

Energy Absolute

Energy for the Future

E@ at Glance

Established

In 2006 to produce palm oil

Core Business

Energy (Renewable and Utilities)

Secondary Market

The Stock Exchange of Thailand since 30 Jan 2013

Market Capitalization (as of 12/11/19)

Approximately THB 166.92 bil. (US\$ 5.56 bil.)



SET50
Index



Credit Rating

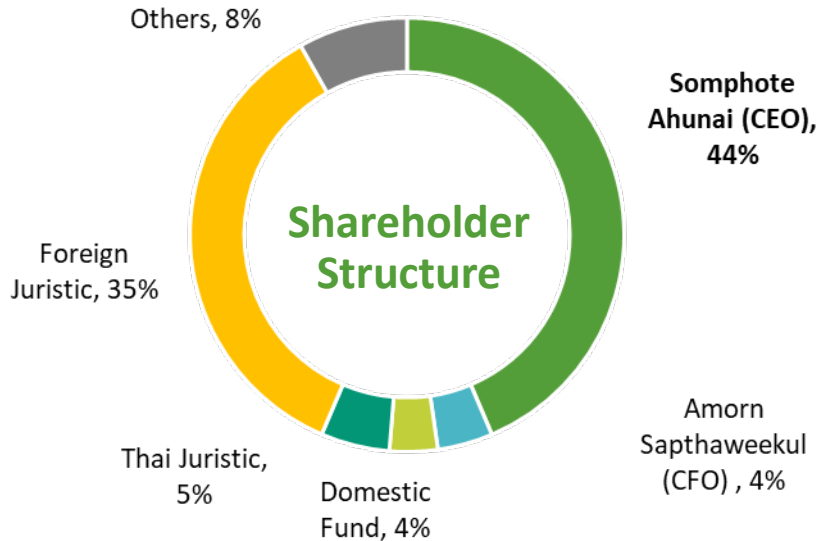
Corporate rating : A

CG Rating

Excellent



At 13 March 2019



Mr. Somphote Ahunai
Chief Executive Officer

Education

- MBA from University of Pittsburgh, USA
- Bachelor of Engineering from Chulalongkorn University, Thailand

Previous Experience

- Analyst and Researcher in USA.
- Managing Director of a Securities Brokerage company in Thailand
- Managing Director of a Renewable Energy company in Thailand

Mr. Amorn Saphthaweekul
Deputy CEO and Chief Finance Officer

Education

- Master of Science (Finance) from Chulalongkorn University, Thailand
- Bachelor of Business Administration (Finance and Banking) from Thammasat University, Thailand

Previous Experience

- Investment Banker and Financial Advisor,
- Director in a Renewable Energy company

• Highlight of Operating Performance •

	Q3/2019	9M/2019
Total Revenue	THB 4,103 mil. increase 39% YOY	THB 10,804 mil. increase 23% YOY
Net Profit	THB 1,633 mil. increase 30% YOY	THB 4,233 mil. increase 31% YOY

Note: Total Revenue and Net Profit exclude accounting profit and other revenue

*“A leader in alternative energy business,
by using the modern technology and environmentally friendly”*

Existing Businesses

From 2006



Biodiesel : B100 and Glycerin



Renewable Power

- *Solar 278 MW*
- *Wind 386 MW*

New Businesses

From 2016 - Onwards



EV-Charging



EV-Car



E-Ferry

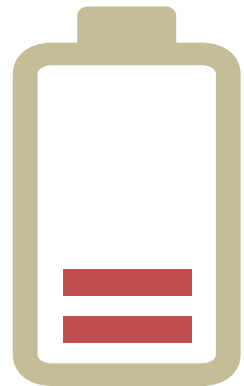


Energy Storage



Green Diesel & PCM

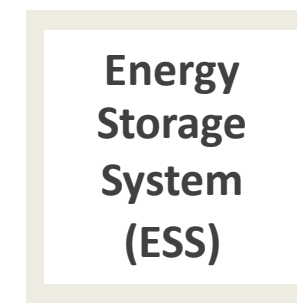
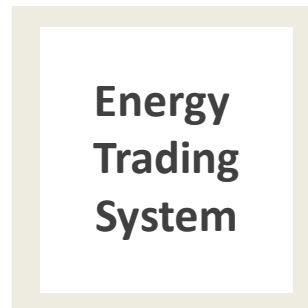
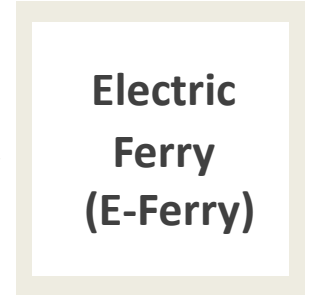
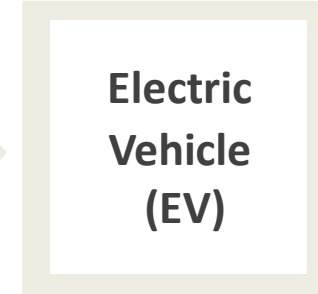
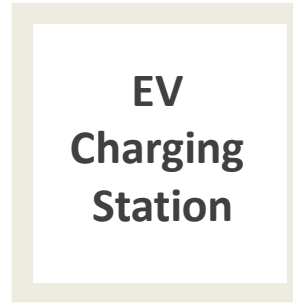
Energy Storage System : Core Technology for New Businesses



Phase I
1 GWh



Next Phase
50 GWh





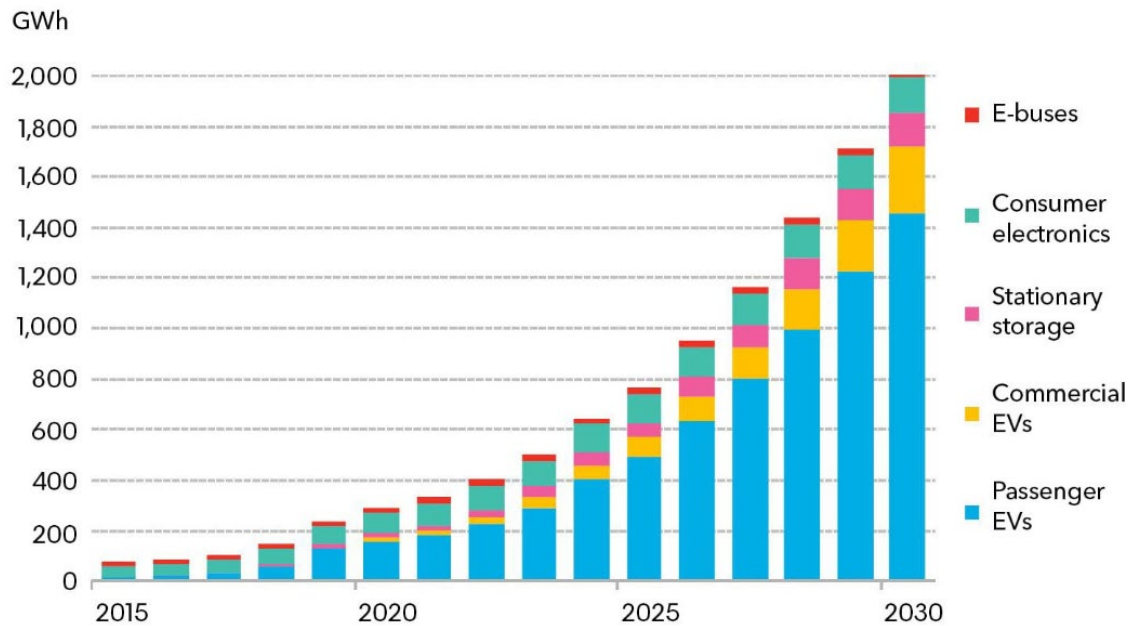
Growth in EVs & Battery Technologies

Energy Absolute PCL.

