



# Energy Absolute

(EA.BK/EA TB)\*

## Not Rated

Price as of 8 Jul 2020	45.50
12M target price (Bt/shr)	N.A.
Unchanged/Revised up(down)(%)	N.A.
Upside/downside (%)	N.A.

## Key messages

EA is one of the largest renewable power producers in Thailand and is gearing into a new S-Curve (electric vehicles (EVs)/energy storage systems (ESS)) business. The company's strategy on EVs would be i) create public awareness of EVs, and ii) transform current public transportation (taxies, buses, and ferries) into electric vehicles. There is also potential opportunity in ESS for microgrid solutions. EV cars, buses and ferries are expected to capture approximately 30-50% of the company's 1GWh battery plant. We believe the current share price has already partially priced in the fair value from the battery plant. However, if Thailand's EV industry develops faster than expected, there would be sizable opportunity for battery demand.

## Trading data

Mkt cap (Btbn/US\$bn)	169.7/5.4
Outstanding shares (mn)	3,730
Foreign ownership (mn)	1,337
3M avg. daily trading (mn)	11
52-week trading range (Bt)	27.50 – 55.75
Performance (%)	3M 6M 12M
Absolute	24.7 15.9 -16.1
Relative	10.7 34.5 6.1

## Quarterly EPS

	1Q	2Q	3Q	4Q
2018	0.52	0.26	0.34	0.21
2019	0.32	0.39	0.45	0.47
2020	0.39	N.A.	N.A.	N.A.

## Share price chart



Source: SET

Wisuwat Yaikwawong, CFA  
66.2658.888 Ext.8855  
wisuwat@kgi.co.th

## Gearing into new S-Curve businesses (EV/ESS)

### Event

Quick view from company visit.

### Impact

#### Renewable energy accounts for almost three-fourths of renewable business

EA is one of the largest renewable power producers in Thailand and focuses on three segments (renewable energy, biodiesel and other businesses). Renewable energy contributed 73% of the company's 2019 revenue, while biodiesel contributed 25.4% of 2019 revenue.

#### Plans to launch EV production in 4Q20 while battery plant (1GWh) to start in 2021

The company's strategy on EV business would be i) create public awareness of EV, and ii) transform domestic public transportation (taxies, buses, and ferries) into electric vehicle. EA launched MINE SPA1 (MPV) which targets to deliver 180 units for taxies in 4Q20 and 4,800 units in 2021. The company has its own car manufacturing plant and will have a battery plant. The battery plant is currently under construction and is expected to start production in 2021.

#### Ten years to reach breakeven for current EV technology

We performed a detailed breakeven analysis between the MG ZS and MG ZS EV models and discovered that it would take 10 years 3 months (205,600km) to reach breakeven assuming fuel consumption of 12km/l with Gasohol 95 cost of Bt26/l for MG ZS and 6.5 hrs charging time for ZS EV with MEA/PEA off peak TOU rate of Bt2.6369/kWh. However, rapid developments in battery technology should speed up the breakeven time. Meanwhile, the higher usage of taxies (400-500km per day) would significantly decrease the breakeven period of EVs. The government targets for Thailand to be ASEAN's EV manufacturing hub within five years.

#### E-Ferry, E-Bus and energy storage system are other keys to fill up battery demand

EA plans to launch E-Ferry services in August 2020 (20 vessels). The payback period for this investment (Bt1.3bn) would be 4-5 years. The company also invested in a 40% stake in NEX Point (NEX.BK/NEX TB). We have a positive view on this acquisition as the company specializes in assembling and distributing buses and has additional growth from Beli Services providing preventive maintenance and repairs for 500 NGV buses. There is also potential opportunity for NEX to participate in the bidding for BMTA buses (2,511 e-buses) and the Amita Thailand battery plant would have a good chance of supplying the batteries for the e-buses. Meanwhile, there is also potential opportunities for the energy storage system (ESS) business, especially for microgrid solutions in Thailand and CLM countries. The EV, e-bus and e-ferry are expected to account for approximately 30-50% of the utilization rate for the first phase of the battery production capacity.

### Valuation & action

We believe the current share price has already partially priced in the battery manufacturing (5-6GWh) which is in line with management's view that the company could expand production capacity from 1GWh to 5GWh within the next five years. However, if Thailand's EV industry develops faster than expected, there would be sizable opportunity for battery demand.

### Risks

Increasing import EVs and batteries from China, expiration of solar adder in 2022-2026.

## Company At A Glance

### Three core businesses with renewable (solar, wind) dominating

EA is one of the largest renewable power producers in Thailand and currently operates three business groups: i) renewable energy, ii) biodiesel, and iii) other businesses (electric vehicle (EV), electric charging stations, and energy storage systems and solutions (ESS)).

### Renewable Energy

Currently EA has 664 MW, consisting of 278MW from solar and 386MW from wind in Thailand. This business contributed 73.4% of the company's 2019 revenue. Of the revenue from renewable energy, 61.6% is based on solar adder (Bt8/kWh for Lopburi (8MW) and Bt6.5/kWh for the remaining 270MW) and wind adder (Bt3.5/kWh). However, the adder period will expire during 2022 - 2029 (Figure 3).

