

POWERING AHEAD >>>
BANPU ACCELERATES
TRANSFORMATION
FOR BETTER LIVING FOR ALL

2022 ANNUAL REPORT
(56-1 ONE REPORT)
BANPU PUBLIC COMPANY LIMITED

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CONTENTS

04

Financial Highlights

08

Operational Results

10

The Board of Director's Review

12

Chief Executive Officer Review



PART 1

BUSINESS AND OPERATIONAL RESULTS

22	Policy and Business Overview	135	Security
24	Banpu Group's Map of Operations	136	Debenture
26	Vision & Mission	141	Dividend Policy
27	Summary of Major Changes and Development in 2022 and Current Events	142	Risk Management
33	Banpu Information	156	Driving Business for Sustainability
34	Revenue Structure	161	Management of Stakeholder Impacts in Business Value Chain
36	Products and Services	166	Sustainability Management – Environmental Aspect
57	Market and Competition	170	Sustainability Management – Society Aspect
106	Business Assets	179	Corporate Social Responsibility (CSR)
114	Coal and Natural Gas Reserves	202	Management's Discussion and Analysis 2022
116	Banpu Group Structure	227	Financial Ratio
118	Detail of The Company, Its Subsidiaries, Associated Companies, Joint Ventures and Other Investment of Banpu Public Company Limited	228	Other References
134	Shareholders	229	Significant Litigation



PART 2

CORPORATE GOVERNANCE

232	Corporate Governance Policy
256	Corporate Governance Structure
284	Corporate Governance Performance
289	Report of the Corporate Governance and Nomination Committee
292	Report of the Compensation Committee
294	Report of the Audit Committee to Shareholders
298	Report of the Environment, Social, and Governance Committee
300	Internal Control
306	Connected Persons and Transactions
308	Related – Party Transactions and Relationships

In case this Annual Report (Form 56-1 One Report) reference information disclosed on the Company's website, the disclosed information shall be deemed to be part of Form 56-1 One Report. The Board of Directors certifies the correctness and completeness of disclosed information and annual information disclosure in Form 56-1 One Report.



PART 3

CERTIFICATION OF INFORMATION AND DATA ACCURACY

314	Attachment 1: Details of the Board of Directors and Management
326	Attachment 2: Details of the Management and Controlling Parties of Banpu and Its Subsidiaries



As a leading international versatile energy provider, Banpu Public Company Limited has driven Banpu Transformation with the **Greener & Smarter** strategy to expand our greener energy and energy technology business portfolio in response to future energy trends and deliver sustainable values for all stakeholders. **The plan for Banpu Transformation encompasses 3 core strategies: Acceleration, Antifragile and Augmentation.**

We have remained steadfast in our commitment to Banpu's promise of **“Our Way in Energy”** for the past four decades. We still reinforce our standpoint to deliver smarter energy for sustainability while adhering to **Environmental, Social, and Governance (ESG)** principles. In every step we take, we power the better living for all, create sustainable growth and values for our stakeholders, and **play a crucial part in enhancing the better and sustainable world.**

Acceleration

Accelerating the growth of the three core groups of businesses - energy resources, energy generation, and energy technology - in alignment with the Greener & Smarter strategy. We also focus on expanding our businesses that will respond to all customers' needs by leveraging advanced technology which will optimize energy utilization and sustainability.

Antifragile

Weathering disruption and economic cycles through our integrated energy solutions portfolio by diversifying risks and capturing opportunities from existing risks.

Augmentation

Expanding the business ecosystem and energy expertise to create growth from new S-curve businesses by strategically investing in businesses with high potential, technology advancement, long-term competitiveness, and sustainable positive returns.



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FINANCIAL HIGHLIGHTS



Sales Revenues

7,693

Million USD

+87%

EBITDA

3,916

Million USD

+120%

Net Profit

1,162

Million USD

+282%

Total Assets

12,638

Million USD

+15%

Total Liabilities

8,229

Million USD

+5%

Total Equity

4,409

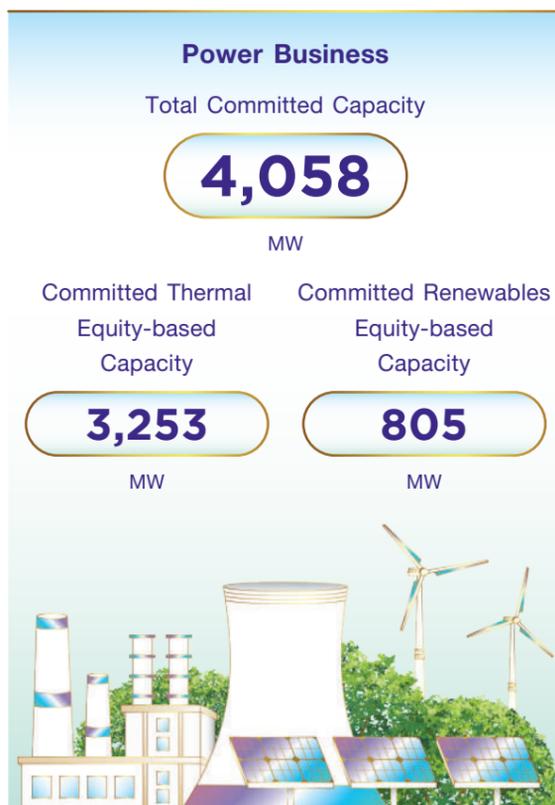
Million USD

+42%

Energy Resources



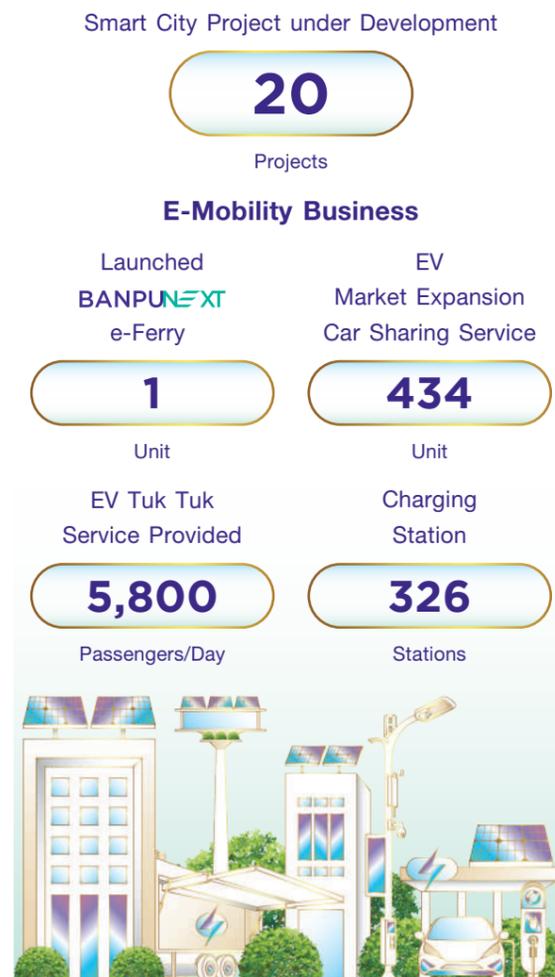
Energy Generation



Energy Technology



Smart City & Energy Management Business



	For the Year Ended			
	31-Dec-22	31-Dec-21	31-Dec-20	
Financial Position				
Total Assets	(Million USD)	12,638	10,946	9,377
Total Liabilities	(Million USD)	8,229	7,843	6,562
Total Shareholders' Equity	(Million USD)	4,409	3,103	2,815
Issued and Paid-up Share Capital	(Million USD)	243	199	147
Operational Results				
Sale Revenues	(Million USD)	7,693	4,124	2,283
Cost of Sales	(Million USD)	(3,616)	(2,393)	(1,822)
Gross Profit	(Million USD)	4,077	1,731	460
Selling and Administration Expenses	(Million USD)	(674)	(475)	(365)
Royalty Fee	(Million USD)	(592)	(294)	(183)
Other Revenues	(Million USD)	441	130	155
Other Expenses	(Million USD)	(1,182)	(445)	(31)
Profit from Operation	(Million USD)	2,070	647	36
Share of Profit from Joint Ventures	(Million USD)	339	227	135
Interest Expenses	(Million USD)	(257)	(174)	(173)
Financial Expenses	(Million USD)	(8)	(10)	(6)
Corporate Income Tax	(Million USD)	(521)	(198)	(9)
Non-controlling Interests	(Million USD)	(461)	(189)	(39)
Net (Loss) Profit	(Million USD)	1,162	304	(56)
EBITDA	(Million USD)	3,916	1,778	563
Financial Ratios				
Gross Profit Margin	(%)	53.0	42.0	20.2
Net (Loss) Profits to Total Revenues	(%)	13.7	6.8	(2.2)
Returns on Assets	(%)	9.9	3.0	(0.6)
Returns on Equity	(%)	30.9	10.3	(2.0)
Interest Coverage Ratio	(Times)	9.4	5.8	2.5
Net Debt to Equity	(Times)	0.74	1.31	1.47
Data per Share				
Earnings per Share	(USD)	0.162	0.049	(0.009)
Book Value per Share	(USD)	0.52	0.46	0.55
Dividend per Share	(THB)	1.20*	0.45	0.30

* The Company announced a total dividend of THB 1.20 per share arising from its performance during the period from 1 January 2022 to 31 December 2022, of which THB 0.45 was paid on 30 September 2022. The remaining dividend of THB 0.75 per share for 2022 performance will be paid on 28 April 2023.

Remark: Financial figures are based on the consolidated financial statement.

OPERATIONAL RESULTS

	For the Year Ended		
	2022	2021	2020
Coal Sales Volume	(Million Tonnes)		
Sources - Indonesia (ITMG)	16.3	18.2	19.6
Other Sources	2.7	1.9	1.6
Total Sources - Indonesia	18.9	20.1	21.2
Sources - Australia	8.5	9.8	12.5
Sources - China (Traded Coal)	2.8	1.8	1.0
Sources - Others	0.7	0.2	0.0
Total Coal Sales Volume	31.0	32.0	34.7
Natural Gas Sales Volume	(Billion Cubic Feet Equivalent)		
Natural gas sales volume - Marcellus	50.7	56.1	61.3
Natural gas sales volume - Barnett	229.3	190.1	50.4
Total Natural Gas Sales Volume	280.0	246.2	111.7
Revenue	(Million USD)		
Revenue from Indonesia (ITMG)	3,325	1,939	1,084
Other Sources	325	151	56
Total Revenue from Indonesia	3,650	2,090	1,140
Revenue from Australia	1,253	728	698
Revenue from China (Traded Coal) and Other Sources	287	91	41
Revenue from Coal Business	5,190	2,909	1,878
Revenue from Gas Business*	1,658	890	120
Revenue from Power Business	746	244	196
Revenue from Other Businesses	99	80	87
Total Revenues	7,693	4,124	2,283
Gross Profit Margin	(%)		
Gross Profit Margin - Indonesia (ITMG)	72	62	31
Gross Profit Margin - Other Sources	4	-5	5
Gross Profit Margin - Indonesia	66	57	30
Gross Profit Margin - Australia	38	7	6
Gross Profit Margin - China (Traded Coal)	16	12	32
Gross Profit Margin - Coal Business	57	43	21
Gross Profit Margin - Gas Business	61	54	11
Gross Profit Margin - Power Business	12	6	25
Gross Profit Margin - Other Businesses	24	-18	5
Total Gross Profit Margin	(%) 53	42	20

* Included revenue from the new natural gas field located in North Texas in The U.S. invested on 30 June 2022.

Revenue from Coal Business

(Unit : Million USD)



Revenue from Gas Business*

(Unit : Million USD)



Revenue from Power Business

(Unit : Million USD)



Revenue from Other Businesses

(Unit : Million USD)



Total Revenues

(Unit : Million USD)



* Included revenue from the new natural gas field located in North Texas in The U.S. invested on 30 June 2022.

THE BOARD OF DIRECTORS' REVIEW

40 years of Banpu, powering ahead to deliver a Better Living for All

Over the past 40 years of operations to deliver energy sustainability, Banpu has continuously developed and transformed its business to overcome every challenge and seek business opportunities amid uncertainty for sustainable growth. We have always adhered to the environmental, social, and governance (ESG) principles to ensure that Banpu Group can generate consistent and favorable long-term returns for our shareholders and investors while also creating sustainable benefits for all stakeholders.



Mr. Chanin Vongkusolkit
Chairman of
the Board of Directors



Over the past 40 years of operations to deliver energy sustainability, Banpu has continuously developed and transformed its business to overcome challenges and seize business opportunities amid uncertainty to ensure sustainable growth. In 2022, the world continued facing volatility in terms of climate change, geopolitical conflicts, the energy crisis, and cyber threats. Well aware of such challenges, the Board of Directors has prioritized business continuity while commitment to the environmental, social, and governance (ESG) principles to ensure that Banpu Group can generate consistent business growth and favorable long-term returns for our shareholders and investors while also creating sustainable benefits for all stakeholders.

Regarding the corporate strategic plan, in the past year, the Board of Directors oversaw the implementation of the 5-year strategic plan (2021-2025), which is currently in the medium term of the plan. The Board approved an improved operational plan proposed by the management to ensure better support to the strategic plan, which encompasses decarbonizing all of our assets, deploying Carbon Capture, Utilization and Storage (CCUS) technology, building the new S-curve by investing in funds that target the industries of the future, developing our human resources and operation capability for the energy trading business, as well as promoting cross-business-unit and cross-country collaborations to ultimately leverage the robust Banpu's business ecosystem.

One of the major responsibilities of the Board of Directors is to oversee risk management, particularly in an unpredictable and rapidly changing world. In 2022, Banpu managed risks by implementing a plan to enhance production efficiency in order to cope with price fluctuations and energy demand. Consequently, we were able to capitalize on the upside from rising market prices resulting in a record cash flow. The Board of Directors and management team prioritize risk management and strategic planning to achieve growth according to Banpu's target while maintaining an acceptable risk appetite. Additionally, we invested more in greener energy and energy technology businesses under the Greener & Smarter strategy, which aligns with future energy trends.

Furthermore, the Board of Directors attaches great importance to independence and transparency in the governance of the Company and annually reviews "the Corporate Governance Policy and Code of Conduct." In 2022, the Company amended the Corporate Governance Policy and the Practices of the Board of Directors of Banpu Public Company Limited regarding the appointment of the Lead Independent Director to increase the role of independent directors in enhancing corporate governance.

The Board realizes the importance of succession planning and the development of successors to crucial positions. We oversee succession of senior management positions and recruit new executives to strengthen the workforce in all countries. Moreover, we have continuously developed and prepared the next generation for top leadership roles. In 2022, the Company introduced programs such as the Banpu International Business Leader Program (IBLP) and the Banpu Business Leaders Development Program to cultivate future leaders. We also have other programs that empower leaders through cross-functional and cross-country development processes, providing active learning opportunities. Our objective is to prepare a new generation of leaders who can effectively execute Banpu's strategy to achieve seamless growth.

With adherence to ESG principles, Banpu received several domestic and international sustainability awards and recognitions in 2022. These includes the Sustainability Awards of Honor for the 5th consecutive year and being included in the Thailand Sustainability Investment (THSI) list for the 8th consecutive year by the Stock Exchange of Thailand. At the international level, Banpu was selected as a member of Dow Jones Sustainability Indices (DJSI) for the 9th consecutive year, reflecting our outstanding ESG performance and underscores our commitment to responsible business operations.

The Board of Directors would like to extend our heartfelt appreciation to our valued shareholders, investors, supporters, business partners, stakeholders, and all involved parties in Thailand and abroad for your continued support over the past four decades. Your unwavering support has enabled us to continue our commitment to deliver "Smarter Energy for Sustainability" to the world. We pledge to keep driving our business forward and maintain our position as a leading international versatile energy provider with our responsibility toward the world, the environment, society, and corporate governance to sustainably power a Better Living for All.

CHIEF EXECUTIVE OFFICER REVIEW

“

We are scaling up our greener portfolio, exploring disruptive growth markets and powering ahead with the acceleration of our sustainability transformation to a Greener & Smarter value structure.

”



Ms. Somruedee Chaimongkol
Chief Executive Officer



The current global economic and energy crisis has underlined the importance of Banpu's responsible approach to the energy transition. By diversifying its energy resources, energy generation, energy technology and distribution channel. Banpu has been able to honor its commitment to ensuring sustainable energy supplies that are *reliable, affordable* and *eco-friendly*. As a leading international versatile energy provider, Banpu has a duty to supply energy both now and in the decades to come.

Strong commodity prices in 2022 generated strong cashflows for Banpu which have enabled us to reduce group gearing and accelerate investments in lower carbon and clean energy technology sectors. Key progress last year included the major expansion of our US natural gas production and midstream integration, continuous renewable energy business growth, and investment in energy technology businesses such as batteries, energy management and smart city solutions.

2023 marks a very special year for Banpu as we celebrate our 40th Anniversary! Banpu is stronger than ever before and continues to maintain top ESG performance. We have qualified for the Dow Jones Sustainability Indices (DJSI) for the 9th consecutive year and are widely recognized as an *'Energy Transition Leader'* across the Pan-Pacific Rim.

In this 'Ruby' anniversary year, I would like to thank all our stakeholders, including our dedicated employees, supportive partners and loyal customers, for diligently driving our transformation forward. In 2023, we are *powering ahead* with Banpu's transformation and are set to deliver strong returns for our shareholders and stakeholders in the coming years.

Financial Performance

The continued impact of Covid-19 and geopolitical tension between Russia and Ukraine have greatly impacted the global economy, leading to volatile market conditions and a global energy crisis.

In 2022, Banpu generated a consolidated group EBITDA¹ of USD 3,916 million, a 120% increase from the previous year. The Group's consolidated EBITDA is comprised of USD 2,654 million from the mining business, USD 1,052 million from our gas business, and USD 231 million from our power business.

Banpu's consolidated net profit after tax was USD 1,162 million after a foreign exchange translation gain of USD 5 million and a derivative loss of USD 816 million.

The TRIS rating agency affirmed Banpu's credit status at "A+" with a stable outlook on its senior unsecured debentures, reflecting confidence in our business efficiency and robust cash flows.

Energy Resources

Gas Business

In 2022, the Henry Hub benchmark price averaged USD 6.4/MMBtu. Banpu's gas subsidiary in the U.S., BKV, acquired upstream and midstream assets in the North Texas Shale for USD 750 million, reinforcing Banpu's position as one of the top 20 gas-weighted natural gas producers in the U.S. market. This acquisition will increase Banpu's gas net production to 864 MMcf and 1P reserves to 5.8 TCF.

¹ Earnings before interest, tax, depreciation and amortisation.

In 2022, BKV generated EBITDA of USD 1,052 million², substantially higher than in 2021 due to a surge in natural gas prices. In our second quarter, BKV entered a definitive agreement with EnLink Midstream to develop a Carbon Capture, Utilization and Storage (CCUS) project in the Barnett Shale region of North Texas. This strategic partnership is designed to mitigate carbon dioxide emissions from BKV's owned and operated upstream businesses in alignment with Banpu's commitment to achieve Net Zero scope 1 and 2 emissions from BKV's owned and operated upstream businesses by 2025.

In our third quarter, BKV entered into a CCUS project development agreement with Verde CO₂ called "BKV Verde"; and in our fourth quarter, BKV reached an internal final investment decision on a second CCUS project.

Mining Business

Banpu seeks to ensure the stable delivery of higher-quality coal while remaining a responsible and reliable supplier to its customers and stakeholders. Banpu Group coal sales in 2022 totaled 35.2 million tonnes (Mt) versus 36 Mt in the previous year. Total coal sales from Banpu's Indonesian mines were 19.6 Mt, with 8.5 Mt from our Australian mines and 7.0 Mt from our China operations. Compared to 2021, production from our Indonesian and Australian mines decreased, while output from our Chinese mines increased.

Sales to our ASEAN customers this year amounted to 7.5 Mt, and sales to customers in China increased by 16% in 2022 to 13.6 Mt. In South Asia, sales in India reached 1.1 Mt while sales in Bangladesh were at 1.0 Mt. Sales to customers in Japan, South Korea and Taiwan decreased to 5.1 Mt while sales to domestic customers in Australia totaled at 5.5 Mt.

The benchmark NEX Index representing thermal benchmark prices at Newcastle in Australia for high-grade export coal increased to an average of USD 367 per tonne compared to USD 138 per tonne

in 2021 due to supply shortages and recovering demand. Banpu Group's weighted average coal selling price was USD 168 per tonne in 2022 compared to USD 91 per tonne in 2021.

In order to accelerate our transition towards Greener & Smarter energy businesses, we are no longer investing in new coal mining assets and will be integrating clean energy, such as solar and battery powered solutions to improve energy efficiency across our mining operations.

Indonesian Mining Business

PT. Indo Tambangraya Megah Tbk (ITM) is listed on the Indonesian Stock Exchange (IDX) and is approximately 67% owned by Banpu. ITM recorded an EBITDA of USD 1,846 million in 2022, an increase from the previous year due primarily to a gain in average selling prices, peaking at USD 211 per tonne in 3Q22, despite a decrease in sales volume at 18.9 Mt in 2022, down from 20.1 Mt in 2021.

ITM's coal output decreased by 9% in 2022 to 16.7 Mt: 6.8 Mt from Indominco, 3.1 Mt from Trubaindo, 5.7 Mt from Bharinto, 0.2 Mt from Embalut and 0.9 Mt from Jorong. ITM's average unit cost increased to USD 94 per tonne from USD 59 per tonne due to an increase in royalty costs, fuel prices and the adjustment of DMO tariffs due to changes in regulations.

Australia Mining Business

Centennial's EBITDA in 2022 increased by 279% to an equivalent of USD 578 million. Centennial's total output was down by 10% to 8.7 Mt in 2022 compared to 9.5 Mt in 2021. This decrease is due to longwall relocation delays at Mandalong and unfavorable conditions at Springvale. Clarence saw a slightly lower production from 1.4 Mt to 1.3 Mt, while Airly decreased to 1.2 Mt from 1.3 Mt. For the Northern operations, Mandalong production decreased to 2.8 Mt from 3.8 Mt and Myuna output slightly increased to 1.1 Mt from 0.9 Mt.

China and Mongolia Mining Business

In 2022, our mining operations in China accounted for USD 230 million in EBITDA, a significant increase from 2021. Gaohe's average selling price increased by 15% to USD 153 per tonne while sales volume remained stable at 8.7 Mt. Gaohe's output increased to 9.4 Mt. At Hebi Zhong Thai, in Henan Province, output increased from 0.7 Mt to 0.8 Mt. In Mongolia, during the year, the Group considered to provide a provision for the impairment loss of one coal mine under development because the public transportation infrastructure that is necessary for commercialization of the project did not progress as plan, while the other remaining projects are under development and continued on pilot projects and feasibility studies.

Energy Generation

Banpu Power (BPP)'s EBITDA in 2022 was USD 231 million, compared to USD 105 million in 2021. Currently, BPP operates thermal power and renewable power assets in the U.S., North Asia and the Greater Mekong region.

This growth derived from the development of renewable energy projects in Vietnam (Vinh Chau wind, Chu Ngoc solar, and Nhon Hai solar) and the upcoming development of a major solar rooftop in China (Zhengding rooftop). Banpu Group is well on track to reach its growth target of 6.1 GWe by 2025.

Thermal Power Business - Greater Mekong Region

BPP has two major thermal power operations in the Greater Mekong region: a 50% stake in BLCP, a coal-fired power plant in Thailand with a 1,434 MW capacity, and a 40% stake in HPC, a coal-fired mine-mouth power plant in Laos with a 1,878 MW capacity. This year, BLCP's EBITDA recorded USD 56 million

with an excellent Equivalent Availability Factor (EAF) of 87%. HPC's EBITDA reached USD 357 million, with an EAF of 86%.

Thermal Power Business - China

BPP holds three legacy combined heat-and-power (CHP) operations in China: Luannan, Zouping, and Zhengding - with a total capacity of 548 MWe. This year the combined EBITDA of the CHP operations dipped to USD 0.1 million.

BPP has a 30% stake in the Shanxi Lu Guang power plant, a coal-fired power plant that uses advanced clean coal ultra-supercritical technology with a total capacity of 1,320 MW. The plant saw improved performance in 2022 due to an increase in power tariffs through power trading and higher power sales.

Thermal Power Business - Japan

In the second quarter of 2021, BPP acquired a 33.5% stake in Nakoso IGCC, the world's largest Integrated Gasification Combined Cycle power plant. While still in its early stages of operation, Nakoso IGCC has a 73 MW capacity, with a reported net generation of 1,332 GWh. The plant showed an EAF of 32% in 2022, representing a contribution of USD 8.11 million to Banpu Group's total profit.

Thermal Power Business - U.S.

Temple I CCGT power plant has 768 MW in power capacity with a net generation of 3,810 GWh. The power plant utilizes High Efficiency, Lower Emissions (HELE) technology and is one of the most efficient Combined Cycle Gas Turbines (CCGT) power plants for ERCOT, Texas' electrical grid operator.

In 2021 BPP and BKV both acquired 50% of Temple I CCGT. In 2022, Temple I CCGT recorded USD 87 million

² IFRS EBITDA. There are significant differences between Banpu's presentation of IFRS EBITDA and BKV's presentation of US Non-GAAP EBITDAX, including treatment of derivative gains and losses, depletion expense, accretion expense, stock compensation expense, BNAC expenses, equity income, and contingent consideration gains and losses for asset acquisitions.

in EBITDA. Growth is due to peak energy demand during the summer season, higher power prices and our integration into the downstream energy retail business through BKV Energy.

Renewable Energy Business

Banpu's solar business grew to 623 MW of operating capacity in 2022: 177 MW in China, 141 MW in Japan, 167 MW in Australia and 138 MW in Vietnam. In 2022, Banpu was selected by the Zhengding government to develop a major solar rooftop project in China with a potential production capacity of up to 167 MW by 2023. In Vietnam, Banpu has recently acquired the 15 MW Chu Ngoc solar power plant, 35 MW Nhon Hai solar power plant, and 6 MW of solar rooftop capacity from Solar ESCO.

In China, Banpu's solar business recorded an EBITDA of USD 21 million in 2022 (-6% year-on-year). The average capacity factor was 15%. Power sold was 227 GWh, a slight increase from 223 GWh in 2021.

In Japan, Banpu's solar business generated a cash distribution of USD 9.4 million, up by 10% year-on-year. The power sold was 211 GWh, a 31% increase from 2021. The average capacity factor remained stable at 12%.

In Australia, Beryl and Manildra solar farms sold 194 GWh, 93 % more than in 2021, with an average capacity factor of 18%. However, the farm's profit contribution dipped due to weather impacts of La Niña, derivative losses, and curtailment.

In Vietnam, Banpu's solar and wind energy business generated USD 10 million in EBITDA in 2022, a 233% increase year-on-year. The average capacity factor recorded was 16% while the power sold was 106 GWh, an 150% increase from 42 GWh in 2021, due to the newly acquired solar farm in Vietnam in first half of the year.

Banpu's renewable power generation businesses have reached 718 MW in total operating capacity. This year we saw notable portfolio growth in our Vietnamese renewable energy generation businesses with the recent acquisition of operating Nhon Hai solar (35 MW) and Chu Ngoc solar (15 MW). In addition, we have also completed construction and pre-commissioning activities for phase 1 of Vinh Chau wind, with an operating capacity of 30 MW.

Energy Technology

Solar Rooftop and Floating Solar Business

This year Banpu's solar rooftop and floating solar business reached 205 MW of committed capacity. Banpu's acquisition of the Solar ESCO Vietnam solar development platform added 6 MW of equity capacity to our solar business total.

Banpu developed major solar rooftop projects across strategic geographies including 64 MW committed capacity in Zhengding, China and 8.2 MWp in total secured capacity for IBP in Indonesia.

Energy Storage System Business

Under Banpu NEXT, Banpu partnered with Cherdchai Motor Sales and Durapower to develop a lithium-ion (Li-ion) battery assembly plant for electrical buses in Thailand, which will become operational in 2023 and to expand production capacity to 1 GWh by 2026. Furthermore, with a view to scaling-up its battery business and ESS value chain, Banpu NEXT has acquired more shares in Durapower, increasing its stake in the company from 47.68% to 65.1%. Banpu NEXT currently has a 1.0 GWh Li-ion capacity with plans to expand to 3.75 GWh by 2025.

Banpu entered a joint venture with Singapore-based energy storage solutions provider, VFlowTech, to develop next-generation hybrid energy storage solutions to

address the growing demand for renewable energy in Southeast Asia. Their joint venture, LiV Energy Venture, is a hybrid energy storage solution, equipped with advanced energy management systems and optimized for microgrid application. This hybrid vanadium redox flow (VRB) and Li-ion battery energy storage solution will be deployed in smart microgrid applications.

E-mobility Business

Banpu is making progress with its Mobility-as-a-service (MaaS) platform for e-mobility which encompasses an electric tuktuk ride hailing app, MuvMi, a carsharing app, Haupcar, an EV-charging infrastructure business, EVolt, and the e-club car platform Beyond Green.

Notable achievements include MuvMi's expansion of its fleet to 334 e-tuktuks in operation and an additional 342 e-tuktuks undergoing the registration process. Furthermore, Haupcar has expanded its advanced carsharing service to the delivery segment with a total of 65 EV cars provided to 65 branches of 7-11 convenience stores and 34 EV cars under carsharing service.

Smart City and Energy Management Business

Banpu is currently engaged in over 20 smart city and energy management projects. Banpu acquired 25% of Thai-based company Altotech Global for IoT space and data analytics development to strengthen its Energy Management Systems business. Altotech Global has developed an automatic IoT platform called "Alto Energy Edge" to support energy management and optimization in office buildings and hotels.

Banpu invested USD 15 million into Eurazeo's Smart City Fund II, a CVC fund with a focus on new energy, smart mobility and industrial technology. Furthermore, to expand our district cooling systems capacity,

Banpu entered a joint venture with SP Group in Singapore. In addition, Banpu NEXT has signed a memorandum of understanding (MOU) with PlanetComm, a leading integrated digital technology provider in Thailand, to collaborate on the expansion of a new smart safety platform for smart city infrastructure.

Energy Trading

Banpu has reached a 1,719 GWh energy trading capacity, currently trading in Japan with an outlook to expand to liberalized markets where there is a Banpu Group presence.

Banpu secured 8 MW of electricity supply with KEPCO through a Baseload Auction for the period of April 2023 to March 2024. We engaged with 21 small-to-medium scale clients with an annual total sales volume of 5 GWh.

Corporate Social Responsibility

In 2022, Banpu augmented its Corporate Social Responsibility programs to support education, sports, social enterprise, charities and disaster relief projects.

Banpu resumed its "Fight Against Covid-19" project in partnership with Health and Elderly Establishment Confederation (HEC) to donate 2,000 care packages worth over USD 87,000 to home patients with restricted access to government services. Under the same partnership, Banpu donated Covid-19 emergency care packages worth USD 109,000 to the three southernmost provinces of Thailand: Pattani, Narathiwat and Yala.

To support natural disaster relief from storms and floods, Banpu donated over USD 145,000 to the Thai Red Cross Disaster Operations Center to aid in emergency care package distribution - medicines, rations, clothing - to over 4,500 households throughout central and northeastern Thailand.

For 16 years now, Banpu has been supporting educational development with a philosophy that “Learning is the power of change and development.” In 2022, Banpu contributed over USD 34,000 to the development of 18 schools across the southernmost provinces of Thailand. At present, Banpu has contributed about USD 600,000 to more than 170 schools.

In October 2022, Banpu organized its 17th “Power Green Camp” under the theme “Climate Change, We Must Change” to raise climate change awareness among youths. The event selected 50 students across Thailand to participate in field activities as they learn about coastal erosion, biodiversity, carbon emissions, and climate change. The event closed with a group project contest for the best environmental science project.

Banpu hosted its 11th annual “Banpu Champions for Change (BC4C)” program in partnership with ChangeFusion, a Thailand-based NGO. The program seeks to accelerate social entrepreneurs in generating social impacts and business sustainability while maintaining a healthy social enterprise ecosystem. The event included a forum for entrepreneurs and a marketplace to present products and services as well as a prize pool of over USD 37,000.

Environment, Social and Governance Performance

In 2021, Banpu established an ESG (environment, social, governance) Committee to optimize sustainable development practices and support the Board of Directors’ ongoing commitment to ESG. This move reflects the company’s commitment to deliver affordable, reliable and eco-friendly energy aligned with the United Nations’ Sustainable Development Goals (SDGs).

At Banpu, we are proud to embrace the global shift towards more sustainable investment and development.

Our commitment to building sustainable stakeholder value through environmental care, social investment and best practice corporate governance has been the cornerstone of our philosophy for almost four decades now.

For the 9th consecutive year, Banpu has been selected as a member of the Dow Jones Sustainability Indices (DJSI). The DJSI is managed by the world’s most prestigious sustainability rating agency, SAM and S&P Dow Jones Indices. This year, we achieved a higher total sustainability score, with major improvements in key areas including Environmental Eco-efficiency, Human Capital Development, Labor Practices, Occupational Health & Safety, and Cyber Security. These results demonstrate the company’s steadfast commitment to ESG principles and delivering “Smarter Energy for Sustainability.”

For the 5th consecutive year, Banpu has received the Sustainability Awards of Honor for Sustainability Excellence from the SET Awards 2022 and has been shortlisted for Thailand Sustainability Investment (THSI) list 2022 for the 8th year running. Furthermore, Banpu ranked amongst the top 296 Listed Companies with Excellent Corporate Governance Scoring, according to the Corporate Governance Report of Thai Listed Companies 2022. Banpu has also received “Sustainability Disclosure Award 2022” from Thaipat institute for consistent and excellent ESG principles conduct.

For the 3rd consecutive year Banpu has reaffirmed its “A” rating from the ESG Ratings by MSCI. For our credit rating, we received an “A+” score from TRIS Rating with a stable outlook on its senior unsecured debentures, reflecting the company’s stable business growth.

Strategic Review and Outlook

In 2015, we launched our Greener & Smarter growth strategy designed to harness disruptive mega-trends for the long-term benefit of our shareholders and stakeholders. Banpu has been actively implementing a transformation to a more sustainable business model and business structure through the steady decarbonization and diversification of our portfolio. We aim to deliver affordable, reliable, and eco-friendly energy throughout the Asia-Pacific region and beyond.

Our transformation strategy involves establishing a strong position in the U.S. shale gas sector, continuously expanding our renewable energy portfolio and developing clean energy technology businesses under our flagship company Banpu NEXT. Our integrated portfolio allows us to harness cashflow from our conventional energy operations to fund growth in our renewables and clean technology ventures.

In order to maintain steady progress we have set ourselves some key sustainable development goals, including the reduction of greenhouse gas emissions, especially methane, across all of our core businesses. By 2025 we aim to significantly increase EBITDA contribution from our Greener & Smarter businesses and invest in more high-potential S-curve and ‘Antifragile’ businesses such as healthcare.

2022 was another fantastic year for our gas business. With the major expansion and midstream integration of our US natural gas production, gas is now firmly placed as one of Banpu’s core businesses. We will continue to leverage cash flow from our conventional energy businesses to fund the expansion of our Greener & Smarter portfolio.

Banpu NEXT is at the forefront of energy sector innovations, accelerating Banpu’s transformation by developing clean energy technologies for the energy ecosystem of the future. Banpu NEXT continues to harness the ‘3D’ global megatrends of Digitalization, Decentralization and Decarbonization, to develop a cutting-edge, fully integrated and future-facing energy technology portfolio.

To reach these new horizons, Banpu NEXT has set itself some ambitious growth targets. By 2025, our solar rooftop and floating business are targeted to reach 500 MW of committed capacity, our energy storage systems business is targeted to reach 3.75 GWh of Li-ion battery production capacity, our e-mobility business will expand significantly to establish our integrated Mobility-as-a-Service platform, we aim to have 30 smart cities and energy management projects in operation - and we aim to reach 2,000 GWh of electricity sales.

Banpu is a people-centric organization. Our corporate culture is driven by the Banpu Heart mantra of ‘Passion, Innovation and Commitment’. We are *passionate* about accelerating a sector wide transition towards more sustainable models through cutting-edge *innovation* and an unwavering *commitment* to our vision of a better future.

As we celebrate our 40th anniversary year, Banpu’s Antifragile spirit shines brighter than ever. Since 1983 we have been a pioneering change in the energy sector, harnessing disruptive forces to propel us forward to new horizons. Today we are blazing ahead with even bolder ambitions for the energy sector and beyond.

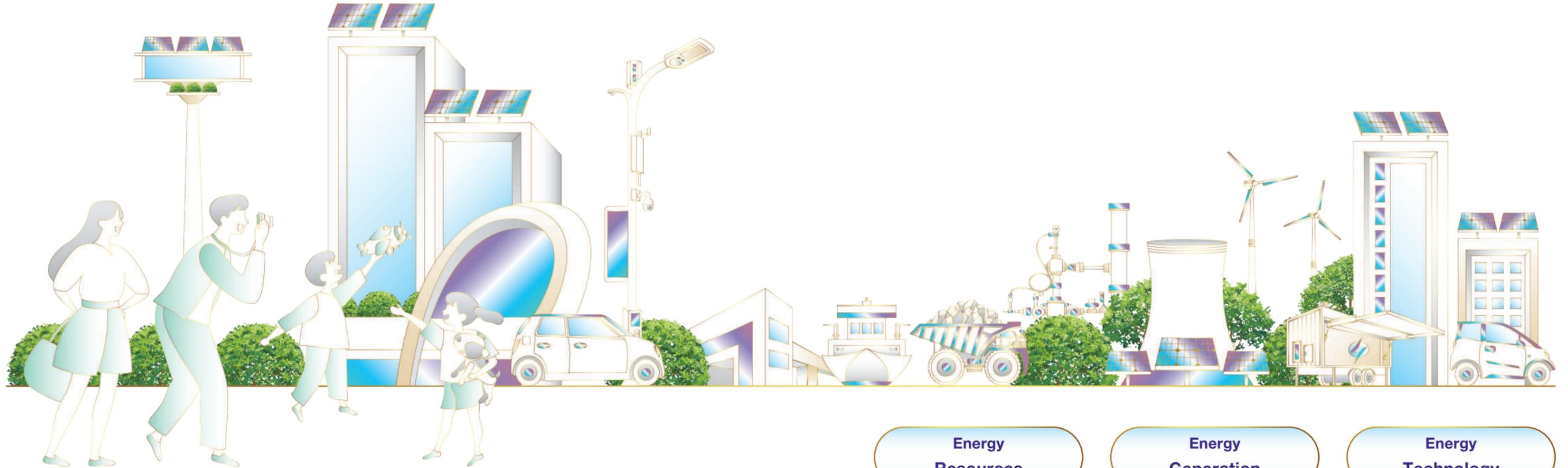
It is an honor and a privilege to serve Banpu’s mission. I would like to extend my gratitude to Banpu’s Board of Directors, stakeholders and shareholders for their continued support.



PART 1

**BUSINESS AND
OPERATIONAL
RESULTS**

POLICY AND BUSINESS OVERVIEW



Banpu Public Company Limited was established on 16 May 1983 as “Ban Pu Coal Company Limited” with a THB 25 million registered capital. Banpu was founded by members of the Vongkusolkit and Auapinyakul families in order to subcontract a coal mining operation at Banpu Mine (BP-1 Mine) located in Li District, Lamphun Province from the Department of Alternative Energy Development and Efficiency.

On 4 May 1989, Banpu was listed on the Stock Exchange of Thailand (SET). The Company later changed its name on 29 July 1993 to “Banpu Public Company Limited”.

With nearly four decades of experience in business operations both locally and internationally, Banpu has become an **International Versatile Energy Provider**. We aim to deliver the best-in-class energy solutions with our extensive expertise in integrated energy solutions. Currently, we operate in many countries across Asia-Pacific, namely Thailand, Indonesia, China, Australia, Lao PDR, Mongolia, Japan, the United States of America, and Vietnam.

We are committed to driving the growth and robustness of the Banpu ecosystem through the **Greener & Smarter strategy** by reinforcing eco-friendly businesses and leveraging smart technologies and innovations. Steered by the strategy, Banpu is able to fully deliver **“Smarter Energy for Sustainability”** to all stakeholders through 3 core business groups of integrated energy solutions as follows:

Energy Resources

Coal and gas including related operations such as marketing, trading, logistics, fuel procurement, and transmission

Energy Generation

Thermal and renewable power plants

Energy Technology

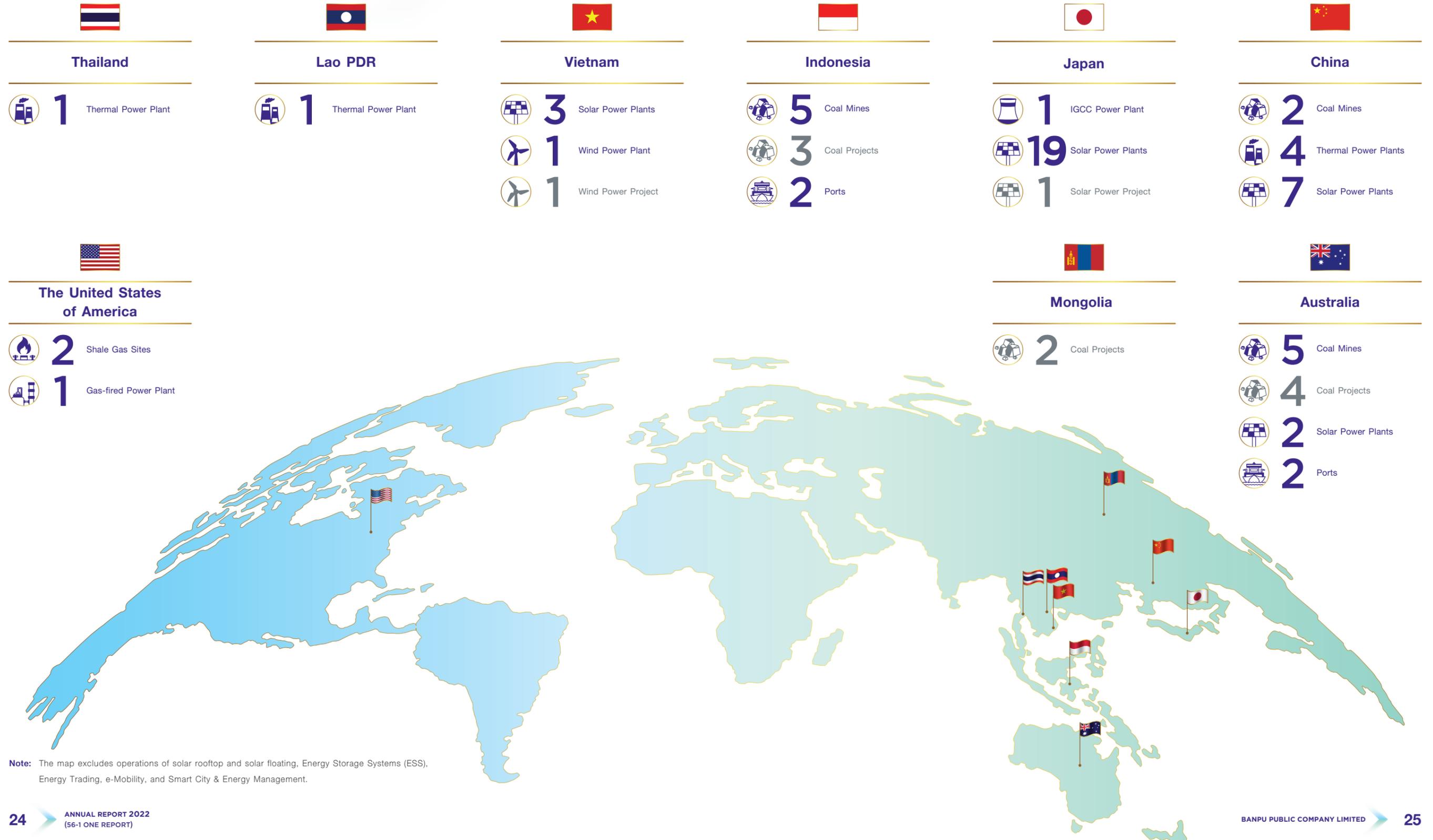
Solar rooftop and solar floating, Energy Storage Systems (ESS), Energy Trading, e-Mobility, and Smart City & Energy Management

Banpu strives to create energy sustainability for the world through the delivery of affordable, reliable, and eco-friendly energy. We also embrace the **ESG principles** in our business conduct adherence to the environmental, social, and governance. Moreover, our employees are connected with

“Banpu Heart” corporate culture, which comprises 3 core values: Passionate, Innovative, and Committed. Adherence to the corporate culture has significantly empowered Banpu to cope with any changes and build stakeholder confidence in line with our brand promise **“Our Way in Energy”**.

BANPU GROUP'S MAP OF OPERATIONS

Banpu is growing its business to deliver “Smarter Energy for Sustainability” Accelerating business portfolio expansion under the **Greener & Smarter strategy**, focusing on greener energy and energy technology to respond to global energy trends and create sustainability in the energy path of the future.



Note: The map excludes operations of solar rooftop and solar floating, Energy Storage Systems (ESS), Energy Trading, e-Mobility, and Smart City & Energy Management.

VISION & MISSION

VISION

The Asian energy company at the heart of innovation, technology and sustainability



MISSION

Build sustainable value for all our stakeholders as a trusted partner, with emphasis on care for the earth and society

Promote innovation, synergy, sustainability, and integration across the energy supply chain, between thermal and new energy technologies

Foster our corporate values, operational excellence, and uphold Banpu's reputation for integrity, professionalism and best practices

SUMMARY OF MAJOR CHANGES AND DEVELOPMENT IN 2022 AND CURRENT EVENTS



Banpu Renewable Singapore Pte. Ltd. (BRS), a wholly owned subsidiary company of Banpu NEXT reported that Shirakawa Solar Power Plant, which is located in Fukushima Prefecture, Japan, achieved Commercial Operation Date (COD). This 10 MW Solar Power Plant, which is under the 100% TK structure, entered into a Power Purchase Agreement (PPA) with Tohoku Electric Power Co., Inc. and is eligible for a Feed-in-Tariff (FiT) of 36 JPY/kWh for 19 years. The Shirakawa Solar Power Plant can generate and supply electricity to approximately 2,000 households.



25 January 2022

BRE Singapore Pte. Ltd. (BRES), a wholly owned subsidiary company of Banpu NEXT entered into a purchase and sale agreement (PSA) to acquire 100% stake in Licogi 16 Gia Lai Investment Renewable Energy Joint Stock Company (LCE Gia Lai) which owns Chu Ngoc Solar Power Plant and Licogi 16 Ninh Thuan Investment Renewable Energy Joint Stock Company (LCE Ninh Thuan) which owns Nhon Hai Solar Power Plant in Vietnam. The total transaction value was USD 26.69 million (approximately THB 883 million). Chu Ngoc Solar Power Plant has 15 MW capacity, achieved Commercial Operation Date (COD) since 4 June 2019 and Nhon Hai Solar Power Plant has 35 MW capacity achieved COD since 6 July 2020. Both Solar Power Plants are eligible for a Feed-in-Tariff (FiT) of US cents 9.35/kWh and will supply electricity through Vietnam's national power grid under a Power Purchase Agreement (PPA) with Vietnam Electricity (EVN) for a period of 20 years.



Nhon Hai Solar Power Plant



Chu Ngoc Solar Power Plant

27 January 2022

Banpu issued 5 tranches of unsubordinated and unsecured debentures with a debenture holders' representative in the name-registered certificate with a total value of THB 12,000 million. The 3-year, the 6-year, the 8-year, the 10-year and the 12-year debentures were offered to general and institutional investors at the interest rates of 1.76%, 3.11%, 3.58%, 3.89% and 4.12% per annum, respectively. The principal is to be repaid at the maturity date.

23 February 2022

>> The Board of Directors Meeting approved the Company's dividend payment at a rate of THB 0.45 per share for the operating results from 1 January to 31 December 2021. Previously, an interim dividend from the operating results from 1 January - 30 June 2021 had been paid out to shareholders at a dividend rate of 0.20 per share on 23 September 2021. The remaining dividend for the operating results from 1 July - 31 December 2021 was proposed to be paid to shareholders at THB 0.25 per share. The dividend payment was appropriated from the corporate income tax-exempt profit, on which shareholders are not entitled to tax credits. The dividend was paid on 29 April 2022.

>> **BPIN Investment Co., Ltd. (BPINI)**, a wholly owned subsidiary company of Banpu NEXT completed its divestment of its 47.5% shareholding in Sunseap Group Pte. Ltd. (Sunseap) to the purchaser, EDP Renováveis SA (EDPR). The conditions precedent with certain adjustments have been satisfied, therefore the final gross consideration paid to BPINI was SGD 469.2 million, equivalent to approximately USD 347.5 million (approximately THB 11,363 million). BPINI made its initial investment in Sunseap in 2017 with subsequent investments in 2018 and 2020 to support the growth of Sunseap. As of 30 June 2021, the cumulative amount invested by BPINI in Sunseap was SGD 236.6 million, equivalent to approximately USD 174 million (approximately THB 5,569 million). The decision to sell BPINI's shareholding in Sunseap is part of Banpu group's Portfolio Rationalization.

4 March 2022

BRES has entered into Shares Subscription Agreement (SSA) for the purchase of 49.04% shareholding in Solar Esco Joint Stock Company (Solar Esco), established and operating under the laws of Vietnam from existing shareholders for the amount of USD 14.5 million (approximately THB 466 million). Solar Esco is a leading renewable company in Vietnam, providing full-fledged rooftop solar power platform covering planning, development, and construction as well as providing Engineering Procurement and Construction (EPC) and Operation and Maintenance (O&M) service with diversified partner portfolio including commercial centers, industrial plants, and warehouse with existing capacity of 20.4 MW and potential of 106 MW in pipeline.



18 May 2022

BKV Corporation (BKV), 96.12% subsidiary of Banpu has signed a Purchase and Sale Agreement (PSA) to acquire natural gas and midstream assets in the Barnett Shale, United States of America from XTO Energy, Inc. and Barnett Gathering LLC (XTO), subsidiaries of Exxon Mobil Corporation. The transaction valued at USD 750 million (approximately THB 25,125 million), with contingent payments up to USD 50 million. The transaction closed on 30 June 2022 and the revenue recognition from the operation of this asset has been realized from 1 July 2022 onward.



28 June 2022

Banpu announced the appointment of Mr. Sinon Vongkusolkrit as the Chief Executive Officer of Banpu NEXT.

29 June 2022

Banpu Ventures Pte. Ltd. (BPV) a wholly owned subsidiary company of Banpu invested in the U.S. Healthcare industry through Public U.S. based healthcare investment fund as a founding limited partner for USD 150 million (approximately THB 5,298 million). This healthcare fund will focus on medical care and wellness business in the U.S. including Biopharma R&D and production using innovative technology to develop personalized medical products and services that effectively suit each individual, based on their different health profile.

12 July 2022



BKV and EnLink Midstream, LLC (EnLink), the key midstream operator in the US (including separation, compression, transports, and processes natural gas) entered into a definitive agreement to develop a Carbon Capture, Utilization and Sequestration (CCUS) project in the Barnett Shale in Texas. The project is expected to achieve first injection in Q4/2023.

21 July 2022



Banpu NEXT, a leading Smart Energy Solutions provider in Asia-Pacific, partnering with Cherdchai Motors Sales Co., Ltd., the largest bus operator in Thailand, and Durapower Holding Pte. Ltd., a global leader in performance lithium battery storage solutions, to set up lithium-ion battery assembly plant in Thailand, expected an initial operation to commence in 2023. Products from this plant will be engineered to support fast charging and offer high storage capacities to maximize the driving range of Cherdchai's e-Buses and address battery demands in all EV segments in Thailand with a plan to expand its production capacity to 1 GWh by 2026.

31 August 2022

The Board of Directors Meeting approved the interim dividend payment from operating results during 1 January - 30 June 2022, at a rate of THB 0.45 per share. The dividend payment was appropriated from the corporate income tax-exempt profit, on which shareholders are not entitled to tax credits. The interim dividend was paid out on 30 September 2022.

20 September 2022

Banpu issued 3 tranches of unsubordinated and unsecured debentures with a debenture holders' representative in the name-registered certificate, with a total value of THB 9,100 million. The 4-year, the 7-year, and the 10-year debentures were offered to general and institutional investors at the interest rates of 3.26%, 3.80% and 4.20% per annum, respectively. The principal to be repaid at the maturity date.

5 October 2022

Banpu reported the registration of the increase in paid-up capital of the Company, regarding the issue of warrants representing the right to purchase new ordinary shares of Banpu Public Company Limited (BANPU-W4) in which a total of 1,691,527,171 units of warrant were issued on 1 October 2021 with the last exercise date on 30 September 2022. The number of warrants exercised was 1,688,052,702 units, the number of common shares allocated for this exercise 1,688,052,702 shares. The Company has accordingly allocated 1,688,052,702 new common shares (par value of THB 1 per share) and registered as paid-in capital with the Ministry of Commerce, resulting in an increase in the Company's paid-up capital from THB 6,766,108,686 to THB 8,454,161,388.

18 November 2022

BKV progressed towards the Initial Public Offering (IPO) of its common stock by publicly filing a registration statement and preliminary prospectus on Form S-1 (Public Filing) with the U.S. Securities and Exchange Commission (SEC). The foregoing is in line with the resolution of the Board of Directors' Meeting No. 9/2022, held on 28 September 2022, which resolved to approve the Public Filing and BKV's application to list its common stock on the New York Stock Exchange (NYSE) under the symbol "BKV". The Company expects to remain as a major shareholder and controlling person of BKV, and BKV expects to remain as the Company's subsidiary on the completion date of the IPO. The foregoing details are subject to change as the Company's board of directors, BKV's board of directors and/or any persons designated by the Company's board of directors or BKV's board of directors may deem it appropriate.

27 December 2022

TRIS Rating Co., Ltd., affirmed the Company rating and the rating of unsecured debentures of Banpu Public Company Limited at "A+" with a stable outlook. The ratings reflect the Company's leading position in the Asia-Pacific coal industry, predictable cash flows from the power business, and its transition toward a greener energy portfolio under the Greener & Smarter strategy. The ratings take into consideration the volatility in coal and gas prices, and the declining coal price trend over the next 3 years, driven by China's coal import slowdown and global efforts to reduce carbon emissions. Banpu plans to invest mainly in shale gas assets in USA, gas-fired power plants, renewable energy, and other energy technology businesses.

20 February 2023

BPIN Investment Co., Ltd (BPINI), a wholly owned subsidiary of Banpu NEXT has increased its shareholding in Durapower Holdings Pte Ltd, an associated company, from 47.68 percent to 65.10 percent, and Durapower has become a subsidiary of Banpu, with the transaction value of USD 70 million. This is part of BANPU's strategy to scale up its Energy Storage System business and enhance the presence of Banpu NEXT to accelerate its growth plans.

22 February 2023

The Board of Directors Meeting approved the Company's dividend payment at a rate of THB 1.20 per share for the operating results from 1 January to 31 December 2022. Previously, an interim dividend had been paid out to shareholders at a dividend rate of THB 0.45 per share on 30 September 2022 for the operating results from 1 January to 30 June 2022. The remaining dividend for the operating results from 1 July - 31 December 2022 was proposed to be paid to shareholders at THB 0.75 per share. The dividend payment was appropriated from the corporate income tax-exempt profit, on which shareholders are not entitled to tax credits. The dividend is scheduled to be paid on 28 April 2023.

BANPU INFORMATION

Name and Location of Banpu Public Company Limited

Name (Thai)	บริษัท บ้านปู จำกัด (มหาชน)
Name (English)	Banpu Public Company Limited
Major Business	Energy
Registration Number	BorMorJor. 152
Authorized Capital	THB 10,149,163,028*
Paid-up Capital	THB 8,454,161,388**
No. of Shares	8,454,161,388 shares
Par Value	THB 1
Headquarters	27 th Floor, Thanapoom Tower, 1550, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand
Telephone	+66 2 694 6600
Website	www.banpu.com
Company Secretary	Telephone : +66 2 694 6859 e-mail : bodsec@banpu.co.th
Investor Relations	Telephone : +66 2 694 6684 e-mail : investor_relations@banpu.co.th
Corporate Communications	Telephone : +66 2 694 6680 e-mail : cc@banpu.co.th

Notes:

* The Extraordinary General Meeting of Shareholders No. 1/2021 held on 9 August 2021 approved the increase of the Company's registered capital from THB 5,074,581,513 to THB 10,149,163,028 by the issuance of 5,074,581,513 new ordinary shares at the par value of THB 1 per share. The Company registered the capital increase with the Ministry of Commerce on 20 August 2021.

** The Company has accordingly allocated 1,688,052,702 new common shares (par value of THB 1 per share) from exercise BANPU-W4 and successfully registered as paid-in capital with the Ministry of Commerce on 5 October 2022, resulting in an increase in the Company's paid-in capital from THB 6,766,108,686 to THB 8,454,161,388.

REVENUE STRUCTURE

For the previous 3 years ended 31 December 2022

Banpu Public Company Limited

Products/Services	Conduct by	% of Shareholding	2022		2021		2020	
			Revenue (USD Million)	%	Revenue (USD Million)	%	Revenue (USD Million)	%
Sales Revenues:								
1. Imported Coal	Banpu	-	57.47	97.49	39.85	99.48	45.82	95.30
2. Other Revenues	Banpu	-	1.48	2.51	0.21	0.52	2.26	4.70
Total Sales Revenues			58.95	100.00	40.06	100.00	48.08	100.00

Banpu Public Company Limited and its Subsidiaries

Products/Services	Conduct by	% of Shareholding	2022		2021		2020	
			Revenue (USD Million)	%	Revenue (USD Million)	%	Revenue (USD Million)	%
Sales Revenues - Domestic:								
1. Domestic Coal in Thailand	Banpu	-	57.47	0.75	39.85	0.97	45.82	2.01
	BMC	100.00	96.70	1.25	31.73	0.77	25.64	1.12
	BPI	100.00	-	-	3.16	0.08	-	-
2. Domestic Coal in Indonesia*	Indominco	65.14	106.99	1.39	93.11	2.26	53.79	2.36
	Bharinto	65.14	310.15	4.03	171.29	4.15	40.29	1.77
	Trubaindo	65.14	229.66	2.98	198.05	4.80	89.51	3.92
	Jorong	65.14	16.59	0.22	22.96	0.56	19.10	0.84
3. Domestic Coal in Australia	CEY	100.00	332.19	4.32	365.59	8.87	495.13	21.69
4. Coal Trading in China	BST	100.00	-	-	-	-	17.14	0.75
	BBET	100.00	200.52	2.61	55.33	1.34	4.60	0.20
5. Power in China	BIC	78.57	200.13	2.60	190.88	4.63	169.72	7.44
	BPPRIC	100.00	27.50	0.36	28.76	0.70	26.67	1.17
6. Power in Japan	BPPTGK	100.00	65.12	0.85	64.24	1.56	-	-
7. Power in the U.S.	BKV-BPP	100.00	501.92	6.52	20.19	0.49	-	-
8. Power in Australia	BEN	100.00	10.27	0.13	5.79	0.14	-	-
9. Power in Vietnam	ELMD	100.00	6.55	0.09	3.65	0.09	-	-
10. Gas	BNAC	100.00	1,657.73	21.55	890.73	21.60	120.45	5.28
11. Other Revenues			12.75	0.16	9.74	0.24	87.32	3.83
Total Sales Revenues - Domestic			3,832.24	49.81	2,195.05	53.23	1,195.18	52.36

Products/Services	Conduct by	% of Shareholding	2022		2021		2020	
			Revenue (USD Million)	%	Revenue (USD Million)	%	Revenue (USD Million)	%
Sales Revenues - Overseas:								
Coal - International Trade**	Indominco	65.14	834.96	10.85	578.73	14.03	418.04	18.31
	Kitadin	65.14	-	-	9.59	0.23	9.45	0.41
	Bharinto	65.14	1,153.74	15.00	590.64	14.32	195.38	8.56
	Trubaindo	65.14	843.46	10.96	345.70	8.38	248.62	10.89
	Jorong	65.14	-	-	3.81	0.09	11.81	0.52
	Energi	65.14	48.4	0.63	21.65	0.53	-	-
	CEY	100.00	921.08	11.98	362.07	8.78	202.60	8.88
	BMS	100.00	59.34	0.77	16.35	0.40	1.55	0.07
Total Sales Revenues - Overseas			3,860.98	50.19	1,928.54	46.77	1,087.45	47.64
Total Sales Revenues			7,693.22	100.00	4,123.59	100.00	2,282.63	100.00
Participating Profit (Loss) from Investment in Associated Companies (Equity Method)			339.36	-	227.14	-	135.33	-
Total Revenues			8,032.58	-	4,350.73	-	2,417.96	-

Notes:

- Other revenues consist of other services.
- The Company did not realize sales revenue from its power business in Thailand as its shareholding is not more than 50%
- BBET means Banpu (Beijing) Energy Trading Co., Ltd.
- BEN means Banpu Energy Australia Pty Ltd.
- ELMD means El Wind Mui Dinh Ltd.
- Basis of preparation of the information presented above is based on the generally accepted accounting principles which eliminate intercompany transactions. The amounts shown should not be reconciled with the statutory accounts of each territory.
- * Sales revenues from domestic coal in Indonesia operated by Indominco, Bharinto, Trubaindo, and Jorong in 2021 and 2020 are calculated from the Company's 67.13% shareholding.
- ** Sales revenues from coal - international trade operated by Indominco, Kitadin, Bharinto, Trubaindo, Jorong, and Energi in 2021 and 2020 are calculated from the Company's 67.13% shareholding.



PRODUCTS AND SERVICES



Energy Resources Group

Mining Business

Coal is a solid fuel, varying in color from brown to jet-black. The coal mining process starts from exploration of a potentially economic coal seam, production (excavation and transportation), coal selection, coal pulverization to attain the size and quality as required by the customers and stockpiling to be delivered to the customers.

Coal Mines in the Republic of Indonesia

The total coal production in 2022 was 16.6 million tonnes from the following mines.



1) Indominco Mine

It is operated by PT. Indominco Mandiri, a wholly-owned subsidiary of PT. Indo Tambangraya Megah Tbk (ITM). Located in Bontang, East Kalimantan Province, this open-pit mine has 23.5 million tonnes of coal reserves. The production capacity in 2022 was 6.81 million tonnes. The Bontang Coal Terminal is utilized for loading its coal to be exported from Indonesia.

2) Trubaindo Mine

It is operated by PT. Trubaindo Coal Mining, a wholly-owned subsidiary of ITM. Located in West Kutai, East Kalimantan Province, this open-pit mine has 32.5 million tonnes of coal reserves. Its production capacity in 2022 was 3.0 million tonnes.

3) Bharinto Mine

It is operated by PT. Bharinto Ekatama, a wholly-owned subsidiary of ITM. The mine is located in North Barito, Central Kalimantan Province and West Kutai, East Kalimantan Province, adjacent to the Trubaindo mine. This open-pit mine has coal reserves of 135.8 million tonnes, and its production capacity in 2022 was 5.7 million tonnes.



4) Jorong Mine

It is operated by PT. Jorong Barutama Greston, a wholly-owned subsidiary of ITM. Located in Tanah Laut, South Kalimantan Province, this open-pit mine has 7.3 million tonnes of coal reserves. Its production capacity in 2022 was 0.9 million tonnes.



5) Kitadin Mine

It is operated by PT. Kitadin, a wholly-owned subsidiary of ITM. Located in Bontang and Kutai Kartanegara, East Kalimantan Province. Its production capacity in 2022 was 0.21 million tonnes. The mining operation ceased in February 2022 as the license of Kitadin mine expired on 25 February 2022.

6) Graha Panca Karsa (GPK) Mine

It is operated by PT. Graha Panca Karsa, a 70% owned subsidiary of ITM. Located in East Kalimantan Province, this open-pit mine has 21.5 million tonnes of coal reserves.

7) NPR Mine Project

It is operated by PT. Nusa Persada Resources, a wholly-owned subsidiary of ITM. Located in Central Kalimantan Province, this open-pit mine has 77.4 million tonnes of coal reserves.

8) TIS Mine Project

It is operated by PT. Tepian Indah Sukses, a wholly-owned subsidiary of ITM. Located in East Kalimantan Province, this open-pit mine is under the coal reserves evaluation.

Coal Mines in Australia

Centennial Coal Co. Pty Ltd. (Centennial), a subsidiary of Banpu, is one of the underground coal producers in New South Wales. Centennial supplies coal fuels for coal-fired power plants in New South Wales. Its main assets consist of the possessions to operate coal mining business in Northern and Western parts of New South Wales. The total production capacity in 2022 was 8.9 million tonnes with the share of production from the following mines:

1) Airly Mine

It is operated by Centennial, which owns 100% of its shares. The mine is located near Lithgow in the Western Coalfields of New South Wales. It is an underground mine using a continuous mining method. Airly has 22.3 million tonnes of coal reserves, and its production capacity in 2022 was 1.2 million tonnes.



2) Angus Place Mine

It is operated by Centennial, which owns 100% of its shares. Located in the Western Coalfields of New South Wales, the mine has 53.0 million tonnes of coal reserves. Since the end of February 2015, the production has been suspended under care and maintenance. Its staff and machinery were relocated to the Springvale mine to expand production and will return when Angus Place resumes its operation.



3) Springvale Mine

It is operated by Centennial, which owns 100% of its shares. Located in the Western Coalfields of New South Wales, the mine has 113.1 million tonnes of coal reserves. Its production capacity in 2022 was 2.3 million tonnes. The Springvale mine deploys the longwall mining technology.



Angus Place mine and Springvale mine produce and supply thermal coal for domestic and international markets. They also have conveyor belts to transport coal to the power plants that are their domestic customers. The Lidsdale Sliding Coal Loader has been expanded to support the transportation of increasing volumes of coal exports.

4) Clarence Mine

It is a joint venture in which Centennial owned 85% and S.K. Energy Australia Pty Ltd. owned 15% of its shares and is operated by Centennial. Located near Lithgow, in the Western Coalfields of New South Wales, it is an underground mine using a highly efficient continuous mining method. Clarence has 29.3 million tonnes of coals reserves. Its production capacity in 2022 was 1.5 million tonnes. The mine exports its coals through Port Kembla.



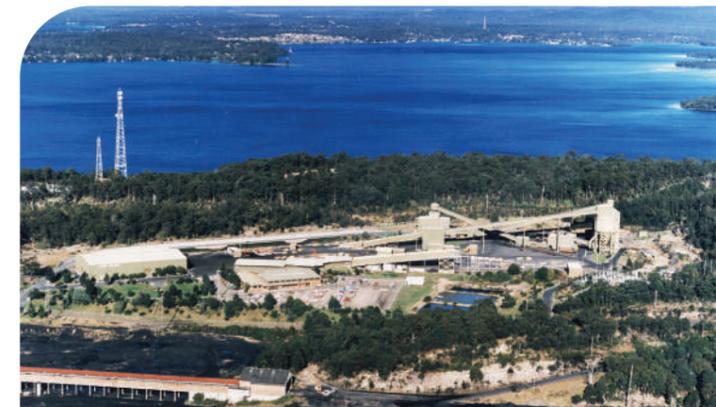
5) Mandalong Mine

It is operated by Centennial, which owns 100% of its shares. Located near Morisset, New South Wales. Mandalong is an underground longwall mine with high production capacity as it can excavate the coal seams with a thickness of over 5 meters. It has 50.3 million tonnes of coal reserves. In 2022, its capacity was 2.8 million tonnes. Its product is distributed in domestic markets and exported through the Port of Newcastle.



6) Myuna Mine

It is operated by Centennial, which owns 100% of its shares. Located near Lake Macquarie, in the Newcastle Coalfields, New South Wales, Myuna is an underground mine using a continuous mining method. The mine has 32.5 million tonnes of coal reserves, and its 2022 production capacity was 1.1 million tonnes. Coal from Myuna is transported to major customers nearby using a conveyor system.



7) Northern Coal Services (NCS)

It is a coal washing plant located in the Newcastle Coalfield, New South Wales. Since it is located in the Port of Newcastle, NCS processes thermal coal and semi-soft coking coal excavated from various mines and prepares them for delivery to domestic and international markets. The connection with double-track railways enables effective and fast coal uploading to the Port of Newcastle. Northern Coal Services' capacity is approximately 4 million tonnes per year, and it has specific routes for exporting and transporting coal to domestic customers.

Future Projects

1) Newstan Extension Mine Project

It explores and studies the feasibility of utilization of existing mining infrastructure to expand the coal reserves and production capacity.

2) Mandalong Southern Extension Mine Project

It is an extension of the Mandalong mine. The project is now effectively designed to connect with Mandalong mine.

3) Neubeck Mine Project

It is located in the Western Coalfields of New South Wales near its domestic power plants, which are its customers. Neubeck produces quality coal to supply domestic markets and export to international markets through Port Kembla.

Coal Mines in the People's Republic of China

The total coal production in 2022 was 10.2 million tonnes from the following mines.

1) Gaohe Mine

It is operated by BP Overseas Development Co., Ltd., a Banpu's subsidiary which owns 100% shares of Asia American Coal Inc. (AACI). AACI was established to develop and conduct business as well as invest in a joint venture in the coal business in China with Shanxi Lu'an Mining Industry (Group) Co., Ltd., a major coal producer in China. Each holds 45% and 55% shares, respectively, of Shanxi Gaohe Energy Co., Ltd. Gaohe mine is an underground longwall mine in Shanxi Province with 100.2 million tonnes of coal reserves. In 2022, its production capacity was 9.4 million tonnes.



2) Hebi Mine

It is operated by Banpu Minerals Co., Ltd., a Banpu's subsidiary, which entered a joint venture with Hebi Coal and Electricity Co., Ltd. Each holds 40% and 60% of shares, respectively, in Hebi Zhong Tai Mining Co., Ltd. (HZTM). HZTM was established to produce and distribute coal from the Hebi mine in Henan Province. It is an underground longwall mine with 12.9 million tonnes of coal reserves. In 2022, its production capacity was 0.8 million tonnes.

Coal Mines in Mongolia

Banpu's coal reserves in Mongolia located in the South Gobi, the Middle Gobi, and the Western region. The projects under development are as follows:

1) Tsant Uul Mine Project

It is located in South Gobi Province in the southern region of Mongolia bordering Inner Mongolia, an autonomous region of northern China. The project is currently under development and in the feasibility study phase to increase the value of existing coal to respond to domestic market demand. A pilot plant was operated to experiment on the Coal to Coal Tar production. The preliminary experiment could produce a total amount of 5,000 liters of tar, ensuring that tar can be separated from coal at Tsant Uul. In addition, the company is studying the feasibility to increase the value of tar, charcoal, and gas from the production process and is preparing for further commercial operation.

The company studied engineering and technology, including an in-depth study of optimum chemical and physical properties of tar and charcoal, which can be developed into valuable chemical products, as well as the demand for such chemical products in Mongolia and China.

2) Unst Khudag Mine Project

It is located in Central Gobi Province in central Mongolia and has thermal coal reserves. The Company was granted approval to converse exploration license into mining license for a period of up to 30 years in which the patent permit can be renewed after it expires.

The Company was granted approval from relevant government authorities to conduct a feasibility study for mining projects, including the study of the amount of freshwater reserve for the project. The Company continues to conduct a preliminary study on production engineering and appropriate technology and the production cost in converting coal into chemical products and power generation, including market research for chemical products in Mongolia's and China's markets. Additionally, the company is studying technologies that can add value to products by using coal as fuel in production processes and aiming to export products to China market.

3) Altai Nuurs Mine Project

It is located in Gobi Altai in the west of Mongolia. The project has coal reserves of both thermal coal and coking coal. The Company was granted approval to converse exploration license into mining license and was approved by relevant government authorities to conduct a feasibility study for mining projects. The Company plan to produce and export coal to China through the Mongolia public transportation infrastructure. However, due to the prolonged uncertainties of the development of public logistics infrastructures that impact the project's commercialization. In 2022, the Company decided to discontinue the Altai Nuurs Mine Project development and recognize the impairment loss of the project.

Gas Business

Banpu is committed to seeking new eco-friendly energy sources in alignment with its Greener & Smarter strategy. The company has been expanding its investment into a natural gas business through its subsidiary, BKV Corporation (BKV). BKV's predecessor, BKV Oil and Gas Capital Partners, L.P., (BKV O&G), was formed in June 2015 and subsequently restructured on 1 May 2020, the result of which was the formation of BKV as a consolidated corporate entity. Banpu North America Corporation (BNAC), a subsidiary of Banpu, is currently a 96.11% shareholder in BKV. Through Banpu's ownership of BKV, Banpu is also the ultimate parent company of BKV's wholly-owned subsidiaries, including BKV Chaffee Corners, LLC, BKV Chelsea, LLC, BKV Operating, LLC and BKV Barnett, LLC.

BKV is engaged in the acquisition, operation and development of natural gas and natural gas liquid (NGL) properties primarily located in the Barnett Shale in the Fort Worth Basin of Texas (Barnett) and in the Marcellus Shale in the Appalachian Basin of Northeastern Pennsylvania (NEPA). As of 30 September 2022, BKV's total acreage position was approximately 505,000 net acres, 99% of which was held by production, and the company's net daily production averaged 864 million cubic feet equivalent per day (MMcfe/d), consisting of approximately 79% natural gas and approximately 21% NGLs, making it one of the top 20 gas-weighted natural gas producers in the U.S. market. As of 31 December 2022, BKV had proved reserves (1P) of 5,785,289 million cubic feet equivalent (MMcfe).

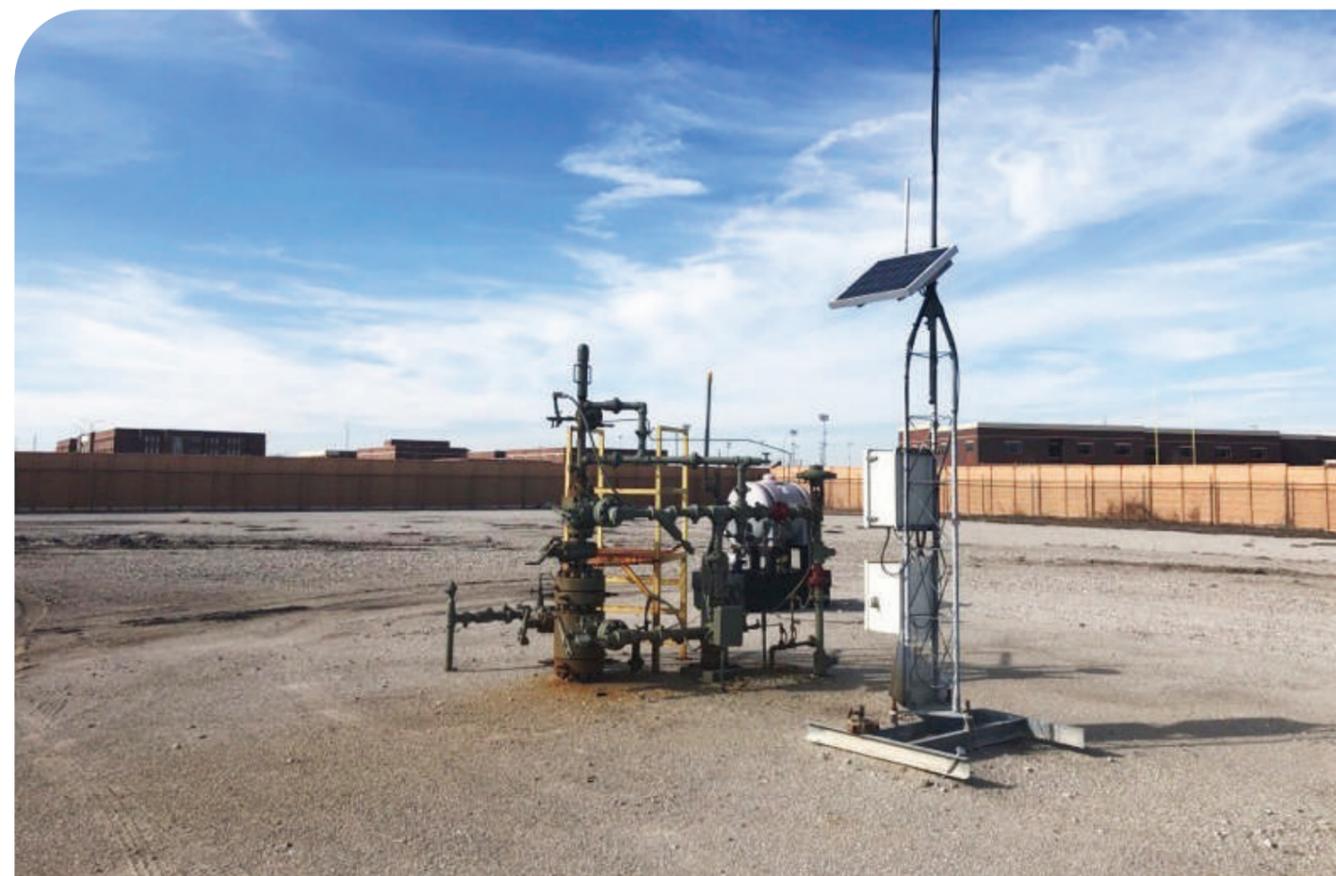
Marcellus Shale in Pennsylvania

Since 2016, BKV has built its position in NEPA through 12 accretive acquisitions and now has an attractive production base comprising approximately 37,000 net acres located in one of the most prolific areas of the play.



Barnett Shale in Texas

BKV's upstream assets are predominantly located in the Barnett, which is where horizontal drilling was pioneered and which has the advantage of more than 15 years of technological advancements, proximity to demand hubs and a significant amount of midstream and other infrastructure in place. As of 31 March 2022, BKV was the largest natural gas producer by gross operated volume in the Barnett.



BKV entered the Barnett in October 2020 with its acquisition of more than 289,000 net acres, 3,850 producing operated wells and related upstream assets in the Barnett from Devon Energy Corporation for a cash purchase price of USD 570 million. On 30 June 2022, BKV further scaled its Barnett position by acquiring approximately 175,000 net acres, 2,100 operated wells and related natural gas upstream, midstream and other assets from XTO Energy, Inc. and Barnett Gathering LLC

(2022 Barnett Assets), in a transaction valued at USD 750 million, with contingent payments of up to USD 50 million.

The 2022 Barnett Assets were acquired to support BKV's strategic growth and to achieve operational synergies with pre-existing assets and are already in operation, with revenue recognition from their operation being realized from 1 July 2022 onward.



Energy Generation Group

Thermal Power Business

Combined Heat and Power Plants (CHP)

Banpu Power Public Company Limited (BPP), a 78.66% owned subsidiary of Banpu, holds 100% of the paid-up capital in Banpu Power Investment Co., Ltd. (BPIC), which was registered in Singapore through Banpu Power International Ltd. (BPPI). BPIC invested in three combined heat and power plants in northern China with a total installed capacity of 618 MWe (equity-based capacity of 548 MWe), comprising a power capacity of 348 MW and a steam production capacity of 1,508 tonnes per hour. Details are as follows:

1) Luannan Combined Heat and Power Plant

The power plant is located in Luannan County, Tangshan City, Hebei Province. The coal-fired power plant generates power and steam with a total installed capacity of 246 MWe, comprising a power capacity of 150 MW and a steam production capacity of 538 tonnes per hour.



2) Zhengding Combined Heat and Power Plant

The power plant is located in Zhengding County, Shijiazhuang City, Hebei Province. The coal-fired power plant generates power and steam with a total installed capacity of 139 MWe, comprising a power capacity of 73 MW and a steam production capacity of 370 tonnes per hour.



3) Zouping Combined Heat and Power Plant

The power plant is located in Zouping County, Binzhou City, Shandong Province. The coal-fired power plant generates power and steam with a total installed capacity of 233 MWe, comprising a power capacity of 125 MW and a steam production capacity of 600 tonnes per hour. However, as BPIC holds 70% shares of this power plant, its equity-based capacity is 163 MWe.



BLCP Power Plant

BPP holds 50% shares of BLCP Power Ltd. (BLCP), an independent power producer (IPP) with a 1,434 MW thermal power capacity. BLCP consists of two production units with an installed capacity of 717 MW each. Both units are fueled by high-quality bituminous coal. Located in Map Ta Phut Industrial Estate, Rayong Province, BLCP has secured a Power Purchase Agreement (PPA) with the Electricity Generating Authority of Thailand for 25 years starting from the Commercial Operation Date (COD) of the second production unit. The construction of the BLCP began in August 2003. Its first unit and second unit achieved COD in October 2006 and February 2007, respectively. Both units have been fully operational for 16 years.



HPC Power Plant

BPP entered into a joint venture with a subsidiary of Ratch Group Pcl. (RATCH) and Lao Holding State Enterprise (LHSE), a state enterprise of the Government of Lao PDR, to establish Hongsa Power Co., Ltd. (HPC) and Phu Fai Mining Co., Ltd. (PFMC). The headquarters of the two companies are in Vientiane, Lao PDR, and they have an objective to operate the HPC power plant in Lao PDR under the following joint venture's terms and conditions:



- HPC was granted a concession from the Lao PDR government to develop, construct and operate the HPC power plant. The concession is valid from November 2009 until its expiration or 25 years from the COD of the third production unit in March 2016. The shareholding percentage of each company is BPP 40%, RATCH 40%, and LHSE 20%.

- PFMC was granted a concession to operate a lignite coal mine. The shareholding percentage of each company is BPP 37.5%, RATCH 37.5%, and LHSE 25%.

HPC is a mine-mouth power plant fueled by lignite coal with a total installed capacity of 1,878 MW from three power production units, whose capacity is 626 MW each. The first, second, and third production units achieved their COD on 2 June 2015, 2 November 2015, and 2 March 2016, respectively.



Shanxi Lu Guang Power Plant

BPIC, a wholly-owned subsidiary of BPP, entered into a joint venture agreement to develop Shanxi Lu Guang power plant, a 1,320 MW coal-fired power plant that deploys the Ultra-Supercritical (USC) technology. It is located in Changzhi City, Shanxi Province, China, three kilometers away from the Gaohe mine. BPIC holds 30% shares of the power plant, while Gemeng International Energy Co., Ltd. (Gemeng) and Anhui Province Wenergy Co., Ltd. each holds 35% of its shares. The first and second production units achieved their COD in June 2021 and October 2021, respectively.

Nakoso IGCC Power Plant

BPIC, a wholly-owned subsidiary of BPP, acquired 33.5% stakes in Nakoso IGCC Management Co., Ltd. (NIMCO), which holds 40% shares of Nakoso IGCC power plant. Therefore, BPP holds 13.4% shares

in the 543-MW Nakoso IGCC power plant in Fukushima Prefecture, Japan. This power plant deploys the Integrated Gasification Combined Cycle (IGCC) technology developed by Mitsubishi Corporation Power Limited (Japan), one of the power plant's five shareholders. The IGCC technology, resulting from 30 years of research and development, integrates the coal gasification technology with the Gas-Fired Combined Cycle Plant. The Nakoso power plant is a commercial-scale IGCC power plant using High Efficiency, Low Emissions (HELE) technology. It achieved COD on 16 April 2021 and entered into a long-term Power Purchase Agreement (PPA) to supply electricity to Japan's power grid. Nakoso IGCC also has a long-term fuel supply agreement.



Temple I CCGT Power Plant

BKV, a 96.1% owned subsidiary of Banpu, and Banpu Power US Corporation (BPPUS) - a wholly-owned subsidiary of BPP, jointly established BKV-BPP Power LLC (BKV-BPP) in which BKV and BPPUS equally hold 50% ownership.

On 10 August 2021, BKV-BPP Power LLC acquired 100% of shares of Temple Generation Intermediate Holdings II, LLC, which owns the Temple I Gas-fired power plant in Texas, one of the fast-growing economic and population hubs in the U.S. The 768-MW gas-fired power plant has been operational since 15 July 2014.

The Temple I CCGT power plant deploys the Combined Cycle Gas Turbines (CCGT) technology, which is High Efficiency, Low Emissions (HELE) technology. This power plant is flexible in terms of operation according to its merit order to serve the dynamic demand pattern, enabling it to compete in the Electric Reliability Council of Texas (ERCOT), a free electricity trading market.



Renewable Power Business

Solar Power Plants in the People's Republic of China

Banpu NEXT Co., Ltd. (Banpu NEXT), a subsidiary in which Banpu and BPP equally hold 50% ownership, holds 100% shares of BPP Renewable Investment (China) Co., Ltd. (BPPRIC). BPPRIC invested in seven solar farms in China that are eligible for a Feed-in Tariff (FiT) of a 20-year term. As of 31 December 2022, BPPRIC's total generation capacity was 177.32 MW, as detailed below.

Solar Power Plants	Shareholding (%)	Capacity (MW)		Location (Province)	Commercial Operation Date
		100%	Equity-Based		
1. Huineng	100.00	21.51		Shandong	July 2016
2. Jinshan	100.00	28.95		Shandong	September 2016
3. Haoyuan	100.00	20.00		Shandong	October 2016
4. Hui'en	100.00	19.70		Shandong	January 2017
5. Deyuan	100.00	51.64		Zhejiang	February 2017
6. Xingyu	100.00	10.30		Shandong	October 2017
7. Jixin	100.00	25.22		Jiangsu	June 2016
Total Capacity		177.32			



Solar Power Plants and Projects in Japan

Banpu NEXT has invested in several solar power plants and projects in Japan through subsidiaries. As of 31 December 2022, the Company's total equity-based capacity was 243.26 MW. Details are as follows:

Solar Power Plants/ Projects	Shareholding (%)	Capacity (MW)		Location (Prefecture)	Commercial Operation Date
		100%	Equity-Based		
1. Olympia - Hitachi Omiya No.1	40.00	2.00	0.80	Ibaraki	July 2013
2. Olympia - Hitachi Omiya No.2	40.00	2.00	0.80	Ibaraki	January 2015
3. Olympia - Ozenosato - Katashina	40.00	2.00	0.80	Gunma	January 2015

Solar Power Plants/ Projects	Shareholding (%)	Capacity (MW)		Location (Prefecture)	Commercial Operation Date
		100%	Equity-Based		
4. Olympia - Sakura No.1	40.00	2.00	0.80	Tochigi	December 2015
5. Olympia - Sakura No.2	40.00	2.00	0.80	Tochigi	October 2015
6. Hino	75.00	3.50	2.63	Shiga	May 2016
7. Awaji	75.00	8.00	6.00	Hyogo	May 2017
8. Mukawa	92.30	17.00	15.70	Hokkaido	August 2018
9. Nari Aizu	100.00	20.46	20.46	Fukushima	December 2018
10. Kurokawa	100.00	18.90	18.90	Miyagi	December 2019
11. Tenzan	100.00	1.96	1.96	Saga	October 2017
12. Mutoran 1	100.00	1.73	1.73	Hokkaido	August 2018
13. Mutoran 2	100.00	1.63	1.63	Hokkaido	January 2018
14. Takeo 2	100.00	1.00	1.00	Saga	October 2018
15. Yamagata	100.00	20.00	20.00	Yamagata	November 2020
16. Yabuki	75.00	7.00	5.25	Fukushima	December 2020
17. Kesenuma	100.00	20.00	20.00	Miyagi	November 2021
18. Nihonmatsu	100.00	12.00	12.00	Fukushima	November 2021
19. Shirakawa	100.00	10.00	10.00	Fukushima	January 2022
20. Yamagata Iide	51.00	200.00	102.00	Yamagata	During feasibility study phase
Total Capacity		243.26			



Solar Farms in Australia

Banpu acquired two operating solar farms in New South Wales, Australia, through Banpu Energy Hold Trust, jointly established by Banpu Energy Australia Pty Ltd. (BEN), a subsidiary of Banpu, and Banpu Renewable Australia Pty Ltd. (BREA), a subsidiary of Banpu NEXT.

BEN's and BREA's shareholding percentage in Banpu Energy Hold Trust is 80% and 20%, respectively. Banpu Energy Hold Trust acquired 100% shares of both Beryl Solar Farm (BSF) and Manildra Solar Farm (MSF), which are Banpu's first two utility-scale solar farms in Australia, as detailed below:



1) Beryl Solar Farm (BSF)

Beryl is a 110.9 MW solar farm located in New South Wales. It achieved COD in June 2019.

2) Manildra Solar Farm (MSF)

Manildra is a 55.9 MW solar farm located in New South Wales. It achieved COD in December 2018.



These two solar farms are supported by growing demand and electricity consumption as well as the government policy to promote electricity generation from renewable energy. They supply electricity through the National Electricity Market (NEM) under the long-term Power Purchase Agreement (PPA). This acquisition paved the way for investment in a renewable business in Australia under the Wholesale Electricity Market with an advanced trading system.

