



# 3Q22 results

Opportunity Day

22<sup>nd</sup> November 2022



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**Highlights  
3Q22**

# 02

Greener, Smarter  
... Faster !

# 03

Financial  
Summary

# 04

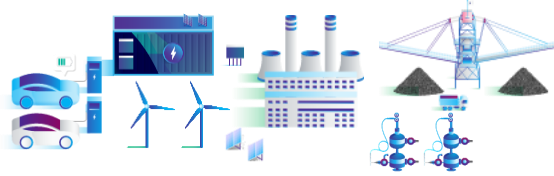
Energy  
Resources

# 05

Energy  
Generation

# 06

Energy  
Technology



## Accelerating Banpu's Sustainability Transformation

Significant progress in Greener, Smarter businesses through developments in:

### China Solar Rooftops

Selected by Zhengding government to develop 58 MW solar rooftop with the potential to increase to 167 MW by 2023

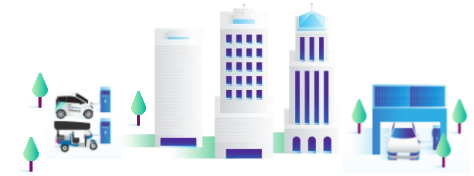
### Smart Cities & EMS

25% acquisition in Altotech Global, an IoT platform developer for EMS, and investment in Eurazeo Smart City Fund II, a CVC fund focusing on new energy, industrial tech, etc.



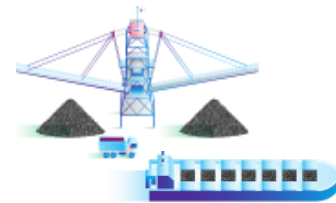
## Robust Cash Flow Generation

EBITDA for the quarter was **\$1,350 M** with strong contribution from Coal and Gas businesses and incremental contribution from Greener assets



## ESG Leadership Recognition

ESG leadership recognition across the Banpu group, showcased by recently being awarded '**Honor**' Sustainability Excellence from SET Awards 2022



## Energy Prices Strong

Gas price averages at **\$8.0/MMBtu** and coal price averages at **\$426/t** in 3Q22, due to continued strong demand amidst tight supply levels



## Capital Raising for Greener, Smarter Transition

Capital raising from warrant exercise and debenture issuance to accelerate the Banpu group transition

# 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 Award**  
Gold Class 2022

**S&P Global**

**Gold**

class distinction, the only company in the industry out of 29 companies being assessed to achieve the award



PART OF  
Moody's ESG Solutions

BEST EMERGING MARKET PERFORMERS

**Best Performer**

Recognized as one of the top 100 Best Emerging Market Performers, out of a universe of 843 companies from 31 different countries

## SUBSIDIARIES

**ESG EXCELLENCE**



*In 2021, BPP demonstrated high ESG standards through sustainable and responsible operations*

Sustainability Yearbook  
Member 2022  
S&P Global

**S&P SUSTAINABILITY  
YEARBOOK MEMBER**



**COMMENDED  
SUSTAINABILITY AWARD**



**5<sup>TH</sup> YEAR LISTED ON THSI**

**RESPONSIBLY  
SOURCED GAS**



**AWARDED RESPONSIBLY  
SOURCED GAS (RSG)  
CERTIFICATION  
WITH GOLD RATING**  
by Project Canary TrustWell, a  
3<sup>rd</sup> party certification company

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 being awarded the Best Sustainability Award for at least 4 consecutive years

## CREDIT RATING



A Strategic Partner of S&P Global

**A+**

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



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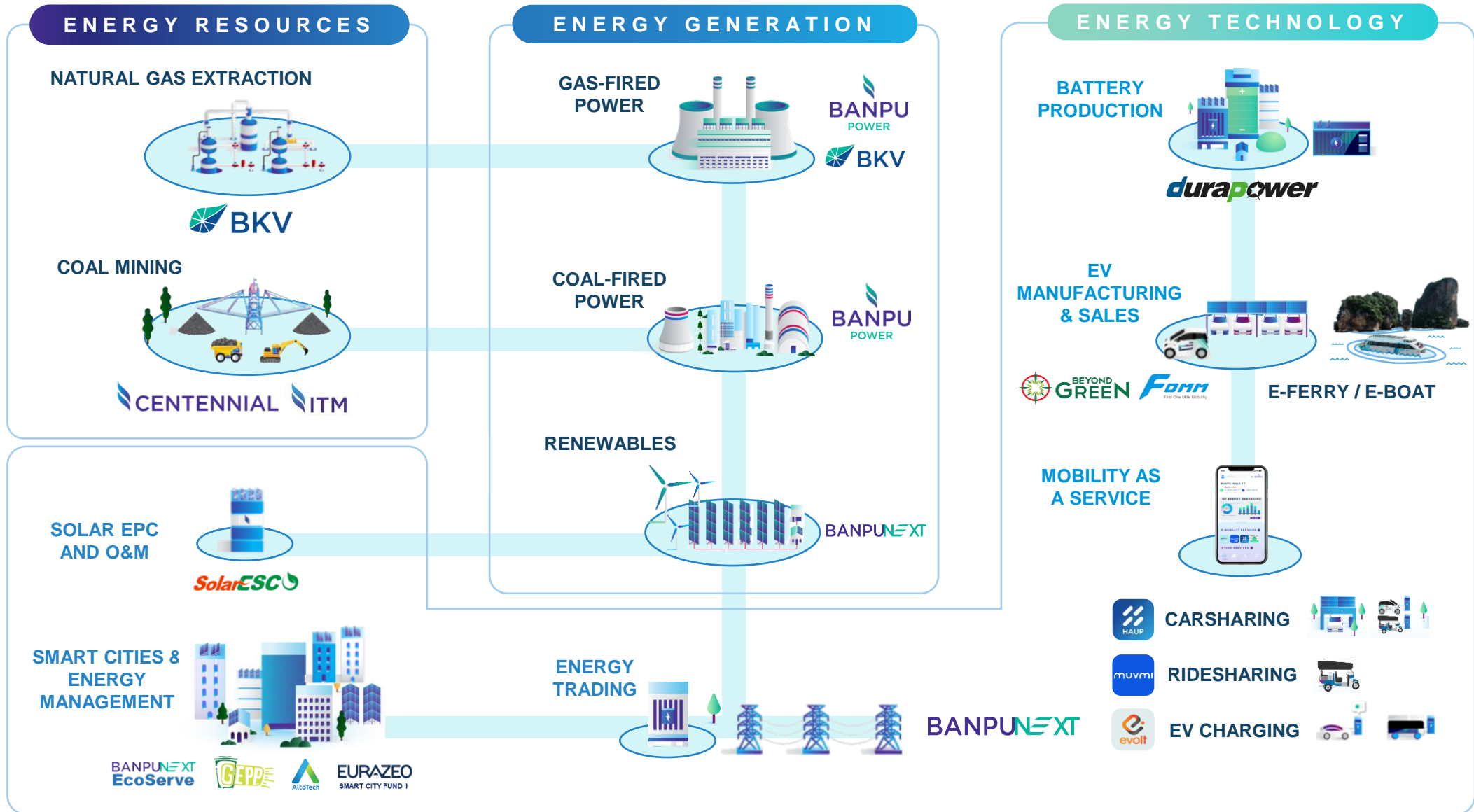
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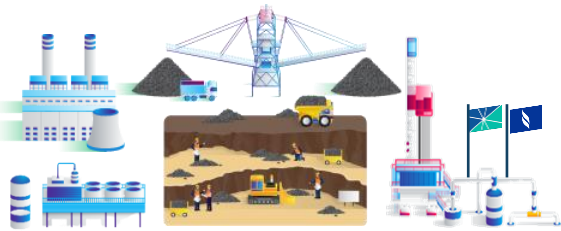
Energy  
Technology

# Banpu: international versatile energy provider



# Banpu: driving the Greener, Smarter growth through Banpu NEXT

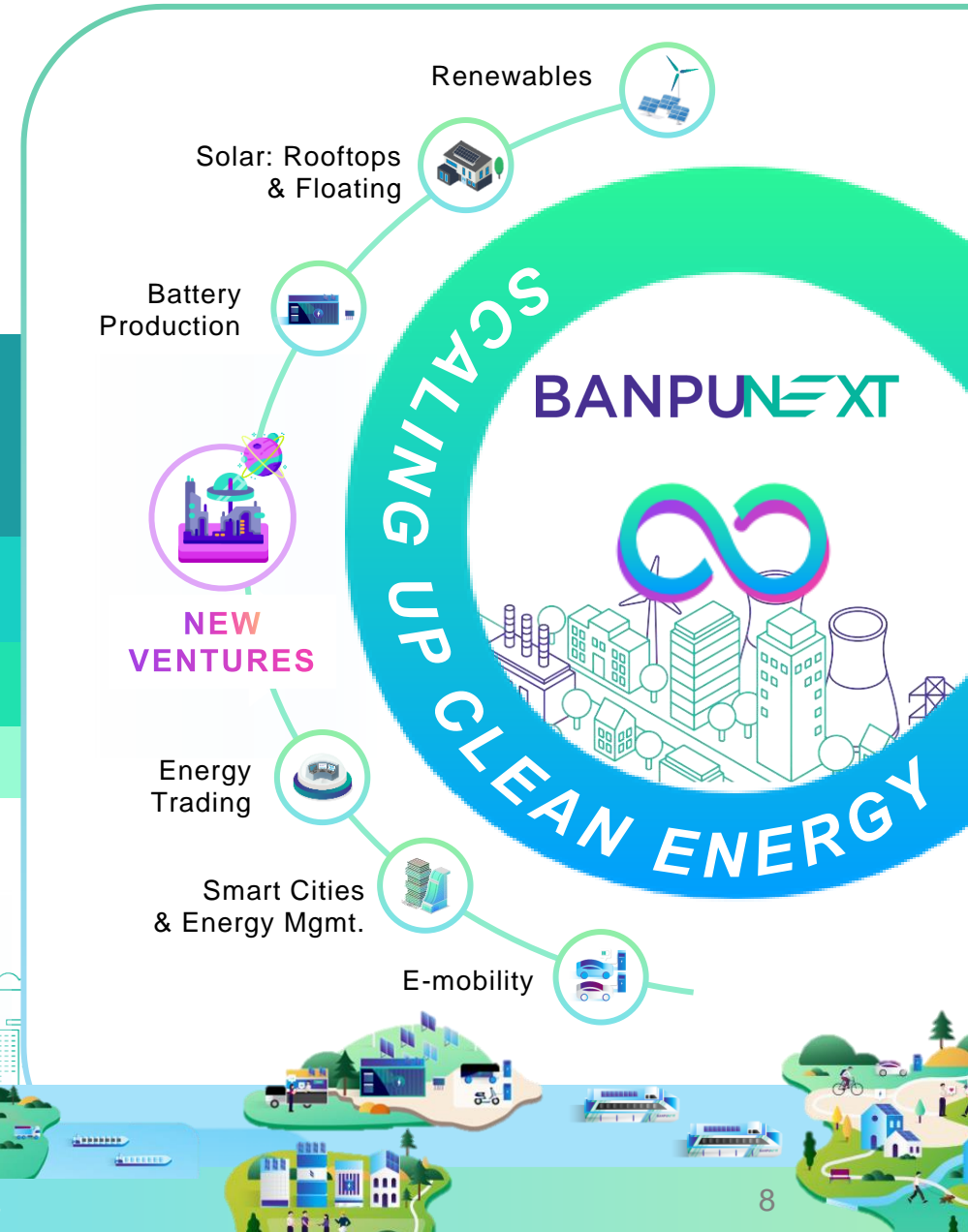
**BANPU**



Leveraging price upside from energy resources business and steady cash flow generation from power business to...

▶▶  
...ACCELERATE  
**GREENER, SMARTER**  
GROWTH

- ▶ **STRONG CASH FLOW GENERATION FROM OPERATIONS**
- ▶ **CORE COMPETENCIES**
- ▶ **TRANSFERABLE SKILLS**
- ▶ **SYNERGIES**



# Clean energy technology: catalyst for a sustainable future



## CLEAN ENERGY

Global installed renewables capacity

**2.5x** Solar in 2025  
**1.6 - 1.8 TW**  
*From 0.7 TW in 2020*



Wind in 2025  
**1.2 - 1.3 TW**  
*From 0.7 TW in 2020*



## ENERGY STORAGE

Global demand for Li-ion battery for EV in 2025

**680 GWh**  
*From 215 GWh in 2020*

**3.2x**

Installed VRFB utility-scale & commercial battery in 2025

**8 GWh**  
*From 2 GWh in 2020*

**4.0x**



## EV & MOBILITY

Global EV sales in 2025

**21 M cars**  
*From 7 M cars in 2020*

**3.0x**

Thailand EV sales in 2025

**402 K cars**  
*From 41 k cars in 2020*

**9.8x**



Significant growth in the area of clean energy technology, in alignment with Banpu NEXT's strategy to accelerate the Greener, Smarter transition

Source: IEA Renewables 2021, IHS Markit, Bloomberg NEF

# Banpu NEXT: Banpu's Greener, Smarter transformation

GREENER,  
SMARTER  
TRANSFORMATION  
INITIATED

2017



ACCELERATED GROWTH SINCE ESTABLISHMENT TO TODAY ▶▶

2019



3 Q 2 2

## Smart cities & EMS



**Altotech acquisition:**  
Acquired 25% of Altotech for IoT space and data analytics development in energy management systems



**Smart city fund investment:**  
Invested US\$15 M into Eurazeo's Smart City Fund II, a CVC fund focusing on new energy, smart mobility, etc.

GROWTH IN 2022



**First battery investment**  
Li-ion production

**SUNSEAP**  
Singapore Solar Platform  
via investment in Sunseap Group



**First step into Vietnam Wind**  
80 MW wind project



**E-mobility in Thailand**  
First steps into EVs including launch of e-ferry for tourism



**Energy Trading in Japan**  
Gaining know-how in liberalized markets



**Solar rooftops in Thailand**

**End-to-end waste management platform**

## Expanding the Energy Tech Ecosystem



Continued investments into e-mobility and energy management businesses



**Australia & Vietnam Solar**

## Solar rooftop

### Signed PPA:

**INDONESIA**  
PT. CPI signs solar rooftop PPAs with 7.3 MW total capacity



### Solar ESCO Acquisition:

**VIETNAM**  
solar rooftop platform in Vietnam with 6 MW of equity capacity



## Stationary batteries: LiV Energy Venture

**SINGAPORE**

Joint Venture for Lithium-Vanadium hybrid ESS



2 Q 2 2

1 Q 2 2

## Energy management: BNSP Joint Venture

**SINGAPORE**  
JV with SP Group to expand capabilities in district cooling systems



## Li-ion battery production: THAILAND

Strategic partner with Cherdchai Motor Sales for 1 GWh battery plant by 2026



STRATEGY AND DIRECTION

## 1 Value creation through meaningful megawatts

Invest into high-quality renewable assets with potential growth pipeline and high cash flow generation potential

## 2 Scale-up targeted ecosystem portfolio

Expansion of portfolio on focused business areas and effective opportunity pipeline management



## 3 Manage invested partners to maximize synergies and returns

Enhance synergy value with partners and rationalize portfolio with carefully executed growth and exit strategy

