

Thailand Energy Sector

Oil prices supported by geopolitical risks while natural gas prices decline on warm weather, ample storage

Rising US inventories

- US crude oil inventories increased by 2.9m bbls WoW for the week ending 15 Dec. At the same time, gasoline inventories grew 2.7m bbls WoW but remain 2% below the 5-year average. Distillate inventories also rose 1.5m bbls WoW and are about 10% below the 5-year average.
- **US oil output:** increased by 200kbd to 13.3mbd. On a YoY basis, output has increased by 1.2mbd.
- Net speculative position: CFTC reported the net speculative position has fallen to 151.6k contracts as of 16 Dec, having fallen by more than 50% since the recent high in late Sep. This is also the lowest level since 8 Jul and is close to the multi-year low level reached earlier that month.

Rebel attacks in Red Sea up-end oil shipping

- Background: The Houthis rebels in Yemen launched attacks on ships carrying goods to/from Israel and those owned by Israeli citizens/companies. This has significantly increased risks for crude oil and oil product shipping through the Red Sea. Despite a US-led international response, 'Operation Prosperity Guard', several companies chose to sail longer routes and avoid the Red Sea entirely.
- Ship re-routing: Major shippers such as Maersk and Evergreen have already re-routed their ships to avoid the Red Sea. Among energy firms, Norwegian gas giant Equinor implemented re-routing plans while BP became the first oil major to pause all shipments through the Red Sea.
- Impacts on energy prices: About 8% of global crude and oil products and 4-8% of LNG cargo traverses the Red Sea. The attacks on shipping have introduced both direct and indirect costs. For example, insurance fees jumped 10x to 0.5-0.7% of the value of a ship from just 0.07%. Ships sailing via longer routes (Cape of Good Hope instead of transiting through Suez Canal) also take more time and incur significant additional charter and bunker costs. Indirect costs include inefficient logistics and more oil on water, which could negatively impact petroleum product supply from the Middle East and India to Europe and crude oil shipments from Russia to China and India.

Global gas prices continue to fall

- Falling gas prices: Asian spot LGN price (JKM) fell below USD12/mmbtu in recent days. The price has fallen from over USD40/mmbtu at the beginning of the year. Meanwhile, Europe's natural gas benchmark (TTF) fell to EUR34/MWh (about USD11/mmbtu) from over EUR80/MWh early this year. Prices in the US (Henry Hub) have corrected to USD2.4/mmbtu, less than half the level at the beginning of the year.
- Exceptionally warm weather: A major reason for global decline in gas prices is the exceptionally warm weather this winter. According to Copernicus, Nov 2023 was the warmest Nov on record (data going back to 1940). 2023 as a whole saw six record-breaking warm months.
- Ample storage: Europe's gas storage remains close to its maximum level for this time of year. At 99 Bcf, storage now is 10% above last year's level. In the US, storage is at 3,664 Bcf, or about 7.6% above the 5-year average for this time of year.

WoW price movements of petrochemical products (% and USD)

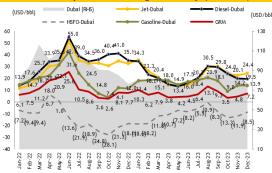
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	Dubai	Jet-DB	Diesel-	FO-DB	Gasoline	Naphtha-	GRM	HDPE-	PP-	Bz-	Px-	
	crude	Jet-DD	DB	מט-טו	-DB	DB	Olum	Naphtha	Naphtha	ULG95	ULG95	
This week	76.0	24.5	20.2	(7.8)	14.4	(2.6)	8.6	298	248	92	213	
Last week	76.1	25.3	19.4	(8.5)	13.2	(6.2)	6.7	320	280	77	205	
% Chg	(0.1)	(3.2)	4.2	8.0	9.3	57.7	28.5	(7.0)	(11.6)	20.0	3.7	
USD chg	(0.1)	(0.8)	0.8	0.7	1.2	3.6	1.9	(22.4)	(32.4)	15.4	7.6	

