

Thailand Utilities

Gas cost headwinds might be calmed by hydropower

- We believe the ERC will have no choice but to raise the Ft again – possibly multiple times in 2023 – to keep pace with further potential gas cost increases.
- We think the actual import of spot LNG will be lower than the ERC's projections in 2H22-2023, based on higher electricity production from hydropower plants in Laos.
- We prefer, from most to least, SPPs, EVs, IPPs, and renewables.

More Ft hikes are highly likely in 2023

We believe the Energy Regulatory Commission (ERC) will have no choice but to raise the fuel tariff (Ft) again – possibly multiple times in 2023 – to match the gas cost which has increased by over 70% y-y vs the mere 35% y-y increase in the national power grid tariff at THB4.7/kWh. The main reason is the Electricity Generating Authority of Thailand (EGAT)'s mammoth deficit of over THB100b, which could lead to financial distress for the state-owned enterprise if the ERC continues to keep the Ft stable while the gas cost continues to rise – let alone to cover the subsidies for the gas cost for nine months (4Q21-1H22).

EGAT: victim of the higher gas cost

According to EGAT, Thailand's peak power demand hit a record of 31GW in Apr-22, up from 28GW in Apr-21, as the economic reopening and a significant tourism rebound boosted demand for electricity. EGAT's power generation, which accounted for 44% of the total power supply in 5M22, uses gas as its main fuel, followed by imported coal (all lignite-based power plants). EGAT's responsibility for shouldering the margin squeeze at its own power plants as well as the rising gas costs for electricity purchased under its power purchase agreements (PPAs) with independent power producers (IPPs) and small power producers (SPPs), has led to over THB100b in losses, based on our estimates as of Jul-22.

Electricity reshuffle in 2H22-2023: hydro could douse the gas price inferno

On top of the rising global gas price, Thailand has seen its gas supply situation worsen recently due to lower-than-expected gas production from the Erawan gas field, and the recent leak in the gas pipeline linking the Zawtika offshore gas field in Myanmar to Thailand. However, we think the actual imports of spot LNG will be lower than the ERC's projections in 2H22-2023 – likely in the range of 1.0-1.5mt per quarter or around 0.3-0.5mt/month – based on higher electricity production from hydropower plants in Laos, which could replace up to 15-20% of the electricity from Thailand's LNG-based power plants, and by switching power generation to other fuels including high sulphur fuel oil (HSFO), diesel, and coal.

SPP > EV > IPP > renewables

Among the four segments of the Thai power sector under our coverage, we prefer, from most to least, SPPs, EVs, IPPs, and renewables. Top picks are BGRIM for SPPs, EA for EVs, GULF for IPPs, and GUNKUL for renewables. We think the downside from potentially higher gas costs due to increasing imports and the rising price of global spot LNG vs Thailand's pool gas price is low and should allow SPPs' margins to recover and EGAT's subsidy losses to be reimbursed.



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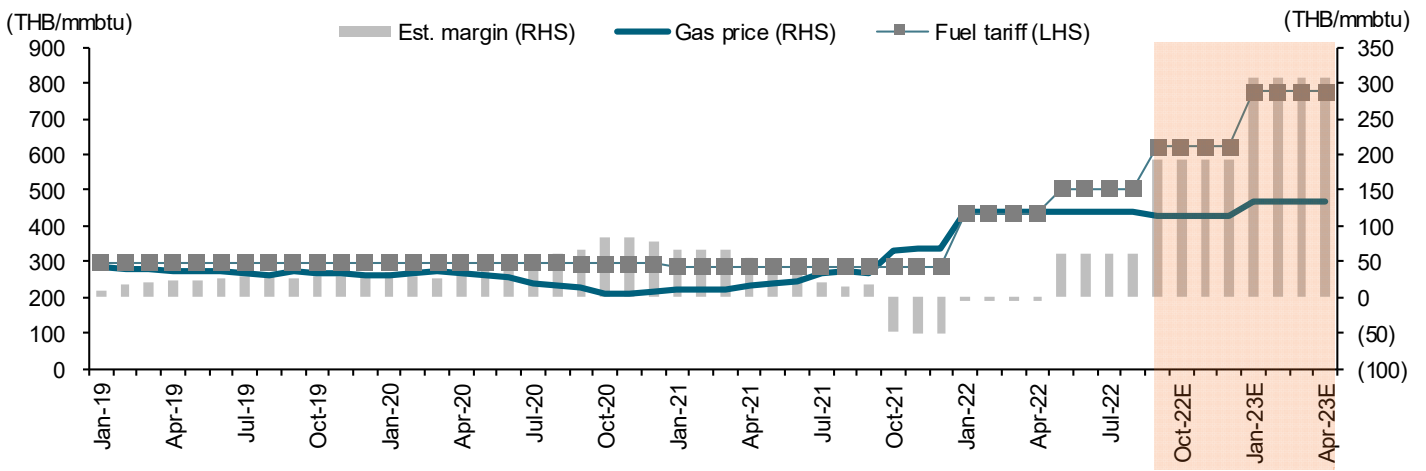
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Gas cost headwinds might be calmed by hydropower

Since 4Q21, Thailand has seen a significant jump in the overall pool gas price (weighted average gas price by source), rising from THB220/mmbtu in 1Q21 to THB335/mmbtu in 4Q21 and hitting THB442/mmbtu in 1Q22, driven by higher imports of spot LNG, whose price has skyrocketed by over 8x from its 10-year average of USD5/mmbtu in 2011-21 to over USD45/mmbtu as of 2 Aug-22, triggered by the gas supply shock that followed the imposition of sanctions by the US and its allies against Russia after its invasion of Ukraine on 24 Feb-22.

As a result, SPPs, whose selling prices for electricity and steam sold to industrial users (IUs), have suffered from a severe margin squeeze due to the spike in the gas cost that has far outpaced the rise in the national power grid price, which in turn is linked to the Ft. Changes in the Ft must be announced by the ERC one month in advance before the applicable period of four months.

Exhibit 1: Pool gas price, fuel tariff, and estimated margins

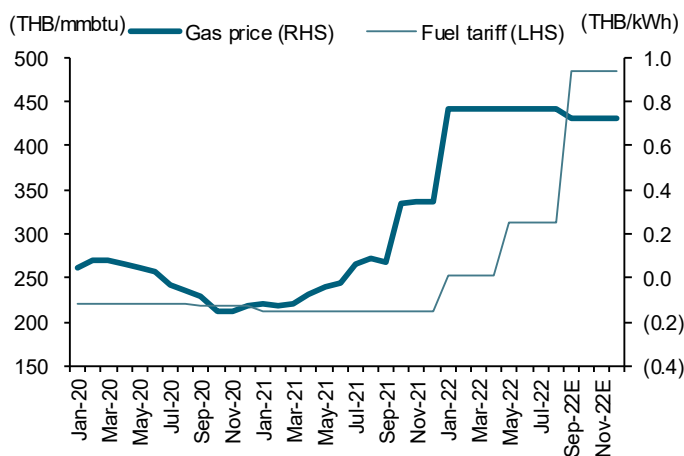


Sources: BGRIM; EGAT; PTT; FSSIA estimates

Last week, the ERC finally announced that the Ft for Sep-Dec 2022 would rise by THB0.6866/kWh, bringing the total Ft to THB0.9343/kWh and the total average electricity tariff to THB4.7/kWh, up from THB4.0/kWh in May-Aug 2022.

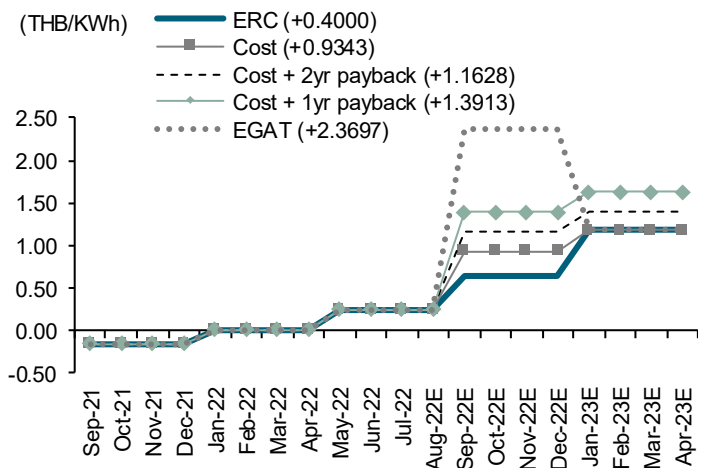
While the Ft-driven electricity tariff is now higher, we think it will cover only the projected energy cost increase for Sep-Dec 2022. As for the subsidy losses of over THb100b carried by EGAT and SPPs, they have remained uncompensated, and, at best, only partly compensated for SPPs.

Exhibit 2: Gas price vs Ft



Sources: PTT; BGRIM; EGAT

Exhibit 3: Ft hike scenarios

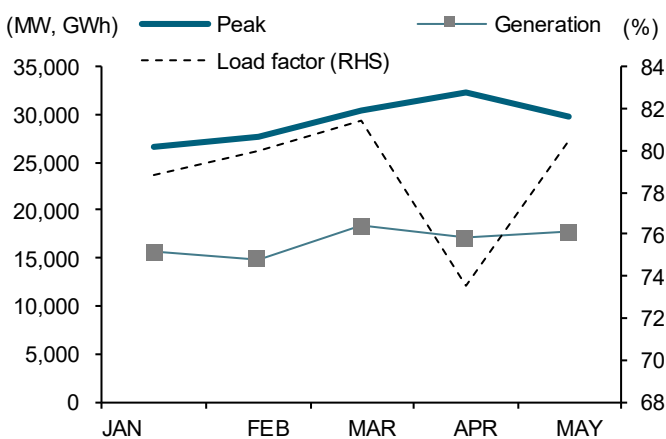


Sources: ERC; EGAT

More Ft hikes are highly likely in 2023. We believe the ERC will have no choice but to raise the Ft again, possibly multiple times in 2023, to further match the gas cost increase of over 70% y-y vs the mere 35% y-y increase in the national power grid tariff at THB4.7/kWh. The main reason is EGAT's mammoth financial burden of over THB100b in losses, which could lead to EGAT's financial distress within the next few months if the ERC continues maintain the Ft at the current rate while the gas cost continues to rise – let alone to cover the subsidies for the gas cost for nine months (4Q21-1H22).