Solar and Wind Power Plants and Projects in the Socialist Republic of Vietnam

Banpu NEXT has expanded its investment and development of solar and wind power plants and projects in Vietnam. Currently, it owns five solar and wind power plants and projects, one of which is during submission of documents for COD approval and feasibility study phase, and the other four projects have been commercially operational. These operating plants also entered into long-term power purchase agreements with Vietnam Electricity (EVN) under the Feed-in Tariff (FiT) scheme for a 20-year period to supply electricity through the national grid system. As of 31 December 2022, the total capacity was 217.60 MW. Details are as follows:

Power Plants/ Projects	Shareholding (%)	Capacity (MW)		Location (Province)	Commercial Operation Date
		100%	Equity- Based		
Wind Power Plants/Projects					
1. El Wind Mui Dinh	100.00	37.60	37.60	Ninh Thuan	June 2019
2. Vinh Chau - Phase 1	100.00	30.00	30.00	Soc Trang	During submission of documents for COD approval
Vinh Chau - Phases 2 & 3	100.00	50.00	50.00	Soc Trang	During the feasibility study phase
Solar Power Plants					
3. Ha Tinh*	100.00	50.00	50.00	Ha Tinh	June 2019
4. Chu Ngoc*	100.00	15.00	15.00	Gia Lai	June 2019
5. Nhon Hai**	100.00	35.00	35.00	Ninh Thuan	July 2020
Total Capacity			217.60		

Notes:

* Banpu NEXT entered into a Sale and Purchase Agreement to invest in Ha Tinh and Chu Ngoc solar power plants. Currently, the Company is awaiting approval from a government agency to complete the share transaction.

** Banpu NEXT completed the acquisition of Nhon Hai solar power plant, and the revenue was first recognized on 1 June 2022.





Energy Technology Group

Banpu is moving forward to becoming a leading international versatile energy provider with a commitment toward sustainable energy. To achieve its goal, the Company leverages its experience of four decades in the energy business, both in Thailand and abroad. The Company builds on its expertise in solar power business management, from solar rooftops and floating solar in China and Japan to the energy trading platform and virtual power plant technologies in offering clean energy technology business suitable for the future energy of Thailand through its subsidiary, Banpu NEXT Co., Ltd.

Banpu NEXT, a leading smart energy solutions provider in Asia-Pacific and a long-term strategic partner. It innovates total smart energy solutions for sustainability to fulfill all needs and every step of business operations in order to drive sustainability operations beyond limits. This enables businesses to achieve their sustainability goals based on the Environmental, Social, and Governance (ESG) principles and Sustainable Development Goals (SDGs). Moreover, the Company creates value and opportunities for sustainable growth, supports a low-carbon society and smart city development in Thailand and abroad, and improves the quality of life for its customers and the general public. Banpu NEXT has engaged in businesses as follows:

Solar Rooftop and Floating Business

Banpu NEXT operates a solar power generation and distribution business, including solar rooftop and floating solar systems. It focuses on expanding its business portfolio to strategic markets in Asia-Pacific, including China, Japan, Vietnam, Indonesia, and Thailand, with a total capacity of 205 MW as of 31 December 2022.

Banpu NEXT continues to expand its rooftop and floating solar power generation business. In 2022, the Company joined forces with Apex Park, the developer of Apex Green Industrial Estate, expecting to install a 32 MW floating solar system at Apex Green Industrial Estate, Chachoengsao Province, which is the largest private floating solar project in Thailand. The goal is to transform the Apex Green Industrial Estate into an eco-industrial estate that will serve as an exemplar of a low-carbon, sustainable estate, creating value in all dimensions for entrepreneurs, communities, and the environment. In addition, Banpu NEXT is looking for investment opportunities with clean energy technology partners to jointly develop clean energy solutions and best services to meet the customers' current and future demands and to strengthen the business ecosystem. The Company has acquired a 49% stake in Solar Esco Joint Stock, a renewable energy company in Vietnam, to provide solar rooftop installation services in Vietnam and to accelerate the overseas expansion of the integrated solar rooftop business. The Company has also been selected by the local government in Zhengding to develop a rooftop solar power project

for government buildings, schools, factories, and commercial establishments, including households in villages and communities. The project is under the "Whole-county Rooftop Solar PV" policy with a committed capacity of 64 MW at the end of 2022 and the potential to increase to 167 MW by 2023, marking an important step in expanding Banpu Group's clean energy portfolio.

Banpu NEXT continues to expand its rooftop solar power business in Indonesia through an investment in PT. ITM Bhinneka Power or IBP, a Banpu subsidiary that provides integrated rooftop solar installation services to commercial and industrial customers. IBP's services encompass engineering consultation, a site survey using modern technology to plan a suitable system for each area and customer needs, as well as after-sales service by a team of energy technology experts and a customer relations team.

As of 31 December 2022, Banpu NEXT operated rooftop and floating solar power projects in Indonesia, both operational projects and projects under development, with a total capacity of 8.24 MW.



Energy Storage Systems Business

Banpu NEXT has partnered with Durapower Holdings Pte Ltd., a Singapore-based energy storage company and a world-leading provider of lithium-ion battery systems that develop energy storage solutions for electric vehicles (EV) and stationary energy storage solutions, such as solar power systems. Banpu NEXT and Durapower formed a joint venture with Cherdchai Motor Sales Co., Ltd., Thailand's largest bus operator, in July 2022 to establish a battery assembly plant in Thailand for Cherdchai's e-Buses and electric vehicle markets throughout the Asia-Pacific region. It is expected to begin operations at the end of 2023. Banpu NEXT also plans to increase battery production capacity at the China factory in order to achieve 3.75 GWh by 2025.



Energy Trading Business

Banpu NEXT has engaged in overseas energy trading. It first began operations in Japan. Electricity grid operators, educational institutions, government agencies, and hospitals are the primary customers. Banpu NEXT is always on the lookout for opportunities to expand its energy trading business to other countries where energy can be freely traded. The energy trading capacity is 1,719 GWh as of 31 December 2022.

E-Mobility Business

Banpu NEXT is Thailand's first fully integrated alternative mobility service provider in the form of Mobility as a Service (MaaS). The services include ride-sharing with MuvMi electric tuk-tuks, car sharing - vehicle rental via the HAUP application, EV charger management, and operation & maintenance and customer services. In addition, the Company has developed EV fleet management and employed digital platforms for real-time tracking of logistics and transportation. As of 31 December 2022, the Company's Mobility As a Service (MaaS) encompassed:

- Ride-sharing service with Muvmi electric tuk-tuks covering 12 main areas in downtown Bangkok, including 1. Chula-Samyan, 2. Aree-Pradiphat, 3. Phaholyothin, 4. Kasetsart, 5. Rattanakosin Island, 6. Sukhumvit, 7. On Nut, 8. Bang Sue, 9. Chidlom-Lumpini, 10. Victory Monument, 11. Ratchada-Rama 9, 12. Silom-Sathorn, with more than 2,500 access points in Bangkok
- Car-sharing service with over 1,000 access points nationwide and 1,500 vehicles on the platform
- EV charger management service with 310 EV charging stations
- After-sales service by Beyond Green Co., Ltd. in 19 major provinces, namely Bangkok, Chiang Mai, Chiang Rai, Phitsanulok, Loei, Udon Thani, Nakhon Phanom, Roi Et, Ubon Ratchathani, Nakhon Ratchasima, Nakhon Sawan, Kanchanaburi, Hua Hin in Prachuap Khiri Khan, Chonburi, Rayong, Phuket, Krabi, Hat Yai in Songkhla, and Koh Samui in Surat Thani



Smart Cities & Energy Management Business

Banpu NEXT offers smart energy solutions for sustainability, including the solar power system, Energy Management System (EMS), Smart Safety Platform, waste management system, and various smart infrastructure systems for efficient energy use and energy saving. The Company assists customers in transitioning to Smart Businesses while moving forward to a carbon-free society and driving smart city development. As of 31 December 2022, the Company operated 20 smart city development and energy management projects.

In 2022, Banpu NEXT acquired a 25% stake in Thai tech startup AltoTech Global Co., Ltd., the developer of Alto Energy Edge energy management platform that innovatively uses Artificial Intelligence (AI) and Internet of Things (IoT) technologies to monitor and optimize building's energy efficiency. Furthermore, the Company signed a memorandum of understanding (MoU) to collaborate on developing clean energy solutions in the Asia Pacific with SP Group, a leading utilities group in Singapore and Asia Pacific with experience in installing the world's largest Multi-Plant district cooling network in the Marina Bay District, Singapore, as well as a central heating and cooling system for large mixed-use projects in Chongqing and Guangzhou, China. These collaborations are meaningful steps toward expanding Banpu NEXT's energy management system business with the goal of continuously strengthening the business and jointly providing full-fledged energy management solutions to customers in Thailand and abroad.

Banpu NEXT's Energy Management System (EMS) is supervised by energy and technology experts at every step, from measuring energy consumption, analyzing and designing suitable systems, installing devices and solutions along with digital platforms, to providing after-sales service. The Company offers

three types of services: 1. utility management & energy efficiency solutions offering chilled water system, air conditioning, compressed air, and steam and hot water systems, etc., with guaranteed efficiency and energy savings; 2. facility management providing facility maintenance and technical services, and 3. district cooling systems and infrastructure designed to meet the needs of real estate business or large real estate projects.

In addition, Banpu NEXT has built on the success of the Phuket Smart City project by partnering with PlanetComm, a leading integrated digital technology provider in Thailand, its long-term strategic partner, to expand the "Smart Safety Platform." This is intended to provide comprehensive security management and facilitate the smart city expansion plan in order to drive smart city development and promote Thailand's tourism sector.

Banpu NEXT combines its expertise in clean energy solutions with cutting-edge technology to provide 24-hour professional after-sales service for its customers. The Company specifically designed integrated digital platforms and applications that allow customers to manage their energy consumption in real time.

MARKET AND COMPETITION

Energy Resources

Mining Business



Market and Competition

Market

1. Global Coal Market

Overall, the global coal market in 2022 was highly volatile. In January, the government of the Republic of Indonesia announced a ban on coal exports due to insufficient supplies for domestic consumption, causing tight supply and increasing global coal prices. In February, the tension between Russia and Ukraine escalated as Western countries imposed economic sanctions on Russia, including a ban on Russian coal imports. The ban disrupted the supply chain and caused global coal prices to reach record highs.

In April 2022, the European Union announced a ban on Russian coal imports which came into force on 10 August 2022, prompting European coal buyers to seek coal from other sources instead. As Russian coal is generally of high quality while the remaining high-quality coal in the market at that time was not enough to meet rising demand, the market competition intensified, lifting global coal prices to record levels.

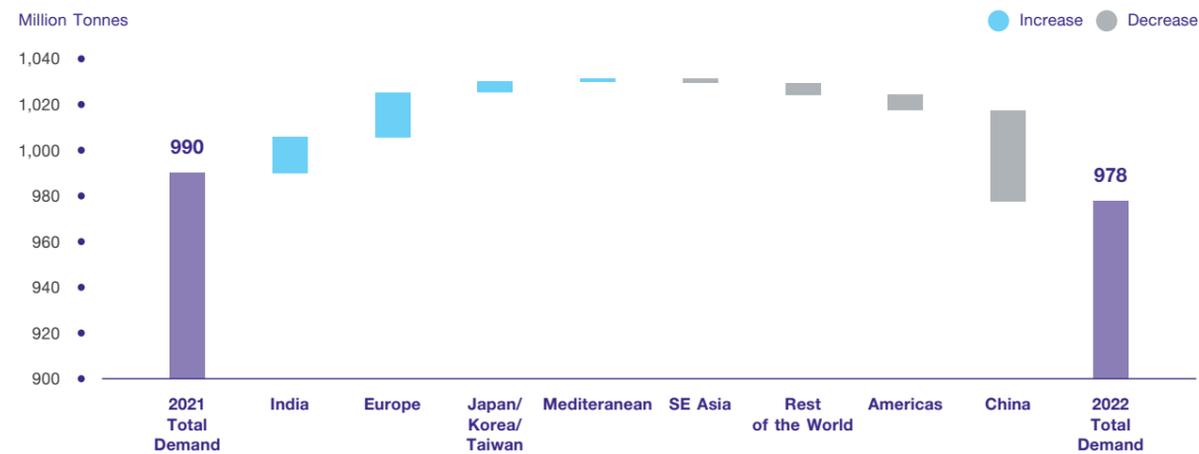
Despite extremely high prices, the cost to generate electricity from coal was much lower than that from natural gas due to a price surge as Russia reduced natural gas exports to Europe. The uncertainties surrounding the natural gas supply from Russia have made Europe more dependent on coal. Moreover, La Nina was forecast to influence winter in late 2022 and early 2023 to be colder than normal. This prompted more coal buying for the winter, further tightening the supply of high-quality coal.

The UK allowed Russian coal imports until the end of 2022 before the coal import ban came into force in early 2023. However, the coal-fired power plants in UK have been retired, and although the retirement of some of the remaining coal-fired power plants was delayed, coal consumption only increased slightly.

Japan also joined the international sanctions on Russian coal by gradually phasing out coal imports from Russia. The country still allowed its coal buyers, who already had purchase agreements with Russia, to continue importing coal according to their active agreements. However, some coal importers voluntarily stopped importing coal from Russia and switched to buy coal from other sources. In addition, Japan's coal consumption began to recover after being impacted by the COVID-19 pandemic last year, leading to a tight supply of high-quality coal.

South Korea did not impose sanctions against Russia and allowed coal users to import coal from Russia. Although the government's coal-fired power plants removed Russian coal from tender documents, they still bought coal from Russia through coal traders registered outside Russia because Russian coal is much cheaper than coal from other sources. Therefore, the overall demand for coal in South Korea increased due to the soaring liquefied natural gas (LNG) prices after European importers seek natural gas from other sources to replace Russian natural gas supplies which plummeted from pipeline maintenance work and political tensions. The South Korean government had to lift restrictions on the operation of coal-fired power plants to reduce electricity costs, prompting more coal-fired power plants to resume operation.

2021/2022 Thermal Coal Import Demand Changes



Source: Marketing, Sales and Logistics analyst, Banpu Plc

Taiwan did not officially join the sanctions on Russia, but its coal-fired power plants have stopped importing Russian coal since mid-2022. Meanwhile, Taiwan's private sector continued to import Russian coal because of its low price compared to other energy sources. In 2022, Taiwan's coal imports fell slightly from the previous year due to the increased operation of nuclear power plants and maintenance of coal-fired power plants.

China's coal imports in 2022 fell drastically due to the COVID-19 outbreak at the beginning of the year, forcing the Chinese government to announce lockdowns in many cities from the end of Q1 to Q2 following its zero-COVID policy. Strict lockdowns resulted in a severe economic slowdown with only 0.4% growth in Q2, down from 4.8% in Q1, causing a sharp decline in electricity and coal demand. But after the Chinese government began easing

lockdowns at the end of Q2, the economy started to recover, prompting electricity and coal demands to increase. As the early summer approached, the electricity demand for cooling increased and propelled coal demand to increase accordingly.

Nevertheless, strict COVID-19 control measures severely affected coal production and transportation in China. The transportation sector suffered more than the production sector due to travel restrictions to curb the spread of COVID-19. Later in the rainy season, heavy rainfalls flooded coal mining sites, causing coal supply to recover slower than coal demand. Only in the latter half of 2022 that China's coal imports started to rebound.

The Chinese government strictly controlled domestic coal prices, especially for the coal sold to power plants. The price of coal sold under the purchase agreement

between coal-fired power plants and producers is set at CNY 570-770 per tonne, which was the FOB price in North China ports. In addition, there were efforts to encourage coal-fired power plants to enter into coal purchase agreements with producers to cover their total demand. But this price control excluded coal users in other industries. In the meantime, the Chinese government tried to motivate coal producers to scale up production so that there was enough coal stock for consumption, a critical factor that helped stabilize coal prices in China.

The Chinese government loosened almost all COVID-19 control measures on 7 December 2022 and shifted focus to economic growth. Unfortunately, the COVID-19 cases escalated rapidly after easing restrictions, causing a short-term economic slowdown but a positive effect in the long term because it created herd immunity in the country and helped the economy recover faster than maintaining the zero-COVID policy. It also contributed to the increased demand for coal.

In 2022, the Republic of India's coal imports increased as its economy recovered after suffering COVID-19 in the previous year. Summer's heatwaves, coupled with domestic coal supply shortage, pushed coal imports for coal-fired power plants to rise despite high global coal prices. Therefore, the Indian government allowed

power plants run on imported coal to add the cost onto the electricity bill, which helped ramp up power plants operations.

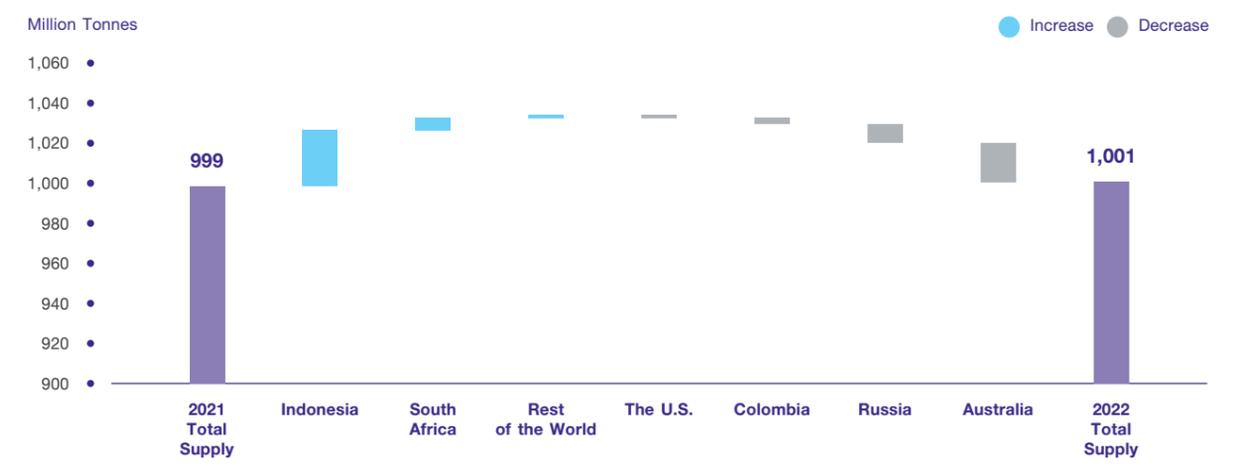
Some Southeast and South Asian countries delayed coal imports in 2022 due to soaring prices, prompting many factories to turn to low-grade coal to reduce costs. Other factories cut back on production because they could not afford costly coal.

Overall, the export volume of coal in 2022 was similar to the previous year, indicating a recovery in coal demand toward the end of the year to meet the expected demand in the following year. But the supply of high-quality coal became tightened after several countries imposed sanctions on Russian coal.

Indonesia's coal exports continued to increase despite the government's export suspension for most of January 2022. Indonesian producers tried to raise production and export coal wherever possible to take advantage of relatively high global prices.

Australia's coal exports dropped significantly due to severe rainfall almost all year round from the influence of La Nina, leading to flooding that suspended production at coal mines and disrupted railway transportation.

2021/2022 Thermal Coal Export Supply Changes



Source: Marketing, Sales and Logistics analyst, Banpu Plc

South Africa's rail transport of coal from mines to seaports is faced with frequent thefts of power cables and a lack of locomotive maintenance hampering coal transportation. Multiple derailments also caused South Africa's coal exports to decline. However, some coal producers used trucks to transport coal from mines to ports, which helped increase export volume.

Heavy rains and several protests hard-hit Colombia's coal exports. In addition, the new Colombian government, elected at the end of 2022, has the policy to reduce coal production and exports while no longer approving the development of new coal mines. There are also plans for tax reform, which will result in higher taxes for coal producers and fewer incentives to increase production in the long run.

Russian coal exports were impacted by Western sanctions and limited rail transport capacity. Nevertheless, European buyers and Russian sellers had been trying to accelerate coal delivery to Europe before the ban on Russian coal imports took effect on 10 August 2022. Concurrently, Russian coal producers attempted to export more coal to Asia. Still, with limited rail transport capacity from mines to Pacific ports, it was not viable to increase the

significant amount of coal exports to Asia by this route. As coal prices in Asia remained high, Russian coal producers tried to export coal from West Coast ports and used bulk carriers to transport coal to Asia. As a result, Russia's overall coal exports declined only slightly.

The U.S. coal exports in 2022 decreased slightly from the previous year, even when the global coal prices were relatively high because of high domestic demand and limited the U.S. coal transport capacity. Thus, the U.S. coal producers could not increase export volumes.

In 2022, the Company sold 19.6 million tonnes of Indonesian coal, down 2.8% year-on-year as it had stopped Kitadin Embalut mine's coal production in Indonesia since March 2022. The Indonesian government's coal export ban in January 2022 also affected the Company's sales.

Banpu's sales to China rose to 34%, increasing 20.3% year-on-year because of high demand in the Chinese market as tight supply kept coal prices consistently high. China's ban on Australian coal has made Indonesia China's primary source of coal imports, and Indonesian coal prices stable. After China,

Indonesia and Japan were the second and third largest markets for Banpu, with sales volumes of 21% and 15%, respectively. The coal sales in the Indonesian market dropped by 10.9% compared to the previous year due to transportation problems which delays coal delivery to power plants until the following year. Meanwhile, customers in the metal smelting industry postponed coal deliveries to the next year

because of the high price. In addition, this industry does not receive government support in the form of price control and needs to buy coal at market price.

Due to the strong demand for coal, coal sales to India increased 73.6% year-on-year to 1.1 million tonnes. Moreover, Banpu could sell coal to Europe after sanctions on Russian coal prompted Europe to buy coal from other sources instead.

2. Coal Market in the Republic of Indonesia

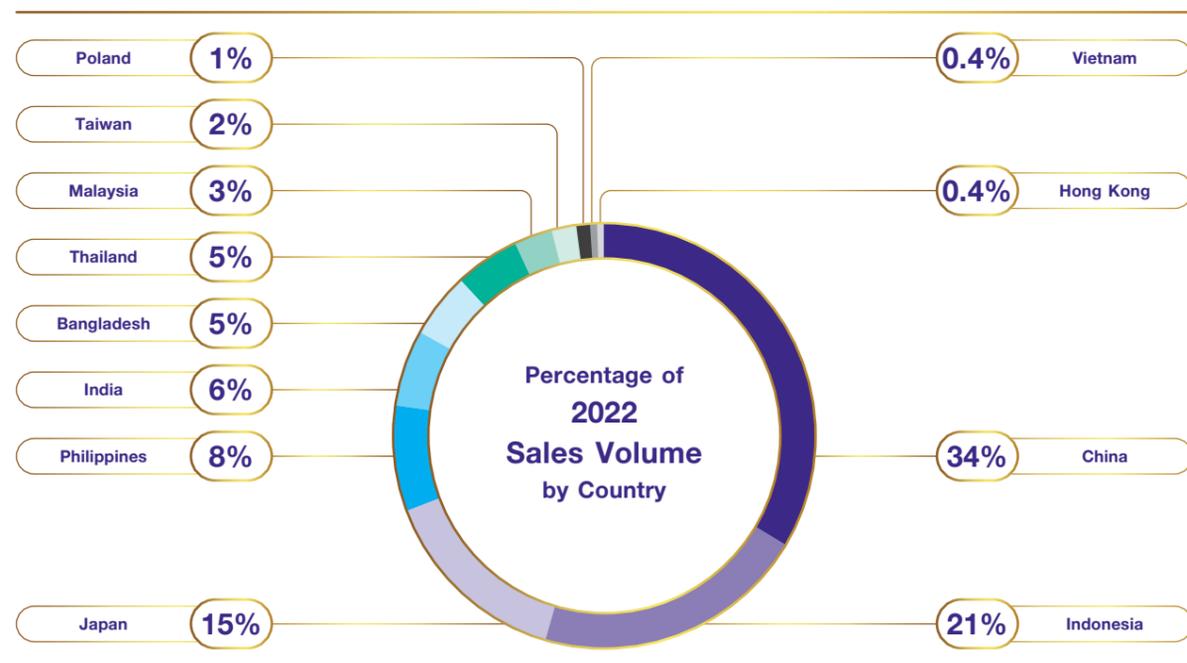
Indonesia experienced a coal shortage earlier in 2022 because coal producers were trying to export as much coal as possible. Because coal prices in the export market were much higher than the government-mandated domestic prices, many power plants had critically low coal stocks. The Indonesian government announced a ban on coal exports in January to ensure that producers supply adequate coal to domestic users. The ban on coal exports has kept Indonesian coal prices relatively stable whereas coal prices from other sources have soared due to the sharp decline in global coal supply. However, the Indonesian government has relaxed the coal export ban, allowing coal mines that meet their Domestic Market Obligation (DMO) or those supplying coal to domestic users at a rate of 25% or higher to export coal.

The Indonesian government lifted the ban on coal exports on 28 January 2022. Nevertheless, the coal export volumes fell sharply in January as producers tried to speed up coal delivery to bulk carriers lining up for coal. As a result, there was no coal left for sale in the spot market. Additionally, it was at that time the monsoon season in Indonesia, resulting in lower coal production. A shortage of coal barges also lengthened the transport of coal to bulk carriers. The coal supply from Indonesia remained tight for the following two to three months as producers had to expedite the delivery of coal to customers first.

Indonesia's coal production continued to rise from a year earlier despite the government's ban on coal exports in January because producers were trying to increase production capacity as much as possible when global coal prices remained high. In 2022, the Indonesian Ministry of Energy and Mineral Resources preliminarily reported coal production at 685 million tonnes, an increase of 11.6% from the previous year, although coal producers have faced various problems, such as heavy rainfalls and a shortage of mining equipment. Most of the increased coal was low-quality coal.

The Indonesian government revised the Domestic Market Obligation (DMO) regulation to closely monitor mine compliance using an online system. Mines with purchase agreements with domestic consumers, especially power plants, must input the information into the system to track monthly coal transports from mines to consumers. Any mines that fail to meet the DMO would face a coal export ban, be fined, and risk having concessions revoked. Those mines that do not have purchase agreements with domestic consumers are required to pay compensation to the government

Indonesia's coal exports reached 458 million tonnes, increasing 6.5% year-on-year. High global coal prices motivated Indonesian producers to export more coal. Most exported coal is of medium to low quality, with huge discounts compared to high-quality coal, making it attractive for buyers. Although there were significant discounts, Indonesian coal price was relatively high. However, the decline in exports from Australia and Russia, coupled with China's continued ban on Australian coal, contributed to an increase in Indonesia's exports.



Indonesia's coal demand in 2022 was about 187 million tonnes, up 40.6% from the previous year, as last year's coal demand was affected by the COVID-19 pandemic. The volume also included coal stock replenishments that were very low at the beginning of the year. For coal consumption by sector, 64% was in power generation, 16% in the metal smelting industry, 10% in the cement industry, and the rest were in other industries.

In 2022, Banpu sold 4.2 million tonnes of coal in Indonesia, which accounted for 21% of the Company's total sales of Indonesian coal but only about 2.2% of Indonesian coal demand. Banpu's major customers are coal-fired power plants in Indonesia, which

3. Coal Market in Thailand

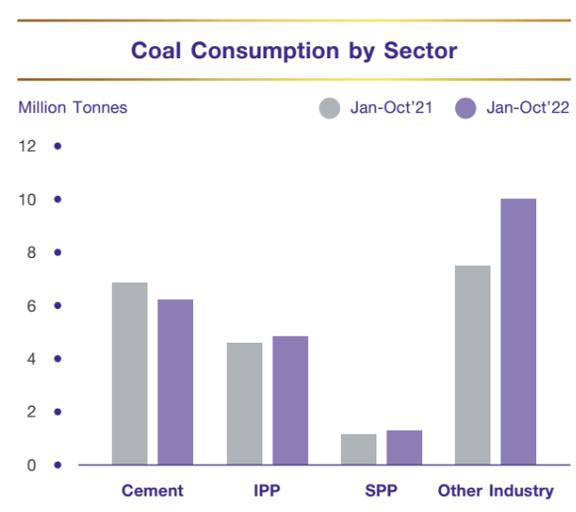
During the first ten months of 2022, total coal consumption of the private sector in Thailand was approximately 22.4 million tonnes, rising 2.1 million tonnes or 10.6% year-on-year. The cement industry consumed about 6.2 million tonnes of coal, down 10.1% year-on-year due to higher energy prices and inflation, which led to economic slowdown and decrease in cement demand correspondingly.

However, the use of coal for power generation increased because the cost of coal for power generation remained low compared to other fuels. Coal consumption by independent power producers (IPP) and small power producers (SPP) rose to 4.8 and 1.3 million tonnes, respectively, up 4.5% and 8.9% year-on-year.

Coal consumption from other industries, such as paper, petrochemicals, textiles, and food, was about 10 million tonnes, rising 33.7% year-on-year. Despite its soaring prices, coal remained competitive when compared with oil and natural gas.

account for 58% of total coal sales volume in Indonesia, followed by 38% from metal smelting industry, 5% from cement industry, and 1% from other industries, respectively.

The Indonesian government has still capped domestic prices for coal supplied to power plants at USD 70 per tonne (for coal with a gross calorific value of 6,322 kcal/kg) and for coal supplied to the industrial sector at USD 90 per tonne (for coal with a gross calorific value of 6,322 kcal/kg). However, there was no price capping for coal supplied to metal smelting factories, so the Company tried to increase sales to customers in this industry.



Source: Marketing, Sales and Logistics analyst, Banpu Plc

Competitions

1. Competition in the Coal Industry

The global coal markets in 2022 can be divided into two groups: the first is those who did not buy Russian coal, namely the European Union and Japan. This group also includes some coal users in Taiwan who voluntarily stopped importing Russian coal; and therefore bought coal from other sources instead, most of which was high-quality coal. These markets thus faced a tight supply, and the competition was fierce as demand was higher than supply.

The second group of markets did not ban Russian coal and continued buying coal from all sources as usual. However, the Western ban on Russian access to the Society for Worldwide Interbank Financial Telecommunications (SWIFT) affected many countries as they needed help in making payments for coal from Russia and insurance. Settlements for coal purchases could still be made through coal trading companies and banks in neutral countries. In addition, China and India have established an alternative payment system directly with Russia in local currency. As it was not necessary to rely on the Western countries' international money transfer system, many countries in this group imported more coal from Russia.

In early 2022, the Indonesian government banned coal exports while coal demand in many countries began to recover after they relaxed the COVID-19 control measures. Nevertheless, the supply still grew at a slower pace than the demand due to the lack of investment in the supply side over the past few years, resulting in limited supply and intense competition. In Q2/2022, there was an outbreak of COVID-19 in China, prompting the government to

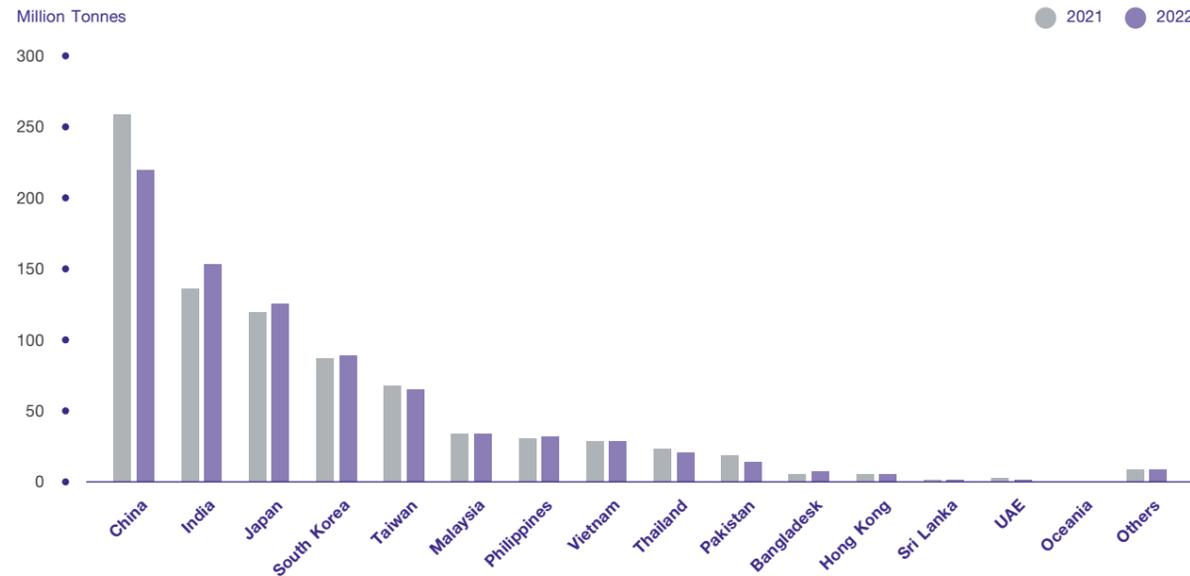
impose a lockdown in many provinces. So, the demand for medium and low-quality coal dropped significantly. Coal demand began to recover in the middle of Q3 after the Chinese government eased the restrictions. Coal production also recovered well, bringing supply back to normal and making competition to become less intense. The high-quality coal market, on the other hand, remained highly competitive due to increasing coal demand from countries that sanctioned Russia while the production was challenged by several factors.

Overall global coal imports in 2022 totaled about 978 million tonnes, decreasing around 12 million tonnes year-on-year or 1.2%.

Despite the impact of the COVID-19 pandemic, which caused coal imports in 2022 to fall to about 40 million tonnes from a year earlier, China remained the world's largest coal importer thanks to its high demand. At the same time, coal production and transportation had been affected by the COVID-19 control measures, forcing China to rely on imported coal. Due to the West's and its allies' sanctions on Russian coal, Russia exported more coal to Asia at low prices with an increased market share in China. In addition, the Chinese government's price control on domestic coal helped stabilize the prices of medium and low-quality coal in the global market.

In 2022, India imported about 153 million tonnes of coal, an 11.8% increase over the previous year when the country was affected by the COVID-19 pandemic. India was unable to increase production to meet domestic coal demand; therefore, the competition was intense. Most of India's coal imports were medium and low-quality coal with abundant supply. As Russian coal was a cheaper alternative in this market, there was a sharp rise in coal imports from Russia.

Asian Thermal Coal Import by Country



Source: Marketing, Sales and Logistics analyst, Banpu Plc

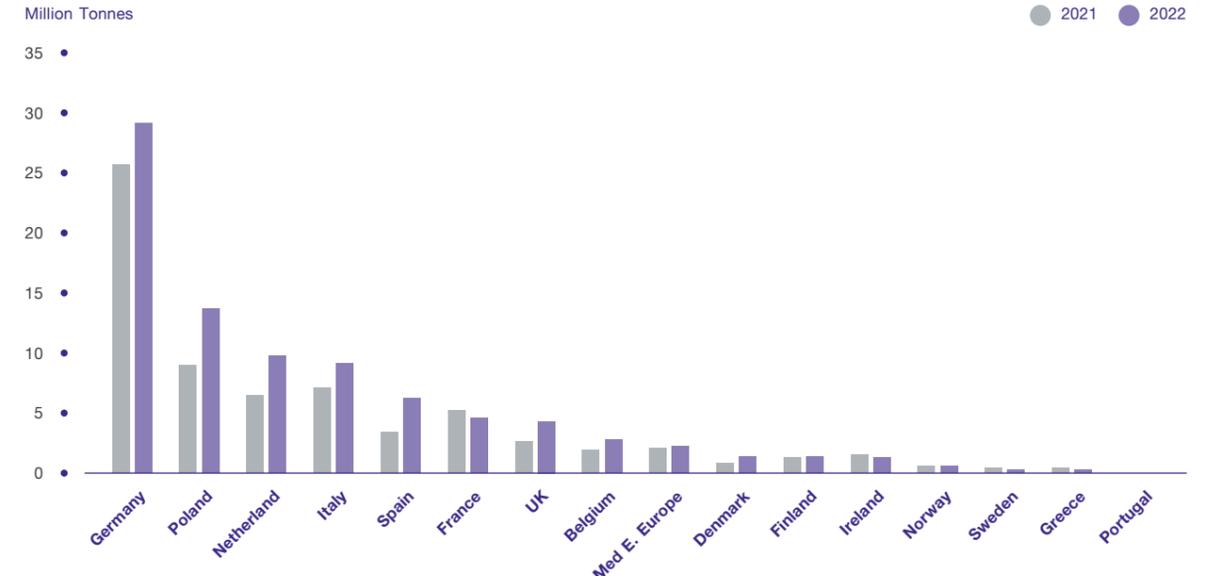
North Asian countries, namely Japan, South Korea, and Taiwan, imported approximately 282 million tonnes of coal, increasing 1.7% year-on-year. Factors contributing to more coal consumption were the high price of liquefied natural gas (LNG) and nuclear power plant outages, thus, requiring coal-fired power plants to increase operations. This group of markets is divided into two sub-markets. In the high-calorific coal market, the competition was not intense because some countries started reducing coal imports from Russia and turned to other countries while there were supply shortages, leading to a tighter supply. Another sub-market is for low-calorific coal, in which the competition was more intense due to abundant supply.

Southeast Asian Countries' coal imports in 2022 dropped 1% from the previous year, with a volume of 122 million tonnes due to high coal prices almost

all year round, prompting consumers to reduce their coal consumption as they could not defer the cost to their product buyers. The competition, therefore, became more intense as there were multiple sellers while most consumers were flexible about the quality of coal.

Europe's coal import volume in 2022 was approximately 87 million tonnes, a 28% increase from the previous year due to the political conflict between Europe and Russia. Transportation of Russian natural gas to Europe was disrupted, prompting European countries to reactivate coal-fired power plants and delay their coal retirement to stabilize the power systems. This raised coal demand and weakened competition in the markets, which favor high-quality coal. In 2022, buyers competed to buy coal elsewhere to replace the Russian one, whose import was banned at the end of the year, driving the price of high-quality coal to a record level.

European Thermal Coal Import by Country



Source: Marketing, Sales and Logistics analyst, Banpu Plc

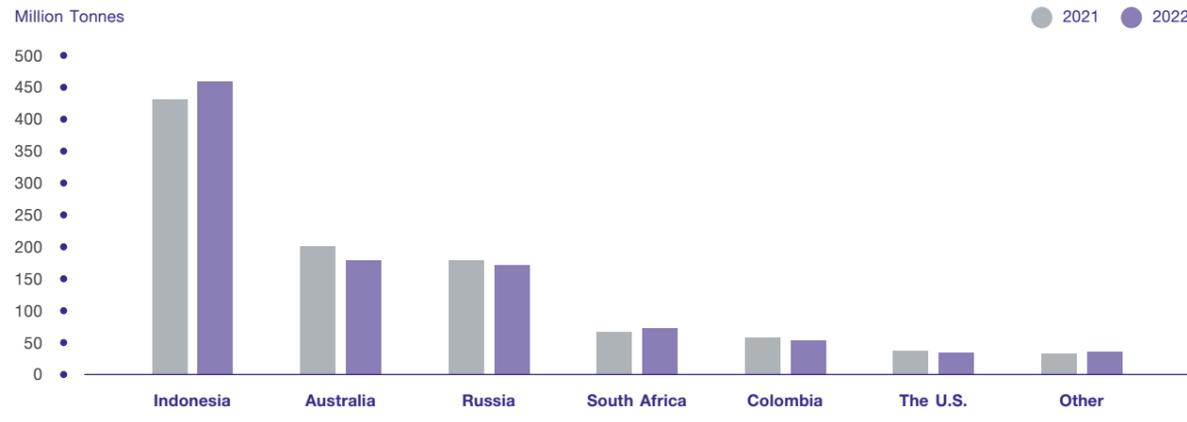
Global coal exports in 2022 were at approximately 1,001 million tonnes, increasing 0.2% from the previous year due to the rerouting of coal shipments following the EU's sanctions on Russian coal, adding greater distances and shipping time. The world's six major coal exporters were Indonesia, Australia, Russia, South Africa, Colombia, and the U.S. Their combined export volume accounted for more than 96% of the global seaborne coal trade.

Indonesia, the world's largest coal exporter, exported approximately 458 million tonnes of coal, increasing 6.4% from the past year despite the government's ban on coal exports in January and the surge in domestic demand. Indonesian coal producers were able to increase their output significantly despite

heavy rainfall. Global coal prices that stayed high also prompted Indonesian producers to increase their capacity, leading to stiffer competition among producers.

Australia remained the world's second-largest coal exporter after Indonesia, with an export volume of approximately 179 million tonnes in 2022, down 9.9% from the year earlier. The country had been impacted by La Nina, which caused heavy rainfalls almost all year round, hindering coal production and transportation. Competition in the Australian market was mild due to the high demand for high-quality coal, which had tightened the supply throughout most of the year.

Global Thermal Coal Export by Country



Source: Marketing, Sales and Logistics analyst, Banpu Plc

In 2022, Russian coal exports were at approximately 170 million tonnes, decreasing 5.3% over the past year owing to Western sanctions. However, Russia maintained relatively low coal prices compared with other sources, so its coal exports to Asia could offset declining exports to the European markets. However, Russian railway capacity limited the transport of coal to the Pacific ports, intensifying competition among Russian producers. Some coal producers who had no access to rail transport had to unload coal at western ports, then used liners to transport coal to Asia, incurring a prohibitive freight cost owing to the long distance.

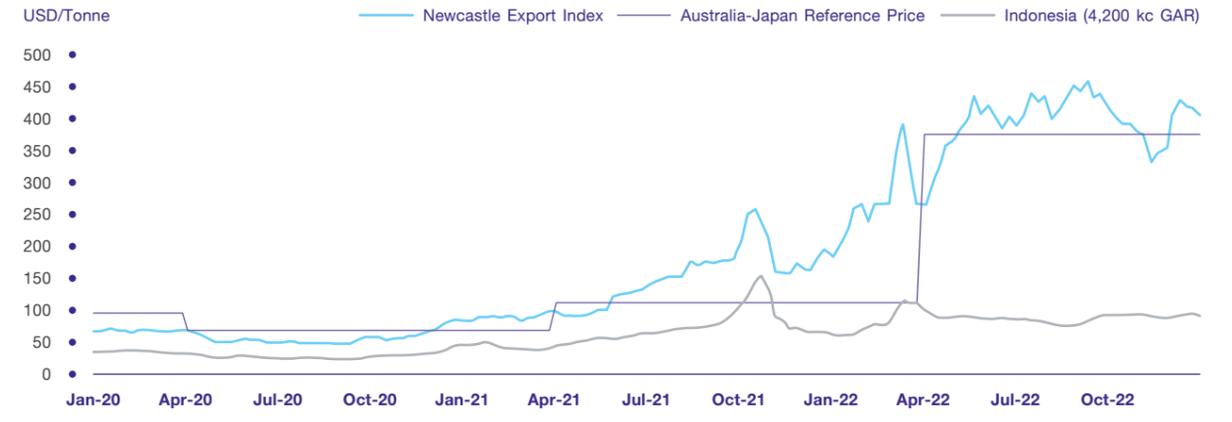
South Africa's total coal exports in 2022 were approximately 71 million tonnes, rising 9.4% from a year earlier. South African coal faced rather intense competition from cheap Russian coal in the Indian market, which is South Africa's major market. However, the high-quality coal market was less

competitive because high-quality coal could be exported to European markets, where demand was extremely high.

Colombian coal exports in 2022 were at approximately 54 million tonnes, down 4.4% from the previous year. Coal producers in Colombia did not face intense competition because coal production decreased while Europe's demand increased sharply. Colombia is closer to Europe than other coal-producing countries; thus, the transportation costs are lower, making Colombian coal attractive to European buyers.

In 2022, the U.S. exported 34 million tonnes of coal (excluding exports to Canada), dropping 4% from the past year. The competition in this market was mild because of high domestic demand and restricted quotas for rail transportation, allowing limited capacity for coal exports.

Thermal Coal Export Price, FOB



Source: McCloskey

Coal prices in 2022 were highly volatile due to many factors, including geopolitical tensions, the pandemic, and climate. The European Union and its allies' ban on Russian coal imports was a primary cause of supply chain disruptions, especially for high-quality coal, whose supply was limited. Therefore, the price of high-quality coal rose to a record high and had been highly volatile almost all year round. While the price of low-quality coal, mostly from Indonesia, rose early this year following Indonesia's coal export ban. But after the Indonesian government eased the ban on coal exports, the price of low-quality coal dropped but remained high.

In 2022, major Japanese buyers and major Australian coal producers could not agree on the contract price for the 2023 fiscal year, which starts in April 2023, because the global coal price was extremely high. But Australian producers reached an agreement with Japanese buyers who were not regular customers for sales contracts that will be effective in July 2023. They agreed on a contract price of USD 375 per tonne, FOB Newcastle. Many coal buyers are using the Australia-Japan Reference Price for coal delivery in the 2023 Japanese fiscal year (July 2023 – June 2024), which increased 241% over 2022 (from USD 109.97 per tonne).

In 2023, imported coal demand is set to increase over 2022 as the Europe-Russia conflict continues. The conflict will put the procurement of natural gas in Europe at risk, and the prices of natural gas and liquefied natural gas (LNG) will remain elevated, which will promote the use of coal, a cheaper alternative, in power generation. Coal is expected to be in higher demand for energy stability as many European countries have reactivated retired coal-fired power plants and delayed phasing out of coal-fired power plants.

Demand for coal in Asia is expected to generally increase because many new coal-fired power plants gradually started operations from the end of 2022 and would require more coal in 2023. Coal is still a cheap fuel option for developing countries being threatened by economic crises and inflation.

The price of coal in 2023 is expected to fall owing to the supply chain adjustment. However, the ongoing conflict between Europe and Russia, coupled with the EU's ban on Russian coal imports, will split the global coal market into two parts and continue to tighten the supply of high-calorific coal. Thus, the price of high-quality coal is expected to remain elevated although lower than in 2022.

Meanwhile, the price of low-calorific coal is expected to be more stable because it increased slightly in 2022 as Indonesian producers could increase sufficient output to meet the demand. Coal production in China is expected to increase significantly due to

the Chinese government's efforts to stabilize domestic energy prices, keeping the price of imported coal unchanged, as buyers in China can still buy domestic coal if the price is lower than imported coal.

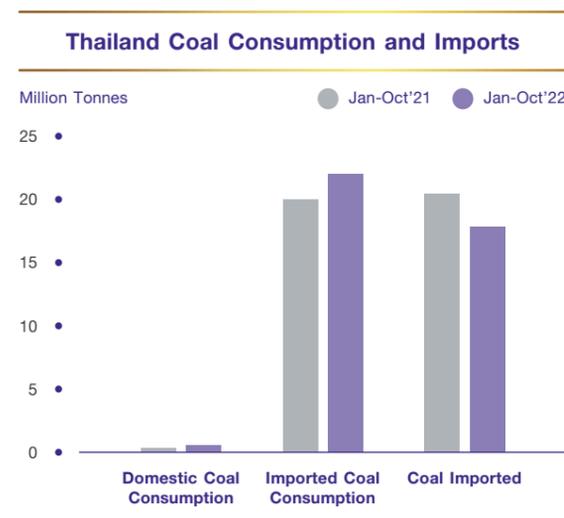
2. Competition in Thailand

In 2022, competition in Thailand remained intense because Thailand is an open market and close to Indonesian production sources, which had abundant output this year. At the same time, demand for coal in Thailand decreased due to the spike in global prices together with the economic slowdown.

More than 98% of the coal used in the private sector was imported coal. In the first ten months of 2022, imported coal consumption was at 22 million tonnes, increasing 9.9% year-on-year, driven by the surge in natural gas and coal prices. This prompted coal-fired power plants to increase production despite higher coal prices because coal is still cheaper than other fuels. Consumption of domestic coal in the first ten months of 2022 was at 0.35 million tonnes, up 76.7% year-on-year because cement factories relied more on domestic coal to reduce costs.

Although consumption of imported coal increased, coal imports in the first ten months of 2022 fell 12.9% year-on-year to 17.9 million tonnes, showing that coal stocks were being used while coal imports were delayed due to record high prices.

Coal users had been trying to cut costs while coal production in Indonesia remained high. Therefore, many coal sellers entered the Thai market and intensified competition. However, coal prices in Thailand kept soaring in line with global coal prices.



Source: Energy Policy and Planning Office

Thailand's market competition in 2023 is expected to remain fierce as Indonesian coal producers continue to raise output. China's coal production is projected to grow, so demand for imported coal will increase only marginally, causing Indonesian coal prices to drop.

Competitive Strategies

Supply chain disruptions in the past year caused moderate competition in the high-quality coal market but stiff competition in the medium and low-quality coal markets. As coal demand decreased and supply increased, Banpu adjusted its strategies to the changing business environment. Major competitive strategies deployed are as follows:

• Focusing on Premium Markets

Banpu prioritizes high-quality coal markets where buyers are reliable because these are high-paying markets. The Company prefers reliable coal suppliers who can fulfill agreed requirements in terms of quantity, quality, and punctuality. As Banpu has its own premium coal sources and coal terminals, it is regarded as a competitive and reliable coal producer in the premium markets.

At the same time, the Company expanded its low-quality coal customer base into major Asian markets to diversify risks. It also expanded exports into Europe to meet the rising demand driven by the energy crisis following the EU's sanctions on Russian coal imports.

• Improving the Quality of Coal

Banpu improved the quality of coal from its Indonesian mines by using the Resource Optimization application to determine the optimum blending ratio of coal from different mines to get the blends that meet the target markets' requirements. The Company also bought coal from other producers for quality improvement to add value to the Company's products.

• Maintaining Customer Relations

Banpu values long-term relationships with customers and trade partners through its employees. In early 2022, the Company maintained customer relationships through phone calls and online

meetings because some countries still imposed travel restrictions to curb COVID-19 spread. Around year-end, when COVID-19 preventive measures were eased in many countries, the Company sent out its employees to visit customers to learn about their problems and obstacles. This helped the Company to understand the challenges facing customers, both the COVID-19 pandemic and the impacts of the Russia-Ukraine conflict. The Company could also use inputs from customers to improve its operations, fix customer problems, and strengthen business relationships.

The Company continued sending emails to customers and stakeholders every quarter to inform them of the Company's performance to ensure that it can fulfill delivery commitments amid the pandemic and the economic consequences of the Russia-Ukraine conflict.

• Increasing Coal Sales

Banpu has forged strategic alliances with other coal production sources to add coal supply to the Company's portfolio. Part of the supply is to be blended with the Company's coal to improve quality. The rest will be sold to customers directly to increase sales volume over production output.

The Company utilized the supply chain management system to manage the transportation of coal from external sources to increase efficiency and quality control and secure stability and flexibility of supply. As a result, the Company's coal delivery is reliable and trusted by customers.

Major Competitors

Banpu's major competitors were coal producers and exporters in the global market, such as Glencore and Yancoal, and Indonesian producers, such as Bumi Resources, PT. Bukit Asam, PT. Adaro Indonesia, PT. Kideco Jaya Agung, PT. Bayan Resources, and PT. Golden Energy Mines. Russian producers and traders sold more coal into Asian markets this year due to Europe's ban on Russian coal imports. Therefore, large Russian coal producers like SUEK tried to penetrate more into Asian markets. There were also other coal traders, such as Noble Energy, Trafigura, and many small producers. As coal is also a commodity, traders of other commodities can easily enter the coal business. However, it is harder to become coal producers because they need to own coal resources, which are fairly limited, so large coal producers remain mostly unchanged.

The Company's major competitors in Thailand were mostly coal import traders. This market is easy for new coal traders to enter as it is an open market. Banpu's major competitors are SCG Trading Co., Ltd., Lanna Resources Plc., Asia Green Energy Plc., and small coal traders that import coal to sell to smaller coal users in the country.

Pricing Policy

This year, the Company focused on coal sales based on index-linked pricing in order to realize the increased coal prices corresponding to the rising global prices. For coal sold in the spot market, the price will be

agreed upon shortly before delivery, reflecting the global price at the time of sales. However, the coal price for power plants in Indonesia was capped by the Indonesian government at USD 70 per tonne for coal with a gross calorific value (GAR) of 6,322 kcal/kg. For other industries except metal smelting, the coal price was set at USD 90 per tonne with the same quality. For the metal smelting industry, coal will be sold at the market price.

Customer Profiles

Banpu's major customers remained large-scale coal-fired power plants with high stability and reliability and large coal purchase volume. These customers purchased coal through a transparent bidding process through both short-term and long-term contracts, with spot market purchases. Banpu also sold coal to other users, such as the cement, pulp and paper, metal smelting, and brick-making industries. These users needed less coal for their operations than large-scale power plants, so they purchased coal under short-term contracts and sometimes from the spot market.

Trading and Trading Channels

The Company operated coal marketing and trading activities for either coal produced in Indonesia and Australia or coal procured from other sources. It took charge of identifying market opportunities, making sales offers, bidding and negotiating with customers, preparing contracts, as well as coordinating with customers in arranging delivery of coal, and providing after-sales services. Sales of coal were made directly to coal users.

Natural Gas Business



Market and Competition

Market

1. Global Natural Gas Market

The global economy has recovered strongly after the 2020 financial crisis induced by the COVID-19 pandemic. However, the pace of economic growth varies significantly across the global economy. The global economic rebound has been driven by a combination of factors, including easing restrictions, increased government spending, return of consumer confidence, and increased business investments. The degree to which measures have been eased and the economic policies of the various countries are likely the causes of the significant variability in the real gross domestic product (GDP) growth rate. The U.S. and China in particular show robust recovery growth rates, and this is significant for the energy markets since both economies represent the largest consumers of energy.

As a result of the rebound in the global economy, energy markets have also recovered significantly from their pandemic lows with commodity prices increasing dramatically throughout 2022 to significant levels above the pre-pandemic levels. In 2022, the largest driver of this continued commodity price appreciation was tensions between Russia and Ukraine in April. From the supply side, levied sanctions immediately posed uncertainty regarding supply availability from Russia, specifically with regard to oil and natural gas. From the demand side, European markets were immediately affected, given these markets' dependence on Russian natural gas supplies to satisfy winter heating loads, and to a lesser extent, natural gas-fired power demand that satisfied cooling loads in the summer. Europe was faced with the daunting task of trying to replace its largest historical source of natural gas supply in relatively short order. This increased demand immediately impacted an already tight global natural

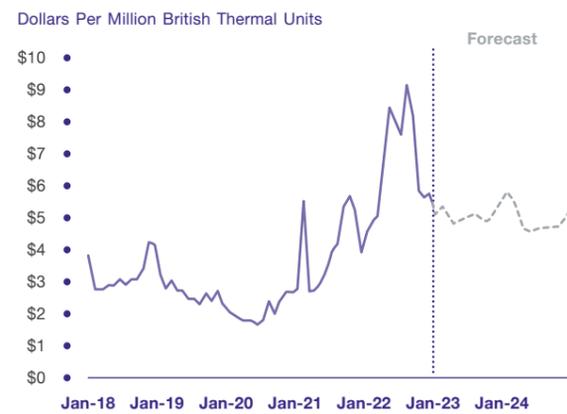
gas market, with significant appreciation occurring in the largest two observed international price indices, the European-based Title Transfer Facility (TTF) and Japan-Korea Marker (JKM™). This general rebound in energy commodity prices throughout 2022 contributed to significant inflation throughout the year and remains a big concern in early 2023. The rapid rise in inflation led many governments to raise interest rates in the latter half of 2022, a widely enacted monetary policy tightening that has not been seen in quite some time. Inflation rates, subsequent global monetary policy tightening, ongoing supply chain issues, China's latest COVID-19 outbreak, and the remnants of COVID-19 shutdown policies have weighed on the 2023 global economic outlook, with many prognostications of a short-term global recession. This has led to some shorter-term softening of commodity prices to the start of 2023. In addition to the economic outlook, most of the northern hemisphere has had a

relatively warmer-than-normal start to winter, directly affecting heating loads and thus temporarily loosening global supply-demand balances. Global natural gas price indices and benchmark/regional U.S. price indices have felt the effect of the loosening balances, trending lower at the start of 2023.

2. The U.S. Natural Gas Market

After navigating the pandemic and its downward effect on commodity prices in 2020 and portions of early 2021, the U.S. industry participants remained focused on capital efficiency and balance sheet strength throughout 2022. The relatively higher natural gas prices throughout the year led to record cash flow surpluses and stronger financial positions for a majority of industry operators. The discipline and noted historical results present an opportunity for greater capital flexibility but also new challenges as the industry heads into 2023.

Monthly Henry Hub Natural Gas Spot Price



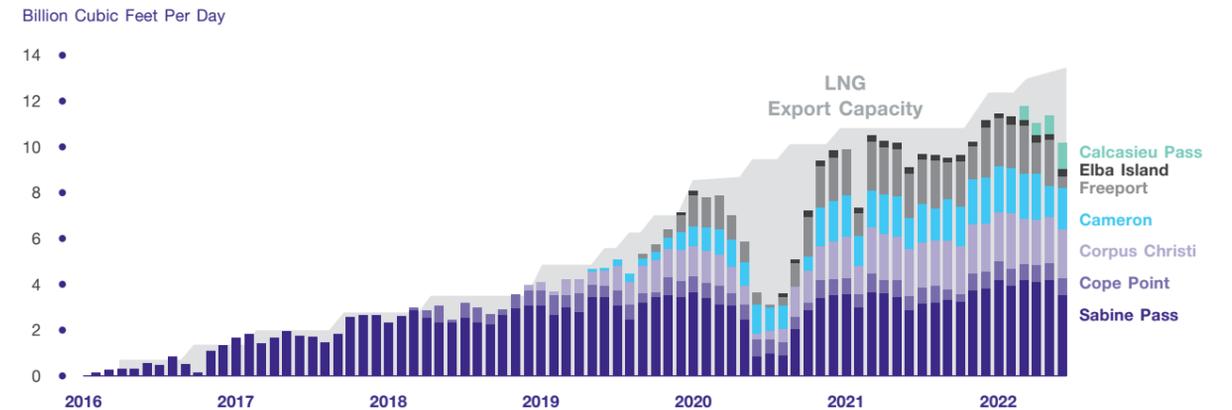
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, January 2023

The deployment of surplus cash is at the center of the industry's new challenges. Whether to grow organically or through M&A, invest in energy transition business lines, or continue to return cash to shareholders has implications for each specific operator's performance

and positioning in the ever-changing industry landscape. Projected headwinds in the form of cost escalation and embedded regulatory and political policies are challenges the industry has consistently faced and will face again in 2023.

From a supply-demand perspective, the domestic U.S. natural gas market will be looking at key signposts to help discern where Henry Hub pricing will trend in 2023. A continuance of strong underlying natural gas demand in the form of the U.S. LNG exports to global markets and natural gas demand for power generation will be pivotal to balancing projected growth in supply throughout the year. The return to service of the Freeport LNG liquefaction export facility, which has been inoperable since a fire in June of 2022, will be key to assuring strong underlying U.S. LNG export levels in the short term. The demand for the U.S.-based LNG exports is not expected to grow significantly in the long term until 2024 when new capacity along the U.S. Gulf Coast is slated to commence operation.

Monthly U.S. Liquefied Natural Gas (LNG) Exports (Jan 2016-Jun 2022)

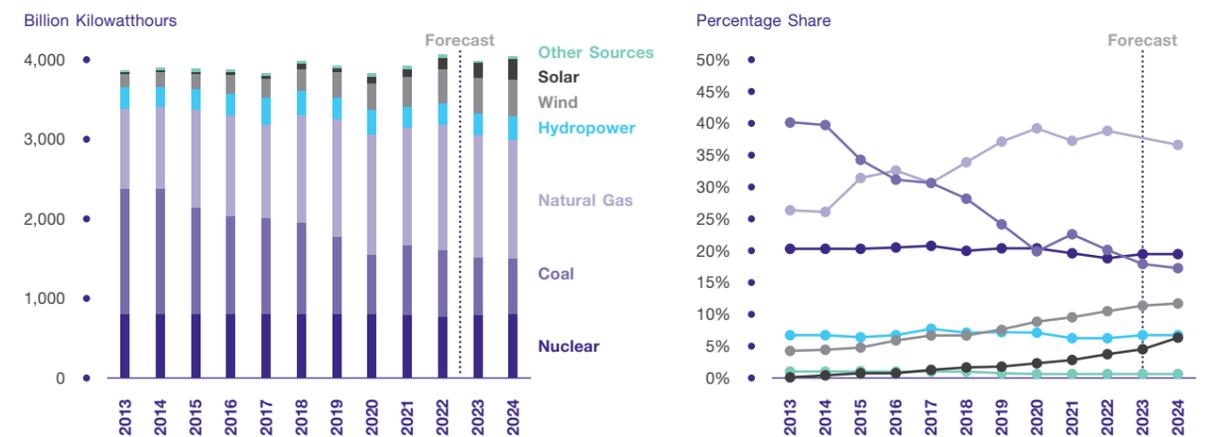


Data source: U.S. Energy Information Administration (EIA), Liquefaction Capacity Table, and U.S. Department of Energy LNG reports

Note: June 2022 LNG exports were EIA estimates based on tanker shipping data. LNG export capacity was an estimated peak LNG production capacity of all operational U.S. LNG export facilities.

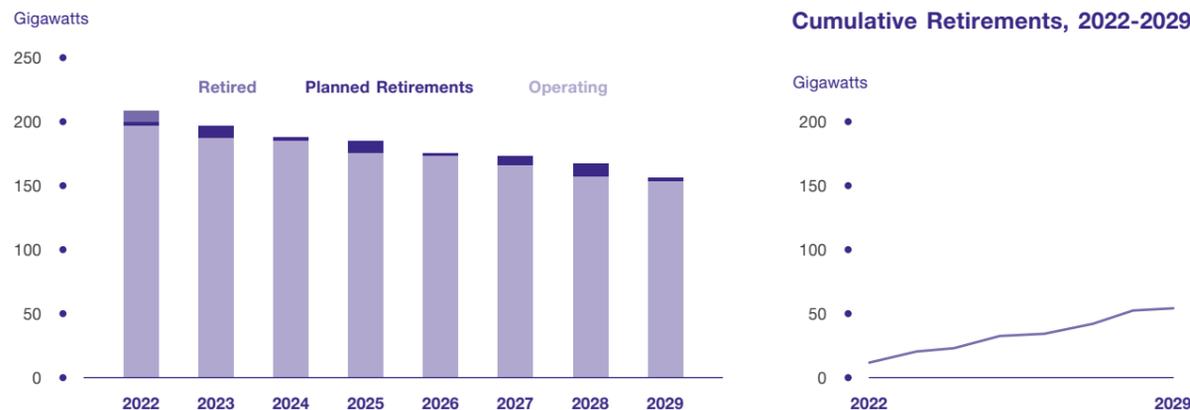
Natural gas-fired power generation has continued to capture market share of available and dispatched power generation in 2022. This is largely due to the continued retirement of coal-fired power generation assets within the U.S. regional power markets and higher export demand of the U.S. coal stockpiles, given relatively higher global coal prices. The ongoing transition from coal to natural gas in these markets can be attributed to individual plant efficiencies and related economics but is also being motivated by power operators' desire to reduce their carbon footprints.

U.S. Electricity Generation by Source, all Sectors



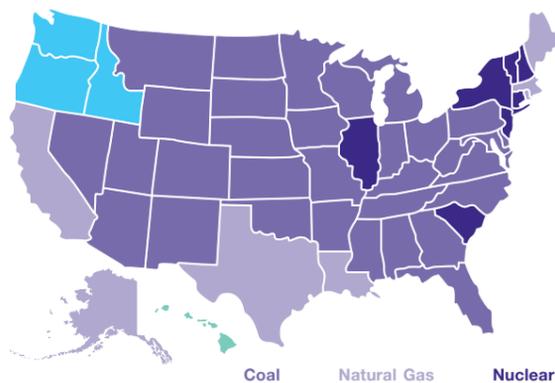
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, January 2023

U.S. Coal-Fired Generating Capacity and Planned Retirements (2022-2029)

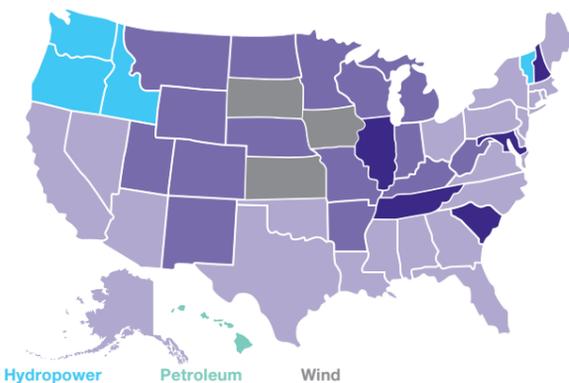


Data source: U.S. Energy Information Administration, Monthly Electric Generator Inventory

Largest Source of In-State Electricity Generation 2001



Largest Source of In-State Electricity Generation 2021



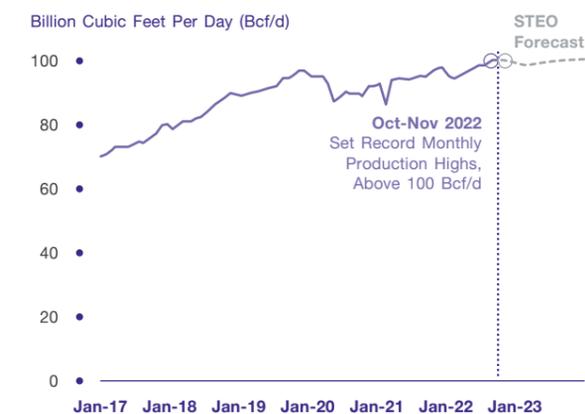
Data source: U.S. Energy Information Administration, Electricity Data Browser

The perceived structural changes in these two demand sectors may offset anticipated production growth, especially in the latter half of 2023. Despite a general lack of investment in new U.S. interstate pipelines in recent years, operators in the Permian basin of West Texas continue to invest in required incremental associated natural gas production export capacity. This is necessary in order to produce incremental oil volumes in the basin. Currently, 1.7 Bcf/d of new capacity is scheduled to come online in the second half of 2023. The majority of 2023 production growth is expected to come from this region, with other regions representing smaller amounts of growth that the regional and the broader U.S. market will have to balance.

There remains a constructive outlook for U.S. natural gas prices in the long term. This is driven by a combination of factors, including coal plant retirements, with 15 GW expected to be retired during 2023 and 2024, and the maturation of the U.S. unconventional shale plays as the industry has begun to face inventory degradation. Lastly, and one of the most important factors, is that the natural gas market has increasingly evolved into a global gas market, and as that has happened, the U.S. market has become linked to the global LNG markets. This will be a major driver of the U.S. natural gas market demand starting in 2024-2025 and continuing through the remainder of the decade.

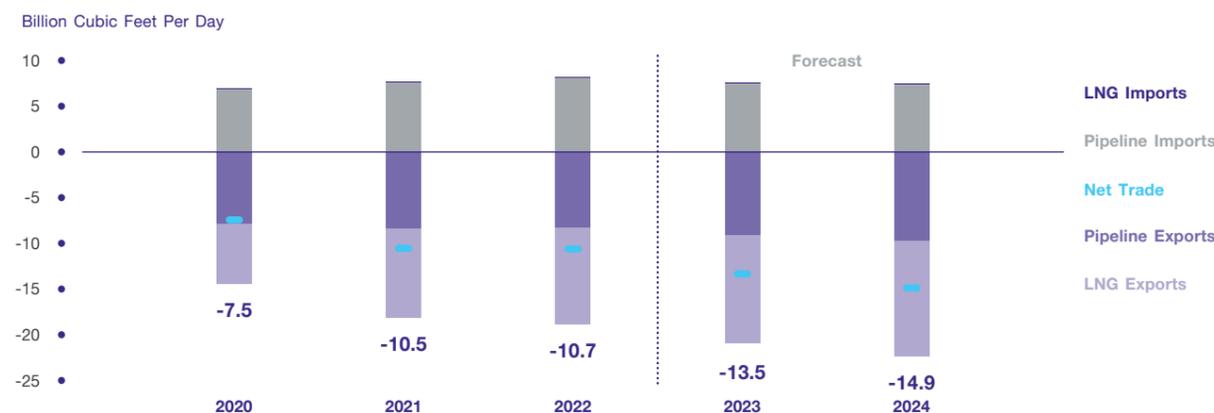
According to the Federal Energy Regulatory Commission (FERC), today there is 14 Bcfe/d of LNG export capacity, with utilization effectively running at 100%. There is another 12 Bcfe/d of export capacity related to current LNG projects that are approved and under construction, with another 19 Bcfe/d of projects that have been approved but are not yet under construction. Tack onto this another 10 Bcfe/d of projects that have been proposed, and there will be a tremendous demand pull on the U.S. natural gas supply. While inevitably not all of these projects are likely to be built or come online, it is possible to envision demand of 35 Bcfe/d in the U.S. LNG market. Against the backdrop of what is today an approximately 100 Bcfe/d in the U.S. natural gas market, LNG exports will result in a steep change in demand for U.S. natural gas.

Monthly U.S. Dry Natural Gas Production (Jan 2017-Dec 2023)



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook

U.S. Annual Natural Gas Trade



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, January 2023.

3. Other Key U.S. Industries

Carbon Capture, Utilization, and Sequestration (CCUS)

CCUS involves the capture of CO₂ emissions and the processing of such emissions for reuse or permanent storage in subsurface geological formations and is recognized as a primary means of

reducing CO₂ emissions from large-scale energy and industry sources. To advance the objectives outlined in the Paris Agreement, the U.S. released goals in 2021, including delivering a net-zero emission economy by no later than 2050 (and 2035 for the electric power sector). According to the Global CCS Institute, the global CCUS industry must grow by more than a factor of 100 by the year 2050 to achieve Paris Agreement climate targets and decarbonize

hard-to-abate industrial sectors, equating to approximately 70 to 100 new facilities per year. In Energy Technology Perspectives 2020, the International Energy Agency (IEA) estimated that 80% of industrial facilities and power plants accounting for 85% of emissions are located within 100 kilometers of a potential storage site.

There have been numerous recent legislative initiatives to stimulate investment in CCUS. In January 2021, the U.S. Treasury and the Internal Revenue Service (IRS) issued critical guidance on Section 45Q carbon capture and storage tax credits, expanding its applications to a wider range of CCUS activities. In November 2021, the Infrastructure Investment and Jobs Act (IIJA) included over USD 12 billion to be spent on CCUS over the next five years. In addition, the Inflation Reduction Act of 2022, signed into law on 16 August 2022, authorized approximately USD 370 billion for clean energy and climate change spending and provides significant incentives for CCUS investment. Key incentives include increasing the value of Section 45Q credits, extending construction deadlines for Section 45Q eligible projects, and adding a direct pay feature or transferability. Further, during the Global Clean Energy Action Forum in September 2022, 16 countries committed USD 94 billion for clean energy demonstration projects, including CCUS. In the past year, CCUS project development has significantly accelerated across various industrial applications with broad support from strategic and financial investors.

Liquefied Natural Gas (LNG)

LNG is natural gas in its liquid phase after being super-cooled to -260°F. LNG is primarily used to store and transport gas between markets that have limited

natural gas pipeline connectivity. Once natural gas is delivered to an LNG facility, the gas is liquified and shrunk to approximately 1/600th of its original volume. Then, the LNG is loaded onto carriers with large cryogenic tanks onboard for maritime transport. The LNG is transitioned back into its original gaseous state at receiving terminals. From there, the regasified gas is either stored or transported via pipeline to end-consumers like power plants, industrial facilities, and residential communities.

In the wake of the tensions between Russia and Ukraine, Europe is diversifying its natural gas supply toward LNG alternatives. According to the Council of the EU, the EU had reduced its reliance on Russian gas imports from around 50% in the first half of 2021 to approximately 31% in the first half of 2022. The U.S. Energy Information Administration (EIA) reported that the U.S. had exported 68% of its LNG to Europe through the first nine months of 2022, roughly doubling the 2021 average of 34%. According to the IEA and FERC, because the U.S. LNG utilizations were at 87% for the first half of 2022, an additional 6 Bcf/d capacity is currently under construction, and FERC has approved another 24 Bcf/d in capacity. According to FERC, current market dynamics have poised LNG for expansion, particularly in the U.S. Gulf Coast, where approximately 90% of the U.S. LNG build is slated. The Barnett region is approximately 300 miles from the Gulf Coast LNG market. Producers are capitalizing on these dynamics by entering into supply agreements that provide a take-or-pay style fixed liquefaction fee for the LNG facility and efficient access to the global gas markets. Upstream producers with exposure to international LNG natural gas prices are expected to provide a baseline of pricing support for Texas and Louisiana-based natural gas producers with pipeline connectivity to the Gulf Coast.

Note: Take or Pay (TOP) is a provision in a contract stating that a buyer has the obligation of either taking delivery of gas from a seller or paying a specified penalty amount to the seller for not taking them in the agreed quantity and period.

Competition

Within the U.S. natural gas production market, there are three primary sources of competition.

1. Competitive Natural Gas Producers

The U.S. Natural Gas Producer Benchmarking

BKV Peer Set Benchmarking								
YTD Q3 2022 Income from O&G Product excl. Hedging Gains/ Losses								
	BKV	Peer 2	Peer 3	Peer 4	Peer 5	Peer 6	Peer 7	Peer 8
Average Production (MMcfe/day)	864	971	1,364	1,628	2,116	3,198	4,837	5,487
Unhedged EBITDA Margin	77%	80%	78%	82%	64%	58%	58%	79%
Free Cash Flow Margin	21%	14%	19%	16%	28%	28%	6%	18%
ROCE	23%	34%	23%	10%	27%	17%	22%	10%
Reinvestment Rate	32%	52%	53%	37%	21%	23%	64%	36%

Source: Internal analysis based on peer company GAAP public company filing and BKV IFRS financials; Unhedged EBITDA Margin = Unhedged EBITDA / Total Revenue ; Free Cash Flow Margin = Free Cash Flow / Total Revenue ; ROCE = EBIT / (Total Assets – Current Liabilities) x 100 ; Reinvestment rate = Capex / Adjusted EBITDAX

BKV competes with other onshore unconventional natural gas producers to deliver its products to the marketplace. Besides environmental, social, and governance (ESG) principles, natural gas producers typically compete on their efficiency and ability to access key markets. These measures are best quantified by financial metrics, excluding the effects of hedging. The chart above illustrates BKV's competitive position vis-à-vis eight peers that operate in the same or similar natural gas basins. The data shows that despite its smaller size, BKV can compete on efficiency and margin metrics with leading U.S. public peers.

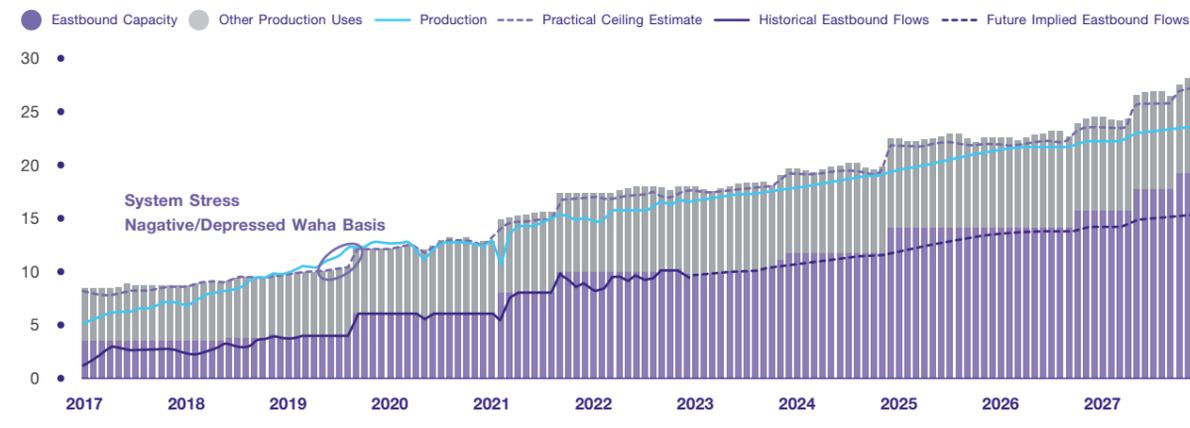
2. Associated Gas Production

Secondary competition for natural gas producers is from associated gas, in which oil producers generate natural gas as a by-product of oil producing operations. Since oil is the primary economic driver for these operators, the marginal costs of their natural gas are extremely low, and they can displace existing natural gas demand. The key for associated natural gas producers is getting their natural gas to market through economic pipeline infrastructure to monetize their by-products. The most significant source of this

associated natural gas is from an unconventional play in west Texas located in the Permian basin. While substantial associated natural gas is produced from the Permian, the pipeline constraints from the Permian to demand markets in the gulf coast areas of Texas and Louisiana imply that the overall competition from

this source of associated gas will be capped based on the pace of pipeline infrastructure build-outs. The chart below projects the total potential associated natural gas supply from the Permian basin, assuming supply is constrained by anticipated future pipeline infrastructure builds.

Permian Production, Uses and Ceiling (Bcf/d)



Data compiled: 16 Jan 2023.

Production uses refer to the ways production can be consumed (stacked bars). Other production uses reflect other capacity, Mexico flows, local demand, and fuel. Practical ceiling reflects the total production potential estimate and can be lower than the theoretical limit because of conditional properties. Future implied eastbound flows based on cumulative share of production growth since January 2019.

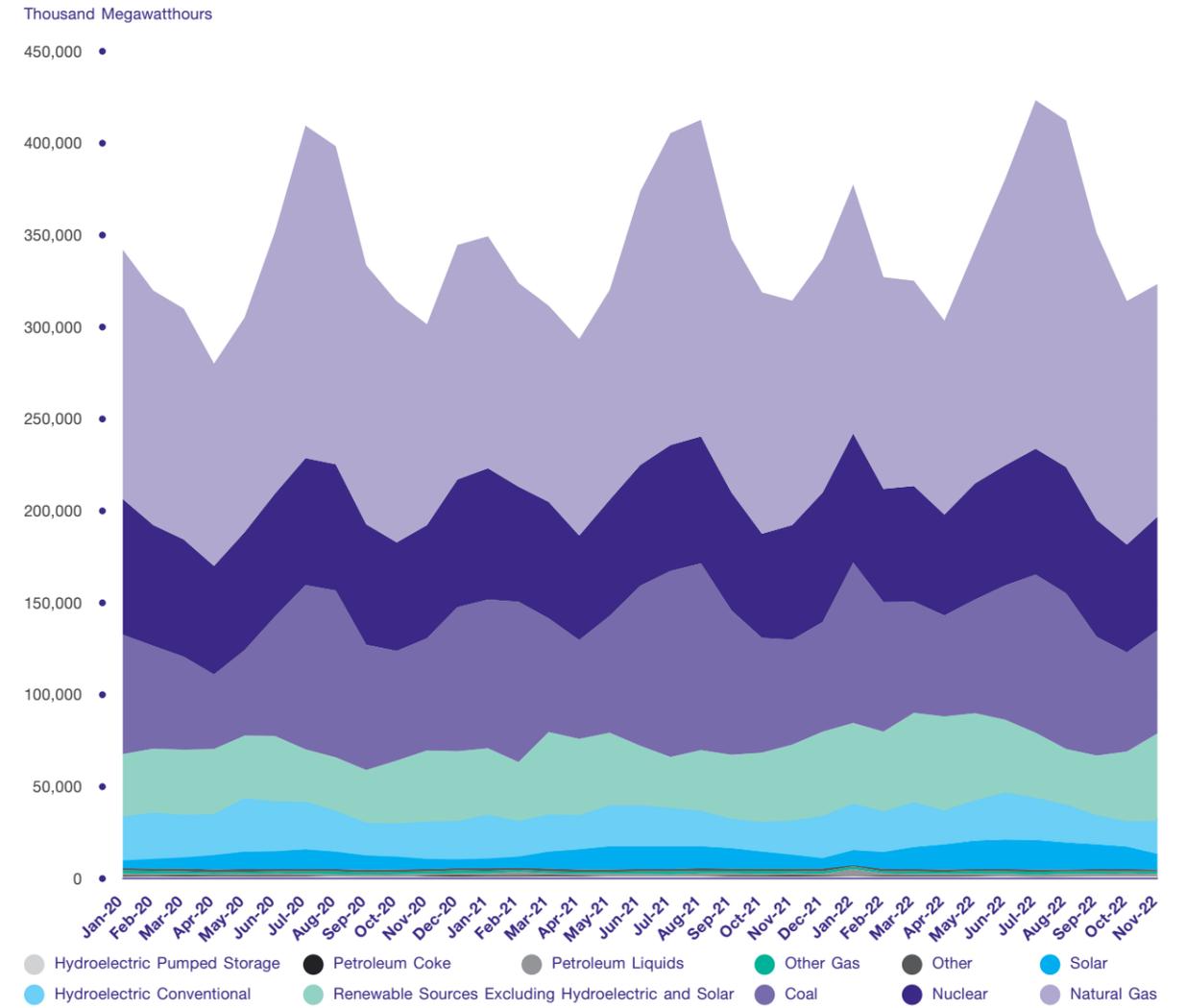
Source: S&P Global Commodity Insights.

3. Alternative Sources of Primary Energy

The third source of competition is from natural gas substitution sources; this is particularly focused on renewable energy penetration in the power sector and the commercial and residential sectors. The past five years have seen respectable increases in renewables net power generation across the U.S. However, the

base of renewable power generation is small; therefore, the overall impact on demand substitution has been muted. Going forward, policies around future power generation remain uncertain in the U.S. but have a significant impact on the outlook for future demand substitution and must be watched closely.

Net Generation by Energy Source: Total (All Sector), January 2020-November 2022



Source: IEA net generation report all sectors monthly

Competitive Strategies

BKV's strategy is to create value for its shareholders by managing and growing its integrated asset base and focusing on the net zero objectives. The strategy has the following principal elements:

1. Deliver robust returns to shareholders

BKV intends to prioritize delivering strong returns to shareholders through its dividend policy and focus on

creating shareholder value. The company believes that its operational expertise in successfully drilling and refracturing wells, acquiring and integrating assets purchased at attractive valuations, and maintaining financial discipline, will underpin the ability to meet shareholder return goals. Its integrated businesses and natural gas-weighted, low-decline proved developed producing (PDP) reserves collectively reduce the downside risk while providing asymmetric upside returns from the confluence of commodity price uplift potential, operational improvement and development opportunities,

and future accretive acquisition opportunities. The payment of any future dividends on its common stock will be at the discretion of the Board of Directors and may vary significantly from quarter to quarter and may be zero.

2. Optimize the value of core businesses

BKV utilizes technology and data analysis to enhance its assets and operations, which the company believes improves its operational efficiencies, reduces emissions, and helps realize its operational and financial goals as the company continues to scale its business. For example, the “Pad of the Future” program, which includes the conversion of natural gas-powered instrument pneumatics to compressed air-powered instruments on existing pads, combined with emission and leak surveys, reduces GHG emissions by 72%, based on current Scope 1 and 2 emissions from production in its owned and operated natural gas upstream business. The “Pad of the Future” application improves pad efficiencies and operating revenue. As of the year ended 31 December 2021, employing technology and operational excellence, the company reduced lease operating costs in the Barnett by 14% since October 2020 and in NEPA by 26% since January 2019, based on prior 12-month rolling averages. In 2022, XTO integration and industry-wide cost inflation make it incomparable. However, BKV expects additional cost savings and efficiencies as we move forward.

Additionally, its refrac and long lateral drill programs have enabled BKV to organically grow its reserves base. As of 30 September 2022, the Barnett refrac program has added 491 Bcfe of proved reserves since its inception in early 2021, with an estimated 516 Bcfe of probable reserves and 167 Bcfe of possible reserves, at an average of approximately USD 0.70/Mcfe finding and development costs during 2021. This refrac program employs specifically designed perforating technology and a suite of innovative refrac techniques, as well as advanced refrac designs and diversion methods to maximize reserve recovery and economics from legacy Barnett wells. The Barnett new

well drilling program has added 1.1 Tcfe of proved reserves since the company entered into the Barnett, with a total estimate of approximately 669 Bcfe of probable reserves and 360 Bcfe of possible reserves. As of 31 December 2022, BKV has Natural Gas reserves of 5,785 Bcfe.

3. Grow through opportunistic and synergistic acquisitions

A significant element of BKV’s business strategy is gaining scale through accretive acquisitions. The company has a track record of growth through acquisitions, which it believes have been at attractive valuations. Since 2016, BKV has completed 19 acquisitions and two CCUS partnerships, resulting in greater than a 100% compound annual growth rate of adjusted EBITDAX as of 30 September 2022. Business model, management team experience, and application of technology enable BKV to quickly and efficiently integrate additional upstream, midstream, and power assets into its businesses.

4. Maintain a disciplined financial strategy

BKV believes that it can execute its business plan, grow business, and continue to generate substantial adjusted free cash flow. The company targets a maintenance reinvestment rate of less than 30% and an upstream reinvestment rate of less than 40%. To support the generation of future free cash flow, BKV has a policy of hedging approximately 25% to 60% of its production volumes over a given 12 to 24-month period. Its capital-efficient project inventory, low-decline natural gas production, and multiple integrated business lines will provide consistent returns through varying business cycles. The company will apply its cash flows to manage indebtedness in line with its leverage target, fund the capital expenditure program, enhance shareholder value, and execute opportunistic acquisitions across its business lines.

5. Focus on net zero objectives

BKV seeks to apply its integrated business model, CCUS projects, and carbon-negative initiatives to realize Scope 1 and 2 net zero upstream owned and operated emissions by the end of 2025. The company believes it can achieve this through the “Pad of the Future” emissions reductions program, emissions surveys, installing solar power, and executing CCUS projects. It also believes that carbon emissions within the U.S. can be reduced substantially through carbon capture on natural gas production, power plants, processing facilities, and other energy and industrial infrastructure. As such, in addition to lowering emissions in its direct operations, CCUS for third parties has become a core focus of its business plan. BKV expects its CCUS projects to represent a meaningful portion of its budgeted capital expenditures

going forward as the company advances its long-term goal of eliminating and/or offsetting Scope 3 emissions from owned and operated upstream businesses.

6. Encourage innovation

BKV’s distinctive culture encourages innovation with a value-driven focus that helps build its competitive advantage. For example, its emphasis on the efficient application of modern technology led to the development of the “Pad of the Future” program, advancements in Barnett refracs, and other operational improvements. The company intends to continue to develop, retain and add to its already talented, experienced, and forward-thinking employees. The unified team and mantra of “Being a force for good” underpin BKV’s core values and contribute to the company’s ability to drive business growth successfully.

Energy Generation

Banpu operates the energy generation group of businesses through its subsidiary, Banpu Power Public Company Limited (BPP). As a leader in power generation and distributor in Asia-Pacific, including in Thailand, Lao PDR, China, Japan, Vietnam, Australia and the U.S.

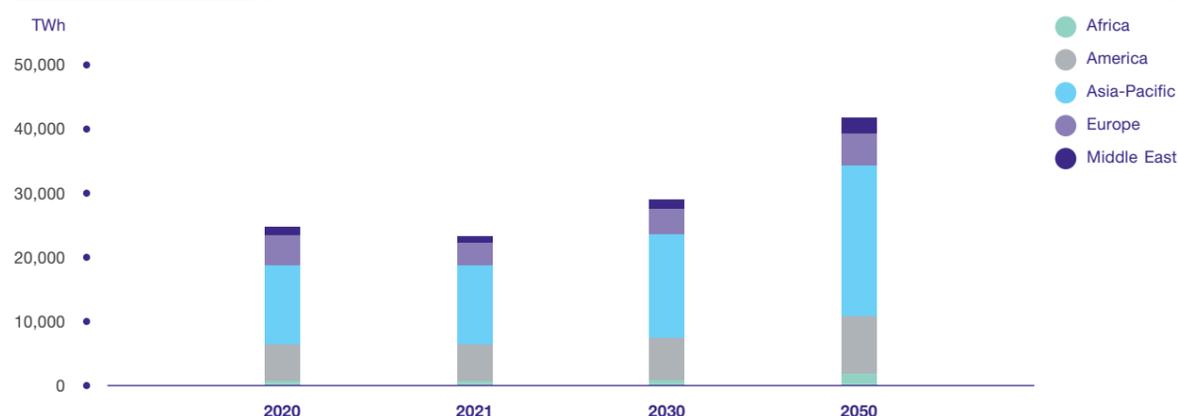


Market and Competition

Market

Thermal and Renewable Power Businesses

Global Electricity Demand 2020 - 2050



Source: World Energy Outlook 2022

In 2021, the global electricity demand grew by 6%, as a result of the speedy economic recovery the post-pandemic COVID-19 and the effects of climate change worldwide. However, in 2022, the global energy landscape suffered a major setback due to the Russia's invasion of Ukraine in February, causing significant repercussions and initiating a worldwide energy crisis. The United States and several EU countries have imposed a series of sanctions on Russia and many European countries declare their intention to phase out Russian natural gas imports completely. Given that 25% of the EU's energy consumption is supplied by Russia, Europe has resorted to importing liquefied natural gas (LNG)

from the U.S., Australia, and other countries. Natural gas prices have reached record levels, pushing the electricity market and oil prices to their highest level since 2008 due to rising oil and natural gas prices, as well as supply constraints. Consequently, governments of many countries delayed the shutdown of coal-fired power plants and eased restrictions to increase the availability of coal-fired power generation in place of natural gas to secure the energy supply. The rising energy prices also contributed to the highest inflation rates in several decades. Meanwhile, renewable energy has continued to grow rapidly worldwide, generating over 10% of global electricity in 2022.