High growth in Battery business mainly from Electric Vehicles

GROWTH IN BATTERY BUSINESS MAINLY FROM ELECTRIC VEHICLES

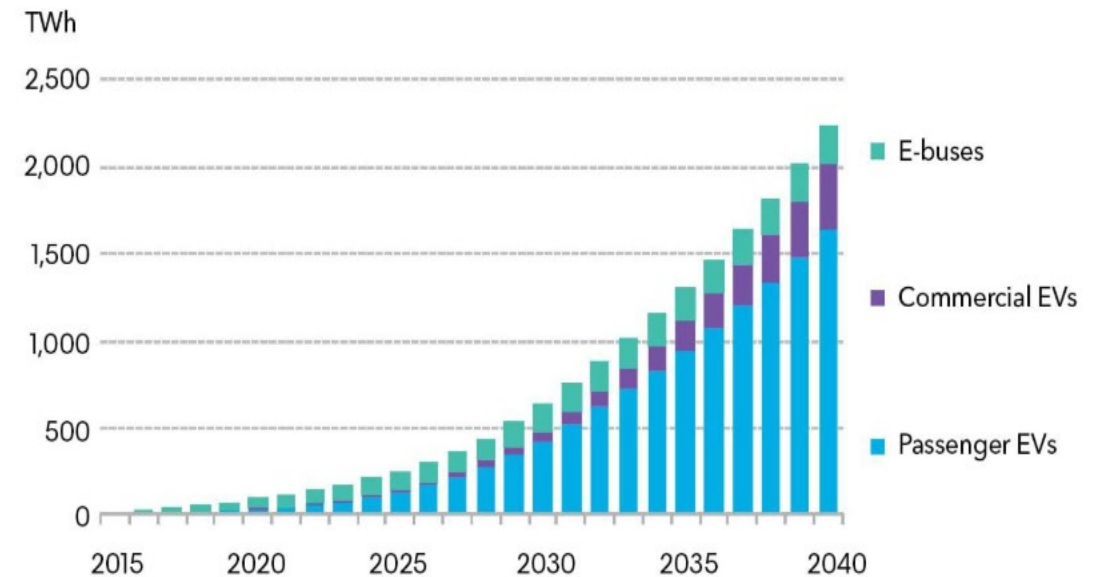
Annual lithium-ion battery demand



Source: BloombergNEF, Avicenne

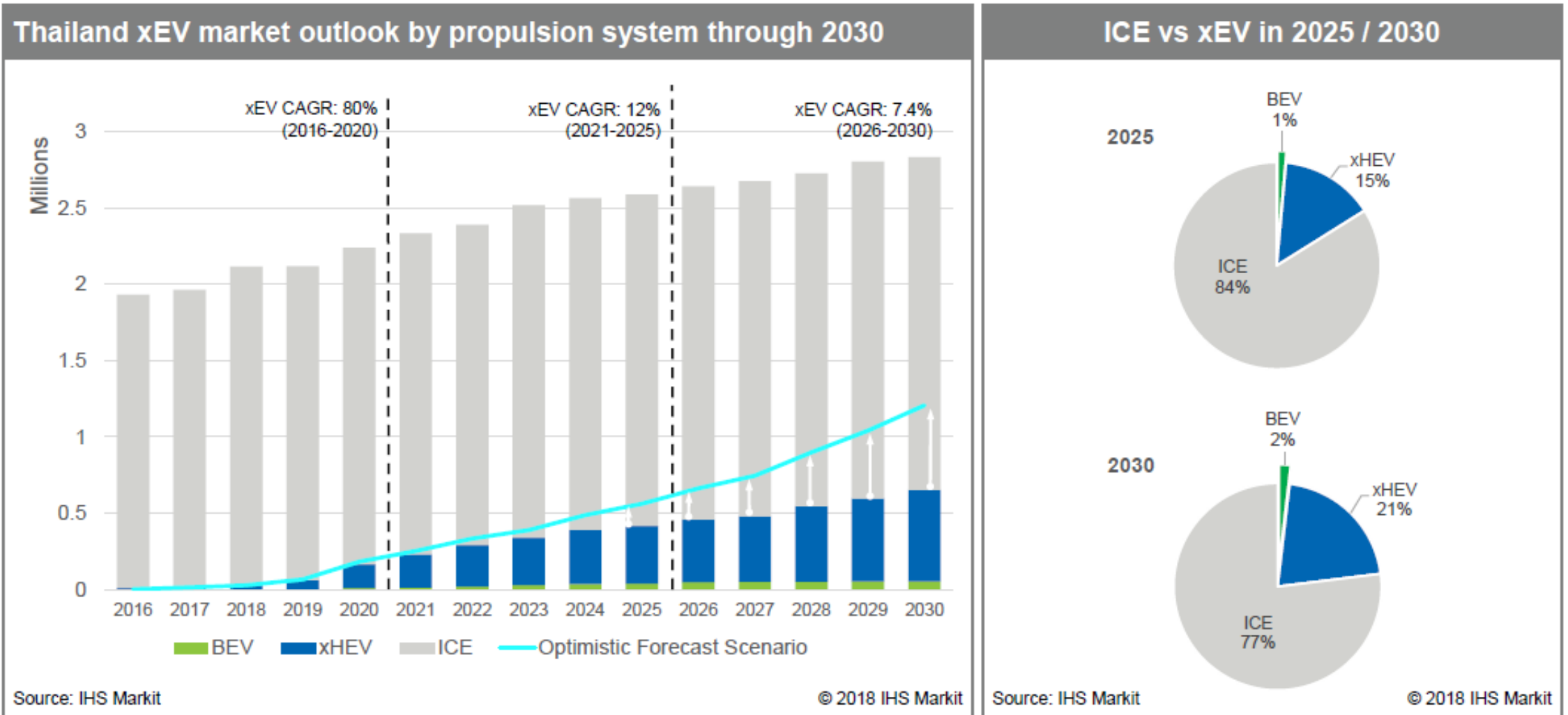
ELECTRICITY DEMAND FROM ALL TYPES OF EVS RISES FROM 74TWH IN 2019 TO 2,333TWH IN 2040.

Yearly electricity consumption from passenger EVs, commercial EVs and e-buses



Thailand Electric Vehicle Market

HIS Markit expected xEVs will reach over 0.65Mil. units or 23% of total production by 2030, while Energy Blue print set the target of 1.2Mil units by 2036.



Compare Amita's granted Patents with others

	Amita	BYD	LG Chem	Samsung SDI	SK Innovation
Cell cost (\$/kWh)	140	160	140	170	180
Cell energy density (Wh/kg)	170 (NMC532)	170 (NMC532)	220 (NMC622)	190 (NMC111+NCA)	200 (NMC622)
Major Cathod Material	NMC	LFP/NMC	NMC	NMC/NCA	NMC
Major battery type	Pouch	Prismatic	Pouch	Prismatic/ Cylindrical	Pouch
Technology roadmap	NMC811	NMC811	NMC811, NCMA	NCA, NMC	NMC811

NMC811 vs NMC532 : Higher density 25%, Lower cost , Longer cycle life 15-20%

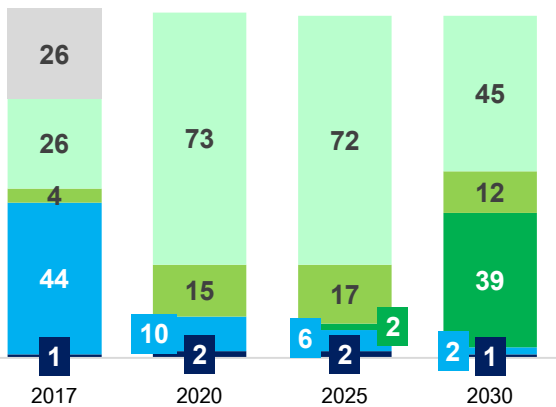
Distribution of Battery Technology for EV

NMC series is increasing adopted

■ NCA ■ LFP ■ NMC 9.5.5 ■ NMC 811 ■ NMC 622 ■ NMC 111

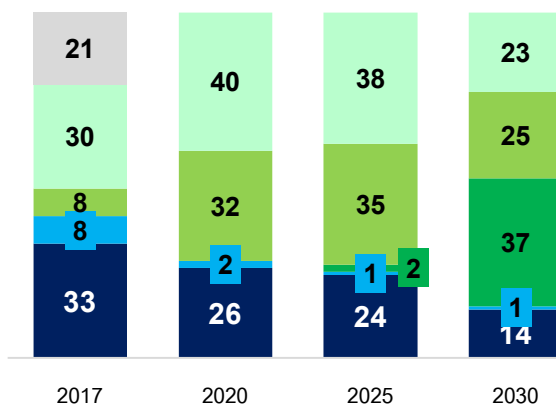
China

Battery capacity demand by chemistry (%)



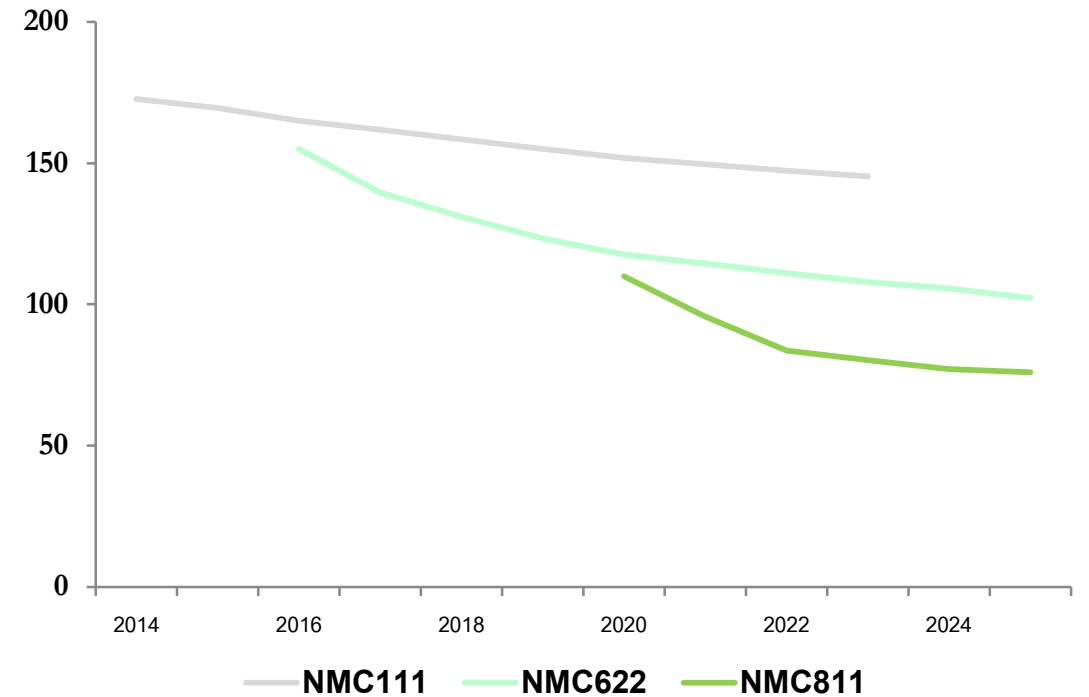
Rest of the world


Battery capacity demand by chemistry (%)



DEVELOPMENT OF NMC SERIES FOR LOWER COST

USD/kWh





Our Technologies & Key Partners

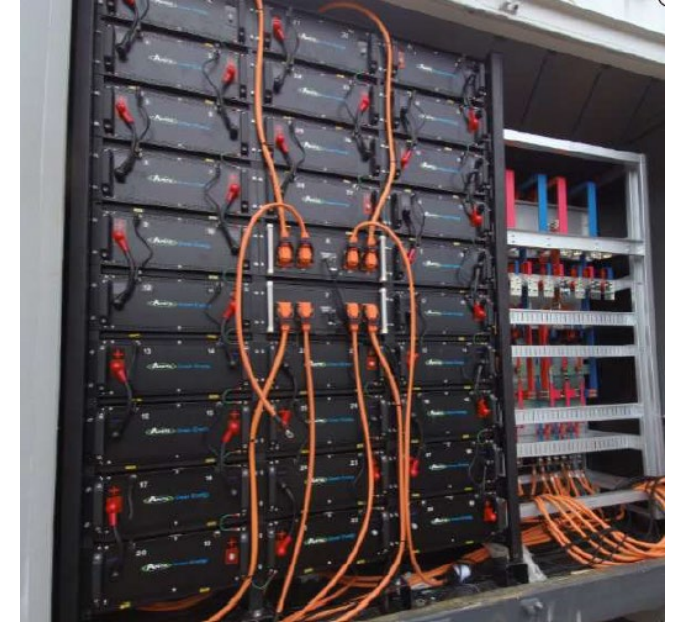
Energy Absolute PCL.

