



Banpu 2Q23 results

Opportunity Day

29th August 2023



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01

Highlights 2Q23

2Q23 highlights

Key financial metrics

\$280 M

EBITDA

Resilient performance despite low commodity prices, supported by Power business

-\$13 M

NPAT

Impacted by lower coal and gas prices

0.84 x

ND/E

ND/E increased from 0.74 x in the previous quarter

Key operational metrics



890 MMcfed

Gas production



966 MW

Renewable power*



37.5 Mt

Coal sales**



4,008 MW

Thermal power*

Note: *Committed capacity; **Coal sales target 2023

Key developments



US gas-fired power

Completed \$460 M acquisition of 755 MW Temple II power plant in Texas, US, further strengthening Banpu's gas value chain in the US



Battery production

Durapower is undertaking Phase 2 of its expansion plan to increase production capacity to a total of 2 GWh, with completion expected by end of 2024



EV charging infrastructure

Increased shareholding in EVOLT, an EV charging infrastructure provider, from 20% to 23.81% for \$0.86 M

Banpu: ESG leadership and credit rating recognition

BANPU ESG RATING

MSCI
ESG RATINGS



CCC B BB BBB A AA AAA

A

rating for third consecutive year for demonstrating resiliency towards long-term ESG risks and excellent risk management and mitigation relative to peers.



Sustainability Disclosure Award 2022

from Thaipat Institute for consistent and excellent conduct of ESG principles.

Member of
**Dow Jones
Sustainability Indices**

Powered by the S&P Global CSA

Awarded since 2014

Recognized as a constituent of DJSI for conducting business with the highest ESG standards.



Awarded since 2015

Recognized in THSI for sustainable operations and responsible investment principles.



Honor since 2018

Highest distinction in SET's Sustainability Excellence Award for at least 4 consecutive years.



ASEAN Asset Class

Awarded in 2021 ASEAN Corporate Governance Scorecard for excellent corporate governance.



Best Public Company of the Year 2023 in the SET & Best Company of the Year 2023 in Resources Industry

Awarded by Money & Banking Magazine for Banpu's exceptional ability to effectively manage business and organization.



A+ Credit rating

with a **'stable'** outlook on the company and senior unsecured debentures reflecting the company's stable business growth.

SUBSIDIARIES



ESG EXCELLENCE

Establishment of ESG Committee in March 2023 to supervise ESG targets and performance



5th Year

Listed on THSI



Commended Sustainability Award
Awarded by SET in 2022



ASEAN Asset Class
from 2021 ASEAN Corporate Governance Scorecard



Awarded Responsibly Sourced Gas (RSG) Gold Rating Certification*

by Project Canary Trustwell, a 3rd Party Certification Company.

*Certification awarded to 100% of BKV's NEPA production and a portion of BKV's Barnett production, as of 31 Dec 2022.



Banpu: recent ESG updates



Release of first TCFD report



Climate Change report (May 2023) compiled following the Task Force on Climate-related Financial Disclosures (TCFD), identifying risks opportunities assessment results related to climate change.



Virtual reality program for employee safety



Collaborated with the NSW Coal Service to develop a VR training program to eliminate risk of employees working underground in mines and increase knowledge regarding Trigger Action Response Plan (TARP).



Banpu Digital Academy



Established to drive digital transformation and enhance digital awareness among all employees and raise their “Digital Savvy” competency, the Academy carries out various activities, i.e., the Banpu Global Innovation Award and the Banpu Hackathon.



Reuse of waste as alternative fuel in China



Zouping power plant's successful trial of mixed coal and solid waste in their boiler conserved 9,337 tonnes of raw coal, disposed of activated carbon, improving business agility during high coal price situations in 2022.



Policies and initiatives for human rights



In 2022, Banpu elevated its ESG rating in "Labor Practices" and "Human Rights" to top-tier levels through the establishment of the "Non-discrimination & Anti-harassment Policy" and conducted human rights due diligence in its power businesses in Vietnam and Thailand.



Data privacy & cybersecurity



Introduced the "Information and Cybersecurity Policy," based on ISO/IEC 27001, to tackle emerging risks and appointed a Global Information Security Officer to ensure effective cybersecurity management and data privacy governance.

02

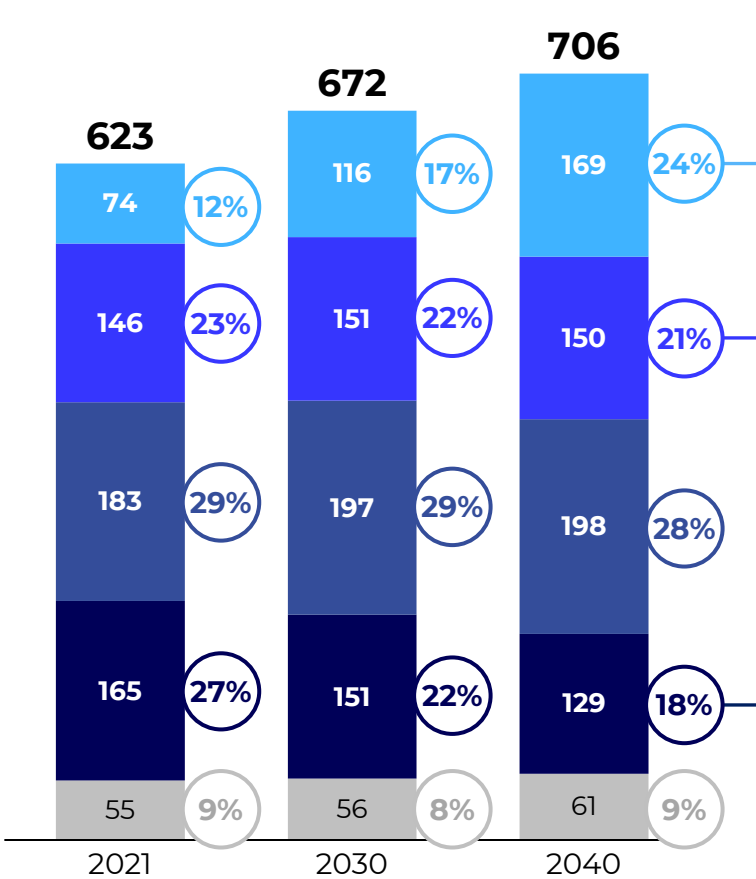
Focus:
**Powering
the Future**

Global energy transition

WORLD PRIMARY ENERGY SUPPLY

Unit: Exajoules

Renewables Natural gas Oil Coal Other



Source: IEA WEO 2022 Stated Policies Scenario

ENERGY DEMAND IN BANPU'S FOCUSED GEOGRAPHIES

Unit: TWh

2021

2030

ACCELERATING GROWTH

APAC

3,604

7,334

"The strong business case for renewables, combined with policy support, has sustained an upward trend in their share of the global energy mix."



US

874

2,668

Unit: bcm

2021

2030

CRUCIAL TRANSITION FUEL

APAC

920

1,043

"Natural gas to play a key role due to its flexibility of dispatchable energy, supporting the rapid build-up of renewables... [causing] the increase in natural gas consumption in emerging markets and developing economies."



US

871

864

Unit: Mt

2021

2030

STABILITY AND SECURITY

APAC

4,460

4,444

"Global coal demand plateaus in 2025. However, given the current energy crisis with all its uncertainties, a lurch into growth or contraction is possible."



Global energy transition – country-specific policies

1 Coal still critical baseload energy source



Coal-fired power projects in the pipeline have been approved to proceed with their developments (Indonesia, China)

2 Co-firing of coal-fired and gas-fired power plants

 **20% and 30%**

ammonia and hydrogen co-firing in coal-fired and gas-fired power plants respectively by 2030 (Japan)

 **100%**

ammonia and biomass co-firing in coal-fired power plants by 2050. Hydrogen co-firing in gas-fired power plants to start in 2035 (Vietnam)

   **CCUS***

technology adoption in gas-fired power to support decarbonization of the power industry (US, China, Japan)

3 Accelerating developments in renewables and clean tech

 **59 GW**

additional renewable capacity installed by 2030, focusing on solar, wind and energy storage (Australia)

 **69% share**

of BEVs and PHEVs by 2035, with THB 24 bn in subsidies to support domestic EV battery cell manufacturing (Thailand)

 **30% tax credit**

available to lower cost of installing rooftop solar, wind, geothermal and energy storage (US)

Note: *Carbon capture, utilization and sequestration

Source: IEA, Press

Climate ambitions

GHG emissions reductions by 2030

Through renewable energy expansion, energy efficiency, clean transportation, afforestation and reforestation, carbon pricing, etc. across geographies to limit global warming to 1.5°C

Carbon neutrality & net zero emissions

2050



Carbon neutral

2060



Carbon neutral

2065



Banpu: responsible transition

Banpu aims to transition responsibly to build a future which balances world's energy needs, environmental protection and social well-being.



Climate change mitigation

Investments in low-carbon, clean energy sources, energy efficiency, e-mobility, environmental protection and biodiversity preservation



Energy access and affordability

Continued supply of reliable and affordable thermal energy to support the rising share of intermittent renewable energy and energy decentralization



Social equity

Ensure the benefits and costs of transition among all stakeholders including communities, customers and workers affected by the changes

Transition portfolio



MINING



COAL-FIRED
POWER

BASELOAD



NATURAL
GAS



HELE & GAS-
FIRED POWER

LOWER-
CARBON



STRATEGIC
MINERALS



BATTERY
VALUE CHAIN



RENEWABLE
POWER



SOLAR
ROOFTOPS

CLEAN
ENERGY



E-MOBILITY



SMART CITIES
& EMS



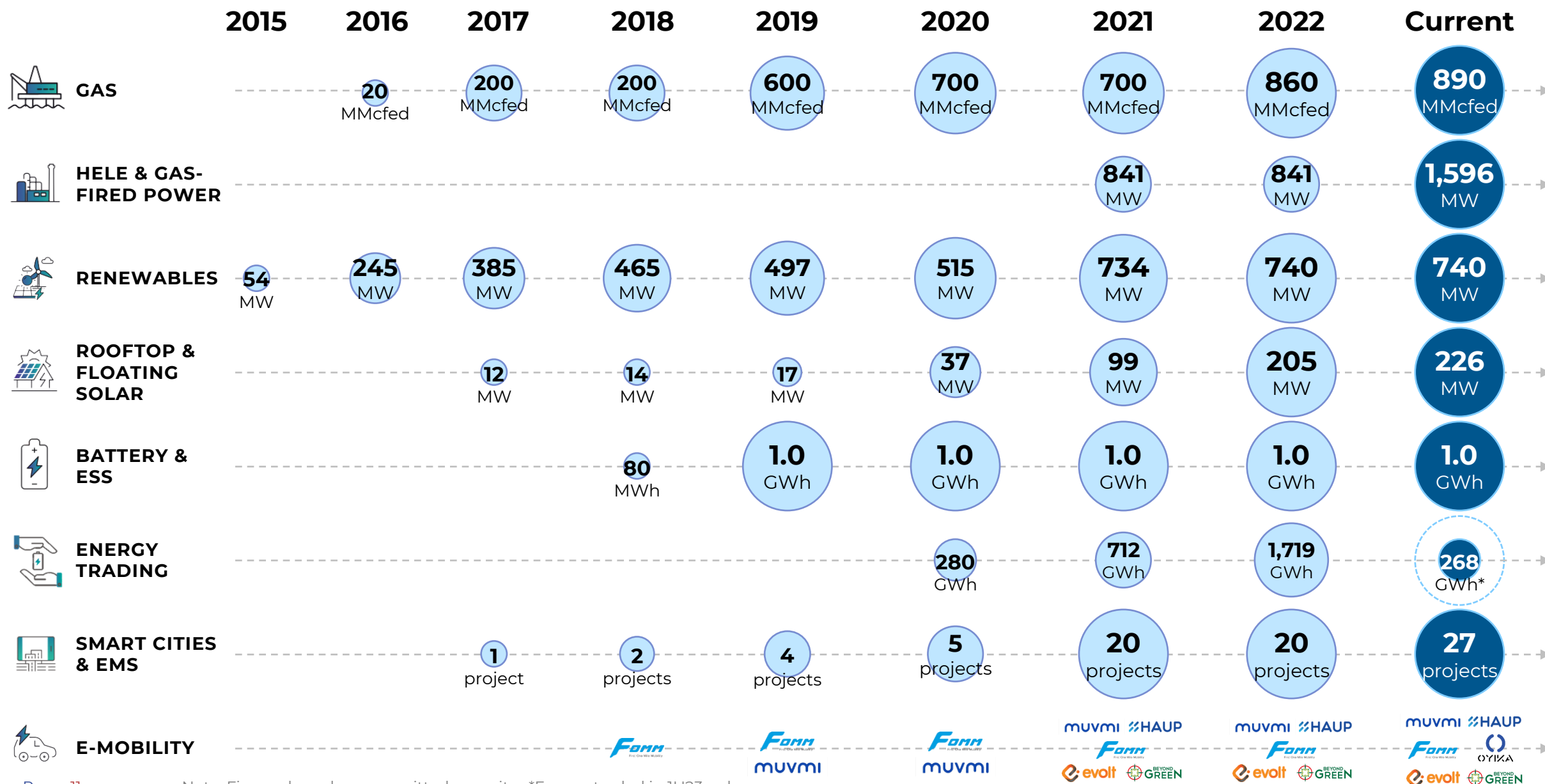
CCUS



NATURE-
BASED
SOLUTIONS

EMISSIONS
REDUCTION

Banpu: transition progress so far



Banpu: growing gas-fired power capacity

NEW ACQUISITION

TEMPLE II

Combined-Cycle Gas Turbine (CCGT)



ACQUISITION
PRICE

US\$460 M

INSTALLED
CAPACITY

755 MW

DEAL CLOSING
DATE

10 JULY 2023



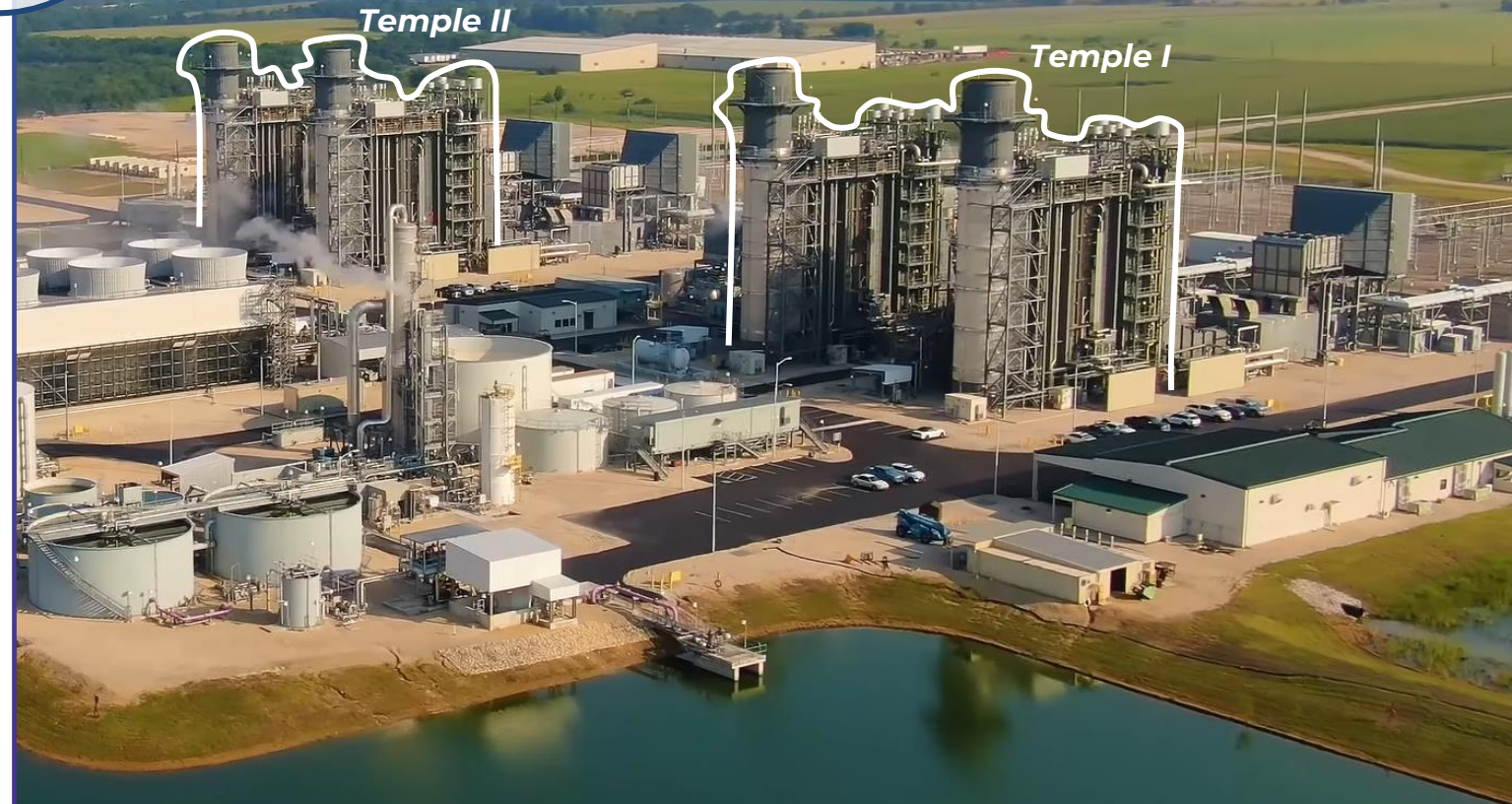
Immediate cashflow contribution with a proven track record of consistent operational performance since COD