1 Market and Competition in Thailand

Comparison of Power Development Plan and Current Proportion of Power Generation Capacity by Fuel Source



Source: Energy Policy and Planning Office (EPPO), Ministry of Energy (As of end-October 2022)

In 2022, Thailand's installed power generation capacity totaled 53,370 MW, growing by 5% from 2021. In April, the electricity demand reached its peak at 33,177 MW, which was 2,145 MW or 7% higher than the peak demand in 2021 at 31,032 MW. The proportion of generation capacity by fuel source in 2022 consisted of natural gas at 53%, coal at 16%, oil at 0.3%, hydropower at 3%, and renewable at 10%. In summary, power generation from natural gas, coal, hydropower, and oil decreased while renewables power generation and imported electricity increased.

2 Market and Competition in Lao PDR

Currently, Lao PDR operates 90 power plants with an installed capacity of 10,956 MW. The capacity comes from 77 hydropower plants with an installed capacity of 1 MW or more, accounting for 81% of the total power generation capacity, eight solar power plants, four biomass plants, and one coal-fired plant. 72% of the output is exported to foreign countries such as Thailand, Vietnam, Cambodia, Singapore, and Myanmar. Lao PDR signed power purchase agreements to supply

10,500 MW of electricity to Thailand, 5,000 MW to Vietnam, and 600 MW to Cambodia by 2025. Thailand has purchased electricity from Lao PDR through eight power plants, which include seven hydropower plants and one coal-fired power plant.

Most of Lao PDR's capacity is from hydropower. When considering domestic electricity consumption, over 90% relies on hydropower generation. Therefore, Lao PDR always faces power outages during the dry season, forcing the country to turn to electricity imports. Accordingly, the Lao government planned to diversify energy sources by increasing the fuel mix of power from solar, wind, and coal while reducing its reliance on hydropower generation.

3 Market and Competition in China

The growth rate in electricity consumption in China is as follows:

	2022	2021	2020	2019
Growth rate in power generation capacity (%)	8.3	7.6	6.6	6.3
Total power generation capacity (GW)	2,500	2,377	2,210	2,073

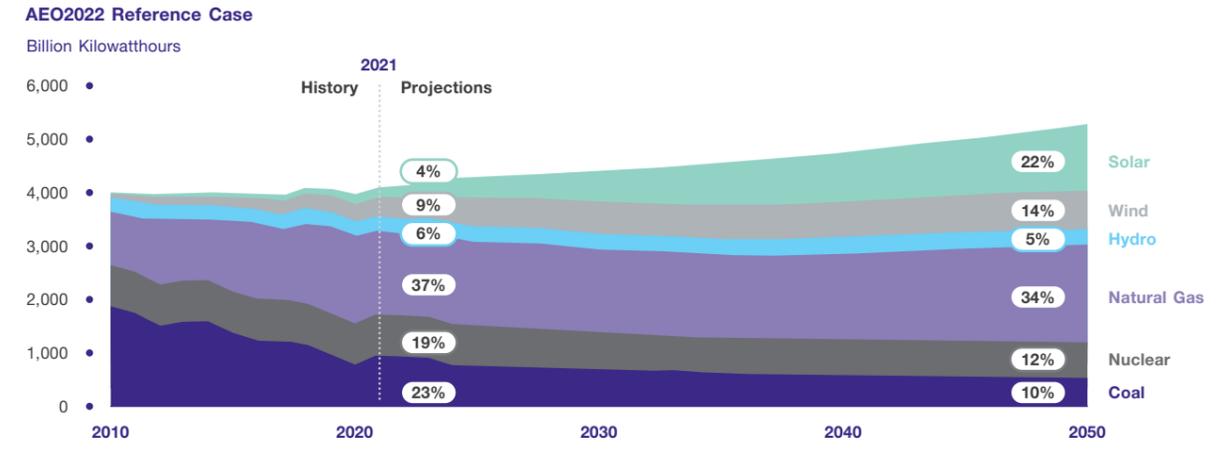
Source: National Energy Administration (NEA), China

In 2022, China's power generation capacity growth rate was 8.3% of total capacity, growing over the past year. Over 55% of total capacity was from coal-fired power plants while renewable energy capacity continued to increase, with solar and wind power installed capacity reaching 360 GW and 350 GW respectively. The Chinese government has announced that its carbon emissions will peak by 2030. It also aims to reach carbon neutrality by 2060 and will increase the proportion of power generation from non-fossil energy sources to 80%.

The Chinese government has issued several measures to tackle the energy shortage crisis, for example, increasing coal production quotas and opening coal mines in Inner Mongolia. It also raised the electricity prices ceiling from the maximum rate at 10% to 20% and lifted the cap on electricity prices ceiling in heavy industry to ease the pressure on power producers. In addition, the Chinese government has reformed the electricity market by opening a wholesale market for all coal-fired power plants. The liberalized wholesale market allows commercial and industrial consumers to buy and sell electricity directly from producers, allow energy distribution and electricity pricing to be determined more by market-based mechanisms.

4 Market and Competition in the United States of America

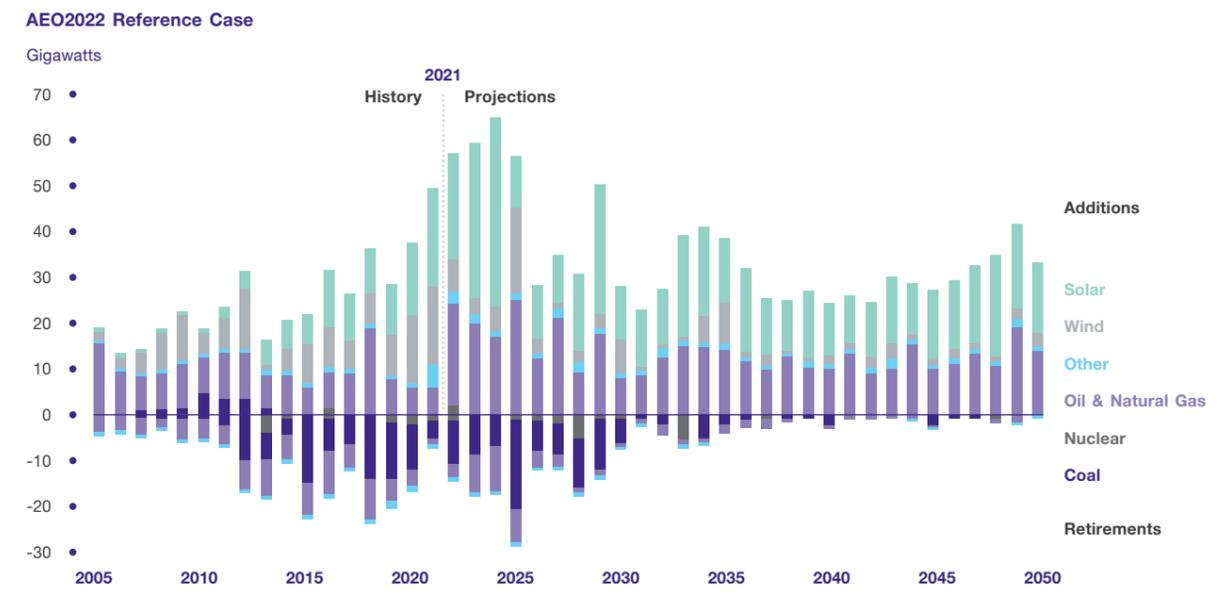
The U.S. Electricity Generation from Selected Fuels



Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022) Reference case.

Note: Solar includes both utility-scale and end-use photovoltaic electricity generation.

Annual Electricity its Generating Capacity Additions and Retirements

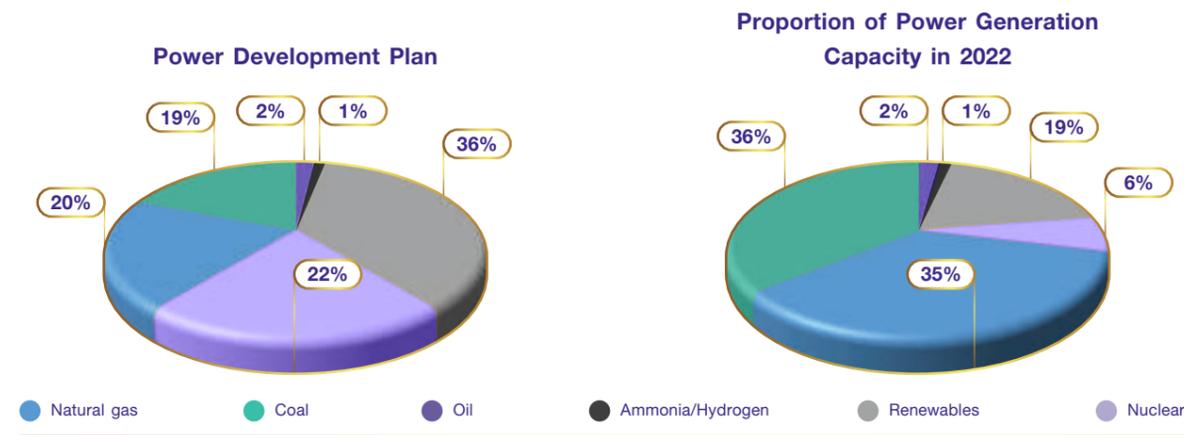


Source: U.S. Energy Information Administration, Annual Energy Outlook 2022 (AEO2022) Reference case

The International Energy Agency (IEA) estimated that the electricity demand in the U.S. would increase steadily at the average annual growth rate of approximately 1% with smaller shares of nuclear power generation and coal-fired power generation. Natural gas is expected to play a major role in satisfying power demand and stabilizing power generation. The share of power generation from renewables will continue to grow, accounting for over 57% of the total capacity increase, or about 570 GW, between 2021 and 2050. Wind power generation is projected to account for 10% while solar power generation tends to increase the most, representing 47% of the total capacity thanks to tax incentives provided by the government.

5 Market and Competition in Japan

Comparison of Power Development Plan and Current Proportion of Power Generation Capacity by Fuel Source



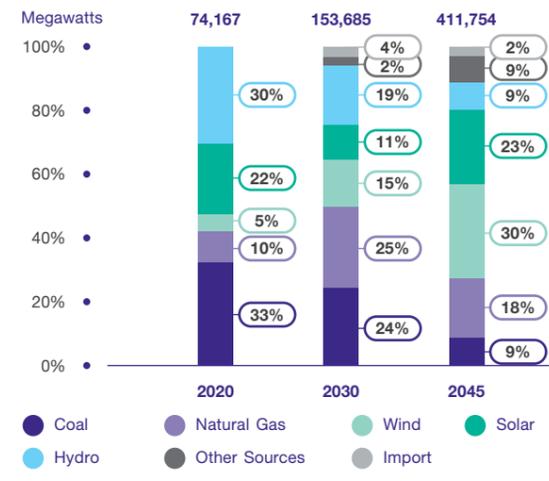
Source: The 6th Strategic Energy Plan, Ministry of Economy, Trade and Industry (METI), Japan (As of end-October 2022)

Japan's electricity consumption has enjoyed a stable growth with the majority of capacity from thermal power generation. Part of the capacity was from renewables, accounting for 19% of the total capacity of 69,599 MW, consisting of 3,962 MW from wind power, 15,476 MW from solar power, and 49,690 MW from hydropower. According to the Sixth Strategic Energy Plan, Japan set to achieve of 36-38% from renewables by 2030, a significant increase of renewable energy portfolio. The Government of Japan has replaced the renewable-based electricity pricing scheme from the Feed-in Tariff (FiT) scheme with the auction scheme. In 2022, newly developed solar power plants will get an average price of JPY 9.63 per kWh based on the auction scheme. Besides, there was a regulatory change prescribing that any solar power plant project development of over 40 MW operating capacity must submit an Environmental Impact Assessment (EIA) report. The new regulation has been effective from April 2020 onward.

6 Market and Competition in Vietnam

In 2022, Vietnam's Gross Domestic Product (GDP) grew by 8.02% driven by growth in domestic retail sales and exports. It is projected that Vietnam's GDP in 2023 will be at around 6.5% due to weak global demand and the global economic slowdown.

Proportion of Power Generation Capacity by Fuel Source

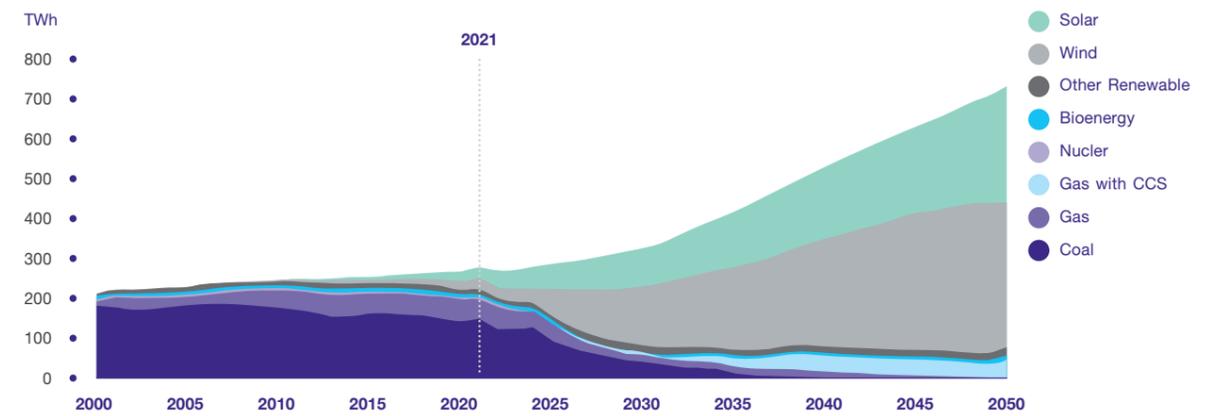


Vietnam has established renewable capacity targets for 2045 in the draft of the Power Development Plan VIII finalized in April 2022, aiming to increase wind capacity to 30% and solar capacity to 23% of the total target capacity of 411.8 GW.

Vietnam has set the FiT for the solar and wind power projects that have already achieved commercial operation date. In the future, the Vietnamese government will change the solar and wind pricing schemes from FiT to the auction scheme.

7 Market and Competition in Australia

Anticipated Proportion of Electricity Generation from Each Fuel Source (Australia)

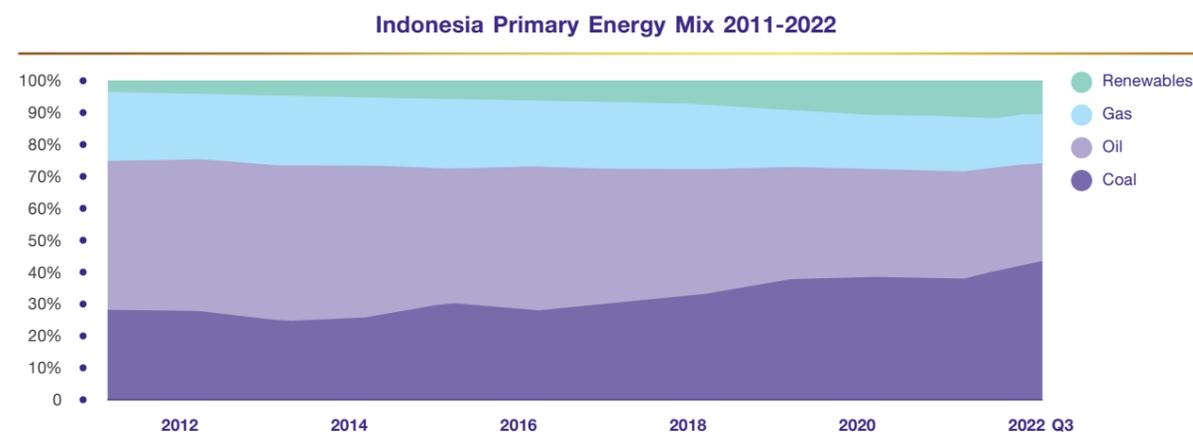


Source: BloombergNEF - New Energy Outlook 2022 - Australia - Net Zero Scenario

The Eastern and Southern states of Australia consist of Queensland, New South Wales, Victoria, South Australia, and Tasmania. These states jointly operate the National Electricity Market, where electricity demand has remained stable over the past five years. In 2021, the electricity demand was at 267,452 GWh, rising 0.1% from the previous year. Australia's primary energy source is coal, with a share of 71% of total energy sources. However, the share of coal has steadily

declined as renewable energy, especially solar energy, has gained popularity in households with solar rooftop systems. The Australian government has pledged to achieve net-zero emissions by 2050, which has led the states to develop and implement policies that promote more renewable energy generation. It is expected that by 2050, the share of renewable energy will increase to 84%.

8 Market and Competition in Indonesia



Source: 2011-2020 data from MEMR (2022), 2022 Q3 data from MEMR's preliminary data per November.

In 2022, Indonesia's Gross Domestic Product grew by 5.7% due to rising energy demand driven by post-pandemic-COVID-19 economic recovery. The power generation capacity remained quite similar to last year owing to limited addition of new renewable capacity in 2022. The proportion of coal-fired power generation has increased to 67.5% while renewables has remained below 14%.

Competitive Strategies

1. Competitive Strategies in Thailand

BPP holds a 50% stake in BLCP Power Ltd., which operates the BLCP power plant, in which BPP owns an equity capacity of 717 MW out of a total capacity of 1,434 MW. Located in the Map Ta Phut Industrial Estate, the BLCP power plant is a major power producer that sells electricity directly to the Electricity Generating Authority of Thailand (EGAT). The dispatch rate of the BLCP power plant in 2022 was 99.7%, reflecting the power plant's ability to manage operational efficiencies. BLCP's production output accounts for 5% of EGAT's total installed and purchased power capacity.

Competitive Strategies

1) Maintaining Operational Efficiency and Readiness of Power Plants

BPP consistently improves efficiency and maintains the equipment of power plants according to the maintenance schedule to secure the Availability Factor (AF) and Contracted Available Hours (CAH) in accordance with the power purchase agreement (PPA). In 2022, BLCP reported the Equivalent Availability Factor (EAF) of 87.1%.

2) Seeking Opportunities for Business Expansion

BPP has been on the lookout for new domestic growth opportunities by aligning the domestic power business expansion plan with the Power Development Plan for 2018-2037 (PDP 2018), approved by the National Energy Policy Council (NEPC) on 24 January 2019. The plan proposes increasing the capacity of Isolated Power Supply (IPS) groups and efficient energy-saving measures.

The PDP proposal will push electricity demand lower than projected while there are more policies promoting renewable power generation. Moreover, the development of new thermal and renewable power plants will face increasing competition in project bidding and in applying for electricity retail supply licenses. Therefore, the company has prepared competent and experienced staff from the Business and Project Development Department to monitor the government and related government agencies' policies and evaluate the company's competitiveness. In addition, the business development team also prepares the company's participation in government project which allows private investment, such as the Eastern Economic Corridor (EEC). It also responds to government support for the business sector's role in the Isolated Power Supply (IPS) projects that use renewable energy sources.

3) Stakeholder Relations Management

BPP has supported activities and enhanced mutual understanding in the communities in all locations where it operates, resulting in a healthy relationship with the communities.

Major Competitors

- BPP's thermal power plants that are commercially operational have no direct competitors who are power producers because the company entered into a long-term power purchase agreement with the Electricity Generating Authority of Thailand.
- Major domestic power producers include Electricity Generating Plc., Ratchaburi Electricity Generating Holding Plc., Global Power Synergy Plc., Gulf Energy Development Plc., and international investors.

2. Competitive Strategies in Lao PDR

BPP holds a 40% stake in Hongsa Power Company Limited, which operates the HPC power plant, the only mine-mouth power plant in Lao PDR. The HPC power plant has a total capacity of 1,878 MW, of which the company holds 751 MW equity capacity. The power plant sells the majority of electricity to the Electricity Generating Authority of Thailand under the Independent Power Producer (IPP) scheme and some of its output to Lao PDR. The HPC power plant's production output constitutes 25% of the total electricity that Lao PDR supplies to Thailand.

Competitive Strategies

1) Maintaining Operational Efficiency and Readiness of Power Plants

All three production units of HPC power plant have been fully operational since 2016, with 100% dispatch in 2022. This demonstrates the operational stability and low operating costs, which are crucial for both countries' electricity systems.

2) Managing Relationships with Local Government Agencies and Communities

BPP places importance on community development by promoting community engagement and improving the quality of life of local people. These measures have been realized into community development initiatives, for example, infrastructure development (water supply, electricity, and roads), partial relocation and rebuilding of houses in appropriate areas, vocational training and promotion of employment at power plants, contract for project design, and equipment procurement.

3) Cost Management and Efficiency

In 2022, BPP supported the HPC power plant to improve its efficiency and capacity readiness in power generation and distribution. The improvements covered equipment maintenance and coal transportation to the power plant, which helped maintain the Equivalent Availability Factor (EAF) at 85.9%. Moreover, the power plant increased readiness by stocking equipment parts and improving the speed and efficiency of maintenance, contributing to smooth power generation.

Major Competitors

BPP's coal-fired power plant that is commercially operational has no direct competitors because the company has a long-term power purchase agreement with the Electricity Generation Authority of Thailand and Électricité du Laos.

3. Competitive Strategies in China

BPP's combined heat and power (CHP) plants and solar power plants in China are more highly efficient than average power plants and meet pollution control standards. Hence, they obtain various supports from the Chinese government, such as guaranteed electricity sales to local electricity authorities, exclusive rights to sell steam and heat in permitted zones, and local government subsidies.

Competitive Strategies

1) Cost and Efficiency Management

The Chinese government has pursued electricity trading market reform to reflect fuel costs in each province and, at the same time, has imposed measures to stabilize electricity prices for households. BPP has assessed the impact on the pricing in power and steam purchase agreements and adjusted the prices accordingly. BPP maintained its cashflow generation and liquidation management by improving production efficiency and strictly controlling costs by strategically buying and stocking up coal when coal prices decline and utilizing it when coal prices increase.

2) Environmental Management

The Chinese government has a stringent policy on environment and pollution control, which restricts the use of coal as a major fuel source in industrial plants. BPP uses highly efficient power generation processes that comply with current environmental standards and regularly maintains all equipment and machinery. It also has the plan to improve environmental control equipment. Furthermore, BPP monitors and assesses environmental impacts to ensure that its business operations fully comply with environmental laws, rules, and regulations. The company has considered deployment of the state-of-the-art technology called Ultra-Supercritical (USC), which is high efficiency, low emissions (HELE) technology, in new projects, such as the Shanxi Lu Guang power plant.

3) High Adaptability

BPP has a specific team to closely monitor changing market conditions and align business operations to the market conditions or situations in order to embrace business opportunities and mitigate negative impacts. The company is prepared to adjust the distribution of electricity, steam, and hot and chilled water in response to the factors affecting the demand. For instance, the Zhengding CHP plant would produce electricity, steam, and hot water for sale during winter. In summer, when customer demand shifted, it would swap to produce chilled water for sale, which helped generate more income and reduce the impacts of the seasonal decrease in electricity and steam sales.

The Zhengding CHP plant was selected to develop a major solar rooftop project under the support of the local government in Hebei province. Currently, the power plant has a capacity of 64 MW, with the potential for expansion to 167 MW by 2023, representing another milestone in expanding its clean energy portfolio.

4) Service Quality and Stakeholder Relations Management

BPP prioritizes the quality of products and services. The company strives to ensure readiness and security in generating and distributing electricity and steam to respond to customers' needs at all times, especially the distribution of steam and hot water in wintertime. The company always maintains a good relationship with customers based on mutual trust and benefits, which has earned trust and confidence from customers.

Relationship management with local government agencies and communities is on the basis of mutual benefits by providing basic utility services (electricity and steam) to local communities, building trust and equity, as well as lending continued support to the community. This has brought BPP acceptance from local government agencies and communities as an exemplary local enterprise. Despite a setback from external factors, the company still enjoys full support from local governments, for instance, financial subsidies or approval to raise steam prices when coal prices increase.

5) Seeking Opportunities for Business Expansion and Added Value Creation

BPP puts greater emphasis on investment in renewable energy to align with the government's policy to promote renewable energy. The company also focuses on creating added value by expanding investment into related businesses while considering the costs of different fuel sources and appropriate technology. For example, the location of the Luannan CHP plant is in the urban-industrial area, which gives it a strategic advantage in becoming the sole distributor of steam. BPP is also considering expanding its customer base to new industrial areas to offer the service of the solar rooftop system. Moreover, the company is conducting a feasibility study for the development of the company's existing land to develop a biomass power plant project.

Major Competitors

- Domestic and international power producers and investors

4. Competitive Strategies in the United States of America

On 1 November 2021, BKV-BPP Power LLC (BKV-BPP), a 50%-owned affiliated company of Banpu Power US Corporation (BPPUS), which is 100% owned by BPP, invested in the 768-MW Temple I Combined Cycle Gas-Turbine (Temple I CCGT) Power Plant, which achieved commercial operation date on 15 July 2014. Temple I CCGT is located in Texas, one of the fastest-growing economic and population centers in the U.S. The power plant can generate and supply the power needs of about 750,000 households in Central Texas. Equipped with a pollution control management system to maintain low emissions, the power plant is highly efficient and flexible in power generation in accordance with power consumption patterns. Its priority dispatch makes it ideal for the competition in the Electric Reliability Council of Texas (ERCOT) market. This investment is the company's stepping stone to an advanced and free electricity trading market, creating added value from the synergy between BPP and BKV Corporation, a subsidiary of Banpu Public Company Limited, through knowledge and resource sharing to maximize the benefits of investment.

Competitive Strategies

1) Maintaining Readiness and Enhancing Efficiency of Power Plants

Temple I CCGT power plant undergoes annual maintenance in spring and fall or during March and October to ensure the highest operational

readiness during the time when electricity consumption peaks (in winter and summer). Moreover, to prevent impact from winter storms, the power plant installed windshields and permanent roof to protect outdoor equipment from blizzards and extreme temperatures. It also installed the heat tracing system on pumps, valves, gauges, and other equipment to prevent them from freezing and becoming inoperable. In 2022, a wet compression system was installed to increase the power plant's efficiency. The system increases generation capacity during summer, the time when the ERCOT market's power demand peaks.

2) Cost and Price Management

The Temple I CCGT power plant operates in an open electricity market with a risk of price fluctuations and fuel costs. In the U.S., advanced derivatives will help power producers reduce the risk of electricity price fluctuations and fuel costs. In managing electricity prices and fuel costs, the Temple I CCGT power plant will consider entering into derivative contracts to mitigate the risk of fluctuations in electricity prices and fuel costs. In addition, the Temple I CCGT power plant is one of a few power plants in Texas that own gas storage facilities. Therefore, BKV-BPP can purchase natural gas when the prices are low and store it at the plant as a reserve for power generation when gas prices are higher. Over the past year, natural gas prices were highly volatile, primarily due to extreme weather conditions and supply-demand imbalances when domestic supply could not keep up with increasing demand throughout the year. However, with a team of experts in the natural gas business and effective operational management of both BPP and BKV Corporation, Temple I CCGT power plant could harness its gas storage and maintain profitability from this storage optimization.

3) Seeking Opportunities for Business Expansion and Added Value Creation

The company monitors market conditions, growth, and investment trends. It seeks investment opportunities in various projects across the U.S., whether natural gas-fired power plants, renewable-energy power plants, or other technologies. That includes value creation through further investments in related companies, for example, by exploring the possibility of investing in new fuels that are compatible with the country's energy development policy and can be supported by financial institutions. The company is also looking for an opportunity to enter into a power purchase agreement with a large electricity consumer or expand the business into the retail market and power trading business.

Major Competitors

- Domestic and international power producers and investors

5. Competitive Strategies in Japan

BPP expanded investment into Japan by starting with an investment in the solar power plant business. Currently, the company has a combined capacity of 135 MW from commercially operational projects and 102 MW from under development projects. In 2021, the company diversified its investment through joint investment in the Nakoso IGCC power plant with an installed capacity of 543 MW in Fukushima Prefecture. This gas-fired power plant deploys the IGCC technology – a high efficiency, low emissions (HELE) technology – which integrates gasification technology with the Gas-Fired Combined Cycle power plant. Besides, the power plant has entered into a long-term

power purchase agreement and a long-term fuel supply agreement. The company continues to create sustainable growth and seeks investment opportunities in power plants which deploy eco-friendly technologies in markets that have growing electricity demand and supporting government policies.

Competitive Strategies

1) Capability in Investment Management

BPP has a strategy to collaborate with partners in seeking new investment opportunities as well as managing financial costs from multiple funding sources, especially from domestic financial institutions, to achieve long-term investment goals.

2) Project Development

BPP closely monitors policy and regulatory changes of the Japanese government related to the energy industry, with a specific team to follow up and study the changes in detail as well as impacts on under-development projects to ensure that all projects achieve commercial operation dates as planned.

3) Seeking Opportunities for Business Expansion and Added Value Creation

Since Japan's energy management is governed by a clear energy policy, BPP faces low investment risk and can keep the risk to a manageable level although the Japanese government reduced the FiT for solar power and turned to the auction scheme. To achieve the target return on investment, BPP has adapted by focusing on cautious cost management, procuring important equipment to improve efficiency, and seeking appropriate

funding sources. For the new investment, BPP will prioritize projects under the FiT scheme or acquire projects that have already achieved commercial operation date.

BPP also constantly seeks investment opportunities in related businesses by building upon the existing power generation business to create added value, such as energy trading and retail electricity by expanding business opportunities with retail customers as well as solar rooftop business to fulfill demands of business and industrial sectors and renewable energy consumers.

Major Competitors

- Domestic and international power producers and investors

6. Competitive Strategies in Vietnam

BPP has expanded investment in the power business in Vietnam since 2016 under a Memorandum of Understanding (MoU) signed with Soc Trang Provincial People's Committee to conduct a feasibility study on investment in a renewable energy project. The company was awarded an Investment Registration Certificate (IRC) for Vinh Chau wind power project in 2018 and subsequently established a subsidiary in Soc Trang province. BPP assembled an experienced team with a good understanding of Vietnam's business environment to develop the project. The construction of the Vinh Chau wind power project, Phase 1, has been completed and ready for commercial dispatch. The company continued a feasibility study to explore the opportunity for further expansion of the generation capacity.

In 2020, BPP expanded its investment through the acquisition of the commercially operational El Wind Mui Dinh wind farm in Ninh Thuan province. The 37.6 MW wind farm is eligible for a FiT for a period of 20 years. Located on the South Central Coast of Vietnam, Ninh Thuan province has the highest potential and investment opportunities in renewable energy, thanks to government support. In addition, in December 2021, a subsidiary of Banpu NEXT Co., Ltd. (Banpu NEXT) entered into a purchase and sale agreement to invest in three solar farms: the 50-MW Ha Tinh Solar Farm in Ha Tinh province, the 15-MW Chu Ngoc Solar Farm in Gia Lai province, and the 35-MW Nhon Hai Solar Farm in Ninh Thuan province. The three solar farms are eligible for a FiT. The investment is awaiting approval from the responsible authorities, which is expected to be completed in Q1/2023. After that, the solar farms can generate immediate income for the company.

Competitive Strategies

1) Managing Relationships with Local Government Agencies and Communities

BPP builds relationships with local government agencies on the basis of respect for social and cultural differences. The company focuses on becoming a mutually responsible partner with government agencies to sustainably engage in local community development by providing continuous support for community activities.

2) Project Development and Management

BPP recognizes the importance of sound decision-making in project investment. It conducts thorough pre- and full due diligence by hiring consultants with experience and expertise in various fields, such as engineering, environmental, legal, financial, accounting, and tax consultants, to ensure accurate results of the feasibility study before investing and compliance with regulations and investment conditions in Vietnam and internationally. In addition, consultants also help monitor the progress of project development and execution of each construction phase as planned, enabling timely completion of power plant construction.

3) Seeking Opportunities for Business Expansion and Added Value Creation

Vietnam has enjoyed a continuous growth rate and is projected to achieve a GDP growth rate of 6.5% in 2023,* which will lead to a continuous increase in electricity demand. The Vietnamese government also has a clear energy management plan to increase renewable power generation capacity, presenting a promising opportunity for BPP to make an investment.

Major Competitors

- Domestic and international power producers and investors

7. Competitive Strategies in Australia

Banpu group has been driving the growth of the renewable energy business through Banpu NEXT, an affiliated company in which BPP holds a 50% stake. Banpu NEXT has expanded investments in the renewable energy business in Australia. In June 2021, Banpu NEXT established Banpu Energy Hold Trust to invest in two solar farms with a combined generation capacity of 166.8 MWdc, comprising 110.9 MWdc from the Beryl Solar Farm (BSF) and 55.9 MWdc from the Manildra Solar Farm (MSF). Both solar farms are located in New South Wales, where there is consistent growth in electricity consumption and demand, and the government has a clear policy to promote electricity generation from renewable sources. Power plants under long-term power purchase agreements will supply electricity to the National Electricity Market (NEM) and has a long-term power purchase agreement (PPA) with the private sector concurrently. The acquisition of these two solar farms has paved the way for renewable energy investments in Australia and is a penetration into an advanced electricity trading and wholesale electricity market. The company has been actively seeking investment opportunities with a focus on team and people management, building trust with business partners, and promoting growth in renewable energy and related businesses. Furthermore, in 2022, the company is working on developing an integrated energy solution platform. After obtaining the license, BPP started energy trading to generate added value and enhance profitability.

Major Competitors

- Domestic and international power producers and investors

*Source: World Bank – Global Economic Prospects (As of January 2023)

8. Competitive Strategies in Indonesia

PT. ITM Bhinneka Power (IBP) was established in late 2021 to operate a solar rooftop power generation business focusing on industrial and commercial customers as well as a hybrid solar rooftop project at PT. Indo Tambangraya Megah Tbk (ITM) mines to reduce diesel consumption in mining operations. In 2022, PT. Cahaya Power Indonesia (CPI) – a joint venture with IBP – with a 60:40 ownership ratio, started operating a 2.2 MWp solar project under a lease agreement with PT. TCM, a subsidiary of ITM. CPI constantly seeks market opportunities to expand its customer base in order to achieve its targets. The company also has a strategy to increase electricity generation from renewables; therefore, IBP started exploring business opportunities for hydropower projects. Currently, IBP has a hydropower plant project which is in the assessment and development phase according to its strategic plan.

Competitive Strategies

1) Relationship Management with Current Networks and Expansion to Related Business Alliances

The management leveraged existing networks of coal miners, Thai companies, and partners in Indonesia to connect with industries and companies that can promote renewable energy and carbon credits similar to coal mining.

2) Business Development and Project Management

IBP's objective is to explore renewable energy projects, primarily solar and hydropower, by surveying existing projects in the market to conduct a thorough analysis and hiring a consultant for due diligence to ensure the accuracy and feasibility of project operation and development. The company also cooperates with experts from Banpu NEXT who provide advice and transfer knowledge on renewable energy and energy efficiency learned from operations in Thailand.

3) Seeking Opportunities in Integrated Energy Use and Value-Added Services

Indonesia has large commercial, industrial, and service markets. But the energy sector is still in its beginning stage and at a point where other competitors are also looking to enter the renewable energy sector. As BPP's advantage is its accumulated experience in renewable energy and energy technologies in other regions, it devised a strategy to provide integrated energy services, including solar rooftop installation and energy efficiency projects, to increase energy saving and support carbon credit offset plans for customers.

Major Competitors

- Domestic and international power producers, developers of solar rooftop projects, and investors

Energy Technology

Banpu operates the energy technology group of businesses through its subsidiary, Banpu NEXT Co., Ltd. As a leading smart energy solution provider in Asia-Pacific, Banpu NEXT provides services with knowledge and expertise in technology and energy innovation of international standards. Partnering with strong business alliances, Banpu NEXT can deliver smart energy solutions for sustainability and integrated after-sales services, including smart hardware and digital platforms, to ensure affordable, reliable, and environmentally-friendly energy as well as a fulfilling lifestyle for its customers.



Market and Competition

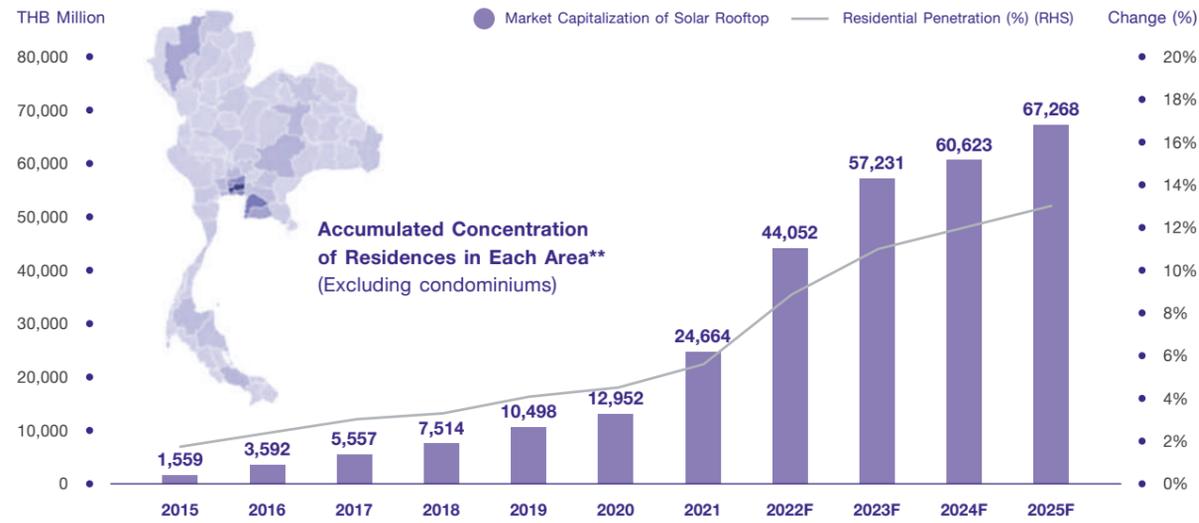
Market

1. Solar Rooftop and Solar Floating Business

The International Energy Agency (IEA) has projected that renewables will become the world's major energy source by 2025, accounting for one-third of total energy, with solar energy as a critical driver. Thailand has established a national energy policy in line with the growth of renewable energy through the Alternative Energy Development Plan (AEDP) 2018-2037, approved by the Cabinet on 20 October 2022. The plan targets to increase the share of

renewable and alternative energy in the form of electricity, heat, and biofuels in final energy consumption to 30% by 2037. The plan also targets the generation of 29,411 MW of electricity from renewables, with over 50% coming from solar, including 12,139 MW of solar power and 2,725 MW of floating solar power.

Thailand's Estimated Market Capitalization of Solar Rooftop



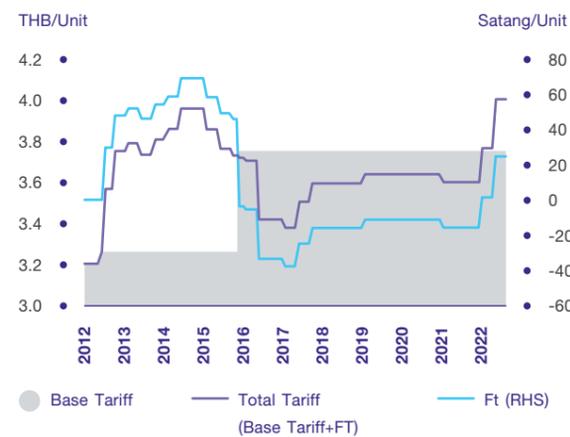
	Number of Residences (Million)	Monthly Electricity Consumption* (kWh)	Electricity Tariff (THB/Month)				
			Dec 19	Dec 21	Aug 22	Dec 22 (E)	2023 (F)
Metropolitan Electricity Authority	3.7	350	1,422.3	1,408.4	1,558.5	1,722.9	1,840.2
Provincial Electricity Authority	18.3	159	583.2	576.9	645.1	719.7	773.1

* Average household electricity consumption over five years back: (E) Estimated, (F) Forecasted

** Total transfers of property ownership between 2015 – 2021, including single-detached houses, semi-detached houses, townhouses, and commercial buildings (excluding condominiums)

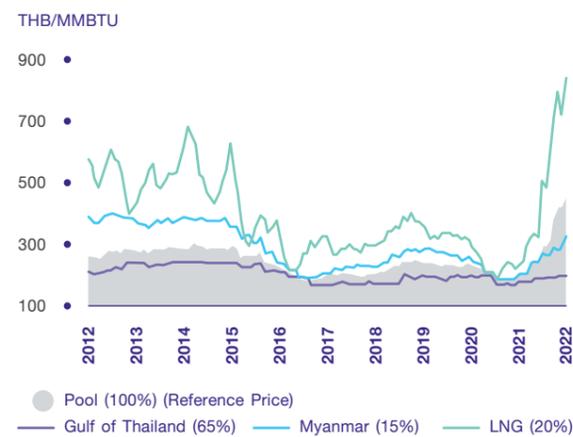
Sourc: Ministry of Energy and ttb analytics

Thailand's electricity tariff in 2022 increased significantly due to the government's reduction in support and rising energy costs.



Sourc: Ministry of Energy and ttb analytics

The reference price of Thailand's natural gas increased sharply.



In addition, the National Energy Plan 2022, a master plan to bring the energy sector to achieve carbon neutrality in the years 2065 to 2070, also encourages investment in renewable energy in the energy sector. The plan aims to increase the proportion of renewable energy and clean energy from new power plants, with at least 50% of renewable energy, and put long-term energy storage system costs into consideration.

The market of solar rooftop installations for residential, industrial, and commercial buildings is concentrated in Bangkok and greater metropolitan areas. The growth was high, particularly in the segments of industrial and commercial buildings, as operators wanted to cut costs pushed up by rising energy prices and to facilitate the transition to clean energy according to the stringent carbon emission control policy.

2. E-Mobility Business

Thailand's electric vehicle market is poised for exponential growth, with registrations of 18,135 new electric vehicles in the first 11 months of 2022 (Jan-Nov), increasing 235% year-on-year. Influencing factors include purchase subsidies for EV car buyers, tax incentives throughout 2023, the expansion of EV charging infrastructure to cover wider areas, and oil prices that remain high.

Pollution and daily transportation are major problems facing urban dwellers. So, EV is becoming an attractive option gaining more interest and confidence from consumers, especially when the world's leading car manufacturers decided to establish production and distribution bases in Thailand to start manufacturing EVs in 2024. However, rising production costs driven

by the rising prices of lithium, battery raw material, as well as rising energy and labor costs, could push up electric vehicle prices.

In addition, the use of electric cars for public transport has been increasing, such as short-term EV rental or car-sharing services, which will help reduce personal car use and energy consumption, alleviate air pollution problems, and improve urban transportation.

3. Smart City and Energy Management Business

Smart City Development Plan is another policy that the government is prioritizing. It is considered an urgent agenda to align with the country's development direction under the Thailand 4.0 guidelines and the 20-year National Strategy. The government encourages cities to use cutting-edge and smart technologies and innovations to improve urban services and management efficiency, reduce costs and resource consumption of the target city and population, and emphasize good design and business and public sector participation in urban development. Starting from the pilot development of smart cities in 7 provinces in 2018, the Digital Economy Promotion Agency (DEPA) aims to develop 100 smart cities in 76 provinces and Bangkok by 2022. Measures include promoting participation in city governance and infrastructure development with more deployment of technologies, especially the energy infrastructure, an essential infrastructure required for Thailand to become a smart city. Smart city solutions that maximize energy efficiency range from energy management systems (EMS), energy storage systems (ESS), and electric vehicles (EV).

Marketing Policy for Integrated Energy

Services

Banpu NEXT has established an explicit, transparent, and accountable marketing policy to support the Banpu Group's Sustainability Policy as follows:

1. To expand the customer portfolio to cover major markets in Asia
2. To create added value to products and services as an integrated energy solutions provider, offering solar solutions and installation as well as diverse energy solutions with state-of-the-art technology, including smart hardware and digital platforms, in order to satisfy varying customer needs in each area while driving the transition to sustainable smart cities; and to develop Internet of Things (IoT) systems for the best customer services to secure being the customer's first choice
3. To maintain marketing ethics and respect customers, competitors, and stakeholders
4. To ensure transparency, credibility, integrity, and professionalism

Competition

Smart Energy Solutions for Sustainability

Competitive Strategies

Banpu NEXT focuses on differentiating itself from competitors by offering integrated smart energy solutions, encompassing smart hardware and digital platforms. The company deploys cutting-edge and appropriate technologies as well as designs products and services by prioritizing customers' problems and

needs to improve customers' quality of life. It also joins the effort to promote smart cities and drive Thailand toward a low-carbon society. Banpu NEXT's major competitive strategies are as follows:

- **Customer-Centricity**

In developing services and solutions, Banpu NEXT deploys a customer-centric approach by taking into account the customer's pain points and needs in energy utilization. A team of experts will visit customers at their sites to discuss their needs. Cutting-edge technologies and innovations are integrated to support data collection, analysis, and evaluation to provide efficient and cost-effective energy solutions to customers in order to help solve their problems and fulfill their needs as much as possible.

- **Providing Integrated Smart Energy Solutions**

Apart from providing solar rooftop system installation, Banpu NEXT also offers other energy solutions to improve customers' quality of life. The company helps promote and drive the use of clean energy and related technologies to support Thailand's smart cities initiative. Solutions provided are, for example, the microgrid system, energy management system, and energy storage system for power generation control, transmission, and power storage to achieve maximum energy efficiency, as well as electric vehicle solutions. Smart data analytics is the first step of Banpu NEXT's solutions development process to truly understand customer pain points and appropriately respond to the diverse needs of customers in different locations in terms of cost reduction and improvement of energy efficiency and customer convenience.

- **Product Excellence**

Banpu NEXT uses TIER 1 quality products from industry-leading brands with guaranteed industrial standards. The company's engineering team has expertise in designing systems that address the specific needs of each project. System installations comply with international standards, while state-of-the-art technology such as drone thermal scan is used to inspect solar panels to ensure delivery of the safest clean energy with the best value for money and highest efficiency for customers.

- **Service Excellence**

Banpu NEXT has built and developed many systems to support after-sales service, for instance, a control room for real-time monitoring of power generation, allowing timely correction of system malfunctions by a team of experienced engineers and customer service staff. The "Banpu Application" for mobile was developed to allow real-time tracking of the power generation system, the amount of power generated, and the power-saving performance. Customers can also view historical data and can be alerted when a system failure occurs.

In addition, Banpu NEXT has a customer service department responsible for providing information, receiving complaints, and responding to customer queries through various channels. Customers can report problems about Banpu NEXT's smart energy solutions to customer service 24/7, allowing the company to quickly resolve issues.

- **Strong Ecosystem**

Banpu NEXT operates its business under the Greener & Smarter strategy while prioritizing collaborating with partners in the energy technology

business, clean energy and related businesses, and all sectors to enhance business potential, strengthen energy technology, and create a robust business ecosystem. The company is always open to technologies and ideas from new-generation startups with the potential to complement its all-in-one energy solutions through funding and collaboration in order to transform innovations into new businesses or to increase business growth.

- **Brand and Marketing Communication Strategies**

Banpu NEXT has implemented brand and marketing communication strategies in line with Banpu's Greener & Smarter strategy and environmental, social, and governance (ESG) principles to create awareness and trust among business customers, investors, service users, and society.

Banpu NEXT positions itself as a leading smart clean energy solution provider in Asia-Pacific and a long-term clean energy partner aiming to create integrated clean energy solutions for all business processes and help customers achieve ESG goals and Sustainable Development Goals (SDGs). The company also aspires to enhance the quality of life for consumers and people in society by offering Smart Energy Solutions for Sustainability encompassing Solar Rooftop and Floating, Energy Storage, Energy Trading, e-Mobility, and Smart City & Energy Management businesses.

Banpu NEXT communicates with the target customers and all groups of stakeholders through online and offline marketing channels, including press releases and articles on its business direction and services, promotional marketing activities, and corporate social responsibility activities as follows:

1. Corporate Branding and Public Relations

- PR articles highlighting Banpu NEXT's brand position: "Betterment for All," which aims to offer better alternatives for everyone in a low-carbon society through the full-range "Smart Energy Solutions for Sustainability," allowing unlimited access and utilization of clean energy
- Press interviews on business directions and strategies, including the management concept of senior executives to accelerate investment in clean energy and energy technology businesses, enhance competitiveness and connect business ecosystems that align with new energy trends
- Promoting Banpu NEXT's businesses information and investment direction to expand the portfolio in the Asia-Pacific region to build a business ecosystem and respond to the rising demand for clean energy and sustainability
- Informative articles on technology and smart solutions that modern commercial and industrial operators should deploy in their operations, from upstream to downstream, to enhance competitiveness, reduce long-term costs, create sustainable growth, and transform their facilities into Smart Eco Industrial Estates (Smart Eco 4.0) and smart factories.

2. Products, Services, and Marketing Public Relations

- Banpu NEXT has launched a new model of Banpu NEXT e-Boat for marine tourism. Banpu NEXT e-Boat can be customized and configured to serve various uses. It is equipped with high-quality materials and batteries, powered entirely by clean energy, which is pollution-free, odorless, noise-free, and safe. Compared to traditional passenger boats

of the same size, this eco-friendly boat can significantly reduce fuel costs by up to 85%. Additionally, the Banpu NEXT e-Boat provides long-term value with low maintenance expenses and a monitoring system to keep track of the boat's operations and battery usage. Entrepreneurs and tourists can also enjoy full warranty and after-sales support services for every e-Boat purchased.

- The company has introduced the Microgrid system, a fully integrated system for electricity generation, storage, and distribution. The system helps maintain power stability 24 hours a day and reduces electricity bills and pollution while driving businesses toward sustainability. The equipment is made of top-quality materials, commanded and controlled by an automation system via a digital platform with accurate real-time monitoring. Additionally, the microgrid system can be customized to meet the specific needs of each customer, and the company offers comprehensive services, from pre-installation consulting to after-sales support. The microgrid system is ideal for hotels, resorts, and private businesses located on islands or in areas without access to electricity, as well as industries that require a 24-hour electricity supply.
- The company has developed the "Smart Safety Platform," an integrated safety system for business customers. This platform includes smart features that improve safety and work efficiency while offering convenient and swift data management to increase long-term business value. Smart Safety operates on a digital platform, providing fast and precise data analysis. The dashboard and application allow real-time data tracking from anywhere at any time. This platform is not only ideal for government agencies operating in the security and tourism sectors but also for various other businesses.

- Banpu NEXT expanded its portfolio of floating solar power generation or floating solar systems in Lakchai Muang Yang Industrial Estate, Rayong Province, leveraging its expertise in energy technology to design a floating solar system that meets the needs of the industrial estate's business. The company's floating solar is supported by digital platforms and applications to monitor system performance in real time. It helps create long-term value, reduce electricity costs, increase energy efficiency, and foster business toward becoming a green industry.
- Banpu NEXT and Apex Park have joined forces to transform Apex Green Industrial Estate into an eco-industrial zone that sets an example for sustainable and low-carbon industrial zones. The project aims to create value in all dimensions for all stakeholders, including industrial estates, entrepreneurs, communities, and the environment. The collaboration involves the installation of floating solar systems for electricity generation. Entrepreneurs can purchase electricity from this project to use in their businesses to reduce electricity bills and increase energy efficiency. The project is strategically located in the Eastern Economic Corridor (EEC) and equipped with world-class infrastructure technology.
- The company arranged a promotional campaign that combines three energy solutions, which allow businesses to take full advantage of clean energy. These solutions include energy production, tracking energy usage, and providing electric vehicle charging. After installing a solar energy system with Banpu NEXT, they will receive an energy monitoring system and an EV charger, along with a free platform that helps enhance energy efficiency, reduce electricity bills, add value to their investment, and create business expansion

opportunities. These solutions also reduce CO₂ emissions and help transform businesses into smart businesses and drive the country toward a low-carbon society.

- Banpu NEXT has developed the "Energy Management System (EMS)," a multidimensional energy management service encompassing utility management and energy efficiency solutions, facility management, and district cooling systems and infrastructure. The system uses hardware, software, and digital platforms certified by the Federation of Thai Industries (FTI). Banpu NEXT's energy management system provides the most efficient energy management, which enables real-time monitoring and control. The company offers integrated services from inspection, design, and installation to after-sales services for companies seeking to reduce production costs, especially for industrial buildings, hotels, and mixed-use projects that combine the use of real estate to maximize space utilization. Customers can see quick results in reduced electricity bills. The EMS also increases long-term profit, reduces CO₂ emissions, and drives sustainable business growth.

3. Collaborative Branding with Business Alliances

- Banpu NEXT and its business partners, Haupcar and MuvMi, co-hosted a press interview with executives to promote their new transportation mode called Mobility as a Service (MaaS) jointly developed by Banpu NEXT and both partners. MaaS will complement the smart mobility business and add diverse services to meet the needs of all customer groups, supporting all travel modes for both the business sector and the general public. EV Fleet Management platform was also developed to cover land and marine transport to facilitate transportation systems and travel in the business

sector, such as corporate fleet management and staff shuttle management and general transportation services, as well as operation and maintenance services.

- Banpu NEXT signed a Memorandum of Understanding with its business partners – Cherdchai Motor Sales Co., Ltd., Thailand's largest bus operator, and Durapower Group, a global leader in performance lithium battery storage solutions, to build a lithium-ion battery assembly plant in Thailand for Cherdchai's e-Buses. The plant will also serve the electric vehicle markets in the Asia-Pacific region. It is expected to start operations at the end of 2023 with a plan to expand capacity to 1 GWh/year by 2026.
- Banpu NEXT signed a cooperation agreement with Planet Communications Asia PLC., a leading integrated digital technology provider in Thailand, to develop the Smart Safety Platform. This comprehensive safety management solution can process data quickly and accurately. It can run as a web-based service and an application. Users can track and command the system and receive real-time alerts anytime & anywhere through this application. This cooperation is part of smart city development and tourism promotion in line with the approach to boosting the digital economy and Thailand 4.0.

4. Public Promotion and Marketing Communication Activities

- Banpu NEXT presented the company's exhibition booth and provided a lecture on "Smart Hotel as a Business Development Trend" at the 5th Phuket Hotels for Islands Sustaining Tourism (PHIST) Conference, the largest gathering of entrepreneurs

in the hospitality and tourism industry for sustainability in Southeast Asia. At the conference, Banpu NEXT also showcased an energy management system to the attendees.

- Banpu NEXT presented an exhibition booth at the ISAN BCG EXPO 2022 in Khon Kaen Province, where participants can explore the use of clean energy through several activities. At the event, Mr. Sinon Vongkusolkit, CEO of Banpu NEXT, shared his insight on energy technologies that help promote business growth and sustainability according to the BCG economy model for sustainable development of grassroot economy and business transitioning toward smarter business.
- Banpu NEXT, in collaboration with the Marketing Association of Thailand (MAT), organized the 31st J-MAT Award marketing plan competition on the theme of "Smart e-TukTuk, driving the future with GenNEXT people." This activity reflected Banpu group's determination to support the creativity of young people and empower them to become marketers and entrepreneurs in the modern business world who recognize the importance of clean energy innovations. It also promotes transforming young people's ideas into smart energy solutions to create new S-curve industries driven by technology and innovation for the business sector to support a low-carbon society and improve the quality of life.

Major Competitors

Banpu NEXT has no major competitor offering full-range smart energy solutions as it does since the majority of competitors in the market focuses on installation services and rooftop solar system design.

The competitors in the market can be classified into three groups: retail operators offering installation services, large operators offering installation services as well as investment packages, and foreign investors. Over 50% of competitors in the market are retail operators.

The company's competitors in the solar rooftop solutions business are large operators offering installation services with investment packages since they are financially stable operators with diverse services to offer. Meanwhile, smaller operators with access to funding from foreign investors can also offer similar services as large operators. In addition, the access to funding allows them to partner with other operators that offer similar services to Banpu NEXT.

Pricing Policy

Banpu NEXT offers various pricing packages according to the conditions and requirements of customers. Currently, the company offers two pricing packages for solar rooftop installation services: installation invested by Banpu NEXT and installation costs paid by customers depending on the equipment, installation size, and service model chosen. Banpu NEXT also adjusts installation and equipment costs according to market conditions. It also keeps up with recent technological advancements to provide customers with smart technology options of the highest efficiency at the best prices.

Customer Profiles

Banpu NEXT's customer portfolio consists of enterprises seeking alternative energy management solutions or medium and large enterprises that primarily consume electricity during the daytime, such as industrial and commercial buildings, and industrial

parks or communities seeking full utilization of smart energy technology. In 2022, 70% of customers signing solar power installation contracts with Banpu NEXT chose the first option in which Banpu NEXT is an investor, and customers benefit from savings on electricity bills. The other 30% of customers opted for the system installation service in which they invest in equipment and installation and enjoy the free use of solar energy generated from their rooftops. However, with growing customer needs for lower installation costs, more discount schemes, shorter contract periods, or additional services, Banpu NEXT has adjusted its proposals accordingly to better satisfy the varying needs and different profiles of customers. For other solutions, namely electric vehicle management, energy storage system, and energy management, customers have similar investment needs, namely, periodic payment plans or lease options. Due to the COVID-19 pandemic, customers suspend lump-sum investments to avoid risks.

Distribution and Distribution Channels

Banpu NEXT offers solar rooftop power generation and smart energy solutions through an open bidding process announced by customers, direct negotiations with customers, and presentations to renewable energy agencies and organizations. Banpu NEXT will contact prospective customers to introduce the company and listen to customers' needs. Then the engineering team will conduct a site survey to design the power generation system or other solutions tailored to the customer's needs. These solutions may include electric vehicle management, energy storage system, or energy management. Based on their findings, the team will prepare a project proposal to present to the customer. Banpu NEXT expands its sales channels through events, activities, and happy customer referrals.

BUSINESS ASSETS

Fixed Assets

Banpu's business assets in Thailand and overseas include coal mining, natural gas, generation and distribution of power and steam, renewables, energy technology, and related businesses. The fixed assets illustrated in the tables below consist of the Company's and its subsidiaries' fixed assets. Net book value after deducting accumulated depreciation and impairment losses, as reported in the consolidated financial statements of the Company and its subsidiaries for the year ended 31 December 2022 and 31 December 2021, amounted to USD 4,197.48 million and USD 3,416.13 million, respectively, as detailed below:

The Group's Property, Plant and Equipment

Items	Book Value (USD Million)		Liabilities
	31 Dec 2022	31 Dec 2021	
1. Land	52.83	52.31	No obligation
2. Land Improvement	57.05	60.52	No obligation
3. Building and infrastructures	136.98	121.99	Put up some buildings and infrastructures as collateral for the long-term loan agreements between subsidiaries and financial institutions
4. Machinery and equipment and power plants and components of power plants and gas exploration and producing assets and pipelines	3,819.34	3,104.99	Put up some machinery and equipment as collateral for the long-term loan agreements between subsidiaries and financial institutions
5. Furniture and Office Equipment	7.26	6.41	Put up some furniture and office equipment as collateral for the long-term loan agreements between subsidiaries and financial institutions
6. Equipment and Tools	4.52	5.13	Put up some equipment and tools as collateral for the long-term loan agreements between subsidiaries and financial institutions
7. Motor Vehicles	9.11	5.87	Put up some motor vehicles as collateral for the long-term loan agreements between subsidiaries and financial institutions
8. Assets under Construction	110.39	58.91	Put up some assets under construction as collateral for the long-term loan agreements between subsidiaries and financial institutions
Total	4,197.48	3,416.13	

Leases and Rights

1. Leases and Investment Incentives of the Company and its Subsidiaries and Joint Ventures

1.1 Leases held by Subsidiaries in Indonesia

Project	Lease No.	County	Province	Area (Hectare)	Expiry Date	Lessee	Notes
Jorong	06PB0318	Tanah Laut	South Kalimantan	4,883	9 December 2029	PT. Jorong Barutama Greston	Production
Indominco	01PB0435	Kutai Timur, Kutai Kartanegara	East Kalimantan	24,121	31 March 2028	PT. Indominco Mandiri	Production
Kitadin (Embalut)	KTN 2013 006 OP	Embalut, Kutai Kartanegara	East Kalimantan	2,973	25 February 2022	PT. Kitadin	Mine Rehabilitation & Mine Closure
Trubaindo	96PB0160	Kutai Barat	East Kalimantan	22,687	27 February 2035	PT. Trubaindo Coal Mining	Production
Bharinto	99PB0081	Barito Utara & Kutai Barat	Central and East Kalimantan	17,311	29 June 2041	PT. Bharinto Ekatama	Production
TIS	64.07.14.08 (Code/Block Area)	Kutai Barat	East Kalimantan	2,065	11 April 2029	PT. Tepian Indah Sukses	Production
NPR	188.45 /277/2013	Barito Utara	Central Kalimantan	4,291	20 May 2033	PT. Nusa Persada Resources	Exploration
GPK	64.07.19.16	Kutai Barat	East Kalimantan	5,060	14 September 2029	PT. Graha Panca Karsa	Production

1.2 Leases held by Subsidiaries in Australia

Project	Lease No.	County	State	Area (Hectare)	Expiry Date	Lessee	Notes
Airly	ML1331	Airly, Coco, Morundurey & Bandamora	New South Wales	2,745	11 October 2035	Centennial Airly Pty Ltd.	Production
Airly	ML1814	Morundurey	New South Wales	1,258	22 July 2042	Centennial Airly Pty Ltd.	Production
Angus Place	ML1424	Wolgan, Cox, Cook & Marangaroo	New South Wales	7,735	18 August 2024	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Care & Maintenance



Project	Lease No.	County	State	Area (Hectare)	Expiry Date	Lessee	Notes
Angus Place	CCL704	Cox & Lidsdale	New South Wales	2,541	14 January 2023	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Care & Maintenance
Angus Place	ML1699	Cook	New South Wales	30.6	26 June 2035	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Care & Maintenance
Angus Place	ML1720	Cook	New South Wales	158.9	23 November 2036	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Care & Maintenance
Blue Mountain	CCL738	Lett	New South Wales	1,116	28 September 2025	Hartley Valley Coal Company Pty Ltd.	Closed
Blue Mountain	ML1457	Lett & Marangaroo	New South Wales	185.1	3 November 2020 (Renewal Submitted for approval)	Hartley Valley Coal Company Pty Ltd.	Closed
Charbon	MPL505	Clandulla	New South Wales	0.4097	11 August 2026	Charbon Coal Pty Ltd.*	Closed
Charbon	MPL526	Wells, Clandulla & Rylstone	New South Wales	7.106	14 December 2024	Charbon Coal Pty Ltd.*	Closed
Charbon	MPL499	Clandulla	New South Wales	0.7917	28 May 2026	Charbon Coal Pty Ltd.*	Closed
Charbon	ML1318	Clandulla	New South Wales	983	29 June 2026	Charbon Coal Pty Ltd.*	Closed
Charbon	ML1384	Clandulla	New South Wales	195.5	18 January 2038	Charbon Coal Pty Ltd.*	Closed
Charbon	ML1501	Clandulla	New South Wales	13	21 December 2022	Charbon Coal Pty Ltd.*	Closed
Charbon	ML1545	Clandulla	New South Wales	204.65	9 January 2025	Charbon Coal Pty Ltd.*	Closed
Charbon	CCL732	Clandulla	New South Wales	1,024	2 December 2025	Charbon Coal Pty Ltd.*	Closed
Charbon	MPL670	Rylstone & Clandulla	New South Wales	9.92	26 March 2024	Charbon Coal Pty Ltd.*	Closed
Charbon	ML1524	Clandulla	New South Wales	20.26	28 October 2023	Charbon Coal Pty Ltd.*	Closed
Charbon	MPL964	Clandulla	New South Wales	4.932	20 November 2023	Charbon Coal Pty Ltd.*	Closed

Note: * The lease is held by the joint venture entity.

Project	Lease No.	County	State	Area (Hectare)	Expiry Date	Lessee	Notes
Charbon	MPL270	Clandulla	New South Wales	213.7	29 April 2026	Charbon Coal Pty Ltd.*	Closed
Charbon	ML1647	Clandulla	New South Wales	570.9	17 December 2031	Charbon Coal Pty Ltd.*	Closed
Charbon	ML1663	Clandulla	New South Wales	52.5	9 January 2033	Charbon Coal Pty Ltd.*	Closed
Clarence	CCL705	Clwydd, Marangaroo & Rock Hill	New South Wales	3,210	20 December 2026	Coalex Pty Ltd. and Clarence Coal Investments Pty Ltd.	Production
Clarence	ML1354	Clwydd & Cook	New South Wales	155.3	21 July 2036	Coalex Pty Ltd. and Clarence Coal Investments Pty Ltd.	Production
Clarence	ML1353	Clwydd, Cook & Rock Hill	New South Wales	1,075	21 July 2036	Coalex Pty Ltd. and Clarence Coal Investments Pty Ltd.	Production
Clarence	ML1583	Clwydd, Marangaroo, Lett	New South Wales	3,331	9 July 2027	Coalex Pty Ltd.	Production
Clarence	ML1721	Clwydd	New South Wales	5.11	7 December 2036	Coalex Pty Ltd. and Clarence Coal Investments Pty Ltd.	Production
Ivanhoe	ML1627	Cullen Bullen	New South Wales	79.78	2 February 2030	Ivanhoe Coal Pty Ltd.	Closed
Ivanhoe	CCL712	Cullen Bullen, Cox & Falnash	New South Wales	1,628	12 November 2006 (Renewal Pending)	Ivanhoe Coal Pty Ltd.	Closed
Ivanhoe	ML1301	Cox	New South Wales	5.131	28 September 2034	Ivanhoe Coal Pty Ltd.	Closed
Ivanhoe	MPL348	Cox	New South Wales	9.45	24 May 2025	Ivanhoe Coal Pty Ltd.	Closed
Mandalong	ML1443	Morisset, Dora & Mandalong	New South Wales	3,648	1 March 2020 (Renewal Pending)	Centennial Mandalong Pty Ltd.	Production
Mandalong	ML1543	Mandalong	New South Wales	172.5	25 November 2024	Centennial Mandalong Pty Ltd.	Production
Mandalong	MPL191	Coorumbung	New South Wales	0.5615	25 February 2023	Centennial Mandalong Pty Ltd.	Production

Note: * The lease is held by the joint venture entity.



Project	Lease No.	County	State	Area (Hectare)	Expiry Date	Lessee	Notes
Mandalong	CCL762	Dora, Awaba, Mandalong, Morisset & Wallarah	New South Wales	2,940	13 October 2022 (Renewal Submitted for Approval)	Centennial Mandalong Pty Ltd.	Production
Mandalong	ML1553	Morisset	New South Wales	64.32	7 September 2025	Centennial Mandalong Pty Ltd.	Production
Mandalong	ML1722	Mandalong, Morisset, Wyong & Munmorah	New South Wales	3,206	17 December 2036	Centennial Mandalong Pty Ltd.	Production
Mandalong	ML1744	Mandalong, Wyong, Olney	New South Wales	409	6 October 2037	Centennial Mandalong Pty Ltd.	Production
Mandalong	ML1793	Coorumbung	New South Wales	6.4	16 July 2040	Centennial Mandalong Pty Ltd.	Production
Mannering	CCL721	Morisset & Wallarah	New South Wales	3,526	29 July 2026	Centennial Mannering Pty Ltd.	Subleased to Chain Valley
Mannering	CCL719	Wallarrah	New South Wales	1,817	22 December 2020 (Renewal Submitted for Approval)	Centennial Mannering Pty Ltd.	Subleased to Chain Valley
Munmorah	CCL720	Wallarrah & Munmorah	New South Wales	3,720	16 February 2023	Centennial Munmorah Pty Ltd.	Closed
Munmorah	CCL722	Morisset, Wallarah, Munmorah & Tuggerah	New South Wales	1,009.8	5 July 2019 (Partial Renewal Submitted)	Centennial Munmorah Pty Ltd.	Closed - Subleased to Chain Valley
Myuna	MPL334	Awaba	New South Wales	33.3	19 October 2036	Centennial Myuna Pty Ltd.	Production
Myuna	ML1370	Wallarrah	New South Wales	524	7 March 2033	Centennial Myuna Pty Ltd.	Production - Subleased to Chain Valley
Myuna	ML1632	Awaba, Coorumbung, Wallarah & Morisset	New South Wales	6,125	13 October 2022 (Renewal Submitted for Approval)	Centennial Myuna Pty Ltd.	Production - Subleased to Chain Valley
Neubecks Project	CCL756	Cox	New South Wales	101	6 December 2024	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Under Development

Project	Lease No.	County	State	Area (Hectare)	Expiry Date	Lessee	Notes
Newstan	CCL746	Awaba & Coorumbung	New South Wales	3,308	31 December 2028	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	CCL764	Teralba & Awaba	New South Wales	108.8	18 May 2021 (Renewal Submitted for Approval)	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	CCL763	Awaba	New South Wales	190.9	9 June 2022 (Renewal Submitted for Approval)	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	PLL497	Awaba	New South Wales	20.23	24 August 2038	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	ML1587	Awaba	New South Wales	3	23 October 2027	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	ML1586	Awaba & Coorumbung	New South Wales	449.1	13 October 2022	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	ML1452	Awaba & Coorumbung	New South Wales	1587	6 July 2020 (Renewal Submitted for Approval)	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	CCL727	Teralba & Awaba	New South Wales	2,194.08	12 August 2027	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	MPL328	Awaba	New South Wales	0.397	5 August 2036	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	ML1380	Awaba	New South Wales	78	18 September 2037	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	MPL304	Teralba	New South Wales	0.07	25 March 2035	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	MPL305	Awaba	New South Wales	0.4044	25 March 2035	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	ML1480	Awaba	New South Wales	14.49	20 July 2023	Centennial Newstan Pty Ltd.	Care & Maintenance
Newstan	MPL327	Awaba	New South Wales	1.041	5 August 2036	Centennial Newstan Pty Ltd.	Care & Maintenance
Springvale	ML1303	Lidsdale & Marangaroo	New South Wales	713	15 December 2034	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	ML1588	Cook & Clwydd	New South Wales	976	19 October 2027	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production



Project	Lease No.	County	State	Area (Hectare)	Expiry Date	Lessee	Notes
Springvale	CL377	Lidsdale & Marangaroo	New South Wales	1,105	9 March 2025	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	MPL314	Lidsdale	New South Wales	95.98	3 August 2035	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	ML1323	Lidsdale & Marangaroo	New South Wales	30.1	3 August 2035	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	ML1537	Marangaroo	New South Wales	4.125	16 June 2024	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	ML1326	Clwydd, Cook, Cox & Marangaroo	New South Wales	2,157	18 August 2024	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd..	Production
Springvale	ML1352	Cox & Lidsdale	New South Wales	7.6	23 June 2036	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	ML1448	Lidsdale	New South Wales	95.16	31 May 2020 (Renewal Submitted for Approval)	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	ML1670	Cook	New South Wales	0.3	17 February 2033	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Springvale	ML1727	Clwydd, Cook & Marangaroo	New South Wales	1,256	4 February 2037	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Production
Western Main	CCL733	Cox & Lidsdale	New South Wales	678.86	3 July 2027	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Closed
Western Main	ML1319	Cox	New South Wales	1.476	5 July 2035	Centennial Springvale Pty Ltd. and Boulder Mining Pty Ltd.	Closed

1.3 Leases held by Subsidiaries in the People's Republic of China

Projects	Concession Number	County	Province	Area (sq. km)	Expiry Date	Lessee	Notes
Gaohe	C1000002 01010111 0077581	Changzhi County, Changzhi City	Shanxi	65.4	14 October 2040	Shanxi Gaohe Energy Co., Ltd.	Production
Hebi	10000005 20080	Heshan District, Hebi City	Henan	23.4825	14 July 2035	Hebi Zhong Tai Mining Co., Ltd.	Production

2. Land Use Rights of Power Business in the People's Republic of China

Location	Right Holder	Area (sq. m)	Start Date	Expiry Date	Purpose	Book Value of Land Use Right (THB Thousand)
Zhending County Shijiazhuang City, Hebei Province	Shijiazhuang	7,132	27 December 2006	2 September 2053	To be the location of Zhengding Combined Heat and Power Plant	90,332
	Chengfeng	67,354	16 February 1998	30 November 2047		
	Cogen Co., Ltd.	17,665	28 December 2016	26 March 2062		
		23,135	18 April 2001	17 April 2031		
Luannan County Tangshan City, Hebei Province	Tangshan Banpu	225,172	18 April 2020	18 April 2070	To be the location of Luannan Combined Heat and Power Plant	416,523
	Heat and Power	2,100	22 September 2018	21 September 2068		
	Co., Ltd.	90,370	1 January 2017	31 December 2066		
		40,960	1 January 2017	Under Consideration by Government Agencies		
Zouping County Binzhou Prefecture, Shandong Province	Zouping Peak	105,831	30 August 2001	3 July 2051	To be the location of Zouping Combined Heat and Power Plant	39,508
	CHP Co., Ltd.	18,190	29 December 2007	29 December 2056		
		24,315	29 December 2008	3 December 2058		

COAL AND NATURAL GAS RESERVES



Details of coal reserves and sales volume as of 31 December 2022 are as follows:

(Unit: Million Tonnes)

Coal Mine	Reserves as of 31 Dec 2021	Reserves Addition 2022	Sales Volume Jan - Dec 2022	Reserves as of 31 Dec 2022
1. Indonesia				
1.1 Jorong	8.15	-	0.87	7.28
1.2 Indominco	30.32	-	6.78	23.54
1.3 Kitadin	0.44	-	0.32	0.12
1.4 Trubaindo	35.49	-	2.97	32.52
1.5 Bharinto	141.16	-	5.32	135.84
1.6 Graha Panca Karsa	-	21.50	-	21.50
1.7 NPR Project	77.40	-	-	77.40
2. Australia	260.69	-	8.07	252.62
3. China				
3.1 Gaohe	108.84	-	8.68	100.15
3.2 Hebi Zhongtai	13.75	-	0.82	12.93
Total	676.24	21.50	33.83	663.91

Note: A full name of NPR Project is Nusa Persada Resources Project.

Details of natural gas reserves and sales volume as of 31 December 2022 are as follows:

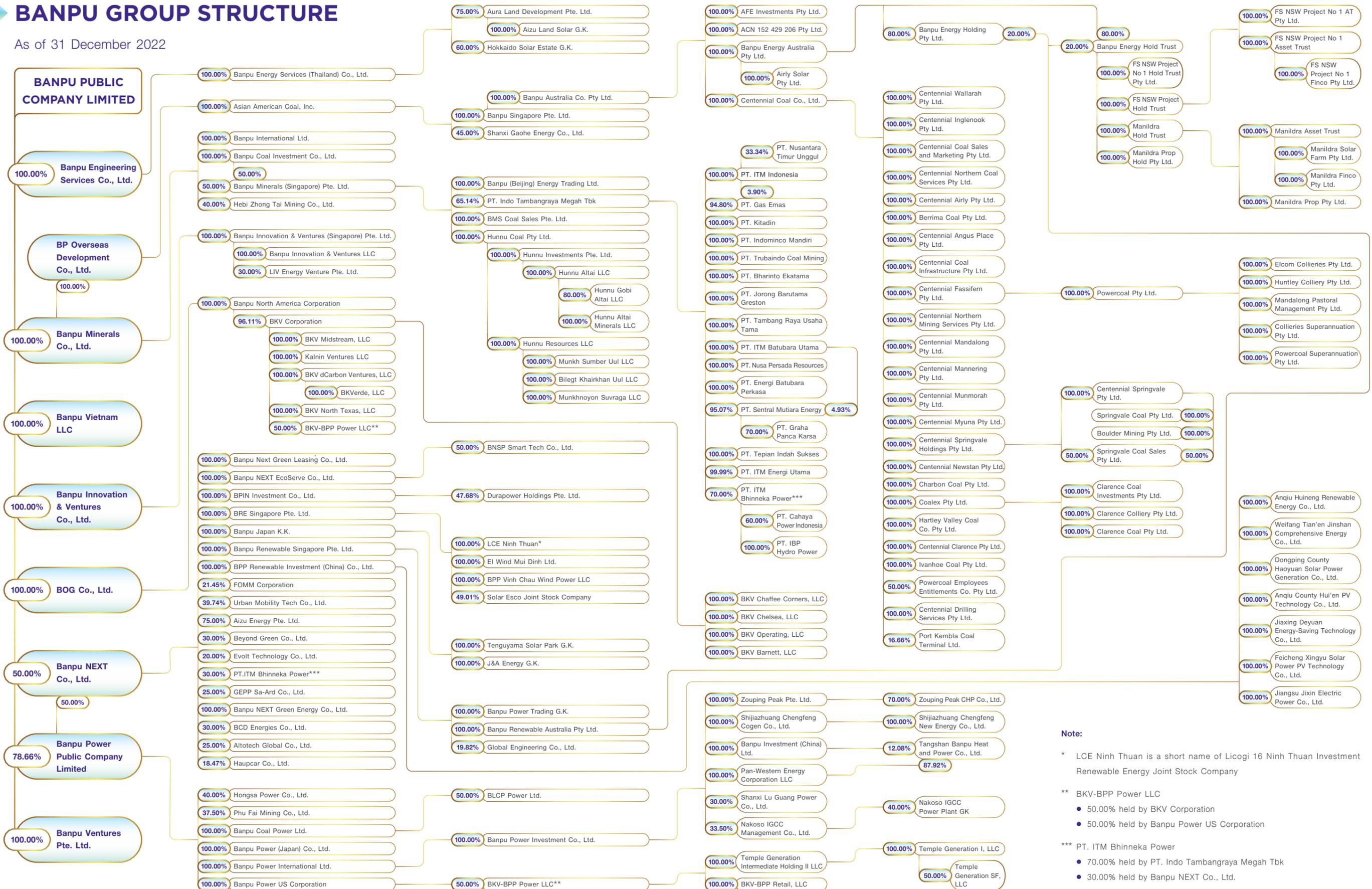
(Unit: Million Cubic Feet)

Natural Gas Reserves as of 31 December 2021	4,186,761
1. Reserves addition from XTO acquisition	1,413,576
2. Adjustment on reserve estimation	465,001
3. Production and Sales 2022	(280,049)
Natural Gas Reserves as of 31 December 2022	5,785,289

Note: Natural Gas Reserves from the Marcellus and Barnett shales refer to Reserve Report's Ryder Scott.

BANPU GROUP STRUCTURE

As of 31 December 2022



Note:

- * LCE Ninh Thuan is a short name of Licogi 16 Ninh Thuan Investment Renewable Energy Joint Stock Company
- ** BKV-BPP Power LLC
 - 50.00% held by BKV Corporation
 - 50.00% held by Banpu Power US Corporation
- *** PT. ITM Bhinneka Power
 - 70.00% held by PT. Indo Tambangraya Megah Tbk
 - 30.00% held by Banpu NEXT Co., Ltd.

