

Energy Tidbits

Vitol “we have a sense of balance, rather than the predicted tightening of the [#Oil] market, which may yet occur later this year”

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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	£3,591	£3,199	246	£2,953	7	-315	994	-47	3,592
February	£3,227	£2,870	223	£2,647	6	-288	658	38	3,061
March	£3,614	£3,225	267	£2,958	6	-380	163	33	2,781
April	£3,520	£3,152	257	£2,895	6	-342	-214	23	2,367
May	£3,667	£3,296	266	£3,030	6	-386	-403	-5	2,242
June	£3,557	£3,215	259	£2,956	4	R-325	-324	R7	2,318
July	£3,690	£3,330	276	£3,055	6	R-303	-180	R5	2,583
August	£3,699	£3,349	270	£3,079	6	R-322	-206	R3	2,560
September	£3,638	£3,281	265	£3,016	4	-293	-436	-4	2,289
October	£3,769	£3,394	275	£3,119	5	-315	-422	-21	2,366
November	£3,683	£3,297	269	£3,029	4	-308	71	-23	2,773
December	£3,729	£3,328	249	£3,079	5	-304	573	29	3,382
Total	£43,385	£38,936	3,120	£35,816	65	R-3,880	275	R37	32,314
2023									
January	£3,820	£3,419	264	£3,156	6	-332	455	24	3,309
February	RE3,456	RE3,094	242	RE2,852	5	-329	399	R25	R2,951
March	RE3,843	RE3,450	281	RE3,169	6	-399	224	R7	3,006
April	£3,719	£3,342	279	£3,063	5	-398	-265	15	2,420
2023 4-month YTD	£14,836	£13,305	1,065	£12,239	22	-1,458	813	71	11,687
2022 4-month YTD	£13,952	£12,446	993	£11,453	24	-1,325	1,602	47	11,802
2021 4-month YTD	13,423	11,940	899	11,041	21	-1,144	1,398	42	11,358

^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 4-month YTD	2022 4-month YTD	2021 4-month YTD	2023			
				April	March	February	January
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	378,396	341,756	328,993	74,575	¥104,893	94,530	104,399
Mexico	664,162	676,831	676,710	169,183	177,150	152,318	165,511
Total pipeline exports	1,042,558	1,018,587	1,005,703	243,758	¥282,043	246,848	269,910
LNG							
Exports							
By vessel							
Antigua and Barbuda	10	6	0	3	2	2	4
Argentina	16,166	9,933	6,724	11,536	2,343	2,287	0
Bahamas	165	142	142	43	53	27	42
Bangladesh	3,369	9,317	16,932	0	0	0	3,369
Barbados	0	92	79	0	0	0	0
Belgium	23,860	46,562	3,484	4,844	¥8,053	7,322	3,640
Brazil	4,932	33,665	67,842	3,598	1,334	0	0
Chile	10,578	9,906	47,922	0	7,271	0	3,307
China	29,019	21,101	121,306	3,426	5,132	2,565	17,896
Colombia	0	486	892	0	0	0	0
Croatia	15,776	25,074	11,033	3,163	3,694	6,006	2,913
Dominican Republic	14,934	16,822	21,067	6,901	876	3,514	3,643
Egypt	0	0	0	0	0	0	0
Finland	6,850	0	0	0	6,850	0	0
France	155,373	210,489	88,236	53,211	28,581	39,457	34,124
Germany	62,311	0	0	14,927	24,841	8,229	14,314
Greece	17,049	15,348	7,405	3,905	3,156	6,781	3,207
Haiti	38	57	36	11	8	11	8
India	45,837	38,736	65,275	14,585	10,230	14,064	6,956
Indonesia	805	717	0	0	0	0	805
Israel	0	0	6,051	0	0	0	0
Italy	58,713	43,273	17,635	17,378	13,699	17,555	10,082
Jamaica	839	424	10,900	31	540	161	107
Japan	65,544	62,669	139,032	13,687	20,102	14,058	17,696
Jordan	0	0	0	0	0	0	0
Kuwait	3,707	12,575	7,526	3,707	0	0	0
Lithuania	16,078	26,119	13,157	5,766	3,599	0	6,713
Malaysia	0	0	0	0	0	0	0
Malta	2,592	2,345	2,928	0	0	0	2,592
Mexico	6,270	0	13,354	0	3,051	0	3,219
Netherlands	197,006	101,186	66,989	60,234	61,017	39,301	36,453
Nicaragua	0	0	0	0	0	0	0
Pakistan	0	3,074	10,426	0	0	0	0
Panama	5,927	7,861	3,795	0	3,209	0	2,718
Poland	36,286	28,884	17,988	7,165	7,236	10,347	11,538
Portugal	23,323	23,931	10,718	4,237	6,133	6,138	6,816
Singapore	0	6,725	10,651	0	0	0	0
South Korea	82,720	82,416	127,916	24,734	10,807	22,672	24,507
Spain	97,900	188,220	47,985	13,680	38,096	32,138	13,987
Taiwan	30,112	34,028	30,363	9,774	10,311	6,557	3,471
Thailand	14,041	8,370	7,388	4,225	4,249	1,829	3,738
Turkiye	75,344	112,044	50,930	13,908	11,866	13,444	36,126
United Arab Emirates	0	0	0	0	0	0	0
United Kingdom	281,068	181,935	87,095	75,836	70,499	71,702	63,032
By truck							
Canada	13	32	15	7	7	0	0
Mexico	393	570	213	58	96	106	133
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	1,404,948	1,365,135	1,141,431	374,578	¥366,941	326,275	337,155
CNG							
Canada	1	*	129	0	*	*	*
Total CNG exports	1	*	129	0	*	*	*
Total exports	2,447,507	2,383,723	2,147,263	618,335	¥648,984	573,122	607,065

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						
	Total	December	November	October	September	August	July
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	959,630	98,718	90,179	72,738	61,926	75,220	69,774
Mexico	R2,078,627	158,638	160,986	171,766	169,159	R182,596	R189,652
Total pipeline exports	R3,038,257	257,355	251,165	244,505	231,086	R257,816	R259,426
LNG							
Exports							
By vessel							
Antigua and Barbuda	22	1	2	2	3	2	2
Argentina	66,939	0	0	0	0	2,202	9,448
Bahamas	489	42	35	40	43	53	45
Bangladesh	12,663	0	0	0	0	0	0
Barbados	93	0	1	0	0	0	0
Belgium	80,245	3,274	0	7,190	9,165	3,589	0
Brazil	71,998	0	0	3,439	0	10,542	5,192
Chile	30,131	0	0	0	3,365	0	6,917
China	96,659	6,992	17,308	22,598	10,275	10,272	784
Colombia	5,703	0	0	3,699	0	606	0
Croatia	77,286	6,204	5,122	2,922	9,073	7,824	4,600
Dominican Republic	50,824	6,644	0	3,469	3,196	3,357	6,532
Egypt	0	0	0	0	0	0	0
Finland	329	329	0	0	0	0	0
France	571,399	38,311	50,655	41,959	57,943	33,885	53,443
Germany	7,113	7,112	1	0	0	0	0
Greece	69,031	2,869	421	4,424	0	10,763	12,922
Haiti	115	9	0	0	8	11	8
India	122,518	14,139	10,138	7,005	10,528	10,265	13,902
Indonesia	6,579	3,256	505	625	509	967	0
Israel	0	0	0	0	0	0	0
Italy	116,034	6,992	3,205	0	8,355	15,462	9,914
Jamaica	1,516	147	137	144	240	110	121
Japan	209,220	20,535	24,396	10,684	7,005	20,156	18,189
Jordan	0	0	0	0	0	0	0
Kuwait	57,018	0	0	3,299	7,038	6,415	5,382
Lithuania	77,212	3,281	3,708	7,072	3,541	7,579	7,947
Malaysia	0	0	0	0	0	0	0
Malta	5,273	0	2,928	0	0	0	0
Mexico	3,832	539	0	0	0	0	0
Netherlands	378,329	39,893	20,645	39,703	30,924	50,020	32,637
Nicaragua	0	0	0	0	0	0	0
Pakistan	3,074	0	0	0	0	0	0
Panama	13,759	249	3,833	0	0	0	0
Poland	127,404	13,885	3,453	7,095	16,917	6,885	17,780
Portugal	69,583	10,025	3,732	7,005	5,806	3,202	6,412
Singapore	22,980	0	0	6,628	0	0	6,275
South Korea	292,732	24,700	14,069	38,844	19,736	36,033	34,342
Spain	426,657	33,847	26,445	26,369	21,263	26,140	34,396
Taiwan	106,738	9,203	3,592	9,041	9,753	8,901	9,353
Thailand	25,988	0	0	0	3,673	3,607	0
Turkiye	192,067	17,979	31,430	10,333	5,458	0	0
United Arab Emirates	0	0	0	0	0	0	0
United Kingdom	464,462	69,332	76,693	46,040	51,467	21,263	3,797
By truck							
Canada	76	8	0	19	0	0	0
Mexico	1,552	160	153	175	94	103	76
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	3,865,643	339,960	302,608	309,823	295,379	300,215	300,415
CNG							
Canada	2	0	*	1	*	*	1
Total CNG exports	2	0	*	1	*	*	1
Total exports	R6,903,902	597,316	553,774	554,328	526,465	R558,031	R559,842

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
	June	May	April	March	February	January	Total
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	70,105	79,214	80,475	105,074	74,630	81,577	937,124
Mexico	R182,995	R186,003	R176,447	169,885	155,032	175,467	2,154,457
Total pipeline exports	R253,100	R265,217	R256,922	274,958	229,662	257,045	3,091,580
LNG							
Exports							
By vessel							
Antigua and Barbuda	3	2	3	2	0	2	8
Argentina	25,246	20,111	9,933	0	0	0	83,449
Bahamas	47	42	34	43	31	34	486
Bangladesh	0	3,346	0	3,421	5,896	0	37,734
Barbados	0	0	0	34	31	28	297
Belgium	7,023	3,441	7,341	17,743	7,691	13,786	5,584
Brazil	3,857	15,303	3,448	2,236	10,660	17,322	307,714
Chile	0	9,943	3,530	3,214	0	3,162	121,881
China	7,329	0	10,217	7,527	3,357	0	453,304
Colombia	912	0	0	0	0	486	2,247
Croatia	7,925	8,543	6,763	3,358	5,870	9,084	36,133
Dominican Republic	5,838	4,964	3,645	6,530	0	6,647	53,095
Egypt	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0
France	37,564	47,150	56,343	64,415	39,646	50,084	170,780
Germany	0	0	0	0	0	0	0
Greece	9,633	12,650	1,336	4,116	8,094	1,802	39,708
Haiti	13	9	11	10	16	20	137
India	10,653	7,152	14,223	10,438	7,210	6,866	196,218
Indonesia	0	0	0	0	717	0	3,269
Israel	0	0	0	0	0	0	8,906
Italy	7,137	21,696	15,519	7,088	13,629	7,037	34,210
Jamaica	48	144	135	92	111	86	25,276
Japan	21,561	24,024	13,231	17,697	10,214	21,527	354,948
Jordan	0	0	0	0	0	0	0
Kuwait	8,105	14,204	7,298	0	5,277	0	34,476
Lithuania	6,729	11,237	13,770	5,700	3,131	3,518	30,919
Malaysia	0	0	0	0	0	0	0
Malta	0	0	0	0	2,345	0	5,427
Mexico	3,292	0	0	0	0	0	15,200
Netherlands	34,420	28,902	28,395	24,922	31,591	16,279	174,339
Nicaragua	0	0	0	0	0	0	1
Pakistan	0	0	3,074	0	0	0	45,818
Panama	623	1,192	1,536	0	3,069	3,255	8,436
Poland	14,282	18,224	13,882	3,831	7,475	3,695	56,320
Portugal	5,582	3,888	6,632	10,728	3,703	2,868	65,865
Singapore	3,352	0	0	6,725	0	0	20,918
South Korea	25,054	17,538	13,813	19,289	27,489	21,824	453,483
Spain	29,639	40,337	40,259	59,224	39,359	49,379	215,062
Taiwan	6,892	15,975	9,541	12,161	6,115	6,211	99,350
Thailand	6,920	3,419	0	0	4,880	3,490	14,548
Turkiye	7,542	7,281	6,637	16,629	43,697	45,081	188,849
United Arab Emirates	0	0	0	0	0	0	0
United Kingdom	3,326	10,608	39,775	56,799	25,301	60,060	195,046
By truck							
Canada	8	8	15	0	4	13	128
Mexico	105	115	122	144	157	148	1,250
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	300,659	351,448	330,463	364,116	316,766	353,791	3,560,818
CNG							
Canada	*	0	0	*	0	0	211
Total CNG exports	*	0	0	*	0	0	211
Total exports	R553,760	R616,665	R587,385	639,074	546,428	610,836	6,652,609

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
	December	November	October	September	August	July	June
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	108,568	85,136	62,464	72,023	71,586	68,264	69,528
Mexico	166,956	165,449	184,472	178,746	193,710	197,623	198,242
Total pipeline exports	275,524	250,585	246,936	250,769	265,296	265,887	267,770
LNG							
Exports							
By vessel							
Antigua and Barbuda	3	2	0	3	0	0	0
Argentina	2,077	0	0	1,950	14,363	22,798	19,312
Bahamas	36	34	36	43	56	46	48
Bangladesh	0	0	0	3,276	7,085	0	3,493
Barbados	34	27	25	33	27	31	22
Belgium	0	0	0	0	0	0	0
Brazil	24,246	10,715	40,769	38,282	34,204	39,637	32,293
Chile	2,938	2,956	6,364	7,929	16,262	19,913	0
China	17,050	50,228	42,202	48,584	51,662	42,222	42,319
Colombia	0	0	0	436	919	0	0
Croatia	3,117	9,416	0	0	2,980	3,299	2,923
Dominican Republic	5,969	2,780	5,619	0	5,901	1,806	4,670
Egypt	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0
France	33,892	10,021	9,333	6,578	7,111	0	3,683
Germany	0	0	0	0	0	0	0
Greece	5,305	7,629	1,515	799	3,607	6,651	0
Haiti	4	8	17	10	24	8	18
India	3,203	14,807	10,548	23,941	20,592	13,090	16,503
Indonesia	1,218	456	477	1,118	0	0	0
Israel	0	0	0	2,855	0	0	0
Italy	0	0	0	0	3,401	6,826	3,425
Jamaica	113	715	1,858	2,931	2,907	0	2,927
Japan	24,297	33,947	37,666	10,290	19,979	24,895	39,783
Jordan	0	0	0	0	0	0	0
Kuwait	0	0	6,193	10,333	3,298	0	7,126
Lithuania	0	0	0	3,282	1,677	6,469	3,285
Malaysia	0	0	0	0	0	0	0
Malta	0	0	0	2,498	0	0	0
Mexico	0	0	1,088	0	0	758	0
Netherlands	23,354	8,829	17,157	10,424	7,347	10,597	3,030
Nicaragua	0	0	0	0	0	1	0
Pakistan	0	2,490	3,138	9,642	3,319	13,428	3,376
Panama	0	0	911	0	1,390	0	0
Poland	7,159	7,068	3,270	0	0	6,619	10,635
Portugal	9,630	5,380	10,459	3,696	6,382	3,296	5,538
Singapore	0	3,728	0	0	0	3,449	0
South Korea	38,201	30,787	33,836	31,375	50,101	39,314	55,918
Spain	32,579	22,821	35,638	31,274	23,068	8,630	7,833
Taiwan	12,034	3,404	7,123	5,789	6,728	20,653	3,097
Thailand	0	0	0	0	3,707	0	0
Turkiye	38,420	47,330	19,385	24,176	0	5,591	0
United Arab Emirates	0	0	0	0	0	0	0
United Kingdom	60,315	30,648	3,302	3,099	0	0	0
By truck							
Canada	20	8	8	19	18	16	7
Mexico	148	160	182	150	147	97	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	345,363	306,397	298,119	284,813	298,262	300,143	271,368
CNG							
Canada	0	0	0	0	14	16	27
Total CNG exports	0	0	0	0	14	16	27
Total exports	620,886	556,982	545,055	535,583	563,572	566,046	539,165

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				
	May	April	March	February	January
Exports					
Volume (million cubic feet)					
Pipeline					
Canada	70,561	74,567	91,301	78,198	84,927
Mexico	192,549	182,918	183,051	137,381	173,360
Total pipeline exports	263,110	257,485	274,352	215,579	258,287
LNG					
Exports					
By vessel					
Antigua and Barbuda	0	0	0	0	0
Argentina	16,226	4,485	2,238	0	0
Bahamas	45	46	39	29	28
Bangladesh	6,948	10,219	3,566	0	3,148
Barbados	19	30	14	19	17
Belgium	2,100	0	3,484	0	0
Brazil	19,726	11,615	21,977	13,118	21,132
Chile	17,598	10,293	21,320	6,524	9,784
China	37,731	50,474	28,476	3,415	38,940
Colombia	0	892	0	0	0
Croatia	3,364	3,666	7,367	0	0
Dominican Republic	5,283	2,905	5,577	5,689	6,895
Egypt	0	0	0	0	0
Finland	0	0	0	0	0
France	11,926	36,120	33,678	14,851	3,587
Germany	0	0	0	0	0
Greece	6,796	0	6,805	0	600
Haiti	12	3	10	11	12
India	28,259	13,752	17,381	13,776	20,367
Indonesia	0	0	0	0	0
Israel	0	3,225	2,826	0	0
Italy	2,923	6,896	10,739	0	0
Jamaica	2,925	2,370	2,458	2,365	3,708
Japan	25,058	28,756	27,673	18,271	64,331
Jordan	0	0	0	0	0
Kuwait	0	3,705	3,821	0	0
Lithuania	3,049	3,078	3,228	6,851	0
Malaysia	0	0	0	0	0
Malta	0	2,928	0	0	0
Mexico	0	0	0	13,354	0
Netherlands	26,611	17,060	24,204	22,777	2,949
Nicaragua	0	0	0	0	0
Pakistan	0	3,323	3,421	0	3,682
Panama	2,341	0	3,279	0	516
Poland	3,581	7,382	3,507	7,099	0
Portugal	10,765	7,358	0	3,360	0
Singapore	3,089	3,660	3,303	0	3,688
South Korea	46,033	21,683	32,203	18,094	55,936
Spain	5,234	22,974	13,900	3,733	7,377
Taiwan	10,157	6,594	13,450	0	10,319
Thailand	3,453	7,388	0	0	0
Turkiye	3,017	0	3,619	20,652	26,659
United Arab Emirates	0	0	0	0	0
United Kingdom	10,586	13,877	17,440	34,343	21,436
By truck					
Canada	18	15	0	0	0
Mexico	48	48	19	63	83
Re-exports					
By vessel					
Argentina	0	0	0	0	0
Brazil	0	0	0	0	0
Japan	0	0	0	0	0
South Korea	0	0	0	0	0
United Kingdom	0	0	0	0	0
Total LNG exports	314,922	306,818	321,023	208,394	305,196
CNG					
Canada	25	29	36	32	32
Total CNG exports	25	29	36	32	32
Total exports	578,056	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	€37,302	€11,186	€151,815	€12,255	€311,786	€3,092	€196,780	€81,699	€196,005
February	30,014	€33,465	€9,336	€138,369	€10,930	€284,177	€2,801	€183,345	€74,429	€172,829
March	32,473	€37,518	€11,388	€155,246	€12,194	€313,229	€3,214	€219,028	€86,190	€187,872
April	30,910	€36,247	€11,212	€151,319	€12,037	€313,229	€3,042	€215,953	€68,484	€179,444
May	31,677	€37,042	€11,489	€155,982	€12,469	€340,363	€3,152	€223,843	€80,563	€189,214
June	28,644	€35,573	€11,057	€150,046	€12,037	€335,290	€3,464	€214,602	€86,013	€190,021
July	29,654	€36,446	€11,651	€153,067	€12,457	€345,647	€3,465	€227,099	€89,572	€193,519
August	29,380	€36,659	€11,970	€154,806	€12,526	€355,454	€3,634	€230,690	€88,700	€196,604
September	29,288	€34,405	€11,100	€151,415	€11,565	€346,479	€3,572	€233,548	€88,797	€189,795
October	31,122	€35,354	€11,358	€155,354	€12,749	€363,490	€3,540	€247,855	€90,617	€195,926
November	30,934	€33,777	€10,905	€151,562	€12,036	€354,732	€3,342	€237,280	€84,563	€195,571
December	36,181	€33,198	€11,167	€150,545	€11,556	€355,671	€3,277	€249,384	€76,094	€186,258
Total	373,141	€426,986	€133,818	€1,819,526	€144,811	€4,019,547	€39,595	€2,679,408	€995,720	€2,273,058
2023										
January	33,391	€34,788	€11,061	€151,836	€11,783	€363,830	€3,526	€252,664	€82,392	€198,189
February	30,726	RE31,085	€10,048	RE135,227	RE10,528	RE352,432	RE3,221	RE231,359	RE79,805	RE174,917
March	32,676	RE34,430	RE10,906	RE150,111	RE11,441	RE370,117	RE3,548	RE266,763	RE87,596	RE199,565
April	31,313	€32,937	€10,657	€146,953	€11,247	€363,660	€3,464	€257,921	€86,814	€187,560
2023 4-month YTD	128,105	€133,239	€42,672	€584,128	€44,999	€1,450,038	€13,759	€1,008,708	€336,607	€760,231
2022 4-month YTD	126,261	€144,532	€43,121	€596,749	€47,417	€1,222,421	€12,149	€815,106	€310,802	€736,150
2021 4-month YTD	121,029	149,690	46,239	617,305	49,136	1,056,452	12,529	678,313	319,483	748,932

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	€213,419	€660,345	€853,214	€20,789	€234,795	€85,192	€31,292	€65,454	€3,199,287
February	€192,596	€581,432	€766,441	€18,966	€209,707	€76,605	€28,839	€55,884	€2,870,165
March	€219,732	€635,076	€871,961	€21,315	€239,344	€84,319	€31,519	€63,547	€3,225,163
April	€223,078	€616,181	€856,759	€21,254	€235,580	€81,405	€29,705	€65,810	€3,151,649
May	€237,032	€640,189	€887,465	€22,840	€247,179	€82,036	€31,011	€62,326	€3,295,871
June	€230,337	€616,632	€862,817	€22,278	€240,568	€80,395	€31,237	€63,627	€3,214,637
July	€239,295	€641,726	€887,919	€23,066	€251,625	€85,506	€32,355	€66,393	€3,330,463
August	€238,265	€632,014	€897,401	€23,500	€255,603	€81,633	€32,294	€68,280	€3,349,415
September	€236,726	€613,657	€882,979	€22,110	€245,734	€81,528	€31,485	€66,585	€3,280,768
October	€241,688	€629,461	€915,309	€22,164	€251,647	€87,030	€31,961	€67,352	€3,393,976
November	€235,873	€605,505	€885,128	€21,326	€255,298	€84,565	€30,838	€63,917	€3,297,153
December	€236,429	€611,037	€914,687	€22,688	€253,533	€81,550	€30,737	€63,662	€3,327,655
Total	€2,744,470	€7,483,257	€10,482,08	€262,297	€2,920,613	€991,764	€373,272	€772,838	€38,936,202
2023									
January	€241,437	€646,645	€928,236	€22,346	€256,931	€80,638	€31,512	€67,908	€3,419,111
February	RE217,813	RE572,742	RE835,949	RE19,000	RE231,585	RE70,453	RE27,351	RE59,703	RE3,093,944
March	RE240,837	RE642,354	RE948,520	RE22,799	RE255,585	RE79,645	RE27,883	RE65,039	RE3,449,814
April	€233,031	€620,017	€920,833	€22,585	€247,619	€76,344	€30,107	€58,586	€3,341,648
2023 4-month YTD	€933,118	€2,481,759	€3,633,538	€86,730	€991,720	€307,080	€116,852	€251,236	€13,304,517
2022 4-month YTD	€848,825	€2,493,034	€3,348,375	€82,324	€919,426	€327,521	€121,355	€250,695	€12,446,265
2021 4-month YTD	819,103	2,499,316	3,055,133	77,705	899,296	374,499	135,686	279,758	11,939,605

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 April 2023

- **Top five countries of destination, representing 61.8% of total U.S. LNG exports in April 2023**
 - United Kingdom (75.8 Bcf), Netherlands (60.2 Bcf), France (53.2 Bcf), South Korea (24.7 Bcf), and Italy (17.4 Bcf)
- **374.4 Bcf of exports in April 2023**
 - 2.2% increase from March 2023
 - 13.4% more than April 2022
- **111 cargos shipped in April 2023**
 - Sabine Pass (39), Cameron (29), Freeport (18), Corpus Christi (16), Cove Point (7), and Elba (2)
 - 121 cargos in March 2023
 - 107 cargos in April 2022

1a. Table of Exports of Domestically-Produced LNG Delivered by Region (Cumulative from February 2016 through April 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	4,696.3	31.3%	1391
Europe and Central Asia	15	6,859.2	45.7%	2145
Latin America and the Caribbean**	13	2,195.7	14.6%	784
Middle East and North Africa	5	380.3	2.5%	111
South Asia	3	872.7	5.8%	259
Sub-Saharan Africa	0	0.0	0.0%	0
Total LNG Exports	44	15,004.3	100.0%	4,690

*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 April 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	520	1,804.5	12.0%
2. Japan*	East Asia and Pacific	384	1,308.1	8.7%
3. United Kingdom*	Europe and Central Asia	383	1,270.4	8.5%
4. Spain*	Europe and Central Asia	367	1,148.8	7.7%
5. France*	Europe and Central Asia	345	1,127.1	7.5%
6. China*	East Asia and Pacific	297	1,011.3	6.7%
7. Netherlands*	Europe and Central Asia	277	931.8	6.2%
8. India*	South Asia	199	675.9	4.5%
9. Turkiye*	Europe and Central Asia	210	670.8	4.5%
10. Brazil*	Latin America and the Caribbean	219	613.3	4.1%
11. Mexico*	Latin America and the Caribbean	166	553.1	3.7%
12. Chile*	Latin America and the Caribbean	135	429.9	2.9%
13. Italy*	Europe and Central Asia	115	370.1	2.5%
14. Taiwan*	East Asia and Pacific	112	353.7	2.4%
15. Poland*	Europe and Central Asia	92	305.1	2.0%
16. Portugal*	Europe and Central Asia	90	284.8	1.9%
17. Argentina*	Latin America and the Caribbean	116	281.3	1.9%
18. Greece*	Europe and Central Asia	82	192.6	1.3%
19. Dominican Republic*	Latin America and the Caribbean	71	172.7	1.2%
20. Belgium*	Europe and Central Asia	52	165.1	1.1%
21. Lithuania	Europe and Central Asia	53	163.4	1.1%
22. Kuwait	Middle East and North Africa	46	160.1	1.1%
23. Croatia	Europe and Central Asia	44	132.5	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	28	96.9	0.6%
28. Germany	Europe and Central Asia	21	69.4	0.5%
29. Bangladesh*	South Asia	20	67.8	0.5%
30. Panama*	Latin America and the Caribbean	32	57.9	0.4%
31. Jamaica*	Latin America and the Caribbean	27	57.9	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		4,690	14,998.8	
Germany	Europe and Central Asia	1	0.0	0.0%
40. Antigua and Barbuda	Latin America and the Caribbean	45	0.0	0.0%
41. Nicaragua	Latin America and the Caribbean	1	0.0	0.0%
42. Haiti	Latin America and the Caribbean	139	0.5	0.0%
43. Barbados	Latin America and the Caribbean	305	1.3	0.0%
Jamaica	Latin America and the Caribbean	172	1.7	0.0%
44. Bahamas	Latin America and the Caribbean	720	2.0	0.0%
Total Exports by ISO		1383	5.5	
Total Exports by Vessel and ISO		6,073	15,004.3	

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

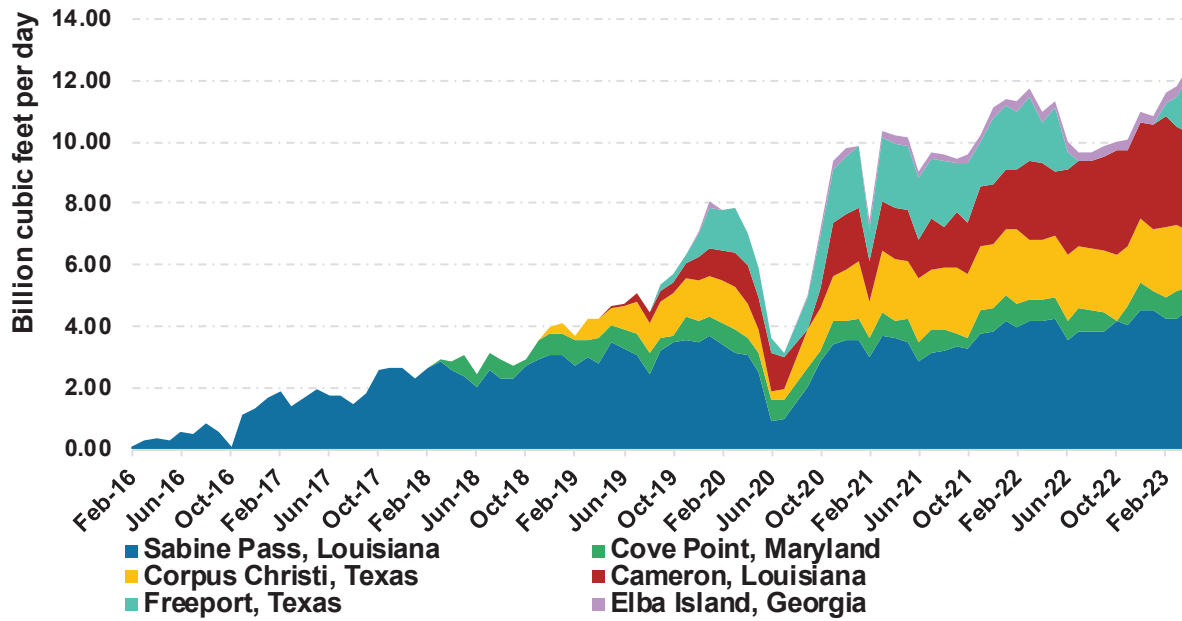
* Split cargos counted as both individual cargos and countries.