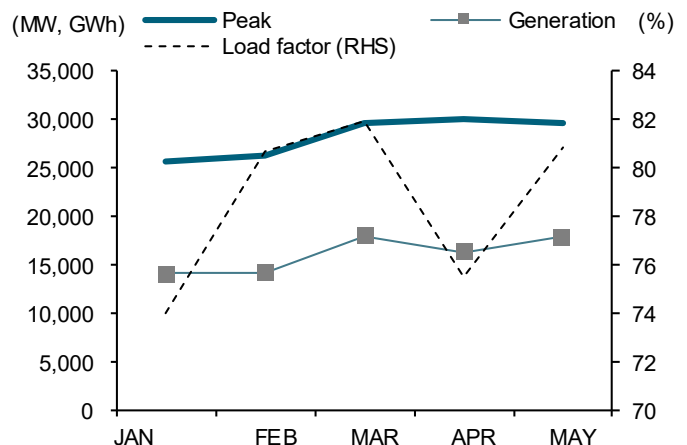
Electricity demand hit a record high of 31GW in Apr-22. According to EGAT, Thailand's peak power demand hit a record high of 31GW in Apr-22, up from 28GW in Apr-21, as the economic reopening and a significant tourism rebound boosted demand for electricity.

Exhibit 4: Peak demand, power generation, and load factor (5M22)



Source: EGAT

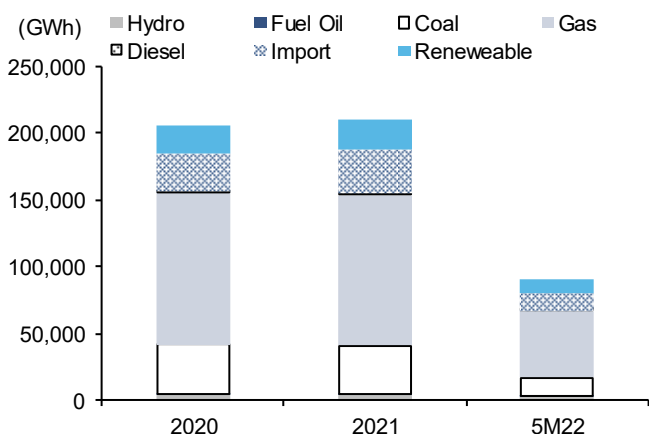
Exhibit 5: Peak demand, power generation, and load factor (5M21)



Source: EGAT

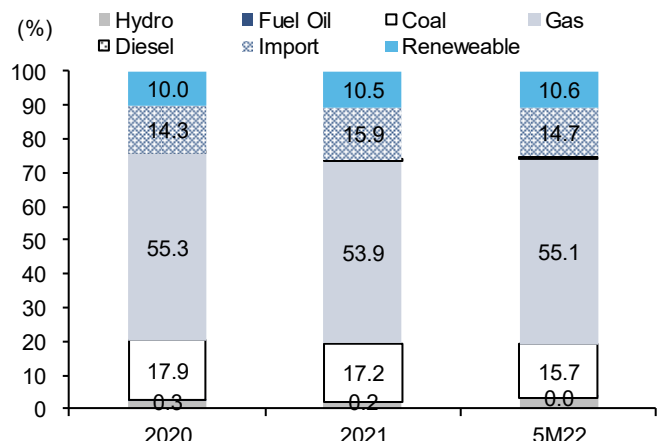
EGAT's data indicates that in 5M22, gas-fired power plants at 55% of total remained Thailand's largest power generation source, followed by coal (15.7%), imported electricity (14.7%, from hydro and coal), and renewables (10.6%).

Exhibit 6: Thailand's power generation capacity breakdown by fuel type



Sources: EGAT; Provincial Electricity Authority (PEA); Metropolitan Electricity Authority (MEA)

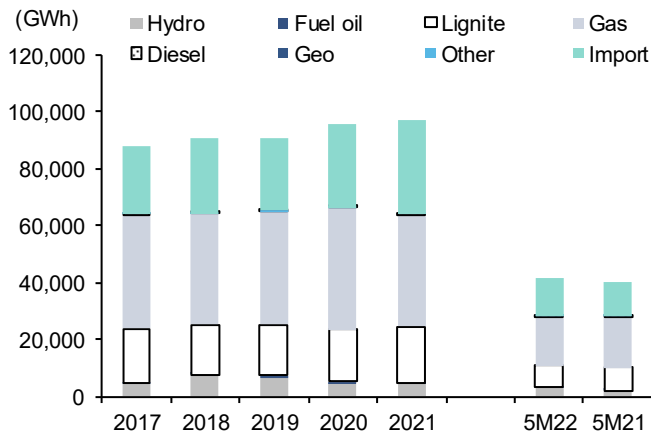
Exhibit 7: Thailand's power generation capacity breakdown by fuel type (%)



Sources: EGAT; PEA; MEA

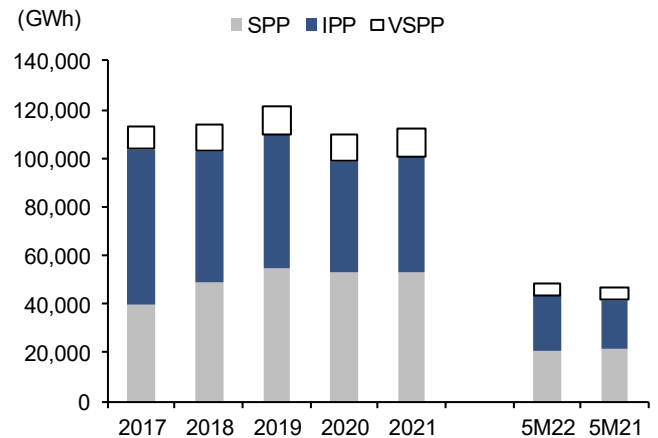
EGAT hit hard by higher gas costs. EGAT, which accounted for 44% of total power generation in 5M22, uses gas as its major fuel source for power generation, which is supplemented by imported electricity and coal (from lignite-based power plants). EGAT shouldered not only a margin squeeze at its own power plants, but also the rising gas costs for electricity purchases under its PPAs with IPPs and SPPs. This has led to soaring losses of over THB100b, based on our estimates as of Jul-22.

Exhibit 8: Thailand's power generation breakdown by fuel type



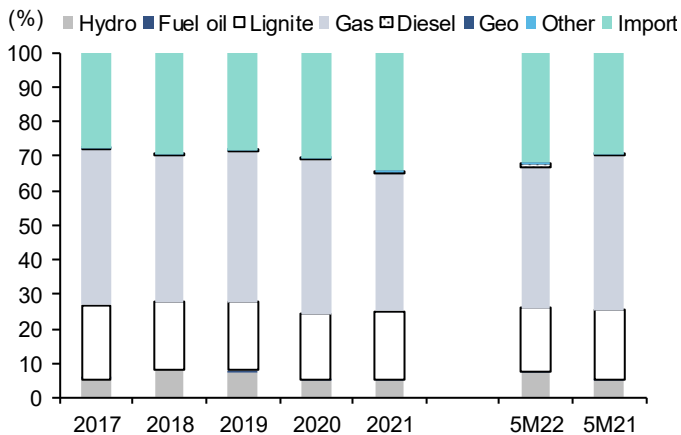
Sources: EGAT; PEA; MEA

Exhibit 9: EGAT's power generation breakdown by power plant type



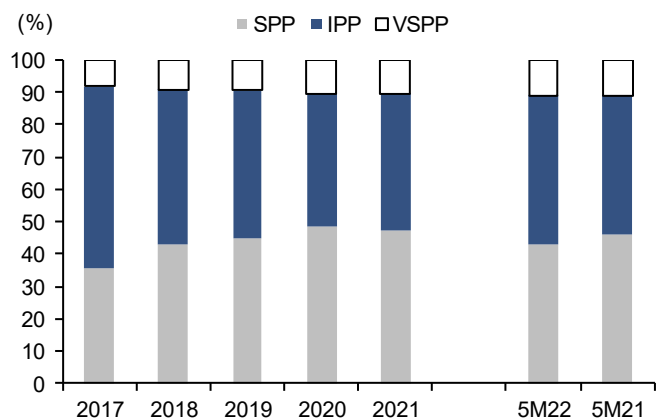
Sources: EGAT; PEA; MEA

Exhibit 10: Thailand's power generation breakdown by fuel type (%)



Sources: EGAT; PEA; MEA

Exhibit 11: EGAT's power generation breakdown by power plant type (%)



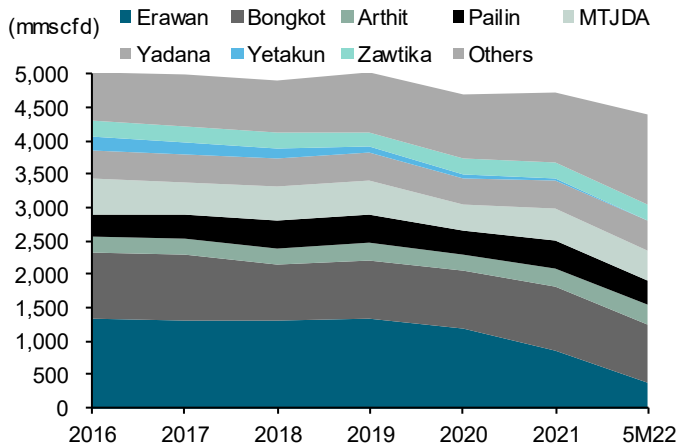
Sources: EGAT; PEA; MEA

Power generation management could mitigate the impact of costly spot LNG

On top of the rising global gas price, Thailand has seen its gas supply situation worsen recently, with lower-than-expected gas production from the Erawan gas field, whose production has plunged from 1,185mmscfd in 2020 down to 867mmscfd in 2021 and 250mmscfd in May-22, based on data from the Department of Mineral Fuels (DMF) and PTT (PTT TB, BUY).