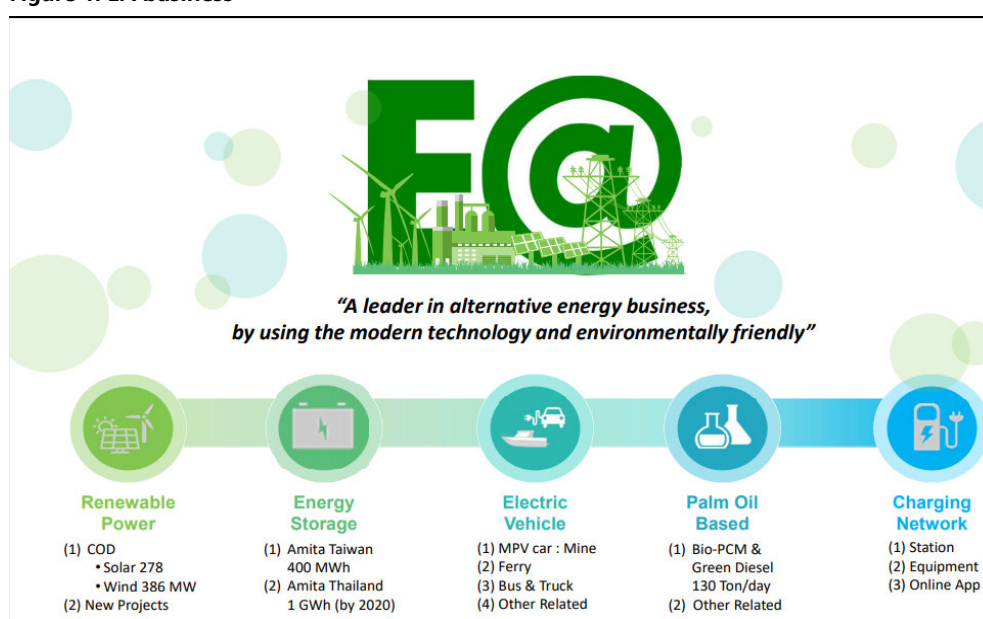
### Biodiesel

Currently EA produces 0.8mn liters/day of biodiesel with green diesel/PCM (65 ton/day with expansion to 130 ton/day) and refined glycerin (80 tons/day). This business contributed 25.4% of the company's 2019 revenue.

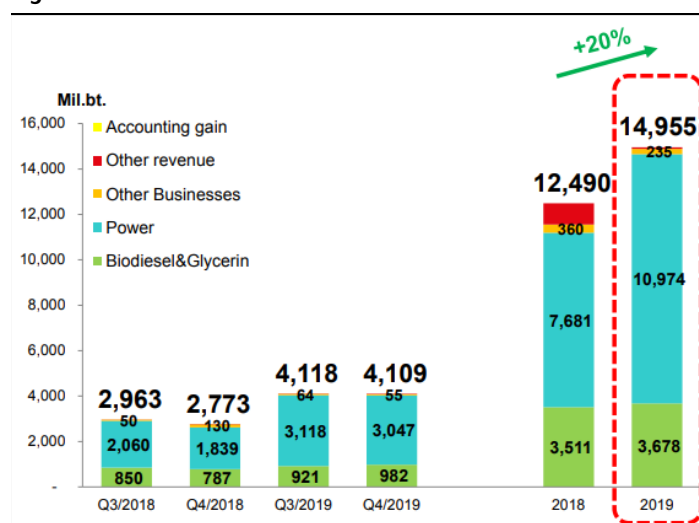
### Other business (EV, ESS and electric charging stations)

This segment would be the new S-Curve against the expiration of adder revenue from the renewable energy business. The company has invested in a 74.71% stake in Amita Technologies (5233.TW/5233 TT) which is one of the leading lithium battery manufacturers in Taiwan, established in 2000 (current production capacity of 0.4GWh p.a.). EA aims to jointly develop batteries for EVs and ESS. The company already built the initial phase of its battery plant (1GWh) in Chacheongsao (near Bluetech industrial estate) which would enhance downstream production (EVs, E-Bus, E-Ferry and ESS). The company also has the country's largest market share in charging stations, at 71.3%, to support EV businesses (Figure 4)

Figure 1: EA business



Source: Company data, KGI Research

**Figure 2: 2019 revenue breakdown**


Source: Company data, KGI Research

**Figure 3: Expiration of adder**

Type	Name	Capacity (MW)	Adder (Bt/kWh)	Expired adder
Solar	Lopburi	8	8	October 2022
Solar	Nakhon Sawan	90	6.5	December 2023
Solar	Lampang	90	6.5	February 2025
Solar	Phitsanulok	90	6.5	April 2026
Wind	HKH1	36	3.5	March 2027
Wind	HKH2	45	3.5	June 2027
Wind	HKH3	45	3.5	June 2027
Wind	HNH1	45	3.5	
Wind	HNH5	48	3.5	
Wind	HNH8	45	3.5	February 2025
Wind	HNH9	42	3.5	
Wind	HNH10	80	3.5	