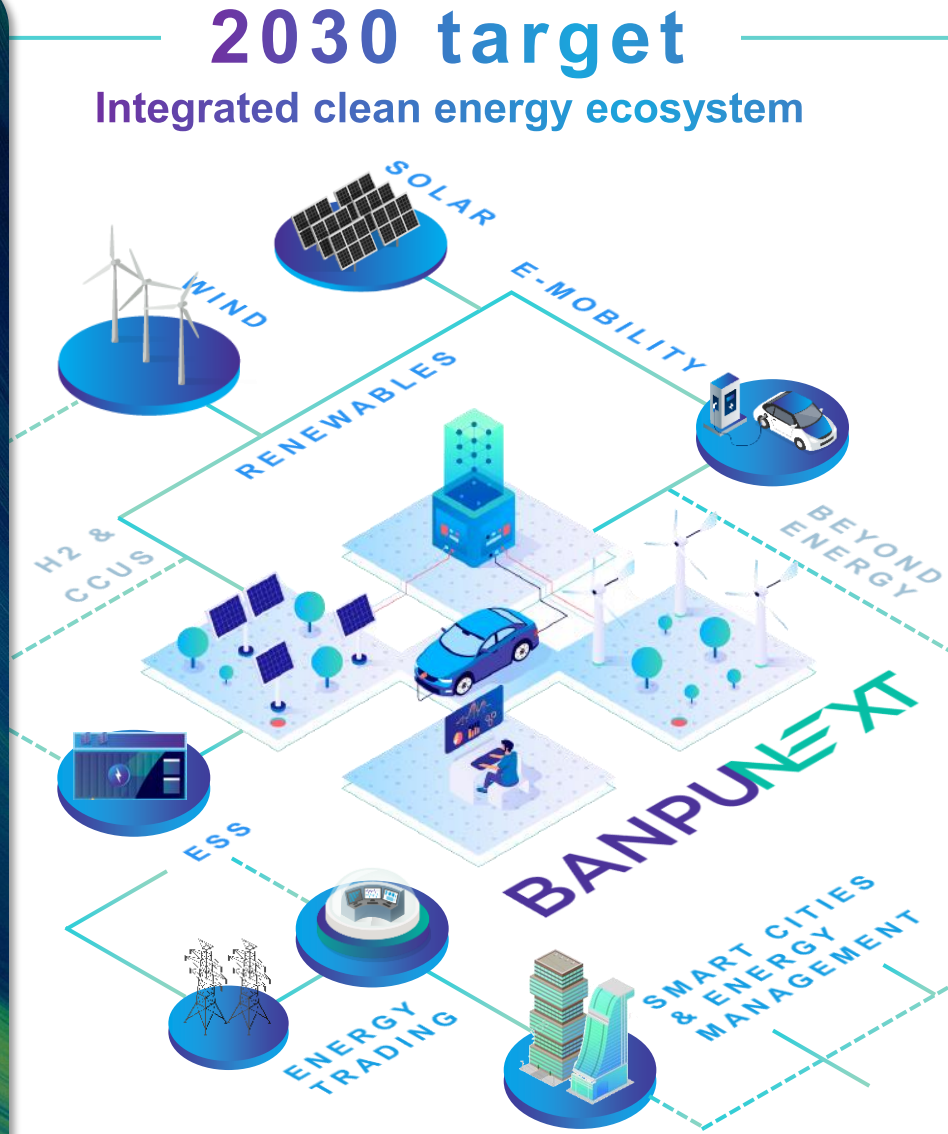


## 4 Penetrate new S-curve business and technology

- Explore and acquire new focused energy tech businesses
- Enhance and expand collaboration with expertise networks and partners



# Current position and future targets



Note: Current and target capacity are based on Banpu group's 100% basis

## the Vision

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**Innovating infinite energy solutions to all**

To provide innovative energy technology solutions ranging from smart data analytics to energy generation and storage for sustainability



**the ambition.**

**Net Zero Solutions  
Provider & One-Stop  
Solution for Smart Energy**

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Just transition for not only Banpu, but to support other companies' transition towards **Carbon Neutrality** and **Net Zero** for a sustainable future

## the Mission

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**To become a global energy solutions provider that innovates betterment for all and generations to come**





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## KEY FIGURES

**EBITDA** **\$1,350 M**

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

**NPAT** **\$487 M**

Strong performance, with strong EBITDA generation and improved operational results

**ND/E** **0.88 x**

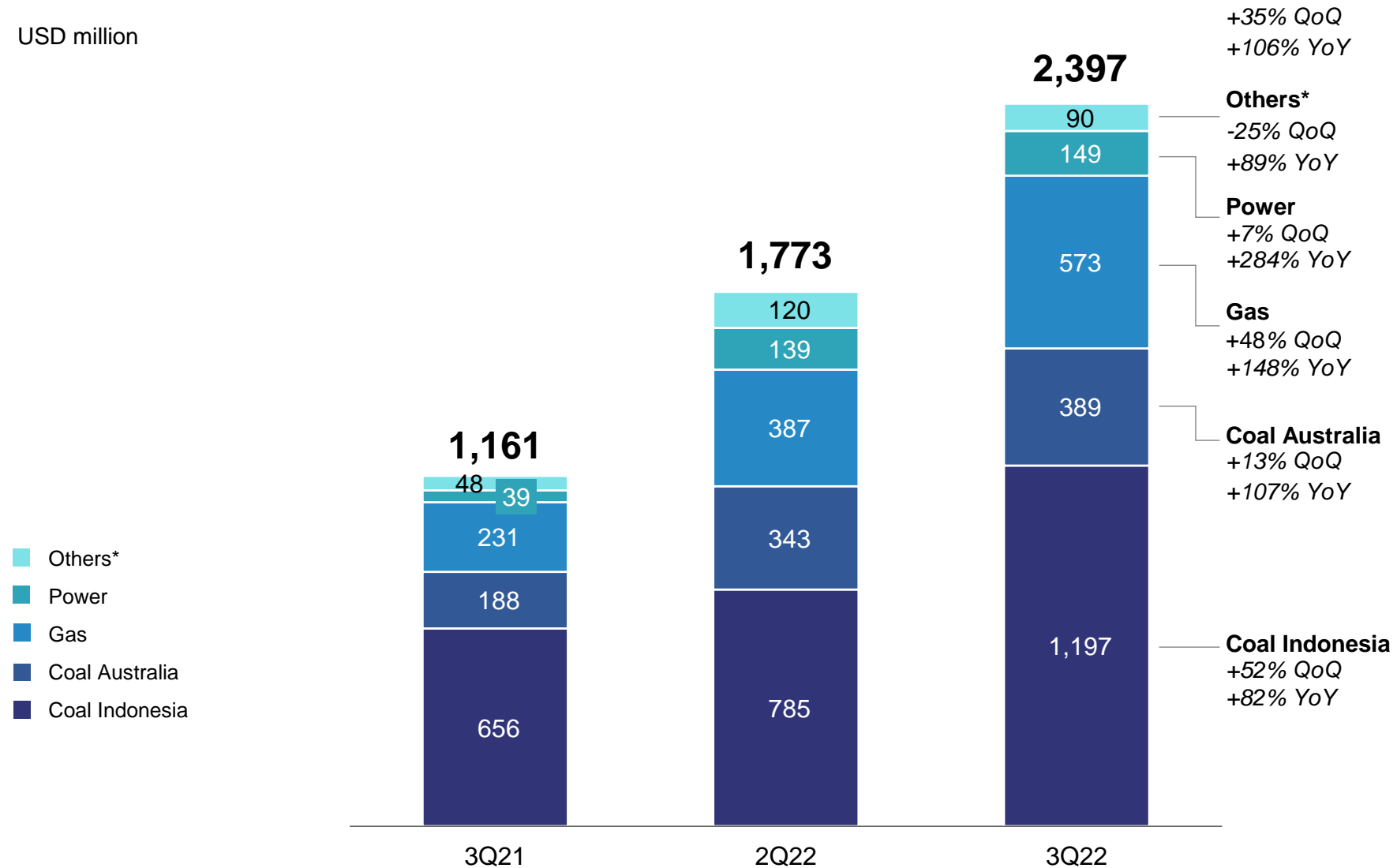
ND/E decreased from 1.13 x in the previous quarter following a strong performance in 3Q22

## KEY TAKEAWAYS

- 1 Continuous strong Coal business performance:** from solid production volume and higher ASP, compared to relatively strong levels of 2Q22, driven by strong coal prices, demand and supply tightness
- 2 Strong contributions from Gas business:** supported by higher average local price\* levels and higher production volumes
- 3 Strategic positioning:** Coal and Gas businesses well-positioned to benefit from current commodity price levels and demand upside
- 4 Greener, Smarter investments:** cash flow generation captured from Greener Investments including: Nakoso IGCC, Australia Solar, Temple I CCGT, Japan Solar, Vietnam Wind, Vietnam Solar and North Texas

