Energy Tidbits

No Shortage of LNG Buyers for Post-2026 Supply, Qatar Expects Multiple Deals Including with Europeans

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Table 1. Summary of natural gas supply and disposition in the United States, 2018-2023

billion cubic feet

Year and month	Gross withdrawals	Marketed production	NGPL production[a]	Dry gas production[b]	Supplemental gaseous fuels[c]	Net imports	Net storage withdrawals[d]	Balancing item[e]	Consumption[f]
2018 total	**37,326**	**33,009**	**2,235**	**30,774**	**69**	**-719**	**314**	**-300**	**30,139**
2019 total	**40,780**	**36,447**	**2,548**	**33,899**	**61**	**-1,916**	**-503**	**-408**	**31,132**
2020 total	**40,614**	**36,202**	**2,710**	**33,493**	**63**	**-2,734**	**-180**	**-129**	**30,513**
2021									
January	3,517	3,118	235	2,884	6	-279	719	16	3,344
February	2,950	2,609	196	2,412	5	-152	795	40	3,099
March	3,518	3,144	237	2,907	6	-357	64	30	2,649
April	3,438	3,069	231	2,838	5	-356	-180	-42	2,265
May	3,535	3,168	239	2,930	6	-373	-424	-21	2,117
June	3,400	3,056	230	2,826	5	-331	-254	-8	2,238
July	3,514	3,182	240	2,943	6	-338	-175	-23	2,412
August	3,545	3,196	241	2,956	6	-343	-164	-20	2,434
September	3,423	3,087	232	2,854	5	-315	-398	-4	2,142
October	3,600	3,245	244	3,001	6	-317	-368	-60	2,263
November	3,545	3,170	239	2,931	6	-315	137	-66	2,693
December	3,680	3,284	247	3,037	6	-368	330	3	3,007
Total	**41,666**	**37,328**	**2,811**	**34,518**	**66**	**-3,845**	**82**	**-157**	**30,665**
2022									
January	E3,591	E3,199	246	E2,953	7	-315	994	-47	3,592
February	E3,227	E2,870	223	E2,647	6	-288	658	38	3,061
March	E3,614	E3,225	267	E2,958	6	-380	163	33	2,781
April	E3,520	E3,152	257	E2,895	6	-342	-214	23	2,367
May	E3,667	E3,296	266	E3,030	6	-386	-403	-5	2,242
June	E3,557	E3,215	259	E2,956	4	-324	-324	5	2,318
July	E3,690	E3,330	276	E3,055	6	-301	-180	4	2,583
August	E3,699	E3,349	270	E3,079	6	-321	-206	1	2,560
September	E3,638	E3,281	265	E3,016	4	-293	-436	-4	2,289
October	E3,769	E3,394	275	E3,119	5	-315	-422	-21	2,366
November	E3,683	E3,297	269	E3,029	4	-308	71	-23	2,773
December	E3,729	E3,328	249	E3,079	5	-304	573	29	3,382
Total	**E43,385**	**E38,936**	**3,120**	**E35,816**	**65**	**-3,875**	**275**	**33**	**32,314**
2023									
January	RE3,820	RE3,419	264	RE3,156	6	R-332	455	R24	R3,309
February	RE3,458	RE3,097	242	RE2,854	5	-329	399	R22	R2,952
March	E3,844	E3,451	281	E3,171	6	-399	224	5	3,006
2023 3-month YTD	**E11,122**	**E9,967**	**787**	**E9,180**	**17**	**-1,060**	**1,079**	**51**	**9,267**
2022 3-month YTD	**E10,431**	**E9,295**	**736**	**E8,558**	**19**	**-983**	**1,816**	**24**	**9,434**
2021 3-month YTD	**9,985**	**8,871**	**668**	**8,203**	**16**	**-788**	**1,577**	**85**	**9,093**

[a] We derive monthly natural gas plant liquid (NGPL) production, gaseous equivalent, from sample data reported by gas processing plants on Form EIA-816, *Monthly Natural Gas Liquids Report*, and Form EIA-64A, *Annual Report of the Origin of Natural Gas Liquids Production*.

[b] Equal to marketed production minus NGPL production.

[c] We only collect supplemental gaseous fuels data on an annual basis except for the Dakota Gasification Co. coal gasification facility, which provides data each month. We calculate the ratio of annual supplemental fuels (excluding Dakota Gasification Co.) to the sum of dry gas production, net imports, and net withdrawals from storage. We apply this ratio to the monthly sum of these three elements. We add the Dakota Gasification Co. monthly value to the result to produce the monthly supplemental fuels estimate.

[d] Monthly and annual data for 2018 through 2020 include underground storage and liquefied natural gas storage. Data for January 2021 forward include underground storage only. Appendix A, Explanatory Note 5, contains a discussion of computation procedures.

[e] Represents quantities lost and imbalances in data due to differences among data sources. Net imports and balancing item excludes net intransit deliveries. These net intransit deliveries were (in billion cubic feet): 212 for 2021; 209 for 2020; -8 for 2019; and -12 for 2018. Appendix A, Explanatory Note 7, contains a full discussion of balancing item calculations.

[f] Consists of pipeline fuel use, lease and plant fuel use, vehicle fuel, and deliveries to consuming sectors as shown in Table 2.

[R] Revised data.

[E] Estimated data.

[RE] Revised estimated data.

Source: 2018-2021: U.S. Energy Information Administration (EIA), *Natural Gas Annual 2021*. January 2022 through current month: Form EIA-914, *Monthly Crude Oil and Lease Condensate, and Natural Gas Production Report*; Form EIA-857, *Monthly Report of Natural Gas Purchases and Deliveries to Consumers*; Form EIA-191, *Monthly Underground Gas Storage Report*; EIA computations and estimates; and Office of Fossil Energy and Carbon Management, *Natural Gas Imports and Exports*. Table 7 includes detailed source notes for Marketed Production. Appendix A, Notes 3 and 4, includes discussion of computation and estimation procedures and revision policies.

Note: Data for 2018 through 2020 are final. All other data are preliminary unless otherwise indicated. Geographic coverage is the 50 states and the District of Columbia. Totals may not equal sum of components because of independent rounding.

Table 5. U.S. natural gas exports, 2021-2023

volumes in million cubic feet; prices in dollars per thousand cubic feet

	2023 3-month YTD	2022 3-month YTD	2021 3-month YTD	March	February	January	2023 Total	2022 Total
Exports								
Volume (million cubic feet)								
Pipeline								
Canada	303,560	261,281	254,426	104,632	94,530	104,399	959,630	
Mexico	494,979	500,384	493,792	177,150	152,318	R165,511	2,074,340	
Total pipeline exports	**798,539**	**761,665**	**748,218**	**281,782**	**246,848**	**R269,910**	**3,033,970**	
LNG								
Exports								
By vessel								
Antigua and Barbuda	7	3	0	2	2	4	22	
Argentina	4,630	0	2,238	2,343	2,287	0	66,939	
Bahamas	121	109	96	53	27	42	489	
Bangladesh	3,369	9,317	6,713	0	0	3,369	12,663	
Barbados	0	92	49	0	0	0	93	
Belgium	18,627	39,221	3,484	7,665	7,322	3,640	80,245	
Brazil	1,334	30,217	56,227	1,334	0	0	71,998	
Chile	10,578	6,376	37,629	7,271	0	3,307	30,131	
China	25,593	10,884	70,832	5,132	2,565	17,896	96,659	
Colombia	0	486	0	0	0	0	5,703	
Croatia	12,613	18,311	7,367	3,694	6,006	2,913	77,286	
Dominican Republic	8,033	13,177	18,161	876	3,514	3,643	50,824	
Egypt	0	0	0	0	0	0	0	
Finland	6,850	0	0	6,850	0	0	329	
France	102,162	154,145	52,116	28,581	39,457	34,124	571,399	
Germany	47,384	0	0	24,841	8,229	14,314	7,113	
Greece	13,144	14,012	7,405	3,156	6,781	3,207	69,031	
Haiti	27	46	33	8	11	8	115	
India	31,251	24,513	51,524	10,230	14,064	6,956	122,518	
Indonesia	805	717	0	0	0	805	6,579	
Israel	0	0	2,826	0	0	0	0	
Italy	41,336	27,754	10,739	13,699	17,555	10,082	116,034	
Jamaica	808	289	8,530	540	161	107	1,516	
Japan	51,857	49,438	110,276	20,102	14,058	17,696	209,220	
Jordan	0	0	0	0	0	0	0	
Kuwait	0	5,277	3,821	0	0	0	57,018	
Lithuania	10,312	12,349	10,079	3,599	0	6,713	77,212	
Malaysia	0	0	0	0	0	0	0	
Malta	2,592	2,345	0	0	0	2,592	5,273	
Mexico	6,270	0	13,354	3,051	0	3,219	3,832	
Netherlands	136,771	72,791	49,930	61,017	39,301	36,453	378,329	
Nicaragua	0	0	0	0	0	0	0	
Pakistan	0	0	7,103	0	0	0	3,074	
Panama	5,927	6,324	3,795	3,209	0	2,718	13,759	
Poland	29,121	15,002	10,606	7,236	10,347	11,538	127,404	
Portugal	19,087	17,299	3,360	6,133	6,138	6,816	69,583	
Singapore	0	6,725	6,991	0	0	0	22,980	
South Korea	57,986	68,602	106,233	10,807	22,672	24,507	292,732	
Spain	84,220	147,961	25,011	38,096	32,138	13,987	426,657	
Taiwan	20,338	24,487	23,769	10,311	6,557	3,471	106,738	
Thailand	9,816	8,370	0	4,249	1,829	3,738	25,988	
Turkiye	61,436	105,407	50,930	11,866	13,444	36,126	192,067	
United Arab Emirates	0	0	0	0	0	0	0	
United Kingdom	205,233	142,161	73,218	70,499	71,702	63,032	464,462	
By truck								
Canada	7	17	0	7	0	0	76	
Mexico	335	449	165	96	106	133	1,552	
Re-exports								
By vessel								
Argentina	0	0	0	0	0	0	0	
Brazil	0	0	0	0	0	0	0	
Japan	0	0	0	0	0	0	0	
South Korea	0	0	0	0	0	0	0	
United Kingdom	0	0	0	0	0	0	0	
Total LNG exports	**1,029,982**	**1,034,672**	**834,612**	**366,552**	**326,275**	**337,155**	**3,865,643**	
CNG								
Canada	1	*	100	*	*	*	2	
Total CNG exports	**1**	*	**100**	*	*	*	**2**	
Total exports	**1,828,522**	**1,796,337**	**1,582,930**	**648,334**	**R573,122**	**R607,065**	**6,899,616**	

See footnotes at end of table.

Table 5. U.S. natural gas exports, 2021-2023

volumes in million cubic feet; prices in dollars per thousand cubic feet – continued

	2022						
	December	November	October	September	August	July	June
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	98,718	90,179	72,738	61,926	75,220	69,774	70,105
Mexico	158,638	160,986	171,766	169,159	181,124	188,178	181,700
Total pipeline exports	**257,355**	**251,165**	**244,505**	**231,086**	**256,344**	**257,951**	**251,805**
LNG							
Exports							
By vessel							
Antigua and Barbuda	1	2	2	3	2	2	3
Argentina	0	0	0	0	2,202	9,448	25,246
Bahamas	42	35	40	43	53	45	47
Bangladesh	0	0	0	0	0	0	0
Barbados	0	1	0	0	0	0	0
Belgium	3,274	0	7,190	9,165	3,589	0	7,023
Brazil	0	0	3,439	0	10,542	5,192	3,857
Chile	0	0	0	3,365	0	6,917	0
China	6,992	17,308	22,598	10,275	10,272	784	7,329
Colombia	0	0	3,699	0	606	0	912
Croatia	6,204	5,122	2,922	9,073	7,824	4,600	7,925
Dominican Republic	6,644	0	3,469	3,196	3,357	6,532	5,838
Egypt	0	0	0	0	0	0	0
Finland	329	0	0	0	0	0	0
France	38,311	50,655	41,959	57,943	33,885	53,443	37,564
Germany	7,112	1	0	0	0	0	0
Greece	2,869	421	4,424	0	10,763	12,922	9,633
Haiti	9	0	0	8	11	8	13
India	14,139	10,138	7,005	10,528	10,265	13,902	10,653
Indonesia	3,256	505	625	509	967	0	0
Israel	0	0	0	0	0	0	0
Italy	6,992	3,205	0	8,355	15,462	9,914	7,137
Jamaica	147	137	144	240	110	121	48
Japan	20,535	24,396	10,684	7,005	20,156	18,189	21,561
Jordan	0	0	0	0	0	0	0
Kuwait	0	0	3,299	7,038	6,415	5,382	8,105
Lithuania	3,281	3,708	7,072	3,541	7,579	7,947	6,729
Malaysia	0	0	0	0	0	0	0
Malta	0	2,928	0	0	0	0	0
Mexico	539	0	0	0	0	0	3,292
Netherlands	39,893	20,645	39,703	30,924	50,020	32,637	34,420
Nicaragua	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0
Panama	249	3,833	0	0	0	0	623
Poland	13,885	3,453	7,095	16,917	6,885	17,780	14,282
Portugal	10,025	3,732	7,005	5,806	3,202	6,412	5,582
Singapore	0	0	6,628	0	0	6,275	3,352
South Korea	24,700	14,069	38,844	19,736	36,033	34,342	25,054
Spain	33,847	26,445	26,369	21,263	26,140	34,396	29,639
Taiwan	9,203	3,592	9,041	9,753	8,901	9,353	6,892
Thailand	0	0	0	3,673	3,607	0	6,920
Turkiye	17,979	31,430	10,333	5,458	0	0	7,542
United Arab Emirates	0	0	0	0	0	0	0
United Kingdom	69,332	76,693	46,040	51,467	21,263	3,797	3,326
By truck							
Canada	8	0	19	0	0	0	8
Mexico	160	153	175	94	103	76	105
Re-exports							
By vessel							
Argentina	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0
Japan	0	0	0	0	0	0	0
South Korea	0	0	0	0	0	0	0
United Kingdom	0	0	0	0	0	0	0
Total LNG exports	**339,960**	**302,608**	**309,823**	**295,379**	**300,215**	**300,415**	**300,659**
CNG							
Canada	0	*	1	*	*	1	*
Total CNG exports	**0**	*	**1**	*	*	**1**	*
Total exports	**597,316**	**553,774**	**554,328**	**526,465**	**556,559**	**558,367**	**552,464**

See footnotes at end of table.

Table 5. U.S. natural gas exports, 2021-2023

volumes in million cubic feet; prices in dollars per thousand cubic feet – continued

	2022						2021
	May	April	March	February	January	Total	December
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	79,214	80,475	105,074	74,630	81,577	937,124	108,568
Mexico	185,965	176,440	169,885	155,032	175,467	2,154,457	166,956
Total pipeline exports	**265,179**	**256,916**	**274,958**	**229,662**	**257,045**	**3,091,580**	**275,524**
LNG							
Exports							
By vessel							
Antigua and Barbuda	2	3	2	0	2	8	3
Argentina	20,111	9,933	0	0	0	83,449	2,077
Bahamas	42	34	43	31	34	486	36
Bangladesh	3,346	0	3,421	5,896	0	37,734	0
Barbados	0	0	34	31	28	297	34
Belgium	3,441	7,341	17,743	7,691	13,786	5,584	0
Brazil	15,303	3,448	2,236	10,660	17,322	307,714	24,246
Chile	9,943	3,530	3,214	0	3,162	121,881	2,938
China	0	10,217	7,527	3,357	0	453,304	17,050
Colombia	0	0	0	0	486	2,247	0
Croatia	8,543	6,763	3,358	5,870	9,084	36,133	3,117
Dominican Republic	4,964	3,645	6,530	0	6,647	53,095	5,969
Egypt	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0
France	47,150	56,343	64,415	39,646	50,084	170,780	33,892
Germany	0	0	0	0	0	0	0
Greece	12,650	1,336	4,116	8,094	1,802	39,708	5,305
Haiti	9	11	10	16	20	137	4
India	7,152	14,223	10,438	7,210	6,866	196,218	3,203
Indonesia	0	0	0	717	0	3,269	1,218
Israel	0	0	0	0	0	8,906	0
Italy	21,696	15,519	7,088	13,629	7,037	34,210	0
Jamaica	144	135	92	111	86	25,276	113
Japan	24,024	13,231	17,697	10,214	21,527	354,948	24,297
Jordan	0	0	0	0	0	0	0
Kuwait	14,204	7,298	0	5,277	0	34,476	0
Lithuania	11,237	13,770	5,700	3,131	3,518	30,919	0
Malaysia	0	0	0	0	0	0	0
Malta	0	0	0	2,345	0	5,427	0
Mexico	0	0	0	0	0	15,200	0
Netherlands	28,902	28,395	24,922	31,591	16,279	174,339	23,354
Nicaragua	0	0	0	0	0	1	0
Pakistan	0	3,074	0	0	0	45,818	0
Panama	1,192	1,536	0	3,069	3,255	8,436	0
Poland	18,224	13,882	3,831	7,475	3,695	56,320	7,159
Portugal	3,888	6,632	10,728	3,703	2,868	65,865	9,630
Singapore	0	0	6,725	0	0	20,918	0
South Korea	17,538	13,813	19,289	27,489	21,824	453,483	38,201
Spain	40,337	40,259	59,224	39,359	49,379	215,062	32,579
Taiwan	15,975	9,541	12,161	6,115	6,211	99,350	12,034
Thailand	3,419	0	0	4,880	3,490	14,548	0
Turkiye	7,281	6,637	16,629	43,697	45,081	188,849	38,420
United Arab Emirates	0	0	0	0	0	0	0
United Kingdom	10,608	39,775	56,799	25,301	60,060	195,046	60,315
By truck							
Canada	8	15	0	4	13	128	20
Mexico	115	122	144	157	148	1,250	148
Re-exports							
By vessel							
Argentina	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0
Japan	0	0	0	0	0	0	0
South Korea	0	0	0	0	0	0	0
United Kingdom	0	0	0	0	0	0	0
Total LNG exports	**351,448**	**330,463**	**364,116**	**316,766**	**353,791**	**3,560,818**	**345,363**
CNG							
Canada	0	0	*	0	0	211	0
Total CNG exports	**0**	**0**	*****	**0**	**0**	**211**	**0**
Total exports	**616,627**	**587,378**	**639,074**	**546,428**	**610,836**	**6,652,609**	**620,886**

See footnotes at end of table.

Table 5. U.S. natural gas exports, 2021-2023

volumes in million cubic feet; prices in dollars per thousand cubic feet – continued

	2021						
	November	October	September	August	July	June	May
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	85,136	62,464	72,023	71,586	68,264	69,528	70,561
Mexico	165,449	184,472	178,746	193,710	197,623	198,242	192,549
Total pipeline exports	**250,585**	**246,936**	**250,769**	**265,296**	**265,887**	**267,770**	**263,110**
LNG							
Exports							
By vessel							
Antigua and Barbuda	2	0	3	0	0	0	0
Argentina	0	0	1,950	14,363	22,798	19,312	16,226
Bahamas	34	36	43	56	46	48	45
Bangladesh	0	0	3,276	7,085	0	3,493	6,948
Barbados	27	25	33	27	31	22	19
Belgium	0	0	0	0	0	0	2,100
Brazil	10,715	40,769	38,282	34,204	39,637	32,293	19,726
Chile	2,956	6,364	7,929	16,262	19,913	0	17,598
China	50,228	42,202	48,584	51,662	42,222	42,319	37,731
Colombia	0	0	436	919	0	0	0
Croatia	9,416	0	0	2,980	3,299	2,923	3,364
Dominican Republic	2,780	5,619	0	5,901	1,806	4,670	5,283
Egypt	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0
France	10,021	9,333	6,578	7,111	0	3,683	11,926
Germany	0	0	0	0	0	0	0
Greece	7,629	1,515	799	3,607	6,651	0	6,796
Haiti	8	17	10	24	8	18	12
India	14,807	10,548	23,941	20,592	13,090	16,503	28,259
Indonesia	456	477	1,118	0	0	0	0
Israel	0	0	2,855	0	0	0	0
Italy	0	0	0	3,401	6,826	3,425	2,923
Jamaica	715	1,858	2,931	2,907	0	2,927	2,925
Japan	33,947	37,666	10,290	19,979	24,895	39,783	25,058
Jordan	0	0	0	0	0	0	0
Kuwait	0	6,193	10,333	3,298	0	7,126	0
Lithuania	0	0	3,282	1,677	6,469	3,285	3,049
Malaysia	0	0	0	0	0	0	0
Malta	0	0	2,498	0	0	0	0
Mexico	0	1,088	0	0	758	0	0
Netherlands	8,829	17,157	10,424	7,347	10,597	3,030	26,611
Nicaragua	0	0	0	0	1	0	0
Pakistan	2,490	3,138	9,642	3,319	13,428	3,376	0
Panama	0	911	0	1,390	0	0	2,341
Poland	7,068	3,270	0	0	6,619	10,635	3,581
Portugal	5,380	10,459	3,696	6,382	3,296	5,538	10,765
Singapore	3,728	0	0	0	3,449	0	3,089
South Korea	30,787	33,836	31,375	50,101	39,314	55,918	46,033
Spain	22,821	35,638	31,274	23,068	8,630	7,833	5,234
Taiwan	3,404	7,123	5,789	6,728	20,653	3,097	10,157
Thailand	0	0	0	3,707	0	0	3,453
Turkiye	47,330	19,385	24,176	0	5,591	0	3,017
United Arab Emirates	0	0	0	0	0	0	0
United Kingdom	30,648	3,302	3,099	0	0	0	10,586
By truck							
Canada	8	8	19	18	16	7	18
Mexico	160	182	150	147	97	105	48
Re-exports							
By vessel							
Argentina	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0
Japan	0	0	0	0	0	0	0
South Korea	0	0	0	0	0	0	0
United Kingdom	0	0	0	0	0	0	0
Total LNG exports	**306,397**	**298,119**	**284,813**	**298,262**	**300,143**	**271,368**	**314,922**
CNG							
Canada	0	0	0	14	16	27	25
Total CNG exports	**0**	**0**	**0**	**14**	**16**	**27**	**25**
Total exports	**556,982**	**545,055**	**535,583**	**563,572**	**566,046**	**539,165**	**578,056**

See footnotes at end of table.

Table 5. U.S. natural gas exports, 2021-2023

volumes in million cubic feet; prices in dollars per thousand cubic feet – continued

	2021			
	April	March	February	January
Exports				
Volume (million cubic feet)				
Pipeline				
Canada	74,567	91,301	78,198	84,927
Mexico	182,918	183,051	137,381	173,360
Total pipeline exports	**257,485**	**274,352**	**215,579**	**258,287**
LNG				
Exports				
By vessel				
Antigua and Barbuda	0	0	0	0
Argentina	4,485	2,238	0	0
Bahamas	46	39	29	28
Bangladesh	10,219	3,566	0	3,148
Barbados	30	14	19	17
Belgium	0	3,484	0	0
Brazil	11,615	21,977	13,118	21,132
Chile	10,293	21,320	6,524	9,784
China	50,474	28,476	3,415	38,940
Colombia	892	0	0	0
Croatia	3,666	7,367	0	0
Dominican Republic	2,905	5,577	5,689	6,895
Egypt	0	0	0	0
Finland	0	0	0	0
France	36,120	33,678	14,851	3,587
Germany	0	0	0	0
Greece	0	6,805	0	600
Haiti	3	10	11	12
India	13,752	17,381	13,776	20,367
Indonesia	0	0	0	0
Israel	3,225	2,826	0	0
Italy	6,896	10,739	0	0
Jamaica	2,370	2,458	2,365	3,708
Japan	28,756	27,673	18,271	64,331
Jordan	0	0	0	0
Kuwait	3,705	3,821	0	0
Lithuania	3,078	3,228	6,851	0
Malaysia	0	0	0	0
Malta	2,928	0	0	0
Mexico	0	0	13,354	0
Netherlands	17,060	24,204	22,777	2,949
Nicaragua	0	0	0	0
Pakistan	3,323	3,421	0	3,682
Panama	0	3,279	0	516
Poland	7,382	3,507	7,099	0
Portugal	7,358	0	3,360	0
Singapore	3,660	3,303	0	3,688
South Korea	21,683	32,203	18,094	55,936
Spain	22,974	13,900	3,733	7,377
Taiwan	6,594	13,450	0	10,319
Thailand	7,388	0	0	0
Turkiye	0	3,619	20,652	26,659
United Arab Emirates	0	0	0	0
United Kingdom	13,877	17,440	34,343	21,436
By truck				
Canada	15	0	0	0
Mexico	48	19	63	83
Re-exports				
By vessel				
Argentina	0	0	0	0
Brazil	0	0	0	0
Japan	0	0	0	0
South Korea	0	0	0	0
United Kingdom	0	0	0	0
Total LNG exports	**306,818**	**321,023**	**208,394**	**305,196**
CNG				
Canada	29	36	32	32
Total CNG exports	**29**	**36**	**32**	**32**
Total exports	**564,333**	**595,411**	**424,004**	**563,515**

See footnotes at end of table.