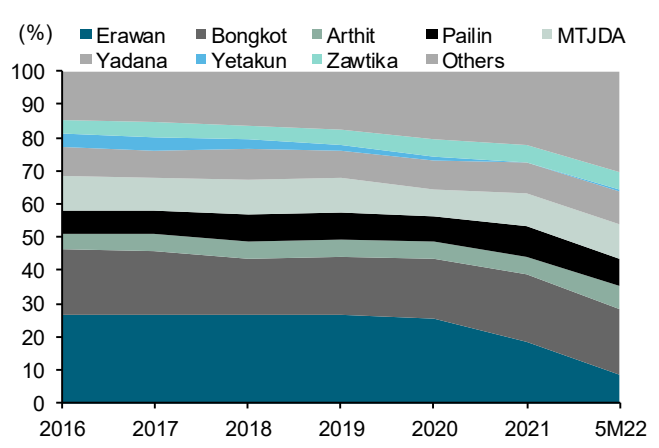
To add insult to injury, on 1 Aug-22, the gas pipeline linking the Zawtika offshore gas field from Myanmar to Thailand leaked, causing a two-week shutdown for repairs. As Zawtika supplies around 235mmscfd or 3% of Thailand’s total gas supply as of May-22, the sudden reduction in the gas supply could exacerbate the already tight gas supply situation in Thailand.

Exhibit 12: Gas supply by field



Sources: DMF; PTT

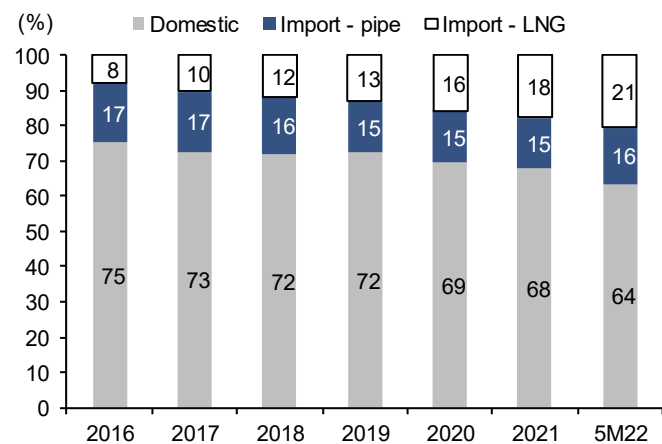
Exhibit 13: Gas supply by field (%)



Sources: DMF; PTT

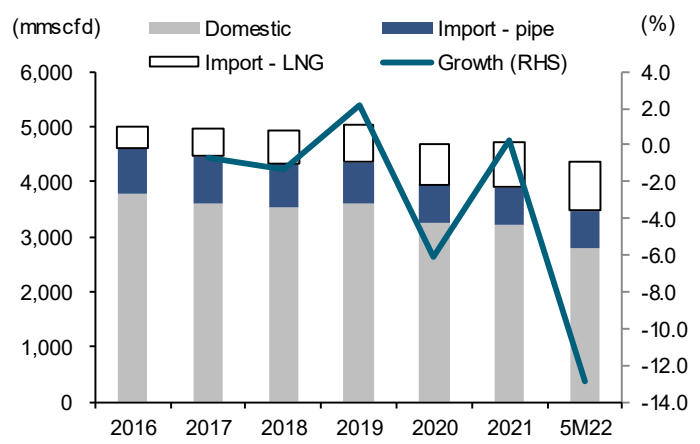
Imports of gas from Myanmar via pipeline accounted for 16% of the total gas supply in Thailand in 5M22. Given the drop in gas flows from Myanmar to Thailand, including the natural depletion of Yetagun whose current gas production has fallen to only 25mmscfd, and the two-week halt in the gas supply from Zawtika due to the pipeline leak, we think it will be challenging to secure sufficient gas supply in 2H22 without any impact from the high price of imported LNG on the pool gas price and the electricity tariff.

Exhibit 14: Thailand’s gas supply breakdown by source (%)



Sources: DMF; Energy Policy and Planning Office (EPPO)

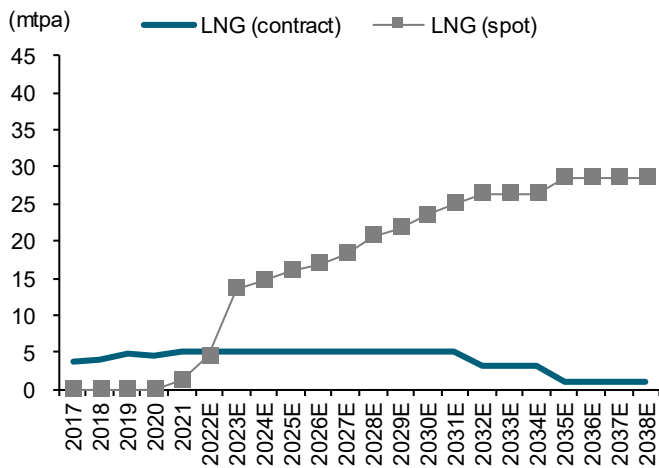
Exhibit 15: Thailand’s gas supply breakdown by source



Sources: DMF; EPPO

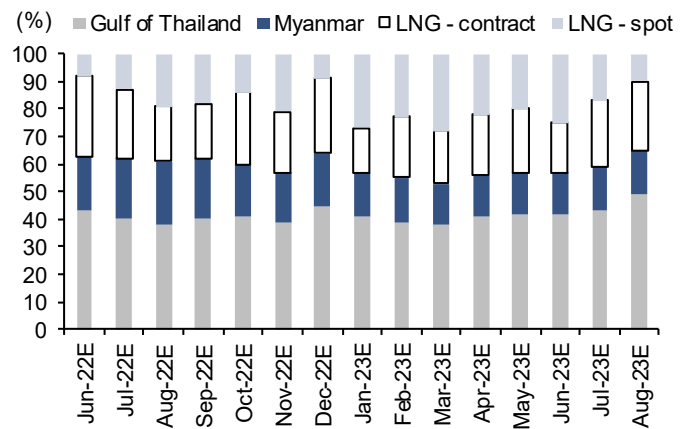
Would lower LNG imports even be possible for Thailand? While the ERC projects that Thailand will have to import more spot LNG, ranging from 15-23% of the total gas supply in Jun-22 to Aug-23, we believe the actual amount of imported LNG will be much lower than the amount projected by the ERC.

Exhibit 16: Projected LNG imports (contract and spot)



Sources: EPPO; PTT

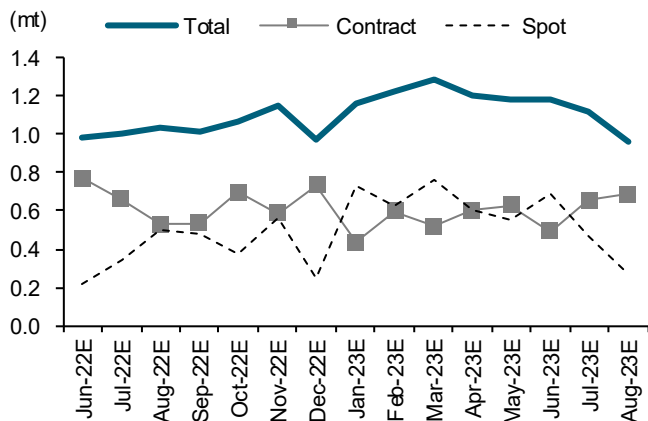
Exhibit 17: Projected LNG imports in Jun-22 to Aug-23



Source: ERC

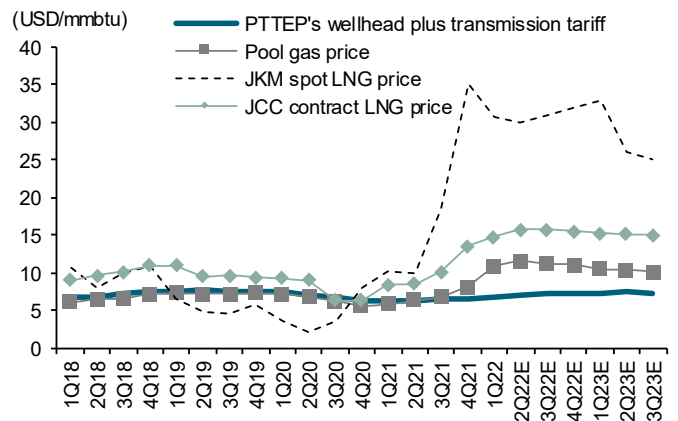
In 1H22, according to PTT, Thailand imported 2mt of spot LNG and 2.6mt of contract LNG. The ERC projects that the country needs to import around 1mt/month in 2H22 and 1.1mt/month on average in 8M23 to compensate for the gas supply shortfall from Erawan.

Exhibit 18: Projections of monthly LNG import volumes



Source: ERC

Exhibit 19: PTTEP's gas price, Thailand's pool gas price, JKM spot LNG price, and JCC contract LNG price (quarterly)



Sources: PTTEP; PTT; FSSIA estimates

However, we think the actual volume of spot LNG imports will be lower than the ERC's projections, likely in the range of 1.0-1.5mt per quarter or around 0.3-0.5mt/month, based on the potential for higher electricity production from hydropower plants in Laos and the possibility of switching power generating plants over to other fuel sources, including HSFO, diesel, and coal.

In the upcoming winter (Oct-22 to Apr-23) in the Northern Hemisphere, demand for gas, coal, and even HSFO or diesel, is projected to rise substantially as the EU plans to completely cut off purchases of gas, coal, and oil from Russia as part of stricter sanctions over its invasion of Ukraine.

Hence, we think the price of spot LNG could spike further to over USD50/mmbtu by Sep or Oct-22 as EU countries rush to fill their gas storage facilities to 70-90% of capacity vs the current 50% as of Jul-22, according to the US Energy Information Administration (EIA).

The coal price, represented by the Newcastle coal price index, is similarly expected to jump to over USD500/tonne by the end of 2022, thanks to the rising demand for coal as a substitute energy source for power generation in the EU.

