



1Q23 results

Opportunity Day

19th May 2023



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1Q23**

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1Q23 highlights

Accelerating Banpu's Sustainability Transformation

Significant progress in Greener, Smarter businesses through developments in:

Japan battery farm



Development of 58 MWh battery farm in Iwate Tono with support from the government's subsidy program. Targeted COD by 2025

Battery value chain and E-mobility



Stake increase in Durapower from 47.68% to 65.1%, 4.55% acquisition in Green Li-ion, a battery recycling company, and 14.2% in Oyika, a battery swapping provider

Carbon neutrality

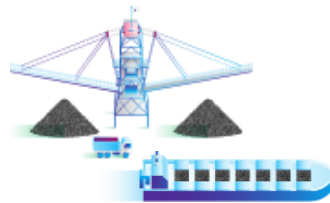


Partnership with NSTDA to accelerate the carbon neutrality development of Thai industries



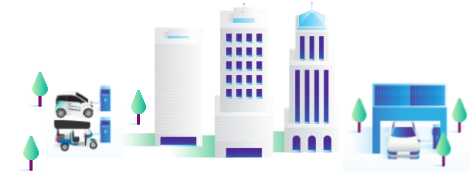
Consistent Cash Flow Generation

EBITDA for the quarter was **\$467 M** with strong contribution from Coal and Gas businesses and incremental contribution from Greener assets



Energy Prices Resilient

Gas price averages at **\$2.7/MMBtu** and coal price averages at **\$257/t** in 1Q23, due to continued strong demand with increasing supply



ESG Leadership Recognition

ESG leadership recognition across the Banpu group, with ESG committees being established across key subsidiaries of the group to accelerate decarbonization of the portfolio



Initiatives taken to enhance performance amid volatile prices

Addressing short- and long-term implications of commodity price correction to sustain high profitability

Banpu: ESG leadership and credit rating recognition



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



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.

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

BANPU ESG RATING



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



Sustainability Disclosure Award 2022

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



CREDIT RATING A+

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



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.





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Banpu: delivering sustainability since inception

1970-80s

Energy crises

- Internal and external political conflicts in the Middle Eastern countries had caused **two major energy crises in Asia**
- During both crises, the global oil supply was disrupted followed by the sudden **increase in oil prices** causing **inflation to soar** which led to **economic stagnation and increased unemployment**



1983

Banpu inception

- Banpu was founded on the idea that **‘coal is a cheaper and more reliable source of energy than oil in Asia’**
- The mission was to develop more **Reliable and Affordable** energy supplies hence bringing greater **Sustainability** to Asia's energy sector



1983 onwards

Early operations

- Banpu founders Chanin Vongkusolkit, Metee Auapinyakul, and Ongart Auapinyakul were granted a license from the Department of Energy to develop a new deposit known as **‘Ban Pu’** in Lamphun with **4 Mt of estimated coal reserves**
- From the early days, Banpu has emphasized its focus on all stakeholders – from employees and customers to local communities, regulatory authorities, business partners, and investors
- ***Stakeholder value growth generates shareholder value and vice versa***



Banpu: 40 years journey



BANPU'S GEOGRAPHIES



BANPU

MINING

Established to focus on coal mining in Thailand

BANPU POWER

THERMAL POWER

Established thermal power business in Thailand

BANPU NEXT

ENERGY TECHNOLOGY

Ventured into energy technology with investment in solar rooftop business, followed by battery production, smart cities, e-mobility and energy trading

ENERGY RESOURCES

GAS

Commenced natural gas operations in the US

RENEWABLES

Entered renewable power business with first investment in Japan solar

BANPU

International versatile energy provider offering integrated energy solutions across the Pan-Pacific

Banpu: 'Our Way in Energy'



Celebrating 40 years of excellence, growth, and innovation in delivering affordable, reliable and eco-friendly energy that has powered the development of the **Pan-Pacific Region**



Well-structured and balanced portfolio for strong cash flow generation and upside potential

Extensive track-record in asset management across different countries in the Pan-Pacific region



Effective capital allocation supported by financial stability and robust funding

Continuous people and organizational development inspiring innovation and excellence



Value-oriented strategic and financial investments focusing on both short-term cash flow generation and long-term growth

The energy world in 2030

DECARBONIZATION

2x ↑
Renewables in 2030
>7.7 TW
from 3.3 TW of global
installed capacity in 2021

11x ↑
CCUS in 2030
>510 Mtpa
from 43 Mt of CO₂
captured globally in 2021

16x ↑
Electric Vehicles in 2030
>200 M
from 12.3 M active
vehicles globally in 2021



Hydrogen and ammonia in 2030
>30 GW
of global installed capacity from
development stage in 2021



- Nature-based solutions
- Biofuels

DECENTRALIZATION



16x ↑
Energy storage system in 2030
>425 GW
from 27.1 GW of global
installed capacity in 2021

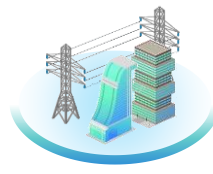


- Solar rooftops
- Liberalized energy markets
- Smart power infrastructure

DIGITALIZATION



5x ↑
Internet-of-Things in 2030
>US\$1.6 tn
from US\$322 bn of global
industrial IoT market size in 2021



- Energy trading
- Energy management and
energy efficiency

ENERGY WORLD IN 2030

Diversified, greener, smarter
energy with the deployment of
sustainable and transformative
energy technologies



Banpu: accelerating the transformation to harness the 3Ds



TRANSFORMATION ACCELERATORS

Banpu group will accelerate the transformation to harness the 3D trends of the global energy market through investment in opportunities that are...



Scalable



Value-growth



Sustainable

ENERGY RESOURCES



MINING



NATURAL GAS



STRATEGIC MINERALS



CCUS*



NBS**

ENERGY GENERATION



THERMAL POWER



SOLAR & WIND POWER



CCUS

ENERGY TECHNOLOGY



SOLAR ROOFTOPS



BATTERY VALUE CHAIN



E-MOBILITY



SMART CITIES & EMS



ENERGY TRADING

CORPORATE VENTURE CAPITAL



ENERGY RELATED VENTURES



BEYOND ENERGY

Banpu: scaling up renewables and energy technology

BANPUNEXT



Accelerating the **Greener, Smarter** transition of the Banpu group through investments in clean energy and energy technology assets to capture the growth in new energy trends in Asia Pacific

ENERGY-RELATED

TECH ENABLERS



ECOSYSTEM PORTFOLIO: SCALING UP AND VALUE CREATION

Investment of high-quality assets with potential growth pipeline and high cash flow generation potential



- ▶ 2025 target
- ▶ 2022 capacity



Renewables

1,100 MW

From 805 MW

1.4x



Solar: rooftops & floating

500 MW

From 205 MW

2.4x



Battery & ESS

3.75 GWh

From 1.0 GWh

3.8x



Energy trading

2,000 GWh

From 1,719 GWh

1.2x



Smart cities & energy mgmt.

30 projects

From 20 projects

1.5x



E-mobility

MaaS

MAXIMIZE PARTNERSHIP SYNERGIES & RETURNS

Enhance synergy value with partners and portfolio companies through strong network effects and partnerships



muvmi

Form



PENETRATE NEW S-CURVE BUSINESSES & TECHNOLOGIES

Explore investment opportunities to acquire new energy tech businesses and expand collaboration with expertise networks and partners to gain new technological know-hows



Banpu: entering new business ventures through CVC

CORPORATE VENTURE CAPITAL (CVC)



Diversify Banpu's portfolio and explore new S-curve businesses by leveraging venture-driven approach to gain access to emerging technologies, innovative business models and untapped market opportunities

ENERGY-RELATED

BEYOND ENERGY

DIRECT & INDIRECT INVESTMENT

Focusing on early-to-late growth stage, Banpu CVC aims to directly acquire companies or invest through funds with concentrated and diversified portfolios to gain exposure to high growth S-curve industries

SYNERGY AND GROWTH STRATEGY OF CVC:

INTEGRATE WITH EXISTING BUSINESSES

Investments with high growth potential and synergistic value with existing businesses will be integrated accordingly to enhance their value creation

SPIN OFF TO NEW BUSINESS PILLAR

Investments with strategic alignment with the Banpu group and potential to become a new core cash flow generator will be spun off to become a new business pillar

FINANCIAL RETURNS

Focus on generating additional returns to Banpu group with prioritization of investments with mid-to-long term financial returns through cash flow generation and value-growth

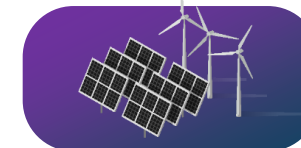
INVESTMENT SUPPORT FOR EXISTING BUSINESS PILLARS

Banpu CVC will support existing business pillars in identification of investment targets with high synergistic potential and execution of investment process

ENERGY RESOURCES



ENERGY GENERATION



ENERGY TECHNOLOGY



Banpu: initiatives taken to enhance performance amid volatile prices

Short-term initiatives

Long-term strategy



Mining

Operations

Coal blending optimization: to balance coal stock and cover wider coal specifications, potentially increasing the ASP

Cost control effectiveness program: conducted across all business units to ensure expenses are effectively budgeted

Financials

Capital rationalization: 2023 capex reduction at Australia mines by 10%

Operations

Reserve expansion: through organic development at Mandalong, Springvale and GPK, underground operation study at Melak and coal gasification study at Indominco

New business development: expansion of infrastructure business (ports) and development of strategic minerals

Financials

Balanced capital: for required expenditure and investments



Gas

Operations

Continuous optimization: to improve costs and efficiency through automation, monitoring and vendor negotiation

Financials

Cash flow prioritization: maximizing cash flow generation by balancing with moderate production growth (capex reduction)

Hedging positions: c.49% of 2023 gas volume is hedged at US\$3.4/MMBtu while c.18% of 2023 NGL volume is hedged

Operations

Closed-loop operation development: from upstream production to midstream gathering and transportation

CCUS development: through dCarbonVentures' strong project pipeline execution to achieve Net Zero goals by the early 2030s

Financials

Additional hedge requirements: to further protect against downward price movements and reduce revenue volatility



Power

Operations

Sustained strong operations: through investment in advanced tech. and maintenance at international standards

Increased stability: at Temple I plant through implementation of Wet Compression System and real-time monitoring

Financials

Fuel cost optimization: through centralized long-term coal supply contracts at China thermal operations

Operations

US expansion: continued effort to explore power investment opportunities to establish synergy with Temple I and gas production assets in Texas

Decarbonization initiatives: developed at BLCP to assess feasibility of ammonia co-firing and CCS development

Financials

Low gearing ratio: flexible for future growth investment

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KEY FIGURES

EBITDA **\$467 M**

Strong result driven by Coal and Gas business contribution, supported by commodity price levels. Stable contribution from Power and other businesses.

NPAT **\$147 M**

Strong performance supported by resilient operational results

ND/E **0.74 x**

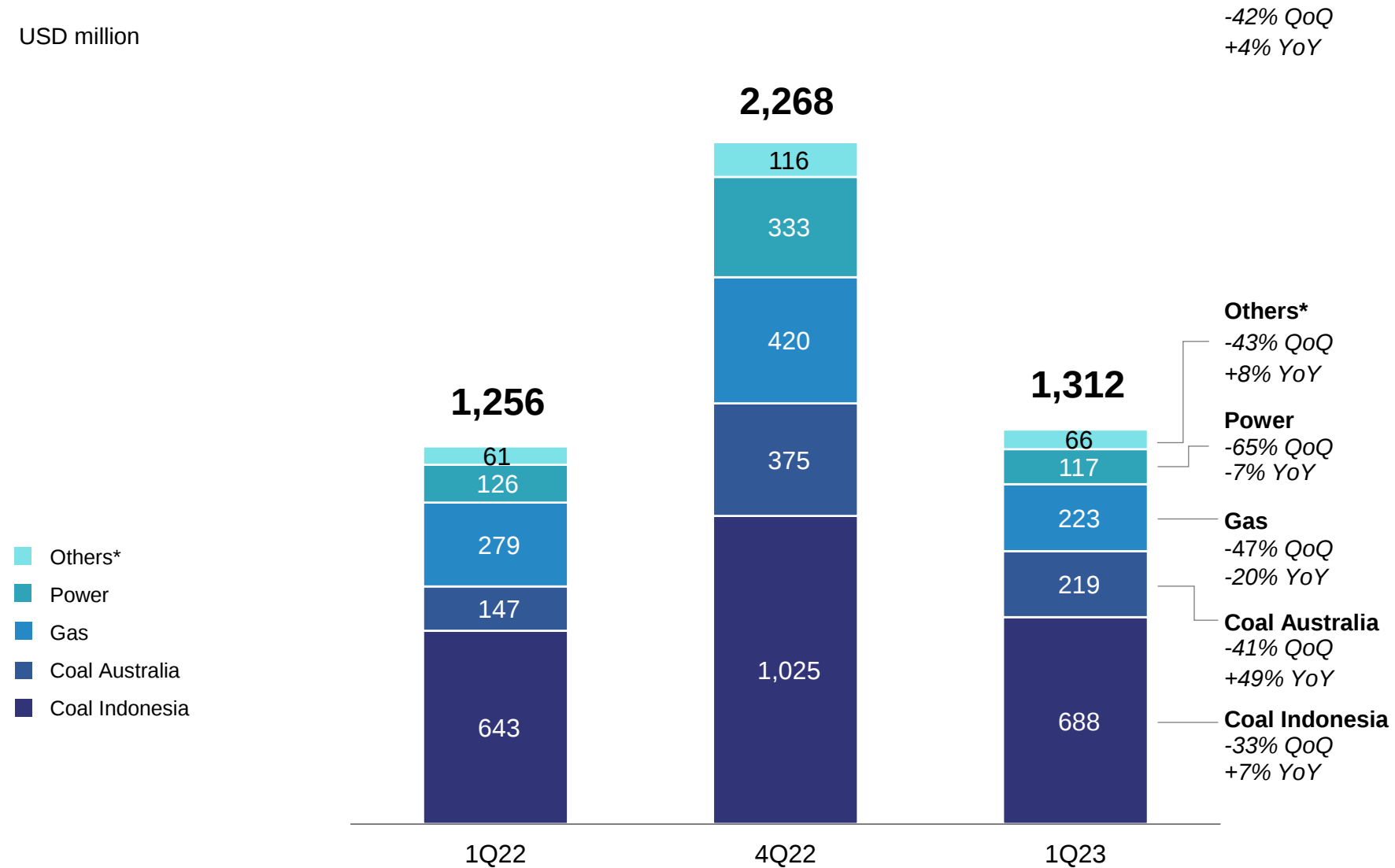
ND/E maintained at same level with previous quarter

KEY TAKEAWAYS

- 1 Continuous resilient Coal and Gas business performance:** supported by healthy ASP level from ongoing demand despite modest supply growth
- 2 Solid hedging position:** to minimize revenue and cash flow volatility and create opportunities for potential pricing enhancement
- 3 Strategic positioning:** Coal and Gas businesses well-positioned to benefit from current commodity price levels and demand
- 4 Greener, Smarter investments:** cash flow generation captured from Greener Investments including: Temple I CCGT, Australia Solar, Japan Solar, Vietnam Wind, Vietnam Solar and North Texas