Unlocking full potential of both Temple I and Temple II through greater flexibility, reliability and efficiency



Enhancing synergies across Banpu's US assets through integrated value chain of upstream and downstream gas



Banpu: integrated gas strategy in the US

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TEMPLE II

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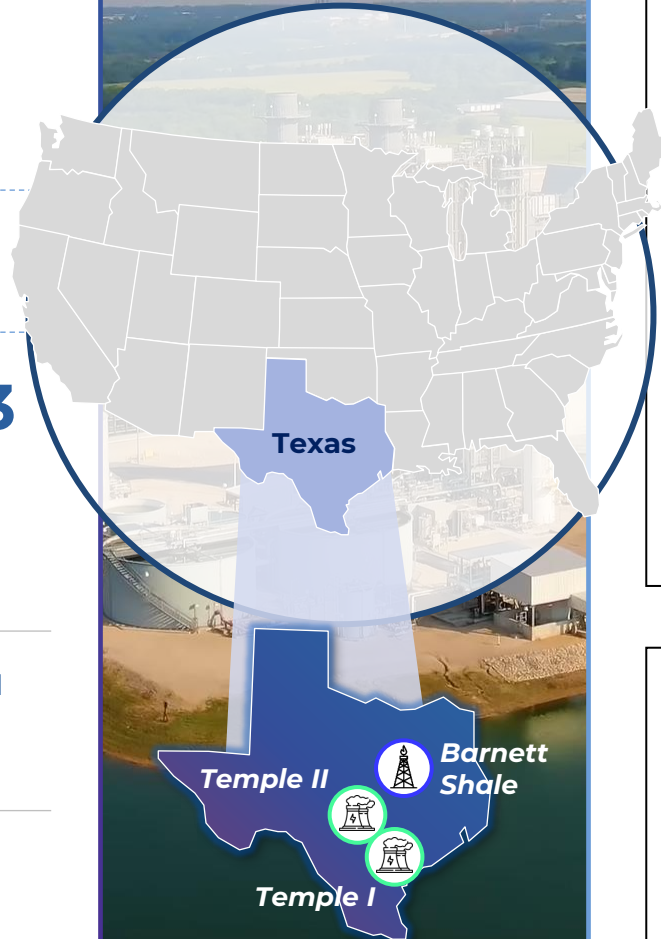
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Unlocking full potential of both Temple I and Temple II through greater flexibility, reliability and efficiency



Enhancing synergies across Banpu's US assets through integrated value chain of upstream and downstream gas



EXISTING ASSETS

Upstream and midstream

BARNETT SHALE

Shale gas assets with strategic location in proximity to Temple I and Temple II power plants allowing potential direct gas supply from the wells



NET
PRODUCTION

728 MMcfed



MIDSTREAM
PIPELINE

778 miles

Downstream

TEMPLE I

The first US power plant acquisition by Banpu located next to Temple II in the ERCOT North Zone



INSTALLED
CAPACITY

768 MW

Banpu: our purpose, vision and mission

■ PURPOSE ■

To deliver sustainable energy

■ VISION ■

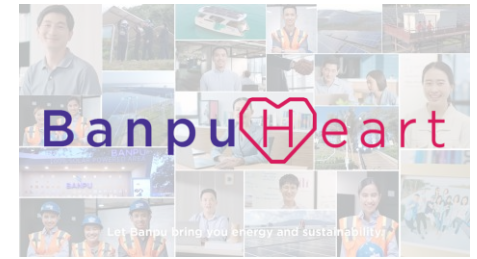
Asian energy company at the heart of **innovation, technology, and sustainability**

■ 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



With a wide variety of ethnicities, languages and cultures, Banpu people are united to achieve the company's vision and mission guided by the principles of Banpu Heart



Passionate



Innovative



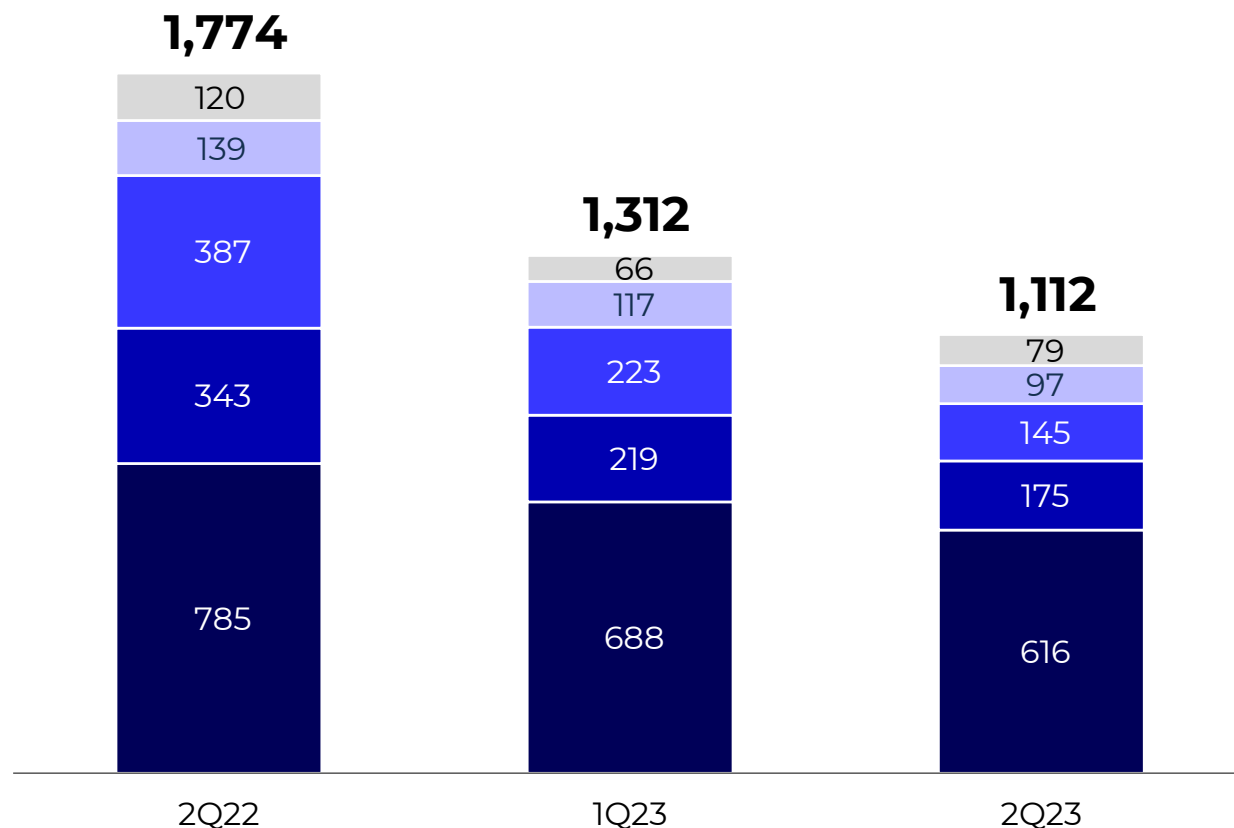
Committed

03

Financial Summary

Banpu consolidated sales revenues – 2Q23

USD million



-15% QoQ

-37% YoY

Others*

+20% QoQ

-34% YoY

Power

-17% QoQ

-30% YoY

Gas

-35% QoQ

-62% YoY

Coal Australia

-20% QoQ

-49% YoY

Coal Indonesia

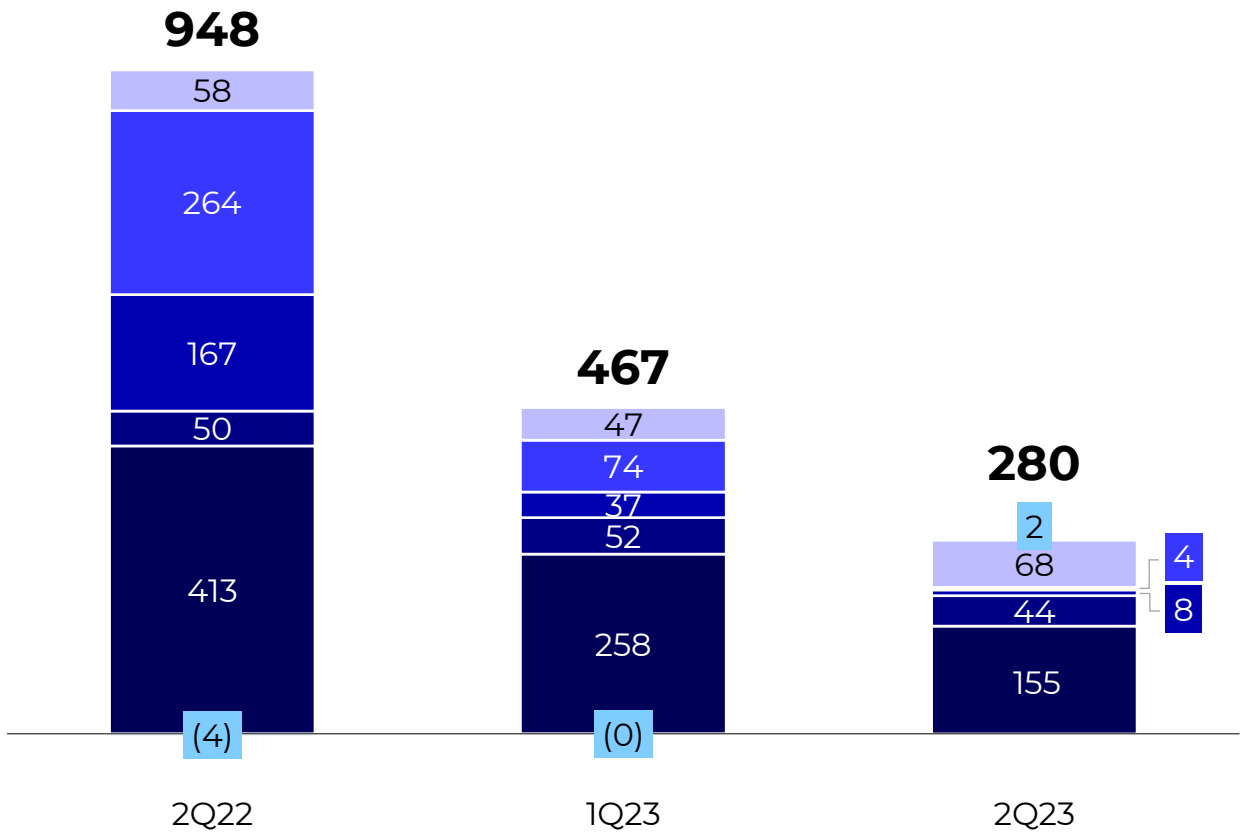
-10% QoQ

-21% YoY

Note: *Revenue from others includes coal trading, and other businesses

Banpu consolidated EBITDA – 2Q23

USD million



-40% QoQ

-70% YoY

Energy technology

n.a.

n.a.