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.

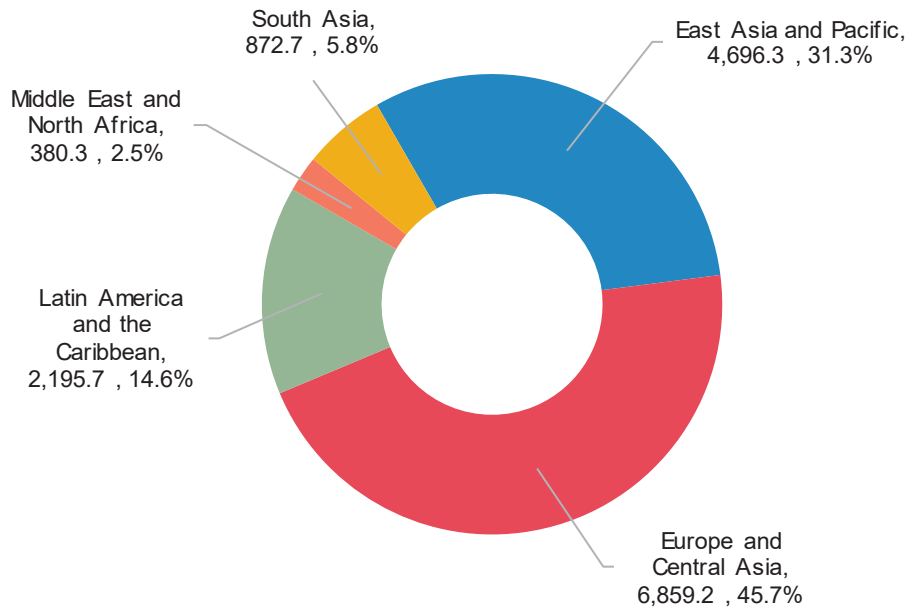
Totals may not equal sum of components because of independent rounding.

1c. Domestically-Produced LNG Exported by Point of Exit (February 2016 through April 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 April 2023) (Bcf, %)



Cheniere and ENN Sign Long-Term LNG Sale and Purchase Agreement

[Download as PDF](#) JUNE 26, 2023 8:00AM EDT

20-plus Year SPA Expected to Support Sabine Pass Expansion Project
HOUSTON--(BUSINESS WIRE)-- Cheniere Energy, Inc. (“Cheniere” or the “Company”) (NYSE American: LNG) announced today that Cheniere’s subsidiary, Cheniere Marketing, LLC (“Cheniere Marketing”), has entered into a long-term liquefied natural gas (“LNG”) sale and purchase agreement (“SPA”) with ENN LNG (Singapore) Pte. Ltd. (“ENN”), a wholly-owned subsidiary of ENN Natural Gas Co., Ltd. (“ENN Natural Gas”).

Under the SPA, ENN has agreed to purchase approximately 1.8 million tonnes per annum (“mtpa”) of LNG from Cheniere Marketing on a free-on-board (“FOB”) basis for a purchase price indexed to the Henry Hub price, plus a fixed liquefaction fee. Deliveries will commence in mid-2026, ramping to 0.9 mtpa in 2027. Delivery of the remaining 0.9 mtpa, which is subject to, among other things, a positive Final Investment Decision with respect to the first train (“Train Seven”) of the Sabine Pass Liquefaction Expansion Project (“SPL Expansion Project”), will commence upon the start of commercial operations of Train Seven. The term of the SPA extends until the 20th anniversary of the start of commercial operations of Train Seven.

“We are pleased to build upon our existing long-term relationship with ENN, a leader in China’s rapidly growing natural gas industry, with this 20-plus year agreement signed today,” said Jack Fusco, Cheniere’s President and Chief Executive Officer. “This SPA further supports China’s structural shift to natural gas as a growing primary energy source, powering its economy while enabling improved environmental performance with flexible, reliable and cleaner LNG. This SPA accelerates Cheniere’s commercial momentum on the SPL Expansion Project, demonstrating the market’s need for additional LNG capacity, and the value of Cheniere’s unique capability to tailor long-term solutions for customers worldwide.”

This is the second long-term SPA signed between ENN and Cheniere Marketing. The long-term SPA signed in October 2021 initiated the first cooperation between two parties in the LNG business.

Wang, Yusuo, Chairman of the Board of ENN Natural Gas said, “At present, China is moving forward with the implementation of ‘carbon peaking & carbon neutrality,’ further accelerating the energy transformation, and China’s natural gas market is full of potential. As a leading global LNG supplier, Cheniere’s stable LNG production and supply capacity are highly compatible with China’s fast growing natural gas market. The signing of this long-term SPA marks another milestone in the establishment of good strategic cooperation between two parties, contributes to ENN Natural Gas’ establishment of an intelligent ecological operator in the field, provides customers with quality services and resources, and promotes the low-carbon transformation and upgrade of all industries.”

The SPL Expansion Project is being developed to include up to three natural gas liquefaction trains with an expected total production capacity of approximately 20 mtpa of LNG. In May 2023, certain subsidiaries of Cheniere Energy Partners, L.P. (NYSE American: CQP) entered the pre-filing review process with respect to the SPL Expansion Project with the Federal Energy Regulatory Commission under the National Environmental Policy Act.

About Cheniere

Cheniere Energy, Inc. is the leading producer and exporter of LNG in the United States, reliably providing a clean, secure, and affordable solution to the growing global need for natural gas. Cheniere is a full-service LNG provider, with capabilities that include gas procurement and transportation, liquefaction, vessel chartering, and LNG delivery. Cheniere has one of the largest liquefaction platforms in the world, consisting of the Sabine Pass and Corpus Christi liquefaction facilities on the U.S. Gulf Coast, with total production capacity of approximately 45 mtpa of LNG in operation and an additional 10+ mtpa of expected production capacity under construction. Cheniere is also pursuing liquefaction expansion opportunities and other projects along the LNG value chain. Cheniere is headquartered in Houston, Texas, and has additional offices in London, Singapore, Beijing, Tokyo, and Washington, D.C.

For additional information, please refer to the Cheniere website at www.cheniere.com and Quarterly Report on Form 10-Q for the quarter ended March 31, 2023, filed with the Securities and Exchange Commission.

About ENN Natural Gas

As one of the largest private energy companies in China, ENN Natural Gas Co., Ltd. (ENN Natural Gas, stock code 600803.SH) operates over 250 city gas projects nationwide, has annual LNG distribution capacity over 10 bcm, runs the first large-scale private LNG terminal in China – ENN Zhoushan LNG Receiving Terminal. Its business layout covers the entire natural gas value chain, including distribution, trading, storage and transportation, production and engineering. Based upon the innovation practices in the field, ENN Natural Gas has built an intelligent operation platform for natural gas industry. It accelerates the aggregation of demand, resources, reserves, and delivery ecology of the natural gas industry, innovates and develops digital intelligence services, promotes the digital intelligence upgrade of the natural gas industry. In 2022, ENN Natural Gas's total natural gas sales volume was 36.2 bcm, accounting approximately 10% of China's total natural gas consumption.

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

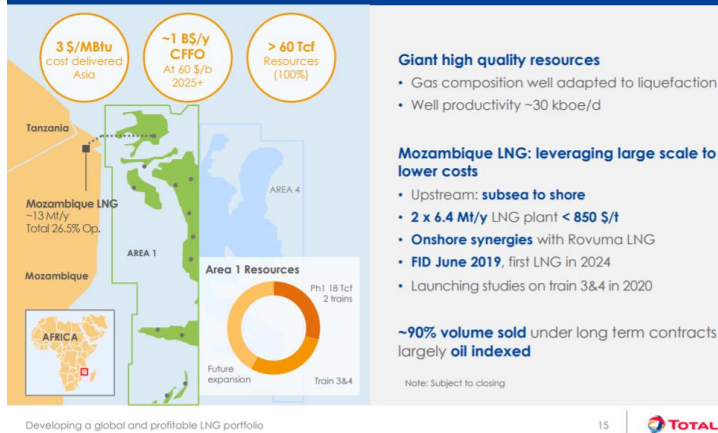
Posted Wednesday April 28, 2021. 9:00 MT

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

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

Total Mozambique Phase 1 and 2

Mozambique LNG: unlocking world-class gas resources



Source: Total Investor Day September 24, 2019

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

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

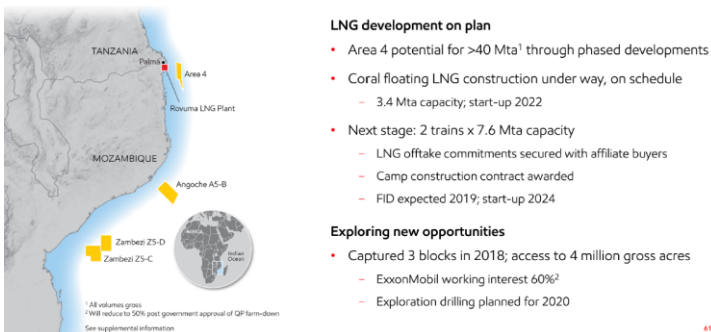
Mozambique's security issues pushes back 5.0 bcf/d of new LNG supply at least a couple years. The global LNG issue is that 5 bcf/d of new Mozambique LNG supply (apart from the Eni Coral FLNG of 0.45 bcf/d) won't start up in 2024 and

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

Exxon Mozambique LNG

UPSTREAM MOZAMBIQUE

Five outstanding developments



Source: Exxon Investor Day March 6, 2019

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

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

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

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

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

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



Source: IEA

● On Track ● More Efforts Needed ● Not on Track

Source: IEA Tracking Clean Energy Progress, June 2020

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

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

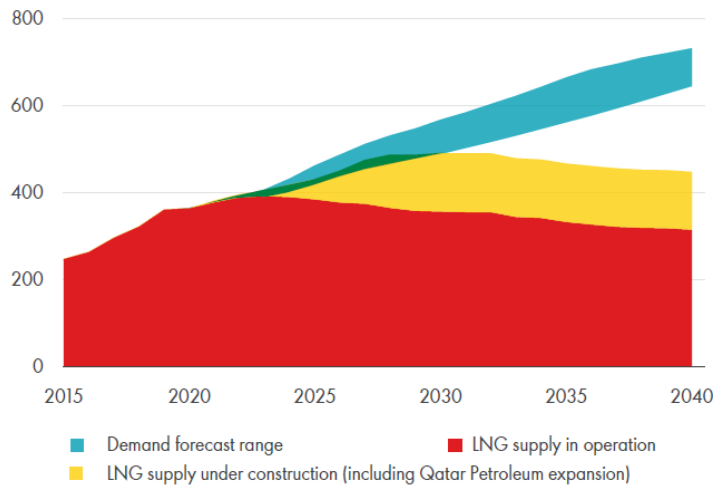
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would have reflected some delay, perhaps 1 year, at Mozambique but would be surprised if they put a 2-3 year delay in for the 5 bcf/d from Total Phase 1 +2 and Exxon Rozuma Phase 1. Compared to their LNG Outlook 2020, it looks like there was no change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

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

Emerging LNG supply-demand gap

MTPA



Source: Shell LNG Outlook 2021, Feb 25, 2021

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

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

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

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

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

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

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

Posted 11am on July 14, 2021

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

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

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

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

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

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

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

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

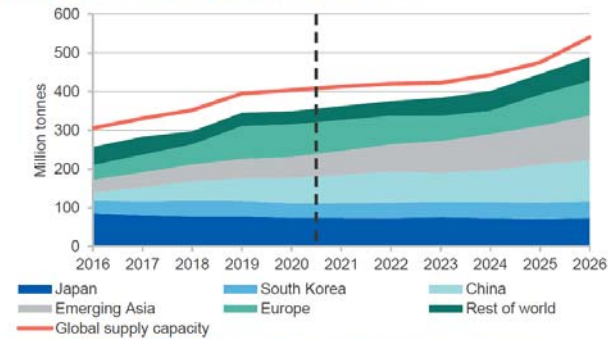
But we still see major LNG suppliers like Australia hinting but not outright saying that LNG supply gap is coming sooner. We have to believe Australia will be unveiling a sooner LNG supply gap in their September forecast. On June 28, we tweeted [\[LINK\]](#) on Australia's Resources and Energy Quarterly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

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

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

March 2021 LNG Outlook

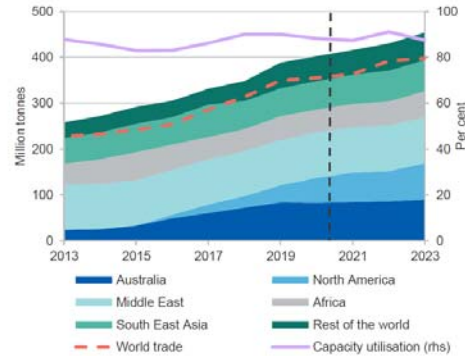
Figure 7.1: LNG demand and world supply capacity



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

June 2021 LNG Outlook

Figure 7.1: LNG demand and world supply capacity



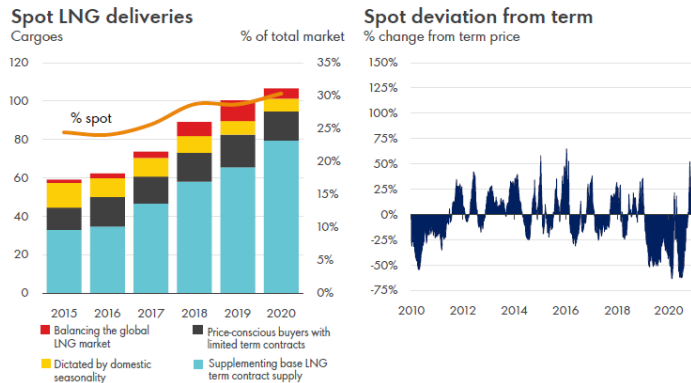
Source: Nexant (2021) World Gas Model; Department of Industry, Science, Energy and Resources (2021)

Source: Australia Resources and Energy Quarterly

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

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

Spot LNG deliveries and Spot deviation from term price



Source: Shell LNG Outlook 2021 on Feb 25, 2021

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Guyana not interested in joining OPEC



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Vice-President Bharrat Jagdeo

–VP Jagdeo says

NASCENT oil producer Guyana is not interested in joining the Organization of the Petroleum Exporting Countries (OPEC), Guyana’s Vice-President Bharrat Jagdeo said on Monday, as the South American country looks to rapidly boost production and attract new operators.

Guyana, which has become one of the fastest-growing crude-oil producers in the world since it began producing oil commercially in 2019, has been invited to attend OPEC’s international seminar in July, Jagdeo said, but there was no invitation to become a member of the cartel. “We were not formally invited to join OPEC. **That is not something we are interested in.** We have been invited, however, to participate in OPEC meetings,” Jagdeo told Reuters.

The Ministry of Natural Resources said the country was invited to attend the July meeting in Vienna and participate in a ministerial panel on diversifying energy economies.

The Wall Street Journal reported on Monday that Saudi Arabia’s Energy Minister, Abdulaziz bin Salman, and Haitham al-Ghais, OPEC’s secretary-general, have invited Guyana to join the cartel.

Guyana is planning an oil auction within a couple of months in the hope that such can bring in other oil and gas companies.

An ExxonMobil Corp-led (XOM.N) consortium currently controls all offshore output in Guyana under a production and sharing agreement in which Exxon decides the pace of production and shares a piece of the output with the government.

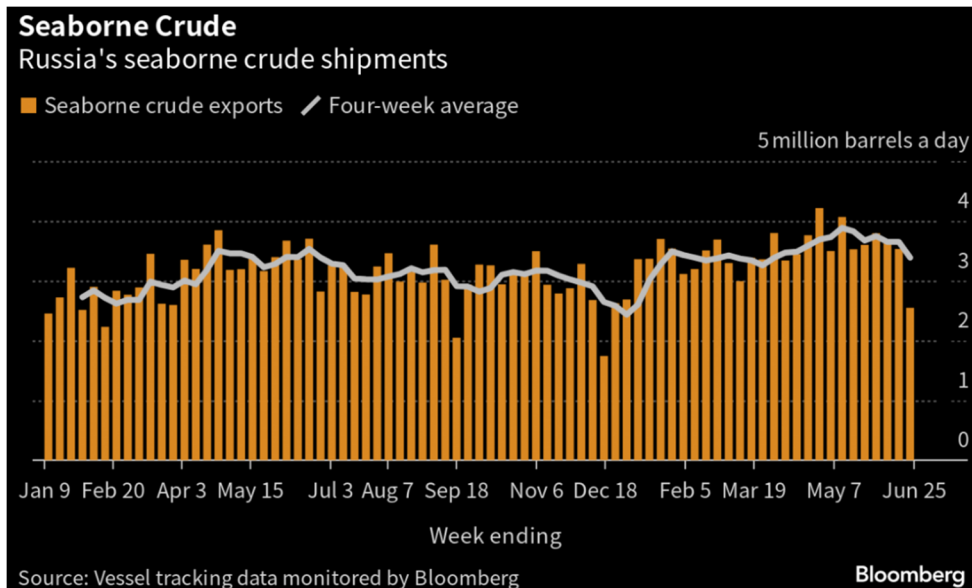
“We are committed to responsibly developing the resources offshore Guyana to maximise value for all stakeholders, including the government and people of Guyana,” said Exxon spokesperson Meghan Macdonald, in response to questions about the country and OPEC.

The company and the country are in talks over which unexplored offshore areas will be returned to the government, people close to the discussions have told Reuters.

The country is using its inland forests to tap carbon markets, in a business the government sees as more profitable than using the acreage for mining or agriculture, Jagdeo had previously said. (Reuters)

By Julian Lee

(Bloomberg) -- Russia's seaborne crude oil flows to international markets slumped last week but maintenance work, rather than output cuts, is the most likely cause. Crude flows through Russian ports fell by about 980,000 barrels a day in the week to June 25. Lower shipments were seen from all regions, but hardest hit was the Baltic, where fewer than half the normal number of tankers were loaded at Primorsk. The port accounted for more than half of the week-on-week drop in the country's total seaborne crude exports. Crude shipments through Primorsk dropped in exactly the same way during the same week last year and the pattern can also be seen in both 2020 and 2021, albeit a week earlier. In all three years, shipments rebounded the following week. There was a gap in the loading program for the port, with no cargoes due to complete loading between June 21 and June 25, indicating that the drop in flows was planned. The program then reverts to its more normal pattern of at least one cargo completing loading each day for the rest of the month.



There was also a big drop in shipments from the Pacific, where flows were down week-on-week by more than 200,000 barrels a day. A slump in shipments from Kozmino was partly offset by an increase in the flow from Sakhalin Island. But it's unlikely that this reflects an output cut either. Exports from Pacific ports command higher prices than those from the west of the country and shipping times to key markets in China and India are shorter, making cuts to flows from Kozmino unlikely. A gap in the Kozmino loading program suggests the dip in flows from the port will also be temporary.

Moscow has said previously that lower flows resulting from its output cut would be targeted at ports on the Baltic and Black Sea. But there has been no sign of a significant drop in

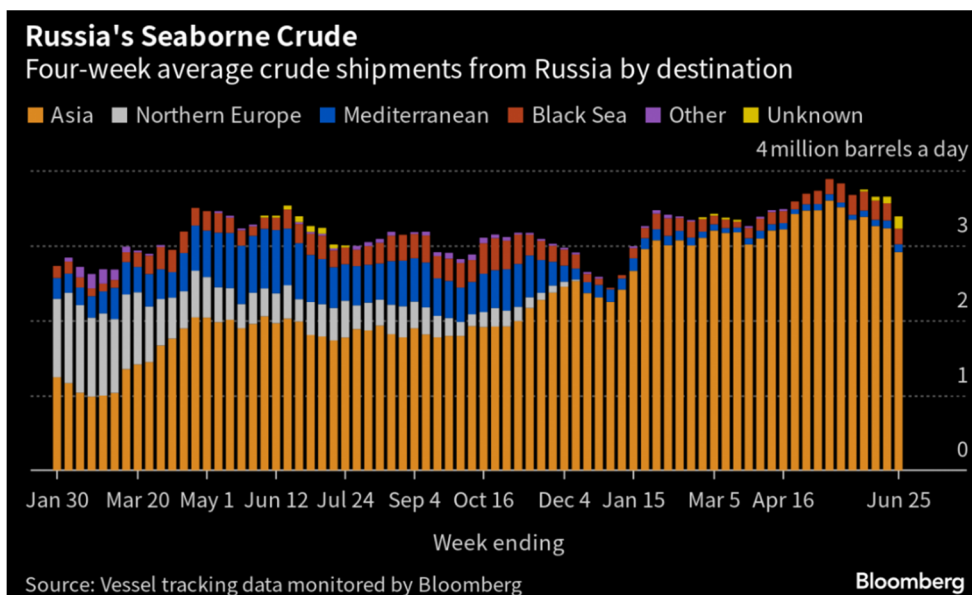
flows from the Baltic port of Ust-Luga, nor from Novorossiysk on the Black Sea.

Meanwhile, Russian refineries raised crude processing rates to the highest level since April in the week to June 21, as the nation's downstream maintenance season nears its end.

The short-lived march toward Moscow by the private army known as the Wagner Group at the weekend is unlikely to have any impact on Russian crude flows, as long as the situation doesn't deteriorate again.

Crude Flows by Destination

On a four-week average basis, overall seaborne exports in the period to June 25 were down by 263,000 barrels a day to 3.39 million barrels a day. More volatile weekly flows also fell, plunging by about 980,000 barrels a day to 2.55 million barrels a day.



Weekly data are affected by the scheduling of tankers and loading delays caused by bad weather. Port maintenance can also disrupt exports for several days at a time.

All figures exclude cargoes identified as Kazakhstan's KEBCO grade. Those are shipments made by KazTransoil JSC that transit Russia for export through the Baltic ports of Ust-Luga and Novorossiysk.

The Kazakh barrels are blended with crude of Russian origin to create a uniform export grade. Since Russia's invasion of Ukraine, Kazakhstan has rebranded its cargoes to distinguish them from those shipped by Russian companies. Transit crude is specifically exempted from European Union sanctions.

* Asia

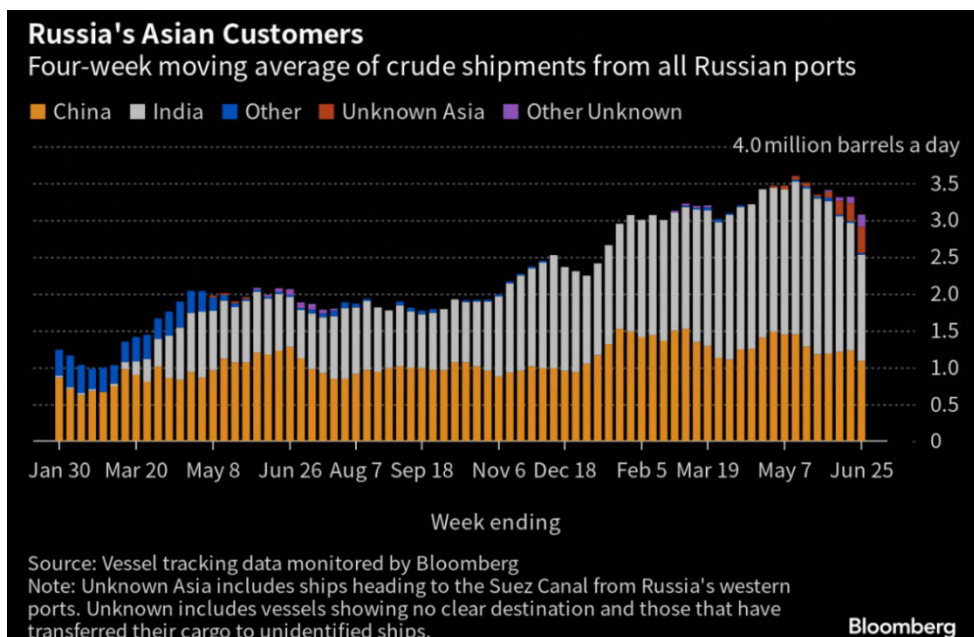
Four-week average shipments to Russia's Asian customers, plus those on vessels showing no final destination, fell to 3.07

million barrels a day in the period to June 25 from 3.32 million barrels a day in the four weeks to June 18. That's the lowest since March.

While the volumes heading to India appear to have declined from recent highs, history shows that most of the cargoes on ships without an initial destination eventually end up there or in China.

The equivalent of 358,000 barrels a day was on vessels showing destinations as either Port Said or Suez in Egypt, or which already have been or are expected to be transferred from one ship to another off the South Korean port of Yeosu. Those voyages typically end at ports in India or China and show up in the chart below as "Unknown Asia" until a final destination becomes apparent.