Table 7. Marketed production of natural gas in selected states and the Federal Gulf of Mexico, 2018-2023

million cubic feet

Year and month	Alaska	Arkansas	California	Colorado	Kansas	Louisiana	Montana	New Mexico	North Dakota	Ohio
2018 total	**341,315**	**589,985**	**202,617**	**1,847,402**	**201,391**	**2,832,404**	**43,530**	**1,493,082**	**706,552**	**2,403,382**
2019 total	**329,361**	**524,757**	**196,823**	**1,986,916**	**183,087**	**3,212,318**	**43,534**	**1,769,086**	**850,826**	**2,651,631**
2020 total	**338,329**	**480,982**	**170,579**	**1,990,462**	**163,356**	**3,206,163**	**37,963**	**1,948,168**	**882,443**	**2,378,902**
2021										
January	31,667	39,285	11,467	160,766	12,900	276,873	3,292	173,929	83,193	193,911
February	28,365	30,183	10,846	143,192	10,142	223,268	2,859	144,804	70,129	175,146
March	31,483	42,466	12,136	157,254	13,251	282,668	3,299	180,669	83,243	193,911
April	29,514	37,756	11,791	156,092	12,842	273,643	3,078	178,912	82,917	185,964
May	29,005	38,563	12,342	162,416	13,063	283,576	3,328	187,994	85,384	192,163
June	27,715	36,918	11,885	154,617	12,716	276,142	2,975	184,732	82,520	185,964
July	26,280	38,045	12,141	160,287	13,215	299,939	3,321	195,904	80,072	189,515
August	27,864	37,753	12,076	158,586	13,224	292,784	3,343	199,365	84,297	189,515
September	28,534	36,508	11,617	153,270	12,769	290,606	3,283	194,290	85,041	183,401
October	30,458	37,626	11,655	160,291	13,213	307,744	3,460	200,567	87,446	199,379
November	30,735	36,079	11,279	155,653	12,722	310,363	3,291	195,365	87,089	192,947
December	33,039	37,006	11,371	157,031	12,928	313,823	3,163	201,176	87,692	199,379
Total	**354,660**	**448,187**	**140,604**	**1,879,457**	**152,986**	**3,431,429**	**38,693**	**2,237,706**	**999,025**	**2,281,193**
2022										
January	32,865	E37,302	E11,186	E151,815	E12,255	E311,786	E3,092	E196,780	E81,699	E196,005
February	30,014	E33,465	E9,336	E138,369	E10,930	E284,177	E2,801	E183,345	E74,429	E172,829
March	32,473	E37,518	E11,388	E155,246	E12,194	E313,229	E3,214	E219,028	E86,190	E187,872
April	30,910	E36,247	E11,212	E151,319	E12,037	E313,229	E3,042	E215,953	E68,484	E179,444
May	31,677	E37,042	E11,489	E155,982	E12,469	E340,363	E3,152	E223,843	E80,563	E189,214
June	28,644	E35,573	E11,057	E150,046	E12,037	E335,290	E3,464	E214,602	E86,013	E190,021
July	29,654	E36,446	E11,651	E153,067	E12,457	E345,647	E3,465	E227,099	E89,572	E193,519
August	29,380	E36,659	E11,970	E154,806	E12,526	E355,454	E3,634	E230,690	E88,700	E196,604
September	29,288	E34,405	E11,100	E151,415	E11,565	E346,479	E3,572	E233,548	E88,797	E189,795
October	31,122	E35,354	E11,358	E155,354	E12,749	E363,490	E3,540	E247,855	E90,617	E195,926
November	30,934	E33,777	E10,905	E151,562	E12,036	E354,732	E3,342	E237,280	E84,563	E195,571
December	36,181	E33,198	E11,167	E150,545	E11,556	E355,671	E3,277	E249,384	E76,094	E186,258
Total	**373,141**	**E426,986**	**E133,818**	**E1,819,526**	**E144,811**	**E4,019,547**	**E39,595**	**E2,679,408**	**E995,720**	**E2,273,058**
2023										
January	33,391	RE34,788	RE11,061	RE151,836	RE11,783	RE363,830	RE3,526	RE252,664	RE82,392	RE198,189
February	30,726	RE31,080	RE10,048	RE135,226	RE10,526	RE353,324	RE3,229	RE232,034	RE79,811	RE174,916
March	32,676	E34,425	E10,916	E150,003	E11,475	E372,578	E3,560	E266,164	E87,799	E199,535
2023 3-month YTD	**96,793**	**E100,292**	**E32,025**	**E437,065**	**E33,785**	**E1,089,731**	**E10,316**	**E750,863**	**E250,001**	**E572,639**
2022 3-month YTD	**95,351**	**E108,285**	**E31,910**	**E445,430**	**E35,380**	**E909,191**	**E9,107**	**E599,153**	**E242,318**	**E556,706**
2021 3-month YTD	**91,515**	**111,934**	**34,448**	**461,212**	**36,293**	**782,809**	**9,451**	**499,401**	**236,565**	**562,968**

See footnotes at end of table.

Table 7. Marketed production of natural gas in selected states and the Federal Gulf of Mexico, 2018-2023

million cubic feet – continued

Year and month	Oklahoma	Pennsylvania	Texas	Utah	West Virginia	Wyoming	Other states	Federal Gulf of Mexico	U.S. total
2018 total	**2,875,787**	**6,264,832**	**8,041,010**	**295,826**	**1,771,698**	**1,637,517**	**485,675**	**974,863**	**33,008,867**
2019 total	**3,036,052**	**6,896,792**	**9,378,489**	**271,808**	**2,155,214**	**1,488,854**	**456,024**	**1,015,343**	**36,446,918**
2020 total	**2,786,366**	**7,148,295**	**9,336,110**	**241,989**	**2,592,319**	**1,306,368**	**404,391**	**789,262**	**36,202,446**
2021									
January	221,544	652,640	798,426	19,392	234,432	97,657	35,223	71,772	3,118,370
February	163,094	585,371	609,757	18,126	208,571	89,337	31,366	64,024	2,608,580
March	220,130	645,407	826,381	20,404	227,218	95,164	34,671	74,200	3,143,955
April	214,334	615,899	820,570	19,783	229,075	92,340	34,427	69,762	3,068,700
May	223,372	635,584	844,723	20,313	234,118	94,341	35,868	72,053	3,168,206
June	213,314	616,270	815,947	19,502	227,987	90,259	29,234	67,429	3,056,126
July	221,002	638,200	858,526	20,601	229,376	93,644	30,467	71,744	3,182,278
August	222,329	646,169	863,509	20,347	241,373	89,749	32,659	61,377	3,196,320
September	216,455	622,275	855,425	19,928	216,452	91,662	30,611	34,559	3,086,687
October	223,093	645,126	873,479	20,457	240,446	93,162	37,663	60,037	3,245,301
November	214,361	646,233	836,104	20,014	229,812	90,176	32,023	65,610	3,169,856
December	218,805	677,331	872,543	20,538	241,569	91,741	36,962	67,903	3,283,998
Total	**2,571,834**	**7,626,504**	**9,875,390**	**239,405**	**2,760,429**	**1,109,232**	**401,172**	**780,471**	**37,328,378**
2022									
January	E213,419	E660,345	E853,214	E20,789	E234,795	E85,192	E31,292	E65,454	E3,199,287
February	E192,596	E581,432	E766,441	E18,966	E209,707	E76,605	E28,839	E55,884	E2,870,165
March	E219,732	E635,076	E871,961	E21,315	E239,344	E84,319	E31,519	E63,547	E3,225,163
April	E223,078	E616,181	E856,759	E21,254	E235,580	E81,405	E29,705	E65,810	E3,151,649
May	E237,032	E640,189	E887,465	E22,840	E247,179	E82,036	E31,011	E62,326	E3,295,871
June	E230,337	E616,632	E862,817	E22,278	E240,568	E80,395	E31,237	E63,627	E3,214,637
July	E239,295	E641,726	E887,919	E23,066	E251,625	E85,506	E32,355	E66,393	E3,330,463
August	E238,265	E632,014	E897,401	E23,500	E255,603	E81,633	E32,294	E68,280	E3,349,415
September	E236,726	E613,657	E882,979	E22,110	E245,734	E81,528	E31,485	E66,585	E3,280,768
October	E241,688	E629,461	E915,309	E22,164	E251,647	E87,030	E31,961	E67,352	E3,393,976
November	E235,873	E605,505	E885,128	E21,326	E255,298	E84,565	E30,838	E63,917	E3,297,153
December	E236,429	E611,037	E914,687	E22,688	E253,533	E81,550	E30,737	E63,662	E3,327,655
Total	**E2,744,470**	**E7,483,257**	**E10,482,08**	**E262,297**	**E2,920,613**	**E991,764**	**E373,272**	**E772,838**	**E38,936,202**
2023									
January	RE241,437	RE646,645	RE928,236	RE22,346	E256,931	RE80,638	E31,512	RE67,908	RE3,419,111
February	RE218,267	RE572,710	RE835,462	RE20,131	RE231,572	RE70,490	RE27,351	RE59,734	RE3,096,636
March	E240,659	E642,362	E946,356	E22,798	E255,759	E78,717	E29,904	E65,558	E3,451,244
2023 3-month YTD	**E700,363**	**E1,861,718**	**E2,710,055**	**E65,274**	**E744,262**	**E229,844**	**E88,766**	**E193,200**	**E9,966,991**
2022 3-month YTD	**E625,746**	**E1,876,853**	**E2,491,617**	**E61,071**	**E683,846**	**E246,116**	**E91,650**	**E184,885**	**E9,294,615**
2021 3-month YTD	**604,769**	**1,883,418**	**2,234,564**	**57,922**	**670,221**	**282,159**	**101,259**	**209,996**	**8,870,905**

E Estimated data.

RE Revised estimated data.

Source: 2018-2021: U.S. Energy Information Administration (EIA), *Natural Gas Annual 2021*, Bureau of Safety and Environmental Enforcement (BSEE), IHS Markit, and Enverus. January 2022 through current month: Form EIA-914, *Monthly Crude Oil and Lease Condensate, and Natural Gas Production Report*; and EIA computations.

Note: For 2022 forward, we estimate state monthly marketed production from gross withdrawals using historical relationships between the two. We collect data for Arkansas, California, Colorado, Kansas, Louisiana, Montana, New Mexico, North Dakota, Ohio, Oklahoma, Pennsylvania, Texas, Utah, West Virginia, Wyoming, and federal offshore Gulf of Mexico individually on the EIA-914 report. The "other states" category comprises states/areas not individually collected on the EIA-914 report (Alabama, Arizona, Federal Offshore Pacific, Florida, Idaho, Illinois, Indiana, Kentucky, Maryland, Michigan, Mississippi, Missouri, Nebraska, Nevada, New York, Oregon, South Dakota, Tennessee, and Virginia). Before 2022, Federal Offshore Pacific is included in California. We obtain all data for Alaska directly from the state. Monthly preliminary state-level data for all states not collected individually on the EIA-914 report are available after the final annual reports for these series are collected and processed. Final annual data are generally available in the third quarter of the following year. The sum of individual states may not equal total U.S. volumes because of independent rounding.

Summary

Overview of Activity for March 2023

- **Top five countries of destination, representing 60.9% of total U.S. LNG exports in March 2023**
  - United Kingdom (70.5 Bcf), Netherlands (61.0 Bcf), Spain (38.1 Bcf), France (28.6 Bcf), and Germany (24.8 Bcf)
- **366.3 Bcf of exports in March 2023**
  - 12.4% increase from February 2023
  - 0.7% more than March 2022
- **121 cargos shipped in March 2023**
  - Sabine Pass (41), Cameron (36), Corpus Christi (19), Freeport (12), Cove Point (8), and Elba (5)
  - 100 cargos in February 2023
  - 114 cargos in March 2022

1a. Table of Exports of Domestically-Produced LNG Delivered by Region (Cumulative from February 2016 through March 2023)

Region	Number of Countries Receiving Per Region	Volume Exported (Bcf)	Percentage Receipts of Total Volume Exported (%)	Number of Cargos*
East Asia and Pacific	8	4,640.5	31.7%	1375
Europe and Central Asia	15	6,581.0	45.0%	2062
Latin America and the Caribbean**	13	2,173.6	14.9%	777
Middle East and North Africa	5	376.6	2.6%	110
South Asia	3	858.1	5.9%	255
Sub-Saharan Africa	0	0.0	0.0%	0
Total LNG Exports	**44**	**14,629.7**	**100.0%**	**4,579**

*Split cargos counted as both individual cargos and countries

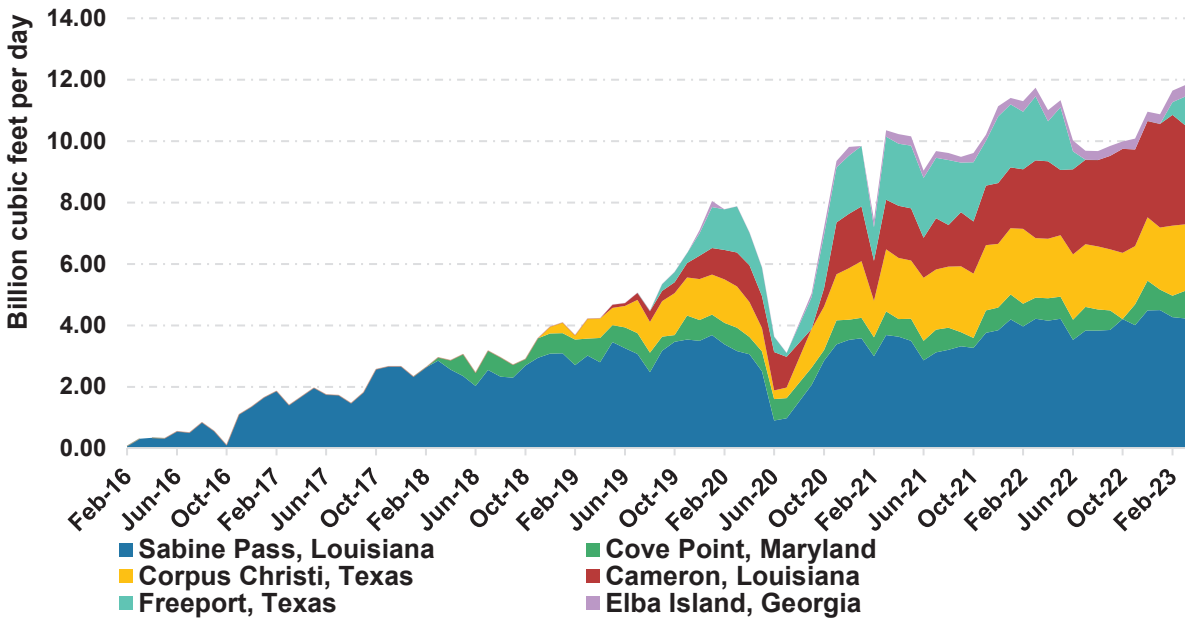
**Number of cargos does not include the shipments by ISO container

1b. Shipments of Domestically-Produced LNG Delivered – by Country
(Cumulative from February 2016 through March 2023)

	Country of Destination	Region	Number of Cargos	Volume (Bcf of Natural Gas)	Percentage of Total U.S LNG Exports (%)
1.	South Korea*	East Asia and Pacific	513	1,779.8	12.2%
2.	Japan*	East Asia and Pacific	380	1,294.5	8.8%
3.	United Kingdom*	Europe and Central Asia	361	1,194.5	8.2%
4.	Spain*	Europe and Central Asia	363	1,135.1	7.8%
5.	France*	Europe and Central Asia	330	1,073.9	7.3%
6.	China*	East Asia and Pacific	296	1,007.9	6.9%
7.	Netherlands*	Europe and Central Asia	260	871.6	6.0%
8.	India*	South Asia	195	661.3	4.5%
9.	Turkiye*	Europe and Central Asia	205	656.9	4.5%
10.	Brazil*	Latin America and the Caribbean	218	609.7	4.2%
11.	Mexico*	Latin America and the Caribbean	166	553.1	3.8%
12.	Chile*	Latin America and the Caribbean	135	429.9	2.9%
13.	Italy*	Europe and Central Asia	110	352.7	2.4%
14.	Taiwan*	East Asia and Pacific	109	343.9	2.4%
15.	Poland*	Europe and Central Asia	90	297.9	2.0%
16.	Portugal*	Europe and Central Asia	88	280.5	1.9%
17.	Argentina*	Latin America and the Caribbean	112	269.8	1.8%
18.	Greece*	Europe and Central Asia	80	188.7	1.3%
19.	Dominican Republic*	Latin America and the Caribbean	69	165.8	1.1%
20.	Belgium*	Europe and Central Asia	50	160.3	1.1%
21.	Lithuania	Europe and Central Asia	51	157.6	1.1%
22.	Kuwait	Middle East and North Africa	45	156.4	1.1%
23.	Croatia	Europe and Central Asia	43	129.3	0.9%
24.	Pakistan*	South Asia	40	128.9	0.9%
25.	Jordan*	Middle East and North Africa	36	124.2	0.8%
26.	Singapore*	East Asia and Pacific	33	107.4	0.7%
27.	Thailand*	East Asia and Pacific	27	92.7	0.6%
28.	Bangladesh*	South Asia	20	67.8	0.5%
29.	Panama*	Latin America and the Caribbean	32	57.9	0.4%
30.	Jamaica*	Latin America and the Caribbean	27	57.9	0.4%
31.	Germany	Europe and Central Asia	17	54.5	0.4%
32.	United Arab Emirates	Middle East and North Africa	15	51.1	0.3%
33.	Israel*	Middle East and North Africa	9	28.0	0.2%
34.	Colombia*	Latin America and the Caribbean	18	24.2	0.2%
35.	Malta*	Europe and Central Asia	11	20.1	0.1%
36.	Egypt*	Middle East and North Africa	5	16.9	0.1%
37.	Indonesia*	East Asia and Pacific	16	10.7	0.1%
38.	Finland	Europe and Central Asia	3	7.2	0.0%
39.	Malaysia	East Asia and Pacific	1	3.7	0.0%
	Total Exports by Vessel		**4,579**	**14,624.4**	
	Germany	Europe and Central Asia	1	0.0	0.0%
40.	Antigua and Barbuda	Latin America and the Caribbean	42	0.0	0.0%
41.	Nicaragua	Latin America and the Caribbean	1	0.0	0.0%
42.	Haiti	Latin America and the Caribbean	137	0.4	0.0%
43.	Barbados	Latin America and the Caribbean	305	1.3	0.0%
	Jamaica	Latin America and the Caribbean	167	1.6	0.0%
44.	Bahamas	Latin America and the Caribbean	705	2.0	0.0%
	Total Exports by ISO		**1358**	**5.4**	
	Total Exports by Vessel and ISO		**5,937**	**14,629.7**	

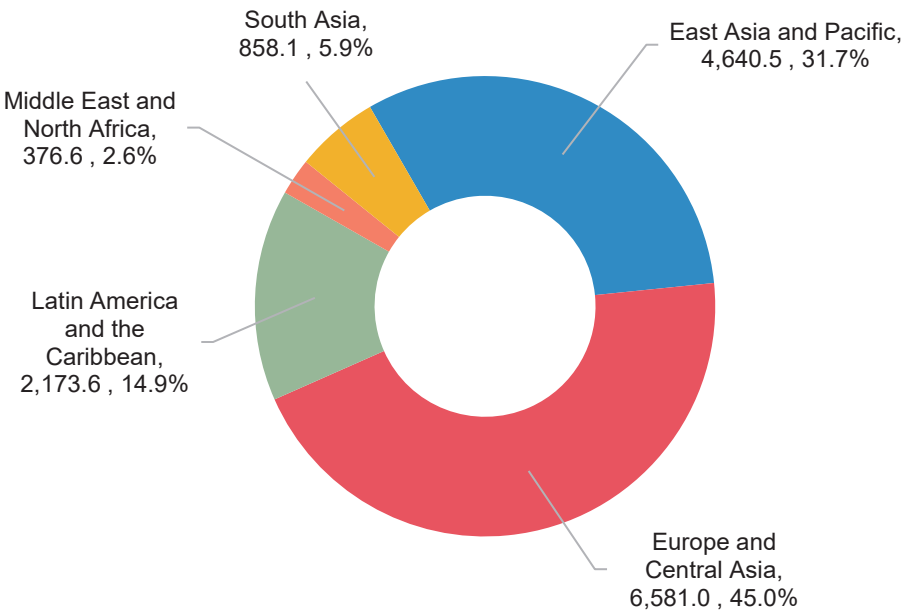
Note:
Volume and Number of Cargos are the cumulative totals of each individual Country of Destination by Region starting from February 2016.
Jamaica has received U.S. LNG exports by both vessel and ISO container. The volumes are totaled separately
* Split cargos counted as both individual cargos and countries.
Vessel = LNG Exports by Vessel and ISO container = LNG Exports by Vessel in ISO Containers.
Does not include re-exports of previously-imported LNG. See table 2c for re-exports data.
Totals may not equal sum of components because of independent rounding.

1c. Domestically-Produced LNG Exported by Point of Exit
(February 2016 through March 2023)



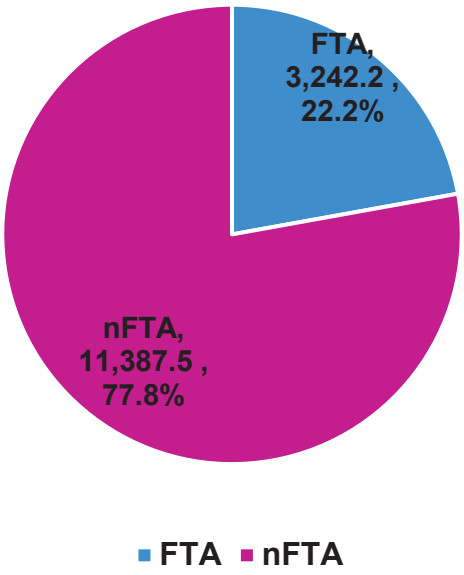
The Cameron, LA point of exit includes exports from Cameron LNG and Venture Global Calcasieu Pass.

1d. Domestically-Produced LNG Exported by Region
(Cumulative from February 2016 through March 2023)
(Bcf, %)



1e. Volumes and Percentages of FTA and nFTA Shipments of Domestically-Produced LNG Delivered
(Cumulative from February 2016 through February 2023)

	Volume (Bcf)	Percentage of Total Volume	Number of Countries
FTA	3,242.2	22.2%	8
nFTA	11,387.5	77.8%	36
Total LNG Exports	**14,629.7**	**100.0%**	**44**



Spot cargos total 640.5 Bcf - or 4.4 percent - of the 14,629.7 Bcf total volume of shipments.

These totals are cumulative starting from February 2016 through March 2023 - a cumulative listing of cargos and regions in Table 1b and a cumulative list of FTAs and nFTAs in Table 1h.

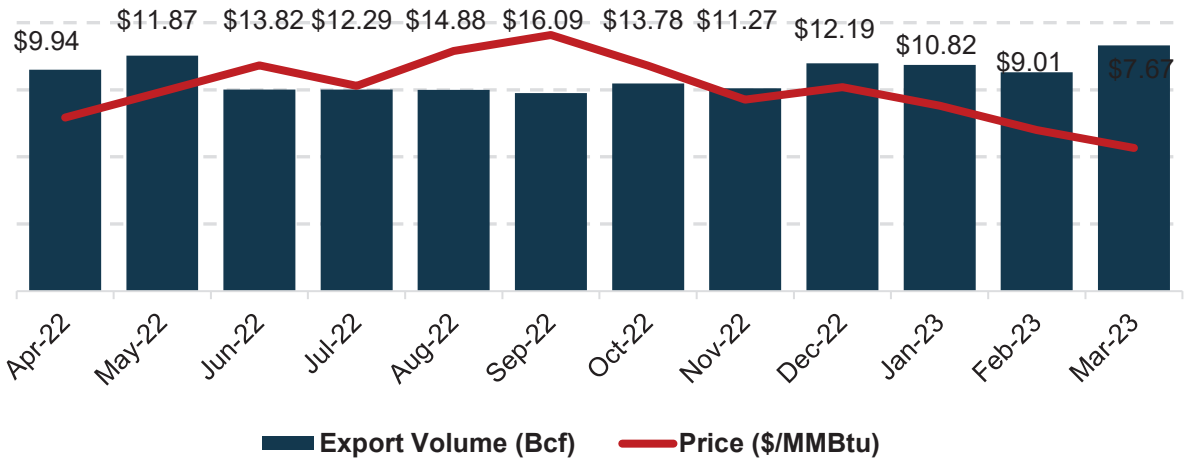
FTA Countries that Require National Treatment for Trade in Natural Gas -As of October 31, 2012, the United States has FTAs that require national treatment for trade in natural gas with Australia, Bahrain, Canada, Chile, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Jordan, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, Republic of Korea and Singapore. Panama is the most recent country with which the United States has entered into a FTA that requires national treatment for trade in natural gas, effective October 31, 2012. Not all countries that have a FTA with the United States require national treatment for trade in natural gas (i.e. Costa Rica and Israel). A list of all countries with which the United States has a FTA can be found at: http://www.ustr.gov/trade-agreements/free-trade-agreements.