Exhibit 20: LNG swap futures contract based on the Southeast Asia price Sep-22 (JKMU22)



Source: Barchart.com

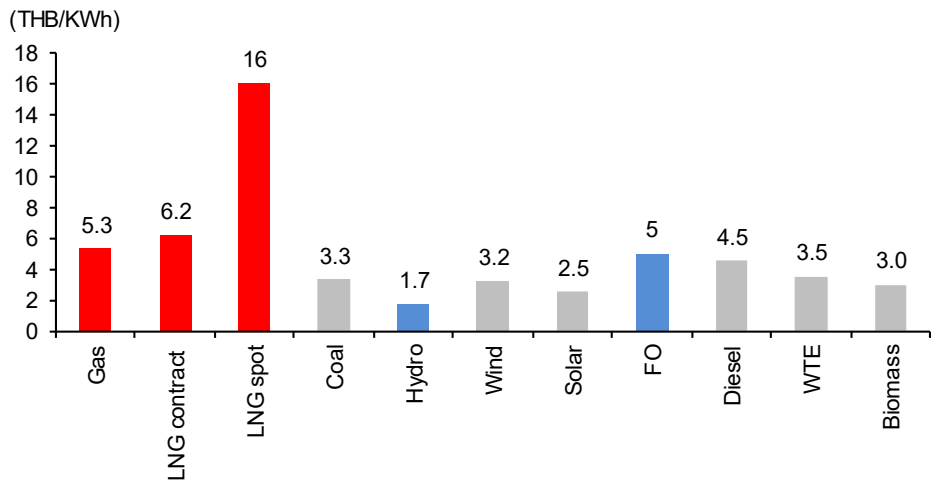
Exhibit 21: Newcastle coal price index Sep-22 (LQU220)



Source: Barchart.com

Water for life. We estimate that Thailand could replace up to 10-15% of its demand for imported LNG by increasing its electricity imports from Laos due to the seasonally higher electricity production of Laos' hydropower plants.

Exhibit 22: Estimated production cost of electricity by fuel plant type



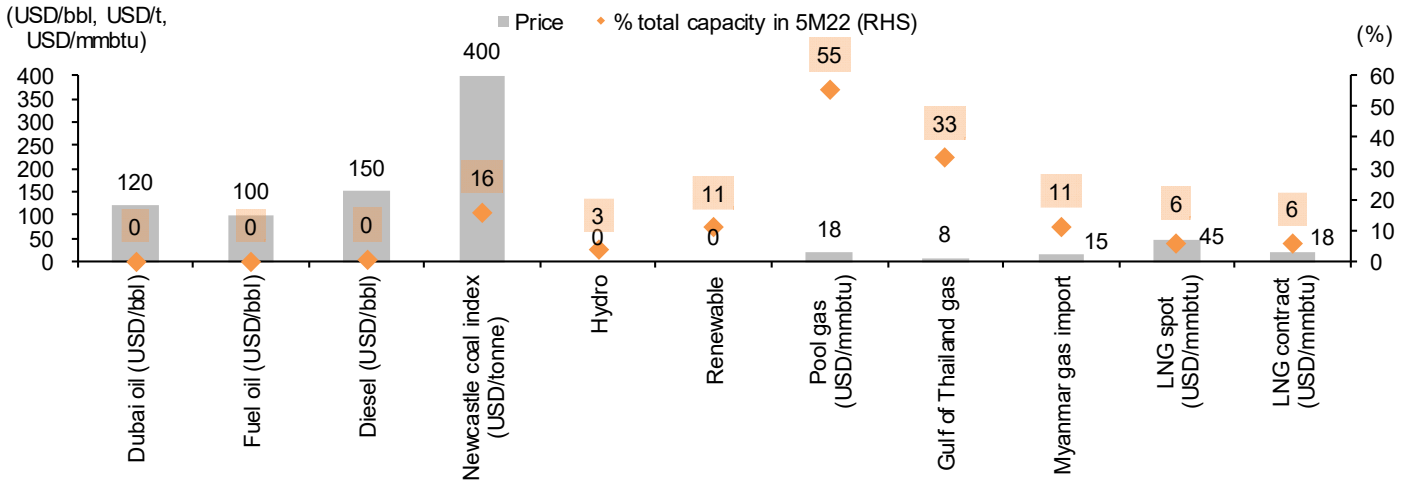
Sources: FSSIA estimates; EGAT

EGAT, the sole buyer of all electricity produced from the hydropower plants in Laos under PPAs with Thailand, will have a strong motivation to maximise its electricity purchases in 2H22-2023. In our view, EGAT could reduce, if not fully avoid, any further rises in the electricity tariff in 2023 from the impact of costly LNG imports, as the production cost of electricity from hydropower is the lowest of all.

Hydro is the first priority for reducing LNG imports. Based on EGAT's data and FSSIA's estimates, the production cost at its hydropower plants in Laos is THB1.7/kWh, far below the cost of electricity produced from Thailand's pool gas at THB5.3/kWh, contract LNG at THB6.2/kWh, and spot LNG at THB16/kWh.

HSFO could resolve Thailand's gas price dilemma. In addition, other alternative sources for producing electricity include gas-to-HSFO switchable power plants, including large-scale IPPs owned and operated by EGAT, GULF, RATCH, GPSC, and EGCO. We estimate that up to 15GW of gas-fired IPPs could be switched over to use HSFO as a substitute fuel source to reduce gas demand and thereby lower the overall cost of Thailand's electricity production.

Exhibit 23: Fuel price assumptions and their proportion (%) of total power capacity in Thailand

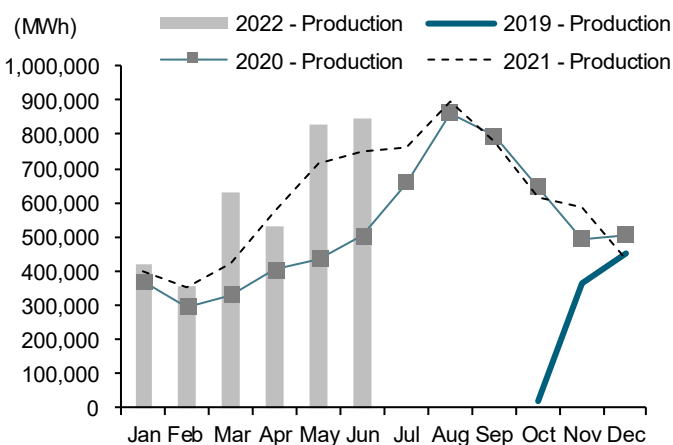


Sources: EGAT; EPPO

CKP's two hydropower plants could run at higher rates in 2H22. According to CKP, the electricity production at its two major hydropower plants – 1.2GW Xaiyaburi (XPCL) and 0.6GW Nam Ngum 2 (NN2) – could run at much higher y-y capacity factors (CFs) to produce significantly more electricity to sell to Thailand.

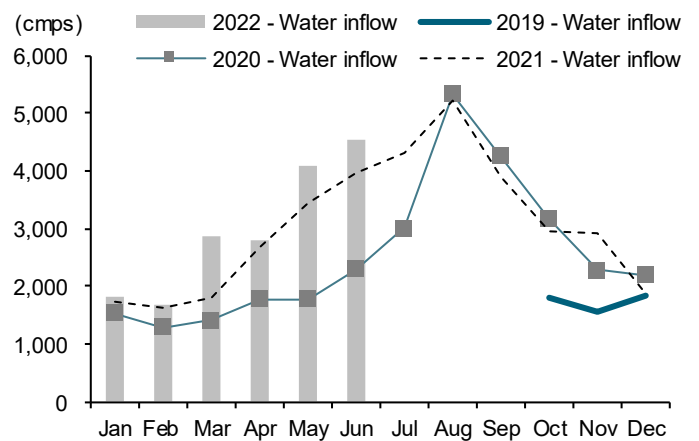
XPCL's output alone could offset 15-20% of the production from 1mt of the spot LNG used by IPPs. XPCL, as a run-of-river hydropower plant, achieved a 90% CF in Jun-22, up from 80% in Jun-21, and 54% in Jun-20. We estimate that XPCL alone could produce an additional 0.7-1.2GWh of electricity in 2H22, potentially replacing up to 15-20% of the electricity derived from 1mt of imported LNG used to produce around 7.9GWh of electricity from 1GW of IPP generation capacity, based on our estimates.

Exhibit 24: XPCL's electricity production



Source: CKP

Exhibit 25: XPCL's water flows

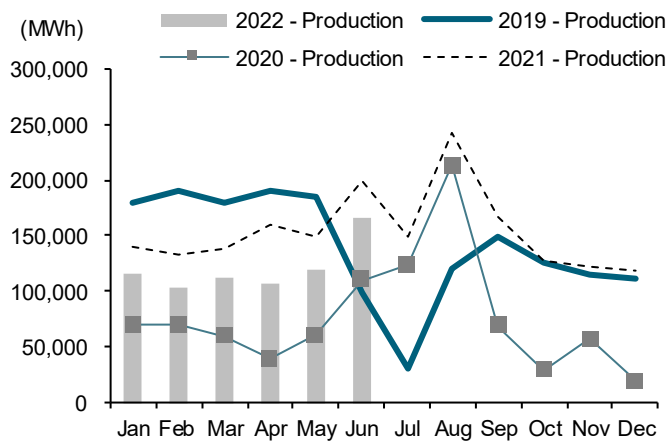


Source: CKP

Similarly, NN2 could also produce more electricity in 2H22 thanks to higher seasonal water flows, despite its reservoir being lower y-y. We estimate that NN2 could produce an additional 50k-100kWh of electricity, replacing 1-2% of the electricity produced from IPPs using 1mt of imported LNG (7.9GWh).