# Banpu consolidated sales revenues – 3Q22

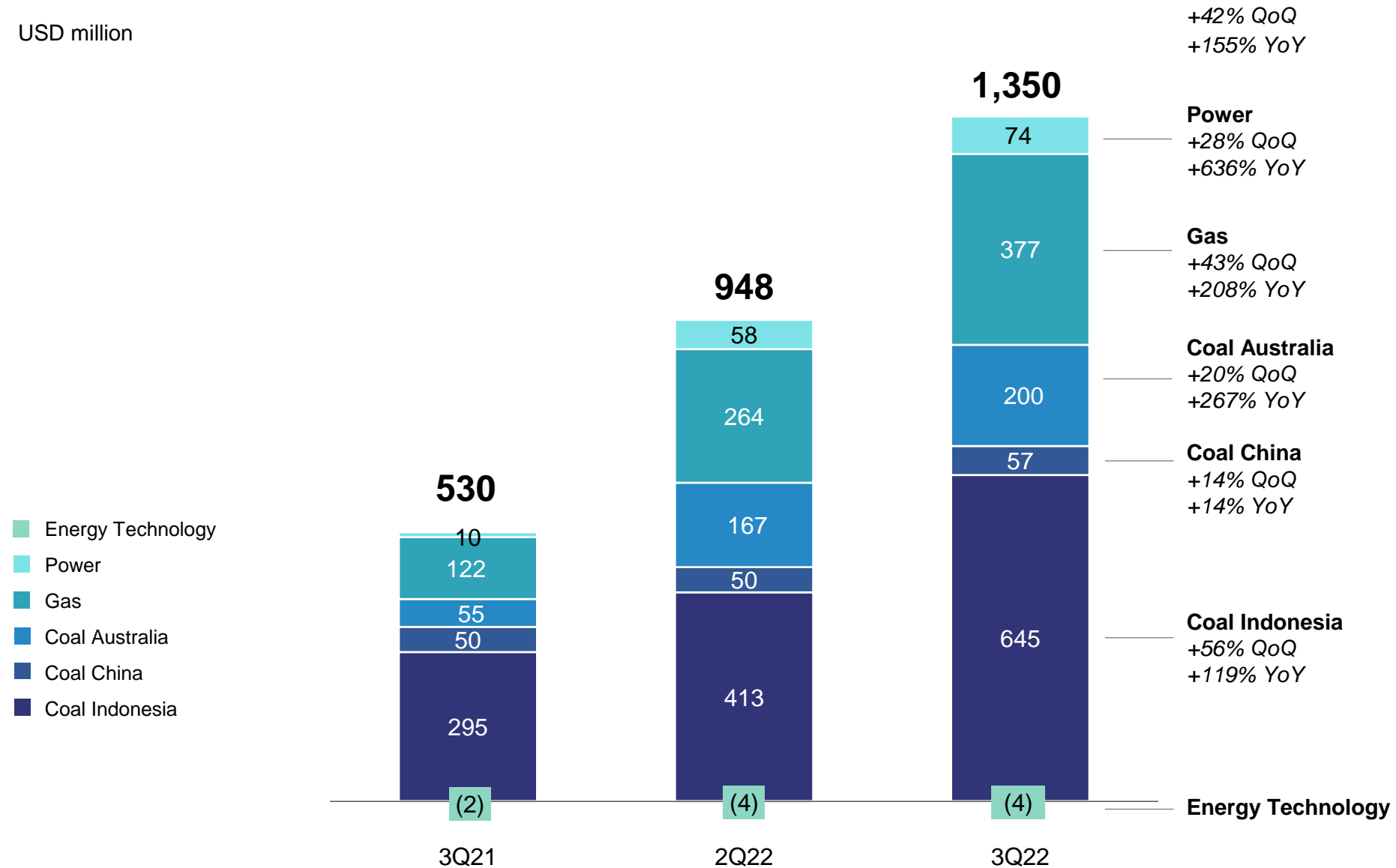
USD million



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

# Banpu consolidated EBITDA – 3Q22

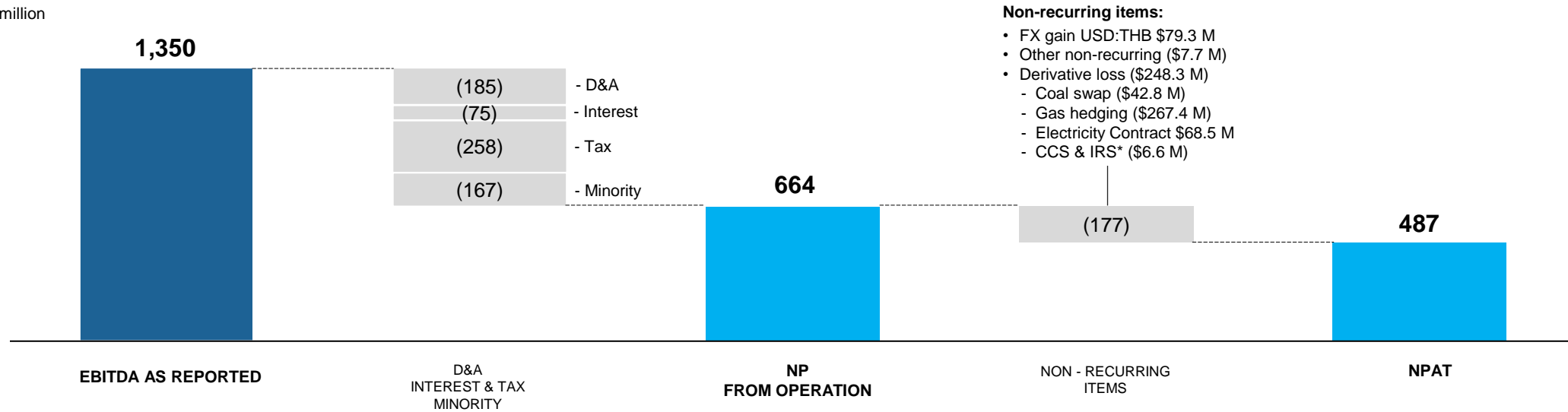
USD million



# Banpu consolidated NPAT – 3Q22

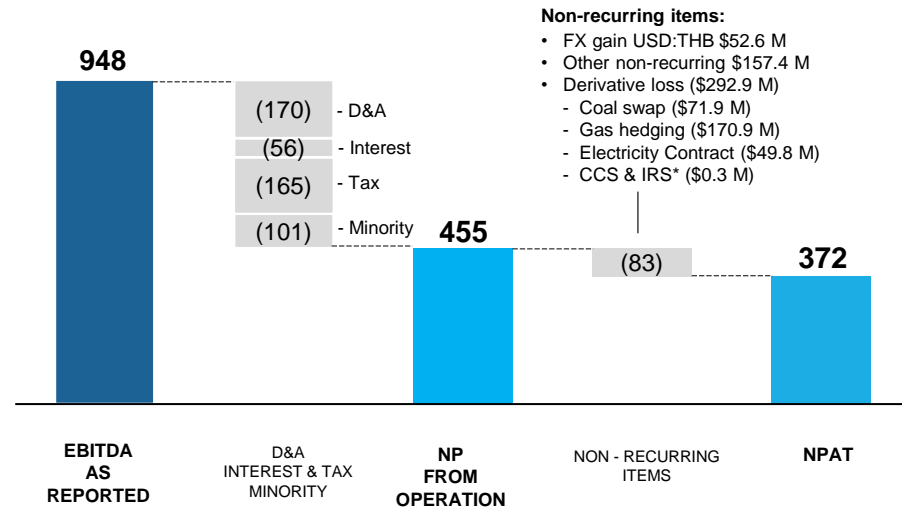
## 3Q22 NET PROFIT AFTER TAX

USD million



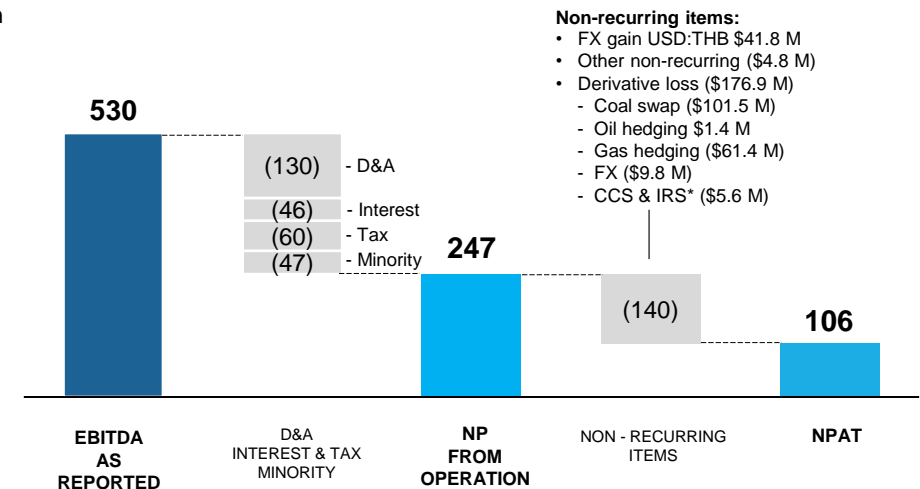
## 2Q22 NET PROFIT AFTER TAX

USD million



## 3Q21 NET PROFIT AFTER TAX

USD million



Note: \*cross currency swap, interest rate swap



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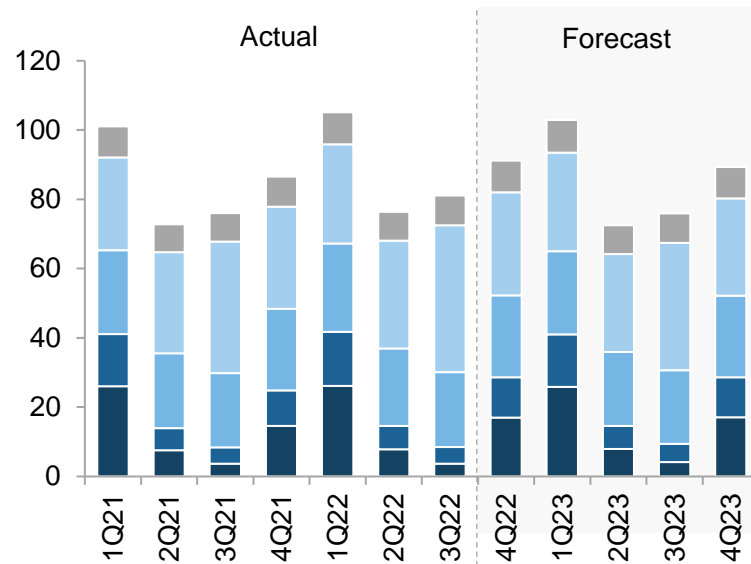
Energy  
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# U.S. gas market update

## US CONSUMPTION & PROJECTION

Unit: Bcf/d

- Residential
- Commercial
- Industrial
- Power
- Other

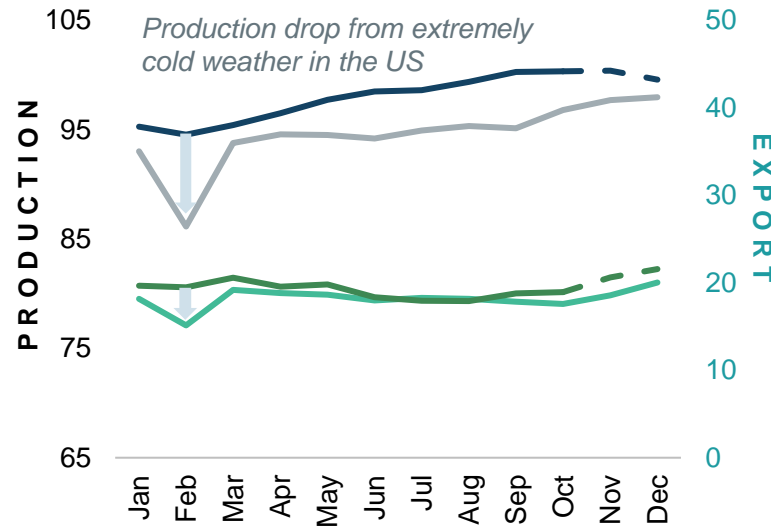


- Majority of US gas demand is domestic consumption. Price is largely determined by local demand and supply with indirect linkage to oil via associated gas production.
- Consumption in the US averaged at 81.1 Bcf/d in 3Q22, up 6% from 2Q22, mainly due to higher consumption from power sector.
- Consumption is forecasted to average at around 88.4 Bcf/d in 2022, up 5% from 2021.

## US NATURAL GAS PRODUCTION

Unit: Bcf/d

- 2021 actual production
- 2022 actual production
- 2022 forecasted production
- 2021 actual export
- 2022 actual export
- 2022 forecasted export

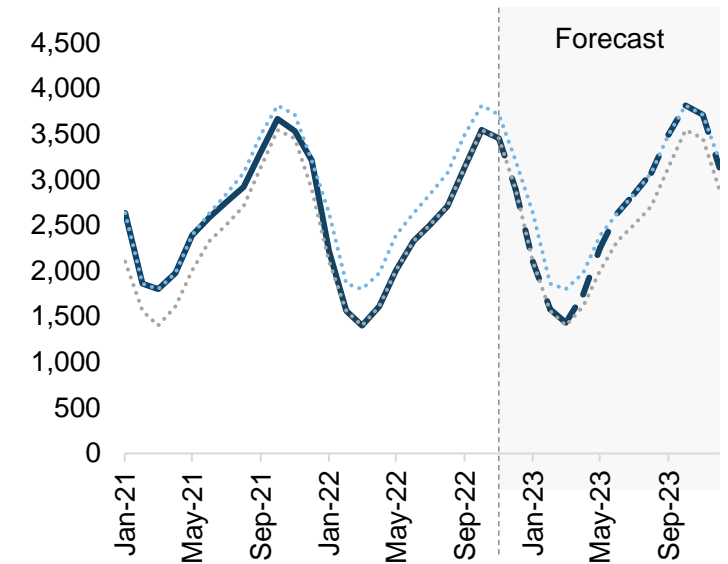


- US gas production is forecasted to increase to 100.1 Bcf/d in 4Q22 and average at 98.1 Bcf/d in 2022, up 4% from 2021.
- US LNG exports are expected to increase to 11.3 Bcf/d in 4Q22, up 15% from 3Q22, and average at 10.9 Bcf/d in 2022, up 11% from 2021. The increase is mainly due to the restart of Freeport LNG following the fire incident in June.

## U.S. STORAGE LEVEL

Unit: Bcf

- Storage
- 3yr - Low
- 3yr - High



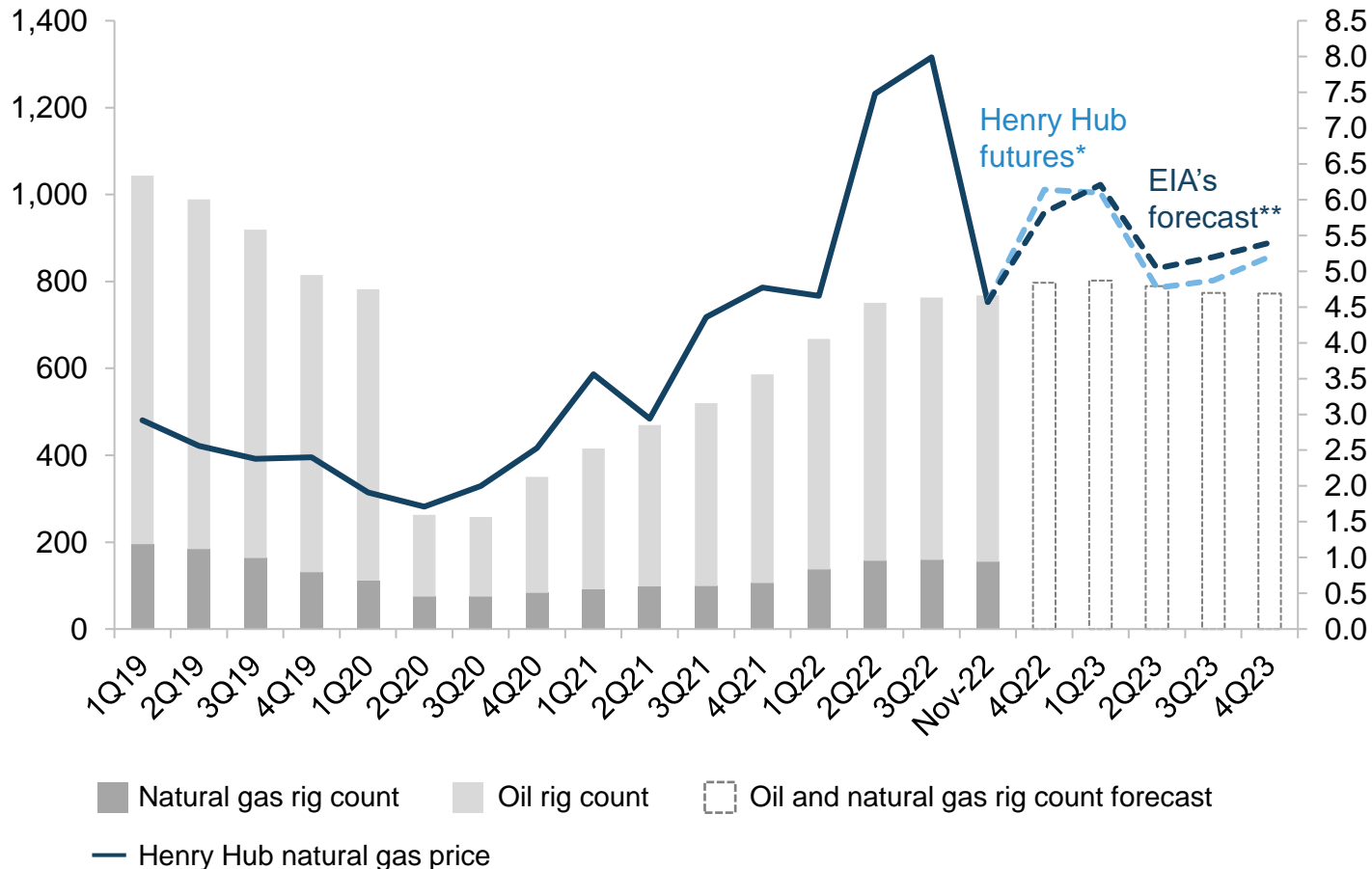
- Natural gas inventories in October 2022 ended at 3.5 Tcf, 4% below the 5-year average. Stocks were 0.1 Tcf less than the same period last year and the 5-year average of 3.6 Tcf.
- Higher-than-average injections into storage in September and October reduced the deficit of natural gas inventories to the 5-year average.

# U.S. gas: gas prices expected to remain high amid winter season

## 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 3Q22 increased from the previous quarter driven by continued surge in gas demand in Europe and supply disruptions globally.
- Capital spending is expected to slow down towards the end of 2022 due to the lack of completion crews to bring wells to production and increasing dividend distribution by rig operators.
- Oil and gas rigs are expected to increase slightly in 4Q22, up 4% from 3Q22 but remain at levels 24% lower than 1Q19.
- Henry Hub futures signal to increase from the current spot price to around \$6.1/MMBtu in 1Q23 and decline to around \$4.7-4.9/MMBtu levels in the following quarters.

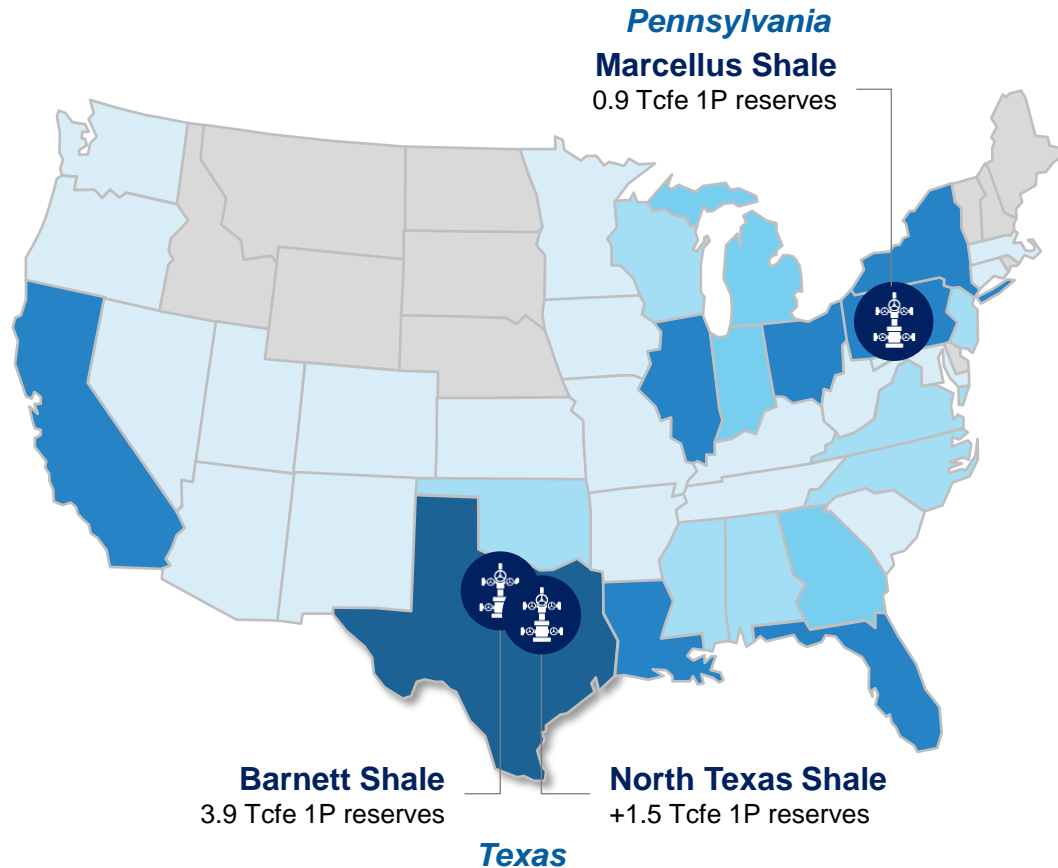
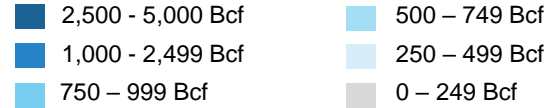
Note: \*As of November 8<sup>th</sup>, 2022, \*\*Short-Term Energy Outlook (November 2022)  
Source: IHS Markit report (July 2022) and Baker Hughes US natural gas rotary rig count (November 2022)

# Banpu Gas: 3Q22 highlights

## US DRY GAS CONSUMPTION 2021 BY STATE\*



Banpu shale gas operations



Average local price\*\*

**\$7.61/Mcfe**

+15% QoQ

Sales volume

**78 Bcfe**

+32% QoQ

EBITDA\*\*\*

**\$377 M**

+43% QoQ

Notes:

\* Source: EIA

\*\* Average local price = Henry Hub - basis differential

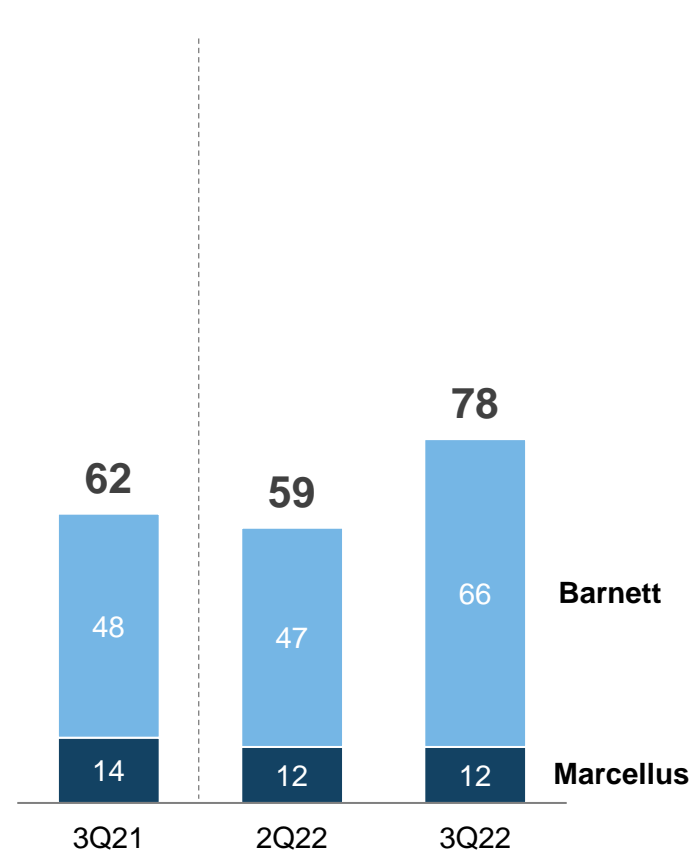
\*\*\* IFRS EBITDA. Significant differences between IFRS and BKV US GAAP EBITDAX include treatment of derivative gains and losses, depletion expense, accretion expense, stock compensation expense, BNAC expenses, equity income, and contingent consideration gains and losses for asset acquisitions

# Banpu Gas: 3Q22 performance

3Q22 EBITDA of \$377M reflected strong underlying performance post-North Texas integration, higher average local price, and additional production from the new asset and ongoing initiatives in the legacy assets.