Banpu consolidated sales revenues – 1Q23

USD million

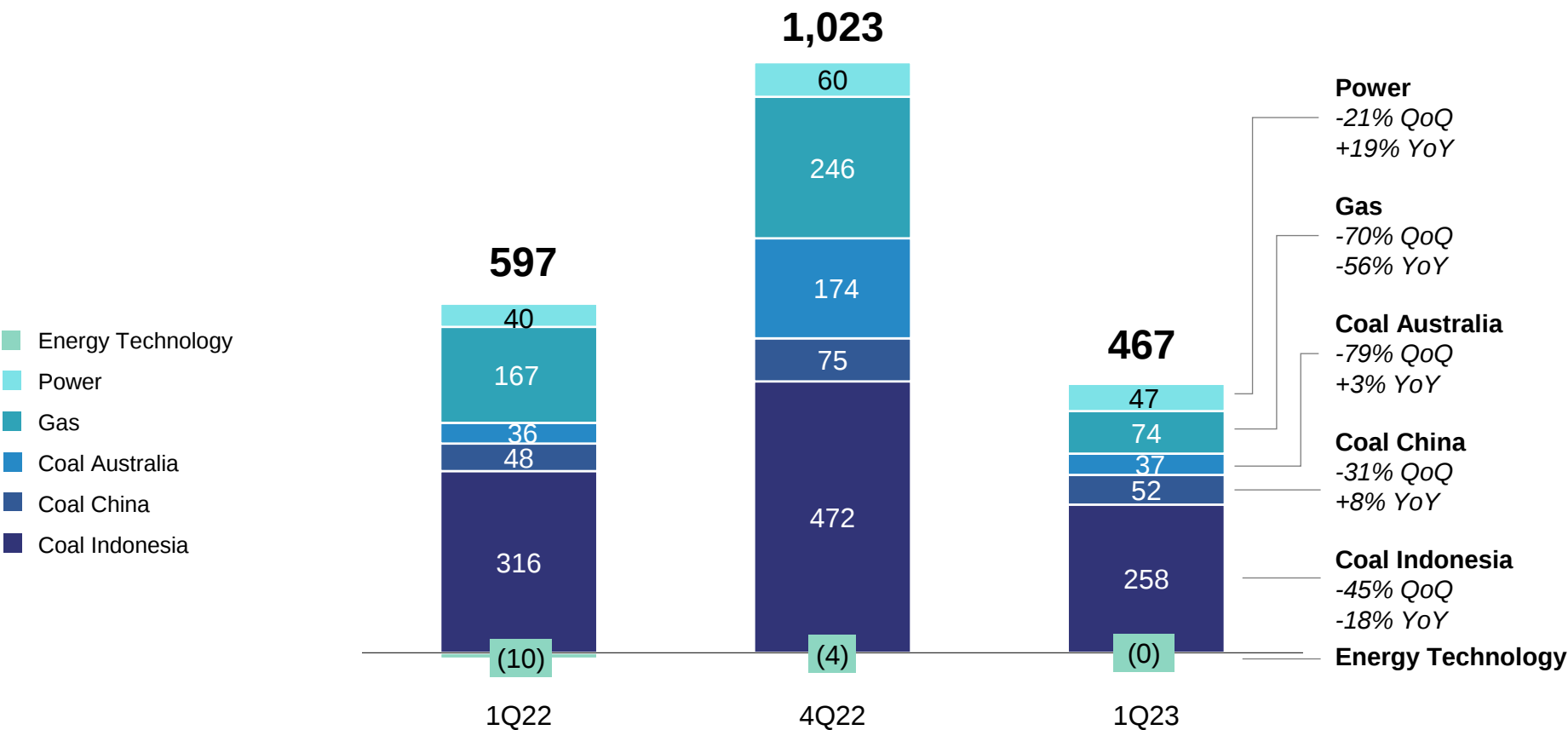


Note: *Revenue from others includes coal trading, and other businesses

Banpu consolidated EBITDA – 1Q23

USD million

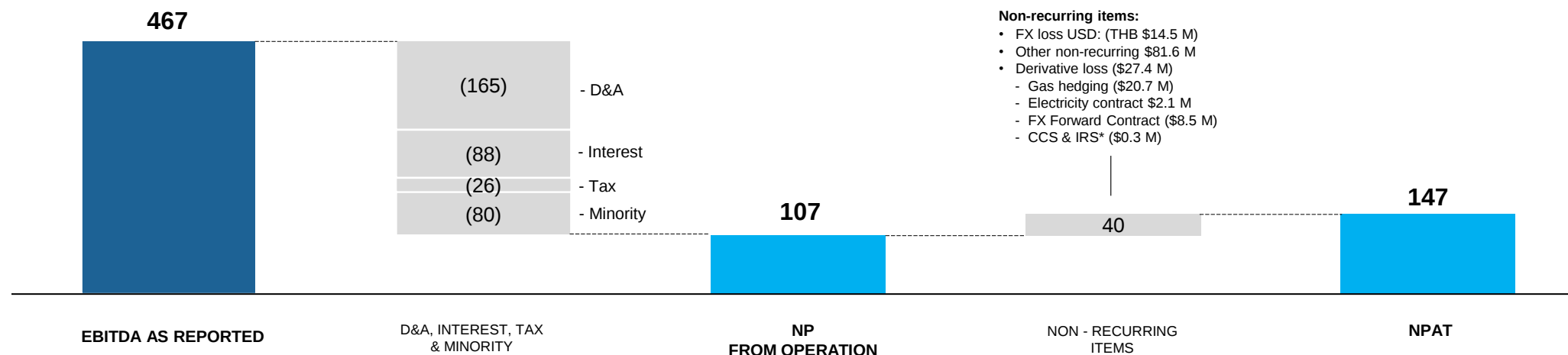
-54% QoQ
-22% YoY



Banpu consolidated NPAT – 1Q23

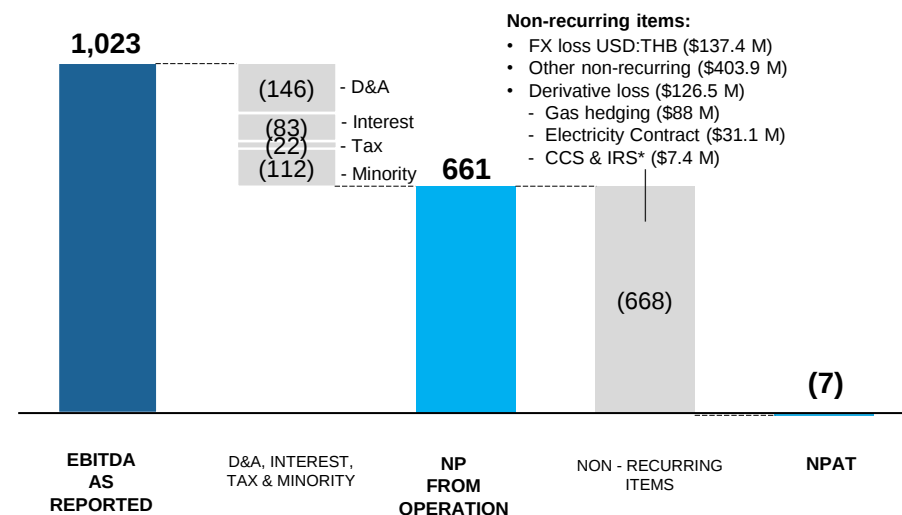
1Q23 NET PROFIT AFTER TAX

USD million



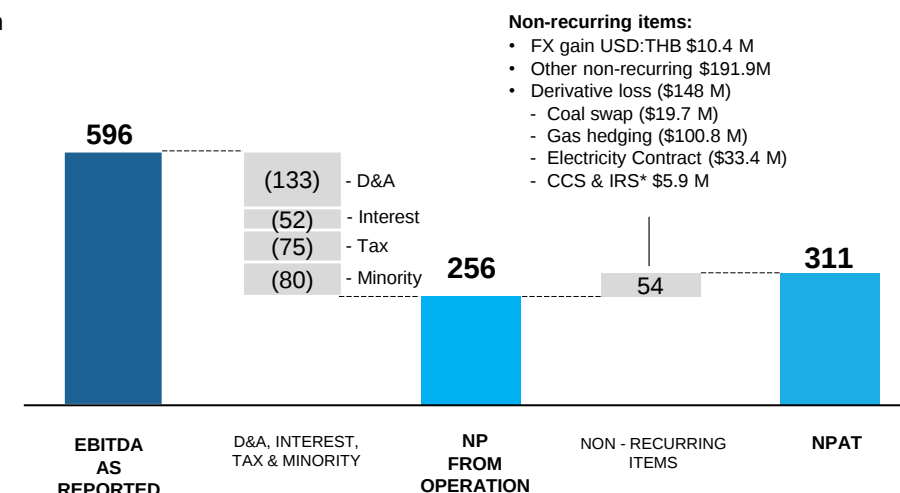
4Q22 NET PROFIT AFTER TAX

USD million



1Q22 NET PROFIT AFTER TAX

USD million



Note: *cross currency swap, interest rate swap



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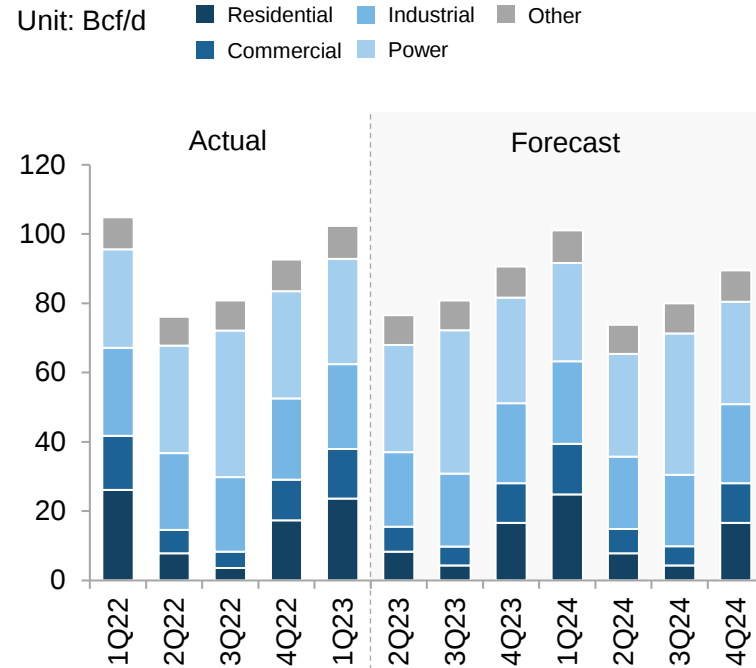
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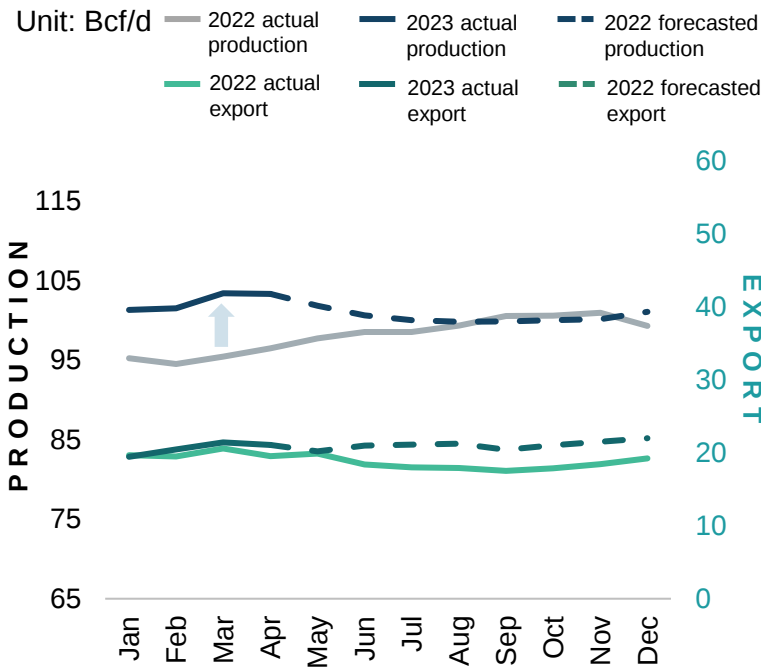
U.S. gas market update

US CONSUMPTION & PROJECTION



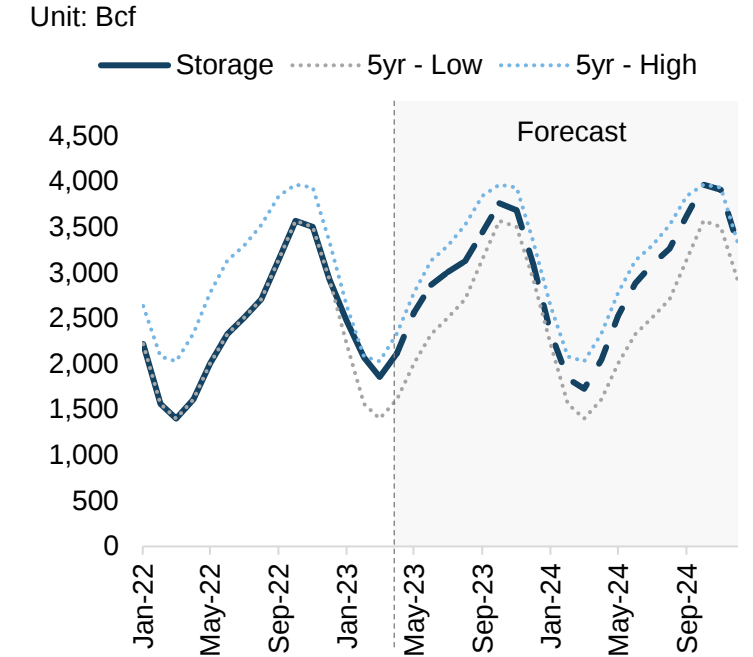
- Majority of US gas demand is domestic consumption. Price is largely determined by local demand and supply with indirect linkage to oil via associated gas production.
- Consumption in the US averaged at 102.4 Bcf/d in 1Q23, up 11% from 4Q22. Residential and commercial experienced softened demand due to the mild winter temperature compared to 1Q22.
- Consumption is forecasted to average at around 87.5 Bcf/d in 2023, around 1% higher compared to 2Q22.

US NATURAL GAS PRODUCTION



- US gas production is at 102 Bcf/d in 1Q23 and is forecasted to remain at a similar level in 2Q23 before declining in subsequent quarters.
- US LNG exports are expected to increase to 12.3 Bcf/d in 2Q23, up 1% from 1Q23, and average at 12.1 Bcf/d in 2023, up 14% from 2022. The increase is primarily driven by the restart of Freeport LNG following the fire incident in June 2022.

U.S. STORAGE LEVEL



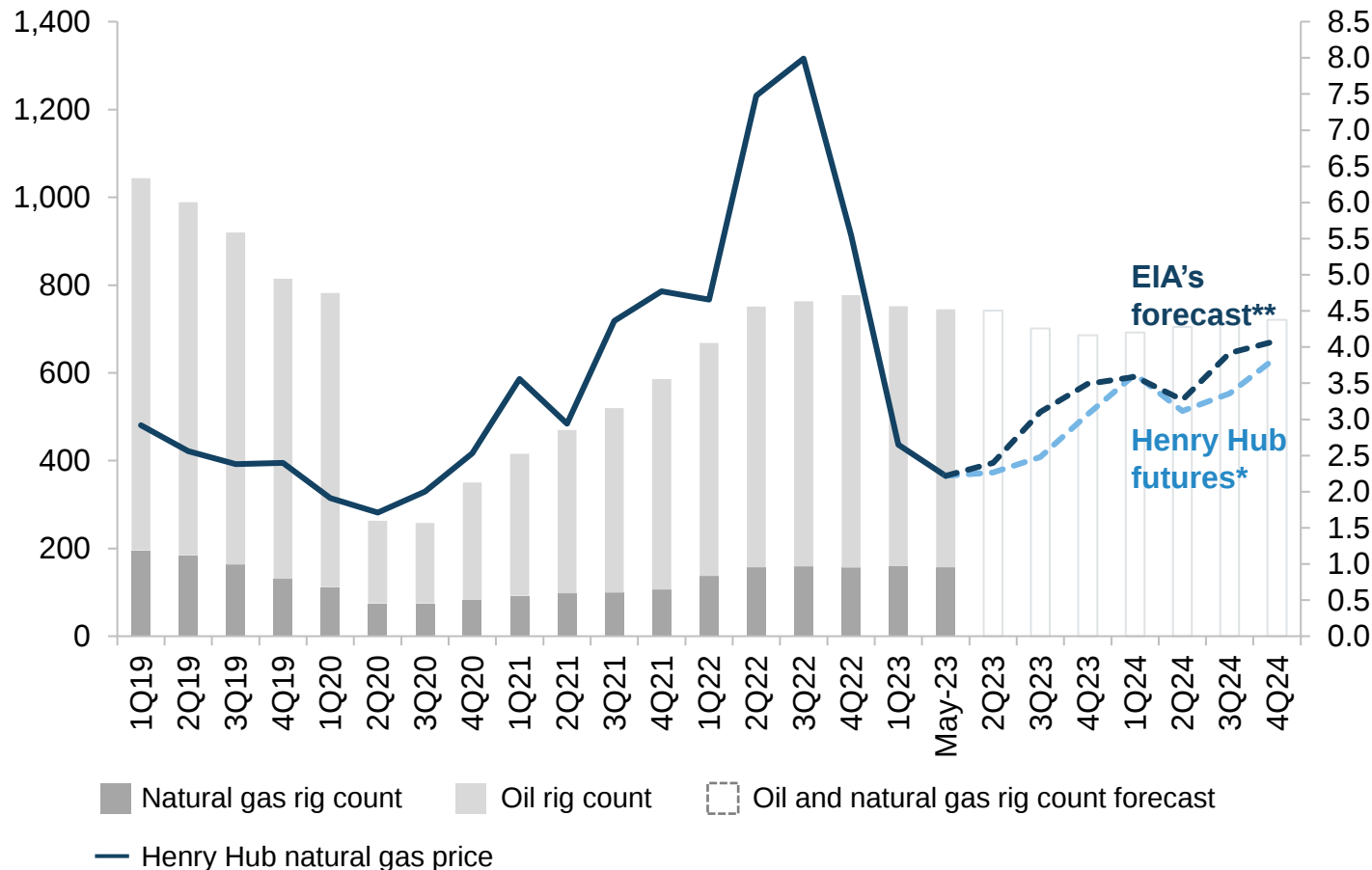
- Natural gas inventories in April 2023 ended at 2.1 Tcf, 19% higher than the 5-year average and around 0.5 Tcf higher than the same period last year due to warmer weather in early 2023, leading to lower gas consumptions needed for heating.
- It is expected that the above 5-year average trend will continue during most of 2023 and start to normalize during the winter.