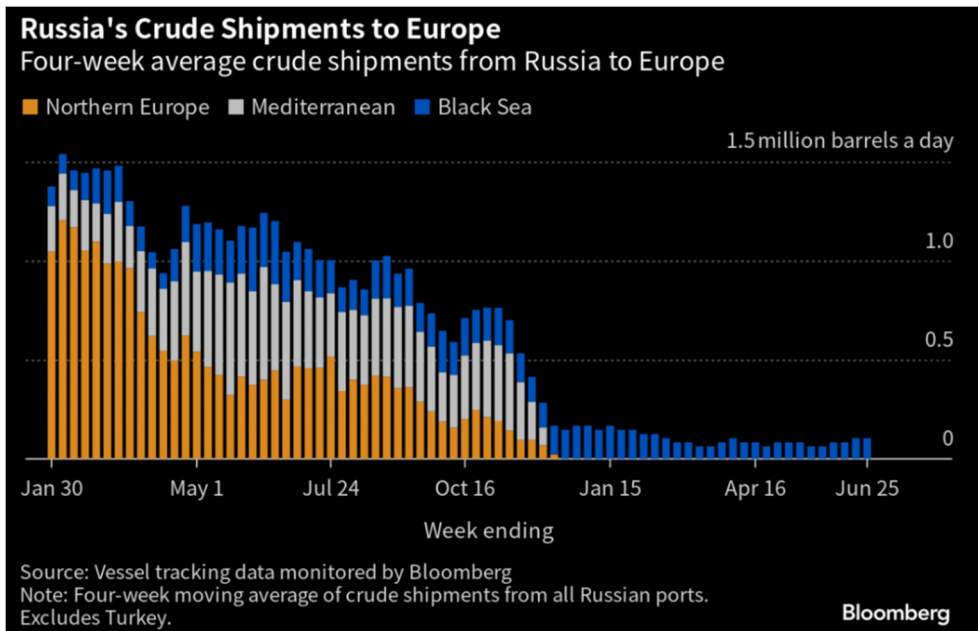
The "Other Unknown" volumes, running at 164,000 barrels a day in the four weeks to June 18, are those on tankers showing no clear destination. Most of those cargoes originate from Russia's western ports and go on to transit the Suez Canal, but some could end up in Turkey, while other cargoes are transferred from one vessel to another, either in the Mediterranean or, more recently, in the Atlantic Ocean.



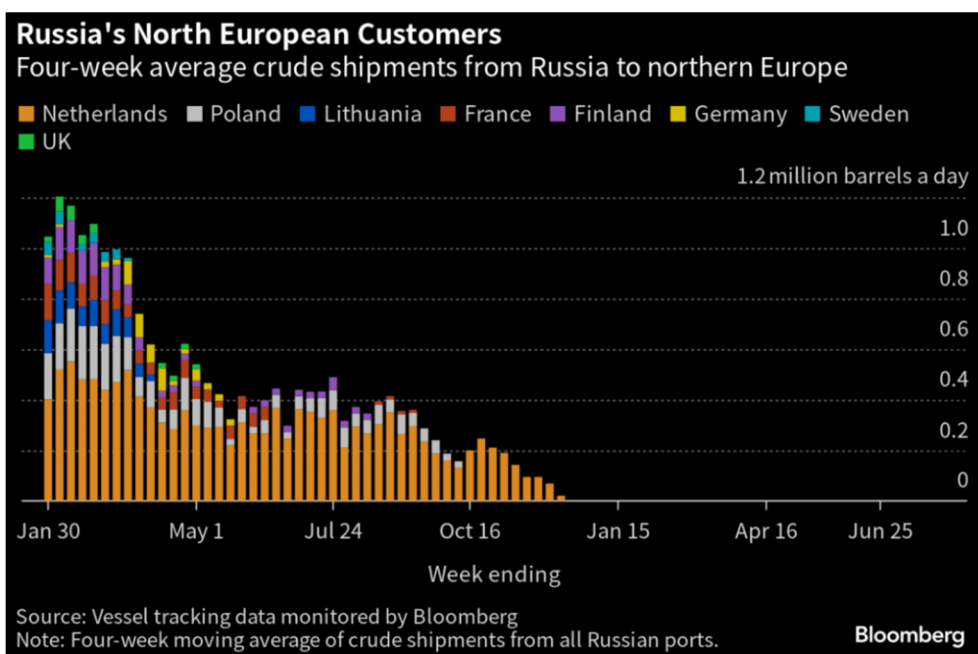
* Europe

Russia's seaborne crude exports to European countries were unchanged at 104,000 barrels a day in the 28 days to June 25, with Bulgaria the sole destination. These figures do not include shipments to Turkey.

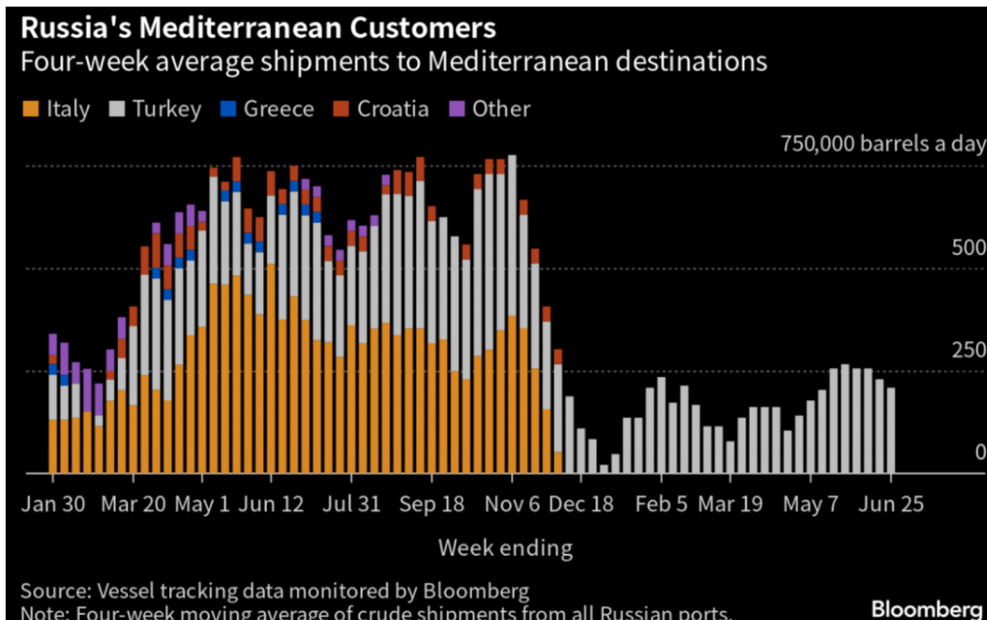
A market that consumed about 1.5 million barrels a day of short-haul seaborne crude, coming from export terminals in the Baltic, Black Sea and Arctic has been lost almost completely, to be replaced by long-haul destinations in Asia that are much more costly and time-consuming to serve.



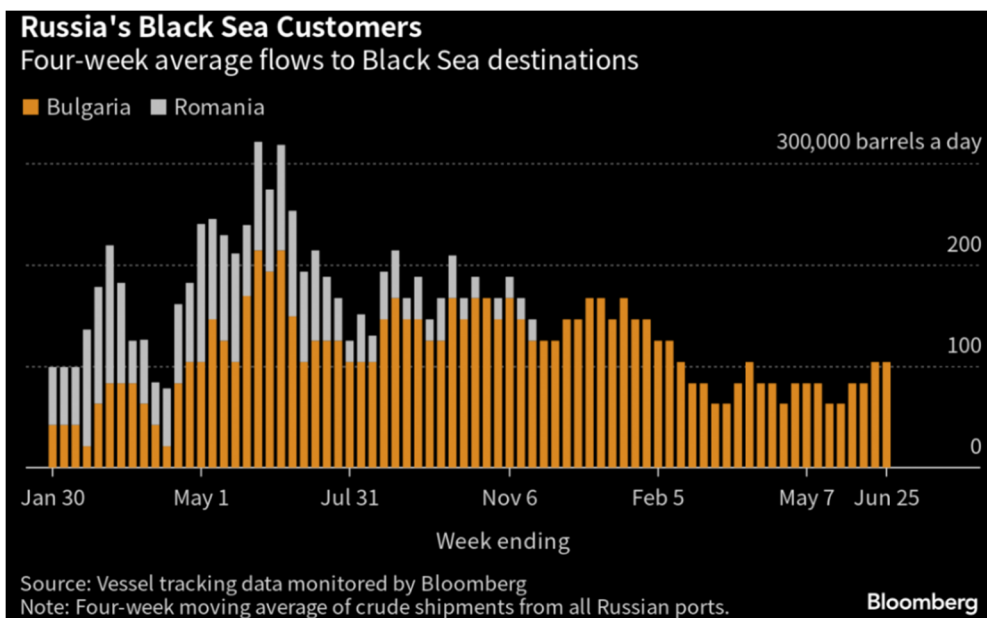
No Russian crude was shipped to northern European countries in the four weeks to June 25.



Exports to Turkey, Russia's only remaining Mediterranean customer, edged lower to 209,000 barrels a day in the four weeks to June 25, their lowest four-week average level in six weeks; flows to the country had topped 425,000 barrels a day in October.



Flows to Bulgaria, now Russia's only Black Sea market for crude, were unchanged at 104,000 barrels a day.

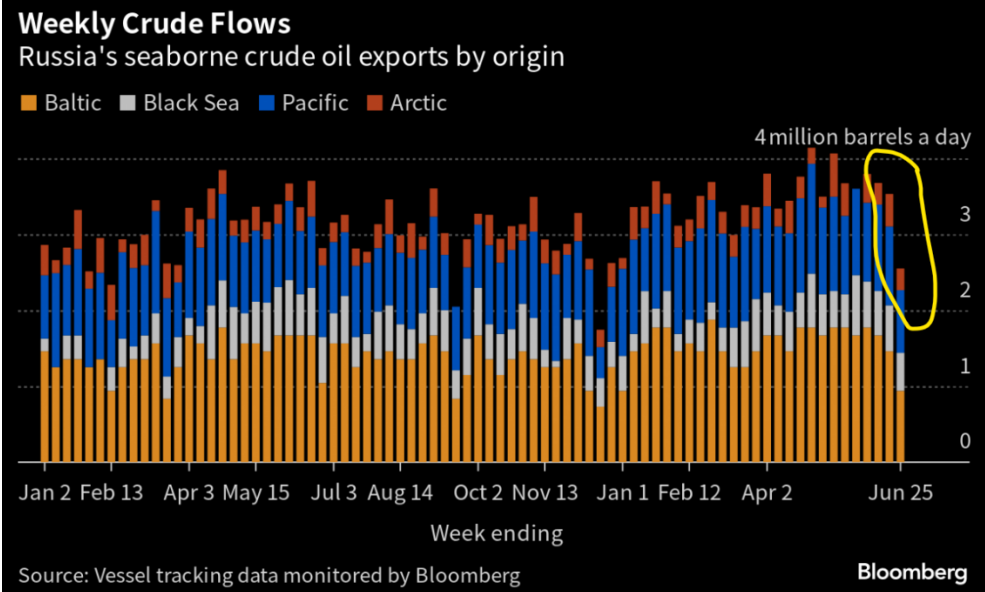


Flows by Export Location

Aggregate flows of Russian crude slumped to 2.55 million barrels a day in the seven days to June 25, from 3.53 million barrels a day the previous week. Shipments fell from all four export regions, with the biggest drops seen at Baltic and Pacific ports.

Shipments from Primorsk dropped by 521,000 barrels a day, or 56%, from the previous week. Flows from Kozmino were down week-on-week by 314,000 barrels a day.

Figures exclude volumes from Ust-Luga and Novorossiysk identified as Kazakhstan's KEBCO grade.



Export Revenue

Inflows to the Kremlin's war chest from its crude-export duty slumped to \$39 million in the seven days to June 25, a drop of \$15 million or 28%. Four-week average income fell by \$2 million to \$52 million.

President Vladimir Putin ordered his government to fine-tune existing indicators and establish additional ones to calculate oil prices for tax purposes in order to reduce the discount to global crude prices. Russia's government calculates oil taxes using a discount to Brent, which sets the floor price for the nation's crude for budget purposes. If Russian oil trades above that threshold, the Finance Ministry uses the market price for tax calculations, as has been the case in recent months. From July the discount is currently set at \$25/bbl, though this may now be narrowed.

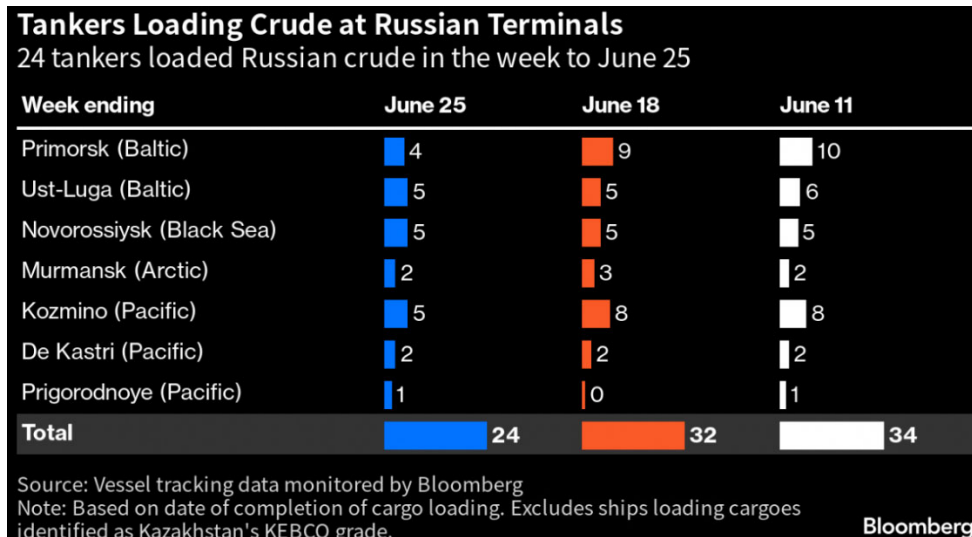


The duty rate for June has been set at \$2.21 a barrel, based on an average Urals price of \$55.97, which was \$23.90 a barrel below Brent during the period between April 15 and May 14. The rate for July will be cut to \$2.13 a barrel, based on an average Urals price of \$54.57, which was \$20.89 a barrel below Brent during the period between May 15 and June 14.

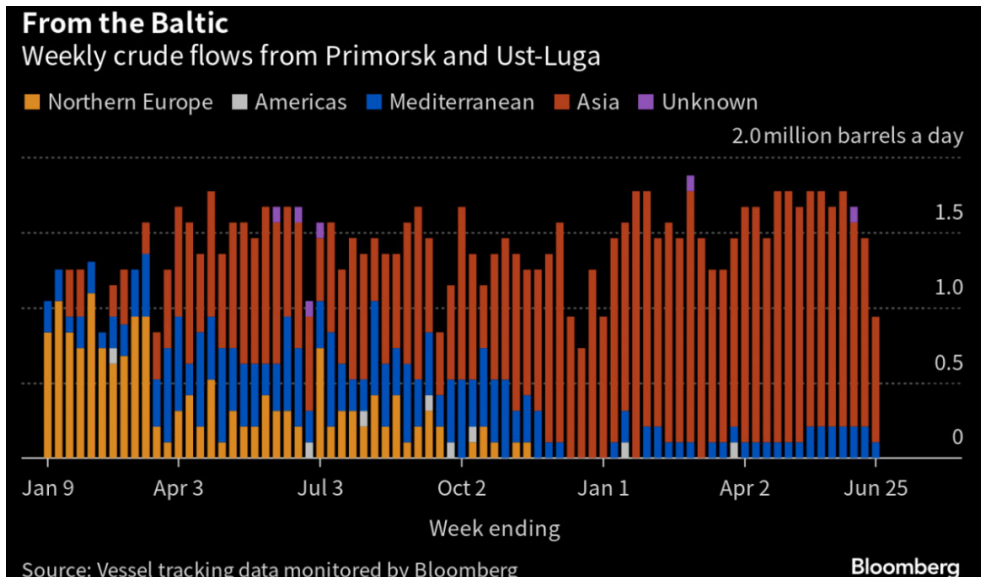
Origin-to-Location Flows

The following charts show the number of ships leaving each export terminal and the destinations of crude cargoes from the four export regions.

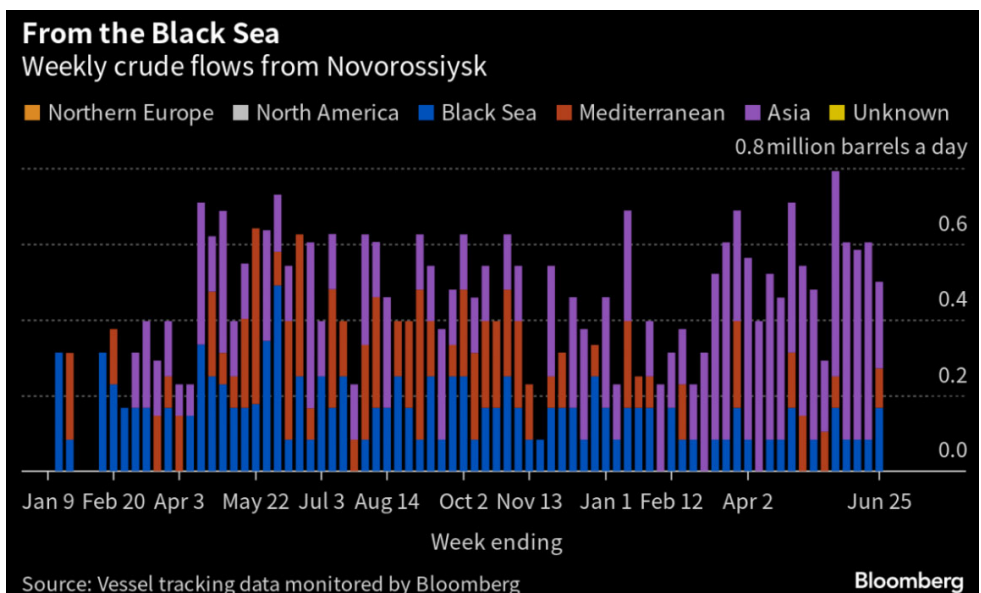
A total of 24 tankers loaded 17.85 million barrels of Russian crude in the week to June 25, vessel-tracking data and port agent reports show. That's down by 6.87 million barrels from the previous week's figure and the smallest volume since December. Destinations are based on where vessels signal they are heading at the time of writing, and some will almost certainly change as voyages progress. All figures exclude cargoes identified as Kazakhstan's KEBCO grade.



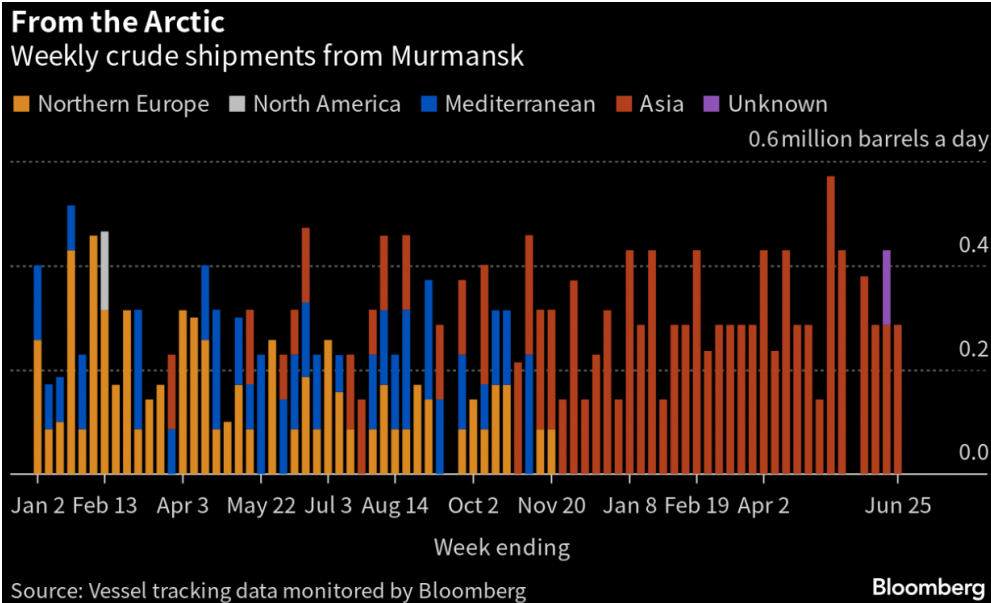
The total volume on ships loading Russian crude from Baltic terminals fell to a six-month low of 938,000 barrels a day.



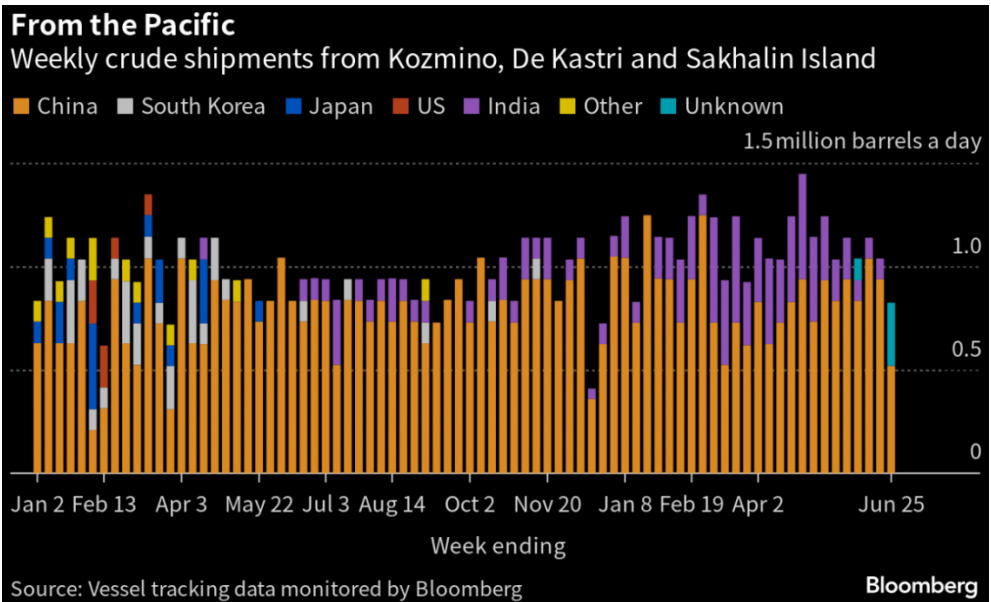
Shipments of Russian crude from Novorossiysk in the Black Sea dropped to five-week low of 500,000 barrels a day. One cargo of Kazakhstani crude was also loaded at the port during the week.



Arctic shipments gave up the previous week's gain, falling back to 286,000 barrels a day, with two Suezmax tankers leaving the port in the week to June 25.



Eight tankers loaded at Russia's three Pacific export terminals, down from 10 the previous week. The volume of crude shipped from the region fell to a six-month low of 824,000 barrels a day.



The volumes heading to unknown destinations are mostly Sokol cargoes that recently have been transferred to other vessels at Yeosu, or are currently being shuttled to an area off the South Korean port from the loading terminal at De Kastri. Most of these are also ending up in India. Some Sokol cargoes are now being transferred a second time in the waters off southern Malaysia. A small number of ESPO shipments are also being moved from one vessel to another in the same area. All of these cargoes have, so far, gone on to India. One cargo was loaded from the Sakhalin Island terminal in the week to June 25.

NOTES
Note: This story forms part of a regular weekly series

tracking shipments of crude from Russian export terminals and the export duty revenues earned from them by the Russian government.

Note: All figures exclude cargoes owned by Kazakhstan's KazTransOil JSC, which transit Russia and are shipped from Novorossiysk and Ust-Luga as KEBCO grade crude.

Note: Weeks have been revised to run from Monday to Sunday, rather than Saturday to Friday. This change has been implemented throughout the data series and previous weeks' figures have been revised.

Note: The next update will be published on Tuesday July 4, with future updates also to be published on Tuesdays.

If you are reading this story on the Bloomberg terminal, click here for a link to a PDF file of four-week average flows from Russia to key destinations.

--With assistance from Sherry Su.

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Remarks by President & CEO Amin H. Nasser at Energy Asia

Kuala Lumpur, MALAYSIA, June 26, 2023



Amin H. Nasser, Aramco President & CEO

Bismillah al-Rahman al-Rahim.

The Right Honorable Dato' Seri Anwar Ibrahim, Prime Minister of Malaysia, Your Excellencies, Distinguished Guests, Ladies and Gentlemen, good morning.

It is a pleasure to be in Kuala Lumpur, especially on the eve of Eid al-Adha. We are greatly honored that the Prime Minister could join us today.

I am also grateful to Tan Sri Tengku Muhammad Taufik and his team for their warm hospitality, and for organizing this timely conference.

Let me first say a few words about the current energy market environment, which has been complicated by the conflict in Ukraine. Overall, we believe that oil market fundamentals remain generally sound for the rest of the year.

Despite the recession risks in several OECD countries, the economies of developing countries – especially China and India – are driving healthy oil demand growth of more than 2 million barrels per day this year.

This is high by historical standards. And although China is facing some economic headwinds, the transport and petrochemical sectors are still showing signs of demand growth.

So we are optimistic about the market's prospects for the rest of the year. And once the broader global economy starts to recover, supply-demand balances will likely tighten further.

But my main comments this morning focus on Asia's energy future. How Asia's priorities should be better reflected in the global energy transition debate. And how Asia's and Aramco's views on future energy align.

Let me begin with Asia's rising economic dominance. The region now accounts for 46 percent of world GDP and is on track to reach half by 2050.

Conversely, North America's share is under 20 percent, while the EU's is just 15 percent.

People in Asia are increasingly better off too, with GDP per capita rising from just a thousand dollars in 1980 to over eighteen thousand dollars today. And by 2050, three of the five largest economies in the world are expected to be Asian, with growth rates in emerging markets predicted to be twice as strong as developed economies.

These are seismic changes.

But when it comes to the energy transition, I do not believe the interests of this dynamic region are being adequately reflected in the popular energy transition narrative and current transition policies.

Existing transition policies rightly attempt to address environmental sustainability. However, the equally critical issues of energy security and affordability are under-emphasized.

We also know from experience that energy transitions are a complex, multi-generational process. Completely transforming a 100 trillion dollar global economy in just a quarter of a century is fanciful.

And the same energy transition policies should not be applied to every nation, or it will severely affect the competitiveness of those who are not at the same economic maturity level.

All of this is relevant to the whole of Asia. In addition, the under-developed parts of Asia face particularly challenging realities.

For example, almost half of the region, or 2 billion people, do not have access to clean cooking fuels, damaging health and the environment. And 150 million people have no access to electricity; 350 million have only limited access; while almost a billion experience frequent power interruptions.

So it is a very diverse picture. In some parts of Asia, many still need basic access to energy to lift them out of poverty.

But as a rising economic powerhouse with a rising population, Asia needs increasing amounts of proven energy to keep its growing middle class growing. And that path to prosperity is increasingly threatened by current transition policies.

Even at the tip of the transition spear the picture is hardly rosy.

For example, despite the welcome additional contributions from electric vehicles, solar, and wind over the past decade, their growth has not even met the growth in global energy consumption.

And the energy equivalent cost of green hydrogen is still in the range of 200 to 400 dollars per barrel, compared with the current oil price of around 75 dollars. So demand for conventional energy like oil and gas has continued to increase, while coal remains the world's largest source of electricity.

The prevailing narrative and current transition policies have already caused a decade of under-investment in oil and gas. When shocks occur, such as the conflict in Ukraine, it is not surprising that an energy crisis for many is the result.

And if you put all your transition eggs in the new energy basket, you are scrambling when that basket cannot carry the load!

The one silver lining is a growing realization that to address energy security and affordability as well as environmental sustainability, global transition policies must be more pragmatic, orderly, and inclusive.

That should encourage different forms of energy to run in parallel while scaling up alternatives to do more. With intensified global efforts, led by our industry, to further reduce the carbon footprint of conventional energy.

This includes the powerful instrument of efficiency enhancement. What would also help Asia is the acceptance of a multi-speed transition model. And proper levels of financial support for developing countries to help them adapt to climate change and transform energy systems.

Thankfully, consensus is starting to build around this change of course.

Large Asian energy consumers like China and Japan are already stressing that transition policies must be realistic as well as inspirational. And that new energy must be ready before reducing reliance on the old.

Others stress that the path to carbon neutrality should be diverse, because the world has different economic and energy situations. But a lot more needs to be done for this pragmatic approach to become a worldwide reality.

I see this as Asia's great opportunity to speak louder and more clearly about its unique transition priorities. Asia's transition voice should match its economic voice.

At Aramco, we are turning this pragmatic approach into action.

For example, we are continuing investments in our upstream to help respond to the worrying global under-investment in oil and gas. We are also intensifying efforts to reduce our relatively low upstream carbon intensity.

And we are working on multiple technological fronts with the aim of reducing GHG emissions from conventional energy, such as CCS, Circular Carbon Economy, and Direct Air Capture.

