%	1,126		

Source: Pemex

Oil – Venezuela oil production only down 30,000 b/d from gas pipeline explosion

Explosion at 36" gas line in Venezuela

Venezuela has been surprising to the upside for its oil production and continues to be a key oil item to watch in 2021. The OPEC March MOMR has Venezuela production at 521,000 b/d, up 89,000 b/d from 421,000 b/d in December. Last Saturday, there was an explosion in a tract of gas pipeline in Eastern Venezuela. Bloomberg had reported that it was caused by a valve issue at a 36" gas pipeline at a high-pressure gas injection plant (PIGAP II). PDVSA halted production at 85 oil wells as a result, and Oil Minister Tareck El Aissami blamed the explosion on a terrorist attack against PDVSA. But this oil impact is not expected to be material, rather Reuters stated PDVSA cut its light oil production by 30,000 b/d for this reason. However, Reuters wrote [LINK] *"Officials have in the past blamed explosions at pipelines and refineries, as well as blackouts and other infrastructure failings, on attacks aimed at sabotaging the country's economy. Critics say the incidents are due to chronic lack of maintenance, underinvestment and mismanagement".* It's hard to say how much was going through the pipeline, but this a big pipeline at 36" diameter. To put it in perspective, TransCanada Mainline is 48" and Westcoast goes up to 26". Bloomberg reported that 1 bcf/d of gas production was affected by the explosion. Our Supplemental Documents package includes the Reuters report.

Oil – Next OPEC+ meeting is Wed March 31

OPEC JMMC Mar 31

It looks like the increasing Covid restrictions in Europe and small pull back in oil this week are setting up less debate about what OPEC+ will do next week. As opposed to the last meetings where the debate has been about increasing or not, and in the two last meetings the OPEC+ group, with the allowed exception of Russia and Kazakhstan, did not increase any supply. And Saudi Arabia also did an extra voluntary 1 mmb/d cut. Right now, the expectation is for no OPEC+ increase and most are leaning to Saudi continuing its voluntary 1 mth cut. What isn't clear is if Russia and Kazakhstan will get any additional increases. As a reminder, OPEC+ ministers have agreed to meet monthly cycle and the agreement on Thurs is for the month of April production levels. The OPEC release also advised that the next OPEC+ JMMC meeting is Wed March 31, and the next full OPEC+ ministerial meeting is Thurs April 1. Good thing that the monthly meetings are remote as we hate to think of the logistical challenges they would have in the good old days of physical meetings in Vienna.

Oil – Saudi's weeks long war vs the Houthis just passed 6th year mark

6 years since beginning of Saudi-Houthi war

There weren't any celebrations this week in Saudi Arabia to mark the 6th anniversary of the start of their war against the Houthis in a war that they went into expecting to be over in a matter of weeks, not years. Saudi Arabia's intervention in Yemen had began on March 26, 2015, exactly six years to Friday. At 12 AM on Thursday March 26, 2015, King Salman ordered the beginning of a large scale military operation against the Houthis with several airstrikes targeting air bases and air defense infrastructure [LINK]. Saudi Arabia was the leader of the 10-country coalition behind the initial operations which included Morocco, Eqypt, Sudan, Jordan, Kuwait, Bahrain, Qatar, UAE, and Pakistan. Prior to the Saudi led large scale intervention, the internal conflict in Yemen between the Hothis and the Hadi government had pushed Hadi to the city of Aden. The Saudi's had warned against Houthi forces pushing towards Aden where Hadi had taken refuge, which was the ultimate reason for the initial military intervention.

Figure 20: Saudi-Led Coalition

Source: Al Arabiya News:

Oil – Did Riyadh refinery lead to the Saudi peace proposal?

Are Houthi missiles hitting too close to home?

Was it coincidental that Saudi's call for peace came days after the latest Riyadh refinery drone attack or on the eve of the 6th anniversary of a war that was expected to be won in a matter of weeks? Plus there was an interesting Bloomberg terminal story this week "*Saudis Seek U.S. Help to Thwart Rising Attacks on Oil Sites*". We doubt this thought ever entered MBS mind when he first started the war 6 years ago. No one, but the Saudis will ever know, but the war has been going on for 6 years, the Houthis are launching more missiles at Saudi Arabia and not just at south Saudi Arabia, more missiles are getting thru the missile defense system, and now they may be asking the US for help. We have to believe that last week's drone hit on the Riyadh refinery must be a huge wake up call to the Saudis. It reminds them that the royal palace is just at the other end of the Riyadh and exposed. If their missile defense let a drone thru there, it could hit them elsewhere in Riyadh or will one time hit a critical Aramco facility and take it down. Our Supplemental Documents package includes the Bloomberg story.

Oil – Houthi's warned of attacks on Aramco if Saudi kept attacking Marib

Houthis warmed they would attack Aramco

No one should be surprised by the Houthis escalation of drones and ballistic missile attacks on Saudi Aramco. The Houthis have been warning they will be attacking Saudi Aramco. So the attacks on Saudi Aramco's Riyadh refinery this week and the Saudi Aramco major loading terminal and refinery at Ras Tanura should not be a surprise. We have been highlighting the battle for Marib in Yemen with our view that this is likely the major battle that signals the end may be nearing for the Saudi/Houthi war. Tied to the Marib battle, our March 7, 2021 Energy Tidbits highlighted that week's warning by the Houthis to Saudi that if Saudi continued its air strikes in the battle for Marib, the Houthis would turn their attacks to Saudi Aramco facilities. That has happened. In the March 7 memo, we wrote "Earlier this week, on Tuesday the Jerusalem Post reported [LINK] on the Houthis *"will strike at Saudi Arabia's Aramco if Saudi Arabia or UAE "fighters or supporters" commit "aggression" in certain areas. The Houthis pointed to the "Safer oil fields", as an example. It was not clear where this red line was or what specific infrastructure they don't want targeted." "The most important message is to warn the Saudi regime not to think of attacking Ma'rib oil structures .Therefore, if the Safar oil sectors are targeted by Saudi or Riyadh-based fighter jets, the Sanaa forces* *will also use 'UAVs and missiles will bomb Saudi oil structures in a large-scale operation.'" He warned of another Abqaiq-style attack".*

Oil – How much oil supply growth potential does Aramco have post 2025?

Does Saudi have oil supply growth post 2025?

This is not an issue for anyone who believes peak oil demand is already here. But, if not, we have to wonder if there is some post 2025 oil significance to the fact that Saudi Aramco doesn't have any big undeveloped oil fields it can call on to add to future productive capacity and will rely on incremental oil supply additions for its next wave of oil supply capacity additions. We couldn't help think of the peak oil supply crowd from 20 years ago and wonder what they would have asked as follow up questions to some of Saudi Aramco answers from the Q4 call Q&A on Monday. But we wondered if they would have pressed mgmt on what happens to its oil supply around 2025 or so. For those, like us, who have a view that, post Covid recovery, oil demand keeps ramping up in the 2020s, there is a case for a very bullish oil call in the late 2020s. If this was 20 years ago, the analysts would be questioning mgmt differently but this isn't the era where analysts are worried about peak oil supply as they are more concerned about peak oil demand. But the peak oil supply people would be questioning on the post 2025 oil supply outlook and would have noted the Q&A exchange on how Saudi will add the 1 mmb/d to get their maximum sustainable capacity (MSC) to 13 mmb/d. Aramco is saying they don't have any big potential new fields to add to the supply capacity and that the way they get to the 1 mmb/d is to get from a number of increments. It's a reminder that there will be peak oil supply for them. And the reality of peak oil supply is that once you get there, it means that declines in conventional oil reservoirs, like in Saudi Arabia, then accelerate. In the Q&A, they first say that the 1 mmb/d in new capacity to get to 13 mmb/d MSC comes in increments over the next few years. They get asked a later question on what is different this time in getting the incremental capacity, why is it more incremental? The CEO repeats it comes in increments (like he said the first time), but said this is what happens unless you bring on a new large field. He then used prior examples of examples of new fields that came on to bring MSC to its current ~12 mmb/d. But then he noted they don't have these big fields to bring on, rather the 1 mmb/d will come in increments, over time, over the next few years. The very bullish case comes with increasing oil demand in the 2020s and an increasing on Saudi Arabia to meet that demand given the shift away from oil from large international oil companies. And that if Saudi starts to have to produce at its 13 mmb/d by the mid 2020s, it then fights declines thereafter without having the benefit of large new fields that can be added to replace increasing declines. Something to think about post 2025 oil.

