

B.Grimm Power: Q1'2022 Opportunity Day

27 May 2022



Sustainability Award
Industry Mover 2022

S&P Global

Our strategy is guided by our vision:

Empowering the world compassionately



EMPOWER

- Build human capabilities
- Power industries, businesses and communities



THE WORLD

- Find trusted partners and great opportunities in attractive countries
- Grow our footprint all over the world



COMPASSIONATELY

- Cultivate a culture of mindfulness and compassion among everyone at B.Grimm

That means **empowering great people and partners** to be a force for good
in the **societies and the environment** where we operate.



Who we are

B.Grimm Power today

We are a top-tier energy utility, providing reliable and affordable energy, mainly from natural gas, to today's single-buyer markets and industrial customers in our region.

3,254

Mega Watt

Installed
Capacity

77

% of the operating capacity

Natural Gas
Powered

14.8

Billion Thai Baht

Q1'2022
Revenue

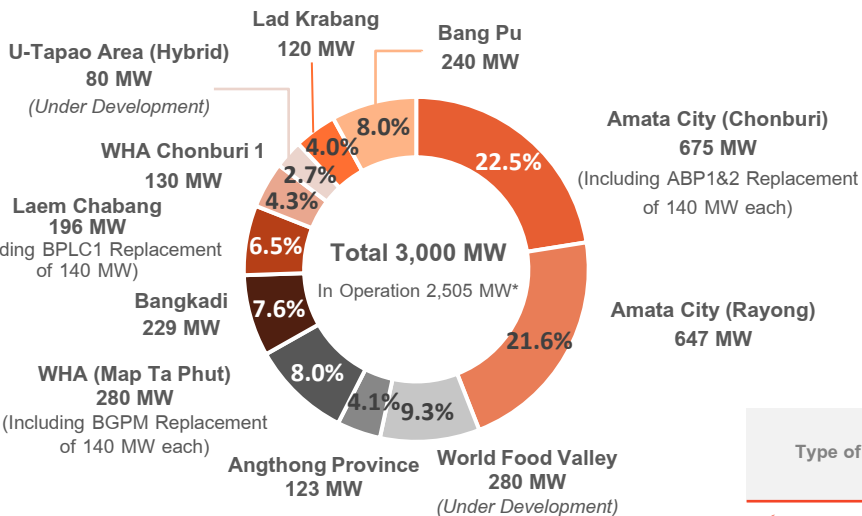
73.5

% of Q1'2022 revenue

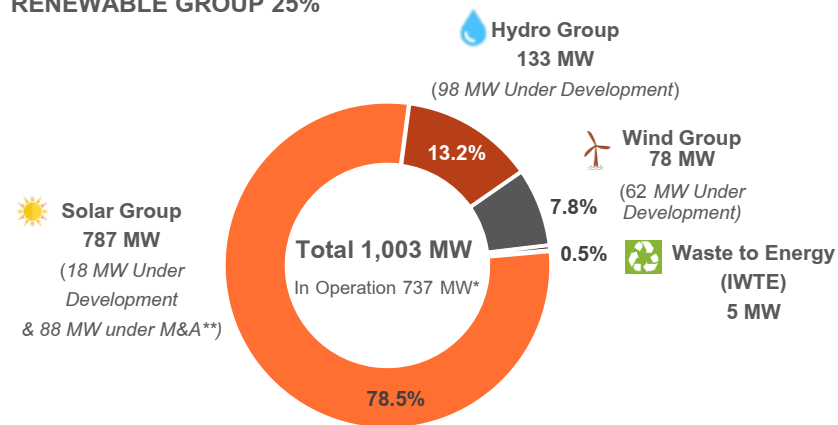
State-Owned
Off-taker

Well-diversified portfolio with expertise in green-field development

GAS – FIRED POWER PLANT (INDUSTRIAL POWER PLANTS) 75%



RENEWABLE GROUP 25%



TRANSMISSION & DISTRIBUTION



Bien Hoa 90 MW
(with 13 MW back up
for power trading)










Poi Pet PPSEZ 14 MW***

SOLAR ROOFTOP



Solar rooftop for industrial
users and commercial
buildings with up to 100 MW
opportunity***

Type of Energy	Installed MW			Equity MW		
	Total Capacity	%	In Operation	Total Capacity	%	In Operation
 Gas fired	2,920 MW	72.7	2,505 MW	1,833 MW	66.9	1,458 MW
 Solar	769 MW	19.1	681 MW	641 MW	23.4	605 MW
 Hydro	133 MW	3.3	35 MW	95 MW	3.5	25 MW
 Hybrid	98 MW	2.4		98 MW	3.6	
 Wind	78 MW	1.9	16 MW	66 MW	2.4	15 MW
 IWTE	5 MW	0.1	5 MW	2 MW	0.1	2 MW
 Backup for power trading	13 MW	0.3	13 MW	4 MW	0.1	4 MW
Total	4,015 MW	100	3,254 MW*	2,738 MW	100	2,110 MW*

*As of May 2022

**The transaction will be completed within 2022

***Transmission & distribution and solar rooftop are not included in total installed capacity

A large white wind turbine dominates the left side of the slide, with its blades extending towards the top left. In the background, another smaller wind turbine is visible on a distant hill. The landscape is a lush green field under a blue sky with scattered white clouds.

Agenda

01 Our Strategy

02 Q1'2022 Highlights

03 Professionalism

04 Compassion

05 Financial Performance

Empowering the world compassionately as a **Utility Solution Provider** with **net zero carbon emission in 2050**

Strategies

Progress

1

Significantly expand **gas and renewable generating capacity**



- Secured 606 MW PPA in 2021 in Poland, Malaysia, South Korea Vietnam and Thailand
- To secure at least 1 GW PPA in 2022
- Target **10 GW PPA Portfolio** in 2030

2

Become a leader in **LNG to Power**



- Signed TUA (Terminal Use Agreement) in Q1'2022
- Target to sign LNG SPA (LNG Sale Purchase Agreement) and pipeline capacity contract in 2022
- To import 0.5 MTPA of LNG in 2023

3

Grow our B2B offerings to **industrial customers**



- To secure captive projects with 50-100 MW capacity as the first phase
- JV between Amata B.Grimm Power and **SCG Cleanergy** to provide rooftop system in the **AMATA industrial estates**.



4

Build a foothold in **commercial and building** segments



- To secure the first project in 2022
- Exploring a number of potential projects under **UVBGP JV**



5

Become a leader in private **transmission & distribution**



- As the largest private T&D network in the region with 9 strategic locations in Thailand, Vietnam and Cambodia, we are adding at least 2 more locations in Vietnam.

6

Maximize Reliability and Viability in **energy trading**



- The pilot project of energy trading at B.Grimm buildings
- Exploring overseas opportunities

7

Become the market leader in **digital transformation**

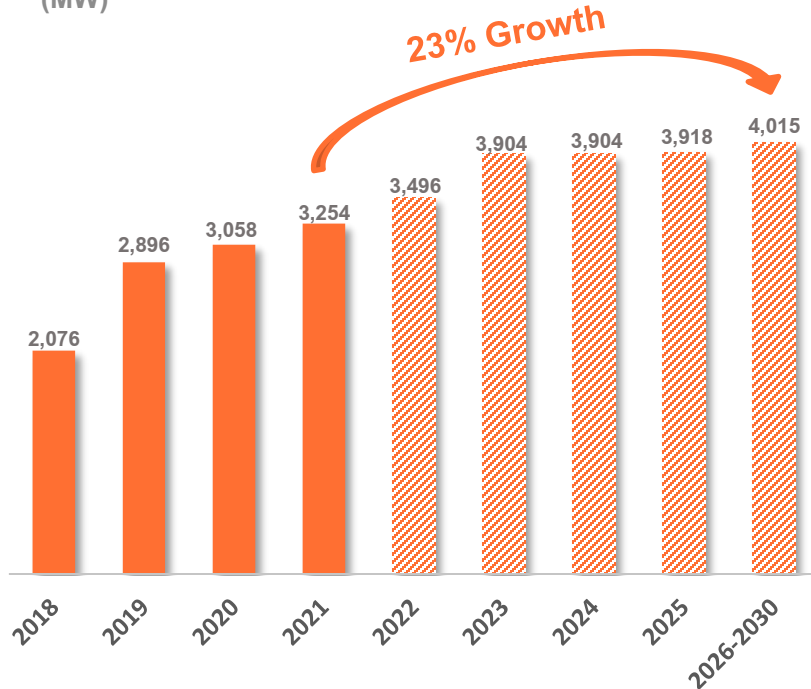


- 76 initiated projects in 2021 to improve agility, efficiency and productivity
- Digital-Twins project collaborations with Siemens and REPCO
- Partnership with GIC/Stamford to transform B.Grimm to be the Innovation Company and Accelerate our New S-Curve business.

Capacity Growth target of 7,200 MW in 2025

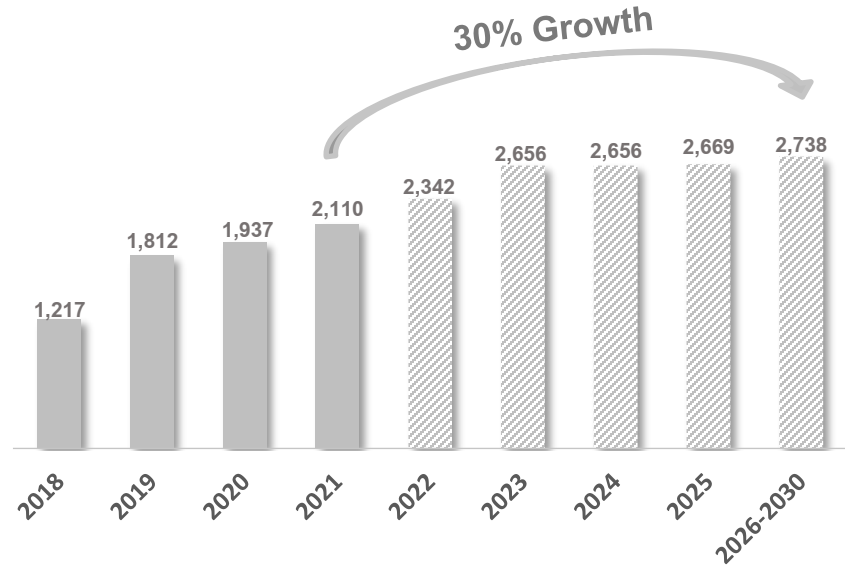
Installed Capacity of Existing PPA

(MW)

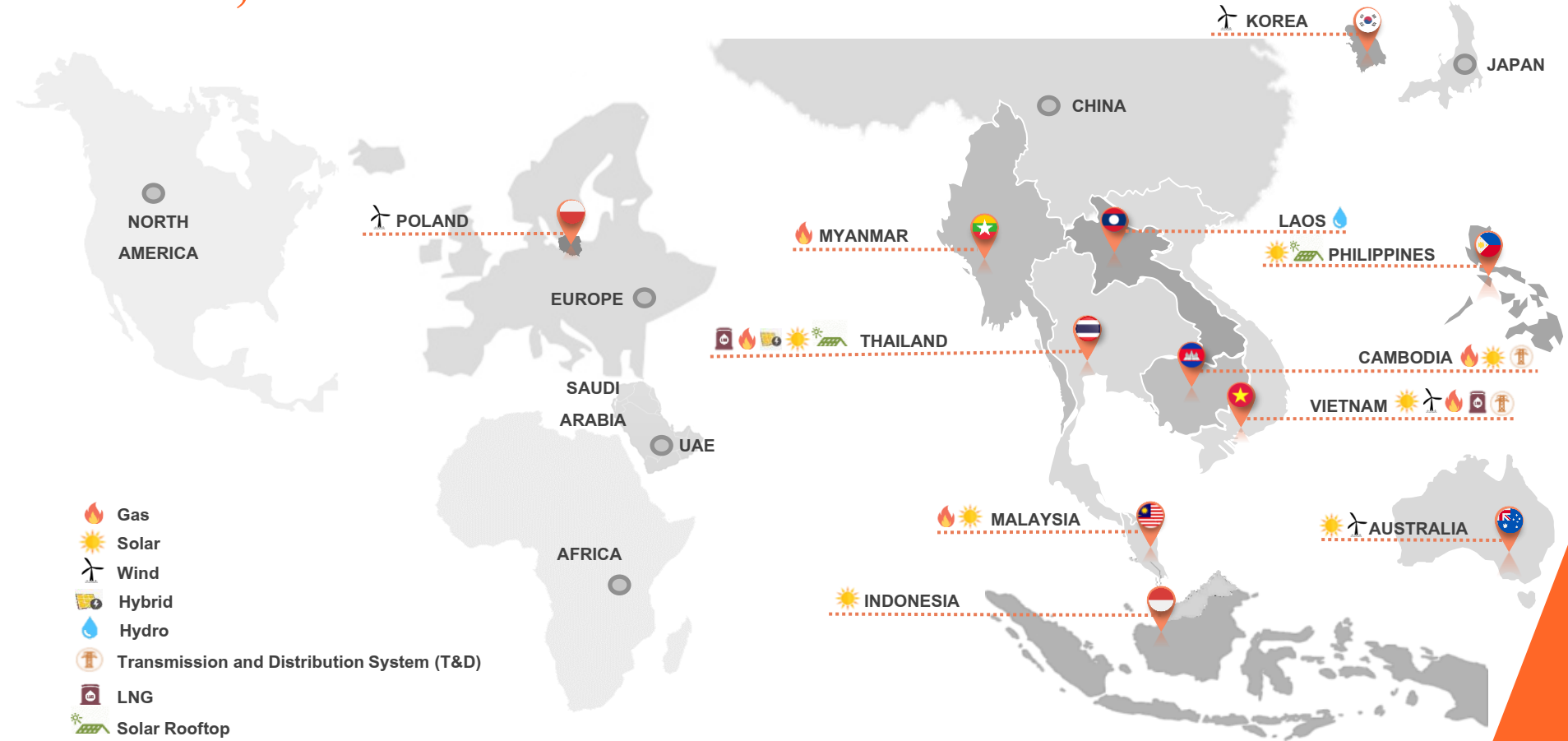


Equity Capacity of Existing PPA

(MW)