U.S. gas: gas prices are expected rebound in the upcoming quarters

US RIG COUNT VS HENRY HUB PRICE

US OIL AND NATURAL GAS RIG COUNT
Unit: Rigs

HENRY HUB SPOT PRICE
Unit: \$/MMBtu

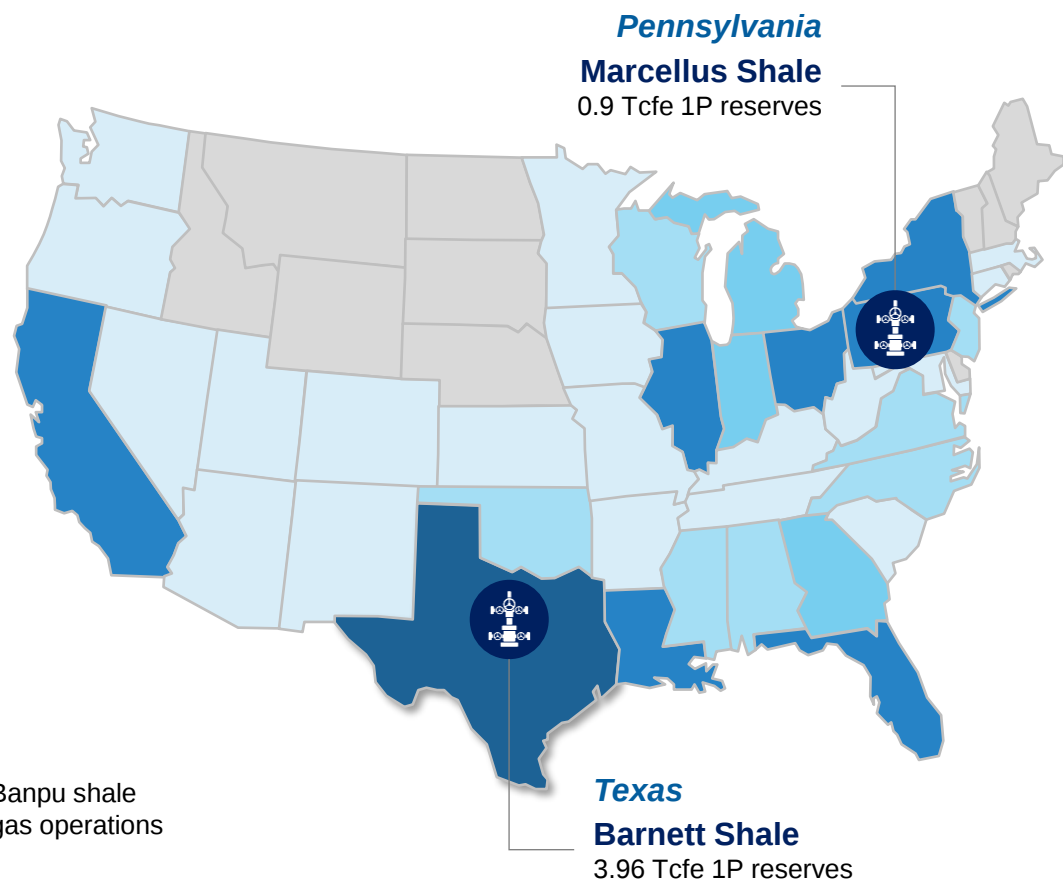
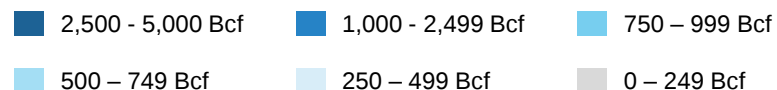


COMMENT

- Natural gas prices in 1Q23 decreased due to high inventory levels post a record-warm winter and the demand/supply rebalancing in the market.
- Oil and gas rigs are expected to decrease slightly in 2Q23, down 1% from 1Q23 to remain at levels 29% lower than 1Q19. The lower rigs level is anticipated for the remainder of 2023.
- Henry Hub futures remain at around \$2.3-2.5/MMBtu levels in 2Q23 and 3Q23 before increasing to \$3.0-3.5/MMBtu levels in 4Q23 as the storage levels normalize.

Banpu Gas: 1Q23 highlights

US DRY GAS CONSUMPTION 2021 BY STATE*



Banpu shale
gas operations

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

Average local price**

\$2.89/Mcfe

-44% QoQ

Sales volume

79 Bcfe

-5% QoQ

EBITDA***

\$74 M

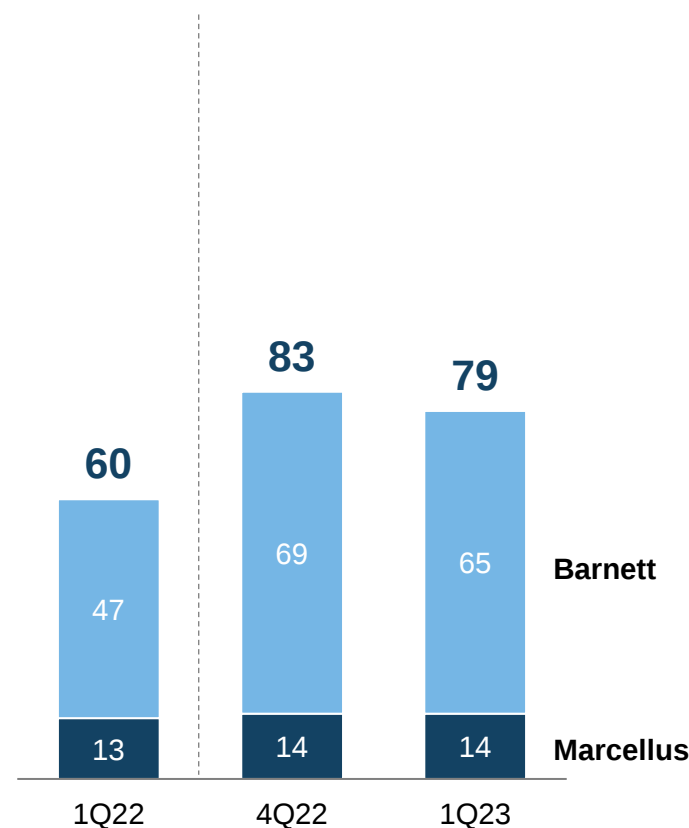
-70% QoQ

Banpu Gas: 1Q23 performance

Maintaining resilience amid market headwinds: 1Q23 EBITDA of \$74 M reflected robust base performance and the efficacy of our operational adjustments during challenging phases of the commodity cycle.

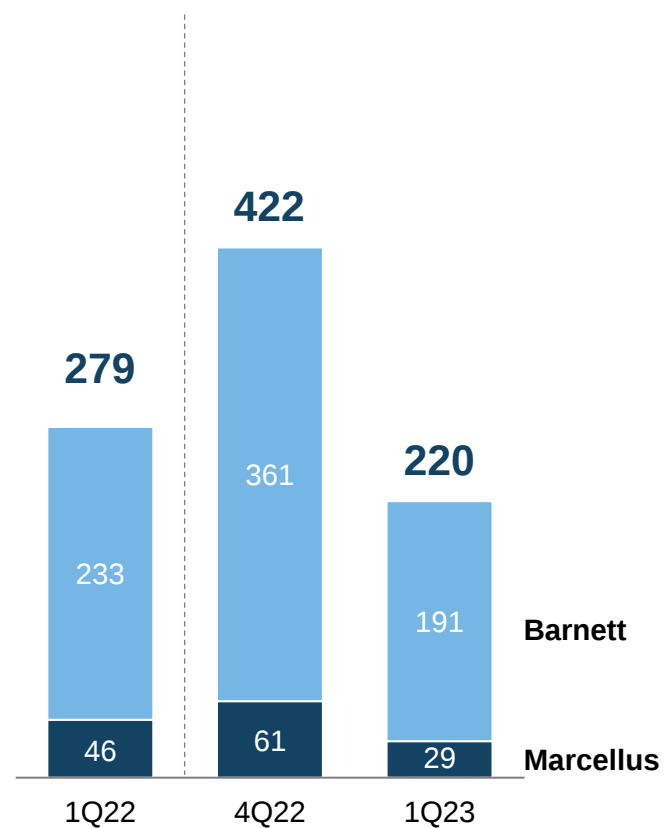
SALES VOLUMES

Unit: Bcf*



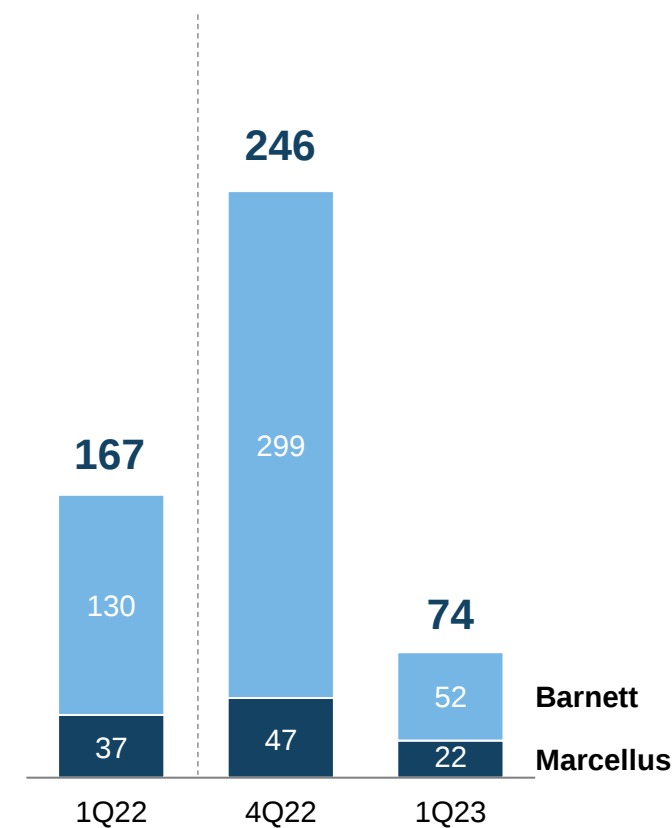
TOTAL REALIZED REVENUE**

Unit: US\$M



EBITDA****

Unit: US\$M



Note:

* Bcf = Billion cubic feet

** 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

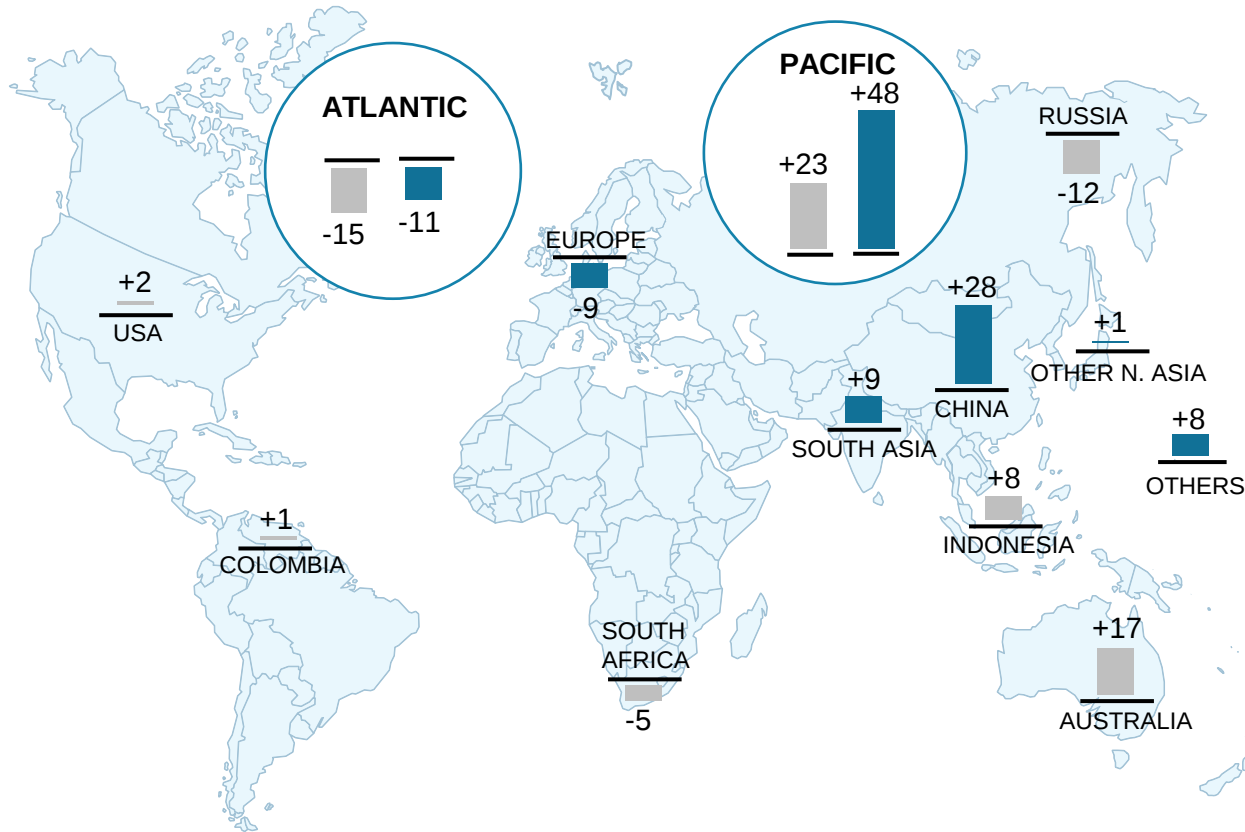
*** Other income from trading JV

**** 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;

Global thermal coal market

COAL DEMAND AND SUPPLY CHANGE – 2023E VS 2022

Unit: Mt ■ SUPPLY ■ DEMAND



Note: JKT = Japan, South Korea and Taiwan

TRENDS

DEMAND

Shoulder season has arrived in the northern hemisphere, but price remain supported by strong Indian demand. We expect China's import demand will remain strong this year while Southeast Asia will also continued import gains. Low gas prices and high gas inventory open opportunity for coal-to-gas switching in Europe but significant risk of gas supply will keep coal generation to be an important part of the energy mix.

- **China:** Thermal coal imports have been steady for the past six months. Economic activity is likely to steadily improve given policy support which should translate into stronger power demand in 2H, and likely to support seaborne demand.
- **India:** Coal burn has been strong. Thermal coal import demand remains steady as hotter weather is boosting consumption. Government directive to increase imports will push thermal coal imports further up this year.
- **JKT:** Warmer than normal weather capped electricity demand and curtailed coal burn in 1Q. Ample coal stocks curtail spot demand, but favourable generation economics will support coal burn in the 2H. We expect steady import demand this year.
- **Europe:** Diminishing coal demand across Europe is a product of reduced total energy demand, strong renewable performance, and weakening gas fundamentals. We expect coal import will slow down in April and May due to low seasonal demand before it resumes in June. Looking further, we expect coal will remain a staple in Europe as fuel-switching economics should start to favour coal again in 2H.