Oil – Not yet seeing usual warnings this year on terrorism potential during Ramadan

Monthly long Ramadan starts April 13

Reminder that Ramadan is 10 days earlier this year, and starts the evening of Tues April 13, and ends the evening of Wed May 12. So we are must over 2 weeks away. Normally every year in the run up to Ramadan, we will see security threat warnings. We look to the US Overseas Security Advisory Council [LINK] for Security Alerts that typically refer to Ramadan and, in prior years, have noted that "martyrdom during the month may hold a special allure to some". It is described by the LiveScience [LINK] "*Ramadan is the most sacred month of the year in Islamic culture. Muslims observe the month of Ramadan, to mark that Allah, or God, gave the first chapters of the Quran to the Prophet Muhammad in 610, according to the Times of India. During Ramadan, Muslims fast, abstain from pleasures and pray to become closer to God. It is also a time for families to gather and celebrate*

Oil – Saudi suggests India take oil out of its strategic reserves

Saudi tells India to tap its SPR

It may be interesting to watch the tit-for-tat between India and Saudi Arabia on the price of oil, but the reality is that, as unhappy India is right now with Saudi, they are also clear that they will ultimately buy oil from whoever gives India the best deal. One of the Friday headlines was India energy minister Pradhan calling Saudi's suggestions "undiplomatic", saying "*that was in a way (an) undiplomatic answer by some of our old friend. I politely disagree with that kind of approach. Certainly India has its own strategy, when and how to use our own storage, and we are conscious about our interests".* This was in response to Saudi energy minister Abdulaziz saying "*with regard to India, very simple. I would ask my friend that he (Dharmendra Pradhan) withdraw some of the cheap oil they bought in April, May and June (last year). There is an opportunity cost for not withdrawing it now.".* India has been very vocal in March about diversifying its oil supply. However, the Times of India reported [LINK] what we believe is a reminder that, tit-for-tat aside, it doesn't mean India won't be buying oil from Saudi. They just want the best deal from anyone. The Times quoted Pradhan "*We are an open, free market. Our oil marketing companies and private sector oil majors are free to take oil from any part of the world, whichever country will provide favourable business terms, whether it is America, or Iraq or UAE or Saudi Arabia. India's common interest is paramount in decision".*

Oil – Pradhan forecasts oil demand to double by 2040 vs 2030 in previous ministry forecast

India oil demand forecast to double by 2040

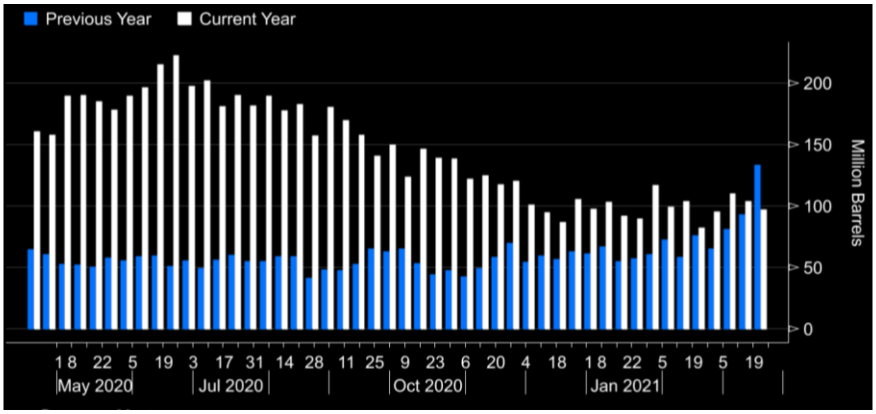
Last week's (March 21, 2021) Energy Tidbits highlighted Bloomberg's reporting of India Ministry of Petroleum and Natural Gas official's forecast for India oil consumption to double by 2030. Bloomberg wrote "*India's oil demand is expected to rise to 8.7 million barrels/day or about 435 million tons/year by 2030 from 4.4 million barrels now, according to Kumar, who's the joint secretary of refinery at the Ministry of Petroleum and Natural Gas". T*his week, India's oil minister Pradhan, slightly walked back India's oil consumption growth forecast to double by 2040, rather than 2030 that was stated last week. Platts reported on Pradhan's comments and wrote [LINK] *"Pradhan added that with India's oil demand expected to double by 2040 Pradhan added that with India's oil demand expected to double by 2040, it was imperative for the county to pursue both greenfield and brownfield refinery expansions, which would take the country's refining capacity from the current 250 million mt/year to 450 million mt/year by 2030".* While the forecast from Pradhan is not as aggressive as last week, it still represents significant growth and is still more than what others have forecasted. The IEA Oil 2021 posted last week had forecast oil demand in India to reach 5.20 mmb/d by 2026 from 4.50 mmb/d in 2020. Our Supplemental Documents package includes the Platts report.

Oil – Vortexa floating storage -6.8% WoW, Braemar shows a 5-week low in tankers

Vortexa and Braemar floating storage

Floating storage data from Vortexa and Braemar have been volatile as of late, however the overwhelming trend has been a decline which continued this week. (i) Bloomberg reported on Vortexa floating oil data that showed a WoW decrease of 7.05 mmb or -6.8% WoW to 96.46 mmb on March 19 from 103.51 mmb on March 12. Floating storage is still down 56.4% since the June 28 peak of 221.3 mmb. Asia Pacific, the region with eh most floating storage, was up 1.9% WoW to 67.74 mmb, however the ioncrease was offset by decreases in US Gulf Coast, Middle East, Europe, and West Africa. (ii) Bloomberg later reported on the Braemar data. Braemar doesn't estimate the barrels of oil in floating storage but notes there was a decrease of 2 VLCCs in floating storage to 34 as of March 22, the lowest level since Feb 15. Total tankers of 198 as of March 15 is -7 WoW. Our Supplemental Documents package include the Bloomberg Vortexa and Braemar stories.

Figure 21: Vortexa Global Floating Storage Level



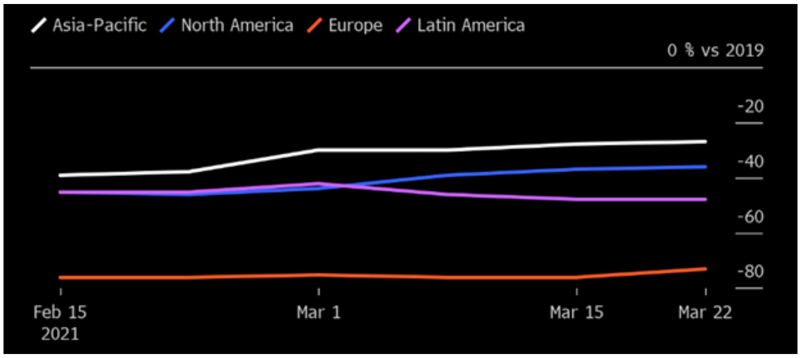
Source: Bloomberg, Vortexa

Oil – Bloomberg Oil Demand Monitor, Europe air travel continues to lag

Bloomberg's Oil Demand Monitor

We recommend reading the weekly Bloomberg terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. The variability in recovery levels for air traffic around the glove is continuing, with the worst-off being Europe still. Europe is lagging due to movement restrictions and a surge in infections. Some regions of France, including Paris, entered a lockdown on Saturday that could last as long as four weeks. Europe airline seat capacity is 73% below 2019 levels, while APAC is down only 27% and North America -36%. Although the U.K. has benefitted from a rapid rollout of vaccinations, it will not allow international holiday travel until May 17 at the earliest. With respect to road traffic data, the U.K. is fairing far better than the rest of Europe. While London traffic congestion was +5% compared to typical 2019 levels, traffic congestion in Paris was -42% from 2019 levels. London, Shanghai, and Beijing were the only cities that had congestion exceeding 2019 levels. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Figure 22: Airplane seat capacity versus 2019