.. and **10,000 MW towards 2030**



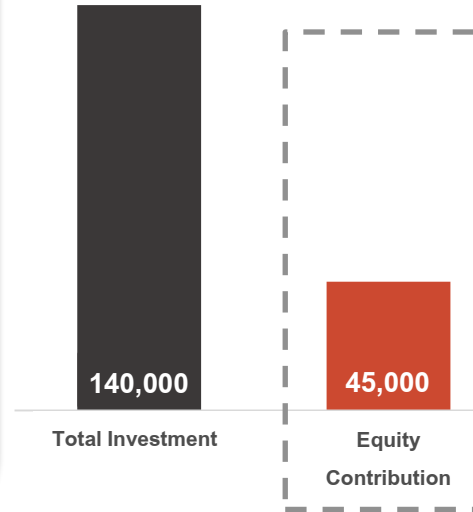
Approval for the extension of **5-year debentures issuance upto THB100bn** of total amount of debentures

5-Year Investment and Financing Plan (2022-2026)

To support new business growth of more than 8,000MW in 2026 (both M&A and green field projects), B.Grimm will require new fund raising of up to THB 30,000 mn which is mixed of debt and equity instruments to retain B.Grimm capital structure in strong position and to maintain the Net Debt to Equity ratio within target at 2.0x.

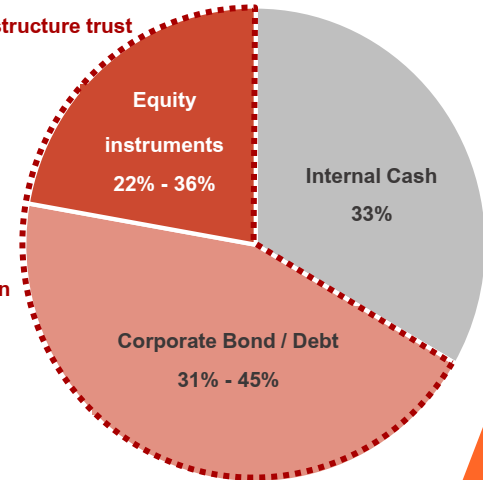


Unit: THB mn



Perpetual bond, Hybrid bond,
Asset monetization,
Vietnam IPO, Infrastructure trust

New Funding
Up to THB 30,000 mn



Total THB 45,000 mn

27 April 2022

We got the approval from shareholders to extend the limit of the amount of debentures issuance within 5 years (2022-2026) to THB 100 bn in order to support business expansion and capturing forthcoming investment opportunities.

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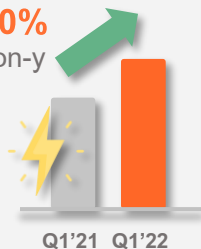
05 Financial Performance

Q1'2022 Highlights

Revenue grew **41.2% y-on-y** in Q1'2022

New-high IU volume of **871 GWh**

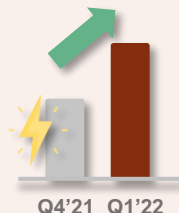
7.0%
y-on-y



23 MW new IUs
in Q1'2022

40.2% q-on-q recovering Vietnam
Solar revenue

47.7% q-on-q increasing
sale volume



Declining curtailment in Vietnam



7.5% y-on-y declining SG&A from expense control



3.5% of financing cost in Q1'2022, declining
from 3.7% in 2021



A gradual increase in Ft charge

16.71 satang/kWh increase in Jan

23.38 satang/kWh increase in May



However, Q1'2022 NNP declined 94.7% y-on-y
mainly from 100.4% rising gas price



Signed TUA (Terminal Use Agreement)

2022

2023



MW

Operating MW to grow by 10-15% (M&A and COD)
To secure at least **1 GW** total PPA
New IU clients with total PPA at least 55 MW

Continue growing PPA portfolio to **7.2 GW** by 2025
Utilities solutions for customers



Gas/LNG

Expected SPP gas per unit of
THB 400-450/MMBTU

To import **0.5 MTPA LNG** from early-2023
(expected 7-10% gas cost saving for IU portion)



Expense control

5 SPP replacements (SCOD in Jul-Dec 2022) to save gas per unit by 15%
Efficiency improvement of BPWHA and ABP4 to save gas cost by THB 20-25 million per annum
Expense control to save > **THB 100 million** per annum
Digital Twins implementation to save maintenance cost in long term



Digital & Innovation

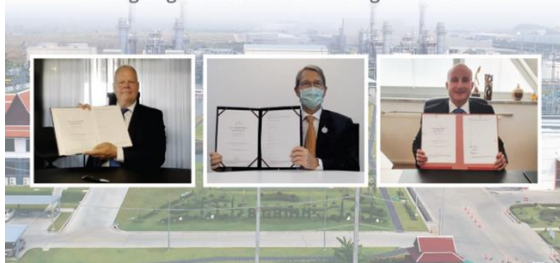


Collaboration for the future readiness

Collaboration with **Siemens Energy** to develop **the Digital Performance Twin**



Signing of the Collaboration Agreement



To collaborate and introduce solutions to improve the availability and efficiency of the turbines and develop digital services to support the measurement and analytics required to ensure continuous improvements in turbine and power plant operations.

Pilot Project at: ABP3, ABP4 and ABP5

Project Period: Jan - Jul 2022

Key focus areas

1

Efficiency

- Improve overall fleet operational efficiency
- Reduce gas-turbine degradation

2

Availability

- Reduce planned outage duration
- Improve reliability through reduction of unforeseen failures

3

Digitalization

- Monitor the condition and performance of the plant
- Create transparency & provide critical insights

Future Ready for Innovation Company



Diagnosis Organization
to innovation company



People Transformation



Internal Infrastructure
development



**Foundation
for Innovation
Company**



Strategic move
for innovation



New organization structure /
New company spin off



Portfolio Management
(Core, Adjacent, New)

**Business
Transformation**



Create Innovation
Environment and ecosystem



Activities to
support the ecosystem

**Ecosystem
Creation**



**New Growth
Model**



Venture Capital



Strategic Partnership
with Startup



Sandbox for
B.Grimm initiative
strategic move



Pioneering for Innovation



Collaboration with **True Group** to develop **the Digital Innovation for Energy Industries**



B.GRIMM
SINCE 1878



true

together

Smart Energy

Development of Digital Infrastructure



Data Center

Infrastructure development
and energy management solutions

Smart Grid

5G Technology Innovation Project
Development



Tech Startup

Developing a new economic ecosystem
and promoting start-ups in Thailand



A large white wind turbine stands in a green field under a blue sky with clouds. The turbine's blades are visible, and the nacelle has the B.GRIMM logo. In the background, other turbines and rolling hills are visible.








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SPP Portfolio

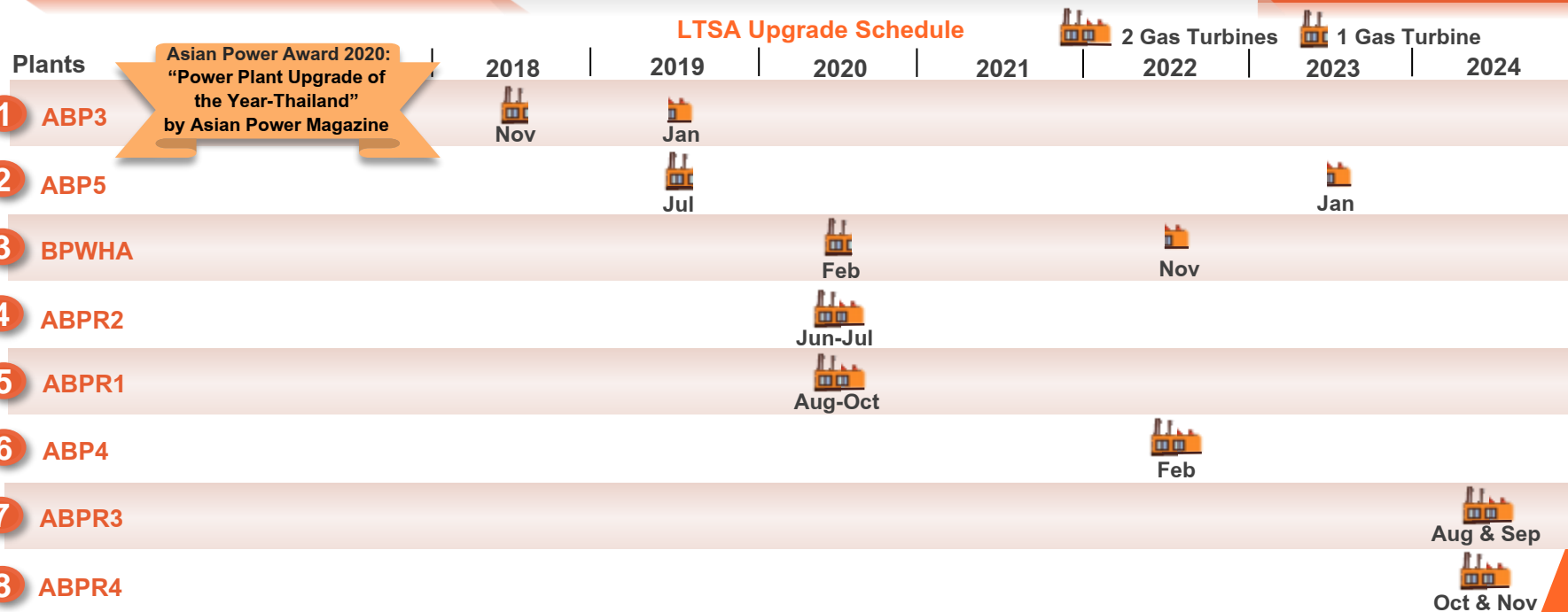
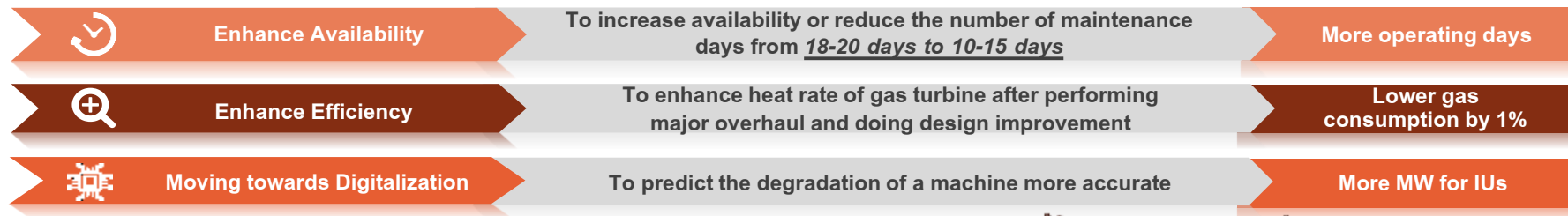
21 In Operation

2 Under Construction

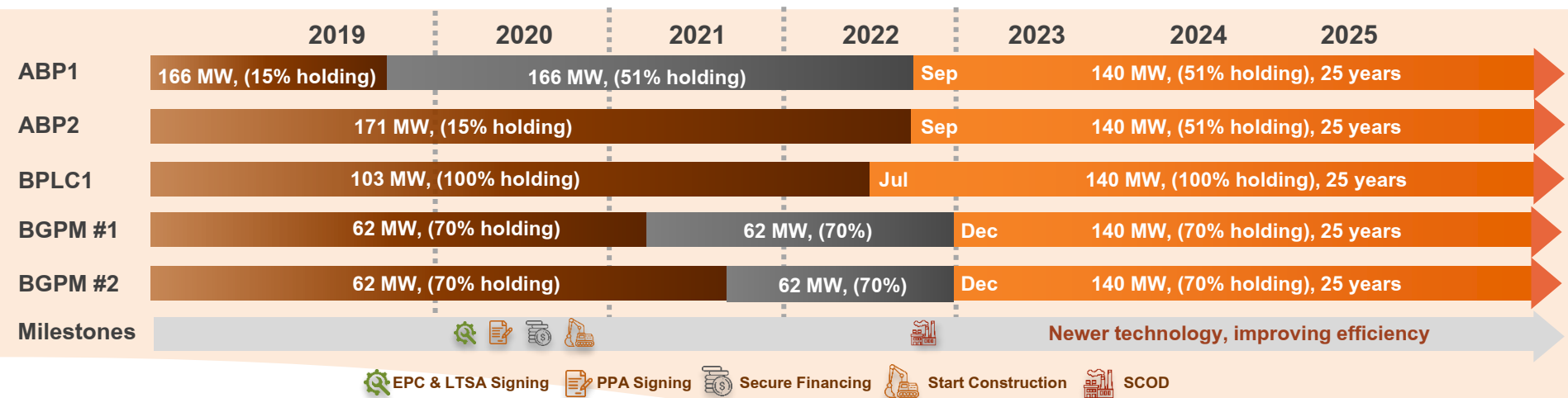
8 with Gas-Turbine Upgrades (2019-2024)	5 Replacement (SCOD in 2022)	BGPAT2, BGPAT3 (SCOD in 2023)
 Maintenance period	 New Technology	 New Technology
 Gas consumption by 1%	 MW increase by 135 MW	 MW increase by 280 MW
 7 MW / plant available for IU	 Gas consumption by ~15%	 Food and beverage customer's base
	 Wastewater treatment capacity to reduce freshwater consumption	
 LNG import for fuel-cost management		