More information can be found on DOE's website - https://energy.gov/fe/services/natural-gas-regulation/how-obtain-authorization-import-andor-export-natural-gas-and-lng

Totals may not equal sum of components because of independent rounding.

1f. Domestically-Produced LNG Exported – Volume (Bcf) and Weighted Average price ($/MMBtu) by Point of Exit per month

	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Sabine Pass, LA	124.6	130.7	105.7	118.5	118.7	115.6	130.4	120.1	139.2	139.2	119.5	131.0	**1,623.6**
	$8.80	$10.93	$12.90	$10.50	$12.71	$13.71	$10.85	$9.26	$10.43	$8.67	$6.72	$5.86	**$9.86**
Cove Point, MD	21.8	22.2	19.7	24.2	21.4	18.8	0	20.4	29.8	20.8	19.4	27.8	**267.8**
	$9.32	$10.85	$12.33	$11.28	$12.36	$13. 61	0	$10.10	$10.98	$8.67	$8.35	$6.96	**$10.21**
Corpus Christi, TX	58.3	62.0	63.7	63.1	63.4	59.8	66.8	57.0	64.1	62.6	64.1	67.1	**812.2**
	$10.48	$11.95	$13. 57	$12.17	$14.70	$15.99	$12.42	$10.36	$10.60	$10.74	$7.06	$6.26	**$11.21**
Cameron, LA	75.4	65.8	83.3	85.2	87.2	91.1	104.9	94.1	97.1	104.8	100.8	100.0	**1168.4**
	$12.33	$14.85	$16.05	$15.15	$18.92	$19.89	$18.38	$14.82	$16.34	$14.33	$12.99	$11.65	**$15.11**
Freeport, TX	39.3	63.5	17.3	0	0	0	0	0	0	0	11.6	29.0	**225.1**
	$9.07	$11.23	$12.83	0	0	0	0	0	0	0	8.23	6.14	**$9.36**
Elba Island, GA	10.8	6.9	10.7	9.1	9.2	9.7	7.4	10.6	9.4	9.4	10.6	11.4	**124.0**
	$7.93	$9.66	$11.40	$12.20	$11.58	$14.31	$12.53	$9.62	$10.14	$8.81	$10.72	$7.54	**$10.42**
Total	**330.1**	**351.1**	**300.4**	**300.2**	**299.9**	**295.1**	**309.4**	**302.3**	**339.6**	**336.9**	**326.0**	**366.3**	**4,221.1**
	$9.94	**$11.87**	**$13.82**	**$12.29**	**$14.88**	**$16.09**	**$13.78**	**$11.27**	**$12.19**	**$10.82**	**$9.01**	**$7.67**	**$11.59**



Notes:

Prices are free on board (FOB) and are inclusive of all costs of the LNG up to the point of export, including commodity costs and liquefaction fees.

Does not include re-exports of previously-imported LNG. See table 2c for re-exports data.

Totals may not equal sum of components because of independent rounding.

The Cameron, LA point of exit includes exports from Cameron LNG and Venture Global Calcasieu Pass.

W - Withheld to avoid disclosure of individual company data.

DOE has a confidentiality policy for certain data elements collected on Form FE-746R that allows DOE to publish a monthly volume-weighted average price for each point of LNG import or export, but not a price for each individual imported or exported LNG cargo. For additional information, please see the Federal Register Notice concerning this Information Collection Extension at https://www.federalregister.gov/documents/2018/08/30/2018-18829/information-collection-extension.

1h. Destination of Domestically-Produced LNG Delivered by Country and Region with Trade Agreement Status
(February 2016 through March 2023)

Country of Destination	Region	FTA or nFTA	Type of FTA	Name of FTA
Antigua and Barbuda	Latin America and the Caribbean	nFTA		
Argentina	Latin America and the Caribbean	nFTA		
Bahamas (ISO)	Latin America and the Caribbean	nFTA		
Bangladesh	South Asia	nFTA		
Barbados (ISO)	Latin America and the Caribbean	nFTA		
Belgium	Europe and Central Asia	nFTA		
Brazil	Latin America and the Caribbean	nFTA		
Chile	Latin America and the Caribbean	FTA	Bilateral	United States-Chile Free Trade Agreement
China	East Asia and Pacific	nFTA		
Colombia	Latin America and the Caribbean	FTA	Bilateral	United States- Colombia Trade Promotion Agreement
Croatia	Europe and Central Asia	nFTA		
Dominican Republic	Latin America and the Caribbean	FTA	Multilateral	CAFTA-DR
Egypt	Middle East and North Africa	nFTA		
Finland	Europe and Central Asia	nFTA		
France	Europe and Central Asia	nFTA		
Germany	Europe and Central Asia	nFTA		
Greece	Europe and Central Asia	nFTA		
Haiti	Latin America and the Caribbean	nFTA		
India	South Asia	nFTA		
Indonesia	East Asia and Pacific	nFTA		
Israel[4]	Middle East and North Africa	FTA	Bilateral	United States-Israel Free Trade Agreement
Italy	Europe and Central Asia	nFTA		
Jamaica	Latin America and the Caribbean	nFTA		
Japan	East Asia and Pacific	nFTA		
Jordan	Middle East and North Africa	FTA	Bilateral	United States-Jordan Free Trade Agreement
Kuwait	Middle East and North Africa	nFTA		
Lithuania	Europe and Central Asia	nFTA		
Malaysia	East Asia and Pacific	nFTA		
Malta[1]	Europe and Central Asia	nFTA		
Mexico[2]	Latin America and the Caribbean	FTA	Multilateral	USMCA - United States-Mexico-Canada Agreement[3]
Netherlands	Europe and Central Asia	nFTA		
Nicaragua	Latin America and the Caribbean	FTA		CAFTA-DR
Pakistan	South Asia	nFTA		
Panama	Latin America and the Caribbean	FTA	Bilateral	U.S.- Panama Trade Promotion Agreement
Poland	Europe and Central Asia	nFTA		
Portugal	Europe and Central Asia	nFTA		
Singapore	East Asia and Pacific	FTA	Bilateral	Singapore FTA
South Korea	East Asia and Pacific	FTA	Bilateral	KORUS - U.S.-Korea Free Trade Agreement
Spain	Europe and Central Asia	nFTA		
Taiwan	East Asia and Pacific	nFTA		
Thailand	East Asia and Pacific	nFTA		
Turkey	Europe and Central Asia	nFTA		
United Arab Emirates	Middle East and North Africa	nFTA		
United Kingdom	Europe and Central Asia	nFTA		

Source: Office of the United States Trade Representative and the World Bank

[1]For classification purposes, Malta is included in the Europe and Central Asia region.
[2]For classification purposes, Mexico is included in the Latin America and the Caribbean region.
[3]USMCA entered into force on 1 July 2020. These data previously attributed to the North American Free Trade Agreement (NAFTA).
[4]For classification purposes, the U.S. FTA with Israel does not require national treatment for natural gas, meaning natural gas is not covered as a good or service under the FTA.

https://www.qatarenergy.qa/en/MediaCenter/Pages/newsdetails.aspx?ItemId=3758

QATARENERGY SIGNS A 15-YEAR LNG SUPPLY AGREEMENT WITH BANGLADESH -

DOHA, Qatar • 1 June 2023 – QatarEnergy's LNG trading arm, QatarEnergy Trading, has entered into a long-term LNG Sale and Purchase Agreement (SPA) with Bangladesh Oil, Gas and Mineral Corporation (Petrobangla) to supply about 1.8 million tons per annum (MTPA) of LNG to Bangladesh for 15 years, starting in 2026.

The SPA signing at QatarEnergy's Headquarters in Doha, was witnessed by His Excellency Mr. Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs, the President and CEO of QatarEnergy, and His Excellency Mr. Nasrul Hamid, the state minister for Power, Energy and Mineral Resources of the People's Republic of Bangladesh.

In his remarks during the signing ceremony, His Excellency Mr. Saad Sherida Al-Kaabi said: "Today, we are proud to be the largest LNG supplier to Bangladesh and Petrobangla by a large margin, delivering more than 3.5 million tons per annum from Qatar to Bangladesh. These supply arrangements reinforce our unwavering dedication to safeguarding the energy security of valued customers like Bangladesh and delivering the reliable energy they require for socio-economic development and prosperity."

Concluding his remarks, His Excellency Mr. Al-Kaabi thanked the working teams from both sides for their dedicated work to reach this agreement, adding: "I would also like to express our gratitude to His Highness the Amir, Sheikh Tamim bin Hamad Al Thani, for his wise leadership and his continued guidance to and support of the energy sector."

Qatar currently delivers more than 3.5 million tons per annum of LNG to Bangladesh. With this new SPA, QatarEnergy reaffirms its position as the LNG supplier of choice for its partners in the South Asia LNG markets.

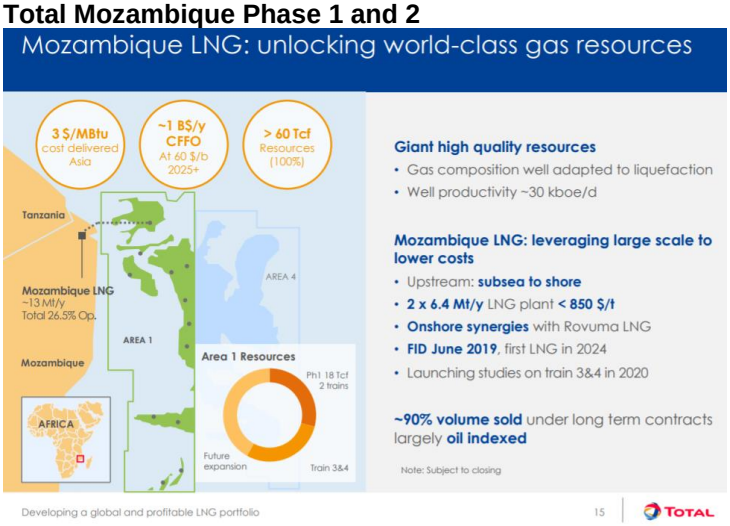
Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?

Posted Wednesday April 28, 2021. 9:00 MT

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

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

Total Mozambique Phase 1 and 2



Source: Total Investor Day September 24, 2019

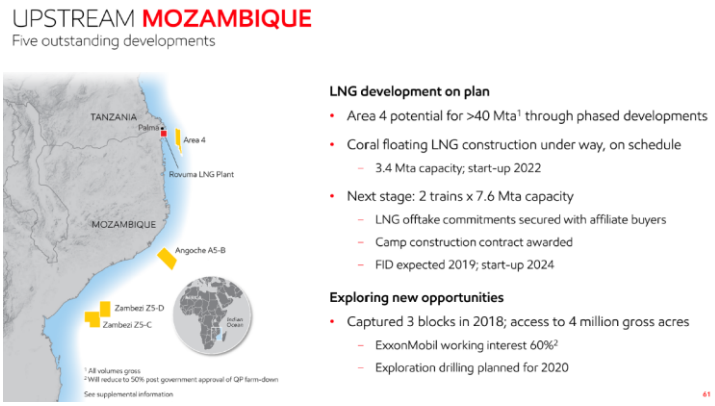
Total's Mozambique force majeure is no surprise, especially the need to the restoration of security and stability "in a sustained manner". Yesterday, Total announced [LINK] "*Considering the evolution of the security".* No one should be surprised by the force majeure or the sustained manner caveat. SAF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

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

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

continuing thru the 2020s. And we believe all LNG forecasts included this 5.0 bcf/d to be in service in the 2020s as Mozambique had been considered the best positioned LNG supply to access Asia after Australia and Papua New Guinea. (i) Eni Coral Sul (Rovuma Basin) FLNG of 0.45 bcf/d planned in service in 2022. [LINK] This is an offshore floating LNG vessel that is still expected to be in service in 2022. (ii) Total Phase 1 to add 1.7 bcf/d with an in service originally planned for 2024. We expect the in service data to be pushed back to at least 2026 assuming Total gives a development restart approval in Dec 2021. In theory, this would only be a 1 year loss of time. However, Total has let services go, the project will be idle for 9 months, it isn't clear if the need to get people out quickly let them do a complete put the project on hold, and how many people will be on site maintaining the status of the development during the force majeure. Also what new procedures and safety will be put in place for a restart. These all mean there will be added time needed to get the project back to where it was when force majeure was declared ie. why we think a 12 month time delay will be more like an 18 month project delay. (iii) Exxon's Rozuma Phase 1 LNG will add 2.0 bcf/d and, pre-Covid, was expected to be in service in 2025. We believe the delays related to security and safety at Total are also going to impact Exxon. We find it highly unlikely the Exxon board would take a different security and safety decision than Total. Pre-pandemic, Exxon's March 6, 2019 Investor Day noted their operated Mozambique Rovuma LNG Phase 1 was to be 2 trains each with 1.0 bcf/d capacity for total initial capacity of 2.0 bf/d with FID expected in 2019 and first LNG deliveries in 2024. The 2019 FID expectation was later pushed to be expected just before the March 2020 investor day. But the pandemic hit, and on March 21, 2020, we tweeted [LINK] on the Reuters story "*Exclusive: Coronavirus, gas slump put brakes on Exxon's giant Mozambique LNG plan"* [LINK] that noted Exxon was expected to delay the Rovuma FID. There was no timeline, but the expectation was that FID would now be in 2022 (3 years later than original timeline0 and that would push first LNG likely to 2027. (iv) Total Phase 2 was to add 1.3 bcf/d. There was no firm in service date but it was expected to follow closely behind Phase 1 to maintain services. That would have put it originally in the 2026/2027 period. But if Phase 1 is pushed back 2 years, so will Phase 2 so more likely 2028/2029.. (v) Total Phase 1 + 2 and Exxon Rozuma Phase 1 total 5.0 bcf/d and would have been (and still are) in all LNG supply forecasts for the 2020s. (vi) We aren't certain if the LNG supply forecasts include Exxon Rozuma Phase 2 ,which would be an additional 2.0 bcf/d on top of the 5.0 bcf/d noted above. Exxon Rozuma has always been expected to be at least 2 Phases. This has been the plan since the Anadarko days given the 85 tcf size of the resource on Exxon's Area 4. There was no firm in service data for Phase 2, but it was expected they would also closely follow Phase 1 to maintain services. We expect that original timeline would have been 2026/2027 and that would not be pushed back to 2029/2030. (vii) It doesn't matter if its only 5 bcf/ of Mozambique that is delayed 2 to 3 years, it will cause a bigger LNG supply gap and sooner. The issue for LNG markets is this is taking projects that are in development effectively out of the queue for some period.

Exxon Mozambique LNG



Source: Exxon Investor Day March 6, 2019

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

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

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

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

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

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

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

Source: IEA

On Track More Efforts Needed Not on Track

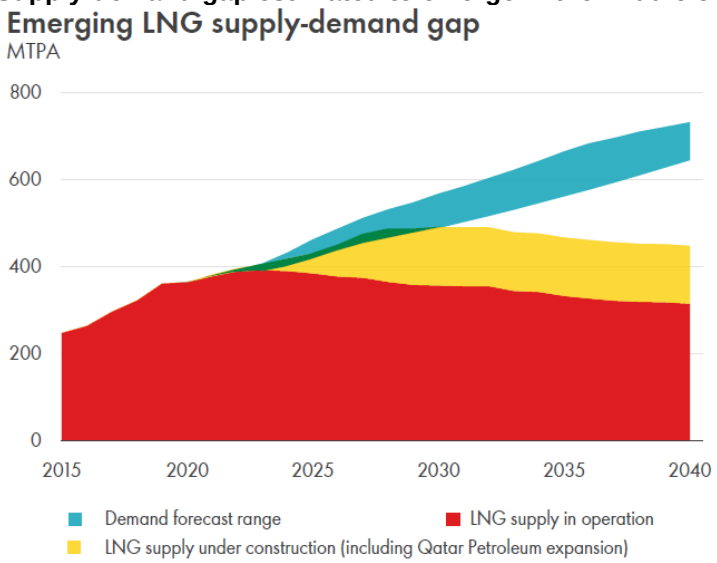
Source: IEA Tracking Clean Energy Progress, June 2020

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

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

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

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



Source: Shell LNG Outlook 2021, Feb 25, 2021

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

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

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

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

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

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

Posted 11am on July 14, 2021

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

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

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

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

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

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

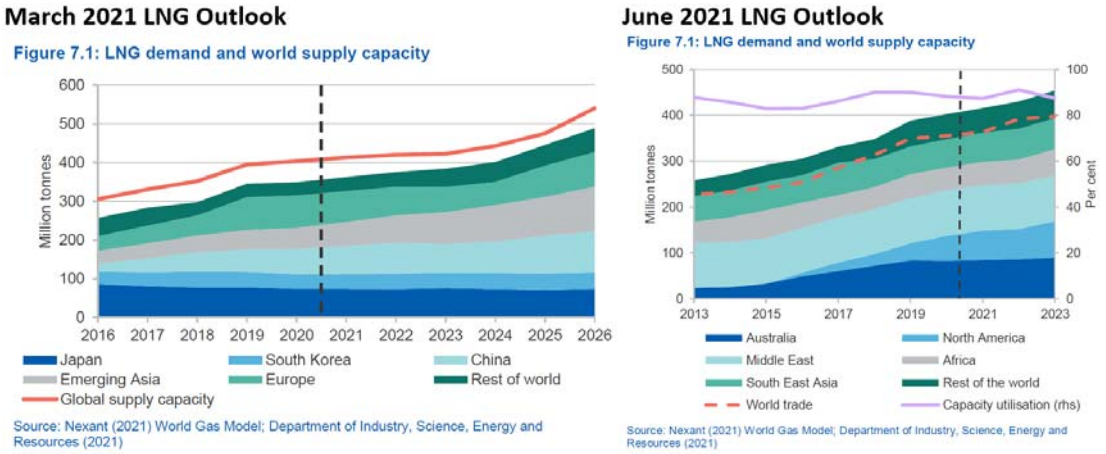
Common theme - new LNG supply is being delayed ie. [Total] Mozambique. Don't forget need capacity>demand due to normal maintenance, etc. Positive for LNG." (ii) Chevron's Gorgon. A big LNG story in H2/20 was the emergence of weld quality issues in the propane heat exchangers at Train 2, which required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

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

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

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

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

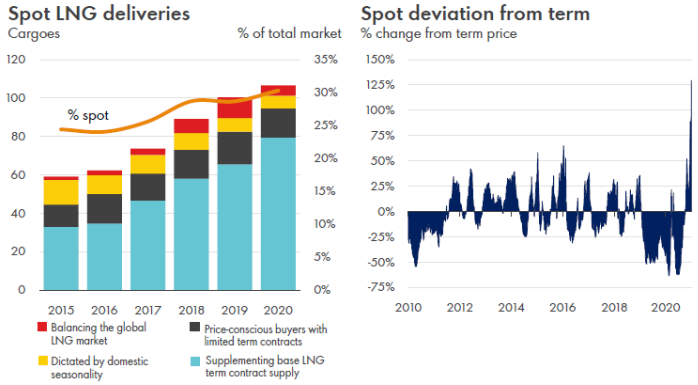


Source: Australia Resources and Energy Quarterly

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

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

Spot LNG deliveries and Spot deviation from term price



Source: Shell LNG Outlook 2021 on Feb 25, 2021

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

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

> Petronas/CNOOC is 10 yr supply deal for 0.3 bcf/d. On July 7, we tweeted [LINK] on the confirmation of a big positive to Cdn natural gas with the Petronas announcement [LINK] of a new 10 year LNG supply deal for 0.3 bcf/d with China's CNOOC. The deal also has special significance to Canada. (i) Petronas said "*This long-term supply agreement also includes supply from LNG Canada when the facility commences its operations by middle of the decade*". This is a reminder of the big positive to Cdn natural gas in the next 3 to 4 years – the start up of LNG Canada Phase 1 is ~1.8 bcf/d capacity. This is natural gas that will no longer be moving south to the US or east to eastern Canada, instead it will be going to Asia. This will provide a benefit for all Western Canada natural gas. (ii) First ever AECO linked LNG deal. It's a pretty significant event for a long term Asia LNG deal to now have an AECO link. Petronas wrote "*The deal is for 2.2 million tonnes per annum (MTPA) for a 10-year period, indexed to a combination of the Brent and Alberta Energy Company (AECO) indices. The term deal between PETRONAS and CNOOC is valued at approximately USD 7 billion over ten years.*" 2.2 MTPA is 0.3 bcf/d. (iii) Reminds of LNG Canada's competitive advantage for low greenhouse gas emissions. Petronas said "*Once ready for operations, the LNG Canada project paves the way for PETRONAS to supply low greenhouse gas (GHG) emission LNG to the key demand markets in Asia."*
>
> Qatar Petroleum/CPC (Taiwan) is 15 yr supply deal for 0.16 bcf/d. Pre Covid, Qatar was getting pressured to renegotiate lower its long term LNG contract prices. Now, it's signing a 15 year deal. On July 9, they entered in a new small long term LNG sales deal [LINK], a 15-yr LNG Sale and Purchase Agreement with CPC Corporation in Taiwan to supply it ~0.60 bcf/d of LNG. LNG deliveries are set to begin in January 2022. H.E. Minister for Energy Affairs & CEO of Qatar Petroleum Al-Kaabi said *"We are pleased to enter into this long term LNG SPA, which is another milestone in our relationship with CPC, which dates back to almost three decades. We look forward to commencing deliveries under this SPA and to continuing our supplies as a trusted and reliable global LNG provider."* The pricing was reported to be vs a basket of crudes.

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

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

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

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

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

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

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

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

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

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

https://www.gulf-times.com/article/662211/business/lng-supply-deals-with-european-customers-likely-after-summer-al-kaabi

LNG supply deals with European customers likely after summer: Al-Kaabi

PRATAP JOHNLAST EDITED JUNE 01, 2023 | 09:52 PM

HE the Minister of State for Energy Affairs, Saad bin Sherida al-Kaabi

QatarEnergy will sign liquefied natural gas (LNG) supply deals with European customers likely after the summer, HE the Minister of State for Energy Affairs, Saad bin Sherida al-Kaabi said on Thursday.
"Agreements with several European destinations... are very close to being finalised," he said at a media event at the QatarEnergy headquarters on Thursday.
Replying to a question by Gulf Times, al-Kaabi said, "We are talking to many companies in different countries. We are in advanced discussions with some customers. If I put everything that we have on the table and assume that we are going to be successful in signing everything that we are negotiating today, a big portion of it will be going to Asia, the other will be going to Europe and we will be more than sold out as far as volumes of North Field East (NFE) and the North Field South (NFS) are concerned."
QatarEnergy's LNG trading arm, QatarEnergy Trading, yesterday entered into a long-term LNG Sale and Purchase Agreement (SPA) with Bangladesh Oil, Gas and Mineral Corporation (Petrobangla) to supply up to 1.8mn tonnes per year (MTPY) of LNG to Bangladesh for 15 years, starting in 2026.
The gas would come from the ongoing North Field expansion, which seeks to enhance the country's liquefied natural gas (LNG) production capacity from 77 MTPY to 126 MTPY by 2026 or 2027.
North Field expansion comprises the North Field East (NFE) and the North Field South (NFS) expansion projects and is the industry's largest ever LNG project.
Al-Kaabi reiterated Qatar's commitment to honouring its contracts and said, "Until now we have not defaulted even on one cargo. We will honour our contracts fully and it is very important for us as an LNG producer and exporter. These supply arrangements reinforce our unwavering dedication to safeguarding the energy security of valued customers"."
He noted, "Today, we are proud to be the largest LNG supplier to Bangladesh and Petrobangla by a large margin, delivering more than 3.5mn tonnes per year from Qatar to Bangladesh. These supply arrangements reinforce our unwavering dedication to safeguarding the energy security of valued customers like Bangladesh and delivering the reliable energy they require for socio-economic development and prosperity."