Source: Bloomberg, OAG Aviation

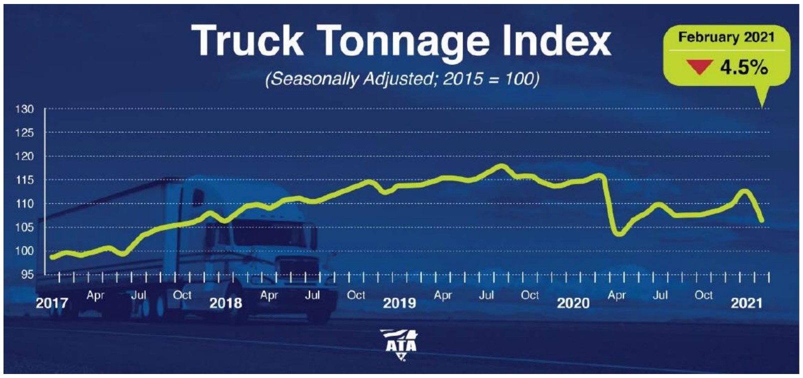
Oil – Feb truck tonnage -4.5% MoM due to weather, down 5.9% YoY

Truck tonnage index -4.5% MoM in Feb

Trucking tonnage serves as an important economic indicator for the U.S. economy. It has remained resilient throughout 2020 and into 2021, showing substantial improvements. However February's drop should not be a cause for concern as it can be attributed to the February freeze off. On Wednesday, the American Trucking Association released its monthly Truck Tonnage Index which decreased 4.5% in February after a 1.4% increase in January

[LINK]. The February reading is -5.9% YoY. The ATA wrote *"February's drop was exacerbated, perhaps completely caused, by the severe winter weather that impacted much of the country during the month,"* said ATA Chief Economist Bob Costello. *"Many other economic indicators were also soft in February due to the bad storms, but I continue to expect a nice climb up for the economy and truck freight as economic stimulus checks are spent and more people are vaccinated."* Our Supplemental Documents package includes the ATA monthly update.

Figure 23: Truck Tonnage Index



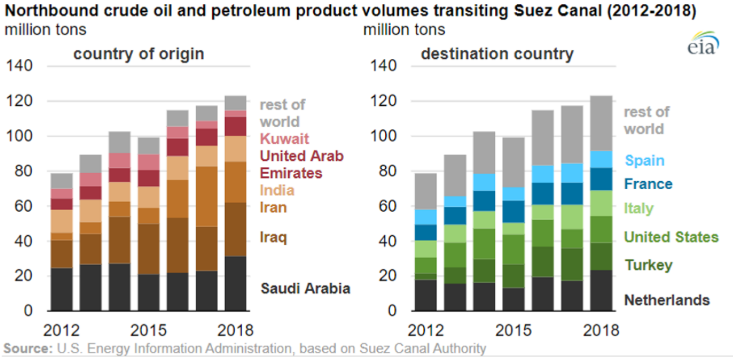
Source: American Trucking Association

Oil & Natural Gas – Suez Canal, still no definitive timeline for Ever Given to be freed

Ever Given still stuck

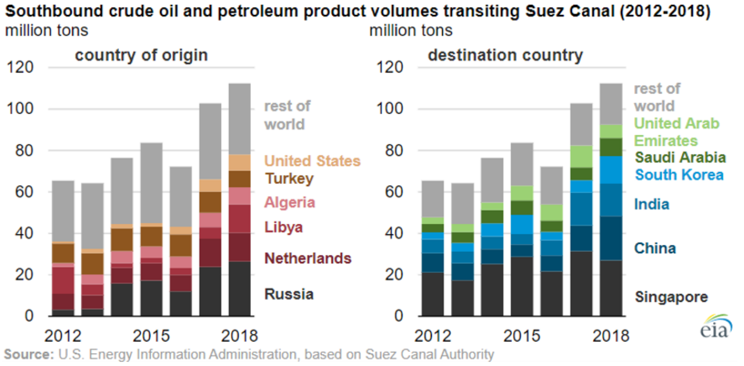
As of our 7am MT news cut off, there is still no definitive timeline for when the Ever Given container ship to be unstuck in the Suez Canal. There are update reports every few hours from Bloomberg, Reuters and others. As opposed to recapping the details of what's happened to date, we are including some of the basic reference material just in case you haven't seen. (i) The best go-to reference document is the EIA's July 23, 2019 brief "*The Suez Canal and SUMED Pipeline are critical chokepoints for oil and natural gas trade*" .[LINK]. It has a number of excellent data points. It notes the both the northbound and southbound flows of crude, petroleum products and LNG thru the Suez Canal. Everyone focuses on crude oil from the Middle East to Europe. But the EIA also reminds Asia imports petroleum products from European refineries via the Suez Canal. The two different graphs not seen elsewhere are the EIA showing county of origin and destination for northbound and southbound traffic thru the Suez Canal. There are more charts than posted below. (iii) We have been seeing more reports in the last 2-3 days of ships being diverted around the Cape of Good Hope. One of our tweets [LINK] included the below World Shipping Council map that noted the Suez Canal saves 8,900 km or 10 days off the trip around the Cape of Good Hope. (iv) >50 ships per day passed thru the Suez Canal. Our tweet also included this point, which was based on a BBC report [LINK] "*Almost 19,000 ships passed through the canal in 2020, according to the Suez Canal Authority - an average of 51.5 ships per day.*" Our Supplemental Documents package includes the EIA brief.

Figure 24: Northbound crude oil and petroleum product volumes by country



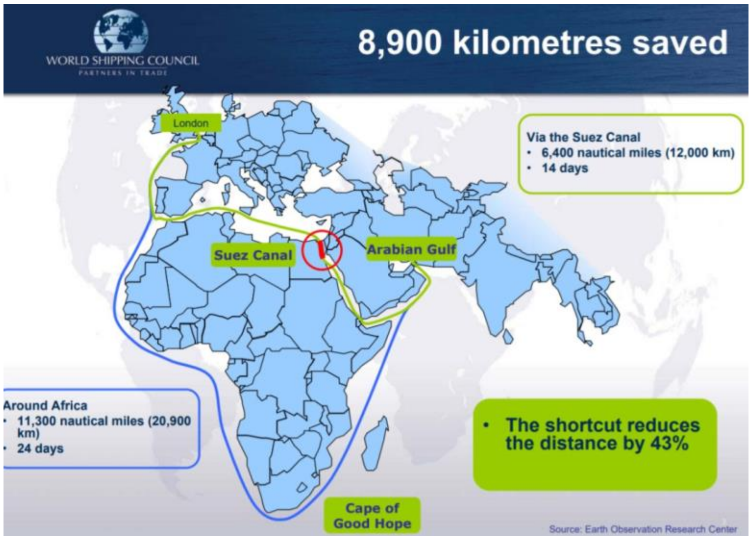
Source: EIA

Figure 25: Southbound crude oil and petroleum product volumes by country



Source: EIA

Figure 26: Suez Canal saves 8,900 kms off voyage



Source: World Shipping Council

Oil & Natural Gas – Russia Northern Sea Route is ~4,000 km shorter than Suez Canal

Russia Northern Sea Route

It certainly may not happen overnight, but we expect that Russia's Northern Sea Route will, over time, be getting increasing volumes as a result of the Suez Canal stoppage. And as a result of longer transit seasons. The distance is much shorter than both the Suez Canal and around Cape of Good Hope. Below is a good graphic from the ECORYS discussion paper at the International Transport Forum. [LINK]