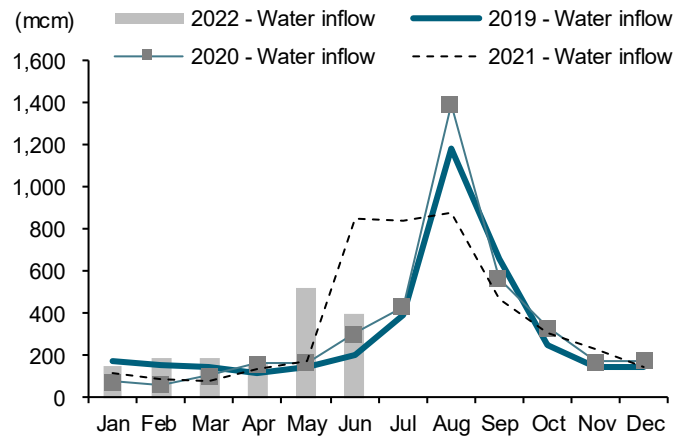
With a range of 15-17% of its electricity supply imported from hydropower plants in Laos, Thailand could reduce its imports of LNG and avoid the cost of producing electricity from higher-priced, imported LNG by replacing it with electricity produced from hydropower plants in 3Q22, which is the high season for the hydropower plants in Laos.

Exhibit 26: NN2's electricity production



Source: CKP

Exhibit 27: NN2's water flows



Source: CKP

SPPs remain our top pick as a loophole for avoiding the spot LNG monster

Among the four segments in the Thai power sector under our coverage, we prefer, from most to least, SPPs, EVs, IPPs, and renewables.

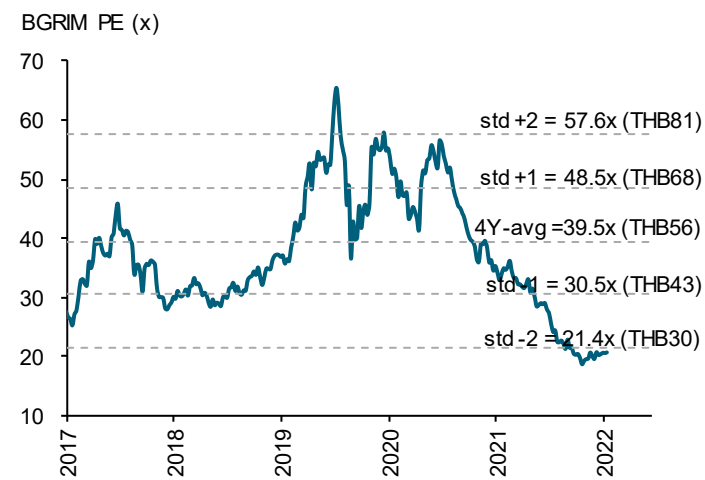
BGRIM for SPPs. With our projections of higher Ft rates and selling prices for electricity and steam to IUs for SPPs, and the marginally higher price of pool gas due to the lower, if not zero, need for imported LNG made possible by the higher electricity production from hydro and HSFO power plants, we prefer BGRIM as our top SPP pick in the Thai power sector, followed by GPSC.

EA and NEX for EVs. We expect EA's quarterly net profits to rise from THB1.5b-2.0b to THB2.0b-3.0b, driven by 1) the upcoming net profit contribution from its EV ventures, including its battery and EV manufacturing plants, and sales and marketing via its 40% stake in Nex Point (NEX TB, BUY); and 2) higher net profits from the rising adder-based electricity tariffs of its solar farms and wind farms.

GULF for IPPs. While we prefer IPPs less than SPPs, we like GULF as a growth play due to its power capacity expansion strategy, both domestically (from wind farms via its JV with GUNKUL) and overseas (mainly Vietnam in the near term), and GULF's forward and vertical integration of its existing power and infrastructure portfolio into telecommunications and industry 4.0.

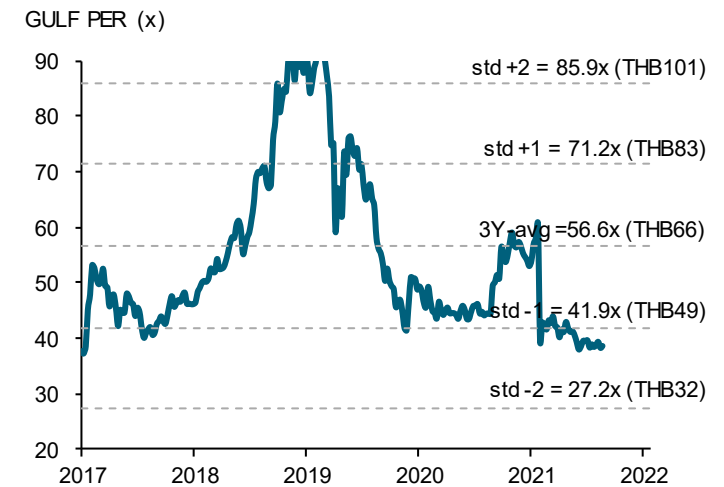
GUNKUL for renewables. GUNKUL's earnings growth is now poised to jump markedly in 2H22 onward, driven by 1) its new cannabis and hemp farming, extraction, and downstream products venture; 2) the higher revenue and earnings from adder-based tariffs at its 170MW wind and solar farms; and 3) the potential capacity growth from its JV with GULF in the upcoming bidding for a proposed 1.2-2.0GW wind farm development in Thailand within the next 12 months.