PRATAP JOHN
PUBLISHED ON JUNE 01, 2023 | 09:48 PM

And LNG as a transition fuel, what are your, for the?

Darren W Woods {BIO 17692013 <GO>}

Yeah, I think if you look at LNG, first of all, backing out coal would be the first priority. I think for the planet that's looking to reduce emissions.

Job number one is to for the sources that you've got today, the infrastructure that you have today, back out coal, coal burning. You can do that with gas, replacing with gas. You can also make ammonia. People don't often know that you can put ammonia into coal plants and reduce the emissions associated with that.

You can convert natural gas into ammonia. And then ultimately, you can convert natural gas into hydrogen. And we think there's an equation. Longer term, you're backing out coal and burning gas.

I think even longer than that, you're basically converting that into ammonia or hydrogen and ultimately burning that with no emissions. So I think that'll be a transition that takes decades and decades. But there's a potential there for continued demand for gas, but the form in which it's combusted will change.

Bob Brackett {BIO 15346675 <GO>}

If you think about your career, you've been at ExxonMobil three decades, came out of Northwestern with a business degree, came out of A&M as an engineer.

Before that, how does the cycle we've just gone through, the shale cycle, how does that compare? Was that a historic? Are we past that? I mean, clearly we're not past shale or shale growth, but are we past that period of time of shale competition?

Darren W Woods {BIO 17692013 <GO>}

I think -- so, if you look at shale, it's not unlike a lot of the cycles or evolution that the industry has gone through, where technology unlocks additional resources that prior to that technology advancement, we didn't think those resources were available to the world. Deepwater is an example that came before that. So if you go back in time, there are stages in the industry where you see new resources coming on with the advent of new technologies or new techniques. Shale is just another example of that.

I think we've seen kind of the initial rush of shale and understand that proposition there. I think there's still a lot of technology to unlock, and that's still relatively immature in its development cycle. We're still only recovering about 10% of unconventional resources, and so there's a lot of oil being left in the ground based on industry's ability to tap into that and recover that oil. That's actually one of the areas we're very focused on.

We think -- when we bought into our XTO and got into the unconventional business, one of the challenges I gave the organization is this is -- I called it a short game. All these

independents are playing very short-term games in the unconventional space. We're kind of a long ball hitter, and so what does long ball look like in unconventional? And so you saw us in 2018 pivot that XTO business into a much, what I'd say, longer-term horizon, building infrastructure, developing more of a manufacturing approach, and very importantly, establishing a technology program. My challenge to the organization was to double recoveries and to find technologies that could unlock that.

And that's been a kind of a five-year program, and we're beginning to see the signs of some, I think, very promising new technologies to better unlock some of that resource, which I look forward to taking advantage of that technology and applying that to the resource that we know is there.

Bob Brackett {BIO 15346675 <GO>}

So I'm going to have to take that bit. So there's sort of two, if we think about conventional oil fields, we think about primary recovery and secondary recovery and tertiary or EOR, if we're going to get more recovery out of these shale wells, is it, which of those is the leverage? Is it better completions, better primary production?

Darren W Woods {BIO 17692013 <GO>}

Yeah, I think, if you look at that, the unconventional fracking's been around for around for a really long time. But the science of fracking is not well understood.

There are very few companies or organizations out there that could tell you exactly how fracks propagate and what that looks like underground. Our view is that's just a hard science project, a problem to solve. And so we can start looking at and have been doing a lot of work to understand how we better frack so you get better fracks all along the lateral. So if you think about capital efficiency, the longer laterals you can drill, the less capital you have to spend to access the resource.

One of the challenges with long laterals is how do you efficiently frack along that entire lateral? Make sure that you're opening the rock up along that entire length. We've been doing a lot of work there and see some really good progress around improving the ability to frack along a very long lateral. And then the other big challenge in terms of recovery is once you get those fracks, how do you keep them open so that the resources will flow? And doing a lot of work in that space to unlock and better keep the fracks open. And so that in my mind in my mind is where the first wave of technology will come into that field.

And we think we've got some promising techniques to employ there that will significantly improve our recovery.

Bob Brackett {BIO 15346675 <GO>}

We'll come back to the Permian, but we'll bring it back up the pyramid and just talk about longer-term capital allocation. How do you think about allocating to conventional Upstream oil and gas, the Downstream, Chemicals in a energy transition world, versus

https://en.shana.ir/news/473353/Owji-Energy-diplomacy-helps-boost-exports
28 May 2023 - 11:27 News Code: 473353

Owji: Energy diplomacy helps boost exports

'No offshore gas condensate storage now'

SHANA (Tehran) – Iran's Oil Minister Javad Owji on Saturday said his ministry has managed to increase exports through exercising energy diplomacy.

The minister made the remarks in a conference with heads of Iran's missions in foreign countries.

"Unfortunately, we had problems in the energy diplomacy sector and exports were not satisfactory in the previous administration," regretted Owji, adding the country had 87 million barrels of gas condensates in storage offshore before the incumbent government took over and witnessed numerous blackouts in 2020 winter due to the imbalance between gas production and consumption.

"Now, the offshore gas condensate storage has been reduced to zero, and we have made great investments and enjoyed banks and holdings' funding to redress the imbalance," he continued.

Investment incentives

Owji said, "We have adopted new method in oil contracts giving investors great incentives."

He said investments are necessary for the development of the liquefied natural gas (LNG) industry, encouraging foreign investors to fund the lucrative oil and gas projects.

The minister added good gas contracts have been signed, voicing Iran's readiness to cooperate with other countries and construct refineries and refinery-integrated petrochemical plants.

Almost self-sufficient

Owji said 70 to 80 percent of oil equipment are manufactured in Iran and "we are almost self-sufficient in this sector", adding all types of rotating equipment are produced by Iranian manufacturers.

"We are also producing 67 types of catalysts and exporting them," he stated.

The petrochemical exports have fetched the country $14 billion, concluded the oil minister.

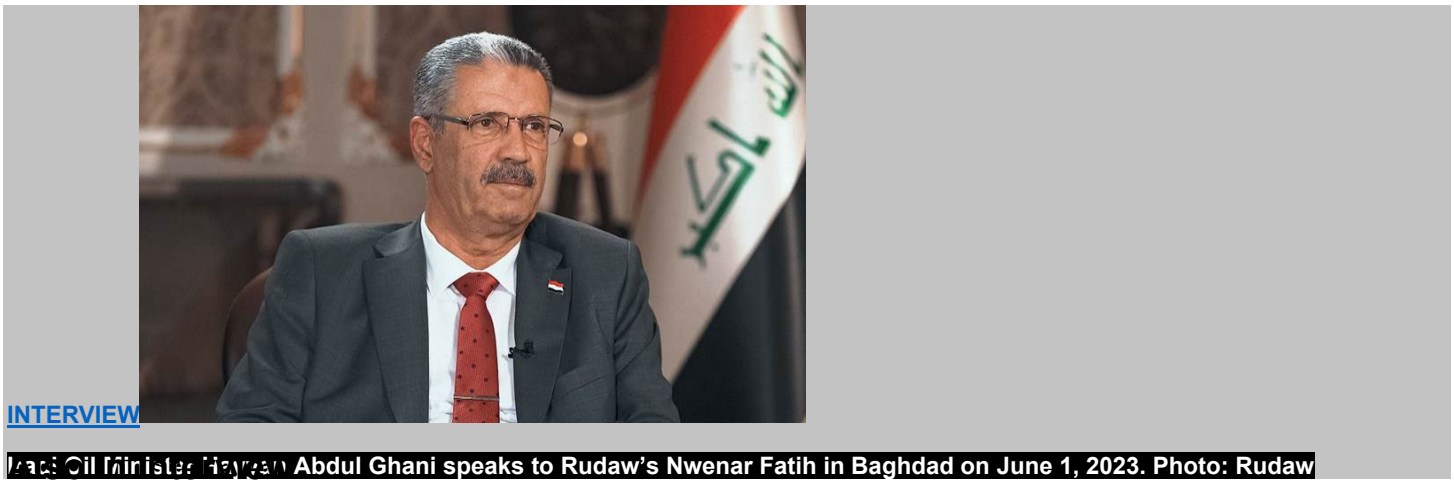
News Code 473353

https://www.rudaw.net/english/interview/03062023

Iraq committed to slash oil production to stabilize economy: Oil minister

16 hours ago

Julian Bechocha@JBechocha



INTERVIEW

Iraqi Oil Minister Hayyan Abdul Ghani speaks to Rudaw's Nwenar Fatih in Baghdad on June 1, 2023. Photo: Rudaw

ERBIL, Kurdistan Region - Iraq will remain committed to a cut in oil production by more than 200,000 barrels per day to combat dropping prices that impact its economy, the oil minister said in an exclusive interview on Thursday ahead of an OPEC meeting.

"The latest decision to cut production was more of a voluntary move, rather than an obligation. Phone calls were made with brothers including oil and energy ministers from OPEC and OPEC+. An agreement was struck because there was a decline in oil prices," Iraqi Oil Minister Hayyan Abdul Ghani told Rudaw's Nwenar Fatih in Baghdad.

The Iraqi oil ministry in April announced that it was reducing production by 211,000 barrels per day starting from May and effective until the end of 2023, adding to the two million barrels per day cut already in effect since November of last year.

"The reason behind this decision was the falling prices of oil, and to send guarantees for sustainable oil exports to the international market so a similar energy crisis would never happen again," Ghani said, noting that low oil prices have "significant impacts" on the economy of Iraq and other oil exporting countries.

"We want to remain committed to the production cut," he said.

Iraq's three-year federal budget, which is awaiting parliamentary approval, set oil prices at $70 per barrel and anything below that would plunge the country into economic instability.

"The preferred prices are $70 and beyond, roughly from $73 to $74, and it happened that sometimes the prices went much further up. We are committed to the prices, and maybe the key objective is that we want the prices to fix and stabilize around $80," Ghani said.

Ministers from the 13-nation OPEC cartel will meet on Sunday to discuss oil production cuts, possibly by as much as 1 million barrels per day, according to Reuters. The group controls around 40% of the world's crude.

Western nations, especially the United States, have repeatedly accused OPEC of manipulating and driving up

oil prices. Washington has called on member states such as Saudi Arabia to reconsider decisions to cut production.

"The indicators are that the prices will stabilize, and maybe in the next few months, the prices will go up further," said Ghani.

Regarding the suspension of Kurdistan Region's oil exports through the Iraq-Turkey pipeline amid an ongoing arbitration row between Baghdad and Ankara, Ghani said that Iraq took advantage of the suspension of exports to meet its reduction quota in OPEC as it had previously failed to make required cuts.

Oil firms operating in the Kurdistan Region have stopped production or reduced output after a Paris arbitration court in late March ruled that Turkey had violated an agreement with Iraq by allowing the Kurdistan Region to begin independent oil exports in 2014.

"With regard to Iraq, there were basically demands on Iraq's share because Iraq had violated its allocated share in the past, so we took advantage of this reduction," the minister stated.

The Kurdistan Regional Government (KRG) exported some 400,000 barrels of crude per day to global markets through Turkey. The Iraqi government also exported about 75,000 barrels of Kirkuk oil per day through the same pipeline.

The oil minister expressed optimism about the resumption of the Region's oil exports, saying that the stoppage "will not continue" amid ongoing negotiations with Turkey. "We hope to receive a delegation from the Turkish side soon to resolve this issue," he said.

As the federal government asserts some control over the Kurdistan Region's oil sales in the wake of the court ruling, Baghdad is reviewing existing contracts.

"We met with the companies and we agreed to establish a committee from both sides to review the contracts. Until now, the review process is not done, however what was signed was that SOMO will rely on the price that it relies on for all of Iraq's oil to export that oil," the minister said.

Ghani late last month **told** Rudaw that his ministry has signed contracts with four companies to buy about half a million barrels of oil from the Kurdistan Region per day, and that they have informed the Turkish side that Iraq is ready to export this amount of oil – between 400,000 and 500,000 barrels per day.

"We do not know what these contracts consist of and they are being reviewed now. If there are clauses or questions in the contracts that need to be amended, they will be amended, hopefully," he said.

TotalEnergies deal

A deal signed between the Iraqi government and France's TotalEnergies will see the energy giant build four projects for oil, gas, and renewables in southern Iraq over 25 years.

"The Total contract is special because it is a connected contract. It is called the southern Iraq integrated contract. This contract encompasses the development of gas, production of crude oil, and the usage of seawater for the equipment of the fields for oil purposes," Ghani said, adding that developing renewable energy sources such as solar is also part of the deal.

According to the minister, the contract consists of a facility processing 600 million cubic feet of gas per day,

which is expected to be completed in two stages over five years.

The agreement was reached after five rounds of talks between TotalEnergies CEO Patrick Pouyanne and Iraqi Prime Minister Mohammed Shia' al-Sudani.

The contract was initially signed in 2021 but faced a delay due to disagreements over Iraq's stake in the deal as Baghdad demanded a 40 percent share.

A final agreement was reached in early April and TotalEnergies will have the lion's share with a 40 percent stake in the Gas Growth Integrated Project (GGIP), followed by Iraqi state-owned Basra Oil Company with 30 percent, and QatarEnergy with 25 percent.

"Gas will be invested from five primary oil fields – the Majnoon field, the West Qurna 2 field, the Luhais field, the Artawi field, and the Tuba field," Ghani said. An increase in crude oil production "within the range of 150,000 to 160,000 barrels per day from the Artawi field" is also part of the deal as well as sulfur extraction from the oil and a seawater station capable of supplying 5 million barrels of water every two days.

"With the implementation of this contract, the gas flaring in these fields will completely stop," said Ghani.

Gas flaring

Gas flaring is the process of burning excess gas produced by oil wells that is not captured or used and is considered a convenient way to deal with the waste product known as associated petroleum gas. It is, however, extremely **damaging** to the environment and public health and contributes to climate change.

Iraq is notorious for the deadly and toxic practice of gas flaring. It is second only to Russia in terms of the amount of gas burned off, though the Iraqi population lives on average much closer to the flaring sites than Russians do.

"Iraq is compliant with the Paris Agreement and the development of its gas in its entirety to stop the flaring of gas by 2030," Ghani said, adding that he regrets such large quantities of gas are flared while Baghdad continues to import gas from Tehran for its electricity needs.

"Today we import large quantities of gas from our neighbor Iran, and we cannot continue like this, to import gas while the gas in our fields is flared. The majority of gas that is available to us is associated gas, which comes from the production of crude oil," the minister said.

"Within five years of activating the Total contract, there will be a stoppage of gas flaring from five oil fields," he said.

The World Bank **estimates** that Iraq flares around 17 billion cubic meters of gas every year, worth around $8 billion annually. The practice causes severe environmental damage and remains a serious risk to the wellbeing of people living close to flaring sites, from Basra to the Kurdistan Region, where refugee camps are particularly vulnerable.

Last month, Prime Minister Sudani **called** the practice of flaring gas "burning money on a daily basis" and reaffirmed his commitment to preserving Iraq's environment and reducing flaring.

When asked whether Western companies still look favorably on Iraq for investment, Ghani denied there is a problem and referred to British Petroleum (BP), the operator of Iraq's super-giant Rumaila oil field, as an example.

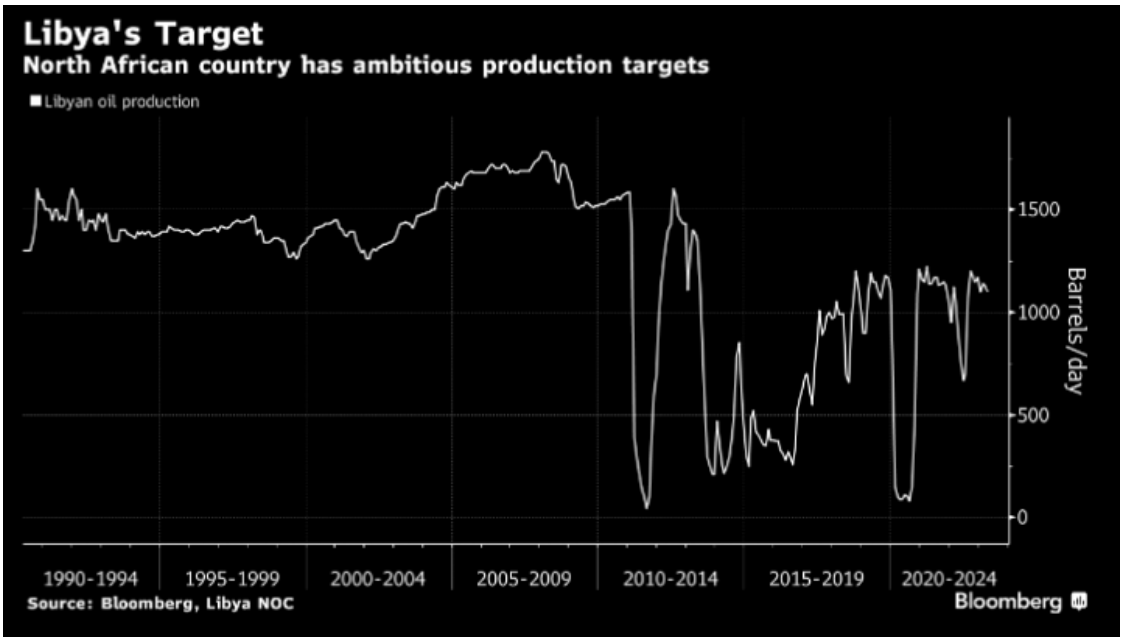
"If we discuss BP - British Petroleum - it operates the largest oil field in Iraq which is the Rumaila oil field, in its entirety from south to north. Thankfully, the situation is fine and the work is conducted in a proper way," he said, despite the oil field being called "the cemetery" by locals due to large amounts of gas flaring that have caused cancer rates to increase in the area.

Ali Hussein Jaloud, a 21-year-old Iraqi who lived next to BP's Rumaila oil field, died on April 21 of leukemia, a disease that was largely attributed by him and his family to the pollution from the flared gas that surrounds their community.

Following his death, the US-based Human Rights Watch called on the Iraqi government to "start by moving beyond simply acknowledging the problem to enacting and enforcing tight restrictions to restrict flaring" and make polluters compensate communities affected by the deadly practice.

Libya’s Oil Chief Sees Output Hitting Decade High by Year End
2023-05-19 08:57:31.222 GMT

By Hatem Mohareb
(Bloomberg) -- Libya is aiming to boost oil production by about 8% by December, a level that would catapult it to the highest in a over a decade.
North Africa’s biggest producer should be able to pump about 1.3 million barrels a day by the end of the year, Farhat Bengdara, chairman of the National Oil Company, said in an interview. Avoiding field closures and steps like improving oil workers’ pay already helped boost output by nearly a quarter since January 2022 to 1.2 million barrels a day now, he said.
Libya has been dogged by political turmoil ever since the overthrow and killing of leader Moammar Al Qaddafi in 2011, with a political stalemate pitting rival governments and factions against each other.
Crude production has frequently been held hostage to infighting, although output has held steady this year, offering hope that the country’s troubles might abate.
Read more: Libya Parliament Ousts PM It Chose as Challenger to Tripoli Rule
Bengdara said that $17 billion of investment across 45 projects would allow the National Oil Corp. to raise production to 2 million barrels a day within five years. If sustained, that would far exceed anything achieved during Qaddafi’s rule.



The government will offer rights to develop additional fields next year, he said.
NOC is restarting natural gas supply from the Mellitah complex after maintenance, Bengdara said. Flows should remain stable for the next 5 years after the work, he said.
The NOC on Tuesday signed a $1.05 billion deal with Italy’s

Eni SpA to capture flared natural gas, a project that should start operating in 2025.
International companies are working in the country to expand production at some its main fields, like the Waha deposit. Italy's Eni SpA and BP Plc are set to start new drilling operations by the end of 2024, Bengdara said.

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Exxon's Math Calls For Overall Global Oil Decline Rate of ~7%, A Very Bullish Argument For Post 2020 Oil Prices

Posted: Thursday June 20, 2019. 5:30pm Mountain

We believe Exxon presented a very bullish argument for oil prices beyond 2020 and that it has been overlooked because most readers only flip thru a slide deck and don't listen to or read transcripts of management's spoken words. Exxon's spoken words highlighted one of the forgotten (and perhaps most important) oil supply/demand concerns for post 2020 - the mid term challenge to replace increasing rate of overall global oil declines. And what is eye opening is Exxon's estimated overall global oil decline rate, which is way higher than any we can ever remember seeing. Its impossible to tell from the small oil supply/demand graph in the slide deck, but Exxon's spoken words says long term oil demand is 0.7% per year and then "*When you factor in depletion rates, the need for new oil grows at close to 8% per year and new gas at close to 6% per year*." Exxon may not specifically say what the global decline rate is, but their math is that the world needs new oil supply to grow annually at close to 8% to meet the 0.7% annual increase in oil demand and offset declines ie. an overall global decline rate of approx. 7%. This is an overall global oil decline rate for OPEC and non-OPEC. This compares to BP's estimate of overall global oil decline rate of 4.5% and we expect most are probably assuming something around 5%, certainly not above 6%. No one should be surprised by the increased decline rate given that high decline US shale and tight oil have increased by ~2.5 mmb/d in the last ~2 years. But an implied ~7% overall global oil decline rate is way higher than expectations. There is a big difference between needing to offset oil declines of ~7 mmb/d vs declines of ~4.5 mmb/d ie. an additional 2.5 mmb/d of new oil supply every year. Even if the implied difference was to 6%, it would still be an additional 1.5 mmb/d of new oil supply and that would also be very bullish for post 2020 oil. We recognize that the 2019/2020 oil supply demand story is the need for OPEC+ to keep cuts thru 2020, but Exxon's math implying ~7% overall global oil decline rate sets up a very bullish view for oil post 2020. We believe the reality to replace oil declines post 2020 is overlooked.

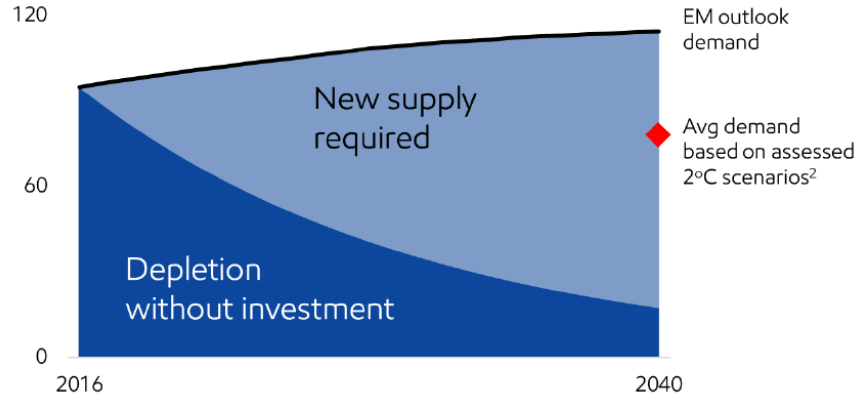
The 2019/2020 oil story - oil inventories still above the 5 yr ave and OPEC+ need to work together in 2020. There is increasing geopolitical risk to oil in a range of regions (Iran/Saudi Arabia, Libya, Venezuela, etc.) yet the prevailing tone to oil in the past month is negative with the concerns on trade wars/lower economic growth leading to weakness in oil demand. This was reinforced in the past week with the view that there is the need for OPEC+ to continue to work together in H2/19 and in 2020. Our SAF June 16, 2019 Energy Tidbits memo [LINK] reviewed the IEA's new monthly Oil Market Report [LINK], which included (i) "*OECD oil stocks remain at comfortable levels 16 mb above the five-year average"*, (ii) the EIA lowered its 2019 oil demand growth rate by 0.1 mmb/d to +1.2 mmb/d, and (iii) a negative first look at 2020 oil supply/demand. The EIA's first 2020 forecast puts more pressure on OPEC+ to continue with cuts through 2020. IEA says oil demand growth rate will grow from +1.2 mmb/d in 2019 to +1.4 mmb/d in 2020. This is a positive, however, it is more than offset as the IEA forecasts another year of big non-OPEC oil supply growth of +2.3 mmb/d in 2020. In theory a lesser call on OPEC of 0.9 mmb/d. The IEA writes "*A clear message from our first look at 2020 is that there is plenty of non-OPEC supply growth available to meet any likely level of demand, assuming no major geopolitical shock, and the OPEC countries are sitting on 3.2 mb/d of spare capacity".*

Exxon sees modest annual growth in oil demand, but peak oil demand sometime after 2040. Exxon presented at a US sellside energy conference on Tues. We expect a big reason why Exxon's oil outlook was ignored was that the presentation was almost all about providing a great detailed look at the Guyana oil play. Plus its headline annual growth rate for oil demand of 0.7% per year wouldn't have made anyone bullish, if anything maybe even more so so on oi. Exxon only provided some brief comments on their oil supply and demand outlook. Exxon said *"In this scenario, oil demand is expected to grow 0.7% per year, driven by commercial transportation and chemical"*. This compares to 2018 oi demand growth of 1.45% and even this year's lower oil demand growth rates of 1.15%. However, we recognize it is tough to get data from a small graph, but a positive tn the graph is that it seems to indicate that peak oil demand doesn't happen before 2040.