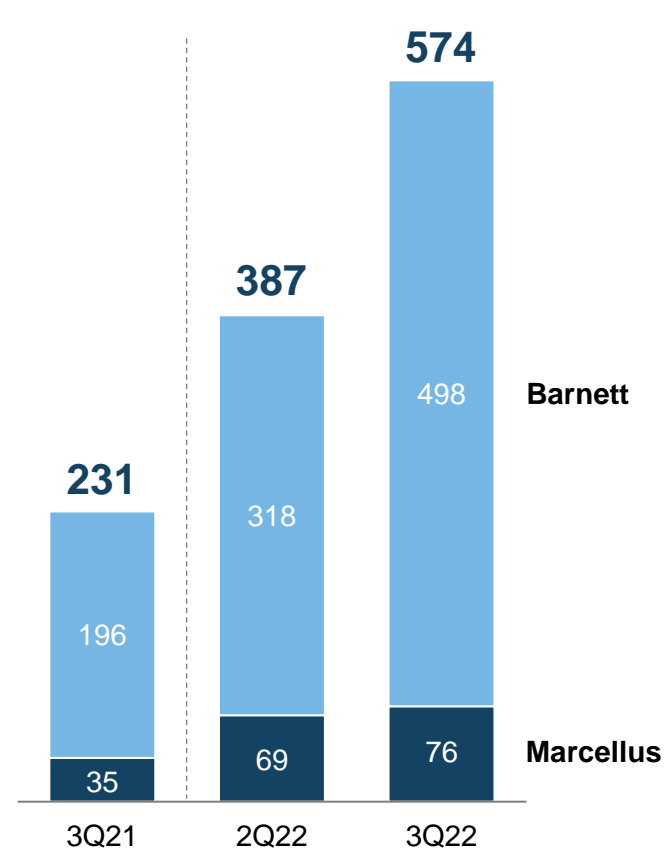
## SALES VOLUMES

Unit: Bcf\*



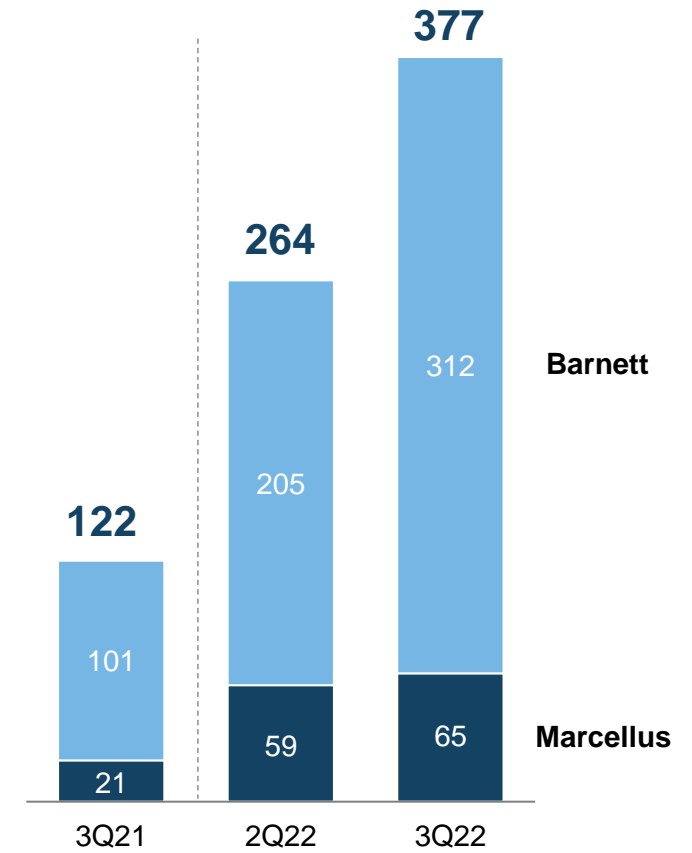
## TOTAL REALIZED REVENUE\*\*

Unit: US\$M



## EBITDA\*\*\*

Unit: US\$M



Notes:

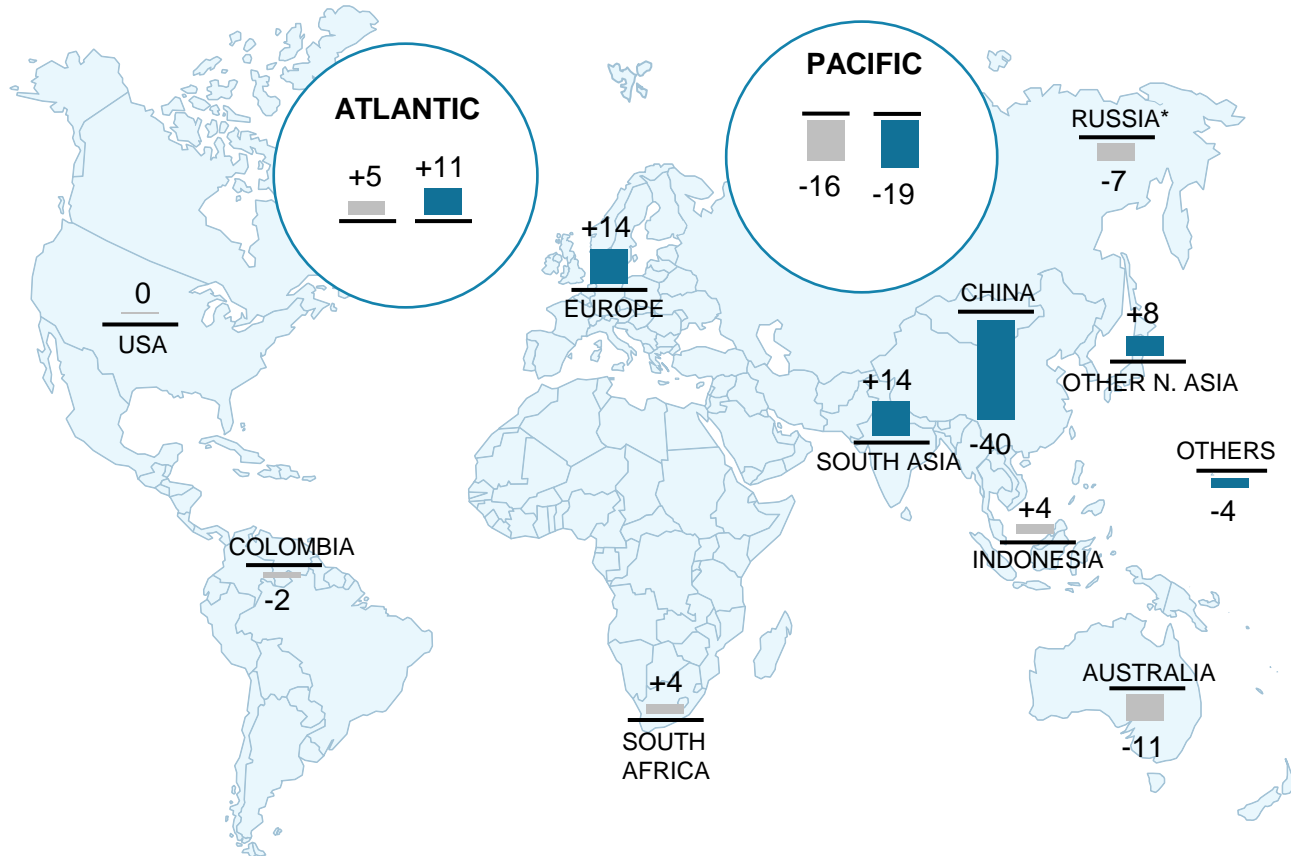
\* Bcf = Billion cubic feet

\*\* 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

\*\*\* 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

## COAL DEMAND AND SUPPLY CHANGE – 2022E VS 2021

Unit: Mt    ■ SUPPLY    ■ DEMAND



## TRENDS

### DEMAND

Mild weather conditions helped ease the global thermal coal market ahead of winter. However, HCV demand is expected to remain strong **due to** the ban on Russian coal and expected colder-than-normal winter in the northern hemisphere. LCV market is weaker as China's imports have plummeted and are facing high competition from Russian coal.

- **China:** Covid-19 and safety restrictions impacted coal supply chains and drove domestic coal prices up. Supply concerns encouraged buyers to keep sourcing imported coal. China is still the main market driver for mid- to low-CV market.
- **India:** Coal demand is expected to remain strong in Q4 due to the season of festivities when contributions from hydro and renewables generally remain subdued. High discount of Russian coal remains attractive for Indian buyers.
- **JKT:** Most utilities have secured enough stocks of HCV coal for winter. However, coal demand is expected to grow as South Korea lifted restrictions on coal burn while La Nina weather condition is expected to persist through winter.
- **Europe:** Coal burn remains strong as governments seek to preserve European gas supplies for the upcoming winter to help fuel heating demand. While sanctions on Russian coal came into force on 10<sup>th</sup> August. The EU's plan to cut gas consumption, intervene power market and cap energy prices helped to push coal prices down.

### SUPPLY

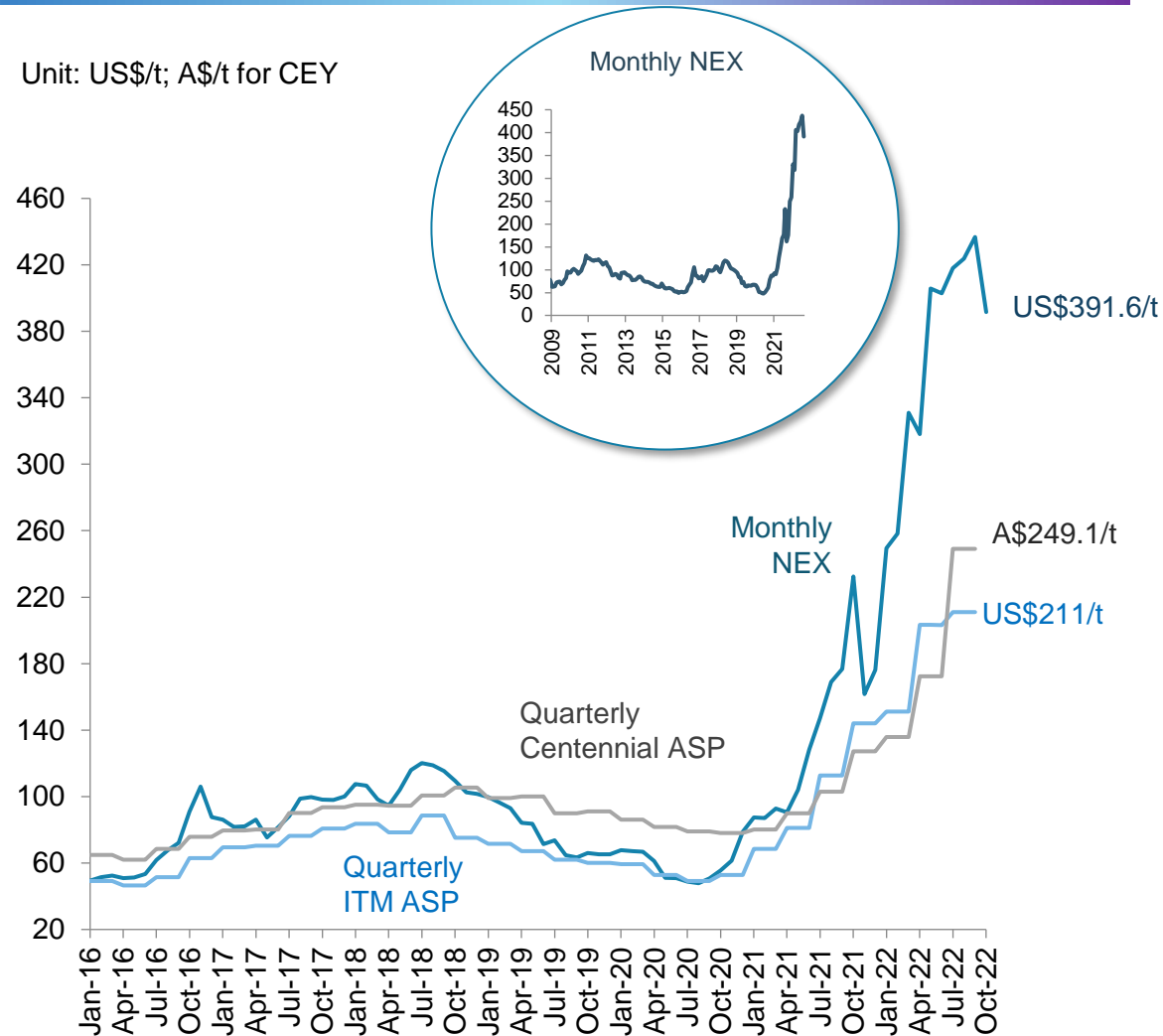
HCV supply remains tight due to continued rainfall in Australia and limited upside from other origins. Mid-to-low CV supply is expected to remain healthy from steady Indonesian production and ample supply of Russian coal into Asia.

- **Indonesia:** Coal production remains strong, but more rainfall and high domestic demand are likely to limit availability of spot cargoes for exports, while more Indonesian coal are heading to Europe.
- **Australia:** Supply still struggling due to continued rainfall. La Nina weather condition is likely to stay until March 2023.
- **Others:** Russian exporters divert coal to Asia as the sanction came into effect while spot availability at far east port is limited for the near term. South African exports continue to be capped by logistical constraints. Colombia's exports to Europe soar but there is little scope for a production improvement.