Figure 27: Russia Northern Sea Route vs Suez Canal

Source: International Transport Forum, ECORYS

Energy Transition – White House says "*not fighting the oil and gas sector*"

McCarthy & oil ceo meeting

We recognize that there weren't any specifics arising from the meeting, but it feels like the meeting reinforced our concern that the Biden administration is going to be very tough on the oil and gas sector. On Monday, there was a White House meeting between National Climate Advisor Gina McCarthy and leadership from oil and gas companies including BP, Chevron, Exxon and others. We would have loved to see the reactions of the oil CEOs to whatever McCarthy said at the meeting. The White House readout said the meeting was "*to discuss shared priorities around addressing the climate crisis, protecting and creating good-paying, union jobs across the country, and ensuring America leads the world in a clean energy revolution that powers the future.*" There wasn't a lot of detailed reporting on items discussed at the meeting. It was interesting that the CEOs were meeting with Gina McCarthy and also representation (inferring not Secretary Haaland) from the Dept of Interior, and did not include John Kerry or even Dept of Energy Secretary Granholm. This is an administration that makes a point of having its officials meet at appropriate levels. But the takeaway from the brief White House readout and limited reporting is that we think it looks like a cop out meeting to get oil and gas to join Biden in a clean energy revolution. And in the White House readout, there wasn't any hint that they care specifically about oil and gas jobs or the oil and gas sector. The headlines on the White House view was on McCarthy "*made clear that the Administration is not fighting the oil and gas sector*". They made a point of specifically saying they weren't fighting the "oil and gas sector', but no where in the readout did the White House give any specific indication of supporting or caring for the oil and gas sector. Our Supplemental Documents package includes the White House readout. [LINK]

Energy Transition – Toyota warns Senate committee not too fast to get rid of ICE vehicles

Toyota warns on ICE vehicle phase out

We recognize that companies don't like to speak directly and bluntly in their public comments about issues with governments. We just don't get it because inevitably the governments do what they want and, part of their rationalizing is that they didn't see strong direct opposition to their ideas. A good example was last week with Toyota's presentation to the Senate Committee on Energy and Natural Resources "*Driving Innovation in the Transportation Sector Forward*" hearing on March 16. In their opening remarks [LINK] Toyota warned that there are tremendous challenges to overcome in getting rid of ICE vehicles. Why not just say, it won't work and there will be problems and gaps. Rather Toyota said "*Every auto company is committed to developing electric vehicle technology. Many have made aspirational statements about when they will phase out the internal combustion engine. But we also have to acknowledge the current reality. Last year, less than 2% of the vehicles sold in America were battery electric. If we are to make dramatic progress in electrification, it will require overcoming tremendous challenges, including refueling infrastructure, battery availability, consumer acceptance and affordability, and the reliability of the electric grid."*

Energy Transition – Germany reminds need electricity transmission for energy transition

Germany electricity transmission lags

There was a good reminder on one of the big challenges for the energy transition from Bloomberg's story "*Germany's Climate Obstacle: Its Love Affair With Combustion Cars*". It wasn't the major thrust of the story, but there was a reminder how electricity transmission is a critical requirement of the energy transition and it is a hold up in Germany. This is an item we mentioned several months ago that one of the big problems for Germany is that the renewable power (offshore wind) is in the north and the big industrial is to the south, there is a lack of transmission lines, and Germany hasn't been able to get the transmission lines thru local opposition. Germany has the same two big electricity capital allocation themes/requirements as the US – the need to upgrade/expand the grid and need to add transmission to bring renewable power to demand markets. These are two of the reasons why we keep saying the energy transition will happen, but it will take longer, have bumps and cost a lot more. In the story, Bloomberg wrote "*Meanwhile Energy Minister Peter Altmaier, from Merkel's Christian Democratic Union party, has successfully cut emissions in Germany's energy sector, but struggled to speed up the grid improvements needed to support the EV target. Construction of powerlines to transport electricity from wind farms in the North Sea to Germany's energy-intensive south has foundered, with projects mired in legal challenges. The country isn't building enough grid-scale batteries."* Our Supplemental Documents package includes the Bloomberg report.

Energy Transition – Ecopetrol, CCS & green hydrogen need to see lower costs

Ecopetrol commits to Net Zero

There were a number of energy transition themes for 2021 relevant to oil and gas from "*Ecopetrol announces commitment and plan to achieve net zero carbon emissions by 2050*" [LINK]. (i) Net Zero 2050 means committing to firm targets in 2030 and taking action right away. We can't stress enough that the big surprise in 2021 isn't that more will commit to Net Zero but, by doing so, it means that real actions have to be taken starting in 2021 because a Net Zero commitment means some sort of hard emissions target by an interim date ie. 2030. Ecopetrol says "*The company will reduce its emissions by 25% in 2030 compared a 2019 baseline*." A 25% reduction is significant, but we think a 25% is a lot easier for them than a Cdn oil company that has already done basic items like methane emissions reductions from pneumatic devices. (ii) Reinforces why we see natural gas for power and diesel for heavy industry won't be wiped out as quickly as hoped by climate change side. There is a reality of the economics/cost competitiveness of green hydrogen and CCS. And the issue as to why these may not take off as quickly as hoped by the Energy Transition aspirations. Who will pay for it? It reminds of the Saudi Aramco Q4 call blue hydrogen comment – they say it will need long term offtake commitments. We think there are real questions on how they get any significant green hydrogen, blue hydrogen and even CCS going as quickly as needed to hit what will be growing 2030 aspirations. Who is going to pay for it? We think governments are gong to be forced to step up to help bridge the gap ie. tax writeoffs, etc. Ecopetrol doesn't say that but clearly warns there isn't visibility today for green hydrogen and CCS to be competitive. In their 2025-2030 period, Ecopetrol says "*Gradually escalating green hydrogen and carbon capture, use and sequestration pilots – if the technologies are competitive*." (iii) It reinforces that the approach to make the first chunk of emission reductions are existing, known items, manyu of which have been done to some degree by Cdn oil companies ie. reducing methane emissions at pneumatic devices, reducing gas flaring, putting in some solar/wind at facilities. These are why we say it shouldn't be as hard for Ecopetrol. Reducing methane emissions from pneumatic devices in Canada has been going on for years. Here are some of the 2020-2025 actions. "*Implementation of initiatives identified for energy efficiency, reduction of fugitive emissions, venting and flaring, and renewable energies – solar, wind and geothermal." "Identifying additional initiatives for efficiency, reduction of flaring and biomass*." (iv) Note later in the memo, we note their focus on their forest carbon offsets as a key part of their 2030 ambitions. They call it the Natural Climate Solutions. Our Supplemental Documents package includes the Ecopetrol release.