Exhibit 28: BGRIM's prospective P/E band



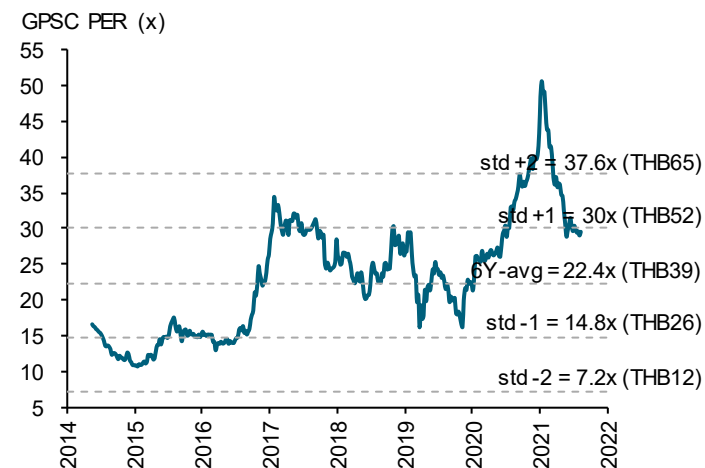
Sources: Bloomberg; FSSIA estimates

Exhibit 29: GULF's prospective P/E band



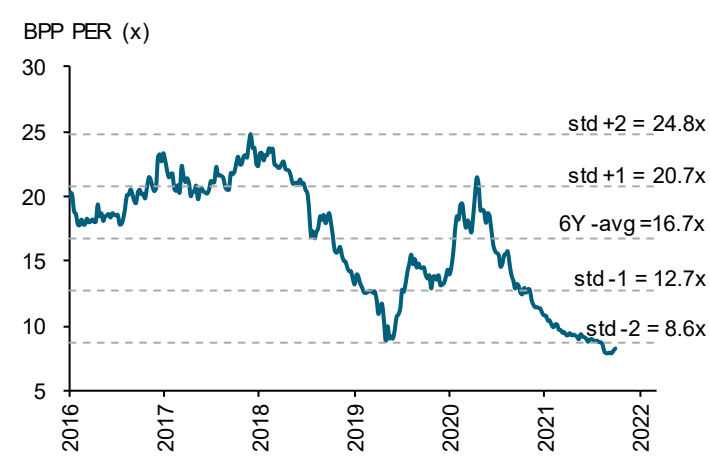
Sources: Bloomberg; FSSIA estimates

Exhibit 30: GPSC's prospective P/E band



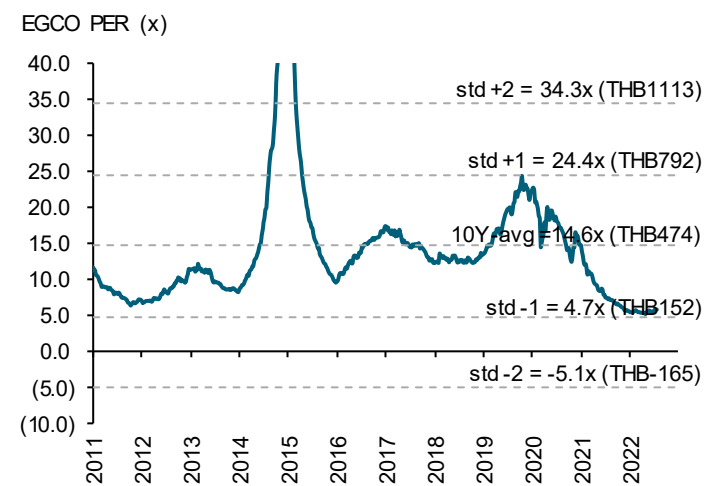
Sources: Bloomberg; FSSIA estimates

Exhibit 31: BPP's prospective P/E band



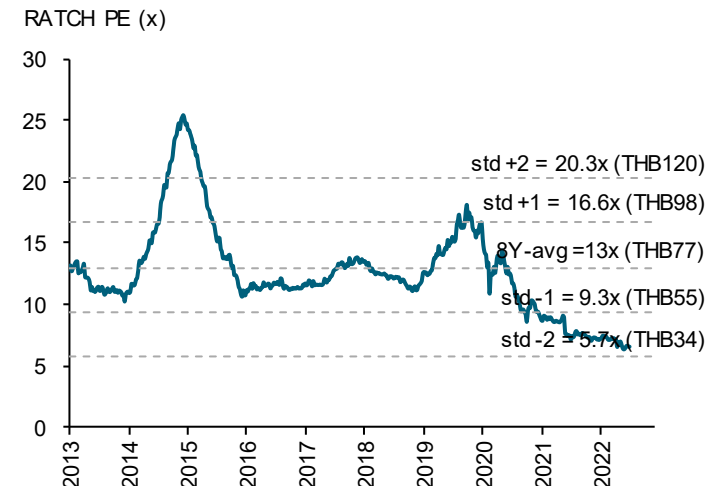
Sources: Bloomberg; FSSIA estimates

Exhibit 32: EGCO's prospective P/E band



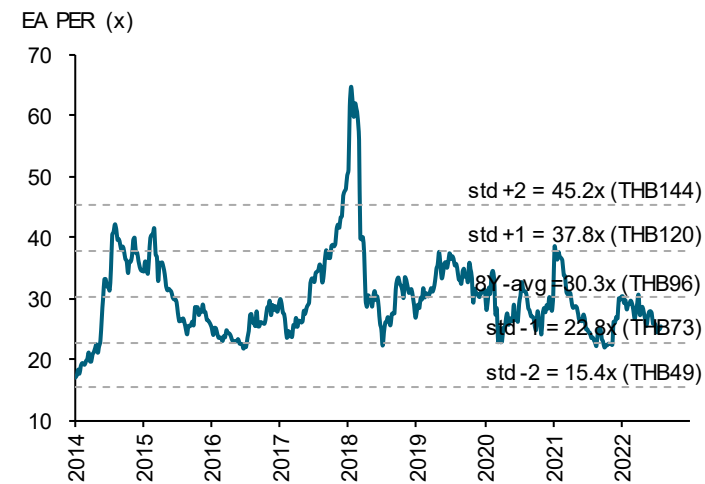
Sources: Bloomberg; FSSIA estimates

Exhibit 33: RATCH's prospective P/E band



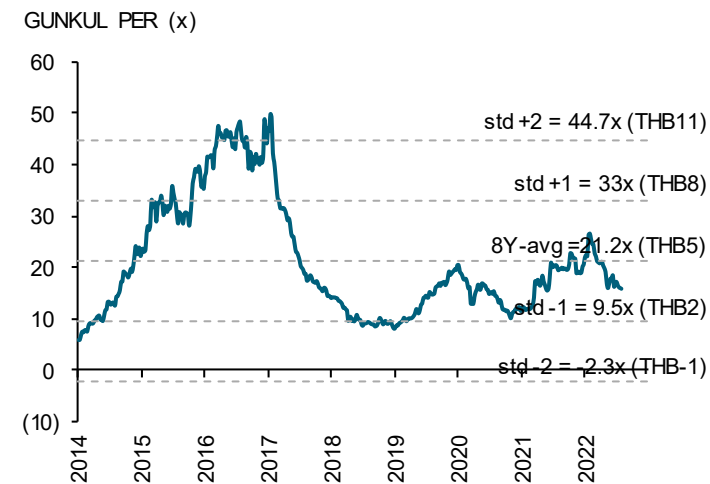
Sources: Bloomberg; FSSIA estimates

Exhibit 34: EA's prospective P/E band



Sources: Bloomberg; FSSIA estimates

Exhibit 35: GUNKUL's prospective P/E band



Sources: Bloomberg; FSSIA estimates

Exhibit 36: Peer comparisons

Company	BBG code	Rec	Share Price (LCY)	Target price (LCY)	Up side (%)	Market Cap (USD m)	3Y EPS CAGR (%)	----- PE -----		---- ROE ----		---- PBV ----		EV / EBITDA	
								22E (x)	23E (x)	22E (%)	23E (%)	22E (x)	23E (x)	22E (x)	23E (x)
THAILAND															
B Grimm Power	BGRIM TB	BUY	39.00	44	13	2,816	34.7	27.8	17.9	11.8	16.4	3.1	2.8	11.6	9.7
Gulf Energy Deve	GULF TB	BUY	47.75	60	26	15,520	21.1	40.7	37.9	13.6	13.6	5.3	5.0	30.9	28.8
Global Power Syn	GPSC TB	HOLD	69.00	70	1	5,390	11.2	40.0	25.3	4.5	7.0	1.8	1.7	21.1	17.6
Banpu Power	BPP TB	BUY	15.20	20	32	1,283	29.1	8.5	8.2	11.5	11.2	0.9	0.9	33.2	24.8
Electricity Gen	EGCO TB	BUY	187.00	245	31	2,727	13.8	5.8	5.7	14.3	13.1	0.8	0.7	12.0	11.0
Ratch Group	RATCH TB	BUY	38.75	60	55	2,335	3.0	6.6	6.6	14.6	11.6	0.8	0.7	11.1	10.5
Wha Utilities&Pow	WHAUP TB	BUY	3.72	4.5	21	394	18.2	11.1	10.4	10.2	10.6	1.1	1.1	30.9	29.8
Bcpq	BCPG TB	BUY	10.50	17	62	842	(9.7)	11.9	17.2	9.1	5.9	1.0	1.0	13.5	19.5
Ck Power	CKP TB	BUY	5.35	6.6	23	1,205	19.5	14.0	13.9	11.8	10.8	1.6	1.5	11.4	13.1
Energy Absolute	EA TB	BUY	82.75	101	22	8,550	28.5	26.0	26.1	31.5	25.0	7.2	5.9	22.7	21.6
Gunkul Engineer	GUNKUL TB	BUY	5.25	6.6	26	1,292	27.3	20.5	12.9	16.9	24.9	3.4	3.1	16.2	11.5
Demco Pcl	DEMCO TB	BUY	3.32	5.9	78	67	nm	11.4	9.8	4.4	4.9	0.5	0.5	(64.5)	(142.6)
Power Solution	PSTC TB	BUY	1.89	3.7	96	124	nm	12.8	11.5	5.8	6.1	0.7	0.7	15.0	14.2
Sermasang Power	SSP TB	BUY	9.40	20	113	325	34.0	8.7	7.6	18.0	18.0	1.5	1.3	8.7	7.9
Tpc Power	TPCH TB	BUY	7.65	14	83	85	60.3	6.4	5.4	15.8	17.0	1.0	0.9	6.6	5.5
Tpi Polene Power	TPIPP TB	BUY	3.72	5.7	53	866	nm	6.8	7.7	14.8	12.7	1.0	1.0	5.9	6.3
Absolute Clean	ACE TB	BUY	2.66	4.1	54	750	nm	15.0	12.3	13.2	15.1	1.9	1.8	10.3	9.3
Earth Tech	ETC TB	BUY	3.44	3.8	10	213	nm	23.3	21.5	11.3	11.4	2.5	2.4	15.0	14.2
Thailand avg						44,784	16.3	28.5	24.9	15.8	15.0	4.0	3.6	22.2	20.3
HONGKONG															
Datang Intl Power	991 HK	n/a	1.37	n/a	NA	5,925	nm	1.2	1.0	10.9	11.9	nm	nm	nm	nm
Huadian Power	1071 HK	n/a	2.70	n/a	NA	5,744	nm	9.4	6.0	3.7	5.7	0.4	0.4	13.2	11.2
Huaneng Power	902 HK	n/a	3.46	n/a	NA	12,256	nm	24.3	6.4	2.4	8.0	0.5	0.5	11.4	9.0
China Power Inter	2380 HK	n/a	3.99	n/a	NA	5,355	nm	13.4	9.8	6.8	9.2	0.9	0.9	2.2	1.7
China Resources	836 HK	n/a	13.94	n/a	NA	8,310	nm	7.5	5.5	9.5	12.0	0.7	0.6	2.2	1.9
Clp Holdings Ltd	2 HK	n/a	65.75	n/a	NA	21,097	nm	19.3	14.6	9.1	9.6	1.4	1.4	7.6	7.4
Power Assets	6 HK	n/a	51.10	n/a	NA	13,825	nm	15.8	16.0	8.0	7.7	1.2	1.2	78.9	82.9
Hongkong avg						72,512	nm	15.4	10.3	7.3	9.1	0.9	0.9	20.6	20.7
MALAYSIA															
Petronas Gas	PTG MK	n/a	16.92	n/a	NA	7,581	(1.9)	17.7	17.1	14.3	14.3	2.5	2.5	9.1	9.4
Tenaga Nasional	TNB MK	n/a	8.30	n/a	NA	10,621	2.5	10.5	9.8	7.6	7.9	0.8	0.8	6.7	6.7
Ytl Power Inte	YTLP MK	n/a	0.71	n/a	NA	1,299	nm	nm	18.3	1.1	2.4	0.4	0.4	11.6	9.9
Malaysia avg						19,501	0.4	3.4	3.6	2.6	2.7	0.4	0.4	2.1	2.1
CHINA															
China Datang	1798 HK	n/a	1.89	n/a	NA	1,751	nm	7.1	5.9	9.4	10.7	0.8	0.6	8.1	7.2
China Gas	384 HK	n/a	12.02	n/a	NA	8,330	nm	7.9	8.0	14.4	12.4	1.0	0.9	nm	nm
China Longyuan	916 HK	n/a	11.80	n/a	NA	19,630	16.6	11.1	9.3	11.5	12.1	1.2	1.1	10.6	9.2
Beijing Enterprises	392 HK	n/a	24.40	n/a	NA	3,864	nm	3.4	3.1	9.0	9.0	0.3	0.3	2.9	2.8
Kunlun Energy	135 HK	n/a	5.60	n/a	NA	6,177	nm	7.3	7.0	9.7	9.5	0.7	0.7	2.9	2.7
China avg						39,753	16.6	4.9	4.4	6.3	6.2	0.5	0.5	3.5	3.0
INDONESIA															
Perusahaan Gas	PGAS IJ	n/a	1,675.00	n/a	NA	2,737	3.0	9.4	8.7	10.2	10.6	0.9	0.9	5.0	4.8
Indonesia avg						2,737	3.0	0.4	0.3	0.4	0.4	0.0	0.0	0.2	0.2
SINGAPORE															
Sembcorp Indus	SCI SP	n/a	2.95	n/a	NA	3,877	21.6	10.8	10.1	12.3	11.9	1.2	1.1	8.6	8.6
Singapore avg						3,877	21.6	0.6	0.5	0.7	0.6	0.1	0.1	0.5	0.5
Utilities under coverage						44,784	16.3	28.5	24.9	15.8	15.0	4.0	3.6	22.2	20.3
Average (all)						183,165	16.1	14.5	11.5	8.4	8.9	1.5	1.4	14.6	14.1