Sources: Bloomberg, MST

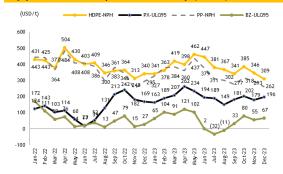
Analyst

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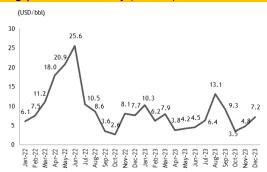
Refined crack spreads - average monthly (USD/bbl)



Key petrochemical spreads - monthly (USD/t)



Singapore GRM - monthly (USD/bbl)



Note: Last data entries are the running averages for the current month Source: Bloomberg



Petrochemical spreads

		ical	JPI C	aus												Aromatics (USD/tonne					Luk						
	Feed				Refinery								etrocher			,				•			Lube and others (USD/tonne)			Int PET	Coal
	Dubai (USD/bbl)	Naphtha (USD/t)	LPG- Dubai	Gasoline- Dubai	Jet-Dubai	Diesel- Dubai	HSFO- Dubai	NPH- Dubai	SG GRM	ETH- NPH	PROP- NPH	Butadine- NPH	HDPE- ETH	HDPE- NPH	LLDPE- NPH	LDPE- NPH	PP-NPH	MEG- 0.65ETH	PX- Condens	BZ- Condens	PX- ULG95	BZ- ULG95	500SN- HSFO	Phenol- BZ	BPA - Phenol	(USD/t)	(USD/t
Yearly 2014	96.6	861	(28.1)	14.3	15.9	16.1	(8.3)	(4.0)	5.7	506	419	452	179	685	681	717	638	43	386	375	279	268	495	216	268	231	71
2015	51.1	492	(16.1)	18.3	13.9	13.7	(5.0)	1.8	7.8	578	298	413	169	747	736	765	618	89	397	238	254	95	431	201	270	215	59
2016	41.4	400	(11.6)	14.9	11.5	10.8	(5.0)	1.6	6.1	670	311	725	74	744	751	791	581	(35)	416	261	316	162	411	180	243	192	66
2017	53.0	496	(10.8)	14.8	12.1	12.5	(2.3)	0.3	7.1	650	381	1,012	31	681	671	761	604	108	388	357	278	247	498	148	298	207	88
2018 2019	69.1 63.3	615 526	(22.5)	10.6 9.4	15.4 14.0	14.7 14.1	(2.6)	(2.9)	5.9 3.8	605 327	419 355	799 524	81 141	686 468	534 423	565 472	621 539	128 26	460 358	214 99	388 284	143 25	461 324	346 340	375 276	313 244	107 78
2020	41.9	380	(9.1)	4.4	2.5	6.2	(3.0)	(1.0)	0.4	348	416	321	157	506	480	626	561	(2)	226	133	187	93	386	263	632	245	60
2021	68.6	648	(13.3)	10.9	5.8	6.6	(4.8)	1.1	3.4	366	367	376	165	531	557	877	637	20	263	317	179	232	843	263	1,704	241	136
2022	97.1	789	(30.9)	18.6	29.9	34.0	(13.8)	(12.3)	10.8	217	210	301	174	392	413	650	376	(69)	269	199	129	56	673	281	552	281	354
Quarterly																											
1Q22 2Q22	96.52 108.46	878 887	(24.1)	17.8 32.0	15.4 37.6	19.1 41.4	(8.7)	(2.1)	8.1 21.4	238 280	249 231	139 585	175 164	413 444	437 476	731 781	419 431	(37) (118)	258 303	248 289	123 63	114 38	530 588	411 203	837 626	293 298	260 360
3Q22	99.07	715	(33.5)	15.6	33.8	36.5	(21.9)	(22.2)	7.6	175	182	377	194	370	391	607	352	(48)	266	167	132	33	790	226	362	314	417
4Q22	84.50	675	(31.9)	9.2	32.7	38.9	(22.5)	(11.9)	5.9	176	179	101	165	341	349	481	300	(72)	248	94	198	41	785	285	382	217	380