Started new era of advance technology Energy Storage Business



- Started investing in Amita Technologies Inc., Taiwan in Dec 2016
current shareholding = 77%
- Amita Technologies Inc. was established in March 2000 to produce lithium-ion power battery with strong material science research and long test data accumulation supported by ITRI.*
- Main Businesses
 - High Power Battery for EV, E-Scooter, Power Plant
 - OEM (Original Equipment Manufacturer)
 - PDCA- Post Dry Cell Battery
 - Turnkeys of High Technology Battery Factory for EV in Beijing
- Current production capacity and capability : 44Ah power battery cell or over 500MWh per year

Energy Storage System for a small renewable power plant



Battery for E-Scooter



** ITRI, a nonprofit R&D organization of Taiwan, who played a vital role in Taiwan's economic growth, strengthen capabilities of innovation and cooperation with international partners all over the world.*



Amita's turnkey project : Design & Construction Management for CABRI factory

- China Automotive Battery Research Institute Co., Ltd (CABRI) originated from China Association of Automobile Manufacturers (CAAM) and General Research Institute for Nonferrous Metals (GRINM) with massive support of state and governmental departments to serve as an industry & technology coordination and innovation platform, jointly established by domestic scientific research institutions, power battery manufacturers and automobile OEMs.
- The shareholders of CABRI include 11 enterprises of **General Research Institute for Nonferrous Metals (GRINM), China Ting New Power, Dongfeng, Chang'an, SAIC, Brilliance, GAC, CATL, Tianjin, Lishen**



Industrial Technologies Research Institute (ITRI)



Total Staff : 6,259 Accumulated Patents : 28,227
Ph.D. : 1,449 Startups & Spinoffs : 281
Master : 3,688 Industry Services : 18,119
Alumni : 25,232 Transferred Technologies : 613

The most prestigious recognition of invention
& innovation awards

“Oscars of Invention”



- Won **41 R&D 100 Awards** for 12 consecutive years since 2008
- Most of the winning technologies licensed to manufacturers for commercialization, including **STOBA Technology in Li-ion battery**

- ITRI is the most awarded research institute for the Top 100 Global Innovators in Asia.
- Only 3 Other government-sponsored research institutions in the same class:
 - (1) Fraunhofer (Germany) - Europe's largest application-oriented research organization
 - (2) The French Alternative Energies
 - (3) Atomic Energy Commission (USA)
- *Other 2019 R&D 100 Awards winners include the MIT Lincoln Laboratory, Dow, Dupont, etc*





Amita Technologies Inc.

A Passion for Providing Green Energy Solutions.

Amita Technologies has been deeply committed to sustainable energy and environmentally responsible practices since its establishment in 2000.



Lithium Battery Solutions for Green Energy



Lynx E-Carver with Amita Batteries


AMITA has branched out into the sights of Japanese energy storage applications market with a new strategic thinking electric....

[Link to Youtube](#)



High power efficiency.
Superior cycle life.
Density of 180Wh/kg
with total solution.





**Our EV
MINE SPA1**

Energy Absolute PCL.

Criteria for picking a good EV

Safety

With battery package
and located plug higher

Fits with day in a life

- Charging time period : support quick charge and smartphone using.
- Flexibility & Compatibility of charging plug
- Location of compatible chargers along the usual routes / main routes

Affordable price & Functionality

To offer suitable size of battery base
on daily use and suitable price.



Keep longer life battery

Home charger preparation &
charging station

Maintenance service

Warranty and After-sale Service
battery package

STRUCTURE FRAME OF M I N E

ALUMINUM STRUCTURE
แข็งแกร้ง และน้ำหนักเบา

BODY ON FRAME
โครงสร้างกับตัวถังแยกส่วนกัน

PROVED BY CAE
ผ่านการทดสอบความแข็งแรง



Design Concept

- Function
- Appearance
- Comfort
- Ergonomic

Engineering



Light Weight with Aluminum for Longer Range



Packed with Advance Technologies



Integrate with our Chargers & Others System
Fast Charge Battery



Durability



Cost

MINE SPA1


95 KW
(127 Hp)
Max Power


140 KM/H
Max Speed


30 KWH
Battery*


200 KM
Range (NEDC)**

*Charging network by EA Anywhere

**New European Driving Cycle



Solar
Yellow



Chaophraya
Blue



Bio Black



Ess Grey



Pcm
Brown



Turbine
Silver



Mahanakhon
White

Weight	1,400 kg.
Dimension	1,730 x 4,530 x 1,730 mm.
Wheel Base	2,750 mm.
Ground Clearance	150 mm.
Turning Radius	5.9 mm.
Rear Space	650 Liter

[MORE DETAIL](#)

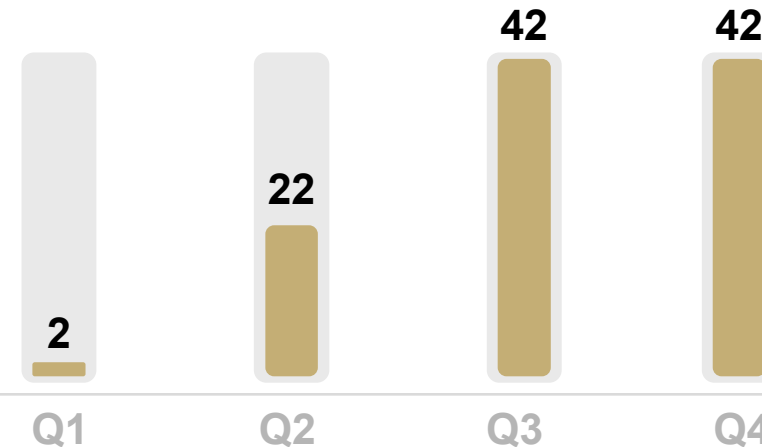


To prove the high safety of battery system Electric Ferries

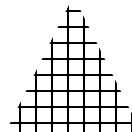
Using our 800-KWh Lithium-ion battery capacity to modernize and make a cleaner and safer transportation for our community including tourist who travel along Chao Phraya River, which is one of the most impressive tourist destinations in Bangkok.

The electric ferry is designed by our own team and using our technology.

No. of E-Ferry



2020



No Emission is Now Your Decision

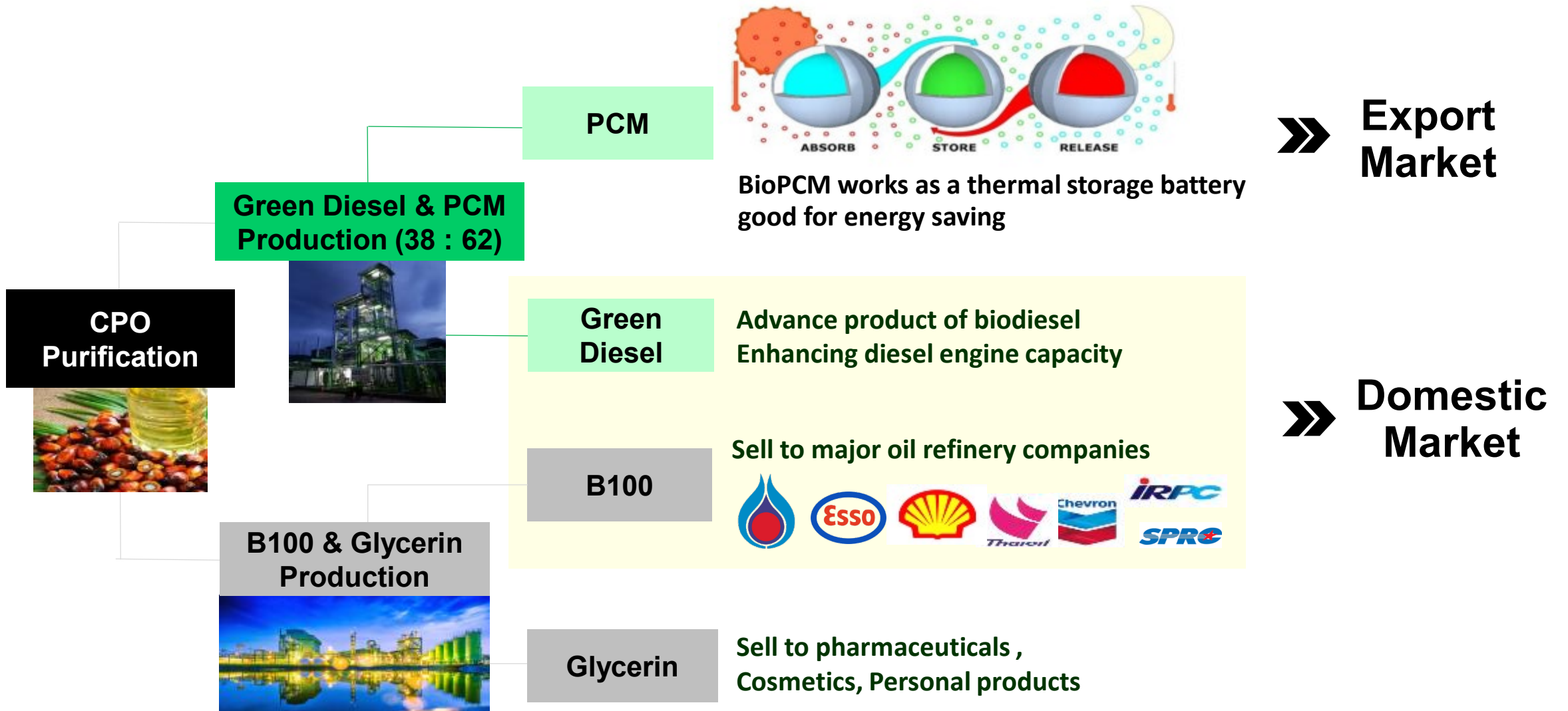




Upcoming Projects

Energy Absolute PCL.