SUPPLY

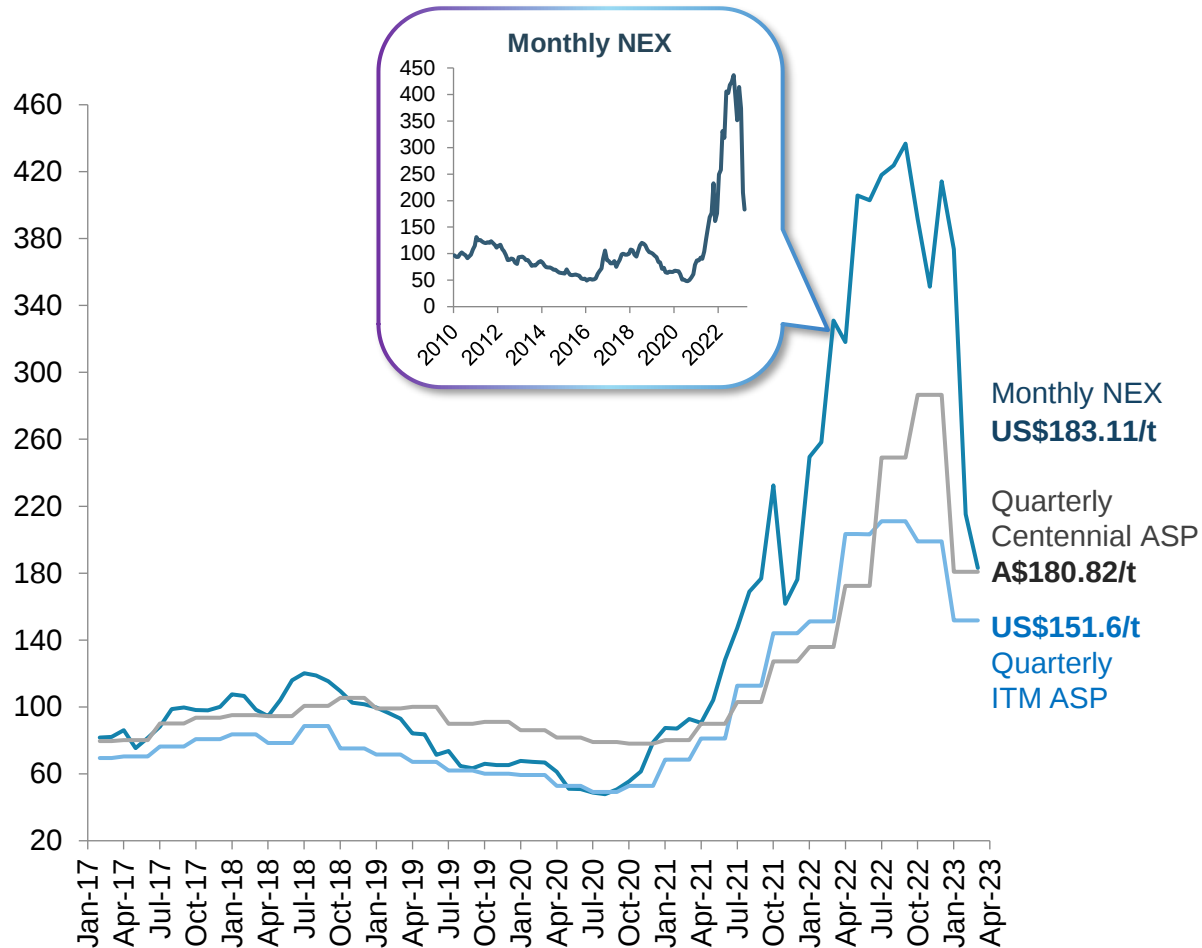
Even with additional global supply, we expect the market to remain tight through the year and provide support to coal prices. Significant growth of HCV supply is limited in the near term due to lack of investment during the past few years.

- **Indonesia:** Higher average rainfall has not significant impacted production, while miners are gearing up to increase output. Export is expected to remain strong, although incremental growth from current levels is becoming harder to come by.
- **Australia:** Exports bounce back from weather-related disruptions. Exports to China have been resumed following the end of restrictions.
- **Others:** Russian thermal coal exports supported by robust demand in China but trend to decline amid lower coal prices and limited rail. South African thermal coal exports swing back to Asian market while rail constraints persist. Blockades and port maintenance disrupt Colombian exports in 1H.

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 dropped significantly from mid January until late February, then the market started stabilizing in the range of US\$170-190 through March 2023. Weekly GCNewc was US\$397.3 in the 1st week of January, hit the bottom (US\$170.8/t) in the week of 17 March and ended up at US\$178.53 in the last week of 1Q23.
- The lower quality thermal coal market has been weakening too, while relatively stable compared to GCNewc. During 1Q23, ICI2 decreased from US\$150.18 to US\$118.18, ICI3 started at US\$111.38 in the 1st week of January, ended up at US\$97.2 in the last week of March and ICI4 was dropping from US\$90.45 to US\$73.53 in late March. In general, we see relatively strong base for lower spec thermal coal market thanks for the extremely 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.
- Key price metrics:
 - ITM ASP 1Q23: US\$151.6/t* (-24% QoQ)
 - CEY ASP 1Q23: A\$180.8/t (-37% QoQ) or US\$124.1/t (-34% QoQ)
 - ASP Domestic A\$91.6/t (+14% QoQ), ASP Export A\$400.5/t (-26% QoQ)
 - ASP Domestic US\$62.8/t (+19% QoQ), ASP Export US\$274.9/t (-22% QoQ)
 - NEX (May 12, 2023)**: US\$169.5/t

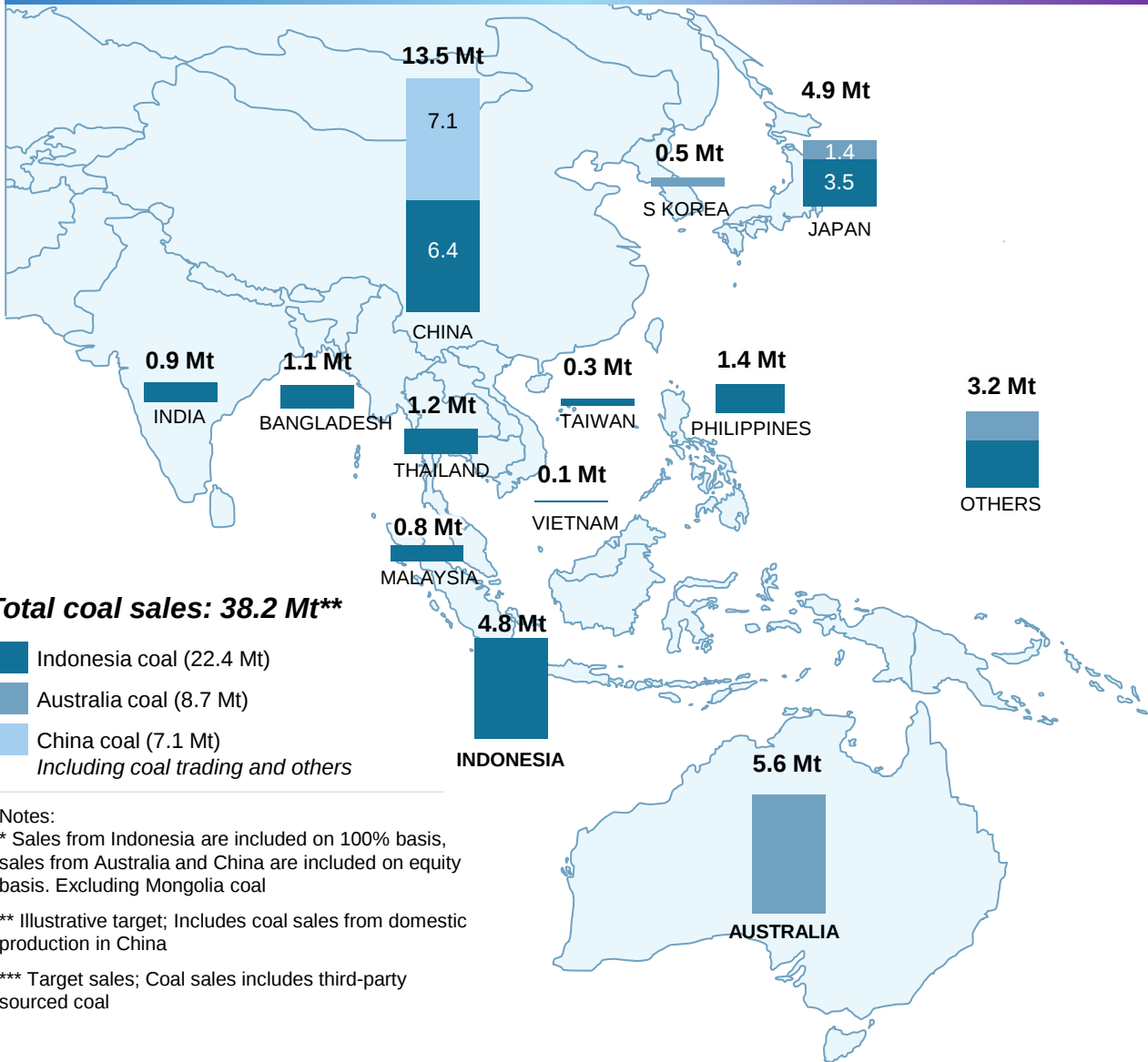
Note:

* Includes post shipment price adjustments as well as traded coal; CEY sales volume 1Q23 : 71% domestic & 29% export, 4Q22 : 55% domestic & 45% export

** The Newcastle Export Index (NEX)

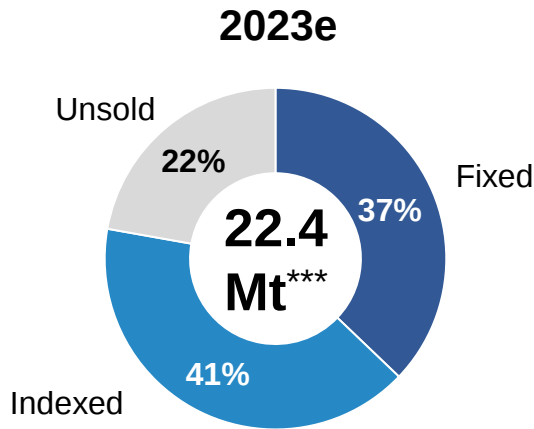
Banpu Mining: group coal sales and pricing status 2023e