1Q23	79.58	698	(20.8)	18.5	27.6	26.0	(16.2)	(4.5)	8.3	165	209	361	207	372	372	452	360	(37)	346	247	186	86	647	90	282	201	260
2Q23	77.61	605	(33.0)	16.8	14.2	14.8	(8.7)	(12.5)	4.2	231	221	243	203	434	405	437	389	(44)	396	241	230	75	591	82	298	197	162
3Q23	87.38	656	(39.6)	19.1	25.9	26.8	(4.9)	(16.9)	9.6	145	123	162	217	361	337	343	295	(36)	358	184	173	(3)	442	88	270	113	147
4Q23	84.20	655	(29.7)	12.4	23.7	21.2	(11.2)	(13.8)	5.0	206	163	341	144	350	322	366	294	(71)	325	202	193	67	519	72	328	139	134
Monthly																											
Jan-23	80.9	685	(25.6)	18.0	35.5	34.3	(18.6)	(7.2)	10.3	99	184	202	242	341	353	451	327	15	318	223	163	65	702	52	306	186	358
Feb-23	80.8	727 686	(16.1)	18.3 19.1	26.3	23.3	(18.2)	(2.6)	6.2	169	231 220	451 469	194 175	363 419	363 404	438 466	378	(53)	327 392	247 272	189 207	104 91	633	85 133	299 240	214	178
Mar-23 Apr-23	76.7 83.2	686 676	(20.8)	18.0	21.1 14.2	20.4 15.1	(11.8)	(3.0)	7.9 3.8	244	227	385	163	398	366	400	384 360	(86) (74)	435	299	262	121	581	43	258	203 214	192
May-23	74.3	595	(29.6)	14.9	13.7	13.4	(7.2)	(10.3)	4.2	255	255	257	208	462	432	470	437	(43)	381	251	234	102	602	154	291	208	164
Jun-23	74.7	543	(35.8)	17.5	14.6	16.0	(8.2)	(16.3)	4.5	208	187	90	239	447	421	423	379	(15)	371	173	194	2	589	48	344	170	130
Jul-23	81.5	597	(41.8)	18.4	18.1	20.2	(5.5)	(17.3)	6.4	148	142	68	233	381	358	341	311	2	386	162	189	(32)	481	76	289	126	134
Aug-23	86.6	658	(38.2)	20.9	29.2	30.5	(0.9)	(15.8)	13.1	147	119	112	220	367	344	347	302	(45)	341	191	149	(11)	404	83	259	125	145
Sep-23 Oct-23	92.8 90.4	701 660	(38.8)	18.1 9.0	30.3 24.1	29.8 24.0	(8.3)	(17.4) (19.5)	9.3 3.5	140 215	111 159	278 373	201 170	341 385	313 343	343 393	277 318	(59) (90)	346 293	199 178	181 202	33 80	441 499	105 124	262 276	88 136	159 139
Nov-23	82.9	642	(29.1)	14.2	22.6	20.1	(11.9)	(13.9)	4.8	215	176	356	131	346	321	361	293	(65)	339	212	179	55	526	50	334	134	123
Dec-23	77.6	665	(24.1)	13.9	24.4	19.5	(8.5)	(6.1)	7.2	182	150	280	127	309	295	339	262	(54)	342	217	196	67	532	42	375	146	143
Weekly																											
03-Apr-23	83.4	696	(31.1)	22.1	17.5	20.0	(11.5)	(8.5)	5.8	219	199	409	175	394	354	424	324	(80)	453	315	256	113	617	61	240	218	200
10-Apr-23	86.2	690	(36.0)	20.0	14.9	17.0	(12.0)	(12.0)	5.5	225	215	405	155	380	350	410	330	(75)	417	262	236	86	573	59	240	225	194
17-Apr-23	86.5	691	(36.5)	18.5	13.1	14.1	(10.4)	(12.1)	2.5	224	219	364	155	379	349	409	339	(80)	440	316		108	557	- 22	265	198	187