Energy Transition – Lower solar costs "essential" for Biden's 2035 clean grid plan

DOE targeting 60% reduction in solar costs by 2030

Biden's plan for a carbon-pollution free electric grid by 2035 has been a major focal point for views on US natural gas. While the likelihood of this aspiration being fully realized is low, if he is even 25% or 50% successful, that is still a material amount of gas consumption being replaced. This was the thesis in 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*". It is also a concept to keep in mind with the Thurs US Department of Energy announcement of a rather ambitious plan to cut the costs of solar by 60% by 2030 [LINK]. They probably won't get there, but that's not the point. The point is that Biden wants to put the US on this stretch goal, which means there will be big capital allocation to getting as far along this path as possible. Its also interesting that they then link the cost lowering, but not specifically the 60%, to being "essential" to achieve Biden's plan. The DOE wrote *"Lowering the cost of solar energy is essential to accelerating deployment and achieving President Biden's goal of a 100% clean electricity grid by 2035. To reach that goal in the next 15 years, hundreds of gigawatts of solar energy need to be installed as much as five times faster than it is now. To that end, DOE is accelerating its utility-scale solar 2030 cost target by five years – setting a new goal of driving down the current cost of 4.6 cents per kilowatt-hour (kWh) to 3 cents/kWh by 2025 and 2 cents/kWh by 2030".* To achieve these cost reductions, the DOE will be providing $128mm in funding for various solar projects. The reminder to natural gas markets is that the DOE reinforces Biden's target to have 100% of US electricity carbon pollution-free by 2035. Our Supplemental Documents package includes our July 28, 2020 blog and the DOE announcement

Energy Transition – Aramco reminds of challenge to get blue hydrogen in scale

Blue hydrogen in scale won't happen quickly

The Saudi Aramco Q4 call also had comments on key energy transition areas. (i) The Aramco comments fit into the thesis that the energy transition will take longer, be bumpy and cost more than the aspirations. We really think that the aspirations just assume technology advancements will find answers in time to for the energy transition to happen on time and inexpensively. Direct air capture of carbon is a rapidly growing hot spot for emissions and Saudi says simply it costs a lot. Which says they can do it, it will just cost more and someone have to pay for it. And then hydrogen, which is likely "THE" hot energy transition theme, Aramco may be talking blue, but green will be the same – if you want to do it in scale, it will be like LNG in the early stages. It will need long term offtake contracts at good prices and it will take some support for financing. (ii) Direct air capture of carbon costs a lot today. In the Q&A, they were asked about direct air carbon capture. CEO " *yes, direct air capture is vey important and something that we are interested in right now." "what we are aiming for of course is reducing the cost. The issue with direct air capture today, it costs a lot, to achieve the right results in terms of reducing the emissions. so we are working to reduce the cost and with that we can introduce more commercial direct air capture technology*." (iii) Hydrogen. we tweeted [LINK] "*#bluehydrogen #greenhydrogen may be the future, but big scale will take a long time and need old style LNG deals to unlock ie. long term offtake guarantees. $SAR CEO "hydrogen does not come cheap". #NatGas power, #diesel for industry will be needed for longer. #energytransition".* There is another important concept here, the speed for hydrogen to ramp up in any size will take longer than expected. Think it conceptually much like the early LNG developments. There is massive front end capex on the blue hydrogen supply side – develop natural gas, build in CCW, set up hydrogen transportation to get to shipping, hydrogen ships, etc. Is no different than the early days of LNG, where they needed liquefaction but also LNG tankers. Aramco doesn't say this specifically for blue hydrogen, but says clearly they will need firm long term offtake agreements. This will be the same for green hydrogen. Otherwise Aramco won't commit to the big capital required for the all the upfront infra costs to supply hydrogen. In the Q&A, the CEO said "*The gas to hydrogen, as I say, we have a lot of work ongoing. We are not at liberty to share all the details, but let me say what we look at in terms of hydrogen is something with big scale. It is all as we way, what we are advantaged with here is the geology, is the large xxxx when it comes to our resources, abundance of resources either conventional and unconventional. We do have the economies of scale. It all depends also on the market. because as you know, the only market that exists today is Japan, I mean at scale. And even with that, considering that what we are looking at, we need to ensure there is an offtake guaranteed over the long term before you execute these programs. These programs going to cost a lot of capital in order to do them, hydrogen does not come cheap. It costs a lot because it requires a lot of sequestration. And as such we need to make sure that the markets are there for that blue hydrogen. so we are currently doing a lot of work, we have been doing it for some time. we have the resources as they say. we do have the aquifer for the sequestration. and we do have the appetite to produce hydrogen and as we say, we are coordinating, our priority is satisfying the kingdom requirement when it comes to gas supply, this is very important and critical. before we can export any gas out of kingdom. It's a captive market for us. it's the best market for us when it comes to ensuring gas availability within the kingdom and we get good rates of return when it comes to supplying gas within the kingdom. however, hydrogen, blue hydrogen brings great opportunity especially with our resource base and our competitive advantage and we are seriously engaging others right now looking at it."*

Energy Transition – Saudi Green Initiative could wipe out >400,000 b/d of oil demand

Saudi Green Initiative

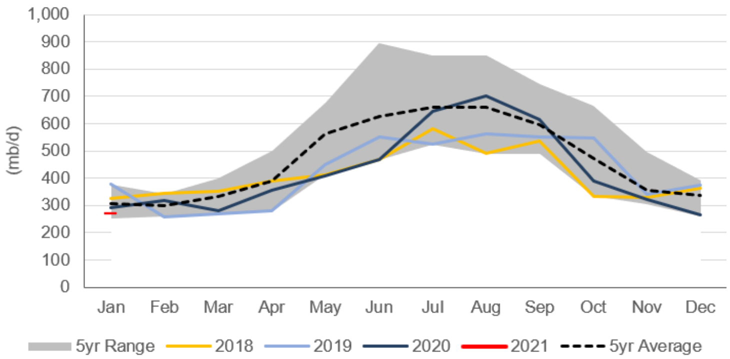
Earlier this morning, we tweeted [LINK] on "*The Saudi Green Initiative and The Middle East Green Initiative"* [LINK]. We shouldn't be surprised by the announcement timing given Saudi Arabia was on the invitation list to Biden's Apr 22/23 climate summit. These two initiatives are "*to be launched soon*", which means that it will be some time before we get all the details. However, there were some specific targets mentioned such as planting 10 billion trees within the Kingdom "*in the upcoming decades*". There was also a key energy transition target noted "*HRH the Crown Prince further added, the Saudi Green Initiative will also work to reduce carbon emissions by more than (4%) of global contributions, through an ambitious renewable energy program that will generate (50%) of the Kingdom's energy from renewables by 2030, and several other projects in the fields of clean hydrocarbon technologies, estimated to eliminate more than (130 MT) of carbon emissions, alongside raising the rate of waste* *diversion from landfills to reach 94% in the Kingdom*." Our tweet was "*#PeakOil demand. Saudi Green Initiative targets electricity generation from renewables to increase from <1% to 50% by 2030. If so, should in theory wipe out need for >400,000 b/d of oil currently used to generate electricity*." No question, this is an ambitious target, increasing renewables from <1% to 50% in 9 years. But we wanted to note the implications if they can do so. Our tweet included the below data from BP that shows the relatively consistent Saudi electricity generation by fuel that is close to natural gas 60%, oil 40%. Last week's (March 21, 2021) Energy Tidbits included the updated JODI monthly data including the below graph of oil used for electricity generation. And that if Saudi's objective is to reduce emissions, then it will cut first its oil used for electricity, which means it can wipe out all >400,000 b/d of oil consumed for electricity. Our last point on this is much like our comment on Biden's target to have all electricity generation be from carbon pollution free sources by 2035 – its not attainable, but if the country is put on this path, it's a question of when, not if. Our Supplemental Documents package includes the Saudi Press Agency reporting of the MBS announcement.