However, Exxon says new oil supply of 8% per year is needed to meet demand growth and offset decline rates. On one hand, we continue to be surprised that Exxon's view on new oil supply has received no attention. On the other, it makes sense because the vast majority of readers only flip thru a slide deck so will miss the spoken word that gives numbers and context to a slide. That was clearly the case with the Exxon presentation. If Exxon is anywhere near right, this is a hugely bullish view for mid/long term oil ie post 2020 oil. Exxon highlighted one of the forgotten oil supply/demand concerns is

the mid term challenge to replace global oil declines. And what is eye opening is Exxon's estimated decline rate, which is way higher than any we can ever remember seeing. Exxon says long term oil demand is 0.7% per year and then says "*When you factor in depletion rates, the need for new oil grows at close to 8% per year and new gas at close to 6% per year*." Exxon didn't specifically say that the overall global decline rate was ~7%, but the math looks straightforward. The world needs new oil supply to growth at close to 8% per year to meet 0.7% annual demand growth and to offset declines in global (OPEC and non-OPEC) oil production ie. the overall global oil decline rate is approx. 7%. This is an overall OPEC and non-OPEC global decline rate.

Oil Supply/Demand (moebd)

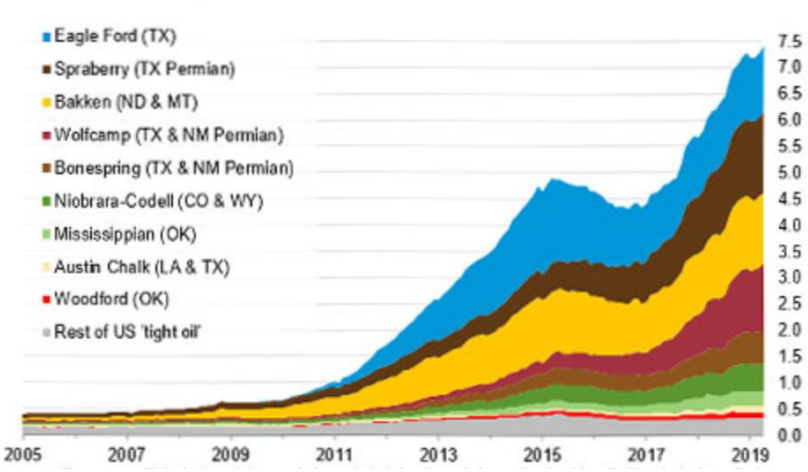


Source: Exxon US Sellside Conference Presentation June 18, 2019

Implies a huge overall global decline rate of ~7% - way higher than other estimates. It may well be the case that forecasters haven't updated their global oil decline models to reflect the impact of the US adding ~2.5 mmb/d of high decline shale and tight oil in the past two years. But we aren't aware of anyone who is using an overall global oil decline rate as high as 7%. We have seen estimates for 7% for decline rates for non-OPEC oil, but not for the decline rates overall for global oil. Rather, we expect that most have been assuming overall global oil decline rates of 4% to 5%. Later in the blog, we note our peak oil demand comment from Nov 6, 2017 (prior to the big ramp up in US shale and tight oil) that used Core Laboratories spring 2017 estimate for overall global oil decline of ~3.3%.

Exxon's global leadership position, especially in shale, is why we should pay attention to this view of significantly higher global oil decline rates. Everyone knows Exxon is the largest public international oil company and is in all major oil regions and all types of plays from conventional, oil sands, middle east, deepwater oil and shale oil, We believe that Exxon is viewed as the global leader in the Permian, and this shale oil leadership is critical to understand as we believe that the growth of US shale is the key reason for the increasing overall global oil decline rates. Exxon's shale oil leadership is why we should be paying attention to this estimate. The game changer to global oil decline rates has been the increasing oil production from high decline US shale and tight oil. The EIA estimates [LINK] that US shale and tight oil plays are up over 6 mmb/d this decade and ~2.5 mmb/d n the past two years alone.

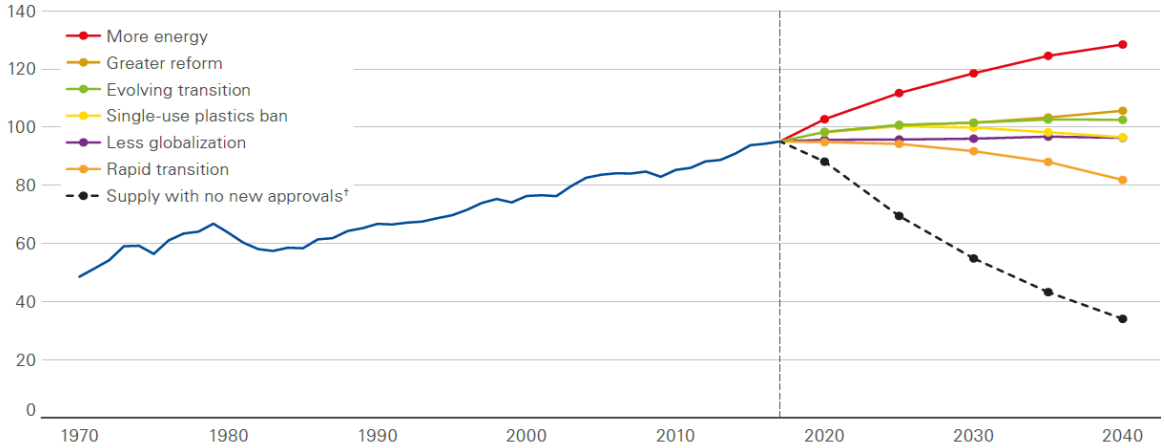
US Tight Oil Production – Selected Plays (Million barrels of oil per day)



Source: EIA

BPs recent forecast for overall global oil decline rate is 4.5% per year. BP's Energy Outlook 2019 Edition (Feb 14, 2019) [LINK] included their outlook for oil supply and demand and specifically on overall global oil decline rates. BP wrote "*Second, significant levels of investment are required for there to be sufficient supplies of oil to meet demand in 2040. If future investment was limited to developing existing fields and there was no investment in new production areas, global production would decline at an average rate of around 4.5% p.a. (based on IEA's estimates), implying global oil supply would be only around 35 Mb/d in 2040."* Below is the graph from their Energy Outlook 2019 Edition report.

Demand and Supply of Oil (Mbd)



Source: BP Energy Outlook 2019 Edition

If Exxon is anywhere close, this is a hugely bullish signal for mid/long term oil ie. post 2020 oil. We recognize that this significantly higher than expected overall global oil decline rate will take a year or two to work thru the current supply/demand fundamentals given where markets are today. However, over the mid term, the need to add ~7 mmb/d of new oil supply is a huge challenge for the world. The difference between an Exxon type view of ~7% declines vs BP's 4.5% declines is approx. 2.5 mmb/d of an additional new oil supply every year is needed to balance the markets. In reality, even if Exxon's implied overall global decline rate was ~6%, it would still be very bullish for mid/long term oil as this means an additional ~1.5 mmb/d of new global oil supply per year.

Its even more bullish for post 2020 oil than we thought in our Nov 6, 2017 peak oil demand blog. We have always been in the camp that believes peak oil demand is coming, but we have also been of the view that the post 2020 challenge to replace oil declines would be getting tougher. We believe Exxon's view of higher global oil decline rates is consistent with the ~2.5 mmb/d increase in US shale and tight oil in the past two years. And is way more bullish than we wrote in our Nov 6, 2017 blog "*Peak Oil Demand Is Coming, But >4 Mmb/d Of New Oil Supply Will Be Needed Every Year To Replace Declines To Get There*" [LINK], and "*We buy into the narrative of peak oil demand, believe it is inevitable, its visible and will happen before 2030. Peak oil demand will be from the cumulative impact of a number of factors including EVs, battery/storage, LNG for power, LNG for transportation, increased energy efficiency, etc. But the peak oil demand narrative forgets the most basic fundamentals of oil – industry has to add new oil supply every year to replace declines just to keep production flat. Even after today's big oil rally, long dated strips are still under $52 from 2020 thru 2025. We don't believe long dated 2020 thru 2025 strips are predictive of future prices or indicative of the marginal supply costs to add 4 to 5 million b/d every year in 2020 to 2025 or to add >3 million b/d every year once peak oil demand is reached and is in plateau. We believe these marginal supply costs are significantly higher and >$60. We believe oil can quickly move to a base of >$60 with this supply challenge and there will be longevity to this call as markets appreciate this challenge and that the marginal supply cost to add this much new oil production every year is well over $60. Peak oil demand won't take away from the challenge to add significant new oil production every year."* Note that our Nov 6, 2017 blog was based on the spring 2017 Core Laboratories estimate that the global world wide annual decline rate in oil was then 3.3%. But to Core Laboratories support, this estimate would have been before the ~2.5 mmb/d of added US shale and tight oil in the past two years.

http://en.people.cn/n3/2023/0529/c90000-20025007.html

Current COVID-19 infections in China feature low prevalence level, mild symptoms: experts

(Xinhua) 14:02, May 29, 2023

BEIJING, May 28 (Xinhua) -- The overall COVID-19 infections in China have entered a low prevalence level since mid-May, and the vast majority of COVID-19 patients show mild symptoms, medical experts said.

Despite a recent increase, the total amount of fever clinic patients is far less than that during the peak of the previous infection wave, and most of the patients only have mild symptoms, said Wang Liping, a researcher with the Chinese Center for Disease Control and Prevention (China CDC).

Wang said infections caused by the XBB subvariants of Omicron will continue to exist for some time, but the overall situation is stable and under control, with little impact on the normal operation of medical services and the whole society.

Another China CDC researcher Chen Cao noted that according to monitoring data, the XBB subvariants are now the predominant COVID-19 strains in both imported and local infections, with no significant change in pathogenicity.

Underpinned by China's multi-channel monitoring and early warning system, disease control authorities across the country will take effective response measures if any signal of new risks is detected, said Chen.

In general, reinfected COVID-19 patients show milder symptoms than their first infection, said Li Tongzeng, a chief doctor with the Department of Respiratory and Infectious Diseases at Beijing Youan Hospital, Capital Medical University.

Clinical data shows that most reinfected people have a mild sore throat and can break a fever more quickly, with their symptoms lasting three to five days, said Li.

(Web editor: Zhang Kaiwei, Liang Jun)

https://www.globaltimes.cn/page/202305/1291584.shtml

Young people are majority re-infected with COVID-19 in current wave: epidemiologist

By GT staff reporters Published: May 29, 2023 10:29 PM

With China entering a "wave-like" stage of COVID-19 infections, young people are the majority who get re-infected, and they have mild symptoms, said epidemiologists, dismissing severe risks of the recent surge. Several local governments rolled out new vaccines targeting Omicron variants to strengthen the population's immunity.

Recently, sporadic COVID-19 infections were reported in many cities across China, many of which are suffering from the second COVID-19 infection wave since last winter.

Li Tongzeng, chief physician in the respiratory and infectious diseases department at Beijing You'an Hospital, told the Global Times that the fever clinic recently received an increasing number of patients whose symptoms include fever, respiratory problems and coughing. A few patients suffered from

vomiting and diarrhea.

Li said that most of those who are infected for a second time have milder symptoms than the first time, and their test result could turn negative within three or five days.

The number of COVID-19 infections in China has increased since late April and entered a low-level and wave-like stage from mid-May with most cases showing only mild symptoms, experts from the Chinese Center for Disease Control and Prevention (CDC) said on Sunday.

Most of those who got infected again are young people, with mild symptoms in the upper respiratory tract, Tong Zhaohui, a respiratory and critical illness expert and director of the Beijing Institute of Respiratory Medicine, told the Global Times. He said that antibodies left over from previous infections remain, so there's nothing to worry about.

Versions of the Omicron subvariants, including XBB, remain the dominant variants in China, Chen Cao, a researcher from the CDC, was quoted by media as saying on Monday. He noted that the XBB subvariants account for 95.2 percent of the variants they sampled from May 15 to 21.

There are also concerns about the impact of COVID-19 sequela. Tong said that if symptoms such as fatigue, sleep deprivation or others persist for three months, then they can be categorized as sequela. But the expert said only a handful of patients suffer from COVID-19 sequela at the moment, and those whose COVID-19 symptoms persist for longer than three months are usually people with higher risks.

Although they dismissed the severe risk of this infection wave, epidemiologists again stressed the importance of vaccinating high-risk groups, such as old people and people with underlying diseases.

According to Sinocelltech, a Chinese pharmaceutical enterprise, its newest vaccines targeting four types of COVID-19 subvariants including Omicron have been used in Beijing and other cities.

China's national authority on May 24 approved clinical trials on the efficacy of SA58, a new anti-COVID-19 monoclonal antibody nasal spray that was jointly developed by Chinese vaccine manufacturer SINOVAC and a research team led by Chinese scientists Cao Yunlong and Xie Xiaoliang, SINOVAC told the Global Times on Monday. It said that the antibodies can effectively neutralize Omicron subvariants such as XBB, XBB.1 and XBB.1.5.

Last week, some community hospitals in Shanghai introduced new vaccines covering the Omicron variants, including the protein subunit vaccine and the mRNA vaccine, which are available for people aged above 18.

https://www.globaltimes.cn/page/202306/1291841.shtml

COVID-19 tops most reported infectious disease in Beijing for five consecutive weeks

By Global Times Published: Jun 02, 2023 01:33 PM

COVID-19 has continued to be the most reported infectious disease in Beijing for five consecutive weeks, media reported Friday citing latest weekly report of Beijing municipal health authority, as sporadic reports of COVID-19 reinfections have kept increasing in some Chinese cities recently, causing public concern over whether there will be a new wave of the virus.

According to the latest data, Beijing health authority received 30,750 reports of 16 notifiable infectious diseases in the 21st week of this year (May 22-28). The five most reported diseases were COVID-19, other infectious diarrheal diseases, influenza, tuberculosis and syphilis, accounting for about 99 percent of the total reports.

Respiratory infectious diseases are the most reported diseases this week, accounting for more than 97 percent of the total reports, media said.

From the 17th to the 21st week of this year, the reports of infectious diseases gradually climbed in Beijing. The data in the previous four weeks are 6,438, 10,508, 18,081 and 25,544, according to media reports.

Amid growing reports of COVID-19 infections in recent period with a certain part of them being reinfection cases, the State Council's Joint Prevention and Control Mechanism organized experts to respond to public concerns.

The proportion of pneumonia and severe cases in the COVID-19 reinfection patients is very low, and reinfected people are mainly young people with relatively mild symptoms that mainly manifest in the upper respiratory tract, media reported Thursday citing Tong Zhaohui, an expert in critical respiratory diseases under the National Health Commission.

The symptoms of reinfection patients are generally milder than those of the first infection, according to Tong. The symptoms of people infected for the first time in recent period are similar to those that were infected last winter, and are relatively severe, such as body temperature exceeding 38.5 C and severe respiratory symptoms, while the body temperature of reinfection cases generally does not exceed 38 C, he said.

"This is because people who were infected last winter still have certain antibodies, and the memory of cellular immunity exists, which has a protective effect on the human body [when they get reinfected this time]," Tong explained.

The elderly, those with underlying diseases and the unvaccinated are still high-risk groups, Wang Guiqiang, director of the infectious diseases department at Peking University First Hospital, told media. He encouraged people from these groups to get vaccinated or receive booster shots to reduce risk of severe diseases.

Wang also said medical service institutes in communities should conduct thorough investigation in local high-risk groups and timely provide antigen and nucleic acid tests.

Other people can take anti-virus drugs if they have fever after infection, Wang said, noting currently six kinds of anti-virus drugs are available in China.

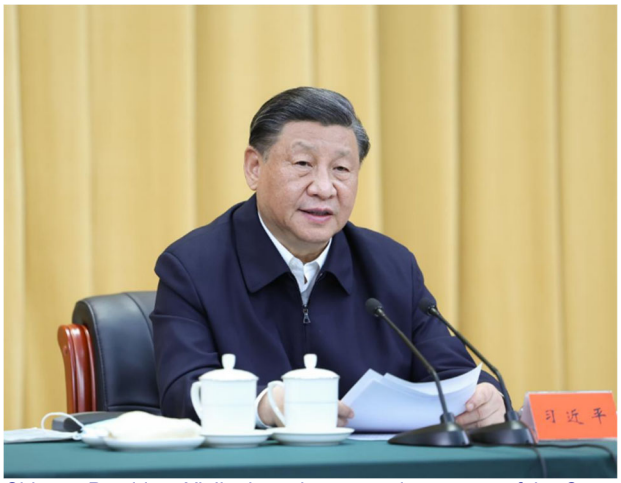
As to public concerns over the sequelae of COVID-19, Tong said that some people may experience symptoms such as fatigue, insomnia, and anxiety for a period of time after recovering from COVID-19 infection. These are only post-coronavirus symptoms, not sequelae. They can recover after a longer time and will not affect work and life.

Global Times

Pictures from Xinhua report https://english.news.cn/20230603/3c4cf21d26a8463b9e80b9cd11925032/c.html

Xi stresses building modern Chinese civilization

Source: Xinhua Editor: huaxia 2023-06-03 00:41:00



Chinese President Xi Jinping, also general secretary of the Communist Party of China Central Committee and chairman of the Central Military Commission, participates in a meeting on cultural inheritance and development, and delivers an important speech in Beijing, capital of China, June 2, 2023. (Xinhua/Ju Peng)

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Chinese President Xi Jinping, also general secretary of the Communist Party of China Central Committee and chairman of the Central Military Commission, participates in a meeting on cultural inheritance and development, and delivers an important speech in Beijing, capital of China, June 2, 2023. (Xinhua/Wang Ye)

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Embargoed until 0945 CST (0145 UTC) 1 June 2023

Caixin China General Manufacturing PMI™

Manufacturing output growth improves to 11-month high

Manufacturing business conditions in China improved for the first time in three months during May, according to latest PMI data. Production expanded at the quickest rate in nearly a year, supported by a fresh rise in overall new business amid reports of firmer client demand. This in turn contributed to increases in purchasing activity and stocks of inputs. At the same time, further improvements in supplier capacity helped to shorten average delivery times and ease cost pressures. Notably, input costs fell solidly in May, with firms often passing on savings to clients in the form of lower selling prices.

However, business confidence around the 12-month outlook for output slipped to a seven-month low in May amid concerns over lingering global economic uncertainty. As a result, firms maintained a cautious approach to staff hiring, with employment falling again in May.

The headline seasonally adjusted *Purchasing Managers' Index™ (PMI™)* – a composite indicator designed to provide a single-figure snapshot of operating conditions in the manufacturing economy – picked up from 49.5 in April to 50.9 in May. Crucially, the latest reading was above the neutral 50.0 level to signal the first improvement in the health of the manufacturing sector since February. Though mild, the pace of improvement was stronger than the post-pandemic average.

Helping to push the headline index higher was a strong and accelerated rise in production during May. Notably, the rate of growth picked up from April's three-month low and was the best seen since June 2022.

Greater intakes of new business was central to the latest improvement in output. Though modest, the rate of new order growth was the second-quickest seen over the past two years, with a number of firms noting firmer demand conditions and new customer wins. New export business increased at a slightly faster pace.

Higher new orders prompted firms to raise their buying activity again midway through the second quarter, though the rate of growth slipped to a four-month low. Nevertheless, this helped to drive a renewed increased in stocks of purchases. Stocks of finished goods meanwhile fell fractionally on the month.

Average delivery times for inputs shortened again in May, with firms often stating that this was due to increased capacity at suppliers and improved material availability.

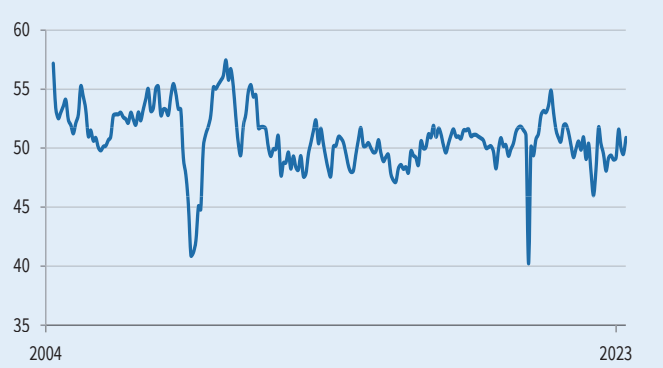
The improvement in supply chains led to a further easing of cost pressures in May. In fact, average input costs fell solidly for the second month in a row. Manufacturers noted that prices had fallen for a variety of inputs, notably metals, food and fuel. However, intense market competition often led firms to share cost savings with clients, with companies cutting their selling prices at a solid rate.

Although firms registered improvements in output and demand in May, business confidence regarding the 12-month outlook for production slipped to a seven-month low. While many firms projected that further improvements in new business, new product development and company expansions would support growth, others expressed concerns over lingering economy uncertainty, particularly overseas.

As a result, firms maintained a cautious approach to staff hiring, with employment across the sector falling in May and at the quickest rate since February 2020. Despite lower staff numbers, capacity pressures appeared to ease, with backlogs falling slightly for the first time in five months. Some firms noted that greater production levels had enabled them to process outstanding orders.

China General Manufacturing PMI

sa, >50 = improvement since previous month



Sources: Caixin, S&P Global

Key findings:

Stronger increase in output as firms see fresh upturn in new business

Input costs fall solidly

Employment continues to decline as business confidence softens

New Export Orders Index

sa, >50 = growth since previous month

Sources: Caixin, S&P Global

Employment Index

sa, >50 = growth since previous month

Sources: Caixin, S&P Global

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

"The Caixin China General Manufacturing PMI in May grew 1.4 points from the previous month to 50.9, returning to expansion as both supply and demand picked up.

"Both manufacturing supply and demand improved. Manufacturing output grew significantly, with the related subindex logging its highest since June 2022. The subindex for total new orders recorded its second-highest reading since May 2021 as surveyed businesses reported more clients and demand, even though demand remained a bit weaker than supply. External demand remained stable, with the gauge for new export orders rising marginally within expansionary territory. Exports of intermediate goods significantly outperformed shipments of consumer and investment products.

"Manufacturing employment continued to deteriorate. In a stark contrast to the improvements in supply and demand, the job market contracted at a faster pace in May, with the employment subindex plumbing the lowest level since February 2020. Manufacturers were reluctant to hire workers as they sought to trim staffing levels and increase efficiency. The falling number of workers in the sector didn't have much of an effect on backlogs of work, which remained stable overall in May.

"Prices continued to plunge. As deflationary pressure has grown, the gauges for input and output prices remained well below 50 for the second straight month, logging their second-lowest readings since early 2016. Input prices were dragged down by falling food, fuel and industrial metals costs, while prices charged to customers were constrained by heated market competition.

"Supplier delivery times got even shorter in May. The related subindex ticked up slightly inside expansionary territory as suppliers maintained sufficient stocks and delivery times improved. Meanwhile, manufacturers' quantity of purchases and stocks of raw materials both grew marginally.

"Manufacturers remained optimistic, but the reading for expectations for future output worsened in May from the previous six months, though it stayed above 50. In fact, the reading was 2.6 points below the long-term average, as manufacturers showed concern about economic uncertainty.

"In a nutshell, manufacturing activity improved in May. Both supply and demand expanded, but employment sank to a three-year low. Businesses stepped up purchasing, inventories of raw materials grew marginally, logistics picked up, prices continued to slump, and manufacturers' optimism wavered.

"In general, April's official economic data fell short of expectations, raising doubts about the sustainability of the post-Covid recovery. In May, China's manufacturing sector experienced a patchy recovery, as shown in the Caixin PMI: market supply and demand improved significantly, and businesses purchased more raw materials and stepped up replenishing their inventories. In contrast, the job market shrank, prices plunged, and manufacturers grew less optimistic about the future. The divergence points to the fact that current economic growth lacks internal drive and that market entities lack sufficient confidence, highlighting the importance of expanding and restoring demand. Currently, stabilizing employment, increasing income and bolstering expectations through proactive fiscal policy should be prioritized given a dire job market and mounting deflationary pressure."