2023e COAL SALES* SOURCE – DESTINATION ANALYSIS

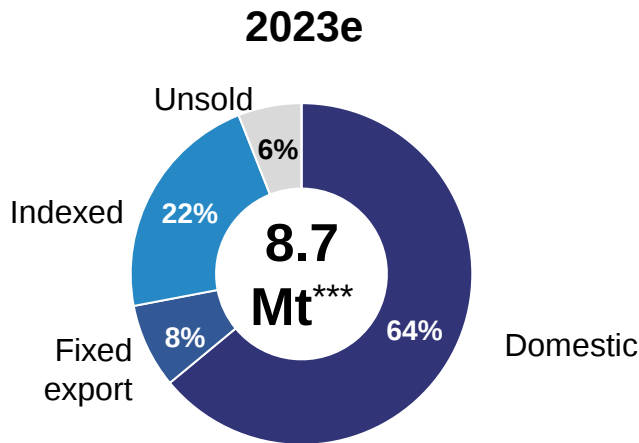


COAL SALES PRICING STATUS

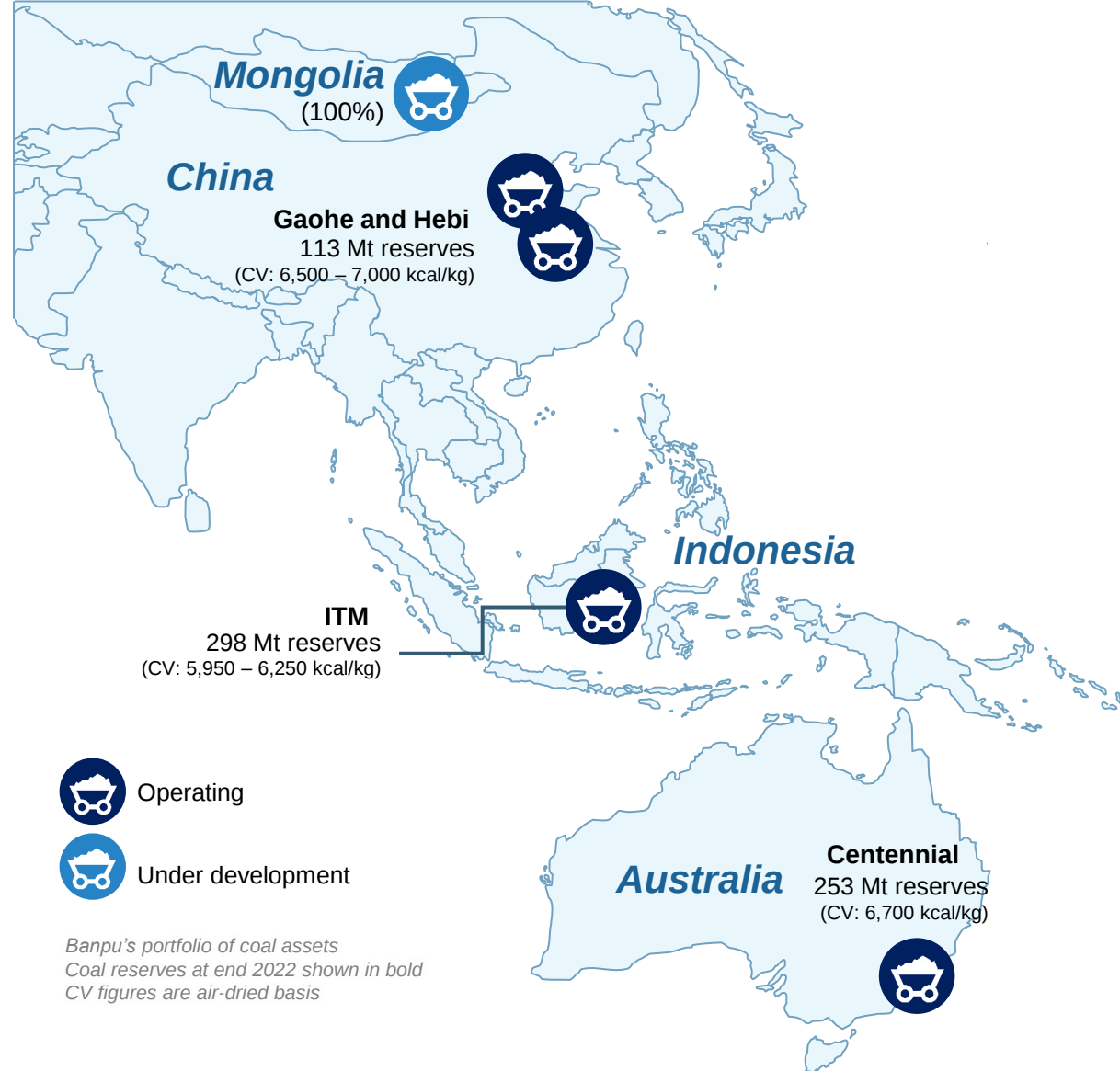
INDONESIA



AUSTRALIA



Banpu Mining: 1Q23 highlights



Production volume*

8.2 Mt

-5% QoQ

Sales volume*

9.2 Mt

-13% QoQ

EBITDA

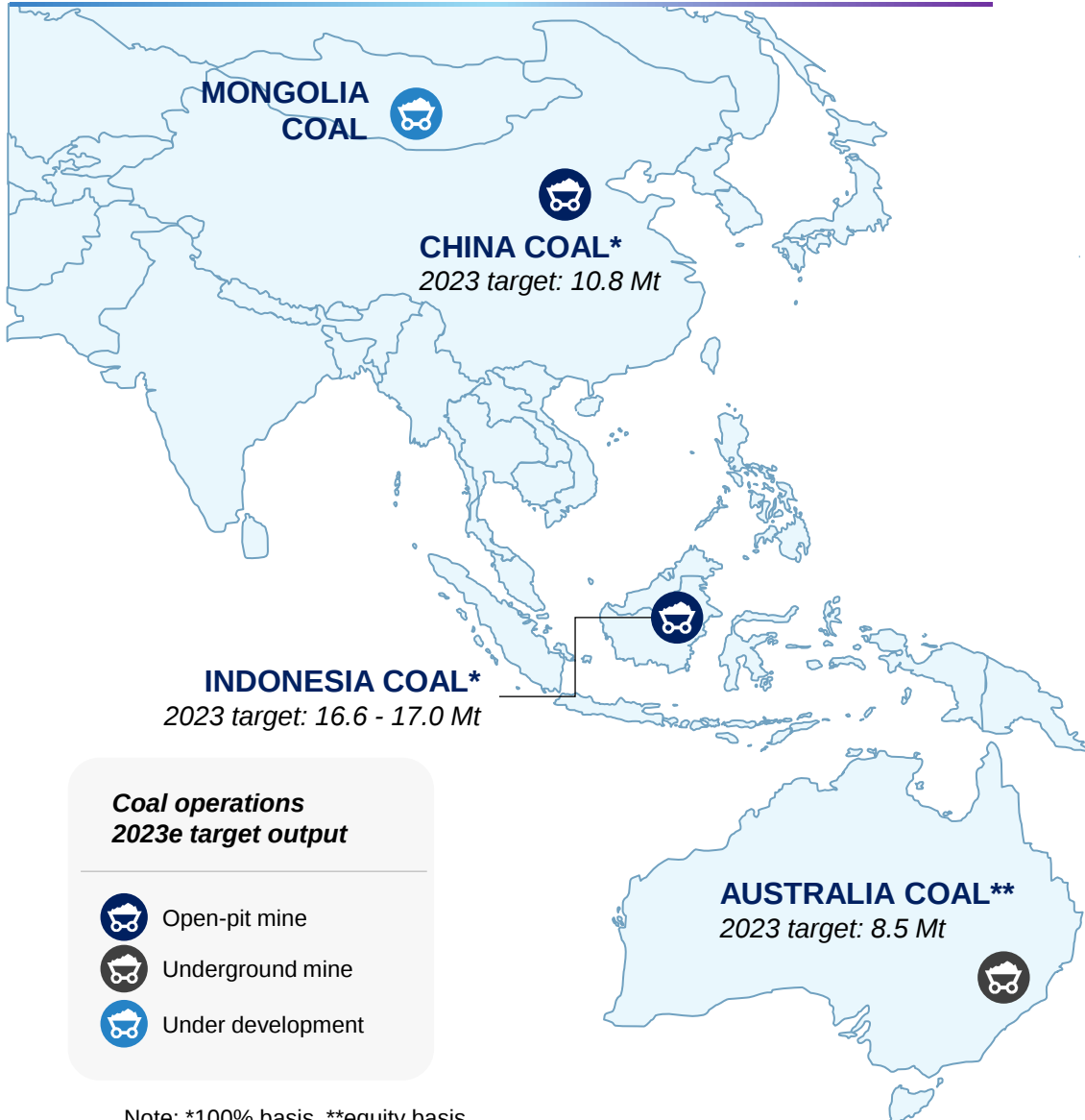
\$346 M

-52% QoQ

Note: *Based on 100% basis

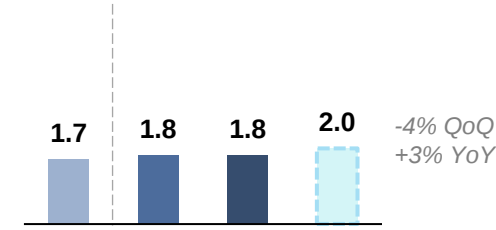
Banpu Mining: operational summary

2023E COAL OUTPUT



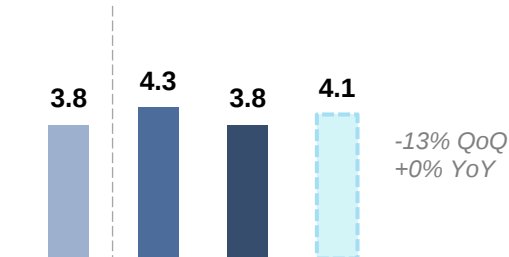
ROM PRODUCTION AND KEY UPDATES

AUSTRALIA COAL**



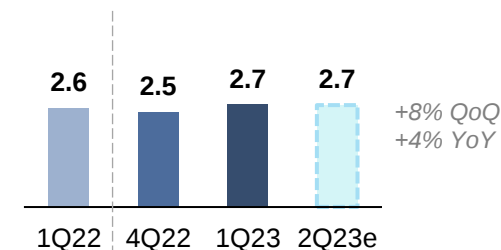
- Production for the quarter was similar to the two previous quarters at 1.8 Mt. Both Longwall mines operated throughout the quarter with no relocations.
- Lower production at Clarence due to geological conditions and Airly due to timing of Mini-wall relocation.

INDONESIA COAL*



- 1Q23 production achieved the target of 3.8 Mt despite rainy season at the start of the quarter.
- 2Q23 production is targeted at 4.1 Mt supported by increase in production at Indominco and Trubaindo mines.

CHINA & MONGOLIA COAL*

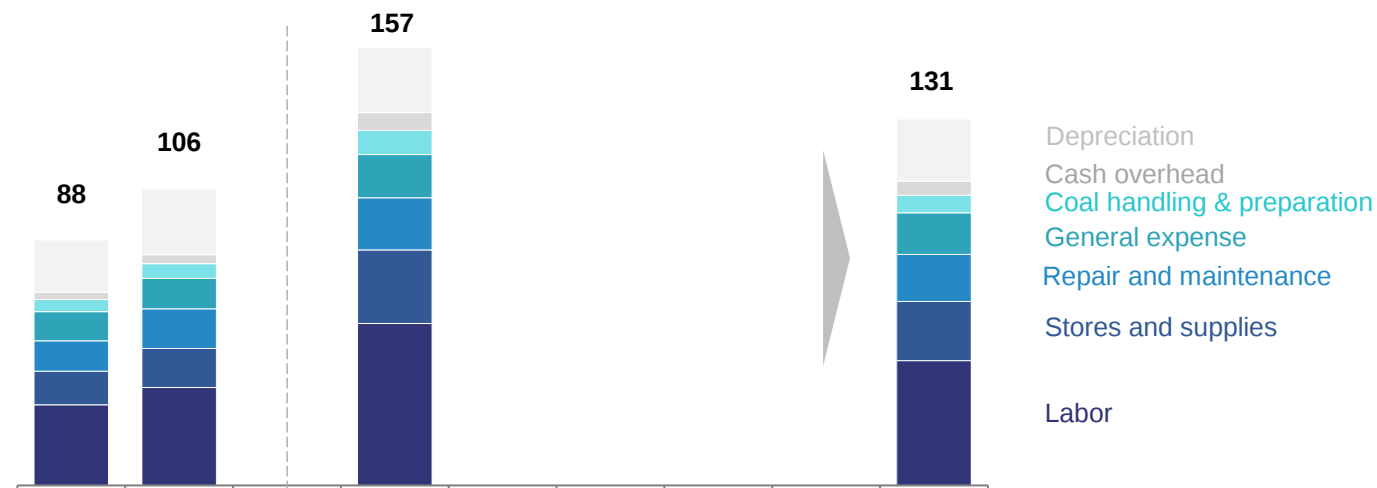


- Gaohe: Stable production and sales in 1Q23 despite weaker demand due to slow resumption of industrial activities.
- Hebi: Stable production and sales in 1Q23 with continued development of LTCC3205 which will ensure strong performance in 2023.

Banpu Mining: average production cost breakdown

AUSTRALIA COAL – AVERAGE PRODUCTION COST¹

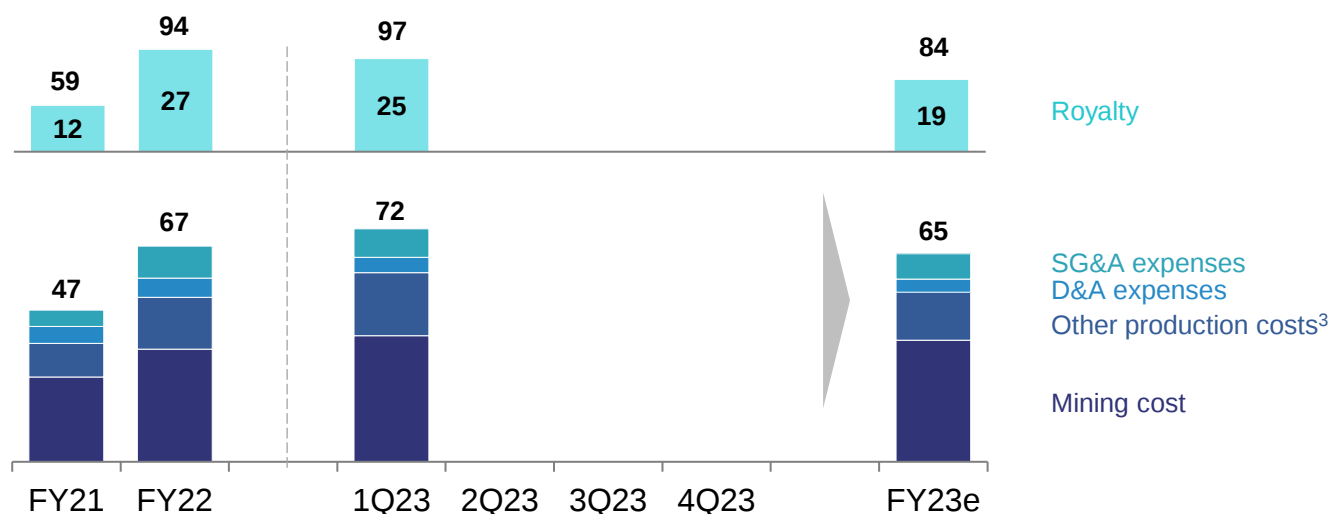
Unit: A\$/t



- Lower quarterly tonnes in 1Q23 compared to prior full year has resulted in higher unit costs. We expect the unit costs to fall in 2Q23.
- Global inflation environment continues to drive input costs across the business (e.g., electricity up 250% in FY23).
- Mine site teams are implementing strict opex and capex cost control measures resulting in cost reduction for 2Q23.

INDONESIA COAL – AVERAGE TOTAL COST²

Unit: US\$/t



- Total cost excluding royalty decreased from \$81/t in 4Q22 to \$72/t in 1Q23 (-11% QoQ) due to:
 - Decline in fuel price as one of the key cost drivers.
 - Implementation of cost effectiveness program which started in the early 1Q23.
- 1Q23 royalty decreased to \$25/t (-12% QoQ) following the decrease in global coal price.



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1Q23

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Beyond

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05

**Energy
Generation**

06

Energy
Technology

Banpu Energy Generation: 4,210 MW committed capacity



8 countries

operations across the
Pacific Rim



3,253 MW

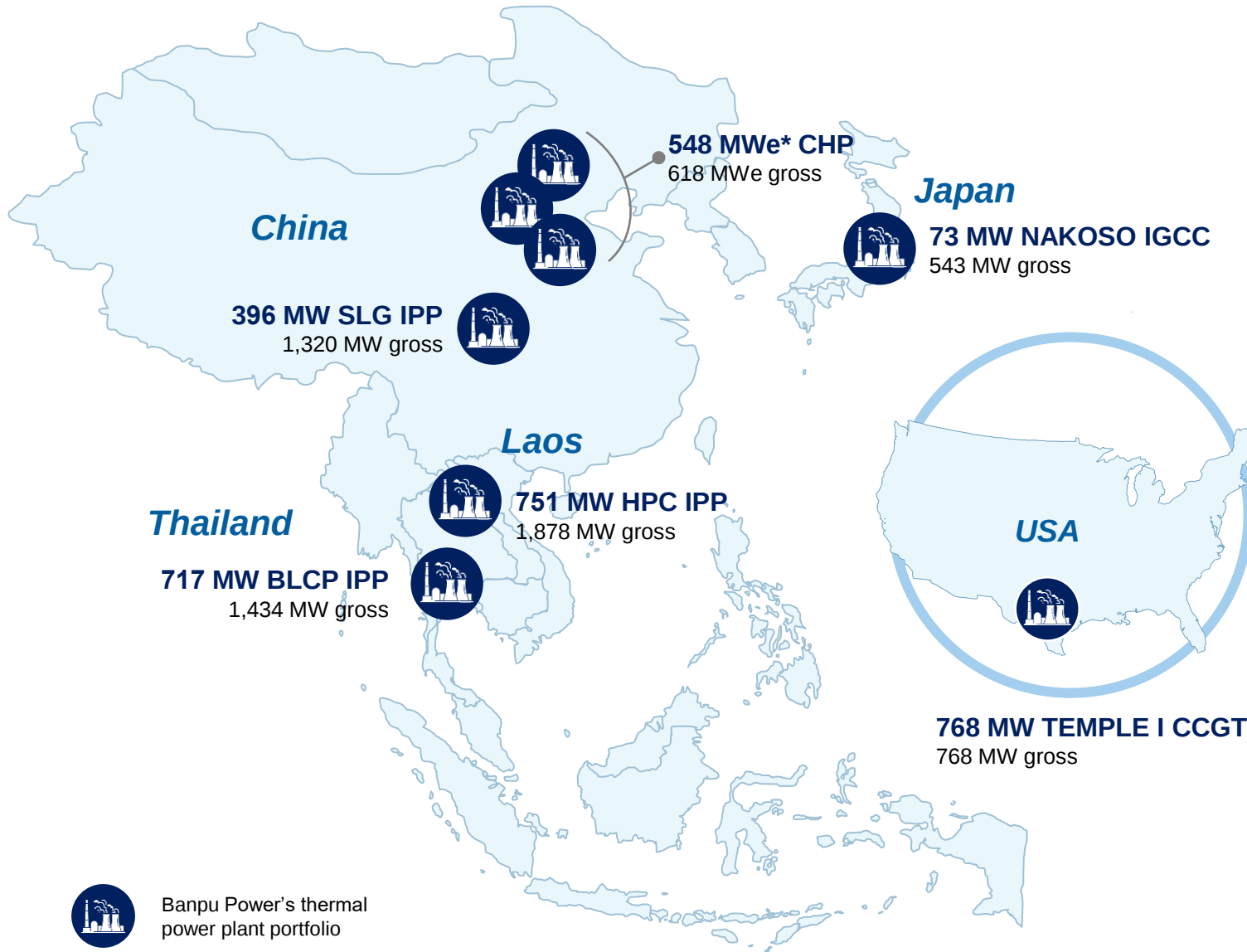
committed thermal
equity capacity



957 MW

committed renewables
equity capacity

Banpu Thermal Power: 1Q23 highlights



Note: * MW equivalent

EBITDA
\$47 M
-21% QoQ

Achieved EAF

96% at HPC	86% at BLCP
4% at Nakoso	95% at Temple I

Thermal Power: 1Q23 updates



BLCP

Successful major maintenance conducted in January. Operations continued as planned with consistently high EAF.*

- High reliability with EAF reported at 86%, +8% YoY
- Total revenue reported at THB 3.9 bn, EBITDA at THB 0.3 bn
- Reported share of profit at THB 54 M



HPC

Smooth operations as planned, achieving high EAF and net generation, resulting in a notable increase in profit sharing of 73% YoY.

- Reported higher EAF of 96%, +19% YoY
- Total revenue reported at THB 6.2 bn, EBITDA at THB 3.9 bn
- Reported share of profit at THB 1.1 bn



SLG

Maintained favorable price through coal supply contract. Lower power sold by 11% QoQ due to the shutdown of U2 during grid maintenance and industrial steam supply halt in January during the Spring Festival.

- Reported net power sold of 1,349 GWh
- Reported share of profit at RMB 4 M, improved by RMB +53 M YoY



China CHP

Despite the challenges of high coal costs and decrease in demand due to mild weather, our optimized operations have led to improved EBITDA and net profit QoQ.

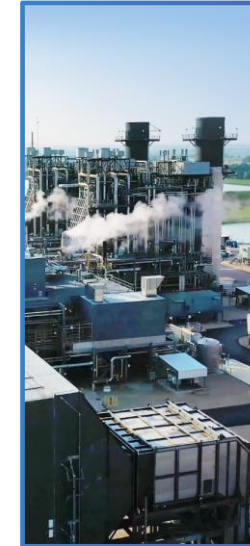
- Reported revenue of RMB 453 M
- Total EBITDA of RMB 25 M
- Reported share of profit at RMB 2 M



Nakoso IGCC

To ensure long-term reliability and sustainability, a temporary closure is scheduled for 2023 as the plant is still in its early stage of operations and requires equipment configuration and design adjustments.