• **Biodiesel Business with advance technology of GD & PCM** •



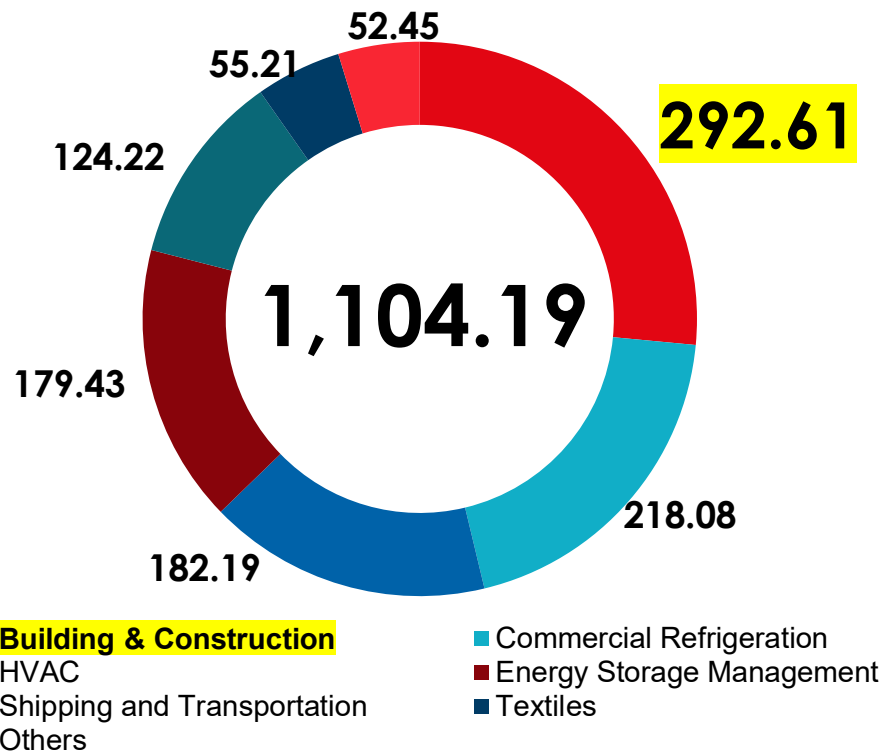
» **Export Market**

» **Domestic Market**

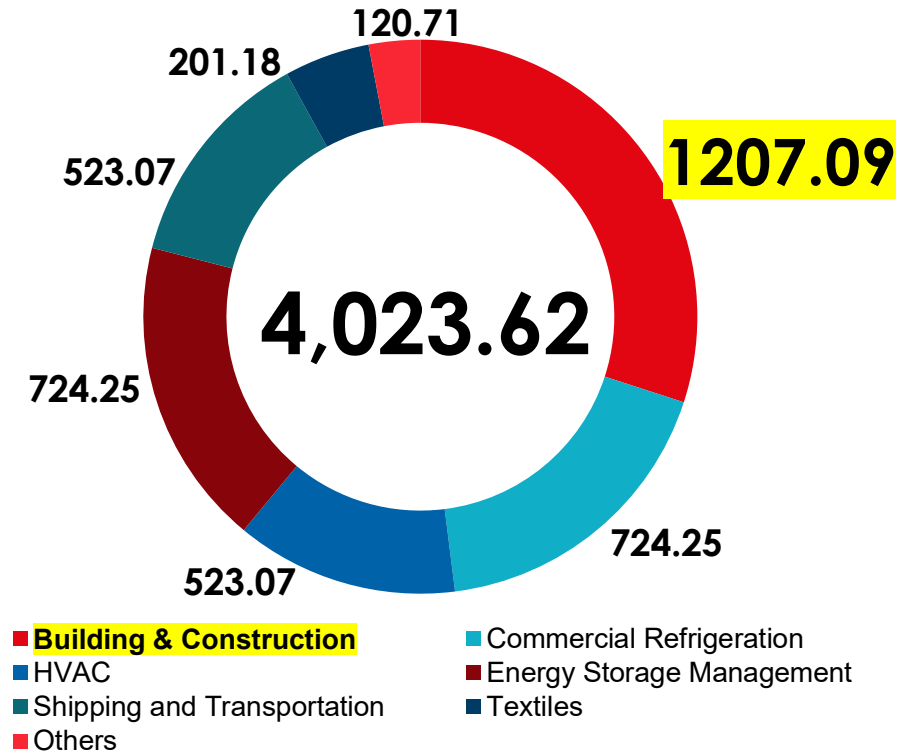
• PCM Market Size : To be US\$ 4.024 billion in 2025 •

- ✓ Growing demand especially in Asia- Pacific mainly in Building and Construction
- ✓ Japan issued policy in Promotion of Zero Energy Building (ZEB) and Zero Energy Houses (ZEH)

PCM Market in 2018 (in US\$ million)



PCM Market in 2025 (in US\$ million)

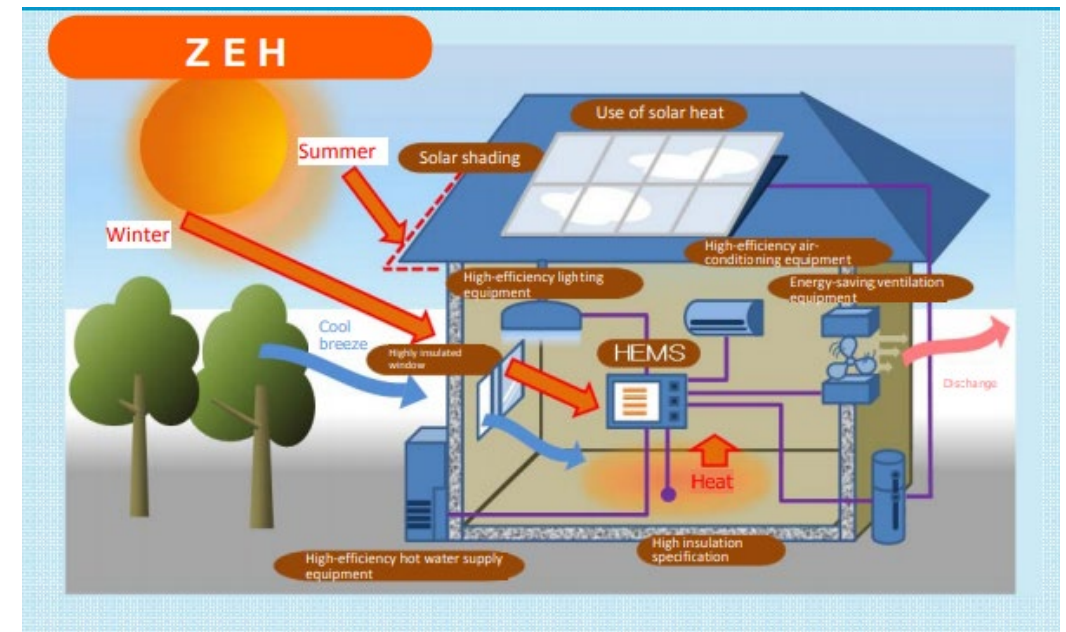


Market Opportunity in Japan from the government policy

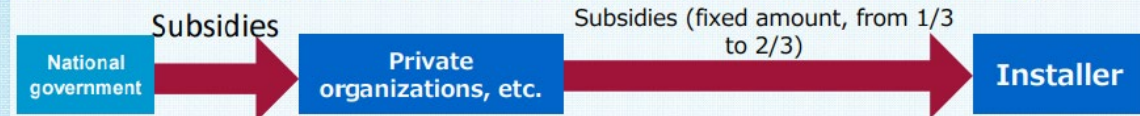
ZEB and ZEH

Japan's Strategic Energy Plan (adopted at the Cabinet Council in April 2014) establishes the following goals to realize and promote ZEB (Net Zero Energy Building) and ZEH (Net Zero Energy House):

- Realize ZEB & ZEH in newly constructed public buildings by 2020
- Realize ZEB & ZEH in average newly constructed public and private buildings by 2030



Conditions (targeted persons and acts, subsidy rates, etc.)