Enhancing performance of operating projects

Benefits from the LTSA with Siemens



SPP extension and replacement scheme



Key consideration	Existing	Extension*	Replacement
EGAT PPA period (years)	21-25	1-3	25
EGAT contract capacity (MW)	Up to 90	Up to 60	30
EGAT Tariff	Capacity Payment + Energy Payment	Energy Payment	Capacity Payment + Energy Payment
IU Tariff	Benchmark with PEA	Benchmark with PEA	Benchmark with PEA
Contracted heat rate with EGAT (BTU/KWh)	8,600	8,282	7,409
BGRIM's power plants applied with this scheme	ABP1, ABP2, BPLC1, BGPM (2 plants)	ABP1, BGPM (2 plants)	ABP1, ABP2, BPLC1, BGPM (2 plants)

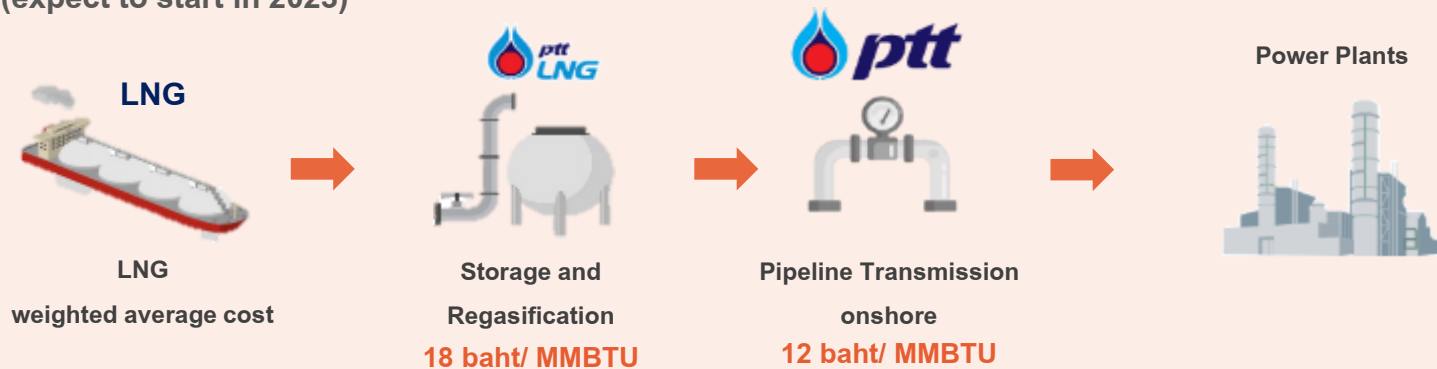
*For PPAs expired in 2019 - 2021

Increase flexibility in gas management with diverse sources

SPP gas from PTT



LNG import (expect to start in 2023)



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Sustainability recognitions

**Sustainability Award
Industry Mover 2022**
S&P Global

**S&P Global Sustainability Yearbook
and Industry Mover**
by S&P Global



MSCI ESG Rating: A



FTSE4Good

FTSE4GOOD Emerging Index
FTSE4GOOD ASEAN 5 Index



Thailand Sustainability Investment
by SET
4 consecutive years (2018-2021)



ESG 100 company
by Thaipat Institute
4 consecutive years (2018-2021)



Thai CAC certified
by Thailand's Private Sector Collective
Action
2 consecutive terms



CGR Score: EXCELLENT
by Thai Institute of Directors Association
2 consecutive years (2020-2021)



2020 The first green loan certified by
Climate Bond Initiative in CLMVT

Sustainability highlights

Economics & Governance

Operational Excellence

- Availability Factor **96.7%**
- Use AI in Health Monitoring Project



Digital Transformation

- Collaborate with Siemens and REPCO to implement cutting-edge digital twins of our power plants
- **76** initiated projects in 2021 to improve agility, efficiency and productivity



Corporate Governance

- Female director **50%**
- Independent director **60%**
- **ZERO** case of corruption and non-compliance



Environment

Commit to Net-Zero Carbon Emissions by 2050

- GHG intensity declined by **7%** in 2018-2021



>82% of water consumption came from mixed wastewater



5.7% reduction in net water consumption

Commit to Net Positive Impact (NPI) on Biodiversity

- Collaborates with WWF-Thailand supporting the Tiger Conservation Program at Mae Wong and Khlong Lan National Parks
- **100%** of power plants assessed for potential biodiversity impact (47 plants in operations in 2021).
- Conduct the **Biodiversity Action Plan (BAP)** and disclose the Biodiversity and Ornithology Assessment Report in **every 3 years** for 3 Operational located in or adjacent to the protected or high biodiversity wilderness areas



Sustainable Cultivation Centre at Xenamnoy and Xekatam Hydro power plant, Laos

Social



ZERO Fatalities for employees and contractors

- **77%** Employee engagement
- **0.91x to 1.21x** average female to male salary and other cash incentives ranged by employee level

- Announced **Human Rights Policy & Non-discrimination and anti-harassment commitment** in 2021
- Perform **Human Rights Risks Assessment and mitigation** covering 100% of operating sites and tier 1 suppliers



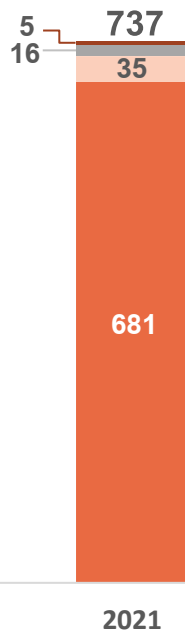
11-year continued supports to build more **STEMS professionals** in Thailand

- **232 schools** joining **Little scientist house program** under B.Grimm network (of total 29,120 schools joining the whole program)
- **118 students** joining the **Dual Vocational Education Programs** to be equipped with practical skills in electrical engineering during 2011 to 2021

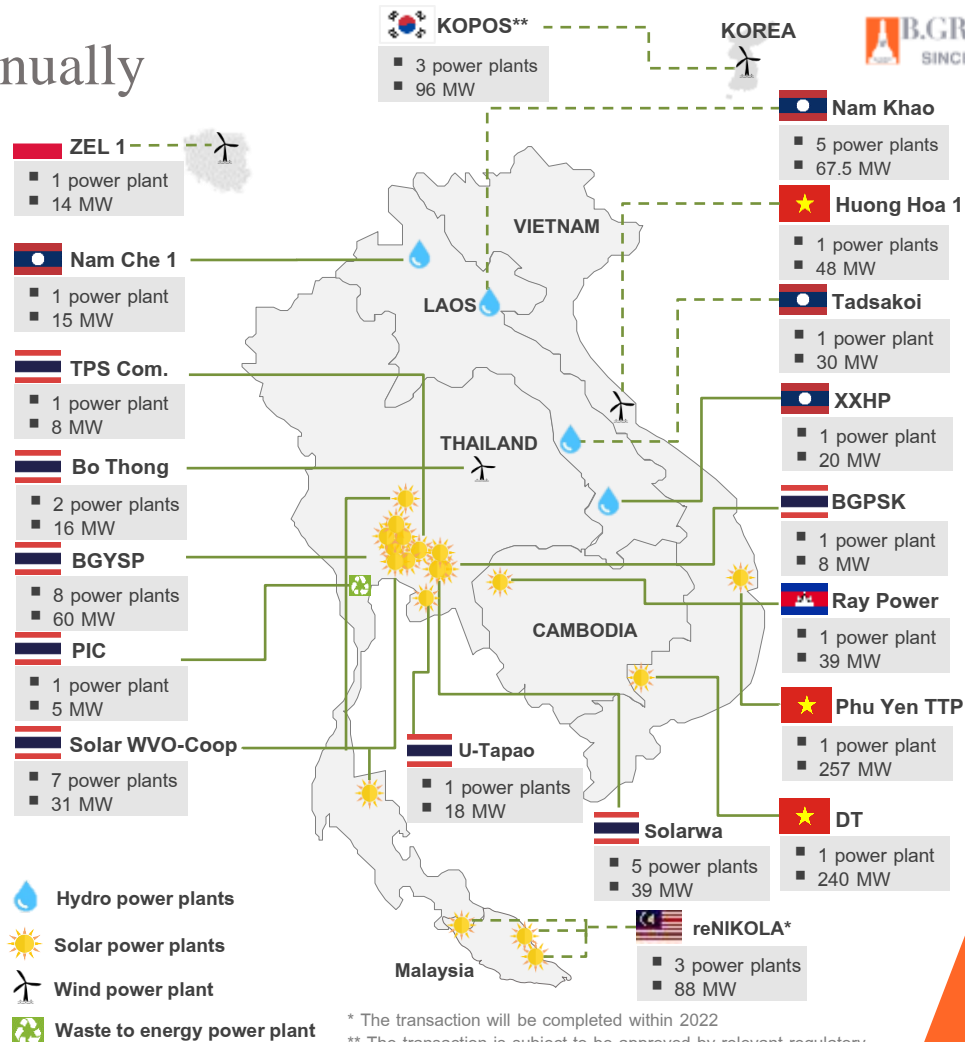


Expanding renewable power continually

■ Solar
 ■ Hydro
 ■ Wind
 ■ iWTE



— In operation
- - - Under Development



* The transaction will be completed within 2022

** The transaction is subject to be approved by relevant regulatory authorities of Republic of Korea

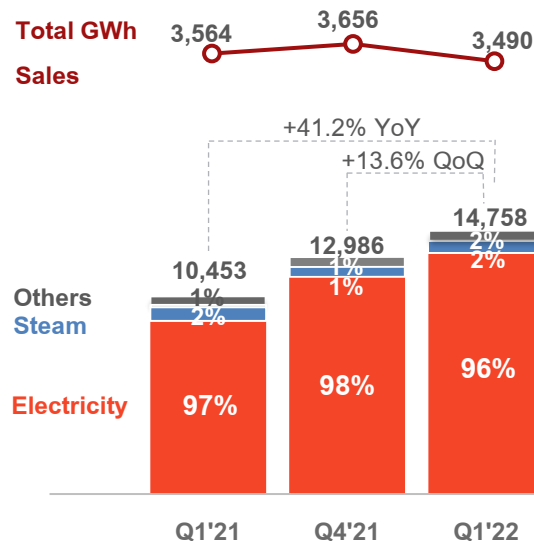
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Steady cashflow from strong top line and EBITDA

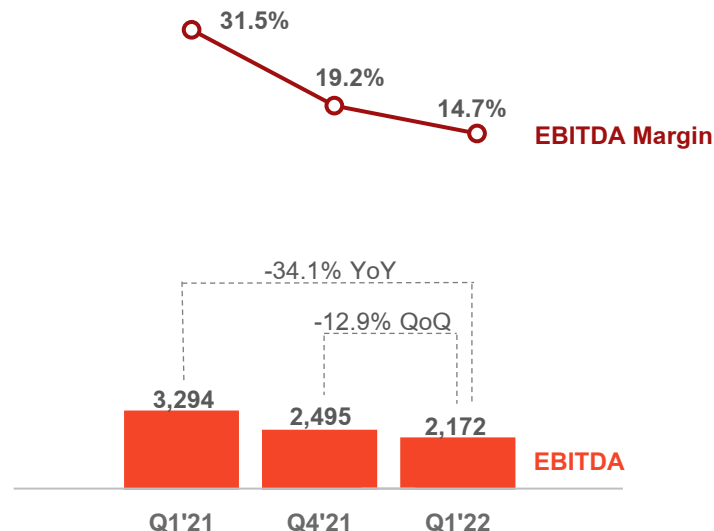
TOTAL REVENUES (Unit: THB mn)



Revenue grew strongly with total sales volume 3,490 GWh

- Total revenue rose 41.2% y-on-y in Q1'2022 to THB 14,758 million, mainly from
 - 7.0% growing IU electricity volume from both existing clients and 23 MW new clients
 - Growths from solar and wind projects in Thailand and hydro projects in Laos.
 - Increasing SPP tariff
- Total volume declined from SPP maintenance and load management.