21-Apr-23 28-Apr-23	81.1 78.9	668 633	(33.6)	15.7 13.9	12.9 12.9	12.5 11.9	(10.4)	(9.3) (10.9)	2.5 2.7	237 272	237 267	377 372	165 165	402 437	372 407	422 457	382 427	(63) (73)	444 423	310 292	287 285	152 147	572 585	28 89	265 280	212 217	190
05-May-23	73.2	595	(25.6)	13.3	12.7	11.2	(8.1)	(9.3)	2.6	281	291	341	195	476	446	496	456	(59)	430	280	280	143	613	154	280	217	170
12-May-23	73.7	595	(30.9)	13.3	14.3	13.3	(6.9)	(9.7)	4.6	260	270	270	215	475	445	485	445	(26)	358	235	259	117	600	186	280	227	165
19-May-23	75.0	595	(27.9)	15.6	14.7	15.0	(5.8)	(11.0)	5.3	250	260	230	205	455	425	455	435	(34)	374	264	207	90	600	122	305	195	162
26-May-23	75.3	597	(34.2)	17.4	12.9	13.9	(8.1)	(11.2)	4.2	229	199	189	215	444	414	444	414	(51)	361	224	190	59	597	154	300	193	160
02-Jun-23	73.7	562	(34.0)	17.3	12.7	14.1	(8.3)	(13.3)	4.6	263	213	173	195	458	418	448	398	(56)	350	210	195	68	599	52 38	360	186	131
09-Jun-23 16-Jun-23	75.4 74.8	561 548	(36.3)	18.4 19.4	14.2 15.5	15.6 17.1	(8.4)	(15.1) (15.9)	4.6 5.9	195 172	180 157	75 57	235 270	430 442	410 412	420 412	380 372	(16) 7	378 384	179 176	184 204	16 (22)	589 598	12	345 350	174 165	136 128
23-Jun-23	73.5	520	(37.7)	16.7	15.7	16.9	(8.2)	(17.6)	4.1	200	190	75	260	460	440	430	380	7	378	165	192	(18)	581	95	300	169	126
30-Jun-23	76.1	527	(35.9)	15.7	15.0	16.6	(8.2)	(19.4)	3.4	208	193	68	235	443	423	403	363	(18)	366	136	194	(33)	579	41	363	154	128
07-Jul-23	77.6	549	(39.1)	15.2		17.2	(5.0)	(18.6)	3.8	186	181	76	235	421	401	381	341	(8)	374	139	209	(23)	533	55	358	141	138
14-Jul-23	81.8	607	(42.8)	16.7	16.8	18.7	(5.7)	(16.6)	5.5	129	129	69	235	364	344	324	284	12	383	149	203	(33)	473	65	298	120	132
21-Jul-23 28-Jul-23	81.7 84.7	602 631	(40.7) (44.7)	20.3	18.0 22.1	20.1 24.6	(6.2) (5.1)	(17.0) (16.9)	8.0 8.3	153 124	138 119	73 54	225 235	378 359	348 339	338 319	318 299	(1) 4	383 402	183 178	172 171	(39)	473 444	58 127	273 225	135 109	133
26-Jul-23 04-Aug-23	86.9	657	(45.1)	19.0		30.9	(0.3)	(16.2)	11.1	138	103	48	215	353	333	313	293	(37)	340	190	183	15	402	105	230	133	137
11-Aug-23	87.6	657	(40.6)	19.3	28.0	29.4	(1.5)	(17.0)	12.9	138	123	98	235	373	333	333	293	(37)	333	177	155	(16)	396	116	225	132	144
18-Aug-23	85.5	647	(33.7)			30.1	(0.8)	(16.0)	14.1	169	139	139	215	384	364	384	324	(60)	338	200	125	(24)	402	76	270	124	150
25-Aug-23	86.3	672	(33.5)	23.2		31.5	(1.1)	(14.1)	14.3	143	113	163	215	358	348	358	298	(45)	354	196		(18)	417	36	310	111	149