Power

+43% QoQ

+17% YoY

Gas

-95% QoQ

-99% YoY

Coal Australia

-78% QoQ

-95% YoY

Coal China

-15% QoQ

-12% YoY

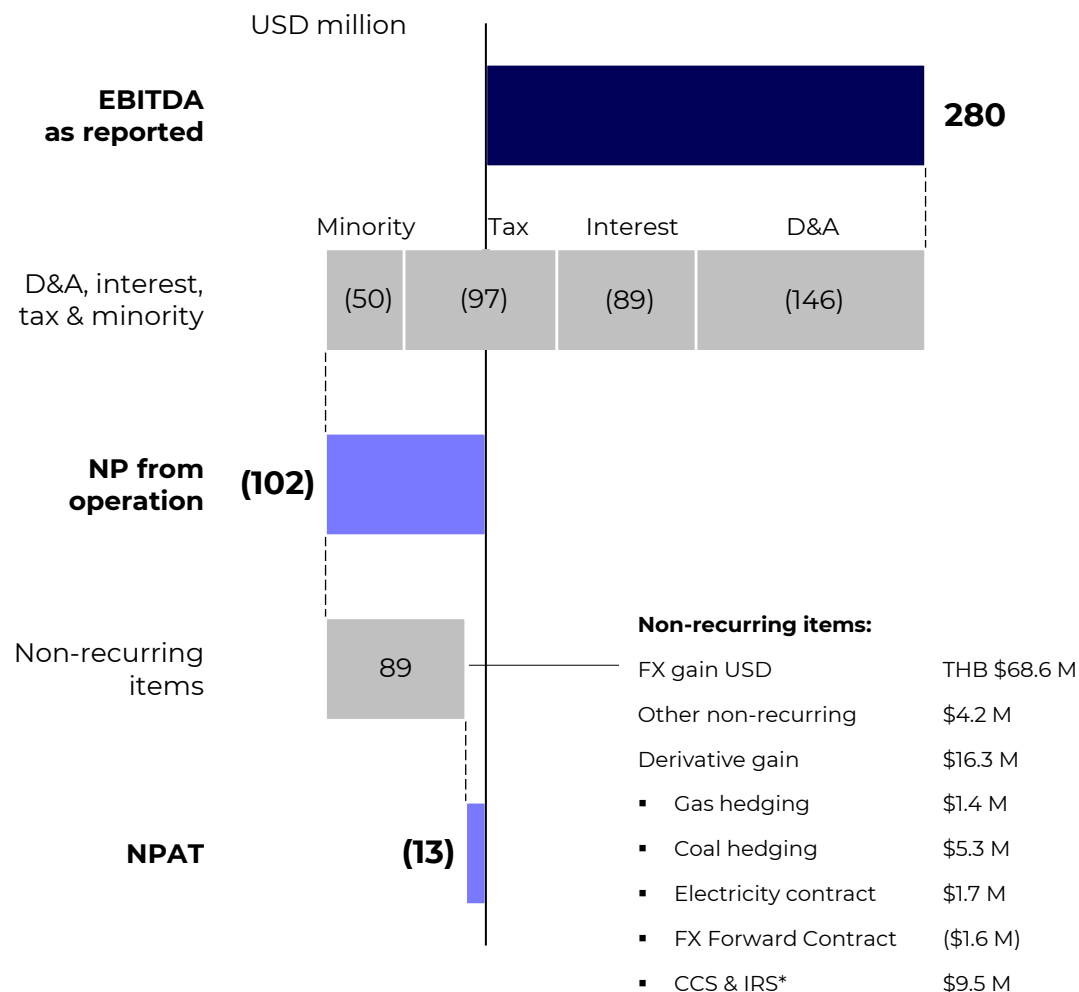
Coal Indonesia

-40% QoQ

-63% YoY

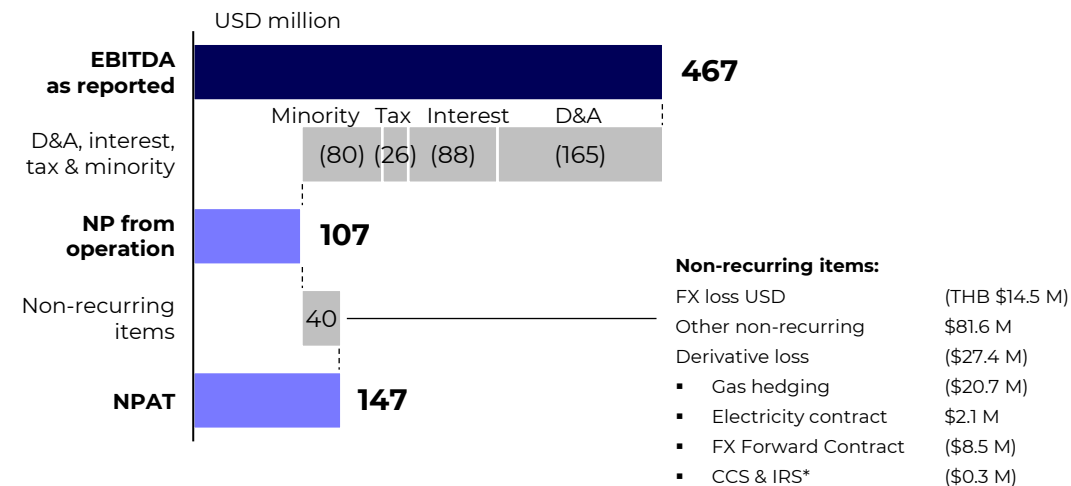
Banpu consolidated NPAT – 2Q23

2Q23 NET PROFIT AFTER TAX

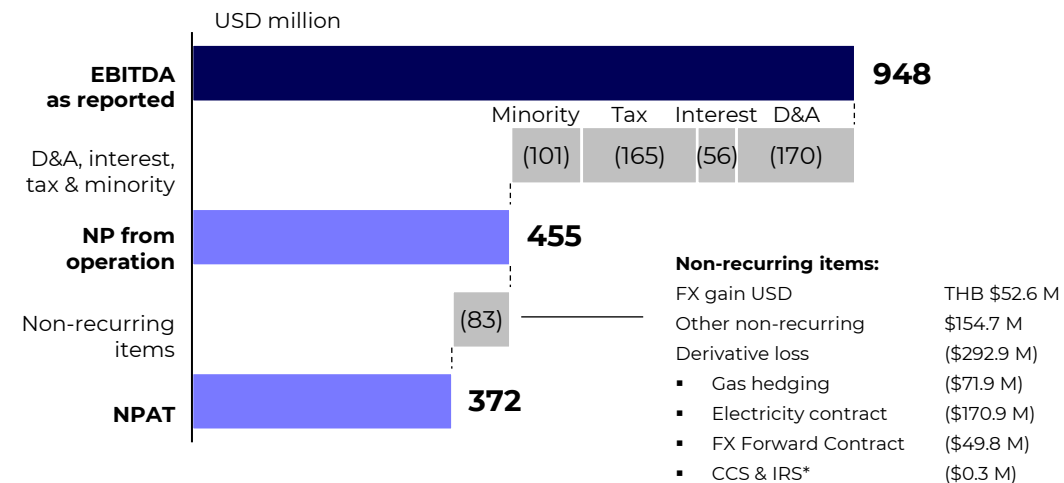


Note: *Cross currency swap, interest rate swap

1Q23 NET PROFIT AFTER TAX



2Q22 NET PROFIT AFTER TAX



04

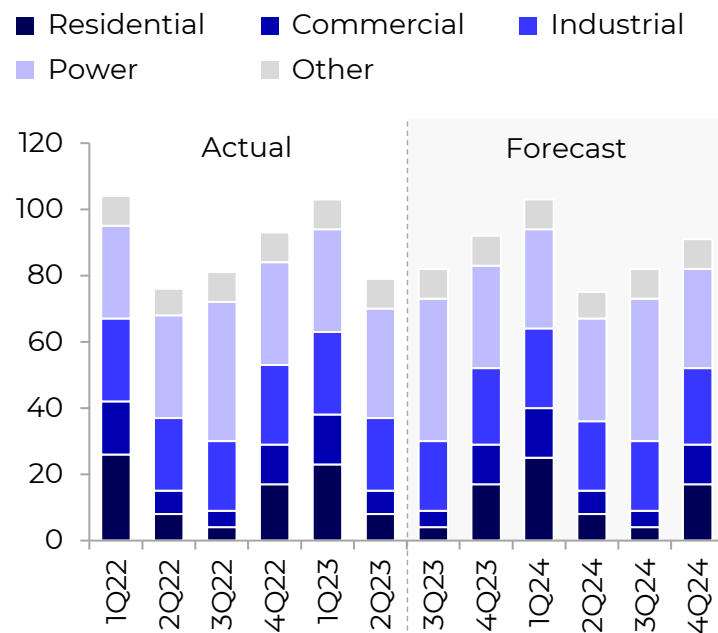
Energy Resources



U.S. gas market update

US CONSUMPTION & PROJECTION

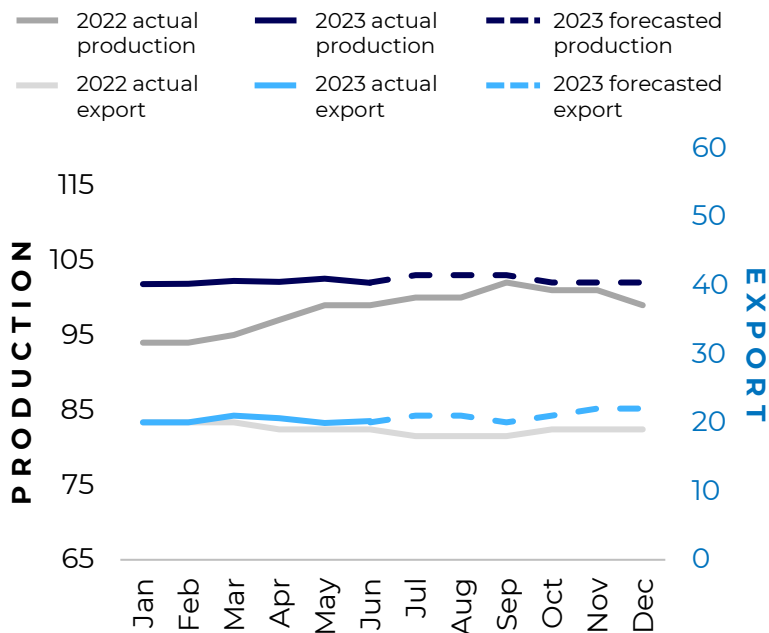
Unit: Bcf/d



- Consumption in the US averaged at 75.4 Bcf/d in 2Q23, fell 27% from 1Q23. Residential and commercial experienced the usual low-demand seasons.
- Consumption is forecasted to average at around 89 Bcf/d in 2023, a similar level to 2022.

US NATURAL GAS PRODUCTION

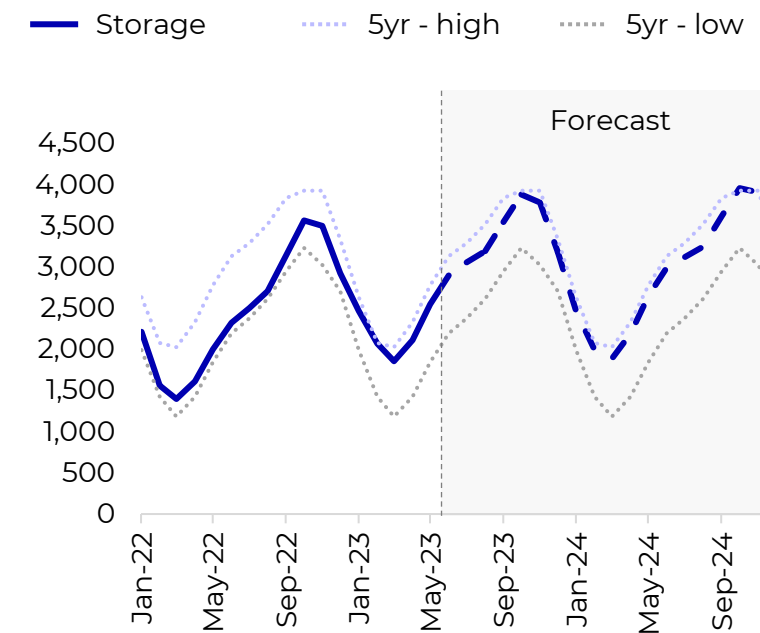
Unit: Bcf/d



- US gas production is at 102 Bcf/d in 2Q23, slightly flat QoQ, and is projected to remain at a similar level for the rest of the year, after increased drilling activities in the Haynesville and Permian basins and an expansion of pipeline infrastructures.
- US LNG exports are expected to increase to 12.3 Bcf/d in 3Q23, up 2% from 2Q23, and average at 12.0 Bcf/d in 2023, up 14% from 2022.

U.S. STORAGE LEVEL

Unit: Bcf



- Natural gas inventories in June 2023 ended at 2.9 Tcf, 14% higher than the 5-year average and around 0.6 Tcf higher YoY due to lower gas consumptions for heating amid warmer weather in early 2023.
- The inventories are expected to be normalized during the winter but will remain above the 5-year average in upcoming quarters.

Source: EIA Short-Term Energy Outlook (July 2023)

U.S. gas: gradual recovery of gas prices from 3Q23

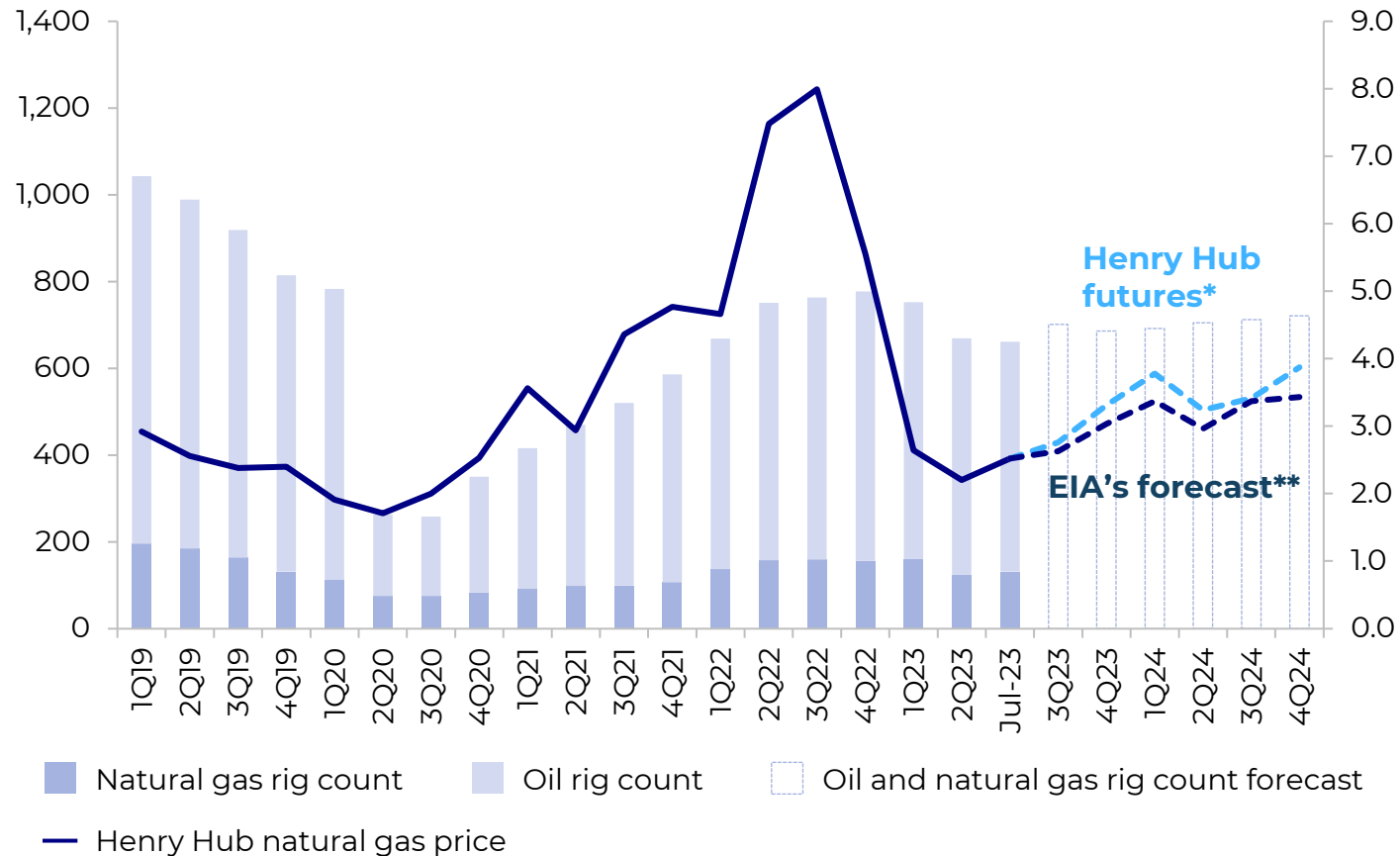
US RIG COUNT VS HENRY HUB PRICE

Us oil and natural gas rig count

Unit: rigs

Henry hub spot price

Unit: \$/MMBtu



COMMENTS

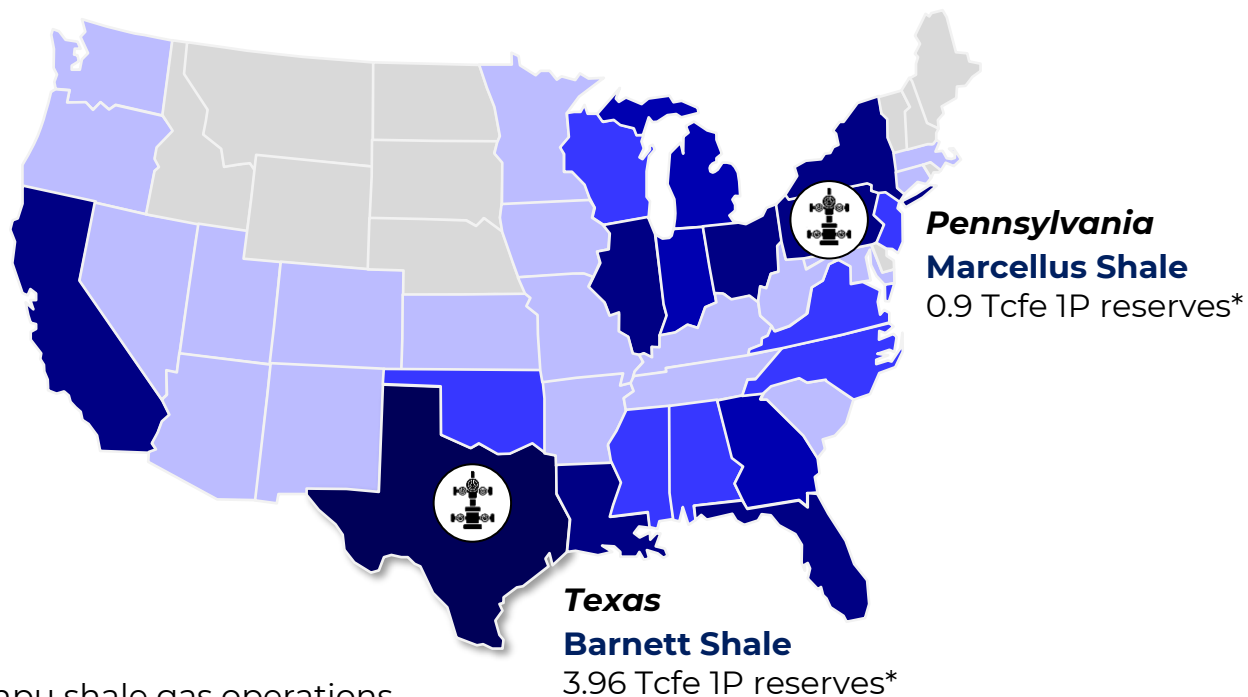
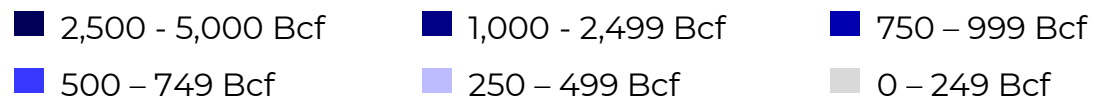
- Natural gas prices in 2Q23 decreased and are pressured by a higher-than-average inventory level, increased gas production, and record-warm winter.
- Oil and gas rigs decreased in 2Q23, down 11% from 1Q23 and about 35% lower than the early 2019 level. The growth of rigs level is expected to be relatively low towards the end of 2023.
- Henry Hub futures to improve to around \$2.6/MMBtu levels in 3Q23 before increasing to \$3.0-3.5/MMBtu levels in 4Q23 as the storage levels normalize and demand increases.

Note: *As of July 26th, 2023; **Short-Term Energy Outlook (July 2023)

Source: EIA Short-Term Energy Outlook (July 2023), Baker Hughes US natural gas rotary rig count (July 2023)

Banpu Gas: 2Q23 highlights

US DRY GAS CONSUMPTION 2021 BY STATE¹



Banpu shale gas operations

Average local price**

\$1.92/Mcfe -33% QoQ

Sales volume

80 Bcfe +1% QoQ

EBITDA***

\$4 M -95% QoQ

Notes: *As of (or, as applicable, for year end) December 31, 2022; ** Average local price = Henry Hub - basis differential; *** IFRS EBITDA. Significant differences between IFRS and BKV US GAAP EBITDAX include 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

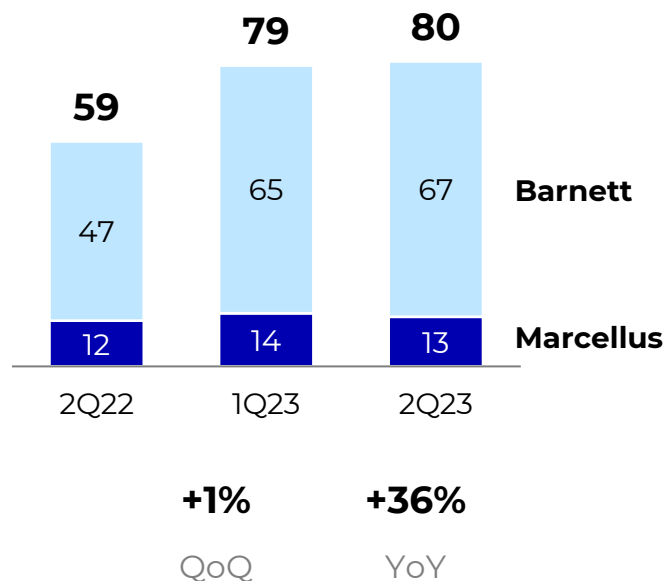
Source: (1) EIA

Banpu Gas: 2Q23 performance

2Q23 EBITDA of \$4M characterizes our resiliency and ability to survive period of commodity volatility through positive cash flow generation.