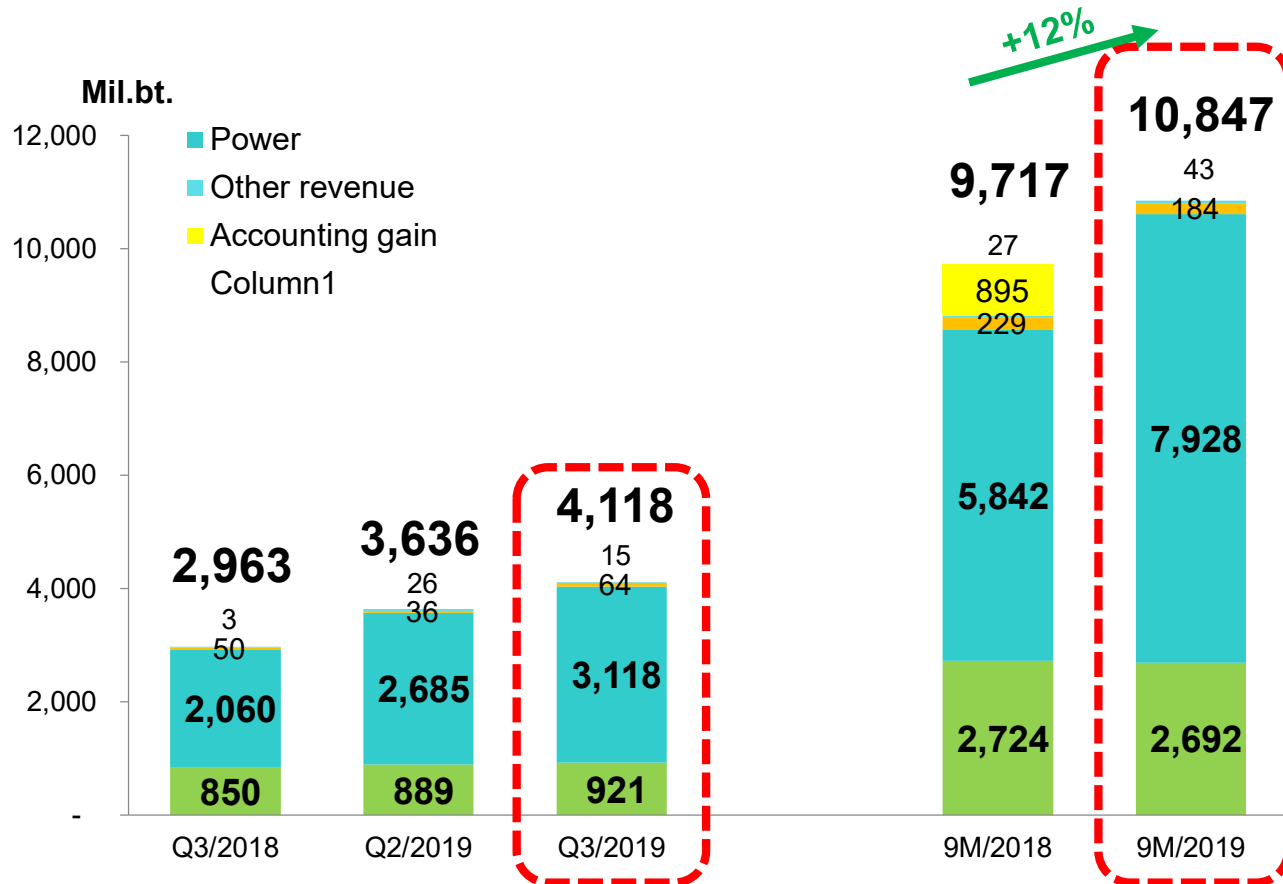


Our Performance

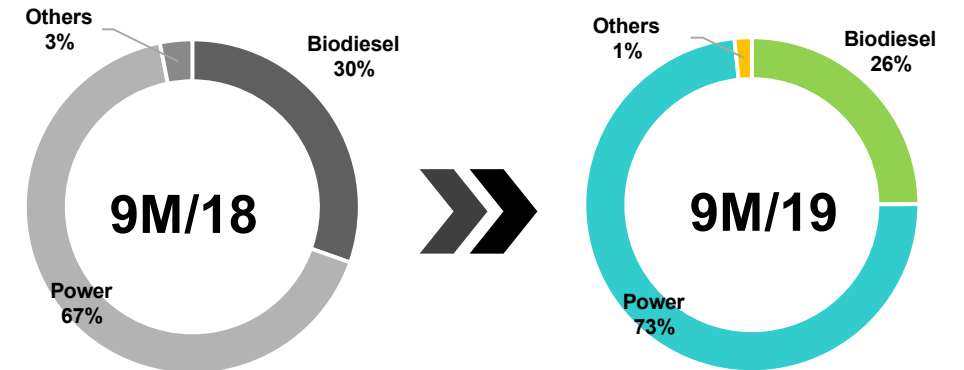
Energy Absolute PCL.

Revenue for 9m Period increased from Wind Power

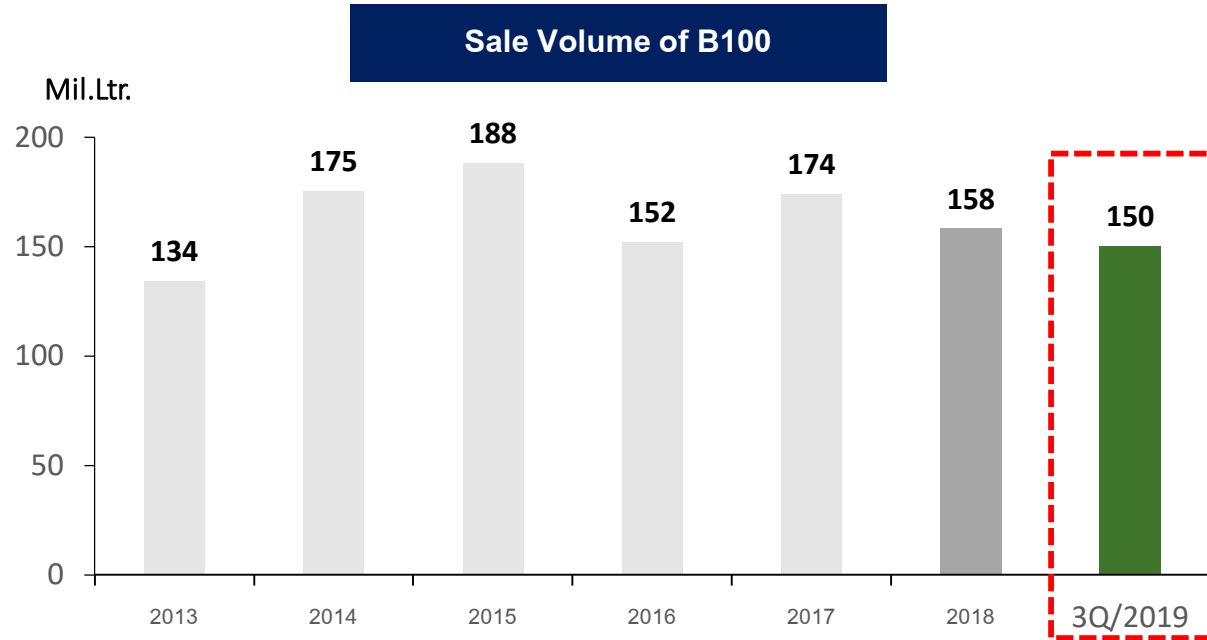
Total Revenue **increased 12%**
 Total Operating Revenue **increased 23%**



Revenue contribution from power business is increasing after completion of 260 MW wind power, Hanuman Project.



Biodiesel Production



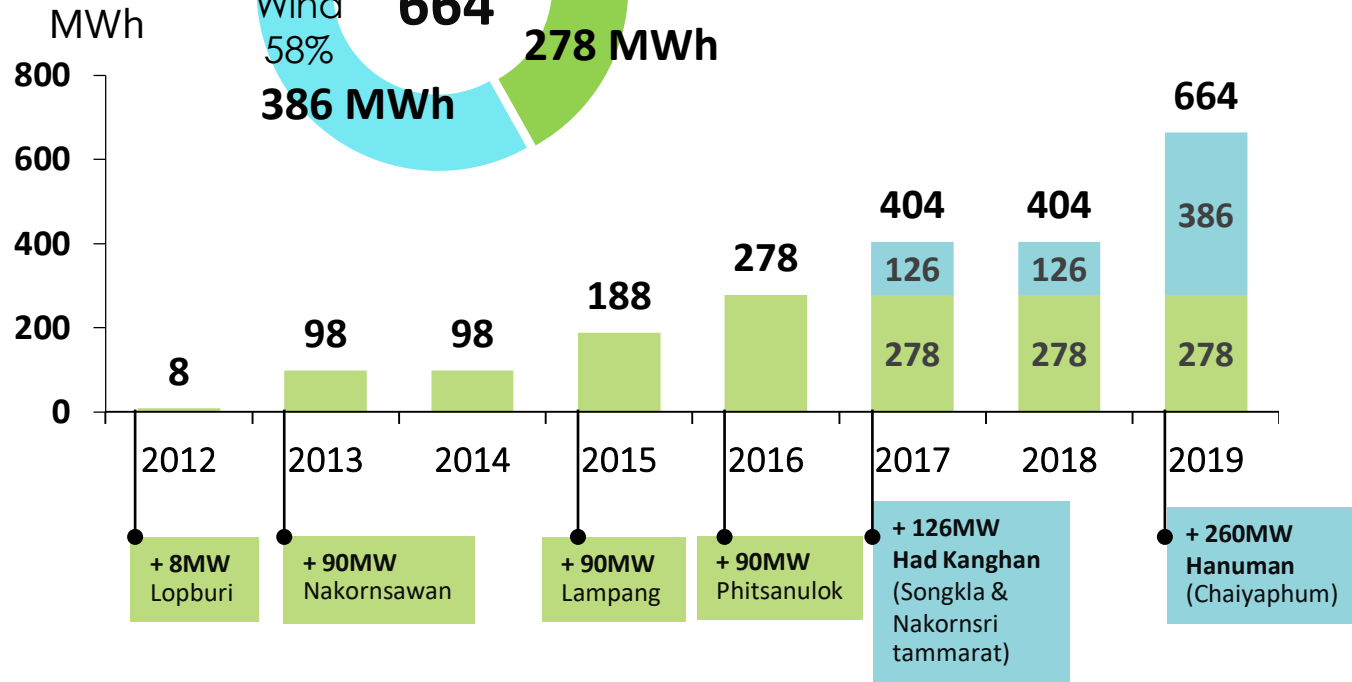
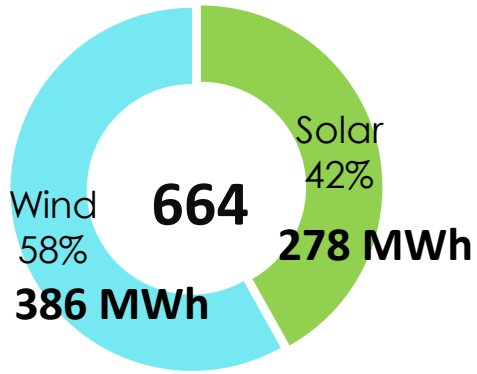
Location	Kabinburi Industrial Estate, Prachinburi under BOI promotion & privileges
Plant Capacity	<ul style="list-style-type: none"> Biodiesel 800,000 Liters per day Pilot production of green diesel/PCM 1 Ton per day Refined Glycerin 80 Tons per day (by product)

- B100 volume in 3Q/2019 = 150 mil.liters increased 25.80% as compared to the same period of last year but the revenue slightly increased. Because of lower of selling price by 19.34% due to oversupply of palm product in the market.
- Glycerin volume in 3Q/2019 = 10 mil.kg. increased 18.01% from expanding domestic customer base.