Together, it means the oil we supply can increasingly help Asian countries to meet their emissions reduction goals. Meanwhile, we are accelerating the expansion of our downstream and chemicals business.

We are also adding new, lower carbon energy products to our portfolio, including hydrogen, ammonia, methanol, and e-fuels. And when it comes to global net-zero ambitions our strategies do not just keep a realistic energy transition in mind.

They also acknowledge the need for a materials transition, including non-combustible uses of oil and gas in more sustainable materials that are the building blocks of modern life.

Crucially, we are intensifying our efforts to become Asia's energy provider of choice on the ground.

In Korea, we recently began work on a seven billion dollar petrochemical project with S-Oil. Similarly, we recently signed agreements for two multi-billion dollar liquids to chemicals investments in China. And our PrefChem joint venture with Petronas in Johor shows the confidence we have in Malaysia and the broader ASEAN region.

The common thread is partnerships – with people we know personally, companies we can count on, in a region we respect. That is why we are doubling down on Asia's growing demand for energy; chemicals; advanced materials; lubricants; and new lower carbon energy, supported by game-changing technologies, doubling down on these needs by being Asia's "one-stop source" that also aims to balance energy security and affordability with environmental sustainability.

And with the largest capital expenditure program in our history, we are doubling down on investment opportunities for Asian companies in Saudi Arabia.

Ladies and Gentlemen, like many in Asia, we see the future in decades not quarters, eras not cycles.

So in a century that is Asian, we know that our future is Asia. If we can bring our combined strength to bear on a new approach to energy transition, that reflects Asia's unique priorities, we can deliver the energy future that its economies and people deserve.

Thank you, Eid Mubarak, and Selamat Hari Raya Haji!

Address by OPEC Secretary General

Delivered by HE Haitham Al Ghais, OPEC Secretary General, at the Energy Asia conference, 26 June 2023, Kuala Lumpur, Malaysia.

Honourable Prime Minister, Excellencies, ladies and gentlemen,

It is a great privilege to be here in Kuala Lumpur this morning to listen to the Honourable Prime Minister of Malaysia, Dato' Seri Anwar Ibrahim.

I would like to thank the Prime Minister for his wise words, and also for Malaysia's continued support for the Declaration of Cooperation (DoC) between OPEC and non-OPEC producers, widely known as OPEC+.

Malaysia's effective participation in the DoC since it was inaugurated at the end of 2016, has been instrumental in helping the oil industry overcome two historic downturns, most recently during the COVID-19 pandemic.

At OPEC, we look forward to continuing to work with the government's Head of Delegation to DoC meetings, His Excellency Mohammad Rafizi Bin Ramli, Malaysia's Minister of Economy and his team in the coming months and years.

I would also like to take this opportunity to thank my good friend, Tan Sri Tengku Taufik, President & Group CEO of Petronas and Chairman of Energy Asia.

I recall meeting him earlier this year in Davos – and listening to his views on a host of topics, including the need for an inclusive and sustainable energy transition. He is an extremely eloquent advocate for the oil and gas industry.

Excellencies, ladies and gentlemen,

Malaysia has a long and distinguished oil industry history, dating back to 1910. This was the year when the country's first oil well was spudded on Bukit Telaga Minyak (Canada Hill) in Miri, Sarawak. It produced its first oil by the end of the year and continued producing for a further 62 years.

Known as the 'Grand Old Lady', the well is now a monument that still overlooks the town of Miri.

It is a mark of Malaysia's extensive oil history, a sign of oil's continuing importance to the country today, and I firmly believe to its future. This future also needs to be set into the context of the overall theme of this conference: Charting Pathways for a Sustainable Asia.

Allow me to stress that the issue of sustainable energy pathways goes to the core of OPEC's founding commitment to support a stable and sustainable oil market, in the interest of producers, consumers and the global economy.

This has gained additional momentum over the past six years or so in working with other leading oil-producing countries through the DoC.

Together, we have been front-and-centre in supporting a balanced and stable global oil market. This was clearly on display at the most recent ministerial meeting earlier in June, with the group following its successful approach of being precautionary, proactive, and pre-emptive.

The importance of market stability is not only vital for the short-term, it is critical for the long-term too.

In OPEC's World Oil Outlook (WOO), we see global energy demand increasing by 23% through 2045, and I see no credible way to address this without utilizing all available energy sources, and with energy market stability as a guiding light.

Renewables will play a much greater role, and contrary to what some may say, OPEC Member Countries are already investing significantly in this area. Gas, hydro, nuclear, hydrogen and biomass will also expand, BUT, it is clear that oil will remain an integral part of the mix.

Every data-based forecast that I have seen shows that oil is irreplaceable for the foreseeable future. In our WOO, we see global oil demand rising to 110 million barrels a day by 2045, and oil still making up about 29% of the energy mix by then.

A massive energy expansion is required as we see the global economy more than doubling in size, and the world's population reaching 9.5 billion by 2045. Moreover, as we all know, there remains a critical need to bring modern energy services to those billions that continue to go without basic energy access in many parts of the world.

While we must continue to provide more energy to the world, we also recognize the need to continually reduce emissions and decarbonize, subscribing to global best practices and cutting edge, best-in-class technologies. For example, carbon capture utilization and storage, clean hydrogen technologies, the circular carbon economy, and others.

Meeting the expected future energy growth, while also lowering global emissions, requires unprecedented investment and collaboration.

Chronic underinvestment in the industry, not just oil, but across all energies, is putting the viability of the whole energy system at stake. It is a point I have continually highlighted since becoming OPEC Secretary General.

In our WOO, for the oil industry alone, investment requirements equate to \$12.1 trillion, or over \$500 billion each year between now and 2045.

Recent annual levels have been significantly below this, due to industry downturns, the pandemic, and the increasing focus on environmental, social and governance issues.

All industry policymakers and stakeholders need to work together to ensure a long-term investment-friendly climate, with sufficient finance available. One that works for producers and consumers, as well as developed and developing countries.

For OIL, we have heard appeals over the last year or so for producing countries to play a key role in ensuring stable and sustainable global energy supplies. At the same time, however, we have also constantly heard calls to end financing in oil projects.

The two sentences simply do not fit together.

Let me ask investors in the audience today: would you invest if you do not see security of demand, particularly in an industry where returns can take a decade or more?

Talk of no new investment in oil projects will only lead to energy chaos. We need energy clarity, not energy chaos.

We also need facts, not fantasy to take us through a just, inclusive and realistic transition.

Excellencies, ladies and gentlemen,

In recent years, we have heard of net-zero targets and scenarios in which global demand drops to around 80 mb/d by 2030, which is more than 20 mb/d below today's level. We need to remember that 2030 is only six years from now!

Over the period to 2030, however, it is expected that another half a billion people will move into cities across the world as the global economy continues to expand.

Being in Malaysia, and to put this in an understandable context, this urbanization drive will require the addition of approximately 50 new Kuala Lumpurs.

It goes without saying therefore that the world will therefore need more, not less oil, alongside the need to continually reduce emissions.

This returns to me the need for facts and energy clarity.

What has become apparent in the past few years or so is that references to net-zero numbers have sown confusion among investors and policymakers. This is not a positive recipe for either producers nor consumers.

Excellencies, ladies and gentlemen,

When I listened to my friend Tan Sri Tengku Taufik in Davos earlier this year, a line stuck out to me. He said when talking about the energy transition: "Don't sacrifice the good for the perfect."

It makes absolute sense to me. We cannot get everything absolutely right. Moreover, we need to recognize that we should be talking about energy transitions.

It has to be a plural, as I firmly believe that each nation and peoples have their own energy transition pathway. The capacities and national circumstances of developing countries must be taken into account.

Addressing the energy and climate challenges must put fairness at its heart, making sure businesses, governments, and communities can come together to deliver genuine and real change.

Standing here in Kuala Lumpur is a reminder of two things.

Firstly, that Asia is at the heart of our global energy future. It has to have its own say in the challenges related to its energy security, availability and the need to reduce emissions.

Secondly, the vital role of Malaysia, both as a partner with OPEC in the DoC and as a regional and global energy leader, through both the national government, and its national oil company, Petronas.

At OPEC, we very much look forward to continuing our fruitful collaboration with Malaysia, and ensuring we deliver the energy clarity we all need.

Thank you, and Terima Kasih.

COVID infections still the number one infectious disease in Beijing: weekly report

By Global Times Published: Jun 29, 2023 11:31 AM

A total of 2,869 cases of 19 infectious diseases were reported from June 19 to 25 in Beijing with the majority of them being cases of coronavirus, authorities said on Thursday. The number of infections has seen a decline compared with the previous week, despite a significant increase in the influx of people from all over the country during the just-concluded Dragon Boat Festival.

The top five reported diseases are, in order, coronavirus infection, other infectious diarrhea, hand, foot, and mouth disease, viral hepatitis, and syphilis, accounting for 95.6 percent of all reported cases of infectious diseases, the Beijing Municipal Health Commission said on Thursday.

The number of cases from Jun 19 to 25 has decreased compared to the previous week, shaking off concerns that the three-day Dragon Boat Festival from June 22 to 24 would bring a lead in COVID cases due to large influx of people.

During the festival break, 216 tourist attractions in Beijing welcomed 5.19 million visitors, recording a 2.1 percent growth over the same period in 2019, official data showed. Tourists visiting the capital generated revenue of 309.09 million yuan (\$43.05 million), up 5.8 percent from the same period in 2019.

Respiratory tract infections remained the most reported disease throughout the week, the commission said, accounting for 86.3 percent of the total.

Many people in China have contracted a second COVID infection in recent weeks, with Beijing reporting over 10,000 cases from May 1 to 7. China's top respiratory disease expert Zhong Nanshan estimated in May some 85 percent of the total population in China, approximately between 1.1 and 1.2 billion people, have been infected with coronavirus.

Besides COVID, the Beijing health commission reminded people to be vigilant against hand, foot, and mouth disease, a common childhood infectious disease characterized by fever, oral mucosal herpes or ulcers, and rash on the hands, feet, buttocks, and other areas.

Good hygiene practices such as hand washing, frequent ventilation and disinfection, are effective measures in preventing the disease.

<https://newsroom.aaa.com/2023/06/record-breaking-travel-volumes-expected-july-4th-weekend/>

Record-Breaking Travel Volumes Expected July 4th Weekend

Number of Americans traveling by car and air over the holiday projected to be highest on record

Aixa Diaz Media Relations Manager ADiaz@national.aaa.com

6/26/2023

WASHINGTON, DC (June 26, 2023) – AAA projects 50.7 million Americans will travel 50 miles or more from home this Independence Day weekend*, setting a new record for the holiday. Domestic travel over the long weekend will increase by 2.1 million people compared to 2022. This year's projection surpasses the previous July 4th weekend record set in 2019 of 49 million travelers.

"We've never projected travel numbers this high for Independence Day weekend," said Paula Twidale, Senior Vice President of AAA Travel. "What this tells us is that despite inventory being limited and some prices 50% higher, consumers are not cutting back on travel this summer. Many of them heeded our advice and booked early, another sign of strong travel demand."

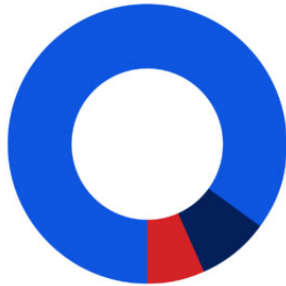
This July 4th weekend is expected to set a new record for the number of Americans traveling by car for the holiday. AAA expects 43.2 million people will drive to their destinations, an increase of 2.4% over 2022 and 4% higher than 2019. This summer, gas prices are well below what they were one year ago. The national average for a gallon of regular was \$4.80 on July 4th, 2022. Gas prices have remained steady the past couple of months, with the national average hovering around \$3.50 to \$3.60 a gallon, thanks to the lower cost of oil.

Air travel is also expected to set a new record. AAA projects 4.17 million Americans will fly to their destinations Independence Day weekend, an increase of 11.2% over 2022 and 6.6% over 2019. The previous July 4th weekend air travel record of 3.91 million travelers was set in 2019. The share of air travelers in the overall holiday forecast this year is an impressive 8.2% – the highest percentage in nearly 20 years.

Other modes of transportation are also on the rise this year. AAA expects 3.36 million people will travel by bus, cruise, or train over the long weekend, an increase of 24% over last year. While more travelers are turning to these modes this year, the number is not expected to surpass 2019's total of 3.54 million.

AAA 2023 July 4th Travel Forecast

Share of Travelers by Mode



■ Auto 85.2%
■ Air 8.2%
■ Other 6.6%

Number of Travelers by Mode

	Auto	Air	Other	Total
2023 (forecast)	43.2M	4.17M	3.36M	50.7M
2022	42.2M	3.75M	2.72M	48.7M
2019	41.5M	3.91M	3.54M	49.0M
Growth* (2022 to 2023)	2.4%	11.2%	23.8%	4.3%
Growth* (2019 to 2023)	4.1%	6.6%	-4.8%	3.7%

*Percentages may differ due to rounding. | Source: S&P Global Market Intelligence

Best/Worst Times to Travel and Peak Congestion by Metro

INRIX, a provider of transportation data and insights, expects Friday, June 30 to be the busiest day on the roads during the Independence Day holiday weekend, with average travel times up nearly 30% over normal. Major metros like Boston, Seattle, and Washington, DC are expected to see the worst traffic. INRIX recommends leaving in the morning or after 6 p.m. to avoid the heaviest holiday congestion.

“With record-breaking travelers expected on the road this holiday weekend, drivers should prepare for above-average delays to their favorite destinations,” said Bob Pishue, transportation analyst at INRIX. “Using traffic apps, local DOT notifications, and 511 services are key to minimizing holiday travel traffic frustrations this Independence Day.”

Best and Worst Times to Travel by Car

Date	Worst Travel Time	Best Travel Time
Thu, June 29	4:00 – 6:00 PM	Before 12:00 PM
Fri, June 30	10:00 AM – 5:00 PM	Before 10:00 AM, After 6:00 PM
Sat, July 1	1:00 PM	Before 12:00 PM
Sun, July 2	<i>Minimal Traffic Impact Expected</i>	
Mon, July 3	<i>Minimal Traffic Impact Expected</i>	
Tue, July 4	12:00 – 3:00 PM	Before 11:00 AM, After 6:00 PM
Wed, July 5	3:00 – 6:00 PM	Before 2:00 PM

Peak Congestion by Metro

Metro	Route	Peak Congestion Period	Est. Travel Time	Compared to Typical
Atlanta	Savannah to Atlanta via I-16 W	Tue, 6PM	6 hrs 18 mins	67%
Boston	Boston to Hyannis via Pilgrim Hwy S	Fri, 11AM	2 hrs 24 mins	63%
Chicago	Chicago to Indianapolis via I-65 S	Wed, 5PM	5 hrs 30 mins	33%
Washington DC	Rehoboth Beach to Washington via US-50 W	Tue, 5PM	4 hrs	82%
Denver	Fort Collins to Denver via I-25 S	Fri, 1PM	2 hrs 24 mins	60%
Detroit	Cleveland to Detroit via I-90 W	Fri, 10AM	4 hrs 36 mins	73%
Houston	Houston to Galveston via I-45 S	Sat, 11AM	1 hr 18 mins	52%
Los Angeles	Los Angeles to Las Vegas via I-15 N	Sun, 6PM	6 hrs 12 mins	60%
Minneapolis	Minneapolis to Eau Claire via I-94 E	Wed, 6PM	2 hrs 36 mins	30%
New York	New York to Jersey Shore via GSP S	Fri, 5PM	2 hrs 48 mins	64%
Portland	Portland to Cannon Beach via US-26 W	Sat, 1PM	2 hrs 18 mins	35%
San Diego	Palm Springs to San Diego via I-15 S	Wed, 7AM	3 hrs 30 mins	17%
San Francisco	San Francisco to Sacramento via I-80 E	Fri, 12PM	2 hrs 18 mins	48%
Seattle	Seattle to Ellensburg via I-90 E	Fri, 3PM	2 hrs 36 mins	43%
Tampa	Tampa to Orlando via I-4 E	Tue, 11AM	2 hrs 24 mins	69%

Summer Travel Trends and Tips

Travel demand has been steadily increasing since 2020, and this summer is poised to be one for the record books. Here are some trends and tips from AAA Travel.

- Air travel is seeing the biggest spike despite high ticket prices. Passengers are paying 40% – 50% more for flights compared to last year, but AAA data shows bookings aren't slowing down. Many airlines are responding to demand by hiring more staff and taking smaller regional planes out of service and replacing them with larger ones to increase capacity. However, there are still challenges, including a shortage of air traffic controllers that has led to reduced service in and out of New York City area airports.

- **AAA Travel Tip:** Avoid checking luggage to save time and money. Instead, travel with a carry-on bag to skip baggage claim and give yourself flexibility if your flight is delayed or canceled.
- Hotel prices are up slightly over 2022, but not by much. While the number of domestic hotel bookings is about the same as last year, AAA data shows international hotel bookings are up 80% compared to 2022. International travel demand is booming and so are passport applications. The U.S. State Department says it's processing half a million applications a week. Routine service is averaging 10-13 weeks.
 - **AAA Travel Tip:** Need a passport fast? [RushMyPassport](#) provides expedited services and discounts for AAA members. This past May, they handled more than 1,100 applications from AAA members, compared to just 73 applications in May of last year.
- Car rental shortages seen during the pandemic have improved. Inventory has been increasing steadily since last year, with newer models and electric vehicles added to fleets. AAA data shows rental prices are down slightly from last year. Demand for international rental cars is up more than 80% compared to 2022.
 - **AAA Travel Tip:** If you're planning to drive abroad, keep in mind some countries require [International Driving Permits](#). AAA is one of only two private entities in the U.S. authorized by the State Department to issue IDPs. This year, AAA reports demand for IDPs is double what it was in 2022.
- Cruising is back to pre-pandemic numbers, with sold-out ships and advance bookings. Prices are about the same as 2022, with certain cruises a bit higher this year due to demand. Alaska cruises are particularly popular this time of year. AAA booking data also shows Caribbean cruises and European river cruises are top vacations in 2023.
 - **AAA Travel Tip:** Protect your investment with [travel insurance](#). AAA data shows demand for travel insurance is up more than 100% over last year, as more travelers now see the need to prepare for the unexpected.

Holiday Forecast Methodology

Travel Forecast

In cooperation with AAA, S&P Global Market Intelligence developed a unique methodology to forecast actual domestic travel volumes. The economic variables used to forecast travel for the current holiday are leveraged from S&P Global Market Intelligence's proprietary databases. These data include macroeconomic drivers such as employment, output, household net worth, asset prices including stock indices, interest rates, housing market indicators, and variables related to travel and tourism including gasoline prices, airline travel, and hotel stays. AAA and S&P Global Market Intelligence have quantified holiday travel volumes going back to 2000.

Historical travel volume estimates come from DK SHIFFLET's TRAVEL PERFORMANCE/MonitorSM. The PERFORMANCE/MonitorSM is a comprehensive study measuring the travel behavior of U.S. residents. DK SHIFFLET contacts over 50,000 U.S. households each month to obtain detailed travel data, resulting in the unique ability to estimate visitor volume and spending, identify trends, forecast U.S. travel behavior and position brands—all after the trips have been taken.

The travel forecast is reported in person-trips. In particular, AAA and SPGMI forecast the total U.S. holiday travel volume and expected mode of transportation. The travel forecast presented in this report was prepared the week of May 15, 2023.

* Independence Day Holiday Travel Period

For purposes of this forecast, the Independence Day holiday travel period is defined as the five-day period from Friday, June 30 to Tuesday, July 4. When the Fourth of July falls on a Wednesday, it is considered to be a six-day holiday period, when it falls on any other day of the week the holiday period is a five-day window.

About AAA

Started in 1902 by automotive enthusiasts who wanted to chart a path for better roads in America and advocate for safe mobility, AAA has transformed into one of North America's largest membership organizations. Today, AAA provides roadside assistance, travel, discounts, financial and insurance services to enhance the life journey of 62 million members across North America, including 56 million in the United States. To learn more about all AAA has to offer or to become a member, visit AAA.com.

About S&P Global

S&P Global (NYSE: SPGI) provides essential intelligence. We enable governments, businesses and individuals with the right data, expertise and connected technology so that they can make decisions with conviction. From helping our customers assess new investments to guiding them through ESG and energy transition across supply chains, we unlock new opportunities, solve challenges and accelerate progress for the world. We are widely sought after by many of the world's leading organizations to provide credit ratings, benchmarks, analytics and workflow solutions in the global capital, commodity and automotive markets. With every one of our offerings, we help the world's leading organizations plan for tomorrow, today. For more information, visit www.spglobal.com.

About DKSA

DK SHIFFLET boasts the industry's most complete database on U.S. resident travel both in the U.S. and worldwide. Data is collected monthly from a U.S. representative sample, adding over 60,000 traveling households annually and is used daily by leading travel organizations and their strategic planning groups. DK SHIFFLET is an MMGY Global company.

About INRIX

Founded in 2004, INRIX pioneered intelligent mobility solutions by transforming big data from connected devices and vehicles into mobility insights. This revolutionary approach enabled INRIX to become one of the leading providers of data and analytics into how people move. By empowering cities, businesses, and people with valuable insights, INRIX is helping to make the world smarter, safer, and greener. With partners and solutions spanning across the entire mobility ecosystem, INRIX is uniquely positioned at the intersection of technology and transportation – whether it's keeping road users safe, improving traffic signal timing to reduce delay and greenhouse gasses, optimizing last mile delivery, or helping uncover market insights. Learn more at INRIX.com.

<https://www.tipro.org/newsroom/tipro-news/texas-pro-business-environment-supports-economic-growth-and-energy-security>

TEXAS' PRO-BUSINESS ENVIRONMENT SUPPORTS ECONOMIC GROWTH AND ENERGY SECURITY

JUNE 16, 2023

Austin, Texas - Citing the latest Current Employment Statistics (CES) report from the U.S. Bureau of Labor Statistics (BLS), the Texas Independent Producers and Royalty Owners Association (TIPRO) today highlighted new employment figures showing a significant gain in Texas upstream employment last month. According to TIPRO's analysis, direct Texas upstream employment for May 2023 totaled 206,000, an increase of 6,900 jobs from adjusted April employment numbers. Texas upstream employment in May 2023 represented the addition of 22,700 positions compared to May 2022, including an increase of 2,700 jobs in oil and natural gas extraction and 20,000 jobs in the services sector.

TIPRO's new employment data yet again indicated strong job postings for the Texas oil and natural gas industry during the month of May. According to the association, there were 13,779 active unique jobs postings for the Texas oil and natural gas industry in May, including 4,366 new job postings added during the month by companies. In comparison, the state of California had 5,100 unique job postings last month, followed by Louisiana (2,390), Oklahoma (2,037) and Pennsylvania (1,649). TIPRO reported a total of 61,442 unique job postings nationwide last month within the oil and natural gas sector.

Among the updated 17 specific industry sectors TIPRO uses to define the Texas oil and natural gas industry, Support Activities for Oil and Gas Operations led in the rankings for unique job listings in May with 3,516 postings, followed by Gasoline Stations with Convenience Stores (1,693) and Crude Petroleum Extraction (1,542). The leading three cities by total unique oil and natural gas job postings were Houston (4,993), Midland (1,268) and Odessa (695), said TIPRO.

The leading three companies ranked by unique job postings in May were John Wood Group (796), Love's (524) and Halliburton (462), according to TIPRO. Of the top ten companies listed by unique job postings last month, four companies were in the services sector, followed by two midstream companies, two in the gasoline stations category with convenience stores, and two in oil and natural gas extraction. Top posted industry occupations for May included maintenance and repair workers (467), heavy tractor-trailer truck drivers (401) and managers (353). The top posted job titles for May included field service technicians (115), lease operators (96) and process engineers (75).

Top qualifications for unique job postings included valid driver's license (2,392), commercial driver's license (CDL) (312), and CDL Class A license (249). TIPRO reports that 43 percent of unique job postings required a bachelor's degree, 29 percent required a high school diploma or GED, and 29 percent had no education requirement listed. There are 1,484 advertised salary observations (11 percent of the 13,779 matching postings) with a median salary of \$50,000.

Additional TIPRO workforce trends data:

- - A sample of 500 active industry job postings in Texas for May 2023 can be viewed [here](#). Please note, some positions may no longer be available.
- - The top three posting sources in May included [indeed.com](#) (5,414), [simplyhired.com](#) (3,388) and [dejobs.org](#) (2,102).
- - Average annual wages for the Texas oil and natural gas industry can be viewed [here](#).
- - Leading industry positions in Texas with median hourly earnings, education, work experience and typical on-the-job training is available [here](#).

TIPRO also highlights recent data released from the Texas comptroller's office showing large tax contributions by the Texas oil and natural gas industry. In May, Texas energy producers paid \$497 million in oil production taxes, up from levels reported for April. Producers also in May contributed almost \$200 million in natural gas production taxes. Oil and natural gas severance taxes are extremely important to state and local governments and are used help to support road and infrastructure investments, water conservation projects, schools and education, first responders and other essential public services across the Lone Star State.

Additionally, TIPRO reports that oil and natural gas output is poised to see further growth this summer, though monthly production gains are narrowing from increases recorded earlier this year. New data from the U.S. Energy Information Administration (EIA) projects that U.S. crude oil production in July will rise to 9.375 million barrels per day (b/d), up 8,000 b/d from June. In the Permian Basin, the most nation's most prolific shale oil basin, regional output will increase by 1,000 b/d to hit 5.76 million b/d next month, forecasts EIA experts. Domestic natural gas production in the United States also will climb and reach 97.3 billion cubic feet per day (bcf/d) in July, according to the latest EIA estimates. This in part will be driven by production gains from the Permian, where natural gas production is expected to grow to 22.878 bcf/d and in the Haynesville, where natural gas production will total 16.6 bcf/d.

"The Texas oil and natural gas industry is an economic powerhouse providing reliable energy to meet growing demand here and abroad," said Ed Longanecker, president of TIPRO. "Fortunately, Texas policymakers continue to maintain a regulatory environment that is conducive to economic growth and the responsible development of our natural resources, which is reflected in our analysis. We appreciate the work of the Texas Legislature this year that advanced a policy agenda supporting the continued success of our industry and its unmatched contributions," added Longanecker.

As a leading energy provider, TIPRO says Texas has also promoted further investments in infrastructure and related projects that support natural gas development. For example, the Matterhorn Express Pipeline is scheduled for completion next year and will deliver natural gas to the Katy Hub on the Gulf Coast, adding additional opportunity for the state to capitalize on its liquified natural gas (LNG) exports.

See below for other projects that will add to the expansion of natural gas from the Permian Basin:

- The Whistler Pipeline Capacity Expansion is expanding compression by installing three new compressor stations on the pipeline, increasing capacity by 0.5 Bcf/d to 2.5 Bcf/d. The project is expected to enter service in September 2023.
- The Permian Highway Pipeline Expansion is expanding compression, increasing capacity by 0.55 Bcf/d to 2.65 Bcf/d. The project is expected to enter service in November 2023.
- The Gulf Coast Express Pipeline is expanding compression, increasing capacity by 0.6 Bcf/d to 2.65 Bcf/d by December 2023.

"These infrastructure investments will enable the Lone Star State to continue being a global leader in natural gas production, driving further economic prosperity across Texas and enhancing our nation's energy security," concluded Longanecker.



SAF Group created transcript of comments by COP28 President-Designate UAE's Dr. Sultan Al Jaber speech at Energy Asia on June 27, 2023. https://twitter.com/COP28_UAE/status/1673763203946541056

Items in "italics" are SAF Group created transcript.

Al Jaber "... *This is a critical gathering to discuss sustainable energy pathways for this very important region* COP28 will mark the first global stock taking. An official assessment of the world's performance against the Paris agreement. But we don't need to wait until December. We already know we are way off track. By 2030, the world must reduce its emissions by 43% to keep the goal of 1.5 within reach. And over the same seven years, energy demand will only increase, particularly in Asia, as the global population grows by half a billion.