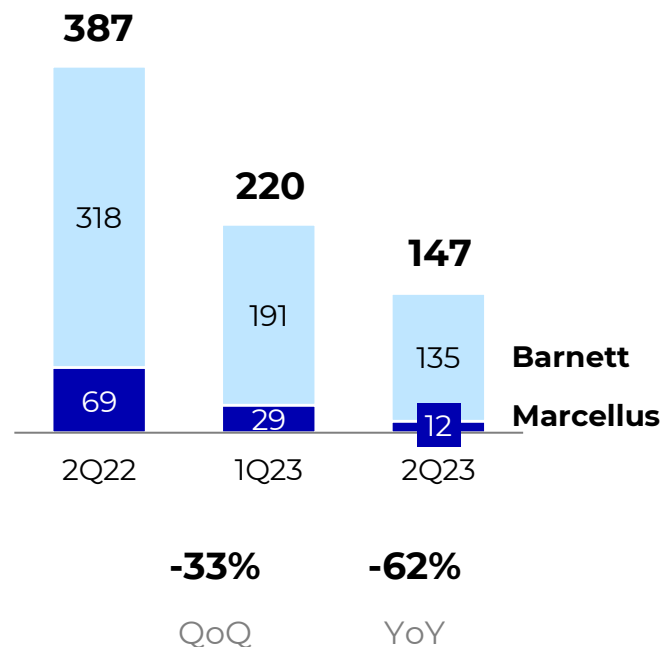
SALES VOLUMES

Unit: Bcf*



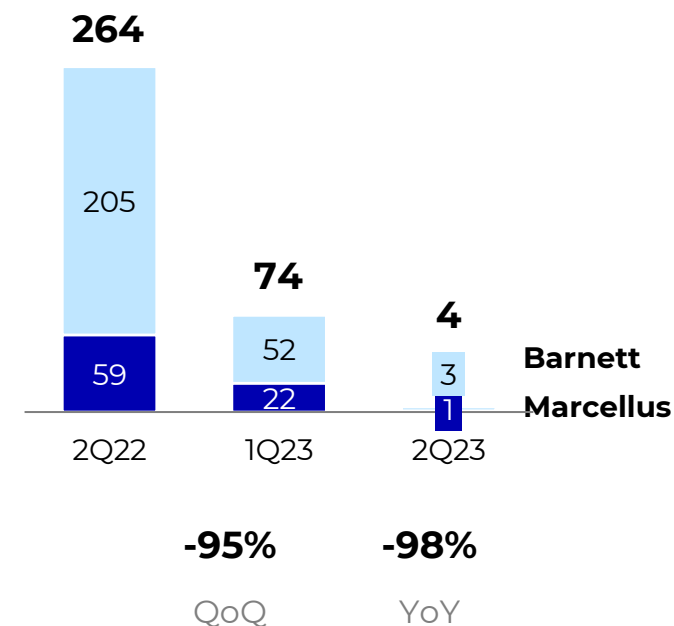
TOTAL REALIZED REVENUE**

Unit: US\$M



EBITDA***

Unit: US\$M



Note: *Bcf = Billion cubic feet equivalent; **IFRS total realized revenue. Significant differences between IFRS and BKV total revenues and other operating income include net derivative gains and losses, marketing, non-operated midstream revenues, and others; ***IFRS EBITDA. Significant differences between IFRS and BKV US GAAP EBITDAX include treatment of derivative gains and losses, depletion expense, accretion expense, stock compensation expense, BNAC expenses, equity income, and contingent consideration gains and losses of asset acquisitions;

Banpu Gas: progress in CCUS projects



Banpu Gas commits to net-zero targets as a part of Greener, Smarter strategy



US gas owned/operated upstream business emissions targets



Carbon capture, utilization, & sequestration

Banpu's US subsidiary is actively exploring investments in CCUS projects, which represents a major milestone towards its net zero goals.

Smarter energy for sustainability

The integration of CCUS projects in the US value chain marks a significant step for Banpu in reducing GHG emissions and minimizing environmental impacts. In addition, this also creates new opportunities for additional financial returns, while enhancing value for the company and stakeholders, and accelerating the drive towards sustainability in the energy industry.

HIGHLIGHT CCUS PROJECTS

Barnett Zero Project

- Natural gas produced in the Barnett is transported to a processing plant, where the CO₂ waste stream will be captured, compressed, and subsequently disposed of and sequestered through a nearby injection well.
- In June 2022, the project reached Phase 1 final investment decision (FID); drilling has commenced and first injection is expected by the end of December 2023.

US\$29-34 M

Estimated project cost

Up to 210,000 tons CO₂e

Estimated average Injection rate per year

Cotton Cove Project

- Will separate, dispose of, and geologically sequester CO₂e generated as a byproduct of our natural gas production in the Barnett, and will utilize our midstream assets to do so.
- In October 2022, the project reached FID and we are targeting commencement of CO₂ sequestration activities by the end of 2024.

US\$14-24 M

Estimated project cost

Up to 80,000 tons CO₂e

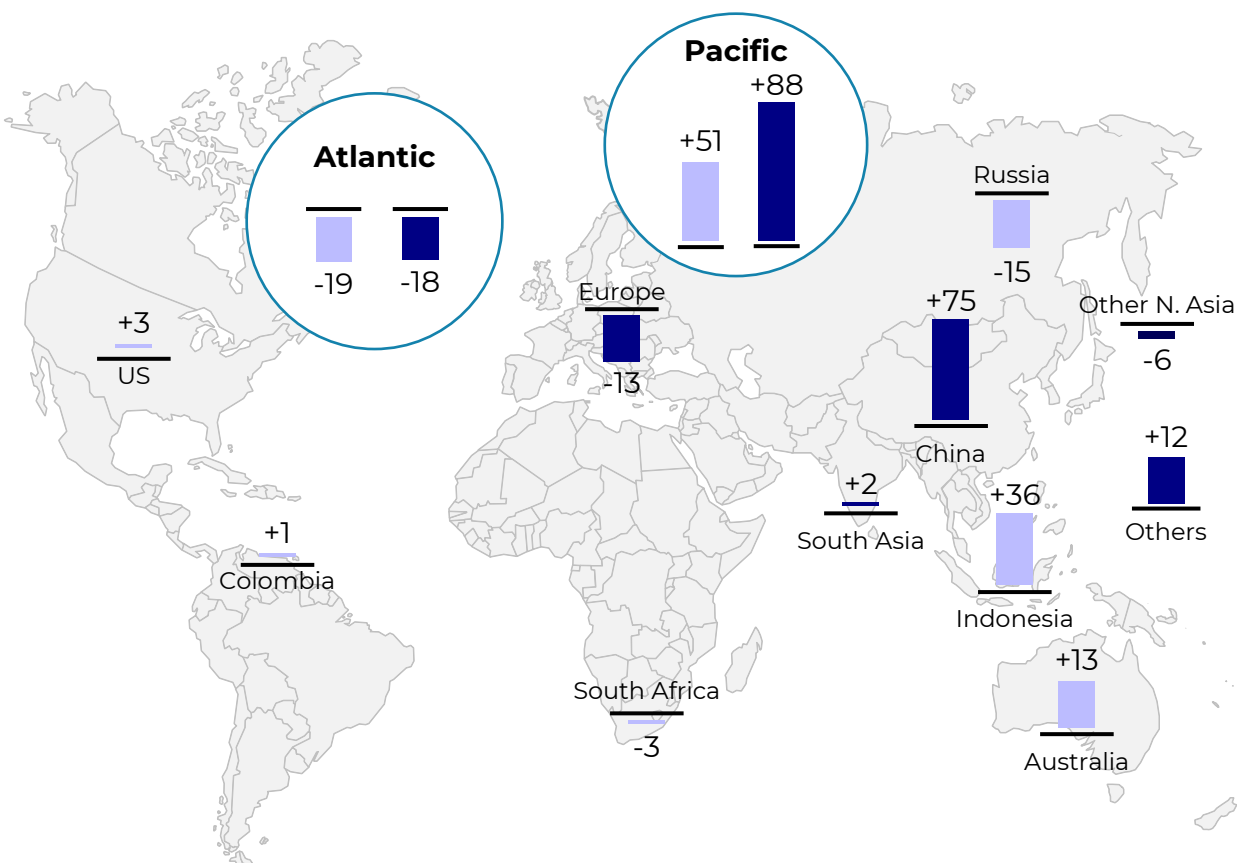
Estimated average injection rate per year



Global thermal coal market

COAL DEMAND AND SUPPLY CHANGE – 2023e VS 2022

Unit: Mt ■ Supply ■ Demand



Note: JKT stands for Japan, South Korea and Taiwan

Demand trends

Global thermal coal import is expected to grow strongly this year driven by China and Southeast Asia. HCV demand in Europe and East Asia dropped in the 1H largely due to subdued power demand. We expect heat wave in East Asia to drive coal use from June to August. However, low gas prices and weak economy in Europe push downward pressure on coal demand.

- **China:** Thermal coal import is likely to slowdown in the 2H but expected to remain at relative high level as imported coal is still competitive against domestic coal at the coastal area.
- **India:** Coal burn remains strong due to higher temperature, lower hydrogeneration and continued economic expansion.
- **JKT:** Muted power demand and high coal stocks suppressed coal demand in the 1H. Hot weather is expected to increase electricity usage in the coming summer.
- **Europe:** Coal consumption remains weak due to slow economy and low gas prices. Coal remains uncompetitive against gas and renewables.

Supply trends

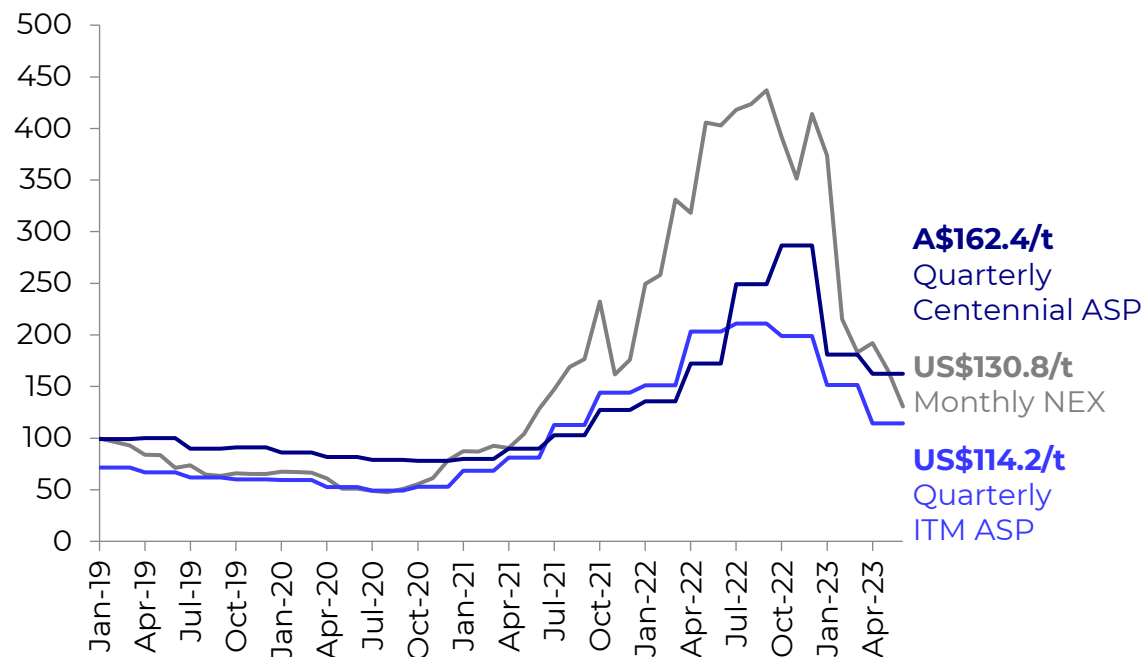
Global coal supply is expected to grow stronger than demand this year, driven by Indonesia and Australia, likely to result in oversupply. Weak European coal demand have been pushing excess coal from Colombia and South Africa into Asian market and is likely to continue in the 2H.

- **Indonesia:** Exports were strong in the 1H but the decline in prices may force some Indonesian miners to cut their output as the current coal prices have affected several producers' costs, especially low-CV producers.
- **Australia:** Exports are running smoothly despite ongoing labour availability issue. Exports to China have recovered rapidly.
- **Others:** Russian thermal coal exports continue to rely mainly on Chinese demand which may be suppressed in the 2H. Colombian producers have been pushing hard to secure business in China as European demand dries up. Logistic constraints in South Africa, Colombia and Russia persist.

Banpu ASPs vs thermal coal benchmark prices

BANPU ASP VS BENCHMARK PRICES

Unit: US\$/t; A\$/t for CEY



COMMENTS

- Seaborne premium thermal coal market continued its downward trend through Q2. Weekly GCNewc was at US\$199.58 in the 1st week of April and dropped to the bottom (US\$120.23/t) in the week of 23rd June.
- The lower quality thermal coal market has also been weakening through Q2. Weekly ICI2 decreased from US\$117.57 (7th April) to US\$86.60 (30th June), ICI3 started at US\$95.82 in the 1st week of April and ended the quarter at US\$67.42. ICI4 started at US\$72.48 in the first week of April and dropped to US\$51.32 in late June. In general, we see relatively strong support for lower spec thermal coal market thanks to the strong import demand from China.
- We anticipate that the global seaborne thermal market will be less volatile in the foreseeable future, as the overall demand/supply tend to be well balanced through the year.

NEX** (11th August 2023)

US\$144.3/t

ITM ASP* (2Q23)

US\$114.2/t

-25% QoQ

CEY ASP (2Q23)

A\$162.4/t

-10% QoQ

ASP domestic (2Q23)

A\$114.4/t

+25% QoQ

ASP export (2Q23)

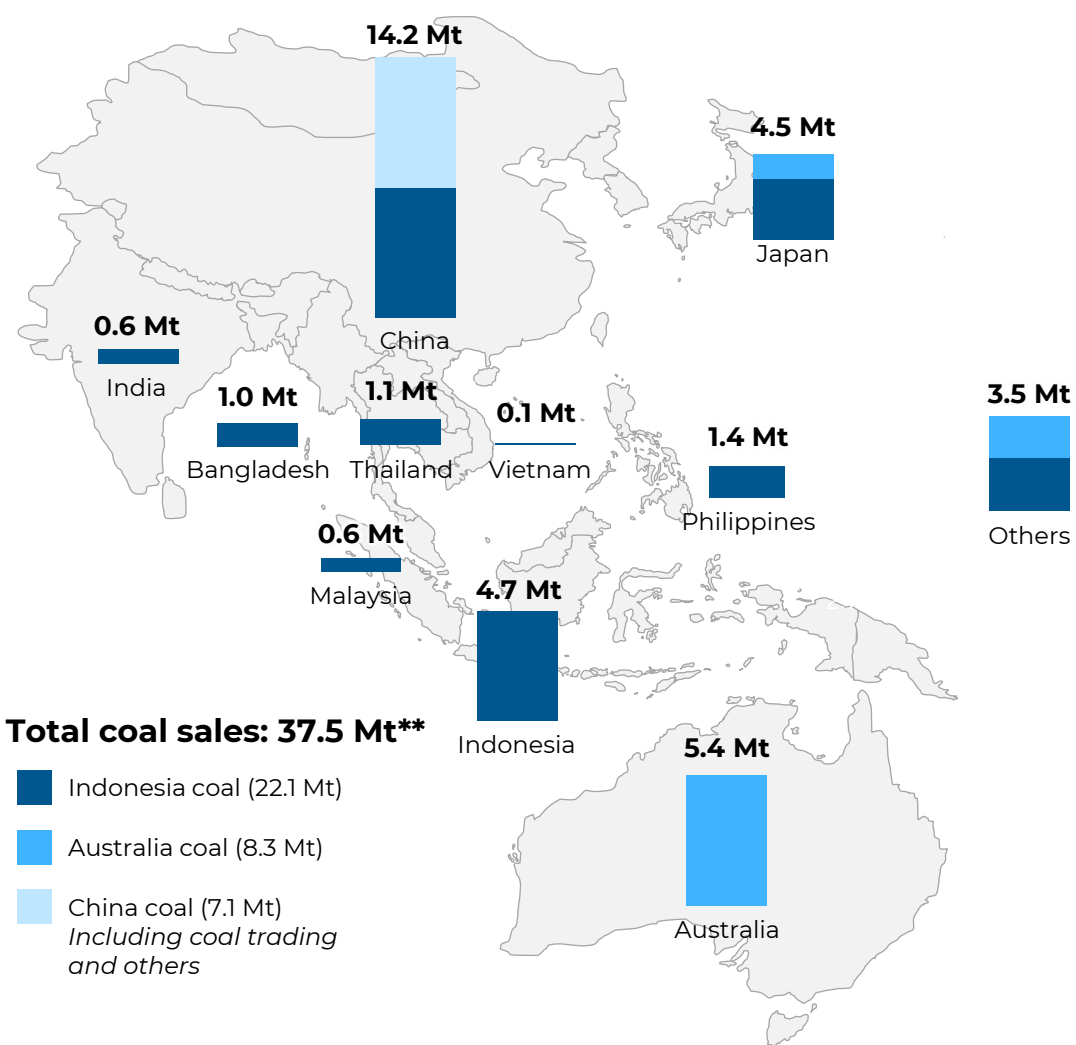
A\$269.8/t

-33% QoQ

Note: *Includes post shipment price adjustments as well as traded coal. CEY sales volume 2Q23 : 69% domestic & 31% export, 1Q23 : 71% domestic & 29% export; **The Newcastle Export Index (NEX)

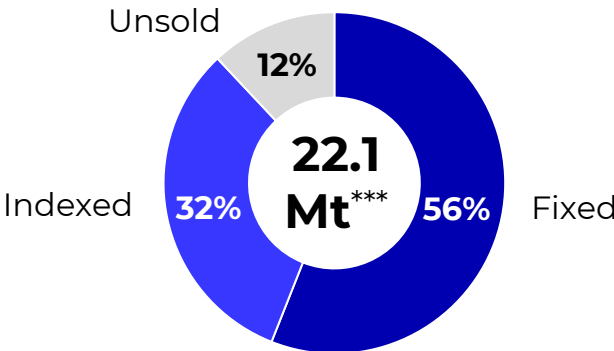
Banpu Mining: group coal sales and pricing status 2023e