Source: Company data, KGI Research

## Electric Vehicle (EV), Energy Storage System (ESS) - EA's Giga Dream

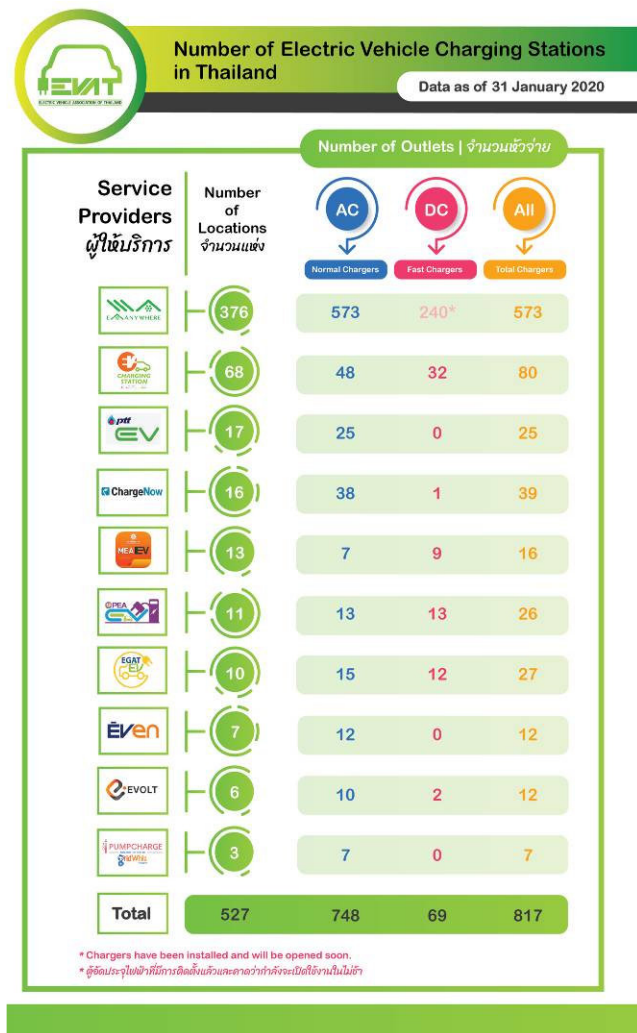
The incoming initial phase of the company's battery manufacturing plant (1GWh) targets to produce batteries for EVs, E-Bus, E-Ferry and ESS. This plant would be the largest battery manufacturing plant in Thailand and Southeast Asia.

EA is the first mover in the EV business in Thailand and Amita Lithium's battery technologies would fully enhance the company's EV business integration from upstream to downstream. Currently, the EV and battery manufacturing plant is under construction and is expected to start production in 4Q20 and 1Q21, respectively, with annual production capacity of 10,000 units p.a. and annual lithium battery capacity of 1GWh. The company has already launched the EV MINE SPA 1 and received orders for 1,500 units at Motorshow 2019 and 3,500 units from Suvarnabhumi Pattana Credit Union Cooperative Limited (Taxi). However, production would shift to 4Q20 - 4Q21. The company mentioned that the purpose of entering the EV business would be i) create public awareness of EVs, and ii) shift the current automotive industry from ICE to BEV/PHEV. EA is not aiming to be a car manufacturer, but rather targets to be a OEM EV battery supplier in Thailand.

### Ten-year breakeven period for current EV

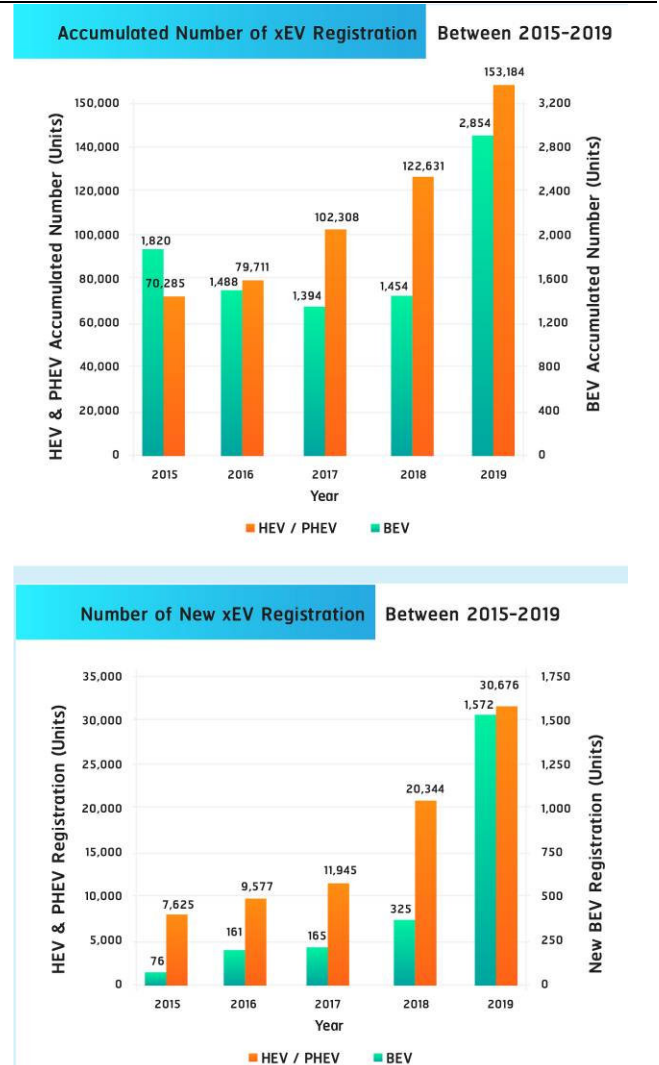
In general, EVs would have a higher purchase price than ICE models. The main economic advantages are lower running cost, maintenance costs, depending on fuel and electricity prices, and zero greenhouse gas emission. We performed a detailed comparative analysis on the MG ZS EV model and MG ZS model (ICE model) (Figure 6). We assume fuel consumption of 12km/l with Gasohol 95 cost of Bt26/l for the MG ZS and 6.5 hrs charging time for ZS EV with MEA/PEA off peak TOU rate of Bt2.6369/kWh. We found that it would take approximately 10 years 3 months (assuming 20,000km/year) or 205,600km to breakeven. The ten-year timeframe would be considered quite long to choose EV. However, the next generation lithium - ion batteries likely to come to the market in the next five to ten years should have low nickel content and use either nickel cobalt aluminum oxide (NCA) (with less than 10% nickel) or nickel manganese cobalt (NMC 811 with 10% of cobalt) compared to current technology NMC 622/532. The cost of these future batteries is expected to be significantly lower due to the reduction of cobalt content, which is expensive.