01-Sep-23 08-Sep-23	88.7 91.6	667 694	(34.4)		33.3 30.0	31.7 28.9	(4.2) (7.3)	(17.0) (17.0)	10.6	148 121	128 106	188 261	215 225	363 346	343 316	363 336	303 276	(55) (40)	371 335	178 228	154 174	(22)	431 437	57 71	305 263	96 99	156 156
15-Sep-23	96.0	716	(39.5)		32.0	31.7	(7.3)	(17.0)	11.0 11.6	109	99	299	215	324	294	324	254	(36)	366	228	174	58	437	117	240	74	161
22-Sep-23	94.6	726	(41.5)	17.8		28.5	(11.9)	(16.6)	8.4	150	100	320	175	325	295	335	265	(74)	343	190	187	28	461	135	265	72	160
29-Sep-23	92.9	703	(38.7)	10.9	27.2	28.2	(10.8)	(17.4)	4.8	172	122	322	175	347	317	357	287	(89)	317	170	219	70	450	143	235	99	160
06-Oct-23	86.3	648	(32.1)			26.8	(13.0)	(16.6)	4.6	228	178	378	175	403	373	423	343	(89)	340	198	260	112	501	207	235	139	139
13-Oct-23	90.2	657	(34.9)	9.8		24.0	(12.1)	(19.5)	4.5	218	163	378	175	393	353	403	333	(89)	294	181	216	93	503	120	260	130	144
20-0ct-23 27-0ct-23	94.6 90.7	678 657	(39.4)			23.6 21.5	(13.3)	(21.8)	1.5 3.6	197 218	142 153	357 378	175 155	372 373	322 323	372 373	287 308	(94) (89)	259 279	155 176	180 154	66 48	486 504	88 80	300 310	138 138	138
27-0ct-23 03-Nov-23	88.5	657	(32.9)	11.8		21.2	(14.7)	(17.8)	4.1	203	153	378	140	343	313	353	293	(79)	317	176	177	46 58	519	20	350	125	123
10-Nov-23	81.8	631	(29.3)	15.3		19.3	(12.8)	(14.0)	5.5	225	190	385	145	370	330	370	310	(61)	338	209	167	40	536	46	360	140	123
17-Nov-23	79.0	626	(26.7)			20.1	(10.2)	(11.7)	6.4	229	194	329	125	354	334	374	304	(56)	378	251	187	65	530	57	325	127	123
24-Nov-23	82.5	653	(27.7)	13.9	23.0	19.7	(10.0)	(12.2)	3.3	202	167	332	115	317	307	347	267	(66)	323	196	186	56	520	78	300	143	122
01-Dec-23	80.6	661	(28.0)			18.9	(9.2)	(9.5)	6.5	194	154	304	115	309	299	339	259	(61)	330	190	171	31	508	63	335	148	134
08-Dec-23 15-Dec-23	76.1 76.0	650 682	(23.2)		25.3 24.5	19.4 20.2	(8.5) (7.8)	(6.2)	6.7 8.6	185 168	165 133	295 243	135 130	320 298	310 278	350 328	280 248	(48) (53)	343 353	218 242	205 213	77 92	540 548	31 32	400 390	140 152	151
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% chg WoW.chg	(0.4)	E 0	0.4	0.3	(2.2)	4 2	9 0	57.7	20 E	/0 A)	(10.4)	(17.0)	12.71	/7 M	(10.4)	16.40	(11.4)	(0.0)	2.0	11.0	2 7	20.0	1 4	2.2	/2 EV	Q 4	(2.0
WoW chg	(0.1)	5.0 3.6	9.6 17.4	9.3 (1.6)		4.2 (2.8)	8.0 28.4	57.7 56.0	28.5 50.4	(9.4) (15.1)	(19.6) (14.4)	(17.8)	(3.7)		(10.4)	(6.4) (6.1)	(11.6) (10.6)	(9.9) 17.8	2.9 0.9	11.0 2.3	3.7 9.7	20.0	1.6 1.1	3.2	(2.5) 12.4	8.6	(3.8
MoM chg	(6.4)																							(16.4)		9.4	16.7