Share price as of 2 August 2022

Sources: Bloomberg, FSSIA estimates

Corporate Governance report of Thai listed companies 2021

EXCELLENT LEVEL – Score range 90-100										
AAV	BCPG	CPALL	GCAP	K	MSC	PLANET	SAMART	SPI	THRE	TVD
ADVANC	BDMS	CPF	GFPT	KBANK	MST	PLAT	SAMTEL	SPRC	THREL	TVI
AF	BEM	CPI	GGC	KCE	MTC	PORT	SAT	SPVI	TIPCO	TVO
AH	BGC	CPN	GLAND	KKP	MVP	PPS	SC	SSSC	TISCO	TWPC
AIRA	BGRIM	CRC	GLOBAL	KSL	NCL	PR9	SCB	SST	TK	U
AKP	BIZ	CSS	GPI	KTB	NEP	PREB	SCC	STA	TKT	UAC
AKR	BKI	DDD	GPSC	KTC	NER	PRG	SCCC	STEC	TMT	UBIS
ALT	BOL	DELTA	GRAMMY	LALIN	NKI	PRM	SCG	STI	TNDT	UV
AMA	BPP	DEMCO	GULF	LANNA	NOBLE	PROUD	SCGP	SUN	TNITY	VGI
AMATA	BRR	DRT	GUNKUL	LH	NSI	DRSH	SCM	SUSCO	TOA	VIH
AMATAV	BTS	DTAC	HANA	LHFG	NVD	PSL	SDC	SUTHA	TOP	WACOAL
ANAN	BTW	DUSIT	HARN	LIT	NWR	PTG	SEAFECO	SVI	TPBI	WAVE
AOT	BWG	EA	HMPRO	LPN	NYT	PTT	SEAOIL	SYMC	TQM	WHA
AP	CENTEL	EASTW	ICC	MACO	OISHI	PTTEP	SE-ED	SYNTEC	TRC	WHAUP
ARIP	CFRESH	ECF	ICHI	MAJOR	OR	PTTGC	SELIC	TACC	TRU	WICE
ARROW	CHEWA	ECL	III	MAKRO	ORI	PYLON	SENA	TASCO	TRUE	WINNER
ASP	CHO	EE	ILINK	MALEE	OSP	Q-CON	SHR	TCAP	TSC	ZEN
AUCT	CIMBT	EGCO	ILM	MBK	OTO	QH	SIRI	TEAMG	TSR	
AWC	CK	EPG	INTUCH	MC	PAP	QTC	SIS	TFMAMA	TSTE	
AYUD	CKP	ETC	IP	MCOT	PCSGH	RATCH	SITHAI	TGH	TSTH	
BAFS	CM	FPI	IRPC	METCO	PDG	RS	SMK	THANA	TTA	
BANPU	CNT	FPT	ITEL	MFEC	PDJ	S	SMPC	THANI	TTB	
BAY	COM7	FSMART	IVL	MINT	PG	S & J	SNC	THCOM	TTCL	
BBL	COMAN	GBX	JSP	MONO	PHOL	SAAM	SONIC	THG	TTW	
BCP	COTTO	GC	JWD	MOONG	PLANB	SABINA	SPALI	THIP	TU	
VERY GOOD LEVEL – Score range 80-89										
2S	ASIMAR	CHOW	FLOYD	IT	LOXLEY	OCC	RPC	SKY	TCC	TVT
7UP	ASK	CI	FN	ITD	LRH	OGC	RT	SLP	TCMC	TWP
ABICO	ASN	CIG	FNS	J	LST	PATO	RWI	SMIT	TEAM	UEC
ABM	ATP30	CMC	FORTH	JAS	M	PB	S11	SMT	TFG	UMI
ACE	B	COLOR	FSS	JCK	MATCH	PICO	SA	SNP	TFI	UOBKH
ACG	BA	CPL	FTE	JCKH	MBAX	PIMO	SAK	SO	TIGER	UP
ADB	BAM	CPW	FVC	JMART	MEGA	PJW	SALEE	SORKON	TITLE	UPF
AEONTS	BC	CRD	GEL	JMT	META	PL	SAMCO	SPA	TKN	UPOIC
AGE	BCH	CSC	GENCO	KBS	MFC	PM	SANKO	SPC	TKS	UTP
AHC	BEC	CSP	GJS	KCAR	MGT	PMTA	SAPPE	SPCG	TM	VCOM
AIT	BEYOND	CWT	GYT	KEX	MICRO	PPP	SAWAD	SR	TMC	VL
ALL	BFIT	DCC	HEMP	KGI	MILL	PPP	SCI	SRICHA	TMD	VPO
ALLA	BJC	DCON	HPT	KIAT	MITSIB	PRIME	SCN	SSC	TMI	VRANDA
ALUCON	BJCHI	DHOUSE	HTC	KISS	MK	PRIN	SCP	SSF	TMILL	WGE
AMANAH	BLA	DOD	HYDRO	KOOL	MODERN	PRINC	SE	STANLY	TNL	WIK
AMARIN	BR	DOHOME	ICN	KTIS	MTI	PSG	SFLEX	STGT	TNP	WP
APCO	BROOK	DV8	IFS	KUMWEL	NBC	PSTC	SFP	STOWER	TOG	XO
APCS	CBG	EASON	IMH	KUN	NCAP	PT	SFT	STPI	TPA	XPG
APURE	CEN	EFORL	IND	KWC	NCH	QLT	SGF	SUC	TPAC	YUASA
AQUA	CGH	ERW	INET	KWM	NETBAY	RBF	SIAM	SWC	TPCS	
ASAP	CHARAN	ESSO	INSET	L&E	NEX	RCL	SINGER	SYNEX	TPS	
ASEFA	CHAYO	ESTAR	INSURE	LDC	NINE	RICHY	SKE	TAE	TRITN	
ASIA	CHG	ETE	IRC	LEO	NRF	RML	SKN	TAKUNI	TRT	
ASIAN	CHOTI	FE	IRCP	LHK	NTV	ROJNA	SKR	TBSP	TSE	
GOOD LEVEL – Score range 70-79										
A	BGT	CITY	GIFT	JTS	MDX	PK	SGP	SUPER	TQR	YGG
AI	BH	CMAN	GLOCON	JUBILE	MJD	PLE	SICT	SVOA	TTI	ZIGA
AIE	BIG	CMO	GREEN	KASET	MORE	PPM	SIMAT	TC	TYCN	
AJ	BLAND	CMR	GSC	KCM	MUD	PRAKIT	SISB	TCCC	UKEM	
ALPHAX	BM	CPT	GTB	KK	NC	PRAPAT	SK	THMUI	UMS	
AMC	BROCK	CRANE	HTECH	KKC	NDR	PRECHA	SMART	TNH	UNIQ	
APP	BSBM	CSR	HUMAN	KWI	NFC	PTL	SOLAR	TNR	UPA	
AQ	BSM	D	IHL	KYE	NNCL	RJH	SPACK	TOPP	UREKA	
ARIN	BTNC	EKH	IIG	LEE	NOVA	RP	SPG	TPCH	VIBHA	
AS	BYD	EMC	INGRS	LPH	NPK	RPH	SQ	TPIPL	W	
AU	CAZ	EP	INOX	MATI	NUSA	RSP	SSP	TIPIP	WIN	
B52	CCP	F&D	JAK	M-CHAI	PAF	SABUY	STARK	TPLAS	WORK	
BEAUTY	CGD	FMT	JR	MCS	PF	SF	STC	TPOLY	WPH	

Disclaimer:

The disclosure of the survey results of the Thai Institute of Directors Association ("IOD") regarding corporate governance is made pursuant to the policy of the Office of the Securities and Exchange Commission. The survey of the IOD is based on the information of a company listed on the Stock Exchange of Thailand and the Market for Alternative Investment disclosed to the public and able to be accessed by a general public investor. The result, therefore, is from the perspective of a third party. It is not an evaluation of operation and is not based on inside information.

The survey result is as of the date appearing in the Corporate Governance Report of Thai Listed Companies. As a result, the survey results may be changed after that date. FSS International Investment Advisory Company Limited does not confirm nor certify the accuracy of such survey results.

* CGR scoring should be considered with news regarding wrong doing of the company or director or executive of the company such unfair practice on securities trading, fraud, and corruption SEC imposed a civil sanction against insider trading of director and executive

Sources: Thai Institute of Directors Association (IOD); FSSIA's compilation; data as of 26 October 2021