Figure 4: Charging stations (as of January 31, 2020)



Source: EVAT, KGI Research

Figure 5 : EV registrations



Source: EVAT, Department of Land Transport, KGI Research

**Figure 6: Breakeven analysis between ICE and EV**

Specification	MG ZS	MG ZS EV
Price (Bt mn)	0.8	1.2
Maintenance cost (5 yrs/100,000km)*	26,731	8,940
Annual Energy charge** (Bt mn)	43,902.4	8,455.7
Breakeven distance of EV model (km)		205,614
<b>Breakeven period (yrs)</b>		<b>10.3</b>

Source: MG Thailand, KGI Research

### Verdict on MINE SPA 1

EA targets the MINE SPA 1 vehicle to be a taxi. According to Department of Land Transport, there would be new taxies to replace the current fleet (nine years of usage) of approximately 31,077 units during 2020 - 2028. In our view, the driving range is only 200km per charge compared to average driving of 400-500km per day. Taxi drivers would need to charge at least once a day. Infrastructure (DC fast charger) would require sufficient coverage, but the company confirmed that the DC fast charger would be adequate for BMA. EA received orders for 3,500 units from Suvarnabhumi Pattana Credit Union Cooperative Limited (Taxi) and approximately 180 units would be handed over in 4Q20, while the remaining units would be delivered in 2021.

In our view, MINE SPA 1 business model targeting taxies would be appropriate as taxies (CNG/LPG) require huge annual maintenance costs (Bt50-60bn p.a.) compared to the worry-free maintenance cost of BEV. Electricity cost per charge is also cheaper (approximately Bt100 per charge or Bt0.5/km). While CNG cost would be Bt1.7/km and LPG cost would be Bt1.7-2.0/km.

**Figure 7: Current EV cars in Thailand's market under Bt2mn**

Brand	MINE	FOMM	BYD	BYD	HYUNDAI	HYUNDAI	MG	NISSAN
Model	SPA 1	ONE	T3	M3	KONA	IONIQ	ZS EV	LEAF
Type	MPV	L7e (Compact city car)	MPV	MPV	SUV	Sedan	SUV	Sedan
Country of Origin	Thailand	Japan	China	China	South Korea	South Korea	China	Japan
Battery (kWh)	30	11.8	50.3	50.3	39.2	28	44.5	40
Driving range (km)	200	160	300	300	312	280	300	230
Battery cooling	Unknown	Active	Unknown	Unknown	Active	Active	Active	Passive
Price (Bt mn)	1.2	0.6	1-1.1	1.0	1.85	1.75	1.2	1.5
Import tax (percent)	0	0	0	0	40	40	0	20
Excise tax (percent)	2	2	8	8	8	8	8	8
Max speed (kmph)	140	80	160	160	155	165	150	148
Horsepower (HP)	95	13.4	134	167	167	120	150	150
Normal charging time (hr)	3	6	8	8	6	6	8	12
Supercharge time (minutes)	12	40	45	45	44	47	30	40
Battery warranty (yrs/'000 km)	5/180	3/100	5/500	5/500	8 /unlimited	8 /unlimited	8/180	8/160

Source: Company data, FOMM, BYD, Hyundai, MG Nissan, KGI Research

### E-Bus and E-Ferry are other keys for public transportation evolution

EA would like to promote sustainable public transport by implementing E-Taxies, E-Ferries and E-Buses. The company expect to start operation of E-Ferries for Chaopraya express boat services (Nonthaburi - Sathorn) in August 2020 (20 vessels in 2020 and 21 vessels in 2021). In 2020, the E-Ferries will be based on batteries from Amita Taiwan, while Amita Thailand will supply batteries for 2021 units. Battery size is 800kWh which sufficient for four round trips . The payback period would be within five years. Current daily boat ridership for Chaopharya express boat services is 20,000-25,000 paxs. We expect at least 50% of the current ridership to switch to the E-Ferries due to i) lower travel time, and ii) air-conditioned services at the same fare.

EA also invested in a 40% stake in NEX Point (NEX.BK/NEX TB) with an investment cost of Bt1.5bn which is expected to jointly invest in quality development, manufacturing,

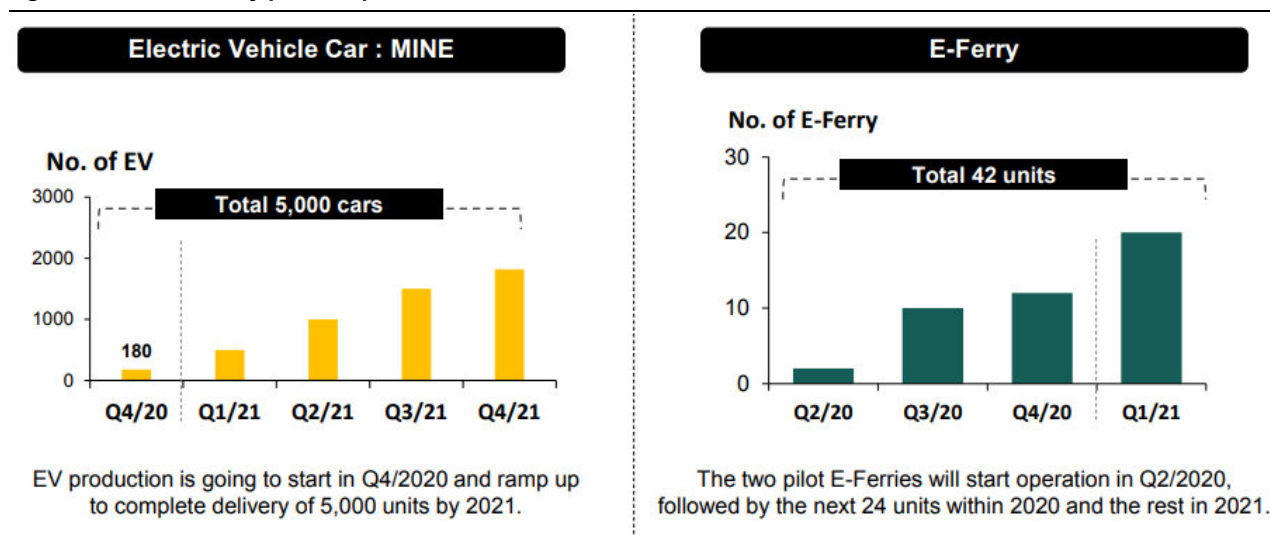
\*The Company may be issuer of Derivative Warrants on these securities.