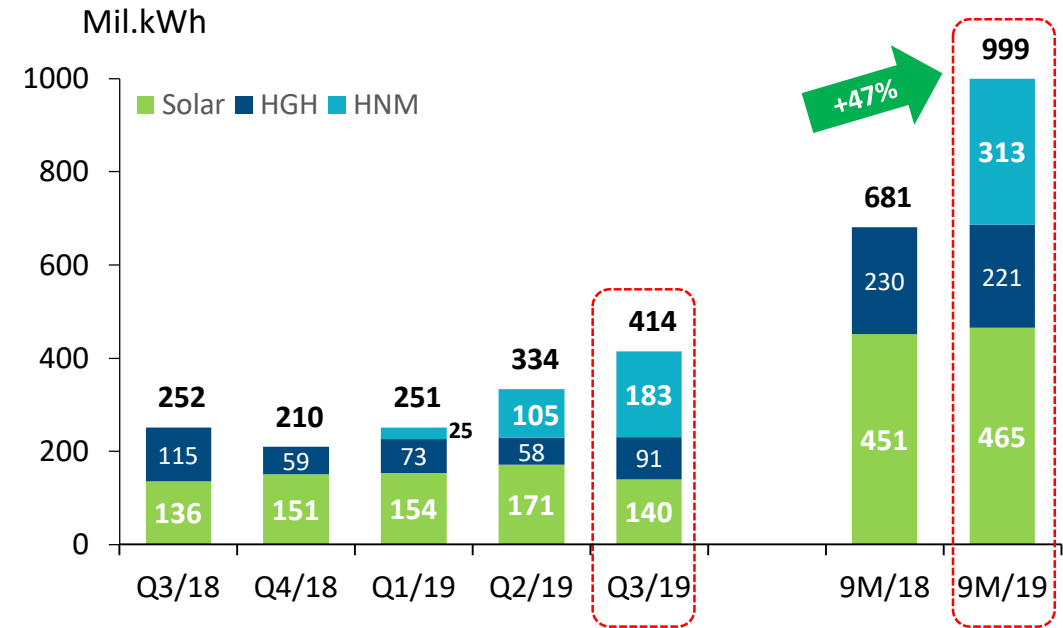


Renewable Energy Production

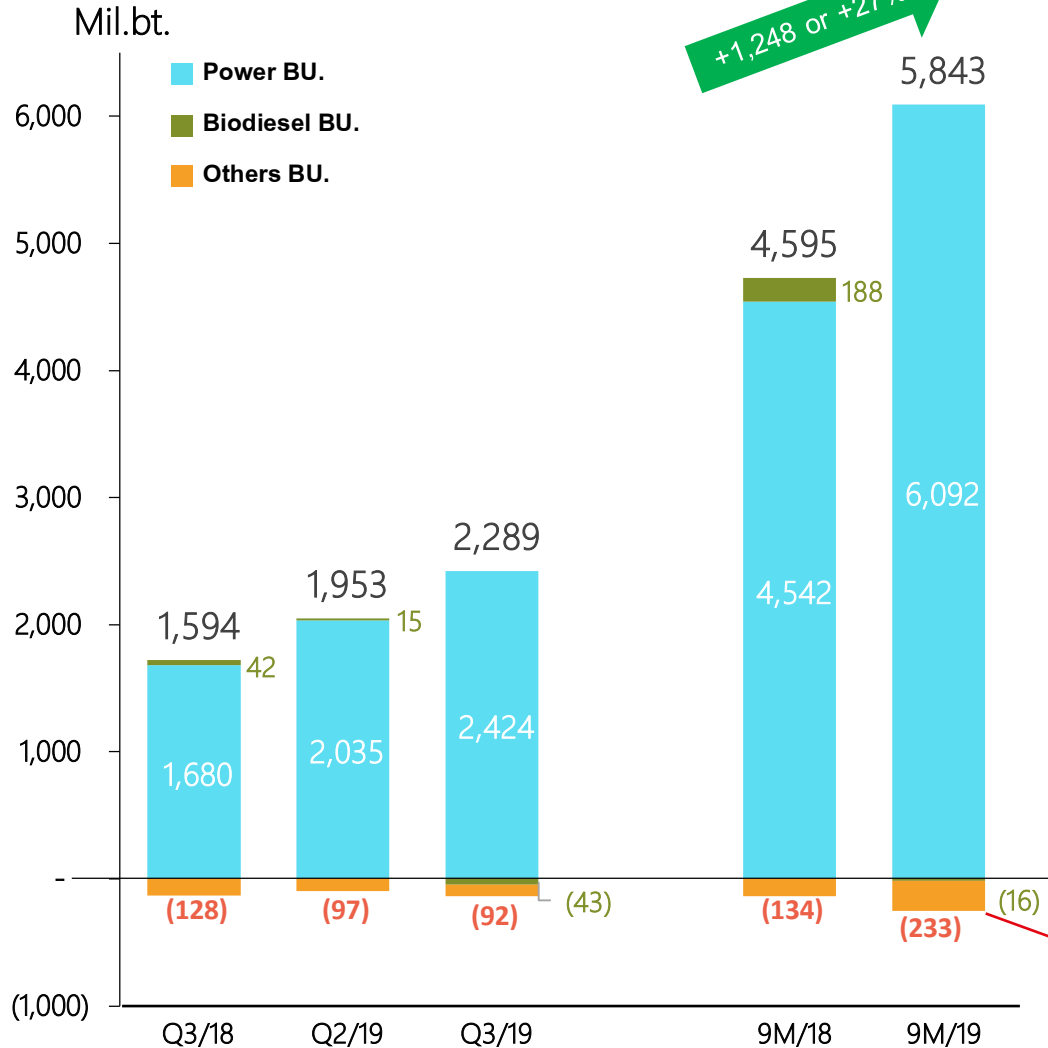
Total Capacity



Output Production



Gross Profit for Q3 & 9M of 2019

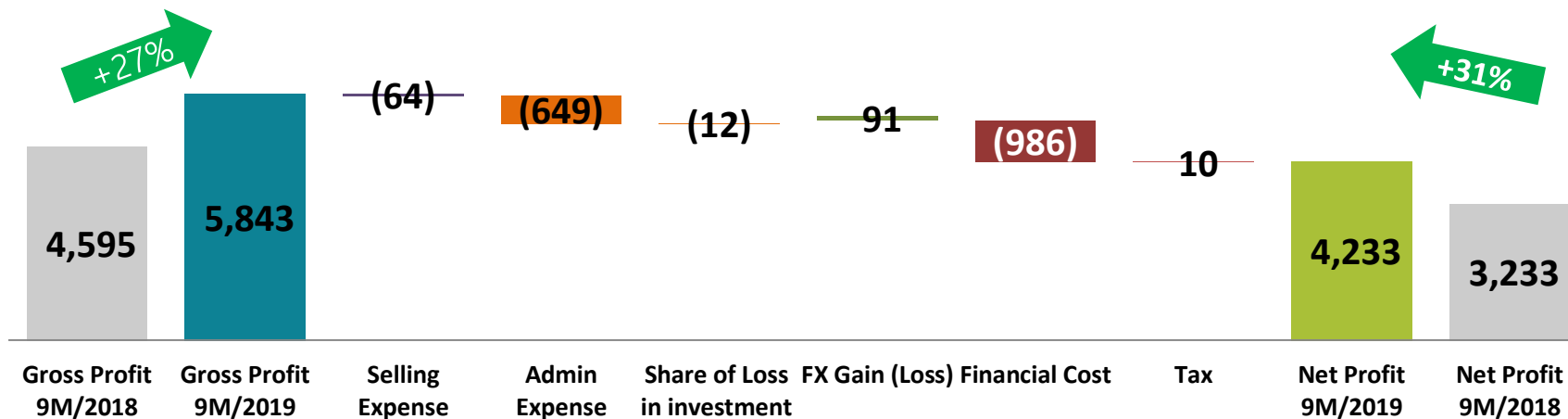


Gross Profit Margin	9M/2018	9M/2019
Biodiesel Business	7%	-0.6%
<ul style="list-style-type: none"> Decreasing form Glycerin price 36% while COGS is no changing. Discount form CPO price was decreased. 		
Power Business		
<i>Solar</i>	81%	83%
<i>Wind</i>	53%	53%
<ul style="list-style-type: none"> Revenue of power business was increasing. Resulting to revenue recognition form Hanuman wind farms gradually adding up in 1st quarter and fully resulting to revenue recognition since 2nd quarter. 		
Total GPM	52%	54%

Total Expense & Net Profit for Q3 & 9M of 2019

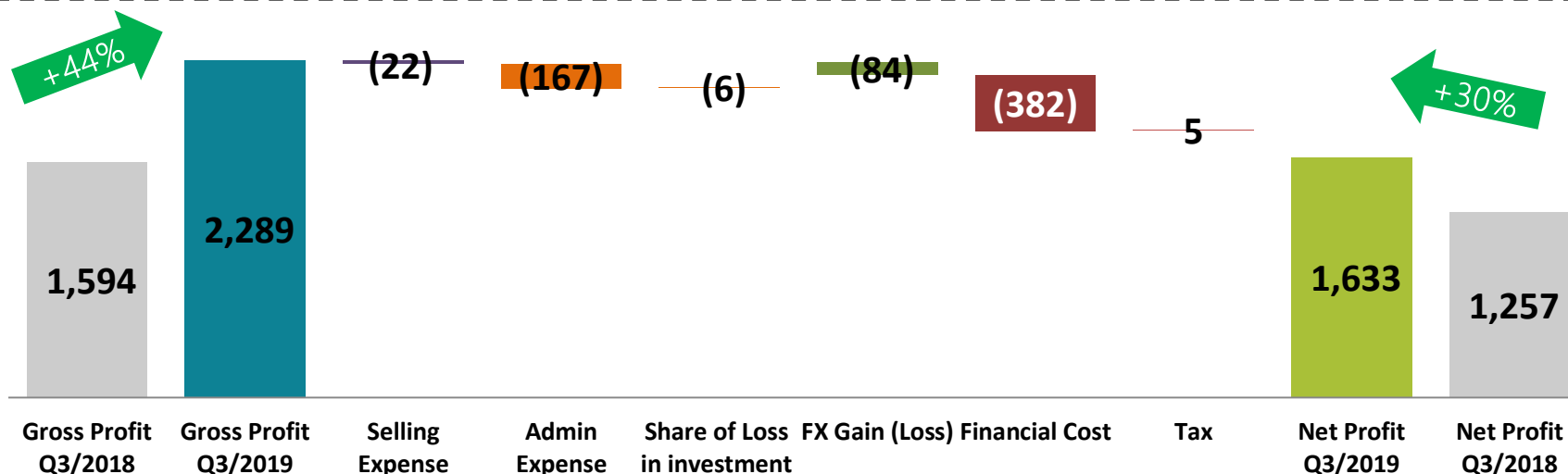
YoY

(Mil.Bt)