EBITDA AND EBITDA MARGIN (Unit: THB mn)



Softening EBITDA in Q1'2022

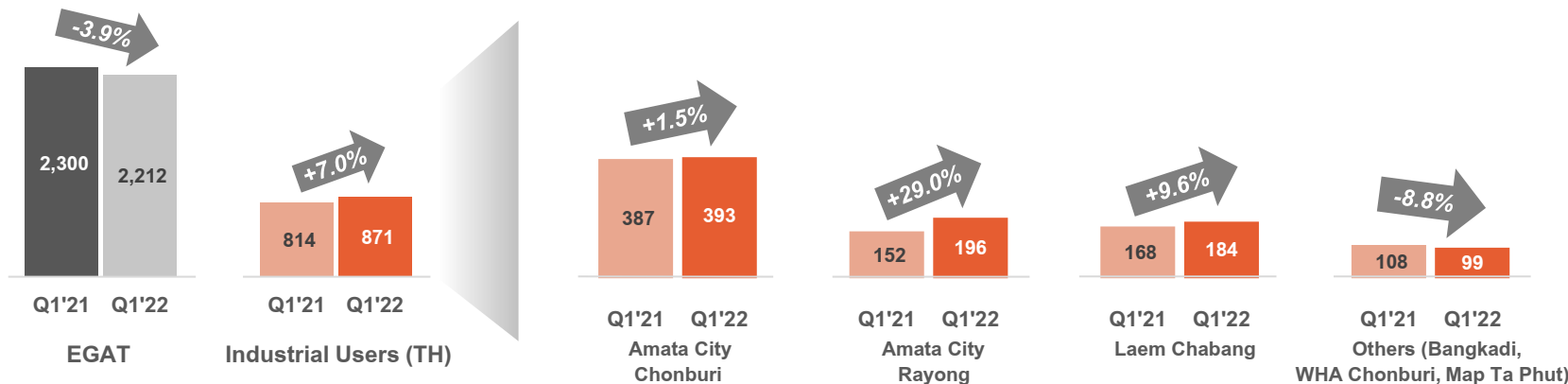
- EBITDA declined 34.1% y-on-y in Q1'2022 to THB 2,172 million due to a sharp increase in gas price by 100.4% to 442 THB/MMBTU in Q1'2022 but a lag time in Ft adjustments despite 7.5% decline in SG&A from expense control
- EBITDA margin declined to 14.7% in Q1'2022.

Strong top line (YoY)

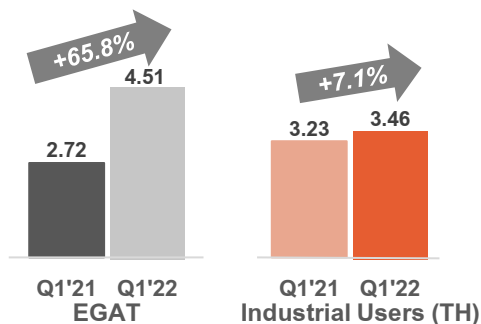
Electricity Sales Volume Decreased YoY for EGAT and Increased for IU (Q1'2021 vs Q1'2022)

KEY DRIVERS: ELECTRICITY AND NATURAL GAS VOLUME AND PRICE YoY

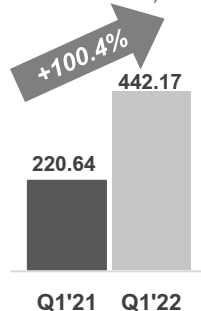
ELECTRICITY SALES VOLUME YoY (Unit: GWh) SALES VOLUME FOR EACH INDUSTRIAL USER (TH) YoY (Unit: GWh)



ELECTRICITY SELLING PRICE YoY
(Unit: THB/kWh)



EFFECTIVE GAS COST
(Unit: THB/MMBTU)



EGAT

- EGAT sales volume declined 3.9% y-on-y from scheduled maintenance of ABP3 and the load management of BGPM1&2 for profit optimisation during PPA extension period.
- Electricity price sales to EGAT increased 65.8% y-on-y because of the 100.4% upsurge in natural gas price in the same period of last year.

IU Thailand

- IU Thailand sales volume increased 7.0% y-on-y due to synchronisation from new clients with total PPA of 23 MW in Q1'2022 and high electricity demand from key sectors especially electronic, auto-parts, home appliances and tires.
- Electricity price sales to industry users Thailand increased 7.1% y-on-y which is in line with Ft charge announced by the ERC.

Strong top line (QoQ)

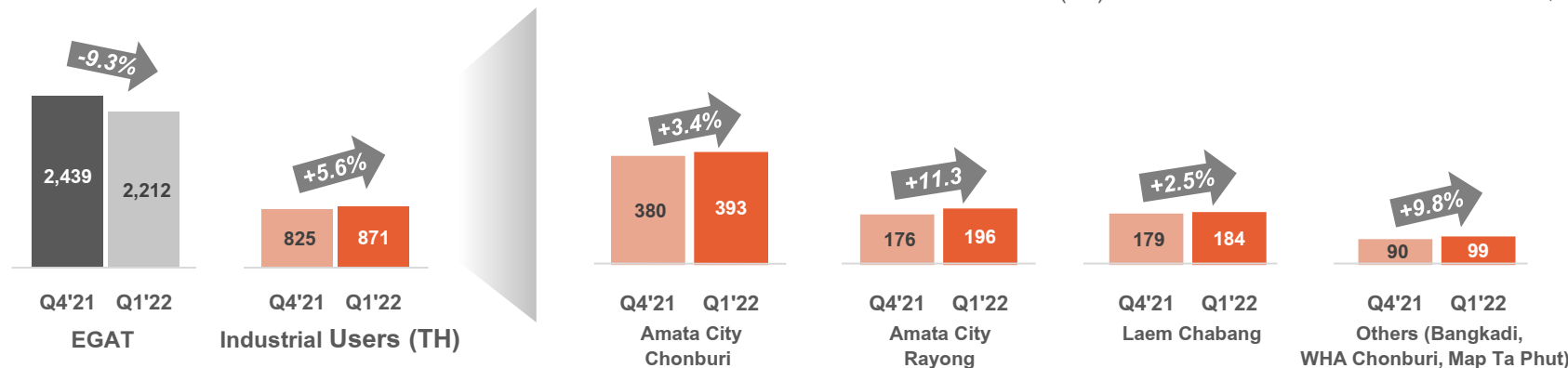
Electricity Sales Volume Decreased QoQ for EGAT and Increased for IU (Q4'2021 vs Q1'2022)

KEY DRIVERS: ELECTRICITY AND NATURAL GAS VOLUME AND PRICE QoQ

ELECTRICITY SALES VOLUME QoQ (Unit: GWh)

SALES VOLUME FOR EACH INDUSTRIAL USER (TH) QoQ

(Unit: GWh)



ELECTRICITY SELLING PRICE QoQ (Unit: THB/kWh)

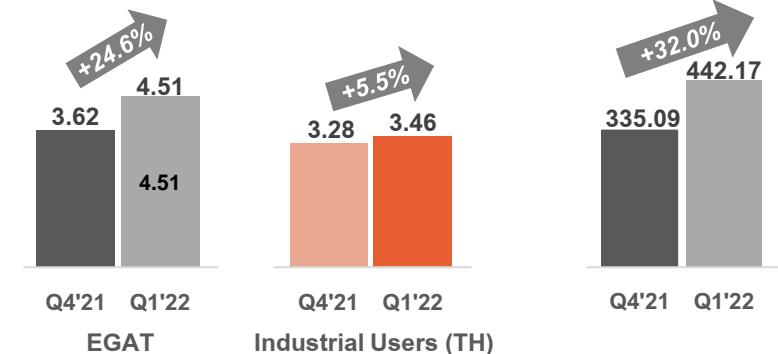
EFFECTIVE GAS COST
(Unit: THB/MMBTU)

EGAT

- **EGAT sales volume decreased 9.3% q-on-q** primarily due to scheduled maintenance of ABP3 and the load management of BGPM1&2 for profit optimisation during PPA extension period.
- **Electricity price sales to EGAT increased 24.6% q-on-q** because the energy payment is generally adjusted to reflect changes in natural gas price which increased in Q1'2022.

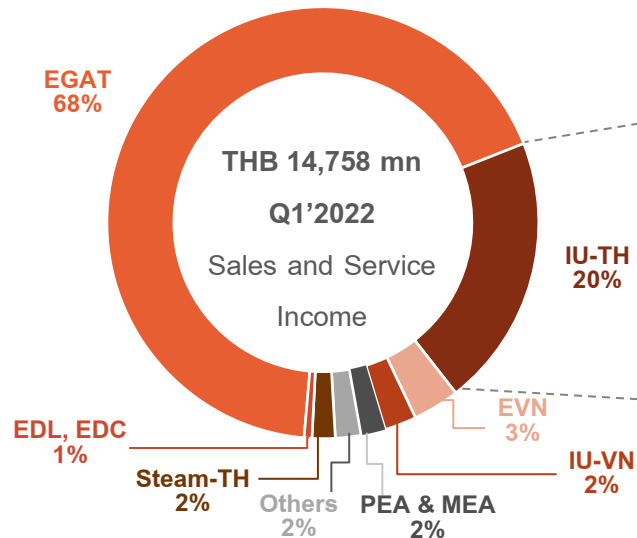
IU Thailand

- **IU Thailand sales volume increased 5.6% q-on-q** primarily due to to synchronisation from new clients with total PPA of 23 MW in Q1'2022 and high electricity demand from key sectors especially electronic, home appliances and metal.
- **Electricity price sales to industry users Thailand increased 5.5% q-on-q** which is in line with Ft charge announced by the ERC.

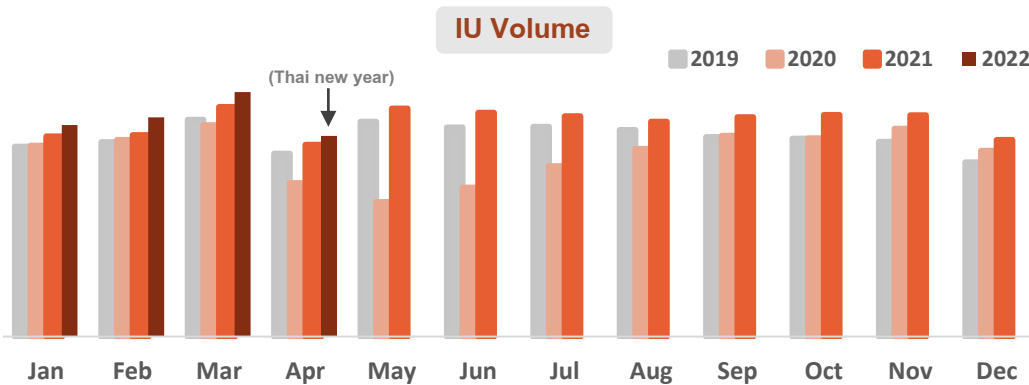
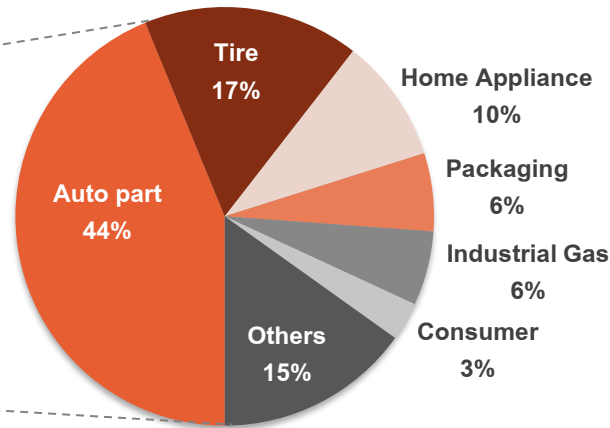