<http://research.kgi.com>; Bloomberg: KGIT <GO> Please see back page for disclaimer

assembling and distributing including sales and after sales services of buses, commercial vehicles and private vehicles. NEX just recently acquired a 51% stake in Beli Services Company Limited, which provides preventive maintenance and repairs for 500 natural gas air-conditioned buses. The remaining 49% stake is held by Smart Bus, which covers 31 bus routes in BMA.

There would be potential opportunities for NEX to participate in BMTA bus bidding (2,511 E-buses) and the Amita Thailand battery plant would have good chance of supplying batteries to the E-Buses.

**Figure 8: EV and E-Ferry planned production**



Source: Company data, KGI Research

#### ESS remains key factor to fulfil production capacity

During the initial phase of the company's battery manufacturing plant (1GWh), the plant would supply batteries for EV and ESS businesses. The upcoming battery production for MINE SPA 1, E-Buses and E-Ferries would only make up 24-50% (Figure 8) of the plant's utilization rate in the initial phase.

ESS could be supplemented by renewable energy (solar and wind) for i) utility scale grid, ii) microgrid (remote area), and iii) peak shift management. However, the microgrid solution is only viable for Thailand and CLM countries due as batteries are bulky, heavy and require special care for transportation. Utility scale ESS solution is not allowed by ERC, EGAT, PEA, or MEA.

The company expects the utilization rate of the plant to reach 50% in the first year. EA also expects to expand battery production capacity into 10-12GWh in the next five years and up to 50GWh in the long term. The investment cost for the initial phase was Bt5bn while the cost for the expansion phase would be Bt2bn/GWh.

**Figure 9: Estimated utilization rate of Phase 1 of battery plant**

	kWh/unit	units p.a.	Case 1 Capacity used (GWh)	units p.a.	Case 2 Capacity used (GWh)	units p.a.	Case 3 Capacity used (GWh)
MINE SPA-1	35	3000	0.11	3500	0.12	5000	0.18
E-Bus	300	400	0.12	800	0.24	1000	0.30
E-Ferry	800	21	0.02	21	0.02	21	0.02
<b>Total</b>			<b>0.24</b>		<b>0.38</b>		<b>0.49</b>
<b>Implied utilization rate (percent)</b>			<b>24.0</b>		<b>38.0</b>		<b>49.0</b>

Source: KGI Research



**Figure 10: World's leading EV battery manufacturers**

Manufacturers	Country	2020 capacity(GWh)	Expansion plan by 2028 (GWh)
CATL	China	40	307
PANASONIC	Japan	35	77
LG CHEM	South Korea	35	237
SAMSUNG SDI	South Korea	35	94
SK	South Korea	4.7	54
BYD	China	30	112
EA	Thailand	1	5-10 GWh by next 5 years and 50 for long term

Source: Statista, www.energycentral.com, KGI Research

## Current EV Industry Development

Deputy Prime Minister Somkid Jatusritipak, as head of the national EV committee set a target for Thailand to be ASEAN's EV manufacturing hub (including motorcycles) within five years to solve pollution (PM 2.5) issues and change Thailand's current automotive industry into EV. The government has a coordinated plan to boost the number of plug-in hybrid electric vehicle (PHEV) and battery electric vehicle (BEV) to 250,000 EVs and 3,000 E-Buses by 2025 and 0.75mn units by 2030 from the current 3,500 EVs (as of May 2020, Figure 5 and 6). Minister of Industry also targets to have BEVs account for 30% of the country's total car production.

Twelve companies have applied for BOI-EV investment: i) FOMM, ii) Mercedes, iii) Skywell, iv) Toyota, v) Honda, vi) MG, vii) MINE, viii) Audi, ix) Mitsubishi, x) Nissan, xi) Suplaoor, and xii) Takano.

Given the unattractive conditions and restrictions to import EVs (Mercedes EQC model), Mercedes already decided to indefinitely postpone its EV investment in Thailand. We believe Mercedes would shift its EV manufacturing base to China and export the right-hand drive model to Thailand (0% tax under Thailand - China FTA).

Meanwhile, Nissan already shut down its manufacturing facilities in Spain and Indonesia and shifted its Southeast Asia production to Thailand. Nissan also recently launched the Nissan Kick e-power (HEV) with BOI tax benefits.

Great Wall Motors (2333.HK/2333 HK), which has annual sales of 1.1mn units, especially in 1-ton pickups), purchased General Motors' factory in Thailand and plans to increase production capacity from a current 50,000 units p.a. to 100,000 units p.a. for its ASEAN production hub.

PTT Group (PTT.BK/PTT TB)\* signed a strategic cooperation agreement with WM Motor (Chinese EV startup company) to i) import WM cars, and ii) conduct a feasibility study to jointly invest in an EV manufacturing plant in Thailand. PTT would be the authorised EV distributor for WM Motors. PTT also developed a battery manufacturing plant under Global Power Synergies (GPSC.BK/GPSC TB)\* with 30MWh capacity.