# Banpu ASPs vs thermal coal benchmark prices

## BANPU ASP VS BENCHMARK PRICES

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



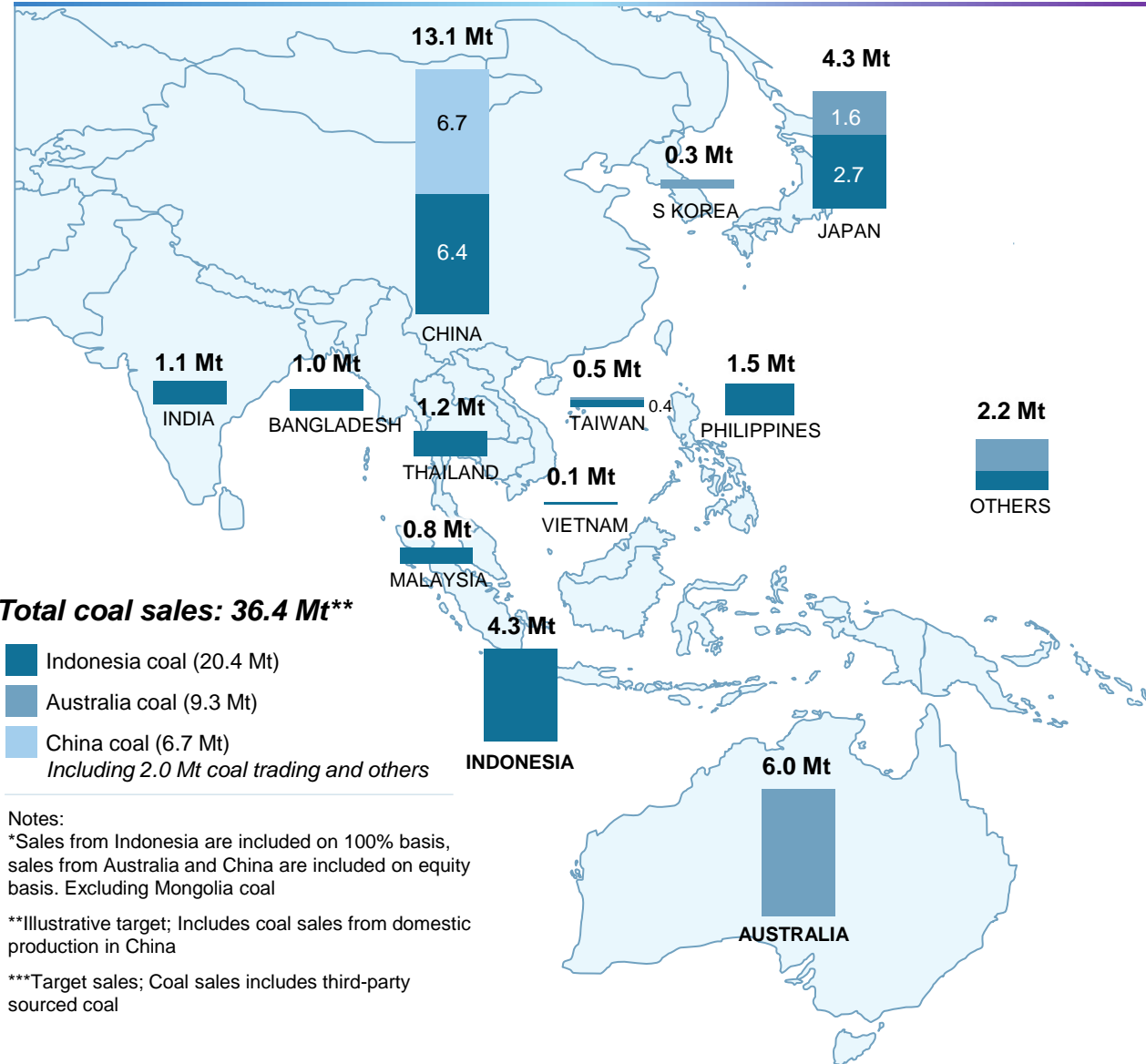
## COMMENTS

- The overall seaborne premium thermal coal market remained extremely strong through 3Q22, mainly due to the strong gas market, as well as the wet weather in major coal fields in Australia.
- On 6 September, GCNewc hit US\$466/t, breaking the previous record (US\$463/t in May). Since early September, the coal market started weakening until the end of Q3. As a result, GCNewc monthly average price has continuously rewritten historical records through Q3 (US\$410.83/t for July, US\$417.39/t for Aug., and US\$434.02/t for Sep.)
- The lower quality thermal coal market has been relatively volatile during Q3. ICI hit the bottom in late August, then gradually recovered through September, mainly due to the hot, dry prolonged summer in major industrial areas of China prompting strong Chinese import demand. Despite the mild recovery, the average price level of mid-low CV Indo coal market in 3Q22 was lower than 2Q22 level.
- We see 3Q22 could be the peak of premium specification thermal coal in a foreseeable future, while the fundamentals of the thermal coal market is still relatively strong, considering the geopolitical environment.
- Demand for off specification thermal coal has become relatively strong due to stronger-than-expected Chinese demand and new demand from traditional premium coal buyers.
- Banpu Group ASP in Q3 continued to increase, especially for export portions.
- Key price metrics:
  - ITM ASP 3Q22 : US\$211/t\* (+4% QoQ)
  - CEY ASP 3Q22 : A\$249.1/t\* (+45% QoQ)
  - ASP Domestic A\$102.7/t (+28% QoQ), ASP Export A\$575.5/t (+63% QoQ)
  - NEX (November 4, 2022)\*\*: US\$375.5/t

Note: \*Includes post shipment price adjustments as well as traded coal  
 \*\*The Newcastle Export Index (NEX)

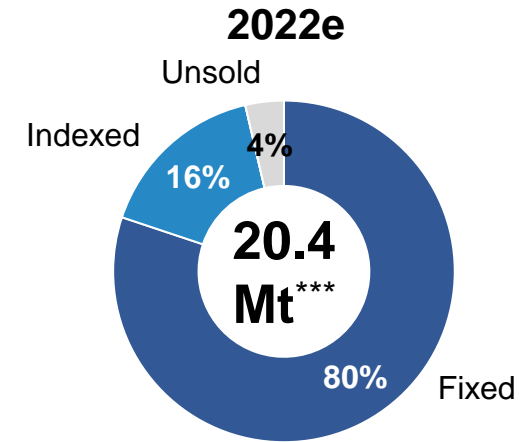
# Banpu Mining: group coal sales and pricing status 2022e