Revenue breakdown

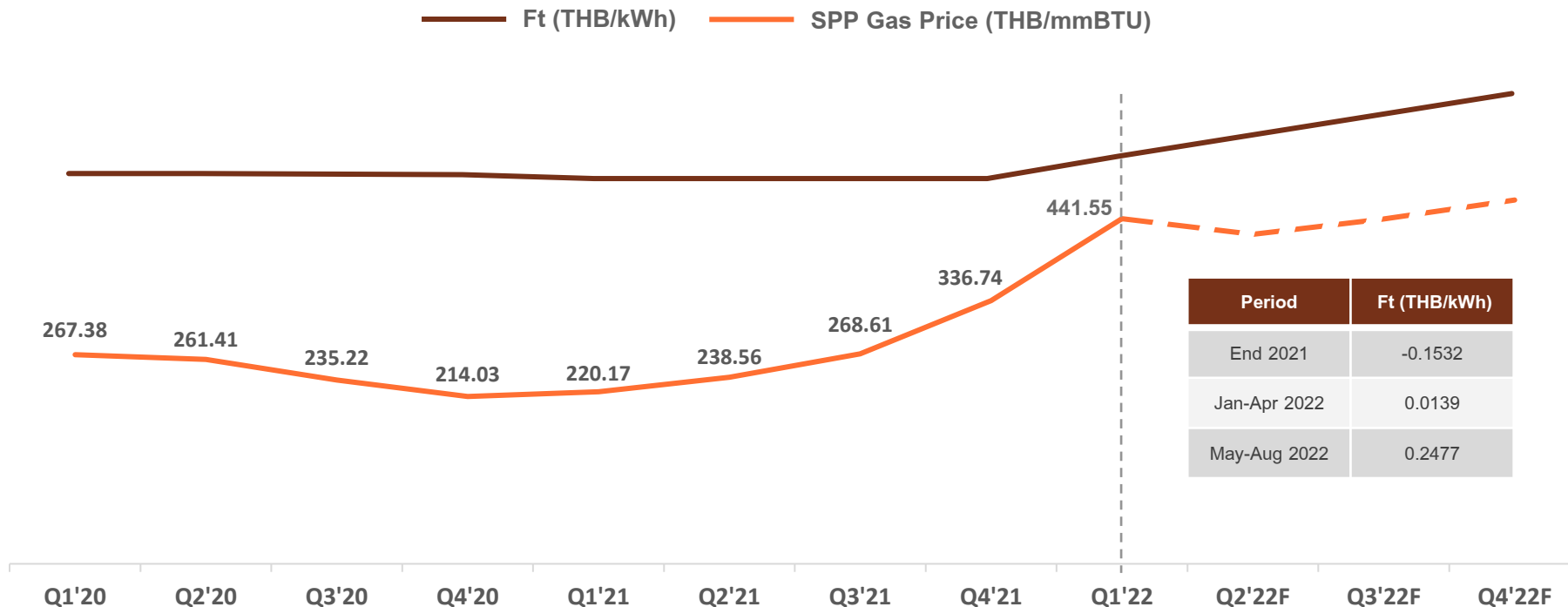
Q1'2022 REVENUE BREAKDOWN BY CUSTOMER



Q1'2022 IU VOLUME BREAKDOWN BY SECTOR



Ft charge and gas price



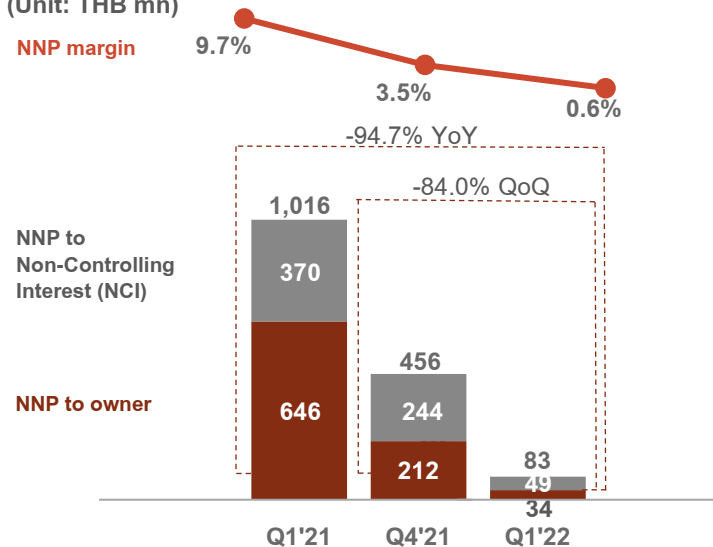
Based on 2021 figures;

- THB 0.01 change in IU tariff would impact earnings by THB 21 million per annum.
- THB 1 /MMBTU change in gas cost would impact earnings by THB 17 million per annum.

Normalised Net Profit

NORMALISED NET PROFIT (NNP)

(Unit: THB mn)

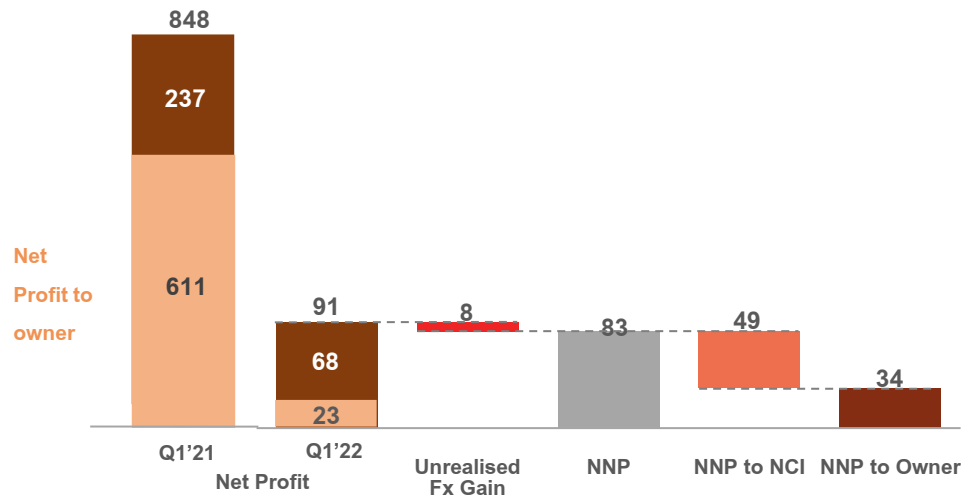


NNP to owner decreased 94.7% y-on-y in Q1'2022

- **NNP - owner of the parent was THB 34 million, down 94.7% y-on-y from**
 - 100.4% increasing gas price which impacted IU business (contributing 20.4% of total revenue)
 - On the other hand, Ft charge gradually increased starting with a 16.71 satang/kWh increase in Jan and a 23.38 satang/kWh increase in May.

RECONCILE NORMALISED NET PROFIT (NNP) OF Q1'2022

(Unit: THB mn)



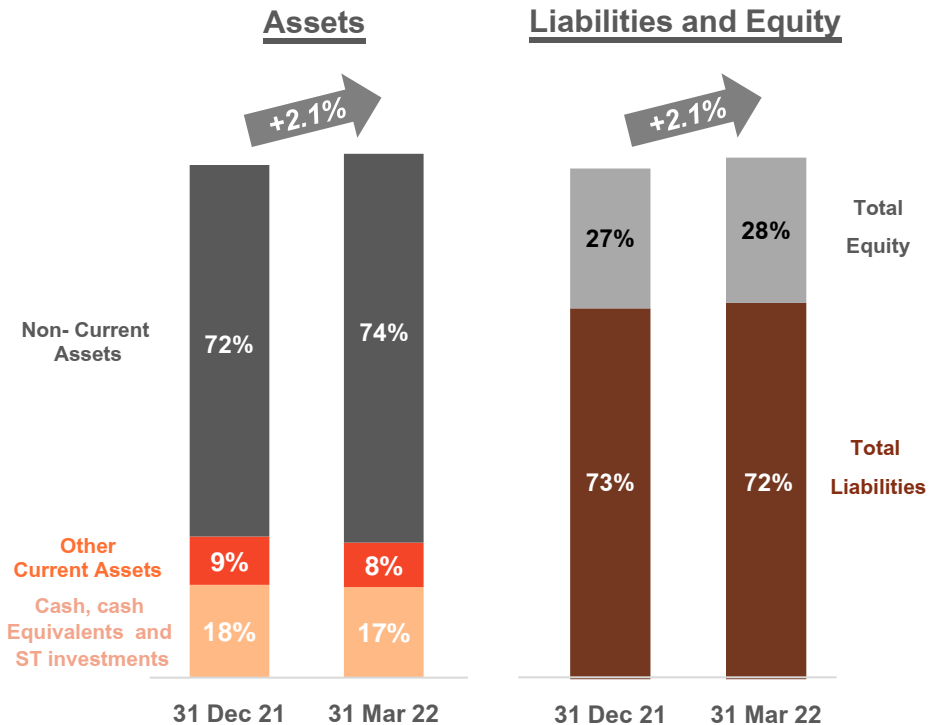
Reconciliation Items:

- **Unrealised Fx gain of THB 8 million in Q1'2022** was a non-cash item from the record of unrealised gain from translating USD debt.

Strong financial position with well-managed capital structure

STATEMENT OF FINANCIAL POSITION

AS OF 31 MARCH 2022



Financial Position as of 31 March 2022

Total assets

- ↑ Total assets increased by 2.1%, primarily due to the continual expansion of project portfolio both local and overseas.

Total liabilities

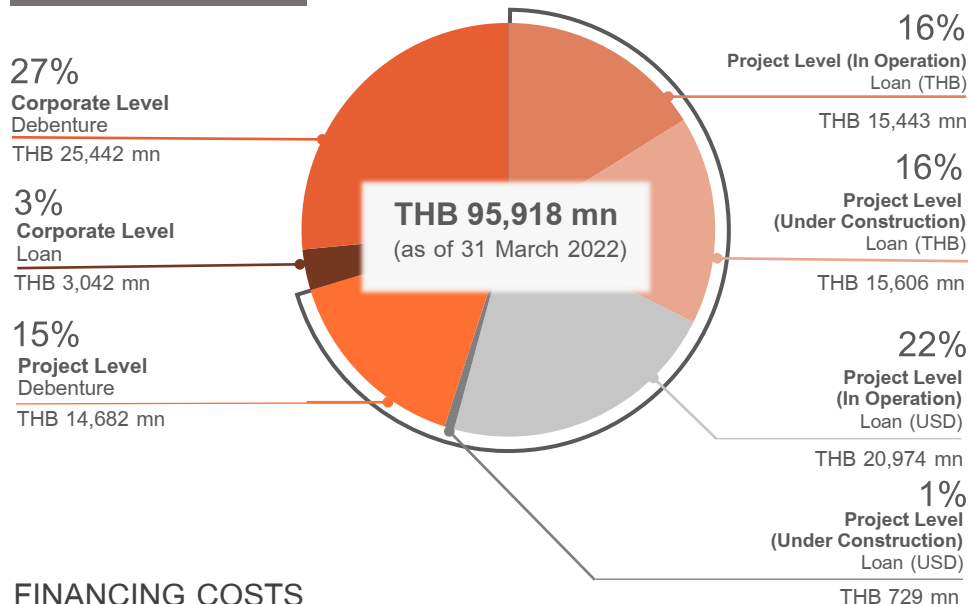
- ↑ Total liabilities increased by 1.4%, primarily due to borrowing for project development.

Total Equities

- ↑ Total equity increased by 4.0%, primarily due to an increase in retained earnings during the period.

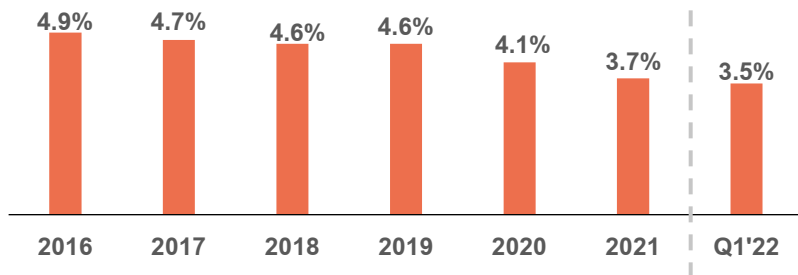
Well-managed debt profile

DEBT PROFILE



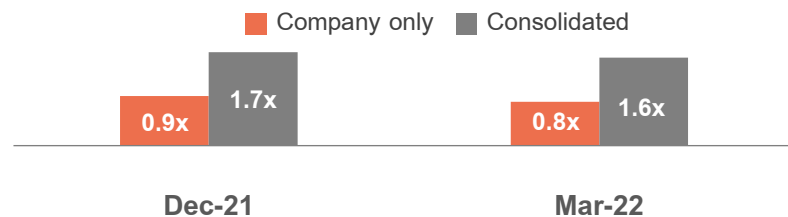
- Only 30% loan represents loan at the corporate level. **The remaining 70% contributes to debts at power plant level** with limited recourse to sponsor
- Interest obligations **of almost all power plant level debts** are swapped to fixed rate
- **Only 23% of total loan as of 31 March 2022 is denominated in USD** which is matched with a proportion of EGAT tariff indexation to USD at project level, so called “Natural Hedge” strategy

FINANCING COSTS



- **Financing costs at 3.5%** in Q1'2022 due to altering of financial structure according to debt refinancing. In July 2021, we successfully issued bonds totalling THB 12,000 mn with an average cost of 2.94% for 3, 5 and 10 years.

NET INTEREST-BEARING DEBT TO EQUITY RATIO



Gearing Ratios

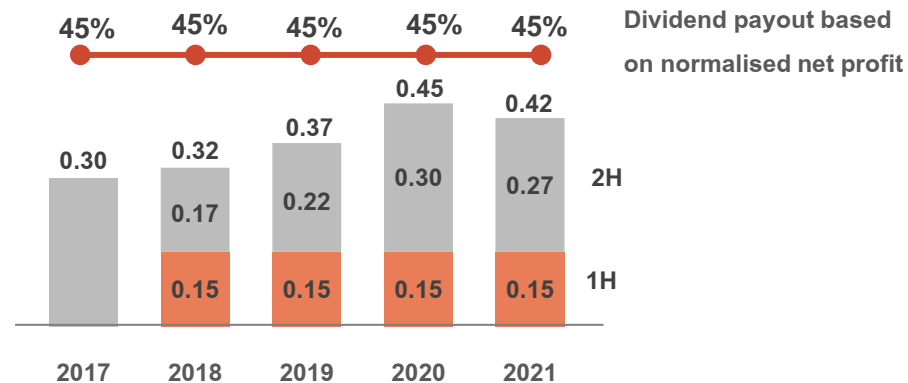


The consolidated net interest-bearing debt to equity ratio decreased to **1.6x** and **0.8x** for B.Grimm Power only as a result of increasing of retained earnings during the period.