Figure 11: YTD registered BEVs, HEVs and PHEVs



Source: Thailand Automotive Institute, BOI, Bangkokbiznews, KGI Research

### How to promote EV usage in Thailand

According to Dr. Yossapong Laoornual (president of Electric Vehicle Association of Thailand), the government would play an important role in promoting EVs:

- Encouraging people to buy BEV by introducing personal income tax incentives for BEV buyers.
- Increasing incentives for EV drivers such as adding more chargers at attractive rates. Committee on Energy Policy Administration already approved a flat rate TOU for charging stations at Bt2.6369/kWh.
- Expanding the use of EV into public transport such as E-Buses, E-Ferries, Taxis, E-Tuktuks, and motorcycles. Four E-Ferries from EA will start providing services from July 1, 2020. Bangkok Mass Transit Authority (BMTA) also plans to launch vehicles.
- Promote awareness of EVs with license plate classification that are visible and easy to distinguish.

### Charging infrastructure needs to expand coverage, especially DC fast chargers

To promote EVs, the support infrastructure, which is charging stations, should be expanded. Currently there are 817 charging stations and only 69 of the total are DC fast chargers. Currently taxi drivers drive 400-500kms per day and if they switch to BEV, which are capable of only 200-300 kms per charge, they may be required to charge one-two times during the day. However, if there are limited DC fast charging stations, taxis would have to use AC chargers that take 3-8 hours depending on the model. If the government would like to push EVs to replace the current fleet of taxis, DC chargers would be the key investment before the launch of any incentive. Meanwhile, home users also need fast chargers for long distance travel (inter-provincial travel).

### Zero import tax on EVs, batteries would be the key threat to Thailand's EV industry development

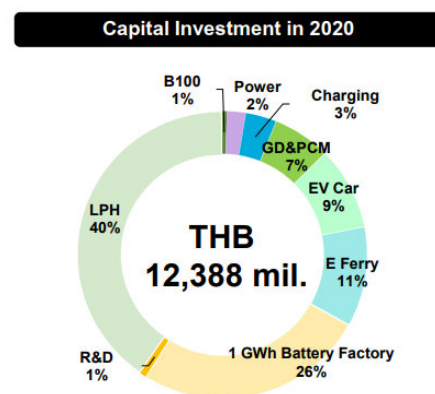
Given the benefits from the FTA between Thailand and China, EVs are one of the goods that China could export to Thailand with zero percent import tax duty. Currently, BYD and MG brands export their BEVs from China to Thailand. China's large scale and well developed EV supply chain would give it a competitive advantage in terms of production. However, Chinese manufacturers such as MG might export EV batteries for EV production in Thailand. Currently MG uses EV batteries from CATL.



### Sufficient room for future expansion

EA targets 2020 capital expenditure of Bt12.4bn. The company's current net debt to equity ratio is only 1.2x while it could gear up to 3.5x as per its debenture covenant, which implies additional investment of approximately Bt80bn (equivalent to 40GWh battery production capacity expansion).

Figure 11: 2020 CAPEX



Source: Company data, KGI Research

### Valuation

#### Market partially priced in EV/ESS businesses

We believe the market has partially priced in the value of EA's EV and ESS businesses as shown in Figure 11, which is in line with management's view. The company expects to expand its production capacity from 1GWh to 5GWh within the next five years. If Thailand's automotive industry turns into ASEAN's hub sooner than expected, there would be opportunities for EA to be an OEM battery supplier for other car manufacturers.

Figure 12: Key financials and valuation

	Dec - 17A	Dec - 18A	Dec - 19A	Dec - 20F	Dec - 21F
Revenue (Btmn)	11,580	12,447	14,887	19,663	29,691
Net Profit (Btmn)	3,817	5,148	6,082	6,361	7,548
Normalized Profit (Btmn)	3,818	5,186	6,075	6,361	7,548
Net Profit Growth (%)	17.4	34.8	18.1	4.6	18.6
Normalized Profit Growth (%)	17.3	35.8	17.2	4.7	18.6
EPS (Bt)	1.02	1.39	1.63	1.71	2.04
DPS (Bt)	0.15	0.20	0.25	0.47	0.63
P/E (X)	51.5	30.6	26.8	27.7	23.2
P/B (X)	11.1	9.9	5.4	6.3	5.2
Dividend Yield (%)	0.3	0.5	0.6	1.0	1.3

Source: Bloomberg consensus, KGI Research

Figure 13: SoTP valuation

SOTP	Bt/sh	Remarks
Renewable business (Solar, Wind)	23.0	DCF with WACC of 4.1%
Biodiesel	1.0	DCF with WACC of 4.1%
EV Car (MINE SPA 1)	1.0	2021 P/E at 12x
E-Ferry	0.1	DCF with WACC of 4.1%
NEX (40%)	0.5	Avg. 3 month market price
<b>Current SOTP</b>	<b>25.6</b>	
<b>Sensitivity on ESS Capacity (GWh)</b>	<b>Fair value</b>	
1	29.25	
2	33.25	
3	36.75	
4	40.00	
5	42.75	
6	45.25	
7	47.25	
8	48.75	
9	50.00	
10	50.75	