## 2022e COAL SALES\* SOURCE – DESTINATION ANALYSIS

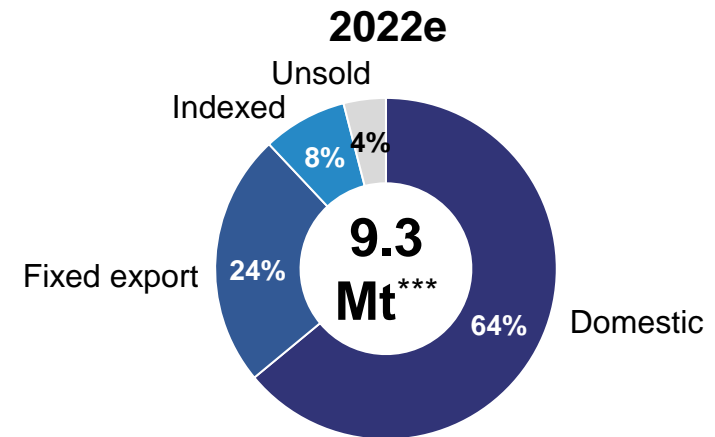


## COAL SALES PRICING STATUS

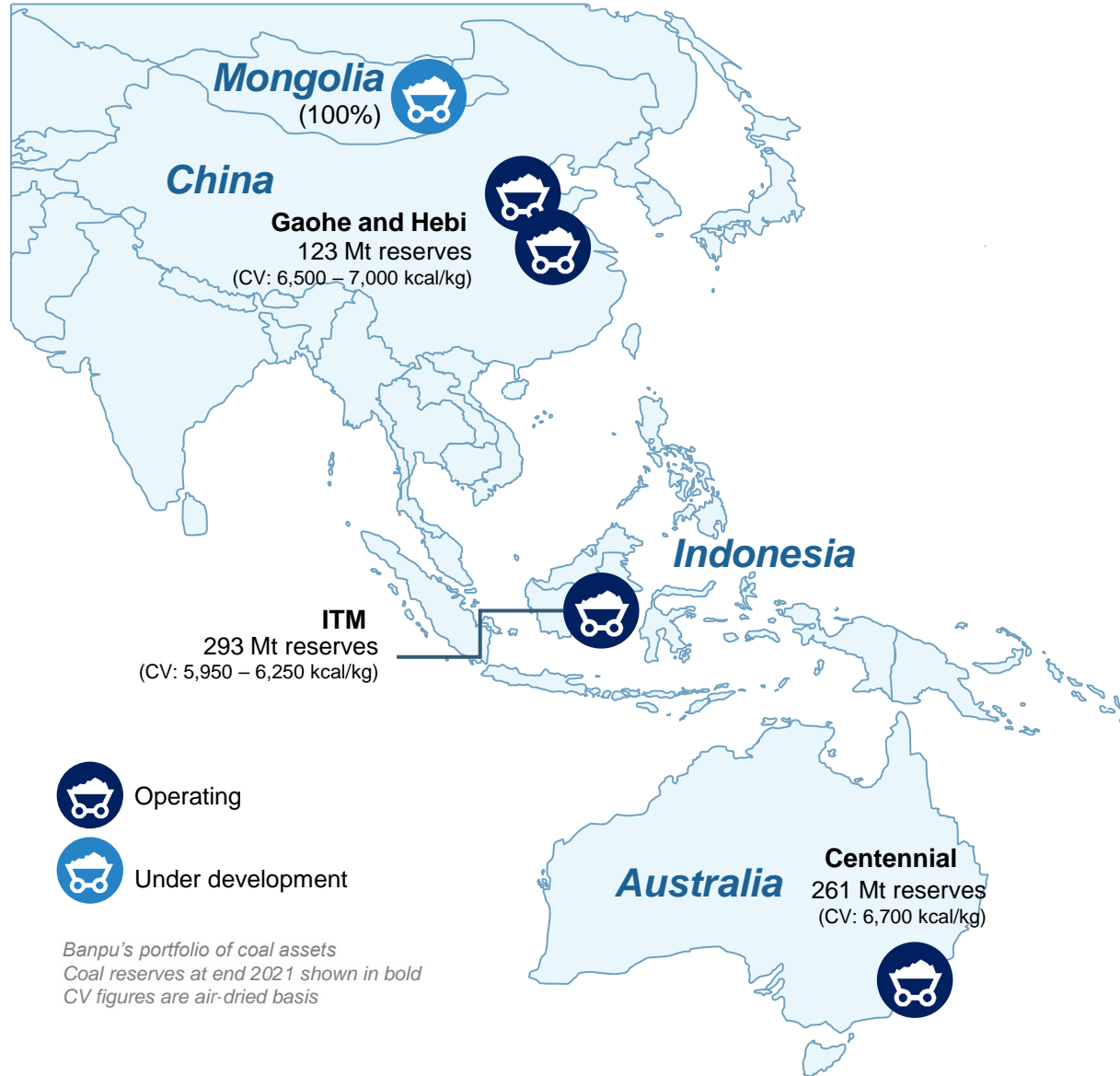
### INDONESIA



### AUSTRALIA



# Banpu Mining: 3Q22 highlights



Production volume\*

**9.5 Mt**

+3% QoQ

Sales volume\*

**11.1 Mt**

+10% QoQ

EBITDA

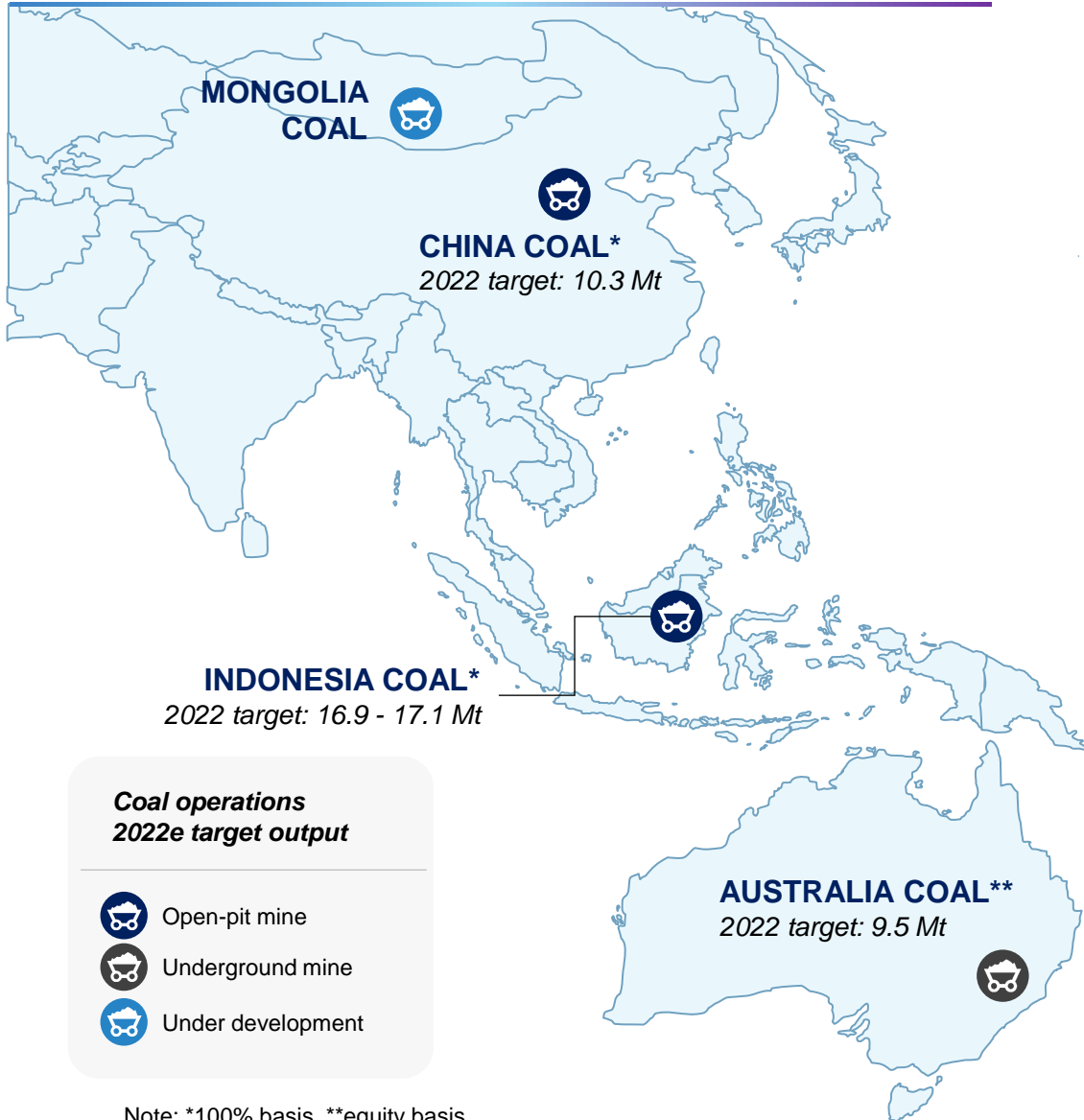
**\$902 M**

+43% QoQ

Note: \*Based on 100% basis

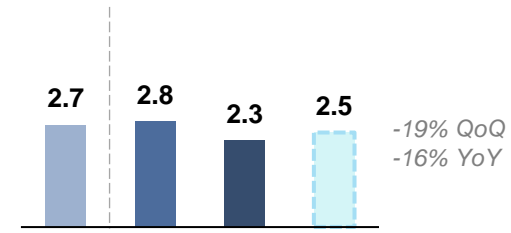
# Banpu Mining: operational summary

## 2022E COAL OUTPUT

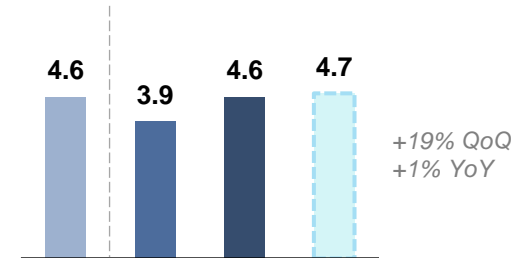


## ROM PRODUCTION AND KEY UPDATES

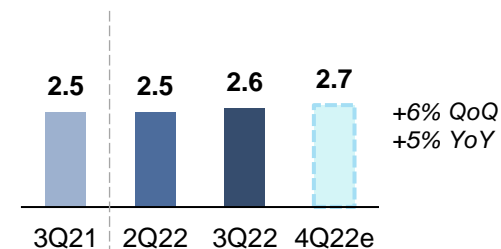
### AUSTRALIA COAL\*\*



### INDONESIA COAL\*



### CHINA & MONGOLIA COAL\*

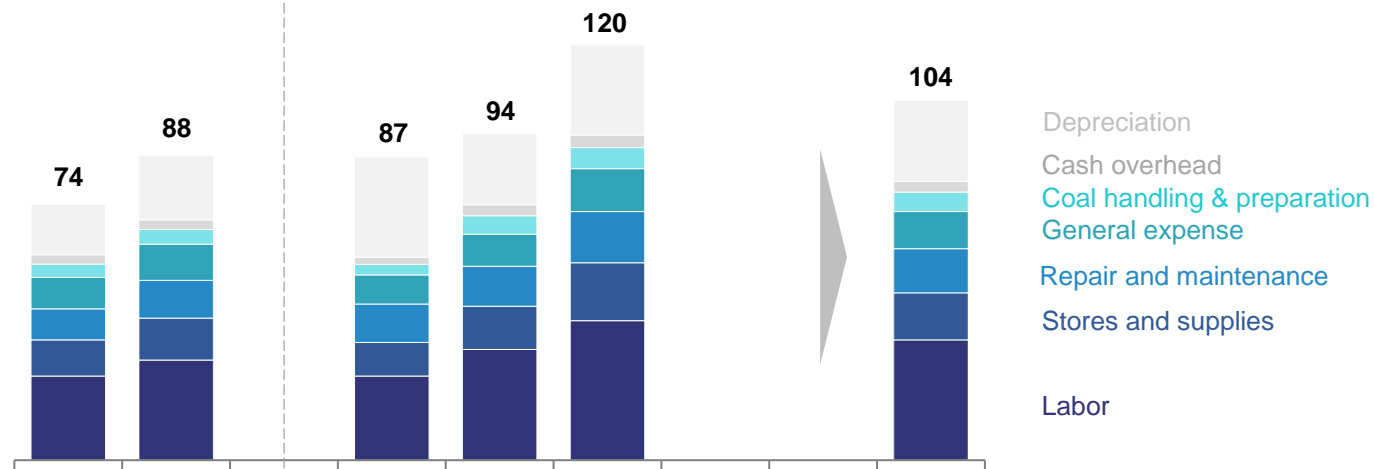


- Q3 production was slightly behind prior quarter forecast.
- Mandalong production was impacted by an Aboriginal cave step-around.
- Clarence and Airly continued to incur Covid-19 absenteeism in Q3, impacting production volumes. We expect Covid-19 impacts to reduce in Q4.
- Achieved the 3Q22 production target at 4.6 Mt despite challenging weather caused by higher rainfalls and slippery conditions.
- 4Q22 target is maintained at 4.7 Mt while we anticipate uncondusive weather with the onset of rainy season in Indonesia.
- Gaohe: Stable production and sales in 3Q22 supported by strong demand during the summer season. Increased coal volume from energy guarantee policy.
- Hebi: Higher production and sales in 3Q22 due to smooth operations of new LW panel 3309 with preparation for LW panel 3310 to ensure strong future performance

# Banpu Mining: average production cost breakdown

## AUSTRALIA COAL – AVERAGE PRODUCTION COST<sup>1</sup>

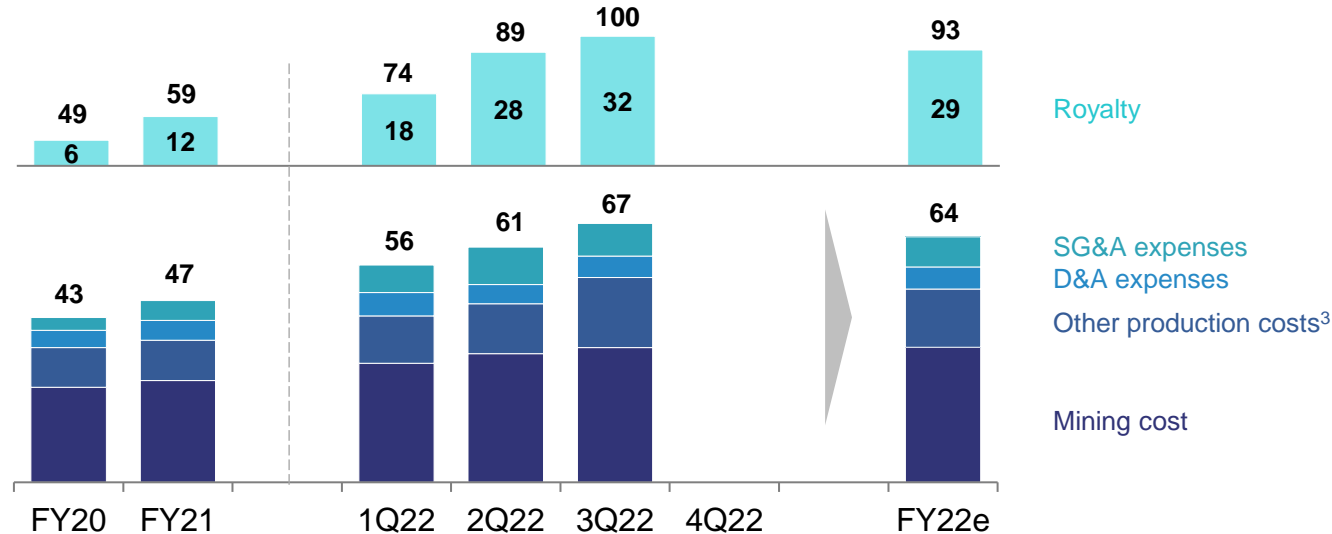
Unit: A\$/t



- Achieved a record quarter profit in Q3 driven by a renewed focus on maximizing high-grade thermal coal exports
- 3Q22 volume dropped 19% QoQ, driving up unit costs. The Mandalong step around also increased depreciation by A\$10/t.
- Global environment continues to drive costs up (i.e., steel, fuel and electricity). Mines have also continued to incur Covid-19 absenteeism.
- Mine site teams are implementing strict capex control measures to manage performance within budget.

## INDONESIA COAL – AVERAGE TOTAL COST<sup>2</sup>

Unit: US\$/t



- Average total cost per ton (excl. royalty) rose to \$67/t in 3Q22 due to increase in mining cost as an impact of higher fuel price.
- Total cost is impacted by higher royalty cost of \$4/t QoQ, which reflects stronger ASP trend is continued until 3Q22.

Note: 1 These figures do not include selling, distribution and royalty costs; based on 'sold' production, 2 Coal business only, 3 including repair and maintenance, salaries and allowances, inventory adjustment, others etc.

01

Highlights  
3Q22

02

Greener, Smarter  
... Faster !

03

Financial  
Summary

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Energy  
Resources

05

**Energy  
Generation**

06

Energy  
Technology

# Banpu Energy Generation: 4,256 MW committed capacity



**8 countries**  
operations across the Pacific Rim



**3,253 MW**  
committed thermal equity capacity\*

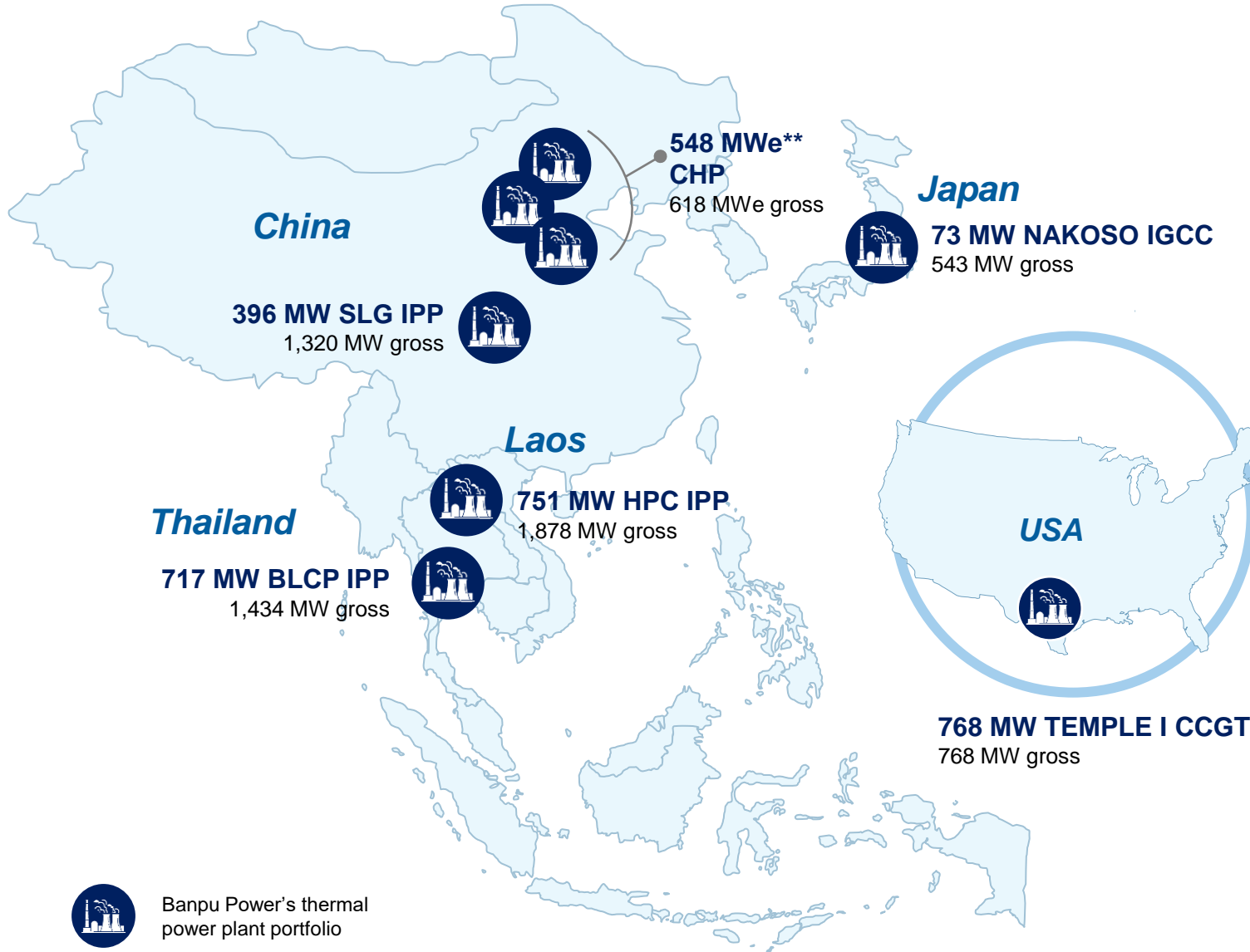


**1,003 MW**  
committed renewables equity capacity

- Solar power plant portfolio
- Solar rooftop portfolio
- Solar floating portfolio
- Wind power plant portfolio
- Banpu Power's thermal power plant portfolio

Note: \*Based on Banpu Power's equity capacity

# Banpu Thermal Power: 3Q22 highlights



Banpu Power's thermal power plant portfolio

Note: \*Based on Banpu Power's equity capacity, \*\*MW equivalent

EBITDA  
**\$74 M**  
 +28% QoQ

Achieved EAF

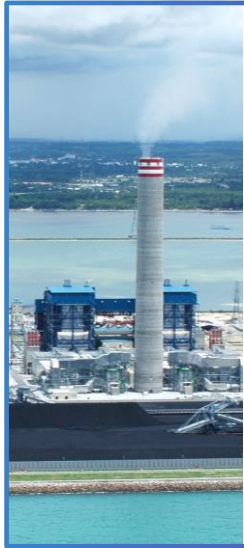
**95%**  
at HPC

**100%**  
at BLCP

**23%**  
at Nakoso

**97%**  
at Temple I

# Thermal Power: 3Q22 updates



## BLCP

*The plant's improved EAF at 99.9% led to higher net generation QoQ, resulting in better EBITDA in 3Q22.*

- Reported EAF of 99.9%
- Total revenue reported at THB 4,864 M, EBITDA at THB 1,066 M
- Reported share of profit at THB 9 M



## HPC

*While continuing to enhance its EAF, the plant operated without a hitch and generated strong financial results for this quarter.*

- Reported EAF of 95.1%
- Total revenue reported at THB 6,331 M, EBITDA at THB 3,955 M
- Reported share of profit at THB 1,405 M



## SLG

*SLG achieved higher power sold in 3Q22. After joining power trading market to raise power tariffs and signing a coal supply contract at a lower coal cost, its financial performance was significantly improved.*

- Reported net power sold of 1,328 GWh
- Reported share of loss at RMB 0.2 M



## China CHP

*CHP has less steam demand, which is primarily from the LN plant. After it entered the power trading market, its tariff increased YoY. However, its financial performance declined due to the high cost of coal and the seasonally weak demand.*

- Reported revenue of RMB 213 M
- Total EBITDA of RMB -12 M
- Reported share of loss at RMB 27 M



## Nakoso IGCC

*As the plant is still in its early stage of operation, maintenance may occasionally be required to increase the plant's long-term reliability.*

- Reported EAF of 23%
- Reported net generation of 251 GWh
- Reported share of profit at THB 2 M

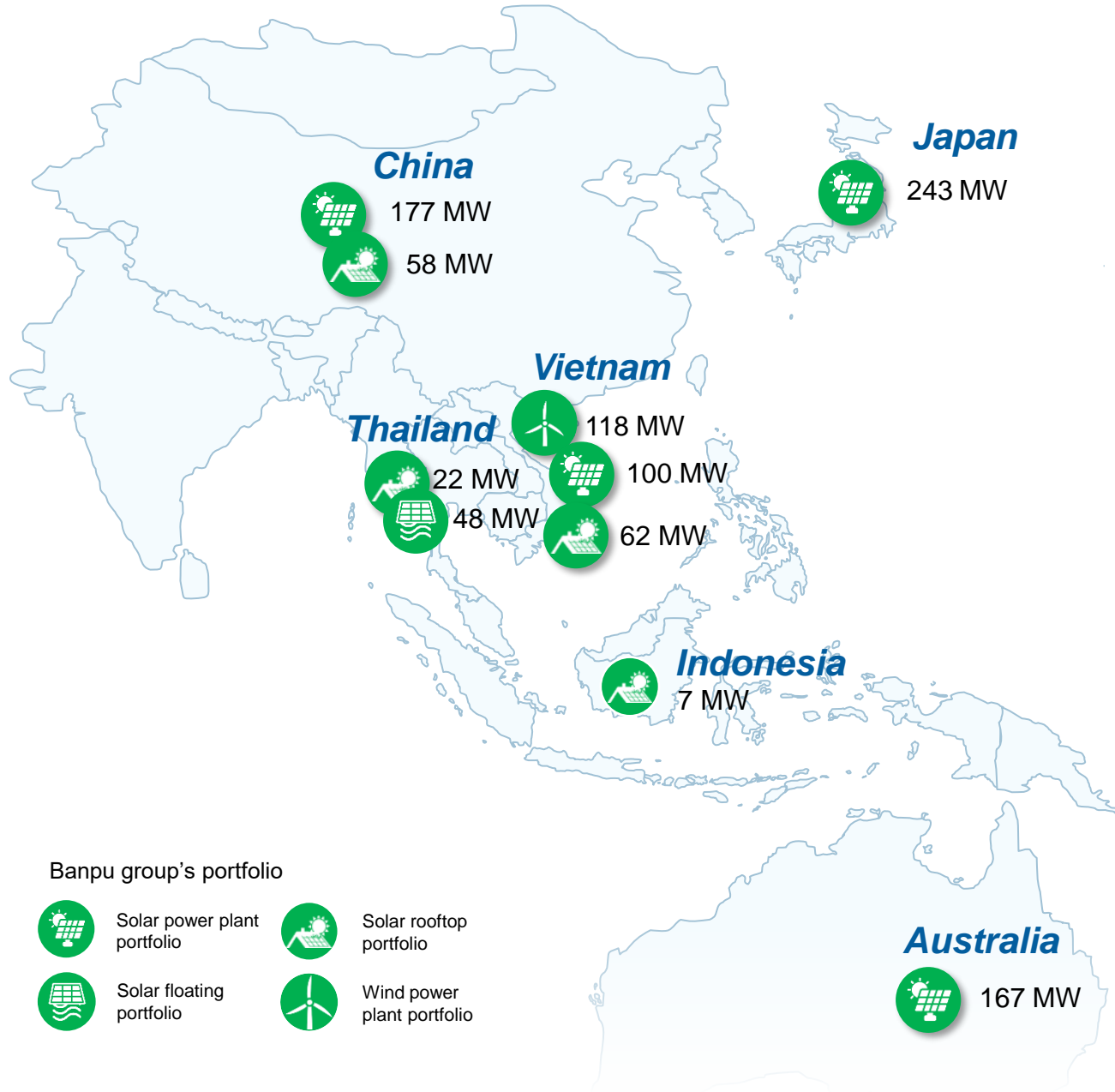


## Temple I

*Maintain its EAF at high level with higher capacity factor due to peak season. It consequently reported higher net generation and successful operational results.*