DETAIL OF THE COMPANY, ITS SUBSIDIARIES, ASSOCIATED COMPANIES, JOINT VENTURES AND OTHER INVESTMENT OF BANPU PUBLIC COMPANY LIMITED

As of 31 December 2022

Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
1 Banpu Public Company Limited	Energy	10,149,163,028 THB	8,454,161,388 THB	8,454,161,388	1	-	1550, Thanapoom Tower, 27 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2694 6600
Subsidiary Companies								
Thailand								
2 Banpu Minerals Co., Ltd.	Coal mining and trading	52,462,730,000 THB	52,462,730,000 THB	52,462,730	1,000	100.00% (held by Banpu Public Company Limited)	1550, Thanapoom Tower, 27 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2694 6600
3 Banpu NEXT Green Energy Co., Ltd.	Smart clean energy solution business	80,000,000 THB	80,000,000 THB	800,000	100	100.00% (held by Banpu NEXT Co., Ltd.)	1550, Thanapoom Tower, 24 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2095 6569
4 Banpu International Ltd.	Investment studying	1,040,000,000 THB	1,040,000,000 THB	104,000,000	10	100.00% (held by Banpu Minerals Co., Ltd.)	1550, Thanapoom Tower, 27 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2694 6600
5 BOG Co., Ltd.	Investment in energy business	33,506,000,000 THB	30,924,700,000 THB	335,060,000	100	100.00% (held by Banpu Public Company Limited)	1550, Thanapoom Tower, 27 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2694 6600
6 Banpu Engineering Services Co., Ltd.	Investment in alternative energy	212,000,000 THB	212,000,000 THB	21,200,000	10	100.00% (held by Banpu Public Company Limited)	1550, Thanapoom Tower, 27 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2694 6600
7 Banpu Energy Services (Thailand) Co., Ltd.	Investment in alternative energy	139,124,430 THB	139,124,430 THB	13,912,443	10	100.00% (held by Banpu Engineering Services Co., Ltd.)	1550, Thanapoom Tower, 27 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2694 6600
8 Banpu Innovation & Ventures Co., Ltd.	Research and development in disruptive technology	231,800,000 THB	2,318,000 THB	2,318,000	100	100.00% (held by Banpu Public Company Limited)	1550, Thanapoom Tower, 27 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2694 6600
9 Banpu Power Public Company Limited	Energy generation business	31,012,020,000 THB	30,477,317,000 THB	3,047,731,700	10	78.66% (held by Banpu Public Company Limited)	1550, Thanapoom Tower, 26 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2007 6000
10 Banpu Coal Power Ltd.	Investment in energy and power business	5,921,587,160 THB	5,921,587,160 THB	592,158,716	10	100.00% (held by Banpu Power Public Company Limited)	1550, Thanapoom Tower, 26 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2007 6000

Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
11 Banpu Power (Japan) Co., Ltd.	Investment in renewable energy business	5,000,000 THB	5,000,000 THB	500,000	10	100.00% (held by Banpu Power Public Company Limited)	1550, Thanapoom Tower, 26 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2007 6000
12 Banpu NEXT Co., Ltd.	Smart clean energy solution business	14,959,000,000 THB	14,959,000,000 THB	1,495,900,000	10	50.00% (held by Banpu Public Company Limited) 50.00% (held by Banpu Power Public Company Limited)	1550, Thanapoom Tower, 24 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2095 6569
13 Banpu Next Green Leasing Co., Ltd.	Investment in energy business and leasing	50,000,000 THB	50,000,000 THB	5,000,000	10	100.00% (held by Banpu NEXT Co., Ltd.)	1550, Thanapoom Tower, 24 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2095 6569
14 Banpu NEXT EcoServe Co., Ltd.	Providing energy management services	96,000,000 THB	96,000,000 THB	960,000	100	100.00% (held by Banpu NEXT Co., Ltd.)	1550, Thanapoom Tower, 24 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2095 6569
Indonesia								
15 PT. Indo Tambangraya Megah Tbk	Major trading of solid, liquid and gas fuel and other related products	1,500,000,000,000 IDR	564,962,500,000 IDR	1,129,925,000	500	65.14% (held by Banpu Minerals (Singapore) Pte. Ltd.)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
16 PT. Kitadin	Coal mining	1,000,000,000,000 IDR	377,890,000,000 IDR	188,945	2,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
17 PT. Indominco Mandiri	Coal mining	20,000,000,000 IDR	12,500,000,000 IDR	12,500	1,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
18 PT. Jorong Barutama Greston	Coal mining	318,855,000,000 IDR	318,855,000,000 IDR	21,257	15,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
19 PT. Trubaindo Coal Mining	Coal mining	100,000,000,000 IDR	63,500,000,000 IDR	63,500	1,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
20 PT. Bharinto Ekatama	Coal mining	68,000,000,000 IDR	17,000,000,000 IDR	17,000	1,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
21 PT. ITM Indonesia	Major trading of solid, liquid and gas fuel and other related products	40,000,000,000 IDR	11,000,000,000 IDR	11,000	1,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100



Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
22 PT. Tambang Raya Usaha Tama	Mining and other excavations support activities	500,000,000,000 IDR	424,610,000,000 IDR	42,461	10,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
23 PT. ITM Batubara Utama	Coal mining	40,000,000,000 IDR	11,000,000,000 IDR	11,000	1,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
24 PT. ITM Energi Utama	Energy business	1,200,000,000,000 IDR	300,000,000,000 IDR	300,000	1,000,000	99.99% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
25 PT. ITM Bhinneka Power	Electric power generator	774,788,000,000 IDR	193,697,000,000 IDR	193,697	1,000,000	70.00% (held by PT. Indo Tambangraya Megah Tbk) 30.00% (held by Banpu NEXT Co., Ltd.)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
26 PT. Gas Emas	Major trading of solid, liquid and gas fuel and other related products	600,600,000,000 IDR	441,232,500,000 IDR	32,700,000	9,725 (Series A Shares) 13,700 (Series B Shares)	94.80% (held by PT. Indo Tambangraya Megah Tbk) 3.90% (held by PT. ITM Indonesia)	Pondok Indah Office Tower 3, 3 rd Floor, 3 Jl. Sultan Iskandar Muda Kav. V-TA Pondok Pinang, Kebayoran Lama, Jakarta 12310, Indonesia	+62 21 29328100
27 PT. Tepian Indah Sukses	Coal mining	3,000,000,000 IDR	1,000,000,000 IDR	1,000	1,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Jl. A.M. Sangaji No. 38F No. 9-10, Kel. Bandara, Kec. Sungai Pinang, Prov. Samarinda Corresponding office: Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 54 1749437
28 PT. Nusa Persada Resources	Coal mining	500,000,000,000 IDR	312,337,000,000 IDR	3,123,370	100,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Jalan Pendreh, Komplek Perumahan Nur Asri Perdana, RT. 33-A, Kel., Kec., Kab. Barito Utara, Prop. Kalimantan Tengah. Corresponding office: Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 81 1884374
29 PT. Energi Batubara Perkasa	Major trading of solid, liquid and gas fuel and other related products	60,000,000,000 IDR	33,410,000,000 IDR	33,410	1,000,000	100.00% (held by PT. Indo Tambangraya Megah Tbk)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+62 21 29328100
30 PT. Sentral Mutiara Energy	Major trading of solid, liquid and gas fuel and other related products	150,000,000,000 IDR	131,897,000,000 IDR	1,318,970	100,000	95.07% (held by PT. Indo Tambangraya Megah Tbk) 4.93% (held by PT. ITM Batubara Utama)	Gd. Menara Pertiwi Lt.28 Unit C-D Jl.Mega Kuningan Barat III Kav.10.1 No.3 Kel.Kuningan Timur, Kec. Setiabudi Jakarta Selatan -12950	+62 21 25983737

Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
31 PT. Graha Panca Karsa	Coal mining and major trading of metal goods for construction material	500,000,000 IDR	270,000,000 IDR	270	1,000,000	70.00% (held by PT. Sentral Mutiara Energy)	Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda Kav. V-TA Pondok Pinang, Kebayoran Lama, Jakarta 12310, Indonesia	+62 21 29328100
32 PT. Cahaya Power Indonesia	Renewable energy	114,720,000,000 IDR	28,680,000,000 IDR	2,000,000	14,340	60.00% (held by PT. ITM Bhinneka Power)	Pondok Indah Office Tower 3, suite 302 Jl. Sultan Iskandar Muda Kav. V-TA Pondok Pinang, Kebayoran Lama, Jakarta 12310, Indonesia	+62 21 29328100
33 PT. IBP Hydro Power	Management consultation	840,000,000,000 IDR	252,150,000,000 IDR	252,150	1,000,000	100.00% (held by PT. ITM Bhinneka Power)	Pondok Indah Office Tower 3, suite 302 Jl. Sultan Iskandar Muda Kav. V-TA Pondok Pinang, Kebayoran Lama, Jakarta 12310, Indonesia	+62 21 29328100
Australia								
34 Banpu Australia Co. Pty Ltd.	Investment in coal mining in Australia	2,920,721,000 AUD	2,920,721,000 AUD	2,920,721,000	1	100.00% (held by Banpu Singapore Pte. Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
35 AFE Investments Pty Ltd.	Mining investment	2 AUD	2 AUD	2	1	100.00% (held by Banpu Australia Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
36 ACN 152 429 206 Pty Ltd.	Investment in coal mining	2 AUD	2 AUD	2	1	100.00% (held by Banpu Australia Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
37 Airly Solar Pty Ltd.	Renewable energy	2 AUD	2 AUD	2	1	100.00% (held by Banpu Australia Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
38 Centennial Coal Co. Pty Ltd.	Coal mining and marketing	2,899,783,562 AUD	2,599,783,562 AUD	845,126,381	4.8	100.00% (held by Banpu Australia Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
39 Centennial Northern Coal Services Pty Ltd.	Employer company for Newstan Washery	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
40 Berrima Coal Pty Ltd.	Dormant	2 AUD	2 AUD	2	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
41 Centennial Airly Pty Ltd.	Coal mining	2 AUD	2 AUD	2	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
42 Centennial Angus Place Pty Ltd.	Coal mining	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
43 Centennial Coal Infrastructure Pty Ltd.	Coal exporting logistics and infrastructure	2 AUD	2 AUD	2	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
44 Centennial Coal Sales and Marketing Pty Ltd.	Coal marketing	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700



Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
45 Centennial Northern Mining Services Pty Ltd.	Dormant	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
46 Centennial Inglenook Pty Ltd.	Coal mining	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
47 Centennial Mandalong Pty Ltd.	Coal mining	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
48 Centennial Mannering Pty Ltd.	Coal mining	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
49 Centennial Munmorrah Pty Ltd.	Coal mining (now Dormant)	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
50 Centennial Myuna Pty Ltd.	Coal mining	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
51 Centennial Newstan Pty Ltd.	Coal mining	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
52 Charbon Coal Pty Ltd.	Coal mining	2 AUD	2 AUD	2	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
53 Centennial Clarence Pty Ltd.	Coal mining - Clarence JV	8,800,000 AUD	8,800,000 AUD	8,800,000	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
54 Centennial Fassifern Pty Ltd.	Coal mining	2 AUD	2 AUD	2	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
55 Powercoal Pty Ltd.	Dormant holding company	4,590,001 AUD	4,590,001 AUD	4,590,001	1	100.00% (held by Centennial Fassifern Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
56 Powercoal Superannuation Pty Ltd.	Superannuation company (Dormant)	2 AUD	2 AUD	2	1	100.00% (held by Powercoal Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
57 Powercoal Employee Entitlements Co. Pty Ltd.	Employee trust company Ex Powercoal	2 AUD	2 AUD	2	1	50.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
58 Hartley Valley Coal Co Pty Ltd.	Dormant	1,000,000 AUD	1,000,000 AUD	1,000,000	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
59 Ivanhoe Coal Pty Ltd.	Coal mining	2 AUD	2 AUD	2	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
60 Centennial Drilling Services Pty Ltd.	Drilling services	1,250,000 AUD	1,250,000 AUD	750,000 A Class Shares 250,000 B Class Shares 250,000 C Class Shares	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700

Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
61 Centennial Springvale Holdings Pty Ltd.	Coal mining	1 AUD	1 AUD	1	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
62 Coalex Pty Ltd.	Coal mining - Clarence JV	7,500,000 AUD	7,500,000 AUD	750,000	10	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
63 Clarence Coal Investments Pty Ltd.	Coal mining - Clarence JV	19,500,002 AUD	19,500,002 AUD	15,500,002 Ord A Shares 4,000,000 Ord B Shares	1	100.00% (held by Coalex Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
64 Clarence Colliery Pty Ltd.	Coal mining - Clarence JV	10,000 AUD	10,000 AUD	10,000	1	100.00% (held by Coalex Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
65 Clarence Coal Pty Ltd.	Coal mining - Clarence JV	2 AUD	2 AUD	2	1	100.00% (held by Coalex Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
66 Collieries Superannuation Pty Ltd.	Superannuation company (Dormant)	2 AUD	2 AUD	2	1	100.00% (held by Powercoal Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
67 Elcom Collieries Pty Ltd.	Dormant	1,500,000 AUD	1,500,000 AUD	750,000	2	100.00% (held by Powercoal Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
68 Huntley Colliery Pty Ltd.	Dormant	354,000 AUD	354,000 AUD	177,000	2	100.00% (held by Powercoal Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
69 Mandalong Pastoral Management Pty Ltd.	Dormant	2,736,028 AUD	2,736,028 AUD	10,000,000 Ord Partly Paid Shares - \$0.20 368,014 Ord Shares - \$2.00	2	100.00% (held by Powercoal Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
70 Centennial Springvale Pty Ltd.	Coal mining	1,000,000 AUD	1,000,000 AUD	1,000,000	1	100.00% (held by Centennial Springvale Holdings Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
71 Springvale Coal Pty Ltd.	Coal mining	2,000,000 AUD	2,000,000 AUD	2,000,000	1	100.00% (held by Centennial Springvale Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
72 Boulder Mining Pty Ltd.	Coal mining	1,000 AUD	1,000 AUD	1,000	1	100.00% (held by Centennial Springvale Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
73 Springvale Coal Sales Pty Ltd.	Coal marketing	2 AUD	2 AUD	2	1	50.00% (held by Centennial Springvale Pty Ltd.) 50.00% (held by Boulder Mining Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
74 Centennial Wallarah Pty Ltd.	Mining investment	2 AUD	2 AUD	2	1	100.00% (held by Centennial Coal Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
75 Hunnu Coal Pty Ltd.	Coal mining and trading	296,070,779 AUD	296,070,779 AUD	408,985,717	No par value*	100.00% (held by Banpu Minerals (Singapore) Pte. Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9166 2700

Note: *Under Corporate Law



Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
76 Banpu Energy Australia Pty Ltd.	Renewable energy	40,504,002 AUD	40,504,002 AUD	40,504,002	1	100.00% (held by Banpu Australia Co. Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
77 Banpu Renewable Australia Pty Ltd.	Renewable energy	7,900,002 AUD	7,900,002 AUD	7,900,002	1	100.00% (held by Banpu Renewable Singapore Pte. Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
78 Banpu Energy Hold Trust	Renewable energy	N/A	N/A	82,320,008 20,580,002	N/A	80.00% (held by Banpu Energy Australia Pty Ltd. 20.00% (held by Banpu Renewable Australia Pty Ltd.))	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
79 Banpu Energy Holding Pty Ltd.	Renewable energy	10 AUD	10 AUD	10	1	80.00% (held by Banpu Energy Australia Pty Ltd. 20.00% (held by Banpu Renewable Australia Pty Ltd.))	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
80 FS NSW Project No 1 HT Pty Ltd.	Renewable energy	100 AUD	100 AUD	100	1	100.00% (held by Banpu Energy Holding Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
81 FS NSW Project No 1 AT Pty Ltd.	Renewable energy	1 AUD	1 AUD	1	1	100.00% (held by FS NSW Project No 1 HT Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
82 FS NSW Project No 1 Finco Pty Ltd	Renewable energy	1 AUD	1 AUD	1	1	100.00% (held by FS NSW Project No 1 AT Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
83 Manildra Prop Hold Pty Ltd.	Renewable energy	1 AUD	1 AUD	1	1	100.00% (held by Banpu Energy Holding Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
84 Manildra Prop Pty Ltd.	Renewable energy	1 AUD	1 AUD	1	1	100.00% (held by Manildra Prop Hold Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
85 Manildra Finco Pty Ltd.	Renewable energy	1 AUD	1 AUD	1	1	100.00% (held by Manildra Prop Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
86 Manildra Solar Farm Pty Ltd.	Renewable energy	100 AUD	100 AUD	100	1	100.00% (held by Manildra Prop Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
87 FS NSW Project No 1 Hold Trust	Renewable energy	1 AUD	1 AUD	1	1	100.00% (held by FS NSW Project No 1 HT Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
88 FS NSW Project No 1 Asset Trust	Renewable energy	N/A	N/A	8,206,490,677	N/A	100.00% (held by FS NSW Project No 1 Hold Trust as trustee for FS NSW Project No 1 AT Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700

Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
89 Manildra Hold Trust	Renewable energy	N/A	N/A	6,926,658,900	N/A	100.00% (held by Banpu Energy Hold Trust as trustee of the Manildra Prop Hold Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
90 Manildra Asset Trust	Renewable energy	N/A	N/A	3,701,105	N/A	100.00% (held by Manildra Hold Trust as trustee for Manildra Prop Pty Ltd.)	Level 20, 1 Market Street, Sydney NSW 2000, Australia	+61 2 9266 2700
China								
91 Shijiazhuang Chengfeng Cogen Co., Ltd.	Power and steam generation and sales	52,516,000 USD	52,516,000 USD	N/A	N/A	100.00% (held by Banpu Power Investment Co., Ltd.)	East of Jingshen Highway, Zhengding County, Shijiazhuang City, Hebei Province, P.R.China, 050800	+86 311 85176918
92 Banpu Investment (China) Ltd.	Investment in energy business and other industrial areas	30,000,000 USD	30,000,000 USD	N/A	N/A	100.00% (held by Banpu Power Investment Co., Ltd.)	Unit 508, 5 th Floor, Tower 21, No. 10 Jiuxianqiao Road, Chaoyang District, Beijing, P.R.China	+86 10 57580388
93 Tangshan Banpu Heat and Power Co., Ltd.	Power and steam generation and sales	78,082,200 USD	47,504,217 USD	N/A	N/A	87.92% (held by Pan-Western Energy Corporation LLC) 12.08% (held by Banpu Investment (China) Ltd.)	West of Gujjaying Villiage, Bencheng Town, Luannan County, Tangshan City, Hebei Province, P.R.China, 063500	+86 31 54168274
94 Zouping Peak CHP Co., Ltd.	Power and steam generation and sales	261,800,000 CNY	261,800,000 CNY	N/A	N/A	70.00% (held by Zouping Peak Pte. Ltd.)	Handian Town, Zouping County, Binzhou City, Shandong Province, P.R.China, 256209	+86 54 34615655
95 BPP Renewable Investment (China) Co., Ltd.	Investment in renewable energy business	160,000,000 USD	97,620,000 USD	N/A	N/A	100.00% (held by Banpu NEXT Co., Ltd.)	Unit 509, 5 th Floor, Tower B21, UBP, No.10 Jiuxianqiao Road, Chaoyang District, Beijing 100015	+86 10 57580388
96 Anqiu Huineng Renewable Energy Co., Ltd.	Solar power generation	66,000,000 CNY	66,000,000 CNY	N/A	N/A	100.00% (held by BPP Renewable Investment (China) Co., Ltd.)	1 st Floor, Unit 1, Dafugou Villiage, Wushan Town, Anqiu County, Weifang City, Shandong Province, P.R.China	+86 10 57580310
97 Weifang Tian'en Jinsan Comprehensive Energy Co., Ltd.	Solar power generation	83,000,000 CNY	83,000,000 CNY	N/A	N/A	100.00% (held by BPP Renewable Investment (China) Co., Ltd.)	2 nd Floor, Unit 1, Dafugou Villiage, Wushan Town, Anqiu County, Weifang City, Shandong Province, P.R.China	+86 10 57580310
98 Dongping County Haoyuan Solar Power Generation Co., Ltd.	Solar power generation	69,000,000 CNY	69,000,000 CNY	N/A	N/A	100.00% (held by BPP Renewable Investment (China) Co., Ltd.)	East side of the north section of Xishan Road, Dongping County, Taian City, Shandong Province, P.R.China	+86 10 57580310
99 Anqiu County Hui'en PV Technology Co., Ltd.	Solar power generation	62,000,000 CNY	62,000,000 CNY	N/A	N/A	100.00% (held by BPP Renewable Investment (China) Co., Ltd.)	Unit 2, Longwangmiao Villiage, Dasheng Town, Anqiu County, Weifang City, Shandong Province, P.R.China	+86 10 57580310



Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
100 Jiaxing Deyuan Energy-Saving Technology Co., Ltd.	Solar power generation	150,740,000 CNY	150,737,586 CNY	N/A	N/A	100.00% (held by BPP Renewable Investment (China) Co., Ltd.)	No. 999 Xianghu Road, Yaozhuang Town, Jiashan County, Jiaxing City, Zhejiang Province, P.R.China	+86 10 57580310
101 Feicheng Xingyu Solar Power PV Technology Co., Ltd.	Solar power generation	55,000,000 CNY	55,000,000 CNY	N/A	N/A	100.00% (held by BPP Renewable Investment (China) Co., Ltd.)	Huangtuling Village, Anzhan Town, Feicheng County, Tai'an City, Shandong Province, P.R.China	+86 10 57580310
102 Jiangsu Jixin Electric Power Co., Ltd.	Solar power generation	64,000,000 CNY	64,000,000 CNY	N/A	N/A	100.00% (held by BPP Renewable Investment (China) Co., Ltd.)	Zhengwei Village, Qianfeng Town, Jinhua County, Huai'an City, Jiangsu Province, P.R.China	+86 10 57580310
103 Banpu (Beijing) Energy Trading Ltd.	Coal trading	80,000,000 CNY	40,000,000 CNY	N/A	N/A	100.00% (held by Banpu Minerals (Singapore) Pte. Ltd.)	Unit 508A, 5 th Floor, Tower 21, No.10 Jiuxianqiao Road, Chaoyang District, Beijing, P.R.China	+86 10 57580388
104 Shijiazhuang Chengfeng New Energy Co., Ltd.	Solar power generation	66,000,000 CNY	5,000,000 CNY	N/A	N/A	100.00% (held by Shijiazhuang Chengfeng Cogen Co., Ltd.)	No. 2-1, Jianye Xiang, Jianye Road, Zhengding County, Shijiazhuang City, Hebei Province, P.R.China	+86 31 185176918
Mongolia								
105 Hunnu Altai LLC	Foreign trade, investment in coal mining	94,597,212,404.47 MNT	94,597,212,404.47 MNT	683,061	138,490	100.00% (held by Hunnu Investments Pte. Ltd.)	Suite 1502, Fides Tower, Gegeenten Complex, 15 th khoroo, Khan-Uul district, Ulaanbaatar-17011, Mongolia	+976 75551221, +976 75551551
106 Hunnu Gobi Altai LLC	Foreign trade, minerals exploration, mining	155,000,000 MNT	155,000,000 MNT	155,000	1,000	80.00% (held by Hunnu Altai LLC)	Suite 1502, Fides Tower, Gegeenten Complex, 15 th khoroo, Khan-Uul district, Ulaanbaatar-17011, Mongolia	+976 75551221, +976 75551551
107 Hunnu Altai Minerals LLC	Foreign trade, minerals mining	17,242,032,000 MNT	17,242,032,000 MNT	17,242,032	1,000	100.00% (held by Hunnu Altai LLC)	Suite 1502, Fides Tower, Gegeenten Complex, 15 th khoroo, Khan-Uul district, Ulaanbaatar-17011, Mongolia	+976 75551221, +976 75551551
108 Hunnu Resources LLC	Foreign trade, investment in coal mining	380,841,975,086.57 MNT	380,841,975,086.57 MNT	237,348,308	1,604.57	100.00% (held by Hunnu Coal Pty Ltd.)	Suite 1502, Fides Tower, Gegeenten Complex, 15 th khoroo, Khan-Uul district, Ulaanbaatar-17011, Mongolia	+976 75551221, +976 75551551
109 Munkh Sumber Uul LLC	Foreign trade	4,099,599,712.83 MNT	4,099,599,712.83 MNT	409,959	10,000	100.00% (held by Hunnu Resources LLC)	Suite 1502, Fides Tower, Gegeenten Complex, 15 th khoroo, Khan-Uul district, Ulaanbaatar-17011, Mongolia	+976 75551221, +976 75551551
110 Bilegt Khaikhan Uul LLC	Foreign trade, minerals mining	31,941,519,864.99 MNT	31,941,519,864.99 MNT	3,194,151	10,000	100.00% (held by Hunnu Resources LLC)	Suite 1502, Fides Tower, Gegeenten Complex, 15 th khoroo, Khan-Uul district, Ulaanbaatar-17011, Mongolia	+976 75551221, +976 75551551
111 Munkhnoyon Suvraga LLC	Foreign trade, minerals mining, tourism, construction materials sale	196,897,807,350 MNT	196,897,807,350 MNT	196,897,807	1,000	100.00% (held by Hunnu Resources LLC)	Suite 1502, Fides Tower, Gegeenten Complex, 15 th khoroo, Khan-Uul district, Ulaanbaatar-17011, Mongolia	+976 75551221, +976 75551551

Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
Singapore								
112 Banpu Minerals (Singapore) Pte. Ltd.	Investment in coal mining	N/A	17,670,002 SGD 11,000,000 USD	17,670,002	No par value*	50.00% (held by Banpu Minerals Co., Ltd.) 50.00% (held by Banpu Coal Investment Co., Ltd.)	One Marina Boulevard, #28-00 Singapore 018989	+65 6890 7188
113 BMS Coal Sales Pte. Ltd.	Coal trading including coal agent and coal blending	N/A	5,000,000 USD	5,000,000	No par value*	100.00% (held by Banpu Minerals (Singapore) Pte. Ltd.)	One Marina Boulevard, #28-00 Singapore 018989	+65 6890 7188
114 Banpu Singapore Pte. Ltd.	Investment in coal business	N/A	1,500,000 SGD 3,067,856,827.21 USD	1,500,000	No par value*	100.00% (held by Asian American Coal, Inc.)	One Marina Boulevard, #28-00 Singapore 018989	+65 6890 7188
115 Hunnu Investments Pte. Ltd.	Investment in coal business	N/A	100 SGD 35,260,188.82 USD	100	No par value*	100.00% (held by Hunnu Coal Pty Ltd.)	One Marina Boulevard, #28-00 Singapore 018989	+65 6890 7188
116 Banpu Power Investment Co., Ltd.	Investment in power business	N/A	111,962,391.00 USD	104,917,663	No par value*	100.00% (held by Banpu Power International Ltd.)	8 Marina Boulevard, #05-02 Marina Bay Financial Centre, Singapore 018981	+65 6338 1888
117 Zouping Peak Pte. Ltd.	Investment in power business	N/A	2 SGD 140,495,758 CNY	2	No par value*	100.00% (held by Banpu Power Investment Co., Ltd.)	8 Marina Boulevard, #05-02 Marina Bay Financial Centre, Singapore 018981	+65 6338 1888
118 Banpu Renewable Singapore Pte. Ltd.	Investment in renewable energy business	N/A	16,310,029,719.8 JPY 71,295,176.69 USD	16,310,029,719	No par value*	100.00% (held by Banpu NEXT Co., Ltd.)	8 Marina Boulevard, #05-02 Marina Bay Financial Centre, Singapore 018981	+65 6338 1888
119 BRE Singapore Pte. Ltd.	Investment in renewable energy business	N/A	68,220,001 USD	68,220,001	No par value*	100.00% (held by Banpu NEXT Co., Ltd.)	8 Marina Boulevard, #05-02 Marina Bay Financial Centre, Singapore 018981	+65 6338 1888
120 Banpu Innovation & Ventures (Singapore) Pte. Ltd.	Research and development in disruptive technology	N/A	3,000,000 USD	3,000,000	No par value*	100.00% (held by Banpu Innovation & Ventures Co., Ltd.)	8 Marina Boulevard, #05-02 Marina Bay Financial Centre, Singapore 018981	+65 6338 1888
121 Banpu Ventures Pte. Ltd.	Holding company for investment in fund and securities	N/A	187,650,000 USD	187,650,000	No par value*	100.00% (held by Banpu Public Company Limited)	1 Marina Boulevard #28-00 One Marina Boulevard Singapore 018989	+65 6890 7188
Republic of Mauritius								
122 Banpu Coal Investment Co., Ltd.	Investment in coal mining	11,050,500 USD	11,050,500 USD	11,050,500	1	100.00% (held by Banpu Minerals Co., Ltd.)	4 th Floor, Ebene Skies, Rue de L'Institut, Ebene, Republic of Mauritius	+230 404 8000
123 BP Overseas Development Co., Ltd.	Investment in coal mining	515,533,002 USD	515,533,002 USD	515,533,002	1	100.00% (held by Banpu Minerals Co., Ltd.)	4 th Floor, Ebene Skies, Rue de L'Institut, Ebene, Republic of Mauritius	+230 404 8000
124 BPIN Investment Co., Ltd.	Investment in renewable energy	212,497,600 USD	212,497,600 USD	212,497,600	1	100.00% (held by Banpu NEXT Co., Ltd.)	4 th Floor, Ebene Skies, Rue de L'Institut, Ebene, Republic of Mauritius	+230 404 8000

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Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
125 Banpu Power International Ltd.	Investment in power business	117,835,000 USD	117,835,000 USD	117,835,000	1	100.00% (held by Banpu Power Public Company Limited)	4 th Floor, Ebene Skies, Rue de L'Institut, Ebene, Republic of Mauritius	+230 404 8000
British Virgin Islands								
126 Asian American Coal, Inc.	Investment in coal mining	410,000,000 USD	265,917,026 USD	265,917,026	1	100.00% (held by BP Overseas Development Co., Ltd.)	Geneva Place, 2 nd Floor, #333 Waterfront Drive, Road Town, Tortola, British Virgin Islands	+284 494 4388
Cayman Islands								
127 Pan-Western Energy Corporation LLC	Investment in power business	100,000 USD	100,000 USD	10,000,000	0.01	100.00% (held by Banpu Power Investment Co., Ltd.)	PO Box 309, Ugland House, Grand Cayman, KY1-1104, Cayman Islands	+1 345 949 8066
Japan								
128 Banpu Power Trading G.K.	Energy trading	N/A	100,000,000 JPY	N/A	No par value*	100.00% (held by Banpu Renewable Singapore Pte. Ltd.)	Kasumigaseki Building, 33 rd Floor, 3-2-5, Kasumigaseki, Chiyoda-ku, Tokyo, Japan 100-6033	+81 3 6205 4665
129 Banpu Japan K.K.	Investment in renewable energy business	N/A	100,000,000 JPY	395,549	No par value*	100.00% (held by Banpu NEXT Co., Ltd.)	Kasumigaseki Building, 33 rd Floor, 3-2-5, Kasumigaseki, Chiyoda-ku, Tokyo, Japan 100-6033	+81 3 6205 4665
130 J&A Energy G.K.	Store and sell electricity using battery	N/A	500,000 JPY	N/A	No par value*	100.00% (held by Banpu Japan K.K.)	Kasumigaseki Building, 33 rd Floor, 3-2-5, Kasumigaseki, Chiyoda-ku, Tokyo, Japan 100-6033	+81 3 6205 4665
131 Tenguyama Solar Park G.K.	Land owner of solar project	N/A	1 JPY	N/A	No par value*	100.00% (held by Banpu Japan K.K.)	Kasumigaseki Building, 33 rd Floor, 3-2-5, Kasumigaseki, Chiyoda-ku, Tokyo, Japan 100-6033	+81 3 6205 4665
United States of America								
132 Banpu North America Corporation	Investment in oil and gas business	938,000,100 USD	938,000,100 USD	938,000,100	1	100.00% (held by BOG Co., Ltd.)	2711 Centerville Road, Suite 400, Wilmington, Delaware, USA 19808	+1 302 654 7584
133 BKV Corporation	Investment in oil and gas business	3,000,000,000 USD	1,170,840,000 USD	117,084,000	0.01	96.11% (held by Banpu North America Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
134 Kalnin Ventures LLC	Investment in oil and gas business	N/A	18,576,245 USD	N/A	No par value*	100.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
135 BKV Chaffee Corners, LLC	Investment in oil and gas business	N/A	109,529,841 USD	N/A	No par value*	100.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
136 BKV Chelsea, LLC	Investment in oil and gas business	N/A	205,285,594 USD	N/A	No par value*	100.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680

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137 BKV Operating, LLC	Investment in oil and gas business	N/A	195,541,343 USD	N/A	No par value*	100.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
138 BKV Barnett, LLC	Investment in oil and gas business	N/A	406,000,000 USD	N/A	No par value*	100.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
139 Banpu Innovation & Ventures LLC	Research and development in disruptive technology	1,000,000 USD	1,000,000 USD	N/A	No par value*	100.00% (held by Banpu Innovation & Ventures (Singapore) Pte. Ltd.)	1150 North Market Street, Suite 1300, Wilmington, Delaware, USA 19801	+1 302 427 7650
140 Banpu Power US Corporation	Investment in energy generation and related business	100 USD	100 USD	10,000	0.10	100.00% (held by Banpu Power Public Company Limited)	251 Little Falls Drive, in the City of Wilmington, County of New Castle, Delaware, USA 19808	+1 720 375 9680
141 BKV-BPP Power LLC	Investment in energy generation and related business	N/A	173,963,925 USD	N/A	No par value*	50.00% (held by Banpu Power US Corporation) 50.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
142 Temple Generation Intermediate Holding II LLC	Energy generation and related business	N/A	N/A	N/A	No par value*	100.00% (held by BKV-BPP Power LLC)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
143 Temple Generation I LLC	Energy generation and related business	N/A	N/A	N/A	No par value*	100.00% (held by Temple Generation Intermediate Holding II LLC)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
144 BKV Midstream, LLC	Investment in oil and gas business	N/A	N/A	N/A	No par value*	100.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
145 BKV North Texas, LLC	Investment in oil and gas business	N/A	N/A	N/A	No par value*	100.00% (held by BKV Corporation)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
146 BKV-BPP Retail LLC	Energy retailing and related business	N/A	N/A	N/A	No par value*	100.00% (held by BKV-BPP Power LLC)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
147 BKV dCarbon Ventures, LLC	Investment in carbon capture business	N/A	N/A	N/A	No par value*	100.00% (held by BKV Corporation)	1200, 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
148 BKVerde, LLC	Investment in carbon capture business	N/A	N/A	N/A	No par value*	100.00% (held by BKV dCarbon Ventures, LLC)	1200, 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680
Vietnam								
149 BPP Vinh Chau Wind Power LLC	Wind power production, power transmission and distribution	427,395,900,000 VND	427,395,900,000 VND	N/A	No par value*	100.00% (held by BRE Singapore Pte. Ltd.)	Wind power plant no.3, Street 48, Vinh Phuoc ward, Vinh Chau town, Soc Trang Province, Vietnam	+84 90 988 5015

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150 Banpu Vietnam LLC	Management consulting services (Except for financial, accounting and legal consultancy)	23,000,000,000 VND	23,000,000,000 VND	N/A	No par value*	100.00% (held by Banpu Public Company Limited)	8 th Floor, Friendship Tower, 31 Le Duan Street, Ben Nghe Ward, District 1, Ho Chi Minh City, Vietnam	+84 90 748 4047
151 Ei Wind Mui Dinh Ltd.	Power production, installation of electrical systems	235,128,370,557 VND	235,128,370,557 VND	N/A	No par value*	100.00% (held by BRE Singapore Pte. Ltd.)	Tu Thien Village, Phuoc Dinh Ward, Thuan Nam District, Ninh Thuan Province, Vietnam	+84 925 9651 1234
152 Licogi 16 Ninh Thuan Renewable Energy Joint Stock Company	Power production	240,000,000,000 VND	240,000,000,000 VND	24,000,000	10,000	100.00% (held by BRE Singapore Pte. Ltd.)	Kien Kien Vinh Hy Street, Khanh Phuoc Hamlet, Nhon Hai Commune, Ninh Hai District, Ninh Thuan Province, Vietnam, 59000	+28 3866 8535
Associated Companies								
Australia								
153 Port Kembla Coal Terminal Ltd.	Ship loading coal port	600,000 AUD	600,000 AUD	600,000	1	16.66% (held by Centennial Coal Co. Pty Ltd.)	Port Kembla Road, Inner Harbour, Wollongong NSW 2520, Australia	+61 2 4228 0288
Japan								
154 FOMM Corporation	Planning, developing, manufacturing and selling of compact electric vehicle	N/A	3,505,170,250 JPY	2,046,635	No par value*	21.45% (held by Banpu NEXT Co., Ltd.)	7-7 Shinkawasaki, Saiwai-ku, Kawasaki-shi, Kanagawa, Japan 212-0032	+81 4 4200 4020
155 Global Engineering Co., Ltd.	Electricity sales and resource aggregator of virtual power plant	N/A	308,200,000 JPY	3,635,000	No par value*	19.82% (held by Banpu Renewable Singapore Pte. Ltd.)	Nishiko Living Kashii 2 nd Floor, 1-1-1, Kashii, Higashi-ku, Fukuoka city, Fukuoka pref. Japan 813-0011	+81 9 2692 7547
Singapore								
156 Durapower Holdings Pte. Ltd.	Investment holding company (with subsidiaries undertaking manufacturing of Lithium-Ion Battery (LiB) for EV and Energy Storage System (ESS))	N/A	59,737,835.50 SGD	385,699	No par value*	47.68% (held by BPIN Investment Company Ltd.)	66 Kallang Pudding Road, #05-02 Hor Kew Business Centre, Singapore 349324	+65 6846 0171
Thailand								
157 Urban Mobility Tech Co., Ltd.	Electric vehicle business	Ordinary Share 1,070,000 Preference Share 723,750 THB	Ordinary Share 1,070,000 Preference Share 723,750 THB	Ordinary Share 107,000 Preference Share 72,375	10	39.74% (held by Banpu NEXT Co., Ltd.)	256 Soi Soonvijai, Rama IX Soi 17 Road, Bangkapi, Huaykwang, Bangkok 10310, Thailand	+66 86887 4796
158 Beyond Green Co., Ltd.	Integrated electric vehicle	714,285,700 THB	714,285,700 THB	7,142,857	100	30.00% (held by Banpu NEXT Co., Ltd.)	115/1, 115/6, Motorway Road, Thap Chang Sub-Area, Saphan Sung Area, Bangkok 10250, Thailand	+66 2136 0490

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159 GEPP SA-ARD Co., Ltd.	Integrated waste management platform	2,666,700 THB	2,666,700 THB	26,667	100	25.00% (held by Banpu NEXT Co., Ltd.)	559/186 Nonsi Road, Chong Nonsi Subdistrict, Yannawa District, Bangkok 10120 Thailand	+66 84360 2928
Vietnam								
160 Solar Esco Joint Stock Company	Computer programming, power production, power transmission and distribution	Ordinary Share 121,715,750,000 Preference Share 31,030,000 VND	Ordinary Share 121,715,750,000 Preference Share 31,030,000 VND	Ordinary Share 12,171,575 Preference Share 3,103 (Preference Share)	10,000 (Ordinary Share) 10,000 (Preference Share)	49.01% (held by BRE Singapore Pte. Ltd.)	47 Le Van Thinh, Quarter 5, Binh Trung Dong Ward, Thu Duc City, Ho Chi Minh City, Vietnam	+286 285 4535
Joint Ventures								
Indonesia								
161 PT. Nusantara Timur Unggul	Fuel distributor	1,000,000,000 IDR	600,000,000 IDR	600	1,000,000	33.34% (held by PT. ITM Indonesia)	Gedung Graha Indramas 4 th Floor, Jalan AIP II K.S. Tubun Raya No. 77, Palmerah, West Jakarta Corresponding office: Pondok Indah Office Tower 3, 3 rd Floor, Jl. Sultan Iskandar Muda, Pondok Indah Kav. V-TA, Jakarta 12310, Indonesia	+6221 29328100
China								
162 Shanxi Gaohe Energy Co., Ltd.	Coal mining in China	1,519,860,000 CNY	1,519,860,000 CNY	N/A	N/A	45.00% (held by Asian American Coal, Inc.)	Haojiazhuang Town, Changzhi County, Changzhi City, Shanxi Province, P.R.China	+86 105 8203663
163 Hebi Zhong Tai Mining Co., Ltd.	Investment in coal mining	783,330,000 CNY	783,330,000 CNY	N/A	N/A	40.00% (held by Banpu Minerals Co., Ltd.)	Sikuang Industrial Park, Hebi, Hebei City, Henan Province, P.R.China	+86 392 2917401-2
164 Shanxi Lu Guang Power Co., Ltd.	Power generating and sales	1,745,818,000 CNY	1,500,000,000 CNY	N/A	N/A	30.00% (held by Banpu Power Investment Co., Ltd.)	Songcun Town, Zhangzi County, Changzhi City, Shanxi Province, P.R.China	+86 355 8580511
Japan								
165 Aizu Land Solar G.K.	Land owner of solar project	N/A	100,000 JPY	N/A	No par value*	100.00% (held by Aura Land Development Pte. Ltd.)	Kasumigaseki Building, 33 rd Floor, 3-2-5, Kasumigaseki, Chiyoda-ku, Tokyo, Japan 100-6033	+81 3 6205 4665
166 Hokkaido Solar Estate G.K.	Land owner of solar project	N/A	10,000,000 JPY	N/A	No par value*	60.00% (held by Banpu Energy Services (Thailand) Co., Ltd.)	1-1-7 Moto-akasaka, Minato-ku, Tokyo, Japan	+81 3 3560 1115
167 Nakoso IGCC Management Co., Ltd.	Electricity power generation, supply services of electricity power and steam	N/A	1,000,000 JPY	N/A	No par value*	33.50% (held by Banpu Power Investment Co., Ltd.)	2-6-1 Marunouchi, Chiyoda-ku, Tokyo, Japan 100-8086	+81 3 3210 2121
168 Nakoso IGCC Power Plant G.K.	Power generation	N/A	100,000,000 JPY	N/A	No par value*	40.00% (held by Nakoso IGCC Management Co., Ltd.)	102-3 Kawada, Iwamamachi, Iwaki, Fukushima, Japan	+81 2 4651 2211

Note: *Under Corporate Law



Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
Lao PDR								
169 Hongsa Power Co., Ltd.	Power generating and sales	927,000,000 USD	927,000,000 USD	92,700,000	10	40.00% (held by Banpu Power Public Company Limited)	NNN Building 4 th Floor, Room No.D5 Bourichan Road, Phonsinouane Village, Sisattanak District, Vientiane Capital, Lao PDR	+856 2122 483
170 Phu Fai Mining Co., Ltd.	Mining concession	50,000 USD	50,000 USD	5,000	10	37.50% (held by Banpu Power Public Company Limited)	NNN Building 4 th Floor, Room No.D5 Bourichan Road, Phonsinouane Village, Sisattanak District, Vientiane Capital, Lao PDR	+856 2122 483
Singapore								
171 Aura Land Development Pte. Ltd.	Investment in property for solar energy business	N/A	3,840,989.20 USD	3,840,988	No par value*	75.00% (held by Banpu Energy Services (Thailand) Co., Ltd.)	8 Marina Boulevard, #05-02 Marina Bay Financial Centre, Singapore 018981	+65 6338 1888
172 Aizu Energy Pte. Ltd.	Investment in renewable energy business	N/A	1,601,577,060 JPY	1,601,577,060	No par value*	75.00% (held by Banpu NEXT Co., Ltd.)	8 Marina Boulevard, #05-02 Marina Bay Financial Centre, Singapore 018981	+65 6338 1888
173 LIV Energy Venture Pte. Ltd.	Development and commercialization of hybrid ESS	N/A	1,000,000 USD 1,000 SGD	1,000,000 2,333,333	No par value*	30.00% (held by Banpu Innovation & Ventures (Singapore) Pte. Ltd.)	1 Cleantech Loop #02-26 Cleantech One Singapore 637141	+65 6268 6129
Thailand								
174 BLCP Power Ltd.	Power generation and sales	12,010,000,000 THB	12,010,000,000 THB	120,100,000	100	50.00% (held by Banpu Coal Power Ltd.)	9 I-8 Road, Map Ta Phut Industrial Estate, Muang District, Rayong 21150 Thailand	+66 3892 5100
175 BNSP Smart Tech Co., Ltd.	Investor and developer district cooling systems (DCS)	3,000,000 THB	3,000,000 THB	30,000	100	50.00% (held by Banpu NEXT EcoServe Co., Ltd.)	1550, Thanapoom Tower, 24 th Floor, New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400, Thailand	+66 2095 6595
176 Evolt Technology Co., Ltd.	Electric vehicle infrastructure	6,250,000 THB	6,250,000 THB	62,500	100	20.00% (held by Banpu NEXT Co., Ltd.)	Block 28, Building C, Floor 2 C201-202 Alley, Wang Mai, Pathum Wan District, Bangkok 10330 Thailand	+66 80593 1072
177 Altotech Global Co., Ltd.	Other information technology and computer service activities	Ordinary Share 1,015,300 Preference Share 629,200 THB	Ordinary Share 1,015,300 Preference Share 629,200 THB	Ordinary Share 10,153 Preference Share 6,292 (Preference Share)	100 (Ordinary Share) 100 (Preference Share)	25.00% (held by Banpu NEXT Co., Ltd.)	719, Rama VI, Wang Mai, Pathum Wan, Bangkok 10330 Thailand	+66 2059 9603
178 BCD Energies Co., Ltd.	Battery system assembly and production	1,000,000 THB	350,000 THB	10,000	100	30.00% (held by Banpu NEXT Co., Ltd.)	333 Baan Nong Bon Village, Moo 4, Na Klang Sub-district, Sung Noen District, Nakhon Ratchasima Province 30380 Thailand	+66 4433 5281
United States of America								
179 Temple Generation SF LLC	Energy generation and related business	N/A	N/A	N/A	No par value*	50.00% (held by Temple Generation I LLC)	1200 17 th Street, Suite 2100, Denver, Colorado, USA 80202	+1 720 375 9680

Note: *Under Corporate Law

Name	Type of business	Authorized capital	Paid up capital	No. of paid-up capital (Shares)	Par value per Share	% of holding	Head Office	Telephone
Other investment								
Thailand								
180 Haupcar Co., Ltd.	Renting of passenger car, pick-up truck, van and similar light motor vehicles	Ordinary Share 5,214,340 Preference Share 2,796,350 THB	Ordinary Share 5,214,340 Preference Share 2,796,350 THB	Ordinary Share 521,434 Preference Share 279,635 (Preference Share)	10 (Ordinary Share) 10 (Preference Share)	18.47% (held by Banpu NEXT Co., Ltd.)	128/21 3 Floor, Phayathai Plaza, Phayathai Road, Thung Phaya Thai Subdistrict, Ratchathewi District, Bangkok 10400 Thailand	+662 113 1155

SHAREHOLDERS

SECURITY

Top 10 Major Shareholders, as of 31 December 2022

Major Shareholders	No. of Shares	%
1. Vongkusolkit Family	673,866,711	7.97
Mitr Phol Sugar Corp., Ltd.	443,587,300	5.25
TME Capital Co., Ltd.	58,382,050	0.69
City Holding Co., Ltd.	53,458,082	0.63
MP Particle Board Co., Ltd.	51,012,426	0.60
Mid-Siam Capital Co., Ltd.	24,998,674	0.30
Pacific Sugar Corp., Ltd.	22,870,758	0.27
Mitr Phol Bio-Power (Phu Wiang) Co., Ltd.	20,633,508	0.24
2. Thai NVDR Co., Ltd.	1,310,041,393	15.50
3. South East Asia UK (Type C) Nominees Limited	257,558,729	3.05
4. State Street Europe Limited	151,108,674	1.79
5. Credit Suisse AG, Singapore Branch	95,130,267	1.13
6. Mr. Direk Vinichbutr	90,699,700	1.07
7. Krungsri LTF Dividend Stock	85,950,400	1.02
8. Tisco Master Pooled Registered Provident Fund	70,980,600	0.84
9. Mr. Monchai Jaturanpinyo	50,000,000	0.59
10. BNY Mellon Nominees Limited	49,577,207	0.59
Total	3,509,856,479	41.53

Notes:

- **Mitr Phol Sugar Corp., Ltd.** has the following shareholder:
Mid-Siam Sugar Corp., Ltd. holds 99.99% of its paid-up capital.
- **TME Capital Co., Ltd.** has the following shareholders:
 1. The Vongkusolkit Family holds 80.01% of its paid-up capital.
 2. Ufinves Co., Ltd. holds 15.23% of its paid-up capital.
 3. The Kanjanakumnerd Family holds 3.82% of its paid-up capital.
 4. The Putpongpiriporn Family holds 0.94% of its paid-up capital.
- **City Holding Co., Ltd.** has the following shareholders:
 1. The Vongkusolkit Family holds 90.50% of its paid-up capital.
 2. The Kanjanakumnerd Family holds 6.00% of its paid-up capital.
 3. The Putpongpiriporn Family holds 2.00% of its paid-up capital.
 4. The Jenlapwattanukul Family holds 1.50% of its paid-up capital.

- **MP Particle Board Co., Ltd.** has the following shareholder:
United Farmer and Industry Co., Ltd. holds 99.99% of its paid-up capital.
- **Mid-Siam Capital Co., Ltd.** has the following shareholder:
Mid-Siam Sugar Corp., Ltd. holds 99.99% of its paid-up capital.
- **Pacific Sugar Corp., Ltd.** has the following shareholder:
Mitr Phol Sugar Corp., Ltd. holds 99.99% of its paid-up capital.
- **Mitr Phol Bio-Power (Phu Wiang) Co., Ltd.** has the following shareholder:
United Farmer and Industry Co., Ltd. holds 51.04% of its paid-up capital.

Authorized Capital

Company Name	บริษัท บ้านปู จำกัด (มหาชน)
Company Name (English)	Banpu Public Company Limited
Market Symbol	BANPU
Major Business	Energy
Registration Number	BorMorJor. 152
Authorized Capital	THB 10,149,163,028* Consisting of 10,149,163,028 ordinary shares with the par value of THB 1 per share
Paid-up Capital	THB 8,454,161,388** Consisting of 8,454,161,388 ordinary shares with the par value of THB 1 per share
Number of Shares	8,454,161,388 shares
Par Value	THB 1 (One Baht)

Notes:

* The Extraordinary General Meeting of Shareholders No. 1/2021 on 9 August 2021 passed a resolution approving the Company's registered capital increase from THB 5,074,581,513 to THB 10,149,163,028 by the issuance of additional 5,074,581,513 ordinary shares at the par value of THB 1 per share. The Company registered the capital increase with the Ministry of Commerce on 20 August 2021.

** The Company has accordingly allocated 1,688,052,702 new common shares (par value of THB 1 per share) from exercising BANPU-W4 and successfully registered as paid-in capital with the Ministry of Commerce on 5 October 2022, resulting in an increase in the Company's paid-in capital from THB 6,766,108,686 to THB 8,454,161,388.

As of 31 December 2022, Thai NVDR Company Limited (Thai NVDR), a subsidiary of the Stock Exchange of Thailand, issued NVDR shares to the Company's shareholders for the underlying securities total amount of 1,310,041,393 shares, or 15.50% of the issued and paid-up shares at that date. NVDR holders will obtain all financial benefits in the same manners as the Company's ordinary shares holders, except that NVDR holders will have no voting rights at shareholder meetings since they are not the Company's direct shareholders. Practically, Thai NVDR will attend a shareholder meeting and vote at its discretion but not by the instruction of

NVDR shareholders. The number of the Company's shares held by the investors who have invested via Thai NVDR is subject to change, which is beyond the Company's control.

Foreign Ownership Restrictions

Foreign shareholders may own the Company's shares in the total amount of not exceeding 40% of the Company's issued and paid-up shares. As of 31 December 2022, the Company's shares owned by foreign shareholders was approximately 27.79% of the Company's paid-up capital.

DEBENTURE

Debenture Details	Banpu Debentures No. 1/2011 Tranche 3	Banpu Debentures No. 1/2011 Tranche 4	Banpu Debentures No. 1/2013	Banpu Debentures No. 2/2013 Tranche 2	Banpu Debentures No. 1/2014 Tranche 2
Issuer	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.
Total Value of Debentures	THB 3,500 Million	THB 2,000 Million	USD 150 Million	THB 2,100 Million	THB 5,000 Million
Type of Debenture	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative
Amount of Debentures	3,500,000 Units	2,000,000 Units	15,000 Units	2,100,000 Units	5,000,000 Units
Par Value	THB 1,000	THB 1,000	USD 10,000	THB 1,000	THB 1,000
Outstanding Debenture Value as of 31 December 2022	THB 3,500 Million	THB 2,000 Million	USD 150 Million	THB 2,100 Million	THB 5,000 Million
Coupon Rate	5.08%	5.19%	4.09%	5.05%	4.80%
Tenor	12 Years	15 Years	10 Years	12 Years	10 Years
Issue Date	1 April 2011	1 April 2011	4 April 2013	10 July 2013	4 July 2014
Maturity Date	1 April 2023	1 April 2026	4 April 2023	10 July 2025	4 July 2024
Call Option for Debenture Holders and Issuer	-None-	-None-	-None-	-None-	-None-
Principal Payment Before the Maturity Date	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.
Maturity Value	THB 1,000	THB 1,000	USD 10,000	THB 1,000	THB 1,000
Collateral	-None-	-None-	-None-	-None-	-None-
Debenture Rating	A+	A+	A+	A+	A+
	TRIS Rating Co., Ltd.				

Debenture Details	Banpu Debentures No. 1/2015 Tranche 2	Banpu Debentures No. 1/2015 Tranche 3	Banpu Debentures No. 1/2017	Banpu Debentures No. 1/2018	Banpu Debentures No. 1/2019
Issuer	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.
Total Value of Debentures	THB 1,750 Million	THB 1,250 Million	THB 10,000 Million	USD 50 Million	THB 10,000 Million
Type of Debenture	Name-registered, unsubordinated and unsecured debentures	Name-registered, unsubordinated and unsecured debentures	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative
Amount of Debentures	1,750,000 Units	1,250,000 Units	10,000,000 Units	5,000 Units	10,000,000 Units
Par Value	THB 1,000	THB 1,000	THB 1,000	USD 10,000	THB 1,000
Outstanding Debenture Value as of 31 December 2022	THB 1,750 Million	THB 1,250 Million	THB 10,000 Million	USD 50 Million	THB 10,000 Million
Coupon Rate	4.00%	4.10%	4.17%	5.25%	4.00%
Tenor	10 Years	12 Years	10 Years	10 Years	10 Years
Issue Date	12 November 2015	12 November 2015	21 April 2017	8 August 2018	22 May 2019
Maturity Date	12 November 2025	12 November 2027	21 April 2027	8 August 2028	22 May 2029
Call Option for Debenture Holders and Issuer	-None-	-None-	-None-	-None-	-None-
Principal Payment Before the Maturity Date	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.
Maturity Value	THB 1,000	THB 1,000	THB 1,000	USD 10,000	THB 1,000
Collateral	-None-	-None-	-None-	-None-	-None-
Debenture Rating	-None-	-None-	A+	A+	A+
	TRIS Rating Co., Ltd. TRIS Rating Co., Ltd. TRIS Rating Co., Ltd.				

Debenture Details	Banpu Debentures No. 1/2021 Tranche 1	Banpu Debentures No. 1/2021 Tranche 2	Banpu Debentures No. 2/2021 Tranche 1	Banpu Debenture No. 2/2021 Tranche 2	Banpu Debenture No. 2/2021 Tranche 3
Issuer	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.
Total Value of Debentures	THB 2,000 Million	THB 3,670 Million	THB 3,945 Million	THB 4,010 Million	THB 6,045 Million
Type of Debenture	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative
Amount of Debentures	2,000,000 Units	3,670,000 Units	3,945,000 Units	4,010,000 Units	6,045,000 Units
Par Value	THB 1,000	THB 1,000	THB 1,000	THB 1,000	THB 1,000
Outstanding Debenture Value as of 31 December 2022	THB 2,000 Million	THB 3,670 Million	THB 3,945 Million	THB 4,010 Million	THB 6,045 Million
Coupon Rate	3.33%	3.78%	2.90%	3.30%	3.80%
Tenor	7 Years	10 Years	5 Years	7 Years	10 Years
Issue Date	24 February 2021	24 February 2021	4 August 2021	4 August 2021	4 August 2021
Maturity Date	24 February 2028	24 February 2031	4 August 2026	4 August 2028	4 August 2031
Call Option for Debenture Holders and Issuer	-None-	-None-	-None-	-None-	-None-
Principal Payment Before the Maturity Date	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.
Maturity Value	THB 1,000	THB 1,000	THB 1,000	THB 1,000	THB 1,000
Collateral	-None-	-None-	-None-	-None-	-None-
Debenture Rating	A+	A+	A+	A+	A+
	TRIS Rating Co., Ltd.				

Debenture Details	Banpu Debenture No. 2/2021 Tranche 4	Banpu Debenture No. 1/2022 Tranche 1	Banpu Debenture No. 1/2022 Tranche 2	Banpu Debenture No. 1/2022 Tranche 3	Banpu Debenture No. 1/2022 Tranche 4
Issuer	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.
Total Value of Debentures	THB 2,000 Million	THB 2,000 Million	THB 1,000 Million	THB 2,000 Million	THB 3,000 Million
Type of Debenture	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative
Amount of Debentures	2,000,000 Units	2,000,000 Units	1,000,000 Units	2,000,000 Units	3,000,000 Units
Par Value	THB 1,000	THB 1,000	THB 1,000	THB 1,000	THB 1,000
Outstanding Debenture Value as of 31 December 2022	THB 2,000 Million	THB 2,000 Million	THB 1,000 Million	THB 2,000 Million	THB 3,000 Million
Coupon Rate	1.58%	1.76%	3.11%	3.58%	3.89%
Tenor	3 Years	3 Years	6 Years	8 Years	10 Years
Issue Date	4 August 2021	27 January 2022	27 January 2022	27 January 2022	27 January 2022
Maturity Date	4 August 2024	27 January 2025	27 January 2028	27 January 2030	27 January 2032
Call Option for Debenture Holders and Issuer	-None-	-None-	-None-	-None-	-None-
Principal Payment Before the Maturity Date	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.
Maturity Value	THB 1,000	THB 1,000	THB 1,000	THB 1,000	THB 1,000
Collateral	-None-	-None-	-None-	-None-	-None-
Debenture Rating	A+	A+	A+	A+	A+
	TRIS Rating Co., Ltd.				

DIVIDEND POLICY

Debenture Details	Banpu Debenture No. 1/2022 Tranche 5	Banpu Debenture No. 2/2022 Tranche 1	Banpu Debenture No. 2/2022 Tranche 2	Banpu Debenture No. 2/2022 Tranche 3
Issuer	Banpu Plc.	Banpu Plc.	Banpu Plc.	Banpu Plc.
Total Value of Debentures	THB 4,000 Million	THB 4,000 Million	THB 1,860 Million	THB 3,240 Million
Type of Debenture	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative	Name-registered, unsubordinated and unsecured debentures with a debenture holders' representative
Amount of Debentures	4,000,000 Units	4,000,000 Units	1,860,000 Units	3,240,000 Units
Par Value	THB 1,000	THB 1,000	THB 1,000	THB 1,000
Outstanding Debenture Value as of 31 December 2022	THB 4,000 Million	THB 4,000 Million	THB 1,860 Million	THB 3,240 Million
Coupon Rate	4.12%	3.26%	3.80%	4.20%
Tenor	12 Years	4 Years	7 Years	10 Years
Issue Date	27 January 2022	20 September 2022	20 September 2022	20 September 2022
Maturity Date	27 January 2034	20 September 2026	20 September 2029	20 September 2032
Call Option for Debenture	-None-	-None-	-None-	-None-
Holders and Issuer				
Principal Payment Before the Maturity Date	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.	The debenture issuer will pay the principal on the maturity date.
Maturity Value	THB 1,000	THB 1,000	THB 1,000	THB 1,000
Collateral	-None-	-None-	-None-	-None-
Debenture Rating	A+ TRIS Rating Co., Ltd.			



Banpu has a policy to pay approximately 50% of its net profits from the consolidated financial statements, less all kinds of statutory and corporate reserves. However, the dividend payout rate will depend on cash flows, investment obligations of the Company and its affiliates as well as legal restrictions and other requirements.

The Company's affiliates have a policy to pay the dividend from net profits after the deduction of all reserves required by governing laws. The Board of Directors shall consider the dividend payout rate based on operating income, financial conditions, and capital requirements. After that, it will be proposed to shareholders for approval. For the past five years, Banpu Public Company Limited has paid out dividends as follows:

Year	Dividend Rate for First Six Months (Baht/Share)	Dividend Rate for Second Six Months (Baht/Share)	Dividend Rate for Full Year (Baht/Share)	Net Profit (Baht/Share)	Dividend Payout per Net Profit (%)
2018	0.35	0.35	0.70	1.30	54%
2019	0.25	0.35	0.60	(0.08)	n.a.
2020	0.15	0.15	0.30	(0.30)	n.a.
2021	0.20	0.25	0.45	1.59	28%
2022	0.45	0.75	1.20*	5.65	21%

* The Company announced a total dividend of THB 1.20 per share arising from its performance during the period from 1 January 2022 to 31 December 2022, of which THB 0.45 was paid on 30 September 2022. The remaining dividend of THB 0.75 per share for 2022 performance will be paid on 28 April 2023.

RISK MANAGEMENT

Risk Management

In 2022, Banpu faced volatility and uncertainty in business due to the changing business environment, such as the COVID-19 pandemic, the Russia-Ukraine conflict, the China-Taiwan conflict, and fluctuations in coal and natural gas prices. However, the Company has prioritized systematic and efficient risk management to reduce the likelihood of risks, mitigate their potential impacts, and expand business opportunities to add value to the Company. In 2022, Banpu managed its risks by implementing a production optimization plan to tackle the volatility of price and energy consumption demand, allowing the Company to generate more revenue while market prices are high, thereby strengthening its cash flow. The Company is committed to risk management in conjunction with strategic planning to ensure the Company's growth and to achieve strategic goals and objectives within an acceptable risk appetite. In addition, the Company invested more in cleaner energy and energy technology businesses in 2022 according to the Greener & Smarter strategy, which is in line with future trends in the energy business and meets all stakeholders' needs and expectations regarding environmental sustainability.

Risk Management Structure

The Company's risk management is under the supervision of the Board of Directors through the Audit Committee, the Risk Management Committee, and the Environmental, Social, and Governance (ESG) Committee, which are assigned to monitor risks and performance according to risk mitigation plans in all business units. The Enterprise Risk Management Department quarterly reports risk management performance review to the Risk Management Committee, the Audit Committee, the ESG Committee, and the Board of Directors to ensure that key and emerging risks are within risk appetite, thus, reducing risk likelihood and potential impacts.

The Company emphasizes specific risk management under the responsibility of various committees, such as the Investment Committee (IC), the Financial Management Committee (FMC), and the Commodity Risk Management Committee (CRMC), to increase efficiency and closely monitor the situation and progress.

Risk Management Culture

The Enterprise Risk Management Department is responsible for the company-wide implementation of risk management policy and framework by employing various tools, such as identification of risk appetite and key risk indicators (KRIs), which are reviewed and improved regularly to align with the Company's strategy. The Company has also promoted the inclusion of risk issues in critical meetings and the cultivation of a risk management culture by integrating risk management in training courses. It organized risk workshops to improve understanding and efficiency in risk assessment, preparing communication materials, hosting activities, and encouraging employees to participate in risk-related activities to gain a better understanding.

Business Risk Factors

1. Strategic Risks

1.1 Risks in Strategic Planning and Implementation

Amid the Russia-Ukraine conflict, the China-Taiwan conflict, the COVID-19 pandemic, the imbalance between energy demand and supply, legal and regulatory changes, disruptive technology trends, and the growing investor and stakeholder expectations, the Company has reviewed its business direction and strategy in response to the changing situations. It places importance on sustainability aspects by defining ESG-based strategies to deliver Smarter Energy for Sustainability. A business plan has been formulated to be more flexible and agile to withstand challenges and increase competitiveness. At the same time, the Company smartly deployed innovation and technology and maintained financial liquidity through revenue generation and risk mitigation with a focus on projects that could generate immediate cash flow. The Company has also reduced expenses and stabilized cash flow to effectively tackle uncertainty. It organizes monthly meetings to analyze the present situation and trends, comparing data from reliable institutions and sources to assist decision-making and inform the deliberation of future business approaches.

1.2 Risk in Human Resources (HR) Management and Development to Accommodate Future Growth

To accommodate future growth in accordance with the Greener & Smarter strategy, Banpu improved HR strategies and management approaches, reviewed the organizational structure, and analyzed the workforce and HR development plans. The Company has formulated the training and development policy and allocated 5% of salary budgets in each host

country for HR development. It also developed Banpu Learning and Development Framework for workforce development planning in order to fill competency gaps of employees throughout the organization. The workforce development plan is reviewed annually. Each employee has an individual development plan based on required competencies, including functional and leadership competencies, which vary by job position, including training in specific skills to develop job competency in the main professional lines of the business. Furthermore, the Company has prepared employees for the digital age by cultivating a growth mindset and developing digital capabilities for the fast-changing working environment, as well as fostering practice of Banpu Heart corporate culture among employees.

For top executives and critical positions, the Company has a process to select, review, and monitor succession planning and high-potential talent management. The Succession Planning Committee is responsible for creating individual development plans for potential candidates as well as monitoring and evaluating the results. New executives are also recruited to strengthen the Company. In addition, the Company has started using the Success Factors system as a standard for developing a succession plan and individual development plans to improve the efficiency of succession planning for critical roles.

1.3 Corporate Reputation Risk

Banpu prioritizes the corporate brand management and reputation risk as it could rapidly and immensely pose adverse impacts that cannot be valued in monetary terms in both the short and long run. The Company is committed to conducting business according to the Greener & Smarter strategy to drive business during challenging times amid the COVID-19 crisis. It adheres to the Environmental, Social, and Governance (ESG) principles to drive business growth

and generate sustainable benefits and returns to all stakeholders. Banpu adopted the Management Framework—Stakeholder Analysis based on the AA1000 Stakeholder Engagement Standard (AA1000SES) for materiality assessment in compliance with the three principles of inclusivity, materiality, and responsiveness. In 2022, the Company improved the approach for materiality assessment by taking into account the three aspects of social capital management: human capital, natural capital, and social capital. The Company is also in the process of setting corporate standards to be used next year.

The Company has aligned corporate communications and brand management with its direction and commitment to ESG principles by developing communication strategies to achieve quick and accurate communications while ensuring good understanding among all stakeholders. These include quarterly analyst meetings for investors and analysts, a direct communication channel for local and international investors via the Investor Relations Department, communications of its corporate social responsibility (CSR) activities, promotes good relationships with local communities, and regularly conducts satisfaction surveys with community members, stakeholders, customers, and employees to assess their attitudes and opinion towards the Company. A whistleblower channel has also been established to gather information to improve the Company's operations.

Accordingly, in 2022, Banpu was selected as a member of the Dow Jones Sustainability Indices (DJSI) – Emerging markets in the coal and consumable fuels industry for the 9th consecutive year with outstanding performance in three areas, namely, Environment, Society, and Governance. The recognition reflects the Company's adherence to the ESG principles in its operations and commitment to delivering “Smarter Energy for Sustainability.”

Apart from that, Banpu also received the Sustainability Awards of Honor, a category under the Sustainability Excellence Awards, for the 5th consecutive year, reaffirming its leading position as an international versatile energy provider in the Asia-Pacific region, with a determination to excel in innovation, technology, and sustainability. The Company has also been listed on the Thailand Sustainability Investment (THSI) index 2022 for the 8th consecutive year for conducting business based on responsible investment, incorporating ESG principles to create sustainable growth and long-term returns for shareholders.

1.4 Risk of Investing in New Businesses

Banpu managed this risk to ensure that its new investments created value for the Company no less than what had been estimated prior to the acquisition. The Company has established an investment decision-making process in which the Investment Committee (IC), comprising executive officers and experts in relevant areas, carefully considers and provides opinions on various aspects of the new investments, such as coherence with the Company's growth strategy, the required return on investment and the project's risk assessment. The Committee regularly monitors investment performance and changes in factors affecting the target rate of return to enable a prompt and effective response to problems while closely monitoring and analyzing its investment portfolio. Banpu also emphasizes the management to achieve synergy between the Company and its new entities via resource planning, staff capacity building, and appropriate restructuring to facilitate change management, resulting in seamless investment while ensuring consistent long-term growth and returns to the strategic plan.

In 2022, Banpu expedited the transition of its business portfolio in alignment with the Greener &

Smarter strategy to cover the entire energy supply chain in order to meet modern consumer demands and create value for stakeholders inside and outside the organization by embracing the ESG principles, which focus on the three pillars of the environment, social, and governance. The Company further expanded its greener energy portfolio by investing in solar farms and floating solar farms domestically and internationally to diversify its business into clean energy, which is in line with the shifting global trends. In addition to the energy business, the Company also feels the urge to incorporate technology in expanding its energy business. The Energy Technology group of businesses spearheading future expansion includes solar rooftop & solar floating development and installation, smart city management, Mobility as a Service (MaaS), development and production of energy storage systems, and energy trading platform. All these will strengthen the Company and cover more comprehensive energy services in the future. By 2025, the Company aims to significantly increase EBIDA contribution from our Greener & Smarter businesses. It will no longer expand investment in coal-related businesses to achieve the business transition according to its strategic plan, which aligns with the global goal and approach to combat climate change, and to create sustainability through its commitment to the ESG principles.

In addition, Banpu invested USD 150 million in a US-based Healthcare Investment Fund in the form of a Founding Limited Partner, focusing on investment in medical and healthcare stocks in the U.S. The strategy is to seek opportunities to increase investment in New S-curve businesses with high potential and growth rates driven by advanced technology. This investment has also laid the foundation for increased knowledge and expertise in new business areas that will expand Banpu's portfolio and increase added value in tandem with the growth plan for existing energy businesses.

2. Financial Risks

2.1 Exchange Rate Risk

The Company follows the risk mitigation plan to mitigate the impact of exchange rate fluctuations at both the corporate and group levels in all countries of operations. The Financial Management Committee convenes to deliberate and choose the suitable financial instruments for each situation. There are measures to balance incoming and outgoing cash flows in foreign currencies as well as adjust its foreign currency forward contracts based on estimated revenues, expenses, and debenture repayments.

As of 31 December 2022, 48% of the Company's denominated debt was in Thai Baht, 46% in US Dollar, 5% in Australian Dollar, and 1% in Chinese Yuan Renminbi. This included capital raised in US Dollar or an amount converted into other foreign currencies to accommodate overseas investments.

2.2 Interest Rate Risk

Banpu has funded its operations with long-term loans in the form of debentures with fixed interest rates and financial institution loans with fixed and floating interest rates. The Company manages interest rate risk by constantly monitoring interest rates in each country where it operates. It also prevents interest rate risk by converting the floating rate to an appropriate fixed rate and manages the ratio of debts with fixed and floating interests to be appropriate to the nature of the Company's businesses.

2.3 Taxation Risk

Banpu pays taxes within the period specified by law to mitigate taxation risks. The Company has created tax guidelines and prepared complete documents for settling tax payments. The investment structure is

regularly reviewed. Additionally, all executives in each country are assigned to closely monitor changes in rules and policies of their respective country, both at the central and local government levels. It includes hiring local legal consulting firms to advise on legal compliance practices.

In the event of taxation disputes with a government agency, the Company would provide the agency with accurate tax information in relation to its business. The Company would also hire expert tax consultants to provide advice and handle disputes when necessary.

2.4 Funding Risk

The Company has investment plans to continuously expand the business in line with the Greener & Smarter strategy, which involves a number of financial obligations that require close and constant monitoring and risk management, as well as prudent investment plans. To obtain funding at a fair cost, the Company created a financial forecast as a financial management tool, estimating and analyzing various financial ratios that will occur in the future to ensure that key financial ratios are at the appropriate level. The Company oversees corporate governance to ensure alignment with the ESG principles and monitors factors affecting financing to acquire funding as planned at reasonable costs.

2.5 Electricity Market Risk

Banpu Power US Corporation (BPPUS), a subsidiary of Banpu, invested in Temple I Combined Cycle Gas-Turbine (Temple I CCGT) Power Plant, which the Company expects to be synergistic with its natural gas production in the U.S. and aligned with the Company's investment direction that focuses on advanced high-efficiency, low-emissions (HELE) technologies. The power plant sells its output in the Electric Reliability Council of Texas (ERCOT) market and is exposed to fluctuations

in the market price of electricity and natural gas. Such fluctuations may pose a financial impact on the Company financially. BPPUS has formulated the Hedging Risk Management Policy and employed appropriate instruments to mitigate risks within the specified scope.

3. Operational Risk

3.1 Risk from Volatility in Coal, Oil, and Natural Gas Prices

Due to volatility in coal, oil, and natural gas prices and its impact on its operating results, Banpu has appointed the Commodity Risk Management Committee (CRMC) to manage the risk. The CRMC analyzes coal, oil, and natural gas price trends and manages the risk by utilizing financial derivatives – coal swap, oil swap, and gas collar option. The Company also closely monitors and assesses the coal market situation and price trends to seek the most opportune time to settle sales contracts with contract customers while taking into account the appropriate proportion of coal under fixed and variable price contracts under index-linked to suit the market conditions at that time.

3.2 Production Risk

The Company stresses mitigating the risk arising from production uncertainty, which is a crucial factor affecting business operations in both the short and long terms. The Company has implemented the following risk mitigation measures to maintain stability and ensure production efficiency and reliability.

- Establishing an operational excellence framework that ensures efficiency, production continuity, and machine and operator safety and supports preventative maintenance

- Deploying digital technology systems to increase efficiency as follows:
 - Developing automation technology for coal mine management and operations to reduce errors in manual systems, lower production costs, as well as improve productivity and production quality
 - Developing Mine Operation Collaboration Application (MOCA) to improve the process of contractor evaluation by using a digital checklist so that involved operators can submit a daily status report to relevant parties and request problem-solving at work sites in a timely manner
 - Developing the IMM Port Logistic Optimization platform that systematically analyzes and processes port logistics data to mitigate the risk of being charged a penalty for shipping delays
 - Developing the Port Operation and Maintenance Management (POMM) system to ensure port readiness to satisfy diverse customer needs and the capacity to continuously operate with maximum efficiency
 - Integrating the automation system, data analytics, and lean operation into managing a large number of natural gas wells to enhance productivity and reduce the production costs

- Performing root cause to improve operational systems in terms of plant reliability and plant efficiency. Power plants have several support systems in place, such as risk-based inspection and predictive maintenance systems, with adequate and appropriate critical spare parts.
- Regularly organizing staff training to enhance their knowledge and competency and promoting knowledge sharing across departments or companies in Banpu Group
- Procuring necessary insurance, such as property damage insurance and business interruption insurance, to prepare for possible incidents

3.3 Occupational Health and Safety Risk

The Company is committed to providing a healthy and safe work environment for all employees and related persons working for the Company, as improper health and safety management can lead to disruptions in production and supply chain. Therefore, to ensure that all Banpu work areas are safe and work environment complies with the principles of occupational health and safety, the Company has implemented occupational health and safety risk management measures as follows:

- Reviewing the effectiveness of each country's occupational health and safety operations on a monthly, quarterly, and annual basis

- Deploying a hazard and risk identification process that covers both routine and non-routine tasks. The Company has established risk mitigation measures according to the hierarchy of controls and developed a risk communication plan as well as a surveillance and monitoring plan.
- Monitoring the work environment through regular assessment according to each operating area's risk factors, such as air quality, noise levels, concentrations of hazardous chemicals, and light intensity, to ensure full compliance with laws
- Establishing occupational health and safety performance as part of the KPIs of Banpu's Chief Executive Officer, including senior executives of all business units and subsidiaries
- Administering health checks for employees and contractors based on their risk factors while maintaining the confidentiality of employee medical information to comply with the Personal Data Protection Act (PDPA).
- Encouraging employees at all levels to get involved in improving safety by voicing their opinions through various channels, e.g., Safety Perception Survey, the Safety Committee, HSEC Family meetings, and the ESG Summit

- Developing a business continuity management system based on international standards such as ISO 22301. Every key business unit must have a business continuity plan and conduct an emergency drill annually. The Company monitors and reviews the performance of the system through internal audits, external audits, and annual management reviews.

During the COVID-19 pandemic in 2022, the Company closely monitored the situation and issued preventive, response, and remedial measures that covered employees in all host countries. The Company supported the Work Anywhere system and adapted to the changing work conditions, such as approval of cash disbursement via electronic channels and the provision of the COVID-19 vaccines. It also set up the Incident Management Team (IMT) for the business units in each country to handle and respond to the COVID-19 crisis.

3.4 Environmental Risk

Banpu formulated the Environmental Policy and related policies, the Greener & Smarter strategy, and short- and long-term sustainable development goals to propel the Company toward achieving the UN's Sustainable Development Goals (SDGs). The Company has adhered to environmental standards and focused on effective resource utilization to conserve natural resources and minimize direct and indirect environmental impacts. It has implemented measures for climate change management, waste management, land utilization, biodiversity conservation, and water resources utilization. In 2022, the following measures were implemented.

Issue	Key Risk Mitigation Measures
Climate Change	<ul style="list-style-type: none"> ● Establishing policies and goals for greenhouse gas management to improve energy efficiency, including the selection of technologies that reduce greenhouse gas emissions ● Setting up the Climate Change Committee and including climate change management as one of the key performance indicators for the CEO and senior management in all relevant business units ● Setting up a Task Force on Climate-related Financial Disclosure (TCFD) with a goal to disclose climate-related financial information based on the TCFD framework by 2023
Production Waste Management	<ul style="list-style-type: none"> ● Announcing the Waste Management Policy as practice guidelines for all business units ● Focusing on waste minimization by conserving, reducing, reusing, recycling, recovering waste, and using waste as fuel to reduce the amount of waste going to incineration or landfills ● Establishing waste management standards in line with international practices and the requirements of each operating country
Land Utilization and Biodiversity	<ul style="list-style-type: none"> ● Announcing the Biodiversity Policy ● Developing a mining plan carefully to minimize the impacts on geographic conditions, biodiversity, and ecosystems by including a mine closure plan from the beginning of the project ● Conducting biodiversity risk assessment annually and using the results as input for rehabilitation planning to minimize the biodiversity impacts ● Developing a biodiversity management plan for all mines with high biodiversity risk to achieve a target of net positive impact on biodiversity upon closure of the mine by 2025
Water Resources Utilization	<ul style="list-style-type: none"> ● Developing a water management plan that covers water withdrawal, water use for production, and water discharge, as well as extending the scope of water management to the river basin level ● Measuring water quality before discharge into the environment both by the Company and external entities ● Assessing water shortage risk in the operating locations based on the data of World Resources Institute's Aqueduct Water Risk Atlas to develop plans and policies to prevent the impacts on the environment and communities in the operational areas and establish community collaboration in managing such risk ● Organizing a project to reduce water utilization in the production process, reuse water, and separate surface water to prevent contamination with wastewater

3.5 Social and Community Risk

The Company has carried out community development activities in every location where it operates, stressing collaboration with its stakeholders, namely communities, government agencies, and other related parties. It has also formulated the Community Development Policy, set management standards, and established strategies and targets for community development activities based on the local government's regulations and relevant international standards such as the UN's Sustainable Development Goals (SDGs). Working with its stakeholders, the Company has carried out community development activities in six key areas: economy, education, hygiene and primary health care, environmental conservation, social and cultural promotion, and infrastructure development. Moreover, the Company has adopted the social return on investment (SROI) framework in measuring the social impacts of its community development projects to maximize the efficiency of its operations in line with its Sustainability Policy.

The Company has implemented the community complaint management system in all business units to ensure systematic management of potential risks. The system includes indigenous peoples management and resettlement management where relocation of communities is necessary. In addition, the Company requires that all operating locations conduct the community perception survey as a standard practice to gather information on community perception and acceptance as well as community concerns and suggestions, which will be used as input for further

improvement. A community satisfaction survey is also required to gather data on quality of life enhancement projects, and the results are used to improve the operations for the benefit and satisfaction of the community. Moreover, the Company implemented a quality assurance review assessed by employees not involved in community development activities to ensure the highest transparency and efficiency.

3.6 Climate Change and Natural Disaster Risks

Natural disasters caused by climate change, such as forest fires, heavy snowfalls, droughts, storms, and extreme rainfalls, have become more frequent and severe. These disasters can affect business operations unless there are adaptation and adequate and appropriate preparedness planning. The Company is well aware of climate change risk, which is a top concern for stakeholders. At the 26th UN Climate Change Conference (COP26) in 2021, member countries agreed on a common goal to limit the rise in the average global temperature, resulting in stricter rules and regulations for greenhouse gas (GHG) emissions in each country. More stringent policies on climate change, such as carbon taxation and renewable energy subsidies, could affect the Company's operations and growth. The Company has considered climate change risks and opportunities and identified key risks and opportunities, both physical and transition risks, following the framework of the Task Force on Climate-related Financial Disclosures (TCFD) to devise a strategic plan, action plans, and mitigation measures in response to this risk as follows:

- Establishing a policy and long-term targets for GHG management since 2010 to increase efficiency in energy consumption and to deploy clean energy technologies
- Closely monitoring rules and regulations for GHG emissions and accommodating changing business environment, including the UN Climate Change Conference, energy policies, and GHG reduction requirements in all countries where the Company has invested
- Formulating climate strategy and practices focusing on four key areas: mitigation of GHG emissions, adaptation to climate change, being a part of a low-carbon society, and participation in the climate change community. The Company set out approaches, timelines, and responsible units to achieve the highest efficiency in strategic plan implementation. Measures taken to reduce GHG emissions are as follows:
 - Setting up the Climate Change Committee to drive and monitor climate-related risk management
 - Considering project development costs by incorporating carbon prices and natural disaster risks of the projects that the Company is investing in so that the management can use the information in making investment decisions; seeking investment opportunities in renewables and other alternative energy sources to minimize GHG emissions and meet the demands of a low-carbon society in order to achieve its GHG emission targets under the Greener & Smarter Strategy.
- Assessing climate-related risks, including the risk and likelihood of natural disasters, forecasting the impact on the Company's assets and operations to prepare risk management measures for potential disaster situations to be submitted to the ESG Committee
- Including disaster risk in its business continuity plan and testing the business continuity plan in various scenarios at different severity levels, as well as purchasing property insurance and business interruption insurance to cushion the impact of potential incidents
- Setting up a Task Force on Climate-related Financial Disclosures (TCFD) with an aim to disclose climate-related information based on the TCFD framework by 2023

3.7 Cyber Threat and Personal Data Protection Risks

The COVID-19 pandemic has led to increased use of digital technology and the Internet of Things when working from home, having online meetings, or storing data in the cloud, which could pose cyber threats to the Company. The threats could lead to serious data breaches or disruption of production, affecting business continuity and the Company's credibility, brand image, and reputation. To manage the risks, the Company implemented the following risk mitigation measures.

- Announcing the Information and Cybersecurity Policy as practice guidelines for employees and educating employees on cyber threats as well as practices and prevention against cyber threats
- Setting up the Security Operation Center to increase the timeliness of threat detection and alerting
- Appointing a Global Information Security Officer (GISO) to oversee the management of personal data protection and information system under the support of the IT unit that is set up at each business unit in all countries
- Activating the Two-Factor Authentication (2FA) for accessing the Company's e-mail and internal work systems
- Rehearsing cyber-incident response and information technology disaster recovery plans annually to enable timely response and mitigate potential impact or damage to the Company's operations
- Raising employees' awareness of various cybersecurity threats, such as practices and preventive measures, and laws related to employees; conducting phishing tests to build employees' phishing awareness when using information systems
- Obtaining an ISO 27001 certification, which is the international standard for information security management systems (ISMS)

- Formulating a PDPA policy that explicitly states the purpose of collection and disclosure of personal data and guidelines for data protection to ensure customers, trading partners, and employees who share personal data with the Company that their privacy is protected and secure

4. Regulatory Change and Compliance Risk

Compliance risk may arise from various factors, for instance, legal complexities, frequent legal changes, misinterpretations of practices, and the foreign language in which a law is written. These can lead to wrong practices and affect the Company's finance and operations, resulting in such penalties as fines and suspension or expulsion of permits. On top of that, the Company's reputation and image can be damaged. Banpu thus prioritizes the management of compliance risk and has entrusted the Corporate Compliance Department with duties to supervise the legal compliance of all units in Banpu Group to ensure strict compliance with applicable laws. Furthermore, the Company manages the risk of policy and regulatory changes in each country by setting up a legal division and/or designating legal consultants in each country to handle legal matters. The Company has also developed the Laws In-Hand application to track and report regulatory changes as well as to alert and communicate with internal departments about newly-issued or amended laws to make them aware of potential effects and know what they are supposed to do.

Emphasizing the pre-caution against corruption risk, Banpu has joined the Thai private sector's Collective Action Against Corruption (CAC), conducted risk assessment, and established corruption risk management guidelines. Furthermore, the Company set up the Personal Data Protection Act (PDPA) Working Group to design a system and procedures to comply with the Personal Data Protection Act (2019) in order to ensure efficient collection, use, and disclosure of personal data. The Company also communicated and educated its employees about these issues.

Additionally, in 2022, the Company announced the Non-Discrimination and Anti-Harassment Policy to create a work environment of mutual respect, where diversity reigns, without any form of discrimination and harassment.

5. Emerging Risks

Emerging risks are risks that have never been in existence or those that the Company has not yet encountered but may cause adverse effects due to unexpected changes in the future, such as political, legal, social, technological, physical environmental, or natural changes. In some situations, the impacts of changes cannot be foreseen, or risks cannot be precisely identified. The Company's growth and expansion investments in more countries bring new challenges and risks. The Company has assessed potential risks and found key emerging risks as follows:

5.1 Risks from the Advancement of Technologies Affecting the Energy Industry

Global trends in lifestyles, economic development, and technological advancement, as well as increased awareness of the importance of renewable energy and the environment, have spawned several technological ideas for the energy transition. These include Carbon Capture, Usage and Storage (CCUS) technology, hydrogen technology, micro-grid systems, renewable energy system, and energy storage system, which contribute to the promotion of alternative energy by the government sector and the technological development of the private sector in the energy industry. The concrete results range from the higher storage capacity of devices and systems, electric vehicles, to lower costs for the renewable energy business as the development of modern technologies progresses. It is both an opportunity and a challenge for the Company to drive the business ahead in line with the rapidly changing business ecosystem. Therefore, the Company has accelerated Banpu Transformation following the Greener & Smarter strategy to timely respond to changing business environment and establish an energy ecosystem that supports its mission to deliver Smarter Energy for Sustainability. It has taken steps to improve preparedness in terms of technology and innovation as follows:

- Restructuring energy portfolio by shifting from conventional energy to greener and smarter energy. Recently, the Company has substantially progressed toward achieving the targets of reducing carbon dioxide (CO₂) and methane (CH₄) emissions. The progress has been made through BKV Corporation (BKV), a subsidiary of Banpu in the U.S., which reached an agreement to develop a Carbon Capture, Utilization and Sequestration (CCUS) project in collaboration with EnLink Midstream, LLC (EnLink), a major mid-stream energy solutions provider (the system for natural gas separation, compression, and transmission pipelines) in the U.S. The project is expected to achieve first injection before the end of 2023, and its operating area will cover the Barnett Shale in Texas. BKV expects the project to mitigate emissions from its owned and operated upstream operations and intends to use the project as a prototype for modular projects that can be repeated and quickly scaled, reinforcing Banpu's "Smarter Energy for Sustainability" stand point.
- Implementing Digital Transformation to increase competitiveness by establishing the Digital Center of Excellence to drive digital transformation and agile working for work process development. For example, the Company developed Mine Operation Collaboration Application (MOCA) to improve the process of contractor evaluation by using a digital checklist, enabling involved employees to submit a daily status report to relevant parties and request to solve problems at work sites in a timely manner.
- Deploying high-efficiency, low-emissions technologies in the production process, e.g., the Combined Cycle Gas Turbines (CCGT) technology

of the Temple I natural gas power plant in the U.S. and the Integrated Gasification Combined Cycle (IGCC) of the Nakoso IGCC power plant in Japan. These technologies increase fuel efficiency and reduce emissions, reflecting the Company's focus on investment in greener energy and energy technology businesses to meet the future demand for greener and smarter energy with cutting-edge technologies.

- Continuously developing employees' skills and knowledge of energy and digital technologies; cultivating a work ethic based on Banpu Heart, which fosters experimenting, learning, resilience and continuous improvement. The Company has also recruited digital specialists from different countries to work in the Digital Capability Centers (DCC) in order to improve employee cooperation and create workplace innovations.

5.2 Supply Chain Risks

Geopolitical conflicts, nationalist policies, the threat of recession, and fluctuations in foreign exchange and interest rates can lead to unexpected changes in laws, taxation, embargoes, and strict law enforcement, which could jeopardize the Company's supply chain. Banpu is well aware of supply chain risk and its importance. The Company has thus initiated supplier management in accordance with the Sustainable Supply Chain Policy to achieve its goal of creating sustainable value throughout the supply chain. Targets in safety, occupational health, environment, social, and corporate governance operations are integrated with supply chain management strategy and relevant policies. The Company has constantly sought to improve the supply chain and reduce potential risks. In 2022, the Russia-Ukraine conflict prompted the Company to assess the risks and impacts that may

arise from the conflict. It prepared production inputs by adequately and properly stocking critical spare parts and entered into long-term coal purchase contracts to secure coal supply for power generation and maintain adequate coal stocks for power plants. To cater to various customers' needs, the Company has adjusted the power plant' operating system to be flexible, suitable, and consistent with customers' needs. It has good customer relationship management and looks for opportunities to attract new customers and invest in new businesses in order to increase sustainability and align with the Greener & Smarter strategic plan.

Apart from that, the Russia-Ukraine conflict has pushed up oil prices and boosted demand for other alternative energy sources, causing coal and natural gas prices to rise. Since more countries are shifting to coal for power generation, it is the opportune time to make more income as market prices rise. In 2022, Banpu's coal sales rose to 42 million tonnes from 36 million tonnes in the previous year. The Company addressed this risk by utilizing oil swap as an instrument to mitigate the impact on production costs. It also closely monitors and assesses the coal market situation and price trends to seek the most opportune time to settle sales contracts with contract customers while taking into account the appropriate proportion of coal under fixed price and variable price contracts under index-linked to suit the market conditions at that time.

DRIVING BUSINESS FOR SUSTAINABILITY

Sustainability Goals and Policy

Believing in its business credo, “An industry will be strong only when it is developed in tandem with social and environmental responsibility,” the Company adheres to corporate governance and aims to strike a sustainable balance between economy, society, and environment. The Company adopted international practices in developing its sustainability strategy to enhance business competitiveness and create value for all stakeholders.



For complete information on “Sustainability Goals and Policy”, [please scan the QR code](#) or click on ‘CLICK HERE’.

To create sustainable values for stakeholders, the Company set up the Environment, Social, and Governance Committee (ESG Committee), of which all members are independent directors. The Committee supports the Board of Directors on the supervision of ESG topics and convenes on a

quarterly basis. The Company also set up the Sustainability Committee, which comprises senior management and heads of business units in all countries where it operates. The Chairperson of the Committee is the CEO, who is also a Board member.

	Roles and Responsibilities	Performance Indicators
Board of Directors	<ul style="list-style-type: none"> Oversee compliance with relevant laws and regulations Establish the KPIs for CEO and evaluate the CEO's performance Review and monitor management of significant ESG risks Review and monitor stakeholder engagement and materiality assessment 	<ul style="list-style-type: none"> Meeting attendance Performance score of the Board of Directors
ESG Committee	<ul style="list-style-type: none"> Oversee the Company's ESG policy, management, and performance Review and monitor stakeholder engagement and materiality assessment to ensure that all stakeholder expectations are identified and included in the materiality assessment and are managed properly Review and monitor the management of significant ESG risks to ensure effective ESG management Oversee the Company's ESG disclosures 	<ul style="list-style-type: none"> Meeting attendance Performance score of the ESG Committee Comprehensiveness of material ESG topics considered

	Roles and Responsibilities	Performance Indicators
Chief Executive Officer (CEO)	<ul style="list-style-type: none"> Ensure the implementation of the Sustainability Policy and integration of ESG strategy into business operations Establish KPIs for senior executives and evaluate their performance 	<ul style="list-style-type: none"> The number of material ESG topics included in the Company's ESG goals The number of ESG goals set as KPIs for senior executives ESG performance of the Company
Sustainability Committee	<ul style="list-style-type: none"> Review ESG topics which are global concern Review stakeholder analysis and material topics Monitor and evaluate ESG or sustainability performance for the past year Formulate and review policy or management standards, and set goals to enhance competitiveness and ensure that the Company grows in tandem with social and environmental responsibility 	<ul style="list-style-type: none"> Meeting attendance ESG performance of the Company
Senior Executives and Heads of Business Units	<ul style="list-style-type: none"> Review related policies and strategies Monitor the ESG performance of the business units Ensure the achievement of ESG goals 	<ul style="list-style-type: none"> ESG performance of each business unit

Led by its vision to become “The Asian energy company at the heart of innovation, technology, and sustainability,” Banpu strives to create sustainable value and stakeholder confidence with its responsibility for society and the world. The Company adopted sustainability principles as well as the environmental, social, and governance (ESG) practices at national and international levels in developing its Sustainability Policy by:

- Integrating the UN Sustainable Development Goals (SDGs) and the UN Global Compact Principles in determining focal areas for sustainable development

- Taking the UN Guiding Principles on Business & Human Rights and Universal Declaration on Human Rights as inputs for developing the Human Resource Management Policy and the Human Rights Policy
- Using the Environmental, Social, and Governance performance results assessed by external rating agencies, such as MSCI ESG Ratings Assessment and S&P Global Corporate Sustainability Assessment, as part of the Company's performance review



Banpu and Sustainable Development Goals

SUSTAINABLE DEVELOPMENT GOALS

Previous Achievements

- 6-3** **6-4** **6** CLEAN WATER AND SANITATION
- Water baseline data is available at all business units
 - Zero significant tailing spills
 - Zero hazardous waste disposal by landfill

- 7-2** **7** AFFORDABLE AND CLEAN ENERGY
- 0.66 GW renewable energy
 - 0.25 GW energy of solar rooftop
 - 700 MMcfed shale gas production

- 8-7** **8-8** **8** DECENT WORK AND ECONOMIC GROWTH
- Zero occupational fatalities
 - More than 50% of spending on local suppliers

- 12-4** **12** RESPONSIBLE CONSUMPTION AND PRODUCTION
- SO₂ emissions intensity less than 30 g/tonne for mining business
 - SO₂, NO_x, TSP emissions intensity less than 76.6, 118.4, and 23.0 g/MWh for thermal power business

- 13-1** **13-2** **13** CLIMATE ACTION
- Integrate internal carbon pricing in investment decision

- 15-1** **15-2** **15-5** **15** LIFE ON LAND
- All business units assessed for potential impact on biodiversity
 - More than 90% of revegetation against plan for mining business

- 17** PARTNERSHIPS FOR THE GOALS
- All community development projects are linked to the SDGs

Long-term Targets

- 2022**
- Hazardous waste disposal less than 6 tonnes for thermal power business
 - Intensity of non-hazardous waste disposal less than 0.130 kg/MWh of for thermal power business
- 2023**
- Intensity of hazardous waste disposal less than 0.010 kg/tonne and non-hazardous waste disposal less than 0.140 kg/tonne

- 2025**
- More than 1.1 GW renewable energy production capacity

- 2021**
- More than 70% of business units assessed for human rights risks
- 2025**
- Lost time injury frequency rate (LTIFR) of employees less than 1.99 and contractors less than 0.14
 - High-consequence injuries rate (employee) less than 0.06
 - Zero high-consequence injuries rate (contractor)

- 2025**
- 5% energy intensity reduction from 2019 for mining business

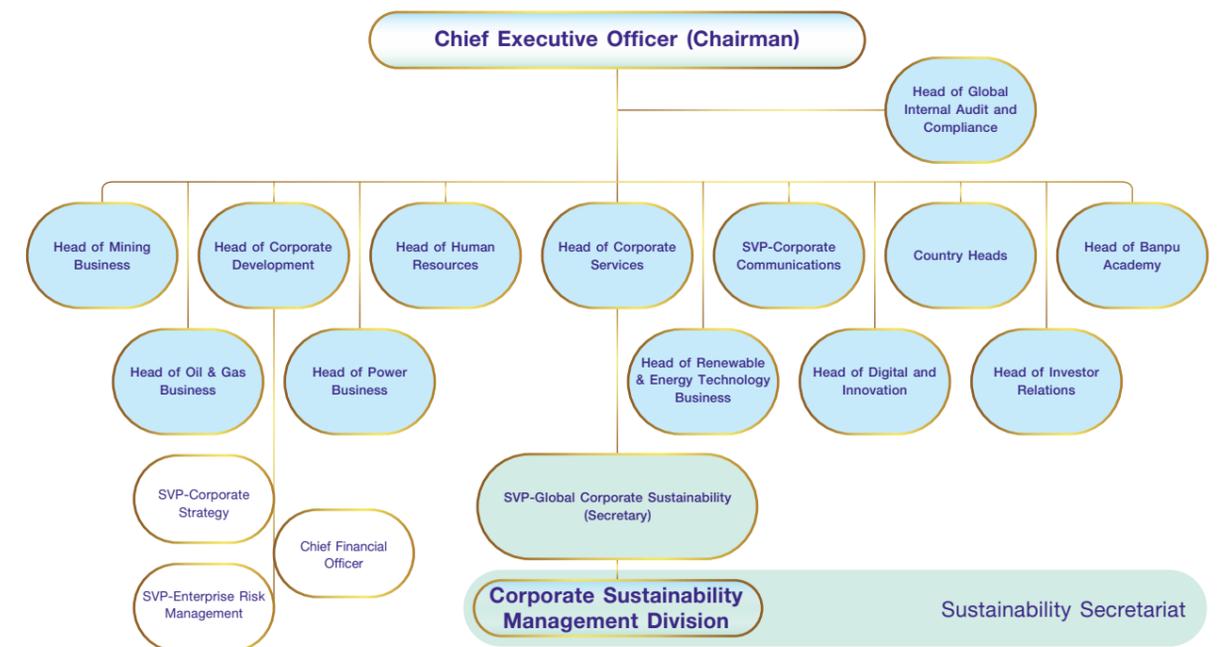
- 2025**
- 7% GHG emissions intensity reduction from Business as Usual (BAU) for mining business
 - 20% GHG emissions intensity reduction from Business as Usual (BAU) for thermal and renewable power businesses

- 2025**
- Net positive impact on biodiversity upon closure of the mine identified as high potential for biodiversity impact

In driving sustainability, the Company integrated significant ESG topics as part of annual KPIs for the CEO and senior executives of every business unit. The Board of Directors is in charge of establishing the CEO's KPIs, covering both financial and ESG aspects, of which ESG KPIs are accountable for 30% of the total KPIs. ESG KPIs include, for example, employee engagement level, the number of significant complaints on corporate governance topics, the

number of cybersecurity incidents, the amount of GHG emissions reduced, and the number of occupational fatalities. Senior executives' KPIs are developed to align with the CEO's KPIs. The performance of the CEO is evaluated by the Board of Directors while that of senior executives is evaluated by the CEO. Meanwhile, the sustainability performance indicators are also used as part of business unit heads' performance evaluation.