Source: KGI Research

# Corporate Governance Report of Thai Listed Companies



## Companies with Excellent CG Scoring

Stock	Company name	Stock	Company name	Stock	Company name
AAV	ASIA AVIATION	INTUCH	SHIN CORPORATION	RATCH	RATCHABURI ELECTRICITY GENERATING HOLDING
ADVANC	ADVANCED INFO SERVICE	IRPC	IRPC	ROBINS	ROBINSON DEPARTMENT STORE
AMA	AMA MARINE	IVL	INDORAMA VENTURES	RS	RS
AMATA	AMATA CORPORATION	KBANK	KASIKORN BANK	SCB	THE SIAM COMMERCIAL BANK
ANAN	ANANDA DEVELOPMENT	KCE	KCE ELECTRONICS	SCC	THE SIAM CEMENT
AOT	AIRPORTS OF THAILAND	KKP	KIATNAKIN BANK	SCCC	SIAM CITY CEMENT
AP	ASIAN PROPERTY DEVELOPMENT	KTB	KRUNG THAI BANK	SCN	SCAN INTER
BANPU	BANPU	KTC	KRUNGTHAI CARD	SEAFCO	SEAFCO
BCP	THE BANGCHAK PETROLEUM	LH	LAND AND HOUSES	SPALI	SUPALAI
BCPG	BCPG	LPN	L.P.N. DEVELOPMENT	SPRC	STAR PETROLEUM REFINING
BTS	BTS GROUP HOLDINGS	MAKRO	SIAM MAKRO	STEC	SINO-THAI ENGINEERING AND CONSTRUCTION
CK	CH. KARNCHANG	MBK	MBK	SVI	SVI
CKP	CK POWER	MINT	MINOR INTERNATIONAL	TCAP	THANACHART CAPITAL
CPALL	CP ALL	MONO	MONO TECHNOLOGY	THAI	THAI AIRWAYS INTERNATIONAL
CPN	CENTRAL PATTANA	MTC	MUANGTHAI CAPITAL	THCOM	THAICOM
DELTA	DELTA ELECTRONICS (THAILAND)	NYT	NAMYONG TERMINAL	TISCO	TISCO FINANCIAL GROUP
DTAC	TOTAL ACCESS COMMUNICATION	PLANB	PLAN B MEDIA	TMB	TMB BANK
EGCO	ELECTRICITY GENERATING	PSH	PRUKSA HOLDING	TOA	TOA PAINT (THAILAND)
GFPT	GFPT	PTT	PTT	TOP	THAI OIL
GPSC	GLOBAL POWER SYNERGY	PTTEP	PTT EXPLORATION AND PRODUCTION	TRUE	TRUE CORPORATION
GUNKUL	GUNKUL ENGINEERING	PTTGC	PTT GLOBAL CHEMICAL	WHA	WHA CORPORATION
HANA	HANA MICROELECTRONICS	PYLON	PYLON	WHAUP	WHA UTILITIES AND POWER
HMPRO	HOME PRODUCT CENTER	QH	QUALITY HOUSES		



## Companies with Very Good CG Scoring

Stock	Company name	Stock	Company name	Stock	Company name
BA	BANGKOK AIRWAYS	COM7	COM7	MEGA	MEGA LIFESCIENCES
BBL	BANGKOK BANK	DCC	DYNASTY CERAMIC	NOK	NOK AIRLINES
BDMS	BANGKOK DUSIT MEDICAL SERVICES	EPG	EASTERN POLYMER GROUP	OSP	OSOTSPA
BEC	BEC WORLD	ERW	THE ERAWAN GROUP	SAPPE	SAPPE
BEM	BANGKOK EXPRESSWAY AND METRO	FPT	FRASERS PROPERTY (THAILAND)	SAWAD	SIRISAWAD POWER 1979
BGRIM	B.GRIMM POWER	GLOBAL	SIAM GLOBAL HOUSE	SIRI	SANSIRI
BPP	BANPU POWER	GLOW	GLOW ENERGY	TFG	THAIFOODS GROUP
CBG	CARABAO GROUP	GULF	GULF ENERGY DEVELOPMENT	TKN	TAOKAENOI FOOD & MARKETING
CENTEL	CENTRAL PLAZA HOTEL	M	MK RESTAURANT GROUP	TWPC	THAI WAH
CHG	CHULARAT HOSPITAL	MAJOR	MAJOR CINEPLEX GROUP		



## Companies with Good CG Scoring

Stock	Company name	Stock	Company name	Stock	Company name
BCH	BANGKOK CHAIN HOSPITAL	ESSO	ESSO (THAILAND)	TPCH	TPC POWER HOLDING
BH	BUMRUNGRAD HOSPITAL	LPH	LADPRAO GENERAL HOSPITAL	WORK	WORKPOINT ENTERTAINMENT
CMAN	CHEMEMAN	SF	SIAM FUTURE DEVELOPMENT		
EKH	EKACHAI MEDICAL CARE	SQ	SAHAKOL EQUIPMENT		

## Companies classified Not in the three highest score groups

Stock	Company name	Stock	Company name	Stock	Company name
UNIQ	UNIQUE ENGINEERING AND CONSTRUCTION	ZEN	ZEN CORPORATION GROUP		

Source: www.thai-iod.com

**Disclaimer:** The disclosure of the survey result 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 assessment 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 result may be changed after that date or when there is any change to the relevant information. Nevertheless, KGI Securities (Thailand) Public Company Limited (KGI) does not confirm, verify, or certify the accuracy and completeness of such survey result.

## Anti-corruption Progress Indicator

### Level 5: Extended

Stock	Company name	Stock	Company name	Stock	Company name
ADVANC	ADVANCED INFO SERVICE	GLOBAL	SIAM GLOBAL HOUSE	QH	QUALITY HOUSES
ANAN	ANANDA DEVELOPMENT	GPSC	GLOBAL POWER SYNERGY	RATCH	RATCHABURI ELECTRICITY GENERATING HOLDING
BBL	BANGKOK BANK	HMPRO	HOME PRODUCT CENTER	ROBINS	ROBINSON DEPARTMENT STORE
BCH	BANGKOK CHAIN HOSPITAL	IRPC	IRPC	SCC	THE SIAM CEMENT
BDMS	BANGKOK DUSIT MEDICAL SERVICES	KBANK	KASIKORNBANK	SIRI	SANSIRI
BIGC	BIG C SUPERCENTER	KCE	KCE ELECTRONICS	SPALI	SUPALAI
CK	CH. KARNCHANG	KKP	KIATNAKIN BANK	STEC	SINO-THAI ENGINEERING AND CONSTRUCTION
DCC	DYNASTY CERAMIC	KTB	KRUNG THAI BANK	TCAP	THANACHART CAPITAL
DELTA	DELTA ELECTRONICS (THAILAND)	LPH	LADPRAO GENERAL HOSPITAL	TISCO	TISCO FINANCIAL GROUP
DRT	DIAMOND ROOFING TILES	PACE	PACE DEVELOPMENT CORPORATION	TMT	THAI METAL TRADE
EGCO	ELECTRICITY GENERATING	PTT	PTT	TOP	THAI OIL
GFPT	GFPT	PTTGC	PTT GLOBAL CHEMICAL		