As a result, we need to rapidly expand zero carbon energies while we systematically decarbonize our current energy system. Are we to do this while ensuring energy always remains accessible, secure and affordable. That is why I am calling on every region of the world to contribute to a global goal of tripling renewable energy capacity by 2030. Asia is already a global leader in renewable energy, accounting for nearly half of all installed capacity globally. And is adding more new capacity than any other region in the world. I am confident that Asia will continue to lead and achieve even higher ambition in the renewable energy space.

At the same time, we know that renewable energy alone will not be sufficient, particularly for heavy emitting industries and in certain geographies. That is why we need to explore all available options including large scale nuclear power and SMRs, battery technology and, of course, hydrogen, which we should aim to double by 2030.

The faster we build the energy system of the future, the faster we can transition from the current one. And as long as the world still uses hydrocarbons, we must ensure they are the least carbon intensive. That is why I have called on oil and gas companies to fully align around Net Zero by 2050 and to reduce methane emissions to near zero by 2030.

Colleagues, we should not overlook the power of efficiency. New technologies have the potential to dramatically increase energy efficiency, which we should aim to double by 2030. If we take these steps, I am confident we can turn the climate challenge into a unique opportunity for building sustainable economic growth. Let's use Energy Asia to shape a cleaner and better roadmap for a responsible energy future.

I invite you all to engage with the COP28 team and share your suggestions, your views, your plans and your commitments. We need to act in solidarity and with unprecedented unity. Let's demonstrate that COP28 will be a COP of action, a COP of impact and a COP for all.

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

Majorities of Americans Prioritize Renewable Energy, Back Steps to Address Climate Change

But many foresee problems ahead with transition to renewables and oppose breaking from fossil fuels altogether

A new Pew Research Center survey finds large shares of Americans support the United States taking steps to address global climate change and back an energy landscape that prioritizes renewable sources like wind and solar. At the same time, the findings illustrate ongoing public reluctance to make sweeping changes to American life to cut carbon emissions. Most Americans *oppose* ending the production of gas-powered vehicles by 2035 and there's limited support for steps like eliminating gas lines from new buildings.

This report comes about a year after the 2022 Inflation Reduction Act introduced policies and incentives meant to dramatically reduce the country's reliance on fossil fuels, a signature part of the Biden administration's efforts on climate change. The survey takes stock of how Americans feel about related questions on climate, energy and environmental policy, including proposed changes to how Americans power their homes and cars and what to do about the impacts communities face from extreme weather.

The Pew Research Center survey of 10,329 U.S. adults conducted May 30 to June 4, 2023, finds:

- 74% of Americans say they support the country's participation in international efforts to reduce the effects of climate change.
- 67% of U.S. adults prioritize the development of alternative energy sources such as wind, solar and hydrogen power over increasing the production of fossil fuel energy sources.

By sizeable margins, Americans support a number of specific policy proposals aimed at reducing the effects of climate change through targeting greenhouse gas emissions and carbon in the atmosphere:

- Overwhelming majorities support planting about a trillion trees around the world to absorb carbon emissions (89%) and requiring oil and gas companies to seal methane gas leaks from oil wells (85%).
- 76% favor providing a tax credit to businesses that develop carbon capture technologies and 70% support taxing corporations based on their carbon emissions.

- 61% favor requiring power plants to eliminate all carbon emissions by the year 2040.

Still, there are limits to public support for major changes to the way homes, cars and the electrical grid are powered.

Only 31% of Americans currently support phasing out the use of fossil fuel energy sources altogether. Another 32% says the U.S. should eventually stop using fossil fuels, but don't believe the country is ready now. And 35% think the U.S. should *never* stop using fossil fuels to meet its energy needs.

Fewer than half of the public (40%) favors phasing out the production of gas-powered cars and trucks. Support for this policy is 7 percentage points lower than it was two years ago. And underscoring the strong feelings big changes to American life can engender, 45% say they would feel *upset* if gas-powered cars were phased out; fewer than half as many (21%) would feel *excited*.

Large shares of Americans support U.S. taking steps to address climate, prioritize renewable energy

% of U.S. adults who say each of the following

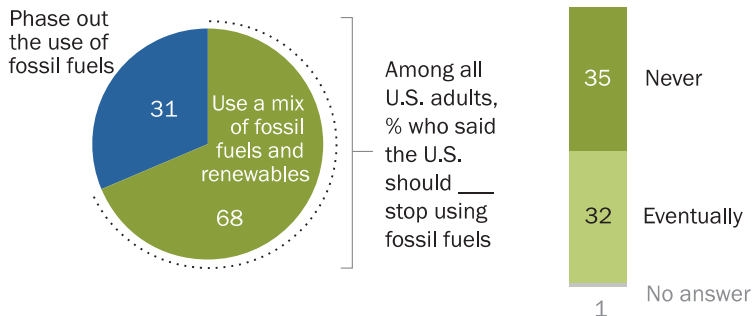
U.S. participation in international efforts to reduce climate change



More important energy priority for the U.S.



But there's limited support for phasing out fossil fuels completely, and 59% oppose ending the production of gas-powered vehicles by 2035



Phasing out the production of new gasoline cars and trucks by 2035



Note: Respondents who did not give an answer are not shown.
 Source: Survey of U.S. adults conducted May 30-June 4, 2023.
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When it comes to the construction of new buildings, slightly more Americans oppose (51%) than favor (46%) requiring most new buildings to run only on electricity, with no gas lines, a recent [flashpoint in state legislatures and national climate conversations](#).

Republicans and Democrats continue to offer competing visions on climate and energy issues. Deep Republican skepticism toward a renewable energy transition is a major factor behind much of the overall public's reluctance to make a sharp break from fossil fuels.

But views within both party coalitions defy simple categorization. And some of the most far-reaching policies aimed at addressing climate change and carbon emissions garner a less-than-enthusiastic response from Democrats, as well as outright opposition from Republicans.

1. What Americans think about an energy transition from fossil fuels to renewables

Most Americans think the U.S. should prioritize the development of renewable energy over fossil fuel sources. At the same time, most say they are *not* ready to stop using fossil fuel energy sources altogether. And a sizeable share think the U.S. should never stop using fossil fuel sources.

Renewable sources, such as wind and solar, are expected to make up a [growing share of the U.S. energy supply](#) relative to fossil fuel sources such as oil, coal and natural gas in coming years. Last year renewable energy sources, including wind, solar and hydropower, [generated more electricity than coal in the U.S.](#) Legislation passed during the Biden administration, such as the Inflation Reduction Act, are [expected to increase the pace of an energy transition](#).

In the new survey, 67% of Americans say the U.S. should prioritize developing alternative energy sources, such as wind, solar and hydrogen technology, while 32% say the priority should be expanding the exploration and production of oil, coal and natural gas.

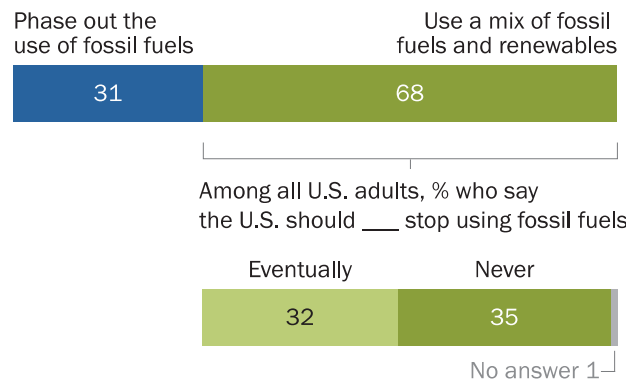
Read the [Appendix](#) for more on this question, including a shift away from renewables among Republicans that occurred at the outset of the Biden administration.

While the public prioritizes renewable energy development, just 31% say they are ready to phase out the use of oil, coal and natural gas completely. A much larger share (68%) say the U.S. should continue to use fossil fuels, alongside renewables, as part of the mix of energy sources the country relies on.

The roughly two-thirds of Americans who support using a mix of renewables and fossil fuels are closely divided over whether the U.S. should *ever* stop using oil, coal and natural gas: 32% of Americans favor a mix of sources now but think the U.S. should eventually stop using fossil fuel energy sources, while 35% favor using a mix of sources now and say the U.S. should *never* stop using oil, coal and natural gas.

35% of Americans think the U.S. should never stop using fossil fuels

% of U.S. adults who say the U.S. should ...



Note: Respondents who did not give an answer are not shown.
 Source: Survey of U.S. adults conducted May 30-June 4, 2023.
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Public expectations on how a renewable energy transition would impact the country

Americans think a major shift from fossil fuels to renewable energy sources in the U.S. would come with some difficulties for the country. But they also see potential benefits, such as improved air and water quality and a more positive than negative impact on jobs in the energy sector.

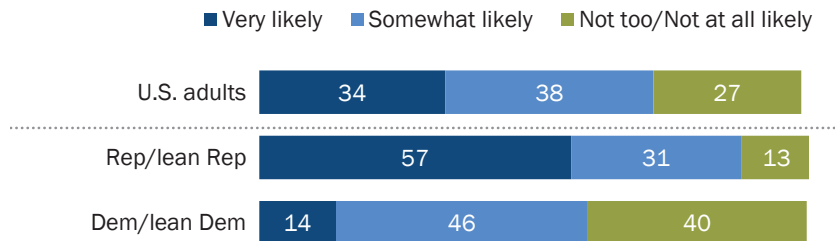
Still, many worry that an energy transition would push consumer prices higher. As with views on energy sources generally, Republicans and Democrats have quite different expectations for what a renewable energy transition would bring for the U.S.

Overall, 34% say the country would be very likely to encounter unexpected problems if the U.S. greatly reduces energy production from fossil fuels while increasing production from renewable sources; another 38% say unexpected problems would be somewhat likely.

Among Republicans, a majority (57%) think an energy transition to renewables would very likely lead to unexpected problems and 31% say this would make unexpected problems somewhat likely. A majority of Democrats also think unexpected problems from an energy transition would be at least somewhat likely (60%), but just 14% consider this *very* likely.

Majority of Americans see unexpected problems from an energy transition as at least somewhat likely

If the U.S. greatly reduces energy production from fossil fuel sources and increases energy production from renewable sources, % of U.S. adults who say it is ___ this transition would lead to unexpected problems



Note: Respondents who did not give an answer are not shown.

Source: Survey of U.S. adults conducted May 30-June 4, 2023.

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The Center survey asked about a number of potential consequences from shifting away from fossil fuels and toward renewable energy sources.

Americans are most optimistic about how an energy transition would impact environmental quality: 59% think that air and water quality would get better if the U.S. greatly reduced fossil fuel energy production and increased production from renewable sources. Three-in-ten say this energy transition would not have much effect on air and water quality, while 11% say it would make air and water quality worse.

On balance, more Americans think a renewable energy transition would make local job opportunities in the energy sector better (49%) than worse (25%).

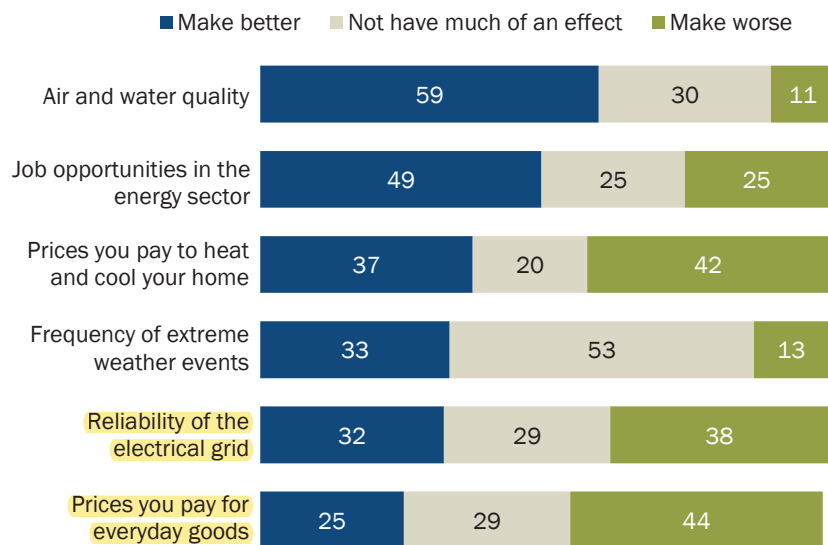
Concerns are more pronounced when it comes to prices.

Slightly more Americans think

an energy transition would make the prices they pay to heat and cool their homes worse (42%) than better (37%). And by a wider margin (44% to 25%) Americans think such a transition would make prices for everyday goods worse than better.

Americans think an energy transition would have a more negative than positive impact on consumer prices

If the U.S. greatly reduces energy production from fossil fuel sources and increases production from renewable sources, % of U.S. adults who say it would ___ each of the following in their local area



Note: Respondents who did not give an answer are not shown.

Source: Survey of U.S. adults conducted May 30-June 4, 2023.

"Majorities of Americans Prioritize Renewable Energy, Back Steps to Address Climate Change"

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Majority of Americans continue to oppose phasing out gasoline cars and trucks by 2035

A majority of Americans remain opposed to phasing out gasoline cars and trucks by 2035. In the new survey, 40% of Americans favor this idea while 59% oppose it. The share of Americans who support phasing out gasoline cars and trucks is down 7 percentage points since 2021. Over this period of time, support for phasing out gasoline cars and trucks has ticked down among both Democrats and Republicans. Refer to the [Appendix](#) for this data.

When asked about their general reaction to the idea of phasing out the production of gas-powered vehicles, just 21% of Americans say they would be excited by the prospect. More than twice as many (45%) say they would be upset; 33% say their feelings would be neutral.

[The U.S. transportation sector](#) is the largest contributor to carbon emissions, and [a majority of those emissions](#) come from gasoline-powered passenger cars and trucks. In April, [the Biden administration proposed new emission limits](#) for automakers that would dramatically reduce the number of gasoline-powered cars and trucks automakers could sell. [Several states are planning to ban](#) the sale of gasoline cars and trucks after 2035.

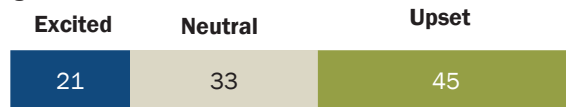
Majority of Americans oppose phasing out new gas-powered cars and trucks

% of U.S. adults who say they ...

Would ___ phasing out the production of new gasoline cars and trucks by 2035



Would feel ___ if the U.S. phased out production of new gasoline cars and trucks

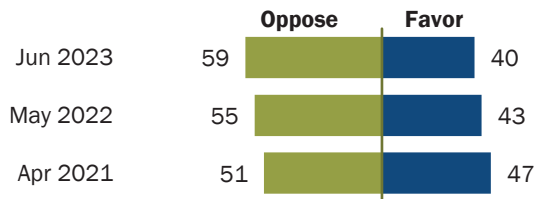


Note: Respondents who did not give an answer are not shown. Source: Survey of U.S. adults conducted May 30-June 4, 2023. "Majorities of Americans Prioritize Renewable Energy, Back Steps to Address Climate Change"

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Opposition to phasing out gas-powered cars and trucks has risen

% of U.S. adults who say they ___ phasing out the production of new gasoline cars and trucks by 2035



Note: Respondents who did not give an answer are not shown. Source: Survey of U.S. adults conducted May 30-June 4, 2023. "Majorities of Americans Prioritize Renewable Energy, Back Steps to Address Climate Change"

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38% of Americans would consider an electric vehicle for their next purchase; half say they would be unlikely to do this

Americans are cool to the idea of making an electric vehicle purchase in the near term. Half of U.S. adults say they are not too or not at all likely to seriously consider an EV the next time they purchase a car or truck.

By comparison, 38% of Americans say they are very (15%) or somewhat (23%) likely to seriously consider an EV for their next vehicle purchase.

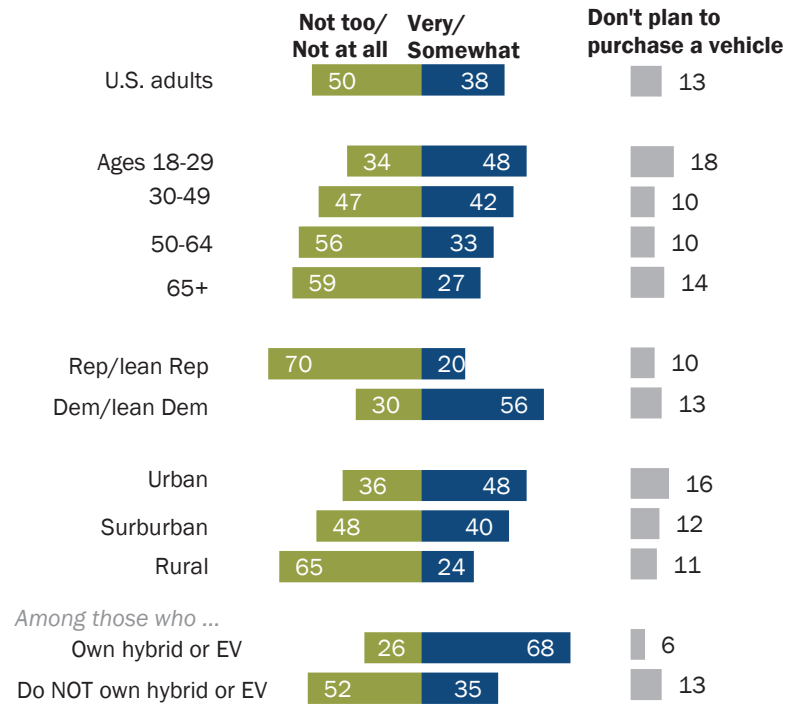
The public’s modest enthusiasm for purchasing an EV themselves is in line with their opposition to phasing out gas-powered vehicles. Interest in purchasing an EV is down 4 percentage points from when it was last measured in a [2022 Center survey](#).

Those most inclined to consider purchasing an electric vehicle in the future include the relatively small share of Americans (9%) who already own a hybrid or electric vehicle; 68% of this group says they are at least somewhat likely to seriously consider this, including four-in-ten who say they are very likely to do so.

Other groups who are more open to purchasing an EV in the future include Democrats (56% say they are at least somewhat likely to give this serious consideration), people who live in urban areas (48%), and young adults ages 18 to 29 (48%).

Democrats, younger adults and urban residents are more open to purchasing an electric vehicle

% of U.S. adults who say they are ___ likely to seriously consider purchasing an electric vehicle the next time they purchase a vehicle



Note: Respondents who did not give an answer are not shown. “EV” stands for electric vehicle.

Source: Survey of U.S. adults conducted May 30-June 4, 2023.

“Majorities of Americans Prioritize Renewable Energy, Back Steps to Address Climate Change”

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2. How Americans see Biden’s climate policies

On balance, slightly more Americans say the Biden administration’s policies on climate change are taking the country in the wrong direction (50%) than the right direction (45%). As with most assessments of the administration, Republicans and Democrats offer opposing viewpoints on this question.

Climate change action has been a central goal of Biden’s administration. In 2022, he [signed the Inflation Reduction Act](#) into law, which included a host of policies designed to address climate change. The administration has also proposed EPA rules to address carbon emissions, such as

[requiring power plants to eliminate emissions by 2040](#) and [requiring oil and gas companies to seal methane leaks](#).

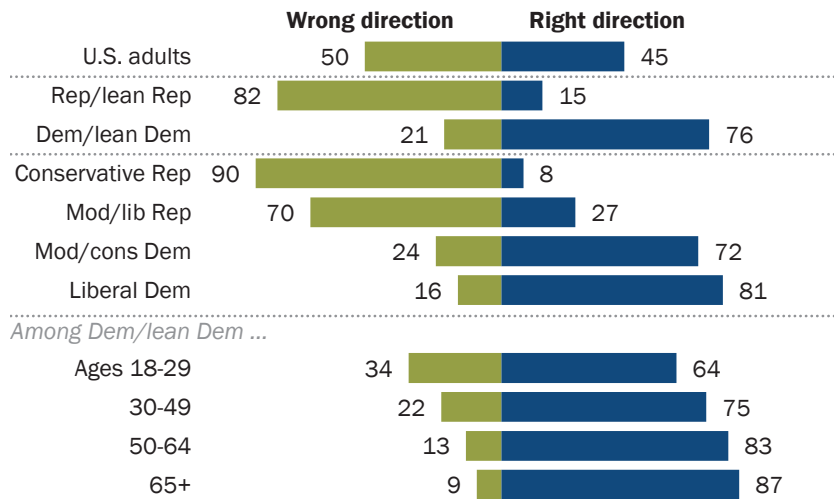
The administration has also moved forward with oil and gas projects, including the [approval of the Willow drilling project in Alaska](#) that attracted criticism from environmental activists.

About three-quarters of Democrats and those who lean to the Democratic Party (76%) say the Biden administration’s climate policies are taking the country in the right direction. Among Republicans and Republican-leaning independents, 82% say Biden is moving the country in the wrong direction. These numbers are little changed since the question was last asked in May 2022.

Democrats’ views differ by age. Younger Democrats offer less support for the administration than older Democrats. Among Democrats ages 18 to 29, 64% say Biden’s climate policies are moving the country in the right direction, compared with 87% among Democrats ages 65 and older.

Wide partisan gap on whether Biden’s climate policies are taking country in right or wrong direction

% of U.S. adults who say the Biden administration’s policies on climate change are taking the country in the ...



Note: Respondents who did not give an answer are not shown.

Source: Survey of U.S. adults conducted May 30-Jun. 4, 2023.

“Majorities of Americans Prioritize Renewable Energy, Back Steps to Address Climate Change”

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Public support for policies to address climate change

Americans' support for action on climate change is reflected in their views of some specific policy proposals.

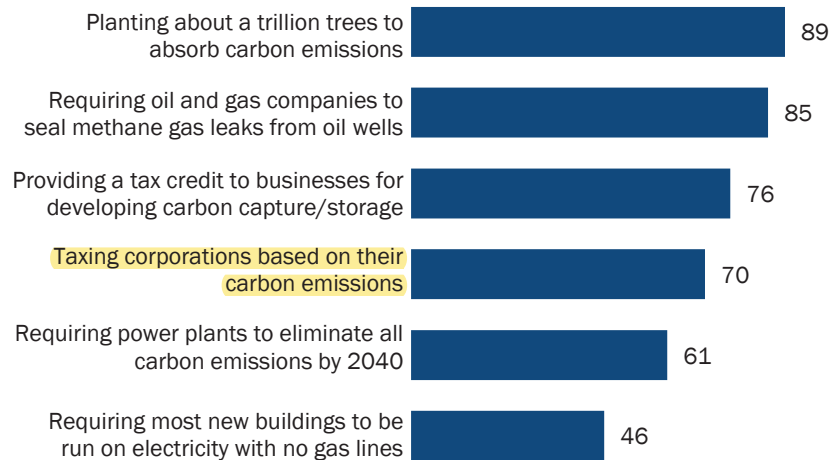
Roughly nine-in-ten (89%) favor planting about a trillion trees to absorb carbon emissions. Large majorities also favor requiring oil and gas companies to seal methane gas leaks from oil wells (85%), providing a tax credit for businesses for developing carbon capture and storage (76%) and taxing corporations based on their carbon emissions (70%).

A somewhat smaller majority of Americans support requiring power plants to eliminate all carbon emissions by 2040 (61%).

Requiring most new buildings to be run on electricity with no gas lines receives the least support of the items included in the survey: 46% favor this idea while 51% oppose it.

Majority of Americans support requiring power plants to eliminate all carbon emissions by 2040

% of U.S. adults who say they **favor** the following proposals to reduce the effects of climate change



Note: Respondents who gave other responses or did not give an answer are not shown.
Source: Survey of U.S. adults conducted May 30-Jun. 4, 2023.
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Protecting the environment and low consumer costs are important considerations for the public in climate proposals

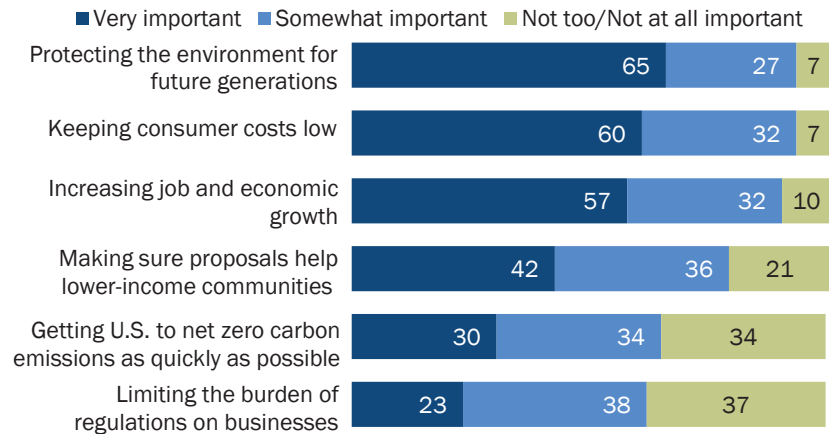
When asked what's important to them in proposals to reduce the effects of climate change, 65% of Americans say protecting the quality of the environment for future generations is a very important factor. Economic considerations also feature prominently: 60% say keeping consumer costs low is a very important consideration to them in climate proposals and 57% say increasing job and economic growth is very important to them.

Smaller shares place the highest level of importance on making sure climate proposals help lower-income

communities (42% very important) or getting the U.S. to net zero carbon emissions as quickly as possible (30%). Just 23% say that limiting the burden of regulations on businesses is very important to them personally when considering proposals to reduce the effect of climate change.

Majorities of Americans say environmental protection, economic factors are important in climate policy

% of U.S. adults who say each of the following is ___ to them personally when thinking about proposals to reduce the effects of climate change



Note: Respondents who did not give an answer are not shown.

Source: Survey of U.S. adults conducted May 30-June 4, 2023.

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Close to half (48%) think the U.S. should do about as much as other large economies to deal with the issue, but 41% think the U.S. should do more than others. A small share (9%) think the U.S. should do less than other countries with large economies.

Just 33% of Americans believe the U.S. and other countries around the world will do enough to avoid the worst impacts from climate change

Americans are not especially optimistic that efforts to address climate change will stave off its most serious impacts. A narrow majority (54%) say the U.S. and other countries around the world will probably or definitely *not* do enough to avoid the worst impacts of climate change. A much smaller share (33%) think the U.S. and others will likely do enough to avoid the worst impacts. About one-in-ten (11%) say they don't believe climate change impacts are a problem.

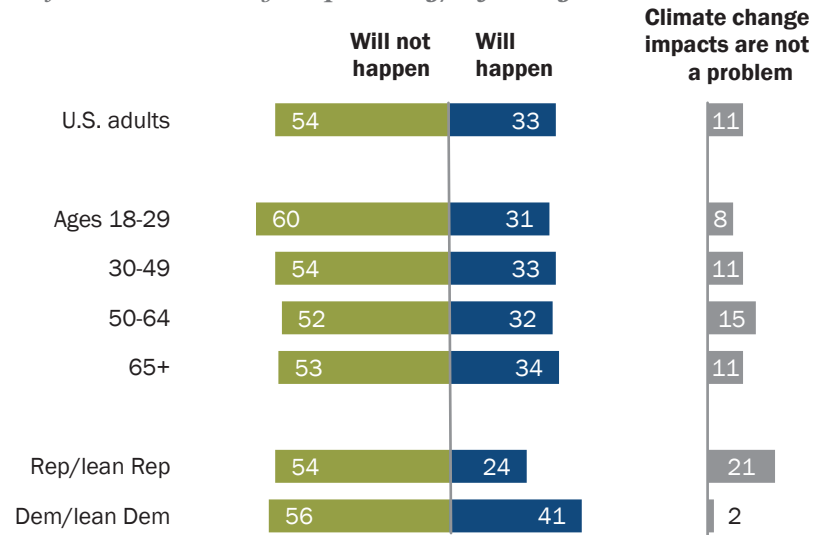
Republicans are significantly more likely than Democrats to say climate change impacts are not a problem (21% vs. 2%), but neither group is particularly optimistic that the U.S. and other countries around the world will do enough to avoid the worst impacts from climate change.