Sustainability Committee



Remark : As of 31 December 2022

To ensure smooth sustainability management, the Sustainability Committee convenes biannually to review and evaluate the ESG performance of each business unit against the goals as well as to review the stakeholder analysis and materiality assessment. The results will then be reanalyzed along with the Board's advice on policies or approaches to formulate additional policies, management standards, or practices in order to enhance sustainability and maximize stakeholder value in the following year.

The Company has disclosed its sustainability strategies and performance, covering significant ESG topics, to stakeholders through a sustainability report since 2011. The previous sustainability reports are

available both in hard copy and online versions, of which the latter can be accessed via the Company's website. The Company prepares its sustainability report based on the GRI Standards and has the report and sustainability performance information verified by a third party agency to ensure that the reporting is in accordance with the GRI Standards and the performance information meets all the mandated requirements.

With a long-term commitment to ESG in its business operations, Banpu has been recognized by leading sustainability rating organizations both nationally and globally as follows:

Global Recognition

Member of
Dow Jones Sustainability Indices
Powered by the S&P Global CSA

The Company was recognized as a member of the Dow Jones Sustainability Indices (DJSI) for the 9th consecutive year.



The Company received an ESG A rating (on a scale of AAA-CCC) in the MSCI ESG Ratings assessment.

Sustainability Award Gold Class 2022
S&P Global

The Company maintained “Gold Class” in Coal & Consumable Fuels for the 8th consecutive year from the S&P Global Sustainability Yearbook 2022.



The Company received an excellent corporate governance award in the category of ASEAN Asset Class PLCs from 2021 ASEAN Corporate Governance Scorecard (ACGS), organized by the ASEAN Capital Markets Forum (ACMF) and the Asian Development Bank (ADB), in collaboration with Thai Institute of Directors Association (IOD)

National Recognition



The Company maintained one of the companies in the Thailand Sustainability Investment by the Stock Exchange of Thailand for the 8th consecutive year.



The Company was ranked one of the top listed companies with excellent corporate governance scoring according to the Corporate Governance Report of Thai Listed Companies in 2022, developed by Thai Institute of Directors Association (IOD) with support from the Stock Exchange of Thailand.



The Company received Sustainability Awards of Honor from SET Awards 2022 in the category of Sustainability Excellence for the 5th consecutive year.



The Company received “Rising Star” in Low Carbon and Sustainable Business Award for the first time from Thailand Greenhouse Gas Management Organization (Public Organization).

MANAGEMENT OF STAKEHOLDER IMPACTS IN BUSINESS VALUE CHAIN

Business Value Chain

Banpu operates businesses in Asia-Pacific region, harnessing the ecosystem in which 3 core business groups are integrated, namely energy resources, energy generation, and energy technology.

- Energy resources group consists of open-pit and underground coal mines based in Indonesia, Australia, and China to respond to customers in the industrial sectors and the power plants in Asia and Europe, and shale gas business based in the U.S. The produced gas will be collected and transmitted through pipelines for distribution to power plants and households in the U.S.
- Energy generation group consists of thermal and renewable power generation businesses deploying High Efficiency, Low Emissions (HELE) technologies to strengthen energy security of industrial sectors and households. The production bases are in China, Thailand, Japan, the U.S., and Lao PDR. The Company also operates renewable power generation from solar and wind energy to meet the demand for clean energy. Currently, the production bases are in China, Japan, Australia, and Vietnam.
- Energy technology group comprises rooftop and floating solar power generation businesses which are in Thailand, China, Vietnam and Indonesia; energy storage system business based in China in response to industrial sector’s energy demand and the new lithium-Ion battery assembly plant in Thailand; energy trading business through a digital platform to effectively respond to future electricity consumption; e-Mobility business for transportation systems according to the Mobility-as-a-Service (MaaS) concept; smart city & energy management business connecting clean energy utilization and energy optimization.

Banpu is well-positioned as “an International Versatile Energy Provider.”

<p>Energy Resources Group</p>	<ul style="list-style-type: none"> • Mining • Gas 	
<p>Energy Generation Group</p>	<ul style="list-style-type: none"> • High Efficiency, Low Emissions (HELE) • Renewable 	

**Energy
Technology Group**

- Solar Rooftop and Floating
- Energy Storage System
- Energy Trading
- E-Mobility
- Smart City & Energy Management

Stakeholder Analysis in Business Value Chain

The Company implemented Stakeholder Analysis in accordance with AA1000 Stakeholder Engagement Standard (AA1000SES) with three key principles of

stakeholder inclusivity, materiality, and responsiveness. Each business unit is responsible for stakeholder analysis in relevant areas to its operation. The results will be gathered and reanalyzed at the organizational level under the supervision of the Sustainability Committee.

Stakeholders	Engagement Channels	Stakeholders' Issues of Interest
Employee	<ul style="list-style-type: none"> ● Communication between the Company and employees through several channels ● Involving employees through establishment of various committees ● Whistleblower channel ● Survey on the alignment of employee behaviors with corporate culture ● Employee engagement survey ● Town hall meeting 	<ul style="list-style-type: none"> ● The Company's business direction ● Business ethics and responsibility to employees ● Happiness in the workplace ● Fair compensation, welfare, and benefits ● Opportunity for career growth and security ● Capability development ● Safety in the workplace
Community	<ul style="list-style-type: none"> ● Community Consultative Committee (CCC) ● Community satisfaction survey ● Whistleblower channel ● Communication through community development officers ● Publishing information on the website 	<ul style="list-style-type: none"> ● Social and environmental impacts from the Company's activities ● Safety in life and residence ● Respect for community rights ● Improvement of quality of life and income generation for the community

Stakeholders	Engagement Channels	Stakeholders' Issues of Interest
Customer	<ul style="list-style-type: none"> ● Customer satisfaction survey ● Whistleblower channel ● Visit on various occasions ● Response to requests for data disclosure ● Report on the annual maintenance plan and emergency drill 	<ul style="list-style-type: none"> ● Quality and price of products ● On-time product delivery ● Social and environmental impact from the use of products ● Availability of products and services ● Personal data breaches ● Collection and use of customer data
Government	<ul style="list-style-type: none"> ● Visit on various occasions ● Participation and promotion of activities organized by the government sector ● Response to requests for data disclosure ● Publication of annual report and sustainability report ● Publishing information on the website 	<ul style="list-style-type: none"> ● Value creation for economy and society ● Business ethics ● Data transparency and disclosure ● Legal and regulatory compliance ● Natural resource optimization ● Supply chain management ● Potential social and environmental impact from the Company's activities ● Driving SDGs into practices
Supplier	<ul style="list-style-type: none"> ● Regular meeting with suppliers 	<ul style="list-style-type: none"> ● Transparent procurement process and fair compensation ● Future opportunity to work with the Company ● Personal data breaches
Contractor	<ul style="list-style-type: none"> ● Regular meeting with contractors ● Annual contractors meeting 	<ul style="list-style-type: none"> ● Transparent procurement process and fair compensation ● Safety in the workplace ● Energy reduction in the production process ● Future opportunity to work with the Company
Financial Institution	<ul style="list-style-type: none"> ● Analyst meeting ● Publication of annual report and sustainability report 	<ul style="list-style-type: none"> ● Business transparency ● Operating results and business growth
Business Partner	<ul style="list-style-type: none"> ● Board meeting at subsidiaries and associated companies ● Publication of annual report and sustainability report ● Report on the annual maintenance plan and emergency drill 	<ul style="list-style-type: none"> ● Business transparency ● International reputation ● Operating results and business growth ● Business continuity

Stakeholders	Engagement Channels	Stakeholders' Issues of Interest
Shareholder	<ul style="list-style-type: none"> Annual general meeting of shareholders Publication of annual report and sustainability report Whistleblower channel Publishing information on the website 	<ul style="list-style-type: none"> Qualifications of the Board of Directors and the management Business transparency Risk and opportunity and management Research & development to enhance competitiveness Operating results and business growth
Investor	<ul style="list-style-type: none"> Investor roadshow Presentation on Opportunity Day organized by the Stock Exchange of Thailand Publication of annual report and sustainability report Publishing information on the website 	<ul style="list-style-type: none"> Qualifications of the Board of Directors and the management Business transparency Value creation for the economy, society, and environment Risk and opportunity and management Operating results and business growth
Media and NGOs	<ul style="list-style-type: none"> Response to requests for data disclosure Fact sheet summary Publishing information on the website Media activities and events 	<ul style="list-style-type: none"> Economic and social value creation Business ethics Transparency and information disclosure Legal and regulatory compliance Potential social and environmental impact from the Company's activities

The assessment and prioritization of material topics are carried out according to the management standard developed consistent with the Global Reporting Initiative (GRI) Standards and AA1000 AccountAbility Principles Standard (AA1000APS), while taking into consideration the impacts on

the Company, environment, human resources and society, covering the aspects of ESG (Environmental, Social and Governance) or interests of the Company's stakeholder. The material topics are annually reviewed and approved by the Environment, Social and Governance (ESG) Committee.

Materiality Matrix 2022-2023



- | Governance | Environment | Social |
|----------------------------------|---------------------|----------------------------------|
| 1. Sustainability Governance | 12. GHG Emissions | 19. Employee Engagement |
| 2. Business Ethics | 13. Energy | 20. Human Capital Development |
| 3. Digital Transformation | 14. Air Emissions | 21. Occupational Health & Safety |
| 4. Supplier Management | 15. Waste | 22. Human Rights |
| 5. Customer Management | 16. Biodiversity | 23. Community Engagement |
| 6. Economic Distribution | 17. Water | 24. Mine Closure |
| 7. Reliability of Power Plants | 18. Mine Subsidence | 25. Community Development |
| 9. Compliance | | |
| 10. Risk Management | | |
| 11. Data Privacy & Cybersecurity | | |

SUSTAINABILITY MANAGEMENT - ENVIRONMENTAL ASPECT

Environmental Policy and Practices

Banpu is committed to business sustainability and has integrated the Environmental, Social, and Governance (ESG) principles into its business operations. The environment (E) aspect is one of the Company's top priorities as it is fully aware of potential environmental impacts caused by its business. Hence, the Company strives to manage the environment with an aim to maximize benefits for all involved parties, for instance, strict legal compliance, continuous commitment to mitigation of environmental impacts, regular assessment and monitoring of environmental risks, and management of current risks as well as the risks that may arise, environmental conservation and natural resources optimization, improvement of environmental performance, and environmental reporting to stakeholders.



For complete information on "Environmental policy and practices", **please scan the QR code or click on 'CLICK HERE'**

The Company has established the Environmental Policy and other related policies, the Greener & Smarter strategy, as well as short and long-term sustainable development goals to drive the Company toward the UN Sustainable Development Goals (SDGs). The environmental aspects that the Company focuses on covering Goal 6: Clean water and sanitation, Goal 12: Responsible consumption and production, Goal 13: Climate action, and Goal 15: Life on land. This is to ensure that the Company can sustainably generate added value for stakeholders and to accentuate the ESG principles. In the past year, the Company conducted an assessment of climate change and water risks at all business units. It also has a plan to continuously expand the assessment to cover other environmental aspects.

Climate change risk is one of the risks the Company has reviewed and prioritized; therefore, climate change management is set as one of the KPIs of the Chief Executive Officer and senior management in all involved business units. The Company set up a Climate Change Committee to implement climate change management, emphasizing four measures,

namely, reduction of GHG emissions, adaptation, being part of a low-carbon society, and joining efforts with other organizations to combat climate change. In 2021, the Company announced the target to reduce greenhouse gas (GHG) emissions in normal operations of each business unit and integrated the energy management plan into its GHG management plan to achieve the highest energy efficiency. In addition, the Company declared its support for the Task Force on Climate-related Financial Disclosure (TCFD) in 2020. It also set up the TCFD Working Group to assess climate-related risks and impacts on the Company's financial statements, mitigation measures for such impacts, and long-term GHG emissions reduction targets. The Company plans to disclose its first "Report on Climate Change" in 2023.

In addition, the Company places importance on emissions of other air pollutants such as particulate matter, sulfur dioxide (SO₂), and nitrogen oxides (NO_x) from its business, realizing they can impact the environment and the health of local people in the surrounding communities. For its power business, the Company controls pollutants at their sources

using engineering control, such as circulating fluidized beds, improving the air quality control system at its power plants, and deploying state-of-the-art and efficient technologies such as technology for trapping sulfur dioxide and nitrogen oxides at smokestacks and electrostatic precipitators for dust trapping. Continuous emission monitoring systems were installed at smokestacks and in surrounding communities to ensure that the ambient air quality always meets legal standards. In its mining business, the Company prevents and reduces emissions by regularly maintaining power generators to prevent incomplete combustion. It also emphasizes pollution control at the source by various methods, such as using conveyors instead of trucks to transport coal, spraying roads and coal stockpile areas with water, regular maintenance of motor vehicles, and limiting the speed of vehicles in mining areas. Technology is deployed to manage traffic flow and water spraying to improve the efficiency of dust control. Apart from that, the Company regularly checks the ambient air quality in the mining areas and surrounding communities.

Water is one of the natural resources that the Company places importance on due to its limited volume and the fact that it is the major raw material for Banpu's business. The Company has developed a water management plan covering diverting water from water sources, water utilization in production, and discharging water into the environment. In order to achieve its long-term target of reducing product water footprint, the Company has expanded the scope of water management to include river basins, starting from analyzing water balance at each business unit, developing the standard practices for water management, to conducting a water footprint assessment of the power business. The Company also has measures to assess the quality of water before discharging it into natural water bodies. The assessment is conducted by Banpu itself and external agencies to ensure that the discharged water meets legal requirements. In addition, the Company has continuously assessed the locations of its business unit whether they are in areas of water stress, according to the World Resources Institute's (WRI) Aqueduct Water Risk Atlas. The assessment in 2022 revealed that 27% of its business units are located in water-stressed areas.

Meanwhile, the Company focuses on waste reduction by means of prevention and minimization, reuse, recycling, and other recovery, aiming to reduce waste disposed into landfills or by incineration. The Company has set waste management standards to comply with international practices and laws and regulations of each country where the Company operates. It also prepared a waste management flow diagram as a reference for gathering waste information and monitoring waste management. For certain wastes in particular businesses, such as overburden and sediments from mining, the Company set control measures through the preliminary risk assessment carried out prior to the beginning of operations. In addition, the Company prepared mining waste management standards to cover the stage prior to mining operations until mine closure.

Realizing the impact on the ecosystem and biodiversity caused by open-pit mining, the Company established a management system consisting of four approaches, namely avoidance, reduction, restoration, and offsets, which is in line with the concept of the International Union for Conservation of Nature (IUCN). The Company also conducted a preliminary biodiversity risk assessment in all business units before introducing any production activities. The assessment considered whether the areas were protected areas or had high biodiversity. The Company also surveyed the species in these areas to help preserve the native species as well as the species on the IUCN Red List. In case a business unit experiences high biodiversity risk, the Company will evaluate the biodiversity value using standards compliant to the Convention on Biological Diversity and develop a biodiversity management plan to achieve its target, which states that from 2025 every mine with high biodiversity risk must achieve a net positive impact upon mine closure.

Additionally, the Company integrated mine subsidence into underground mine planning in the areas prone to mine subsidence from mining. The Company submitted the mining plan, including mine subsidence management, to involved government agencies for approval before starting mining operations and regularly monitors mine subsidence and its impacts.

Environmental Performance

In 2022, the Company formulated operational strategies to achieve its environmental targets in each area. It disclosed environmental performance data, whose accuracy and reliability were verified by third-party auditors from Lloyd's Register International (Thailand) Co., Ltd. The Company adopted a verification and reporting approach based on the GRI Standards at the core, with additional indicators: G4 Mining and Metals Sector Disclosures and G4 Electric Utilities Sector Disclosures. They consist of the Company's and subsidiaries' GHG emissions (Scope 1-3), energy consumption, air emission, water management, and waste management. The Company disclosed all the above environmental performance data in the Sustainability Report 2022.

Climate Change

Banpu implemented climate change management corporate-wide and included it as one of the key performance indicators for the CEO and senior executives of all related business units. It also established the Climate Change Committee to implement GHG management strategies. In 2022, the Company was preparing to disclose information according to the recommendations of the Task Force on Climate-related Financial Disclosure (TCFD). The Company also set up the TCFD Working Group to assess climate-related risks and their financial impacts as well as the mitigation measures and establish long-term GHG emissions reduction targets. In addition, the Company set up the ESG Committee, consisting of three independent directors, who will be accountable to the Board of Directors for overseeing ESG aspects and driving ESG performance to achieve the targets with the highest efficiency. The Company has set a target to reduce GHG emissions intensity by 7% from business as usual for mining and 20% for thermal and renewable power generation by 2025. In addition, in 2022, Banpu extended the GHG emissions assessment to cover Scope 3 emissions, including the assessment of climate-related risks and opportunities for future management of climate impacts.

Energy Consumption

The Company has integrated the energy management plan with the GHG management plan to optimize energy consumption. In 2022, it maintained the proportion of alternative energy consumption (B30 biodiesel) at Indonesian mines and improved the energy efficiency of its combined heat and power plants in China. As a result, the project could increase power generation capacity and reduce energy intensity by approximately 10%. In addition, the combined heat and power plants in China have carried out a project to recycle exhaust gases to reduce energy and heat loss in the power generation process.

Air Emissions

The Company reported air emissions data from two sources: point sources and non-point sources. As for point sources, the Company has constantly implemented measures to control pollutants at the source. In 2022 the Company replaced the De-NO_x Catalyst in the air pollution treatment system at the combined heat and power plants in China, resulting in a consistent efficiency of the capture system. The Company has also installed an online dust monitoring system at all mine sites in Indonesia to manage a water spraying plan to improve dust control efficiency and reduce potential complaints from surrounding communities. Moreover, ambient air quality at mining sites and in communities is regularly monitored by a third party to ensure that the air quality meets legal standards.

Water Management

The Company has developed a database for water consumption and water balance in each business unit. It also formulated the Standard Practice Manual: Water Management, which applied a water management hierarchy encompassing elimination, reduction, and reuse and recycling to reduce environmental impacts from the use of water from natural sources. The Company has conducted a product footprint assessment of water used in the

power business to be used as a database for internal water management. In addition, the Company worked with external agencies involved with basin management. For example, Centennial, a subsidiary of Banpu in Australia, worked with Energy Australia to develop a water treatment project to recycle water discharged from Springvale and Angus Place mines for the Mount Piper Power Plant's cooling system. The project aims to control the amount of water discharged from Springvale mine to the Coxs River within legal requirements. At the same time, it can reduce the amount of water pumped from natural sources to the Mount Piper Power Plant. This project helps increase the amount of water in the basin, which is of good quality and sufficient for other users. It also helps enhance the biodiversity of aquatic animals and plant species in the basin. The Company has continuously assessed the locations of its business units, whether they are in areas of water stress, according to the World Resources Institute's (WRI) Aqueduct Water Risk Atlas, to assist water management planning in the production process. The Company also engages stakeholders in reducing the potential impacts of water shortage and sufficiently preserving the water resource for the consumption in all sectors, for example, by encouraging key suppliers to assess water-related risks and formulate annual prevention and mitigation measures. In 2022, the Company conducted a product water footprint assessment of its power business to be used as a database for internal water management.

Waste Management

The Company strictly complies with the waste management laws of each country where it operates. It also applies the waste management hierarchy, which encompasses prevention and minimization, reuse, recycling, and other recovery, to mitigate the environmental impact of waste disposal. In 2022, the Company implemented waste management in the

production process according to the Waste Management Policy and Manual to minimize waste in the production process and promoted the reuse and recycling of waste through various projects. For example, the Company introduced the project to recycle waste from other industries into an alternative fuel for the combined heat and power plants in China to reduce landfill disposal and coal consumption. In addition, the Company has developed the process flow of waste management that covers the entire value chain of the mining business in Indonesia and the power business in China to assist in waste management planning and monitoring as well as data collection.

Environmental Incidents

In 2022, there was a report of a significant environmental incident: a crack was detected above the underground mining area of the Airly mine in Australia. The investigation of the incident revealed that it was caused by mine subsidence in the area. The Company has repaired and restored the cracked area and set a long-term plan to prevent future occurrences. In addition, the Company has established a fund of AUD 150,000 to support the New South Wales Department of Planning and Environment in restoring the area.

In addition, the Company also places importance on land management. It has set targets and monitored operations on related issues, including post-mining management, biodiversity, and mine subsidence.

For more information on "Environmental Performance", please read the Sustainability Report 2022 from Company's website **by scanning the QR code or clicking on "CLICK HERE"**.



SUSTAINABILITY MANAGEMENT - SOCIETY ASPECT

Social Policy and Practices

Community Policy and Practices

The Company adheres to the business credo that “an industry will be strong only when it is developed in tandem with society and environmental responsibility.” Accordingly, the Company promotes community participation through engagement activities among relevant stakeholders, including communities, government authorities, and involved organizations. This implementation is in line with the Company’s Community Development Policy, whose primary aim is to improve the quality of life and well-being of local communities, empower the communities to become self-reliant in the long run and gain community acceptance.



For complete information on “Community Development Policy”, [please scan the QR code](#) or [click on ‘CLICK HERE’](#)

To align all community engagement activities in the same direction, the Company established the Community Engagement Policy and standard practices. It also devised strategies and set targets for the community engagement activities based on the local government’s regulations and international standards, such as the UN’s Sustainable Development Goals (SDGs). Under the collaboration of communities, the community engagement activities are carried out in six major areas: economy, education, sanitation and primary health care, environmental conservation, social and cultural promotion, and infrastructure development. Moreover, the Company has employed the Social Return on Investment (SROI) framework in evaluating the social impacts of community development activities to maximize the efficiency of its operation in line with its Sustainability Policy.

● Community Engagement Implementation

The Company has formulated the Community Engagement Standard Practice Manual, which includes the guidelines on the development of local communities’ quality of life and the mitigation of social and community impacts. The manual provides community engagement officers with clear operational guidelines of the same standards for all areas of operations. In addition, the guidelines are regularly updated to properly respond to changing situations.

● Community Baseline Data Collection

The Company has determined to collect baseline community data during the early stages of business operations and to update it on a regular basis in order to study and better understand the environment, way of life, and well-being of

the community. Then, the matter will be brought up for consultation with the community consultative committee or community representatives to develop a specific community engagement plan as the community needs are identified and mutual benefit objectives are established.

● Application of Social Impact Assessment

The Company gives great importance to the impact that will occur on the community and, therefore, has established a social impact assessment in all business units prior to the commencement of the project. The information obtained from the assessment will be used to design activities that respond to community needs by mainly reducing or avoiding their impact on the community, including comparing the relief from the impact before leaving the operating area at the end of the concession. Furthermore, if project specifies change during the process, the Company has scheduled a new social impact assessment to align with the modified production activities.

● Promotion of Community Engagement

The Company places importance on community engagement at every stage of development, pre-development, development, and post-development, emphasizing the engagement of community members for community activity design, implementation, monitoring, and review, including evaluation, i.e. drawing up the community engagement plan that meets community needs and is consistent with the government’s development plan. The Company and the community jointly established a Community Consultative Committee (CCC), which consists of representatives from the local government, local communities, and the Company. The committee collaboratively works on project planning, monitoring progress, and solving problems for the greatest benefit to society.

● Building Community Engagement

The Company has cooperated with contractors on community engagement work as many of them have been carrying out community engagement implementations. The Company has worked with them from the planning process, budget allocation, and staff allocation to exchange knowledge, expertise, and information. The cooperation enhances efficiency and widely benefits local communities while reducing redundancies of its social engagement management.

● Community Complaint Management

The Company has devised the Community Complaint Management System to enable systematic management of community complaints across the business. This approach covers indigenous peoples management and local community restoration under resettlement management in the event of inevitable project-related displacement. Also, the Company has specified that the outcomes of community complaint management be reported on a regular basis to the sustainability committee and the Company’s ESG committee.

● Community Perception and Satisfaction Surveys

The Company has held the community perception survey as a common practice in all areas of operations to measure the community’s levels of awareness and acceptability, community concerns, and suggestions from communities. The survey results will be used in improving the operations for the benefit and overall satisfaction of the community. In Indonesia, a community satisfaction survey on community engagement programs is performed annually for Banpu subsidiaries; the results enable the Company to understand their satisfaction levels and how to efficiently enhance community engagement initiatives.

● Quality Assurance Review

The Company has its employees who are not involved with community engagement work to perform the quality assurance review to achieve the highest transparency and efficiency. The annual review enables the Company to identify areas of improvement so that it can improve the efficiency of the community engagement implementation.

Community Performance

In 2022, the Company convened 26 community advisory committee meetings with all villages in its operational areas in Indonesia and 18 mining group-level subcommittee meetings in Australia. It was found from those meetings that most communities in Indonesia wanted to improve their quality of life in the areas of health and economy while communities in Australia concerned about ground water, ongoing employment, and energy security. In 2022, the Company has recorded 97 significant complaints from communities in Australia and Vietnam. For Australia, there were 95 significant complaints, which related to 2 main issues as noise from ventilation fan (87) and surface cracking (8). Focusing on the cracking issue, the complaints have been resolved and closed in the system. The noise issue, on the other hand, is now the subject of engineering work, which is expected to be completed by the middle of 2023. For Vietnam, the complaint is about oil leakage from wind turbines into shrimp farms. At present, the engineering work is currently being completed while compensation is negotiated. The Company values transparency in resolving such issues and keeping complainants informed of its progress. This involves communication through community consultative committees and reporting the results to the appropriate state authorities. In addition to the above, the Company has not received any significant complaints from other business units. Moreover, in alignment with the Company's practice, all business units have integrated the community complaint management guidelines into their daily practices and reported their performance regularly.

Apart from that, the Company conducted community satisfaction surveys covering 17 community development programs of four Indonesian mines. The average satisfaction rating was 85% or at the "Satisfactory" level. The Company also conducted community perception surveys in Indonesia and Australia to measure community acceptance. In Indonesia, a community perception survey was conducted at the communities surrounding Embalut mine, with the average score at the "Satisfactory" level. The Company is also planning to conduct more community perception surveys at other mines next year. In Australia, the survey has been conducted at mining group-level subcommittee meetings, and in 2022, the strategies to improve were reviewed and applied to the implementation in order to secure the local perception at the "satisfactory" level. The surveys will also be conducted in China and Vietnam, where there are ongoing community engagement projects.

Moreover, the Company has employed the Social Return on Investment (SROI) framework to measure the social impacts of community engagement activities and improve the performance of each business unit's community engagement projects. In 2022, the SROI evaluation on the community fertilizer project was conducted in Indonesia, with a ratio of 1:2.67. In addition to that, the Company applies a sustainability tool called, "Maturity Measurement" to evaluate the sustainability of community engagement programs. The tool focuses on 6 aspects – change, inclusion, organization, cooperation, influence, and sustainability. In 2022, the Company chose community engagement projects and conducted sustainability measures in Indonesia that reached 100% of the area.

For more information on "Community Performance", please read the Sustainability Report 2022 from Company's website **by scanning the QR code or clicking on "CLICK HERE"**.



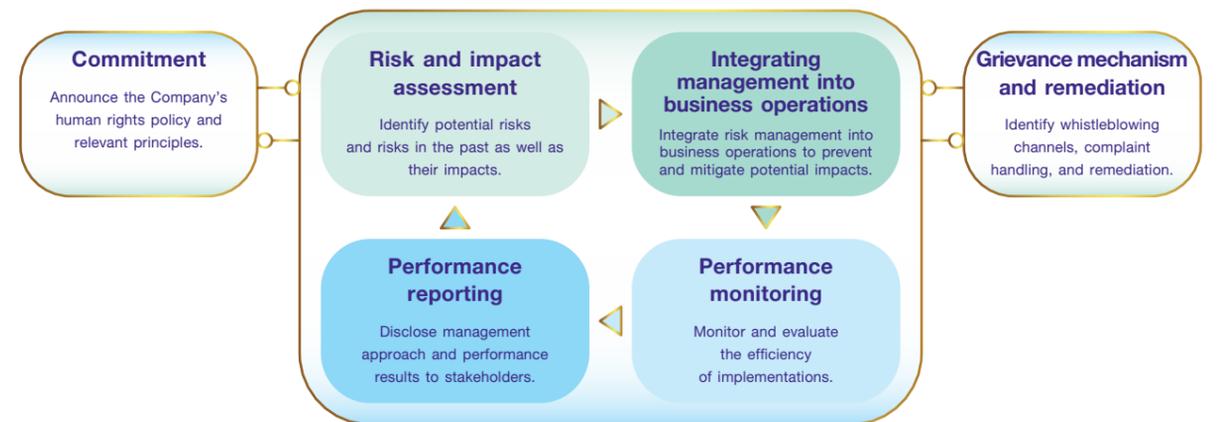
Human Rights Policy and Practices

Banpu strives for conducting business with adherence to international practices such as the Universal Declaration on Human Rights, the UN Guiding Principle on Business & Human Rights, and ILO Declaration on Fundamental Principles and Rights at Work, United Nations Global Compact (UNGC), including applicable labor laws of all countries where it operates. The Company observes the principles of liberty, equality, and human dignity without discrimination on gender, ethnicity, religion, or skin color to avoid and prevent human rights violations on employees, suppliers, customers, contractors, communities, and vulnerable groups such as children, women, disabled persons, indigenous peoples, immigrant workers, and elderly persons. The Company has also developed the "Human Rights Due Diligence Manual" to be used as a management approach for human rights issues, covering key risks throughout Banpu's value chain.



For complete information on "Human Rights Due Diligence Manual", **please scan the QR code or click on 'CLICK HERE'**

Human Rights Due Diligence Process



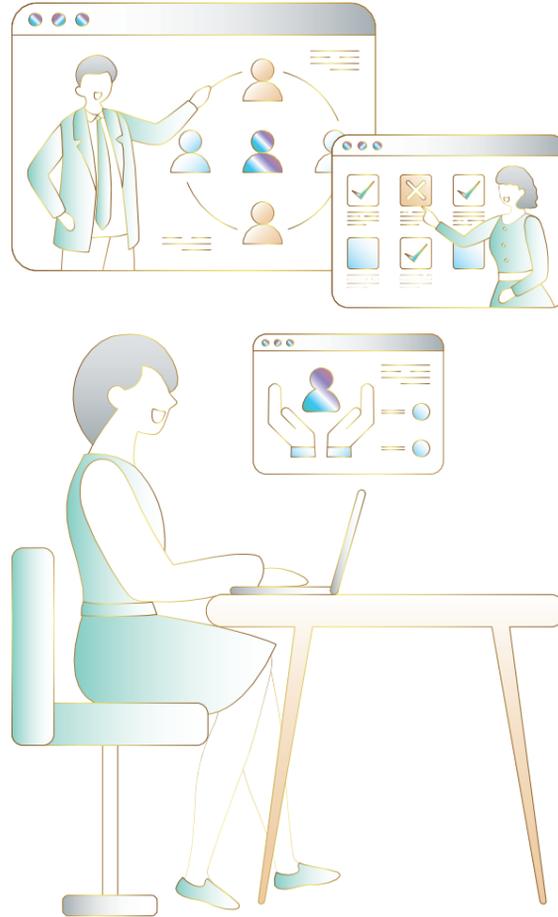
The complaint mechanisms vary depending on issues or related stakeholders. For instance, there are specific whistleblowing channels and compliance investigation procedures for specific governance issues, complaint channels and management measures for community complaints.

Human Rights Performance

In 2022, the Company organized the training for creating the better understanding about human rights and conducted the human rights due diligence assessment for mining business in Indonesia and Banpu subsidiaries in Thailand. There were no salient human rights issues found. However, the Company has also set preventive measures to control risks in human rights issues. The Company plans to extend the scope of human rights risk assessment in 2023, covering the renewable power business in Vietnam.

The Company has publicized the article on human rights issue in the form of monthly e-newsletter "Sustainability Insights" to communicate the human rights policy, practices and prevention of human rights violations in workplace to employees.

Moreover, the Company has approaches to support human rights issue via management approach as follows.



Human Rights Issue	Management Approach
Employees' occupational health and safety (Legal protection)	<ul style="list-style-type: none"> Organize annual safety training for new employees Emergency drill and fire extinguishing and evacuation plan Communicate with employees on the issue via various channels such as e-newsletters Organize SHE Committee monthly meetings
Personal data protection (Legal protection)	<ul style="list-style-type: none"> Regularly communicate with employees on the issue via e-newsletters
Labor treatment (Labor rights and equality, and rights to form a union engage in collective bargaining)	<ul style="list-style-type: none"> Establish the Company's Welfare Committee to represent employees in negotiations or to provide opinions on welfare Respect employee rights and do not prevent employees from forming a labor union or similar body as stipulated in Employee Relations Policy

Occupational Health and Safety Policy and Practices

Banpu is committed to taking good care of employees and all related people who work for the Company by creating safe and healthy working environment. The Company announced Occupational Health and Safety Policy and the 3-Zero targets as follows:

- Zero Incident
- Zero Repeat of incidents
- Zero Compromise to non-compliance with occupational health and safety standards or legal requirements

For complete information on "Occupational Health and Safety Policy", [please scan the QR code or click on 'CLICK HERE'](#)



Moreover, Occupational health and safety performance is one of the key performance indicators of the Chief Executive Officer and senior management of all business groups and subsidiary companies. The Company established the Occupational Health and Safety Division to ensure that its safety operations comply with Banpu Group's regulations and standards as well as applicable local laws. In addition, the ISO 45001 standard has been introduced as guidelines for the occupational health and safety management system. The safety culture framework has been adopted focusing on the safety system, safety knowledge, and safety behaviors in Banpu group and its subsidiaries.

To achieve the 3-Zero targets and continual improvements, the Company has evaluated the effectiveness of occupational health and safety management at all operational country's offices on monthly, quarterly, and annual basis. There are safety culture evaluation, ESG Committee meeting of independent directors, meetings of Sustainability Committee, chaired by the Chief Executive Officer to review and monitor occupational health and safety policy implementation, targets, strategies, incident records, and legal compliance.

Hazard Identification, Risk Assessment, and Incident Reporting and Investigation

Banpu has implemented hazard identification and risk assessment processes that cover both routine and non-routine tasks using various hazard identification tools, such as Job Safety Environment Analysis (JSEA), Green Card/Yellow Card, Safety Health Environment Accountability Program (SHEAP), and Hazard Identification, Risk Assessment and Determining Control (HIRADC) has been implemented at the mining business in Indonesia, while SLAMs (Stop, Look, Assess and Manage) is used in Australia. Thermal power plants in China deploy Safety Walk Down Program and Safety Double Control. At the Bangkok office, the UNSAFE Killer application is used to report and record both unsafe actions and unsafe working environments. The Company has determined risk mitigation measures according to the Hierarchy of Controls, communication plans, and risk surveillance and monitoring.

Occupational Health Services

The Company monitors working environments through regular measurements according to the risk factors of each operational area, such as air quality, noise level at work, the concentration of hazardous chemicals, and light intensity, to ensure that they are fully compliant with the applicable law. External assessment agencies carry out those measurements to ensure that all employees and

contractors have a proper working environment without health-threatening hazards.

At any work locations with possible impacts on the health and safety of employees and contractors, the Company will conduct health and risk assessments and schedule health medical checks based on relevant risk factors for employees and contractors who are exposed to those risks. Employees' health information is kept confidential. The Company also complies with Personal Data Protection Act (PDPA) and has the policy to protect employees' personal information to prevent disclosure without their consent.

At Bangkok office, the Company arranges convenient and quick access to telemedicine services for employees. A Banpu's subsidiary in Indonesia has established a medical service center with doctors and specialists to provide treatments and advice on occupational health problems to workers at all hours. They also offer services to contractors and individuals entering the mine areas and prepare mobile medical units to provide

assistance in the event of an emergency during working hours, including transporting emergency patients via the International SOS service. As for the contractors, the Company has selected the contractors that meet its standards. The Company ensures that the contractors' occupational health services are good and meet specified standards.

● **Employee Engagement, Consultation, and Communication**

The Company engages employees at all levels in safety operations from the development phase, providing suggestions in all areas, including the safety system, safety knowledge and capability, and safety behaviors. Employees in all countries can voice their concerns and suggestions through different channels, such as the Safety Perception Survey through Safety Committee, on quarterly forums on safety issues. The HSEC Family Conference and the ESG Summit are international knowledge-sharing events where all information is constantly reviewed and formulated into short and long-term improvement plans.

In 2022, one of the employees had a fatal accident. After investigation, the accident happened because an operator worked in a prohibited area which is a dangerous area. To prevent incidents reoccurrence, the Company established additional prevention and mitigation measures as follows:

- Review and revise the work instruction of safe working and safe driving at coal stockpile areas, and communicate to relevant persons
- Conduct refresher training of safe working in coal stockpile areas for all site workers
- Conduct refresher training of safe driving in coal stockpile areas
- Install radar sensor on the rear of coal loader to alert drivers of situations that could lead to a collision and obstacles behind the coal loader

The lost time injury frequency rate (LTIFR) for employees was 2.44 and for contractors was 0.21, slightly increasing from the previous year. The total recordable injury frequency rate (TRIFR) for employees was 14.08 and for contractors was 0.66 that slightly below the target. In this regard, the Company analyzed types of injuries that occurred with employees and found that the majority were muscle and ligament injuries, injuries from impact, and open wound as for contractors were injuries from impact, open wound, and fractures. There was also an analysis of the causes of injuries. Most of cause of injuries are overexertion, tripping, slipping, falling, and being pinched or pulled by objects or things.

Based on the Company's safety risk assessment, there are two high-risk activities, for which the Company prepared appropriate preventive measures to mitigate the risks as follows:

High-Risk Activities	Prevention Measures
Working in dangerous area	<ul style="list-style-type: none"> ● Installing a hazard-warning system to reduce the risk that might occur to operators ● Review and revise the work instruction and communicate to relevant persons ● Safety training and communicating about operations to operators ● Promoting and ensuring operators' strict compliance with safety regulations and standards
Operating moving heavy weight equipment	<ul style="list-style-type: none"> ● Reviewing Job Safety Analysis (JSA) ● Assessing and evaluation weighting of moving equipment ● Reviewing work instruction and operational safety standards ● Enhance safety behavior and safety culture to all employee especially new employee ● Communicate result of JSA to relevant persons

Occupational Health and Safety Performance

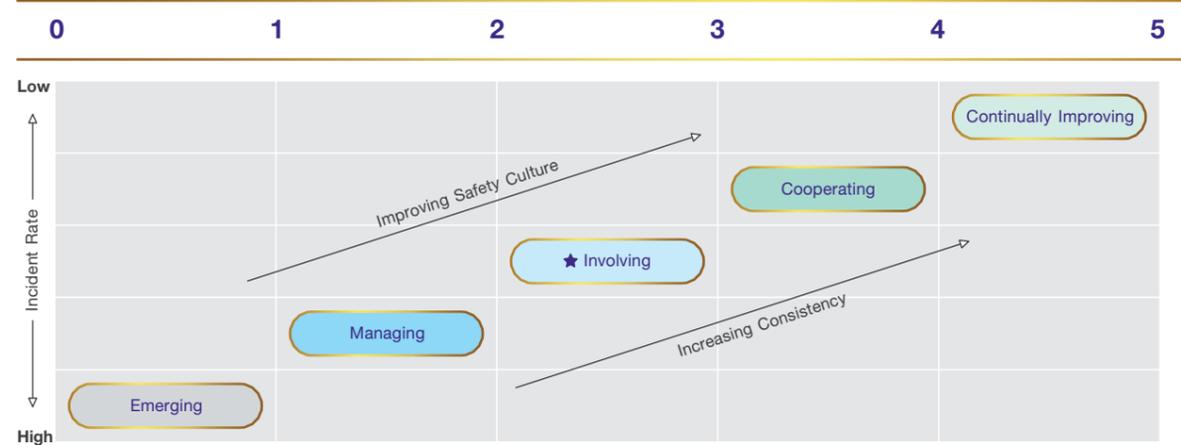
	2022	Target 2022	Target 2025
Number of occupational fatalities - Employees	1	0	0
Number of occupational fatalities - Contractors	0	0	0
Lost time injury frequency rate - Employees	2.44	≤2.55	≤1.99
Lost time injury frequency rate - Contractors	0.21	≤0.17	≤0.14
Total recordable injury frequency rate - Employees	14.08	≤14.04	≤10.93
Total recordable injury frequency rate - Contractors	0.66	≤0.68	≤0.53

Since 2018, the Company has continuously assessed Safety Culture Maturity. To increase the Safety Culture Maturity Level in Banpu, the results of assessment are utilized as part of operational efforts to enhance safety culture in working environment. This year, one solar power plant based in China performed safety culture assessment and all coal mine sites and office operations in Australia performed safety culture re-assessment after the first assessment in 2018.

The evaluation results from both operational groups conclude in 'Involving level' or in level 2.98

performance for the solar power plant while coal mines and offices have both improved performance in all elements, when compared to results from three years prior, because of continuous safety improvement operations. The mentioned developments raise the number of operations assessed for level of excellence to 21 business units in 3 countries, inclusive of China, Australia, and Indonesia. Further plans to expand assessment coverage are in line with safety culture enhancement policy, an initiative to prevent any incidents and accidents occurrence in the future.

Safety Culture Maturity Level



Result in 2022

★ 1 Solar power plant in China

CORPORATE SOCIAL RESPONSIBILITY (CSR)

CSR Activities in 2022

Thailand

Over the past four decades, Banpu has carried out corporate social responsibility programs that address social and environmental issues, covering the development of education, youth capacity, community, and the environment. In 2022, Banpu focused on promoting learning to drive change and sustainable development with a strong belief that **“Learning is the Power of Change and Development”**

Educational Development

Banpu Education for Sustainability

Banpu continued the “Banpu Education for Sustainability” project for the 19th year, aiming to develop education - the country’s foundation of sustainable development. The Company has supported integrated learning for students in six schools in Lamphun, Lampang, and Phayao - the provinces where Banpu’s operations were located. The school development covers three dimensions: turning the schools into sustainable community learning centers, teacher capacity development, and promotion of student’s learning. In 2022, Banpu continued to support English communication skills improvement for teachers and students at Banpu-sponsored schools through the provision of native English speakers. The Company also sponsored hiring four Thai teachers for one of the schools to fill the teaching staff. Despite ongoing challenges from the COVID-19 pandemic, the sponsored schools managed to adjust to the New Normal through hybrid learning and teaching, providing students with online and onsite sessions. For the past 19 years, Banpu has provided support under the Banpu Education for Sustainability program for THB 48.6 million in total.



Sponsorship for Schools in Southern Border Provinces

In 2022, Banpu provided financial support of THB 1.2 million via the Office of the Basic Education Commission (OBEC) to 18 schools in the specially targeted

development zone in the South region to enhance their educational quality. This support was for these schools to procure IT equipment and facilitate their online learning. For the last 16 years, Banpu has sponsored 179 schools in five provinces: Narathiwat, Pattani, Yala, Songkhla, and Satun, worth THB 21.70 million in total.



Banpu has Sponsored

179 Schools

in the South Region
to improve the quality of education and Safety



Narathiwat
57 Schools

Yala
46 Schools

Satun
4 Schools

Pattani
54 Schools

Songkhla
18 Schools

-  Provide tools for protection and safety improvement against civil unrest
-  Support the improvement of buildings and premises for the safety of students and school staff
-  Provide materials for teaching-learning activities in basic education, such as materials for children development, English textbooks, and science laboratory equipment
-  Provide materials for recreational activities, e.g., sports and arts
-  Provide IT equipment and tools to support online teaching and learning
-  Support vocational trainings for students

Partnership School Project

The Partnership School Project is an initiative that fosters educational collaboration between the Ministry of Education and other sectors, including companies, foundations, and academic institutions, to improve school administration, raise academic achievement, and prepare students for the future. The Company has supported three schools, namely Non Sa-at Phitthaya School, Khon Kaen Province; Chumchon Phon Ngam Phon Sawang School, Maha Sarakham Province and Rong Kham Hong Thong Wittaya School, Roi Et Province. In 2022, all these schools continued to improve educational quality to become models for other schools, as well as satisfy parents' expectations and create community pride. The progress in 2022 can be summarized as follows:

1. Elevating Academic Quality and Innovation



The project has seen the effectiveness of Active Learning in improving academic achievement, analytical thinking skills, and communication skills of students at early childhood and primary levels. The national test (NT) scores of Primary 3 students and the Ordinary National Educational Test (O-NET)

of Primary 6 students have continuously increased. The Company also continued its support for the "One Classroom, One Innovation" activity.

2. Improving Technology and Information Technology

The Company provided additional 11 computers for students to be sufficient for learning and for the school's IT system to manage database. During the COVID-19 pandemic, there were trainings for teachers from the sponsored schools on how to use digital platforms and applications for online and onsite teaching and robotics classes for students.



3. Enhancing English Language Skills

The Company sponsored the hiring of English teachers and English lessons in the three schools from the kindergarten level. It also increased English learning hours and encouraged schools to organize activities to develop students' English skills.

4. Developing Vocational and Life Skills

The Company supported ten vocational training activities, namely, barbering, selling food and merchandise, making garlands and artificial flowers, livestock farming, vegetable and ornamental plant farming, hydroponic farming, flower arrangement, sports skills development, and folk music.



5. Creating a Learning Community

The Company facilitated the sharing of experiences and teaching techniques with teachers from neighboring schools. In the past year, 30 teachers from 12 schools joined a study tour of kindergarten education. There was an extension of the Active Learning approach and training on how to use platforms and applications for 65 interested teachers and educational staff. In addition, there was also training on making artificial flowers to help local people earn extra income.

Light and Learn: Solar Project for Education



Banpu NEXT Company Limited, a subsidiary of Banpu, also continued "Light & Learn: Solar Project for Education" with the aim of developing power supply systems for schools in need. The project provides teachers and students with electricity for teaching and learning as well as access to information from various learning media such as distance learning via satellite. In 2022, Banpu NEXT ran the project through the "Mae Fah Luang" hill tribe community learning center, developing power utilities for five schools in Tha Song Yang District, Tak Province, worth over THB 1.5 million. In the past five years, 73 schools have been supported by the project with a total value of THB 7.6 million.

Youth Capacity Development

Banpu Champions for Change

The “Banpu Champions for Change” (BC4C) project is a collaboration between Banpu and ChangeFusion Institute, a non-profit organization under the Rural Restoration Foundation of Thailand under the Royal Patronage. The project has been up and running since 2011 with a mandate to support young social entrepreneurs who are full of creativity and potential for social change, extending business ideas to achieve income growth while positively impacting society, the community, and the environment. The project promotes learning and understanding of social enterprise as well as morals and ethics, and sustainability principles (ESG) in business. It builds an environment conducive to the growth of social enterprise, which in turn will create a quality society and lay a strong and sustainable foundation for the country’s economy.

Banpu Champions for Change - Incubation Program #11

Banpu Supported

7 Social Enterprises

each of which received

THB 80,000

in seed capital for operations and business development for a period of 3 months

3 Social Enterprises

were chosen for their distinctions in business and social impacts each winning team received

THB 250,000

Consists of
Green Diamond Phetchabun,
SWOOP BUDDY
and
The Next Forest



The **Incubation Program** is the BC4C project’s main activity. It is open to young people aged 20-35 years old nationwide to apply as groups of up to four members with a social enterprise project plan to address problems or propose development about social, community, or environmental issues of their interest. Selected plans enter the incubation process and receive consultancy. Project members would attend capacity-training workshops and receive guidance from resource persons and facilitators from diverse fields, such as management, finance, social and environmental evaluation, etc.

Career and Community Development

- **Green Diamond Phetchabun:** an enterprise that connects markets and develops knowledge in production to add value to agriculture with the organic production process that meets international organic standards
- **Mae Hong Son Community Enterprise Network:** an enterprise that develops tourism products and services to create jobs and careers as well as to generate income for the community while also taking care of the environment

Wellness

- **PLAKOD:** an enterprise that combines gaming with physical therapy activities, allowing players to move their bodies while enjoying the game, to increase motivation and build a positive attitude in pediatric rehabilitation
- **LukThamDai:** an enterprise that focuses on child development by age and acts as a helper in child rearing for new parents and provides counseling, advice, and observation of children’s development

Environment

- **SWOOP BUDDY:** an online second-hand clothing store that promotes the use of manufactured garments to last as long as possible to create a circular economy
- **The Next Forest:** an enterprise that focuses on sustainable forest restoration, including designing and planning to allow the area owners and the public to benefit from the reforestation in the future
- **Goodgrocer:** an enterprise that aims to solve the problem of agricultural oversupply as well as ugly produce and to manage and add value to the produce and deliver it to consumers

Banpu Champions for Change - Acceleration Program #1

6 Social Enterprises

Supported by

Acceleration Program

Consists of
moreloop, a-chieve,
YoungHappy, Buddy Homecare,
Noburo and Ooca



As many high-potential social enterprises (SEs) suffered setbacks in pursuing their growth, for instance, the lack of capital, manpower, and business skills. This year, the BC4C project organized its first Acceleration Program. The program supports social enterprises that have been operating for some time and want to grow further with intensive activities to advance social enterprises. It offers consulting and business data analysis by a team of experts, advice on creating a business profile, and technical assistance specifically suitable for each enterprise to expand their businesses. It organizes activities to bridge social entrepreneurs with business people, connecting them with investor networks, business partners, and government agencies to create opportunities for SEs to access knowledge and funding sources.

- **moreloop:** an enterprise that strives to create a circular economy by adding value to good quality fabrics that are surplus from production processes in the textile and garment industries
- **a-chieve:** an enterprise that develops an ecosystem of Thai education guidance to help youngsters choose the right education and career path for themselves, setting up a platform to support Thai guidance teachers in improving their teaching with a teaching process and teaching tools
- **YoungHappy:** an enterprise that reinforces lifelong learning and social participation for the well-being of retirees through a happy community and activities to give them joy and enable them to be self-reliant
- **Buddy Homecare:** an enterprise that aims to solve social problems by developing the potential of underprivileged tribal youths by sponsoring training on elderly care and employing them as professional elderly care workers at an affordable price
- **Noburo:** a platform for employee debt relief that works with employers to improve the quality of life for employees struggling with debt through the principle of “knowledge & capital”, empowering employees with knowledge about personal finance management and assisting them to access fair lending
- **Ooca:** a pioneering enterprise in mental health in Southeast Asia that set up a mental healthcare platform to provide video-counseling service with a psychiatrist

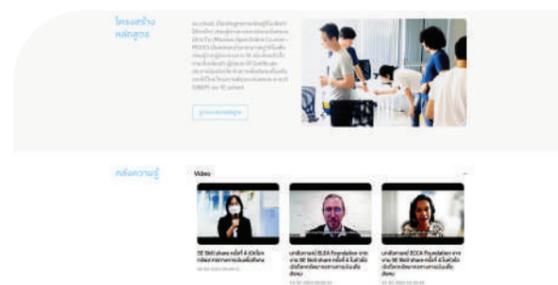
The BC4C project also organized “Impact Day” with the theme “Maximize the Impact, Creating a Strong Network, and Expanding the Power of SEs” to offer a venue for social enterprises to introduce their products and services to the general public. It is also a learning space for SEs and partners in the field to create a SE network in the future. Other activities included a special fashion show under the concept of “UNIVERSAL FASHION – The Impact of Unlimited Possibilities” that tells inclusive stories through clothing that poses no limitations on wearers and a discussion about social enterprises with “Mr. Sanon Wangrangboon”, Deputy Governor of Bangkok as well as a social activist and social entrepreneur, on the topic of “Opportunity to Expand Social Enterprises to City Level to Strengthen SEs in Thailand.”



This year, the BC4C project also held an online “SE Skill Share” forum to facilitate knowledge sharing between social entrepreneurs and experts in different fields, who joined brain-storming and consulting sessions to enhance SE enthusiasts’ knowledge and understanding.

SE Skill Share

1st SE Skill Share on 21 April 2022	Consisted of 3 Topics <ul style="list-style-type: none"> ● “How to Expand Social Development Work Like a Startup” by Ms. Lakkhana Saenbungkho, the founder of Banana Land, and Mr. Smith Harueanphuet, Director of Special Operation Support Unit, the Mae Fah Luang Foundation ● “How to Invest in the Expansion to Online Commerce” by Mr. Narin Jitpraneechai, co-founder of a-chieve, and Mr. Amorpol Huvanandana, the founder of moreloop ● “How to Grow Your Team Along the Enterprise Expansion” by Mr. Janevit Wisojsongkram, co-founder of Buddy HomeCare, and Ms. Sarita Worravitudomsuk, HR Manager of Upbit Exchange (Thailand)
2nd SE Skill Share on 20 July 2022	Consisted of 1 Topic <ul style="list-style-type: none"> ● “Opportunities-Lessons of SE Funding Sources in Thailand and Asia” by three resource persons: Mr. Sunit Shrestha, Managing Director of ChangeFusion, Ms. Ada Chirapaisarnkul, Managing Director of TaejaiDotCom, and Mr. Thanakorn Phromyos, CEO of YoungHappy.
3rd SE Skill Share on 25 October 2022	Consisted of 1 Topic <ul style="list-style-type: none"> ● “First Step in Building Sales Volume... Talking Straight to the Customer’s Heart” by two resource persons: Mr. Somsak Boonkam, the founder and CEO of Local Alike, and Mr. Nattakorn Asunee Na Ayudhaya, Communications Manager of Steps.



This year, the **SE.school website**, the first online learning platform for social enterprises in Thailand, was improved for easier use with a simple interface and is able to serve a large number of users, as well as features various exercises for expanding the learning experience. New content was also developed to make social enterprise operations easier to understand. The SE.school website is another project goal to create a knowledge base and ecosystem that supports social enterprise growth.

BC4C’s Social Impact

Supported

119 Social Enterprises

to try out their business ideas and interests

Benefited

172 Communities and Organizations

Reached Over

2,570,000 Beneficiaries

7

Categories of BC4C’s Social Issues

- Education
- Agriculture
- Health
- Social Work
- Environment
- Career Development
- Finance

Banpu Table Tennis Club

Established in early 2008, Banpu Table Tennis Club (BTTTC) started from Banpu’s subsidiary in China, which supported a national table tennis training center in Zhengding County. From there, Banpu has capitalized on the existing network to help transfer China’s table tennis skills and techniques

to Thai youth players. For the past 14 years, BTTTC has been committed to developing Thai table tennis players by providing daily training support, sponsoring participation in national and international tournaments, and organizing various activities to cultivate morality, ethics, discipline, harmony, and volunteer spirit of the club’s members.



In 2022, apart from sending athletes to various tournaments, BTTC organized a “Let’s Catch Up” activity where members joined an online forum to build rapport and learn about the club’s policies. Another activity was “**Banpu Table Tennis Club Camp: Inspiration and Skill Development for Thai Youths**” held in Buriram, where seven BTTC members including coaches with international experience and BTTC’s volunteer athletes provided coaching to 18 coaches and 85 young participants from

Buriram and neighboring provinces. Since 2014, BTTC has organized ten camps with a firm belief that this activity will inspire and equip standard skills for young players, both rookies and provincial youth and junior athletes.

Furthermore, the BTTC regularly communicates with members and the general public through the “Facebook fan page: Banpu Table Tennis Club” to encourage participation in the club’s activities.



Banpu Table Tennis Club

106 Members

Consists of

75
Athletes

12
Coaches

19
General Members

9 Training Centers Located in 7 Provinces:
Bangkok, Nonthaburi, Chiang Mai, Ubon Ratchathani, Yasothorn, Khon Kaen, and Phuket, with members throughout Thailand

Achievements of Banpu Table Tennis Club's athletes since its establishment

- **2** national athletes competing in the SEA Games
- **49** national youth athletes
- **6** national junior youth athletes
- **2** professional athletes in the Republic of Poland
- **34** athletes admitted to universities for their excellence in table tennis
- Consistently winning in national and international tournaments

Support for a Young Tennis Athlete

Since 2015, Banpu has supported Mr. Songrit Chanbubpha, a high-potential tennis player in pursuing his dream of being the world’s top-ranked player by sponsoring sports equipment, physical fitness training courses, and daily training. The Company has also supported his competitions in Thailand and abroad to expose him to real tournament experiences and to help him enhance his life skills while improving his professional athletic discipline.

In 2022, Mr. Chanbubpha was the 42nd ranked tennis player by the Lawn Tennis Association of Thailand Under His Majesty’s Patronage (LTAT).



Environmental Development

Power Green Camp: An Environmental Science Camp for Youths

Since 2006, Banpu has collaborated with the Faculty of Environment and Resource Studies, Mahidol University, in hosting the “Power Green Camp” under the concept of “Envi-Science Learning Through Actions” to enhance knowledge and understanding of environmental science and natural resources as well as to raise environmental awareness among young people. The camp encourages participants to systematically apply scientific knowledge to solve environmental problems.

The 17th Power Green Camp was organized between 15-25 October 2022, in which participants joined online learning activities and field visits with the theme of “**Climate Change, We Must Change**”. For the first time this year, the camp was open to applicants from vocational colleges (Voc. Cert. level) as well as high schools in all programs nationwide. 50 students from 50 schools in 40 provinces were selected to join the camp to learn about climate change, a current environmental issue and a global concern that requires collaboration across sectors to find effective solutions.



The 17th Power Green Camp activities focused on enabling young participants to learn about climate change issues comprehensively through theoretical learning from environmental experts and hands-on experience from field trips and activities in locations with different contexts in terms of environment and





learning method. The activities included 1) surveying the coastal erosion of Ban Khun Samut Chin in Samut Prakan Province, 2) studying the problem of coastal change and the biodiversity of fireflies' habitat in Amphawa, Samut Songkhram Province, 3) joining the mangrove conservation activity at the Mangrove Ecosystem Conservation and Education Center, Bang Tabun Wittaya School, Phetchaburi Province, which is a carbon reservoir, 4) studying the impact of climate change on the geological structure at Khao Ngu Stone Park, Ratchaburi Province and Tham Krasae, Kanchanaburi Province and 5) visiting Mahidol University, Kanchanaburi campus, to learn about the biodiversity in the forest and do science activities in a laboratory. These activities enabled young people to learn about real climate change problems in a concrete way and allowed them to exchange opinions and ideas with the local community on how to solve the problems.

The camp concluded with the environmental science group project competition under the theme "Climate Change, We Must Change," which was presented both online and offline to the camp committee and the general public. The project that won both the 1st and the popular vote prizes was the "All Nature Sanitary Napkin" made from organic materials. The product can reduce the decomposition time and

protect the environment. It adds value to agricultural waste without requiring an incineration process. The 1st runner-up was the "Ship Seagrass" project, which used a boat to grow seagrass to increase its survival rate and create a better-balanced marine environment. The 2nd runner-up was the "Bioplastic Mulch from Chitosan, Water Hyacinth and Cassava Fibers". This project came up with the idea to produce plastic-like films from organic fibers for soil coverage as a substitute for plastic, which takes a very long time to decompose.



Over the past 17 years
more than

1,000 Students

have participated in

"Power Green Camp"

182 participants were trained to be "Environmental Youth Leaders" to serve as facilitators at the camps and help expand the environmental network



Disaster Relief

Mitr Phol-Banpu Solidarity to Aid Thailand on COVID-19 Confrontation Endowment

Banpu established "Mitr Phol-Banpu Solidarity to Aid Thailand on COVID-19 Confrontation Endowment" with a budget worth THB 500 million in March 2020 and added another THB 500 million in 2021 to the total of THB 1 billion. This is a collaboration between Banpu Public Company Limited and Mitr Phol Group, the private organizations that adhere to corporate governance principles and social responsibility in their business operations. Since 2021, the Endowment set 7 categories of aid in response to major problems that the Thai society has been suffering from the COVID-19 crisis: 1) relief for people suffering from economic and livelihood impacts, 2) support for medical equipment for hospitals and public health agencies, 3) support for proactive health services, 4) support for epidemic control and cremation services for COVID-19 victims, 5) support for medical personnel and related people, 6) aid in terms of mental health problems, and 7) other support for related purposes. The Endowment's support for the COVID-19 epidemic control mission, including the relief for Thai people suffering the impacts, is regarded as one of the great contributions to helping Thais overcome the crisis and return to normalcy.

In 2022, Banpu provided assistance and support to 16 agencies through the Endowment with a total value of THB 29.3 million, as follows:

- Providing personal protective equipment and rapid antigen test kits worth over THB 2.5 million to various agencies for the safety of personnel.
- Providing a budget of THB 20 million for the improvement of the Medical Clinic of Thammasat University Hospital.
- Providing a budget worth over THB 6.7 million to the Health and Elderly Establishment Confederation for the making of 3,000 relief bags to be delivered to people affected by the COVID-19 pandemic.
- Donating 10,240 N95 masks and 8,990 sets of personal protective equipment (PPE) to Thammasat University Hospital and Chulalongkorn Hospital, Thai Red Cross Society.



Providing Relief to Flood-affected People

The powerful tropical storm Noru hitting Thailand in September brought heavy rain, which increased the amount of accumulated rain. There were storms and flooding in many provinces, causing damage to properties and disrupting people's lives. Banpu rushed help to flood victims through 8 agencies with a total value of over THB 14 million, as follows:



- Donating THB 5 million to the relief program under the Thai Red Cross Society's Relief and Community Health Bureau to deliver relief bags containing basic supplies, such as food, drinking water, medicine, and clothes to over 4,500 households of flood victims in the central and northeastern regions.

- Providing a budget of over THB 5.2 million for the Phetkasem Foundation to buy ingredients and cook fresh food for flood victims in Sisaket, Ubon Ratchathani, and Kalasin Provinces. Over 240,000 boxes of food were delivered to flood victims in the affected areas.



- Providing a budget of over THB 3.8 million for the making of 5,150 relief bags of basic supplies to be delivered to flood victims in Ayutthaya, Ubon Ratchathani, Mahasarakham, Khon Kaen, and Phuket Provinces.

- Providing a budget for repairing 30 houses as well as cleaning equipment for 300 households in Ubon Ratchathani Province, worth THB 300,000 in total.



Republic of Indonesia

PT. Indo Tambangraya Megah Tbk (ITM), a subsidiary of Banpu in the Republic of Indonesia, places a strong emphasis on its Corporate Social Responsibility (CSR) and community development activities. Based on Banpu's policy and implementation guidelines, ITM conducted CSR activities with the aim of promoting education and community for sustainable development. Its CSR activities focus on elevating education standards for Indonesian students and teachers and improving the well-being of communities surrounding ITM's five mine sites on Kalimantan Island, namely Indominco Mandiri (IMM), Trubaindo Coal Mining (TCM), Bharinto Ekatama (BEK), Kitadin (KTD) and Jorong Barutama Greston (JBG).

Educational Development

Education is an important component in improving a community's quality of life. ITM has carried out various educational programs, aiming to support underprivileged students to pursue higher education in order to help them improve their quality of life in the future. ITM's support for educational development includes:

Community Learning Center (CLC) – Non-formal Education

The CLC development was initiated to improve literacy and reduce high dropout rates, which can lead to social problems. ITM has carried out the community learning center program (Pusat Kegiatan Belajar Masyarakat: PKBM) through IMM, its subsidiaries, for three communities: namely PKBM Malahing, PKBM Damai Mandiri, and PKBM Salaka. Since 2011, the three PKBMs have been provided teaching curriculums equivalent to school and conducted 93 life-skills training courses. The program has increased literacy rates with a total of 1,753 beneficiaries.

Scholarship

ITM also provides continuous support to the education sector by granting scholarships from elementary to university level to students in the communities surrounding ITM's mines. In 2022, ITM granted scholarships to 433 students, totaling IDR 1,153 million.



Support for Higher Education Students' Learning Activities

ITM has supported university students' learning activities by offering internship opportunities, providing information for research, and serving as guest lecturers



in the fields of mining, technology, environment, social responsibility, and sustainable development. In 2022, ITM supported learning activities for students at 15 universities.



Community Development

Employment Promotion

PT Kitadin-Embalut (EMB), an ITM subsidiary, has organized training programs to enhance the knowledge and skills of youth in orphanages at Separi, Embalut, Kerta Buana, and Bangunrejo Villages. The training programs to build vocational skills include welding and motorcycle mechanic skills. In 2022, the EMB expanded its training programs to encompass skill-building in farming, production of animal feed and organic fertilizers, and orchard farming development. To date, a total budget of IDR 134 million has been sponsored for these programs, which benefited 109 participants.



Economic Development

In 2022, ITM continued to support community economic development through the operations of its subsidiaries as listed below:

- PT. Jorong Barutama Greston (JBG), a subsidiary of ITM, supported Sasirangan Small Business Group to foster the business related to traditional South Kalimantan fabric called Sasirangan. Since 2018, JBG has empowered unemployed and underprivileged people in Karang Rejo and Jorong Villages to produce and design various Sasirangan handcraft products, e.g., Sasirangan batik, clothes, masks, and bags. The latest product is called 3-Dimensional Motif Products or “Sasirangan 3D” and “Ringkel Sasisirangan dyed fabric,” developed by Sasirangan Small Business Group. To preserve the environment, natural materials were used to dye the fabric instead of chemicals. Currently, more than 5,000 craft products have been created, and they have generated an income of IDR 337 million. In 2022, the group successfully produced over 160 pieces of fabric products and evolved into a training center, imparting knowledge on Sasirangan fabric production to visitors from Lambung Mangkurat University in Indonesia and Newcastle University in the United Kingdom.
- In 2021, IMM, an ITM subsidiary, initiated a Seaweed Farming Development program for the Satria Farmer’s Group in Bontang Lestari. In 2022, the group successfully carried out a great harvest of 15 tonnes after going through a 45-day nursery process, reaching an average monthly income of IDR 3 million per person.

Enhancement of Public Health

ITM has been promoting health and sanitation development for the communities, focusing on maternal, child, and elderly health promotion according to its strategy to improve the quality of life for the locals as follows:

- Providing electricity system maintenance which BEK had handed over a solar rooftop system with a 6,000 wph capacity to support the 24-hour health service of Benangin Health Center in the East Teweh Sub-district, Central Kalimantan Province.
- Supporting free healthcare services, including physical examinations of Community Health Center (Posyandu) for babies and toddlers, and offering a new mother checkup program. In 2022, there were 486 service recipients.



- Providing clean water access for 1,543 households in 11 villages
- Supporting the establishment of village-own enterprises, for instance, organizing training in finance, administration, and knowledge exchange among village-own enterprises so that villagers can become self-reliant



Environmental Conservation

To support and maintain environmental preservation, in 2022, ITM carried out the following programs:

- Planting trees to conserve nature together with communities and government on the commemoration of Environment Day
- Participating as a partner in the Kutai National Park (TNK) Conservation Project for the second year in a row. The Company is responsible for supporting the conservation of plant and animal species, as well as preserving culture heritage in Kutai National Park through various activities. These activities include the preservation of infrastructures such as pavilions, signposts, and gates of national park. The Company also raises awareness on the importance of the park and improves the well-being of the surrounding communities.
- Restoring coral reefs and planting mangroves along the Bontang Lestari coastline to control abrasion and conserve marine life
- Conducting biodiversity and indigenous flora studies in collaboration with the National Research and Innovation Agency (BRIN) for the NPR mining project in Central Kalimantan Province
- Supporting waste management in Bangun Rejo Village with the Waste Bank Program. This program encouraged community members to gather and sort household waste and sell it to the program to generate extra income from recycled products. In 2022, the waste management program was expanded to Embalut, Separi, and Kerta Buana Villages. IMM, a subsidiary of ITM, has also developed a waste management program through the Community Learning Center (CLC) at Damai Mandiri and Suka Damai Villages.

Public Infrastructure Development

In 2022, ITM completed the following infrastructure development projects:

- Installing 2,000 meters of water pipes at Santan Tengah, Santan Ilir, Kandolo, Suka Damai, Danau Redan, and Santan Ulu Villages to provide clean water supply to the communities



- Maintaining irrigation and drainage systems at three locations: Bontang Lestari Village, Bontang City, as well as Santan Tengah Village and Santan Ilir Village, Kutai Kartanegara District, East Kalimantan Province
- Installing electricity for 50 households in three villages: Embalut, Kerta Buana, and Bangunrejo
- Renovating 22 houses for the underprivileged in 11 villages: Teluk Pandan, Pandan Jaya, Kandolo, Martadinata, Suka Damai, Suka Rahmat, Danau Redan, Santan Tengah, Santan Ulu, Santan Ilir, and Bontang Lestari
- Maintaining and following up on the installed solar rooftop panels of 5000 wph capacity for Benangin Health Center in the East Teweh Sub-district, Central Kalimantan Province



- Maintaining 23 kilometers of the road in Muara Teweh Town, Barito Utara District, Central Kalimantan Province, and another 3 kilometers in Besik Village

People's Republic of China

In 2022, Banpu Investment (China) Ltd. (BIC), Banpu's subsidiary in China, continued to promote and support the educational and sports development programs, as well as community development activities in the provinces where the Company operates. In addition, BIC promoted new CSR activities by providing financial and equipment support to local governments, communities, and foundations.

Education and Sports Support

Hebei-Banpu Fitness Club

Shijiazhuang Chengfeng Cogen Co., Ltd., BIC's subsidiary, has consistently supported the Hebei-Banpu Fitness Club (formerly Banpu Table Tennis Club) since 2003. This year, the power plant provided a fund of CNY 150,000 to the club to sponsor the training and competition of its athletes.

Luannan-Banpu Special Education School

BIC has continued its support for the Luannan-Banpu Special Education School for 15 consecutive years through the combined heat and power plant of its subsidiary - Tangshan Banpu Heat & Power Co., Ltd. This year, the Luannan power plant supported the school by providing six laptops and 85 sets of bedding for the students, with a value of CNY 49,200 to facilitate their study and daily life.

Disaster Relief

In September 2022, a 6.8-magnitude earthquake struck Luding County, Sichuan Province, causing

the loss of people's lives and property. BIC, together with its employees, thus raised money for the victims to help restore their homes through the Sichuan Charity Federation with a total donation of CNY 36,888.

Community Development

Infrastructure Development

- In 2022, Jixin solar power plant sponsored CNY 703,000 to repair and strengthen the road connecting the power plant and the Zhengxu Village. This improvement not only allows agricultural and engineering machinery to use the road but also lowers hazards from poor road conditions.



- In October 2022, Haoyuan solar power plant donated CNY 5,000 to Maziyu Village to repair the road leading to the mountain that was damaged by heavy storm. This is a convenience for the villagers during the upcoming harvest and planting season.



Economic Development

- Haoyuan and Jixin solar power plants supported vocational training for local communities in Maziyu and Zhengxu Villages, e.g., solar panel cleaning, weeding, and housework services, with a total value of CNY 578,000.



Philanthropic Contributions

- In January 2022, BIC and Gaohe mine, together with the local government and the Shanxi Youth Development Foundation, provided essential food items, such as rice, flour, and oil to underprivileged villagers in Tadian Village, Huguan County, Shanxi Province, worth CNY 94,998 in total.



- In June 2022, a new wave of COVID-19 hit Zouping County. The Zouping combined heat and power plant donated CNY 50,000 to Handian Town to support the local government's pandemic control efforts.

Japan

Banpu Japan K.K. or BJP, a subsidiary of Banpu Group managed by Banpu NEXT Co., Ltd., operates renewable power generation and energy technology businesses in Japan. BJP is committed to being a good corporate citizen in all locations where it operates and also values social and environmental responsibility. BJP's significant CSR activities in 2022 are as follows:

Educational Development

- BJP organized a lecture on "Basic Venture Course I" for students from Aizu University.
- BJP together with companies in AiCT, a smart city project in Aizu-Wakamatsu City, welcomed second-year junior high school students from Aizu-Wakamatsu Zaverio Gakuen School to visit and study the construction process of the Nari Aizu solar farm and its solar carport.
- BJP together with Aizu-Wakamatsu City Hall gave a presentation about renewable energy on the topic "Initiatives at AiCT Office" to the Aizu-Wakamatsu Citizens Charter Promotion Committee.



Vietnam

Since the start of its operations in Vietnam, Banpu has consistently supported community and social engagement activities, striving to create a balance between business growth and community and environmental development. Significant activities carried out in 2022 are as follows:

Children and Youth Development

In June 2022, Banpu Vietnam employees joined hands with Thai Charm and other companies to organize a charity event at SOS Children's Village Ho Chi Minh. They handed out 1,500 meals, donated school supplies, cloth masks, and vitamins, and provided a budget for the summer camp, worth VND 75 million in total. The objective of the event was to improve the quality of life and support the education of children who lost their parents and underprivileged children.



Community Development

In September 2022, at the 7th National Congress of the Ho Chi Minh Communist Youth Union in Soc Trang, Banpu Vietnam donated VND 500 million to support the construction and repair of bridges and roads in rural areas.



Mongolia

Community engagement at Hunnu Coal Limited (Hunnu), a subsidiary of Banpu in Mongolia, aims to build and maintain solid and transparent communication while building community relationship. Hunnu continued its engagement through strategic and sustainable programs that respect the culture's unique heritage, which aligned with the government's plan and strategy.

Education Support

Scholarship Program

In 2022, Hunnu supported scholarships to 7 university students in the Gurvansaikhan Sub Province. These students achieved academic success, demonstrated abilities, and earned awards in various competitions organized by the state and province. In addition, Hunnu also provided scholarships to 4 students of the first level in university studying in a professional field that is in need by Ulziit Sub Province. They will get support from Hunnu until graduation; then, they will work for the administrative division for a 5-year contract.



Health Development

Fighting Against COVID-19



During the COVID-19 pandemic, Hunnu donated 40 units of oxygen treatment equipment and 1,600 sets of a medical gown to the Health Departments of Umnugovi, Dundgovi, Dornod, and Gobi-Altai Provinces in order to support hospitals' tasks. It also contributed a 350-liter autoclave to the first maternity hospital, Urguu, in Ulaanbaatar's capital city.

Australia

Centennial Coal Company Pty Limited (CEY), a subsidiary of Banpu in Australia, believes in transparency in engagement, creating shared value, and establishing relationship to gain and maintain trust with local communities – a key stakeholder in its operations.

Community Engagement

Creating Partnerships

In 2022, The Mandalong Mine Community Fund contributed AUD 50,000 for community use. The Fund was opened for a legally constituted nonprofit organization, which must demonstrate that the proposal benefited residents of Cooranbong, Dora Creek, Mandalong, Morisset, and Wyee Towns. The proposals have been assessed by the current membership of the Mandalong Community Consultative Committee (CCC) and awarded sponsorship to successful organizations.

CEY also actively participated in and supported many community networks and volunteer activities that are not directly mine-related. The employees also supported various charities and did fundraising for topics they were passionate about. These include local school engagement in recognition awards for environmental activities, volunteering for Meals on Wheels which provides meals to frail aged and people with disabilities, and local arts events such as the Dobell Festival of Art, to name a few.

The Pamper Care Project

CEY's staff donated a range of goods to create Christmas hampers for 10 families in West Lakes

Macquarie who receive support from the Woodrising Neighborhood Centre. The hampers provided non-perishable foods and Christmas treats to deliver joy during the Christmas season, which 10 families greatly appreciated.

CEY also supports the local communities' activities through partnerships with the Pamper Care Project, Five Bays Sustainable Neighborhood Group, and Woodrising Neighborhood Centre.



United States of America

BKV Corporation (BKV), a subsidiary of Banpu in the United States of America, strives to be a force for good in society and is dedicated to having honest relationships with stakeholders. BKV actively supports and invests in the communities where it operates. By proactively engaging with local community stakeholders, BKV can better understand their interests and concerns.

Community Engagement

In 2022, BKV contributed a total of USD 175,320 to nonprofit organizations in NEPA (Northeastern Pennsylvania), Denver and Texas, BKV supported the work these organizations are doing in their communities: **Boys & Girls Clubs of Northeastern Pennsylvania** - an organization that enables all young people, especially those who are in need, to reach their full potential as productive, caring, responsible citizens: **Community Link** - an organization in North Texas committed to alleviating hunger by providing food and personal care items to those in need: **Seven Loaves Soup Kitchen** - an organization helps to enhance health and quality of life of the unfortunate and elderly in community by providing regular nutritious and well-balanced meals to those in need: **Communities In Schools of North Texas** - an organization empowers North Texas students on a path to a brighter future. In Denver, BKV also supported Denver Public Schools Foundation, which helps to ensure every student in every school has the tools and resources to reach their highest potential.

In addition, during the 12 Days of Giving in December, BKV held its inaugural employee giving campaign by matching dollar for dollar during the 12 days. Ten non-profits were highlighted over the 12-day campaign. Employees had the chance to

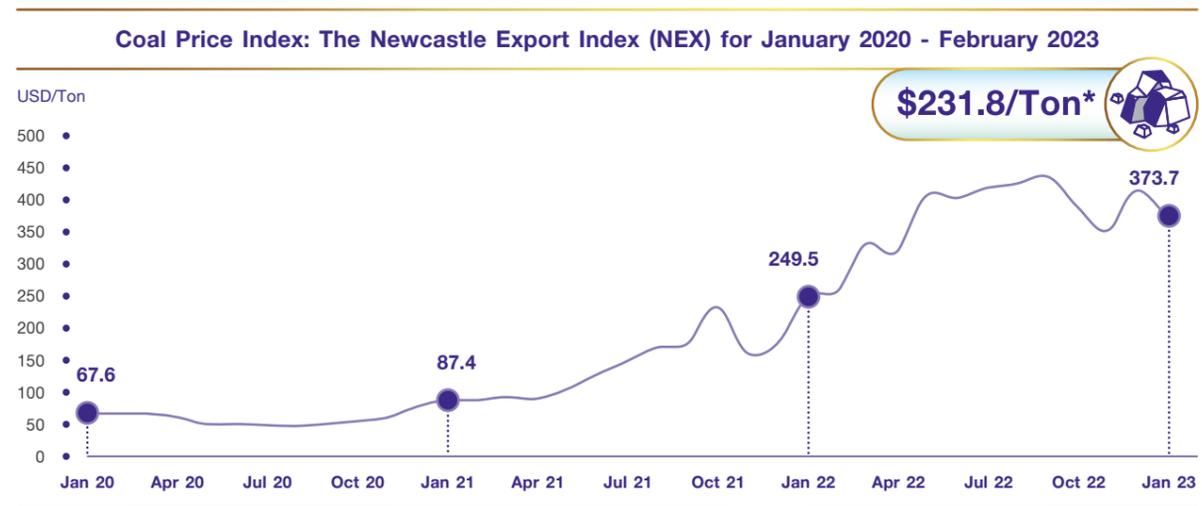


provide a financial contribution to their organization of choice, and BKV matched 100% of their donation. The funds went directly into the communities we operate, allowing us to impact local communities. During this campaign, we raised over USD 11,000, which was directly placed back into the operational areas. BKV plans to launch a year-round employee matching campaign in 2023.

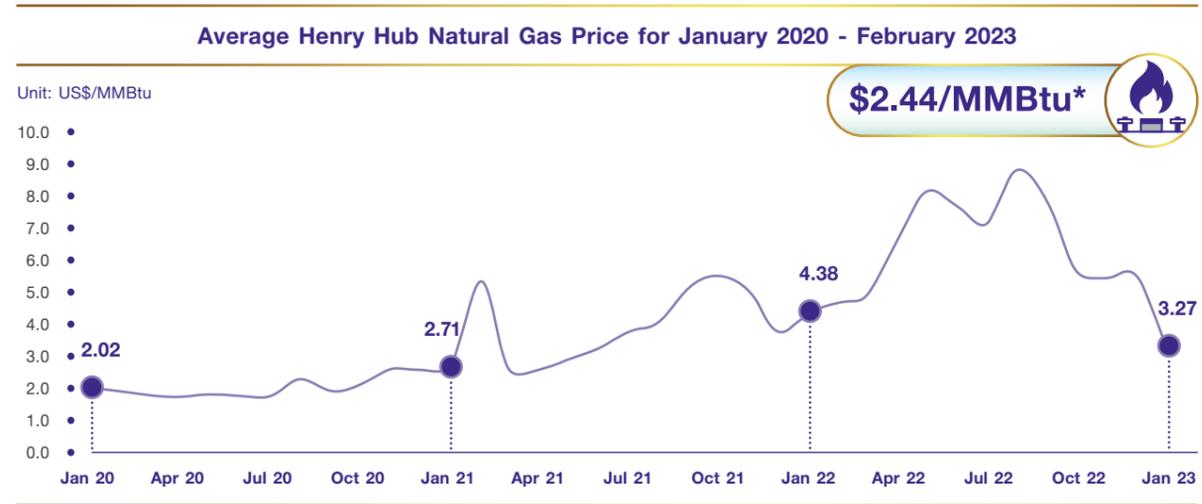
MANAGEMENT'S DISCUSSION AND ANALYSIS 2022

1. Energy Commodities Price Index

The market thermal coal and natural gas price since January 2020 as per below graphs that illustrate the coal and gas price indexes in the past periods.



* As of 10 February 2023



* As of 10 February 2023

2. Management Discussion and Analysis

Banpu achieved strong FY 2022 operational results with reported net profit of USD 1,162 million, significant increase of more than triple compared to previous year. The major contribution comes from the record high commodity prices for both coal and natural gas, result in an average selling price (ASP) of coal for 167.66 USD/ton, increase nearly double compare to previous year, and the average local price of US Natural gas for 5.72 USD/Mcf, increase by 58% compare to previous year, coupled with the company's ability to maintain operational resiliency with high flexibility, allowing all business units to create value by capturing upside opportunity during high commodity price to continue generate strong and consistent cash flow. The reported net profit already included several strategic transactions during the year which are gain from divestment of shareholding in Sunseap Group Pte. Ltd. of USD 179 million, gain from investment in North Texas Shale or XTO gas asset in the US of USD 171 million and also the impact of provision on Altai Nuurs project in Mongolia of USD 375 million as a result of the public transportation infrastructures that is necessary for the project developing and commercial operating did not progress as planned. The company decided to set a provision for prudent reporting in FY 2022.

The company continue to report strong operational cash flow by achieving group EBITDA of USD 3,916 million, 120% improve from previous year, consists of Coal business reported EBITDA of USD 2,654 million (up by 127% YoY), Gas business reported EBITDA ¹ of USD 1,052 million (up by 107% YoY), Power business reported EBITDA of USD 231 million (up by 120% YoY), and Energy Technology business reported EBITDA of USD -22 million.

The Energy resources business reported strong revenue and cash flow generation as a result of operational efficiency improvement and production plan flexibility to capture the upside during high commodity prices for both coal and natural gas business.

Coal businesses reported outstanding performance, driven by higher selling prices which improved by nearly doubled compared to previous year. The group ASP improved to USD 167.66/ ton, up by 84% compared to previous year which reported ASP of USD 91.17/ton. The total coal sales volume was 30.95 million tons, slightly declined by 3% compared to previous year. The average gross profit margin from coal business therefore increased to 57%.

Indonesia coal business reported improvement in average selling price at 192.69 USD/ton, up by 85% from 104.16 USD/ton in previous year. The sales volume of 18.93 million tons slightly decreased by 6% compared to previous year, mainly due to the impact from challenging weather conditions caused by higher-than-expected rainfall. However, with the cost of sale at 64.90 USD/ton, the average gross profit margin improved to 66%.

Australia coal business reported significant improvement in ASP of AUD 213.06/ton, supported by the strong export price that reach average of AUD 444.96/ton, though the sales volume was 8.55 million tons, decreased by 13% compared to previous year from the challenging geology at Mandalong mine, so the longwall changeover took longer time than expected. So, the cost of sales increases to AUD 131.56/ton, but still report strong gross profit margin of 38%.

China coal business continue to report strong share of profit of USD 229.73 million, improve nearly double compared to previous year. The continued strong Chinese domestic coal price driven by strong demand from the reopening of the country to boost up the economy support the earning performance.

Gas business in the US started to recognize the earnings from its newly acquired North Texas Shale or XTO gas asset, so the total production volume increase to 280.05 billion Cubic Feet (Bcf). Up by 14% from previous year. The average local price was 5.72 USD/Mcf, increased by 58% compared to 3.61 USD/Mcf in the previous year, and report gross profit margin at 61% driven by strong domestic demand from all sectors and surge in natural gas export to support demand from European countries that cutoff the natural gas import from Russia due to the ongoing tension between Russia and Ukraine so, throughout the year the domestic natural gas inventory remain weak, result in high domestic natural gas price. However, during end of the year, most of US natural gas producers continued to raise their productions to improve the storage level while the winter was not as cold as expected, so the domestic natural gas price started to stabilize down.

The Energy generation business reported outstanding performance with consistent share of profit, as a result of the ability to maintain plants efficiency for smooth electricity generation in all power plant assets. Temple I, the US gas-fired power plant reported good performance from the continued strong power demand during the year, with net profit of USD 15.24 million. HPC power plant generates share of profit of USD 105.03 million, with strong annual EAF reached 86%, BLCP also reported an improvement in its operation with share of profit of USD 16.22 million, with consistent strong annual EAF of 93%. Nakoso power plant in Japan reported profit sharing of USD 8.11 million. For the performance of CHPs plants in

China reported net loss of USD 29.45 million, mainly from the pressure of high Chinese domestic coal cost for an average of RMB 1,184/ton, an increase of 26% compared to previous year. On the other hand, Shanxi Lu Guang (SLG) power plant in China reported an improvement in its power sold and with the government supportive policy to encourage power plant entering long-term coal supply contract with domestic coal producers, SLG can purchased coal at lower cost of average RMB 902/ton, so its operational performance improved from previous year though still reported net loss of USD 8.87 million.

The renewable business consists of Solar farms in China and Japan continue to report consistent strong operational performance. Solar farms in China reported net profit of RMB 47 million, Solar farms in Japan reported TK dividend distribution of JPY 1,245 million. However, with the challenging weather conditions caused by La Niña impact, some area of our operations experienced with declining capacity factor which are solar farm and wind farm in Vietnam, reported net loss of USD 1.8 million and the 2 solar farms in Australia reported net loss of AUD 8.2 million

For Energy Technology business continues expanding its business through smart and sustainable energy solutions, serving various requirements of all customer segments in respond to the megatrend of low-carbon society, by expanding its products and services in various attractive geographies and collaboration with leading companies and business partners to enhance the potential of the company's clean energy businesses. In 2022, the company has expanded its solar roof business in Thailand, China and Indonesia achieving committed capacity up to 205 MW. The company also continues growing Energy Storage systems or ESS business which cover the production and sales of Battery by increase its shareholding in Durapower Holding Pte. Ltd. to 65.10%, also the JV partnership among Banpu Next

(30%) Durapower (30%) and Cherdchai motors (40%), to set up lithium-Ion battery plant in Thailand, expected to started the operation in 2023. For Smart City and Energy Management business, the company has secured new clients in various industries with a total number of 20 projects. For E-mobility business, the company expanding its fleet management coverage, having ride sharing through Muvmi for

2,500 service points, Car sharing through Haup car for 1,500 sharing stations, the charging stations under Evolt of 300 stations and EV customer services through Beyond Green Co., Ltd for 20 service centers. The company continues to pursue its commitment in expanding clean energy business to achieve its growth targets in all businesses within 2025 as planned.