### Level 4: Certified

Stock	Company name	Stock	Company name	Stock	Company name
AAV	ASIA AVIATION	ERW	THE ERAWAN GROUP	SAPPE	SAPPE
AP	ASIAN PROPERTY DEVELOPMENT	GLOW	GLOW ENERGY	SAWAD	SRISAWAD POWER 1979
BA	BANGKOK AIRWAYS	GUNKUL	GUNKUL ENGINEERING	SCB	THE SIAM COMMERCIAL BANK
BANPU	BANPU	ILINK	INTERLINK COMMUNICATION	SCN	SCAN INTER
BCP	THE BANGCHAK PETROLEUM	KTC	KRUNGTHAI CARD	SEAFCO	SEAFCO
BH	BUMRUNGRAD HOSPITAL	LH	LAND AND HOUSES	SVI	SVI
BJCHI	BJC HEAVY INDUSTRIES	LPN	L.P.N. DEVELOPMENT	TASCO	TIPCO ASPHALT
CBG	CARABAO GROUP	MAKRO	SIAM MAKRO	TKN	TAOKAENOI FOOD & MARKETING
CENTEL	CENTRAL PLAZA HOTEL	MALEE	MALEE SAMPRAN	TMB	TMB BANK
CHG	CHULARAT HOSPITAL	MINT	MINOR INTERNATIONAL	TRT	TIRATHAI
CKP	CK POWER	MODERN	MODERNFORM GROUP	TRUE	TRUE CORPORATION
CPF	CHAROEN POKPHAND FOODS	NOK	NOK AIRLINES	TVO	THAI VEGETABLE OIL
CPN	CENTRAL PATTANA	PTTEP	PTT EXPLORATION AND PRODUCTION		
DTAC	TOTAL ACCESS COMMUNICATION	PYLON	PYLON		

### Level 3: Established

Stock	Company name	Stock	Company name	Stock	Company name
BEM	BANGKOK EXPRESSWAY AND METRO	MTLS	MUANGTHAI LEASING	SPRC	STAR PETROLEUM REFINING
CPALL	CP ALL	SCI	SCI ELECTRIC		

### No progress

Stock	Company name	Stock	Company name	Stock	Company name
AOT	AIRPORTS OF THAILAND	BPP	BANPU POWER	FN	FN FACTORY OUTLET
BCPG	BCPG	BTS	BTS GROUP HOLDINGS	TPCH	TPC POWER HOLDING

Source: [www.cgthailand.org](http://www.cgthailand.org)

**Disclaimer:** The disclosure of the Anti-Corruption Progress Indicators of a listed company on the Stock Exchange of Thailand, which is assessed by the relevant institution as disclosed by the Office of the Securities and Exchange Commission, is made in order to comply with the policy and sustainable development plan for the listed companies. The relevant institution 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 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, KGI Securities (Thailand) Public Company Limited (KGI) does not confirm, verify, or certify the accuracy and completeness of the assessment result.

## KGI Locations

<b>China</b>	Shanghai	Room 1507, Park Place, 1601 Nanjing West Road, Jingan District, Shanghai, PRC 200040
	Shenzhen	Room 24D1, 24/F, A Unit, Zhen Ye Building, 2014 Bao'annan Road, Shenzhen, PRC 518008
<b>Taiwan</b>	Taipei	700 Mingshui Road, Taipei, Taiwan Telephone 886.2.2181.8888 · Facsimile 886.2.8501.1691
<b>Hong Kong</b>		41/F Central Plaza, 18 Harbour Road, Wanchai, Hong Kong Telephone 852.2878.6888 Facsimile 852.2878.6800
<b>Thailand</b>	Bangkok	8th - 11th floors, Asia Centre Building 173 South Sathorn Road, Bangkok 10120, Thailand Telephone 66.2658.8888 Facsimile 66.2658.8014
<b>Singapore</b>		4 Shenton Way #13-01 SGX Centre 2 Singapore 068807 Telephone 65.6202.1188 Facsimile 65.6534.4826

## KGI's Ratings

Rating	Definition
Outperform (OP)	The stock's excess return over the next twelve months is ranked in the top 40% of KGI's coverage universe in the related market (e.g. Taiwan)..
Neutral (N)	The stock's excess return over the next twelve months is ranked in the range between the top 40% and the bottom 40% of KGI's coverage universe in the related market (e.g. Taiwan)
Under perform (U)	The stock's excess return over the next twelve months is ranked in the bottom 40% of KGI's coverage universe in the related market (e.g. Taiwan).
Not Rated (NR)	The stock is not rated by KGI.
Restricted (R)	KGI policy and/or applicable law regulations preclude certain types of communications, including an investment recommendation, during the course of KGI's engagement in an investment banking transaction and in certain other circumstances.  <i>Excess return = 12M target price/current price-</i>
Note	When an analyst publishes a new report on a covered stock, we rank the stock's excess return with those of other stocks in KGI's coverage universe in the related market. We will assign a rating based on its ranking. If an analyst does not publish a new report on a covered stock, its rating will not be changed automatically.

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