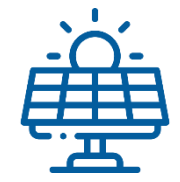
- Report EAF of 97% with net generation of 1,315 GWh
- Revenue reported at USD 106 M, EBITDA at USD 21 M
- Reported share of profit at USD 77 M (Net gain from derivative USD 66 M)

# Banpu Renewable Power: diversified Asia-Pacific portfolio\*



**1,003 MW**

committed renewables capacity across Asia-Pacific



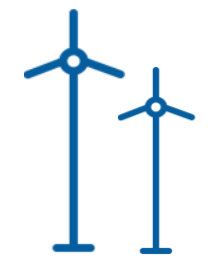
**687 MW**

committed solar power capacity



**198 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: 3Q22 updates



## China Solar

*Due to better irradiation conditions, the capacity factor increased YoY, resulting in higher power sold.*

- Average capacity factor was 16.0%
- Power sold was 63 GWh, +9%YoY
- Reported revenue of RMB 54 M with profit contribution of RMB 18 M



## Japan Solar

*Due to unfavourable weather, the capacity factor has decreased QoQ. Due to the increase in COD projects over the previous 12 months, power sold increased.*

- Average capacity factor was 14.0%
- Power sold was 62 GWh, +29% YoY
- Reported TK distribution of JPY 532 M



## Australia Solar

*A higher QoQ capacity factor as summer approached.*

- Average capacity factor was reported at 15.4%
- Power sold was 43 GWh
- Reported share of profit at AUD 0.6 M (gain from derivative AUD 4.8 M )



## Vietnam Solar

*Nhon Hai solar capacity factor dropped by 3% from unfavourable weather. The 65 MW combined capacity of Ha Tinh and Chu Ngoc Solar transaction is anticipated to close in 4Q22.*

- Average capacity factor was 17.3%
- Power sold was 13.8 GWh
- Reported share of profit at USD 0.2 M



## Vietnam Wind

### El Wind Mui Dinh

- Average capacity factor was 15.2%
- Power sold was 12.6 GWh
- Reported share of loss at USD 1.5 M

### Vinh Chau project

- Completed construction and pre-commissioning activities
- On process of COD documentation with the Vietnam government



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**Energy  
Technology**

# Banpu Energy Technology: growth targets 2025



## SOLAR: ROOFTOP & FLOATING

Including 49% in Solar ESCO

**198**  
MW

committed capacity

**500**  
MW

3Q22

2025  
target



## ENERGY STORAGE SYSTEMS

47.7% in Durapower

30.0% in New JV

**1.0**  
GWh

(0.5 GWh on equity basis)

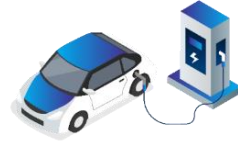
Li-ion battery production capacity

**3.0**  
GWh

(Total 1.76 GWh on equity basis)

In  
progress

**0.75**  
GWh\*



## E-MOBILITY

39.7% in UMT, 30% Beyond Green, 21.5% in FOMM, 20% in eVolt, 18.47% in Haupcar

Ridesharing

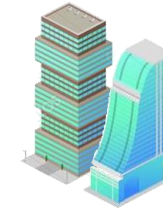
EV

Carsharing

EV charging



Mobility-as-a-service



## SMART CITIES & ENERGY MGMT.

100% ownership

**21**  
projects

Includes energy management, smart infrastructure, etc.

**30**  
projects



## ENERGY TRADING

100% ownership

**428**  
GWh

Electricity sales

**2,000**  
GWh

# Banpu Energy Technology: 3Q22 updates

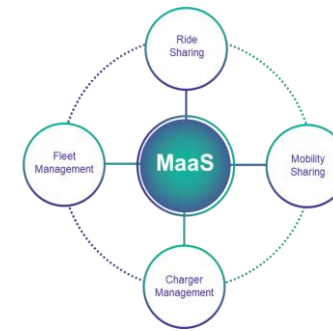


## ZHENGDING SOLAR ROOFTOP PROJECT DEVELOPMENT

Zhengding CHP was selected by Zhengding Government to develop solar rooftops under the 'whole-county rooftop solar PV' policy. It currently has a committed capacity of 58 MW with the potential to increase to 167 MW by 2023

## NEW CONTRACT SIGNING

Expansion of Betagen project for Phase II of rooftop installation (on new warehouse) with capacity of 131 kWp, bringing the total capacity of the project (Phases I & II) to 1.3 MWp



- 
- 
- 
- 

## MUVMI NEW AREA EXPANSION

Increasing its operation from 11 to 12 areas with the latest expansion to Silom – Sathorn. Fleet expansion to 251 E-tuktuks in operation and 115 E-tuktuk under registration process

## EVOLT AWARDED CHARGER INSTALLATION FOR CPN

eVolt has been awarded to install 94 EV chargers at 25 Central department stores



## SECURED ELECTRICITY SUPPLY AND ENHANCED MARKETING AND SALES THROUGH MARKET-LINKED PRICE OFFERING

- Secured electricity supply in total of 8 MW with KEPCO through Baseload Auction for the period of April 2023 to March 2024
- Engaged with 21 small- to medium-sized clients with annual total sales volume of 5 GWh. The electricity supply to these clients is based on market-linked price

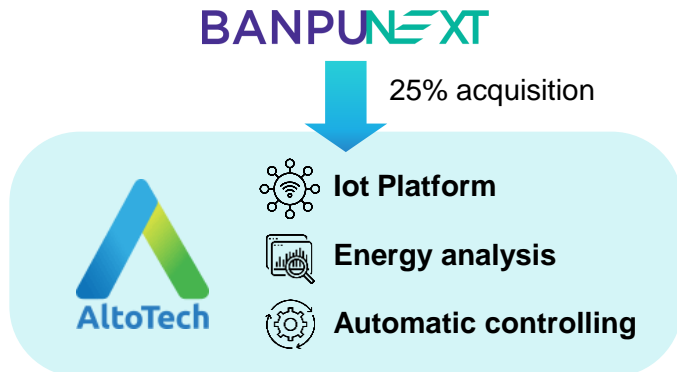
# Banpu Energy Technology: 3Q22 updates (cont'd)



## BANPU NEXT ACQUIRES 25% INTEREST IN ALTOTECH GLOBAL TO STRENGTHEN EMS BUSINESSES

Altotech Global is a Thai-based company established in 2011. It developed automatic IoT platform called “Alto Energy Edge” to support energy management and optimization in the office buildings and hotels. Altotech have 3 core businesses which are **IoT platform, energy analysis and automatic controlling system with AI algorithms developed by the company.** Energy savings are created through Altotech’s proprietary system and software which can also be integrated with solar rooftops.

Banpu NEXT acquired 25% shares in Altotech to build on capabilities in IoT space and data analytics and support the growth of Banpu NEXT’s energy management system businesses.



## STRATEGIC RATIONALE:

- 
**Strengthen Banpu NEXT’s EMS business**
- 
**Enhance leadership position in energy technology solutions**
- 
**Synergy in market approach and expansion**
- 
**Enhance capabilities in IoT platform development**

## EURAZEO SMART CITY FUND II



**INVESTMENT IN EURAZEO SMART CITY FUND II**  
 Eurazeo is a leading global private equity company with AUM of US\$32.4 bn and 530 portfolio companies. Banpu NEXT has invested US\$15 M in its Smart City Fund II, a CVC fund with the investment strategy aligning with Banpu NEXT’s strategy including the focus on new energy, smart mobility, and industrial technology.



# APPENDIX

## ENERGY RESOURCES

### Shale Gas



**865** MMcfed  
Net production

## ENERGY GENERATION

### Renewable Power



**805** MW  
Committed capacity

## ENERGY TECHNOLOGY

### Solar: Rooftop & Floating



**198** 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**



**428 GWh**  
Electricity trading

## Reserve



### DEFINITION

- Natural Gas Reserve Definitions in the US are defined by the SEC and are the same as used for oil:
  - 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



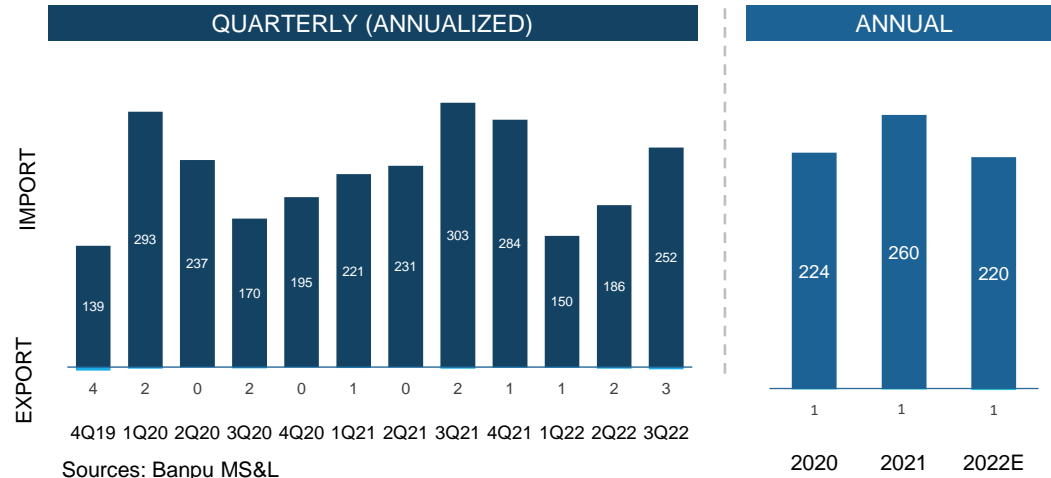
### PRODUCTION UNIT

- 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 Meters<sup>3</sup>
  - 1 MCF = 1.0 Million BTU (MMBTU) or Decatherms (dry gas)
  - 1 BCF = 1.0 Trillion BTU
  - 1 Meter<sup>3</sup> = 35.3 MCF
  - 1 Billion Meters<sup>3</sup> = 35.3 BCF

# China: domestic supply constraints support imports

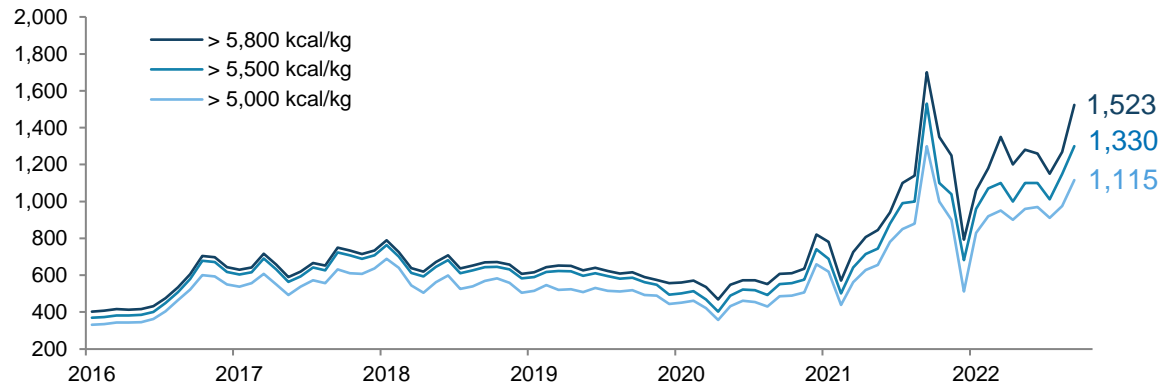
## CHINA THERMAL COAL IMPORTS/EXPORTS\*

Unit: Mt



## CHINA DOMESTIC COAL PRICES

Unit: RMB/t



Note: \*Includes lignite but excludes anthracite imports/exports  
Source: www.sxcoal.com/cn 10 October 2022

## 3Q22

- Lockdown due to the pandemic continued to impact the economic growth in Q3.
- Heat waves in July-August drove coal burn by utilities, but most Chinese utilities were well supplied under term contracts and showed little demand for spot coal.
- Heavy rains in the north affected coal production and logistics however coal production remained solid.
- Drought in southwest, central and eastern regions curtailed hydropower generation and raising coal-fired generation to meet the rise in the country's power demand.
- Domestic thermal coal prices were bullish as supply is curtailed by several issues, such as heavy rainstorms, the Covid-19 pandemic, mine accidents, safety checks and maintenance activities on the Daqin rail line.
- The uptick in domestic coal prices has prompted National Development and Reform Commission (NDRC) to step up its monitoring of the spot coal market, asking sellers to keep coal prices within a reasonable range.
- Supply concerns encouraged buyers to keep sourcing mid- to high-CV imported coal, especially for utilities in south China.
- Increased imports of Russian coal due to low cost and more coal availability in Asia.

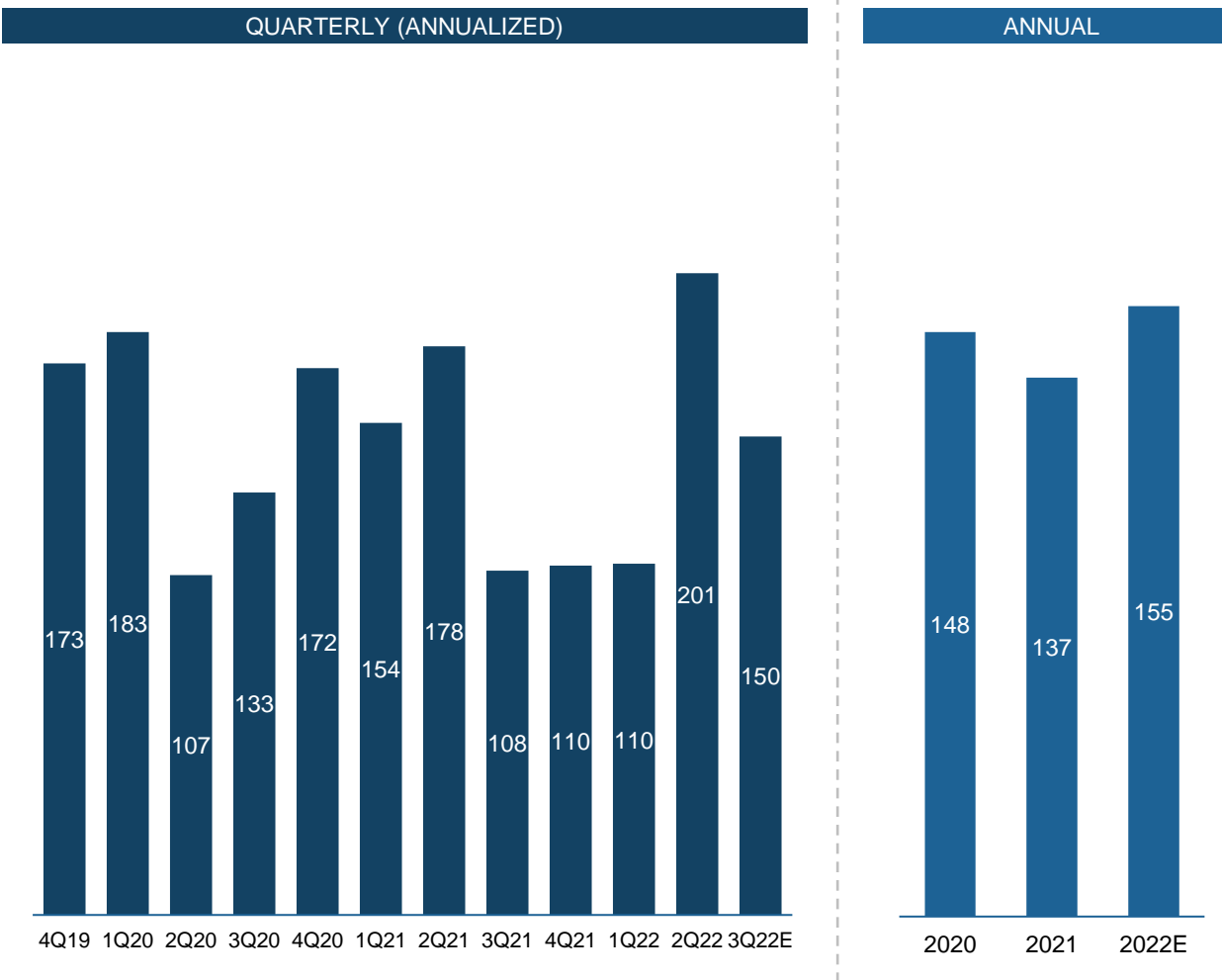
## OUTLOOK

- Uncertainty on economic outlook and concerns over renewed Covid-19 restriction will continue to curb power demand growth.
- Domestic coal production is expected to remain high although intensified safety checks due to the government's efforts to maintain coal supply.
- Uncertainty surrounding domestic industrial production amid fears of a global recession and potential for further devaluation of the yuan against the US dollar are expected to weigh on import in the next few months.
- However, increasing domestic coal price has caused coal users to switch to cheaper imported coal.
- We estimate seaborne imports will remain strong in Q4.