3. Group Performance Analysis

The analysis and explanation of Banpu Group performance for the year ended 31 December 2022 and 2021 as follows:

Consolidated Statement of Income for the year ended 31 December 2022 and 2021

Consolidated financial performance (Unit: Million USD)	2022	2021	Change	
			Amount	%
Sales and service income	7,693	4,124	3,569	87%
Cost of sales and service	(3,616)	(2,393)	(1,223)	51%
Gross profit	4,077	1,731	2,346	136%
Selling expenses	(229)	(171)	(58)	34%
Administrative expenses	(445)	(304)	(141)	46%
Royalty fee	(592)	(294)	(298)	101%
Share of profit from joint ventures and associates	339	227	112	49%
Impairment loss on assets	(375)	-	(375)	100%
Other income (expenses)	(366)	(315)	(51)	16%
Finance cost	(265)	(184)	(81)	44%
Profit before income taxes	2,144	690	1,454	211%
Income taxes	(521)	(198)	(323)	163%
Profit for the year	1,623	492	1,131	230%
Owners of the parent	1,162	304	858	282%
Non-controlling interests	461	189	272	144%
Earning per share (Unit: USD)	0.162	0.049	0.113	231%
Diluted earnings per share (Unit: USD)	0.148	0.046	0.102	222%

Banpu group performance for 2022 reported net profit at \$1,162 million, increased by \$858 million or 282% compared to 2021. This was mainly from an increase in coal and natural gas market price that supported overall group performance. Moreover, 2022 was the first year that the group consolidated a newly acquired shale gas business in North Texas, including new power plants invested during 4Q2021, comprising of Temple I gas-fired power plant in USA and wind power plant in Vietnam. During the year, the group also recognized profit from sales of investment in a joint venture and bargain purchase gain from business

acquisition in USA, including profit sharing from coal business in China. However, during the year, the group considered to provide a provision for the impairment loss of one coal mine under development in Mongolia because the public transportation infrastructure that is necessary for project developing and commercial operating did not progress as planned. The Group decided to set a provision for impairment of \$375 million for such mine.

The Group performance for 2022 were describe as details follows:

Sales and cost of sales

(Unit: Million USD)	Revenue			Cost of Sales		
	2022	2021	Inc. (Dec.)	2022	2021	Inc. (Dec.)
Coal Business	5,190	2,909	78%	2,242	1,658	35%
Natural Gas Business	1,658	890	86%	639	411	55%
Power & Steam Business	746	244	206%	659	229	188%
Others	99	81	22%	76	95	-20%
Total	7,693	4,124	87%	3,616	2,393	51%

Sales

Sales reported at \$7,693 million (equivalent to THB 272,270 million), increased by \$3,569 million compared to 2021, that derived from an increase from coal businesses \$2,281 million, natural gas business \$768 million, power and steam business and others \$520 million. Details were described as follows:

- Sales from coal business of \$5,190 million or 67% of total revenue separated by source of coal as below:
 - Indonesia coal mines of \$3,650 million
 - Australia coal mines of \$1,253 million
 - Coal trading business of \$287 million
- Sales from natural gas business in USA of \$1,658 million or 22% of total revenue.

3. Sales from power and steam of \$746 million or 10% of total revenue derived from Combined Heat and Power (CHP) plants and solar power plants in China, solar power plant in Australia, wind power plant in Vietnam and gas-fired power plant in USA.

4. Others of \$99 million was mainly from energy trading business in Japan.

1. Coal Business

Coal Business		2022	2021	Inc. (Dec.)
Sales Volume	Million Tonnes	30.95	31.91	-3%
Average selling price	\$/Tonne	167.66	91.17	84%
Average Cost of sales	\$/Tonne	72.42	51.97	39%

Coal sales of \$5,190 million, increased by \$2,281 million or 78%, was a result of an increase in average selling price by \$76.49 per tonne or 84%, while a

decrease in sales volume by 0.96 million tonnes, and an increase in cost of sales by \$20.45 per tonne or 39% compared to 2021 as following details:

Indonesia Mines		2022	2021	Inc. (Dec.)
Sales Volume	Million Tonnes	18.93	20.07	-6%
Average selling price	\$/Tonne	192.69	104.16	85%
Average Cost of sales	\$/Tonne	64.90	44.91	45%

Coal Business in Indonesia

● Sales volume

Coal sales volume was 18.93 million tonnes, decreased by 1.14 million tonnes or 6% compared to 2021.

● Average selling price

Average selling price per tonne was \$192.69, increased by \$88.53 or 85% compared to 2021, in accordance with an increase of global coal market price.

● **Average cost of sales**

Average cost of sales per tonne was \$64.90, increased by \$19.99 or 45% compared to 2021, due to an impact from sharply increase in global fuel market price that average price of diesel per liter was \$0.92 (2021: \$0.50), higher overburden expenditure, including higher coal cost purchased from other sources. However, the group has focused on cost management to cope with a volatility in global coal market price, while still maintain coal quality, including quality development to meet customer demand and retain in the long run. Moreover, the group emphasized on more efficiency in fuel used for production This included a favor outcome from cost reduction program that implemented across the group.

Australia Mines	2022	2021	Inc. (Dec.)	
Sales Volume	Million Tonnes	8.55	9.82	-13%
Average selling price	A\$/Tonne	213.06	98.90	115%
Average Cost of sales	A\$/Tonne	131.56	91.90	43%

Coal business in Australia ● **Sales volume**

Coal sales volume was 8.55 million tonnes, decreased by 1.27 million tonnes or 13% compared to 2021 from a decrease in production from Mandalong, Airly and Clarence mines.

● **Average selling price**

Average selling price per tonne was A\$213.06, increased by A\$114.16 or 115% compared to 2021 as the following details:

Australia Mines	Sales Volume (Unit: Million Tonnes)			Avg. Price/Tonne (A\$/Tonne)		
	2022	2021	Inc. (Dec.)	2022	2021	Inc. (Dec.)
Domestic	5.53	6.45	-14%	86.41	75.22	15%
Export	3.02	3.37	-10%	444.96	122.82	262%
Total	8.55	9.82	-13%			

● **Average selling price of domestic and export sales**

Average domestic selling price per tonne was A\$86.41, increased by A\$11.19. This caused by an increase in domestic sales price and from higher quality of coal. The average export selling price per ton was A\$444.96, increased by A\$322.14 per tonne from higher market price compared to 2021. This included a depreciation of AUD currency against USD currency, that impacted to export sales conversion. The average AUD/USD in this quarter was 0.6941 (2021: 0.7516).

● **Average cost of sales**

Average cost of sales per tonne was A\$131.56, increased by A\$39.66. This was because an increase in amortization of deferred longwall changeover cost and higher deferred development cost, affected from encountering geological challenges in Mandalong and Springvale mines since the past period. This was included an increase in coal purchase price from other sources compared to 2021 while decrease in production volume, resulted to higher average cost of sales.

2. Natural Gas Business

Natural Gas Business		2022	2021	Inc. (Dec.)
Sales Volume	Bcf **	280.05	246.22	14%
Average Local Price	\$/Mcf	5.72	3.61	58%
Average selling price	\$/Mcf	5.52	3.38	63%
Average Cost of Gathering, processing & transport	\$/Mcf	1.00	0.88	14%
Average Cost *	\$/Mcf	1.54	0.92	67%

*Avg Cost excluded Cost of Gathering, processing & transportation

** Bcf - Billion Cubic Feet

Natural Gas business in USA

Sales from natural gas business in 2022 reported at \$1,658 million, increased by \$768 million or 86% compared to 2021. Details were as follows:

● **Sales Volume**

Natural gas sale volume was 280.05 billion cubic feet, increased by 33.83 billion cubic feet or 14% compared to 2021. This was mainly due to sales volume from shale gas business in North Texas newly acquired during 3Q2022.

● **Average Local Price**

Refer to higher Henry Hub index price compared to prior year, the average local selling price per Mcf. in this quarter was \$5.72, increased by \$2.11 per Mcf or 58% compared to 2021. Henry Hub natural gas price and West Texas Intermediate

(WTI) price was become higher from an increase in domestic demand of oil and natural gas while the supply became constrained as gas producers carefully monitored on their investment budget. This included consequential effects from banning imports and sale of oil and natural gas from Russia that caused high level of LNGs export sales volume compared to historical data.

● **Average cost of Gathering, processing & transportation**

Average cost of Gathering, processing & transportation per Mcf was \$1.00, increased by \$0.12 or 14% compared to 2021. This was an impact from higher inflation that caused service providers increased their service charges for gathering processing & transportation. However, the group has also continuously focused on manage this cost to cope with the volatility of market price.

● **Average Cost of Sale**

Average cost of sales (excluding gathering, processing & transportation cost) per Mcf was \$1.54, increased by \$0.62 or 67% compared to 2021. This was an increase in production tax that directly correlated to revenue, also a higher inflation that affected to an increase in cost of services and materials.

3. Power Business

Sales from Power and Steam of \$746 million or 10% of total revenue was from sales from CHP plant \$200 million, solar power plant in China of \$28 million, solar power plant in Australia of \$10 million, wind power plant in Vietnam of \$9 million and gas-fired power plant in USA of \$499 million. The power plants in Australia, Vietnam, and USA were acquired by the group during 2021.

Details of sales from CHP plants, solar power plants in China and gas -fired power plant in USA were described as follows:

Power Business		Combined Heat & Power Plants (CHP)			Solar Power Plants			Gas-fired power plants		
		2022	2021	Inc. (Dec.)	2022	2021	Inc. (Dec.)	2022	2021	Inc. (Dec.)
Power sold Volume	GWh	1,089.42	1,179.07	-8%	227.35	222.89	2%	3,810.30	417.23	100%
Stream Volume	Million Tonnes	6.08	6.33	-4%	-	-	-	-	-	-
Average PowerTariff	Unit/kWh	0.42	0.37	14%	0.81	0.83	-2%	74.71	40.08	100%
Average Stream Price	RMB/Tonne	132.27	124.29	6%	-	-	-	-	-	-

Combined Heat and Power (CHP) plants in China

Sales from power, steam, and others from 3 CHP plants in China of \$200 million, increased by \$9 million or 5% compared to 2021, was mainly from increasing in selling price of electricity and steam as detail below:

● **Sales Volume**

Sales volume of 1,089.42 GWh, decreased by 89.65 GWh or 8% compared to 2021 was a result from decreasing in steam production for industrial sector.

Steam sales of 6.08 million tonnes, decreased by 0.25 million tonnes or 4%, mainly was from Luannan CHP plant due to a decrease in demand from industrial customers.

● **Average Selling Price**

Average power tariff was RMB 0.42 per kWh, increased by 14% compared to 2021. This was because Luannan CHP plant and Zhengding CHP plant were entered into Power Trading Market resulting in higher average tariff that aligned with the market price.

Average steam price per tonne was RMB 132.27, increased by 6% from 2021. This was because a part of steam price was adjusted aligned with an increase in coal price and some was adjusted due to new purchase and sales agreements.

● **Cost of Sale**

Cost of sale was \$209 million, increased by \$19 million from higher coal cost, main fuel. Average coal cost per ton was 1,184 RMB (2021: 942 RMB), increased by 242 RMB or 26% compared to last year.

Solar power plants in China

Sales from solar power plants in China reported at \$27.53 million, decreased by \$1 million or 4% compared to 2021. Details of sales volume, average power tariff and cost of sales were as follows:

● **Sales Volume**

Sales volume of 227.35 GWh., increased by 4.46 GWh compared to 2021 from an increase in production volume caused by favorable weather conditions.

● **Average Power Tariff**

Average power tariff was RMB 0.81, decreased from 2021. This was because 10% of production volume was traded in power trading market under government regulations that price was below old contract price.

● **Cost of Sale**

Cost of sale was \$10 million, decreased by \$0.8 million compared to 2022.

Gas-fired power plant (Temple I) in USA Sales from gas-fired power plant (Temple I) reported at \$498.97 million, that was invested since 4Q21. Details were as follows:

- **Sales Volume**

Sales volume was 3,810.30 GWh.

- **Average Power Tariff**

Average power tariff was \$74.71 per kWh.

- **Cost of Sale**

Cost of sale was \$238.49 million, mainly from cost of natural gas.

Administrative expense Administrative expenses reported \$417 million, increased by \$113 million or 37% was mainly from administrative expense resulting from business expansion in USA and from the power plants that were acquired by the group in 2021.

Royalty fees Royalty fees reported at \$592 million, increased by \$298 million or 101%. The fee comprised of royalty fees from Indonesia mines \$514 million, increased by \$266 million and royalty fees from Australia mines that was \$78 million, increased by \$32 million compared to 2021 that was a result of an increase in coal price versus 2021.

Profit sharing (Unit: Million USD)	2022	2021	Inc. (Dec.)	
			Amount	%
BSCP	16	7	9	129%
Hongsa & Phufai Mining	105	113	(8)	-7%
Shanxi Luguang	(9)	(16)	7	-44%
Coal business in China	229	130	99	76%
Holding Company of Solar Power in Japan and others	(2)	(7)	5	-71%
Total	339	227	112	49%

Share of profit from joint ventures and associates

Profit sharing from joint ventures and associates reported at \$339 million, increased by \$112 million or 49% compared to 2021 mainly due to details described as below:

1. Recognition of profit sharing from Hongsa power plant and PhuFai mining in Laos of \$105 million, decreased by \$8 million from 2021. This was from loss on foreign exchange rate translation of \$16 million, while operating performance was increase \$8 million from more efficiency in operation that continuously generated stable electricity.
2. Recognition of profit sharing from BSCP of \$16 million, increased by \$9 million. This was mainly due to a decrease in deferred tax liability recognition and unrealized loss on exchange rate translation by \$11 million, net with a decrease in operating profit of \$2 million.
3. Recognition of loss sharing from SLG power plant of \$9 million that decrease in loss sharing \$7 million compared to 2021. The better performance was due the plant has entered into a long-term coal supply contract with favorable price, that lower coal cost significantly.
4. Recognition of shares of profit from coal business in China of \$229 million or increase \$99 million. This was a result of higher sales price aligned with coal market price.

Impairment loss on asset

Impairment loss on assets of \$375 million was a provision for the impairment loss of one coal mine under development (Altai Nuurs) in Mongolia because the public transportation infrastructure that is necessary for project developing and commercial operating did not progress as planned. This comprised of provision for impairment on mining property rights of \$314 million and deferred exploration and development expenditure of \$61 million.

Other expense

Other expense of \$360 million comprised of:

1. Net gain on foreign exchange rate of \$5 million was mainly from realized gain on foreign exchange rate of \$51 million from THB loan repayment during the period and unrealized loss on foreign exchange rate translation of \$46 million from conversion of USD loan at the end of the year. This was a result of a depreciation of THB currency against USD currency compared to the prior year. Average exchange rate of USD/THB as of 31 Dec 2022 was THB 34.5624 (31 Dec 2022: THB 33.4199). This was also from a depreciation of IDR currency against USD currency. Average exchange rate of USD/IDR as of 31 Dec 2022 was 14,853 IDR (31 Dec 2021: 14,258 IDR)
2. Net loss from financial derivatives of \$816 million comprised of:
 - Realized loss from financial derivatives of \$780 million derived from coal swap contracts of \$134 million, natural gas swap contracts of \$601 million, cross currency swap and interest rate swap of \$4 million, fuel swap of \$1 million, foreign exchange rate forward contract \$16 million, electricity call option from Temple I gas-fired power plant of \$27 million, while, realized gain on interest rate swap of \$3 million.
 - Unrealized loss on fair value remeasurement of financial derivatives at the end of the year of \$36 million was from natural gas swap contract of \$26 million and electricity swaption of \$23 million, while, there was unrealized gain on electricity call option from Temple I gas-fired in USA of \$3 million, interest rate swap of \$9 million and foreign exchange rate forward contracts of \$1 million.

Income tax

3. Management fee income and others of \$445 million was from:

- Interest income of \$18 million.
- Management fee charged to related parties and joint ventures of \$1 million.
- Dividend income of \$8 million, was mainly from profit sharing from solar power business in Japan under TK (TOKUMEI KUMIAI) agreement.
- Gain on sales of investment in a joint venture of \$179 million.
- Others of \$68 million. Those are steam connection fee income from new residential steam customers from CHP plants in China, sales of ashes, slag and scraps from mines and power plants, insurance claims, warehouse management fee income, tax redemption receipts and others.

Income tax of \$521 million, increased by \$323 million was mainly from:

1. An increase in corporate income tax of \$180 million, aligned with higher operating profits compared to prior year.
2. An increase in withholding tax of \$32 million from dividend receives during the period.
3. An increase in deferred tax expense of \$111 million was from an increase in deferred tax liability, primary from a different in foreign exchange rate conversion between accounting basis and tax basis resulting from a depreciation of THB currency, also from recognition of deferred tax liability from a newly acquired shale gas business in North Texas during 2022.

4. Statements of Consolidated Financial Position

Statements of Consolidated Financial Position as of 31 December 2022 in comparison with the Statements of Consolidated Financial Position as of 31 December 2021.

Financial Position (Unit: Million USD)	Inc. (Dec.)			
	31-Dec-22	31-Dec-21	Amount	%
Assets	12,638	10,946	1,692	15%
Liabilities	8,229	7,843	386	5%
Equity	4,409	3,103	1,306	42%

4.1 Total assets of \$12,638 million, increased by \$1,692 million compared to total assets as of 31 December 2021 with details described as below:

Financial Position (Unit: Million USD)	Assets		Inc. (Dec.)	
	31-Dec-22	31-Dec-21	Amount	%
Cash and Cash equivalent	2,154	1,184	970	82%
Investment in debt instruments measured at fair value through profit or loss	12	16	(4)	-25%
Trade accounts receivable and note receivables, net	668	473	195	41%
Inventory net	196	158	38	24%
Current portion of dividend receivables from related parties	28	24	4	17%
Non-current assets held-for-sale	-	172	(172)	-100%
Derivative assets due in one year	14	21	(7)	-33%
Other current assets	614	508	106	21%
Total Current assets	3,686	2,556	1,130	44%

Financial Position (Unit: Million USD)	Assets		Inc. (Dec.)	
	31-Dec-22	31-Dec-21	Amount	%
Dividend receivables from related parties	3	7	(4)	-57%
Investments in joint ventures and associates accounted for using the equity method	1,784	1,645	139	8%
Investments in debt instruments measured at fair value through profit or loss	178	-	178	100%
Investments in equity instruments measured at fair value through profit or loss	7	8	(1)	-13%
Investments in equity instruments measured at fair value through other comprehensive income	159	164	(5)	-3%
Property, plant and equipment, net	4,190	3,416	774	23%
Deferred exploration/stripping costs, net	740	889	(149)	-17%
Mining property rights, net	876	1,276	(400)	-31%
Goodwill, net	394	432	(38)	-9%
Right of use assets net	77	66	11	17%
Derivative assets	51	64	(13)	-20%
Other non-current assets	493	423	70	17%
Total Non-Current Assets	8,952	8,390	562	7%
Total Assets	12,638	10,946	1,692	15%

- Cash and cash equivalents of \$2,154 million, increased by \$970 million. (As explanation in no.5 Consolidated Statement of Cash Flows).
- Investment in debt instrument measured at fair value through profit or loss of \$12 million, decreased by \$4 million, comprising of additions of \$63 million, net with redemptions of \$66 million, and decrease from effects of foreign exchange rate translation at the end of the year ,and others of \$1 million.

- Current portion and non-current portion of dividend receivable from related parties of \$28 million and \$3 million, respectively, were dividend receivable from joint ventures who operates power business in Thailand and joint ventures who operates CHP plant business in China, which total decreased by \$0.23 million. This was a net result of:
 1. An increase from additional declared dividend of \$116 million.
 2. A decrease from received dividend of \$114 million.
 3. A decrease from foreign exchange rate translation at the end of periods and others of \$2 million.
- No balance of non-current assets held for sales \$172 million in this quarter because the sales of investment in a joint venture of the group was completed in 1Q2022.
- Investment in joint ventures and associates of \$1,784 million, increased by \$139 million or 8% was from:
 1. An increase from recognition of profit sharing from joint ventures and associates by \$339 million.
 2. An increase from investment additions of \$17 million.
 3. An increase from recognition of other comprehensive income from investment in joint ventures and associates of \$29 million.
 4. A decrease from dividend recognition during the period of \$116 million.
 5. A decrease from the effects of foreign exchange rate translation at end of the period and others by \$101 million.
- Investment in debt instrument measured at fair value through profit or loss of \$178 million was primary from investment in US healthcare investment fund and Smart City Fund II in Europe during the year totalling \$166 million and increase from fair value remeasurement of investment at the end of the year of \$12 million.
- Investment in equity instrument measured at fair value through other comprehensive income (FVOCI) of \$159 million, decreased by \$5 million. This was due to:
 1. An additional investment in solar power business in Japan of \$13 million.
 2. An increase from the impact of fair value remeasurement of \$4 million.
 3. A decrease from the effects of foreign exchange rate translation at the end of the year and others of \$22 million.

- Property plant and equipment of \$4,190 million, increased by \$774 million derived from:
 1. An increase from additions of machine and equipment of coal business, natural gas business and power business total of \$300 million.
 2. An increase from acquisition of natural gas business in USA and solar power plant in Vietnam total of \$955 million.
 3. An increase from fair value remeasurement of contingent liability from asset acquisition of \$5 million.
 4. An increase from asset reclassification of \$8 million.
 5. A decrease from sales and write-off of \$7 million.
 6. A decrease from depreciation charges for the year of \$372 million.
 7. A decrease from the effects of foreign exchange rate translation at end of the year of \$105 million.
- Right of use assets of \$876 million decreased by \$400 million, or 31%, resulting from write-off during the year of \$26 million, provision for impairment of \$314 million for assets of Altai Nuurs, a mine under development in Mongolia, and from the effects of foreign exchange rate translation at the end of the year of \$60 million.
- Current portion and non-current portion of financial derivative assets, net of \$14 million and \$51 million, respectively, or total of \$65 million This was a result from fair value remeasurement at the end of the year, which comprised of interest rate swap of \$17 million, electricity swaption of \$37 million, electricity forward contracts of \$1 million, foreign exchange rate forward contract of \$4 million, coal swap of \$2 million and natural gas swap of \$5 million.
- Other non-current assets of \$493 million, increased by \$70 million. This was due to an increase in vat receivable of \$103 million, right to operate of power plant business from business acquisition of solar power plant in Vietnam of \$6 million, whereas a decrease in prepaid income tax in Indonesia of \$25 million, deposit of \$1 million, deferred income tax assets in Indonesia of \$12 million, and reclassification of asset under development to be fixed assets and others of \$1 million.

4.2 Total liabilities of \$8,229 million, increased by \$386 million compared to total liabilities as of 31 December 2021 with movement details as described below:

Financial Position (Unit: Million USD)	Liabilities		Inc. (Dec.)	
	31-Dec-22	31-Dec-21	Amount	%
Short-term loans from financial institutions	451	1,174	(723)	-62%
Trade accounts payable	123	99	24	24%
Current portion of long-term borrowings, net	667	517	150	29%
Current portion of debenture, net	251	120	131	109%
Accrued overburden and coal transportation costs	113	77	36	47%
Derivative liabilities due in one year	66	128	(62)	-48%
Other current liabilities	1,112	793	319	40%
Total current liabilities	2,783	2,908	(125)	-4%
Long-term loans from other company	2,262	2,270	(8)	-0.35%
Debentures, net	2,372	1,911	461	24%
Derivative liabilities	4	53	(49)	-92%
Provision for decommissioning and reserve for environment reclamation	263	340	(77)	-23%
Other liabilities	545	361	184	51%
Total non-current liabilities	5,446	4,935	511	10%
Total liabilities	8,229	7,843	386	5%

- Short-term loans from financial institutions of \$451 million, decreased by \$723 million or 62%, was from addition of \$1,599 million, repayment of \$2,296 million, and a decrease from the effects of foreign exchange rate translation at the end of the period of \$26 million.
- Current portions of long-term loans of \$667 million, increased by \$150 million or 29%. This was a net result from a reclassification from non-current portion of \$696 million, repayment of \$497 million, deferred finance charge of \$2 million, and the effects of foreign exchange rate translation at the end of period of \$51 million.

- Current portions of debenture of \$251 million, increased by \$131 million or 109% was from an increase from reclassification from non-current part of \$255 million, offset with redemption of \$115 million and the effects of foreign exchange rate translation at the end of the year of \$9 million.
- Accrued overburden and coal transportation expenses of \$113 million, increased by \$36 million or 47% was mainly from mining operations of subsidiaries in Indonesia.
- Other current liabilities of \$1,112 million increased by 319 million. This was primary from accrued interest expense of \$10 million, accrued income tax and withholding tax payable of \$131 million, accrued royalty expense of \$3 million, fixed asset purchase payable of \$18 million and others such as domestic market obligation \$31 million, accrued expense from derivative of \$12 million, contingent liabilities from a newly acquired shale gas business in North Texas during 2022 of \$22 million, and other accrued expense of \$92 million.
- Long-term loans of \$2,262 million, decreased by \$8 million or 0.35%, was a net result of:
 1. An increase from additional loan during the period of \$680 million.
 2. An increase from business acquisition of \$22 million.
 3. A decrease from reclassification to current portion of \$696 million.
 4. An increase from deferred finance charge and its amortization of \$4 million
 5. A decrease from the effects of foreign exchange translation at the end of the year of \$15 million, was mainly from a depreciation of THB currency against USD currency that affected to THB currency loan. Average exchange rate of THB/USD as of 31 Dec 2022 was THB 34.5624 (31 Dec 2021: THB 33.4199). Also, a decrease was from a depreciation of AUD currency against USD currency at the end of the year. Average exchange rate of AUD/USD as of 31 Dec 2022 was 0.6764 (31 Dec 2021: 0.7260).

- Debenture of \$2,372 million, increased by \$461 million or 24%. This was from new additions of \$774 million, reclassification to current portion of \$255 million, and decrease from deferred finance charge of \$1 million and the effects of foreign exchange rate translation at the end of the year of 57 million due to a depreciation of THB currency against USD currency impacted to THB currency debenture.
- Current portion and non-current portion of derivative liabilities reported at \$66 million and \$4 million, respectively, total of \$70 million. This was changes in fair value of financial derivatives at the end of the year, that consisted of cross currency swap and interest rate swap of \$17 million, natural gas swap contracts of \$43 million, natural gas and natural gas liquid swap and option of \$7 million and electricity call option of \$2 million.

4.3 Shareholders' equity of \$4,409 million increased by \$1,306 million compared to shareholders' equity as of 31 December 2021, with movement details as described below:

Financial Position (Unit: Million USD)	Equity		Inc. (Dec.)	
	31-Dec-22	31-Dec-21	Amount	%
Equity attributable to owners of the parent	3,409	2,372	1,037	44%
Non-controlling interests	1,000	731	269	37%
Total equity	4,409	3,103	1,306	42%

- An increase of \$1,162 million from 2022 net profits.
- An increase of \$223 from additional paid-up share capital.
- An increase of \$25 million from reserve for share-based compensation to employees.
- An increase of \$81 million from fair value reserves for financial assets measured at fair value to other comprehensive income, cash flows hedge reserves and net investment hedge.

- A decrease of \$12 million from fair value of put options over non-controlling interests.
- A decrease of \$346 million from the effects of foreign exchange rate translation of subsidiaries' financial statements and others.
- An increase of \$446 million from non-controlling interest.
- An increase of \$63 million from disposal of treasury shares of a subsidiary.
- A decrease of \$336 million from dividend payment.

4.4 Net debt-to-equity ratio as of 31 December 2022 reported at 0.74 times (31 December 2021: 1.31 times).

5. Statement of Consolidated Cash Flows

Statement of consolidated cash flows for the year ended 31 December 2022 presented an increase of net cash flow by \$970 million (included the effect from unrealized loss on exchange rate translation at the end of period of \$57 million). The details of consolidated cash flows activities were as follows:

Statement of Consolidated Cash Flows (Unit: Million USD)	Amount
Net Cash flows from operating activities	1,832
Net Cash flows used in investing activities	(861)
Net Cash flows from financing activities	56
Net increase in cash and cash equivalents	1,027
Exchange Loss on cash and cash equivalents	(57)
Cash and cash equivalents at the beginning of the period	1,184
Cash and cash equivalents at end of the year	2,154

5.1 Net cash inflow from operating activities of \$1,832 million; with major operating items as follows:

- Collections from sales of \$6,685 million.
- Payments to contractors and suppliers of \$3,230 million.
- Interest payments of \$249 million.
- Payments of income tax of \$260 million.
- Receipts from tax refund of \$30 million.
- Royalty fee payments of \$637 million.
- Other payments of \$507 million.

5.2 Net cash used in investing activities of \$861 million; with major items as follows:

- Payments for machines, equipment, and project in progress of \$281 million.
- Payment for business acquisition of \$648 million.
- Payments for financial assets measured at fair value through profit and loss of \$163 million.
- Payments for financial assets measured at fair value through other comprehensive income of \$12 million.
- Payments for deferred exploration and development expenditure of \$213 million.
- Payment for placement of restricted cash of \$19 million.
- Payment for investment in joint ventures and associates of \$17 million.
- Receipts from dividend from joint ventures and other investments of \$115 million.
- Receipts from sales of investment in joint venture of \$348 million.
- Receipts from interest income and others of \$29 million.

5.3 Net cash inflow from financing activities of \$56 million; comprised of

- Receipts from short term and long - term loans from financial institutions and debentures of \$3,053 million.
- Repayments of short term and long - term loans from financial institutions, debentures, and lease liabilities of \$2,948 million.
- Receipts from disposal of treasury shares of a subsidiary of \$63 million.
- Receipts from additional paid-up share capital of \$223 million.
- Payment for dividend of \$336 million.
- Receipts from an increase in share capital of a subsidiary from non-controlling interest of \$1 million.

6. Coal Reserves

The quantity of sales and remaining of coal reserves for the year ended 31 December 2022:

Coal Mine (Unit: Million Tons)	Quantity of Coal Sales and Reserves			
	Coal reserves as of 31 Dec 2021	Reserves addition 2022	Sales volume Jan-Dec 2022	Coal reserves as of 31 Dec 2022
1. Indonesia				
1.1 Jorong	8.15		0.87	7.28
1.2 Indominco	30.32		6.78	23.54
1.3 Kitadin	0.44		0.32	0.12
1.4 Trubaindo	35.49		2.97	32.52
1.5 Bharinto	141.16		5.32	135.84
1.6 Graha Panca Karsa	-	21.50	-	21.50
1.7 NPR Project	77.40		-	77.40
2. Australia	260.69		8.07	252.62
3. China				
3.1 Gaohe	108.84		8.68	100.15
3.2 Hebi Zhongtai	13.75		0.82	12.93
Total	676.24	21.50	33.83	663.91

7. Natural Gas Reserves

The quantity of sales and remaining of natural gas reserves for the year ended 31 December 2022:

Quantity of Natural Gas Sales and Reserves	Natural Gas
	(Unit: Million Cubic Feet)
Natural Gas reserves as at 31 December 2021	4,186,761
1) Reserves addition from XTO acquisition	1,413,576
2) Adjustment on reserve estimation	465,001
3) Production and Sales 2022	(280,049)
Natural Gas reserves as at 31 December 2022	5,785,289

(Natural Gas Reserves from Marcellus and Barnett shales refer to Reserve Report 's Ryder Scott)

FINANCIAL RATIO

Banpu Public Company Limited and Subsidiaries

		For the Year Ended 31 December		
		2022	2021	2020
Liquidity Ratio				
Current Ratio	(Times)	1.32	0.88	0.71
Quick Ratio	(Times)	1.02	0.57	0.44
Cash Flow Liquidity Ratio	(Times)	0.82	0.40	0.24
Account Receivable Turnover	(Times)	13.42	11.37	9.20
Average Collection Period	(Days)	26.82	31.66	39.13
Inventory Turnover	(Times)	27.48	21.93	16.12
Average Inventory Period	(Days)	13.10	16.42	22.33
Account Payable Turnover	(Times)	32.67	28.83	28.68
Account Payable Days	(Days)	11.02	12.49	12.55
Cash Cycle	(Days)	28.90	35.59	48.91
Profitability Ratio				
Gross Profit Margin	(%)	52.99	41.98	20.17
Operating Profit Margin	(%)	46.67	27.53	(0.35)
Cash to Profit Margin	(%)	0.65	0.91	(57.20)
Net Profit Margin	(%)	13.72	6.78	(2.17)
Returns on Equity	(%)	30.95	10.27	(2.05)
Efficiency Ratio				
Returns on Assets	(%)	9.86	2.99	(0.64)
Returns on Fixed Assets	(%)	47.22	26.71	16.64
Fixed Asset Turnover	(Times)	0.72	0.44	0.29
Financial Ratio				
Debt to Equity	(Times)	1.87	2.53	2.33
Net Debt to Equity	(Times)	0.74	1.31	1.47
Interest Coverage Ratio	(Times)	9.40	5.78	2.51
Dividend Payout	(%)	21	28	N/A

Note:

⁽¹⁾ For IFRS EBITDA, there are significant differences between Banpu's presentation of IFRS EBITDA and BKV's presentation of US Non-GAAP EBITDAX, including treatment of derivative gains and losses, depletion expense, accretion expense, stock compensation expense, BNAC expenses, equity income, and contingent consideration gains and losses for asset acquisitions.

OTHER REFERENCES

1. Ordinary Share Registrar

Thailand Securities Depository Company Limited

1st Floor, The Securities Exchange of Thailand
93 Ratchadapisek Road, Din Daeng, Bangkok 10400
Tel. +66 2009 9000
Contact Center +66 2009 9999

2. Debenture Registrar

Bangkok Bank Public Company Limited

333 Silom Road, Bangrak, Bangkok 10500
Tel. +66 2230 1893

3. Bond Representative

Siam Commercial Bank Public Company Limited

9 Ratchadapisek Road, Jatujak, Bangkok 10900
Tel. +66 2544 1111

Bangkok Bank Public Company Limited

333 Silom Road, Bangrak, Bangkok 10500
Tel. +66 2230 1893

4. Auditor

Ms. Rodjanart Banyatananusard
Authorised Auditor No. 8435

PricewaterhouseCoopers ABAS Company Limited

15th Floor, Bangkok City Tower
179/74-80 South Sathorn Road, Bangkok 10120
Tel. +66 2844 1000

5. Financial Advisor

--None--

6. Advisor or Manager under Management Agreement

The Company did not hire any advisors or managers under any permanent management agreement. Advisors, including financial advisors, were hired on a case-by-case basis as necessary to support its operations from time to time. The Company's management is mainly supervised by the Board of Directors.

7. Financial Institutions

The Company is regularly in contact with around 30 local and international commercial banks and financial institutions.

SIGNIFICANT LITIGATION

On 19 April 2022, an Indonesian subsidiary was sued for the breach of Cooperation Agreement with the other company dated 4 September 2004. The Plaintiff is claiming compensation for total losses of US Dollar 490.64 million. On 13 December 2022, the District Court rejected the Plaintiff's claim in its entirety. On 23 December 2022, the Plaintiff then filed an appeal to the High Court. As at 31 December 2022, this case has been in the process of the High Court. The subsidiary did not recognise contingent liability in the consolidated financial statement because the Group's management believes that the subsidiary has strong evidence to defend in the lawsuit.



PART 2

**CORPORATE
GOVERNANCE**

CORPORATE GOVERNANCE POLICY

The Board of Directors of Banpu Public Company Limited has enforced “the Corporate Governance Policy and Code of Conduct” on directors, executives, and employees at all levels since 2002. The Board annually reviews the policy to ensure compliance with the business context, laws, regulations, rules, and guidelines of related agencies. The Corporate Governance and Nomination Committee is delegated by the Board to conduct a preliminary review of the policy and submit the results to the Board. In 2022, the Company amended the Corporate Governance Policy, and the Practices of the Board of Directors of Banpu Public Company Limited on the appointment of the Lead Independent Director: if the Chairman of the Board is not an independent director, the Board of Directors shall promote the checks and balances of power and authority of the Board of Directors by having the Board of Directors comprise a majority of independent directors and/or appointing a designated independent director to be a Lead Independent Director to participate in setting the board meeting agenda.

In addition, the Board of Directors has organized communication sessions to create understanding and awareness of the Corporate Governance Policy and the Code of Conduct while promoting the implementation and continuously monitoring the performance.



For complete information on “the Corporate Governance Policy and the Code of Conduct”, please scan the QR code or click on ‘CLICK HERE’.

The Company monitored and evaluated the effectiveness of the implementation of the Corporate Governance Policy and the Code of Conduct in the organization based on the results of the 2022 Corporate Culture and Employee Engagement Survey, using the “Committed” value as an indicator. The overall results classified by job levels and locations were at a satisfactory level.

Communication of the Corporate Governance Policy

To drive practice according to the Corporate Governance Policy and the Code of Conduct, in 2022, the Company organized internal communication under the concept “Scale Up Your CG” to foster corporate culture and a positive attitude toward corporate governance. The goal is to enhance employees’ knowledge and understanding of corporate governance through activities and communications as follows:

1. Training on Corporate Governance Principles

The Company organized a session on the principles of good corporate governance (CG) and the Code of Conduct for all of Banpu’s new employees as part of its employee orientation.

2. Internal Communication under the name “Scale Up Your CG”

The Company gathered general CG issues and questions to be used as case studies for communication with employees in the forms of video clips and infographics for a clear and accurate understanding.



3. CG of the Month Column in Banpu Synergy E-Magazine

This column in Banpu Synergy E-Magazine discusses CG trends and directions in Thailand. The internal e-magazine is published online and accessible to Banpu’s employees in every country where the Company operates.



4. CG Day 2022

“CG Day” is an annual event to promote and cultivate the importance of ethical business conduct and commitment to integrity among employees at all levels. In 2022, the Company organized a CG quiz competition, in which three teams participated, to assess the extent to which employees understand CG principles and apply them in their work.



5. Evaluating understanding of CG through CG E-learning and CG E-testing platforms

Corporate Governance Division joined hands with Banpu Academy in developing the CG E-learning and E-testing platforms for measuring employees’ understanding of CG. The e-learning on “B SUCCESS” platform is also utilized to improve employees’ knowledge and encourage adherence to the CG Policy and Code of Conduct.



6. Anti-Corruption

In 2022, the Company conducted its annual assessment of corruption risk and established preventive measures, covering all businesses in every country where it operates, including its subsidiaries and joint ventures. The results were reported to the Risk Management Committee. Moreover, the Company continually communicated and informed its employees of relevant policies and practices to combat corruption, such as the Corporate Governance Policy, the Code of Conduct, and the Standard Practice Manual for Accepting and Offering of Gifts, Hospitality, or Other Similar Forms of Reward. Employees can access the policies through internal communication channels. In the past year, letters were sent out to directors, executives, and employees to request adherence to the No Gift Policy.



For complete information on “the Anti-corruption Policy”, please scan the QR code click on ‘CLICK HERE’.

The Policy and Practices Related to the Board of Directors, Shareholders, and Stakeholders

The Board of Directors formulated the Corporate Governance Policy as guiding principles for directors, executives, and employees based on the Securities and Exchange Commission of Thailand (SEC)'s Corporate Governance Code 2017, comprising eight key principles as follows:

Principle 1: Establish Clear Leadership Role and Responsibilities of the Board

Since 2009, the Board of Directors has explicitly defined the Board's duties and responsibilities in "The Practices for the Board of Directors of Banpu Public Company Limited B.E. 2552." The Practices have been periodically amended, with the most recent amendments in 2022, to align the Board's duties and responsibilities with changing business environment, rules and regulations, and corporate governance guidelines.

For complete information on "The Practices for the Board of Directors of Banpu Public Company Limited", **please scan the QR code or click on 'CLICK HERE'.**



Banpu's Board of Directors is fully aware of its roles and responsibilities in leading and driving the Company forward. The Board is responsible for establishing strategies and policies for business undertaking with accountability, prudence, and integrity to ensure the Company's best interest and social responsibility through adherence to the environmental, social, and governance (ESG) standards. The Board of Directors' scope of duties and responsibilities is as follows:

1. The Board of Directors plays a significant role in establishing the vision and mission of the organization, which involves becoming a more sustainable business. The Board monitors and supervises the Company's operations and reviews business performance yearly to make sure the goals are achieved. It also approves the financial key performance indicators (KPIs) and action plans as well as regularly oversees and monitors the management's performance against plans. Besides, the Board requires the Company's vision and mission to be reviewed at least every five years to ensure that the Company's business operations are on track toward sustainable development as planned.
2. The Board of Directors and the executives have jointly developed a long-term business plan and strategic plan every five years for more than 20 years to ensure alignment with the Company's vision and mission. The Board of Directors appointed the Chief Executive Officer to be in charge of business management as well as strategy development and implementation. The CEO's authority and responsibilities were clearly stipulated. The CEO's authority is cascaded down through executives of lower levels in business units both in Thailand and abroad according to the Company's delegation of authority matrix.
3. The Board of Directors established the Corporate Governance Policy and the Code of Conduct, which are coherent with the Company's vision and mission, business credo, values, principles, and recommended practices. This provides clear guidelines and makes it convenient for directors, executives, and employees to follow. Employees are clearly advised on what they should do and what they should refrain from doing. They are also advised of standard practices they are expected to follow for how to treat fellow employees, shareholders, customers, partners, creditors, competitors, and society at large. Being aligned

with the Corporate Governance Policy, these practices are believed to bring about more concrete actions in relation to good governance.

The Company stipulated that all directors, executives, and employees shall acknowledge, understand, and comply with Corporate Governance Policy and practices as defined in the Code of Conduct. The Company keeps employees, both domestic and overseas, informed of this through publications and activities organized all year round to promote understanding and awareness of the importance of compliance with the Code of Conduct. The executives of each business unit are responsible for creating understanding among their subordinates and promoting compliance with the Code of Conduct while employees at all levels are expected to act as a role model.

Apart from the practices prescribed in the Code of Conduct, the executives and employees have jointly built "Banpu Heart," the Company's corporate culture, to strengthen shared corporate values among employees at all levels, both in Thailand and abroad.

Principle 2: Define Objectives that Promote Sustainable Value Creation

Based on the Board of Directors' guidance and suggestions, the executives formulate and present to the Board the business direction, a long-term strategic plan, an annual action plan, a budget plan, and an annual workforce plan. The Board then has an open discussion with the executives to reach a mutual agreement before approval.

In 2022, the Board of Directors and the executives have reviewed and approved the strategic plan and business direction for 2021-2025 to respond to the rapidly changing business environment. The Company also conducted a risk assessment to prepare the Company for future situations.

The Company devised business strategies and the strategic plan for the next five years based on its sustainable development plan with an emphasis on competitiveness enhancement, stakeholder value creation as well as adaptability to economic and industrial changes. These elements were the basis on which the Company's strategic framework was created in response to its Greener & Smarter strategy. Performance monitoring has been set as a regular agenda of the Board's monthly meeting. The Board monitored the implementation of the strategy by the executives according to the annual plan and the strategic plan and provided advice or feedback on improvement where necessary.

Principle 3: Strengthen Board Effectiveness Determining and Reviewing the Board Structure

The Board of Directors determined and reviewed the Board structure in relation to the number of directors, the proportion of independent directors, diverse qualifications, and specialization of each director to ensure suitability for the Company's business. Sub-committees were also set up to support the Board's duties.

Appointment of Board Members

Independent Directors, who account for 38% of the Board, are as follows:

1. Mr. Teerana Bhongmakapat
2. Mr. Suthad Setboonsarng
3. Mr. Pichai Dusdeekulchai
4. Mr. Teerapat Sanguankotchakorn
5. Mr. Piriya Khempon

Independent directors are an important mechanism for good corporate governance. For the Company and shareholders' best interests, there should be a sufficient number of independent directors to balance the decision-making of the Board and to share opinions independently without influence from any individual or party. An independent director serves a maximum of three terms or nine years as stipulated in The Practices for the Board of Directors of Banpu Public Company Limited B.E. 2552, Amendment No.5 B.E. 2560, Clause 6 Term of Office and Retirement.

Banpu defined independent directors more strictly by imposing more stringent requirements than those stipulated by SEC, particularly on the director's shareholding. Qualifications of "Independent Directors" are available on Banpu's website. For more information about "Qualifications of Independent Directors", [please scan the QR code or click on 'CLICK HERE'](#).



Nomination of Directors and Senior Executives

The Corporate Governance and Nomination Committee is responsible for the nomination of candidates to replace directors whose terms will expire or are terminated on other reasons. The nomination procedure is as follows:

1. Review the structure and the composition of the Board in order to strengthen the Board of Directors as a whole.
2. Review general and specific qualifications, qualifications of independent directors and set additional criteria for candidate screening and

nomination in accordance with the Company's business strategy and in compliance with the Stock Exchange of Thailand (SET)'s rules and regulations. After the recruitment process, the Corporate Governance and Nomination Committee will nominate the candidate to be approved by the Board of Directors and proposes the candidate to be elected at the Annual General Meeting of Shareholders (AGM).

The Corporate Governance and Nomination Committee is responsible for nominating candidates to replace the directors whose terms have expired by rotation or to fill vacancies. The Committee considers candidates from the director pool and allows each member to nominate the candidates. The Committee determines and discloses the Board Diversity, then announces via the Company's website to invite the minority shareholders to nominate qualified candidates within the specified duration of time and under stated conditions. All the candidates will then undergo a nomination process in which knowledge, capability, experience, general qualifications, and board skills mix contributive for board composition and collaboration are considered. The number of nominated candidates will be twice as many as the number of vacancies, and the nomination must be approved by the Board. The Shareholder's meeting will approve the appointment of directors with a minimum of 50% of the voting rights of the total shareholders attending the meeting and having the right to vote. The voting is carried out for each individual director.

For the nomination of executives, the Corporate Governance and Nomination Committee annually monitors a succession plan covering the CEO, and senior executives positions to ensure that the Company will have competent executives with proper expertise and experience to fill critical positions in the future.

Performance Evaluation of the Board of Directors

The Company requires a performance evaluation of the Board of Directors, sub-committees, and individual directors with details on criteria, procedures, and evaluation results disclosed in the annual report and the performance report of the Corporate Governance and Nomination Committee. The Company also requires the Board to conduct an annual board self-assessment to review its performance, problems, and obstacles in the past year to identify ways to enhance its efficiency based on good governance principles. The Secretary of the Corporate Governance and Nomination Committee is in charge of distributing the performance evaluation forms for the evaluation of the full Board and evaluation of individual directors. Upon completion, the forms will be returned to the Secretary of the Corporate Governance and Nomination Committee for tabulation and analysis. The analysis of the annual performance will then be summarized and reported to the Board of Directors as per the evaluation objective. The overall evaluation results are as follows:

Performance Evaluation of the Board of Directors

The evaluation form for the Board of Directors consisted of five major categories as follows:

1. The structure and composition of the Board
2. Roles, duties, and responsibilities of the Board
3. Nomination of directors
4. Remuneration of directors
5. Board meeting and performance of the Board

Performance Evaluation of the Sub-committees

The evaluation form for the four sub-committees, namely the Audit Committee, the Compensation Committee, the Corporate Governance and Nomination Committee, and the Environment, Social, and Governance (ESG) Committee, consisted of items in four major categories as follows:

1. Qualifications of the directors
2. Duties and responsibilities of the directors
3. Duties and responsibilities of each sub-committee according to the Charter
4. Meeting and reporting

Performance Evaluation of Individual Directors

The evaluation form consisted of seven major categories as follows:

1. Structure and composition of the Board
2. Roles, duties, and responsibilities of the Board
3. Ethics and corporate governance
4. Development of directors
5. Relationship with the management
6. The Board of Directors' meeting
7. Overall performance of directors

Performance Evaluation of the Board of Directors	Average Scores	Evaluation Results
Full Board	4.91	Excellent
Individual Directors	4.76	Excellent
Sub-committees		
The Audit Committee	4.75	Excellent
The Corporate Governance and Nomination Committee	4.84	Excellent
The Compensation Committee	4.70	Excellent
The Environment, Social, and Governance Committee	4.33	Very good

Development of the Board of Directors and the Senior Executives

According to the SEC's Corporate Governance Code for Listed Companies (CG Code) 2017, "The Board of Directors should ensure that the Board and each individual director understand their roles and responsibilities as well as the nature of the business. The Board should also support all directors in updating and refreshing their skills and knowledge necessary to carry out their roles as members of the Board and Board committees."

At Banpu, the Board of Directors organizes an orientation session for all new directors to ensure that they are aware of what the Company expects of them about their roles, duties, and responsibilities. Through orientation, the directors also learn about the Corporate Governance Policy and practices, the nature of Banpu's business and operations, and risk

management. In addition, the Company arranges site visits to different operational units for new directors to prepare them for their role as directors.

The Board of Directors has the policy to expand all directors' horizons on various topics, such as corporate governance, industrial outlook, businesses, and new technologies and innovations. Directors are encouraged to attend seminars and useful courses held by the Thai Institute of Directors Association (IOD) and other reputable institutions to improve the Board's performance. Apart from that, seminars led by the executive team are held for directors to transfer related technical knowledge and experience about the Company's business. Knowledge-sharing sessions regarding new energy technological advancements are also organized for the executive so that they can share such experience and knowledge with the Board of Directors on a regular basis. In 2022, the Board of Directors attended seminars and training programs as follows:

Summary of the Board of Directors' Personal Development in 2022

Name	Training Course/ Seminar	Institution	Date of Training/ Seminar
Mr. Chanin Vongkusolkit Chairman of the Board of Directors	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● Commercial Risk Management for Power US	● Banpu Power Public Company Limited in collaboration with Banpu Power US Corporation	4 March 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● Board Education: Derivatives Use by Temple I	● Banpu Public Company Limited in collaboration with Banpu Power Public Company Limited	2 August 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
	● Cybersecurity Update and Artificial Intelligence	● Banpu Public Company Limited	9 November 2022
Mr. Teerana Bhongmakapat Independent Director/ Chairman of the Audit Committee/ Member of the Compensation Committee	● Energy Sector in the U.S.	● Banpu Power Public Company Limited	14 January 2022
	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● Banpu Digital SteerCo - Our Way with Data	● Banpu Public Company Limited	8 March 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
Mr. Piriya Khempon Independent Director/ Chairman of the Environment, Social and Governance/ Member of the Corporate Governance and Nomination Committee	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● Director Duties and ESG	● INSEAD	31 May 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● ESG Summit	● Banpu Public Company Limited	10 October 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
● Cybersecurity Update and Artificial Intelligence	● Banpu Public Company Limited	9 November 2022	
Mr. Anon Sirisaengtaksin Director/ Chairman of the Corporate Governance and Nomination Committee	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
	● Cybersecurity Update and Artificial Intelligence	● Banpu Public Company Limited	9 November 2022

Name	Training Course/ Seminar	Institution	Date of Training/ Seminar
Mr. Buntoeng Vongkusolkit Director/ Chairman of the Compensation Committee	● Agriculture & Cooperatives Executive Program (ACE) # 1	● Minister of Agriculture and Cooperative, Agricultural Research Development Agency (Public Organization), and Kasattratikarn Foundation	January - May 2022
	● Mitr Phol Group's Executive Seminar, 2022	● Mitr Phol Development Institute	4-5 November 2022
	● Executive Coach: Inspiring Leader	● John Robert Powers	May - December 2022
Mr. Suthad Setboonsarng Independent Director/ Member of the Audit Committee/ Member of the Compensation Committee	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● ESG Summit	● Banpu Public Company Limited	10 October 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
Mr. Pichai Dusdeekulchai Independent Director/ Member of the Audit Committee/ Member of the Environment, Social and Governance (ESG) Committee	● Energy Sector in the U.S.	● Banpu Power Public Company Limited	14 January 2022
	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● Banpu Digital SteerCo - Our Way with Data	● Banpu Public Company Limited	8 March 2022
	● Director Duties and ESG	● INSEAD	31 May 2022
	● Seminar on Miscellaneous Accounting Knowledge That an AC Shouldn't Miss	● The Office of the Securities and Exchange Commission	22 July 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● ESG Summit	● Banpu Public Company Limited	10 October 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
	● Cybersecurity Update and Artificial Intelligence	● Banpu Public Company Limited	9 November 2022
	Mr. Teerapat Sanguankotchakorn Independent Director/ Member of the Compensation Committee/ Member of the Environment, Social and Governance (ESG) Committee	● Director's Briefing: What Director Should Know About Quantum?	● Institute of Thai Directors (IOD)
● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand		● Dr. Phirun Saiyasitpanich	28 February 2022
● Director Duties and ESG		● INSEAD	31 May 2022
● How AI and IT application to drive Banpu Business?		● Banpu Public Company Limited	1 August 2022
● ESG Summit		● Banpu Public Company Limited	10 October 2022
● Decarbonization		● Banpu Public Company Limited	17 October 2022
● Cybersecurity Update and Artificial Intelligence		● Banpu Public Company Limited	9 November 2022

Name	Training Course/ Seminar	Institution	Date of Training/ Seminar
Mr. Metee Auapinyakul Director	● Commercial Risk Management for Power US	● Banpu Power Public Company Limited in collaboration with Banpu Power US Corporation	4 March 2022
	● Board Education: Derivatives Use by Temple I	● Banpu Public Company Limited in collaboration with Banpu Power Public Company Limited	2 August 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
Mr. Ongart Auapinyakul Director	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
Mr. Verajet Vongkusolkit Director/ Member of the Corporate Governance and Nomination Committee	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
Mr. Sarayuth Saengchan Director/ Member of the Corporate Governance and Nomination Committee	● Director Duties and ESG	● INSEAD	31 May 2022
	● Director Certification Program (DCP) #322/2022 (IOD)	● Institute of Thai Directors (IOD)	July - August 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● Subsidiary Governance Program (SGP) #2/2022	● Institute of Thai Directors (IOD)	1 August 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
	● Cybersecurity Update and Artificial Intelligence	● Banpu Public Company Limited	9 November 2022
Ms. Somruedee Chaimongkol Director/ Chief Executive Officer	● Global Direction toward Carbon Neutrality and Business Opportunities in Thailand	● Dr. Phirun Saiyasitpanich	28 February 2022
	● Commercial Risk Management for Power US	● Banpu Power Public Company Limited in collaboration with Banpu Power US Corporation	4 March 2022
	● How AI and IT application to drive Banpu Business?	● Banpu Public Company Limited	1 August 2022
	● Board Education: Derivatives Use by Temple I	● Banpu Public Company Limited in collaboration with Banpu Power Public Company Limited	2 August 2022
	● ESG Summit	● Banpu Public Company Limited	10 October 2022
	● Decarbonization	● Banpu Public Company Limited	17 October 2022
	● Cybersecurity Update and Artificial Intelligence	● Banpu Public Company Limited	9 November 2022

Principle 4: Ensure Effective CEO and People Management

Succession Planning Policy

The Board of Directors has devised a succession plan for the CEO and senior executives to ensure that the Company has knowledgeable and competent executives to fill critical positions in the future. The CEO is invited to report the succession plan to the Corporate Governance and Nomination Committee and the Board at least once a year. The Charter of the Corporate Governance and Nomination Committee also prescribes that the Committee has a duty to ensure that a development plan for senior executives (for vice president level and higher) is in place to prepare high-potential candidates for critical roles (for vice president level and higher) if a senior executive retires, resigns, or is unable to perform the duties.

For further information on “The Corporate Governance and Nomination Committee Charter”, **please scan the QR code or click on ‘CLICK HERE’.**



Principle 5: Nurture Innovation and Responsible Business

The Company focuses on maintaining sustainability throughout the supply chain and thus prioritizes adherence to good governance principles in business operations coupled with effective management of risks and opportunities. International standards are integrated in the formulation of sustainable development strategy covering economic, social, and environmental dimensions to enhance the Company’s competitiveness and create value for all stakeholders through a two-tier management system as follows:

- **Strategic Integration of Sustainability:**

The Board of Directors reviews sustainability risk issues and advises the CEO on appropriate mitigation measures.

- **Operational Integration of Sustainability:**

The Sustainability Development Committee oversees, monitors, and evaluates the sustainability performance as well as determines and reviews policies to enhance sustainable development.

The Company annually sets sustainability indicators as well as short-term and long-term performance goals for both the executives and employees while integrating sustainability into the corporate culture. In addition, it has cultivated the corporate culture in all countries where it operates. The Company also regularly discloses management processes and business performance to stakeholders through the appropriate channels.

Moreover, the Company announced an Innovation Policy to promote its vision of being an innovation-driven company focusing on using innovations to drive the Group’s businesses. The Innovation Policy has been implemented as follows:

- Establish an infrastructure that allows and supports all employees to propose ideas for improvement of the Company’s processes and technologies.
- Support activities on innovation to continuously enhance the Company’s productivity.
- Put innovative culture into practice by creating a motivating work environment that inspires creativity and innovation.

- Develop training programs or projects specifically designed to improve creative thinking skills by including innovation topics as part of the programs.
- Create infrastructure that promotes innovation; keep abreast of future trends; and develop products, services, processes, or tools that could quickly and effectively respond to future demands.

Roles of Stakeholders

Banpu is committed to fostering fairness for all stakeholders. The Company set forth guidelines on stakeholder treatment in the Corporate Governance Policy and the Code of Conduct to be followed by directors, executives, and employees to ensure equitable treatment and interests of stakeholders. Important guidelines pertain to conflicts of interest, the responsibility to shareholders, and policies on the treatment of employees, customers, trading partners, creditors, competitors, and society at large. Directors, executives, and employees shall acknowledge, understand, and strictly comply with the guidelines in order to ensure that all stakeholders are treated fairly, and their rights are protected.

In addition, Banpu has established a whistleblower channel, allowing all groups of stakeholders to file grievances regarding breaches of corporate governance and the Code of Conduct via the Company’s website on the “Whistleblowing” page under the Corporate Governance section. Grievances will be sent directly to the Chairman of the Corporate Governance and Nomination Committee at GNCchairman@banpu.co.th and/or to the Secretary of the Corporate Governance and Nomination Committee at GNCsecretariat@banpu.co.th. The Company monitors those grievance cases and reports the progress to the Corporate Governance and Nomination Committee on a quarterly basis and to the

Board of Directors on an annual basis. The Company keeps a record of grievance cases and outcomes as well as follow-up data in the system. Preventive measures were also established to prevent the recurrence of similar complaints. Banpu’s Whistleblower Policy was formulated and has been effective since 2015 to protect whistleblowers and foster a culture of transparency. Guidelines on case investigation are as follows:

1. In case there is sufficient evidence to support the allegation of misconduct, a full investigation into the case will be carried out. The investigation pattern may vary depending on the circumstances. The investigation will be carried out under strict terms of confidentiality, and the whistleblower may be contacted for further information.
2. The investigation team will inform the whistleblowers of investigation results and outcomes through appropriate communication channels.
3. Senior management will decide on the actions to be taken against the wrongdoer, e.g., disciplinary punishment or any other appropriate measures.
4. The Company affirms that whistleblowers who report in good faith any wrongdoing or suspected violation of law, rules, and regulations and the Code of Conduct will not be affected.

For complete information on “Whistleblower Policy and Protection of Whistleblowers”, **please scan the QR code or click on ‘CLICK HERE’.**



For the details of whistleblower channels, [please scan the QR code or click on 'CLICK HERE'](#).



Apart from that, the Company announced a "No Gift" policy to prevent employees from receiving gifts and other benefits from stakeholders. The policy was publicly communicated to all stakeholders through the Company's website. It also requires registration of gifts in the database system in case there is an acceptance of a gift. The Board members, executives, employees, and subsidiaries shall be aware of and comply with the policy which has been established in accordance with the Anti-Corruption Policy. The Company has stipulated in the Code of Conduct its measures on giving and receiving bribes, gifts, and business entertainment, of which the details are as follows:

No. 3.4 Giving and Receiving Bribery

1. Executives and employees are prohibited from demanding or receiving any benefits from trading parties, contractors, suppliers, advisors, and those with whom the Company is conducting business.
2. Executives and employees are strictly prohibited from offering any benefit to government officers, customers, labor unions, or any other external parties in an attempt to persuade them to commit a fraudulent action.

No. 3.5 Gifts, Gratuities, and Business Entertainment

1. Executives and employees should refrain from giving gifts or gratuities to or receiving them from any trading partner or others with whom the

Company is doing business. Gifts given or received during festive occasions are excluded from this requirement, provided that they have an appropriate value and are not related to any business commitment.

2. Executives and employees should refrain from giving or receiving unusually lavish entertainment to or from those with whom the Company is doing business.

Employees

Recognizing that human capital is pivotal to success, Banpu has put in its Code of Conduct a policy and practices toward employees to ensure that employees of all nationalities and languages are treated fairly in terms of access to career opportunities, remunerations, appointments, transfers, capacity-building and a safe workplace for their lives and properties. Banpu has implemented adequate and appropriate Health, Safety, and Environmental (HSE) measures to prevent loss from an accident as well as occupational illness or injury.

1. Principle of Equitability
2. Performance-based Principle
3. Competency-based Principle

To accommodate changes in business and the global economy, the Company determines that it is accountable for equipping the employees with adaptability, flexibility, mobility, positive creativity, and professionalism beyond the chain of command. In other words, Banpu focuses on developing "professional employees" while ensuring fair and equitable treatment of employees regardless of their nationality, ethnicity, religion, language, and gender. Moreover, with the "Banpu Heart" culture, the Company aims to create a cohesive workplace where all its

people unite as one to work together under a shared vision and toward the same goals.

The Company is committed to aligning human resources management with the Company's vision to timely respond to business changes and to drive the Company to become an International Versatile Energy Provider. Hence, capacity building and agility enhancement are among the Company's top priorities as they facilitate smooth collaboration, promote reskilling and upskilling and give employees equal opportunities to thrive across functions and countries. In 2022, Banpu developed a "Banpu People Value Proposition" as a principle to improve human resources management efficiency.

The Company has the Remuneration Policy to provide bonuses and promotions according to the Company's performance both in the short and long terms. It is committed to providing employees with fair compensation in the forms of salary, welfare, and other benefits, e.g., health insurance, provident fund, and Flexi Benefits.

The Company has a fair human resources management of which the recruitment and hiring of professional personnel is conducted based on past professional experience regardless of gender, age, ethnicity, nationality, and religion. This can be witnessed from diversity in Banpu's workforce, both at the head office in Thailand and overseas in terms of ethnicity, religion, language, culture, age, knowledge, and perspective.

Moreover, to achieve effective human resources management, the Company periodically reviews related policies and regulations as well as guidance and measures to support its employees in response to an emergency. Necessary changes are made in compliance with relevant laws such as labor law as well as social and environmental conditions that may affect the way of working. The Company has carried out HR activities as follows:

- The Company launched the Work Anywhere Policy, allowing employees to design their work schedule and the working style that suits the nature of their work. They can work from office, work from home, or from anywhere as long as the goals are met.
- The Company formulated an internship program to ensure that intern students got the most out of their internship while being paid for their work. The intern students were also given a chance to attend training programs such as presentation, English, and financial planning to prepare them for their future careers.
- The Company hired disabled masseurs to support the government's policy on the employment of persons with disabilities. Other supports included a direct donation to the Fund for Empowerment of Persons with Disabilities or hiring of persons with disabilities through government agencies to work in communities.
- Regarding employee treatment, the Company does not prevent employees from forming a labor union according to the Labor Relations Act. Although the labor union has not been organized, employees can file complaints with the Welfare Committee, who will review the complaints and subsequently report the cases to the management.
- Employees can consult or file complaints directly with their supervisor and HR Manager or opt for an online channel if they would like to keep their identity anonymous when filing certain complaints, such as workplace concerns, conflict within their team or with the team leader, untransparent conduct, and sexual harassment. The Company has put in place procedures for investigating complaints and imposing disciplinary penalties against misconduct as stipulated in the Company's work rules.

- In response to a crisis, for instance, flooding, fire, or pandemic, the Company has prepared a set of emergency aid guidelines to support its employees in the forms of allowances, temporary shelters, survival kits, and vaccines where applicable.

The Company puts top priority on providing employees with inclusive and regular learning opportunities to enable them to realize their full potential. It has also set up a Job Evaluation Committee, an Organization Development Committee, and a Succession Plan Committee and has given full support to the Compensation Committee and the Corporate Governance and Nomination Committee in maintaining transparency and driving the workforce toward steady and sustainable growth.

Apart from that, the Company focuses on hiring qualified local people to fill operational positions at all sites, except only when there are no suitable candidates; it will consider hiring ones from other areas.

For complete information on “Employees”, **please scan the QR code or click on ‘CLICK HERE’.**



Customers

Banpu endeavors to respond effectively to customers’ needs. Policy and guidelines on customer treatment are stipulated in the Code of Conduct. The Company is strictly committed to delivering quality products and services according to customers’ expectations at a fair price, timely providing customers with accurate and adequate information, and strictly complying with the terms and conditions agreed upon with customers. The Company has established a

grievance process to allow customers to file complaints about the quality, volume, and safety of products and services. It also provides advice on how to effectively use its products and services for the customers’ best interests. The customer data is kept strictly confidential and shall never be misused.

For complete information on “Customer & Product Stewardship”, **please scan the QR code or click on ‘CLICK HERE’.**



Suppliers/Creditors

The Company has the policy to treat its trading partners and/or creditors equitably and fairly by taking into consideration its best interest whilst acting on the basis of mutual benefit. The Company also makes sure that conflicts of interest are avoided and contractual obligations are fulfilled. The following are Banpu’s supplier/creditor treatment guidelines:

1. The Company shall not demand, receive or pay any improper benefits to its trading partners and/ or creditors.
2. Should it become known that bribes have been demanded or payment of any improper benefit has occurred, then full information shall be disclosed to the trading partners and/or creditors involved, and the Company shall collaborate with the parties concerned to resolve the problem in a fair and timely basis.
3. The Company shall strictly comply with all the terms and conditions agreed upon in a transaction. If any particular conditions cannot be met, the Company will inform any creditor(s) concerned beforehand and seek a mutually acceptable solution.

For complete information on “Supplier Management and Ethics”, **please scan the QR code or click on ‘CLICK HERE’.**



Competitors

The Company set forth in the Code of Conduct a policy and practices to treat competitors in a way that complies with international practices and within a legal framework for business competition. The Company will not fraudulently infringe upon or seek to obtain the trade secrets of any competitors. The Company is also committed to fair business conduct by following the guidelines indicated in its Code of Conduct. In 2022, the Company had no disputes with competitors.

Community and Society

The Company has the policy to conduct businesses that benefit the economy and society while maintaining a balance between business growth and community, social, and environmental development. The Company is also committed to being a good corporate citizen and strict compliance with the relevant laws and regulations. Banpu strives to improve the quality of society, either through the Company’s activities or collaboration with the government sector, communities, or non-governmental organizations.

In addition, the Sustainability Policy has been implemented and benchmarked against global standards, such as the reporting of greenhouse gas (GHG) emissions (ISO 14001). For effective safety, health and environmental (SHE) management, the Company has also developed SHE guidelines which

include the management of risks resulting from the Company’s operations, which may affect employees, business partners, the environment, and the communities where the Company operates.

The Company has developed a framework for managing stakeholder analysis by integrating it into the corporate strategy-making process. In addition, the Company has standardized stakeholder engagement management and community complaint management to ensure they are aligned across all Banpu’s companies and to ensure that all complaints are properly resolved.

The Company has continuously carried out various Corporate Social Responsibility (CSR) activities. It regularly supports social development activities and allocates part of its earnings to organize CSR projects at the local and corporate levels, including CSR projects in all countries where the Company operates.

The Company’s CSR initiatives are driven by the belief: “Learning is the Power of Change and Development”. Learning is the foundation for “People” development, particularly for younger generations, who will be the major driving force behind social and national development in the future. In addition, the Company has raised awareness about corporate social responsibility among its workforce at all levels, with a sustainable community and society as its ultimate goal.

For complete information on “Community and Society”, **please scan the QR code or click on ‘CLICK HERE’.**



Contact Channels

Stakeholders may submit their opinions about the Company through the following channels:

Headquarters:	27 th Floor, Thanapoom Tower, 1550 New Petchburi Road, Makkasan, Ratchathewi, Bangkok 10400	
Telephone:	+66 2694 6600	
Website:	www.banpu.com	
Company Secretary	Telephone:	+66 2694 6859
	Email:	bodsec@banpu.co.th
Investor Relations	Telephone:	+66 2694 6684
	Email:	investor_relations@banpu.co.th
Corporate Communications	Telephone:	+66 2694 6680
	Email:	cc@banpu.co.th

Principle 6: Strengthen Effective Risk Management and Internal Control

Risk Management Policy

The Board of Directors has established a comprehensive risk management system covering risk factors related to vision, goals, business strategies, finance, production, and other aspects. The Board is entrusted with the duty to consider the appropriateness of the Company's risk management system, risk likelihood, and level of impact. Measures for the prevention and management of risks are established, and persons to be accountable for addressing risks have been appointed. Besides, the Board has determined measures for reporting, monitoring, and evaluating risk management. The Risk Management Committee was set up at the management level to regularly present a risk management plan and performance to the Audit Committee and occasionally report them to the Board. The Committee reviews the risk management system and evaluates the performance at least once a year and when the risk level changes.

Internal Control Policy

The Board of Directors has put in place an internal control system that covers all aspects of the Company's business, ranging from finance, operations, and compliance with relevant laws, rules, and regulations. The Board has also established a sufficient and effective checks and balances mechanism to protect shareholders' interests and company's assets. Moreover, the Board has determined the authorization levels and responsibilities of the executives and employees with the checks and balances mechanism included. Operational procedures are made available in writing. The Global Internal Audit Department works independently and reports directly to the Audit Committee, who audits the operating results of all functions, including core business functions and support functions, to ensure regulatory compliance.

Governance of Subsidiaries and Affiliates

The Company has managed its subsidiaries and devised business procedures to ensure operational effectiveness and proficiency, as follows:

The Company and Its Subsidiaries' Investment Policy

1. The executives shall study and assess the preliminary findings of the Investment Committee before reporting the results and investment outlook summary to the Board of Directors. The Board then considers and approves the project which involves funding, development, and expansion, as well as the subsidiary's key policies. The Board of Directors also has the authority to approve the establishment or dissolution of a subsidiary as necessary to ensure that Banpu's portfolio can be most efficiently managed.
2. The Board of Directors shall consider and approve investments based on the criteria set by the SEC, such as connected transactions and decisions involving receipts or asset sales.
3. The Board of Directors shall have a governance mechanism to oversee subsidiaries and safeguard the Company's investments. The Board is responsible for the consideration of suitable executives to serve as directors of the Company's subsidiaries to ensure that the management is aligned with the Company's policies and all transactions comply with securities and exchange laws and regulations as well as the SET's announcements.
4. The subsidiaries shall submit reports on their performance and operations, particularly of their major businesses. They shall also conduct sensitivity analysis and evaluate it against goals or benchmarks. These management reviews provide a basis for policy formulation and business model improvement to ensure continued growth and development of the Company's subsidiaries.

Internal Control Policy and Central Management Policy

To ensure that internal audit is conducted independently, the Board of Directors and the executives determine that the Global Internal Audit Department directly reports to the Audit Committee. The Department is also required to report on the progress of internal audits to the Board of Directors on a quarterly basis.

Executive within each subsidiary is determined based on the Company's shareholding. The Board of Directors is responsible for appointing an executive to serve as a director in each subsidiary to ensure that the business direction is in alignment with Banpu's policies and strategies. Director selection is decided based on knowledge, relevant capabilities to the subsidiary, work location (in case of a foreign subsidiary), health and readiness of the director. Director positions in Banpu's subsidiaries are reviewed at least once a year.

Budget Policy

Investment budget preparation and implementation must be in accordance with the budget regulations of each subsidiary and consistent with the Company's budget rules. Budget preparation and review must be completed within the deadline, and the corresponding information must be submitted according to the Company's operations. Any investment project valued over THB 1.5 billion or spending that exceeds the approved budget by over 15% is subject to the Board of Directors' approval.

Principle 7: Ensure Disclosure and Financial Integrity

Conflict of Interest

The Company considers that it is important to prohibit directors, executives, and employees from using their positions for personal gain. As stipulated in the Code of Conduct, directors, executives, and employees are to avoid connected transactions that could lead to a conflict of interest with the Company. If necessary, the transactions are to be carried out at arm's length, and directors or employees having an interest in the transactions must not be involved in the approval process. If any transaction is considered connected under the SET's notification, rules, procedures, and the disclosure of connected information of listed companies must be strictly complied with.

The Board of Directors also stipulated that directors, executives, or employees shall be prohibited from either using any opportunity or information acquired through their position for personal gain or engaging in any related business activities that compete with the Company, or using insider information to sell or buy the Company's shares. If an executive or an employee is to be involved in a special project whose information has not yet been disclosed to the public; or that it is under negotiation where the project's information has to be kept confidential, as it could affect share prices, the executive or employee is to sign a confidentiality agreement which shall be effective until the information is disclosed to the SET and the SEC.

The Company announced the Market Sensitive Information Policy and practices on the management of confidential information that potentially affects the stock exchange in 2017. It is regarded as a duty of directors, executives, employees, consultants, and subsidiary companies to understand and follow the policy and practices as follows:

1. Establish an internal control system to prevent the leak of confidential information.

2. Cultivate a culture of information safety through constant communication to raise awareness of relevant persons of their duty to protect the Company's confidential information.
3. Limit the number of persons who have access to confidential information based on a need-to-know basis. Set up an information access control system for contract parties and service providers.
4. Exercise extreme caution in receiving and sending information from and to third parties. Persons involved should be aware of their duties related to handling and controlling confidential information.
5. Establish an appropriate information technology and control system.

Disclosure of Information to Investors

The Board of Directors oversees the disclosure of information and its transparency to ensure that both financial and non-financial information relating to the Company's business and operating results is revealed in a complete, accurate, adequate, regular, and timely manner. In addition, the information must reflect the Company's actual performance and its true financial status, as well as its business outlook, while strictly complying with the laws, rules, and regulations relating to information disclosure of both the SEC and the SET. The Company also shares the information with shareholders and investors through other communication channels. The Investor Relations Department directly communicates with shareholders, investors, and securities analysts both domestically and abroad, while the Corporate Communications Department disseminates corporate information to shareholders, investors, and the public through the local and international media.

In 2022, the Company organized the following activities to disclose information to international investors, institutional investors, small investors, securities analysts, and the press:

Information Disclosure and Presentation	Time
1. International Road Show (via virtual meeting)	14
2. Local Road Show (via virtual meeting)	12
3. Quarterly and Annual Analyst Meetings	4
4. "Opportunity Day" for listed companies to release quarterly performance to investors	4
5. Participation in "SET Digital Roadshow" to release quarterly performance to investors	3
6. Information session for investors via conference call	27
7. Clarification of operating results and business information to investors through email, LINE Official account, and phone call	5-7 (per day)
8. Press conference on the Company's operating results	2
9. Press release on the Company's performance and business strategies	7
10. Activities for the press and news release on Corporate Social Responsibility (CSR) Projects	22

The Company's information and news are also made available and equally accessible to all stakeholders.

Interested parties may contact or make inquiries to the Company's Investor Relations at:

Telephone : +66 2694 6684

Email : investor_relations@banpu.co.th

Line : @banpu-ir

Report of the Board of Directors

The Board of Directors is responsible for Banpu's and its subsidiaries' consolidated financial statements and the financial information that appears in Banpu's Annual Report. The financial statements are prepared under the Generally Accepted Accounting Principles (GAAP) in Thailand. The Company always makes sure that an appropriate accounting policy is chosen and carefully pursued on a regular basis. The Audit Committee and auditors jointly review the accounting policy related to the preparation of financial statements to ensure that it remains practical. The Board of Directors emphasizes that the team in charge carefully exercises its discretion and that important information is adequately disclosed in the notes to the financial statements.

The Board entrusted the Audit Committee with the responsibility to oversee the quality of financial statements and the internal control system and to

ensure that any opinions of the Audit Committee on these issues have been included in its report, which is also included in the Company's Annual Report. The Board of Directors considered that the financial statements of the Company and its subsidiaries as of 31 December 2022 are accurate, complete, adequate, and reliable

Policy on the Use of Internal Information

The Company places great importance on information disclosure and transparency and has established a policy and practice on information disclosure and transparency of financial statements under Corporate Governance Policy. The Company also makes it a priority to disclose to shareholders, investors, securities analysts, and the general public the financial and non-financial information about the Company's businesses and operating results in an accurate, complete, adequate, reliable, and timely manner.

The Board of Directors is committed to strict compliance with laws and regulations relating to information disclosure and transparency. Sales or purchases of shares by any director or executive are duly reported to the SEC. Changes in the shareholding of the directors or executives are also subject to be reported to the Board of Directors' meeting on a monthly basis.

The Company's measures to prevent the use of inside information are stipulated in the Code of Conduct under the section "Conflict of Interests and Keeping Confidential Information," especially under the topic "Use of Company Information."

The Company considers that it is the responsibility of its directors, executives, and employees to strictly comply with the policy on the use of inside information, especially inside information that has not been disclosed to the public or any data or information that may affect the Company's businesses or its share price. The Directors shall follow guidelines stated in the Practices for the Board of Directors B.E. 2552 and the Code of Conduct as follows:

1. Directors shall not use the information they receive through their directorship or employment for personal gain or for conducting business or other activities in competition with the Company.
2. Directors shall refrain from using inside information in their possession for the trading of the Company's shares or giving inside information to any third party for the purpose of their dealing in the shares of the Company.
3. Confidential business information shall not be disclosed to any third party, especially to competitors, even after a director, executive, or employee has left the Company.
4. The Company's directors and executives that match the definition given by the SEC, including any individuals obtaining insider information that significantly affects Company's share price, shall refrain from purchasing and selling the Company's

shares during the blackout periods and shall follow the following practice:

- The Company's directors and executives (including their spouses and minor children not yet becoming sui juris), including individuals obtaining insider information that significantly affects Company's share price, shall refrain from trading the Company's shares one month before and until 24 hours after the financial statements or other information affecting the Company's share price are made public.
5. Directors and executives that match the definition given by the SEC are required to report changes in the holding of the company's securities to comply with the SEC's regulations.

Apart from that, the Company stipulated in the Corporate Governance Policy that directors, executives, and employees must not exploit their relationship with the Company for personal gain, conduct business that competes with the Company or carry out any transactions related to oneself, which may lead to a conflict of interest with the Company. If necessary, the transactions are to be carried out at arm's length with fairness and transparency, and directors or employees having an interest in the transactions must not be involved in the approval process. If any transaction is considered connected under the SET's notification, all rules, procedures, and the disclosure of connected information of listed companies must be strictly complied with. Besides, the Practices for the Board of Directors includes a set of guidelines for directors on the handling of information not yet disclosed to the public and requires directors and executive officers to report their holding of the Company's shares in the Board of Directors' meetings on a monthly basis.

Regarding the development of an internal control system, the Company has deployed IT systems to safeguard the use of Company information, such as the external access prevention system and the role-based access control system. In the case where an

executive or employee participates in a special task involving information which is under negotiation and has yet to be publicly disclosed or may be subject to internal control given its possible impact on the Company's share price, such executive or employee must sign a Confidentiality Agreement with the Company. The Agreement shall remain in effect until the information is disclosed to the SEC and the SET.

The internal information usage control is prescribed in the Company's rules under the Disciplinary Action section. According to the rule which applies to employees at all levels, any employee who fails to comply or violates the disciplinary requirements is considered to have breached Company rules and is subject to disciplinary actions and punishments according to the nature of the offense. Regarding information use, it is stated that anyone "disclosing the Company's confidential information with an intention to destroy its reputation, credibility or products, resulting in a financial loss or a loss in a business opportunity to Banpu" may be subject to severe punishment up to dismissal.

In 2022, there were no report of non-compliance with or violations of insider trading regulations stipulated by the SET and the SEC.

In addition, the Board of Directors and executives had disclosed their holding of the Company's securities on the date they were appointed and reported any changes in securities, including those of their spouses and minor children not yet becoming sui juris as well as connected persons, to the Board of Directors for acknowledgment.

Principle 8: Ensure Engagement and Communication with Shareholders

Shareholder's Rights

The Board of Directors emphasizes the importance of rights and equality between shareholders and institutional investors. This has been clearly specified in the Corporate Governance Policy that shareholders

are entitled to receive share certificates, transfer shares, and acquire adequate information in a timely fashion and in a format conducive to decision-making. Shareholders are also entitled to attend a meeting, cast their votes at shareholders' meetings to deliberate the Company's important policies, elect and remove directors, approve appointments of auditors, and receive their shares of profit.

At each shareholders' meeting, the Board of Directors facilitates shareholders by providing them with adequate, clear, and comprehensive information in a timely fashion. The Board encourages the shareholders to attend the meeting and cast their votes or to appoint an individual or an independent director as their proxy in casting votes on their behalf in case they cannot attend. Moreover, shareholders are equally allowed to express opinions, seek explanations, or pose questions.

The 2022 Annual General Meeting of Shareholders (AGM) was convened and live-streamed on 1 April 2022 at 13.30 hours at the Meeting Hall of the Company's Head Office, 1550 New Petchburi Road, Makkasan, Ratchathewi, Bangkok, with full attendance of all 13 directors. In 2022, the Company assigned Thailand Securities Depository Co., Ltd., its share registrar, to send invitation letters to shareholders in advance, and posted the invitation on the Company's website at www.banpu.com/AGM_EGM/ 30 days prior to the meeting date. The minutes of the 2022 AGM were also posted on the Company's website 14 days after the meeting took place so that the shareholders could propose amendments if they found the minutes to be inaccurate within the 30-day period after the minutes were posted.

The Company notified minority shareholders through SET of the opportunities to propose agenda items to be included in the AGM and to nominate candidates to be considered for the director positions in December 2021. The procedures and methods for considering proposals were clearly stated on the Company's website: www.banpu.com/AGM_EGM/. In the 2022 AGM, No shareholder proposed any additional agenda item or nominated candidates for director positions.

Equitable Treatment of Shareholders

Shareholders' Meeting

The Board of Directors has the policy to engage shareholders in decision-making and to ensure that shareholders receive comprehensive and adequate information for decision-making in a timely fashion. As such, Banpu sent out an invitation letter for the meeting, together with supporting documents for each agenda, to shareholders prior to the meeting. Opinions from the Board of Directors also accompany each agenda item. The meeting was attended by 13 directors, including the Chairman of the Audit Committee, the Chairman of the Corporate Governance and Nomination Committee, the Chairman of the Compensation Committee, and the Chairman of the Environment, Social, and Governance (ESG) Committee. The executives, the auditors, and independent observers from a law firm also attended the meeting.

The Chairman of the shareholders' meeting allowed every shareholder to review the Company's operations and submit questions on each agenda item. The Chairman also encouraged shareholders to voice their opinions and make inquiries about the Company's operations. In addition, the Board of Directors had the minutes of the meeting prepared and released on the Company's website 14 days after the meeting so that shareholders could review the minutes and if necessary, propose amendments within 30 days.

Shareholders' Meeting Date

The 2022 Annual General Meeting of Shareholders (AGM) was convened and live-streamed on 1 April 2022 at 13.30 hours at the Meeting Hall of the Company's Head Office, 1550 Thanapoom Tower, New Petchburi Road, Makkasan, Ratchathewi, Bangkok. The 2022 AGM was attended by all 13 directors, 57 shareholders, and 1,135 proxies, bringing the total to 1,192 persons representing 2,479,877,676 shares, which accounted for 36.6514% of all voting shares.

Compliance with Other Corporate Governance Principles

The Company acts in good faith to fully comply with the Corporate Governance Code of Listed Companies 2017 set forth by the SEC, with some exceptions, of which the details and reasons are provided as follows:

1. The Chairman of the Board should be an independent director.

The Company's practice:

The Chairman of the Board is a non-executive director. The roles and duties of the Chairman, which are clearly defined by the Board of Directors, emphasize the balanced benefits for the Company, shareholders, and all stakeholders' best interests. In 2022, the Board approved the resolution to appoint a Lead Independent Director: if the Chairman of the Board is not an independent director, the Board of Directors shall promote the checks and balances of power and authority of the Board of Directors by having the Board of Directors which comprise a majority of independent directors and/or appointing a designated independent director to be a Lead Independent Director to participate in setting the board meeting agenda.

2. The Nomination Committee should consist entirely of independent directors.

The Company's practice:

The present Corporate Governance and Nomination Committee consists of four members, namely one independent director and three non-executive members. The Chairman of the Committee is a non-executive member. However, the Board of Directors has clearly defined in the Charter of the Board the roles and duties of the members of the Corporate Governance and Nomination Committee, covering all aspects of corporate governance and nomination.

3. The Chairman of the Sub-committees shall be an independent director.

The Company's practice:

At present, the Chairman of the Corporate Governance and Nomination Committee and the Chairman of the Compensation Committee are non-executive directors. However, the Board of Directors has clearly defined the roles and duties of the Sub-committees in the Charter, covering all aspects.

4. The Board should appoint an external consultant to provide advice on the approach and criteria for performance evaluation of the Board at least once every three years, and evaluation results should be disclosed in the annual report.

The Company's practice:

The Company conducts an annual performance evaluation of the full Board, sub-committees, and each individual director. The Corporate Governance and Nomination Committee has considered the issue and decided not to appoint an external consultant to facilitate the development of an evaluation approach or to advise on the Board's performance evaluation criteria.

5. The Board should set a clear office term for board members in the Corporate Governance Policy.

The Company's practice:

The Company prescribed that independent directors shall serve the term of office for nine years or no more than three consecutive terms. (The Practices for the Board of Directors of Banpu Public Company Limited, Article 6.2 Section 6. Term of Office and Retirement*). Furthermore, the Company set the directors' retirement age at 72 in the Corporate Governance Policy (Article 4.7 Directors' Retirement).

* Effective from 19 December 2014.

6. The Board should consider the qualifications of a person to be appointed as an "Independent Director" to ensure that the appointed director is truly independent and suitable for the Company's nature. An independent director should meet the qualifications required by the SEC and the SET at the minimum. Apart from that, the maximum office term for an independent director should not be longer than nine consecutive years from the date of the person's first directorship appointment. In the event of reappointment beyond the maximum tenure, the sound reasons for that decision should be provided by the Board.