Young Democrats are particularly skeptical. A majority (64%) of Democrats ages 18 to 29 say the U.S. and other countries are unlikely to do enough to avoid the worst climate impacts. Older Democrats tend to be more evenly divided in their outlook on this question.

Americans unconvinced that U.S. and other countries will do enough to avoid worst climate change impacts

How likely is it that countries around the world, including the U.S., will do enough to avoid the worst impacts from climate change?

% of U.S. adults who say this **probably/definitely ...**



Note: Respondents who did not give an answer are not shown.
 Source: Survey of U.S. adults conducted May 30-June 4, 2023.
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Democrats are more supportive than Republicans of the federal government playing a role in communities at high risk of extreme weather.

About two-thirds of Democrats say it would be a good idea for the federal government to limit new construction in areas at high risk of extreme weather. Views among Republicans are more mixed: 42% say this is a good idea, compared with 31% who say it's a bad idea and 27% who say they're not sure.

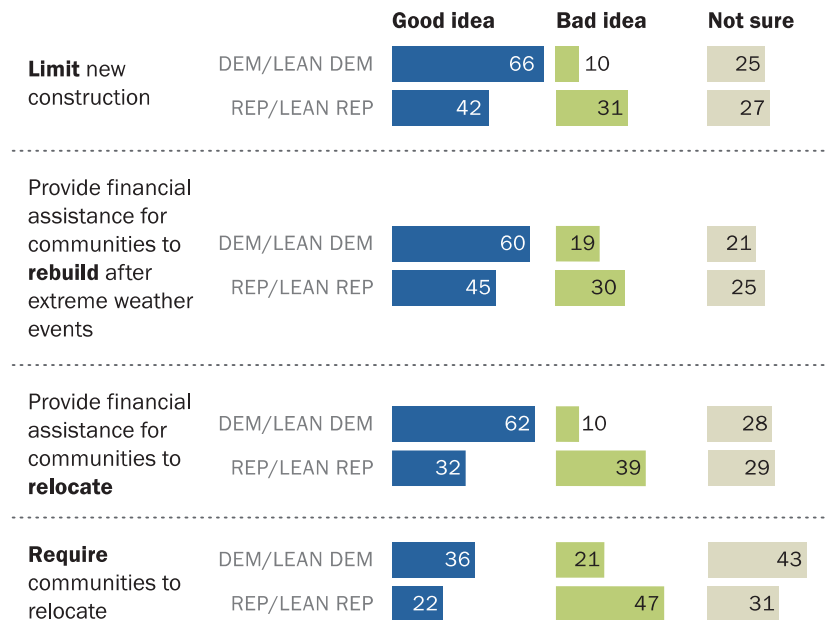
About six-in-ten Democrats (62%) say it's a good idea for the federal government to provide financial assistance for communities to relocate from areas at high risk of extreme weather. By contrast, Republicans are more likely to view this as a bad than good idea (39% vs. 32%).

While Democrats support federal efforts to limit construction and incentivize relocation, they also support federal assistance to help communities rebuild after extreme weather events. Overall, 60% of Democrats think it's a good idea for the federal government to financially assist communities with rebuilding after extreme weather events, compared with just 19% who say this is a bad idea. Among Republicans, 45% say this is a good idea, while 30% call it a bad idea and 25% say they're not sure.

Neither partisan group is particularly supportive of the federal government *requiring* communities at high risk of extreme weather to relocate, though a somewhat larger share of Democrats (36%) than Republicans (22%) says this is a good idea.

About two-thirds of Democrats say it's a good idea for the federal government to limit new construction in areas at risk of extreme weather

% of U.S. adults who say it is a ___ for the federal government to do each of the following in areas at high risk of extreme weather



Note: Respondents who did not give an answer are not shown.
 Source: Survey of U.S. adults conducted May 30-June 4, 2023.
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Most Americans who have experienced extreme weather events see a connection to climate change

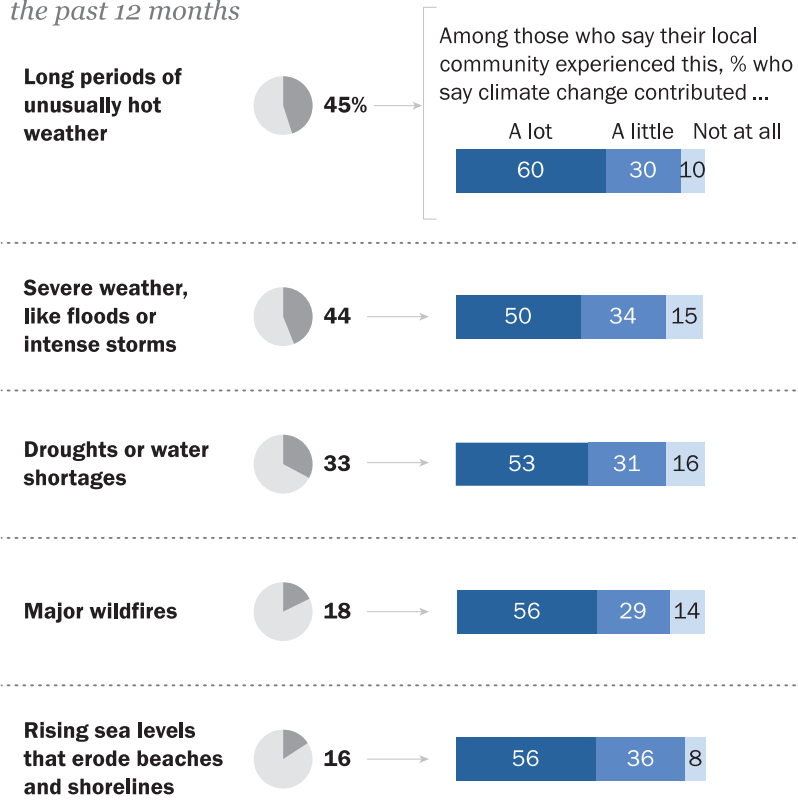
Among adults who report experiencing a form of extreme weather in the last year, most say climate change has contributed a lot or a little to these events.

For example, 90% of adults who have experienced long periods of unusually hot weather in the past year say that climate change contributed a lot (60%) or a little (30%) to this.

Similarly, more than eight-in-ten of those who have experienced coastal erosion, major wildfires, droughts and severe weather like floods or intense storms believe climate change has contributed to these events.

60% of adults who have experienced long periods of unusually hot weather in the past year say climate change contributed a lot

% of U.S. adults who say that their local community has experienced the following in the past 12 months



Note: Respondents who did not give an answer are not shown.
 Source: Survey of U.S. adults conducted May 30-June 4, 2023.
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Republicans and Democrats remain far apart over the value of environmental laws and regulations

Just over half (53%) of Americans say stricter environmental laws and regulations are worth the cost while slightly fewer (45%) say they cost too many jobs and hurt the economy.

Views on this question have changed little in the last two years, but positive views of environmental laws remain lower than in September 2019, when 65% said they were worth the cost.

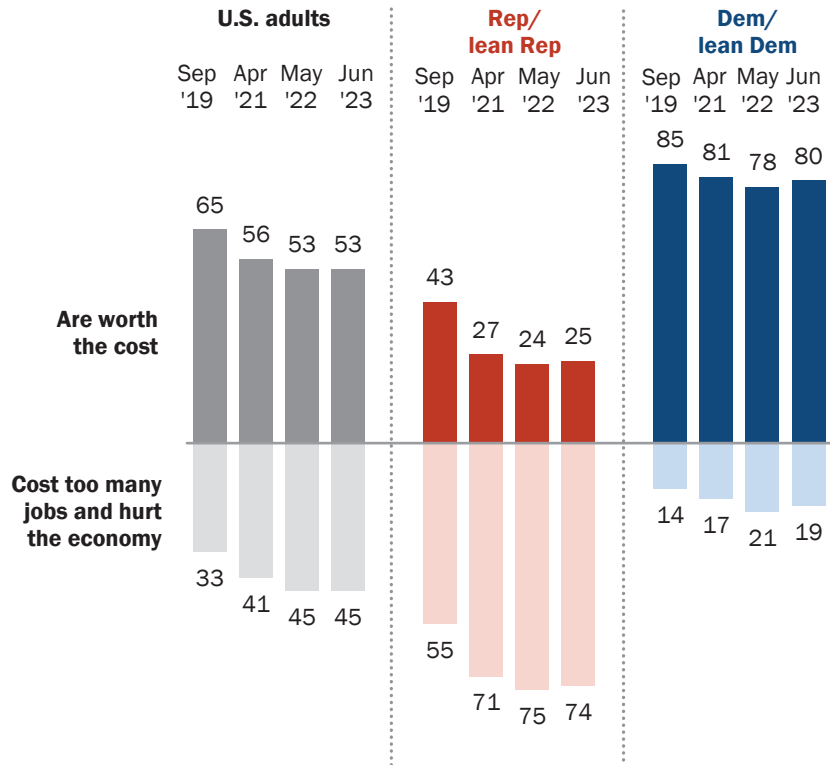
Eight-in-ten Democrats and Democratic leaners view environmental laws as worth the cost. By contrast, just 25% of Republicans and Republican leaners say this, while 74% say they cost too many jobs and hurt the economy.

Ratings of the impact of environmental laws among Republicans turned more

negative between September 2019 and April 2021, a period of time with a change in presidential administrations. This shift in views among Republicans drove the overall decline in public assessments of the value of environmental laws seen in that period.

80% of Democrats say environmental laws are worth the cost; majority of Republicans say economic costs outweigh the benefits

% of U.S. adults who say stricter environmental laws and regulations ...



Note: Respondents who did not give an answer are not shown.
 Source: Survey of U.S. adults conducted May 30-June 4, 2023.
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‘Strong customer reluctance’ forces Volkswagen to slash electric vehicle production

German car maker to pause work at major factory and lay off 300 staff

By Howard Mustoe 30 June 2023 • 11:20am

Volkswagen is to cut electric car production at one of its biggest factories after “strong customer reluctance” led to far lower sales than expected.

The business is pausing work on electric models for six weeks at its plant in Emden, northwest Germany, and will lay off 300 of the 1,500 workers involved in making them.

The company blamed lower subsidies for buyers of the cars across Europe and higher inflation for a drop in consumer interest.

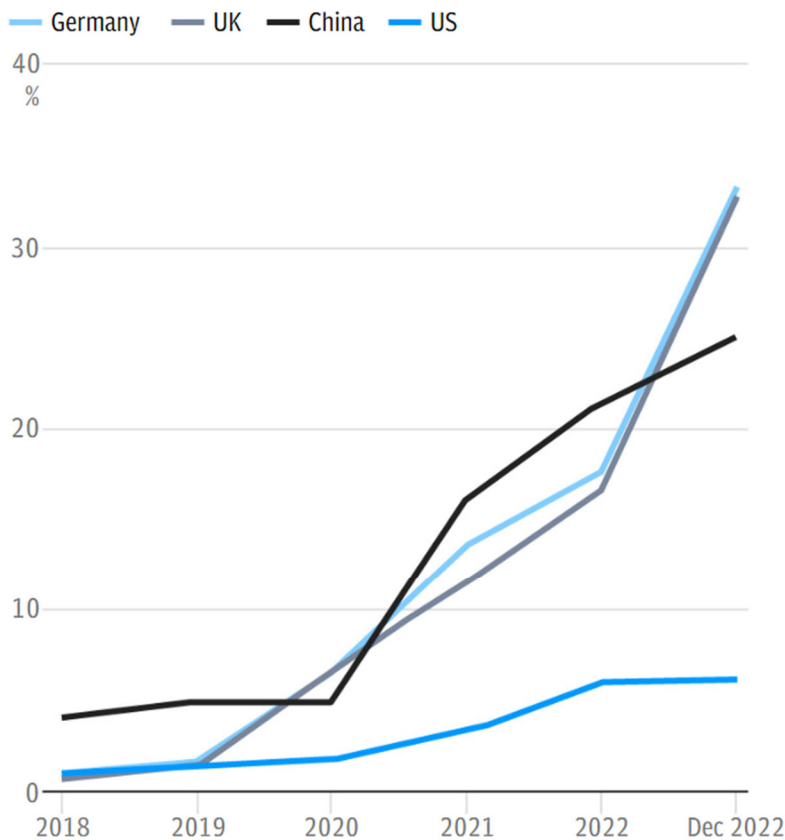
Demand for electric vehicles is running 30pc below the company’s forecasts.

Manfred Wulf, head of the Emden plant, said: “We are experiencing strong customer reluctance in the electric vehicle sector.”

While uptake of electric vehicles has been strong in the past few years, with demand for the cars outstripping supply, manufacturers fear that they are becoming less attractive owing to the extra expense of buying one – battery cars cost about £10,000 more than petrol-driven equivalents – together with a narrower gap between the price of electricity and petrol when filling up.

MORE CARS SOLD ARE ELECTRIC

Electric vehicle share of passenger car market



SOURCE: THEDRIVEN.IO, EV COUNCIL, CAAM, IEA, KBA, SMMT

Customers were sold on a high upfront cost which could be recouped through cheaper charging. But Russia's attack on Ukraine has pushed up natural gas prices, leading to spiralling electricity cost. Meanwhile petrol prices have eased in recent months, narrowing the advantage.

The UK industry has been lobbying hard for cheaper, more plentiful public charging for users who don't have access to discounted overnight electricity from a home charger.

At Volkswagen, production for the new ID.7 saloon car will be pushed from July to later in the year

Volkswagen UK said: "The Volkswagen brand, like other car manufacturers, is currently seeing softening demand for electric cars. Reasons for this include: reduced subsidies, higher inflation and recent longer delivery times due to the shortage of parts.

"We are confident that demand for all-electric cars will pick up again as the year progresses. With the extensively revised ID.3 and the new ID.7, we continue to launch attractive new models."

Volkswagen understands that it must join the price battle for electric cars and in March unveiled a prototype, the ID. 2all, costing less than £22,000 (€25,000) yet with a range of up to 280 miles.

Volkswagen boss Thomas Schäfer also committed to an even cheaper model costing less than £17,500.

•

Electricity Generation by fuel*

Terawatt-hours	2021							2022								
	Oil	Natural gas	Coal	Nuclear energy	Hydro-electricity	Renewables	Other†	Total	Oil	Natural Gas	Coal	Nuclear energy	Hydro-electricity	Renewables	Other†	Total
Canada	2.9	80.1	34.4	92.0	382.8	40.5	4.8	646.6	2.7	81.0	34.1	86.6	398.4	52.1	4.7	659.6
Mexico	32.9	189.5	13.6	11.9	34.9	47.3	^	330.0	34.2	191.8	21.9	10.8	35.7	46.2	-	340.7
US	20.6	1698.1	977.8	820.7	249.0	622.0	12.7	4400.9	25.1	1816.6	904.2	812.1	258.6	719.5	11.5	4547.7
Total North America	56.5	1967.6	1025.8	924.6	666.6	719.1	17.5	5377.7	62.0	2089.4	960.2	909.6	692.7	817.8	16.2	5548.0
Argentina	13.1	89.9	2.4	10.2	19.6	17.4	0.5	153.2	16.7	80.4	2.1	7.5	23.9	19.4	0.8	150.8
Brazil	20.2	87.0	24.2	14.7	362.8	144.8	2.4	656.1	10.1	42.1	16.5	14.6	427.1	164.5	2.3	677.2
Other S. & Cent. America	65.7	106.7	46.9	-	286.3	64.1	-^	569.7	66.3	114.0	38.0	-	295.2	68.8	-^	582.4
Total S. & Cent. America	99.0	283.6	73.5	24.9	668.7	226.3	2.9	1378.9	93.1	236.5	56.6	22.0	746.2	252.8	3.1	1410.4
France	2.0	35.3	4.1	379.4	58.7	61.4	6.8	547.6	2.3	46.9	3.1	294.7	44.6	68.0	8.1	467.7
Germany	4.6	90.3	164.7	69.1	19.7	214.4	26.5	589.3	4.4	79.8	180.6	34.7	17.5	236.5	23.8	577.3
Italy	12.0	144.0	16.0	-	45.4	68.2	3.5	289.1	9.7	156.3	17.6	-	28.2	72.0	3.6	287.3
Netherlands	1.3	56.7	17.3	3.8	0.1	40.4	2.5	122.1	1.6	47.8	17.3	4.2	0.1	48.3	2.7	122.0
Poland	2.0	15.8	129.8	-	2.3	28.2	1.4	179.6	1.7	11.6	127.4	-	2.0	34.7	1.7	179.1
Spain	10.0	71.5	6.0	56.6	29.6	96.1	4.5	274.3	10.1	89.3	9.4	58.6	18.2	103.3	4.9	293.7
Türkiye	0.3	111.2	103.4	-	55.9	64.0	^	334.7	3.1	71.8	112.8	-	67.2	71.4	-	326.2
Ukraine	0.8	10.3	36.8	86.2	10.4	11.0	-	155.5	0.5	7.2	24.8	62.1	11.1	7.0	-	112.7
United Kingdom	1.8	123.2	6.5	45.9	5.5	116.7	9.1	308.7	2.1	125.3	5.6	47.7	5.3	129.5	10.5	326.0
Other Europe	17.8	141.7	146.9	241.3	426.9	242.6	25.5	1242.8	17.1	132.0	151.4	239.5	372.8	269.4	26.6	1208.8
Total Europe	52.7	799.9	631.5	882.3	654.5	942.9	79.8	4043.6	52.6	768.0	650.0	741.5	566.9	1040.1	81.9	3900.9
Kazakhstan	0.1	27.1	75.2	-	9.2	3.4	0.2	115.1	0.1	23.7	76.8	-	9.2	4.2	-	114.0
Russian Federation	8.1	519.9	181.2	222.4	214.5	5.7	5.2	1157.1	6.7	533.9	192.3	223.7	197.7	7.4	5.3	1166.9
Other CIS	4.6	156.9	6.4	7.8	41.2	1.2	0.6	218.7	4.0	159.8	6.2	7.5	40.9	1.6	0.6	220.7
Total CIS	12.8	703.9	262.8	230.2	265.0	10.3	6.0	1490.9	10.7	717.3	275.4	231.2	247.8	13.3	5.8	1501.6
Iran	33.8	290.6	0.8	3.5	14.9	1.8	-	345.3	31.2	300.2	0.8	6.6	7.5	2.0	-	348.1
Saudi Arabia	157.9	234.2	-	-	-	0.8	-	392.9	131.4	269.4	-	-	-	0.8	-	401.6
United Arab Emirates	^	132.2	-	10.5	-	6.3	-	149.0	^	127.7	-	20.1	-	7.0	-	154.7
Other Middle East	135.4	283.8	17.2	-	5.0	13.6	0.2	455.1	134.8	285.8	17.8	-	4.9	17.2	0.2	460.6
Total Middle East	327.1	940.9	17.9	14.1	19.9	22.4	0.2	1342.4	297.3	983.0	18.5	26.7	12.4	27.0	0.2	1365.1
Egypt	10.9	174.0	-	-	14.3	10.5	-	209.7	17.6	159.3	-	-	13.8	10.2	-	200.8
South Africa	3.2	-	206.1	12.4	2.0	15.9	4.7	244.3	3.6	-	197.2	10.1	3.1	16.3	4.5	234.8
Other Africa	45.0	202.0	36.9	-	136.1	22.5	0.5	442.9	49.4	203.9	39.2	-	139.8	24.3	0.5	457.1
Total Africa	59.1	376.0	243.1	12.4	152.4	48.8	5.2	896.9	70.6	363.2	236.4	10.1	156.7	50.8	5.0	892.7
Australia	4.7	47.6	137.4	-	15.9	61.3	0.4	267.5	5.0	46.3	130.9	-	17.1	73.7	0.5	273.6
China	11.8	287.1	5328.8	407.5	1300.0	1148.7	50.3	8534.3	11.9	290.6	5397.8	417.8	1303.1	1367.0	60.4	8848.7
India	2.3	59.8	1274.1	43.9	160.3	173.2	1.1	1714.8	2.5	47.0	1380.1	46.2	174.9	205.9	1.3	1858.0
Indonesia	6.6	56.3	190.0	-	24.7	31.5	0.3	309.4	6.1	56.1	205.3	-	27.3	38.0	0.6	333.4
Japan	34.0	326.1	301.9	61.2	79.6	136.4	80.6	1019.7	40.6	319.7	309.0	51.8	74.9	152.1	85.4	1033.6
Malaysia	1.3	60.9	78.0	-	30.9	3.7	-	174.7	1.8	68.4	76.4	-	32.5	3.9	-	182.9
South Korea	7.2	178.1	211.7	158.0	3.1	39.8	4.2	601.9	6.9	173.3	208.7	176.1	3.5	47.7	4.2	620.3
Taiwan	5.3	108.3	128.9	27.8	3.5	12.2	5.0	291.0	4.5	111.8	121.2	23.8	5.8	16.2	4.9	288.1
Thailand	0.7	113.1	36.1	-	4.5	21.9	-^	176.4	1.7	114.6	35.5	-	6.6	21.9	^	180.4
Vietnam	0.2	26.2	114.2	-	75.9	28.3	^	241.9	0.7	27.8	100.8	-	96.0	34.8	-	260.0
Other Asia Pacific	52.3	230.1	155.5	15.7	163.3	34.5	0.7	955.4	60.5	218.2	154.4	22.3	169.7	11.1	1.0	667.6
Total Asia Pacific	126.4	1493.7	7956.4	714.1	1861.7	1694.8	142.5	13989.7	142.2	1473.9	8120.1	737.9	1911.5	2002.6	158.3	1546.4
Total World	733.5	6565.6	10211.1	2802.5	4288.8	3664.8	254.2	28520.2	728.6	6631.4	10317.2	2679.0	4334.2	4204.3	270.5	29165.1
of which: OECD	153.5	3370.9	2247.8	1912.2	1450.2	1916.7	181.3	11237.6	163.0	3454.1	2197.3	1789.3	1408.2	2157.2	187.5	11357.3
Non-OECD	580.0	3194.6	7963.3	890.4	2838.5	1748.1	72.9	17288.2	565.6	3177.3	8119.8	889.7	2926.0	2046.6	83.0	17807.9
European Union	47.3	548.7	439.8	731.7	347.3	725.5	64.3	2904.6	43.9	556.2	461.2	608.6	276.9	801.7	63.5	2812.0

^ Includes electricity generated from: geothermal, biomass and other sources of renewable energy (not already itemized).

* Based on gross output. Includes uncategorised generation, statistical differences and sources not specified elsewhere e.g. pumped hydro, non-renewable waste and heat from chemical sources.

^ Less than 0.05.

2022 Key highlights

Whilst 2022 saw energy demand continue to recover from the COVID-19 pandemic, legacy supply chain issues, along with conflict in Ukraine, continued to impact the global energy sector.

Energy developments

- 2022 saw a 1% increase in total primary energy consumption taking it to around 3% above the 2019 pre-COVID level.
- Renewables' (excluding hydroelectricity) share of primary energy consumption reached 7.5%, an increase of nearly 1% over the previous year.
- Fossil fuel consumption as a percentage of primary energy remained steady at 82%.

Carbon emissions

- Carbon dioxide emissions from energy use, industrial processes, flaring and methane (in carbon dioxide equivalent terms) continued to rise to a new high growing 0.8% in 2022 to 39.3 GtCO₂e, with emissions from energy use rising 0.9% to 34.4 GtCO₂e.
- In contrast, carbon dioxide emissions from flaring decreased by 3.8% and emissions from methane and industrial processes decreased by 0.2%.

Oil

- Brent crude oil prices averaged \$101/bbl in 2022, its highest level since 2013.
- Oil consumption continued to increase, rising by 2.9 million barrels per day (b/d) to 97.3 million barrels per day (b/d), a smaller increase than was seen between 2020 and 2021. Consumption remained 0.7% below 2019 levels.
- Regionally, OECD consumption increased by 1.4 million b/d and non-OECD by 1.5 million b/d. Most of the growth came from jet/kerosene (0.9 million b/d) and diesel/gasoil (0.7 million b/d).
- Global oil production increased by 3.8 million b/d in 2022, with OPEC+ accounting for more than 60% of the increase. Among all countries, Saudi Arabia (1,182,000 b/d) and the US (1,091,000 b/d), saw the largest increases. Nigeria reported the largest decline in production (184,000 b/d) with production in Libya declining by 181,000 b/d too.
- Refining capacity increased slightly by around 534,000 b/d last year driven by an increase in capacity in non-OECD countries.

Natural gas

- Natural gas prices reached record levels in Europe and Asia in 2022, rising nearly threefold in Europe (TTF averaging \$37/mmBtu) and doubling in the Asian LNG spot market (JKM averaging \$34/mmBtu). US Henry Hub prices rose over 50% to average \$6.5/mmBtu in 2022 – their highest annual level since 2008.
- Global natural gas demand declined by 3% in 2022 dropping just below the 4 Tcm mark achieved for the first time in 2021. Its share in primary energy in 2022 decreased slightly to 24% (from 25% in 2021).
- Global gas production remained relatively constant compared to 2021.
- LNG supply grew 5% (26 Bcm) to 542 Bcm in 2022, similar to 2021. LNG supply increases came mostly from North America (10 Bcm) and APAC (8 Bcm). All other regions made a positive contribution to LNG supply growth in 2022 (8 Bcm).
- The increase in global LNG demand was triggered by Europe (62 Bcm) in 2022. Countries in the Asia Pacific region reduced their LNG imports by 24 Bcm and those in South & Central America by 11 Bcm.

- Japan replaced China as the world's largest LNG importer and accounted for close to 60% of global LNG demand growth in 2022. The Asia Pacific region accounted for around 65% of global LNG demand but fell 6.5% compared to 2021 whilst Europe increased its LNG imports by 57%.
- Overall natural gas pipeline net trade fell ~15% globally in 2022 (78 Bcm). European pipeline imports fell by 35% (82 Bcm), almost entirely attributable to supplies from Russia. Overall, Russian total pipeline exports fell 38%. The Middle East increased its pipeline exports by 12%. China increased its pipeline imports by 5 Bcm.

Coal

- Coal prices reached record levels in 2022, with European prices averaging \$294/tonne and the Japan CIF spot price averaging \$225/tonne (increases of 145% and 45% over 2021 respectively).
- Coal consumption continued to increase, rising 0.6% in 2021 to 161 EJ; the highest level of coal consumption since 2014.
- The growth in demand was largely driven by China (1%) and India (4%). Their combined growth of 1.7 EJ was sufficient to offset declines in other regions by 0.6 EJ.
- Coal consumption in both North America and Europe declined by 6.8% and 3.1% respectively. In 2022, OECD consumption was around 10% less than its 2019 pre-COVID level and non-OECD coal consumption over 6% higher.
- Global coal production increased by over 7% compared to 2021, reaching a record high of 175 EJ. China, India, and Indonesia accounted for over 95% of the increase in global production.

Renewables, hydro and nuclear

- Renewable power (excluding hydro) rose 14% in 2022 to reach 40.9 EJ. This was slightly below the previous year's growth rate of 16%.
- Solar and wind capacity continued to grow rapidly in 2022 recording a record increase of 266 GW. Solar accounted for 72% (192 GW) of the capacity additions.
- The largest portion of solar and wind growth was in China accounting for about 37% and 41% of global capacity additions respectively.
- Hydroelectricity generation increased by 1.1% in 2022 whilst output from nuclear fell by 4.4%.

Electricity

- Global electricity generation increased by 2.3% in 2022 which was lower than the previous year's growth rate of 6.2%.
- Wind and solar reached a record high of 12% share of power generation with solar recording 25% and wind power 13.5% growth in output. The combined generation from wind and solar once again surpassed that of nuclear energy.
- Coal remained the dominant fuel for power generation in 2022, with a stable share around 35.4%, marginally down from 35.8% in 2021.
- Natural gas-fired power generation remained stable in 2022 with a share of around 23%.
- Renewables (excluding hydro) met 84% of net electricity demand growth in 2022.