2023e COAL SALES SOURCE* – DESTINATION ANALYSIS

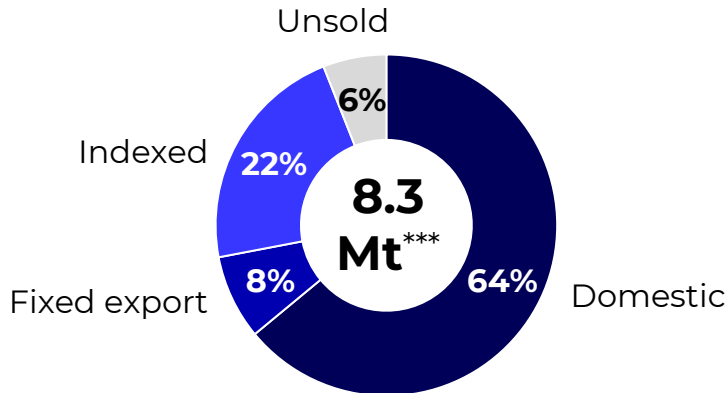


COAL SALES PRICING STATUS (2023e)

Indonesia

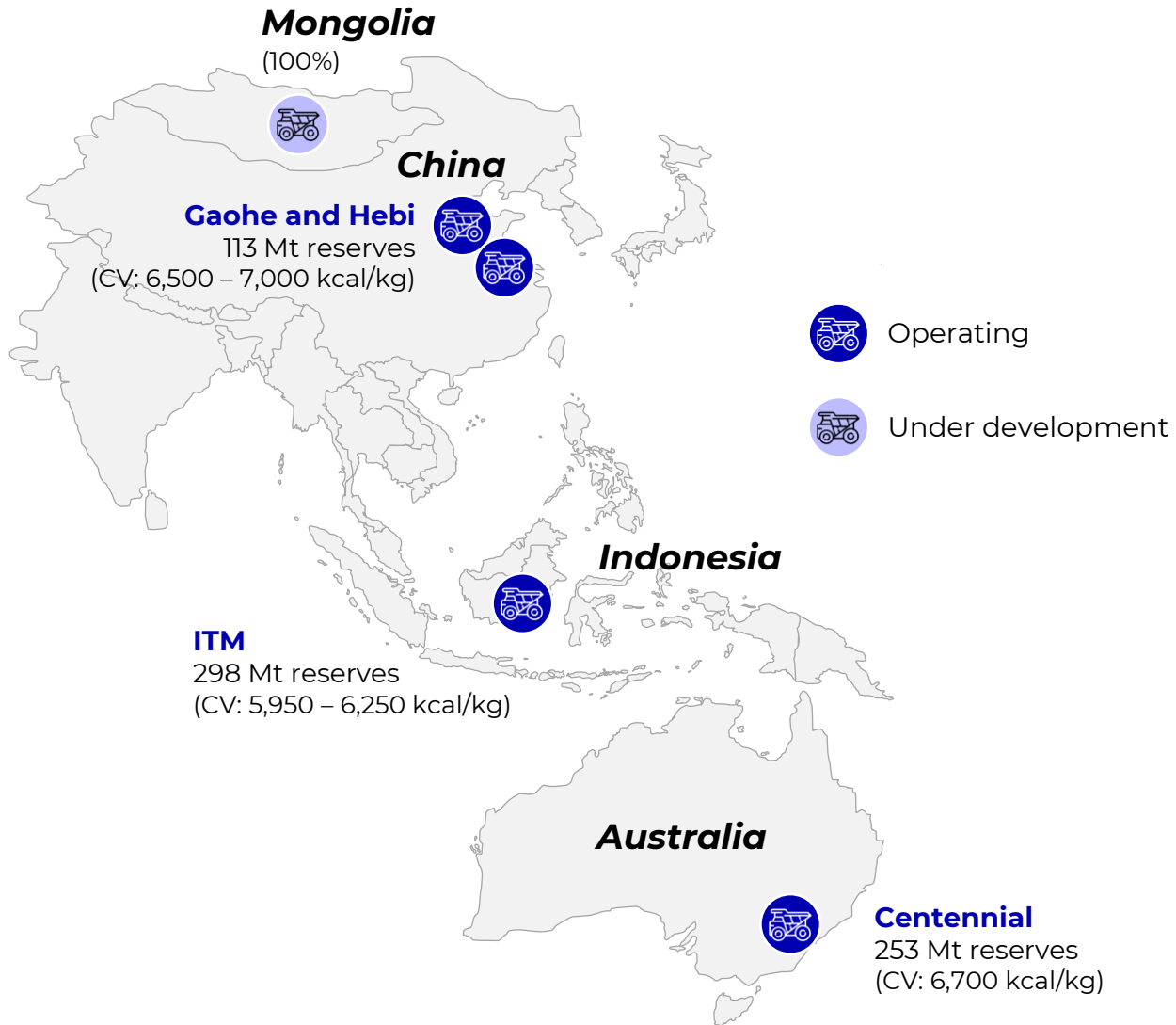


Australia



Notes: *Sales from Indonesia are included on 100% basis, sales from Australia and China are included on equity basis. Excluding Mongolia coal; **Illustrative target; Includes coal sales from domestic production in China; *** Target sales; Coal sales includes third-party sourced coal

Banpu Mining: 2Q23 highlights



Production volume*

8.9 Mt +9% QoQ

Sales volume*

10.5 Mt +14% QoQ

EBITDA

\$206 M -40% QoQ

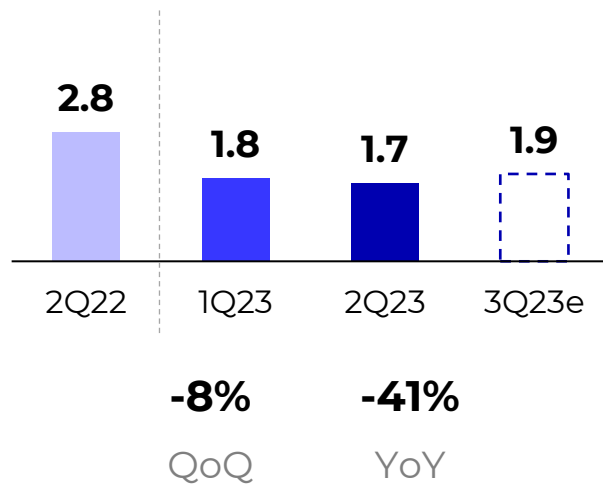
Note: Coal reserves at end 2022 and based on 100% basis. CV figures are air-dried basis

Banpu Mining: operational summary

ROM PRODUCTION AND KEY UPDATES (Mt)

Australia Coal

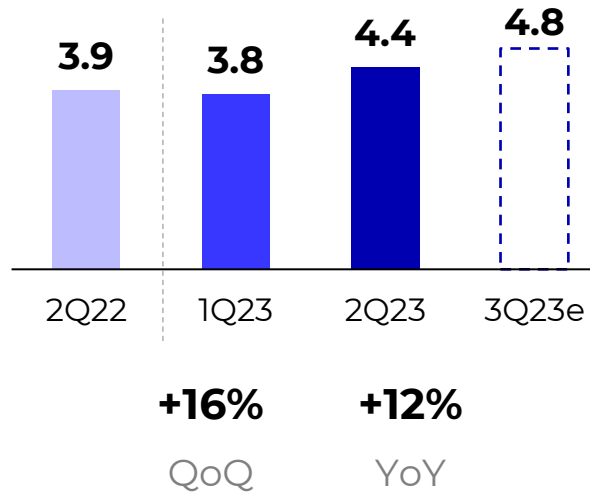
2023 target: 7.7 Mt



- Clarence and Myuna production was impacted by unfavourable strata conditions.
- Springvale delivered higher extraction tonnes whilst Mandalong commenced to relocate to the new Eastern Longwall blocks installing the new low height longwall.
- Labour constraints also contributed to lower than forecast production.

Indonesia coal

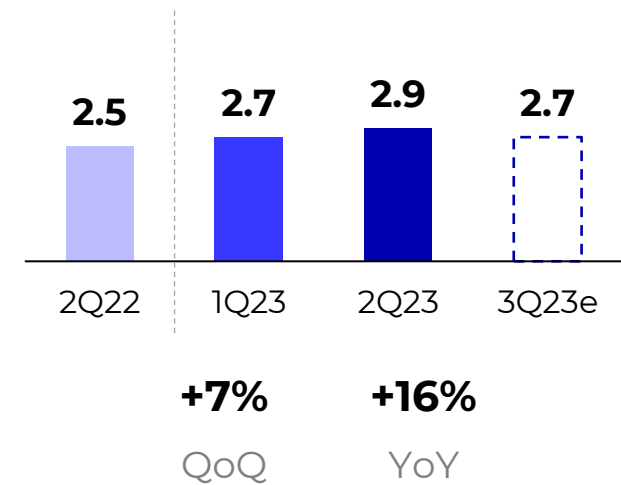
2023 target: 16.6 – 17.0 Mt



- 2Q23 production of 4.4 Mt exceeded the target of 4.1 Mt supported by higher production at Indominco and Bharinto.
- Higher production at 4.8 Mt is targeted in the Melak area for 3Q23 supported by good weather during the dry season.

China Coal

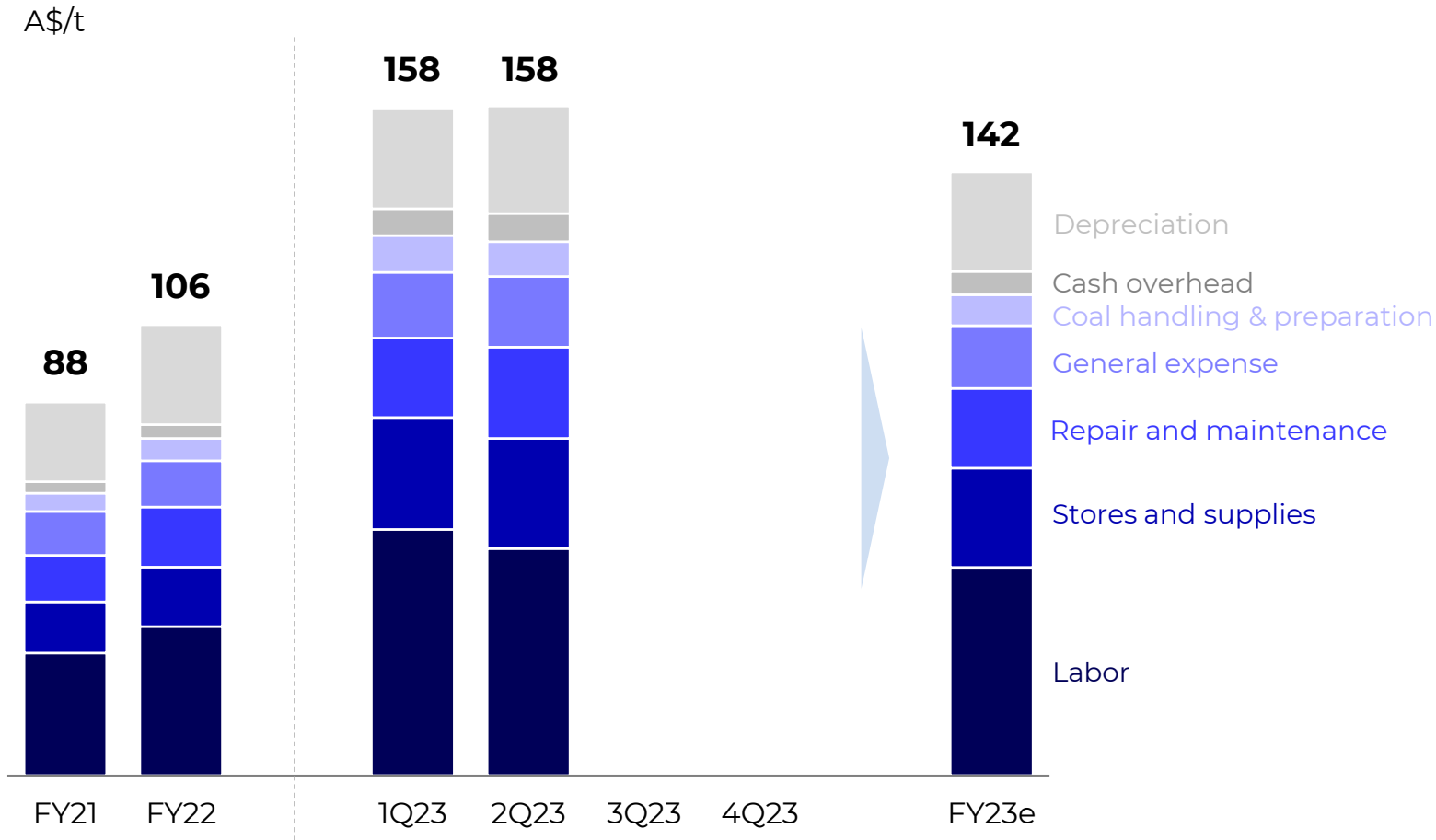
2023 target: 10.8 Mt



- Gaohe: Higher production and sales in 2Q23 to offset drop in coal prices due to weak demand.
- Hebi: Stable production in 2Q23 with retreat mining at LTCC3110 and installation of the LW mining equipment at LTCC3205 to ensure strong performance in 2023.

Note: Based on 100% basis

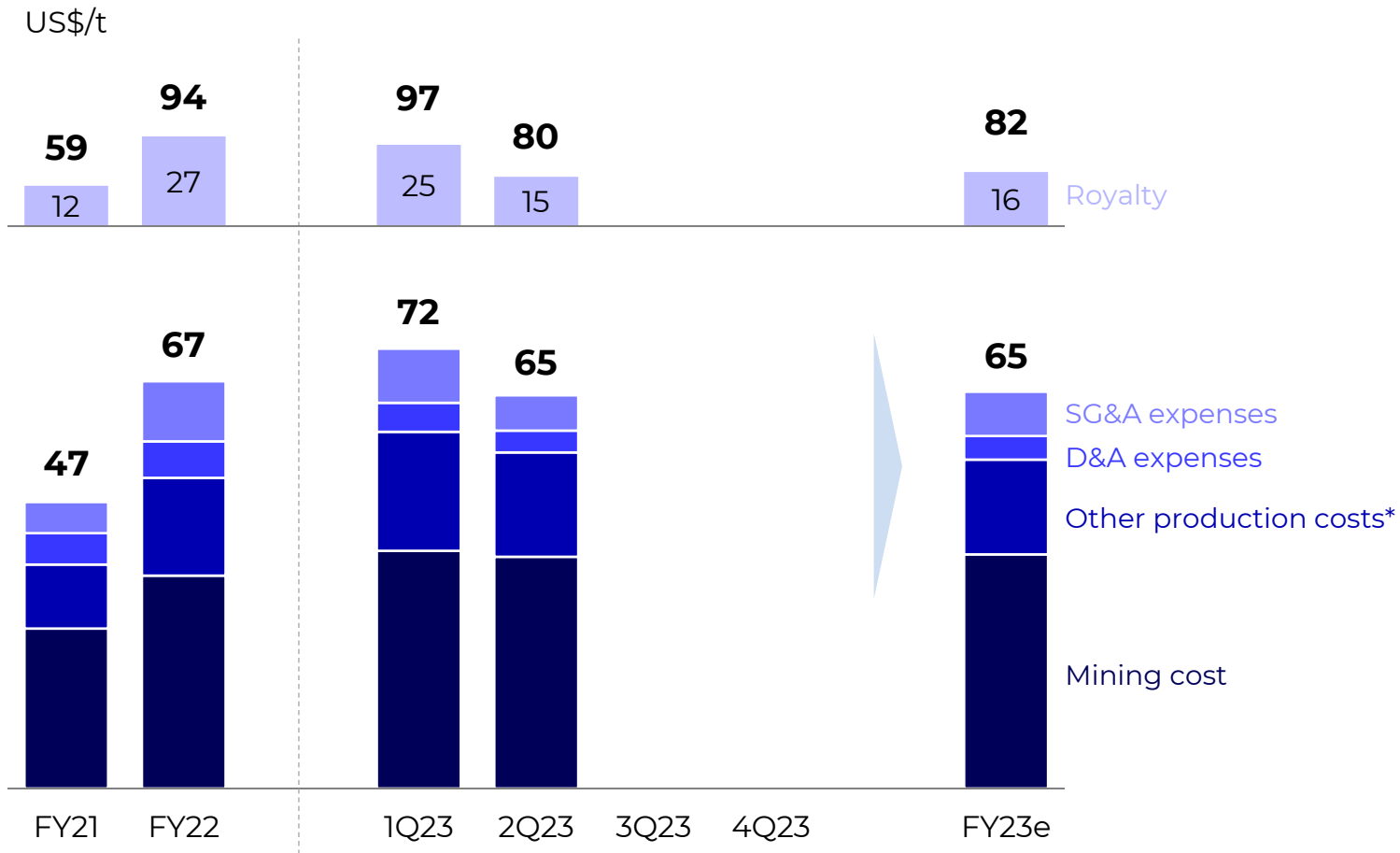
Banpu Mining: average production cost breakdown – Australia



- Production for 2Q23 was 8% lower than 1Q23, however costs per tonne remained in line.
- Production for 2H23 is forecast to increase from 1H23 therefore resulting in downward pressure on unit costs.
- Inflationary pressures continue to impact costs across all sites.
- Cost cutting measures for OPEX have been implemented in addition to a balanced approach to capital allocation at all sites.