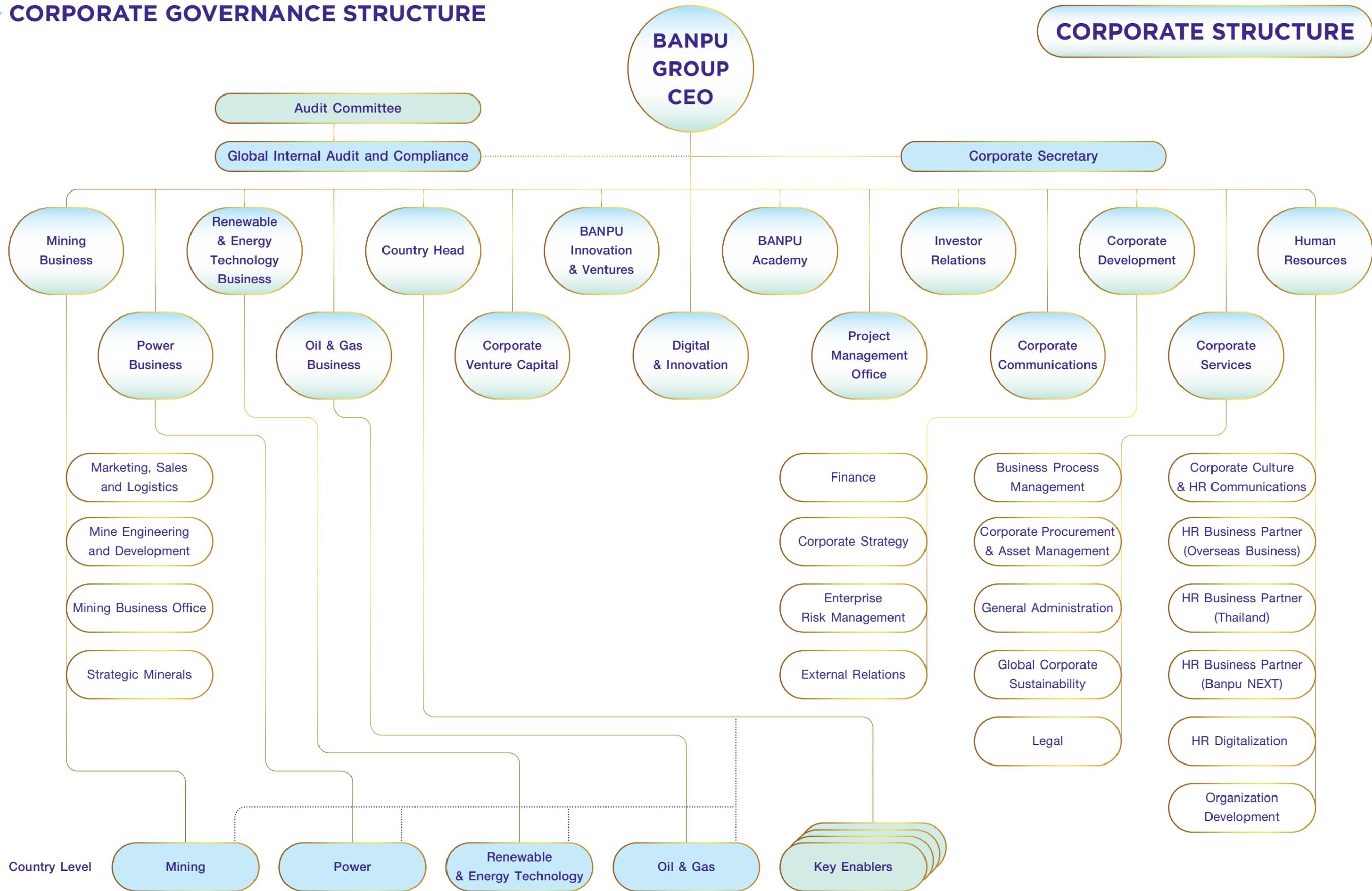
The Company's practice:

The Board has set more stringent requirements on the qualifications of an independent director than the minimum requirements of the SEC and the SET, specifically in terms of the Company's shares held by an independent director. Besides, the Company prescribed that an independent director shall serve the term of office for a maximum of nine consecutive years or no more than three consecutive terms. (The Practices for the Board of Directors of Banpu Public Company Limited Article 6.2 Section 6. Term of Office and Retirement*). Mr. Teerana Bhongmakapat had been an independent director for ten years, from 5 April 2012 to 2022. The Corporate Governance and Nomination Committee carefully deliberated and concluded that Mr. Teerana Bhongmakapat's qualifications match the required qualifications of independent directors. He has also been competent in performing his duties and expressing his independent views; therefore, he is suitable to serve as an independent director. *Effective from 19 December 2014.

7. The Board of Directors considered and adopted the SEC's Corporate Governance Code for Listed Companies 2017 as a guideline for amending Banpu's Corporate Governance Policy, the Code of Conduct, Practices of the Board of Directors, and Charters of Sub-committees in 2022.

CORPORATE GOVERNANCE STRUCTURE

CORPORATE STRUCTURE



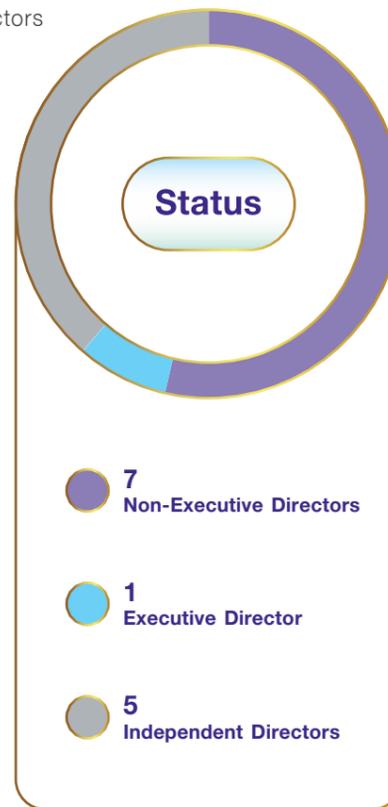
Structure of the Board of Directors

The Board of Directors comprises directors who are widely recognized for their knowledge and competence. The Board plays a pivotal role in determining the Company's objectives and goals and works with executives to devise strategies and policies for short- and long-term operations. The Board also establishes financial policies, oversees risk management, governs overall management, and reviews significant policies and plans annually. The duties of the Board also include overseeing, monitoring, and evaluating the performance of the Company and senior executives according to the plans.

The Board of Directors

consists of

- | | |
|--|------------------------------------|
| 1. Mr. Chanin Vongkusolkit | Chairman of the Board of Directors |
| 2. Mr. Teerana Bhongmakapat | Independent Director |
| 3. Mr. Piriya Khempon | Independent Director |
| 4. Mr. Suthad Setboonsarng | Independent Director |
| 5. Mr. Pichai Dusdeekulchai | Independent Director |
| 6. Mr. Teerapat Sanguankotchakorn | Independent Director |
| 7. Mr. Anon Sirisaengtaksin | Director |
| 8. Mr. Buntoeng Vongkusolkit | Director |
| 9. Mr. Metee Auapinyakul | Director |
| 10. Mr. Ongart Auapinyakul | Director |
| 11. Mr. Verajet Vongkusolkit | Director |
| 12. Mr. Sarayuth Saengchan | Director |
| 13. Ms. Somruedee Chaimongkol | Director |
| 14. Mr. Rawi Corsiri | Director |



Notes:

- Mr. Sarayuth Saengchan (Person No. 12) was appointed as a director, effective from 2 April 2022, and a member of the Corporate Governance and Nomination Committee, effective from 1 May 2022.
- Mr. Rawi Corsiri (Person No. 14) resigned from the director position, effective from 1 April 2022.



For complete information on "Details of Directors", please scan the QR code or click on 'CLICK HERE'.

Board Skill Matrix

Director	Expertise										
	Finance / Accounting	Marketing / Logistics	Management	Technique / Engineering	Business Relations	Economics	Corporate Strategy / International	Mining	Energy	Oil and Gas	Technology
1. Mr. Chanin Vongkusolkit	●	●	●		●	●	●	●	●		
2. Mr. Teerana Bhongmakapat	●		●	●	●	●	●				
3. Mr. Piriya Khempon			●		●	●	●				
4. Mr. Anon Sirisaengtaksin			●	●	●		●			●	
5. Mr. Buntoeng Vongkusolkit		●	●		●		●				
6. Mr. Suthad Setboonsarng			●		●	●	●				
7. Mr. Pichai Dusdeekulchai	●		●		●		●				
8. Mr. Teerapat Sanguankotchakorn			●	●	●						●
9. Mr. Metee Auapinyakul			●		●		●		●		
10. Mr. Ongart Auapinyakul			●	●	●		●	●			
11. Mr. Verajet Vongkusolkit	●		●		●	●			●		
12. Mr. Sarayuth Saengchan*	●			●	●	●	●				
13. Ms. Somruedee Chaimongkol	●		●		●		●	●	●		
14. Mr. Rawi Corsiri**		●	●	●	●		●	●	●		

Notes:

* Mr. Sarayuth Saengchan (Person No. 12) was appointed as a director, effective from 2 April 2022, and a member of the Corporate Governance and Nomination Committee, effective from 1 May 2022.

** Mr. Rawi Corsiri (Person No. 14) resigned from the director position, effective from 1 April 2022.

Board Composition

As of 31 December 2022, the Board of Directors is composed of independent directors, non-executive directors, and an executive director. Among the 13 board members, five are independent directors, who make up 38% of the Board.

Independent Directors

who make up 38% of the Board, are as follows:

- | | |
|--|----------------------|
| 1. Mr. Teerana Bhongmakapat | Independent Director |
| 2. Mr. Piriya Khempon | Independent Director |
| 3. Mr. Suthad Setboonsarng | Independent Director |
| 4. Mr. Pichai Dusdeekulchai | Independent Director |
| 5. Mr. Teerapat Sanguankotchakorn | Independent Director |

The qualifications of the five independent directors meet the requirements of “Independent Directors” of the Company, which are more stringent than the Securities and Exchange Commission’s criteria.

To comply with good corporate governance principles, the Company places importance on building Board diversity using the Board Skill Matrix to cover skills, experiences, knowledge, and specialization that benefit the Company. The nomination of directors does not discriminate on the grounds of gender, race, nationality, or religion to increase the opportunity to nominate the right candidates for the Company’s business operations.

Authorized Signatory Directors on behalf of the Company

It consists of Mr. Chanin Vongkusolkit, Mr. Metee Auapinyakul, Mr. Ongart Auapinyakul, and Ms. Somruedee Chaimongkol. The two individuals are authorized to sign jointly on a document affixed with the Company’s seal.

Authority and Duties of Chairman of the Board

To ensure effective management and clear division of responsibilities over the Company’s policy formulation and operation, the role in leading the Board, and the supervision of management’s performance, the Company stipulated that the Chairman of the Board of Directors and the Chief Executive Officer must not be the same person. The Chairman of the Board of Directors’ duties and responsibilities are to convene the Board of Directors and Shareholders meeting, determines the agenda for Board meetings together with the Chief Executive Officer, and in the case of an equality of votes, the Chairman of the Board of Directors shall give the casting vote.

If the Chairman of the Board is not an independent director, the Board of Directors shall promote the checks and balances of power and authority of the Board of Directors by having the Board of Directors comprise a majority of independent directors and/or appointing a designated independent director

to be a Lead Independent Director to participate in setting the board meeting agenda.

Duties and Responsibilities of the Board of Directors

The Board of Directors is accountable to shareholders for the Company’s business operations and its oversight of the Company’s management to achieve its goals and maximize shareholders’ interests. The Board also has a duty to ensure ethical conduct and benefits to all stakeholders.

The Board of Directors has to comply with the laws, the Company’s objectives and regulations, and the shareholders’ meeting’s resolutions. It must perform duties with integrity and must safeguard the short-term and long-term interests of shareholders. The Board also complies with the rules and regulations of the Stock Exchange of Thailand (SET), the Office of the Securities and Exchange Commission (SEC), and the Capital Market Supervisory Board, which was established according to the Securities and Exchange Act B.E 2535, as amended by the Securities and Exchange Act (No.5), B.E. 2559.

The Board formulated the “The Practices for the Board of Directors of Banpu Public Company Limited, B.E. 2552” as guidelines for the Board of Directors. The practices handbook details definitions, composition, and criteria of the Board, directors’ qualifications, terms of office and vacancies, duties and responsibilities of the Board as well as meetings and voting procedures. It was amended in 2011, 2012, 2014, 2017 (1st and 2nd amendments), and 2022 to reflect changing responsibilities and business climates as well as to enhance good corporate governance of the Board of Directors.

For complete information on “The Practices for the Board of Directors”, **please scan the QR code or click on ‘CLICK HERE’.**



Regulations Governing Directors Holding Positions in Other Companies

To ensure that directors will be able to dedicate adequate time to perform duties for the Company, Banpu requires directors to serve not more than five boards of listed firms, which is considered one of the qualifications of the directors (The Practices for the Board of Directors of Banpu Public Company Limited’s Section 5.1 Clause (5) General Qualifications of Directors, effective from 19 December 2014 onward). The Board also stipulated in the Corporate Governance Policy on the regulations governing directors holding positions in other companies: “Holding directorship position in other company, other than group companies, CEO must get an approval from the Board of Directors.”

Sub-Committees

The Board of Directors set up four sub-committees, namely, the Audit Committee, the Corporate Governance and Nomination Committee, the Compensation Committee, and the Environment, Social, and Governance (ESG) Committee. The Charter was formulated for each sub-committee to be used as their guiding principles.

The Board suggests that the chairperson of each sub-committee should be an independent director. The chairpersons of the Audit Committee and the Environment, Social, and Governance (ESG) Committee are independent directors. The term of office of these committees is three years, from May 2022 to the date of the Annual Shareholder’s Meeting in 2025.

The Audit Committee

consists of three independent directors.

-
1. **Mr. Teerana Bhongmakapat** Chairman of the Committee
 2. **Mr. Suthad Setboonsarng** Member
 3. **Mr. Pichai Dusdeekulchai** Member
-

The Audit Committee has a duty to review the Company’s financial statements, the sufficiency of internal control and audit systems, and compliance with applicable laws and regulations. The Audit Committee selects and appoints the Company’s auditors, determines their compensation, as well as terminates their appointment. The Committee reviews connected transactions or transactions that may lead to a conflict of interest to ensure accuracy and transparency. Key risks, such as commodity price risk, cyber security risk, and IT risk, are also within the purview of the Audit Committee. Moreover, the Committee reviews and oversees compliance with the Anti-corruption Policy and the independence of the Internal Audit Department, including their work plan, performance, budgets, and workforce. It also approves the appointment, assesses performance, and relocates or dismisses the Head of Internal Audit.

The Audit Committee is chaired by Mr. Teerana Bhongmakapat. All committee members are knowledgeable and competent and have sufficient experience in accounting and finance for auditing the accuracy and creditability of the Company’s financial statements.

In the Audit Committee meeting No. 1/2018, held on 16 January 2018, Ms. Wiyada Wiboonsirichai was appointed as Secretary of the Audit Committee, effective from 16 January 2018. Ms. Wiyada Wiboonsirichai has more than 30 years of experience in managing and conducting professional internal audits in accordance with international standards. She is a Certified Public Accountant (CPA) and a Certified Internal Auditor (CIA)

with excellent knowledge and competence in business strategy, internal control of key risks, and business operations for sustainable growth.

For complete information on “The Audit Committee Charter”, **please scan the QR code or click on ‘CLICK HERE’**.



The Corporate Governance and Nomination Committee

consists of four directors, namely one independent director and three non-executive directors.

- | | |
|--------------------------------------|---------------------------|
| 1. Mr. Rawi Corsiri* | Chairman of the Committee |
| 2. Mr. Anon Sirisaengtaksin** | Chairman of the Committee |
| 3. Mr. Piriya Khempon | Member |
| 4. Mr. Verajet Vongkusolkit | Member |
| 5. Mr. Sarayuth Saengchan*** | Member |

Notes:

* Mr. Rawi Corsiri (Person No. 1) resigned from the director position, effective from 1 April 2022.

** Mr. Anon Sirisaengtaksin (Person No. 2) was appointed as the Chairman of the Corporate Governance and Nomination Committee, effective from 1 May 2022.

*** Mr. Sarayuth Saengchan (Person No. 5) was appointed as a member of the Corporate Governance and Nomination Committee, effective from 1 May 2022.

The Corporate Governance and Nomination Committee has two major duties: 1) To review the Corporate Governance Policy and the Code of Conduct and to monitor compliance with the policy and practices within Banpu’s Code of Conduct and 2) To nominate directors and the Chief Executive Officer, to review a succession plan in order to nominate appropriate persons to fill the management positions for department head level and higher and to submit recommendations to the Board of Directors for approval or for submission to the shareholders’ meeting, as appropriate.

Apart from that, the Corporate Governance and Nomination Committee provides suggestions for the Board of Directors about the method to evaluate the directors, completes the evaluation, and monitors improvements following the evaluation. In 2013, the Committee began using an evaluation form to evaluate the annual performance of three sub-committees, starting with 2012 performance onward. In 2014, the Committee started using the individual director assessment performance evaluation.

For complete information on “The Corporate Governance and Nomination Committee Charter”, **please scan the QR code or click on ‘CLICK HERE’**.



The Compensation Committee

consists of four members, namely three independent directors and one non-executive director.

- | | |
|--|--|
| 1. Mr. Buntoeng Vongkusolkit | Chairman of the Compensation Committee |
| 2. Mr. Teerana Bhongmakapat | Member |
| 3. Mr. Suthad Setboonsarng | Member |
| 4. Mr. Teerapat Sanguankotchakorn | Member |

The Compensation Committee’s duty is to provide suggestions regarding compensation management to the Board of Directors for approval or for submission to the shareholders’ meeting, as the case may be, as follows: 1) To recommend guidelines on how to compensate, methods of compensation payments and other benefits to the Board of Directors, other committees appointed thereby and any other persons attending Board of Directors meeting and/or Subcommittee meeting. 2) To consider and recommend compensation amounts and other benefits by taking duties and responsibilities of the Chief Executive Officer into consideration and by reviewing evaluation

criteria to determine the right annual remuneration. 3) To review a compensation structure, compensation rules and regulations as stated in Clause 1 and 2 to suit the person’s duties and responsibilities, Banpu’s operating results, and marketing conditions. And 4) To review overall budgets for a salary increase, annual bonus payments, and provisions of other staff’s fringe benefits.

For complete information on “The Compensation Committee Charter”, **please scan the QR code or click on ‘CLICK HERE’**.



The Environment, Social, and Governance Committee

consists of three independent directors.

- | | |
|--|---------------------------|
| 1. Mr. Piriya Khempon | Chairman of the Committee |
| 2. Mr. Pichai Dusdeekulchai | Member |
| 3. Mr. Teerapat Sanguankotchakorn | Member |

The Environment, Social and Governance (ESG) Committee is accountable to the Board of Directors for the oversight of ESG operations through 1) oversight of policies, management as well as targets and performance relating to ESG aspects, 2) review and monitoring of stakeholder engagement process and materiality assessment to ensure that all stakeholder expectations are identified, included in materiality assessment, and managed properly, 3) review and monitoring of the ESG risk management performance, and 4) oversight of the Company’s ESG disclosure.

For complete information on “The Environment, Social and Governance (ESG) Committee Charter”, **please scan the QR code or click on ‘CLICK HERE’**.



The Board of Directors’ Meeting

The Board of Directors convenes at least once a month on the final week of every month except for February and December, in which the Board convenes on the second week. Any additional meetings may be held if necessary. At the meeting, there are clear meeting agenda items. A complete set of supporting documents is sent to the Board of Directors at least seven days in advance of the meeting to allow the Board an opportunity to properly review the agenda before the meeting. Adding an agenda item after documents are distributed to the Board is allowed only when it is extremely necessary and justified and when the item has been approved by the Chairman of the Board. Each meeting lasts approximately three and a half hours. During the meeting, all directors may openly voice their opinions. The Chairman of the Board must summarize views and board resolutions. If any director has a conflict of interest in a matter being considered by the Board, the director must leave the meeting room.

Minutes of all the meetings are recorded in written form and after approval are signed by the Chairman of the Board and the Company Secretary. Records of the meetings are kept as hard copies and scanned electronic files to facilitate quick reference for directors or related persons. These also include other documents attached to a particular agenda. All are kept secure for reference for at least five years with a safeguard system to prevent any alteration and other risks of catastrophe.

The Board of Directors’ Meeting and Voting Procedure

The Company prescribed the voting procedure in the Board of Directors’ meeting as follows: “At least half of the directors shall be required to form a quorum.

To pass resolutions, the quorum of the meeting shall be at least two-thirds of all the directors.” (The Practices for the Board of Directors of Banpu Public Company Limited, Re: Board of Directors, section 8.5, effective from 19 December 2014 onward).

Non-Executive Directors’ Meetings

Non-executive directors’ meeting without the presence of management was held on 22 October 2022, 10.00-12.00 hours, at JW Marriott Hotel Bangkok. Twelve non-executive directors convened a meeting on the following agenda items.

1. Senior Management Succession Plan
2. CEO Performance in 2022

Summary of Directors’ Meetings in 2022

The Company discloses the information and details of the Board of Directors’ Meetings in 2022 in the table “The Board of Directors’ Meeting” on page 286.

Details	Chairman	Vice-Chairman	Director/ Member
1. Remuneration of the Board of Directors			
1.1 Monthly Compensation (THB/month)	78,000	69,000	60,000
1.2 Meeting allowance for the Board of Directors paid for each meeting attendance (THB/meeting)	39,000	34,500	30,000
2. The Audit Committee	46,800	-	36,000
paid for each meeting attendance (THB/meeting)			
3. The Corporate Governance and Nomination Committee	39,000	-	30,000
The Compensation Committee			
The Environment, Social, and Governance Committee			
paid for each meeting attendance (THB/meeting)			

Remuneration of the Board of Directors

The Board of Directors delegated the Compensation Committee to review the remuneration structure and system and the appropriate remuneration for the Company’s directors and senior management. It is prescribed as a policy that remuneration must be appropriate to roles, duties, and responsibilities and competitive in the job market and business. Executive remuneration is determined based on individual performance to be an incentive for effective performance.

The remuneration of the Board of Directors consists of monthly salary and allowance for each meeting attended. Annual bonuses will be linked to the dividend paid out to shareholders, and the payment of the Board of Directors’ remuneration must be approved by the shareholders’ meeting. In 2022, the shareholders’ meeting determined remuneration for each committee in relation to remuneration for committees in other business groups. The remuneration for the Board and all committees in 2022 were the same as in 2021, as shown in the table.

Remuneration in Cash for the Year Ended 31 December 2022

Total cash remuneration of the Board of Directors in the forms of monthly compensation, meeting allowance, and annual remuneration amounted to THB 44,686,198.00, the details of which are as follows.

Name/ Position	Monthly Compensation and Meeting Allowance (THB)	Meeting Allowance (THB)				Annual Remuneration (THB)	Total Remuneration (THB)
		Director	The Audit Committee	The Corporate Governance and Nomination Committee	The Compensation Committee		
1. Mr. Chanin Vongkusolkit Chairman of the Board of Directors	1,404,000.00	-	-	-	-	2,639,098.00	4,043,098.00
2. Mr. Teerana Bhongmakapat Independent Director/ Chairman of the Audit Committee/ Member of the Compensation Committee	1,080,000.00	421,200.00	-	180,000.00	-	2,030,075.00	3,711,275.00
3. Mr. Piriya Khempon Independent Director/ Chairman of the Environment, Social, and Governance Committee/ Member of the Corporate Governance and Nomination Committee	1,080,000.00	-	330,000.00	-	156,000.00	2,030,075.00	3,596,075.00
4. Mr. Anon Sirisaengtaksin Director/ Chairman of the Corporate Governance and Nomination Committee	1,080,000.00	-	393,000.00	-	-	2,030,075.00	3,503,075.00
5. Mr. Buntoeng Vongkusolkit Director/ Chairman of the Compensation Committee	1,050,000.00	-	-	234,000.00	-	2,030,075.00	3,314,075.00
6. Mr. Suthad Setboonsarng Independent Director/ Member of the Audit Committee/ Member of the Compensation Committee	1,080,000.00	324,000.00	-	180,000.00	-	2,030,075.00	3,614,075.00
7. Mr. Pichai Dusdeekulchai Independent Director/ Member of the Audit Committee/ Member of the Environment, Social, and Governance (ESG) Committee	1,080,000.00	324,000.00	-	-	120,000.00	2,030,075.00	3,554,075.00

Name/ Position	Monthly Compensation and Meeting Allowance (THB)	Meeting Allowance (THB)				Annual Remuneration (THB)	Total Remuneration (THB)
		The Corporate Governance and Nomination Committee		The Compensation Committee	The Environment, Social, and Governance (ESG) Committee		
		Director	The Audit Committee				
8. Mr. Teerapat Sanguankotchakorn Independent Director/ Member of the Compensation Committee/ Member of the Environment, Social, and Governance (ESG) Committee	1,080,000.00	-	-	180,000.00	120,000.00	2,030,075.00	3,410,075.00
9. Mr. Metee Auapinyakul Director	1,080,000.00	-	-	-	-	2,030,075.00	3,110,075.00
10. Mr. Ongart Auapinyakul Director	1,080,000.00	-	-	-	-	2,030,075.00	3,110,075.00
11. Mr. Verajet Vongkusolkrit Director/ Member of the Corporate Governance and Nomination Committee	1,080,000.00	-	330,000.00	-	-	2,030,075.00	3,440,075.00
12. Mr. Sarayuth Saengchan Director/ Member of the Corporate Governance and Nomination Committee	810,000.00	-	210,000.00	-	-	-	1,020,000.00
13. Ms. Somruedee Chaimongkol Director	720,000.00	-	-	-	-	2,030,075.00	2,750,075.00
14. Mr. Rawi Corsiri	270,000.00	-	210,000.00	-	-	2,030,075.00	2,510,075.00
Total							44,686,198.00

Notes:

- Mr. Anon Sirisaengtaksin (Person No. 4) was appointed as the Chairman of the Corporate Governance and Nomination Committee, effective from 1 May 2022.
- Mr. Sarayuth Saengchan (Person No. 12) was appointed as a director, effective from 2 April 2022, and a member of the Corporate Governance and Nomination Committee, effective from 1 May 2022.
- Mr. Rawi Corsiri (Person No. 14) resigned from the director's position, effective from 1 April 2022.
- In addition to the above remuneration, each director received other benefits, including an annual medical check-up fee of THB 50,000 and fees for attending seminars held by the Thai Institute of Directors Association (IOD) and other related institutions as regulated by the Company.

Shareholding of the Board of Directors and Executives as of 31 December 2022

Members of the Board of Directors are required to report the number of shares owned by themselves, their spouses, and minor children being non sui juris, to the Board meeting after they are appointed as Board members. Subsequently, if any Board members, their spouses, and minor children being non sui juris buy or sell the Company's shares, they are required to report such transactions to the next Board meeting. Shareholding of the Board of Directors and Executives as of 31 December 2022 is shown on next page.

Name	Ordinary Share		
	31 Dec 2022	31 Dec 2021	+ / (-)
1. Mr. Chanin Vongkusolkrit	23,478,626	18,182,901	5,295,725
Spouse/ Minor Child	10,814,300	8,651,440	2,162,860
2. Mr. Teerapat Sanguankotchakorn	-	-	-
Spouse/ Minor Child	-	-	-
3. Mr. Teerana Bhongmakapat	-	-	-
Spouse/ Minor Child	-	-	-
4. Mr. Sarayuth Saengchan	-	-	-
Spouse/ Minor Child	-	-	-
5. Mr. Suthad Setboonsarng	380,312	280,250	100,062
Spouse/ Minor Child	20,000	-	20,000
6. Mr. Pichai Dusdeekulchai	-	-	-
Spouse/ Minor Child	-	-	-
7. Mr. Piriya Khempon	-	-	-
Spouse/ Minor Child	-	-	-
8. Mr. Buntoeng Vongkusolkrit	8,382,046	5,505,637	2,876,409
Spouse/ Minor Child	-	-	-
9. Mr. Metee Auapinyakul	7,354,000	5,353,880	2,000,120
Spouse/Minor Child	1,070,000	859,931	210,069
10. Mr. Ongart Auapinyakul	740,092	1,224,146	(484,054)
Spouse/ Minor Child	3,000,000	3,200,000	(200,000)
11. Mr. Verajet Vongkusolkrit	17,495,373	10,751,720	6,743,653
Spouse/ Minor Child	402,600	320,837	81,763
12. Mr. Anon Sirisaengtaksin	33,332	26,666	6,666
Spouse/ Minor Child	18,024	18,024	-
13. Ms. Somruedee Chaimongkol	9,838,666	7,862,288	1,976,378
Spouse/ Minor Child	-	-	-
14. Mr. Somsak Sithinamsuwan	109,711	87,618	22,093
Spouse/ Minor Child	-	-	-
15. Mr. Jirameth Achcha	90	90	-
Spouse/ Minor Child	38,837	30,967	7,870
16. Mr. Sutee Sukruan	-	-	-
Spouse/ Minor Child	-	-	-
17. Dr. Kirana Limpaphayom	-	-	-
Spouse/ Minor Child	139,000	111,200	27,800

Name	Ordinary Share		
	31 Dec 2022	31 Dec 2021	+ / (-)
18. Ms. Arisara Sakulkarawek	-	-	-
Spouse/ Minor Child	-	-	-
19. Mr. Thiti Mekavichai	-	-	-
Spouse/ Minor Child	100,556	80,278	20,278
20. Mr. Wittapon Jawjit*	-	N/A	N/A
Spouse/ Minor Child	11,000	N/A	N/A
21. Mr. Sinon Vongkusolkit*	494,666	N/A	N/A
Spouse/ Minor Child	-	N/A	N/A

The increase in ordinary shares held by directors and senior executives partially resulted from the exercise of BANPU-W4 warrants.

* Senior executive appointed during the year

Name	Warrants Representing the Right to Purchase Ordinary Shares of Banpu Public Company Limited No. 5 (BANPU-W5)		
	31 Dec 2022	31 Dec 2021	+ / (-)
1. Mr. Chanin Vongkusolkit	5,295,725	5,295,725	-
Spouse/ Minor Child	2,162,860	2,162,860	-
2. Mr. Teerapat Sanguankotchakorn	-	-	-
Spouse/ Minor Child	-	-	-
3. Mr. Teerana Bhongmakapat	-	-	-
Spouse/ Minor Child	-	-	-
4. Mr. Sarayuth Saengchan	-	-	-
Spouse/ Minor Child	-	-	-
5. Mr. Suthad Setboonsarng	70,062	70,062	-
Spouse/ Minor Child	-	-	-
6. Mr. Pichai Dusdeekulchai	-	-	-
Spouse/ Minor Child	-	-	-
7. Mr. Piriya Khempon	-	-	-
Spouse/ Minor Child	-	-	-
8. Mr. Buntoeng Vongkusolkit	1,376,409	1,376,409	-
Spouse/ Minor Child	-	-	-
9. Mr. Metee Auapinyakul	1,354,000	1,353,880	120
Spouse/ Minor Child	220,000	219,231	769
10. Mr. Ongart Auapinyakul	1,878,946	1,878,946	-
Spouse/ Minor Child	1,300,000	800,000	500,000

Name	Warrants Representing the Right to Purchase Ordinary Shares of Banpu Public Company Limited No. 5 (BANPU-W5)		
	31 Dec 2022	31 Dec 2021	+ / (-)
11. Mr. Verajet Vongkusolkit	2,743,600	2,743,511	89
Spouse/ Minor Child	81,800	81,867	(67)
12. Mr. Anon Sirisaengtaksin	6,666	6,666	-
Spouse/ Minor Child	4,506	4,506	-
13. Ms. Somruedee Chaimongkol	1,976,378	1,976,378	-
Spouse/ Minor Child	-	-	-
14. Mr. Somsak Sithinamsuwan	22,093	22,093	-
Spouse/ Minor Child	-	-	-
15. Mr. Jirameth Achcha	-	-	-
Spouse/ Minor Child	7,870	7,870	-
16. Mr. Sutee Sukruan	-	-	-
Spouse/ Minor Child	-	-	-
17. Dr. Kirana Limpaphayom	-	-	-
Spouse/ Minor Child	27,800	27,800	-
18. Ms. Arisara Sakulkarawek	-	-	-
Spouse/ Minor Child	-	-	-
19. Mr. Thiti Mekavichai	-	-	-
Spouse/ Minor Child	20,278	20,278	-
20. Mr. Wittapon Jawjit*	-	N/A	N/A
Spouse/ Minor Child	-	N/A	N/A
21. Mr. Sinon Vongkusolkit*	70,033	N/A	N/A
Spouse/ Minor Child	-	N/A	N/A

* Senior executive appointed during the year.

Senior Executives

Banpu's Senior Executives (As of 31 December 2022)

Are as follows:

1. Ms. Somruedee Chaimongkol	Chief Executive Officer
2. Mr. Somsak Sithinamsuwan	Head of Mining Business
3. Dr. Kirana Limpaphayom	Head of Power Business
4. Mr. Thiti Mekavichai	Head of Oil and Gas Business

5. Mr. Sutee Sukruan	Head of Strategy and Business Development
6. Ms. Arisara Sakulkarawek	Chief Financial Officer
7. Mr. Wittapon Jawjit	Head of Human Resources
8. Mr. Jirameth Achcha	Head of Corporate Services
9. Mr. Sinon Vongkusolkit	Head of Renewable and Energy Technology Business and Chief Executive Officer of Banpu NEXT Co., Ltd.

The above list of senior executives has qualifications as per the Definition of “Executives” in the Notification of Capital Market Supervisory Board TorChor 23/2551. These executives are entrusted with authority and duties to manage the Company’s operations according to the policy, strategy, and goals set by the Board of Directors. The Board has approved the scope of authority and defined clear segregation of duties to ensure transparent and flexible operations.

Note:

* Mr. Sinon Vongkusolkit was registered as the Company’s management with the Securities and Exchange Commission on 24 June 2022.

Authority and Duties of the Chief Executive Officer

The Board of Directors sets operational goals for the CEO and considers the CEO’s compensation based on her annual performance. The CEO then evaluates the performance of executives and senior executives based on the goals and evaluation criteria linked with the Company’s strategic plan and annual action plan and the CEO’s operational goals. This information is used to set appropriate compensation packages and incentives.

Executive Remuneration Policy and Payment

The Company’s remuneration consists of monthly salaries, bonuses, and other forms of compensation, such as contributions to the provident fund (excluding remuneration for some executives who are directors). Executive remuneration is rewarded in the forms of salaries and bonuses linked to the Company’s performance based on key performance indicators and individual achievement. In 2022, remuneration rewarded to executives amounted to THB 187,339,716.

Unit: THB	Number of Executives	Amount of Money
Salary and Bonus	9	183,432,315
Contribution to Provident Fund	7	3,907,401
Total		187,339,716

Notes:

• 2022: There were nine executives, namely 1) Ms. Somruedee Chaimongkol, 2) Mr. Somsak Sithinamsuwan, 3) Dr. Kirana Limpaphayom, 4) Mr. Thiti Mekavichai, 5) Mr. Sutee Sukruan, 6) Ms. Arisara Sakulkarawek, 7) Wittapon Jawjit, 8) Mr. Jirameth Achcha, and 9) Mr. Sinon Vongkusolkit.

Employees

Banpu strives for energy sustainability for society

Banpu prioritizes its employees’ well-being in all aspects in order to create a formidable force. The Company empowers its people and supports them to grow sustainably with potential. It creates a conducive environment that facilitates positive social change as it firmly believes that **“Employees” are the key to a robust business ecosystem** leading to new and diverse business opportunities.

Banpu puts its employees at the heart of every human resources management process while managing employees from diverse backgrounds, e.g., race, religion, language, culture, age, knowledge, perspective, and work experience in all countries where it operates. The Company leverages these strengths to enhance value and competitive advantage and create a happy, agile, and flexible workplace for all job positions in response to agile lifestyles. Employees are encouraged to create innovations in all dimensions to drive new businesses, with the ultimate goal of achieving business sustainability and long-term growth based on a solid foundation.

Total Number of Banpu’s and Its Subsidiaries’ Employees by Country
As of 31 December 2022



Remuneration of Employees

In 2022, remuneration in cash paid to employees of Banpu and its subsidiaries in Thailand, China, Indonesia, Australia, Mongolia, Lao PDR, Japan, Vietnam, and the U.S. consisting of monthly salary, bonuses, and other forms of compensation, such as contribution to provident fund amounted to THB 13,855,815,509.37.

Significant Labor Disputes Over the Past Three Years

-None-

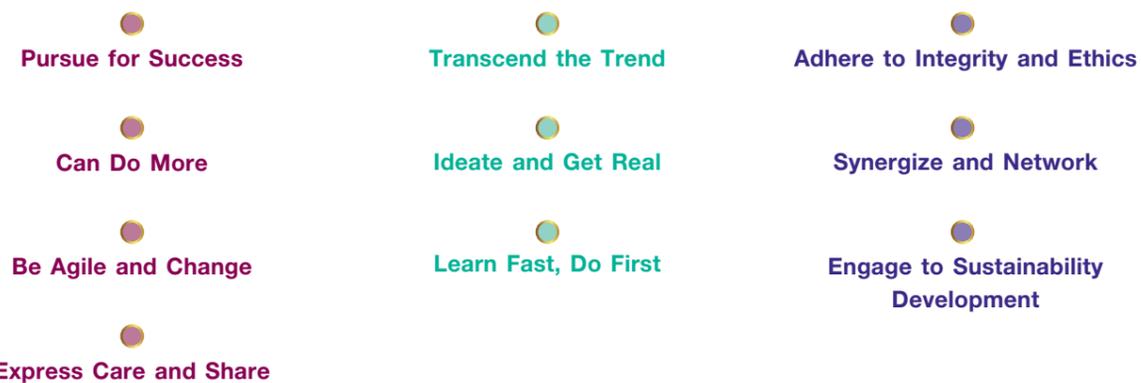
Human Resource Management

“One Banpu, One Goal” Uniting thousands of Banpu’s employees into **“One” Banpu Heart**

“Banpu Heart” is a corporate culture that unites over 6,000 Banpu employees of diverse backgrounds in every country as “One” to mobilize Banpu transformation in alignment with its vision and business strategies, especially during times of organizational change or transformation. Banpu’s executives and employees all adhere to “Banpu Heart” to lead all operations in the same direction toward becoming the Asian energy company at the heart of innovation, technology, and sustainability. Banpu’s corporate culture consists of three shared values as follows:

BanpuHeart

Passionate Striving for the Future **Innovative** New Ideas, New Solutions **Committed** Success Is the Only Option



The Company has incorporated “Banpu Heart” in all processes involved by its employees to strengthen and sustain the corporate culture. The processes include recruitment of new employees, orientation, performance evaluation, employee development, and job promotion.

The Company realizes that “Banpu Heart” underpinned by a mutual trust is a solid foundation creating synergies among Banpu people over the past four decades. Therefore, in 2022, the Company redesigned its activities to accommodate its portfolio diversification by reinforcing a sense of ownership and facilitating employees of different generations from different countries to create diverse activities. The goal is to encourage employees to design and convey corporate culture in a way that suits their context. For example, gamification, including board games and online games, is used to engage Banpu people in all countries in aligning the “10 Key Behaviors of Banpu Heart” with the Banpu Group’s business goals through the exchange of perspectives to ensure a common understanding of the corporate culture. Furthermore, the design thinking process was adopted to organize creative activities in which employees could practice and link the corporate values with their personal values in order to foster understanding and agile working. The activities held are as follows:

- Reinforcement of **Banpu Change Leaders (BCLs)**, a group of employees who volunteer to drive corporate culture by elevating the BCLs network to become a full Global Ecosystem
- Banpu Heart activities in each country, including the **BCLs Forum** in Indonesia, **Banpu Heart and the Local Community** in Mongolia, and **Banpu Heart - How to Be Innovative** in Vietnam, Japan, and Australia
- **Banpu People Garden** campaign demonstrates that Banpu regards employees as good seeds from diverse backgrounds, and each of them can grow in their own path. The campaign provides “**Different Kinds of Plants**” for employees to grow and take care of.
- “**To Achieve the Best, You Must Learn from the Taste of Failure**” activity shows that Banpu encourages its employees to overcome their fear of failure and dare to take risk and make mistakes through the learning process, and grow from failure and strive for success.





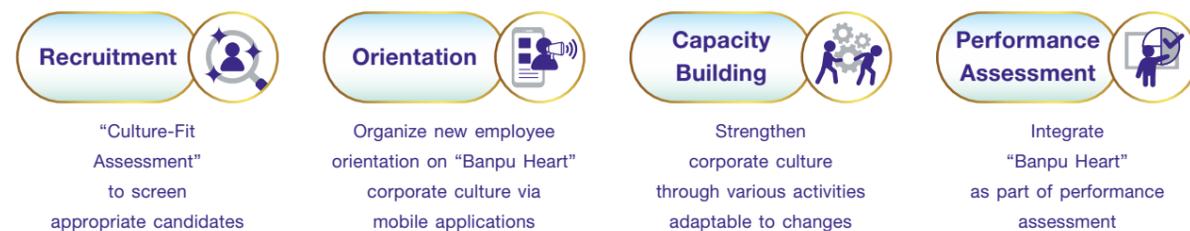
- The presentations by ten Banpu Heart Ambassadors at the “Banpu Transformation Event: The Future we make” affirms that the “Banpu Heart” corporate culture is the key driver of Banpu transformation, which begins with people.



- **The Beat of Winfinity** sports activities connect employees in Thailand and Thai employees who are stationed abroad, allowing them to participate in online and on-site activities in support of Banpu’s core values.

- **Boost Me Up Series** aims to sustainably improve employees’ well-being in all aspects by promoting mindfulness, health, and financial literacy and boosting employees with energy to contribute to society.

Banpu has been committed to developing a corporate culture for the past four decades and is willing to share ideas with other organizations to expand the learning horizons for employees about corporate values. To date, many public and private organizations in Thailand and abroad have joined the learning process. Banpu allowed other companies to visit and learn about its corporate cultures, organized lectures, and provided consultancy for other organizations on how to build a corporate culture in order to drive a sustainable corporate culture.



Apart from that, the Company annually surveys employee opinions on the corporate culture and employee engagement. In 2022, the Company conducted a survey on employee opinions on “Banpu Heart” to measure the levels of employee engagement and alignment of employee behaviors to the corporate culture reflecting “Banpu Heart” as employees are one of Banpu’s key stakeholders. The 2022 survey results are as follows:



Banpu believes that **“People”** and **“Networking”** lie at the heart of innovation.

Banpu places great importance on strengthening its innovation culture. In 2022, despite numerous limitations caused by global situations, the Company continued to develop and expand activities to promote being open to different perspectives and being fearless in trying new things to stimulate an innovative atmosphere in every corner at Banpu. It also prepared employees for changes by creating an Innovation Community within the organization through various activities, such as Banpu Hackathon; Unbox, Unleash Your Creativity; and Banpu Innovation Convention.

Banpu Hackathon was held under the theme “The Future We Make.” This year, the Company initiated a brainstorming session with teams of problem solvers and developers to discover and create new ideas for new business opportunities or solve work-related problems in a short period of time. The Company has also provided a venue for employees to present and experiment with their ideas, overcome the fear of giving a presentation, and dare to learn from mistakes, which helped them better develop their projects. Furthermore, the Company is planning to host Banpu Hackathon in other host countries in 2023.



“Unbox, Unleash Your Creativity” is an activity that aims to cultivate and develop learning about **“innovation”** so that employees are ready to adapt to and stay ahead of every change with the ability to develop new ideas. The activity helped boost inspiration for employees while allowing them to gain knowledge and experiences in various areas, such as technology and current innovation trends,

shared by experts from both inside and outside the organization. This enabled employees to stay ahead of global events and apply the knowledge gained to improve their projects, as well as foster an innovative atmosphere among employees in every country.

Banpu Innovation Convention has served as a venue for showcasing innovations over the past ten years. At the event, employees get to practice their innovative thinking skills and actualize their ideas. Moreover, they can present their innovative ideas in creating smarter ways of working. Banpu Group’s employees from all countries will present their projects to executives and employees to encourage collaboration and information sharing across functions and countries. This event helps promote the Innovation Culture and transform the results into innovations in the short, medium, and long terms, leading to Banpu’s sustainable success in creating innovations.



**“No matter what position you are in, what really matters is...
where do you see yourself in the future?”**

To strengthen “One Banpu, One Goal,” Banpu endeavors to align human resources management with the corporate vision and timely respond to changing business environments to mobilize the Company toward becoming a leading international versatile energy provider. Starting with the establishment of Banpu Academy, the Company supports the strengthening of human resources capacity and promotes agility in the workplace by implementing **Scrum, an Agile Methodology framework, which can be regarded as "Banpu's way of working."** The goal is to create an agile way of working to ensure smooth cross-functional collaboration across countries and the development of new skills for cross-functional operations in all countries. In 2022, the Company implemented the human resources management strategy according to the employee value proposition principle as follows:

1. Continuous Employee Capacity Development in all Countries

People Capability Development Policy

With a determination to develop the capacity of employees and prepare them for business challenges and constant changes, Banpu established **Banpu Academy** in May 2022 at the Bangkok office. The academy will drive Banpu’s vision and goals to transform the Company into a lifelong learning organization in order to equip employees with the ability to learn and develop themselves holistically. This is to ensure that Banpu can achieve steady and sustainable business growth and be ready to embrace opportunities or even challenges in the face of change. Major capacity development operations carried out in 2022 were as follows:

1. Developing standardized and up-to-date employee training courses for the Banpu Group as well as specialized courses based on the expertise and specific context of each current or future business that generates the majority of revenue in each country where Banpu operates
2. Creating networks and ecosystems for employee development in collaboration with international human resources development institutes and organizations from both private and public sectors
3. Integrating data analytics into creating the annual employee development plan and designing learning experiences to efficiently respond to the dynamic needs of personnel development of the business sector and diverse employees
4. Developing employees' potential and capabilities to adapt to the digital age and rapid changes in the New Normal era and to apply digital tools to work more efficiently. The Company focused on developing data analytics and human-centric skills for employees and implemented Banpu's way of working, which derived from the Agile Methodology. Scrum is adopted as a primary framework, and the design thinking process is applied to increase cross-functional, cross-unit, and cross-country collaboration.
5. Fostering innovation culture and unceasing creativity and development in the organization driven by Banpu Academy at the Bangkok office in collaboration with the human resource development unit in each country to establish

Banpu Academy - Country Campus to help connect and drive the development of Banpu Group’s employees in each country systematically.

In 2022, the Company established Banpu Academy - Indonesia Campus and Banpu Academy - Australia Campus with a plan to expand to Vietnam, China, Japan, the U.S., and Mongolia by 2023.



Launch of Banpu Academy - Indonesia Campus via online channels on 26 September 2022

Preparation of Design Thinking Workshop at Australia Campus on 23 November 2022

Newcastle Engineering Team's Design Thinking Workshop in Australia on 25 November 2022

Furthermore, to curate training courses that meet employees' learning needs and behaviors, Banpu Academy conducted a Banpu Academy Employee Diagnostic survey covering over 2,500 employees at all levels in seven countries. The top three skills that employees considered important for the organization were innovation and transformation, effective communication and negotiation, and problem-solving and value creation. Their deciding factor to attend a training course is the relevance of the training course to their jobs. Subsequently, Banpu Academy designed training courses and capacity development plans for employees based on the survey results.

The Company not only organized basic training and development programs but also designed training programs in the form of blended learning for executives and employees of all levels with support from leading consulting firms and management training institutes in Thailand and abroad. To align employee capacity building with the Flexible Workplace Policy, the Company organized upskilling and reskilling programs for employees in the form of self-paced online learning activities. Banpu Academy partnered with the HR Digital Team to provide a suitable platform that responds to varying self-development needs. This is to ensure that employees have positive learning and working experiences as well as the ability to develop and transfer skills, knowledge, and experiences from older to younger employees, enabling the Company to implement strategies smartly, sustainably, and steadily.

In 2022, Banpu's executives and employees in Thailand had average training hours of 20 hours/person, and the training programs provided were as follows:

Self-learning Capacity Development Programs

Apart from in-house and external training courses as well as selective learning programs based on a Universal Blueprint for Infinite Learning, Banpu has the policy to earmark a budget for training at a minimum of 5% of the total annual salary budget. Major skills development programs carried out in 2022 were as follows:

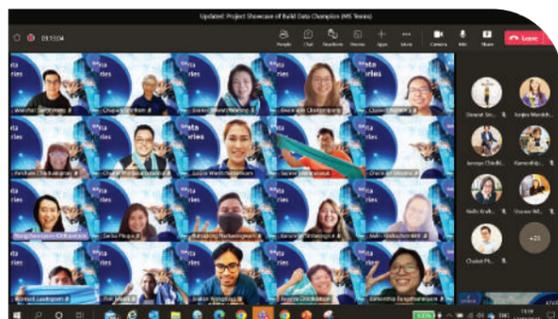
- Leadership skills development** encompasses enhancing business skills such as Energy Titan, negotiation skills, and coaching and mentoring skills to unleash employee potential. The Company also promotes digital savvy through the Data-Driven Citizen Program, which leverages insights to navigate the organization in a technology-driven environment to create benefits for the organization and added-value for customers. Furthermore, the Company provides a space for employees test and try their projects with the help of the learning community to endlessly share experiences and transfer knowledge and data analysis techniques. As learning is employee-centered, employees can choose their own learning style to effectively access and develop knowledge and skills.



Great Coach Report-Out:
Reporting on the achievements of personal development plan and sharing their impressions and benefits from participating in the course

- Functional skills development** includes training on strategic thinking and planning, project management, business model canvas, and Banpu Group's sustainability principles.

In developing technical/functional competencies, the Company has organized not only the required training courses based on the competency of the current job but also the courses to develop new skills to support the Company's expansion and advancement, such as strategic minerals for mining business employees and an internal seminar on ESG. The Company has also developed employees through a learning community that focuses on sharing problem-solving experiences from actual case studies both inside and outside the organization, such as Energy Trading Learning Community and Renewable Energy Asset Management Learning Community. The learning community allows cross-functional employees in different countries to share knowledge, best practices, and experiences. It has also set guidelines for work process development, information sharing, and network expansion in the same work function.



Learning and Developing Data Operations (Data Series):
One of the develop employees courses to use data analytics tools for their own work and the organization



Data Series Community:
A group of people with experience and expertise in using data analytics knowledge to exchange knowledge and learn from each other

Banpu Global Leadership Program

This program provides training for Banpu's executives from all countries. The program aims to promote diversity and inclusion in the workplace and cross-functional networking to instigate international cooperation and collaboration, featuring such courses as self-development to enhance leadership skills, development of team leadership skills, and development of business leadership skills.



Business Leadership Skill Development in Phuket, in July 2022

Furthermore, to align with its mission to foster relationships and connections between industrial and academic sectors, Banpu has collaborated with various educational institutions to promote the exchange of knowledge and experiences among students, faculty, employees, and executives to

contribute to Thai society. In 2022, the Company signed another Memorandum of Understanding (MOU) with Srinakharinwirot University's College of Social Communication Innovation to exchange knowledge and continue to develop staff with the required innovation skills. In addition, Banpu Academy and Chulalongkorn School of Integrated Innovation, under their current MOU, cohosted a seminar to share knowledge and experiences on the topic "B Beyond Digital Transformation."



Succession Planning and High Potential Management

Banpu realizes the importance of the continuity of workforce planning and management to strongly accommodate a growing business. In 2022, Banpu's Succession Planning Committee selected potential successors for senior executive positions and periodically reviewed and monitored the succession plan and potential development through the assessment of competency, personality, and individual development programs (IDPs). The Company also monitored the progress according to the IDPs and recruitment of new employees and executives to fill the critical positions in each country to align succession planning with the Company's business strategy. The Company has identified the key and critical positions, created the key success profile of the key and critical positions, and continuously reviewed selection criteria to strengthen long-term succession management and improve agility in each business.

To prepare middle-level and higher-level executives for the management of employees and operations and their future leadership roles, the Company initiated the following programs in 2022:

- **Banpu International Business Leader Program (IBLP)**, a leadership development program (first batch) for executives in all host countries, aims to develop and prepare leaders based on the action learning approach. All participants are assigned mentors who are senior executives of each organization to help prepare them for the key positions.

- **Banpu Business Leaders Development Program** aims to improve the readiness of executives in each country for people management, operations management, and their future leadership roles. Participants are required to go through a systematic selection procedure, where the leadership capabilities and characteristics are assessed in order to identify strengths and areas for development. A personalized training program is also conducted to prepare each of them for the future leadership role.

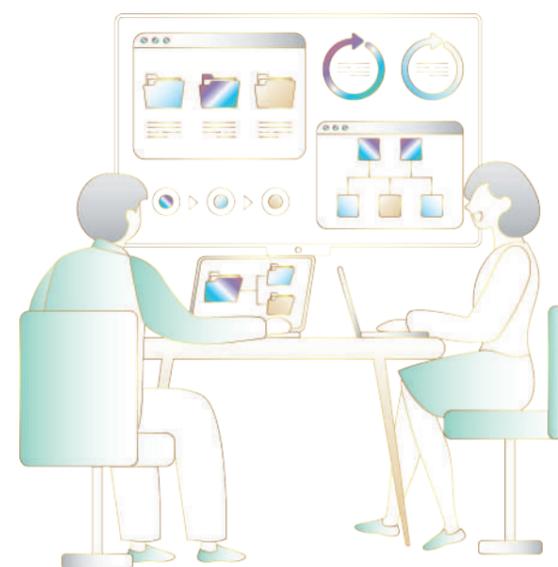
In addition, the Company empowers high-potential candidates with business knowledge, analytical thinking skills, and management skills through a wide range of development activities, such as cross-functional and cross-country working as well as job rotation, and monitors their progress against the personalized learning programs on a quarterly basis.

2. Supporting Agile Working with HR Management Technology to Unite Employees in all Countries under "One Banpu, One Goal"

The Company is moving forward to build an ecosystem of human resources management technology and constantly and concretely link relevant HR information in every country to ensure accurate information management, easy access, and maximum agility in all sectors. Various technologies and systems have thus been introduced to streamline HR management processes in every country under the Process Automation concept, which will strengthen the business ecosystem in the long run.

Global Human Resource Information System Project

One of the projects that the Company is working on to support employee agility is the development of employee information systems in all countries to be linked under a single source of information standard that is simple to use while enhancing both the efficiency of data analytics for human resources management and speedy international cooperation. In 2022, the Company broadened the scope of its working model development via online systems, particularly by developing various workflow systems to ensure that involved persons can see all of the automatically collected information, which helps reduce the work processes and summarize information for quick decision making. Examples of the systems are Manpower Budgeting, Promotion Proposal, 360-degree Development Feedback, and Probation Evaluation. Process automation not only helps create positive user experiences for those involved but also enables real-time management and supervision of employees in every country, leading to increased efficiency and prompt response to any changes.



3. Effective Organization Structure

The Company is well aware that an organizational structure appropriate for business strategies promotes agility, strengthens management, creates synergies among business groups in each country, and facilitates speedy operations in each country to ensure maximum efficiency.

Hence, in 2022, the Company set up a Transformation Working Group to help accelerate the organizational transformation concretely and drive changes in business transformation, corporate center transformation, governance transformation, and people transformation to achieve structural change and holistic implementation across all sectors. Furthermore, the Company aims to strengthen and sustain the growth of the business ecosystem, moving forward to becoming a Global Corporate Center under the supervision of Banpu Group's CEO and the Flagship companies CEOs of all three core business groups: Energy Resources, Energy Generation, and Energy Technology. The Transformation Working Group is responsible for three areas:

- Governance and culture
- Flagship businesses
- Corporate center

Other Important Information

The Person Assigned to Supervise Accounting

Ms. Arisara Sakulkarawek, Chief Financial Officer, was assigned to directly supervise the accounting of the Company. Details of the person directly supervising accounting are included under the section “Details of the Board of Directors and Management” in this report.

Company Secretary

The Board of Directors has appointed Mr. Virach Vudhidhanaseth as Company Secretary, whose duties and responsibilities are as stipulated in the Securities and Exchange Act (No.5), B.E. 2559, an amendment of the Securities and Exchange Act B.E. 2535. The Company Secretary is responsible for organizing the Board of Directors’ meetings and shareholders’ meeting, ensuring compliance with the meetings’ resolutions, and advising the Board on rules and regulations that it must comply with. Additionally, the Company Secretary prepares and keeps the register of directors, Board meeting invitation letters, Board meeting minutes and the Company’s annual reports, invitation letters to attend the shareholders’ meeting and records of its minutes, the report on conflict of interest by directors or executive officers and performs other duties as prescribed by the Office of the Securities

and Exchange Commission, the Capital Market Supervisory Board, and the Stock Exchange of Thailand.

Head of the Internal Audit Department

Ms. Wiyada Wiboonsirichai, Head of Global Internal Audit and Compliance, was appointed to supervise the Company’s internal audit.

For complete information on “Details of senior management, the person directly supervising accounting, Company Secretary and Head of Internal Control”, please scan the QR code or click on ‘CLICK HERE’.



Investor Relations

Investor Relations Department discloses information through the Company’s website to ensure inclusive and equitable access to information for all stakeholders. For complete information, please scan the QR code or click on ‘CLICK HERE’.



Interested parties may contact or make inquiries to the Company’s Investor Relations via the following channels



Phone : +66 2 694 6684



Email : investor_relations@banpu.co.th



Line : @banpu-ir

Audit Fees

The Audit Committee considered the selection of auditors based on Banpu’s evaluation criteria, namely auditor independence as well as audit quality and standards, in accordance with the Stock Exchange of Thailand’s requirements. The Audit Committee then proposed the appointment of auditors to the Board of Directors for approval.

1. Ms. Rodjanart Banyatananusard

CPA, License No. 8435; and/or

2. Ms. Amornrat Permpoonwattanasuk

CPA, License No. 4599; and/or

3. Mr. Pongthavee Ratanakoses

CPA, License No. 7795; and/or

4. Mr. Boonruang Lertwisetwit

CPA, License No. 6552

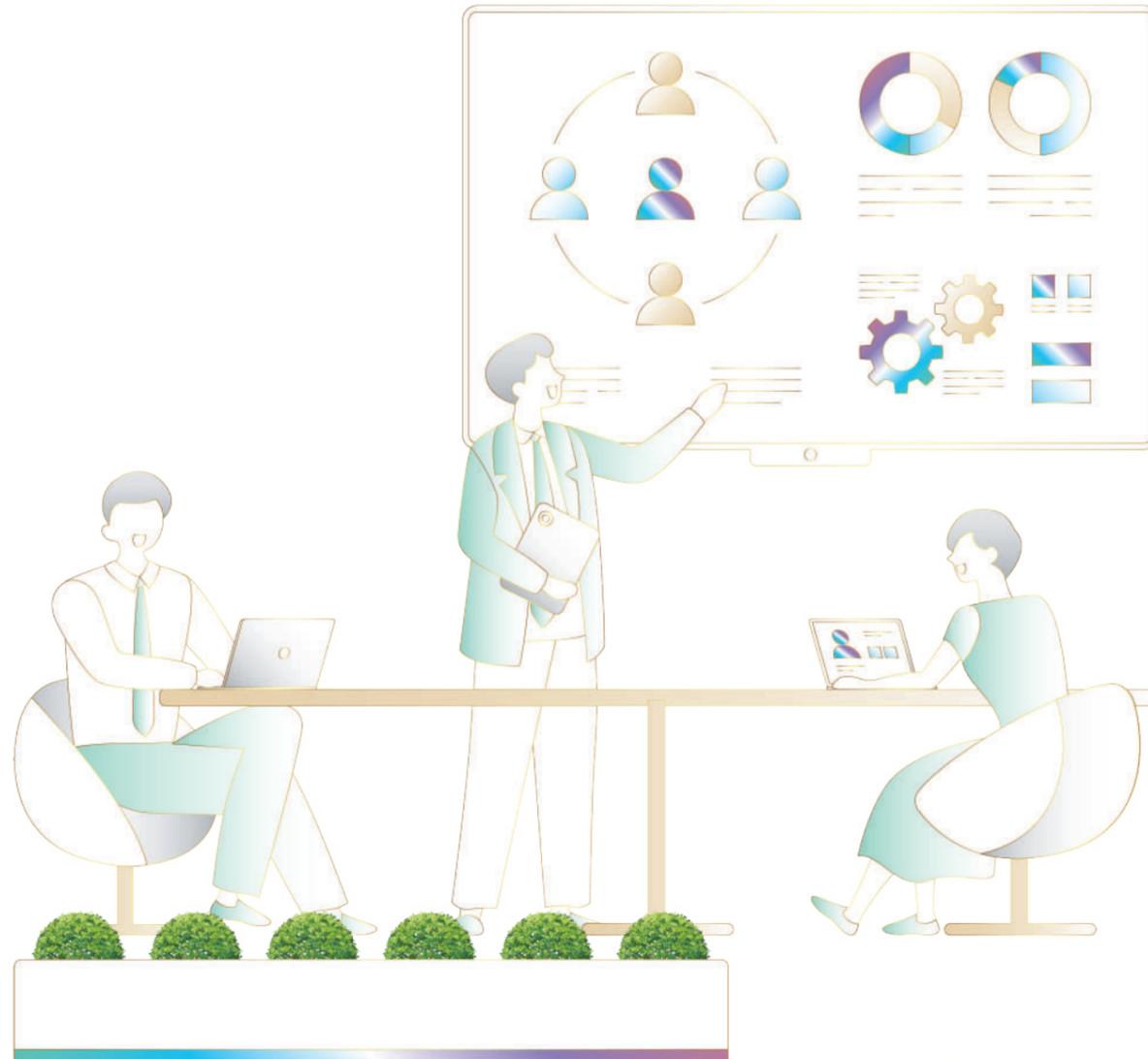
The above individuals from PricewaterhouseCoopers ABAS Ltd. (PwC), which has a network of firms in many countries, were nominated as auditors of Banpu Public Company Limited in 2022 with a total audit fee of THB 2,780,000. The Board of Directors also acknowledged the audit fees of THB 109,005,109 for the annual and quarterly consolidated financial statements of Banpu and its subsidiaries.

Non-Audit Fees

In 2022, the Company had other fees of THB 207,540, which are expenses incurred during the service provided by PricewaterhouseCoopers ABAS Ltd. (PwC).



CORPORATE GOVERNANCE PERFORMANCE



Summary of the Performance of the Board of Directors in 2022

In 2022, the Board of Directors had a pivotal role in formulating policies and strategies to elevate competitiveness, cultivating the corporate culture and values, and enhancing the efficiency of governance and the adequacy of internal control. The Board also supervised the Company's risk management and provided useful opinions on business development. The Board reviewed and adopted good governance principles prescribed in the Corporate Governance Code (CG Code) for Listed Companies 2017 of the Securities and Exchange Commission (SEC) as the Company's CG practices as follows:

1. The Board reviewed and amended the Corporate Governance Policy as follows:

- **Appointment of Lead Independent Director**

If the Chairman of the Board is not an independent director, the Board of Directors shall promote the check and balance of power and authority of the Board of Directors by having the Board of Directors comprise a majority of independent directors and/or appointing a designated independent director to be a Lead Independent Director to participate in setting the Board meeting agenda

Apart from that, the Company has established appropriate measures in place of best practices not yet put into the business context in order to comply with the good governance principles prescribed in the SEC's CG Code for Listed Companies 2017.

Nomination, Development, and Performance Evaluation of the Board and Directors

The nomination, development, and performance evaluation of the Board of Directors are of great importance as the Board of Directors has a critical role in establishing the Company's strategy and business direction to drive sustainable growth. The Company has disclosed information as well as the criteria and procedures for the nomination of Board members under the section "Nomination of Directors and Senior Executives" on page 236, "Performance Evaluation of the Board of Directors" on page 237, and "Development of the Board of Directors and the Executives" on page 238.

The Board of Directors' Meeting

The Board of Directors convenes at least once a month on the final week of every month except for February and December, in which the Board convenes on the second week. Any additional meetings may be held if necessary. At the meeting, there are clear meeting

2. The Board reviewed and amended the Practices of the Board of Directors of Banpu Public Company Limited as follows:

- The Board of Directors has additional authority to appoint an independent director as "Lead Independent Director", in the event that the Chairman of the Board is not an independent director.

agenda items. A complete set of supporting documents is submitted to the Board of Directors at least seven days in advance of the meeting to allow the Board an opportunity to properly review the documents before the meeting. Adding an agenda item after documents are distributed to the Board is allowed only when it is extremely necessary and justified, and the item must be approved by the Chairman of the Board. Each meeting lasts approximately three and a half hours. During the meeting, all directors can openly voice their opinions. The Chairman of the Board is the one who summarizes views and board resolutions. If any director has a conflict of interest in a matter being considered by the Board, the director must leave the meeting room.

In this regard, the minutes of all the meetings are recorded in written form and, after approval, are signed by the Chairman of the Board and the Company Secretary. Records of the meetings are kept as hard copies and scanned electronic files to facilitate quick reference for directors or related persons. These also include other documents attached to a particular agenda. All are kept secure for reference for at least five years with a safeguard system to prevent any alteration and other risks of catastrophe.

The Board of Directors' meetings in 2022 (1 January 2022 – 31 December 2022)

Name	Title	Terms of Office	2022 Meeting Attendance						
			The Board of Directors	Non-Executive Directors	The Audit Committee	The Corporate Governance and Nomination Committee	The Compensation Committee	The Environment, Social, and Governance (ESG) Committee	2022 Annual General Meeting of Shareholders (AGM)
			Total 12 meetings	Total 1 meeting	Total 9 meetings	Total 11 meetings	Total 6 meetings	Total 4 meetings	Total 1 meeting
1. Mr. Chanin Vongkusolkit	Chairman/ Non-Executive Director (NED)	April 2022 - AGM 2025	12/12	1/1	-	-	-	-	1/1
2. Mr. Teerana Bhongmakapat	Independent Director (ID)	April 2022 - AGM 2025	12/12	1/1	9/9	-	6/6	-	1/1
3. Mr. Priya Khempon	Independent Director (ID)	April 2022 - AGM 2025	12/12	1/1	-	11/11	-	4/4	1/1
4. Mr. Anon Sitsaengtaksin	Non-Executive Director (NED)	June 2020 - AGM 2023	12/12	1/1	-	11/11	-	-	1/1
5. Mr. Buntoeng Vongkusolkit	Non-Executive Director (NED)	April 2021 - AGM 2024	11/12	1/1	-	-	6/6	-	1/1
6. Mr. Suthad Setboonsang	Independent Director (ID)	June 2020 - AGM 2023	12/12	1/1	9/9	-	6/6	-	1/1
7. Mr. Pichai Dusdeekulchai	Independent Director (ID)	June 2020 - AGM 2023	12/12	1/1	9/9	-	-	4/4	1/1
8. Mr. Teerapat Sanguankotchakorn	Independent Director (ID)	April 2022 - AGM 2025	12/12	1/1	-	-	6/6	4/4	1/1
9. Mr. Mitee Auapinyakul	Non-Executive Director (NED)	June 2020 - AGM 2023	12/12	1/1	-	-	-	-	1/1
10. Mr. Ongart Auapinyakul	Non-Executive Director (NED)	April 2021 - AGM 2024	12/12	1/1	-	-	-	-	1/1
11. Mr. Verajet Vongkusolkit	Non-Executive Director (NED)	April 2021 - AGM 2024	12/12	1/1	-	11/11	-	-	1/1
12. Mr. Sarayuth Saengchan	Non-Executive Director (NED)	April 2022 - AGM 2025	9/9	1/1	-	7/7	-	-	-
13. Mrs. Somruedee Chaimongkol	Executive Director (ED)	April 2021 - AGM 2024	12/12	-	-	-	-	-	1/1
14. Mr. Rawi Corsiri	Non-Executive Director (NED)	April 2019 - AGM 2022	3/3	-	-	3/3	-	-	1/1

Notes: 1. The 2022 Annual General Shareholders Meeting of Banpu Public Company Limited was convened on 1 April 2022.

2. Mr. Sarayuth Saengchan was appointed as a director, effective from 2 April 2022 onward, and as a member of the Corporate Governance and Nomination Committee, effective from 1 May 2022 onward.

3. Mr. Anon Sitsaengtaksin was appointed as the Chairman of the Corporate Governance and Nomination Committee, effective from 1 May 2022 onward.

4. Mr. Rawi Corsiri resigned as a director, effective from 1 April 2022 onward.

Remuneration of the Board of Directors

The Board of Directors delegated the Compensation Committee to review the remuneration structure, system, and the appropriate remuneration for the Company's directors and senior management. It is prescribed as a policy that remuneration must be appropriate to roles, duties, and responsibilities and competitive in the job market and business. Executive remuneration is determined based on individual performance to be an incentive for effective performance.

The remuneration of the Board of Directors consists of monthly salary and allowance for each meeting attended. Annual bonuses will be linked to the dividend paid out to shareholders, and the payment of the Board of Directors' remuneration must be approved by the shareholders' meeting. The information is disclosed under the section "Remuneration of the Board of Directors" on page 264.

Corporate Governance of Subsidiaries and Affiliates

The Company has managed its subsidiaries and affiliates and established business procedures to ensure operational effectiveness and proficiency, as follows:

Investment Policies by Banpu and Its Subsidiaries

- The management shall study and assess the preliminary findings of the Investment Committee before reporting the results and investment outlook summary to the Board of Directors. The Board then considers and approves the project for funding, development, and expansion, as well as the subsidiaries' significant policies. The Board of Directors also has the authority to approve the establishment of subsidiaries, as well as their dissolution, as necessary to ensure the efficiency of Banpu's operations.
- The Board of Directors considers and approves investment transactions that meet the criteria set

by the SEC, such as connected transactions and the acquisition or disposition of assets.

- The Board of Directors has a governance mechanism to oversee subsidiaries and safeguard the Company's investment. The Board is responsible for considering suitable top executives to serve as directors of the Company's subsidiaries to ensure that the management is aligned with the Company's policies and that all transactions comply with the laws and regulations of the SEC as well as the SET's notifications.
- The subsidiaries shall submit reports on their performance and operations, particularly of their major businesses. They shall also conduct sensitivity analysis, evaluate it against set goals or benchmarks, and provide opinions or recommendations on the business management of each subsidiary. These management reviews provide a basis for policy formulation and business management improvement to embrace continued growth and development so that the Company's subsidiaries grow in a sustainable manner.

Internal Control Policy and Central Management Policy

The Board of Directors and the management assigned the Global Internal Audit Unit to work independently by submitting an internal audit report directly to the Audit Committee. The Unit is also required to report on the progress of the internal audit to the Board of Directors on a quarterly basis.

Management within each subsidiary is determined based on the Company's investment equity. The Board of Directors is responsible for appointing an executive to serve as a director in each subsidiary to ensure alignment of business direction with the Company's policies and strategies. Director selection is decided based on knowledge, relevant capabilities to the subsidiary, work location (in case of a foreign subsidiary), and health and readiness of the director. Director positions in the Company's subsidiaries are reviewed at least once a year.

Budget Policy

Investment budget preparation and implementation must be in accordance with the budget regulations of each subsidiary and consistent with the Company's budget regulations. Budget preparation and review must be completed within the deadline, and the corresponding information must be submitted according to the Company's standard operation. The project investments, which cost more than THB 1,500 million and exceed the approved budget by 15%, must be approved by the Board of Directors.

Corporate Governance and Compliance Monitoring

Reporting of Interests of Directors and Executives

To comply with Clause 89/1/4 of the Securities and Exchange Act (No. 4) B.E. 2551 and the Notification of Capital Market Supervisory Board TorChor 2/2552, reporting of interests of directors, executives and related persons, members of the Board of Directors are required to report the securities held by themselves, their spouses, and minor children who are not sui juris to the Board meeting after they are appointed as Board members. Subsequently, if any Board members, their spouses, and minor children who are not sui juris buy or sell the Company's securities, they are required to report such transactions to the next Board meeting every time.

Anti-Corruption

Banpu has been a certified member of the Thai Private Sector Collective Action Against Corruption (CAC). In 2022, the Company conducted the 2022 assessment of corruption risk and established prevention measures. The risk assessment covered all businesses in every country where Banpu has invested, both at its subsidiaries and joint ventures. The results have subsequently been reported to the Risk Management Committee. Apart from that, the Company has continuously communicated and informed employees

of the policies and practices to combat corruption, for example, the Corporate Governance Policy and the Code of Conduct, and the Anti-Corruption practice on accepting and offering of gifts, hospitality, or other similar forms of benefits. Employees at all levels can access the policies through internal communication channels. In the past year, letters were sent out to the Board of Directors, executives, and employees to request adherence to the No Gift Policy.

Use of Internal Information

In 2022, there were no reports of breach against or non-compliance with the regulations of the SET and the SEC regarding insider trading and sales or purchases of securities.

In addition, the Board of Directors and executives had disclosed their ownership of the Company's securities on the date they were appointed. They also reported changes in securities, including those of their spouses and minor children who are not sui juris as well as related persons, to the Board of Directors for acknowledgment as disclosed under the section "Policy on the Use Internal Information" on page 251.

Reporting Wrongdoing and Receiving Complaints regarding Corporate Governance

The Company has provided channels and procedures for receiving complaints that cover all related stakeholders. The system to receive complaints has been established through the Company's website under the Corporate Governance section regarding Whistleblowing. Complaints can be sent directly to the Chairman of the Corporate Governance and Nomination Committee at GNCchairman@banpu.co.th and/or the Secretary of the Corporate Governance and Nomination Committee at GNCsecretariat@banpu.co.th, who will quarterly report the complaints to the Corporate Governance and Nomination Committee and annually submit a summarized report to the Board of Directors. Details are disclosed under the section "Roles of Stakeholders" on page 243 In 2022, the Company received no complaints from the stakeholders.

REPORT OF THE CORPORATE GOVERNANCE AND NOMINATION COMMITTEE

The Corporate Governance and Nomination Committee consists of Mr. Anon Sirisaengtaksin*, the Chairman of the Committee, with Mr. Piriya Khempon, Mr. Verajet Vongkusolkit, and Mr. Sarayuth Saengchan** as members. The Committee independently performs duties entrusted by the Board of Directors in compliance with principles and the Charter of the Corporate Governance and Nomination Committee as well as good governance principles prescribed in the Corporate Governance Code for Listed Companies (CG Code) 2017 of the Securities and Exchange Commission (SEC).

In 2022, the Corporate Governance and Nomination Committee convened 11 meetings with full attendance. The Corporate Governance and Nomination Committee summarized its performance in 2022 as follows:

The Corporate Governance Mission

indicator. The survey results, which are classified by job grade and work location, were satisfactory.

1. Amendment of the Corporate Governance Policy

In 2022, the Board of Directors of Banpu Public Company Limited resolved to approve the amendment of the Corporate Governance Policy and the Practices for the Board of Directors of Banpu Public Company Limited regarding the appointment of the Lead Independent Director: if the Chairman of the Board is not an independent director, the Board of Directors shall promote the checks and balances of power and authority of the Board of Directors by having the Board of Directors comprise a majority of independent directors and/or appointing a designated independent director to be a Lead Independent Director to participate in setting the board meeting agenda.

In this regard, the Corporate Governance and Nomination Committee monitored the implementation of Banpu's Corporate Governance Policy and the Code of Conduct based on the 2022 survey results on employee attitude toward "Banpu Heart", the corporate culture, using "Committed" as an

2. Promotion of Corporate Culture and Positive Attitude toward Corporate Governance

The Corporate Governance and Nomination Committee monitored the implementation of the communication plan to promote the corporate culture and positive attitude toward corporate governance through a wide range of activities in 2022, which yielded satisfactory results.

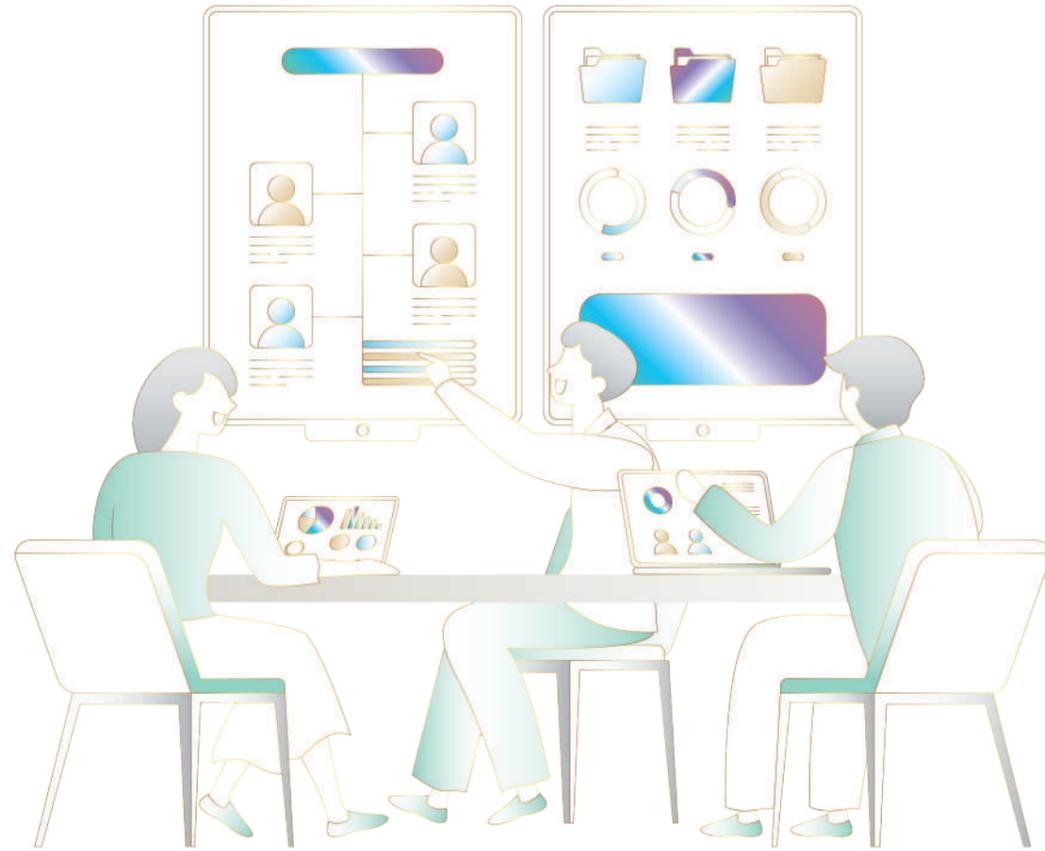
3. Receiving Complaints regarding Corporate Governance

Banpu has established a communication channel for receiving complaints regarding corporate governance, covering all groups of stakeholders, via the Company's website under the Corporate Governance section. Complaints can be sent directly to the Chairman of the Corporate Governance and Nomination Committee at GNCchairman@banpu.co.th and/or the Secretary of the Corporate Governance and Nomination

Notes:

*Mr. Anon Sirisaengtaksin was appointed as the Chairman of the Corporate Governance and Nomination Committee, effective from 1 May 2022 onward.

**Mr. Sarayuth Saengchan was appointed as a member of the Corporate Governance and Nomination Committee, effective from 1 May 2022 onward.



Committee at GNCsecretariat@banpu.co.th. The complaints will then be reported to the Corporate Governance and Nomination Committee on a quarterly basis, and a summarized report will be submitted to the Board of Directors on an annual basis. In 2022, there were no complaints from any group of stakeholders.

4. Performance Evaluation of Directors and the Board and Directors

The Corporate Governance and Nomination Committee presented the annual evaluation results to the Board of Directors' meeting. The Board of Directors' overall performance was satisfactory, with a score of 4.91 out of 5. Specifically, each topic received a score in the "good to excellent" range (between 4.5 and 5.0.) The Board acknowledged the evaluation results and suggestions, and

the directors also exchanged views in the Board of Directors' meeting on ways to enhance their performance to best benefit the Company.

The annual evaluation results of the four sub-committees, namely, the Audit Committee, the Compensation Committee, the Corporate Governance and Nomination Committee, and the Environment, Social and Governance (ESG) Committee, received an "excellent" score range with an average score of 4.66 out of 5. Each sub-committee submitted its annual self-evaluation report to the Board of Directors as part of its annual performance report.

Apart from that, each individual director performed a self-assessment. The annual evaluation of each director's individual performance earned an average score of 4.76 out of 5. The Board of Directors acknowledged the results and suggestions and found

the individual performance evaluation satisfactory. They exchanged views on how to enhance their performance to best benefit the Company.

Mission on the Nomination of Directors and Succession Planning for Senior Executive Officers

Nomination of Directors Retired by Rotation in 2022

The Corporate Governance and Nomination Committee reviewed the qualifications and appropriateness of the directors who have served their three-year term and proposed to the Board of Directors to re-nominate their names to the 2022 Annual General Meeting of Shareholders for consideration and approval. In the 2022 AGM, four directors re-elected by the shareholders were as follows:

1. Mr. Chanin Vongkusolkit
2. Mr. Teerana Bhongmakapat
3. Mr. Teerapat Sanguankotchakorn
4. Mr. Piriya Khempon

After the Corporate Governance and Nomination Committee had reviewed the qualifications and appropriateness of the four directors whose terms of office expired, they agreed that the directors have appropriate qualifications and impressive performance

to be nominated to the 2022 Annual General Meeting of Shareholders for consideration and approval of re-election. The Committee nominated their names to the Board of Directors according to the nomination and appointment procedures, which have already been completed.

Nomination of Director to Replace Retired Director

The Corporate Governance and Nomination Committee has considered the composition and structure of the Board of Directors and updated the Board's Skills Matrix to be consistent with the Company's current strategy and business direction. The Committee also selected candidates to replace Mr. Suthad Setboonsarng, the director reaching retirement age, on the date of the 2023 Annual General Meeting of Shareholders. The selection followed the specified requirements, procedure, and period of time. The candidate will be proposed for the Board's approval; the Board will then nominate the candidate to the 2023 Annual General Meeting of Shareholders for approval.

Succession Plan for Senior Executive Officers

In 2022, the Corporate Governance and Nomination Committee received nine progress reports on the succession plan and reported the succession plan to the Board of Directors once.

Mr. Anon Sirisaengtaksin
Chairman of the Corporate Governance and Nomination Committee
Banpu Public Company Limited

REPORT OF THE COMPENSATION COMMITTEE

The Compensation Committee of Banpu Public Company Limited is composed of four members: three being independent directors and other one being a non-executive director. All members were appointed by the Board of Directors based on their expertise, competence, skills, and experience, both domestically and internationally.

The Compensation Committee consists of Mr. Buntoeng Vongkusolkit, the Chairman of the Compensation Committee, and three other members, Mr. Teerana Bhongmakapat, Mr. Suthad Setboonsarng, and Mr. Teerapat Sanguankotchakorn.

The Compensation Committee Charter B.E. 2552 prescribed duties and responsibilities of the Compensation Committee as follows:

- To provide recommendations on remuneration management to the Board of Directors regarding the Board of Directors, sub-committees appointed by the Board, and any other persons attending the Board of Directors meetings or sub-committee meetings
- To consider and recommend remuneration and other benefits, including annual remuneration of the Chief Executive Officer, and deliberate the overall budget for an annual salary increase, bonuses as well as other benefits for employees

- To review and recommend the amendment of the scope of work, duties, and responsibilities of the Compensation Committee in response to changing circumstances and determine appropriate structure and criteria for consideration and deliberation on remuneration
- To submit a report on the Compensation Committee's performance to the Board of Directors at least once a year

In 2022, the Compensation Committee convened six meetings, comprising five regular meetings and one special meeting, in which the Committee considered the agenda proposed by the Secretary of the Committee. The Committee also provided recommendations to the Board of Directors for consideration and approval.

Amid the COVID-19 pandemic, the means for the Committee's meetings have been adjusted as appropriate through e-meetings. The meetings in 2022 can be summarized as follows:

1. Remuneration and Other Benefits

In 2022, the Compensation Committee considered and provided recommendations on remuneration of the Board of Directors, sub-committees, Chief Executive Officer, and Banpu Group's employees in all countries based on their duties, responsibilities, and performances in the previous year, the Company's operating results, key economic information, remuneration surveys of leading companies in Thailand and abroad and other factors contributing to the successful implementation of the Company's strategy and overall benefits.

Given the robust operating results of the Company in 2022, the Compensation Committee considered appropriate variable bonus payments, taking into account several factors, including the Company's operating results, individual achievements, exogenous factors that may impact the Company's operating results, as well as strong competition in labor markets of some countries.

The considerations and recommendations regarding remuneration were made in a thorough, careful, and transparent manner. The remuneration can provide motivation and incentives for individuals to perform duties to the best of their abilities.

2. Business Directions of the Company

The Compensation Committee participated in determining the Company's business operations to actualize practical results through the practice and continuity of the its business operations. The Committee considered and provided suggestions on the Chief Executive Officer's key performance indicators in 2022, which aligned with the Company's short-term and long-term business directions and key annual goals assigned by the Board. Furthermore, the Committee considered the Chief Executive Officer's performance during the first and second half of 2022 and provided recommendations on the matter to the Board of Directors.

3. Collaborative Work with Employees and the Management

The Compensation Committee regularly invited executives to attend the meetings on related agendas to provide information and detailed explanations to support its deliberations. This practice enabled the Committee to make accurate, precise, and timely decisions while also providing an opportunity to understand the working conditions of employees in each area of every country.

The Compensation Committee also performed a self-evaluation of its performance over the past year regarding its qualifications, duties and responsibilities, meetings, and reporting. The evaluation results were reported to the Board of Directors together with the evaluation results of other sub-committees.

In conclusion, the Compensation Committee, in 2022, fully performed its duties and responsibilities as prescribed in the Compensation Committee Charter B.E. 2552 of Banpu Public Company Limited and as entrusted by the Board of Directors. The Committee also provided valuable opinions and recommendations to the executives, the Board of Directors, and stakeholders on a regular basis.

Mr. Buntoeng Vongkusolkit
Chairman of the Compensation Committee
Banpu Public Company Limited

REPORT OF THE AUDIT COMMITTEE TO SHAREHOLDERS

Dear Shareholders of Banpu Public Company Limited,

The Audit Committee of Banpu Public Company Limited consists of three independent directors who are competent and having diverse expertise and experience in accounting, finance and banking, business management, and economics, namely Mr. Teerana Bhongmakapat, as Chairman of the Audit Committee, Mr. Suthad Setboonsarng, and Mr. Pichai Dusdeekulchai, as committee members. Ms. Wiyada Wiboonsirichai, Head of Global Internal Audit and Compliance, is the Secretary of the Audit Committee.

The Audit Committee performs its duties with independence within the scope and responsibilities entrusted by the Board and as stipulated in the Audit Committee Charter, which complied with the Securities and Exchange Commission (SEC)'s regulations, best practice guidelines and good corporate governance. In accordance with the Greener & Smarter strategy, the Company has expanded its business investments to various countries in order to drive corporate transformation throughout the organization to keep pace with sustainable growth, manage potential new risks, and improve the internal control system to be suitable for the Company's rapidly changing businesses. As a result, it poses a significant challenge to the Company's corporate governance. The Audit Committee places a high priority on ensuring adequate and appropriate internal control and risk management, good corporate governance and compliance with laws and regulations relating to business operations both domestically and internationally, new projects and

investments. The compliance also cover the Company's anti-corruption policy and other important law including the Personal Data Protection Act (PDPA). The Company aims to be an organization with strong corporate governance, conducting internal audits and regulatory compliance by deploying advanced technology for agile audit and beyond compliance. This enables the Company to achieve its goals and meet international standard, generate benefits for all stakeholders, and conduct sustainable and well-balanced operation in both the short and long term, in accordance with ESG principles that prioritize the interests of all stakeholders.

In 2022, the Audit Committee convened nine meetings with full attendance of all members. The meetings were participated by executives, the Global Internal Audit Department, and external auditors in related agenda. The Audit Committee also held a closed meeting session with the external auditors without the presence of management. The results of Audit Committee meetings are quarterly reported to the Board of Directors. The Audit Committee's main activities can be summarized as follows:

1. Review of Financial Statements

The Audit Committee reviewed Banpu's quarterly financial information and the 2022 financial statements together with related management, the Global Internal Audit department, and external auditors on key matters. The Audit Committee asked the auditor about the accuracy and completeness of the financial reports, the update of the accounting policy, the adjustment transactions, and accounting estimates

which affects financial reports. The Committee also oversaw the adequacy and suitability of accounting methods, the audit scope, the accurate and sufficient disclosure of information, and the independence of the auditor. This is to ensure financial reports' compliance with legal requirements and the Generally Accepted Accounting Principles, reliability, and adequate and timely information disclosure for the benefit of investors and users of the financial statements.

2. Review of Internal Control and Internal Audit

The Audit Committee reviewed and supported the Global Internal Audit Department to review and monitor the Company's and its subsidiaries' internal control over investment, operation, resource utilization, asset protection, the prevention of errors, damages, and corruption, the reliability of financial statement, and law and regulatory compliance, including the Company's operational and IT procedures. The Audit Committee also drove the improvement of internal audit, risk management, internal control, and compliance focusing on raising awareness for executives and employees. The Audit Committee also encouraged management to review the Company's policies and procedures to support the appropriateness of operation to ensure prudent and judicious internal control. The Audit Committee supported the management in overseeing IT governance to achieve continuous improvement and ensure cybersecurity to support the Company's strategy and effective operations. According to the result of the internal control review using the Internal Control Sufficiency Evaluation Form developed by Thailand's Securities and Exchange Commission, no significant issues or shortcomings were detected. The Audit Committee is confident that Banpu has sufficient and appropriate internal control for effective business management and operations.

The Audit Committee oversaw internal auditing by reviewing and approving the strategic plan and annual audit plan of the Global Internal Audit Department. It has placed a strong emphasis on agile auditing and taking a proactive role in providing counseling services in order to improve the efficiency, credibility, and effectiveness of the internal audit process aligning with the expectations of stakeholders. The Committee also encouraged the development of the internal auditor as a team and as an individual to improve knowledge and capabilities for the efficient operation. Furthermore, the Committee promoted the improvement of audit processes through the use of technology for data analytics and digital technology to increase audit efficiency, which create benefits and added value for the business, such as cost reduction and productivity improvement for the Company and its business units.