Key minerals

- Lithium carbonate prices rose 335% to average a record high of \$47,000/tonne. Similarly, the price of cobalt increased 24% in 2021 to average \$64,000/tonne.
- Lithium and cobalt production rose sharply by 21%.



Gita Gopinath

Three Uncomfortable Truths For Monetary Policy

Remarks by IMF First Deputy Managing Director Gita Gopinath for the European Central Bank Forum on Central Banking 2023

June 26, 2023

Introduction

Good evening and thank you President Lagarde for that kind introduction. And thanks to the European Central Bank for inviting me to participate in this year's forum, coming at a critical time for central banking.

The battle against inflation is very much ongoing, both in the euro area and around much of the world. Headline inflation has declined, but the stickier components remain persistently high. Central banks must continue to fight high inflation *now*, while also determining if—and how—monetary policy strategy may need to change in the *future*.

This is, of course, no easy task. This evening, I will focus on how to contend with high inflation by confronting what I will call *three uncomfortable truths for monetary policy*.

- The first uncomfortable truth is that **inflation is taking too long to get back to target**. This means that central banks, including the ECB, must remain committed to fighting inflation despite risks of weaker economic growth.
- The second uncomfortable truth is that **financial stresses could generate tensions between central banks' price and financial stability objectives**. Achieving “separation” through additional tools is possible, but not a *fait accompli*.
- The third uncomfortable truth is that going forward, **central banks are likely to experience more upside inflation risks than before the pandemic**. Monetary policy strategies and the use of tools like forward guidance and quantitative easing must accordingly be refined.

Let's begin by exploring the first uncomfortable truth: inflation is taking too long to get back to target.

1. Uncomfortable Truth #1: Inflation is taking too long to get back to target.

Inflation forecasters have been optimistic that inflation will revert quickly to target ever since it spiked two years ago. As you can see, (slide 4) this includes the ECB and the IMF, whose forecasts are

nearly indistinguishable. What we see in these charts is that inflation sits well above previous forecasts. This reminds me of Samuel Beckett's famous play, *Waiting for Godot*. In the play, both the cast and audience await a mysterious character named Godot who never appears. Similarly, we are still waiting for low inflation to reappear. We hope, of course, that real life will have a different ending than the play. But as of now, the audience is still waiting.

Despite repeated forecast errors, markets remain particularly optimistic that inflation in the euro area and most advanced economies will recede to near-target levels relatively quickly (slide 5, left panel). These disinflation hopes—likely fueled by the sharp drop in energy prices—underpin expectations that policy rates will decline soon, despite central bank guidance to the contrary (right panel). Surveys of market analysts paint a similar picture and suggest that inflation is likely to come down without much of a hit to growth. It is useful to bear in mind that there is not much historical precedent for such an outcome.^[1]

Setting aside forecasts, the fact is that inflation is too high and remains broad-based in the euro area, as in many other countries (slide 6). While headline inflation has eased significantly, inflation in services has stayed high, and the date by when it is expected to return to target could slip further.

II.A Why inflation has proved persistent

While ongoing research will shed light on why inflation has proved so sticky, several factors are probably at play, and continue to pose upside inflation risks.

First, while the ECB has raised interest rates during the past year by 400 basis points—the most in its history—activity has only slowed modestly. The unemployment rate is at historic lows. Wage growth has been solid and is picking up, though not by enough to begin reversing sharp declines in real wages over the past two years.

The combination of tight labor markets with a still solid stock of household savings and residual pent-up demand may be behind the resilience in activity we have seen so far.

Second, despite the large increase in the nominal policy rate, financial conditions may not be tight enough which impedes monetary policy transmission (slide 8). As seen in the right chart, real rates using market-based measures of inflation expectations are still quite low, and near-term real rates using household measures are likely negative.

Lastly, the pandemic has likely lowered potential output and productivity, which would also help explain some of the upward pressure on inflation.

What is worrisome is that sustained high inflation could change inflation dynamics and make the task of bringing inflation down more difficult. Given the massive decline in real wages since the pandemic, some wage catchup is to be expected. All else equal, if inflation is to fall quickly, firms must allow their profit margins—which have shot up during the past two years—to decline and absorb some of the expected rise in labor costs. But firms may resist this, especially if the economy remains resilient, while workers may demand payback for their real wage losses. Such dynamics would slow inflation reduction and likely feed into expectations and increase susceptibility to further upside cost or resource pressures.^[2]

II.B. Fiscal policy can help, but...

Some side effects of fighting inflation with monetary policy could be reduced by giving fiscal policy a bigger role. Indeed, economic conditions call for fiscal tightening. It could help cool demand and reduce the need for rising interest rates, especially if done in concert by a broad group of countries.^[3]

At a minimum, it is critical for euro area governments to resist any temptation to dilute the deficit reduction projected under current policies. Where support is needed, they must shift from providing broad-based to well-targeted support, and revenue windfalls from high inflation should be saved.

II.C. Appropriate policy strategy

Ultimately, it is up to central banks to deliver price stability irrespective of fiscal stance. With underlying inflation high and upside inflation risks substantial, risk management considerations in the euro area suggest that monetary policy should continue to tighten and then remain in restrictive territory until core inflation is on a clear downward path. The ECB—and other central banks in a similar situation—should be prepared to react forcefully to further upside inflation pressures, or to evidence that inflation is more persistent, even if it means much more labor market cooling. The costs of fighting inflation will be significantly larger if a protracted period of high inflation boosts inflation expectations and changes inflation dynamics.

There are also some downside risks to inflation that could arise, for instance, from the recent unwinding of supply chain disruptions and fall in energy prices. The effect of the recent tightening in monetary policy is still working through the system. While central banks must be vigilant about not easing prematurely, they should be prepared to adjust course if a chorus of indicators suggest that these downside inflation risks are materializing.

III. Uncomfortable Truth #2: Financial stresses could generate tensions between central banks' price and financial stability objectives.

If inflation persists and central banks need to tighten much more than markets expect, today's modestly tight financial conditions could give way to a rapid repricing of assets and a sharp rise in credit spreads. We've seen during the past year how, under some circumstances, policy tightening can come with significant financial stresses, including in Korea, the UK, and more recently in the US.

For the euro area, tighter monetary policy may also have diverse regional effects, with spreads rising more in some high-debt economies. Higher rates can also amplify other vulnerabilities arising from household indebtedness and a large share of variable rate mortgages in some countries.

This brings me to the second uncomfortable truth: Financial stresses could generate tensions between central banks' price and financial stability objectives.^[4] This is because, while central banks can extend broad-based liquidity support to solvent banks, they are not equipped to deal with the problems of insolvent borrowers. Let me explain.

III.A. Policy response to modest financial stress

If financial stresses remain modest, central banks shouldn't face too much of a challenge in achieving both price and financial stability objectives. If households and firms face a rise in borrowing costs, central banks can lower policy rates to keep output and inflation on roughly the same path. Other relatively standard central bank tools—such as discount window lending and other forms of liquidity support—can also help.

Of course, lowering policy rates—even if to keep broad financial conditions unchanged—may be misinterpreted as waning resolve to fight inflation, so effective communication is important.

III.B. When stress threatens to morph into systemic crisis

The situation becomes much more difficult if financial stresses threaten to morph into a systemic crisis. Critically, forestalling a crisis may go beyond what central banks can do alone. While they can

extend broad-based liquidity support to solvent banks, they cannot support insolvent banks, firms, or households. These must be addressed by governments and may require sizeable fiscal resources. And central banks may be considerably limited in alleviating nonbank stresses given difficulties in assessing solvency and the political economy risks of picking winners and losers.

Forceful and timely interventions that are backed with the requisite fiscal support could allow monetary policy to focus on price stability, as was the case during the recent stress episodes. This separation is clearly the most desirable outcome. But when governments lack fiscal space or political support to respond to the problem, central banks may need to adjust their monetary policy reaction function to account for financial stress. While central banks must never lose sight of their commitment to price stability, they could tolerate a somewhat slower return to the inflation target to avert systemic stress. Even so, the bar should be high to doing so. Such a shift in the reaction function could leave the central bank behind the curve in fighting inflation – as, for instance, happened when the Federal Reserve decided to ease policy in the mid-1960s on fears of a credit crunch, even as inflation pressures were sizable.

Put simply, while separation is achievable in principle, it is challenging in practice, and must not be taken for granted.

III.C. Steps to strengthen the EU framework

The ECB has taken forceful steps to help achieve both price and financial stability goals. This includes the Transmission Protection Instrument, which helps guard against the risk of a sharp divergence in borrowing costs across countries and should reduce the risk of an adverse feedback loop developing between sovereigns and banks.

So, what other steps can the ECB and European Union (EU) take? These would build upon several measures these institutions have already taken to deepen financial resilience. The EU, for example, applies Basel III capital and liquidity requirements to all banks, not just the largest ones, and the capital and liquidity ratios of the banking system as a whole are solid.

In the near-term, continuing enhanced risk assessments and bank stress-testing (as envisaged in the ongoing EBA-ECB bank stress tests) will help ensure EU banks remain resilient to rate hikes and rapid deposit outflows.

In addition, ensuring prudent public debt paths to safeguard fiscal sustainability—including by finalizing the reform of the EU economic and fiscal governance framework—is essential and critically needed. So is strengthening pan-European institutions such as the European Stability Mechanism that can provide rapid financial support to sovereigns and to the Single Resolution Fund. As part of its journey toward completing a Banking Union, the EU should make meaningful progress toward a European deposit insurance scheme to increase risk sharing across borders. Making the EU crisis management and bank resolution framework more flexible, possibly by including a systemic risk exception, would also help raise resilience. Moreover, further progress with capital markets union will help deepen capital markets and reduce fragmentation risk within the EU.

On the macroprudential policy side, it would be helpful to strengthen capital buffers even further. Banks should save some of their current high profits as capital. The macroprudential toolkit should be expanded for nonbank financial intermediaries.^[5]

- 1. Uncomfortable Truth #3: Central banks are likely to experience more upside inflation risks than before the pandemic.**

This brings me to the third uncomfortable truth: **central banks are likely to experience more upside inflation risks than before the pandemic.** Monetary policy strategies and the use of tools like forward guidance and quantitative easing must accordingly be refined.

The monetary policy strategies implemented in the post-GFC period by the ECB and other major central banks focused heavily on supporting activity and boosting too-low inflation when the effective lower bound (ELB) seemed a pervasive constraint. There was little sense that inflation could rise persistently above target given the perceived flatness of the Phillips Curve, or that central banks would face significant tradeoffs in addressing supply shocks. Risk management considerations tilted heavily toward downside risks to activity and inflation.

IV.A. More upside inflation risk

Looking forward, central banks are likely to experience more upside inflation risks than before the pandemic for two sets of reasons (slide 13). Some of the upside risk reflects structural changes affecting aggregate supply—heightened by the pandemic and the war in Ukraine—and that may result in larger and more persistent shocks. In addition, we have also learned the lesson that the Phillips Curve is not reliably flat.

Turning first to structural changes, there is a substantial risk that the more volatile supply shocks of the pandemic era will persist. Despite a considerable easing of pandemic-related supply pressures, the restructuring of global supply chains that was intensified by the pandemic and war, coupled with geo-economic fragmentation, may cause ongoing disruptions to global supply. Many countries are turning to inward-looking policies, which raise production costs, and, ironically, make countries less resilient and more susceptible to supply-side shocks. As seen in the left chart, the number of new restrictions on trade and foreign direct investment (FDI) imposed on EU countries ratcheted up markedly during the pandemic. EU countries have also increased their own restrictions on in-bound trade and FDI.

The increasing physical and transition risks from climate change are also likely to amplify short-term fluctuations in inflation and output.^[6] Delays in achieving Paris Agreement goals increase the risk of a disorderly transition and serious disruptions to energy supply, which could boost inflation sharply and create more difficult tradeoffs for central banks.^[7]

The pandemic has also taught us more about the Phillips Curve (slide 14). Evidence increasingly shows that nonlinearities may become pronounced at high levels of resource utilization, so that inflation is more sensitive to resource pressures.^[8] Difficulties in measuring economic slack may also make it harder for policymakers to gauge the point at which inflationary pressures will escalate.

IV.B. Implications for policy strategy

These takeaways suggest that when it comes to policy strategy, it will be important to be more cautious about “looking through” supply shocks. Central banks may need to react more aggressively if the supply shocks are broad-based and affect key sectors of the economy, or if inflation has already been running above target, so that expectations are more likely to be dislodged. They may also need to react more aggressively in a strong economy in which producers can pass on cost hikes more easily and workers are less willing to accept real wage declines. And they should be confident that the shocks are mainly supply-driven, rather than fueled by strong demand.

While the focus now is on high inflation, what we’ve learned about the Phillips Curve also has important implications for the monetary policy response to future periods of below-target inflation. Some refinement may be needed to the “lower-for-longer” strategies—used widely after the Global Financial crisis—that typically involved maintaining policy rates at the effective lower bound

until inflation reaches or overshoots its target. Lower-for-longer strategies may still be desirable under some conditions, particularly for an economy in deep recession and facing chronically low inflation.^[9]

But the pandemic experience suggests that policymakers should be more cautious about calibrating policy to generate a persistent fall of unemployment below the natural rate U^* when inflation is running only modestly below target—say between 1.5 percent and 2 percent. And there could well be a case for preemptive tightening under these conditions if resource pressures appear tight and there is a material risk that new shocks—such as fiscal expansion—could push the economy to overheat. By allowing for a more gradual pace of tightening, a preemptive approach would also reduce the financial stability risks likely to accompany a rapid exit from low rates (the second uncomfortable truth).

IV.C. Refining the use of tools

Refining monetary policy strategies also calls for adjusting the use of tools. Forward guidance is a helpful tool, and conditional promises can enhance its impact. But such promises should be tempered by escape clauses if developments unfold much differently than expected. The forward guidance provided by central banks during the pandemic may have been too much of a straitjacket and prevented a faster reaction to inflation surprises.

The costs and benefits of quantitative easing (QE) should also be reconsidered. QE will likely remain a critical tool should central banks face circumstances like the post-GFC period in which unemployment runs high and inflation low even though policy rates have hit their floor. But there should be more wariness of using QE—and accompanying it with forward guidance promising low policy rates—when employment has largely recovered, and inflation remains only modestly below target. Maintaining QE in such circumstances increases the risk that the economy will overheat and that policy will be forced into a sharp U-turn.

So, when we consider the monetary policy of tomorrow, it is important to recall today's lessons: First, take a closer look at supply shocks before deciding to simply “look through” them. Second, be careful about running the economy hot, and be ready to act preemptively if it does—even if inflation isn't yet burning brightly. Third, make sure that forward guidance is coupled with escape clauses; and fourth, be more cautious about deploying QE outside of a recession.

Conclusion

To conclude, now is the time to face the three uncomfortable truths that I've outlined. Inflation remains sticky; financial stresses could make price and financial stability a difficult balancing act; and more upside inflation risks will likely come our way. I am heartened by the actions that the ECB—and many other central banks—have taken to tackle inflation. But the battle won't be easy—financial stresses may intensify, and growth may have to slow more. Even so, we know that we can't have sustained economic growth without a return to price stability. The good news is that while low inflation may seem elusive, it is certainly no stranger, and central bank actions can deliver it. Unlike the characters in *Godot*, we are not waiting for a potential stranger to arrive; we are inviting an old friend to return.

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The Military Recruiting Crisis: Even Veterans Don't Want Their Families to Join

Pentagon scrambles to retain the main pipeline for new service members as disillusioned families steer young people away

By [Ben Kesling](#)

June 30, 2023 12:01 am ET

Sky Nisperos's grandfather came to the U.S. from Mexico, and became an American citizen by serving in the U.S. Navy. Her father, Ernest Nisperos, is an active-duty officer in the Air Force with two decades of service. For years, Sky planned to follow a similar path.

"I wanted to be a fighter pilot," the 22-year-old said. "It was stuck in my head."

Now, one of the most influential people in her life—her father—is telling her that a military career may not be the right thing.

The children of military families make up the majority of new recruits in the U.S. military. That pipeline is now under threat, which is bad news for the Pentagon's already acute recruitment problems, as well as [America's military readiness](#).

"Influencers are not telling them to go into the military," said Adm. Mike Mullen, the former chairman of the Joint Chiefs of Staff, in an interview. "Moms and dads, uncles, coaches and pastors don't see it as a good choice."

After the patriotic boost to recruiting that followed 9/11, the U.S. military has endured 20 years of war in Iraq and Afghanistan with no decisive victories, scandals over shoddy military housing and healthcare, poor pay for lower ranks that forces many military families to turn to food stamps, and rising rates of post-traumatic stress disorder and suicide.

At the same time, the labor market is the tightest it has been in decades, meaning plenty of other options exist for young people right out of school.

U.S. recruiting shortfalls represent a long-term problem that, if not resolved, would compel the military to reduce its force size. With America embarking on [a new era of great-power competition with China and Russia](#), that problem has become more serious.

China, which has around two million serving personnel, versus a little under 1.4 million in the U.S., has steadily expanded its military capabilities in recent decades, [especially in the South China Sea](#). The [most immediate threat is a possible conflict with China over Taiwan](#), which would require a rapid and sustained response from all parts of the U.S. armed forces.

“I’ve been studying the recruiting market for about 15 years, and we’ve never seen a condition quite like this,” said a senior Defense Department official.

Toughest year

The U.S. Army in 2022 had its toughest recruiting year since the advent of the all-volunteer military in 1973 and missed its goal by 25%. This year, it expects to end up about 15,000 short of its target of 65,000 recruits.

The Navy expects to fall short by as many as 10,000 of its goal of nearly 38,000 recruits this year, and the Air Force has said it is anticipating coming in at 3,000 below its goal of nearly 27,000. The Marine Corps met its target last year of sending 33,000 to boot camp, and expects to meet its goals this year, but its leaders described recruitment as challenging.

Only 9% of young people ages 16-21 said last year they would consider military service, down from 13% before the pandemic, according to Pentagon data.

Pentagon officials see recruitment shortfalls as a crisis and pledge to hit their targets in the future to stave off making changes to the force structure.

Army Secretary Christine Wormuth said she expects within weeks to begin drafting a proposal for a recruiting overhaul so sweeping that Congress might need to pass legislation to enact all of it.

She declined to provide details but said a key element will be to coordinate with veterans’ groups. “Right now we are not in a comprehensive, structured way leveraging our relationships with veterans organizations,” Wormuth said.

The Army has stepped up and modernized its marketing, launched remedial courses to bring unqualified young people to a level where they can join and revised some benefits.

Defense officials said they aren’t doing a good job of battling what they call misperceptions. They said many families want their children to go on to higher education after high school, considering the military a stumbling block instead of a steppingstone. Once a young person is on a path to a career, they aren’t as likely to put on a uniform, they said.

When the draft ended at the close of the Vietnam War, the military fostered recruitment with the promise of a good career with retirement benefits and healthcare, as well as education benefits to prepare soldiers for life after the military. That strategy worked, and the Army typically met its overall needs.

It did so by relying heavily on veterans and military families to develop the next generation of recruits, especially in the region known in the military as the “Southern Smile,” a curving region from the mid-Atlantic and down across the southern U.S.

Today, nearly 80% of all new Army recruits have a family member who has served in uniform, according to the service. That can be a good thing, said Col. Mark Crow, director of the Office of Economic and Manpower Analysis at West Point, because “people who know the most about it stick around.”

Depending too much on military families could create a “warrior caste,” Wormuth said. Her plans seek to draw in people who have no real connection to the military and to broaden the appeal of service.

Sky Nisperos, who moved around the world as a military brat, said that as a teen she began to see the effect of her father’s nearly dozen deployments and tours away from his family. Ernest Nisperos said he remembers being asleep when one of his kids jabbed him in the ribs to wake him. He put Sky’s sister in a wrestling ankle lock before he realized he was back home.

“My sister and I would say, ‘It’s just drill sergeant-dad mode,’ especially for the month he came back,” Sky said.

Ernest Nisperos realized his deployments, which involved battle planning and top secret intelligence, were taking a toll. In 2019, after he returned from Afghanistan, he took the family to Disneyland. During the nightly fireworks extravaganza, he cowered in the fetal position while his family and “Toy Story” characters looked on.

Sky worried her father would end up like her grandfather, the military patriarch, who in the years since he retired from the Navy started to have what the family describes as flashbacks to his time in Ramadi, Iraq, in 2005, sometimes yelling that he needed to take cover from a nonexistent attack.

Her father decided he didn’t want that life for Sky and her two siblings.

‘What was it all for?’

Some on the left see the military as a redoubt of fringe conservatism. Oath Keepers, the militia group involved in the Jan. 6, 2021, attack on the Capitol whose [leaders were found guilty of seditious conspiracy](#), and other extremists have touted their veteran credentials. Those on the right have expressed concerns about the military focusing on progressive issues, or in the terms of some Republican lawmakers, being too “woke.”

The sudden and unpopular conclusion to the war in Afghanistan in 2021 added to the disenchantment of some veterans, including Catalina Gasper, who served in the Navy. Gasper said she and her husband, who spent more than two decades in the Army, used to talk to their boys, now 7 and 10, about their future service, asking them if they wanted to be Navy SEALs.

In July 2019, on her last combat deployment to Afghanistan, she was stationed at a base in Kabul when the Taliban launched an attack. The blast battered Gasper’s body and she was transported back to the U.S. for treatment and recovery.

She was left with lingering damage from a traumatic brain injury. She is sensitive to loud sounds and bright lights. She has recurrent dizziness and forgets words. She also has bad knees and herniated discs in her back.

The U.S. pulled out of Afghanistan in the summer of 2021, precipitating Kabul’s fall to the Taliban. “We’re left with the gut-wrenching feeling of, ‘What was it all for?’ ” she said.

She said she was a patriot but decided she would do everything she could to make sure her kids never enter the military. “I just don’t see how it’s sustainable if the machine keeps chewing up and spitting out” our young people, she said.

Katherine Kuzminski, head of the Military, Veterans and Society Program at Center for a New American Security, a bipartisan security think tank, said the pandemic exacerbated the military’s long-term recruiting problems. “You can’t underestimate the fact we didn’t have recruiters on college and high school campuses for two years,” she said. “Recruiters are the only military access point for many people” without family or friends in the military.

Wormuth, the Army secretary, said she is working with the Department of Education to streamline access to schools. Even with federal laws in place that guarantee military recruiters access to high school and college students, school administrators can limit the scope of visits and restrict recruiters’ movements and activities in schools.

Recruiters are competing with some of the lowest unemployment numbers in decades, and entry-level jobs in the service industry that can promise quick paychecks, no commitments and no wait times to start.

“To be honest with you it’s Wendy’s, it’s Carl’s Jr., it’s every single job that a young person can go up against because now they are offering the same incentives that we are offering, so that’s our competition right now,” said Sgt. Maj. Marco Irenze, of the Nevada Army National Guard.

Defense officials said the military pay scale was designed for single teenage men content to live in barracks and who joined to seek adventure, among other reasons. But the military has seen a shift from teens to people in their 20s, who come in later in life with greater expectations for benefits, pay and marketable skills and who pay more attention to the job market.

The lowest-ranking troops make less than \$2,000 a month, although pay is bolstered by benefits including healthcare, food and housing, leaving them few out-of-pocket expenses.

Families or those who live off base can find expenses outstrip income. More than 20,000 active-duty troops are on SNAP benefits, otherwise known as food stamps, according to federal data.

When service members move to a new base they often have to spend money out of pocket—even though the Army is supposed to cover all costs, according to Kathy Roth-Douquet, CEO of Blue Star Families, a military-family advocacy group that is currently asking Congress to mandate more funding for troops’ housing.

“If it’s too expensive to serve in the military, families won’t recommend service,” she said. “This hurts the main pipeline of recruitment.”

The promise of a pension down the line isn’t as attractive as it once was, said West Point’s Crow. Only 19% of active-duty troops stayed until retirement age in 2017, according to the Pentagon. To tackle that problem, the military started a system in 2018 that allows troops to invest in what is essentially a 401(k) program, so if they leave the military before full retirement they can still benefit.

Prep courses

The Department of Defense said 77% of American youth are disqualified from military service due to a lack of physical fitness, low test scores, criminal records including drug use or other problems. In 2013, about 71% of youth were ineligible.

The Army estimates that pandemic pressures on education including remote learning, illness, lack of internet access and social isolation lowered scores on the ASVAB, the military's standardized test for potential recruits, by as much as 9%. Those who score below a certain level on the test and on physical readiness tests can't join without improving their scores.

Lt. Col. Dan Hayes, a Green Beret who once taught Special Forces captains, some of the highest-performing soldiers in the Army, took charge of the Future Soldier Prep Course in Fort Jackson, S.C. The course takes Army recruits who can't perform academically or physically and gets them up to standards that allow them to join the service. Other programs help new soldiers raise scores.

"We're looking at the problems in society and recruiting and realizing we have to meet people half way," said Hayes.

The Army is adapting marketing techniques from the private sector. One early lesson: The Cold War-era slogan, "Be All You Can Be," performed better than a recent one, "Army of One," which didn't reflect the teamwork the service thinks appeals to current teenagers. The slogan also emphasizes that the military offers career development and a broader sense of purpose, some of its strongest selling points.

Maj. Gen. Deborah Kotulich, the director of the Army's recruiting and retention task force, a unit convened to address recent shortfalls, said potential recruits should know the Army has more than 150 different job fields available.

Maj. General Alex Fink is just as likely to wear a business suit as camouflage fatigues at the Army Enterprise Marketing Office based in Chicago. The Army put Fink, a reservist with a marketing background, in Chicago so he can be in the heart of one of the nation's advertising and marketing hubs.

"It hadn't evolved for the last 15 or 20 years," he said in an interview. "We really couldn't measure the effectiveness of marketing."

Fink's office is now gathering data on every potential recruit. If an Army ad runs on Facebook and a link gets clicked, the service can follow that anonymous user digitally.

"We don't know your name, but we can start serving you ads," he said.

And if that user eventually fills out an Army questionnaire, the service has a name to go with that data and can know what kinds of ads work best. "Literally we can track this all the way until a kid signs a contract," he said.

Restructuring units

Deeper problems soldiers report include moldy barracks, harassment, lack of adequate child care and not enough support for mental health issues such as suicide.

“Parents have concerns about, hey, if my kid joins the military are they going to have good places to live?” Wormuth said. “If my kid joins the military are they going to be sexually harassed, or are they going to be more prone to suicidal ideations?”

She said the Army has encouraged recruiters to be forthright about addressing what might have once been taboo issues in order to dispel those concerns. The service says it has worked to encourage troops to report abuse and harassment and cracked down on such behavior, and has also expanded parental-leave benefits.

Department of Defense officials have said they will have to address the total combat power of the military if the recruiting crisis continues, but that they aren't ready to yet talk about whether strength will ultimately be affected.

[Readiness shortfalls](#) can be masked when units aren't headed into war, but a full-scale response, such as what would be needed in the Pacific, could expose undermanned units that can't be deployed or aren't effective, and [ships and aircraft that aren't combat ready](#) due to a lack of personnel to maintain them.

The military faces decisions on either cutting the size of units or reconfiguring them, or making choices that could hurt the quality of the current forces.

Working to retain existing soldiers is an option. But retention can mean low performers aren't let go, said Gil Barndollar, a senior research fellow at the Center for the Study of Statesmanship at Catholic University of America. “If you're not cutting your bottom 10% after their initial contracts it's going to have a long-term effect on high performers,” he said.

Last year, the Army's top officer, Gen. James McConville, told reporters the service was prepared to eliminate redundancies in the Army's key fighting units, which are called brigade combat teams. The Army would maintain the number of the units by reducing the personnel in each of them, a restructuring that was prompted by the recruiting crunch, according to one defense official.

Mark Cancian, a senior adviser at the Center for Strategic and International Studies, a nonpartisan think tank, said the Army might end up making cuts that leave too few soldiers in platoons and other units. During peacetime and training this may go unnoticed, but if those units have to deploy, the Army would have to take troops from other units to fill in gaps.