Figure 28: Saudi Arabia electricity generation by fuel

	Oil	Natural Gas	Renewables	Total
2016 Terawatt Hrs	156.6	213.7	0.1	370.4
% of Total	42.28%	57.69%	0.03%	100.00%
2017 Terawatt Hrs	156.9	225.1	0.1	382.1
% of Total	41.06%	58.91%	0.03%	100.00%
2018 Terawatt Hrs	158.8	200.0	0.4	359.2
% of Total	44.21%	55.68%	0.11%	100.00%
2019 Terawatt Hrs	149.6	206.0	1.8	357.4
% of Total	41.86%	57.64%	0.50%	100.00%

Source: BP:

Figure 29: Saudi Arabia direct use of crude oil for electricity generation



Source: JODI

Climate Change – Supreme Court rules Liberals carbon tax is constitutional

Liberals carbon tax is constitutional

There was a significant event on Thursday with the Supreme Court of Canada issuing its ruling on the Liberals Greenhouse gas Pollution Pricing Act. (i) This is significant because it sets up the Liberals to proceed with whatever carbon tax levels they deem appropriate. (ii) The SCC ruled that the act is constitutional. [LINK] This means that the Liberals carbon tax rules are constitutional and do not overstep provincial jurisdiction. The SCC wrote "*Chief Justice Richard Wagner wrote for the majority of the judges, which found the Act to be* *constitutional. They noted that global warming causes harm beyond provincial boundaries and that it is a matter of national concern under the "peace, order and good government" clause of the Constitution*. (iii) We tweeted [LINK] on what we saw was a key SCC statement. "*2/2. important to note "the majority noted the Act would only apply where provincial or territorial pricing systems are not strict enough to reduce global warming". sets up Liberals ability to crank up #CarbonTax as they see needed to "reduce" global warming*." This is a scary statement as it allows the Liberals basically unlimited ability to increase carbon prices as the caveat is that what they see as needed to "reduce global warming." It doesn't limit it the carbon price needed for Canada to hit Paris or Net Zero, rather to a bigger picture of to "reduce global warming". (iv) Our above concern that there really aren't any limits on carbon tax in amount of timing is why we tweeted [LINK] "*Does @SCC_eng ruling set up #CarbonTax only to #Liberals climate plan $170/tonne in 2030 or @PBO_DPB $289/tonne in 2030 if Canada to hit Paris Accord. Or maybe just faster increases if @JustinTrudeau wants to exceed Paris? #OOTT".* We think the SCC ruling frees up the Liberals from any prior plans. Our Dec 11, 2020 Energy Tidbits noted the Liberals fall economic statement and that included the Liberals plan to increase the carbon tax from $30 to $170/tonne over the next 8 years. Our Oct 11, 2020 Energy Tidbits memo highlighted Canada's Parliamentary Budget Officer Oct 9 report on Thurs on scenarios for additional carbon tax that would be needed for Canada to catch up to and meet its Paris climate goals by 2030 [LINK]. On Friday, the Liberals said they would exceed the Paris targets. But the PBO report in Oct stated that with the current carbon price policies, Canada will not meet its commitments on emissions reductions under the Paris Accord, and that GHG emissions would likely be 77 Mt above its target by 2030. The report then estimates the addition carbon tax that would be required to help the Liberals reach the Paris Accord commitments. The report stated *"Combined with the $50 per tonne federal fuel charge, households and non-OBPS firms could face an explicit carbon price ranging from $117 per tonne to $289 per tonne in 2030".* In our Oct 11, 2020 Energy Tidbits we also stressed that the carbon taxes would be going even higher than the PBO report because the Liberals had stated in the Sept throne speech that they would be exceeding the Paris targets. We believe that this concern is even more valid post the SCC ruling. Our Supplemental Documents package includes the SCC case summary.

Climate Change – API backs carbon pricing

API backs carbon pricing

The American Petroleum Institute (API) is the industry association for the large US oil and gas companies. The API received headlines on Thursday with the release of its Climate Action Framework. The headlines are on that the oil industry admits climate change is real and supports a carbon tax. On the carbon tax, the API framework says "*Rather than a patchwork of federal and state regulations and mandates that could ineffectively address the climate challenge, an economywide government carbon price policy is the most impactful and transparent way to achieve meaningful progress. We recognize there are different ways for policymakers to consider carbon pricing – from a cap-and-trade system to a carbon tax – but there are some general parameters to begin the discussion."* On climate change is real, it is interesting that this does not appear in the actual framework. Rather this was statement from API CEO Sommers to the media talking about the new framework. We suspect this wasn't noticed as many didn't read the framework to see this statement is not included therein. Regardless, we don't think people will see these are huge gives. Rather after reviewing the framework, we think it will be viewed as the oil and gas sector crawling while the rest of the world is trying to sprint ahead on climate change. Now, we also think there is some logic that the oil and gas sector is also trying to be realistic on what needs to be done, but we think the overall assessment from the public will be the API is just behind the times. The API framework only mentions Paris twice. And neither reference is anything approaching a target to meet Paris. One is a footnote reference in an IEA forecast included in the framework. The only API real Paris reference is in the conclusion "*Meeting growing energy demand will require investments, innovations, breakthroughs and a coalescence of the global community like we have never before seen. Our industry is prepared to tackle these challenges, lead where we are best positioned to develop solutions and work with policymakers, other industries and communities to supply the energy the world needs while working to reach the ambitions of the Paris Climate Agreement*." There are The framework is found at [LINK]. Our Supplemental Documents includes the API press release and the WSJ reporting of Sommers comments.

Climate Change – Country green plans/ambitions coming ahead of Biden summit

Biden Apr 22/23 climate summit

Markets should be prepared for a wave of announcements on new emissions targets and green plans over the next 3 weeks, or at least from those leaders invited to Biden's climate summit. We have to believe the opening statement from every leader will be on what they have done or planning to do on dealing with climate change. How much substance there is and hard targets will be up for debate, but how can a global leader not talk up their country's ambition/focus on a global stage? Yesterday, the White House released its invitation list of 40 world leaders to its virtual Leaders Summit on Climate on Apr 22/23 [LINK]. Lets be clear, this is not a summit for big debate on the goal as we have to believe the preparatory discussions with the invited countries has made sure there are no major disagreements. Biden has tended to surprise the upside but those are for controllable items. It isn't clear if he is going to be able surprise to the upside on Apr 22/23 and get a full commitment to Net Zero 2050. Rather the release suggests he won't get to a full Net Zero commitment, but some sort of goal that keeps the Net Zero and a 1.5 degree max "within reach". Paris agreement only obligated the signees to a 2 degree max but had an aspiration of 1.5 degree max. And Biden clearly wants a stronger commitment than Paris. The White House wrote "*In recent years, scientists have underscored the need to limit planetary warming to 1.5 degrees Celsius in order to stave off the worst impacts of climate change. A key goal of both the Leaders Summit and COP26 will be to catalyze efforts that keep that 1.5-degree goal within reach."* The other reminder is that we expect (and are already seeing) countries to announce tougher emissions commitment than Paris, and this will includes firm 2030 emissions reductions targets. The release confirmed that Biden will announce "an ambitious 2030 emissions target" prior to the summit. Our Supplemental Documents package includes the release.

Biden's invitation list and exclusions

Biden's list of invited leaders included all G20 countries and a similar size of other countries and some officials. We weren't surprised that he invited the leaders of the European Commission and European Council as they are more political leaders and quasi decision makers. If we frame it that way, it makes sense why he excluded key global groups like the UN, World Bank and IMF, all of which will be playing huge roles in the move to Net Zero. The notable exclusions were large populations countries like Pakistan (115 mnm), Ethiopia (110 mm), Egypt (102 mm) and Thailand (70 mm). No one was surprised that Iran (84 mm) was excluded. Below is the table we created of the invitation list.

Figure 30: Biden's Invitation List for Leaders to April 22/23 Summit

Biden's Invitation List For US Hosted Virtual Climate Summit Apr 22/23			
Antigua and Barbuda	Democratic Republic of Congo	Italy*	Republic of Korea*
Argentina*	Denmark	Jamaica	Russia*
Australia*	European Commission	Japan*	Saudi Arabia*
Bangladesh	European Council	Kenya	Singapore
Bhutan	France*	Marshall Islands	South Africa*
Brazil*	Gabon	Mexico*	Spain
Canada*	Germany*	New Zealand	Turkey*
Chile	India*	Nigeria	UAE
China*	Indonesia*	Norway	UK*
Colombia	Israel	Poland	Vietnam
* G20 country			

Source: White House, SAF

Climate Change – Is protecting existing forests how COP26 gets Russia onside?