3. Review of Legal Compliance

The Audit Committee reviewed Banpu group's compliance with laws and regulations relevant to its businesses. The Corporate Compliance Department is responsible for promoting and monitoring compliance performance to ensure full compliance with applicable laws and regulations, as well as reporting the results to the Audit Committee. The Company has the Group's Compliance Documents with practices enforced in all countries in which the Company operates to raise awareness of compliance among our employees. The Company has developed and updated Laws in Hand (LIH), a mobile application designed for executives and employees to stay up-to-date with new laws and regulations as well as to monitor and manage compliance risks associated with laws and regulations via the dashboard. The policies, laws, and business news of the countries in which the Company invests are among the information provided on LIH.

In addition, the Company has also established a Personal Data Protection Act (PDPA) policy and practice and assigned the working group as well as the data protection officer to support Thailand's PDPA and those related laws in the countries in which the Company operates, such as the Personal Information Protection Law (PIPL) of China and the Personal Data Protection Law (PDPL) of Indonesia. It also communicated about the PDPA, use and collection of personal data, data loss prevention system, and coordination with government authorities to ensure that all executives and employees understand, realize the importance, and strictly comply with the act.

4. Good Corporate Governance

The Audit Committee reviewed ethical business conduct, effectiveness, and efficiency of good corporate governance of the Board of Directors, the management, and employees. After reviewing related party transactions or the transactions that may cause conflicts of interest between Banpu, its subsidiaries, and the connected persons, the Audit Committee agreed that those transactions were carried out under general commercial conditions. They were reasonable and beneficial to the Company's operations and complied with the Stock Exchange of Thailand's and the Securities and Exchange Commission's rules and regulations. The Company is also committed to ethical and transparent business operations under good corporate governance policy and the Code of Conduct. The Company has established whistleblower channels for receiving complaints or reports of corruption and has entrusted the Investigation Committee to investigate corruption or suspicious acts of corruption through a procedure that is fair to all parties.

5. Oversight of Risk Management System

The Audit Committee reviewed and monitored the risks based on the report of the Enterprise Risk Management Department quarterly to ensure that the efficiency and effectiveness of the risk management process, which can minimize risks to be at the acceptable level. The risk management processes consist of assessment, monitoring, and preventive measures that also cover new businesses that the Company invests in. The Audit Committee assists the Board of Directors in monitoring progress and reviewing the investment portfolio on a regular basis. The Committee also assists in monitoring the key risks related to strategy, operations, finance, compliance, information technology, corruption, reputation, and non-compliance with the Personal Data Protection Act (PDPA). The Enterprise Risk Management Department has monitored key risk management, preventive measures, and situations that might impact the business, with an emphasis on systematic risk management in response to rapidly changing situations and trends.

The Company has planned its strategy focusing on managing risks that may affect the business, such as climate change, geopolitical risk, commodity price risk, and cybersecurity risk, etc., to respond to changes in the global situation. The Company has also established a framework that is in line with the ESG direction and has assessed short-term and long-term risks concerning environmental, social, and corporate governance matters while ensuring the effectiveness of sustainable corporate governance based on business ethics.

6. Nomination of External Auditors with Their Audit Fee for 2023

The Audit Committee considered the nomination of external auditors based on Banpu's evaluation criteria, including experience, knowledge, expertise, independence, timeliness, and reasonableness of audit fees, as well as required qualifications according to the Stock Exchange of Thailand regulations. The Audit Committee proposed the appointment of auditors to the Board of Directors for the shareholders' approval. The following individuals were nominated:

1. Ms. Amornrat Permpoonwattanasuk, CPA, License No. 4599; and/or
2. Ms. Rodjanart Banyatananusard, CPA, License No. 8435; and/or
3. Mr. Pongthavee Ratanakoses, CPA, License No. 7795; and/or
4. Mr. Boonrueng Lerdwiseswit, CPA License No. 6552.

One of the individuals on this list shall conduct an audit and express an opinion on Banpu's financial statements on behalf of PricewaterhouseCoopers ABAS Ltd. (PwC). In case any of these CPA auditors cannot perform the duties, PricewaterhouseCoopers ABAS Ltd. (PwC) shall appoint any of its CPAs as a substitute. The total audit fee for Banpu was proposed at THB 3,012,500.

In summary, in 2022, the Audit Committee fully performed its delegated duties and responsibilities with prudence and independence for the equitable benefit of stakeholders. The Committee maintained its opinion that Banpu is committed to good corporate governance policy and has an appropriate risk management system. The Company operates in compliance with relevant laws and regulations. In addition, Banpu has efficient internal control and internal audit systems that safeguard and create sustainable added value for business growth. The Company's financial statements are accurate and reliable, with adequate information disclosure, in accordance with the Generally Accepted Accounting Principles.

20 February 2023

On behalf of the Audit Committee

Mr. Teerana Bhongmakapat
Chairman of the Audit Committee
Banpu Public Company Limited

REPORT OF THE ENVIRONMENT, SOCIAL, AND GOVERNANCE COMMITTEE

The Environment, Social, and Governance Committee of Banpu Public Company Limited consists of qualified directors in terms of knowledge, competence, skills, and experience in Thailand and abroad, namely Mr. Piriya Khempon, Chairman of the Committee, Mr. Pichai Dusdeekulchai, and Mr. Teerapat Sanguankotchakorn. The Committee independently performs duties to the best of its ability as entrusted by the Board of Directors in compliance with principles and the Charter of the Environment, Social, and Governance Committee.

In 2022, the Environment, Social, and Governance Committee convened four meetings with full attendance. Due to the severe widespread of the COVID-19 pandemic, the Committee held online meetings with the management joining on related agendas. The Committee summarized its performance as follows:

1. Consideration and Review of Policies, Targets, Implementation, and Performance Related to Environmental, Social, and Governance (ESG)

The Committee considered and reviewed targets, implementation, and performance related to environmental, social, and governance, for instance, GHG emissions reduction targets, water utilization, and air quality. In addition, the Committee made recommendations for the alignment between corporate targets and international standards, such as the United Nations Sustainable Development Goals (UNSDGs) and Dow Jones Sustainability Indices.

2. Review and Monitoring of Environmental, Social, and Governance Risk Management

The Committee's quarterly meetings include the important agenda item on reporting environmental, social, and governance risk situations by the Enterprise Risk Management Department. The Committee monitors risk management and relevant mitigation actions to ensure that the Company can timely respond to situations with least impact on its operations. In the past year, the Committee considered material environmental, social, and governance risks, such as impacts of the COVID-19 pandemic, cyber threats, and regulatory and policy changes in countries where Banpu operates arising from changing environmental situations, such as climate change.

3. Review and Monitoring of Stakeholder Engagement and Materiality Assessment Processes

Each year, the Sustainability Committee considers the stakeholder engagement and materiality assessment processes. After that, the Environment, Social, and Governance Committee will review the processes and their results to ensure that Banpu has effective sustainability operations which appropriately respond to each group of stakeholders. Over the past year, the ESG issues that are stakeholders' top concerns are occupational health and safety, human resource development, employee and community engagement, and greenhouse gas emissions.

4. Cooperation between the Committee and the Management

In 2022, Mr. Piriya Khempon, who has international work experience, served as an advisor to the Banpu International Business Leaders Program (IBLP) on cultural intelligence. He also shared his experiences with the participating executives to help them understand working in diverse cultural contexts, which is aligned with Banpu's strategy to diversify its investments to new countries in international markets.

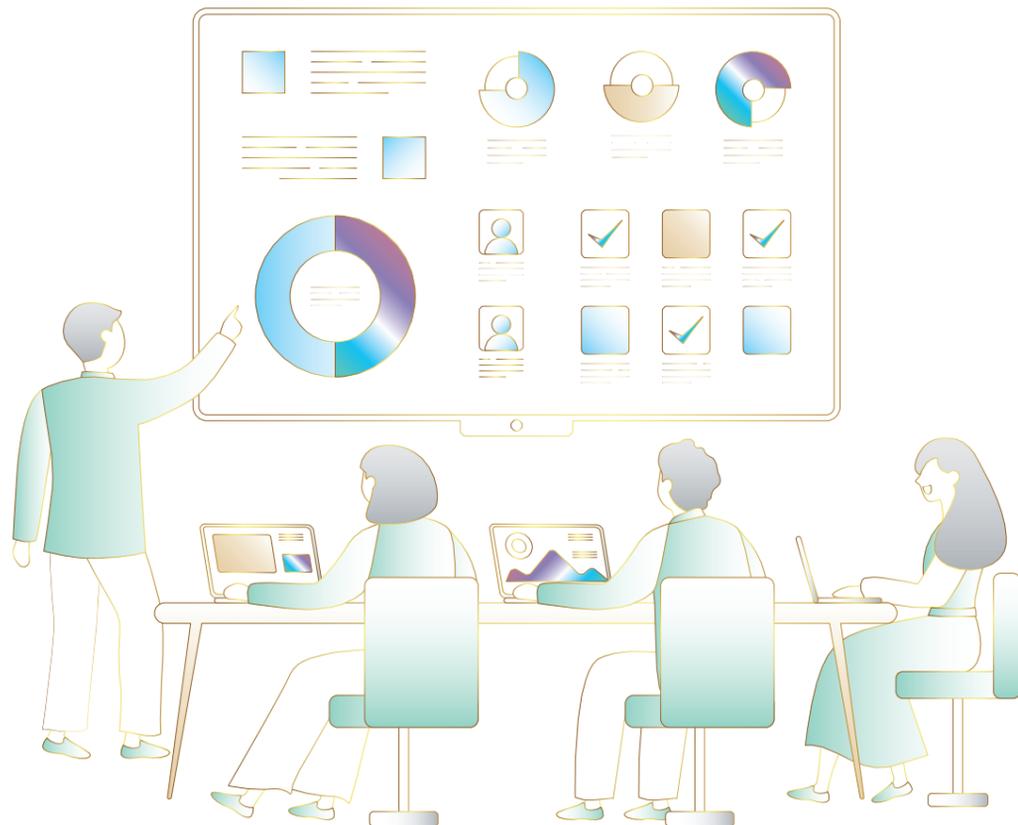
10 February 2023

On behalf of the Environment, Social, and Governance Committee

Mr. Piriya Khempon

Chairman of the Environment, Social, and Governance Committee
Banpu Public Company Limited

INTERNAL CONTROL



Over the past four decades since its establishment, Banpu has conducted businesses based on corporate governance, in line with the Environmental, Social, and Governance (ESG) principles, and has been committed to eco-friendly operations under the Greener & Smarter strategy. The Company and its subsidiaries have an effective and sufficient internal control system in accordance with the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework. The COSO framework enables the Company to effectively and efficiently achieve its strategic and operational goals and helps ensure the reliability of financial statements and other important reports. Banpu complies with applicable laws and regulations while being socially responsible. The Company promotes awareness and practice of good corporate governance among executives and employees as well as ensures that there is effective risk management, appropriate internal control, and internal audit based on international standards in place to protect stakeholders' interests. The Company deploys an appropriate information technology system in its operations as a preventive system to enhance operational efficiency. Moreover, prudent operational procedures have been established to achieve the Company's objectives, mission, and strategies for sustaining business growth.

At the Board of Directors' meeting held on 25 January 2023, the Board evaluated the sufficiency of the Company's internal control system based on the Security Exchange Commission (SEC)'s evaluation form, which was prepared by the management and reviewed by the Audit Committee. The overall evaluation results suggested that the Company had a sufficient, effective, and efficient internal control system as well as risk management that is in line with international standards to cover both corporate and activity levels. The results affirm that Banpu is capable of achieving its predefined goals. The five key components of the internal control system can be summarized as follows:

1. Control Environment

Banpu promotes its transparency, culture of integrity, and ethical conduct while aligning its business operations with its vision, mission, and Greener & Smarter strategy. The Company also fosters an efficient and effective control environment to drive business operations and risk management toward sustainability by taking the following key actions.

The Company has consistently restructured its organization by emphasizing diverse business groups to accommodate business growth. It has developed leaders who possess essential skills and readiness to prepare for future growth both in terms of management and governance in each country in order to facilitate business expansion. In 2022, the Company established the Transformation Working Group to oversee transformation under the supervision of the Group's CEO and flagship company's CEO. The Company adjusted the structure of its departmental management to align with business growth and direction. There is a clear segregation of duties and responsibilities between the Board, who oversees the Company's governance for stakeholder benefits, and the management, who determines the direction and strategy of business operations, ensuring more competitive advantages. The Company has established the checks and balances mechanism to ensure that there are comprehensive risk management and

internal control systems responsive to significant risk factors and the related regulations. In terms of management, the Company has appropriately assigned and defined roles, responsibilities, and authorities to all parties, from the Board of Directors to operational staff. The Interrelationship of Management Accountability (IRMA) between corporate functions and country offices is clarified to strengthen work coordination and communication for work improvement. In addition, the Company has established the proper Key Performance Indicators (KPIs) and Delegation of Authority (DOA).

With a commitment to integrity and transparency, Banpu adheres to good corporate governance principles and the Code of Conduct. It strongly encourages all employees to put the corporate culture, Banpu Heart, into action in order to drive sustainable growth in accordance with ESG principles and become a leading international versatile energy provider. The Company has established the Corporate Fraud Management Policy and whistleblower channels. The Investigation Committee is responsible for the investigation of corruption or suspected cases. Its Anti-Corruption Policy is communicated to all employees to ensure understanding and practice in alignment with the declaration of intent of the Thai Private Sector Collective Action Against Corruption (CAC), which aims to encourage the private sector to put anti-corruption principles into action.

2. Risk Assessment

The Company puts a high priority on risk management amid changes caused by both internal and external factors. It is always prepared for situations that may affect its business activities at the department, business unit, and corporate levels. Risk management is regarded as a critical component of every business process with which all employees shall comply. The Company has established the Risk Management Policy and approaches, as well as oversees and monitors the overall management of critical risks. The management and employees in all units also take part in assessing risk factors and determining measures to minimize risk to an acceptable level. The risks in all areas are actively assessed, including strategic, operational, financial, regulatory compliance, information technology, cyberthreat, corruption, corporate reputation, and Personal Data Protection Act (PDPA) compliance risks. Risk mitigation measures are incorporated into the Company's short-term and strategic plan. The progress of Risk management has been reported to the Risk Management Committee, reviewed by the Audit Committee, and reported to the Board of Directors on a quarterly basis.

The Company always makes ESG-related issues a priority while preparing a strategic plan to respond to a changing global landscape by aligning the operational framework with ESG trends and conducting short- and long-term ESG risk assessments. The Company's top environmental concerns are GHG emissions reduction, water management, and air pollution management. Regarding the social dimension, it focuses on employee management and development, occupational health and safety management, community relations, and community

development. In terms of corporate governance, the Company is committed to sustainable corporate governance, ethical business conduct, supplier and contractor management, personal data protection, and cybersecurity.

2022 was a year full of challenges, such as the ongoing COVID-19 pandemic impacting the global economy, trade wars, energy demand and supply imbalances, law and regulation changes, and rapid technological development and disruption. As a result, the company reviewed its business direction and strategies in light of ESG principles, emphasizing sustainability. It formulated flexible and agile strategies and business plans to withstand all the challenges, improve competitiveness, and deliver smarter energy for sustainability, along with the deployment of smart technology and innovation. In addition, the Company oversaw risk management and controls of business operations and also adopted the integrated Governance Risk and Compliance (GRC) framework, the international standards that help ensure governance, risk management, and compliance, which increased efficiency and effectiveness, reduced work redundancy, and improved the performance of executives and employees to achieve sustainable business growth.

3. Control Activities

The Company prioritizes a sound and effective system of internal control in its business operations. It has put in place internal control procedures to oversee business investments based on the corporate structure to ensure alignment with policies, practices, and strategic directions. The operational control activities are as follows:

1. Formulating policies, regulations, operating manuals, and operating procedures in written documents that are regularly reviewed and updated
2. Identifying and adjusting corporate structure by defining clear segregation of duties and delegation of authority with effective checks and balances
3. Establishing a clear policy on related party transactions by taking into account the Company's best interests on a similar basis to the transactions at arm's length
4. Safeguarding the Company's assets to prevent misuse of the assets for personal purpose
5. Establishing appropriate and effective IT control systems
6. Managing, monitoring, and governing operations to ensure compliance with the Company's action plans, policies, regulations, and procedures, as well as compliance with laws and external requirements assessed by Key Performance Indicators (KPIs) linked to the Company's goals.

In 2022, the Company improved its key procedures to align with the Greener & Smarter strategy and reaffirm its position as a leading international versatile energy provider. The Company focuses more on eco-friendly businesses and the deployment of state-of-the-art technologies to improve operational efficiency, both in terms of speed and accuracy.

4. Information and Communication

Banpu has developed an effective and secure information technology (IT) system compliant with relevant laws to achieve its goal of becoming an integrated energy solutions provider. The Composable Architecture has been deployed for general IT system control to accelerate business transformation. The Company has obtained ISO 27001 certification, the International Information Security Standard, which helped build stakeholder confidence. It has applied the agile and co-creation working concepts to achieve long-term goals and adopted the Composable Architecture framework across the processes of acquisition, development, and quality control. The Company has extended its cybersecurity protection to cover both information technology (IT) and operational technology (OT) to minimize cyber risk and integrate it as part of the ESG framework under the Tech-Focus ESG Contributor strategy. All working plans of cybersecurity have contributed to the sustainability of the organization. In 2022, Banpu appointed a Global Information Security Officer (GISO) with duties and responsibilities to oversee the Banpu Group's information security and digital technology risks and regulatory compliance. The Company controlled the technology infrastructure by deploying the Power of Digital Integration strategy to enable a flexible, scalable, and optimized system. It also integrated the cloud computing system into the new normal workplace to improve operational efficiency.

To connect with business units in all locations worldwide, the Company uses the Microsoft Teams 365 platform. The Electronic Document Management System is also used to facilitate communication and transfer of important data and information from internal and external sources, which enables fast and advanced connection. Access control is implemented by defining authorizations for data access to different systems based on the principle of separation of duties and the right to use while having effective internal communication channels. The Company also has an Investor Relations department and a Corporate Communications department responsible for disclosing and communicating information to stakeholders in a sufficient, appropriate, accessible, and equitable manner.

5. Monitoring

As Banpu has been diversifying its lines of business in various countries, corporate governance is of utmost importance and also a challenge. The Company has implemented a monitoring system at both the management and operational levels. There are regular reviews and monitoring of performance by superiors and department heads. Executive meetings are held regularly to monitor the performance to ensure that goals are met as planned. The Global Internal Audit and Compliance Unit supports the oversight and monitoring of internal control performance covering Banpu's business groups as follows:

- **Global Internal Audit Department** independently performs duties in auditing and assessing the efficiency, effectiveness, and sufficiency of the Company's internal control system and its performance in compliance with corporate standards and regulations. It emphasizes risk-based auditing encompassing businesses and major activities in every country where the Company has invested, advises on the improvement of work processes, and monitors the performance to ensure that appropriate corrective actions, including risk mitigation measures, are taken in a timely manner. In 2022, the Global Internal Audit Department adapted to business growth by adopting remote audit and agile audit while keeping the Company's internal control in compliance with the COSO standard. It is also committed to compliance with International Internal Auditing Standards. It focuses on data analytics and the utilization of new digital technologies to improve the efficiency, reliability, and transparency of the auditing process, thus safeguarding and adding sustainable value to the Company. In addition, the Company has consistently developed and trained its internal auditors, as well as promoted their career advancement, to enable them to perform their duties effectively on par with international standards in order to efficiently prevent diverse and volatile risks in times of transformation and rapid growth.

- **Corporate Compliance Department** is responsible for promoting, safeguarding, and tracking the performance of the Company's compliance with applicable laws and external regulations, with an emphasis on raising awareness of full compliance with relevant environmental and community laws. The Department reports compliance performance based on the ISO 19600 Compliance Management Systems - Guidelines, which highlight the compliance management system within an organization. The Company has improved the Group's compliance documents, which are enforced in all countries based on the Three Lines Model. In 2022, the Company deployed new advanced technology to improve the compliance risk management (C-RiM) system, namely the Laws in Hand (LIH) application – a mobile application for supervising, monitoring, and managing compliance risks via a dashboard that allows timely reporting and monitoring of compliance risks. The application contains comprehensive information about policies, applicable laws, and business news in the countries where the Company operates. The application helps ensure that the Company conducts its business in compliance with applicable laws while being socially and environmentally responsible. In addition, it allows for faster and more advanced risk management. Apart from that, the Company implemented the Compliance Obligations List (COL) system and the Permit and License Monitoring system

company-wide to raise employees' awareness of the importance of compliance with relevant laws and regulations in each country and ensure effective supervision of legal compliance in line with ESG principles in the countries where the Company has expanded its investment.

Additionally, Banpu has been fully prepared to comply with the Personal Data Protection Act (PDPA) in Thailand and applicable laws in other countries, such as the Personal Information Protection Law (PIPL) in China and Indonesia's Personal Data Protection Law (PDPL). The Board of Directors and the management have established policies and practices, set up a working committee, appointed Data Protection Officers, and created a data inventory for every business unit. The Company also educated about the PDPA, use and collection of personal data, data protection system, and how to coordinate with government authorities to ensure that all executives and employees understand, realize the importance of, and strictly comply with the act.

CONNECTED PERSONS AND TRANSACTIONS

As of 31 December 2022

Company / Type of Business	Description of Relationship	Major Shareholders	Members of the Board of Directors
1. Mitr Phol Sugar Corp., Ltd. (Production and Distribution of Sugar and Molasses)	<ol style="list-style-type: none"> One of the shareholders of Banpu Plc., holding 5.25% of its paid-up capital The major shareholder is Mid-Siam Sugar Co., Ltd. There are three joint directors: <ol style="list-style-type: none"> Mr. Chanin Vongkusolkrit Mr. Buntoeng Vongkusolkrit Mr. Verajet Vongkusolkrit 	<ol style="list-style-type: none"> Mid-Siam Sugar Co., Ltd. 99.99% 	<ol style="list-style-type: none"> Mr. Chanin Vongkusolkrit Mr. Buntoeng Vongkusolkrit Mr. Pichet Durongkaveroj Mr. Klanarong Sriroth Mr. Krisda Monthienvichienchai Mr. Verajet Vongkusolkrit Mr. Chusak Vongkusolkrit Mrs. Amporn Kanjanakamnerd Mr. Attaphol Vongkusolkrit Mr. Pongsakorn Wongwuttikraikul Mr. Gavin Vongkusolkrit
2. TME Capital Co., Ltd. (Investment Company)	<ol style="list-style-type: none"> One of the shareholders of Banpu Plc., holding 0.69% of its paid-up capital The major shareholder is the Vongkusolkrit Family. There is no joint director. 	<ol style="list-style-type: none"> The Vongkusolkrit Family 80.01% Ufinves Co., Ltd. 15.23% The Kanjanakamnerd Family 3.82% The Putongsiriporn Family 0.94% 	<ol style="list-style-type: none"> Mr. Vitoon Vongkusolkrit Mr. Annop Vongkusolkrit Ms. Phatsawan Vongkusolkrit Ms. Theeranat Vongkusolkrit Ms. Supawee Vongkusolkrit Mr. Banchoet Vongkusolkrit Mr. Gavin Vongkusolkrit Mrs. Arada Vongkusolkrit Mr. Amnuay Kanjanakamnerd
3. City Holdings Co., Ltd. (Holding Company)	<ol style="list-style-type: none"> One of the shareholders of Banpu Plc., holding 0.63% of its paid-up capital The major shareholder is the Vongkusolkrit Family. There is no joint director. 	<ol style="list-style-type: none"> The Vongkusolkrit Family 90.50% The Kanjanakamnerd Family 6.00% The Putongsiriporn Family 2.00% The Jenlapwattanakul Family 1.50% 	<ol style="list-style-type: none"> Mr. Vitoon Vongkusolkrit Mr. Banchoet Vongkusolkrit Mrs. Arada Vongkusolkrit Ms. Theeranat Vongkusolkrit Ms. Phatsawan Vongkusolkrit Mr. Gavin Vongkusolkrit Mr. Amnuay Kanjanakamnerd Mr. Annop Vongkusolkrit Ms. Supawee Vongkusolkrit
4. MP Particle Board Co., Ltd. (Investment Company)	<ol style="list-style-type: none"> One of the shareholders of Banpu Plc., holding 0.60% of its paid-up capital The major shareholder is United Farmer and Industry Co., Ltd. There is one joint director: <ol style="list-style-type: none"> Mr. Buntoeng Vongkusolkrit 	<ol style="list-style-type: none"> United Farmer and Industry Co., Ltd. 99.99% 	<ol style="list-style-type: none"> Mr. Buntoeng Vongkusolkrit Mr. Krisda Monthienvichienchai Mrs. Amporn Kanjanakamnerd Ms. Kannikar Vongkusolkrit Mr. Pariwat Kanchanathana Mr. Gridi Vongkusolkrit

Company / Type of Business	Description of Relationship	Major Shareholders	Members of the Board of Directors
5. Mid-Siam Capital Co., Ltd. (Sugar Cane Planting and Stock Investment)	<ol style="list-style-type: none"> One of the shareholders of Banpu Plc., holding 0.30% of its paid-up capital The major shareholder is Mid-Siam Sugar Co., Ltd. There are two joint directors: <ol style="list-style-type: none"> Mr. Buntoeng Vongkusolkrit Mr. Verajet Vongkusolkrit 	<ol style="list-style-type: none"> Mid-Siam Sugar Co., Ltd. 99.99% 	<ol style="list-style-type: none"> Mr. Isara Vongkusolkrit Mr. Buntoeng Vongkusolkrit Mr. Verajet Vongkusolkrit Mrs. Amporn Kanjanakamnerd Mr. Attaphol Vongkusolkrit
6. Pacific Sugar Corp., Ltd. (Import and Export of Sugar)	<ol style="list-style-type: none"> One of the shareholders of Banpu Plc., holding 0.27% of its paid-up capital The major shareholder is Mitr Phol Sugar Corp., Ltd. There is one joint director: <ol style="list-style-type: none"> Mr. Verajet Vongkusolkrit 	<ol style="list-style-type: none"> Mitr Phol Sugar Corp., Ltd. 99.99% 	<ol style="list-style-type: none"> Mr. Verajet Vongkusolkrit Mr. Parin Amatyakul Mr. Jirasak Vongkusolkrit
7. Mitr Phol Bio-Power (Phuviang) Co., Ltd. Production and Distribution of Sugar and Molasses)	<ol style="list-style-type: none"> One of the shareholders of Banpu Plc., holding 0.24% of its paid-up capital The major shareholder is United Farmer and Industry Co., Ltd. There are two joint directors: <ol style="list-style-type: none"> Mr. Buntoeng Vongkusolkrit Mr. Verajet Vongkusolkrit 	<ol style="list-style-type: none"> United Farmer and Industry Co., Ltd. 51.04% 	<ol style="list-style-type: none"> Mr. Buntoeng Vongkusolkrit Mr. Krisda Monthienvichienchai Mr. Verajet Vongkusolkrit Mr. Prawit Prakritsri Mr. Jirasak Vongkusolkrit Ms. Theeranat Vongkusolkrit Mr. Nattapong Vongkusolkrit Mr. Sirasak Tathong Mr. Arnat Panya Mr. Gridi Vongkusolkrit

RELATED-PARTY TRANSACTIONS AND RELATIONSHIPS

Banpu Public Company Limited	
Company	Related-Party Transaction
1. Banpu Minerals Co., Ltd.	<p>Transactions with Banpu Minerals Co., Ltd. are as follows:</p> <ul style="list-style-type: none"> • Loan to Banpu Minerals Co., Ltd. in the form of a promissory note with an interest rate calculated based on the market rate plus an additional agreed rate as at 31 December 2022 of USD 1,897,477,558.73 • Dividend income in 2022 of USD 219,400,000.00 • Interest income of USD 65,000,607.68 • Accrued interest receivable as at 31 December 2022 of USD 52,332,253.82
2. BP Overseas Development Co., Ltd.	<p>Transactions with BP Overseas Development Co., Ltd. are as follows:</p> <ul style="list-style-type: none"> • Interest income in 2022 of USD 33,004,583.28
3. Banpu Power Public Company Limited	<p>Transactions with Banpu Power Public Company Limited are as follows:</p> <ul style="list-style-type: none"> • Management fees in 2022 of USD 3,801,389.72 • Dividend income of USD 51,628,767.83
4. Banpu NEXT Co., Ltd.	<p>Transactions with Banpu NEXT Co., Ltd. are as follows:</p> <ul style="list-style-type: none"> • Loan to Banpu NEXT Co., Ltd. in the form of a promissory note and loan agreements with an interest rate calculated based on the market rate plus an additional agreed rate as at 31 December 2022 of USD 60,870,118.65 • Interest income in 2022 of USD 5,447,163.24 • Accrued interest receivable as at 31 December 2022 of 1,716,754.25 • Advances of USD 1,301.02
5. Banpu Innovation & Ventures Co., Ltd.	<p>Transactions with Banpu Innovation & Ventures Co., Ltd. are as follows:</p> <ul style="list-style-type: none"> • Other receivables as at 31 December 2022 of USD 94,556.87
6. Banpu Singapore Pte. Ltd.	<p>Transactions with Banpu Singapore Pte. Ltd. are as follows:</p> <ul style="list-style-type: none"> • Management fees in 2022 of USD 10,000.00 • Other receivables as at 31 December 2022 of USD 10,000.00

Banpu Public Company Limited	
Company	Related-Party Transaction
7. PT. Energi Batubara Perkasa	<p>Transactions with PT. Energi Batubara Perkasa are as follows:</p> <ul style="list-style-type: none"> • Purchases of goods in 2022 of USD 14,049,200.00 • Advances receivable as at 31 December 2022 of USD 245,911.85
8. PT. Indominco Mandiri	<p>Transactions with PT. Indominco Mandiri are as follows:</p> <ul style="list-style-type: none"> • Management fees in 2022 of USD 12,808,030.22 • Purchases of goods of USD 26,213,239.82 • Other receivables as at 31 December 2022 of USD 1,869,454.21 • Advances of USD 1,277.91
9. PT. Jorong Barutama Greston	<p>Transactions with PT. Jorong Barutama Greston are as follows:</p> <ul style="list-style-type: none"> • Management fees in 2022 of USD 1,028,282.81 • Purchases of goods of USD 3,965,512.50 • Advances receivable as at 31 December 2022 of USD 276.36
10. PT. Trubaindo Coal Mining	<p>Transactions with PT. Trubaindo Coal Mining are as follows:</p> <ul style="list-style-type: none"> • Management fees in 2022 of USD 12,397,676.35 • Other receivables as at 31 December 2022 of USD 1,887,139.01 • Advances receivable of USD 1,097.18
11. PT. Bharinto Ekatama	<p>Transactions with PT. Bharinto Ekatama are as follows:</p> <ul style="list-style-type: none"> • Management fees in 2022 of USD 17,364,429.34 • Other receivables as at 31 December 2022 of USD 3,134,002.44 • Advances receivable of USD 8,986.09
12. PT. Indo Tambangraya Megah Tbk	<p>A transaction with PT. Indo Tambangraya Megah Tbk is as follows:</p> <ul style="list-style-type: none"> • Advances receivable as at 31 December 2022 of USD 24,798.42 • Advances of USD 809.35
13. PT. Tambang Raya Usaha Tama	<p>A transaction with PT. Tambang Raya Usaha Tama is as follows:</p> <ul style="list-style-type: none"> • Advances receivable as at 31 December 2022 of USD 1,349.73
14. PT. Nusa Persada Resources	<p>A transaction with PT. Nusa Persada Resources is as follows:</p> <ul style="list-style-type: none"> • Advances receivable as at 31 December 2022 of USD 35,037.03
15. Banpu Australia Co. Pty Ltd.	<p>Transactions with Banpu Australia Co. Pty Ltd. are as follows:</p> <ul style="list-style-type: none"> • Loan to Banpu Australia Co. Pty Ltd. in the form of a loan agreements with an interest rate calculated based on the market rate plus an additional agreed rate as at 31 December 2022 of USD 44,225,098.89 • Interest income in 2022 of USD 2,895,781.64 • Accrued interest receivable as at 31 December 2022 of USD 1,759,291.06 • Advances of USD 106,691.94

Banpu Public Company Limited

Company	Related-Party Transaction
16. Centennial Coal Co., Ltd.	<p>Transactions with Centennial Coal Co., Ltd. are as follows:</p> <ul style="list-style-type: none"> • Loan to Centennial Coal Co., Ltd. in the form of a loan agreements with an interest rate calculated based on the market rate plus an additional agreed rate as at 31 December 2022 of USD 173,189,062.61 • Interest income in 2022 of USD 8,674,701.64 • Management fees of USD 14,908,436.66 • Other receivables as at 31 December 2022 of USD 5,086,482.30 • Accrued interest receivable of USD 2,400,922.36 • Advances receivable of USD 2,587.68
17. Banpu Investment (China) Ltd.	<p>A transaction with Banpu Investment (China) Ltd. is as follows:</p> <ul style="list-style-type: none"> • Cost of Management fees in 2022 of USD 8,472.57 • Advances receivable as at 31 December 2022 of USD 808,118.48
18. Banpu International Ltd.	<p>Transactions with Banpu International Ltd. are as follows:</p> <ul style="list-style-type: none"> • Cost of services in 2022 of USD 5,806,767.50 • Advances receivable as at 31 December 2022 of USD 10,062.50 • Advances of USD 481,862.50
19. BOG Co., Ltd.	<p>Transactions with BOG Co., Ltd. are as follows:</p> <ul style="list-style-type: none"> • Loan to BOG Co., Ltd. in the form of a promissory note with an interest rate calculated based on the market rate plus an additional agreed rate as at 31 December 2022 of USD 117,000,000.00 • Interest income in 2022 of USD 10,118,326.39 • Accrued interest receivable as at 31 December 2022 of USD 1,621,118.06
20. BRE Singapore Pte. Ltd.	<p>Transactions with BRE Singapore Pte. Ltd. are as follows:</p> <ul style="list-style-type: none"> • Loan to BRE Singapore Pte. Ltd. in the form of a loan agreements with an interest rate calculated based on the market rate plus an additional agreed rate as at 31 December 2022 of USD 37,000,000.00 • Interest income in 2022 of USD 1,036,111.11 • Accrued interest receivable as at 31 December 2022 of USD 1,036,111.11

Banpu Public Company Limited

Company	Related-Party Transaction
21. Banpu North America Corporation	<p>A transaction with Banpu North America Corporation is as follows:</p> <ul style="list-style-type: none"> • Advances receivable as at 31 December 2022 of USD 23,045.80
22. BKV Corporation	<p>A transaction with BKV Corporation is as follows:</p> <ul style="list-style-type: none"> • Advances as at 31 December 2022 of USD 60,796.98
23. Banpu Engineering Services Co., Ltd.	<p>A transaction with Banpu Engineering Services Co., Ltd. is as follows:</p> <ul style="list-style-type: none"> • Dividend income in 2022 of USD 439,199.67
24. Hongsa Power Company Limited	<p>A transaction with Hongsa Power Company Limited is as follows:</p> <ul style="list-style-type: none"> • Management fees in 2022 of USD 186,070.91 • Other receivables as at 31 December 2022 of USD 338,047.13
25. Advance Medical Center Co., Ltd.	<p>A transaction with Advance Medical Center Co., Ltd. is as follows:</p> <ul style="list-style-type: none"> • Dividend income in 2022 of USD 194,010.55



PART 3

**CERTIFICATION OF
INFORMATION AND
DATA ACCURACY**

ATTACHMENT 1: DETAILS OF THE BOARD OF DIRECTORS AND MANAGEMENT



Mr. Chanin Vongkusolkit

Age: 70

Chairman of the Board of Directors

Appointed Date : 28 April 2016

Director

Appointed Date : 16 May 1983

Senior Executive Officer

Appointed Date : 10 April 2015

* An uncle of person number 5 and 11
and a father of person number 21



1

Education/ Training

- M.B.A. (Finance), St. Louis University, Missouri, U.S.A.
- B.Econ., Thammasat University
- DCP Refresher Course #3/2006, Thai Institute of Directors Association (IOD)
- Director Certification Program (DCP) #20/2002, Thai Institute of Directors Association (IOD)
- TLCA Leadership Development Program (LDP) – Enhancing Competitiveness #0/2012, Thai Listed Companies Association

% Share Held

- Own share : 0.28
- Spouse : 0.13

Work Experience in the Last Five Years

Banpu Group

- 2016 – Present : Chairman, Banpu Plc.
- 1983 – Present : Director, Banpu Plc.
- 2015 – 2016 : Senior Executive Officer, Banpu Plc.
- 1983 – 2015 : Chief Executive Officer, Banpu Plc.
- 2015 – Present : Member of the Corporate Governance and Nomination Committee, Banpu Power Plc.
- 1996 – Present : Director, Banpu Power Plc.

Other Listed Companies

- 2018 – Present : Chairman, The Erawan Group Plc.
- 2004 – Present : Director, The Erawan Group Plc.

Other Companies

- 1983 – Present : Director, Mitr Phol Sugar Corp., Ltd.

Other Organizations

- 2021 – Present : Chairman, Thai Listed Companies Association
- 2019 – 2021 : Director, Thai Listed Companies Association
- 2021 – Present : Advisor, Thammasat Economics Association
- 2012 – 2021 : Chairman, Thammasat Economics Association
- 2015 – Present : Director, Private Sector Collective Action Coalition Against Corruption Council (CAC)
- 2008 – Present : President, The Foundation for Better Life
- 2012 – 2021 : Director, Faculty of Economics, Thammasat University
- 2016 – 2018 : Commissioner, The Securities and Exchange Commission, Thailand
- 2015 – 2018 : Task Force Chairperson, Task Force for Sustainability in Listed Companies, The Securities and Exchange Commission, Thailand

Remark: % Share Held which is indicated as "0" means % share held less than 1% while "-" means not holding any shares.

Mr. Teerana Bhongmakapat

Age: 66

Independent Director

Appointed Date : 5 April 2012

Chairman of the Audit Committee

Appointed Date : 30 April 2014

Member of the Compensation Committee

Appointed Date : 30 April 2014



2

Education/ Training

- Ph.D. (Econ), University of Wisconsin at Madison, U.S.A.
- M.Econ., Thammasat University
- B.Econ. (Quantitative Economics), Chulalongkorn University
- Capital Market Academy Leader Program #14/2012, Capital Market Academy (CMA)
- Director Certification Program (DCP) #161/2012, Thai Institute of Directors Association (IOD)
- Financial Institutions Governance Program (FGP) #7/2013, Thai Institute of Directors Association (IOD)
- Director Certification Program Update (DCPU) #2/2014, Thai Institute of Directors Association (IOD)
- IT Governance Program (ITG) #2/2016, Thai Institute of Directors Association (IOD)
- Audit Committee Forum 2016, Federation of Accounting Professions Under the Royal Patronage of His Majesty the King, and Thai Institute of Directors Association (IOD)
- Audit Committee Effectiveness Seminar 2012, Federation of Accounting Professions Under the Royal Patronage of His Majesty the King
- Audit Committee Forum 2017, Thai Institute of Directors Association (IOD)
- Cyber Incident Management for Executive Committees of Listed Companies, The Securities and Exchange Commission
- Boards that Make a Difference (BMD) #8/2018, Thai Institute of Directors Association (IOD)
- Risk Management for Corporate Leaders (RCL) #15/2019, Thai Institute of Directors Association (IOD)
- IT Security Awareness for Top Management, ACIS Professional Center Co., Ltd.
- Ethical Leadership Program (ELP) #22/2021, Thai Institute of Directors Association (IOD)

% Share Held

- Own share : -

Work Experience in the Last Five Years

Banpu Group

- 2014 – Present : Chairman of Audit Committee/ Member of Compensation Committee, Banpu Plc.
- 2012 – Present : Independent Director, Banpu Plc.

Other Listed Companies

- 2022 – Present : Advisor, Tisco Financial Group Plc.
- 2013 – 2022 : Director/ Chairman of Corporate Governance Committee/ Chairman of Risk Oversight Committee, Tisco Financial Group Plc.

Other Companies

- 2022 – Present : Vice Chairman of the Audit Committee, Mitr Phol Sugar Corp., Ltd.

Other Organizations

- 2022 – Present : Chairman, The Sustainable Arts and Crafts Institute of Thailand (Public Organization)
- 2021 – Present : Professor Emeritus, Chulalongkorn University
- 2011 – 2016 : Professor of Economics (C11), Chulalongkorn University
- 2006 – 2011 : Professor of Economics, Chulalongkorn University
- 2018 – Present : Chairman of Evaluation Board, Thai Health Promotion Foundation
- 2016 – 2019 : Chairman of the Research Support Committee, National Anti-Corruption Commission (NACC)
- 2010 – 2015 : Eminent Member, Anti-Money Laundering Office (AMLO)

Mr. Piriya Khempon

Age: 64

Independent Director

Appointed Date : 8 April 2020

Chairman of the Environment, Social and Governance Committee

Appointed Date : 1 May 2020

Member of the Corporate Governance and Nomination Committee

Appointed Date : 1 May 2020



3

Education/ Training

- Master of Science (International Relations), London School of Economics, University of London, United Kingdom
- Bachelor of Arts (Political Science), Chiangmai University
- Director Certification Program (DCP) #298/2020, Thai Institute of Directors Association (IOD)
- Top Executive Program in Energy (TEA) #7, Thailand Energy Academy
- Financial Statement for Directors (FSD) #45/2022, Thai Institute of Directors Association (IOD)

% Share Held

- Own share : -
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2021 – Present : Chairman of the Environment, Social and Governance Committee, Banpu Plc.
- 2020 – Present : Independent Director/ Member of the Corporate Governance and Nomination Committee, Banpu Plc.

Other Listed Companies

- 2019 – Present : Director, Saha Pathana Inter-Holding Plc.

Other Organization

- Present : Special Advisor on Foreign Affairs, Office of Eastern Economic Corridor (EEC)
- 2020 – 2022 : Advisor, The Federation of Thai Industries
- 2020 – 2021 : Executive Director and Member of the Risk Oversight Committee, Export-Import Bank of Thailand (EXIM)
- 2017 – 2019 : Ambassador Extraordinary and Plenipotentiary of Thailand to the People's Republic of China, Royal Thai Embassy in Beijing, China
- 2015 – 2017 : Deputy Permanent Secretary for Foreign Affairs, Office of the Permanent Secretary, Ministry of Foreign Affairs

Mr. Anon Sirisaengtaksin

Age: 70

Director

Appointed Date : 19 April 2016

Chairman of the Corporate Governance and Nomination Committee

Appointed Date : 1 May 2022

Executive Advisor

Appointed Date : 1 April 2014



4

Education/ Training

- Honorary Doctor of Public Administration, Bangkok Thonburi University
- M.B.A., Thammasat University
- B.Sc. (Geology), Chulalongkorn University
- Certificates in Project Investment Appraisal and Management and Global Leadership, Harvard University, U.S.A.
- Capital Market Academy Program #1, Capital Market Academy
- Director Accreditation Program (DAP) #52/2006, Thai Institute of Directors Association (IOD)
- Director Certification Program (DCP) #73/2006, Thai Institute of Directors Association (IOD)
- Sustainability Board Training 2021, CIMB Group

% Share Held

- Own share : 0
- Spouse : 0

Work Experience in the Last Five Years

Banpu Group

- 2022 – Present : Chairman of the Corporate Governance and Nomination Committee, Banpu Plc.
- 2016 – Present : Director, Banpu Plc.
- 2016 – 2022 : Member of the Corporate Governance and Nomination Committee, Banpu Plc.
- 2014 – Present : Executive Advisor, Banpu Plc.
- 2021 – Present : Director, Banpu Innovation and Ventures Co., Ltd.

Other Listed Companies

- 2022 – Present : Chairman, Thai Eastern Group Holdings Plc.
- 2020 – Present : Independent Director/ Chairman of Nomination, Remuneration and Corporate Governance Committee/ Member of Board Risk and Compliance Committee, CIMB Thai Bank Plc.
- 2020 – Present : Independent Director/ Member of Audit Committee/ Member of Nomination and Remuneration Committee, Saha-Union Plc.
- 2020 – 2021 : Overseas Business Consultant, PTT Global Chemical Plc.

Other Companies

- 2019 – Present : Reform Council, Silpakorn University
- 2019 – 2022 : Chairman, Thai Eastern Group Holdings Co., Ltd.
- 2014 – 2020 : Chairman, PTTGC Innovation America Corp.
- 2014 – 2020 : Chairman, PTTGC International (USA) Inc.
- 2014 – 2020 : Chairman, Natureworks LLC
- 2012 – 2020 : Chairman, PTTGC International Private Ltd.
- 2012 – 2020 : Chairman, PTTGC International (Netherlands) B.V.
- 2012 – 2020 : Chairman, Emery Oleochemical (M) Sdn. Bhd.
- 2012 – 2020 : Chairman, Emery Specialty Chemical Sdn. Bhd.
- 2012 – 2020 : Chairman, Vencorex Holding

Remark: % Share Held which is indicated as "0" means % share held less than 1% while "-" means not holding any shares.

Mr. Buntoeng Vongkusolkit

Age: 66

Director

Appointed Date : 3 April 2014

Chairman of the Compensation Committee

Appointed Date : 25 April 2019

* A nephew of person number 1 and a cousin of person number 11



5

Education/ Training

- Doctor of Agriculture (Innovative Agriculture), Khon Kaen University
- M.S. in Political Science, Ramkhamhaeng University
- B.S. in Political Science, Ramkhamhaeng University
- Agriculture & Cooperatives Executive Program (ACE) #1, Ministry of Agriculture and Cooperatives & The Agricultural Research Development Agency (Public Organization) & Kasattratikarn Foundation
- Ultra Wealth – Invest Like a Master (UW) #2
- Top Executive Program in Energy (TEA) #5, Thailand Energy Academy
- TLCA Leadership Development Program (LDP) #1, Thai Listed Companies Association
- Top Executive Program in Commerce and Trade (TEPCOT) #5, University of the Thai Chamber of Commerce (UTCC)
- Director Certification Program (DCP) #161/2012, Thai Institute of Directors Association (IOD)
- Senior Executive Program #9, Sasn Graduate Institute of Business Administration of Chulalongkorn University
- Management Problem Solving and Decision Making Program, Kepner – Tregoe, International, Princeton, New Jersey, U.S.A.

% Share Held

- Own share : 0.10
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2019 – Present : Chairman of the Compensation Committee, Banpu Plc.
- 2014 – Present : Director, Banpu Plc.
- 2014 – 2019 : Member of the Compensation Committee, Banpu Plc.

Other Companies

- 2020 – Present : Chairman/ Chairman of Executive Director, Mitr Phol Group
- 1982 – Present : Director, Mitr Phol Group
- 2018 – 2020 : Vice Chairman/ Chairman of Executive Director, Mitr Phol Group
- 2015 – 2020 : Chief Operating Officer – Cane Management Business, Mitr Phol Group
- 2011 – 2018 : Senior Executive Vice President, Sugarcane Development & Management Group, Mitr Phol Group

Other Organizations

- 2019 – 2022 : Honorary Member, King Mongkut's Institute of Technology Ladkrabang Council

Mr. Suthad Setboonsarng

Age: 71

Independent Director

Appointed Date : 3 April 2014

Member of the Audit Committee

Appointed Date : 30 April 2014

Member of the Compensation Committee

Appointed Date : 25 April 2019



6

Education/ Training

- Ph.D. in Economics, University of Hawaii, U.S.A.
- M.A. in Agricultural Economics, University of Hawaii, U.S.A.
- B.A. in Economics, Thammasat University
- Director Certification Program (DCP) #194/2014, Thai Institute of Directors Association (IOD)
- Cyber Resilience Leadership 2017, Bank of Thailand
- Boards that Make a Difference (BMD) #8/2018, Thai Institute of Directors Association (IOD)

% Share Held

- Own share : 0
- Spouse : 0

Work Experience in the Last Five Years

Banpu Group

- 2019 – Present : Member of the Compensation Committee, Banpu Plc.
- 2014 – Present : Independent Director/ Member of the Audit Committee, Banpu Plc.

Other Listed Companies

- 2019 – Present : Director/ Audit Committee, Somboon Advance Technology Plc.

Other Organizations

- 2020 – Present : Special Subcommittee for Public Sector Audit and Evaluation #2 (Grassroot Economy), Public Sector Development Commission
- 2013 – Present : Chairman, NawaChiOne Foundation
- 2021 – 2022 : Chairman, Board of Trustees, International Rice Research Institute (IRRI), Los Banos, Philippines
- 2015 – 2020 : Director/ Chairman of the Audit Committee/ Risk Oversight Committee, Bank of Thailand

Mr. Pichai Dusdeekulchai

Age: 61

Independent Director

Appointed Date : 4 April 2019

Member of the Audit Committee

Appointed Date : 25 April 2019

Member of the Environment, Social and Governance Committee

Appointed Date : 1 May 2021



7

Education/ Training

- Master of Business Administration (MBA), Ashland University, Ohio, U.S.A.
- Bachelor of Arts Program in Mathematics and Statistic, Thammasat University
- TLCA Leadership Development Program (LDP) #1, Thai Listed Companies Association
- Director Certification Program (DCP) #278/2019, Thai Institute of Directors Association (IOD)
- Advance Audit Committee Program (ACCP) #38/2020, Thai Institute of Directors Association (IOD)

% Share Held

- Own share : -
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2021 – Present : Member of the Environment, Social and Governance Committee, Banpu Plc.
- 2019 – Present : Independent Director/ Member of the Audit Committee, Banpu Plc.

Other Listed Companies

- 2022 – Present : Chairman of the Audit Committee/ Chairman of the Nomination and Remuneration Committee/ The Risk Management Committee Member/ Independent, Kijchaoen Engineering Electric Plc.
- 2020 – Present : Independent Director/ Member of the Audit Committee/ Member of the Corporate Governance/ Member of the Risk Oversight Committee, Land and Houses Bank Plc.
- 2020 – Present : Independent Director/ Chairman of the Nomination and Remuneration Committee/ Member of the Audit Committee/ Member of the Risk Oversight Committee, LH Financial Group Plc.

Other Companies

- 2018 – 2018 : General Manager & Deputy Country Head of Thailand, Sumitomo Mitsui Banking Corporation
- 2002 – 2018 : Head of Business Promotion, Sumitomo Mitsui Banking Corporation

Mr. Teerapat Sanguankotchakorn

Age: 57

Independent Director

Appointed Date : 3 April 2019

Member of the Compensation Committee

Appointed Date : 25 April 2019

Member of the Environment, Social and Governance Committee

Appointed Date : 1 May 2021



8

Education/ Training

- Doctor of Philosophy Program in Information Processing, Tokyo Institute of Technology
- Master of Engineering Program in Information Processing, Tokyo Institute of Technology
- Bachelor of Engineering Program in Electrical Engineering, Chulalongkorn University
- Director Certification Program (DCP) #148/2011, Thai Institute of Directors Association (IOD)
- Advance Audit Committee Program (AACP) #14/2014, Thai Institute of Directors Association (IOD)
- Board Matters and Trends (BMT) #8/2019, Thai Institute of Directors Association (IOD)
- National Director Conference 2021 (NDC 2021) "Leadership Behind Closed Door", Thai Institute of Directors Association (IOD)
- Urban Leader Training Course #7, Navamindradhiraj University

% Share Held

- Own share : -
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2021 – Present : Member of the Environment, Social and Governance Committee, Banpu Plc.
- 2019 – Present : Independent Director/ Member of the Compensation Committee, Banpu Plc.

Other Organizations

- 2020 – Present : Executive Director, Technology Promotion Association (Thailand-Japan)
- 2018 – Present : Chairman of the Audit Committee, Thai Public Broadcasting Service (Thai PBS)
- 2018 – Present : Board of Governors, Thai Public Broadcasting Service (Thai PBS)
- 2014 – 2018 : Audit Committee, Thai Public Broadcasting Service (Thai PBS)
- 2012 – 2016 : Board of Governors, Thai Public Broadcasting Service (Thai PBS)
- 2004 – Present : Associate Professor, Telecommunications Field of Study, School of Engineering and Technologies Asian Institute of Technology (AIT)
- 2018 – 2018 : Member of the Committee for Sustainable Development and Planning of National Education, Ministry of Education

Remark: % Share Held which is indicated as "0" means % share held less than 1% while "-" means not holding any shares.

Mr. Metee Auapinyakul

Age: 69

Director

Appointed Date : 16 May 1983

Advisor

Appointed Date : 1 January 2014

* An older brother of person number 10



9

Education/ Training

- Doctor of Business, Engineering and Technology (Honoris Causa), St. Louis University, Missouri, U.S.A.
- B.Sc. (Management), St. Louis University, Missouri, U.S.A.
- Infrastructure for the Market Economy, Harvard University, John F. Kennedy School of Government, Boston, U.S.A.
- National Defence College of Thailand (Class 377)
- National Defence College of Thailand, College of Management (Class 1)
- Director Certification Program (DCP) #61/2005, Thai Institute of Directors Association (IOD)

% Share Held

- Own share : 0.09
- Spouse : 0.01

Work Experience in the Last Five Years

Banpu Group

- 2014 – Present : Advisor, Banpu Plc.
- 1983 – Present : Director, Banpu Plc.
- 2015 – Present : Director, Banpu Power Plc.

Other Listed Companies

- 2004 – Present : Chairman of Advisors, GENCO Plc.

Mr. Ongart Auapinyakul

Age: 66

Director

Appointed Date : 29 July 1983

Advisor

Appointed Date : 1 January 2017

Executive Officer

Appointed Date : 8 January 2001



10

Education/ Training

- B.S. (Mechanical Engineering), University of Missouri, Columbia, U.S.A.
- Senior Executive Program #3, Sasri Graduate Institute of Business Administration of Chulalongkorn University
- National Defence College of Thailand (Class 4414)
- Director Certification Program (DCP) #23/2002, Thai Institute of Directors Association (IOD)
- Capital Market Academy Leader Program #8, Capital Market Academy (CMA)
- Bangkok Metropolitan Administration Executive Program (Mahanakorn Class 1), Urban Green Development Institute Bangkok
- Top Executive Program in Energy (TEA) #1, Thailand Energy Academy
- Top Executive Program #17, Judicial Training Institute
- Executive Management with Business Development and Investment #1, Institute of Business and Industrial Development
- Top Executive Program in Commerce and Trade (TEPCOT) #4, University of the Thai Chamber of Commerce (UTCC)
- Business Revolution and Innovation Network (BRAIN) #1, The Federation of Thai Industries
- Tourism Management Program for Executives (TME) #1, TAT Academy
- Academy of Business Creativity (ABC) #8/2018, Sripatum University
- Top Executive Program for Creative and Amazing Thai Services (ToPCATS) #2, University of the Thai Chamber of Commerce (UTCC)

% Share Held

- Own share : 0.01
- Spouse : 0.04

Work Experience in the Last Five Years

Banpu Group

- 2017 – Present : Advisor, Banpu Plc.
- 1983 – Present : Director, Banpu Plc.
- 1983 – 2016 : Executive Officer, Banpu Plc.

Mr. Verajet Vongkusolkrit

Age: 58

Director

Appointed Date : 1 June 2010

Member of the Corporate Governance and Nomination Committee

Appointed Date : 1 June 2010

* A nephew of person number 1 and a cousin of person number 5



11

Education/ Training

- Bachelor of Science (Finance), Babson College, Massachusetts, U.S.A.
- Director Certification Program (DCP) #24/2002, Thai Institute of Directors Association (IOD)
- TLCA Executive Development Program #13, Thai Listed Companies Association
- TLCA Leadership Development Program (LDP) #2, Thai Listed Companies Association and International Institute for Management Development (IMD)
- Strategy and Innovation for Businesses in ASIA (SIBA) 2016, Mahidol University and MIT Sloan School of Management
- Leadership Communication Certification Program 2018, Thailand Management Association (TMA)
- Senior Executive Program 2019 (SEP) #33, Sasri Graduate Institute of Business Administration of Chulalongkorn University and The Kellogg School of Management and the Wharton School
- Boards that Make a Difference (BMD) #10/2020, Thai Institute of Directors Association (IOD)
- Thailand Energy Academy (TEA) #16, Thailand Energy Academy

% Share Held

- Own share : 0.21
- Spouse : 0

Work Experience in the Last Five Years

Banpu Group

- 2010 – Present : Director/ Member of the Corporate Governance and Nomination Committee, Banpu Plc.
- 2020 – Present : Director, Banpu NEXT Co., Ltd.

Other Companies

- Present : Chief Executive Officer - Thai Sugar, Energy and New Business, Mitr Phol Sugar Corp., Ltd.
- 2008 – Present : Director, Mitr Phol Sugar Corp., Ltd.
- 2008 – Present : Director, Mitr Siam Sugar Corp., Ltd.
- 2008 – Present : Director, United Farmer and Industry Co., Ltd.

Mr. Sarayuth Saengchan

Age: 60

Director

Appointed Date : 2 April 2022

Member of the Corporate Governance and Nomination Committee

Appointed Date : 1 May 2022



12

Education/ Training

- Ph.D. Economics, Faculty of Economics, Chulalongkorn University, Bangkok, Thailand
- Master of Management (M.M.) in Management Policy, Managerial Economics and Operations, Kellogg School of Management - Northwestern University, U.S.A
- Bachelor of Art in Economics, (First-class Honors) in Monetary Policy and Public Finance, Faculty of Economics, Chulalongkorn University
- Director Certification Program (DCP) #322/2022, Thai Institute of Directors Association (IOD)
- Subsidiary Governance Program (SGP) #2/2022, Thai Institute of Directors Association (IOD)

% Share Held

- Own share : -
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2022 – Present : Director/ Member of the Corporate Governance and Nomination Committee, Banpu Plc.

Other Listed Companies

- 2018 – 2022 : Independent Director/ Member of the Audit Committee, Bangkok Dec-Con Plc.

Other Companies

- 2020 – Present : Senior Executive Vice President - Finance and Administration, Mitr Phol Sugar Corp., Ltd.

Other Organizations

- 2021 – Present : Director and Treasurer, Chulalongkorn University Alumni Association
- 2021 – Present : Association Director, Thai Sugar and Bio-Energy Producers Association
- 2020 – Present : Member of the Audit Committee, Vajiravudh College
- 2020 – Present : Director - Fund Management Committee, Thai Sugar and Bio-Energy Producers Association

Remark: % Share Held which is indicated as "0" means % share held less than 1% while "-" means not holding any shares.

Mrs. Somruedee Chaimongkol

Age: 61

Chief Executive Officer

Appointed Date : 10 April 2015

Director

Appointed Date : 4 April 2015



13

Education/ Training

- Honorary Doctoral Degree in Accounting, Bangkok University
- B.Sc. (Accounting), Bangkok University
- Program for Global Leadership, Harvard University Graduate School of Business Administration, Boston, U.S.A.
- Director Certification Program (DCP) #78/2006, Thai Institute of Directors Association (IOD)
- Capital Market Academy Leader Program #18, Capital Market Academy (CMA)
- Executive Management with Business Development and Investment #2, Institute of Business and Industrial Development

% Share Held

- Own share : 0.12
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2015 – Present : Chief Executive Officer/ Director, Banpu Plc.
- 2006 – 2015 : Chief Financial Officer, Banpu Plc.
- 2009 – Present : Director, Banpu Power Plc.
- Present : Director, BLCP Power Limited
- 2020 – Present : Director, Banpu NEXT Co., Ltd.
- 2020 – Present : Director, Banpu NEXT Green Leasing Co., Ltd.
- 2001 – Present : Director, Banpu Minerals Company Limited
- 2001 – Present : Director, Banpu International Limited
- 2016 – Present : Director, Banpu NEXT Green Energy Co., Ltd. (Previously named, Banpu Coal Sales Co., Ltd.)
- 2009 – Present : Director, Banpu Coal Power Limited
- 2019 – Present : Director, Banpu Innovation & Ventures Co., Ltd.
- 2014 – Present : Director, BOG Co., Ltd.
- 2012 – Present : Director, Hunnu Investments Pte. Ltd.
- 2001 – Present : Director, Banpu Singapore Pte Ltd.
- 2013 – Present : Director, BMS Coal Sales Pte. Ltd.
- 2009 – Present : Director, Banpu Minerals (Singapore) Pte Ltd.
- 2018 – Present : Director, Durapower Holdings Pte. Ltd.
- 2010 – Present : Director, Centennial Coal Company Pty Limited
- 2011 – Present : Director, Hunnu Coal Pty Ltd.
- 2012 – Present : Director, AFE Investments Pty Limited
- 2011 – Present : Director, ACN 152 429 206 Pty Limited (Previously named, Banpu Australia Resources Pty Ltd.)
- 2009 – Present : Director, Banpu Australia Co., Pty Ltd.
- 2021 – Present : Director, Banpu Energy Holding Pty Ltd.
- 2019 – Present : Director, Banpu Energy Australia Pty Limited
- 2020 – Present : Director, Banpu Renewable Australia Pty Limited
- 2008 – Present : Director, Banpu Coal Investment Company Limited
- 2017 – Present : Director, BPIN Investment Company Limited
- 2003 – Present : Director, BP Overseas Development Company Limited
- 2008 – Present : Director, Asian American Coal, Inc.
- 2019 – Present : Director, Banpu Japan K.K.
- 2020 – Present : Director, BKV Corporation
- 2015 – Present : Director, Banpu North America Corporation
- 2021 – Present : Director, Banpu Power US Corporation
- 2017 – 2022 : Director, Sunseap Group Pte. Ltd.
- 2019 – 2021 : Director, FOMM Corporation

Mr. Somsak Sithinamsuwan

Age: 62

Head of Mining Business

Appointed Date : 1 January 2020



14

Education/ Training

- M.P.A. (Public Policy and Strategic Management), National Institute of Development Administration (NIDA)
- B.Eng. (Mining and Metallurgical Engineering), Prince of Songkhla University
- TLCA Executive Development Program 2017, Thai Listed Companies Association
- Global Leadership Program for Strategic Leader 2017, IMD Business School

% Share Held

- Own share : 0
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2020 – Present : Head of Mining Business, Banpu Plc.
- 2019 – 2019 : Chief Operating Officer – Coal Business, Banpu Plc.
- 2018 – 2018 : Assistant Chief Operating Officer – Coal Business, Banpu Plc.
- 2020 – Present : Director, Hunnu Gobi Altai LLC
- 2020 – Present : Director, Banpu Vietnam Limited Liability Company
- 2019 – Present : Director, Banpu Energy Services (Thailand) Co., Ltd.
- 2019 – Present : Director, Banpu Engineering Services Co., Ltd.
- 2019 – Present : Director, Banpu International Limited
- 2019 – Present : Director, Banpu Minerals Company Limited
- 2019 – Present : Director, Hunnu Coal Pty Ltd.
- 2019 – Present : Director, BP Overseas Development Company Limited
- 2019 – Present : Director, Banpu Minerals (Singapore) Pte. Ltd.
- 2019 – Present : Director, Banpu Singapore Pte. Ltd.
- 2019 – Present : Director, BMS Coal Sales Pte. Ltd.
- 2019 – Present : Director, Hunnu Investments Pte. Ltd.
- 2019 – Present : Director, Aura Land Development Pte. Ltd.
- 2018 – Present : Commissioner, PT. Indo Tambangraya Megah Tbk
- 2018 – Present : Director, Banpu Coal Power Limited
- 2019 – 2022 : Director, Banpu NEXT Green Energy Co., Ltd. (Previously named, Banpu Coal Sales Co., Ltd.)
- 2015 – 2017 : Managing Director, Hongsa Power Company Limited

Dr. Kirana Limpaphayom

Age: 48

Head of Power Business, Banpu Plc.

Appointed Date : 10 April 2020

Chief Executive Officer, Banpu Power Public Company Limited

Appointed Date : 10 April 2020



15

Education/ Training

- Ph.D. Sociology, Centre for Comparative Labour Studies, University of Warwick, United Kingdom
- M.Sc. Industrial Relations, Labour Market Economic, London School of Economics and Political Science (LSE), University of London, United Kingdom
- Bachelor of Economics, Chulalongkorn University
- Master of Business Administration in Executive Finance, Sasun Graduate Institute of Business Administration of Chulalongkorn University and The Kellogg School of Management and the Wharton School
- Graduate of the Australian Institute of Company Directors (GAICD)
- Director Certificate Program, Indonesian Institute of Corporate Directors (IICD)
- Director Certification Program (DCP) #294/2020, Thai Institute of Directors Association (IOD)

% Share Held

- Own share : -
- Spouse : 0

Work Experience in the Last Five Years

Banpu Group

- 2020 – Present : Head of Power Business, Banpu Plc.
- 2020 – Present : Chief Executive Officer, Banpu Power Plc.
- 2021 – Present : Director, Banpu Energy Holding Pty Ltd.
- 2021 – Present : Director, Banpu Power International Limited
- 2021 – Present : Director, Pan-Western Energy Corporation LLC
- 2021 – Present : Director, BKV-BPP POWER LLC
- 2021 – Present : Director, Banpu Power US Corporation
- 2021 – Present : Director, Banpu Power (Japan) Co., Ltd.
- 2021 – Present : Director, Zouping Peak Pte. Ltd
- 2021 – Present : Director, Banpu Innovation & Ventures Co., Ltd.
- 2021 – Present : Executive Manager, Banpu Power Trading G.K.
- 2022 – Present : Commissioner, PT. Indo Tambangraya Megah Tbk
- 2020 – Present : Director, BLCP Power Limited
- 2020 – Present : Director, Banpu NEXT Co., Ltd.
- 2020 – Present : Director, Banpu NEXT Green Leasing Co., Ltd.
- 2020 – Present : Director, Hongsa Power Company Limited
- 2020 – Present : Director, Phu Fai Mining Company Limited
- 2020 – Present : Director, Banpu Coal Power Limited
- 2020 – Present : Director, Banpu Energy Australia Pty Limited
- 2014 – Present : Alternate Director, Centennial Coal Company Pty Limited
- 2013 – Present : Director, Banpu Australia Co., Pty Ltd.
- 2013 – Present : Director, AFE Investments Pty Limited
- 2013 – Present : Director, ACN 152 429 206 Pty Limited (Previously named, Banpu Australia Resources Pty Limited)
- 2016 – 2020 : President Director, PT. Indo Tambangraya Megah Tbk
- 2022 – Present : Director, Banpu Japan K.K.
- 2022 – Present : Managing Director, BKV-BPP Retail LLC

Mr. Thiti Mekavichai

Age: 60

Head of Oil and Gas Business

Appointed Date : 1 November 2018



16

Education/ Training

- Diploma in Hydrographic Surveying, Plymouth Polytechnic, England
- Bachelor of Science in Geography, Srinakharinwirot University
- Executive Program in Energy Literacy for a Sustainable Future #9, Thailand Energy Academy
- Diploma Course in Democratic Politics and Governance for Executives #19, King Prajadhipok's Institute
- Executive Program in "Thammasat for Society" #5, Thammasat Leadership Program
- PTT Leadership Development Program III, PTT Leadership and Learning Institute
- Executive Leadership Development Program (EP-LEAD), International Institute for Management Development (IMD)
- Media Response for Spokesperson, Hill+Knowlton Strategies
- Safety Leadership Workshop, Safety Management Consultants (UK) Limited

% Share Held

- Own share : -
- Spouse : 0

Work Experience in the Last Five Years

Banpu Group

- 2018 – Present : Head of Oil and Gas Business, Banpu Plc.
- 2021 – Present : Director, BKV-BPP POWER LLC
- 2020 – Present : Director, BKV Corporation
- 2019 – Present : Director, Banpu North America Corporation

Other Listed Companies

- 2011 – 2018 : Executive Vice President of Human Resources and Business Services Group, PTT Exploration and Production Plc.

Remark: % Share Held which is indicated as "0" means % share held less than 1% while "-" means not holding any shares.

Mr. Sutee Sukruan

Age: 58

Head of Corporate Development

Appointed Date : 1 January 2021



17

Education/ Training

- M.B.A. (Finance), Chulalongkorn University
- Bachelor of Accounting, Chulalongkorn University
- TLCA Executive Development Program #11, Thai Listed Companies Association
- Economic Leader Forum, Thammasat Economics Association
- Director Certification Program (DCP) #254/2018, Thai Institute of Directors Association IOD
- Global Leadership Program for Strategic Leader 2019, IMD Business School
- TLCA Leadership Development Program (LDP) #5, Thai Listed Companies Association and International Institute for Management Development (IMD)
- Leadership Program – Accelerating Transformation Series, Banpu Plc. and Pacrim Group
- Data Leadership Essential Program for SVP, Banpu Plc. and Skooldio

% Share Held

- Own share : -
- Spouse : -

Work Experience in the Last Five Years

Banpu Group

- 2021 – Present : Head of Corporate Development, Banpu Plc.
- 2020 – 2020 : Senior Vice President – Corporate Development, Banpu Plc.
- 2018 – 2020 : Chief Operating Officer – Power Business, Banpu Plc.
- 2009 – 2017 : Senior Vice President – Corporate Finance, Banpu Plc.
- 2022 – Present : Director, Licogi 16 Ninh Thuan Investment Renewable Energy Joint Stock Company
- 2018 – 2020 : Chief Executive Officer, Banpu Power Plc.
- 2020 – Present : Director, Banpu Renewable Australia Pty Limited
- 2020 – Present : Director, Banpu NEXT Co., Ltd.
- 2019 – Present : Director, Banpu Japan K.K.
- 2018 – Present : Director, Banpu Coal Power Limited
- 2018 – Present : Director, BRE Singapore Pte. Ltd.
- 2018 – Present : Director, BPP Vinh Chau Wind Power Limited Liability Company
- 2018 – 2021 : Director, Banpu Power (Japan) Co., Ltd.
- 2018 – 2021 : Director, Zouping Peak Pte. Ltd.
- 2018 – 2021 : Director, Banpu Power International Limited
- 2019 – 2021 : Director, Pan-Western Energy Corporation LLC

Ms. Arisara Sakulkarawek

Age: 52

Chief Financial Officer

Appointed Date : 1 March 2019



18

Education/ Training

- Master of Science in Accounting, Thammasat University
- Bachelor of Accounting (BA), Thammasat University
- Orchestrating Winning Performance 2016, IMD Business School
- Global Leadership Program for Strategic Leader 2017, IMD Business School
- Certification from School of Tax
- Certified Public Accountant (Thailand) (CPA)
- TLCA Leadership Development Program (LDP) – Crafting Agile Strategies to Enhance Competitiveness of Your Organization, Thai Listed Companies Association
- Refreshment of the Role and Expectation of a CFO, Federation of Accounting Professions Under the Royal Patronage of His Majesty the King
- Beyond Treasury Management, Federation of Accounting Professions Under the Royal Patronage of His Majesty the King
- Enterprise Governance of IT, Federation of Accounting Professions Under the Royal Patronage of His Majesty the King
- Transfer Pricing, Federation of Accounting Professions Under the Royal Patronage of His Majesty the King
- Basic Forensic Analytics, Federation of Accounting Professions Under the Royal Patronage of His Majesty the King

% Share Held

- Own share : -

Work Experience in the Last Five Years

Banpu Group

- 2019 – Present : Chief Financial Officer, Banpu Plc.
- 2018 – 2019 : Senior Vice President – Corporate Finance, Banpu Plc.
- 2016 – 2017 : Senior Vice President – Controller, Banpu Plc.
- 2011 – 2015 : Vice President – Accounting, Banpu Plc.
- 2020 – Present : Director, Banpu Vietnam Limited Liability Company
- 2020 – Present : Director, Banpu International Limited
- 2020 – Present : Director, Banpu Minerals Company Limited
- 2020 – 2022 : Director, Banpu NEXT Green Energy Co., Ltd. (Previously named, Banpu Coal Sales Co., Ltd.)
- 2019 – Present : Executive Manager, Aizu Land Solar G.K.
- 2019 – Present : Director, Banpu Innovation & Ventures Co., Ltd.
- 2019 – Present : Director, Banpu Innovation & Ventures (Singapore) Pte. Ltd.
- 2019 – Present : Director, Banpu Innovation & Ventures LLC
- 2018 – Present : Director, Banpu Singapore Pte. Ltd.
- 2018 – Present : Director, Banpu Minerals (Singapore) Pte. Ltd.
- 2018 – Present : Director, BP Overseas Development Company Limited
- 2018 – Present : Director, Banpu Coal Investment Company Limited
- 2018 – Present : Director, Aura Land Development Pte. Ltd.
- 2018 – Present : Director, Hunnu Investment Pte. Ltd.
- 2018 – Present : Director, Banpu Engineering Services Co., Ltd.
- 2018 – Present : Director, Banpu Energy Services (Thailand) Co., Ltd.
- 2018 – Present : Director, BOG Co., Ltd.
- 2018 – Present : Executive Manager, Hokkaido Solar Estate G.K.
- 2018 – Present : Director, Banpu North America Corporation
- 2022 – Present : Director, Banpu Ventures Pte. Ltd.
- 2022 – Present : Director, LIV Energy Venture Pte. Ltd.

Mr. Wittapon Jawjit

Age: 52

Head of Human Resources

Appointed Date : 1 July 2021



19

Education/ Training

- Master of Science, Telecommunication Engineering (Satellite and Data Communication), Chulalongkorn University
- Bachelor of Science, Electrical Engineering (Telecommunication Engineering), Chulalongkorn University
- Diploma in Strategic Management and Business Reengineering, Special Program by Sloan School of Management, MIT, Boston, MA, U.S.A.

% Share Held

- Own share : -
- Spouse : 0

Work Experience in the Last Five Years

Banpu Group

- 2021 – Present : Head of Human Resources, Banpu Plc.

Other Listed Companies

- 2017 – 2019 : First Executive Vice President, Head of Human Resources, Bank of Ayudhaya Plc. (BAY)
- 2014 – 2017 : First Executive Vice President, Head of Human Resources, Kiatnakin Phatra Financial Group

Other Companies

- 2005 – 2014 : Chief Executive Officer and Country Head, Mercer (Thailand) Ltd.

Other Organizations

- March 2021 – Present : Committee Member, Thailand National Innovation Committee, Ministry of Higher Education, Science, Research and Innovation
- 2021 – Present : Committee Member, Human Resources Management Subcommittee, National Science and Technology Development Agency (NSTDA)
- 2019 – Present : Advisor to Chief Executive Officer, Mae Fah Luang Foundation

Mr. Jirameth Achcha

Age: 53

Head of Corporate Services

Appointed Date : 1 January 2021



20

Education/ Training

- Master of Economics (Business Economics), Kasetsart University
- Bachelor of Economics (Fiscal Economics), Ramkhamhaeng University

% Share Held

- Own share : 0
- Spouse : 0

Work Experience in the Last Five Years

Banpu Group

- 2021 – Present : Head of Corporate Services, Banpu Plc.
- 2018 – 2020 : Senior Vice President – Corporate Services, Banpu Plc.
- 2016 – 2017 : Vice President – Corporate Compliance, Banpu Plc.
- 2015 – 2016 : Vice President – Business Process Management, Banpu Plc.

Mr. Sinon Vongkusolkit

Age: 32

Head of Renewable and Energy Technology Business, Banpu Plc.

Appointed Date : 16 June 2022

Chief Executive Officer, Banpu NEXT Co., Ltd.

Appointed Date : 16 June 2022

* A son of person number 1



21

Education/ Training

- MA Global Management pathway in Finance and Business Development, Regent's University
- BA Business and Marketing Management, Oxford Brookes University

% Share Held

- Own share : 0.01
- Spouse : –

Work Experience in the Last Five Years

Banpu Group

- 2022 – Present : Head of Renewable and Energy Technology Business, Banpu Plc.
- 2022 – Present : Chief Executive Officer / Director, Banpu NEXT Co., Ltd.
- 2020 – 2022 : Manager – Project Management Office, Banpu Plc.
- 2014 – 2020 : Finance Analyst - Corporate Finance, Banpu Plc.
- 2022 – Present : Director, Banpu NEXT Green Energy Co., Ltd. (Previously named, Banpu Coal Sales Co., Ltd.)
- 2022 – Present : Director, BPIN Investment Company Limited
- 2022 – Present : Director, BKV Corporation
- 2022 – Present : Director, Banpu Japan K.K.
- 2022 – Present : Director, Banpu Ventures Pte. Ltd.
- 2022 – Present : Executive Manager, Banpu Power Trading G.K.

Other Companies

- 2022 – 2022 : Director, PT. Berkah Manis Makmur
- 2022 – 2022 : Director, PT. Rejoso Manis Indo

Mr. Virach Vudhihanaseth

Age: 48

Company Secretary

Appointed Date : 1 January 2018

Senior Vice President – Corporate Strategy

Appointed Date : 10 April 2020



22

Education/ Training

- Master of Arts in Economics, State University of New York, Albany, U.S.A.
- Master of Science in Finance, Bentley College, U.S.A.
- Master in Business Administration, Clark University, U.S.A.
- Bachelor of Economics (International Economics), Bangkok University
- TLCA Executive Development Program 2018, Thai Listed Companies Association
- Company Secretary Program #96, Thai Institute of Directors Association (IOD)
- CG Code Workshop, Deloitte Touche Tohmatsu Jaiyos Audit Co., Ltd. (Deloitte)
- WIAL Certified Action Learning Coach Program, Banpu Plc. and World Institute for Action Learning (Thailand) Ltd.
- Leadership Program – Accelerating Transformation Series, Banpu Plc. and Pacrim Group
- Climate Risk Management and Climate Scenario Analysis, Ernst & Young Corporate Services Limited
- Economic Briefing organized, Kiatnakin Phatra Bank
- Energy Transition Towards Net-Zero, KPMG
- APEC CEO Summit 2022, APEC Business Advisory Council (ABAC)

% Share Held

- Own share : 0
- Spouse : –

Work Experience in the Last Five Years

Banpu Group

- 2020 – Present : Senior Vice President – Corporate Strategy, Banpu Plc.
- 2020 – Present : Head of Corporate Secretary, Banpu Plc.
- 2020 – 2022 : Head of Investor Relations, Banpu Plc.
- 2018 – 2019 : Vice President – Corporate Secretary and Investor Relations, Banpu Plc.
- 2015 – 2017 : Vice President – Investor Relations, Banpu Plc.

Ms. Wiyada Wiboonsirichai

Age: 53

Secretary of the Audit Committee

Appointed Date : 16 January 2018

Head of Global Internal Audit and Compliance

Appointed Date : 1 January 2018



23

Education/ Training

- Master of Business Administration, Financial Management, National Institute of Development Administration (NIDA)
- Bachelor of Accounting, Thammasat University
- Certified Public Accountant (Thailand) (CPA)
- Certified Internal Auditor (CIA), The Institute of Internal Auditors (IIA)
- Certified Control Self-Assessment (CCSA), The Institute of Internal Auditors (IIA)
- TLCA Executive Development Program #13, Thai Listed Companies Association

% Share Held

- Own share : 0

Work Experience in the Last Five Years

Banpu Group

- 2018 – Present : Head of Global Internal Audit and Compliance, Banpu Plc.
- 2018 – Present : Secretary of the Audit Committee, Banpu Plc.
- 2014 – 2017 : Senior Vice President – Information Technology, Banpu Plc.

Remark: % Share Held which is indicated as "0" means % share held less than 1% while "-" means not holding any shares.

ATTACHMENT 2: DETAILS OF THE MANAGEMENT AND CONTROLLING PARTIES OF BANPU AND ITS SUBSIDIARIES

Name	Banpu	Subsidiaries																
		AFE	AACI	ALD	ALSGK	BPA	BRA	BPCI	BEH	BAR	BKV-BPP	BPCP	BEN	BEST	BES	BIVUS	BPI	BPJP
1. Mr. Chanin Vongkusolkit	X	/	/			/	/	/	/	/	/	/	/		/		/	
2. Mr. Teerana Bhongmakapat	//																	
3. Mr. Anon Sirisaengtaksin	/									/								
4. Mr. Suthad Setboonsarng	//																	
5. Mr. Buntoeng Vongkusolkit	/																	
6. Mr. Metee Auapinyakul	/																	
7. Mr. Ongart Auapinyakul	/																	
8. Mr. Verajet Vongkusolkit	/																	
9. Mrs. Somruedee Chaimongkol	/,M	/	/			/	/	/	/	/	/	/	/		/	/	/	/
10. Mr. Sarayuth Saengchan	/																	
11. Mr. Pichai Dusdeekulchai	//																	
12. Mr. Teerapat Sanguankotchakorn	///																	
13. Mr. Piriya Khempon	///																	
14. Mr. Somsak Sithinamsuwan	O			/							/		/	/	/		/	
15. Mr. Thiti Mekavichai	O									/								
16. Dr. Kirana Limpaphayom	O	/			/			/	/	/	/	/	/				/	
17. Mr. Sinon Vongkusolkit	O																	/
18. Mr. Sutee Sukruan	O					/				/								/
19. Ms. Arisara Sakulkarawek	O		/	/			/				/	/	/	/	/	/	/	/
20. Mr. Jirameth Achcha	O																	
21. Mr. Wittapon Jawjit	O																	

Name	Banpu	Subsidiaries																
		BMC	BMS	BNEXT	BGL	BNAC	BKV	BPPJP	BPPI	BPIC	BPP	BPPTGK	BPS	BPVT	BIVSG	BIVTH	BMSCS	BOG
1. Mr. Chanin Vongkusolkit	X			/			/	/		/	/				/	/		
2. Mr. Teerana Bhongmakapat	//																	
3. Mr. Anon Sirisaengtaksin	/						/									/		
4. Mr. Suthad Setboonsarng	//																	
5. Mr. Buntoeng Vongkusolkit	/																	
6. Mr. Metee Auapinyakul	/															/		
7. Mr. Ongart Auapinyakul	/																	
8. Mr. Verajet Vongkusolkit	/						/											
9. Mrs. Somruedee Chaimongkol	/,M	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10. Mr. Sarayuth Saengchan	/																	
11. Mr. Pichai Dusdeekulchai	//																	
12. Mr. Teerapat Sanguankotchakorn	///																	
13. Mr. Piriya Khempon	///																	
14. Mr. Somsak Sithinamsuwan	O	/	/											/	/		/	
15. Mr. Thiti Mekavichai	O									/	/							
16. Dr. Kirana Limpaphayom	O			/	/			/	/	/	/	/	/			/		
17. Mr. Sinon Vongkusolkit	O			/			/				/							
18. Mr. Sutee Sukruan	O			/				/										
19. Ms. Arisara Sakulkarawek	O	/	/			/				/	/	/	/	/	/	/	/	/
20. Mr. Jirameth Achcha	O																	
21. Mr. Wittapon Jawjit	O																	

Name	Subsidiaries																		
	Banpu	BNGE	BPV	BPOD	BPINI	BPPVC	BPPUS	BRES	CEY	HSEGG	HUNNU	HGA	HUNI	LCE Ninh Thuan	LIV	PWE	RETAIL	ITM	ZPP
1. Mr. Chanin Vongkusolkit	X		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2. Mr. Teerana Bhongmakapat	//																		
3. Mr. Anon Sirisaengtaksin	/																		
4. Mr. Suthad Setboonsarng	//																		
5. Mr. Buntoeng Vongkusolkit	/																		
6. Mr. Metee Auapinyakul	/																		
7. Mr. Ongart Auapinyakul	/																		
8. Mr. Verajet Vongkusolkit	/																		
9. Mrs. Somruedee Chaimongkol	/,M	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10. Mr. Sarayuth Saengchan	/																		
11. Mr. Pichai Dusdeekulchai	//																		
12. Mr. Teerapat Sanguankotchakorn	///																		
13. Mr. Piriya Khempon	///																		
14. Mr. Somsak Sithinamsuwan	O	/								/	/	/	/	/	/	/	/	/	/
15. Mr. Thiti Mekavichai	O																		
16. Dr. Kirana Limpaphayom	O		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
17. Mr. Sinon Vongkusolkit	O	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
18. Mr. Sutee Sukruan	O		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
19. Ms. Arisara Sakulkarawek	O	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
20. Mr. Jirameth Achcha	O																		
21. Mr. Wittapon Jawjit	O																		

Name	Associated Companies				
	Banpu	BLCP	HPC	Phu Fai	Durapower
1. Mr. Chanin Vongkusolkit	X	/	/	/	/
2. Mr. Teerana Bhongmakapat	//				
3. Mr. Anon Sirisaengtaksin	/				
4. Mr. Suthad Setboonsarng	//				
5. Mr. Buntoeng Vongkusolkit	/				
6. Mr. Metee Auapinyakul	/				
7. Mr. Ongart Auapinyakul	/				
8. Mr. Verajet Vongkusolkit	/				
9. Mrs. Somruedee Chaimongkol	/,M	/	/	/	/
10. Mr. Sarayuth Saengchan	/				
11. Mr. Pichai Dusdeekulchai	//				
12. Mr. Teerapat Sanguankotchakorn	///				
13. Mr. Piriya Khempon	///				
14. Mr. Somsak Sithinamsuwan	O				
15. Mr. Thiti Mekavichai	O				
16. Dr. Kirana Limpaphayom	O	/	/	/	/
17. Mr. Sinon Vongkusolkit	O				
18. Mr. Sutee Sukruan	O				
19. Ms. Arisara Sakulkarawek	O				
20. Mr. Jirameth Achcha	O				
21. Mr. Wittapon Jawjit	O				

Notes:

Symbols of the Board Members and Executives

- X Chairman of the Board of Directors
- V Vice-Chairman of the Board of Directors
- / Director
- // Independent Director/
Member of the Audit Committee
- /// Independent Director
- M Chief Executive Officer
- N Executive Officer
- O Executive



Abbreviation of the Company, Its Subsidiaries and Associated Companies

Banpu

Banpu Plc.

Subsidiaries

AACI

Asian American Coal, Inc.

AFE

AFE Investments Pty Ltd.

ALD

Aura Land Development Pte. Ltd.

ALSGK

Aizu Land Solar G.K.

BAR

Banpu Australia Resources Pty Ltd.

BEH

Banpu Energy Holding Pty Ltd.

BEN

Banpu Energy Australia Pty Ltd.

BES

Banpu Engineering Services Co., Ltd.

BEST

Banpu Energy Services (Thailand) Co., Ltd.

BIVSG

Banpu Innovation & Ventures (Singapore) Pte. Ltd.

BIVTH

Banpu Innovation & Ventures Co., Ltd.

BIVUS

Banpu Innovation & Ventures LLC

BKV

BKV Corporation

BKV-BPP

BKV-BPP Power LLC

BMC

Banpu Minerals Co., Ltd.

BMS

Banpu Minerals (Singapore) Pte. Ltd.

BMSCS

BMS Coal Sales Pte. Ltd.

BNAC

Banpu North America Corporation

BNEXT

Banpu NEXT Co., Ltd.

BNGE

Banpu NEXT Green Energy Co., Ltd.

BNGL

Banpu NEXT Green Leasing Co., Ltd.

BOG

BOG Co., Ltd.

BPA

Banpu Australia Co., Pty Ltd.

BPCI

Banpu Coal Investment Co., Ltd.

BPCP

Banpu Coal Power Ltd.

BPI

Banpu International Ltd.

BPIC

Banpu Power Investment Co., Ltd.

BPINI

BPIN Investment Co., Ltd.

BPJP

Banpu Japan K.K.

BPOD

BP Overseas Development Co., Ltd.

BPP

Banpu Power Plc.

BPPI

Banpu Power International Ltd.

BPPJP

Banpu Power (Japan) Co., Ltd.

BPPTGK

Banpu Power Trading G.K.

BPPUS

Banpu Power US Corporation

BPPVC

BPP Vinh Chau Wind Power LLC

BPS

Banpu Singapore Pte. Ltd.

BPV

Banpu Ventures Pte. Ltd.

BPVT

Banpu Vietnam LLC

BRA

Banpu Renewable Australia Pty Ltd.



BRES

BRE Singapore Pte. Ltd.

CEY

Centennial Coal Co., Ltd.

HGA

Hunnu Gobi Altai LLC

HSEGK

Hokkaido Solar Estate G.K.

HUNI

Hunnu Investment Pte. Ltd.

HUNNU

Hunnu Coal Pty Ltd.

ITM

PT. Indo Tambangraya Megah Tbk

LCE Ninh Thuan

Licogi 16 Ninh Thuan Investment Renewable Energy Joint Stock Company

LIV

LIV Energy Venture Pte. Ltd.

PWE

Pan-Western Energy Corporation LLC

RETAIL

BKV-BPP Retail LLC

ZPP

Zouping Peak Pte. Ltd.

Associated Companies

BLCP

BLCP Power Ltd.

Phu Fai

Phu Fai Mining Co., Ltd.

HPC

Hongsa Power Co., Ltd.

Durapower

Durapower Holdings Pte. Ltd.



BANPU
AN INTERNATIONAL VERSATILE
ENERGY PROVIDER

40 years of delivering energy sustainability
and our way forward in powering the better living for all.





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