Survey methodology

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

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

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

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

For more information on the survey methodology, please contact: economics@ihsmarkit.com.

Survey dates and history

Data were collected 12-22 May 2023.

Data were first collected April 2004.

About PMI

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

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

About Caixin

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

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PMI™ by S&P Global

EXTENDED RANGE FORECAST OF ATLANTIC SEASONAL HURRICANE ACTIVITY AND LANDFALL STRIKE PROBABILITY FOR 2023

We have increased our forecast and now call for a near-average Atlantic basin hurricane season in 2023. While we anticipate a robust El Niño for the peak of the Atlantic hurricane season, the tropical and subtropical Atlantic have continued to anomalously warm to near-record levels. El Niño increases vertical wind shear in the Caribbean and tropical Atlantic, but the anomalous warmth in the tropical and subtropical Atlantic may counteract some of the typical El Niño-driven increase in vertical wind shear. The probability of U.S. major hurricane landfall is estimated to be near the long-period average. As is the case with all hurricane seasons, coastal residents are reminded that it only takes one hurricane making landfall to make it an active season for them. They should prepare the same for every season, regardless of how much activity is predicted.

(as of 1 June 2023)

By Philip J. Klotzbach[1], Michael M. Bell[2] and Alexander J. DesRosiers[3]
In Memory of William M. Gray[4]

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

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

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Project Sponsors:

[1] Senior Research Scientist
[2] Professor
[3] Graduate Research Assistant
[4] Professor Emeritus

ATLANTIC BASIN SEASONAL HURRICANE FORECAST FOR 2023

Forecast Parameter and 1991-2020 Average (in parentheses)	Issue Date 13 April 2023	Issue Date 1 June 2023	Observed Activity Through May 31 2023	Total Seasonal Forecast (Includes Unnamed Storm*)
Named Storms (14.4)	13	14	1	15
Named Storm Days (69.4)	55	57.75	2.25	60
Hurricanes (7.2)	6	7	0	7
Hurricane Days (27.0)	25	30	0	30
Major Hurricanes (3.2)	2	3	0	3
Major Hurricane Days (7.4)	5	7	0	7
Accumulated Cyclone Energy Index (123)	100	123	2	125
ACE West of 60°W (73)	55	68	2	70
Net Tropical Cyclone Activity (135%)	105	132	3	135

*The National Hurricane Center noted on May 11th that an unnamed subtropical storm formed in the Atlantic in January. As such, this storm is now counted as a 2023 system. Since the formal report on the unnamed storm has yet to be written, we are currently using the Naval Research Laboratory track file on the system for its statistics.

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

1) Entire continental U.S. coastline - 43% (average from 1880–2020 is 43%)

2) U.S. East Coast Including Peninsula Florida (south and east of Cedar Key, Florida) - 21% (average from 1880–2020 is 21%)

3) Gulf Coast from the Florida Panhandle (west and north of Cedar Key, Florida) westward to Brownsville - 27% (average from 1880–2020 is 27%)

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

1) 47% (average from 1880–2020 is 47%)

ABSTRACT

Information obtained through May indicates that the 2023 Atlantic hurricane season will have activity near the 1991–2020 average. We estimate that 2023 will have an additional 14 named storms (average is 14.4), 57.75 named storm days (average is 69.4), 7 hurricanes (average is 7.2), 30 hurricane days (average is 27.0), 3 major (Category 3-4-5) hurricanes (average is 3.2) and 7 major hurricane days (average is 7.4). The National Hurricane Center recently identified that a subtropical storm formed in January, so counting that system, we are predicting 15 total named storms in the basin this year. The probability of U.S. major hurricane landfall is estimated to be near the long-period average. We predict Atlantic basin Accumulated Cyclone Energy (ACE) and Net Tropical Cyclone (NTC) activity in 2023 to be approximately 100 percent of their 1991–2020 average.

This forecast is based on an extended-range early June statistical prediction scheme that was developed using ~40 years of past data. Analog predictors are also utilized. We are also including statistical/dynamical models based off of 25–40 years of past data from the European Centre for Medium Range Weather Forecasts, the UK Met Office, the Japan Meteorological Agency and the Centro Euro-Mediterraneo sui Cambiamenti Climatici model as four additional forecast guidance tools. While there remains considerable spread in our model guidance this year, the model guidance has generally shifted towards a more active season, necessitating an increase in the forecast numbers with this update.

The tropical Pacific is currently characterized by warm neutral ENSO conditions. El Niño development appears imminent. However, the intensity of a potential El Niño event remains uncertain. El Niño typically reduces Atlantic hurricane activity through increases in vertical wind shear. However, sea surface temperatures in the eastern and central tropical Atlantic are near or at record levels, so despite the high potential for an El Niño, the impacts on tropical Atlantic/Caribbean vertical wind shear may not be as strong as is typically experienced given the extremely warm Atlantic.

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

The early June forecast has good long-term skill when evaluated in hindcast mode. The skill of CSU's forecast updates increases as the peak of the Atlantic hurricane season approaches. We also present probabilities of exceedance for hurricanes and Accumulated Cyclone Energy to give interested readers a better idea of the uncertainty associated with these forecasts.

Congress of the United States
Washington, DC 20515

European Parliament

May 23, 2023

The Honorable Joseph R. Biden, Jr.
President of the United States
The White House
1600 Pennsylvania Avenue NW
Washington, D.C. 20500

The Honorable Ursula von der Leyen
President of the European Commission
European Commission
Rue de la Loi 200
1040 Brussels
Belgium

The Honorable António Guterres
Secretary General
United Nations
760 United Nations Plaza
New York, NY 10017

Mr. Simon Stiell
Executive Secretary
United Nations Framework Convention
on Climate Change
P.O. Box 260124
D-53153 Bonn
Germany

Dear President Biden, President von der Leyen, Secretary General Guterres, and Executive Secretary Stiell:

We, the undersigned Members of the United States Congress and Members of the European Parliament, write to urge you to address our profound concern that current rules governing the United Nations Framework Convention on Climate Change (UNFCCC) permit private sector polluters to exert undue influence on UNFCCC processes. We address this letter to the executive leaders from the jurisdictions in which our respective bodies function and to UNFCCC leadership, who can work collectively to enact the requested reforms.

Ahead of the annual Conference of the Parties (COP28) climate negotiations, enacting policies that expose the influence of corporate polluters in UNFCCC meetings will help ensure that climate science takes precedence over climate delay and greenwashing. To that end, we urge you (i) to engage in diplomatic efforts to secure the withdrawal of the President-designate of COP28; and (ii) to take immediate steps to limit the influence of polluting industries, particularly major fossil fuel industry players whose business strategies lie at clear odds with the central goals of the Paris Agreement, at gatherings of the UNFCCC.

Last year, many of us attended or followed COP27 in Sharm-al-Sheikh, Egypt. While we applaud the United Nations for bringing tens of thousands of delegates together, leading to a historic agreement that will help developing countries deal with losses and damages from the

impacts of climate change, the conference ultimately failed to secure consensus from Parties to cut greenhouse gases in line with the agreed global goals.[1]

It did not escape our attention that at least 636 lobbyists from the oil and gas industries registered to attend last year's COP—an increase of more than 25% over the previous year. When the number of attendees representing polluting corporate actors, which have a vested financial interest in maintaining the status quo, is larger than the delegations of nearly every country in attendance, it is easy to see how their presence could obstruct climate action.[2]

As you know, there is no time to waste in sharply cutting carbon pollution on a global scale. The latest Intergovernmental Panel on Climate Change (IPCC) Report states that, to limit warming to 1.5 °C, global emissions must halve by 2030.[3] The planet has already warmed over 1.2°C, and our ability to reach the 1.5 °C goal is moving fast out of reach, with the IPCC pegging the current probability at just 38%.[4] Maintaining the status quo would lead to a catastrophic 2.8°C temperature rise by the end of the century.[5]

In this moment of great urgency, we must unblock the barriers that have kept us from advancing strong global collaboration to address climate change. One of the largest barriers to strong climate action has been and remains the political influence and obstruction of the fossil fuel industry and other major polluting industries. We have seen their negative influence in our home institutions; oil companies and their industry cheerleaders have spent billions of dollars lobbying both the European Parliament, other European institutions and Member States, and the U.S. Congress in order to obstruct or water down climate policy for years.[6] While we acknowledge that engaging with industry can play a role, we must consider this particular industry's track record on climate. Since at least the 1960s, the fossil fuel industry has known about the dangers of climate change posed by its products and, rather than supporting a transition to a clean energy

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[1] United Nations Framework on Climate Change. 2022. "COP27 Reaches Breakthrough Agreement on New 'Loss and Damage' Fund for Vulnerable Countries." 2022. https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries.

[2] Michaelson, Ruth. 2022. "'Explosion' in Number of Fossil Fuel Lobbyists at Cop27 Climate Summit." The Guardian. November 10, 2022. https://www.theguardian.com/environment/2022/nov/10/big-rise-in-number-of-fossil-fuel-lobbyists-at-cop27-climate-summit.

[3] Intergovernmental Panel on Climate Change. 2022. "The Evidence Is Clear: The Time for Action Is Now. We Can Halve Emissions by 2030." 2022. https://www.ipcc.ch/2022/04/04/ipcc-ar6-wgiii-pressrelease/.

[4] Intergovernmental Panel on Climate Change. 2022a. "Mitigation of Climate Change Summary for Policymakers Climate Change." www.ipcc.ch.

[5] United Nations Environment Programme. 2022. "Emissions Gap Report 2022." https://www.unep.org/resources/emissions-gap-report-2022.

[6] Laville, Sandra. 2019. "Fossil Fuel Big Five 'spent €251m Lobbying EU' since 2010." The Guardian. https://www.theguardian.com/business/2019/oct/24/fossil-fuel-big-five-spent-251m-lobbying-european-union-2010-climate-crisis; InfluenceMap. 2022. "EU Green Deal at Risk from Pro-Gas Lobbying." 2022. https://influencemap.org/pressrelease/EU-Green-Deal-at-Risk-from-Pro-Gas-Lobbying-17523; InfluenceMap. 2022a. "Big Oil's Real Agenda on Climate Change 2022." https://influencemap.org/report/Big-Oil-s-Agenda-on-Climate-Change-2022-19585; Sayki, Inci and Cloutier, Jimmy. 2023. "Oil and Gas Industry Spent $124.4 Million on Federal Lobbying Amid Record Profits in 2022." Open Secrets. https://www.opensecrets.org/news/2023/02/oil-and-gas-industry-spent-124-4-million-on-federal-lobbying-amid-record-profits-in-2022/.

future, has instead chosen to promote climate denial and spend millions of dollars to spread disinformation.[7]

Over a half century later, not one of 39 major global oil and gas companies, with collective market capitalization of $3.7 trillion, has adopted a business strategy that would limit warming to safe levels.[8] Several independent analyses agree that the sector is still not taking meaningful action to avoid the worst impacts of the crisis.[9]

Even more outrageous, the global oil and gas industry is expanding amid blockbuster profits to the tune of $4 trillion last year.[10] The sector has poured $160 billion into exploration for new fossil reserves since 2020, even as the IEA has stated that no new fossil fuel projects are compatible with limiting warming to 1.5°C.[11] In short, in the words of UN Secretary General Antonio Guterres, "We seem trapped in a world where fossil fuel producers and financiers have humanity by the throat."[12] It is time to alter this dangerous course.

In June, world governments will gather in Bonn for the UN Climate Change Conference, a critical opportunity to advance progress towards implementation of the Paris Agreement, in anticipation of COP28. It is essential that we seize the opportunity to take actionable steps to address and protect climate policy from polluting interference by adopting concrete rules that

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[7] Hall, Shannon. 2015. "Exxon Knew about Climate Change Almost 40 Years Ago." Scientific American, 2015. https://www.scientificamerican.com/article/exxon-knew-about-climate-change-almost-40-years-ago/; Center for Climate Integrity. 2019. "Documentary Evidence of Oil and Gas Companies' Knowledge of Their Products' Role in Causing Climate Change and Their Subsequent Deception Campaign." https://climateintegrity.org/uploads/media/DeceptionBinder_September2019.pdf; Paddison, Laura. 2023. "Exxon Accurately Predicted Global Warming from 1970s but Still Cast Doubt on Climate Science, New Report Finds." CNN, 2023. https://www.cnn.com/2023/01/12/business/exxon-climate-models-global-warming/index.html; McGreal, Chris. 2021. "How a Powerful US Lobby Group Helps Big Oil to Block Climate Action." The Guardian, 2021. https://www.theguardian.com/environment/2021/jul/19/big-oil-climate-crisis-lobby-group-api; "Big Oil vs the World Tells the 40 Year Story of How the Oil Industry Delayed Action on Climate Change." 2022. BBC. 2022. https://www.bbc.com/mediacentre/2022/big-oil-vs-the-world; McMullen, Jane, Gesbeen Mohammad, and Robin Barnwell. 2022. "The Power of Big Oil ." PBS Frontline. https://www.pbs.org/wgbh/frontline/documentary/the-power-of-big-oil/.

[8] Climate Action 100+. 2022. "Net Zero Company Benchmark." Climate Action 100+. September 2022. https://www.climateaction100.org/whos-involved/companies/?search_companies&company_sector=oil-and-gas.

[9] "Implied Temperature Rise - MSCI." 2023. MSCI. 2023. https://www.msci.com/our-solutions/climate-investing/implied-temperature-rise. Tong, David, and Kelly Trout. 2022. "Big Oil Reality Check: Updated Assessment of Oil and Gas Company Climate Plans." Washington, D.C. www.priceofoil.org; Oxford Net Zero, NewClimate Institute, Data-Driven EnviroLab (DDL), and Energy & Climate Intelligence Unit (ECIU). 2021. "Net Zero Tracker." September 28, 2021. https://zerotracker.net/#companies-table.

[10] Adomaitis, Nerijus. 2023. "Oil and Gas Industry Earned $4 Trillion Last Year, Says IEA Chief." Reuters, 2023. https://www.reuters.com/business/energy/oil-gas-industry-earned-4-trillion-last-year-says-iea-chief-2023-02-14/.

[11] https://www.iea.org/reports/net-zero-by-2050; Carrington, Damian. 2022. "Oil and Gas Firms Planning 'Frightening' Fossil Fuels Growth, Report Finds." The Guardian, 2022. https://www.theguardian.com/environment/2022/nov/10/oil-and-gas-firms-planning-cop27-climate-crisis-frightening-fossil-fuels-growth-report-finds.

[12] Freedman, Andrew. 2022. "UN Secretary-General António Guterres Warns on Climate Action." Axios. https://www.axios.com/2022/06/17/un-secretary-general-guterres-climate-white-house.

limit the influence of the fossil fuel industry and its lobbyists in the UNFCCC decision-making process.

First, we urge you to advocate for the United Arab Emirates to withdraw the appointment of Sultan Al Jaber, head of the Abu Dhabi National Oil Company, as President-designate of COP-28. The decision to name as president of COP28 the chief executive of one of the world's largest oil and gas companies—a company that has recently announced plans to add 7.6 billion barrels of oil to its production in the coming years, representing the fifth largest increase in the world—risks undermining the negotiations. With commonsense reforms to help restore public faith in the COP process severely jeopardized by having an oil company executive at the helm, we respectfully submit that different leadership is necessary to help ensure that COP28 is a serious and productive climate summit.

Second, as some of us have already urged, we request that you institute new policies for corporate participation at COPs and UNFCCC processes more broadly, including requiring participating companies to submit an audited corporate political influencing statement that discloses climate-related lobbying, campaign contributions, and funding of trade associations and organizations active on energy and climate issues. These statements should be reviewed, publicly disclosed, and scrutinized prior to any engagement in UNFCCC climate policymaking processes. The UNFCCC should also consider additional measures to establish a robust accountability framework to protect against undue influence of corporate actors with proven vested interests that contradict the goals of the Paris Agreement; such a framework was proposed last year with broad-based international support from over 450 organizations around the world and five UNFCCC constituencies representing thousands of organizations and millions of people.[13] These reforms would bring much-needed transparency to corporate climate-related political influencing activities around the world, and would help restore public faith that the COP process is not being abused by companies as an opportunity to greenwash.

Thank you for your attention to this important issue and for your ongoing dedication to building global support for reducing carbon pollution and combatting climate change. We welcome further engagement with you on this topic, and the lead co-signers are available to meet with you at a mutually agreeable time prior to the UN Climate Change Conference in June.

Sincerely,

[13] *See, e.g.*, Corporate Accountability. 2022. "Joint Civil Society Submission on Establishing a UNFCCC Accountability Framework to Protect Against Undue Influence of Polluting Interests." https://corporateaccountability.org/wp-content/uploads/2022/08/Joint-civil-society-submission-on-COI-Aug-17-2022_.pdf; Corporate Accountability. "Who We Are." Kick Big Polluters Out. Accessed May 9, 2023. https://kickbigpollutersout.org/who-we-are.

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UAE defends Big Oil's role at UN climate summit it will host

By FRANK JORDANS June 3, 2023

BERLIN (AP) — A senior United Arab Emirates official says the Gulf nation wants the U.N. climate summit it's hosting later this year to deliver "game-changing results" for international efforts to curb global warming, but doing so will require having the fossil fuel industry at the table.

Environmental campaigners have slammed the presence of oil and gas lobbyists at previous rounds of talks, warning that their interests are opposed to the goal of cutting greenhouse gas emissions — caused to a large degree by the burning of fossil fuels. Last month scores of U.S. and European lawmakers called for the summit's designated chair, Sultan al-Jaber, to be replaced over his links to the state-owned Abu Dhabi National Oil Company.

The issue complicates already-delicate negotiations ahead of the Nov. 30 - Dec. 12 meeting in Dubai, known as COP28. Preliminary talks starting next week in Bonn, Germany, will show whether the incoming UAE presidency can overcome skepticism among parties and civil society groups about its ability to shepherd almost 200 nations toward a landmark deal.

"Our leadership have been very clear to me and our team and our president that they don't want just another COP that's incremental," said Majid al-Suwaidi, who as director-general of the summit plays a key role in the diplomatic negotiations. "They want a COP that is going to deliver real, big, game-changing results because they see, just like all of us, that we're not on track to achieve the goals of Paris."

Governments agreed eight years ago in the French capital to limit global warming to 2 degrees Celsius (3.6 Fahrenheit) — ideally no more than 1.5C (2.7F). With average global temperatures already about 1.2C (2.2F) above pre-industrial levels, experts say the window to meet the more ambitious target is closing fast and even the less stringent goal would be missed if emissions aren't slashed sharply soon.

"We need to have everybody at the table discussing with us about how to deliver that," al-Suwaidi told The Associated Press in an interview Friday.

"We need to have oil and gas, we need to have industry, we need to have aviation, we need to have shipping, we need to have all the hard to abate sectors," he said, adding: "We need all those who can to deliver what they can, regardless of who they are."

Al-Suwaidi pushed back against the idea that the fossil fuel industry would undermine meaningful talks on emissions cuts the way they have done in the past

through disinformation campaigns and keeping quiet their own knowledge about climate change.

"There's no doubt in my mind that the position of the sector has completely changed and that they are engaging with us in an active conversation," he said.

Asked whether the talks might consider a phaseout of fossil fuels, proposed last year by nations most vulnerable to climate change, al-Suwaidi said the presidency wouldn't preclude such conversations.

"We welcome any kind of discussion," the UAE's former ambassador to Spain said. "But the parties are the ones who will decide what that discussion is and where we land."

So far, the summit's designated chair al-Jaber has emphasized the need to cut emissions, rather than end fossil fuel use itself. It's prompted fears that he might seek loopholes for untested carbon-capture technologies and so-called offsets — both aimed at reducing current levels of carbon dioxide in the air — that experts say distract from the need to end the release of greenhouse gases.

A report by the Intergovernmental Panel on Climate Change earlier this year called for a nearly two-thirds cut in carbon emissions by 2035, warning that failure to do so greatly increases the risk of droughts, flooding, sea-level rise and other short- and long-term disasters.

Al-Suwaidi, who also has a background in the oil and gas sector, said the UAE leadership is acutely aware of the existential threat global warming poses — including to their own sun-rich but water-poor nation — and is committed to shifting from fossil fuels toward renewable energy such as wind and solar.

"We want to be part of this new economy," he said. "We're a country that's running head first into this future."

Al-Suwaidi said agreeing a global goal for ramping up renewable energy in Dubai could send a positive message to those anxious about the transformation required to stop climate change.

"Rather than talking about what we're stopping people from doing, let's talk about how we're helping them to take up solutions ... that are going to help us to address the emissions problem we have," he said.

The talks in Dubai will also see countries conduct the first 'global stocktake' of efforts to tackle climate change since Paris in 2015. The results are meant to inform a new round of commitments by nations to cut emissions and address the impacts of global warming.

Poor nations are also demanding rich countries make good on pledges for vast financial support, an issue that has often caused major disagreements at past meetings.

“We need the developing world to leapfrog into this new climate system and we need to support that transition for them,” said al-Suwaidi. “Finance is going to be really fundamental at COP28.”

This will require rich countries, including the Group of Seven major economies, who are historically responsible for a large chunk of global emissions, to step up, he said.

“They have the technology. They have the know-how. They have the financial ability. We need them to take that leadership role and show us seriousness about addressing this challenge.”

https://www.theguardian.com/commentisfree/2023/jun/03/electric-vehicles-early-adopter-petrol-car-ev-environment-rowan-atkinson

OpinionMotoring

I love electric vehicles – and was an early adopter. But increasingly I feel duped

Rowan Atkinson

Sadly, keeping your old petrol car may be better than buying an EV. There are sound environmental reasons not to jump just yet

Sat 3 Jun 2023 08.00 BST

Electric motoring is, in theory, a subject about which I should know something. My first university degree was in electrical and electronic engineering, with a subsequent master's in control systems. Combine this, perhaps surprising, academic pathway with a lifelong passion for the motorcar, and you can see why I was drawn into an early adoption of electric vehicles. I bought my first electric hybrid 18 years ago and my first pure electric car nine years ago and (notwithstanding our poor electric charging infrastructure) have enjoyed my time with both very much. Electric vehicles may be a bit soulless, but they're wonderful mechanisms: fast, quiet and, until recently, very cheap to run. But increasingly, I feel a little duped. When you start to drill into the facts, electric motoring doesn't seem to be quite the environmental panacea it is claimed to be.

As you may know, the government has proposed a ban on the sale of new petrol and diesel cars from 2030. The problem with the initiative is that it seems to be based on conclusions drawn from only one part of a car's operating life: what comes out of the exhaust pipe. Electric cars, of course, have zero exhaust emissions, which is a welcome development, particularly in respect of the air quality in city centres. But if you zoom out a bit and look at a bigger picture that includes the car's manufacture, the situation is very

different. In advance of the Cop26 climate conference in Glasgow in 2021, Volvo released figures claiming that greenhouse gas emissions during production of an electric car are 70% higher than when manufacturing a petrol one. How so? The problem lies with the lithium-ion batteries fitted currently to nearly all electric vehicles: they're absurdly heavy, many rare earth metals and huge amounts of energy are required to make them, and they only last about 10 years. It seems a perverse choice of hardware with which to lead the automobile's fight against the climate crisis.

Unsurprisingly, a lot of effort is going into finding something better. New, so-called solid-state batteries are being developed that should charge more quickly and could be about a third of the weight of the current ones – but they are years away from being on sale, by which time, of course, we will have made millions of overweight electric cars with rapidly obsolescing batteries. Hydrogen is emerging as an interesting alternative fuel, even though we are slow in developing a truly "green" way of manufacturing it. It can be used in one of two ways. It can power a hydrogen fuel cell (essentially, a kind of battery); the car manufacturer Toyota has poured a lot of money into the development of these. Such a system weighs half of an equivalent lithium-ion battery and a car can be refuelled with hydrogen at a filling station as fast as with petrol.

If the lithium-ion battery is an imperfect device for electric cars, it's a complete non-starter for trucks because of its weight; for such vehicles hydrogen can be injected directly into a new kind of piston engine. JCB, the company that makes yellow diggers, has made huge strides with hydrogen engines and hopes to put them into production in the next couple of years. If hydrogen wins the race to power trucks – and as a result every filling station stocks it – it could be a popular and accessible choice for cars.

But let's zoom out even further and consider the whole life cycle of an automobile. The biggest problem we need to address in society's relationship with the car is the "fast fashion" sales culture that has been the commercial template of the car industry for decades. Currently, on average we keep our new cars for only three years before selling them on, driven mainly by the ubiquitous three-year leasing model. This seems an outrageously profligate use of the world's natural resources when you consider what great condition a three-year-old car is in. When I was a child, any car that was five years old was a bucket of rust and halfway through the gate of the scrapyard. Not any longer. You can now make a car for £15,000 that, with tender loving care, will last for 30 years. It's sobering to think that if the first owners of new cars just kept them for five years, on average, instead of the current three, then car production and the CO_2 emissions associated with it, would be vastly reduced. Yet we'd be enjoying the same mobility, just driving slightly older cars.