Undermanned units aren't ready to respond quickly, Cancian said, and units with fill-in soldiers don't have the same effectiveness as a unit whose members trained together for months or years. “What you're going to see in the Army are hollow units,” he said.

Wormuth, the Army secretary, has said units will get cuts but hasn't made public her plan. She has for months hinted at broader force reductions.

“If you look at us over the course of the last 50 years of history, the Army is a little bit like an accordion. We tend to expand in times of war,” Wormuth said. “Frankly that's how the Founding Fathers thought about the military, they didn't want a large standing militia.”

Still, she said, the Army is “very, very focused” on turning around the recruiting numbers.

Changes may come too late for those about to graduate from high school or college. Sky Nisperos, who once dreamed of becoming an Air Force pilot, graduated from the University of Oklahoma in May. Her plan now, she said, is to become a graphic designer.

Michael R. Gordon contributed to this article.

Design by Andrew Levinson.

Write to Ben Kesling at ben.kesling@wsj.com

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Dan Tsubouchi @Energy_Tidbits · 3h

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"So as such, I think we have a sense of balance, rather than the predicted tightening of the [#Oil] market, which may yet occur later this year" @vitoinews @michaelwmuller.

not getting bullish vibes from leading indicators for oil (petrochemical, China construction/steel,... [Show more](#)



SAF Group created transcript of comments by Mike Muller (Head, Vitol Asia) and Christof Ruhl (Senior Research Scholar Center on Global Energy Policy, Columbia University) with host Sean Evers (Founder, Managing Partner Gulf Intelligence) on Gulf Intelligence Daily Energy Markets podcast on July 2, 2023. https://twitter.com/gulf_intel/status/1675436910339297281

Items in "Indices" are SAF Group created transcript.

Evers asking Muller on his oil market read given big events (recent OPEC+ cuts including Saudi's extra cuts and Russian events over June) really haven't shaken up oil markets off \$75 Brent. Muller "I would say the outcome of the OPEC+ meeting whereby Saudi Arabia took a unilateral move to take extra production off the market in month of July came at a time where the experts in the market were expecting a phase during the calendar year where there was going to be a tightening of the supply/demand balance anyway. And, as such, there was going to be a tailwind for those that wish to see prices supported. For that extra volume to be taken off the market therefore just added to that tailwind. But, of course, the reason it was done was the general overtones of a softer economic global picture. Fueled not least by concerns around Chinese demand or rather disappointing lack thereof. And as such, I think there 's your explanation why markets generally held at more or less the levels where they were at before the OPEC+ meeting, mid 70s. Yes, there was an excursion down to the low \$70s but, on the whole, what we have here is a relative period here of flat price stability on Brent crude oil and OPEC basket prices. There is a lot more that can be said about global movement of other goods. And if you look at certain leading indicators that the oil market tends to take a cue from, the petrochemical sector for example still doesn't look to be healthy. The Chinese construction sector is not underpinning certain markets that are energy intensive. And if you look at shipping markets, those are not giving you particularly bullish vibes at the moment also. So as such, I think we have a sense of balance, rather than the predicted tightening of the market, which may yet occur later this year."

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

Dan Tsubouchi @Energy_Tidbits · Jun 30

Continued negative China industry indicators.

Its leading steelmakers warn on very challenging H2 as demand disappoints, profitability lags, and pressure to cut costs mounts, report @business....



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Dan Tsubouchi @EnergyTidbits · 15h
#COP28
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No media coverage on #COP28 Pres Designate speech. West didn't want to hear:

- "discuss sustainable energy pathways"
- "systematically decarbonize our current energy system"
- "ensuring energy always remains accessible, secure & affordable"
- "renewable energy alone will not be... [Show more](#)"



COP28 President Designate Dr Sultan Al Jaber addresses Energy Asia

SAF Group created transcript of comments by COP28 President-Designate UAE's Dr. Sultan Al Jaber speech at Energy Asia on June 27, 2023. https://twitter.com/COP28_UAE/status/1673763402046641056

Items in "quotes" are SAF Group created transcript.

Al Jaber "... This is a critical gathering to discuss sustainable energy pathways for this very important region... COP28 will mark the first global stock taking. An official assessment of the world's performance against the Paris agreement. But we don't need to wait until December. We already know we are way off track. By 2030, the world must reduce its emissions by 42% to keep the goal of 1.5 within reach. And over the same seven years, energy demand will only increase, particularly in Asia, as the global population grows by half a billion.

As a result, we need to rapidly expand zero carbon energies while we systematically decarbonize our current energy system. Are we to do this while ensuring energy systems remains accessible, secure and affordable. That is why I am calling on every region of the world to contribute to a global goal of tripling renewable energy capacity by 2030. Asia is already a global leader in renewable energy, accounting for nearly half of all installed capacity globally. And is adding more new capacity than any other region in the world. I am confident that Asia will continue to lead and achieve even higher ambition in the renewable energy space.

At the same time, we know that renewable energy alone will not be sufficient, particularly for heavy emitting industries and in certain geographies. That is why we need to explore all available options including large scale nuclear power and SMRs, battery technology and, of course, hydrogen, which we should aim to double by 2030.

The faster we build the energy system of the future, the faster we can transition from the current one. And by being at the world's head in hydrocarbons, we must ensure they are the least carbon intensive. That is why I have called on oil and gas companies to fully align around Net Zero by 2050 and to reduce methane emissions to near zero by 2030.

Collectively, we should not overlook the power of innovation. New technologies have the potential to dramatically increase energy efficiency, which we should aim to double by 2030. If we take these steps, I am confident we can turn the climate challenge into a unique opportunity for building sustainable economic growth. Let's use Energy Asia to shape a clearer and better roadmap for a responsible energy future.

I invite you all to engage with the COP28 team and share your suggestions, your views, your plans and your commitments. We need to act in solidarity and with unprecedented unity. Let's demonstrate that COP28 will be a COP of action, a COP of impact and a COP for all.

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Dan Tsubouchi @Energy_Tidbits · 15h
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The faster we build the energy system of the future, the faster we can transition from the current one. And **as long as the world still uses fossil fuels, we must ensure they are the least carbon intensive**. That is why I have called on oil and gas companies to fully align around Net Zero by 2050 and to reduce methane emissions to near zero by 2030.

Collectively, we **cannot overlook the power of AI energy**. New technologies have the potential to dramatically increase energy efficiency, which we should aim to double by 2030. If we take these steps, **the transition we seek from the current challenge into a unique opportunity for building sustainable economic growth**. Let's use Energy Asia to shape a clearer and better roadmap for a responsible energy future.

I invite you all to engage with the COP28 team and share your suggestions, your views, your plans and your commitments. We need to act in solidarity and with unprecedented unity. Let's demonstrate that COP28 will be a COP of action, a COP of impact and a COP for all.

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Dan Tsubouchi @Energy_Tidbits · 18h

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Great Canada Day at @RocketClassic. @TaylorPendrith just birdied to move to 2nd. note who he is chasing - fellow Canadian @ahadwingolf who has been on fire today. @jessicahadwin. Tomorrow will be a big golf watch day!!



977

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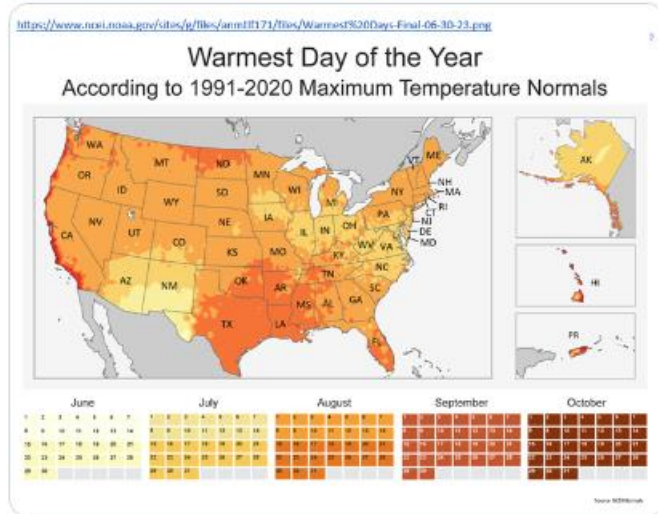
Dan Tsubouchi @Energy_Tidbits · 20h

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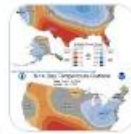
Here's why temperature watch gets important in July ie. don't want below normal temps when it is supposed to be the hottest.

@NOAA map when to expect Warmest Day of the Year.

Mid July starts to see hottest day of the year in states like IL, IN, OH, WV, VA, NC. And current... [Show more](#)



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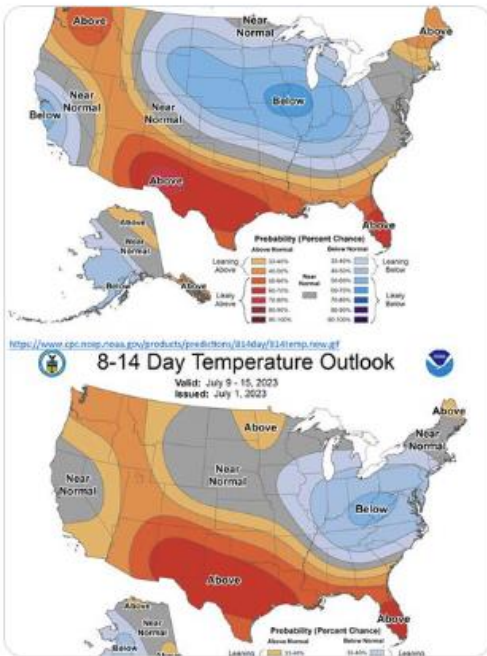
Dan Tsubouchi @Energy_Tidbits · 20h
perfect day on #Calgary for people to raft down the Elbow River, plus some of the 2023 goslings.



1,372

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Dan Tsubouchi @Energy_Tidbits · 20h
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SAF Dan Tsubouchi @Energy_Tidbits · Jul 1
 #Vortexa crude #Oil floating storage at 07/01 est 95.99 mmb, -35.63 mmb WoW vs revised up big by +11.29 06/23 of 131.62 mmb.

Would have been negative tone to oil on 06/25 based on revised 06/23. 131.62 mmb is highest since 10/23/2020. Also since Asia 06/23 was revised up to... [Show more](#)



2 10 1,541

SAF Dan Tsubouchi @Energy_Tidbits · Jul 1
Typo in the 06/30 tweet. Should have said "EL NINO" may tend to lower hurricane activity in Atlantic Basin but tends to increase hurricane activity on west coast of Mexico,

SAF Dan Tsubouchi @Energy_Tidbits · Jun 30
Two hurricanes at same time near #Cabo in June. Not common to see two at same time in peak ASO, let alone at start of hurricane season.
Strong may tend to lower hurricane activity in Atlantic Basin, but tends to increase hurricane activity on west coast of Mexico.



1,434

SAF Dan Tsubouchi @Energy_Tidbits · Jul 1
going to be a crazy busy Canada Day in #Banff and #Canmore. just east of Canmore and been non stop stream of cars driving west. no surprise going to be sunny warm day!



1,561

SAF

Dan Tsubouchi @EnergyTidbits · Jun 30

...

Russian refineries process more crude oil = less oil for export.

@ja_herron update: Russia refineries came out of seasonal maintenance and processed +230,000 b/d MoM more in June.

#OTT

2023-06-30 16:07:33.690 GMT

By Bloomberg News
 (Bloomberg) — Russia's oil refineries raised crude-processing rates this month after completing spring maintenance, providing market-watchers with more data to appraise the nation's output goal.

Primary processing rates averaged 3.48 million barrels a day over the June 1-28 period, according to a person familiar with the matter. That's about 230,000 barrels a day, or 4.4% higher than the average rate in May.

Supplies of Russian crude to domestic refineries, along with shipments from its key ports, are the most scrutinized gauges of the nation's production after the government classified output data following Western sanctions. Earlier this month, Deputy Prime Minister Alexander Novak said Russia had fulfilled its pledge of reducing crude production by 500,000 barrels a day from a baseline in February.

Refinery Runs
 Russia has been increasing oil processing after seasonal maintenance.

Average crude-processing volumes

Month	Average crude-processing volumes (million barrels a day)
Feb 2022	~3.0
Apr	~2.8
Jul	~3.2
Oct	~3.1
Jan 2023	~3.0
Apr	3.48

Source: Bloomberg calculations based on industry data.

Russia's crude exports from key ports have fallen so far this month. The four-week average, which smooths out some of the volatility in weekly numbers, dropped by 263,000 barrels a day to 3.39 million barrels a day in the period to June 25.

Read More: Russian Oil Flows Edge Lower But Evidence of Cuts Remains Scarce

More volatile weekly flows also slumped last week, but maintenance in the Baltic port of Primorsk could be the most likely explanation for the drop.

To contact Bloomberg News staff for this story:
 James Herron in London at jherron@bloomberg.net

To contact the editors responsible for this story: James Herron at jherron@bloomberg.net
 Dylan Griffiths

To view this story in Bloomberg click here: [https://www.bloomberg.com/news/articles/2023-06-30-russia-oil-refineries-raise-crude-processing-rates](#)

4 7 1,897

SAF

Dan Tsubouchi  @Energy_Tidbits · Jun 30

...

WOW!

Is this a pause or a shift down in their #EV sales curve?

[@MustReadMustoe](#) reports "*Strong customer reluctance' forces Volkswagen to slash electric vehicle production.*"

"Volkswagen UK said: "The Volkswagen brand, like other car manufacturers, is currently seeing softening..."[Show more](#)

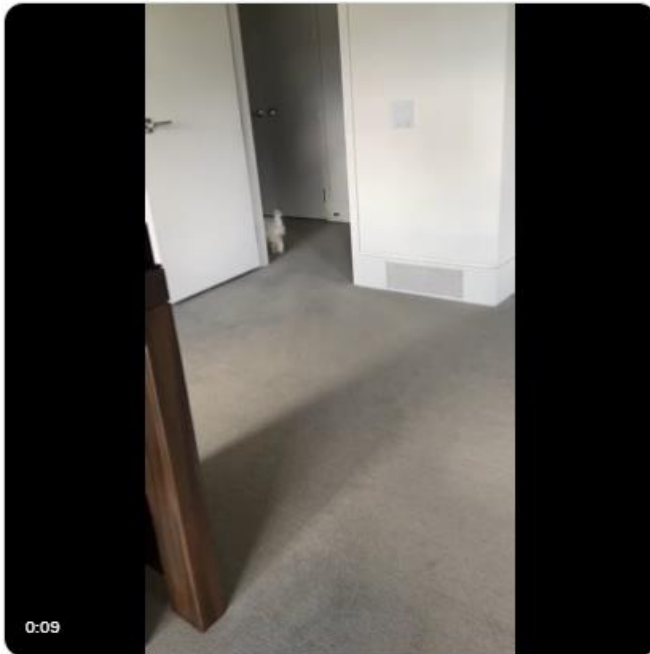
 5  10  30  9,683 

SAF

Dan Tsubouchi  @Energy_Tidbits · Jun 30

...

advantage of having a 3.5 lb maltese in the family, can swivel the office chair and play fetch.



   5  1,224 

SAF

Dan Tsubouchi @Energy_Tidbits · Jun 30
Better update for #SanJoseedelCabo.

...

#HurricaneBeatriz forecast lessening to Tropical Storm/Depression level & path shifted slightly west.

But wouldn't count on the weather forecast. First time can ever recall for sunny days with no rain when a storm is anywhere close by.



808

Dan Tsubouchi @Energy_Tidbits · Jun 30
Continued negative China industry indicators.

Its leading steelmakers warn on very challenging H2 as demand disappoints, profitability lags, and pressure to cut costs mounts, report @business.

See 06/23 tweet ALL China steel indicators worse in May.

#OTT... Show more

re Dan Tsubouchi @Energy_Tidbits · Jun 23
ALL China steel indicators keep getting worse in May.

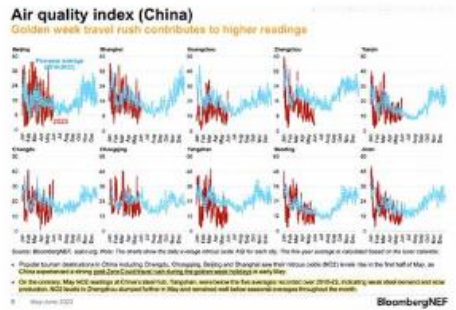
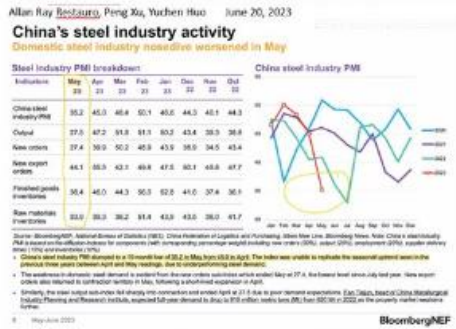
China steel industry PMI hits 10-mth low in May.

Steel output indicator 27.5 in May vs 51.8 in March.

NO2 emissions in China steel hubs below norms ie. less activity.

Thx @BloombergNEF

#OTT



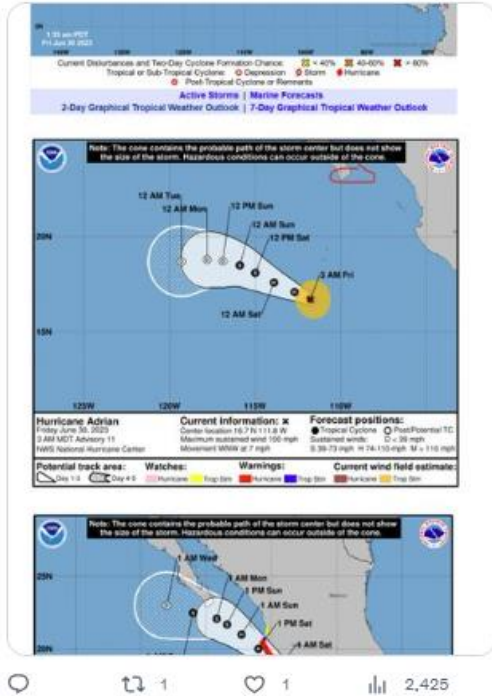
SAF

Dan Tsubouchi @Energy_Tidbits · Jun 30

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Two hurricanes at same time near #Cabo in June. Not common to see two at same time in peak ASO, let alone at start of hurricane season.

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SAF

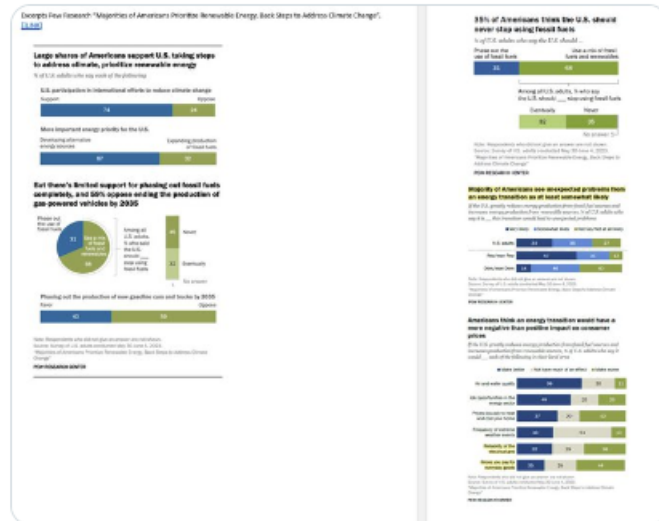
Dan Tsubouchi @Energy_Tidbits · Jun 29
Will #Biden listen?

...

Yes, Americans in favor of climate change action, prioritizing #Wind, #Solar

BUT Americans don't want to phase out ICE vehicles & fossil fuels, see #EnergyTransition likely leading to unexpected problems, risk to grid reliability & higher costs.

Good... Show more



3 12 3,288

SAF

Dan Tsubouchi @Energy_Tidbits · Jun 29
No update from @NPPDnews on 5.2MW Scottsbluff (Nebraska) solar farm hammered by reported baseball sized hail.

...

To be fair, baseball sized hail would destroy a lot more than solar panels.

@fema hail risk map, Scottsbluff is on west side of Neb.

#Coal likely to fill in

#OOT

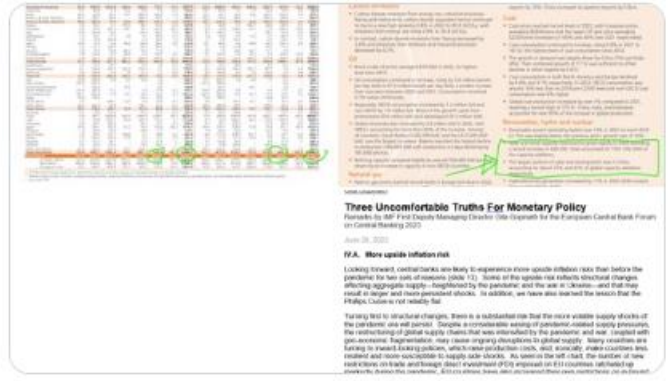


2 3 2,077

SAF Dan Tsubouchi @Energy_Tidbits · Jun 27
 Is 2020s energy supply crunch inevitable?

Record renewables CAPACITY growth, but renewables only covered 83.8% of growth in electricity generation in 2022.

#IMF delays in achieving Paris goals "increase the risk of a disorderly transition & serious disruptions to energy... Show more



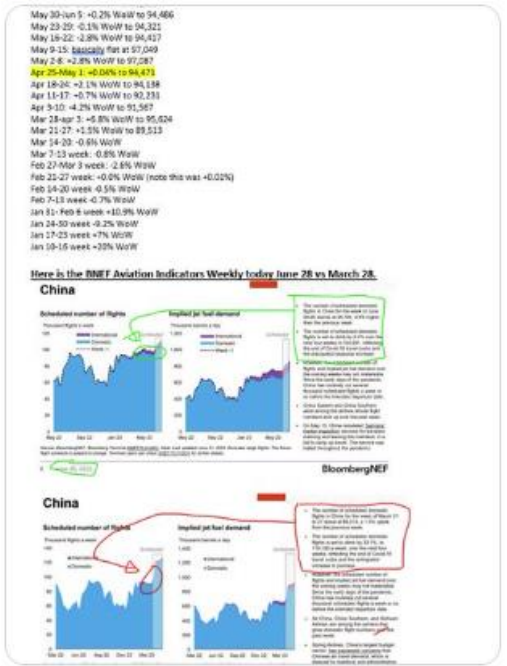
3 7 3,678

SAF Dan Tsubouchi @Energy_Tidbits · Jun 27
 China holiday travel impact?

Scheduled domestic flights +3.4% WoW to 95,724 for Jun 20-26 wk.

BUT have to see if this is a temporary boost over Dragon Boat Holiday Jun 22-24, like temp boost over Apr 24-May 3 May Day Holiday.

Thx @BloombergNEF Claudio Lubis
 #OTT



4 7 3,718


SAF Dan Tsubouchi @Energy_Tidbits · Jun 27
Surely no one expected Guyana to want to join #OPEC.

On joining #OPEC, Guyana VP "this is not something we are interested in."
Guyana just starting #Oil revenues, hasn't had decades of benefits.
It's like why would developing countries take on same Net Zero commitments as... [Show more](#)

<https://www.euronews.com/2023/06/27/guyana-not-interested-in-joining-opec/>

Guyana not interested in joining OPEC

By Staff Reporter
June 27, 2023



Vice-President Bharat Jagdeo

-VP Jagdeo says
NASCENT oil producer Guyana is not interested in joining the Organization of the Petroleum Exporting Countries (OPEC), Guyana's Vice-President Bharat Jagdeo said on Monday, as the South American country looks to rapidly boost production and attract new operators.

Guyana, which has become one of the fastest-growing crude-oil producers in the world since it began producing oil commercially in 2019, has been invited to attend OPEC's international seminar in July, Jagdeo said, but there was no intention to become a member of the cartel.

"We were not formally invited to join OPEC," he said. "We have been invited, however, to participate in OPEC meetings," Jagdeo told Reuters.

The Ministry of Natural Resources said the country was invited to attend the July meeting in Vienna and participate in a ministerial panel on diversifying energy economies.

The Wall Street Journal reported on Monday that Saudi Arabia's Energy Minister, Abdulhamid bin Salman, and Haitham al-Ghais, OPEC's secretary-general, have invited Guyana to join the cartel.

Guyana is planning an oil auction within a couple of months in the hope that such can bring in other oil and gas companies.

An ExxonMobil Corp-led (XOM) consortium currently controls all offshore output in Guyana under a production and sharing agreement in which Exxon decides the pace of production and shares a piece of the output with the government.

"We are committed to responsibly developing the resources of Phase 1 Guyana to maximize value for all stakeholders, including the government and people of Guyana," said Exxon spokesperson Meghan Macdonald, in response to questions about the country and OPEC.

The company and the country are in talks over which unexploded offshore areas will be returned to the government, people close to the discussions have told Reuters.

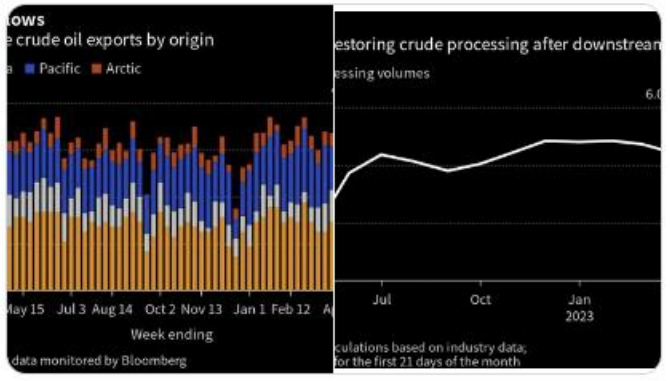
The country is using its inland forests to tap carbon markets, in a business the government sees as more profitable than using the acreage for mining or agriculture, Jagdeo had previously said. (Reuters)

1 1 7 2,453

SAF Dan Tsubouchi @Energy_Tidbits · Jun 27
Flows of Russian #Oil -997,000 b/d WoW to 2.55 mmb/d.

@JLeeEnergy: should see pop back up as 521,000 b/d was maintenance related at Primorsk and >200,000 b/d from Kozmino.

But likely some decline is linked to @ja_herron report RUS refineries processed ~115,000 b/d more in June... [Show more](#)



8 18 3,848

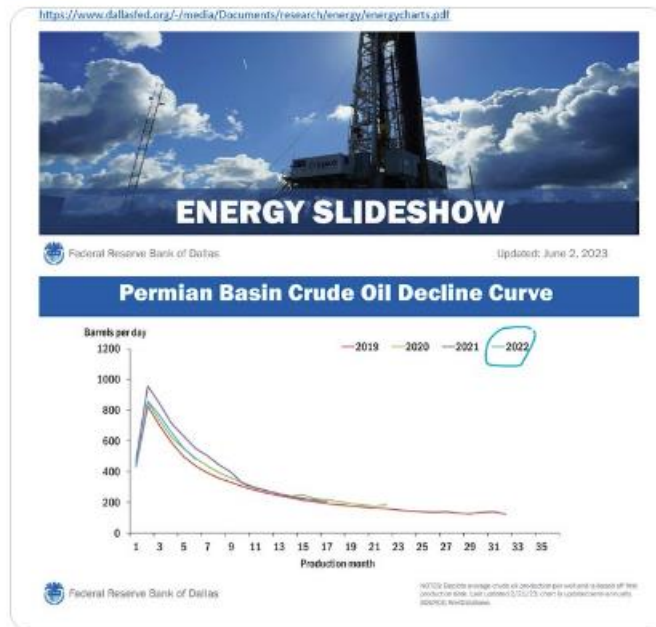
SAF Dan Tsubouchi @Energy_Tidbits · Jun 25
ICYMI.

@DallasFed #PermianBasin crude #Oil decline curve.

Fits maturing Permian thesis ie. industry generally drilled their best wells in 2020/21 when cash flows were squeezed.

2022 wells. Less than 2021 wells. Start little higher vs 2020 but cross over lower ~6 mths.

#OTT



2 3 21 4,527