CAPITAL STRUCTURE

- Manage debt and equity funding to optimize capital structure
- Seek to obtain financing at project level
 - Limited-recourse project loan with back-end equity
 - Target 3.0x debt to equity project financing at outset, delivering over project life
- Consolidated debt **included** loans at power plants because BGRIM holds **majority** in most of the projects

DIVIDEND PER SHARE (Unit: THB)



DIVIDEND POLICY

- Minimum 40% of normalised net profit of consolidated financial statements

Thank You

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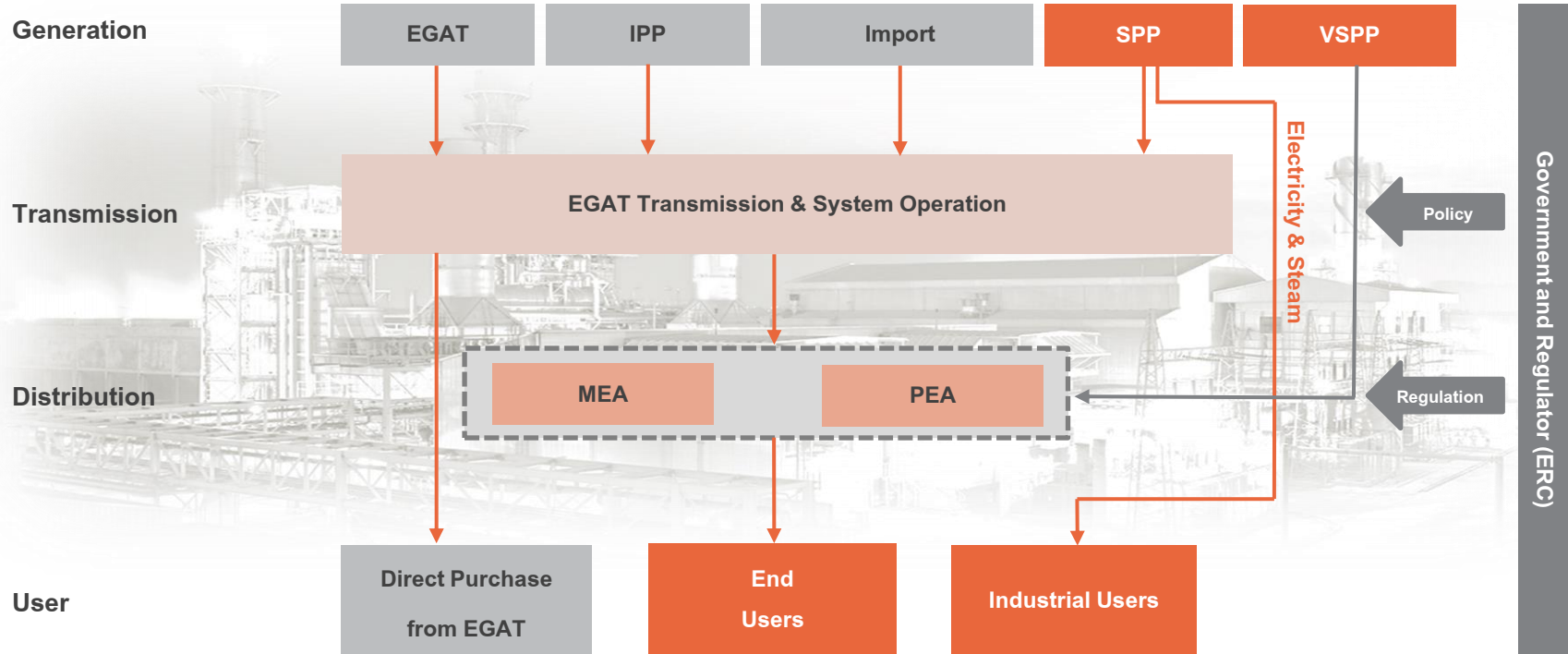
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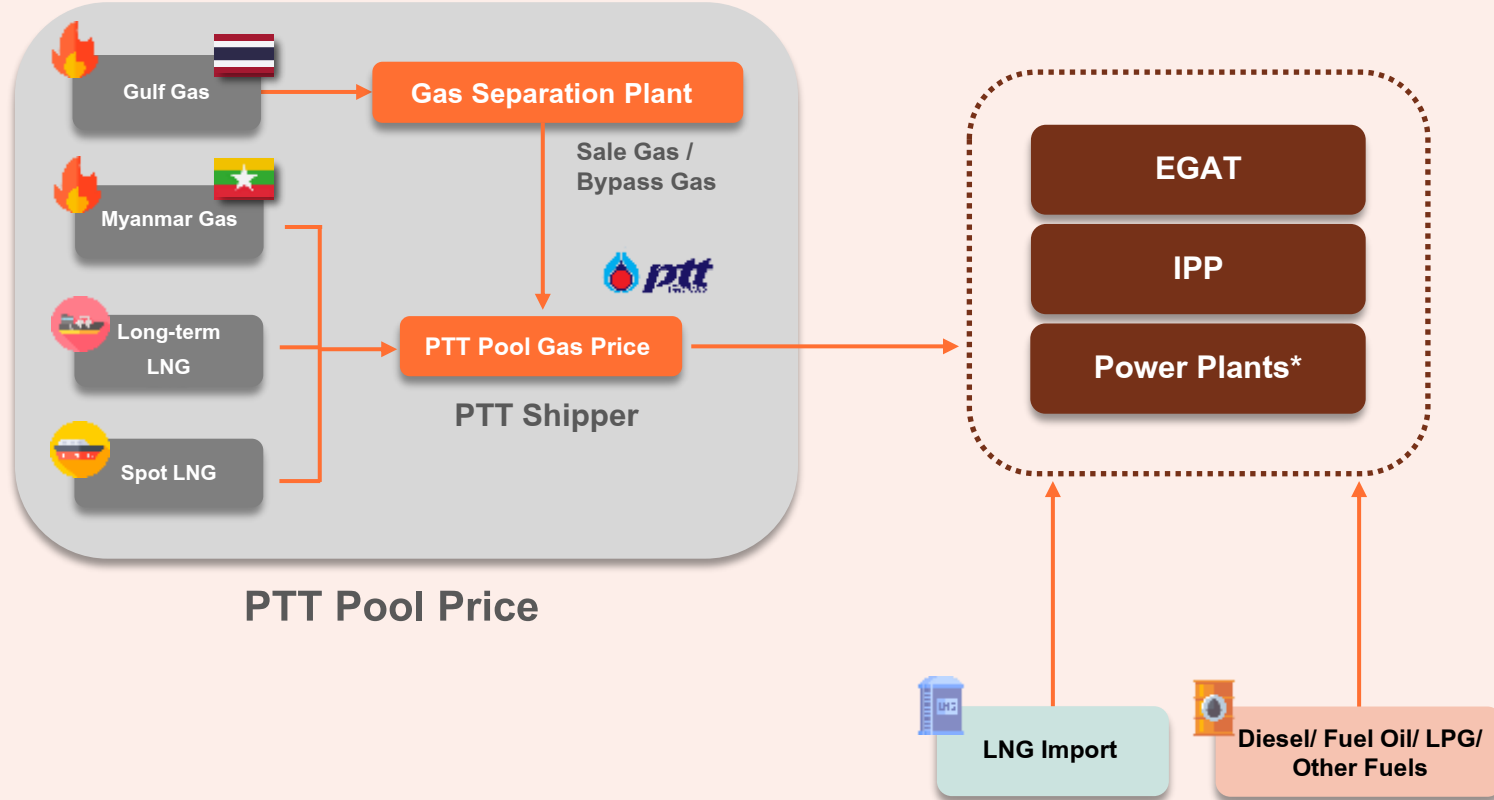
Appendix



Thailand power industry



ERC implement a new **Energy Pool Price** during energy crisis



**Energy
Pool
Price**

Small Power Producer (SPP) scheme

SPP

- 1) Located in strategic industrial estates, near users
- 2) IU tariff is linked to market price while EGAT tariff is based on a cost-plus model
- 3) Provide both electricity and stream to IUs

Round 1: 1992
Round 2: 2007
Round 3: 2010
Replacement: 2018



Contracted Capacity	30-90 MW	The rest	All (> 90 MW)
Off-taker	EGAT	Industrial Users	EGAT
Tenors	20-25	10-15	20-25
Product and Service	Electricity	Electricity, Stream, Demin Water	Electricity
Tariff Structure	CP+EP+FS	Base Tariff + Ft	AP+EP
Minimum	CP	Base Tariff	AP
Fuel cost pass-through mechanism	EP	Ft	EP
Incentive from the government	FS*	-	None

CP = Capacity Payment
EP = Energy Payment
FS = Fuel Saving
AP = Availability Payment

*Fuel saving payment is made to cogeneration when the plant achieves a certain degree of cogeneration efficiency = 0.36 Baht /kWh

As compassionate professionals, we believe we can achieve success by adhering to **our four core values**



Positivity

To continue at a world-class level, we work with positivity, demonstrate a strong can-do-attitude and stay flexible and tolerant in the face of difficulties.

Partnership

We work together as a team, among each other, with our customers, with our partners and communities. We constantly build, maintain and value trustworthy relationships to bring well being, prosperity, and happiness to others.

Pioneering Spirit

We aim to be a leader in the power business, since the beginning of the company. To accomplish that, we have to actively always seek out new opportunities in both investment and development.

Professionalism

We strive for excellence and world-class standards on all levels: be it in developing or operating power plants.

B.Grimm Power Sustainability Framework

- B.Grimm Power's business sustainability framework, conforming to the "Empowering the World Compassionately" vision, develops fundamental elements for a solid foundation of sustainability, encompassing good corporate governance and key economic, social, and environmental sustainability components.
- The framework targets to address B.Grimm Power's key materiality issues to promote long-term growth and readiness to suitably and fairly deliver positive values to all stakeholders in the value chain. It is aligned with the United Nations Sustainable Development Goals (UNSDGs)



“B.Grimm Power is committed to creating positive values to the world, and **supporting the United Nations Sustainable Development Goals (UN SDGs)**. We assessed the **linkage** between our **business, strategy, goals**, and our **key initiatives** with the UN SDGs to ensure that we can contribute effectively and efficiently”

BGRIM 7 Strategic focuses with long-term value creation



- ✓ Involve with Electric Utilities business
- ✓ Align with BGRIM strategic focuses
- ✓ Implement the initiatives/set targets relevant to the UNSDGs

Contribution to sustainability along the value chain

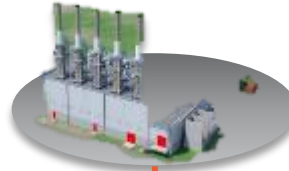


U-Tapao hybrid co-generation power plant



Hybrid Co-generation Power Plant

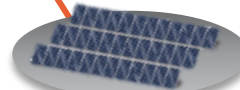
Co-generation power plant 80 MW



Terminal Substation



ESS 50 MWh



Solar PV 18 MW

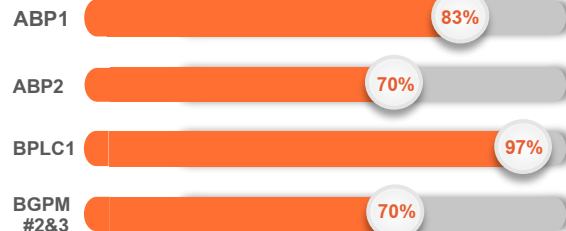
Sattahip Electricity
Authority
The Royal Thai Navy
Welfare Concession



Progress of Projects Under Construction

SPP Replacement

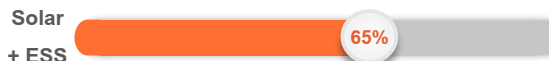
Projects	ABP1	ABP2	BPLC1	BGPM #1&2
Installed Capacity	140 MW	140 MW	140 MW	280 MW
Steam Capacity	30 ton/hr	30 ton/hr	30 ton/hr	60 ton/hr
Economic Ownership	50.7%	51.2%	100.0%	70.0%
SCOD	2022	2022	2022	2022
EGAT PPA	30MW/ 25 yrs	30MW/ 25 yrs	30MW/ 25 yrs	60MW/ 25 yrs



U-Tapao hybrid power plant



Type of Fuel	Solar + ESS	Co-generation power plant
Installed Capacity	18 MW + 50 MWh	80 MW
Economic Ownership	100.0%	100.0%
SCOD	2H' 2022	Ended 2023
PPA	15 MW/ 25 years	15 MW/ 25 years



BGPAT2&3

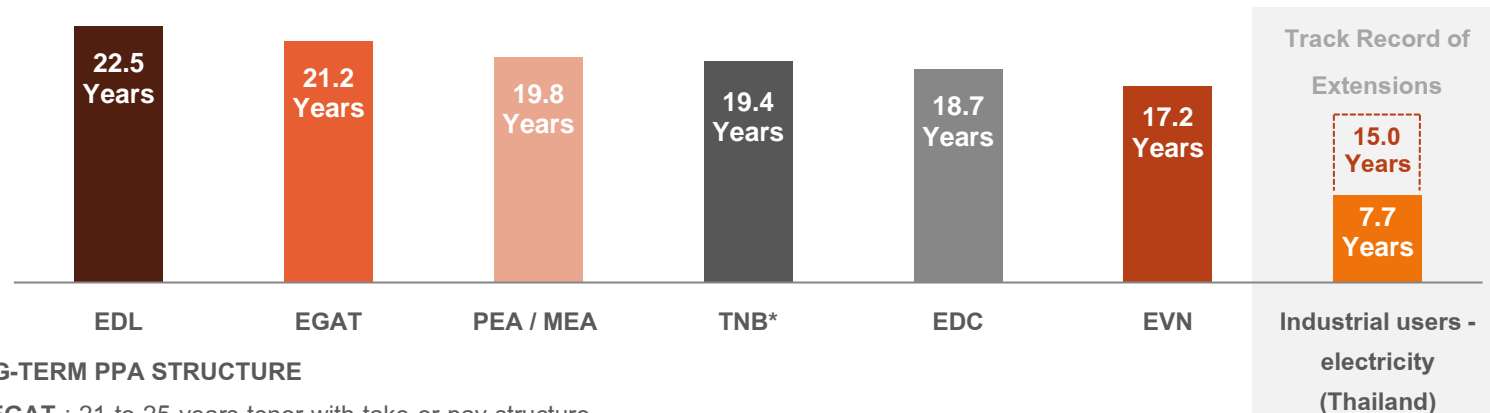


Projects	BGPAT2	BGPAT3
Installed Capacity	140 MW	140 MW
Steam Capacity	30 ton/hr	30 ton/hr
Economic Ownership	70.0%	70.0%
SCOD	2023	2023
EGAT PPA	90MW/ 25 yrs	90MW/ 25 yrs