- Reported EAF of 4%
- Reported net generation of 42 GWh
- Reported share of loss at THB 70 M

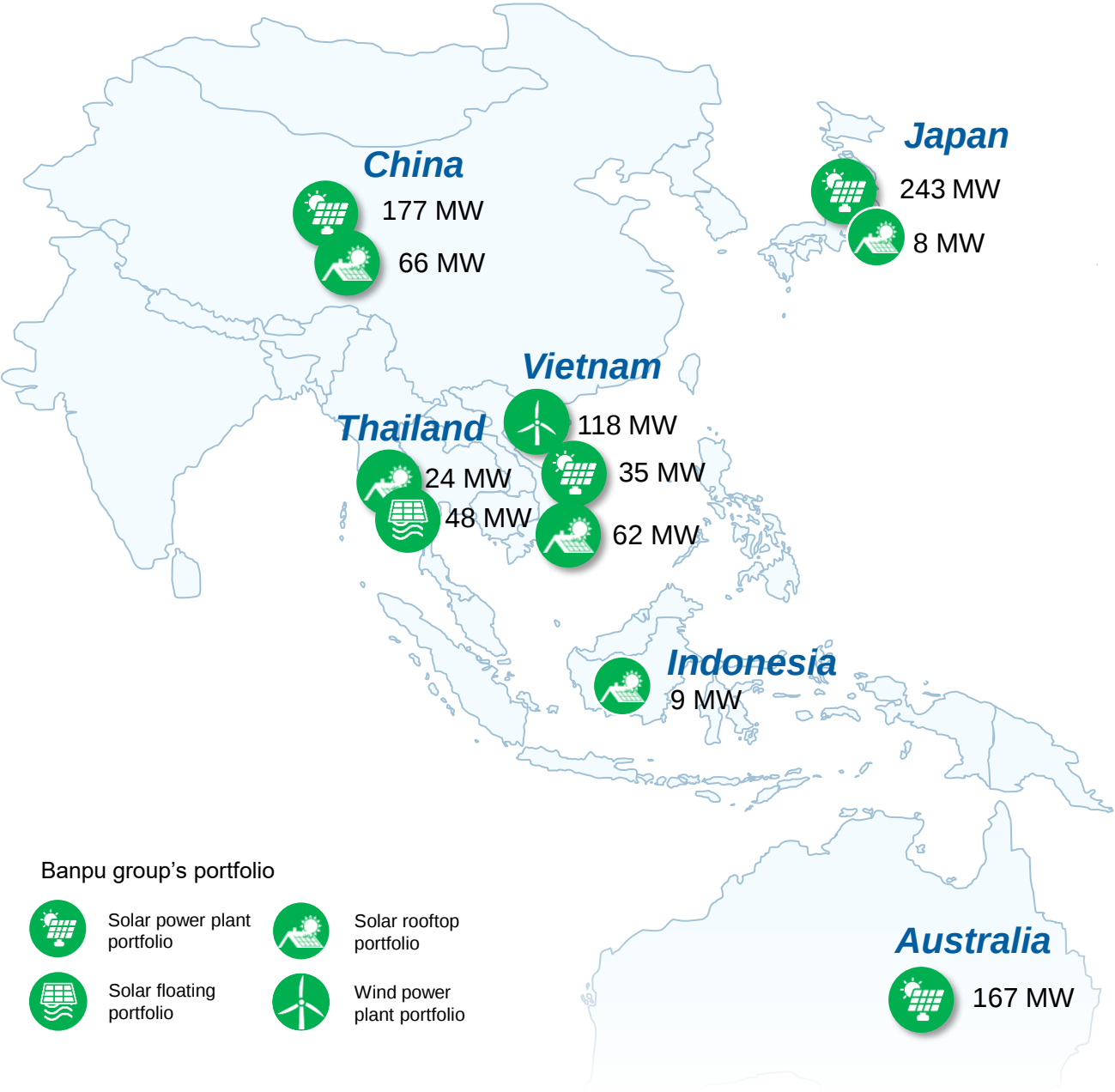


Temple I

Maintaining strong merit order enabled us to achieve higher net generation YoY, despite decreased revenue caused by lower electricity prices due to early mild weather.

- Reported EAF of 95% with net generation of 1,069 GWh
- Revenue reported at USD 36 M
- Reported share of loss at USD 6 M (includes gain from derivative of USD 7 M)

Banpu Renewable Power: diversified Asia-Pacific portfolio*



957 MW

committed renewables capacity across Asia-Pacific



622 MW

committed solar power capacity



217 MW

committed solar rooftop and floating solar capacity



118 MW

committed wind capacity

Banpu group's portfolio



Solar power plant portfolio



Solar rooftop portfolio



Solar floating portfolio



Wind power plant portfolio

Renewable Power: 1Q23 updates



China Solar

Achieved higher power sold YoY due to higher capacity factor resulting from better irradiation and reduced curtailment.

- Average capacity factor was 15%
- Power sold was 56 GWh, +13% YoY
- Reported revenue of RMB 46 M with profit contribution of RMB 14 M



Japan Solar

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

- Average capacity factor was 10%
- Power sold was 43 GWh, +23% YoY
- Reported cash distribution of JPY 221 M



Australia Solar

The El Niño situation resulted in favorable irradiation, leading to an increase in both capacity factor and power sold YoY.

- Average capacity factor was reported at 25%
- Power sold was 66 GWh
- Reported share of loss of AUD 4.7 M (loss from derivative of AUD 3.5 M)



Vietnam Solar

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

- Average capacity factor was 16%
- Power sold was 12 GWh
- Reported EBITDA of USD 1 M



Vietnam Wind

El Wind Mui Dinh

- Average capacity factor was 42%
- Power sold was 34 GWh
- Reported EBITDA of USD 2.8 M and share of profit of USD 1.2 M

Vinh Chau project

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



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**Energy
Technology**

Energy technology: current position and future targets

1Q23

SOLAR: ROOFTOPS & FLOATING
incl. 49% in Solar ESCO

Committed capacity
217 MW



Li-ion battery production capacity

Durapower **1.0 GWh**



New JV **In progress**



BATTERY & ESS SOLUTIONS
65.1% in Durapower
30.0% in New JV

Iwate Tono project
Battery farm
In progress



SMART CITIES & ENERGY MGMT
100% ownership

20 projects
Energy management,
smart infra, etc.



ENERGY TRADING
100% ownership

Electricity sales
119 GWh
(461 GWh in 4Q22)



E-MOBILITY

muvmi

Ridesharing



EV

HAUP

Carsharing

evolt

EV charging



Battery swapping

2025
target

500 MW

3.0 GWh
0.75 GWh*

58 MWh

30 projects

2,000 GWh
(Annually)



2030 target

Integrated clean energy ecosystem



Energy Technology: 1Q23 and recent updates



BATTERY VALUE CHAIN



SHAREHOLDING INCREASE IN DURAPOW

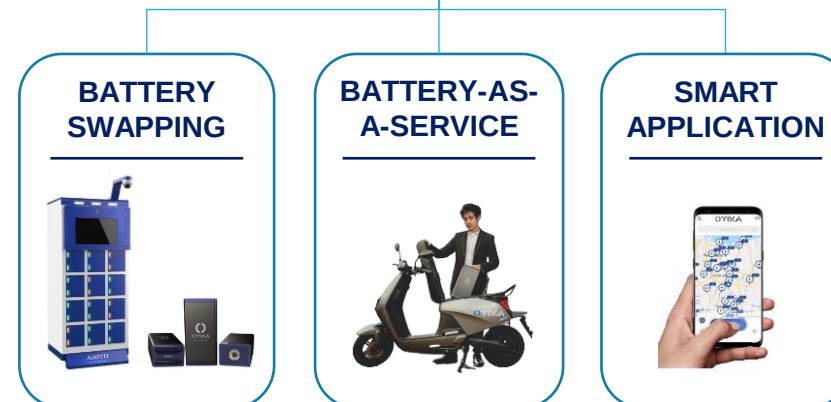
Banpu NEXT has completed the increase in shareholding in Durapower Holding, the battery production subsidiary headquartered in Singapore, from 47.68% to 65.1%.

INVESTMENT IN GREEN LI-ION

Banpu NEXT has invested US\$8 M in Pre-Series B funding round of Green Li-ion, equivalent to 4.55% in the company. Green Li-ion is a Singapore-based technology provider that designs and sells / leases its proprietary equipment to Li-Ion battery recyclers and manufacturers.

BATTERY SWAPPING FOR 2-WHEELERS

*Invested in 14.2% of Oyika
(in Pre-Series B funding round)*



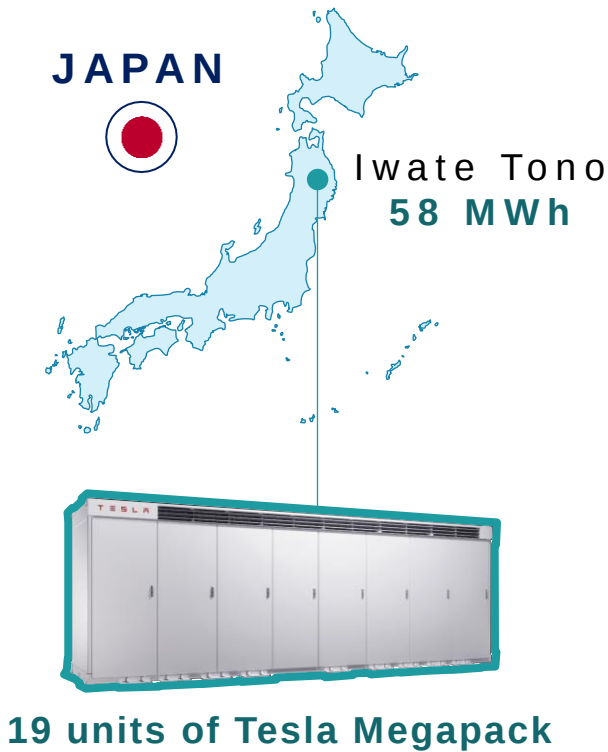
BANPU NEXT INVESTS IN OYIKA TO ACCELERATE BATTERY SWAPPING ADOPTION IN SOUTHEAST ASIA

Banpu NEXT invests US\$8.75 M In Pre-Series B round in Oyika Pte. Ltd. for 14.2% in the company. Oyika is a Singapore-based company that develops battery swapping / charging infrastructure and offers bundled solutions for electric motorbikes in Southeast Asia.

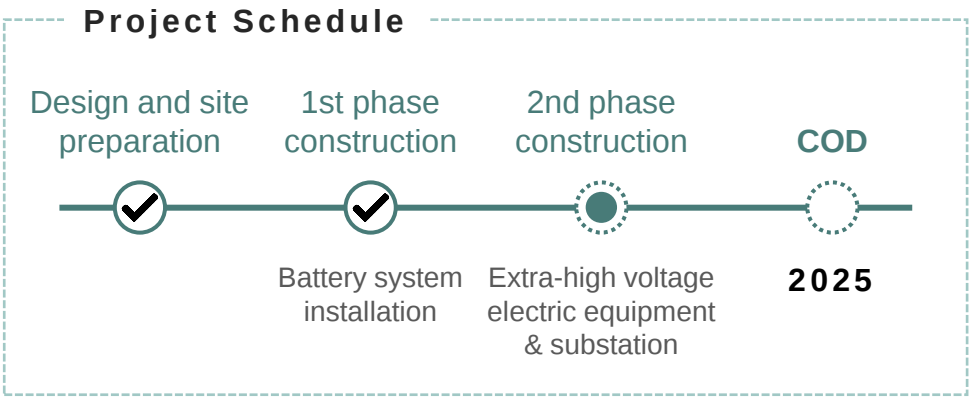
STRATEGIC RATIONALE:

-  **Investment in a high-growth battery swapping industry**
-  **Expansion of Banpu NEXT's E-mobility ecosystem**
-  **Synergy with Banpu NEXT's battery business value chain**

Energy Technology: 1Q23 and recent updates (cont'd)



Aligning with Japan’s carbon neutrality target, Banpu NEXT is developing a large-scale battery project in Iwate Tono with the total capacity of 58 MWh. The project will be developed on approximately **3,000 sqm of land area** with a single landowner. Iwate Tono project will be **supported by the government’s subsidy program**. The EPC consortium working on this project includes Kamigumi and Kurihalant.



ENHANCED MARKETING AND SALES THROUGH TENDERS AND MARKET LINKED PRICE OFFERING

- Engaged 10 customers (mostly state-owned) to supply 97 GWh of electricity from April 2023 to March 2024, 95% of which is hedged through physical and futures markets (TOCOM and EEX)
- Engaged over 400 small-to-medium sized clients; in 8 utility grid areas, with annual total sales volume of 300 GWh. The indicated client group is offered to supply with market-linked pricing.

Energy Technology: 1Q23 and recent updates (cont'd)



**SOLAR:
ROOFTOP &
FLOATING**



**BATTERY &
ESS SYSTEMS**



E-MOBILITY

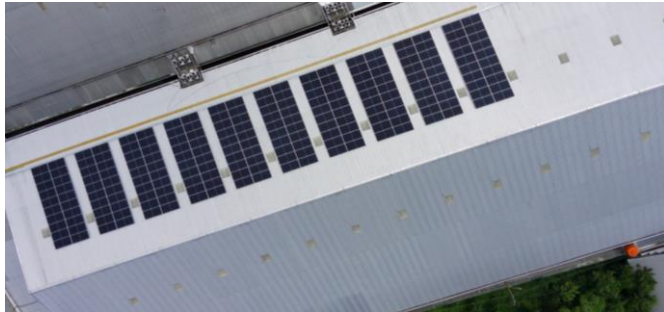


**SMART CITIES
& ENERGY MGMT.**



**ENERGY
TRADING**

SOLAR ROOFTOPS



IBP CONTINUES SOLAR PROJECT DEVELOPMENT

IBP has signed additional solar rooftop PPA of 1.1 MWp in 1Q23; bringing total secured capacity to 9.4 MWp. Currently, the total installed capacity is approximately 4.3 MWp.

ZHENGDDING SOLAR ROOFTOP DEVELOPMENT

Committed capacity of solar rooftop project at Zhengding CHP has increased to 66 MW with potential to increase to 167 MW by 2023. The first operation of 8.9 MW is targeted to commence by 1Q23.

JAPAN SOLAR ROOFTOP DEVELOPMENT

New contract signing with 9 customers for solar rooftop PPA for the total capacity of 7.4 MW bringing the total committed capacity in Japan to 8.1 MW

E-MOBILITY EXPANSION



BEYOND GREEN DEVELOPMENT

Beyond Green has agreed to increase the number of club cars provided RSU Vista Golf Course to 150 club cars. In addition, the company will provide caddy training program to improve overall service at the RSU Vista Golf Course.

BANPU NEXT ECOSERVE



CHILLER PLANT MANAGEMENT CONTRACT AT THAMMASAT UNIVERSITY HOSPITAL

Banpu NEXT EcoServe has been awarded the contract to manage chiller plant at Thammasat University Hospital for 5 years. The company will carry out chiller plant improvement with guaranteed efficiency and airside preventive maintenance.



APPENDIX

Banpu: 'integrated energy solutions' 2023

ENERGY RESOURCES

Shale Gas



876 MMcfed*
Net production

ENERGY GENERATION

Renewable Power



740 MW
Committed capacity

ENERGY TECHNOLOGY

Solar: Rooftop & Floating



217 MW
Committed capacity

Mining



36.4 Mt
Coal sales

Thermal Power



3,253 MW
Committed capacity

Clean Energy Tech



1.0 GWh (100% basis)
Li-ion batteries



E-mobility services
E-mobility solutions



Smart Cities &
Energy Management



119 GWh
Electricity trading

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 (adjacent to a producing well) (PUD)
 - Probable (in the same area as production but not adjacent) (PROB)
 - Possible (contingent on additional drilling) (POSS)
- Reserves have to be economically viable.