We need also to acknowledge what a great asset we have in the cars that currently exist (there are nearly 1.5bn of them worldwide). In terms of manufacture, these cars have paid their environmental dues and, although it is sensible to reduce our reliance on them, it would seem right to look carefully at ways of retaining them while lowering their polluting

effect. Fairly obviously, we could use them less. As an environmentalist once said to me, if you really need a car, buy an old one and use it as little as possible. A sensible thing to do would be to speed up the development of synthetic fuel, which is already being used in motor racing; it's a product based on two simple notions: one, the environmental problem with a petrol engine is the petrol, not the engine and, two, there's nothing in a barrel of oil that can't be replicated by other means. Formula One is going to use synthetic fuel from 2026. There are many interpretations of the idea but the German car company Porsche is developing a fuel in Chile using wind to power a process whose main ingredients are water and carbon dioxide. With more development, it should be usable in all petrol-engine cars, rendering their use virtually CO_2-neutral.

Increasingly, I'm feeling that our honeymoon with electric cars is coming to an end, and that's no bad thing: we're realising that a wider range of options need to be explored if we're going to properly address the very serious environmental problems that our use of the motor car has created. We should keep developing hydrogen, as well as synthetic fuels to save the scrapping of older cars which still have so much to give, while simultaneously promoting a quite different business model for the car industry, in which we keep our new vehicles for longer, acknowledging their amazing but overlooked longevity.

Friends with an environmental conscience often ask me, as a car person, whether they should buy an electric car. I tend to say that if their car is an old diesel and they do a lot of city centre motoring, they should consider a change. But otherwise, hold fire for now. Electric propulsion will be of real, global environmental benefit one day, but that day has yet to dawn.

- Rowan Atkinson is an actor, comedian and writer

Dan Tsubouchi @Energy_Tidbits · 6h

As usual, "The Man" Saudi Energy Minister keeps everyone guessing.

#OPEC+ ministers must have huge respect/fear for him as there aren't leaks!

#OOTT twitter.com/Amena__Bakr/st...

This Tweet was deleted by the Tweet author. Learn more

3 1,293

Dan Tsubouchi @Energy_Tidbits · 14h

#ChinaCovid

China state media

Same primary messaging that reinfection people are "generally milder than those of the first infection". But that means an undisclosed portion of the reinfections are more severe like last time

But looks like new disclosure on first timers "The... Show more

https://www.globaltimes.cn/page/202306/1291841.shtml

COVID-19 tops most reported infectious disease in Beijing for five consecutive weeks

By Global Times Published: Jun 02, 2023 01:33 PM

COVID-19 has continued to be the most reported infectious disease in Beijing for five consecutive weeks, media reported Friday citing latest weekly report of Beijing municipal health authority, as sporadic reports of COVID-19 reinfections have kept increasing in some Chinese cities recently, causing public concern over whether there will be a new wave of the virus.

According to the latest data, Beijing health authority received 30,750 reports of 16 notifiable infectious diseases in the 21st week of this year (May 22-28). The five most reported diseases were COVID-19, other infectious diarrheal diseases, influenza, tuberculosis and syphilis, accounting for about 99 percent of the total reports.

Respiratory infectious diseases are the most reported diseases this week, accounting for more than 97 percent of the total reports, media said.

From the 17th to the 21st week of this year, the reports of infectious diseases gradually climbed in Beijing. The data in the previous four weeks are 6,438, 10,508, 18,081 and 25,544, according to media reports.

Amid growing reports of COVID-19 infections in recent period with a certain part of them being reinfection cases, the State Council's Joint Prevention and Control Mechanism organized experts to respond to public concerns.

The proportion of pneumonia and severe cases in the COVID-19 reinfection patients is very low, and reinfected people are mainly young people with relatively mild symptoms that mainly manifest in the upper respiratory tract, media reported Thursday citing Tong Zhaohui, an expert in critical respiratory diseases under the National Health Commission.

The symptoms of reinfection patients are generally milder than those of the first infection, according to Tong. The symptoms of people infected for the first time in recent period are similar to those that were infected last winter, and are relatively severe, such as body temperature exceeding 38.5 C and severe respiratory symptoms, while the body temperature of reinfection cases generally does not exceed 38 C, he said.

"This is because people who were infected last winter still have certain antibodies, and the memory of cellular immunity exists, which has a protective effect on the human body [when they get reinfected this time]," Tong explained.

The elderly, those with underlying diseases and the unvaccinated are still high-risk groups, Wang Guiqiang, director of the infectious diseases department at Peking University First Hospital, told media. He encouraged people from these groups to get vaccinated or receive booster shots to reduce risk of severe diseases.

Wang also said medical service institutes in communities should conduct thorough investigation in local high-risk groups and timely provide antigen and nucleic acid tests.

Other people can take anti-virus drugs if they have fever after infection, Wang said, noting currently six kinds of anti-virus drugs are available in China.

As to public concerns over the sequelae of COVID-19, Tong said that some people may experience symptoms such as fatigue, insomnia, and anxiety for a period of time after recovering from COVID-19 infection. These are only post-coronavirus symptoms, not sequelae. They can recover after a longer time and will not affect work and life.

Global Times

2 4 5 3,178

Dan Tsubouchi @Energy_Tidbits · 16h

Breaking.

Fire at Calcasieu 135,000 b/d refinery in Lake Charles, Louisiana.

See 👇 @KPLC7News reports fire in an oil tank and not part of the refining process. Also that cause is lightning strike.

#OOTT
kplctv.com/2023/06/03/she...

Table 3. Capacity of Operable Petroleum Refineries by State as of January 1, 2022
(Barrels per Stream Day, Except Where Noted)

State/Refiner/Location	Atmospheric Crude Oil Distillation Capacity				Downstream Charge Capacity				
	Barrels per Calendar Day		Barrels per Stream Day			Thermal Cracking			
	Operating	Idle	Operating	Idle	Vacuum Distillation	Delayed Coking	Fluid Coking	Visbreaking	Other/Gas Oil
Louisiana	**2,922,541**	**0**	**3,051,155**	**0**	**1,541,000**	**563,700**	**0**	**0**	**11,800**
Alon Refining Krotz Springs Inc									
Krotz Springs	80,000	0	83,000	0	36,200	0	0	0	0
Calcasieu Refining Co									
Lake Charles	135,500	0	137,000	0	36,000	0	0	0	0
Calumet Cotton Valley Refining LLC									
Cotton Valley	15,020	0	14,000	0	0	0	0	0	0
Calumet Princeton Refining LLC									
Princeton	8,500	0	8,855	0	7,000	0	0	0	0
Calumet Shreveport Refining LLC									
Shreveport	57,000	0	60,000	0	29,000	0	0	0	0
Chalmette Refining LLC									
Chalmette	190,000	0	197,000	0	160,000	42,000	0	0	0
Citgo Petroleum Corp									
Lake Charles	418,000	0	440,000	0	230,000	110,000	0	0	0
Excel Paralubes									
Westlake	0	0	0	0	0	0	0	0	0
ExxonMobil Refining & Supply Co									
Baton Rouge	520,000	0	542,000	0	264,000	123,500	0	0	0
Marathon Petroleum Co LP									
Garyville	585,000	0	616,000	0	297,500	109,500	0	0	0
Phillips 66 Company									
Westlake	264,000	0	273,000	0	126,000	68,200	0	0	11,800
Placid Refining Co									
Port Allen	75,000	0	82,500	0	27,000	0	0	0	0
Shell Oil Products US									
Norco	226,721	0	260,000	0	91,300	28,500	0	0	0
Valero Refining - Meraux LLC									
Meraux	125,000	0	126,000	0	60,000	0	0	0	0
Valero Refining New Orleans LLC									
Norco	215,000	0	220,000	0	160,000	66,000	0	0	0
Michigan	**148,000**	**0**	**149,000**	**0**	**89,000**	**38,000**	**0**	**0**	**0**
Marathon Petroleum Co LP									
Detroit	140,000	0	149,000	0	89,000	38,000	0	0	0
Minnesota	**435,000**	**0**	**485,000**	**0**	**264,000**	**82,000**	**0**	**0**	**0**
Flint Hills Resources LP									
Saint Paul	336,000	0	378,000	0	234,000	82,000	0	0	0
St Paul Park Refining Co LLC									
Saint Paul	104,000	0	110,000	0	30,000	0	0	0	0
Mississippi	**393,940**	**0**	**410,000**	**0**	**264,875**	**104,000**	**0**	**0**	**0**
Chevron USA Inc									
Pascagoula	350,440	0	375,200	0	330,000	104,000	0	0	0
Ergon Refining Inc									
Vicksburg	26,500	0	27,300	0	16,000	0	0	0	0
Hunt Southland Refining Co									
Sandersville	11,000	0	12,500	0	6,875	0	0	0	0
Montana	**218,000**	**9,600**	**226,800**	**10,000**	**129,600**	**34,370**	**10,000**	**0**	**0**
Calumet Montana Refining LLC									
Great Falls	26,000	9,600	30,000	10,000	20,000	0	0	0	0

Energy Information Administration, Refinery Capacity 2022

1 5 12 4,339

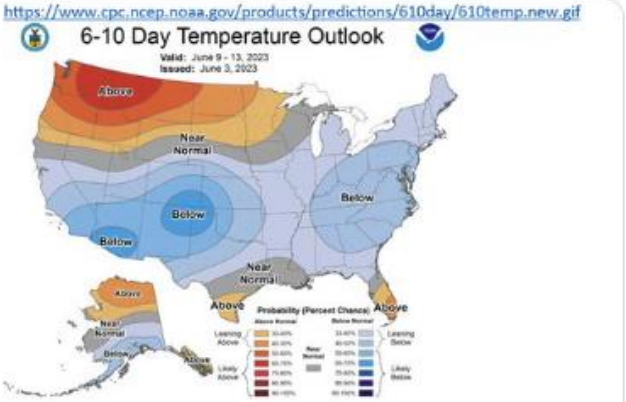
SAF

Dan Tsubouchi @Energy_Tidbits · 20h

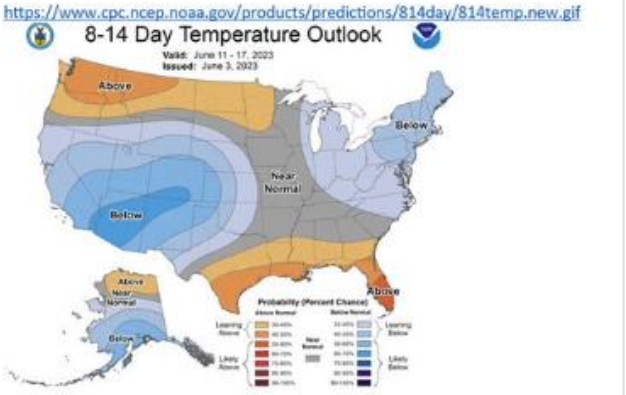
Today's @NOAA 6-10 & 8-14 day outlook covering June 9-17 calls for majority of US to move to normal/below normal.

Should keep pressure on HH #NatGas prices.
#OOTT

https://www.cpc.ncep.noaa.gov/products/predictions/610day/610temp.new.gif



https://www.cpc.ncep.noaa.gov/products/predictions/814day/814temp.new.gif



3 6 2,248

Dan Tsubouchi @Energy_Tidbits · 21h

No shortage in #LNG buyers for post 2026 supply

@qatarenergy CEO. IF can sign everything are negotiating today "big portion of it will be going to Asia, the other will be going to Europe & we will be more than sold out as far as volumes of NFE and NFS are concerned."

#OOTT

https://www.gulf-times.com/article/682211/business/lng-supply-deals-with-european-customers-likely-after-summer-al-kaabi

LNG supply deals with European customers likely after summer: Al-Kaabi

PRATAP JOHNLAST EDITED JUNE 01, 2023 | 09:52 PM

HE the Minister of State for Energy Affairs, Saad bin Sherida al-Kaabi

QatarEnergy will sign liquefied natural gas (LNG) supply deals with European customers likely after the summer, HE the Minister of State for Energy Affairs, Saad bin Sherida al-Kaabi said on Thursday.
"Agreements with several European destinations... are very close to being finalised," he said at a media event at the QatarEnergy headquarters on Thursday.
Replying to a question by Gulf Times, al-Kaabi said, "We are talking to many companies in different countries. We are in advanced discussions with some customers. If I put everything that we have on the table and assume that we are going to be successful in signing everything that we are negotiating today, a big portion of it will be going to Asia, the other will be going to Europe and we will be more than sold out as far as volumes of North Field East (NFE) and the North Field South (NFS) are concerned."
QatarEnergy's LNG trading arm, QatarEnergy Trading, yesterday entered into a long-term LNG Sale and Purchase Agreement (SPA) with Bangladesh Oil, Gas and Mineral Corporation (Petrobangla) to supply up to 1.8mn tonnes per year (MTPY) of LNG to Bangladesh for 15 years, starting in 2026.
The gas would come from the ongoing North Field expansion, which seeks to enhance the country's liquefied natural gas (LNG) production capacity from 77 MTPY to 126 MTPY by 2026 or 2027.
North Field expansion comprises the North Field East (NFE) and the North Field South (NFS) expansion projects and is the industry's largest ever LNG project.
Al-Kaabi reiterated Qatar's commitment to honouring its contracts and said, "Until now we have not defaulted even on one cargo. We will honour our contracts fully and it is very important for us as an LNG producer and exporter. These supply arrangements reinforce our unwavering dedication to safeguarding the energy security of valued customers"."
He noted, "Today, we are proud to be the largest LNG supplier to Bangladesh and Petrobangla by a large margin, delivering more than 3.5mn tonnes per year from Qatar to Bangladesh. These supply arrangements reinforce our unwavering dedication to safeguarding the energy security of valued customers like Bangladesh and delivering the reliable energy they require for socio-economic development and prosperity."

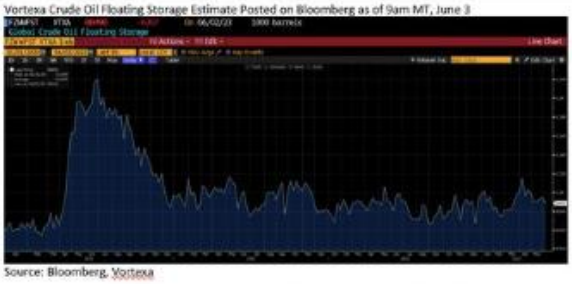
PRATAP JOHN
PUBLISHED ON JUNE 01, 2023 | 09:48 PM

3 14 2,236

Dan Tsubouchi @Energy_Tidbits · Jun 3

#Vortexa crude #Oil floating storage at June 2 est 88.49 mmb, -6.31 mmb WoW vs revised up May 26 of 94.80 mmb. See 👇 table, -29.46 mmb vs 04/07, is this Iran selling floating storage, RUS oil being rerouted after floating, blending or transferred?
Thx @Vortexa @business. #OOTT

Vortexa Crude Oil Floating Storage Estimate Posted on Bloomberg as of 9am MT, June 3



Source: Bloomberg, Vortexa

Posted June 3, 9am MT

Date	FZWWFST VT... Last Px
Fr 06/02/2023	88496
Fr 05/26/2023	94797
Fr 05/19/2023	92877
Fr 05/12/2023	90256
Fr 05/05/2023	89028
Fr 04/28/2023	99073
Fr 04/21/2023	102.658k
Fr 04/14/2023	96064
Fr 04/07/2023	114.915k
Fr 03/31/2023	99827
Fr 03/24/2023	97139

May 27, 9am MT

Date	FZWWFST VT... Last Px
Fr 05/26/2023	85268
Fr 05/19/2023	91091
Fr 05/12/2023	88648
Fr 05/05/2023	88236
Fr 04/28/2023	96851
Fr 04/21/2023	101.561k
Fr 04/14/2023	94718
Fr 04/07/2023	113.444k
Fr 03/31/2023	98654
Fr 03/24/2023	95716
Fr 03/17/2023	86493

May 20, 9am MT

Date	FZWWFST VT... Last Px
Fr 05/19/2023	94004
Fr 05/12/2023	89302
Fr 05/05/2023	84926
Fr 04/28/2023	97375
Fr 04/21/2023	100.845k
Fr 04/14/2023	96206
Fr 04/07/2023	114.358k
Fr 03/31/2023	99009
Fr 03/24/2023	95814
Fr 03/17/2023	86466
Fr 03/10/2023	80745

Source: Bloomberg, Vortexa

Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted	Recent Peak	
Region	June 2/23	May 26/23	WoW	May 26/23	Apr 7/23	June 2 vs Apr 7
Asia	46.70	50.94	-4.24	43.89	58.31	-11.61
Europe	6.97	4.83	2.14	4.73	23.80	-16.83
Middle East	4.91	6.47	-1.56	6.11	6.07	-1.16
West Africa	5.80	7.85	-2.25	6.53	5.97	-0.17
US Gulf Coast	0.11	1.01	-0.90	1.09	3.17	-3.06
Other	24.20	23.7	-1.09	23.12	17.60	4.17
Global Total	88.49	94.80	3.25	85.27	114.92	-29.46
Vortexa crude oil floating storage posted on Bloomberg 9am MT on June 3						
Source: Vortexa, Bloomberg						

Prepared by SAF Group: https://safgroup.ca/news-insights/

1 3 16 3,055

Dan Tsubouchi @Energy_Tidbits · Jun 3

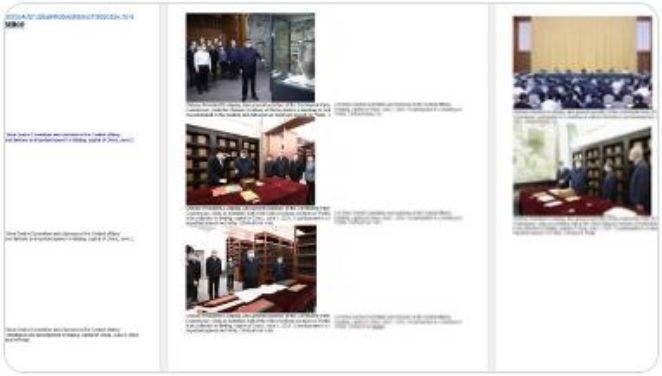
#ChinaCovid

Can't help notice a lot of mask wearing by Xi and others in Thurs/Fri meetings in today's Xinhua Xi story.

Hope state media reports are accurate.

But would think Xi's mask wearing will cause some to go slow/pause their activities a bit?

#OOTT



> **Dan Tsubouchi** @Energy_Tidbits · May 31
>
> 
>
> Will increasing #ChinaCovid cases only have a minor impact on activity/economy?
>
> Hope the state media reports are accurate.
>
> ...

2 8 3,688

Dan Tsubouchi @Energy_Tidbits · Jun 2

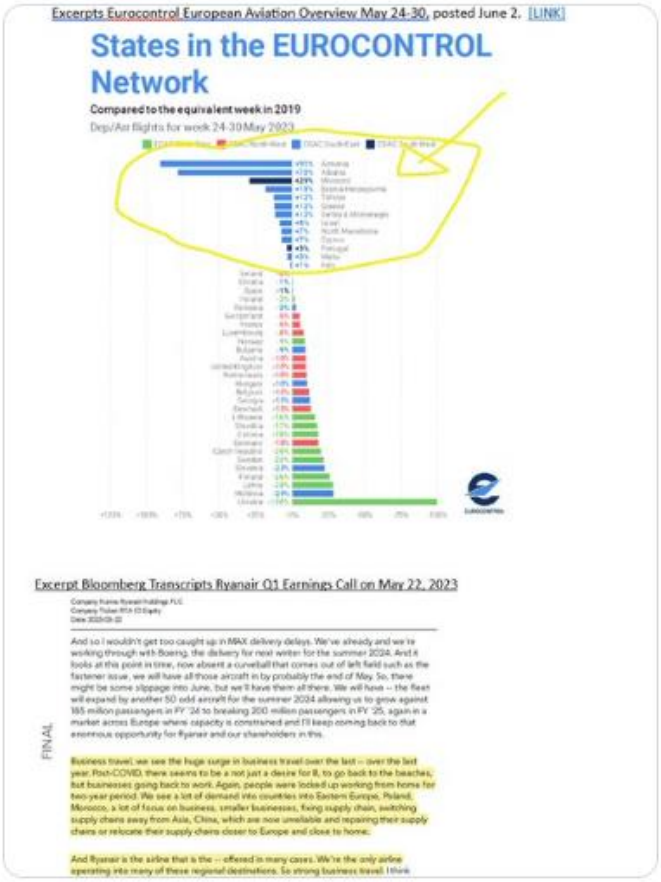
#SupplyChain

EU moving supply chains away from Asia, China closer to home ie. Morocco, Eastern EU, @Ryanair CEO O'Leary.

He should know with increasing business & +21% flights vs 2019.

@eurocontrol May 24-30 vs 2019: Armenia +91%, Albania +78%, Morocco +29%, etc

#OOTT



1 1,062

Dan Tsubouchi @Energy_Tidbits · Jun 2

#EU average daily air flights continues to steadily ramp up & in line with @eurocontrol base case fcast.

May 24-30 wk: +4% WoW, 93% of 2019
May: 92% of 2019.
YTD May: +15% MoM, 89% of 2019.

One surprise, EU/Asia Pacific flights only -10% of 2019, expected bigger gap.

#OOTT

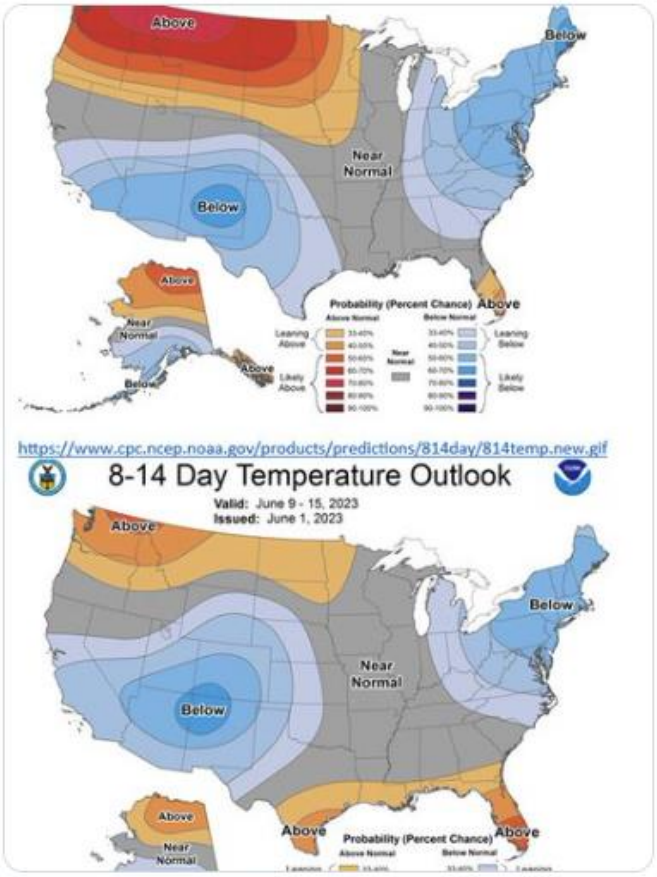
1 4 1,098

Dan Tsubouchi @Energy_Tidbits · Jun 1

Today's @NOAA 6-10 & 8-14 day outlook covering June 7-15 calls for majority of US to move to normal/below normal.

Should keep pressure on HH #NatGas prices.

#OOTT



1 3 1,918

Dan Tsubouchi @Energy_Tidbits · 25m

Asian #AirCargo reflecting global economic uncertainty.

@AAPAirlines Apr data for 40 Asian airlines.

"export activity remained relatively muted, held back by declines in new business orders & trade barriers due to geopolitical tensions… ". Air cargo -5.5% YoY in Apr

For… Show more

PRESS RELEASE

Asia Pacific Airlines Apr-2023 Traffic Results

1 | 1 | 312

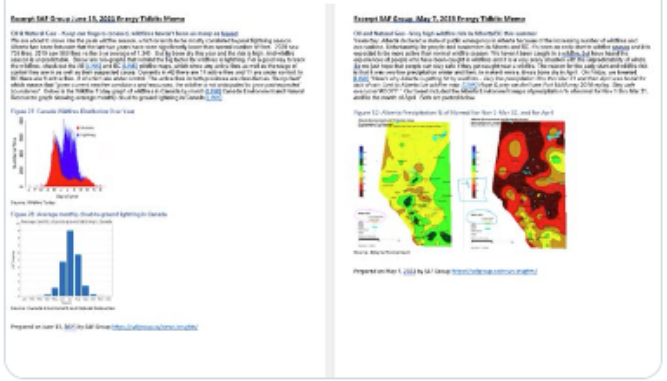
Dan Tsubouchi @Energy_Tidbits · 4h

#Wildfire season peak is normally July/Aug.