Long-term PPA and well-established contracts

WEIGHTED AVERAGE REMAINING PPA LIFE



LONG-TERM PPA STRUCTURE

- **EGAT** : 21 to 25 years tenor with take-or-pay structure
- **PEA / MEA** : up to 25 years tenor (VSPP of solar, wind, waste to energy)
- **EDC** : 20 years tenor (solar)
- **TNB** : 21 years tenor (solar)
- **EDL** : 25 years tenor (hydro)
- **EVN** : 20 years tenor (solar)
- **Industrial Users** : up to 15-year tenor with track record of extensions

Secured Gas Supply with PTT covering respective PPA tenors

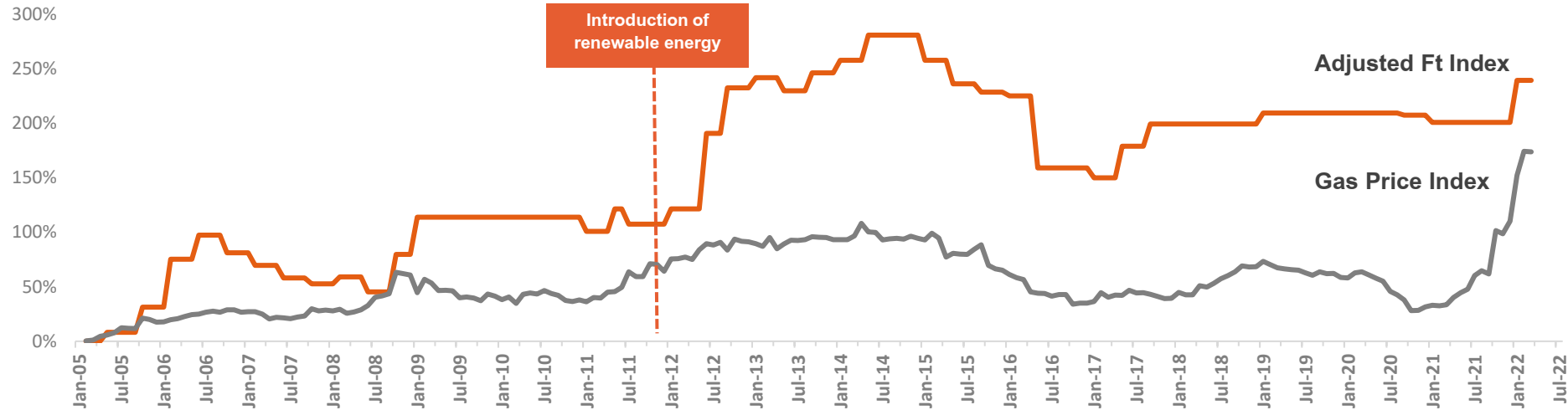
Gas price pass-through at contracted heat rate under EGAT PPA

Note: Weighted Average Remaining PPA life is calculated as the average remaining contractual term remaining from 31 March 2022 to expiry weighted by the aggregate contracted capacity under the relevant agreement

* The transaction for projects in Malaysia will be completed within 2022

High correlation between gas price and Ft charge

Change in Ft vs Gas Price in 2005-2022



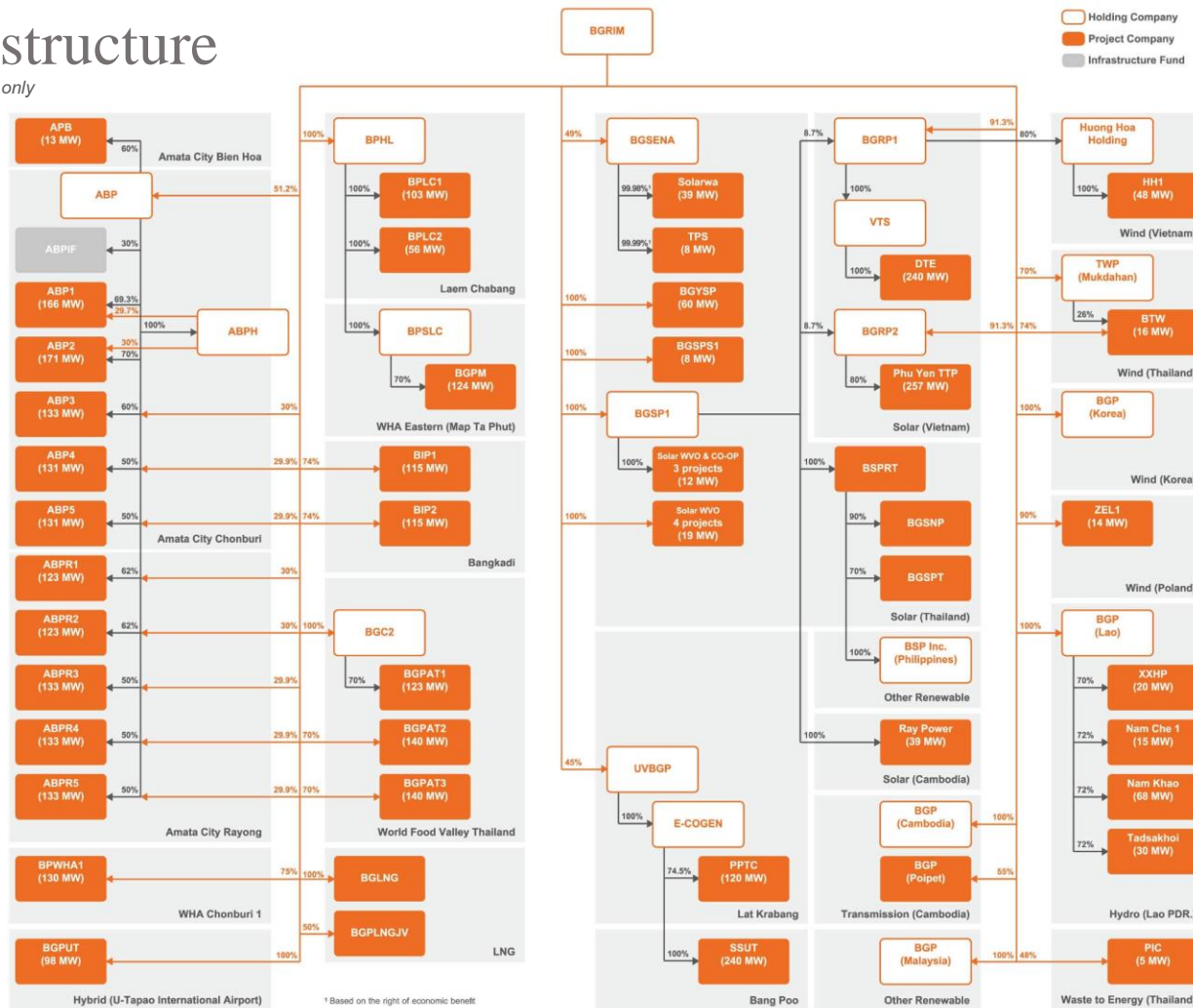
Ft (Fuel Adjustment Charge) is a component of electricity market tariff, announced by Energy Regulatory Commission (ERC) every 4 months to reflect EGAT's overall cost electricity which includes EGAT's power generations, its purchase from private sector and the import from neighboring countries

- In general, natural gas contributes approximately 70% of total fuel used to produce electricity in Thailand. Thus, change in gas price has high correlation with change in Ft.
- In addition, the gap between these two indexes is widen since 2011 – when renewable business started commencement in Thailand.

BGRIM's electricity tariff for IU is normally benchmarked with PEA (base tariff+Ft) which generally moves in the same direction with gas price.

Corporate structure

Core subsidiaries and associates only



* Based on the right of economic benefit

Operational power plants: conventional

Company	Abbreviation	Fuel Type	COD	Economic Ownership % ^(a)	Installed (MW)	Equity (MW)	Offtaker / Program	PPA Expiry	EGAT Contracted Capacity (MW)	IU Electricity Contracted Capacity (MW)	Steam Contracted Capacity (t/h)
Amata Nakorn Industrial Estate, Thailand											
Amata B. Grimm Power 1	ABP1	Gas-Fired Cogen	Sep-98	50.69%	166.4	84.3	EGAT (SPP)	Sep-22 ^(c)	60.0	105.1	6.0
Amata B. Grimm Power 2	ABP2	Gas-Fired Cogen	Sep-01	15.3% ^(b)	171.2	26.2	EGAT (SPP)	Sep-22 ^(c)	90.0	103.0	19.0
Amata B. Grimm Power 3	ABP3	Gas-Fired Cogen	Oct-12	60.70%	132.5	80.4	EGAT (SPP)	Oct-37	90.0	43.1	13.0
Amata B. Grimm Power 4	ABP4	Gas-Fired Cogen	Nov-15	55.50%	131.1	72.8	EGAT (SPP)	Nov-40	90.0	30.9	-
Amata B. Grimm Power 5	ABP5	Gas-Fired Cogen	Jun-16	55.50%	131.1	72.8	EGAT (SPP)	Jun-41	90.0	35.5	13.0
Subtotal					732.3	336.5			420.0	321.6	51.0
Amata City Industrial Estate, Thailand											
Amata B. Grimm Power (Rayong) 1	ABPR1	Gas-Fired Cogen	Nov-13	61.70%	123.3	76.1	EGAT (SPP)	Nov-38	90.0	33.8	14.0
Amata B. Grimm Power (Rayong) 2	ABPR2	Gas-Fired Cogen	Jun-13	61.70%	124.4	76.8	EGAT (SPP)	Jun-38	90.0	24.0	14.0
Amata B. Grimm Power (Rayong) 3	ABPR3	Gas-Fired Cogen	Feb-18	55.50%	133.0	73.8	EGAT (SPP)	Feb-43	90.0	18.0	-
Amata B. Grimm Power (Rayong) 4	ABPR4	Gas-Fired Cogen	Jun-18	55.50%	133.0	73.8	EGAT (SPP)	Jun-43	90.0	46.0	-
Amata B. Grimm Power (Rayong) 5	ABPR5	Gas-Fired Cogen	Oct-18	55.50%	133.0	73.8	EGAT (SPP)	Oct-43	90.0	46.5	-
Subtotal					646.7	374.3			450.0	168.3	28.0
Laem Chabang Industrial Estate, Thailand											
B. Grimm Power (Laem Chabang) 1	BPLC1	Gas-Fired Cogen	Jul-01 ^(d)	100.00%	103.0	103.0	EGAT (SPP)	Jul-22 ^(c)	60.0	54.3	46.2
B. Grimm Power (Laem Chabang) 2	BPLC2	Gas-Fired Cogen	Feb-09 ^(d)	100.00%	56.1	56.1	-	-	-	61.3	18.5
Subtotal					159.1	159.1			60.0	115.6	64.7
Bangkadi Industrial Park, Thailand											
B. Grimm BIP Power 1	BIP1	Gas-Fired Cogen	Apr-15	74.00%	114.6	84.8	EGAT (SPP)	Apr-40	90.0	14.0	-
B. Grimm BIP Power 2	BIP2	Gas-Fired Cogen	Jan-16	74.00%	114.6	84.8	EGAT (SPP)	Jan-41	90.0	24.3	-
Subtotal					229.2	169.6			180	38.3	-
WHA Chonburi Industrial Estate, Thailand											
B. Grimm Power (WHA) 1	BPWHA1	Gas-Fired Cogen	Nov-16	70.00%	130.2	97.7	EGAT (SPP)	Nov-41	90.0	41.1	-
WHA Eastern (Map Ta Phut) Industrial Estate, Thailand											
B. Grimm Power (AIE-MTP)	BGPM	Gas-Fired Cogen	Feb & Dec-98	70.00%	124.0	86.8	EGAT (SPP)	Feb & Dec-21 ^(e)	110.0	4.6	48.0
B. Grimm Power (Anghong) 1											
B. Grimm Power (Anghong) 1	BGPAT1	Gas-Fired Cogen	May -16	70.00%	123.0	86.1	EGAT (SPP)	May-41	90.0	5	5.0
Lad Krabang Industrial Estate, Thailand											
PPTC	PPTC	Gas-Fired Cogen	Mar-16	33.53%	120.0	40.2	EGAT (SPP)	Mar-41	90.0	37.0	14.0
Bang Pu Industrial Estate, Thailand											
SSUT	SSUT	Gas-Fired Cogen	Dec-16	45.00%	240.0	108.0	EGAT (SPP)	Dec-41	180.0	52.5	26.6
Gas-Fired Cogen Total					2,504.5	1,458.3			1,670.0	783.9	237.3
Amata City (Bien Hoa) Industrial Estate, Vietnam											
Amata Power (Bien Hoa) ^(a)	APB	Diesel Generator	Apr-99	30.70%	13.0	4.0	-	-	-	448.9	-
Conventional Total					2,517.5	1,462.3			1,670.0	1,227.4	237.3

(a) Based on B. Grimm Power's direct and/or indirect interest in the project company owning the power plant

(b) Amata B. Grimm Power owned 30.0% of ABPIF's units and consequently, our economic ownership of Amata B. Grimm Power 2 Limited was 15.3%