Production



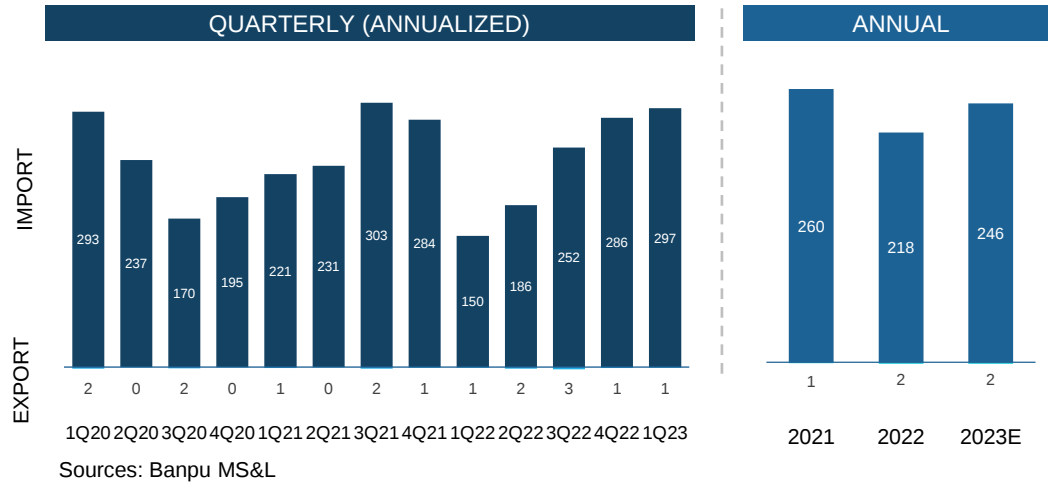
PRODUCTION UNIT

- In the US, production is measured in 1000 cubic feet (MCF)
 - 1000 MCF = 1 MMCF
 - 1,000,000 MCF = 1 BCF
 - 1000 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

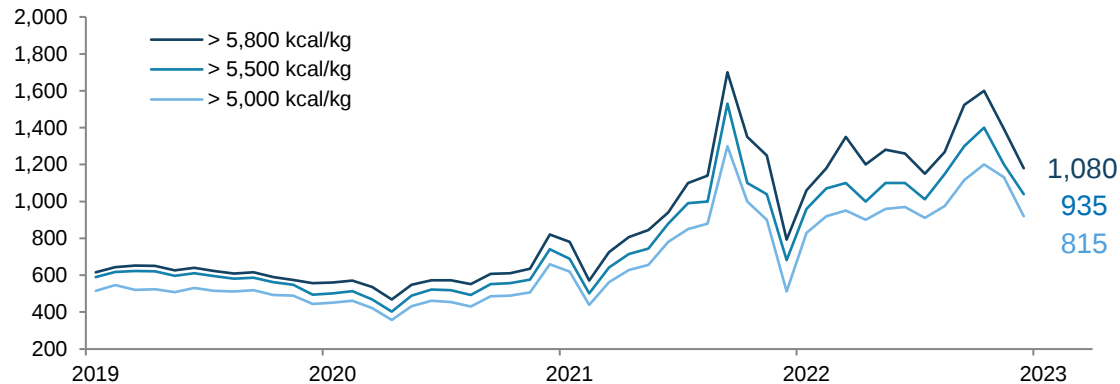
CHINA THERMAL COAL IMPORTS/EXPORTS*

Unit: Mt



CHINA DOMESTIC COAL PRICES

Unit: RMB/t



Note: * Includes lignite but excludes anthracite imports/exports
 Source: www.sxcoal.com/cn (March 10, 2023)

1Q23

- Slow economic recovery, warm winter and strong renewables curtailed coal power generation.
- Large scale of Covid-19 infection after the government ended the control measures has significantly impact economy in 1Q23.
- Overall coal market remains well supplied.
- Domestic coal production remains strong although some regions are subject to the pressure of safety inspections. Overall coal production was 1.15 bt in 1Q23, up by 6% on the year.
- China imported 74 Mt of thermal coal in 1Q23 which was 97% higher year-on-year and 4% higher from 4Q22.
- China imported 2 Mt of thermal coal from Australia in 1Q23 following the end of unofficial ban on Australian coal imports.
- China's receipts of Russian thermal coal increased to 11.7 Mt in 1Q23, up from 4.6 Mt a year earlier and relative flat from the previous quarter.
- Lower than expected economy and flood of imports resulted in the QHD price sliding to RMB1,075/t at the end of March from RMB1,250/t at the beginning of January.

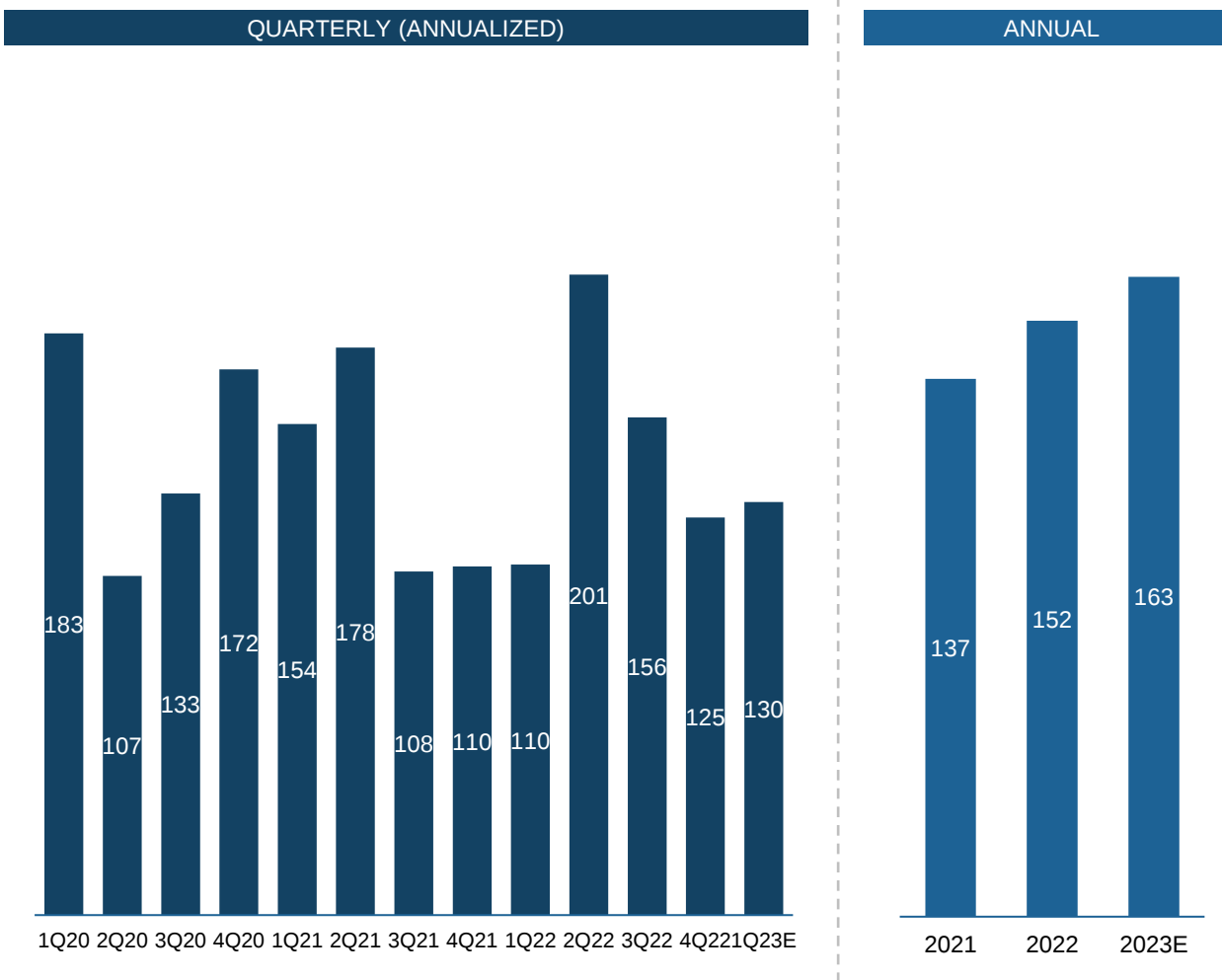
OUTLOOK

- China's thermal coal market will remain under pressure in April as 2Q is generally low demand season in China with weak demand and flood-in import is likely to continue in April.
- Coal demand is expected to bounce back from late 2Q23 due to summer demand and sign of stronger economic recovery in the second half.
- High coal stocks at ports and power plants are likely to delay spot seaborne coal demand in short term. However, coal stocks are still below historical norms.
- Domestic coal is expected to come down but are still high.
- Import curbs on Australian coal have been largely lifted across the country. We expect China will continue import Australian thermal coal but depending on coal prices compared to other origins.

India: severe summer to further strengthen power and coal demand

INDIA THERMAL COAL IMPORTS*

Unit: Mt



Note: * Includes lignite grade imports
Source: Commodity Insights, Banpu MS&L

1Q23

- Power demand remained robust in 1Q23 with 5.4% growth YoY, primarily due to increased heating requirements and most industries operated at peak output, although the electricity generation grew moderately in March owing to heavy and unseasonal rainfall across the country.
- Coal-fired generation rose by 4.9% YoY in 1Q23 as contributions from hydro, nuclear and gas declined. But import coal base generation grew by 5.2% YoY.
- Domestic coal production was 265 Mt in 1Q23, recording a yearly growth of about 15%.
- Government directive supports imports:
 - Domestic coal-based power plants must meet at least 6% of their coal requirement through import until September 2023.
 - All imported coal-based power plants are to run at full capacity during peak summer season (15 March and 16 June).
- Thermal coal import up by 14% YoY and up by 3.5% QoQ in 1Q23, driven by the power and the industrial sectors.

Outlook

- Power demand will remain robust in the near term as India enters the summer season. Summer this year is forecast to be very strong, accompanied by intense heat waves.
- Although domestic supply will remain robust this year, it will fail to keep pace with the growth in coal demand. Therefore, India's reliance on the seaborne coal market will extend further in 2023.
 - Increased heating requirements, various government mandates to the power sector to import coal and the flattening international coal prices will continue to support imports by the power sector.
 - Economic and infrastructure growth will also drive coal demand from the non-power sectors, although recent declines in petcoke prices may affect some demand for coal in this sector.

Coal quarterly output summary

AUSTRALIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON EQUITY BASIS

Mines	CV (kcal/kg)*	3Q22	4Q22	1Q23	2Q23e
Western operations		1.2	1.2	0.8	1.4
Springvale	6,700	0.7	0.4	0.5	0.9
Clarence	6,700	0.3	0.3	0.2	0.3
Airly	6,700	0.2	0.5	0.1	0.2
Northern operations		1.1	0.6	1.0	0.6
Mandalong	6,700	0.8	0.3	0.7	0.3
Myuna	6,700	0.3	0.3	0.3	0.3
Total Australia coal		2.3	1.8	1.8	2.0

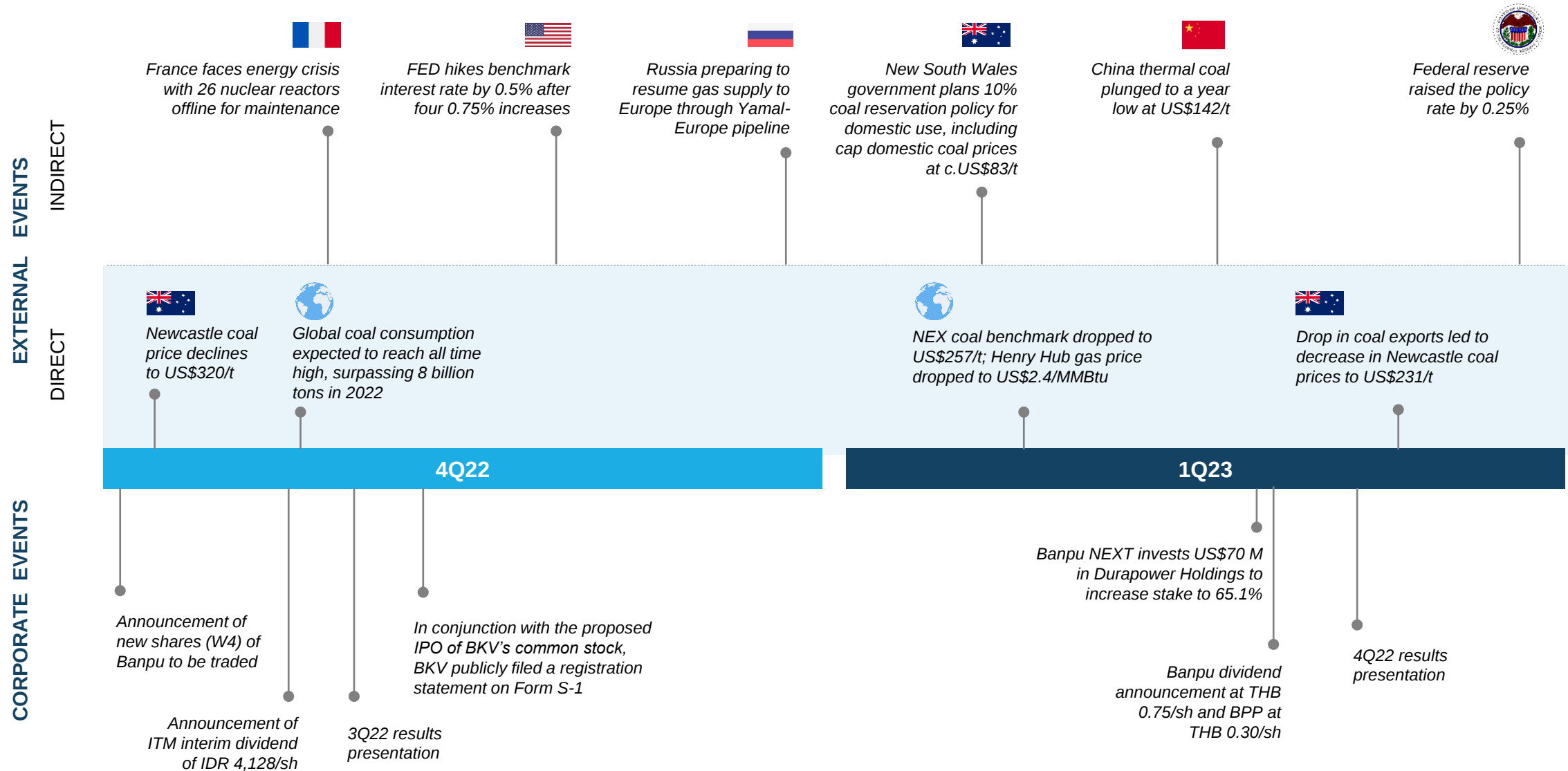
INDONESIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS

Mines	CV (kcal/kg)*	3Q22		4Q22		1Q23		2Q23e	
		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	2.0	8.9	1.6	10.5	1.5	11.6	1.6	15.4
Trubaindo	6,550 – 6,700	0.9	10.8	0.8	12.7	0.6	18.0	0.8	13.7
Bharinto		1.6	10.6	1.8	10.4	1.6	9.1	1.6	9.0
Jorong	5,300	0.2	17.4	0.2	15.5	0.1	15.0	0.1	11.1
Total Indonesia coal		4.6	10.2	4.3	11.0	3.8	11.5	4.1	12.2

CHINA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS

Mines	CV (kcal/kg)*	3Q22	4Q23	1Q23	2Q23e
Gaohe		2.3	2.3	2.5	2.4
Hebi		0.3	0.2	0.2	0.3
Total China coal		2.6	2.5	2.7	2.7

Key external and corporate events



FX impact analysis guidance on P&L

CURRENCY EXPOSURE	NPAT IMPACT 4Q22 (US\$M)	APPROXIMATE FX EXPOSURE (US\$M)		NPAT 5% SENSITIVITY 1Q23 (US\$M)	
		NET LIABILITY	NET ASSET	Assuming 5% depreciation of local currencies against USD	
Banpu: AUD asset, THB bond, and others	-21.5	-1600	270	THB	77
				AUD	-10
ITMG: IDR asset and liabilities	6.2		200	IDR	-10
CEY: USD asset	0.8		20	AUD	1
Net	-14.5			NET	51