Protecting forests the next debate

There is going to be a big push by the climate change leaders like Europe and the US to try to make COP-26 Glasgow a success and, to do so, that means they have to find a way to get the big emitters (ie. China, Russia, Brazil, etc) onside. So the question mark is how? The reality is that there is no way China and Russia will commit to Net Zero in its true form, the question is there way to get them to commit to a Net Zero concept without committing to a true Net Zero. We think there is a way. On Friday, we tweeted [LINK] "*Is this how @COP26 gets RUS, CN, BR, etc onside with #NetZero? A new #ClimateChange debate for 2021/22. Planting trees gets #Carbon offsets, but will RUS get offsets for protecting an existing massive forest? thx @d_khrennikova @LauraMillanL @world_reporter.*" Bloomberg had a good report "*Russia Wants to Use a Forest Bigger Than India to Offset Carbon*" that notes how "*Russia has long argued that it should be granted more slack in climate talks for the sequestration potential of its forests, which hold an estimated 640 billion trees. But until now the huge taiga has been poorly managed, leading to record forest fires in the past two years as global warming has made summers hotter and dryer. "Russia has 20% of global forests, so the international community must be fair in that respect," Alexey Chekunkov, minister for the development of the Russian Far East and Arctic said in an interview. "We have the potential to turn them into a massive carbon capture hub." Under the system, companies would be able to lease sections of forest from the Russian government in order to invest in planting new trees and protecting what's already there. If the data confirms that the investment has improved CO_2 absorption, the company could then create a carbon credit, which would be traded on a digital platform."* What jumped out at us was Chekunkov did more than note the normal planting trees, he added "*and protecting what's already there*" as part o the way to justify the carbon offsets. We don't recall seeing this before where someone is looking at "protecting" the existing forest as a way to justify carbon offsets. It is an interesting concept and, if supported by "data", could be used by any laggards on emissions or by any countries that are interested in minimizing the cost of emissions. Everyone on the climate side talks about deforestation, so they can't disagree with protecting the forest. This could well be one of the big climate change debates for 2021/2022 – does protecting an existing forest get carbon offset credits like planting new trees? Our Supplemental Documents package includes the Bloomberg report.

Protecting forests would help other countries ie. Brazil, China, India, etc

Our tweet also included a mapsoftheworld.com map "top 10 countries with largest forest areas" [LINK] that noted the top 10 being: Russia at #1, followed by Canada, Brazil, US, China, Australia, Democratic Republic of Congo, Argentina, Indonesia, and then India at #10. The majority of these are considered climate change laggards. And clearly if its takes allowing offsets for Russia protecting its forests to get them onside for some sort of COP26 agreement, surely these other countries will want to get similar credit.

Figure 31: Back to the Future II (1989) Mr. Fusion Powering Flux Capacitor

Source: mapsoftheworld.com

Climate Change – Colombia/Ecopetrol also focused on its forests

Ecopetrol to avoid deforestation projects

Colombia is not in the top 10 for largest forest areas, but has a high forest coverage relative to the size of the country. Earlier in the memo, we noted Ecopetrol's Net Zero commitment. One other item in that commitment looks like it ties to Russia's thinking, or at least looks like they would quickly jump to Russia's view if Russia gets carbon offsets for protecting its forests. Ecopetrol doesn't use the word protect, but talks about avoided deforestation. The other item that jumps out from the Ecopetrol release is that it reminds that the issue of protecting forests or even the whole concept of forestation is going to be one of the big climate change debate items. The debate is how real is it, how much credit should they get. What isn't clear from Ecopetrol is if there is an inference that this debate is already going on. Their comments are a little vague if third parties haven't verified all of the reduction, or won't verify all of the reductions. Ecopetrol highlighted "*the design and execution of an offset portfolio of Natural Climate Solutions. The latter includes avoided deforestation projects, restoration and reforestation in agroforestry projects, among others. It may also represent numerous social benefits to the territories where this strategy is implemented. In addition, these projects have the potential to effectively reduce net CO2 emissions and contribute to the country's Nationally Determined Contribution (NDC), considering that the main sources of emissions in Colombia are associated with deforestation and land use changes. The implementation of this plan has already yielded positive results. Ecopetrol achieved a cumulative reduction of 8.4 million tons of CO2e in the 2010 - 2020 period, of which 1.7 million have been verified by a third party.*"

Capital Markets – Will the Liberals Apr 19 budget be a precursor to an election call?

Liberals budget coming Apr 19

On Thursday, the Liberals announced that they will be presenting a long awaited budget on April 19. We tweeted [LINK] "*#Liberals budget on Apr 19, 3 days before US climate summit. New emissions targets should be prominently featured. Hard to see #NDP #Bloc #Greens vote it down. Will @JustinTrudeau decide to ask for a mandate especially after #Conservatives said no to climate change is real. #OOTT.*" (i) Climate change will inevitably be a huge priority, especially as the Apr 19 budget is 3 days before Biden's leaders climate summit on Apr 22. (ii) The climate change priority is also going to be helped by March 20 (see our March 21, 2021 Energy Tidbits) vote by the Conservatives to vote down including climate change is real in their policy. (iii) We find it hard to believe the NDP, Greens and Bloc will vote against the budget with a big climate change and continued Covid fight focus. Rather, we think the question will be if the Trudeau and the Liberals decide to call a new election on the guise that they need a new mandate. We do not believe they need a new mandate for climate change and Covid recovery priorities as we would expect continued support from the NDP, Bloc and Greens. Its why we expect to see an election call soon after the budget is introduced.

Capital Markets – Expecting tax hit on higher income/wealthy Cdns on Apr 19

Expecting tax increases on Apr 19

The reality is that the Liberals need to increase taxes on corporations and high income/wealthy Canadians if they are to increase government revenues. Our only hope is that Trudeau doesn't use his annoying line that he will "asking" these groups to help. Everyone knows that the massive deficits from pre and now post Covid mean higher taxes are inevitable. One areas to watch in the lead up to the budget will be trading over the next 3 weeks to see if there are any signs of investors realizing capital gains ahead of the Apr 19 budget. Capital gains changes is one of the many potential tax risks to investors. We have had feedback from a number of wealthy or higher income Canadians and they are all expecting multiple tax hits such as capital gain treatment, luxury tax on high end cars/jets, etc. One item that there isn't a common view, at least from our friends, is on the risk of a wealth tax a la Elizabeth Warren. Some believe the Liberals will have no choice but to start one given the massive debt they have accumulated before and since Covid. There was a March 11, 2021 Policy Note (Canadian Center for Policy Alternatives) "*wealth tax would raise far more money than previously thought*" [LINK]. The estimate was based on Parliamentary Budget Office July 2020 wealth tax estimates. The March 11 estimate is that a 1% wealth tax on wealth over $20mm would raise $10b per year. And a wealth tax that is1% over $20mm, 2% over $50mm and 3% over $100mm would raise $19.4b per year.

Capital Markets – IFIC: Mutual funds and ETF assets +2.0% in February

Mutual Fund & ETF assets increase MoM

Last Friday, the IFIC (Investment Funds Institute of Canada) reported [LINK] mutual funds and ETF sales for February. IFIC does not provide any commentary on the numbers, but given the strong market performance since the end of Jan dip, it is not surprising to see an increase. For February, the IFIC reported *"Mutual fund assets totalled $1.81 trillion at the end of February 2021. Assets increased by $34.8 billion or 2.0% compared to January 2021. Mutual funds recorded net sales of $17.5 billion in February 2021. ETF assets totalled $269.2 billion at the end of February 2021. Assets increased by $9.4 billion or 3.6% compared to January 2021. ETFs recorded net sales of $5.8 billion in February 2021."* Our Supplemental Documents package includes the IFIC release.

Capital Markets – US home sales price +15.8% YoY w/ record low inventory

US home sales price +15.8% YoY w/ record low inventory

The National Association of Realtors released a report with some key insights [LINK]. The median sales price rose to $313,000, +15.8 YoY, and all regions posted double-digit price gains. Existing-home sales fell 6.6% MoM in February, but sales are still 9.1% higher than last year. At the end of February, housing inventory remained at a record low, driving the selling price up, and is down 29.5% YoY, also a record decline. Properties sold in 20 days on average which is record speed. The NAR's chief economist said *"Despite the drop in home sales for February – which I would attribute to historically-low inventory – the market is still outperforming pre-pandemic levels".* In Feb, the average commitment rate for a 30 yr fixed rate mortgage was 2.81%, up from 2.74% in Jan. In the next few months there may be a slowdown in growth as higher prices and rising mortgage rates will reduce affordability.