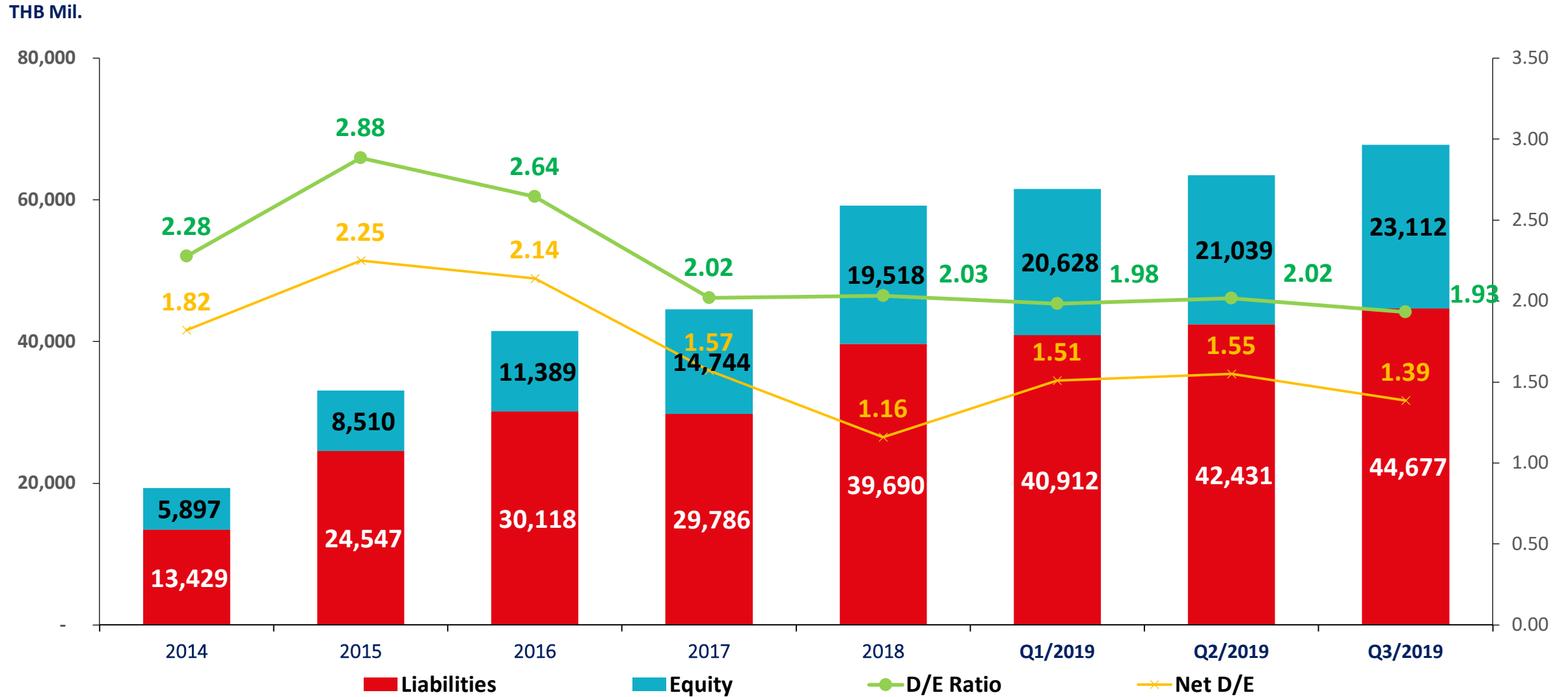
QoQ

(Mil.Bt)



- **Administrative expenses:** for 9M/2019, were Baht 649 mil., increased by Baht 43.04 mil. From the personnel expense with new hiring of employee and executive following to the business expansion plan and PR & Advertising expense due to several programs to promote new businesses, EV charging station and Electrical Vehicle, following to EA's strategic plan.
- **Financial Cost:** increased by Baht 116.00 million. This is mainly due to long term loan from financial institutions for payment of some part of supplier credits for Hanuman wind power plants project.
- **FX Gain:** Due to buying Forward for payment of supplier credits for Hanuman wind power plants project Baht 91 mil.

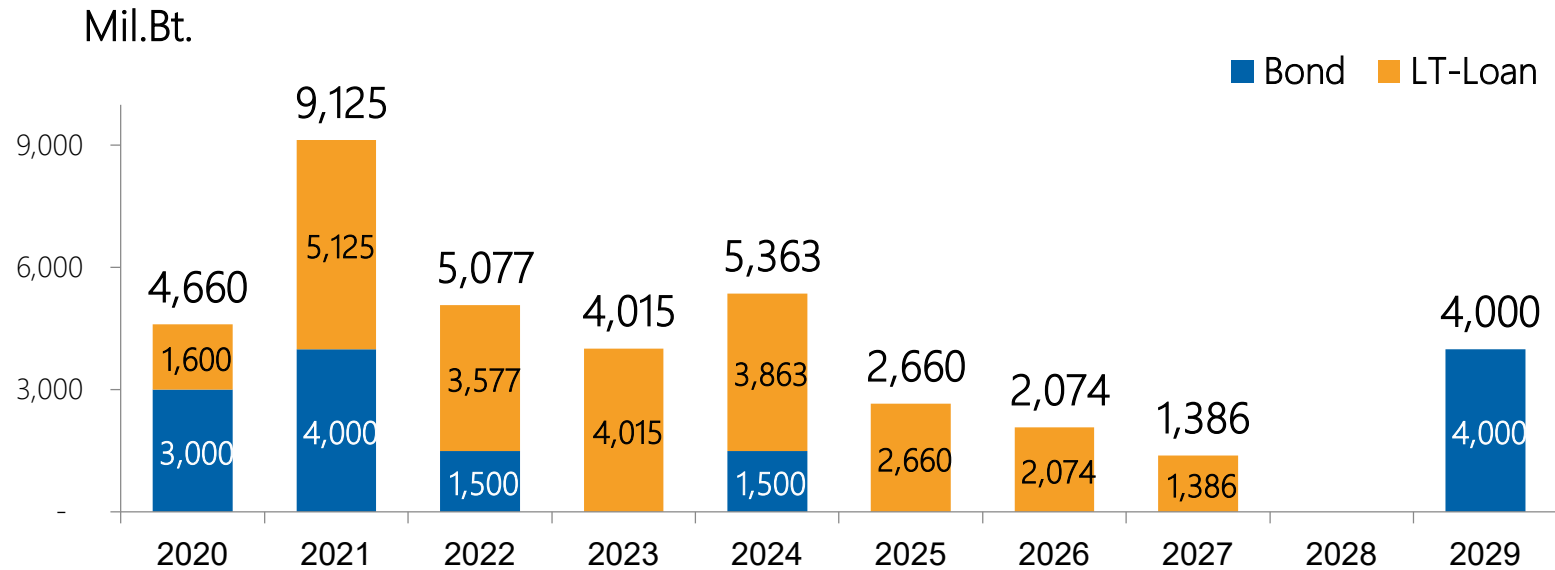
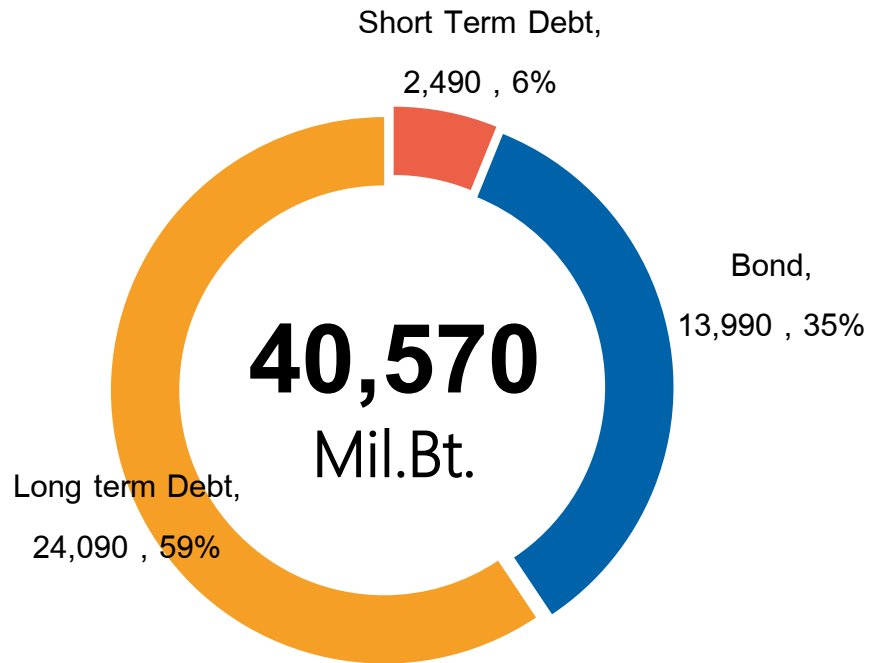
Total Liability, Equity, D/E Ratio and Net D/E Ratio



Financial Cost for Q3 & 9M of 2019



Total Debt



Interest Rate

Short Term Debt: 1.92 – 3.55%

P/N: 2.1 – 2.17%

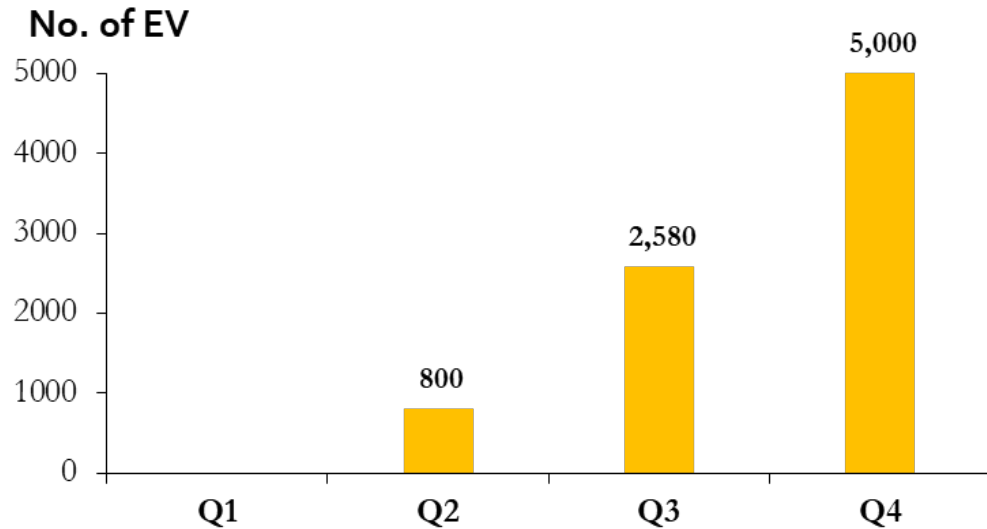
Long Term Debt: 3 - 4%

Bond: 2.22 – 3.61%

On 16th October 2019, EA issued THB 3 billion 7-year bond to ADB with 2.744% interest and was certified by CBI to be green bond.