Note: These figures do not include selling, distribution and royalty costs; based on 'sold' production

Banpu Mining: average total cost breakdown – Indonesia



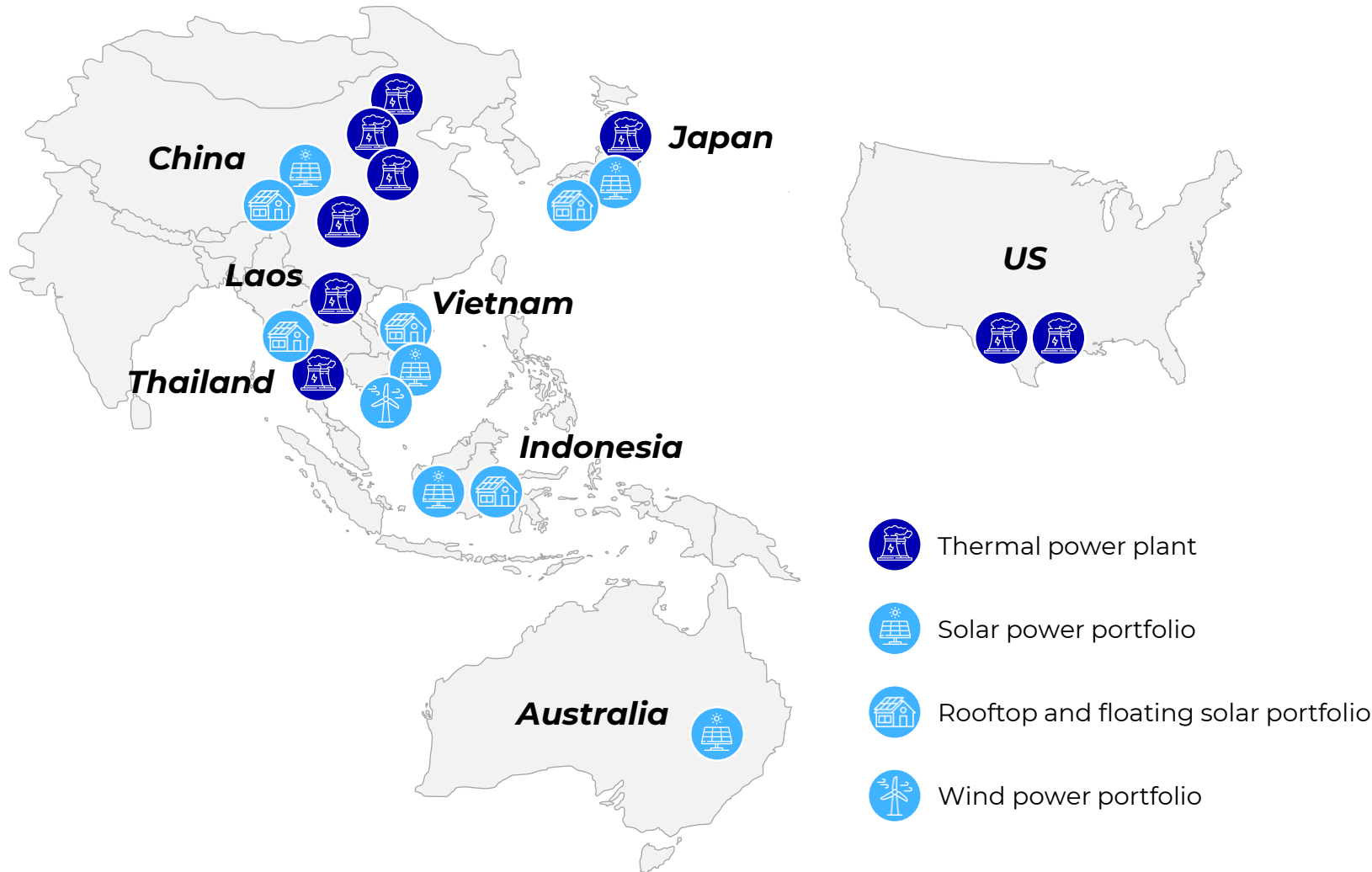
- Total cost excluding royalty decreased from \$72/t in 1Q23 to \$65/t in 2Q23 (-10% QoQ) due to:
 - Lower fuel price as one of the key cost drivers.
 - Implementation of cost control measures which started in the early 1Q23, have affected operational drivers, including fuel consumption, overburden distance, and coal hauling distance.
- 2Q23 royalty decreased to \$15/t (-39% QoQ) following the decrease in global coal prices.

Note: *Including repair and maintenance, salaries and allowances, inventory adjustment, others etc.

05

Energy Generation

Banpu Energy Generation: 4,974 MW committed capacity



8 countries

operations across
the Pacific Rim

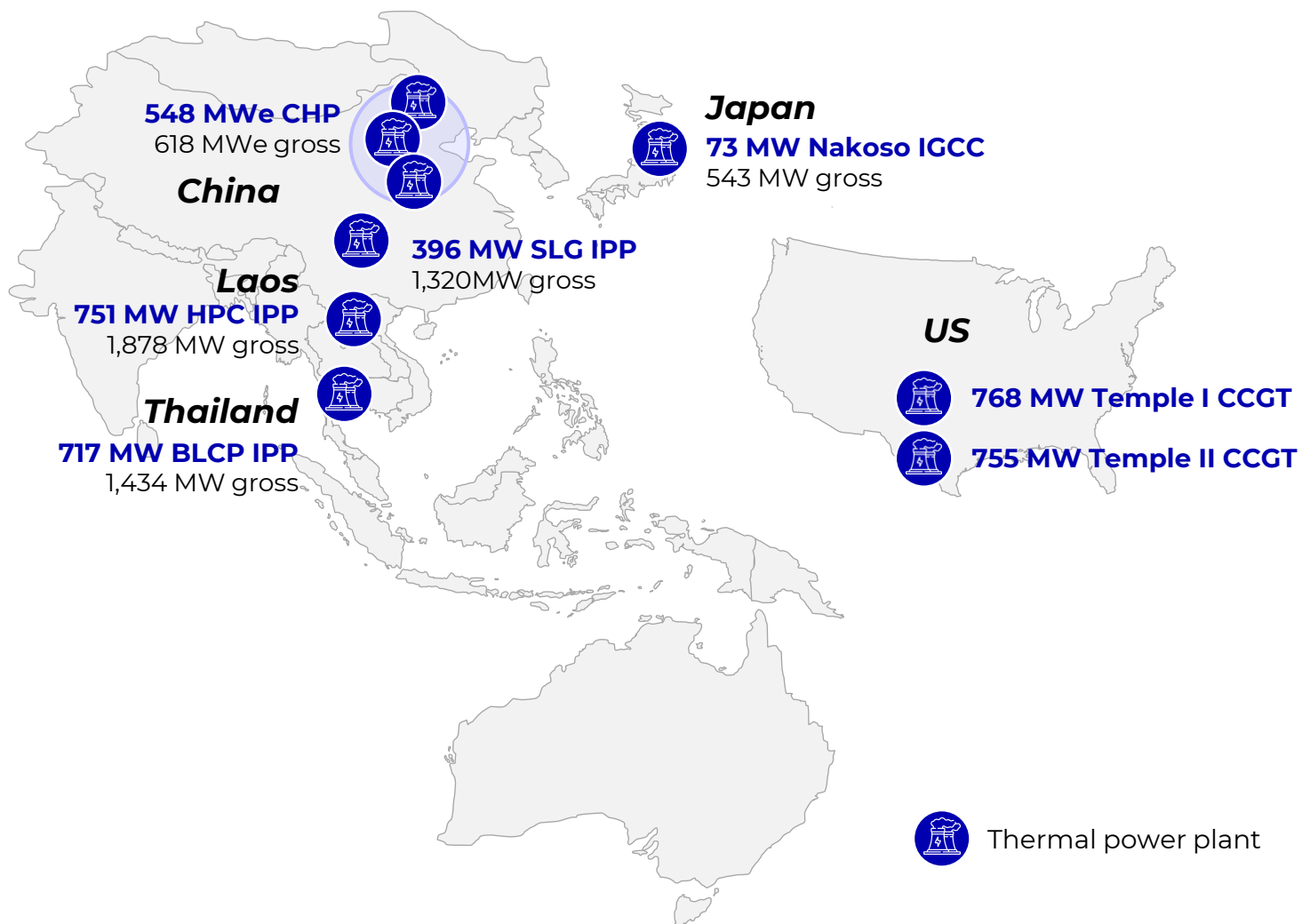
4,008 MW

committed thermal
equity capacity

966 MW

committed renewables
equity capacity

Banpu Thermal Power: 2Q23 highlights



EBITDA

\$68 M

+43% QoQ

Achieved EAF

90%

at HPC

99.8%

at BLCP

77%

at Temple I

n.a.

at Nakoso

Note: MWe is MW equivalent

Thermal Power: 2Q23 updates



HPC

Despite facing the 1st semi-annual test and an unplanned outage due to a Boiler Tube Leak, the team managed to maintain a high EAF

90% EAF -1% YoY

THB 6.0 bn revenue

THB 3.7 bn EBITDA

THB 1.1 bn share of profit



BLCP

BLCP has achieved an outstanding EAF and impressive profits, while managing operations without planned maintenance.

99.8% EAF +5% YoY

THB 4.6 bn revenue

THB 1.0 bn EBITDA

THB 189 M share of profit



SLG

Conducted efficient maintenance on Unit 1's 1000 kv transmission line and completed FGD modification for Unit 2. Despite a seasonal decline in electricity sold, their prudent coal pricing led to a positive net profit.

1,003 GWh net power sold

RMB 2 M share of profit



China CHP

Lower YoY electricity sales due to reduced steam demand and ceased BFG supply at ZP, but higher YoY steam sales at LN and higher tariff at ZD due to utilization of TOU mode

RMB 240 M Revenue

RMB 16 M EBITDA

(RMB 8 M) share of loss



Temple I

The plant achieved a positive operational net profit, supported by good spark spread in June, despite spring planned outage from 28 April to 22 May 2023.

77% EAF -21% YoY

952 GWh net generation

USD 41 M revenue

USD 8.7 M share of profit**



Nakoso IGCC

In 2023, the plant plans a temporary closure for equipment adjustments during its early operations in order to ensure long-term reliability and sustainability.

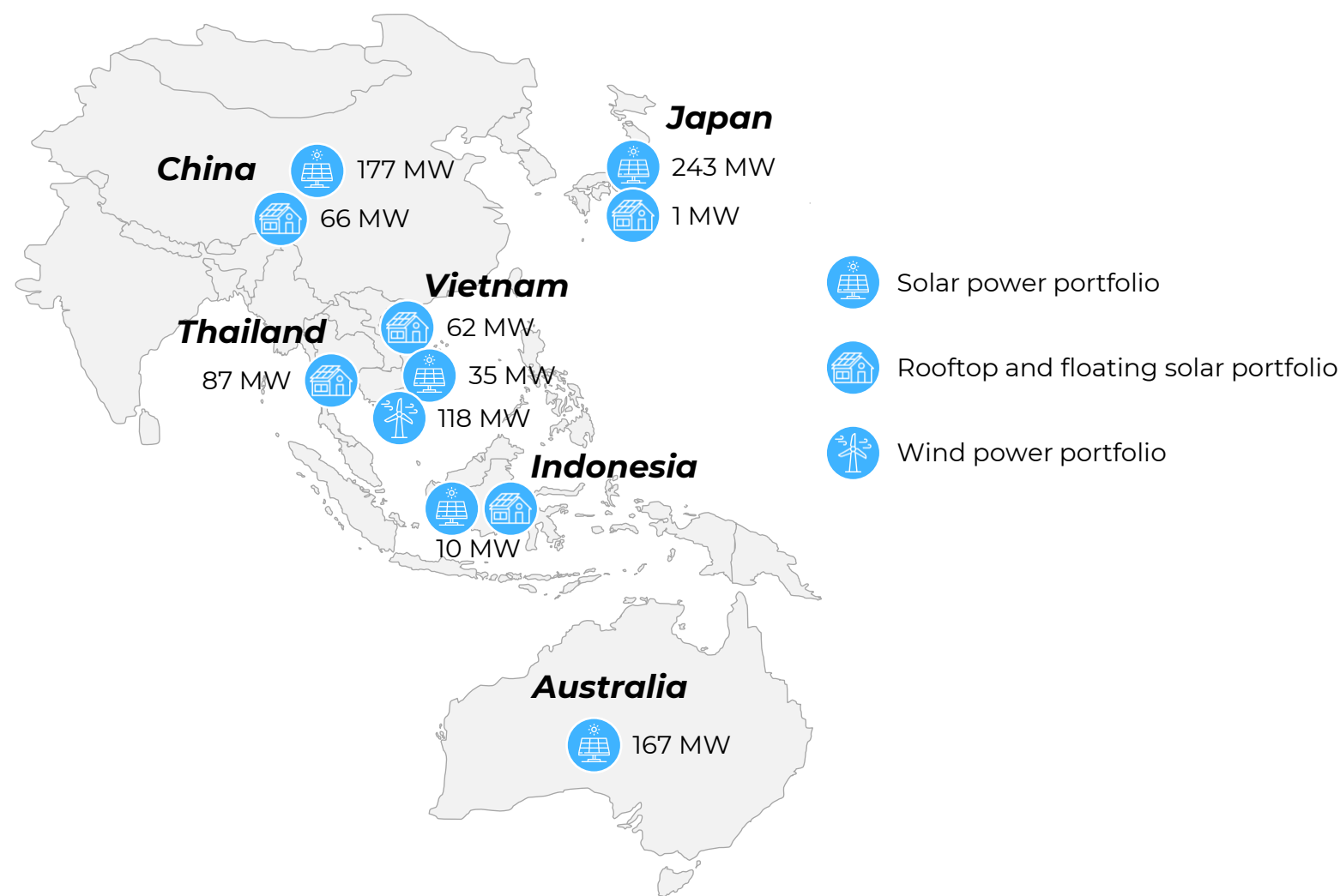
n.a. EAF

n.a. GWh net generation

THB 38 M share of profit***

Note: *Equivalent Availability Factor (EAF) is a percentage of a given operating period in which a generating unit is available without any planned and unplanned shutdown or deratings;
Includes USD 2.8 M gain on derivatives; *Includes THB 134 M compensation as per the long-term service agreement

Banpu Renewable Power: diversified Asia-Pacific portfolio



966 MW

committed renewables capacity across Asia-Pacific

Committed capacity

622 MW

solar power

226 MW

rooftop and floating solar

118 MW

wind power

Renewable Power: 2Q23 updates



China Solar

Increased power sold QoQ due to improved irradiation and higher capacity factor.

15.9% avg. capacity factor
61 GWh power sold +9% QoQ
RMB 49 M EBITDA
RMB 15 M profit contribution



Japan Solar

Good irradiation has contributed to a favorable capacity factor and substantial increase in power sold QoQ.

16% avg. capacity factor
63 GWh power sold +47% QoQ
JPY 317 M cash distribution



Australia Solar

Despite a lower capacity factor due to seasonality, the plant managed to drive a positive net profit in 2Q23

14% avg. capacity factor
38 GWh power sold
AUD 3.2 M share of profit



Vietnam Solar

Nhon Hai Solar demonstrated a strong capacity factor and achieved higher power sold QoQ.

19% avg. capacity factor
15 GWh power sold
USD 0.3 M share of profit



Vietnam Wind

El Wind Mui Dinh

18% avg. capacity factor
15 GWh power sold
USD 0.9 M EBITDA
(USD 0.8 M) share of loss

Vietnam Wind

Vin Chau project

- Completed construction and commissioning activities
- On process of COD documentation with the relevant authorities



Energy Technology

Energy technology: current position and future targets



Solar: rooftop & floating
incl. 49% in Solar ESCO

2Q23

226 MW
Committed capacity

2025 target

500 MW



Battery & ESS solutions

Li-ion battery
production capacity

Durapower

1.0 GWh

**Thailand battery
production JV**

In progress

Battery farm

Iwate Tono project

In progress

3.0 GWh

1.0 GWh

58 MWh



**Smart cities &
energy management**

27 projects

Energy management,
smart infra, etc.

60 projects



Energy trading

268 GWh

Electricity sales
(in 1H23)

2,000 GWh

(annually)



E-Mobility

muvmi
Ridesharing

FORM
BEYOND GREEN
EV

HAUP
Carsharing

evolt
EV charging

OYIKA
Battery
swapping

MaaS
Mobility-as-a-service

2030 target

**INTEGRATED
CLEAN ENERGY
ECOSYSTEM**



Energy technology: 2Q23 rooftop and floating solar updates



Solar: rooftop & floating

THAILAND SOLAR ROOFTOP AND FLOATING PROJECTS

87 MW

Total committed capacity

New contract signing with King Pac Industrial, Sigma Plastics Asia, Rajamangala University of Technology, Hatyai Village, NSL Foods, and other private companies in 2Q23 increased by 63.5 MW from 23.5 MW in 1Q23.

ZHENGDDING SOLAR ROOFTOP DEVELOPMENT

66 MW

Total committed capacity

Committed capacity of solar rooftop project at Zhengding CHP has potential to increase to 167 MW by 2023. The first operation of 9.6 MW is targeted to commence by 2Q23.

IBP CONTINUES SOLAR PROJECT DEVELOPMENT

9.7 MW

Total committed capacity

IBP has signed additional solar rooftop PPA of 1.0 MW in 2Q23. Currently, the total installed capacity is approximately 5.8 MW.

Energy technology: ‘Infinite Cafe powered by Banpu NEXT’

BANPU NEXT

X
ROOTS

InfiniteCafe

POWERED BY BANPU NEXT

Thailand's 1st 100% Clean Energy Pop-up Cafe

Opens daily from 7:00 a.m. to 1 p.m.
until 24 Sep 2023, at Benjakitti Park, Bangkok

SMART ENERGY SOLUTIONS BUSINESS SHOWCASE

Banpu NEXT and Roots, a renowned Thai coffee brand, have partnered for a special project to create a futuristic, smart and sustainable business showcase and support businesses contributing to Net-Zero, while creating value in all aspects.