Unfortunately, the 👇 05/09/23 tweet is still relevant.

Hope everyone can be safe this summer

#OOTT

> **Dan Tsubouchi** @Energy_Tidbits · May 9
>
> #Wildfire season is, unfortunately, only just starting with normal peak Jul/Aug.
>
> See 👇 excerpts.
>
> SAF 06/13/21 Energy Tidbits re distribution of wildfires by month in Canada.
>
> SAF 05/07/23 Energy Tidbits re heightened 2023 risk with very low precipitation in Nov 1-Mar 31 &… Show more
>
> 
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> Excerpt SAF Group June 13, 2021 Energy Tidbits Memo
>
> Excerpt SAF Group, May 7, 2023 Energy Tidbits Memo

1,225

Dan Tsubouchi @Energy_Tidbits · 10h

For those not near their laptop,@EIAgov just released its #Oil #Gasoline #Distillates inventory as of May 26. Table below compares EIA data vs @businessexpectations and vs @APIenergy yesterday. Prior to release, WTI was $68.80.

#OOTT

Oil/Products Inventory May 26: EIA, Bloomberg Survey Expectations, API

(million barrels)	EIA	Expectations	API
Oil	4.49	-1.50	5.20
Gasoline	-0.21	-1.10	1.89
Distillates	0.99	1.00	1.85
	5.27	-1.60	8.94

Note: Oil is commercial so builds in a draw of 2.6 mmb in SPR for the May 26 week
Note: Included in the oil data, Cushing had a 1.63 mmb build for May 26 week
Source EIA, Bloomberg
Prepared by SAF Group https://safgroup.ca/news-insights/

1 2 1,071

Dan Tsubouchi @Energy_Tidbits · 12h

reminder technology success in the #Oil #NatGas sector gets quickly adopted by other producers, small to big

our e@p company drilled one of the first horizontal wells is se sask in late 80s because we saw initial success and were a fast copycat

#OOTT

> **Dan Tsubouchi** @Energy_Tidbits · 12h
>
> Headlines on #Exxon sees technology to improve recovery rate of shale
>
> see 👇 08/09/22 tweet, have to believe refrack is part of this approach. Also perhaps engineered gas for enhanced recovery
>
> question does this provide US shale growth or more likely better chance for plateau.... twitter.com/Energy_Tidbits... Show more

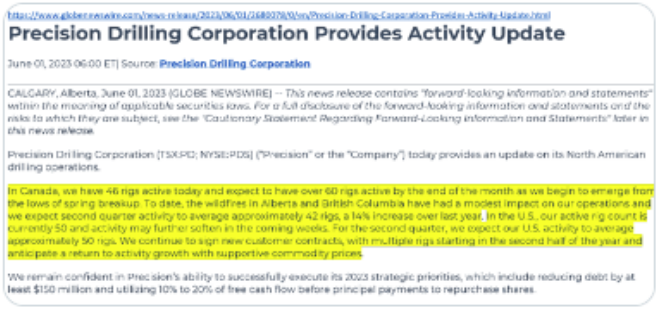
1 2 1,792

Dan Tsubouchi @Energy_Tidbits · 13h

. $PD's rig activity update vs 04/26 Q1 call

US down. "active rig count is currently 50 & may further soften in coming weeks". 04/26 "hard to guide an exit level for PD's Q2 activity, i believe we'll have sustained activity levels in at least the low 50s"

CAN in line. "expect... Show more



https://www.globenewswire.com/news-release/2023/06/01/2680078/0/en/Precision-Drilling-Corporation-Provides-Activity-Update.html

Precision Drilling Corporation Provides Activity Update

June 01, 2023 06:00 ET | Source: **Precision Drilling Corporation**

CALGARY, Alberta, June 01, 2023 (GLOBE NEWSWIRE) -- *This news release contains "forward-looking information and statements" within the meaning of applicable securities laws. For a full disclosure of the forward-looking information and statements and the risks to which they are subject, see the "Cautionary Statement Regarding Forward-Looking Information and Statements" later in this news release.*

Precision Drilling Corporation (TSX:PD; NYSE:PDS) ("Precision" or the "Company") today provides an update on its North American drilling operations.

In Canada, we have 46 rigs active today and expect to have over 60 rigs active by the end of the month as we begin to emerge from the lows of spring breakup. To date, the wildfires in Alberta and British Columbia have had a modest impact on our operations and we expect second quarter activity to average approximately 42 rigs, a 14% increase over last year. In the U.S., our active rig count is currently 50 and activity may further soften in the coming weeks. For the second quarter, we expect our U.S. activity to average approximately 50 rigs. We continue to sign new customer contracts, with multiple rigs starting in the second half of the year and anticipate a return to activity growth with supportive commodity prices.

We remain confident in Precision's ability to successfully execute its 2023 strategic priorities, which include reducing debt by at least $150 million and utilizing 10% to 20% of free cash flow before principal payments to repurchase shares.

4 11 1,954

Dan Tsubouchi @Energy_Tidbits · 22h

Interesting to see how Europe and US markets respond to China Caixin Manufacturing PMI big beat that was released at 7:45pm MT.

But initial 15 minute reaction to Hang Seng, Brent oil and copper is positive.

#OOTT

> **Dan Tsubouchi** @Energy_Tidbits · 23h
>
> 
>
> Positive surprise to upside. China Caixin Manufacturing PMI returns to expansion. May 50.9 vs Est 49.5, Apr 49.5, Mar 50.0, Feb 51.6, Jan 49.2. "China's manufacturing experienced a patchy recovery..... market supply and demand improved ...

1 · 5 · 2,373

Dan Tsubouchi @Energy_Tidbits · 23h

Positive surprise to upside. China Caixin Manufacturing PMI returns to expansion. May 50.9 vs Est 49.5, Apr 49.5, Mar 50.0, Feb 51.6, Jan 49.2. "China's manufacturing experienced a patchy recovery..... market supply and demand improved significantly". Thx @SPGlobalPMI. #OOTT

2 7 19 8,189

Dan Tsubouchi @Energy_Tidbits · May 31

US #Oil production continues to surprise to upside.

See 👇 EIA excerpts

@EIAgov Form 914: Mar/23 actuals of 12.696 mmb/d is +995,000 b/d YoY vs Mar/22 of 11.701 mmb/d.

Also +473,000 b/d vs EIA estimates of weekly oil production that were 12.223 mmb/d.

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4 3 6 2,621

Dan Tsubouchi @Energy_Tidbits · May 31

Luxury travelers are back! No surprise to anyone who has traveled in last year.

Luxury hotelier, Rosewood CEO Sonia Cheng.

"globally, actually travel demand has reeached, exceeding like above 6% over 2019 level"

they are seeing China close to 90% of 2019.

Thx @YvonneManTV... Show more

Rosewood Hotel Group CEO Sonia Cheng with Bloomberg's Yvonne Man and Rishaad Salamat on Bloomberg Markets: Asia at approx. 8:30pm MT on May 30, 2023. Bloomberg clip https://www.bloomberg.com/news/videos/2023-05-31/rosewood-hotel-group-ceo-on-travel-demand-video

Items in "*Italics*" are SAF Group created transcript

Asked what she sees on the ground in China as a luxury hotelier. Cheng *"so we're seeing since the lifting of restrictions earlier this year, we're seeing actually travel bouncing back quite quickly and rebounding quite quickly. Our on the books in terms of hotels have doubled compared to last year driven by growth in occupancy, more than 85% and ADR growth of 9%. So overall in terms of domestic travel in China, it has actually reached close to 90% of 2019 level."*

Cheng *"..... If you look at outbound travelers to date, we are seeing a significant growth in terms of outbound travel to Hong Kong, to main key gateway cities. If you look at Hong Kong in particular, just March alone, we have a record of 2 million tourists coming into Hong Kong."*

Asked how is the pre pandemic benchmark faring for your hotels globally. Cheng *"So globally, actually travel demand has reached, exceeding like above 6% over 2019 level so it's really rebounding quite strong".*

Prepared by SAF Group https://safgroup.ca/news-insights/

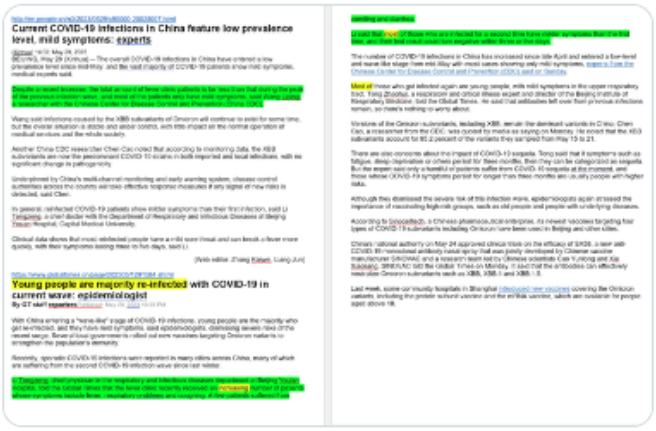
2 6 1,390

Dan Tsubouchi @Energy_Tidbits · May 31

Will increasing #ChinaCovid cases only have a minor impact on activity/economy?

Hope the state media reports are accurate.

Despite a recent increase, the total amount of fever clinic patients is far less than that during the peak of the previous infection wave, and most of the... Show more



Current COVID-19 infections in China feature low prevalence level, mild symptoms: experts

Young people are majority re-infected with COVID-19 in current wave: epidemiologist

4 4 2,197

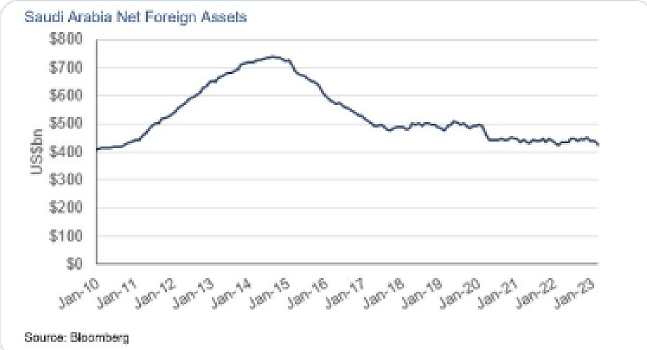
Dan Tsubouchi @Energy_Tidbits · May 30

Why Saudi wants high #Oil prices and also Other People's Money to help fund Vision 2030.

KSA Net Foreign Assets, its Nest Egg, was -$8.6b MoM to $410.1b at 04/30/23. Lowest since 01/31/10.

That's down $326.9b or $3.1b/mth since peak of $737.0b at 08/31/14.

#OOTT



> **Dan Tsubouchi** @Energy_Tidbits · May 3
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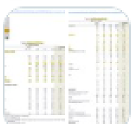
> 
>
> #IMF fiscal Breakeven #Oil price.
>
> Saudi declining $85.80 in 22, $80.90 in 23, $75.10 in 24 with push on non-oil sectors.
> ...

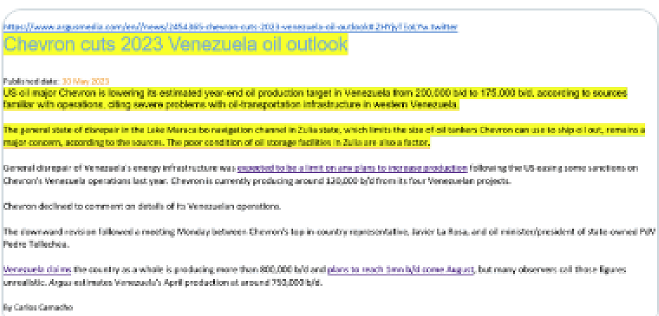
7 · 5 · 34 · 11.8K

Dan Tsubouchi @Energy_Tidbits · May 30

#Chevron lowers yr-end 23 VEN #Oil estimate from 200 kbd to 175 kbd.

1st real indication since US approved Chevron license in Nov that ramp up in VEN oil can't happen as fast as hoped due to bigger VEN infrastructure disrepair.

Thx @ArgusMedia Carlos Camacho.
#OOTT



https://www.argusmedia.com/en/news/2454865-chevron-cuts-2023-venezuela-oil-outlook

Chevron cuts 2023 Venezuela oil outlook

Published date: 30 May 2023

US oil major Chevron is lowering its estimated year-end oil production target in Venezuela from 200,000 b/d to 175,000 b/d, according to sources familiar with operations, citing severe problems with oil-transportation infrastructure in western Venezuela.

The general state of disrepair in the Lake Maracaibo navigation channel in Zulia state, which limits the size of oil tankers Chevron can use to ship oil out, remains a major concern, according to the sources. The poor condition of oil storage facilities in Zulia are also a factor.

General disrepair of Venezuela's energy infrastructure was expected to be a limit on any plans to increase production following the US easing some sanctions on Chevron's Venezuela operations last year. Chevron is currently producing around 120,000 b/d from its four Venezuelan projects.

Chevron declined to comment on details of its Venezuelan operations.

The downward revision followed a meeting Monday between Chevron's top in-country representative, Javier La Rosa, and oil minister/president of state-owned PdV Pedro Tellechea.

Venezuela claims the country as a whole is producing more than 800,000 b/d and plans to reach 1mn b/d come August, but many observers call those figures unrealistic. Argus estimates Venezuela's April production at around 750,000 b/d.

By Carlos Camacho

7 · 8 · 25 · 4,824

Dan Tsubouchi @Energy_Tidbits · May 30

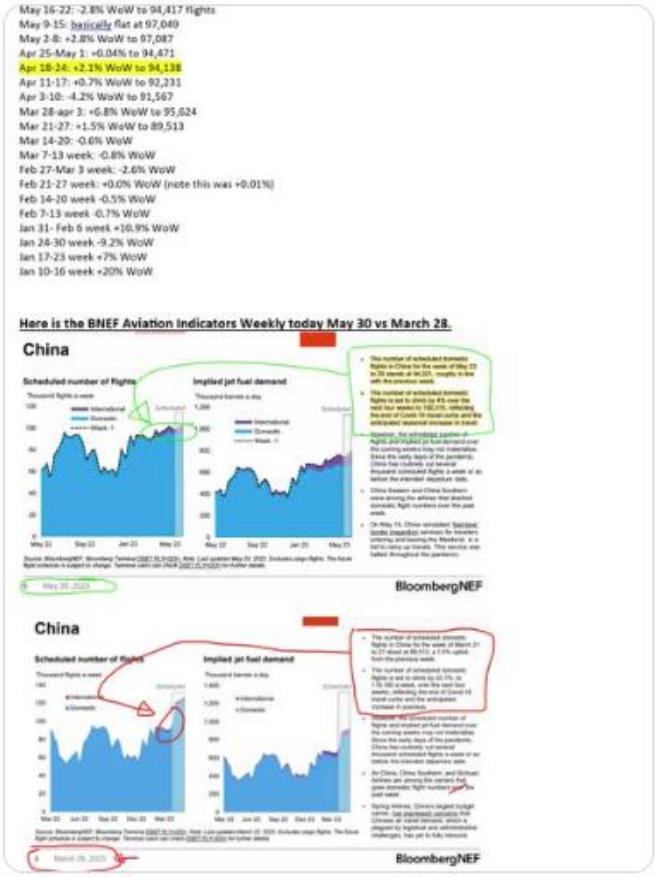
China consumers taking a pause.

Scheduled domestic air flights back to Apr 18-24 levels.

Scheduled domestic flights -0.1% WoW to 94,321.

Scheduled "over" next 4-wk is increasing to 100,316 flights is -15.8% vs 119,180 flights that were scheduled on Mar 28 for Apr.

Thx... Show more



1 5 9 4,323

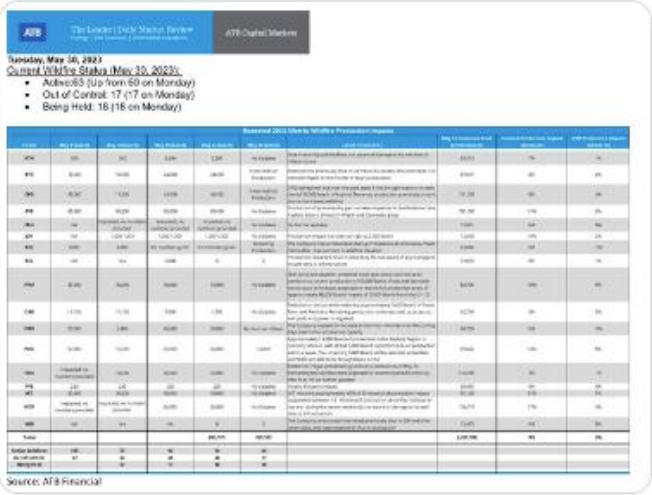
Dan Tsubouchi @Energy_Tidbits · May 30

Alberta wildfires impact on #Oil #NatGas production.

Not all oil & gas companies report of wildfire impact,

But a good running tally👇 where companies REPORT on shut-in/restored production is by @dstuey80 @atbfinancial.

#OOTT



Tuesday, May 30, 2023

Current Wildfire Status (May 30, 2023):

- Active:63 (Up from 60 on Monday)
- Out of Control: 17 (17 on Monday)
- Being Held: 18 (18 on Monday)

Source: ATB Financial

1 6 1,881

Dan Tsubouchi @Energy_Tidbits · May 30

Note @ABDanielleSmith highlight these will be new @JustinTrudeau "policies" ie. not new taxation.

BUT because they're policies, regulations, etc, it means really can't be stopped from being put in place UNLESS the Liberals believe it will hurt their chances of an overall Canada... Show more

> **Dan Tsubouchi** @Energy_Tidbits · May 30
>
> UCP win majority last night. 1/4 of @ABDanielleSmith victory speech warns on expected @JustinTrudeau energy policies.
>
> "we have been made aware that in the coming weeks, Justin Trudeau is planning on bringing forward new restrictions on electricity generation from natural gas... Show more
>
> 
>
>
> **Alberta election: Premier Danielle Smith takes aim at Trudeau during victory speech**
>
> SAF Group created transcript of comments by Premier Danielle Smith's victory 12+ minute victory speech. Attached clip is Global News 3 min clip of Smith addressing soon to be announced Canada policies on energy.
> https://globalnews.ca/video/9732155/alberta-election-alberta-premier-danielle-smith-takes-aim-at-trudeau-during-victory-speech/
>
> Items in "italics" are SAF Group created transcript
>
> Smith *"And finally, my fellow Albertans, we need to come together no matter how we have voted to stand shoulder-to-shoulder against soon to be announced Ottawa policies that would significantly harm our provincial economy. Now, we have been made aware that in the coming weeks, Justin Trudeau is planning on bringing forward new restrictions on electricity generation from natural gas that will not only massively increase your power bills, but will also endanger the integrity and reliability of our entire power grid, which we rely on during out cold and dark Alberta winters. In addition, the Prime Minister is already ready to introduce a de-factor production cap on our oil and gas sector that, if implemented, will result in tens of thousands jobs lost, tens of billions in lost investment, damage our provinces fiscal position and bring economic hardship to Albertans ..."*
>
> Prepared by SAF Group https://safgroup.ca/news-insights/

1 1 2 2,273

Dan Tsubouchi @Energy_Tidbits · May 30

UCP win majority last night. 1/4 of @ABDanielleSmith victory speech warns on expected @JustinTrudeau energy policies.

*"we have been made aware that in the coming weeks, Justin Trudeau is planning on bringing forward new restrictions on electricity generation from natural gas...*Show more

Alberta election: Premier Danielle Smith takes aim at Trudeau during victory speech

SAF Group created transcript of comments by Premier Danielle Smith's victory 12+ minute victory speech. Attached clip is Global News 3 min clip of Smith addressing soon to be announced Canada policies on energy.
https://globalnews.ca/video/9732155/alberta-election-alberta-premier-danielle-smith-takes-aim-at-trudeau-during-victory-speech/

Items in "italics" are SAF Group created transcript

Smith *"And finally, my fellow Albertans, we need to come together no matter how we have voted to stand shoulder-to-shoulder against soon to be announced Ottawa policies that would significantly harm our provincial economy. Now, we have been made aware that in the coming weeks, Justin Trudeau is planning on bringing forward new restrictions on electricity generation from natural gas that will not only massively increase your power bills, but will also endanger the integrity and reliability of our entire power grid, which we rely on during out cold and dark Alberta winters. In addition, the Prime Minister is already ready to introduce a de-factor production cap on our oil and gas sector that, if implemented, will result in tens of thousands jobs lost, tens of billions in lost investment, damage our provinces fiscal position and bring economic hardship to Albertans ..."*

Prepared by SAF Group https://safgroup.ca/news-insights/

1 9 16 8,470

Dan Tsubouchi @Energy_Tidbits · May 29

Here's how China imports Malaysia #Oil at 2x Malaysia's oil production.

It doesn't take much!

See 👇 @TankchatTony 05/25 on rebranding RUS crude/products, in this case as UAE.

No reason why RUS/Iran oil can't be rebranded as Malaysian.

#OOTT

> **Dan Tsubouchi** @Energy_Tidbits · May 25
>
> Big Russian #Oil #PetroleumProducts flows into UAE (Fujairah), blended that changes certificate of origin & "moved to all sorts of strange places you would never expect to be exported to" says @TankchatTony to @FrankKaneDubai @gulf_intel.
>
> See 👇 SAF Group transcript
> #OOTT
>
> 
>
>
> SAF Group created transcript of comments by Tony Quinn (Operating Partner, Prostar Capital & CEO Tankbank International) with host Frank Kane (Editor-at-Large, Arabian Gulf Business Insights) on Gulf Intelligence PODCAST: Daily Energy Markets May 25th. [LINK]
>
> Items in "*italics*" are SAF Group created transcript
>
> At 18:10 min mark, Quinn "*I have to be careful what I say because I get in trouble here, but the oil [Russian oil] is still flowing. I'm sitting amongst 11 terminals here [Their terminals in Fujairah] and probably 50% of them are full of Russian product. So, it's still moving.... But I think in general, I'm seeing more flows. I'm seeing more traders taking Russian flows directly into here. We have seen product moving here to all sorts of strange places that you would never expect to be exported to. So there are big movements particularly out of this part of the Gulf of Russian crude. It's all being diverted. We have a different customer base. Whereas we used to bunker the Kuwaitis, now we're unloading the Russians.*"
>
> At 20:15 min mark, Kane asking if some the product diverting elsewhere, some of it must be Russian ending up in Europe. Quinn "*... offloading of product here or any terminal in the world, you have to remember that, once they blend that product, the certificate of origin changes. So you're suddenly dealing with a product that has a new origin. So if that's here, it suddenly became a UAE product wherever it was before. So all of those things happen. So looking at the flows, you really don't know where it comes from.*"
>
> Prepared by SAF Group https://safgroup.ca/news-insights/

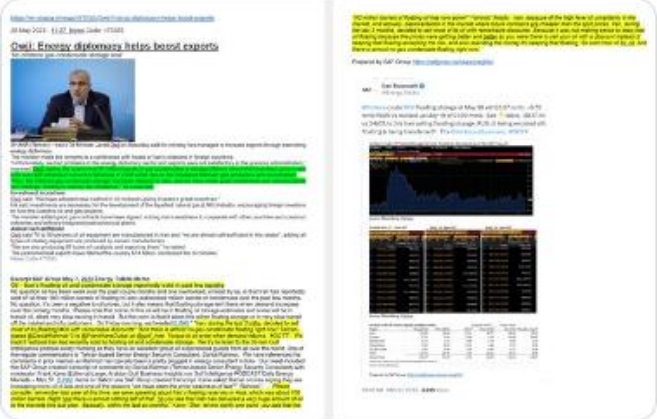
5 2 10 4,329

Dan Tsubouchi @Energy_Tidbits · May 28

Torque to #Oil price when demand returns.

Iran says floating gas condensate storage reduced to zero makes Tehran-based @DanialRahmat12 👇 05/05 intel look good.

Iran didn't specifically comment on floating oil storage, but recall Rahmat also said Iran decided to sell most of... Show more



> **Dan Tsubouchi** @Energy_Tidbits · May 5
>
> 
>
> "Iran, during the last 3 mths, decided to sell most of its [floating] #Oil with remarkable discounts" "And there is almost no gas condensate floating right now" Tehran-based @DanialRahmat12 to @FrankKaneDubai on @gulf_intel. ...

1 9 29 13.9K