 ${\it Sources: Companies, Bloomberg, MST}$

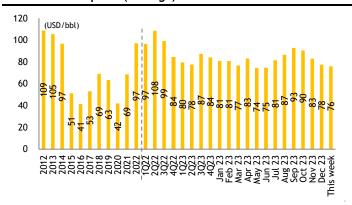
*QoQ and MoM changes based on latest data available.

SG complex GRM: gasoline 32%, jet 19%, diesel 16%, fuel oil 23%, naphtha 7% and LPG 3%

Maybank Securities

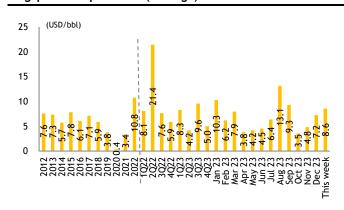
Key spreads in charts

Dubai crude oil price (average)



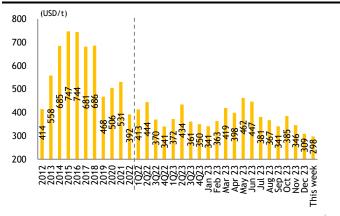
Source: Companies, Bloomberg, MST

Singapore complex GRM (average)



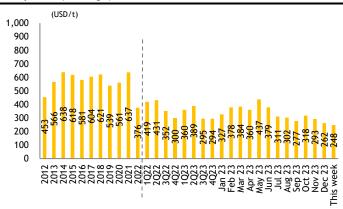
Source: Companies, Bloomberg, MST

HDPE-naphtha (average)



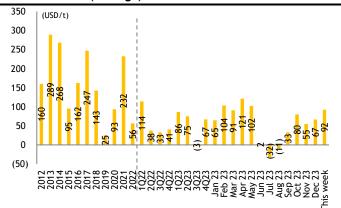
Source: Companies, Bloomberg, MST

PP-naphtha (average)



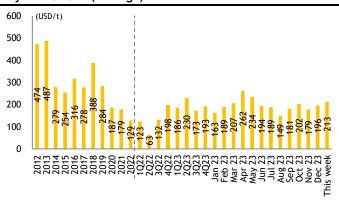
Source: Companies, Bloomberg, MST

Benzene-ULG95 (average)



Source: Companies, Bloomberg, MST

Parxylene-ULG95 (average)



Source: Companies, Bloomberg, MST



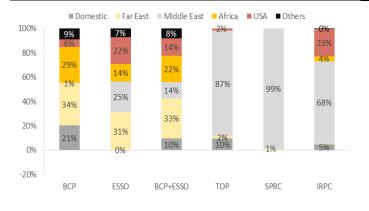
Thai downstream capacity breakdown and comparison

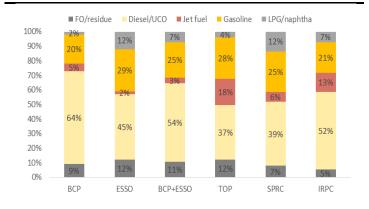
	SCC	PTTGC	IRPC	ТОР	ВСР	ESSO	SPRC	IVL	Total
Key product	HDPE	HDPE	PP	Refinery	Refinery	Refinery	Refinery	Polyester	
Capacity breakdown									
Refining capacity (kbpd)	-	280	215	275	120	174	175	-	1,239
Production yield (%)									
LPG		-	11	5	2	5	4		27
Jet		17	9	21	5	3	2		57
Gasoline			20	27	20	24	29		120
Naphtha		16	3	-	-	3	6		28
Diesel		46	38	37	53	42	39		255
Fuel oil		12	10	10	8	8	4		52
Others		9	9		12	15	16		61
Lube base (ktpa)	-	-	320	267					587
Aromatics (ktpa)	540	2,419	367	838		500			4,664
Paraxylene		1,310		527		500			2,337
Benzene	360	697	114	259					1,430
Toluene		50	132						182
Mixed Xylene	180	76	121	52					429
Others		286							286
Olefins (ktpa)	3,400	2,988	1,221						7,609
Ethylene	2,100	2,376	433						4,909
Propylene	1,300	512	732						2,544
Others		100	56						156
Other downstream (ktpa)	4,590	6,298	1,225	75	-	-	-	13,695	25,883
HDPE	980	850	140						1,970
LDPE	152	300							452
LLDPE	665	800							1,465
PP	860	810	775						2,445
PS	70	90	125						285
ABS/SAN			185						185
PVC	886								886
EO-based		473						550	1,023
Green chemical		904							904
Phenol/BPA		954							954
Propylene oxide	390								390
Specialty Elastomer	220								220
SM	340								340
PTA		970						5,297	6,267
PET	27	147						5,666	5,840
Fiber and yarn								2,182	2,182
LABIX				75					75
Power (MW)			343	497	477				1,317
Petrol station					1,253	721			1,974

Source: Companies, MST

Thai refiners and their crude slates...







Source: Companies



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