Anti-corruption Progress Indicator

CERTIFIED										
2S	BCH	CPALL	GC	K	MFC	PE	QLT	SNP	THCOM	TU
7UP	BCP	CPF	GCAP	KASET	MFEC	PG	QTC	SORKON	THIP	TVD
ADVANC	BCPG	CPI	GEL	KBANK	MILL	PHOL	RATCH	SPACK	THRE	TVI
AF	BE8	CPN	GFPT	KBS	MINT	PK	RML	SPALI	THREL	TVO
AI	BEYOND	CSC	GGC	KCAR	MONO	PL	RWI	SPC	TIDLOR	TWPC
AIE	BGC	DCC	GJS	KCE	MOONG	PLANB	S & J	SPI	TIPCO	U
AIRA	BGRIM	DELTA	GPI	KGI	MSC	PLANET	SAAM	SPRC	TISCO	UBE
AKP	BJCHI	DEMCO	GPSC	KKP	MST	PLAT	SABINA	SRICHA	TKS	UBIS
ALPHAX	BKI	DIMET	GSTEEL	KSL	MTC	PM	SAPPE	SSF	TKT	UEC
AMA	BLA	DRT	GUNKUL	KTB	MTI	PPP	SAT	SSP	TMD	UKEM
AMANAHA	BPP	DTAC	HANA	KTC	NBC	PPPM	SC	SSSC	TMILL	UOBKH
AMATA	BROOK	DUSIT	HARN	KWC	NEP	PPS	SCB	SST	TMT	UPF
AMATAV	BRR	EA	HEMP	KWI	NINE	PR9	SCC	STA	TNITY	UV
AP	BSBM	EASTW	HENG	L&E	NKI	PREB	SCCC	STOWER	TNL	VGI
APCS	BTS	ECL	HMPRO	LANNA	NMG	PRG	SCG	SUSCO	TNP	VIH
AQUA	BWG	EGCO	HTC	LH	NNCL	PRINC	SCN	SVI	TNR	WACOAL
ARROW	CEN	EP	ICC	LHFG	NOBLE	PRM	SEAOIL	SYMC	TOG	WHA
AS	CENTEL	EPG	ICHI	LHK	NOK	PROS	SE-ED	SYNTEC	TOP	WHAUP
ASIAN	CFRESH	ERW	IFEC	LPN	NSI	PSH	SELIC	TAE	TOPP	WICE
ASK	CGH	ESTAR	IFS	LRH	NWR	PSL	SENA	TAKUNI	TPA	WIJK
ASP	CHEWA	ETE	ILINK	M	OCC	PSTC	SGP	TASCO	TPP	XO
AWC	CHOTI	FE	INET	MAKRO	OGC	PT	SINGER	TBSP	TRU	ZEN
AYUD	CHOW	FNS	INSURE	MALEE	ORI	PTG	SIRI	TCAP	TRUE	
B	CIG	FPI	INTUCH	MATCH	PAP	PTT	SITHAI	TCMC	TSC	
BAFS	CIMBT	FPT	IRC	MBAX	PATO	PTTEP	SKR	TFG	TSTE	
BAM	CM	FSMART	IRPC	MBK	PB	PTTGC	SMIT	TFI	TSTH	
BANPU	CMC	FSS	ITEL	MC	PCSGH	PYLON	SMK	TFMAMA	TTA	
BAY	COM7	FTE	IVL	MCOT	PDG	Q-CON	SMPC	TGH	TTB	
BBL	COTTO	GBX	JKN	META	PDJ	QH	SNC	THANI	TTCL	
DECLARED										
AJ	CHG	DDD	ETC	JR	MAJOR	NUSA	RS	SSS	TQM	YUASA
ALT	CPL	DHOUSE	FLOYD	JTS	NCAP	NYT	SAK	STECH	TSI	ZIGA
APCO	CPR	DOHOME	GULF	KEX	NCL	OR	SCGP	STGT	VARO	
B52	CPW	ECF	III	KUMWEL	NOVA	PIMO	SCM	TKN	VCOM	
BEC	CRC	EKH	INOX	LDC	NRF	PLE	SIS	TMI	VIBHA	

Level	
Certified	This level indicates practical participation with thoroughly examination in relation to the recommended procedures from the audit committee or the SEC's certified auditor, being a certified member of Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) or already passed examination to ensure independence from external parties.
Declared	This level indicates determination to participate in the Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC)

Disclaimer:

The disclosure of the Anti-Corruption Progress Indicators of a listed company on the Stock Exchange of Thailand, which is assessed by Thaipat Institute, is made in order to comply with the policy and sustainable development plan for the listed companies of the Office of the Securities and Exchange Commission. Thaipat Institute made this assessment based on the information received from the listed company, as stipulated in the form for the assessment of Anti-corruption which refers to the Annual Registration Statement (Form 56-1), Annual Report (Form 56-2), or other relevant documents or reports of such listed company. The assessment result is therefore made from the perspective of Thaipat Institute that is a third party. It is not an assessment of operation and is not based on any inside information. Since this assessment is only the assessment result as of the date appearing in the assessment result, it may be changed after that date or when there is any change to the relevant information. Nevertheless, FSS International Investment Advisory Company Limited does not confirm, verify, or certify the accuracy and completeness of the assessment results.

Note: Companies participating in Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) under Thai Institute of Directors (as of 26 October 2021) are categorised into: 1) companies that have declared their intention to join CAC, and; 2) companies certified by CAC.

Sources: The Securities and Exchange Commission, Thailand; * FSSIA's compilation

GENERAL DISCLAIMER

ANALYST(S) CERTIFICATION

Suwat Sinsadok, CFA, FRM, ERP FSS International Investment Advisory Securities Co., Ltd

The individual(s) identified above certify(ies) that (i) all views expressed in this report accurately reflect the personal view of the analyst(s) with regard to any and all of the subject securities, companies or issuers mentioned in this report; and (ii) no part of the compensation of the analyst(s) was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed herein.

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Company	Ticker	Price	Rating	Valuation & Risks
B.Grimm Power	BGRIM TB	THB 39.00	BUY	The downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand, 2) a lower crude price, and 3) unplanned shutdowns of its SPPs.
Gulf Energy Development	GULF TB	THB 47.75	BUY	The downside risks to our SoTP-based TP on GULF include 1) lower-than-expected demand for electricity in Thailand; 2) a lower crude price; and 3) delays in project commercial operation dates.
Global Power Synergy	GPSC TB	THB 69.00	HOLD	The downside risks to our SoTP-based TP on GPSC include 1) lower-than-expected demand for electricity in Thailand; 2) a lower crude price; and 3) lower-than-expected demand from industrial users. Upside risks are a lower gas price and higher sales volume.
Banpu Power	BPP TB	THB 15.20	BUY	Downside risks to our SOTP valuation are the start-up delays of its new projects and government intervention in the electricity tariff.
Electricity Generating	EGCO TB	THB 187.00	BUY	Downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand; 2) delays in project commencement or commercial operation dates (COD); and 3) government intervention in electricity tariff subsidies.
Ratch Group	RATCH TB	THB 38.75	BUY	The downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand; 2) lower crude price; and 3) delays in starting new projects.
Energy Absolute	EA TB	THB 82.75	BUY	Downside risks to our SoTP-based TP include: 1) lower-than-expected demand for electricity in Thailand; 2) lower crude prices; and 3) lower-than-expected demand for batteries.
Gunkul Engineering	GUNKUL TB	THB 5.25	BUY	The downside risks to our SoTP-based TP on GUNKUL include 1) lower-than-expected demand for electricity in Thailand, 2) declining EPC backlogs, and 3) lower-than-expected utilisation rates for solar and wind farms
CK Power	CKP TB	THB 5.35	BUY	The downside risks to our SoTP-based TP include lower-than-expected demand for electricity in Thailand and lower-than-expected water supply for hydro projects.
WHA Utilities & Power	WHAUP TB	THB 3.72	BUY	Downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand; and 2) lower crude prices.
BCPG	BCPG TB	THB 10.50	BUY	The downside risks to our SoTP-based TP include: 1) lower-than-expected demand for electricity in Thailand, the Philippines and Indonesia; and 2) government intervention by way of electricity tariff subsidies.
Demco	DEMCO TB	THB 3.32	BUY	Downside risk includes delays in bidding for power transmission projects.
Power Solution Technologies	PSTC TB	THB 1.89	BUY	The downside risks to our SoTP-based TP on PSTC include 1) lower-than-expected demand for electricity in Thailand and delays of power plant project start-ups.
Sermuang Power Corp	SSP TB	THB 9.40	BUY	The downside risks to our SoTP-based TP for SSP include 1) a lower-than-expected demand for electricity in Thailand; 2) a lower crude price; and 3) project start-up delays.
TPC Power Holding	TPCH TB	THB 7.65	BUY	The downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand, 2) a lower crude price, and 3) higher costs of biomass feedstock.
TPI Polene Power	TPIPP TB	THB 3.72	BUY	Downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand; 2) lower crude price, and 3) unplanned shutdown of the company's power plants.
Absolute Clean Energy	ACE TB	THB 2.66	BUY	The downside risks to our SoTP-based TP include 1) lower-than-expected demand for electricity in Thailand, 2) a lower crude price, and 3) higher costs of biomass feedstock.
Earth Tech Environment	ETC TB	THB 3.44	BUY	Downside risks to our SoTP-based TP include: 1) lower-than-expected demand for electricity in Thailand; 2) lower crude price; and 3) lower-than-expected industrial waste volumes.
PTT PCL	PTT TB	THB 35.25	BUY	Risks to our SoTP-based valuation are the oil price and potential earnings downsides from government intervention.
Nex Point	NEX TB	THB 16.50	BUY	Downside risks to our SOTP-based TP include: 1) a lower-than-expected bus sales volume; 2) delays in bus deliveries; and 3) risk from regulatory changes.

Source: FSSIA estimates

Additional Disclosures

Target price history, stock price charts, valuation and risk details, and equity rating histories applicable to each company rated in this report is available in our most recently published reports. You can contact the analyst named on the front of this note or your representative at Finansia Syrus Securities Public Company Limited

FSSIA may incorporate the recommendations and target prices of companies currently covered by FSS Research into equity research reports, denoted by an 'FSS' before the recommendation. FSS Research is part of Finansia Syrus Securities Public Company Limited, which is the parent company of FSSIA.

All share prices are as at market close on 02-Aug-2022 unless otherwise stated.

RECOMMENDATION STRUCTURE**Stock ratings**

Stock ratings are based on absolute upside or downside, which we define as $(\text{target price}^* - \text{current price}) / \text{current price}$.

BUY (B). The upside is 10% or more.

HOLD (H). The upside or downside is less than 10%.

REDUCE (R). The downside is 10% or more.

Unless otherwise specified, these recommendations are set with a 12-month horizon. Thus, it is possible that future price volatility may cause a temporary mismatch between upside/downside for a stock based on market price and the formal recommendation.

* In most cases, the target price will equal the analyst's assessment of the current fair value of the stock. However, if the analyst doesn't think the market will reassess the stock over the specified time horizon due to a lack of events or catalysts, then the target price may differ from fair value. In most cases, therefore, our recommendation is an assessment of the mismatch between current market price and our assessment of current fair value.

Industry Recommendations

Overweight. The analyst expects the fundamental conditions of the sector to be positive over the next 12 months.

Neutral. The analyst expects the fundamental conditions of the sector to be maintained over the next 12 months.

Underweight. The analyst expects the fundamental conditions of the sector to be negative over the next 12 months.

Country (Strategy) Recommendations

Overweight (O). Over the next 12 months, the analyst expects the market to score positively on two or more of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

Neutral (N). Over the next 12 months, the analyst expects the market to score positively on one of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

Underweight (U). Over the next 12 months, the analyst does not expect the market to score positively on any of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.