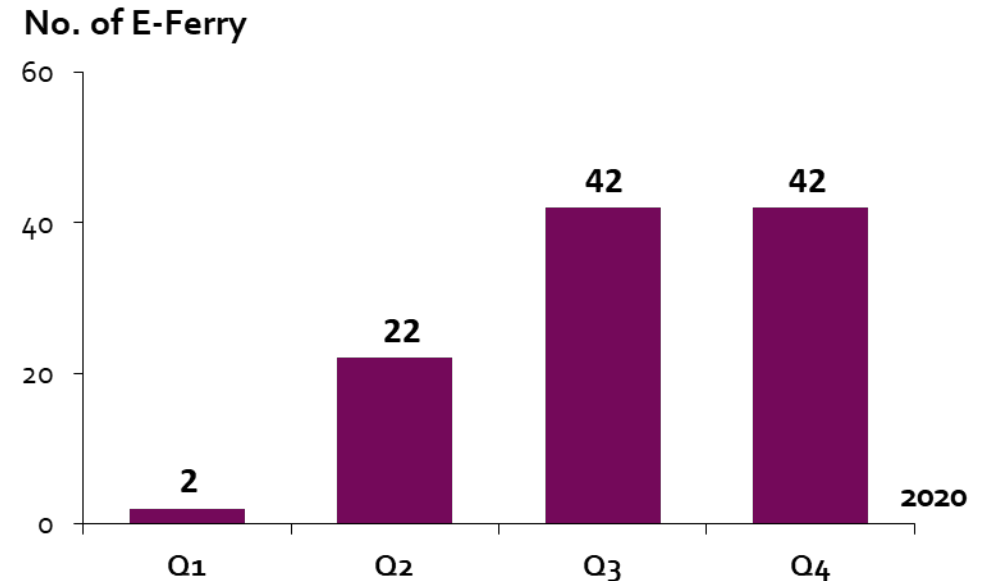
Our Target in Y2020

EV



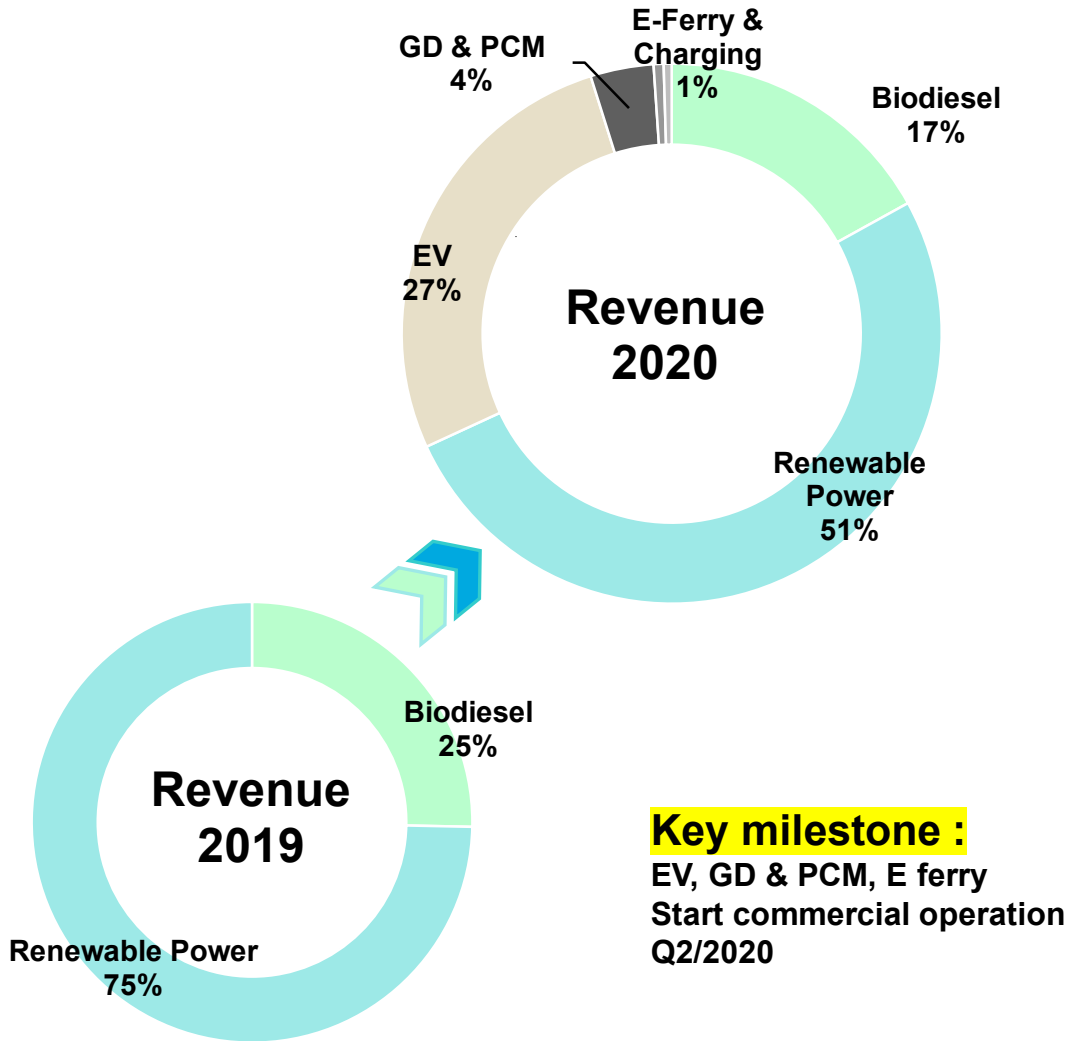
EV production is going to start in Q2 and ramp up to complete delivery of 5,000 units by 2020.

E-FERRY

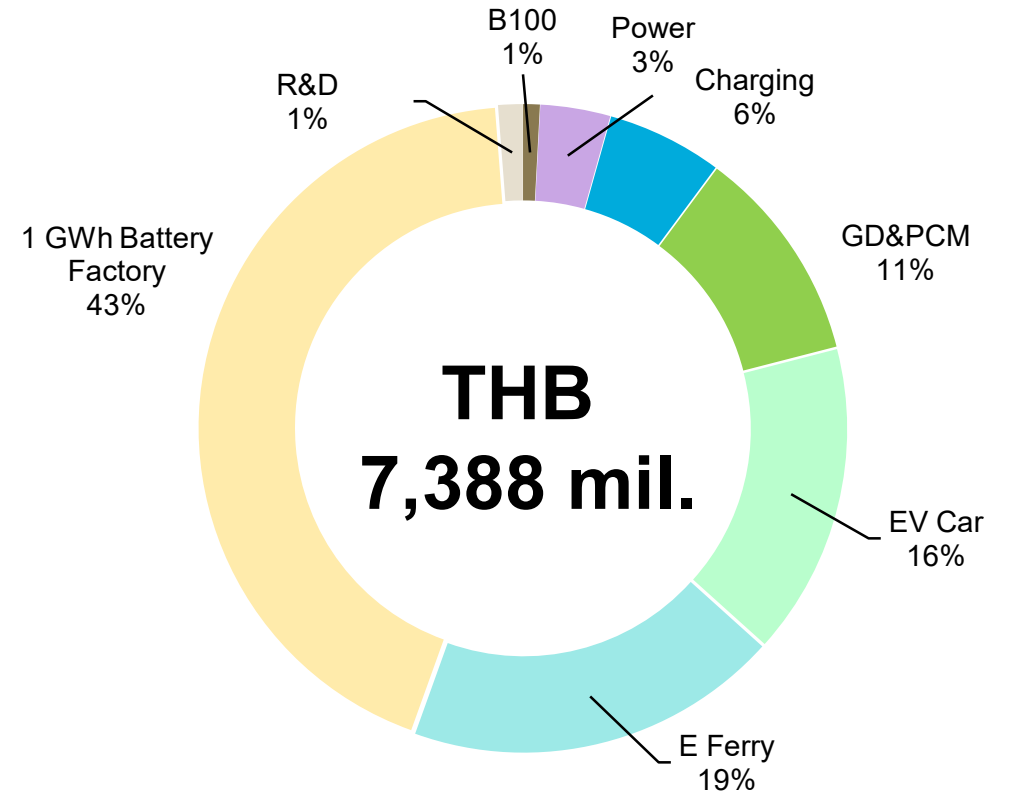


The two pilot E-Ferries will start operation in Q1/2020, followed by the next 20 units in Q2 and the last 20 units in Q3.

Our Target in Y2020: Revenue +61%



Capital Investment in 2020



Disclaimer

This presentation contains summary information about Energy Absolute Public Company Limited (“EA” or “the Company”) and its subsidiaries as at 30 September 2019 and, unless stated otherwise. The information does not purport to be complete or comprehensive.

This presentation contains forward looking statements that may be identified by use of words such as “anticipates,” “hopes,” “expects,” “estimates,” “intends,” “projects,” “plans”, “predicts,” “projects”, “aims” or other similar expressions that are used to identify such statements. Forward looking statements are based on certain assumptions and expectations of future events. No guarantee nor assurance is made that these assumptions and expectations are accurate or will be realized. Such forward looking statements should be considered with caution, since actual results may differ materially from those expressed or implied by such statements.

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