“A Cup to Net-Zero”

- Sustainable coffee bean production
- Beverage recipes that reduce CO₂ emissions
- Store operations and construction
- Use of environmentally friendly materials



Total CO₂ saving: **1,329,980 grams***

*As of 31/07/2023

INSTALLED 4 SMART ENERGY SOLUTIONS



Smart energy

100% off-grid solar system and batteries to ensure stable usage without reliance on the main grid or other power sources.



Smart operation & digital platform

Display of the real-time energy usage data of the cafe and the total CO₂ saving from clean energy usage and beverage consumption.



Smart waste management

Digital platform for waste management to ensure waste is processed efficiently and appropriately.



Smart mobility by MuvMi

Ride-sharing for a greener journey to the cafe through MuvMi electric tuk-tuk services.

Energy technology: 2Q23 battery and ESS solutions updates



Battery & ESS solutions

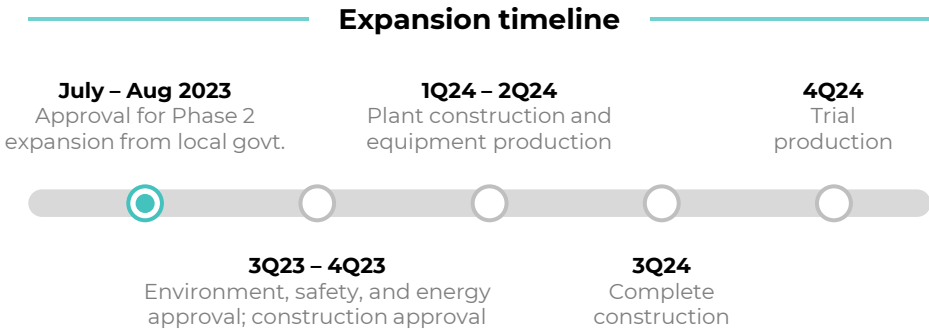


DURAPOWER PHASE 2 EXPANSION



2 GWh

Target manufacturing capacity upon completion of Phase 2 expansion by end of 2024



THAILAND BATTERY PRODUCTION PLANT JV

BANPUNEXT

70%

durapower

30%



1.0 GWh

Expected COD by 2Q24

To be located in Amata City Chonburi, the battery plant will focus on the production of NMC batteries to supply heavy duty electric vehicles (buses, trucks, boats, etc.)

Energy technology: 2Q23 smart cities and energy trading updates



Smart cities & energy mgmt.



DISTRICT COOLING SYSTEM DEVELOPMENT THROUGH BANPU NEXT AND SP GROUP'S JV

Dhanarak Asset Development (DAD), a wholly-owned subsidiary of the Thai Ministry of Finance, has selected BNSP to develop District Cooling System (DCS) at Government Center Building Zone C, Chang Wattana.

APPLICATIONS

-  EaaS, i.e., chilled water supply
-  EV chargers
-  EV buses
-  Renewable energy sources

potential

14,000 RT*

Installed capacity

- Concession period: 20 years
- Expected COD: 2024

62,000 tons

Avg. CO₂ reduction over project lifetime



Energy trading



ENHANCED MARKETING AND SALES THROUGH MARKET LINKED PRICE OFFERING AND SUPPLY AGREEMENT AWARDED THOROUGH TENDERINGS

268 GWh

Accumulated 1H23 sales

- 60% market-linked price products
- 40% fixed-price contracts obtained through tendering (mostly hedged to minimize potential risks)

Over 500

small to medium-sized clients

- 8 utility grid areas
- Participate in the electricity market through market-linked price products and tenders

Energy technology: 2Q23 e-mobility updates



E-mobility



STRATEGIC INVESTMENT INTO EVOLT TECHNOLOGY TO SUPPORT ITS NEW PROJECT AND CHARGING NETWORK EXPANSION



23.81%

Current shareholding position
(Increased from 20.0% in 1Q23)

THB 150 M

Total investment

BUSINESS DIRECTION

EVOLT will continue to expand its charging network into automotive, energy, real estate, and other industries.



BEYOND GREEN RECENT VEHICLE DEPLOYMENTS



17-seater electric minibus

Provided one minibus to Buriram Kids Castle Co., Ltd. for transit services within the Buriram Inter School (BRIS).



14-seater electric minibuses

Provided two minibuses to J-Park Shopping Mall in Sriracha, Chonburi province, to support tourist transit services.



8 golf cars

Provided for hotel transit services at Anantara Koh Yao Yai Resort & Villas in Phang-Nga province.

Appendix

Banpu: 'integrated energy solutions' 2023

ENERGY RESOURCES

Shale Gas



890 MMcfed*
Net production

ENERGY GENERATION

Renewable Power



740 MW
Committed capacity

ENERGY TECHNOLOGY

Rooftop & Floating Solar



226 MW
Committed capacity

Mining



37.5 Mt
Coal sales

Thermal Power



4,008 MW
Committed capacity

Clean Energy Tech



1.0 GWh (100% basis)
Li-ion batteries



E-mobility services
E-mobility solutions



Smart Cities &
Energy Management



268 GWh
Electricity trading

Note: *As of 30th June 2023

Natural gas: reserve and production term

Reserve

Definition

- BKV utilizes oil and gas reserve definitions that conform with the definitions set forth by the US SEC. The following are categories of oil and gas reserves:
 - Proved Developed Producing (PDP)
 - Proved Developed Not Producing (PDNP)
 - Proved Undeveloped (PUD) - adjacent to a producing well
 - Probable (in the same area as production but not adjacent) (PROB)
 - Possible (contingent on additional drilling) (POSS)
- Reserves have to be economically viable.

Production

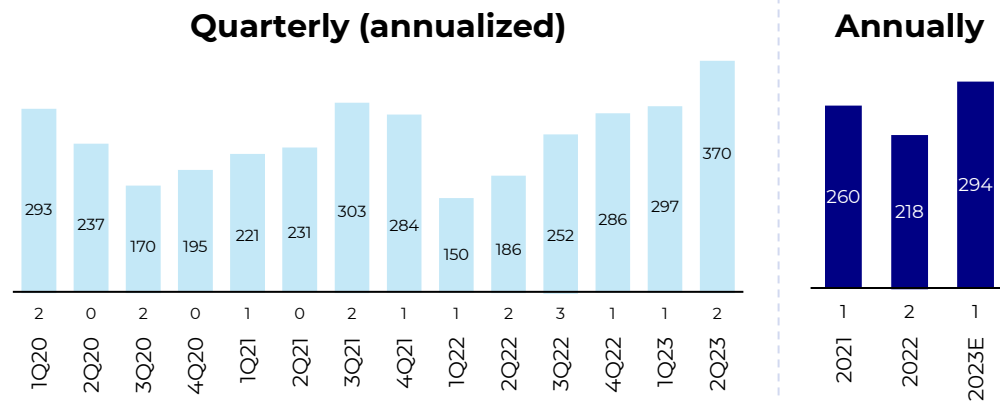
Production unit

- In the US, production is measured in 1,000 cubic feet (Mcf)
- 1000 Mcf = 1 MMcf
- 1,000,000 Mcf = 1 Bcf
- 1,000 Bcf = 1 Tcf
- 1 Mcf = 28.3 meters³
- 1 Mcf = 1.0 Million BTU (MMBTU) or Decatherms (dry gas)
- 1 Bcf = 1.0 Trillion BTU
- 1 meter³ = 35.3 Mcf
- 1 billion meters³ = 35.3 Bcf

China: warm winter and slow economic recovery dented coal demand

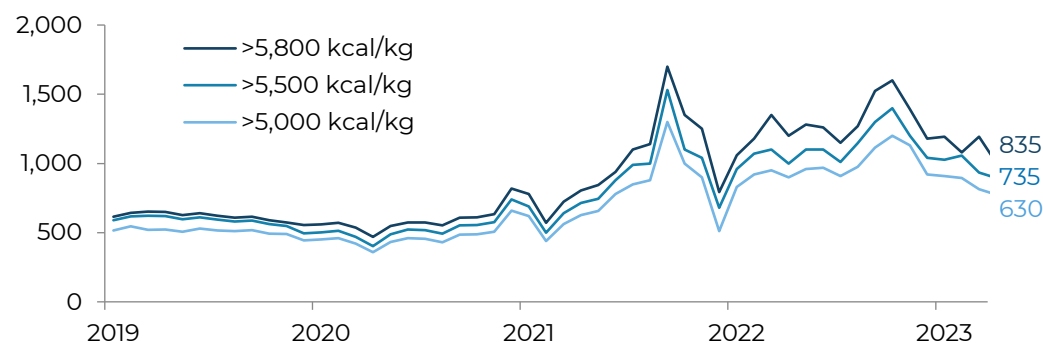
CHINA THERMAL COAL IMPORTS/EXPORTS*

Unit: Mt



CHINA DOMESTIC COAL PRICES

Unit: RMB/t



Note: *Includes lignite but excludes anthracite imports/exports

Source: www.sxcoal.com/cn (13th July 2023), Banpu MS&L

2Q23

- China's GDP grew by 6.3% YoY in Q2 over the low 2022 base due to Covid lockdowns. Weak industrial production resulted from declining exports amid a global slowdown.
- A heatwave increased coal burn in the north, while heavy rainfall boosted hydropower in the south, reducing coal demand.
- Government has continued to call for an increase in supplies of coal, while reiterating its zero-tariff policy for coal imports, to ensure sufficient supply for summer.
- China produced 2.3 bnt of coal in the first half of 2023, up 4.4% or 110 Mt from 2.19 bnt in the same period 2022.
- China's thermal coal imports reached their highest level in Q2 despite economic challenge. China imported 92 Mt of thermal coal in Q2 which was 99% higher year-on-year, brings 1H-2023 imports to 167 Mt, 98% higher from 1H-2022.
- Imports from Australia and Russia achieved a new record.
- The elevated import level coupled with continuing strong domestic supply has pressured domestic coal prices.

OUTLOOK

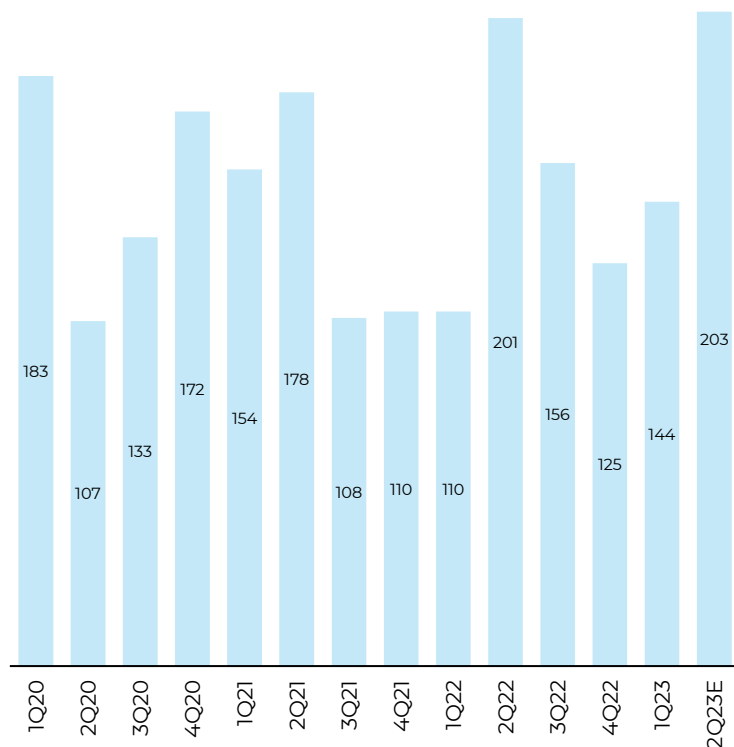
- The sluggish economy recovery in Q2 poses a risk to achieving the 5% growth target, primarily due to poor performances in the industrial and property sectors.
- Despite China facing economic challenges, the demand for imported coal is expected to stay strong as it remains price competitive against domestic coal.
- In Q3, high temperatures will drive coal burn for power generation. However, typhoons and weak industrial activity could limit power demand and impact coal-fired generation.
- Despite the government's efforts to strengthen coal mine safety inspections, domestic coal production is expected to remain robust.
- We expect more stimulus measures from the government to boost domestic consumption in 2H, which will contribute to supporting coal demand.

India: severe summer to further strengthen power and coal demand

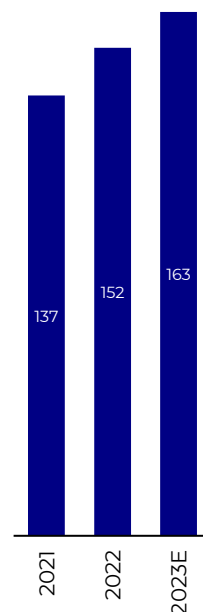
INDIA THERMAL COAL IMPORTS*

Unit: Mt

Quarterly (annualized)



Annually



Note: *Includes lignite grade imports

Source: Commodity Insights, Banpu MS&L

2Q23

- Power demand declined by 3.2% in the first two months of Q2 due to unseasonal rainfalls.
- However, recovery began in June, supported by improved activities, increasing overall power demand by 0.9% YoY.
- Imported coal-fired generation rose by 2.4% YoY in Q2, due to contributions from nuclear and large hydro fell.
- Domestic thermal coal production was 209 Mt in Q2, recording a yearly growth of about 9%.
- Despite domestic supply and pricing affecting Indian buying interest in seaborne imports, the flow of imported coal remained strong due to term contracts.
- Coal demand from non-power sectors were strong due to limited proportion of domestic coal allocation and they preferred high calorific value coal if prices are competitive.

OUTLOOK

- Expectations of rising temperatures and ongoing economic expansion will keep coal-fired generation strong in the near term, leading to robust coal demand from the power sector throughout the year.
- India's government has extended a directive, previously invoked under emergency rules, requiring utilities using imported coal to increase electricity generation to meet anticipated summer demand until 30 September. The extension will further strengthen Indian coal imports.
- Despite strong domestic coal output, logistical constraints persist, leading to an insufficient supply to meet demand, resulting in increased import growth.
- The decline in seaborne coal prices also contributes to the surge in imports, while robust economic and infrastructure growth drives import demand from the non-power sector.

Coal quarterly output summary

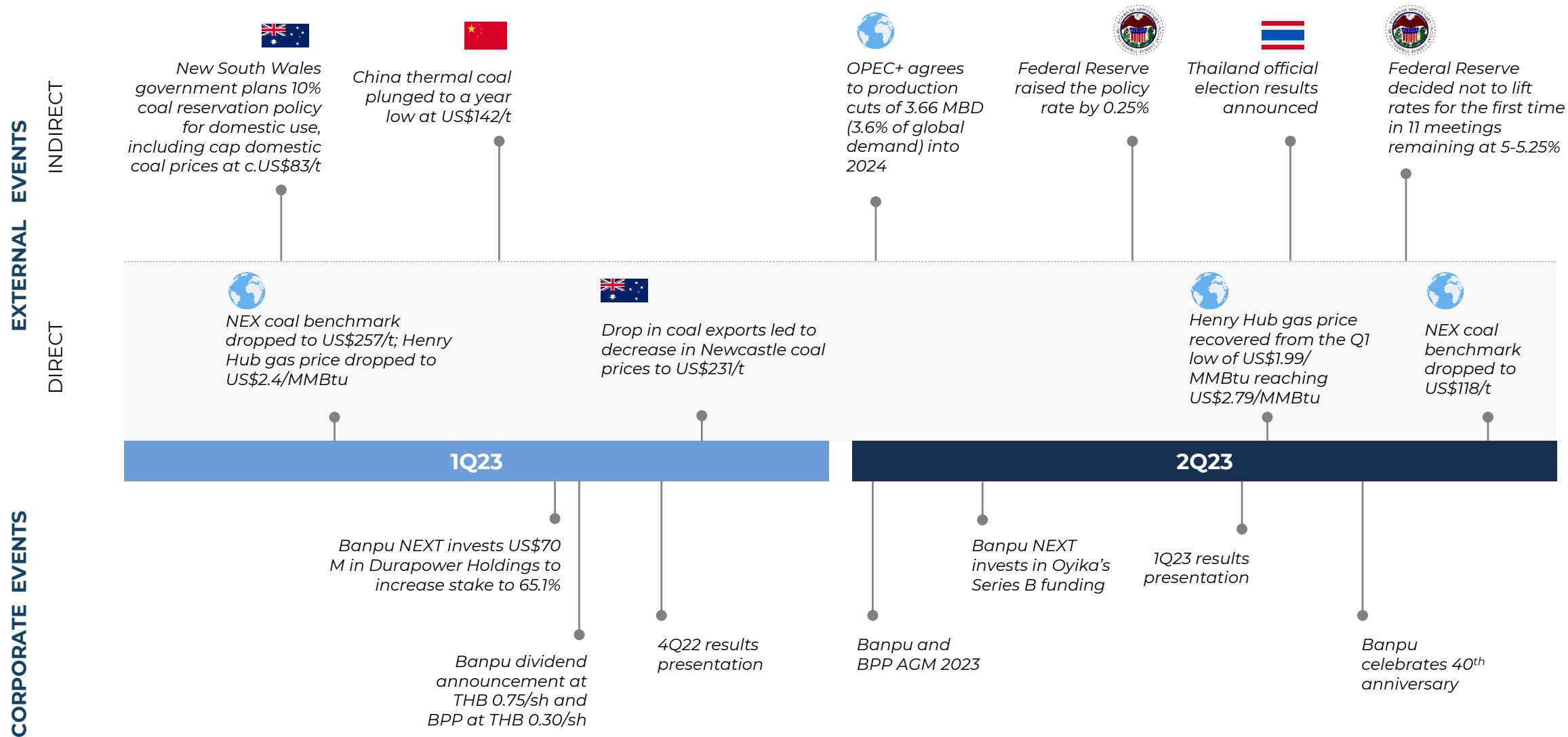
AUSTRALIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON EQUITY BASIS					
Mines	CV (kcal/kg)	4Q22	1Q23	2Q23	3Q23e
Western operations		1.2	0.8	1.2	1.2
Springvale	6,700	0.4	0.5	0.7	0.7
Clarence	6,700	0.3	0.2	0.2	0.4
Airly	6,700	0.5	0.1	0.3	0.1
Northern operations		0.6	1.0	0.5	0.7
Mandalong	6,700	0.3	0.7	0.3	0.4
Myuna	6,700	0.3	0.3	0.2	0.3
Total Australia Coal		1.8	1.8	1.7	1.9

INDONESIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS									
Mines	CV (kcal/kg)	4Q22		1Q23		2Q23		3Q23e	
		Output (Mt)	Strip ratios (bcm/t)	Output (Mt)	Strip ratios (bcm/t)	Output (Mt)	Strip ratios (bcm/t)	Output (Mt)	Strip ratios (bcm/t)
Indominco	5,950 – 6,250	1.6	10.5	1.5	11.6	1.7	14.1	1.7	14.5
Trubaindo	6,550 – 6,700	0.8	12.7	0.6	18.0	0.7	16.1	0.8	13.5
Bharinto		1.8	10.4	1.6	9.1	1.8	9.6	2.1	7.9
Jorong	5,300	0.2	15.5	0.1	15.0	0.1	11.0	0.2	12.5
Total Indonesia Coal		4.3	11.0	3.8	11.5	4.4	12.5	4.8	11.5

CHINA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS					
Mines	CV (kcal/kg)	4Q22	1Q23	2Q23	3Q23e
Gaohe		2.3	2.5	2.7	2.4
Hebi		0.2	0.2	0.2	0.3
Total China Coal		2.5	2.7	2.9	2.7

Note: CV figures are air-dried basis

Key external and corporate events



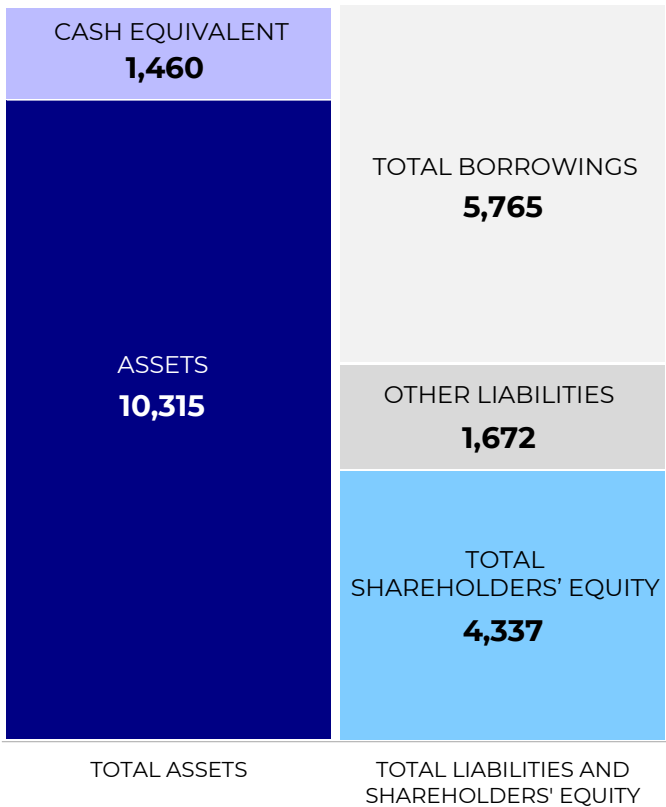
FX impact analysis guidance on P&L

CURRENCY EXPOSURE	NPAT IMPACT 2Q23 (US\$M)	APPROXIMATE FX EXPOSURE (US\$M)		NPAT 5% SENSITIVITY 3Q23 (US\$M)	
		Net liability	Net asset	Assuming 5% depreciation of local currencies against USD	
Banpu: AUD asset, THB bond, and others		-1,700		THB	85
	69.7		270	AUD	-13
ITMG: IDR asset and liabilities	-3.2		120	IDR	-6
CEY: USD asset	2.2		5	AUD	0.3
Net	68.6			Net	66

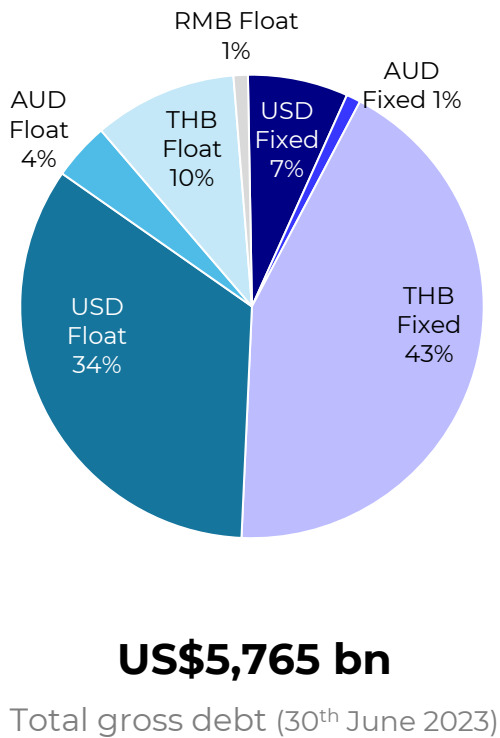
Banpu consolidated balance sheet – 2Q23

2Q23 CONSOLIDATED FINANCIAL POSITION

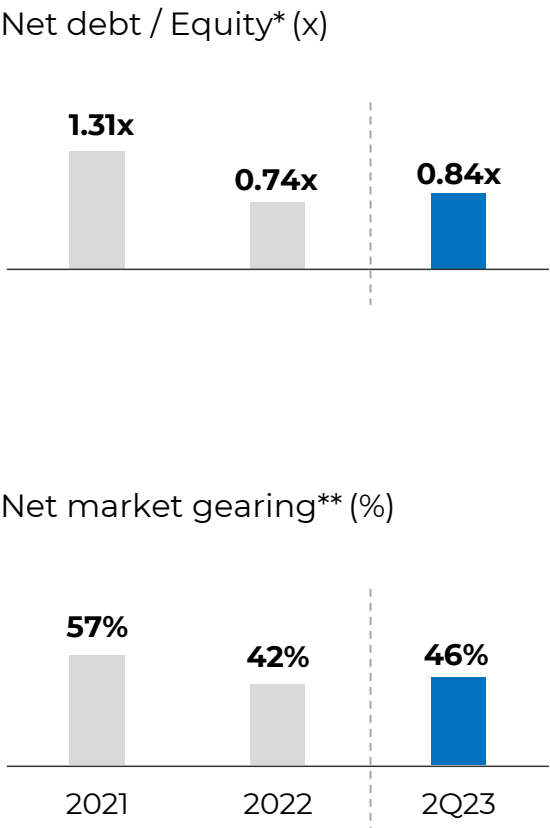
USD million



DEBT FX STRUCTURE



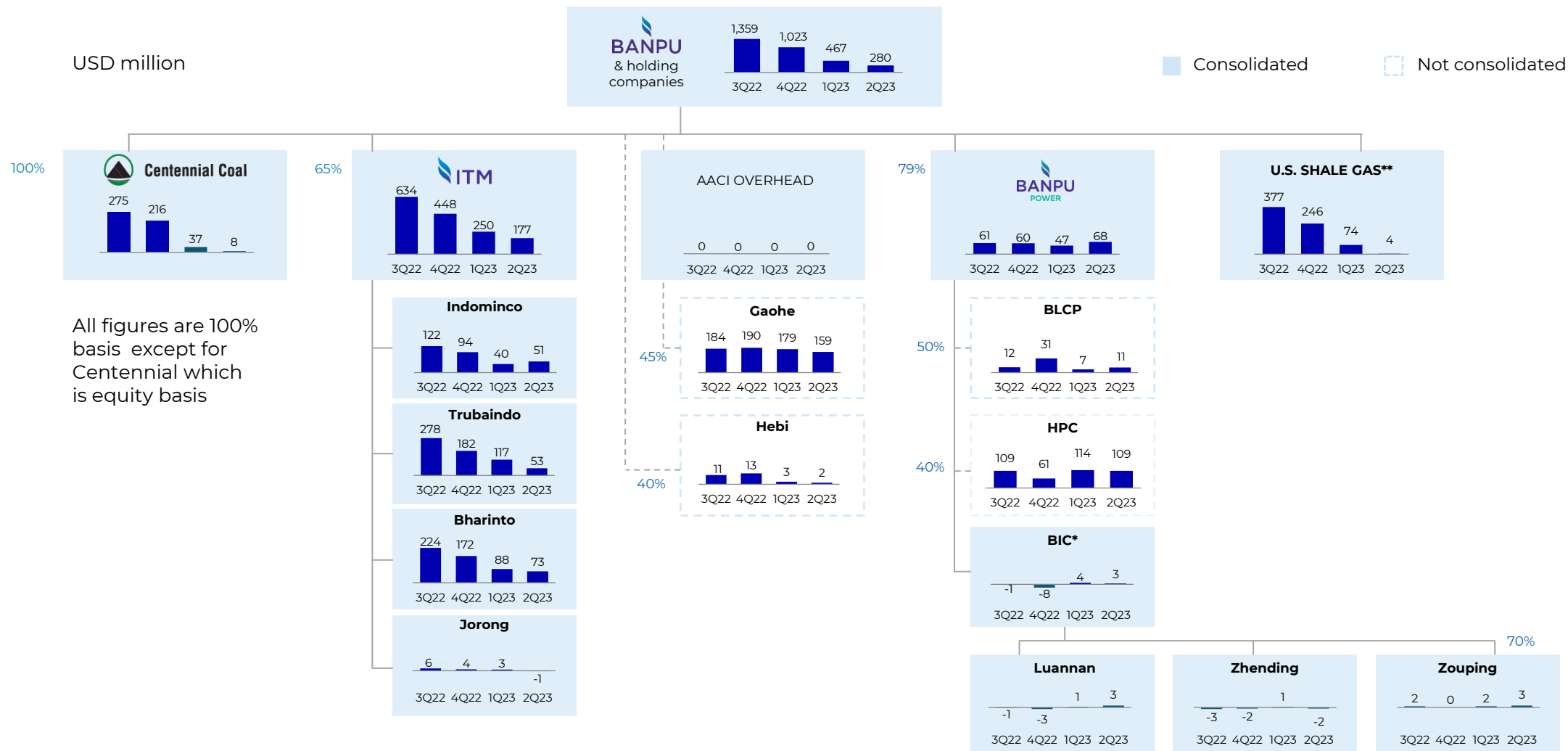
GEARING RATIOS



Note: *Net debt to book value of shareholders' equity; **Net debt to enterprise value (enterprise value = net debt + book value of shareholders' equity)

Banpu group EBITDA breakdown

USD million



Note: all ownership 100% unless otherwise shown

*Banpu Investment China

**IFRS EBITDA. Significant differences between IFRS and BKV US GAAP EBITDAX include treatment of derivative gains and losses, depletion expense, accretion expense, stock compensation expense, BNAC expenses, equity income, and contingent consideration gains and losses of asset acquisitions

Banpu group net debt breakdown



Note: All ownership 100% unless otherwise shown; *Banpu Investment China

Banpu consolidated: operating profit

USD million	2Q23	1Q23	2Q22	QoQ%	YoY%
Total sales revenues*	1,112	1,312	1,773	-15%	-37%
Sales revenue – Coal**	821	945	1238	-13%	-34%
Sales revenue – Gas	145	223	387	-35%	-62%
Sales revenue – Power	87	117	139	-17%	-30%
Cost of sales	(863)	(873)	(842)		
Gross profit*	249	440	931	-43%	-73%
Gross profit – Coal**	253	401	661	-37%	-62%
Gross profit – Gas	(33)	33	254	n.a.	n.a.
Gross profit – Power	20	5	19	+336%	+8%
Gross profit margin (GPM)	22%	34%	53%		
<i>GPM – Coal</i>	<i>31%</i>	<i>42%</i>	<i>53%</i>		
<i>GPM – Gas</i>	<i>-22%</i>	<i>15%</i>	<i>66%</i>		
<i>GPM – Power</i>	<i>21%</i>	<i>4%</i>	<i>14%</i>		

Note: *Including other businesses; **Including coal trading

Banpu consolidated: operating profit

USD million	2Q23	1Q23	2Q22	QoQ%	YoY%
Gross profit	249	440	931	-43%	-73%
GPM	22%	34%	53%		
SG&A	(123)	(120)	(117)		
Royalty	(91)	(125)	(131)		
Income from associates	83	84	81		
Other income and Dividend	22	30	21		
Mining property	(6)	(7)	(9)		
EBIT	134	302	777	-56%	-83%
EBIT – Coal	131	253	509	-48%	-74%
EBIT – Gas	(52)	17	228	n.a.	n.a.
EBIT – Power	56	36	46	+57%	+21%
EBIT – Energy Technology	(2)	(4)	(7)	n.a.	n.a.
EBITDA	280	467	948	-40%	-70%
EBITDA – Coal	206	346	630	-40%	-67%
EBITDA – Gas	4	74	264	-95%	-98%
EBITDA – Power	68	47	58	+43%	+18%
EBITDA – Energy Technology	2	(0)	(4)	n.a.	n.a.

Banpu consolidated: net profit

USD million	2Q23	1Q23	2Q22	QoQ%	YoY%
EBIT	134	302	777	-56%	-83%
Interest expenses	(86)	(86)	(54)		
Financial expenses	(3)	(2)	(2)		
Income tax (core business)	(37)	(51)	(73)		
Minorities	(50)	(80)	(101)		
Net profit before extra items	(41)	83	547	n.a.	n.a.
Non-recurring items*	4	82	157		
Gain (Loss) on Derivatives Transactions	16	(27)	(293)		
Income tax (non - core business)	(32)	(2)	(16)		
Deferred tax income (expenses)	(29)	27	(76)		
Net profit before FX	(82)	162	319	n.a.	n.a.
FX translation	69	(14)	53		
Net Profit	(13)	147	372	n.a.	n.a.
EPS (US\$/share)	(0.002)	0.017	0.055		

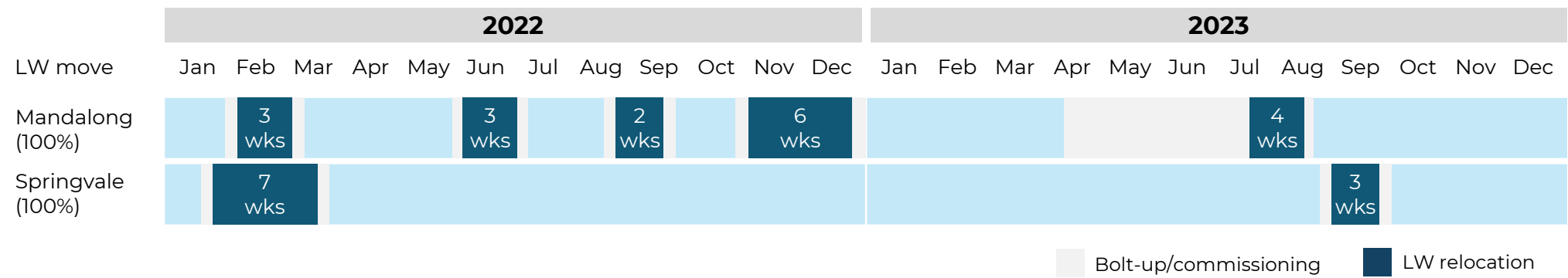
Note: *Income from non-core assets and other non-operating expenses

Centennial: income statement

USD million	2Q23	1Q23	2Q22	QoQ%	YoY%
Sales volume (Mt)	1.6	1.8	2.8	-8%	-42%
Sales revenue	175.3	219.4	342.8	-20%	-49%
Cost of Sales	(199.1)	(207.8)	(221.1)		
Gross profit	(23.8)	11.6	121.8	n.a.	n.a.
GPM	-14%	5%	36%		
SG&A	(21.6)	(28.6)	(26.9)		
Royalty	(10.5)	(13.1)	(21.9)		
Other income	10.7	1.9	1.8		
Other expenses	-	-	-		
EBIT	(45.3)	(28.2)	74.7	n.a.	n.a.
Interest expenses	(7.9)	(8.0)	(9.2)		
Financial expenses	(1.6)	(1.6)	(0.6)		
Gain (loss) on exchange rate	2.2	0.8	(8.6)		
Gain (loss) on derivative	(3.7)	(3.1)	(35.7)		
Corporate income tax	-	-	-		
Deferred tax income	19.6	12.0	(6.4)		
Net Profit	(36.6)	(28.1)	14.1	n.a.	n.a.

Australia coal: quarterly equity rom output

Total equity ROM (Mt)



Note: Production generally responds to the timing of longwall changeovers (i.e., lower production results during a longwall changeover period)



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