Capital Markets – Shout out to John Ruffolo's US$500mm growth private equity fund

John Ruffolo's new fund

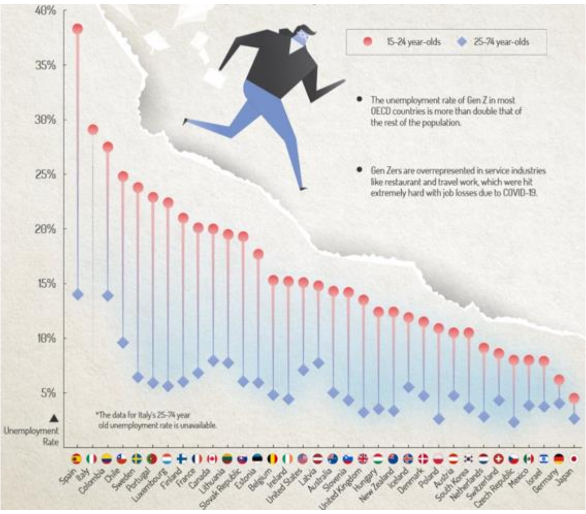
Shout out and hope the best for the new US$500mm growth stage private equity fund from Maverix Private Equity run by John Ruffolo. John is well known for his founding of OMERS Ventures in 2011, which is the venture capital arm of OMERS. John left OMERS Ventures in 2018. I had no idea of his last year until see the BNN Jon Erlichman interview with him on Tues. BNN also posted a story titled "*'I stubbornly didn't die': Canadian tech investor John Ruffolo's recovery from near-fatal accident*" and wrote "*The fund's launch had already been delayed by the COVID-19 pandemic last year, when the 54-year old Ruffolo — an avid cyclist — was struck by a jackknifing transport truck while riding his bike in Markham, Ont. on Wednesday, September 2nd. The accident left him paralyzed from the waist down. "I was lucky to be alive," said Ruffolo, founder and managing partner of Maverix Private Equity, in an interview. "I shattered my spine. I split my pelvis in half. I broke every rib in multiple places. I lost a kidney, a lung, and a lot of blood."* After his accident, he then closed this new US$500mm fund that will be investing sectors such as retail, healthcare, transportation and financial services. And how can you not love his comment on what investors thin as he said "*'Who cares that I can't walk'.* I had no idea of John's accident and I think I only met him once four years ago. But I heard many, many great things about him as a person, a boss, and as someone who knew how to find great teams and businesses. All from my sister, Lynne, who worked for him at OMERS Ventures for many years. So I always had a picture of him of someone who was very successful but able to do so while being a good person and leader. I encourage people to watch the 15 min interview. Jon's story is very good, but the interview is inspiring. Our Supplemental Documents package includes the story, and the 15 min interview is found at [LINK].

Demographics – Gen Z are the biggest casualties of Covid

Gen Z are the biggest casualties of Covid

There was a good Visual Capitalist piece this week that noted Covid has caused unemployment to rise across the board, but Gen Z has been affected the most [LINK]. In comparison to older working-age generations, Baby Boomers, Gen X, and Millennials- 2020 data shows that Gen Z's unemployment rate is nearly double in almost every OECD country. In Canada, the Gen Z unemployment rate is the 10th worst of OECD countries at 20.0%, while the unemployment rate for their older counterparts is 7.9%. In the US, the stats are similar, with 15% of Gen Z unemployed vs 7.1% of Millennial, Gen X, and Boomers. Timing could not have been worse for this demographic as they are just graduating high school or university and beginning their search for work amidst the pandemic. Further, Gen Z is overrepresented in service industries, like restaurants and travel, which were generally hit hardest by the pandemic. The 15-24 year old age group are usually less employed than older age ranges, the different is particularly large in 2020 with the younger group making up ~10% of the workforce vs the average since 2010 of just above 11%.

Figure 32: Unemployment in OECD Countries



Source: Visual Capitalist

Twitter – Look for our first comments on energy items on Twitter every day

@Energy_Tidbits on Twitter

For new followers to our Twitter, we are trying to tweet on breaking news or early views on energy items, most of which are followed up in detail in the Energy Tidbits memo or in separate blogs. Our Twitter handle is @Energy_Tidbits and can be followed at [LINK]. We wanted to use Energy Tidbits in our name since I have been writing Energy Tidbits memos for over 20 consecutive years. Please take a look thru our tweets and you can see we aren't just retweeting other tweets. Rather we are trying to use Twitter for early views on energy items. Our Supplemental Documents package includes our tweets this week.

LinkedIn – Look for quick energy items from me on LinkedIn

Look for energy items on LinkedIn

I can also be reached on Linkedin and plan to use it as another forum to pass on energy items in addition to our weekly Energy Tidbits memo and our blogs that are posted on the SAF Energy website [LINK].

Misc Facts and Figures.

During our weekly review of items for Energy Tidbits, we come across a number of miscellaneous facts and figures that are more general in nature

No surprise, Cdn small businesses with <4 employees hit hardest by covid

Statistics Canada released a report [LINK] with some key insights regarding the characteristics of business that were forced to close in 2020 due to the COVID-19 pandemic. Around 12% of businesses active in Feb. 2020 were closed by Sept. 2020 and remained closed as of Nov. 2020, with many of these closures occurring in the first two months of the pandemic. The data from the report shows that small businesses, likely family owned, got hit the hardest and closed the fastest. Stats Can reports that businesses that had closed in the first wave in March 2020 and remain closed employed on average 3.7 people and had median assets of $99,000. The slightly larger businesses last longer. Stats Can noted that the businesses that closed in Aug employed in average 4.9 people and had median assts of $163,100. Our Supplemental Documents package includes the Statistics Canada report.

Shout out to Bruce Simpson, Canada's top pole vaulter in the 70s
Last week's (March 21, 2021) Energy Tidbits noted the flashback to the Tokyo 1964 Olympics and how it was of huge interest in the Agincourt area (very NE part of Toronto) because of Bill Crothers from there and won the silver medal in the 800 metres. It was interesting to find out this week that there were others from that part of Toronto in the 60/70s who read Energy Tidbits and took the opportunity to remind me of other athletes such as Bruce Simpson. It wasn't that I forgot about Bruce, he just didn't compete in Tokyo. But Bruce was another alumni of Agincourt Collegiate who was the top Canadian pole vaulter and won gold medal at the 1978 Commonwealth Games and the 1979 Pan Am Games. To all my Agincourt friends, I realize that there were other good athletes, but I don't plan to keep listing them. But I wanted to give a shout out to Bruce as he was a good friend and classmate of my brother David.

Good video of three Russia subs emerging from e below 1.5 m ice in Arctic
There was a good video from RIA Novosti showing three Russian nuclear submarines emerging from below 1.5 meter thick ice in the Arctic. Besides being a good video, it is a reminder that Russia has an ongoing focus and priority on the Arctic for both resources and sea transit via the Northern Sea Route noted earlier I the memo. This interest is perhaps even more so considering the longer ice free seasons The RIA story "*Three nuclear submarines of the Navy for the first time in history together surfaced from under the ice*" [LINK] "*For the first time in the history of modern Russia, three nuclear-powered submarines of the Navy surfaced together in the ice. The Commander-in-Chief of the Navy, Admiral Nikolai Evmenov, reported this to the Supreme Commander-in-Chief of the Armed Forces Vladimir Putin . According to Evmenov, the ice was one and a half meters thick. The submarines surfaced "according to a single concept and plan at the appointed time in an area with a radius of 300 meters."*" The below picture doesn't do justice to the video.

Figure 33: Russian subs emerging from below 1.5 m ice in Arctic

Source: RIA Novosti