▪ BOT cut growth 2023 to 3.6%

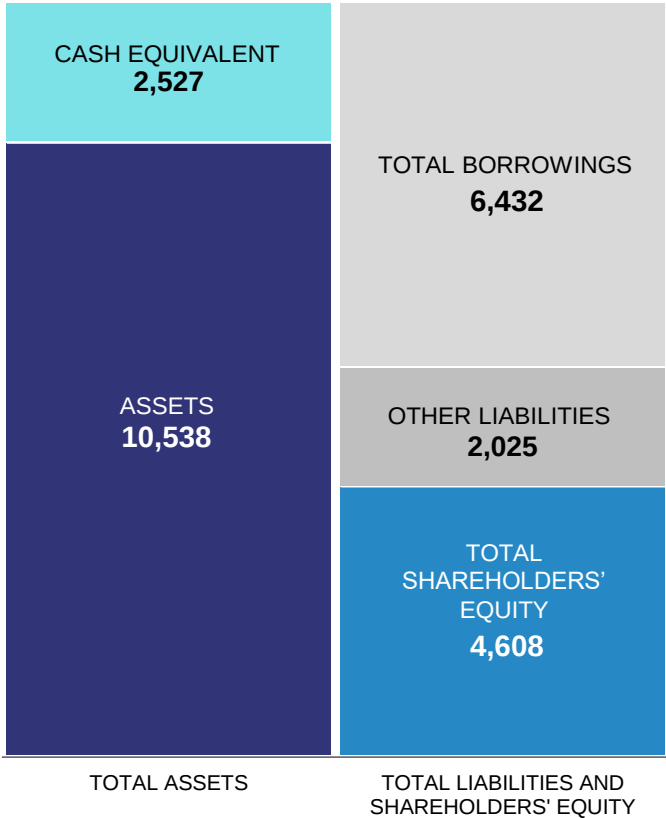
▪ BI forecast 2023 GDP to 4.5%-5.3%

▪ RBA maintained growth for 2023 and 2024 to 1.5%

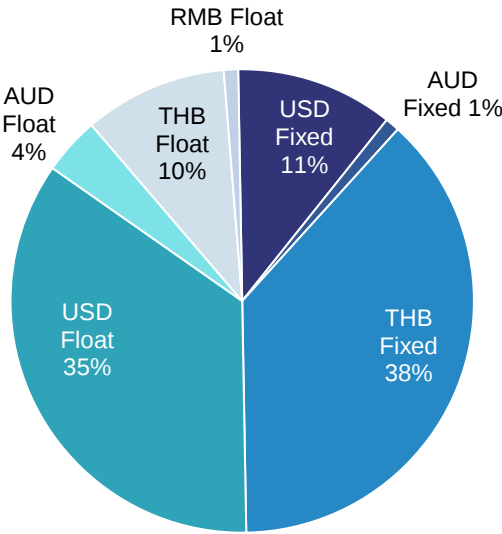
Banpu consolidated balance sheet – 1Q23

1Q23 CONSOLIDATED FINANCIAL POSITION

USD million

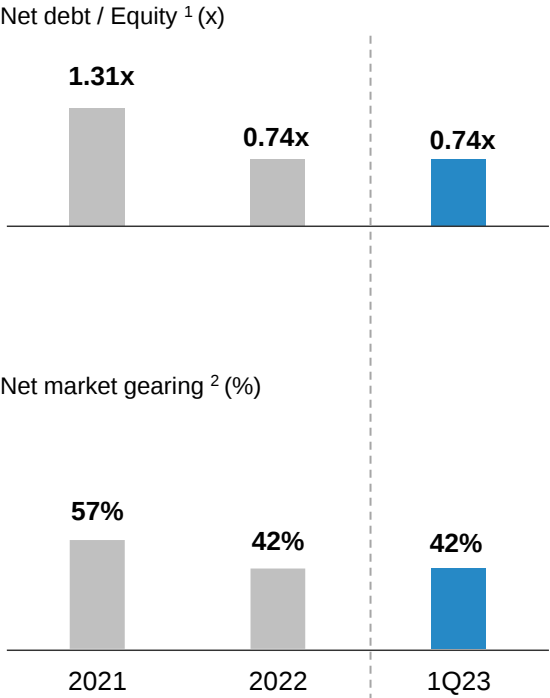


DEBT FX STRUCTURE



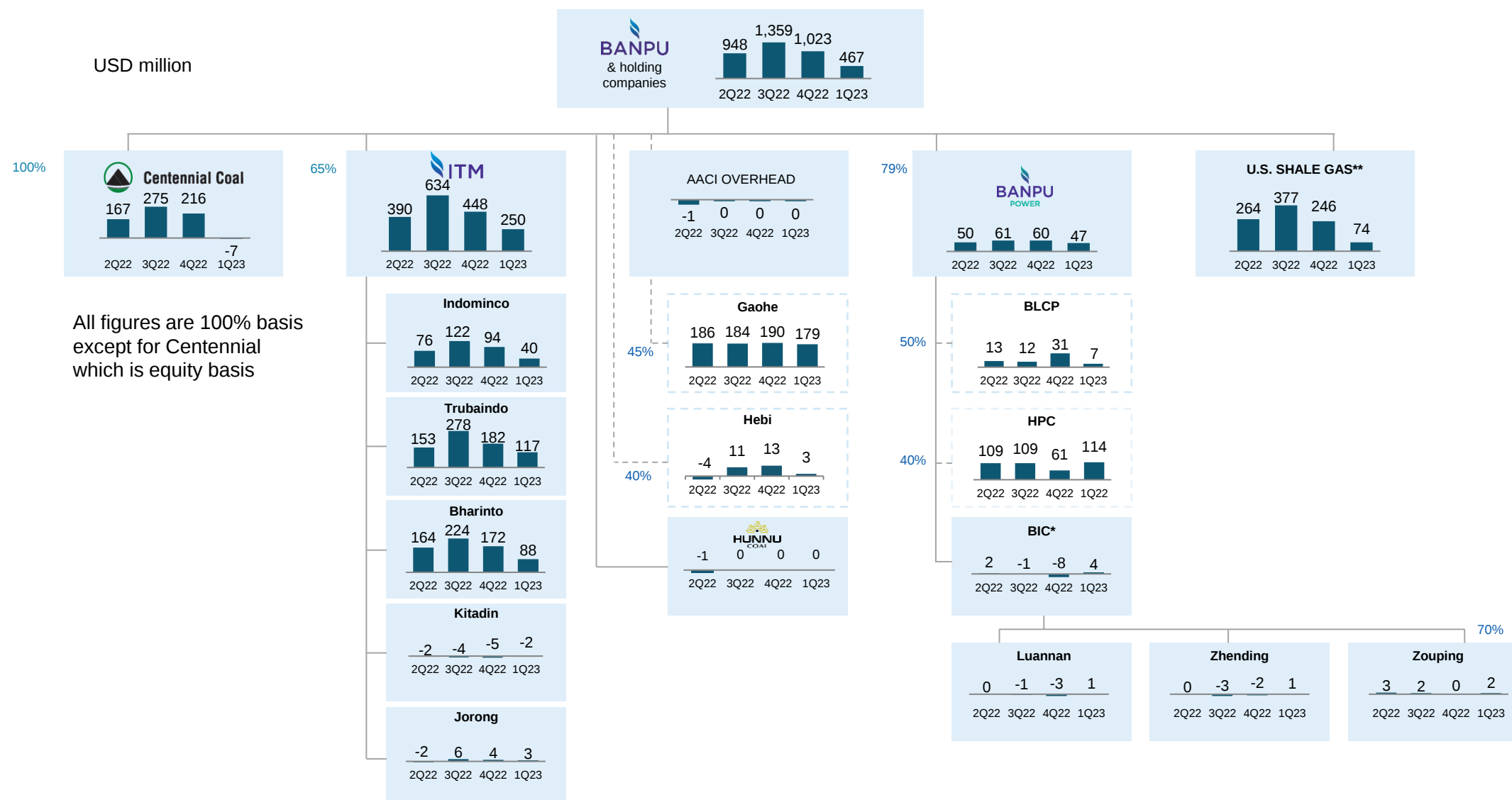
Total gross debt: US\$ 6,432 billion
As of 31 March 2023

GEARING RATIOS



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

Banpu group EBITDA breakdown



Note: all ownership 100% unless otherwise shown

*BIC = 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;

Consolidated NOT consolidated

Banpu group net debt breakdown



Note: all ownership 100% unless otherwise shown

*BIC = Banpu Investment China

Banpu consolidated: operating profit

USD million	1Q23	4Q22	1Q22	QoQ%	YoY%
Total sales revenues*	1,312	2,268	1,256	-42%	+4%
Sales revenue – Coal**	945	1,465	828	-35%	+14%
Sales revenue – Gas	223	420	279	-47%	-20%
Sales revenue – Power	117	333	126	-65%	-7%
Cost of sales	(873)	(1,145)	(666)		
Gross Profit*	440	1,123	590	-61%	-25%
Gross profit – Coal**	401	833	427	-52%	-6%
Gross profit – Gas	33	231	153	-86%	-79%
Gross profit – Power	5	37	9	-87%	-46%
GPM	34%	50%	47%		
<i>GPM – Coal</i>	<i>42%</i>	<i>57%</i>	<i>52%</i>		
<i>GPM – Gas</i>	<i>15%</i>	<i>55%</i>	<i>55%</i>		
<i>GPM – Power</i>	<i>4%</i>	<i>11%</i>	<i>7%</i>		

Banpu consolidated: operating profit

USD million	1Q23	4Q22	1Q22	QoQ%	YoY%
Gross Profit	440	1,123	590	-61%	-25%
GPM	34%	50%	47%		
SG&A	(120)	(210)	(112)		
Royalty	(125)	(168)	(85)		
Income from associates	84	104	62		
Other income and Dividend	30	30	12		
Mining property	(7)	(1)	(5)		
EBIT	302	877	463	-66%	-35%
EBIT – Coal	253	644	320	-61%	-21%
EBIT – Gas	17	190	130	-91%	-87%
EBIT – Power	36	50	26	-28%	+39%
EBIT – Energy Technology	(4)	(7)	(13)	n.a.	n.a.
EBITDA	467	1,023	596	-54%	-22%
EBITDA – Coal	346	722	400	-52%	-13%
EBITDA – Gas	74	246	167	-70%	-56%
EBITDA – Power	47	60	40	-21%	+20%
EBITDA – Energy Technology	(0)	(4)	(10)	n.a.	n.a.

Banpu consolidated: net profit

USD million	1Q23	4Q22	1Q22	QoQ%	YoY%
EBIT	302	877	463	-66%	-35%
Interest expenses	(86)	(80)	(50)		
Financial expenses	(2)	(2)	(2)		
Income tax (core business)	(51)	(83)	(60)		
Minorities	(80)	(112)	(80)		
Net profit before extra items	83	599	271	-86%	-70%
Non-recurring items*	82	(404)	192		
Gain (Loss) on Derivatives Transactions	(27)	(126)	(148)		
Income tax (non - core business)	(2)	(24)	(0)		
Deferred tax income (expenses)	27	85	(15)		
Net profit before FX	162	130	300	+24%	-46%
FX translation	(14)	(137)	10		
Net Profit	147	(7)	311	n.a.	-53%
EPS (US\$/share)	0.017	(0.001)	0.046		

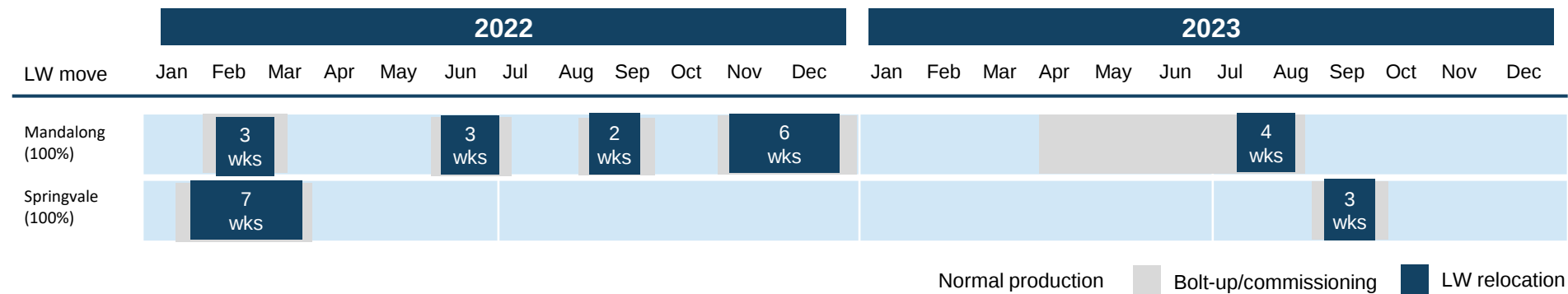
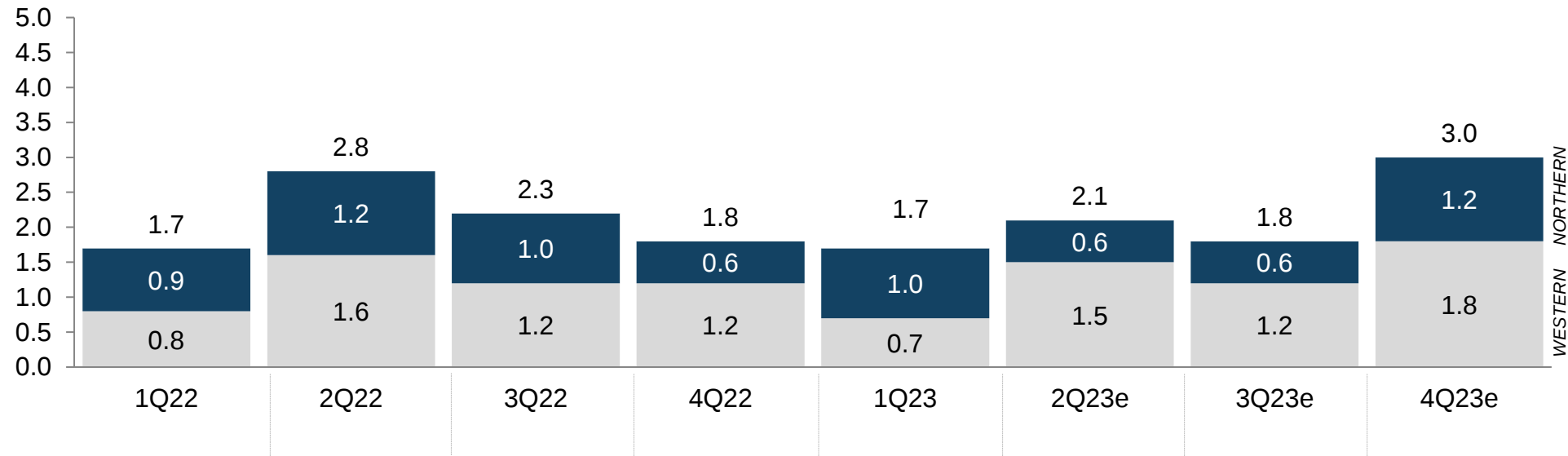
Note: * income from non-core assets and other non-operating expenses

Centennial: income statement

USD million	1Q23	4Q22	1Q22	QoQ%	YoY%
Sales volume (Mt)	1.8	2.0	1.5	-11%	+18%
Sales revenue	219.4	374.8	147.1	-41%	+49%
Cost of Sales	(207.8)	(194.7)	(136.4)		
Gross Profit	11.6	180.1	10.7	-94%	+9%
GPM	5%	48%	7%		
SG&A	(28.6)	(30.0)	(19.3)		
Royalty	(13.1)	(23.5)	(8.4)		
Other income	1.9	2.6	1.6		
Other expenses	-	-	-		
EBIT	(28.2)	129.2	(15.3)	n.a.	n.a.
Interest expenses	(8.0)	(10.1)	(7.8)		
Financial expenses	(1.6)	(1.0)	(0.5)		
Gain (loss) on exchange rate	0.8	(4.4)	5.0		
Gain (loss) on derivative	(3.1)	(6.7)	0.3		
Corporate income tax	-	(0.0)	-		
Deferred tax income	12.0	(32.3)	6.2		
Net Profit	(28.1)	74.7	(12.2)	n.a.	n.a.

Australia coal: quarterly equity rom output

Total equity ROM (Mt)



Note: 1. Production generally responds to the timing of longwall changeovers (i.e., lower production results during a longwall changeover period)
2. As of 1 December 2019, Centennial's economic interest in each of Angus Place and Springvale became 100%.