(c) ABP1, ABP2, BPLC1 and BGPM got the approval to build new replacement projects under the 25-year PPA with the scheduled commercial operation in 2022

(d) Acquired from Sime Darby Energy on 30 June 2014

(e) We instead purchase power directly from a subsidiary of EVN which we then on-sell to industrial users in Amata City Bien Hoa Estate

Operational power plants: solar

Company / Project	Abbreviation	Location	COD	Economic Ownership % ^(a)	Capacity		Main PPA(s)	
					Installed (MW)	Equity (MW)	Offtaker / Program	PPA Expiry
B.Grimm Yanhee Solar Power	BGYSP			100.0%	59.7	59.7		
Sai Luang 2		Pathumthani province, Thailand	Dec-15		8.0	8.0	PEA (FIT)	Dec-40
Sai Luang 3					8.0	8.0		
Sai Luang 9					7.2	7.2		
Sai Luang 10					7.5	7.5		
Sai Yai Nha					8.0	8.0		
Sai Manow					8.0	8.0		
Sai Putsa					8.0	8.0		
Sai Sena 2		Ayutthaya province, Thailand			5.0	5.0		
Solarwa	Solarwa			47.5%	38.5	18.3		
Sai Lui Rim Num		Nakhon Pathom province, Thailand	Dec-15		8.0	3.8	PEA (FIT)	Dec-40
Sai Chalouw 1					8.0	3.8		
Sai Sab					8.0	3.8		
BGTRE2		Saraburi province, Thailand			8.0	3.8		
BGTRE3					8.0	3.8		
					6.5	3.1		
TPS Commercial	TPS	Saraburi province, Thailand	Dec-15	47.5%	8.0	3.8	PEA (FIT)	Dec-40
B.Grimm Solar Power (Sakaeo) 1	BGSPS1	Sakaeo province, Thailand	Apr-16	100.0%	8.0	8.0	PEA (FIT)	Apr-41
Solar WVO-Cooperatives	Solar WVO-Coop		Dec-18	100.0%	30.8	30.8		
BSPCD		Sakaeo province, Thailand			2.3	2.3	PEA (FIT)	
BGPCCS		Chachoengsao province, Thailand			3.6	3.6		
BSPCB		Surat Thani province, Thailand			5.0	5.0		
BGSP1WN		Bangkok province, Thailand			5.0	5.0	MEA (FIT)	Dec-43
BGPLKB		Bangkok province, Thailand			5.0	5.0		
BGPBBO		Samut Prakan province, Thailand			5.0	5.0		
BGPSAI		Nonthaburi province, Thailand			5.0	5.0		
Dau Tieng Tay Ninh Energy	DT	Tay Ninh province, Vietnam	Jun-19	100.0%	240.0	240.0	EVN (FIT)	Jun-39
Phu Yen TTP (Phu Yen)	Phu Yen TTP	Phu Yen province, Vietnam	Jun-19	80.0%	257.0	205.6	EVN (FIT)	Jun-39
Ray Power	Ray Power	Banteay Meanchey Province, Cambodia	Dec-20	100.0%	39.0	39.0	EDC (FIT)	Dec-40
Total					681.0	605.2		

Note: As of March 2022

(a) Based on B.Grimm Power's direct and/or indirect interest in the project company owning the power plant.

Developing projects

Power plants	Location	Fuel type	% Ownership	COD	Electricity Capacity		EGAT / EDL / EVN / TNB PPA	
					Installed MW	Equity MW	Contract MW	Tenor years
reNIKOLA ¹	Malaysia	Solar	40.6%	2018, 2020 & 2021	88.0	35.7	63.9	21
U-Tapao (Phase1)	U-Tapao International Airport (Rayong)	Hybrid (Solar+ESS)	100.0%	2022	18.0 + 50.0 MWh	18.0 + 50.0 MWh	15.0 + 50.0 MWh ²	25
BPLC1 Replacement	Laem Chabang	Gas	100.0%	2022	140.0	140.0	30.0	25
ABP1 Replacement	Amata City (Chonburi)	Gas	50.7%	2022	140.0	71.0	30.0	25
ABP2 Replacement	Amata City (Chonburi)	Gas	51.2%	2022	140.0	71.7	30.0	25
BGPM (1) Replacement	WHA Eastern (Map Ta Phut)	Gas	70.0%	2022	140.0	98.0	30.0	25
BGPM (2) Replacement	WHA Eastern (Map Ta Phut)	Gas	70.0%	2022	140.0	98.0	30.0	25
Huong Hoa 1	Vietnam	Wind	80.0%	2023	48.0	38.4	48.0	20
BGPAT2	World Food Valley	Gas	70.0%	2023	140.0	98.0	90.0	25
BGPAT3	World Food Valley	Gas	70.0%	2023	140.0	98.0	90.0	25
U-Tapao (Phase2)	U-Tapao International Airport (Rayong)	Hybrid (Gas)	100.0%	2023	80.0	80.0	80.0 ²	25
ZEL1	Poland	Wind	90.0%	2025	14.1	12.7	14.1 ³	10 ⁴
Nam Khao 1 - 5	Laos	Hydro	72.0%	2026-2030	67.5	48.6	67.5	25
Tadsakhoi	Laos	Hydro	70.0%	2026	30.0	21.0	30.0	25

¹ The transaction will be completed within 2022

² PPA contract with Sattahip Electricity Authority The Royal Thai Navy Welfare Concession

³ PPA contract with visa Vento who then sell to Industrial Users with long-term contracts matched with the PPA

⁴ With an option for another 10 Years

Contractual overview: commercial features

	SPP Gas-fired Cogeneration			Solar PV	Solar (Vietnam)	Solar (Cambodia)	Solar (Malaysia)	Wind	Hydro	iWTE	Wind (Poland)
	EGAT	Industrial Users		PEA/MEA (FiT)	EVN	EDC	TNB	PEA (Adder)	EDL	PEA	visaVento
		Electricity	Steam								
Term (years)	21 – 25 years	5 – 15 years ^(a)	5 – 15 years ^(a)	25 years	20 years	20 years	21 years	5 years	25 years	20 years	10 years
Extension option	✓	✓	✓	–	–	–	–	5 years auto extension	Up to 10 years	–	Up to 10 years
Contracted capacity	30-90 MW	Depends on each contract		2.25-8 MW	497 MW	30 MW	88 MW	8 MW (each)	6.7 – 15 MW ^(b)	4 MW	14.1 MW
Secured fuel supply	✓	✓	✓	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Natural gas cost pass-through	✓ (at contracted heat rate)	Partially through Ft	Depends on contract	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FX pass-through	✓	Partially through Ft	–	–	–	–	–	–	–	–	–
	–	–	✓	–	–	–	–	–	–	–	–
Tariff	See next page			5.66 THB/kWh 4.12 THB/kWh	9.35 Cents/kWh	7.60 Cents/kWh	8.00-10.00 Cents/kWh	PEA wholesale + 10-year adder at 3.50 THB/kWh	6.50 Cents/kWh	FIT _F + FIT _V + 8-year adder at 0.7 THB/kWh	–
Applicable power plants	ABP1-5, ABPR1-5, BPLC1, BIP1-2, BPWHA1, BGPAT1-3, BGPM (2 PPAs)			BGYSP (8 projects), Solarwa (5 projects), TPS, BGPSK, Solar WVO-Coop (7 projects)	DT2, Phu Yen TTP	Ray Power	reNIKOLA (3 projects)	Bo Thong (2 projects)	XXHP (2 projects), Nam Che, Nam Khao 1-5 (5 projects)	PIC	Zel 1

Source: 56-1, EGAT, PEA

Some contract terms are year-on-year basis

According to concession agreements

Contractual overview: EGAT PPA under SPP program

TARIFF STRUCTURE

Electricity Tariff = Capacity Payment + Energy Payment + Fuel Saving Payment + VAT

$$\text{Capacity Payment Rate (THB/kW/month)} = CP_0 \times \left[(x \times \frac{FX_t}{FX_0}) + (1-x) \right]$$

$$\text{Energy Payment Rate (THB/kWh)} = EP_0 + \left[\left(\frac{P_t - P_0}{10^6} \right) \times \text{contracted Heat Rate} \right]$$

$$\text{Fuel Saving Payment Rate (THB/kWh)} = FS_0 \times \frac{PES_t}{10\%}$$

FX_t = THB/ US\$ Exchange Rate

P_t = Price for natural gas PTT sells to SPPs in a month (THB/MMBTU)

PES_t = primary energy saving ("PES") statistic measuring the efficiency rate of our gas-fired cogeneration power plant in consuming natural gas in the generation of electricity and thermal energy

SPP Regulation	1992, 2005	2007	2010
Applicable power plants	ABP1-2, BPLC1, BGPM	ABP3, ABPR1-2, BIP1	ABP4-5, ABPR3-5, BIP2, BPWHA, BGPAT1
Base Capacity Payment Rate (CP_0) (THB/kW)	302.00	383.66	420.00
Base Exchange Rate (FX_0) (THB/US\$)	27	37	34
US\$THB FX indexation (\mathcal{X})	0.8	0.5	0.5
Base Energy Payment Rate (EP_0) (THB/kWh)	0.85	1.70	1.85
Base Price for Natural Gas PTT sells to SPPs (P_0) (THB/MMBTU)	77.0812	209.4531	232.6116
Contracted Heat Rate (BTU/kWh)	8,600	8,000	7,950
Fuel Saving Payment	-	✓	✓
Base Fuel Saving Payment (FS_0) (THB/kWh)	-	0.36	0.36

Major maintenance schedule in 2022

Projects	Installed Capacity (MW)	Steam Capacity (ton/hr)	Type of maintenance	Duration (days)	2022			
					Q1	Q2	Q3	Q4
Amata City (Chonburi)								
ABP3	132.5	30.0	Major Inspection	22				
ABP5	131.1	30.0	Major Overhaul	18				
WHA Chonburi 1								
BPWHA	130.0	30.0	Major Overhaul	16				
Angthong Province								
BGPAT1	123.0	55.0	Major Overhaul	44				

Abbreviation & our projects

ABBREVIATION

ADB	Asian Development Bank
COD	Commercial Operation Date
EBITDA	Earnings before Interest, Taxes, Depreciation and Amortization
EDC	Electricite Du Cambodge
EDL	Electricite Du Laos
EGAT	Electricity Generating Authority of Thailand
ERC	Energy Regulatory Commission
EPC	Engineering, Procurement and Construction
EVN	Electricity of Vietnam
FIT	Feed-in Tariff

FX	Foreign exchange
IPO	Initial public offering
IU	Industrial user
IWTE	Industrial Waste to Energy
JV	Joint venture
kWh / GWh	Kilowatt / Gigawatt-hour
MEA	Metropolitan Electricity Authority
MMBTU	Million Btu (unit of gas consumption)
NNP	Normalised net profit
O&M	Operations and maintenance

P.A.	Per annum
PEA	Provincial Electricity Authority (Thailand)
PPA	Power purchase agreement
PTT	PTT public Company Limited
ROA	Return on assets
ROE	Return on equity
SG&A	Selling, general & administrative expense
YE	Year End
YoY	Year-on-Year

OUR PROJECTS

ABPIF	Amata B.Grimm Power Plant Infrastructure Fund
ABP1	Amata B.Grimm Power 1
ABP2	Amata B.Grimm Power 2
ABP3	Amata B.Grimm Power 3
ABP4	Amata B.Grimm Power 4
ABP5	Amata B.Grimm Power 5
ABPR1	Amata B.Grimm Power (Rayong) 1
ABPR2	Amata B.Grimm Power (Rayong) 2
ABPR3	Amata B.Grimm Power (Rayong) 3
ABPR4	Amata B.Grimm Power (Rayong) 4
ABPR5	Amata B.Grimm Power (Rayong) 5
BGPAT1	B.Grimm Power (Angthong) 1

BGPAT2	B.Grimm Power (Angthong) 2
BGPAT3	B.Grimm Power (Angthong) 3
BGPSK	B.Grimm Solar Power (Sakaeo) 1
BGSENA	B.Grimm Sena Solar Power Limited
BGYSP	B.Grimm Yanhee Solar Power
BIP1	B.Grimm BIP Power 1
BIP2	B.Grimm BIP Power 2
BGPM	B.Grimm Power (AIE-MTP) (SPP1)
BPLC1	B.Grimm Power (Laem Chabang) 1
BPLC2	B.Grimm Power (Laem Chabang) 2
BPWHA1	B.Grimm Power (WHA) 1
DT	Dau Tieng Tay Ninh Energy Solar Project
Nam Che 1	Nam Che 1 Hydro Power Project

Nam Che 1	Nam Che 1 Hydro Power Project
PIC	Progress Interchem
Phu Yen TTP	Phu Yen TTP Solar Project (Phu Yen)
Solar WVO	Solar WVO-Cooperatives Projects
Ray Power	Ray Power Supply Company Limited
XXHP	Xenamnoy 2 and Xekatom 1 Hydro Power Project
BSPCD	The Chon Daen agricultural cooperatives project
BGPCCS	The WVO project, namely the Veteran Support Office of Chonburi
BSPCB	The Ban Na Doem agricultural cooperatives project
BGSP1WN	The WVO project, namely Office of Agriculture, Industry and Services Affairs
BGPLKB	The WVO project, namely the Veterans General Hospital
BGPBBO	The WVO project, namely the WVO Office of Terminal Production Workshop
BGPSAI	The WVO project, namely the WVO Office of Security Services