# India: coal demand to remain strong in Q4

## INDIA THERMAL COAL IMPORTS\*

Unit: Mt



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

## 3Q22

- Power demand grew moderately by about 4.7% year-on-year in Q3 due to subdued industrial activities and cooling requirement decline during the rainy season.
- Coal-fired generation rose by 4.6% year-on-year in Q3 due to strong hydro and nuclear generation while gas-based generation fell by 46% year-on-year on high gas price.
- Domestic coal production increased by 10% year-on-year to 176 Mt in Q3, driven by Coal India and captive/commercial miners. Coal dispatches was 196 Mt, grew by 4.7% year-on-year.
- In Q3, domestic coal supplies to the power sector increased by 10%, whereas supplies to non-power sector declined by about 15%.
- The industrial sector continued dependence on imports owing to the priority in domestic coal supply allocation to the power sector.
- India has been increasing imports of discounted Russian coal at the expense of South African imports.
- However, depreciation in local currency against the US dollar curbed import demand especially in general industry.

## Outlook

- Power demand is forecasted to increase in Q4 due to a season of festivities.
- Contributions from hydro and renewables generally remain subdued during Q4, the burden to meet demand will fall back on coal.
- With end of the monsoon, growth in domestic coal production is expected to accelerate in Q4.
- However, we expect imports to continue rising as demand growth continues to outpace domestic supply.
- Power plants were seen less active in the seaborne market due to high domestic coal production and devalue of local currency.
- The availability of high energy and highly discounted Russian coal will add to the growth in imports, particularly by the industrial sector.

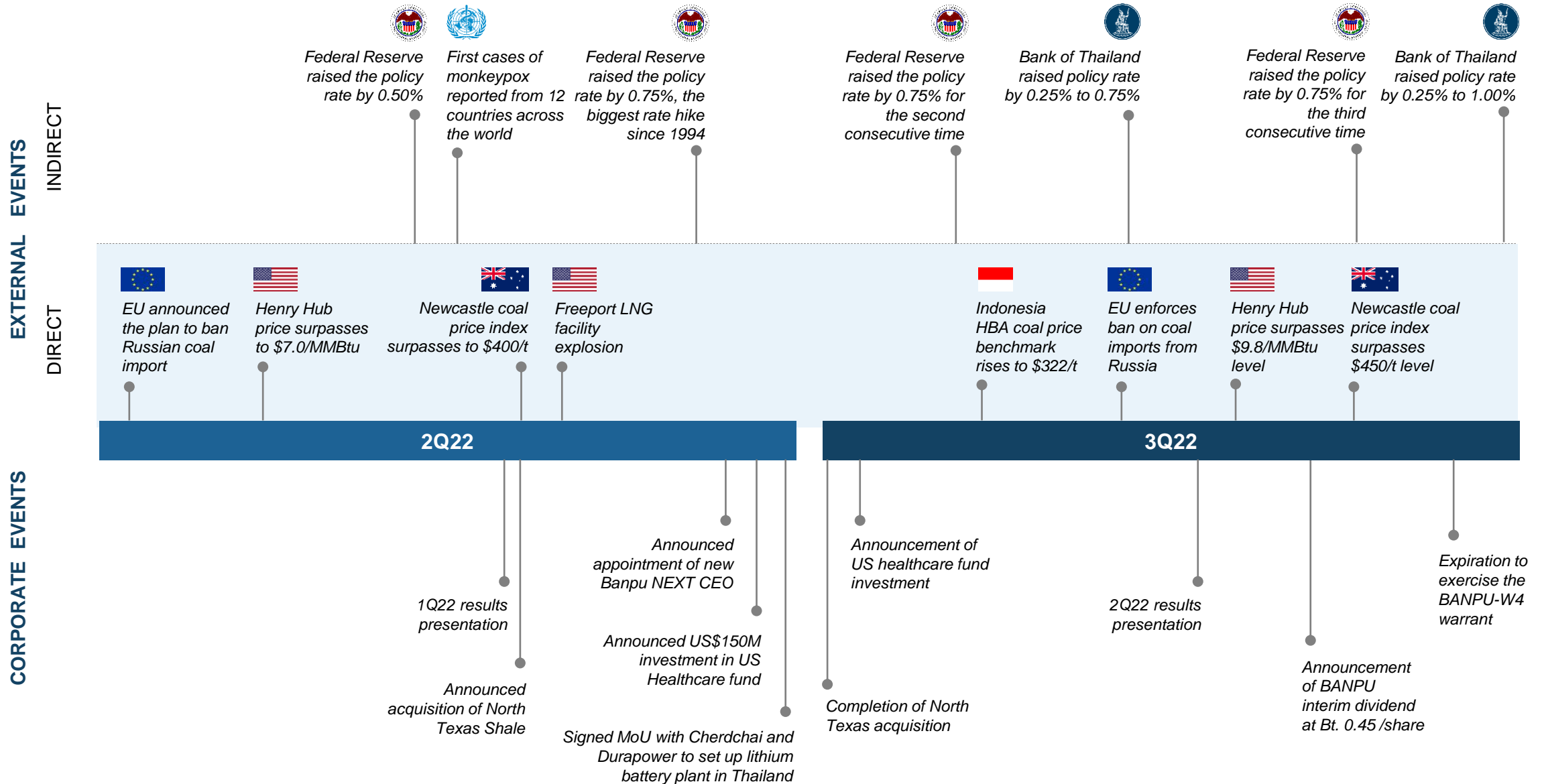
# Coal quarterly output summary

| AUSTRALIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON EQUITY BASIS |               |            |            |            |            |
|---|---------------|------------|------------|------------|------------|
| Mines   | CV (kcal/kg)* | 1Q22       | 2Q22       | 3Q22       | 4Q22e      |
| <b>Western operations</b>   |               | <b>0.8</b> | <b>1.6</b> | <b>1.2</b> | <b>1.6</b> |
| Springvale  | 6,700         | 0.1        | 1.1        | 0.7        | 0.7        |
| Clarence  | 6,700         | 0.4        | 0.3        | 0.3        | 0.5        |
| Airly   | 6,700         | 0.3        | 0.2        | 0.2        | 0.4        |
| <b>Northern operations</b>  |               | <b>0.9</b> | <b>1.2</b> | <b>1.1</b> | <b>0.9</b> |
| Mandalong   | 6,700         | 0.7        | 1.0        | 0.8        | 0.5        |
| Myuna   | 6,700         | 0.2        | 0.2        | 0.3        | 0.4        |
| <b>Total Australia coal</b>   |               | <b>1.7</b> | <b>2.8</b> | <b>2.3</b> | <b>2.5</b> |

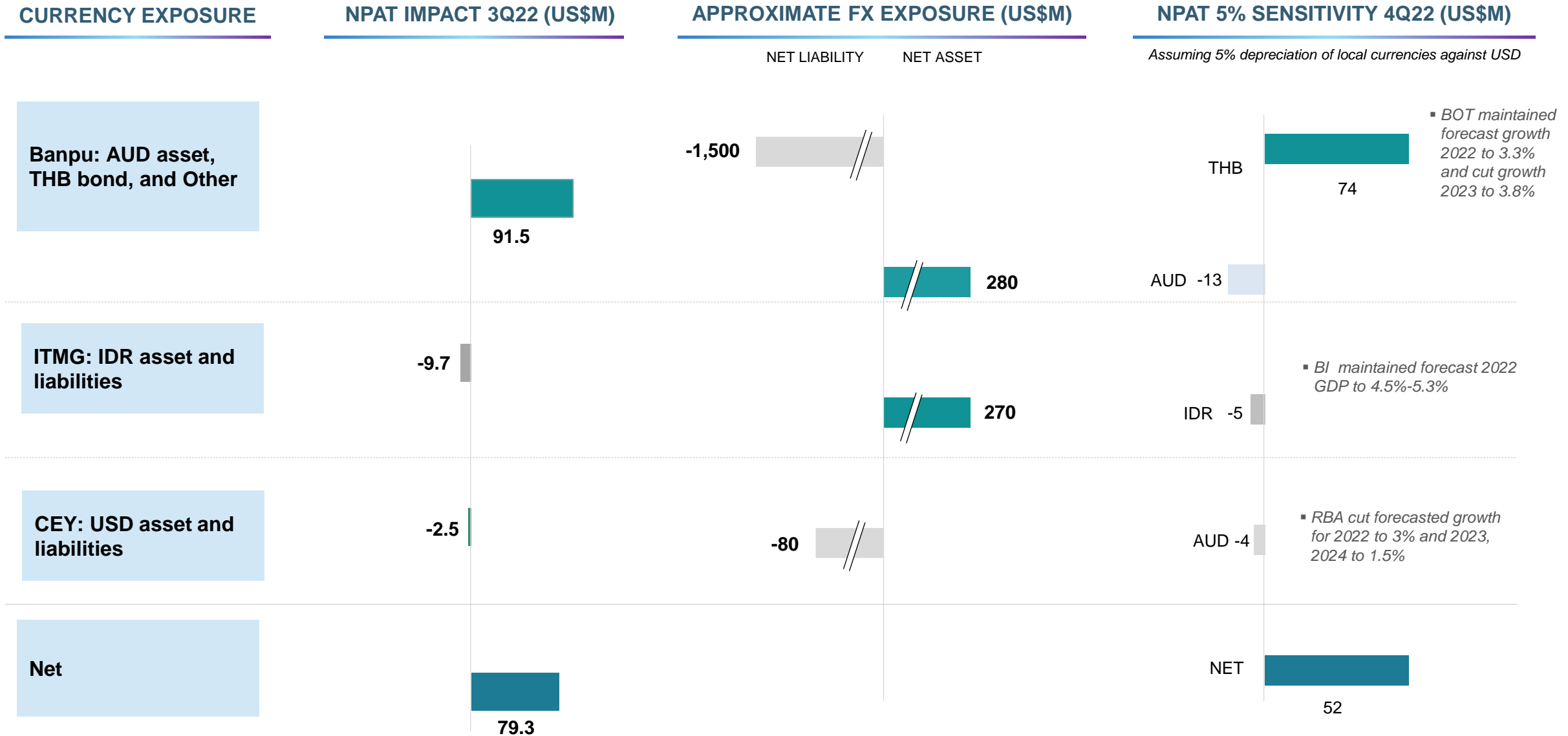
| INDONESIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS |               |             |                      |             |                      |             |                      |             |                      |
|---|---------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|
| Mines   | CV (kcal/kg)* | 1Q22        |                      | 2Q22        |                      | 3Q22        |                      | 4Q22e       |                      |
|   |               | 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 | 1.5         | 9.8                  | 1.7         | 10.3                 | 2.0         | 8.9                  | 1.6         | 11.0                 |
| Trubaindo   | 6,550 – 6,700 | 0.7         | 15.5                 | 0.7         | 14.7                 | 0.9         | 10.8                 | 0.7         | 12.7                 |
| Bharinto  |               | 1.1         | 8.8                  | 1.2         | 7.9                  | 1.6         | 10.6                 | 2.0         | 8.8                  |
| Kitadin-Embalut**   | 5,800         | 0.2         | 17.9                 | -           | -                    | -           | -                    | -           | -                    |
| Jorong  | 5,300         | 0.3         | 11.5                 | 0.2         | 16.2                 | 0.2         | 17.4                 | 0.3         | 17.3                 |
| <b>Total Indonesia coal</b>                                       |               | <b>3.8</b>  | <b>11.1</b>          | <b>3.9</b>  | <b>10.6</b>          | <b>4.6</b>  | <b>10.2</b>          | <b>4.7</b>  | <b>10.6</b>          |

| CHINA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS |               |            |            |            |            |
|---|---------------|------------|------------|------------|------------|
| Mines   | CV (kcal/kg)* | 1Q22       | 2Q22       | 3Q22       | 4Q22e      |
| Gaohe   |               | 2.5        | 2.3        | 2.3        | 2.4        |
| Hebi  |               | 0.1        | 0.2        | 0.3        | 0.3        |
| <b>Total China coal</b>                                       |               | <b>2.6</b> | <b>2.5</b> | <b>2.6</b> | <b>2.7</b> |

# Key external and corporate events



# FX impact analysis guidance on P&L



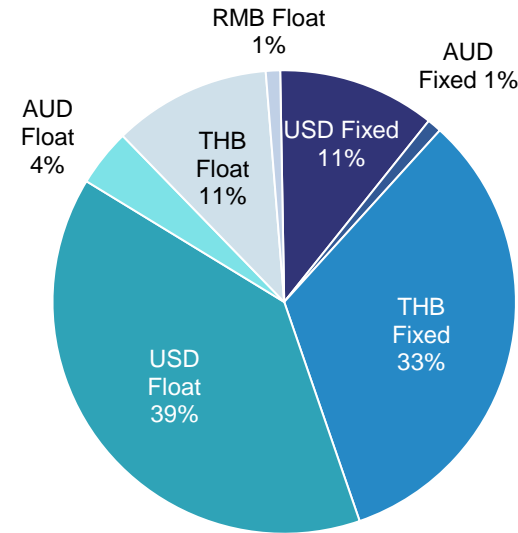
# Banpu consolidated balance sheet – 3Q22

## 3Q22 CONSOLIDATED FINANCIAL POSITION

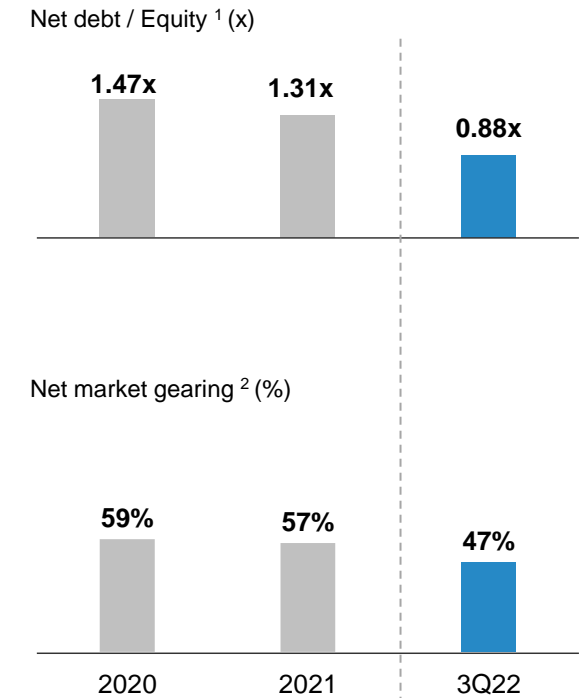
## DEBT FX STRUCTURE

## GEARING RATIOS

USD million



Total gross debt: US\$6.28 billion  
As of 30 September 2022

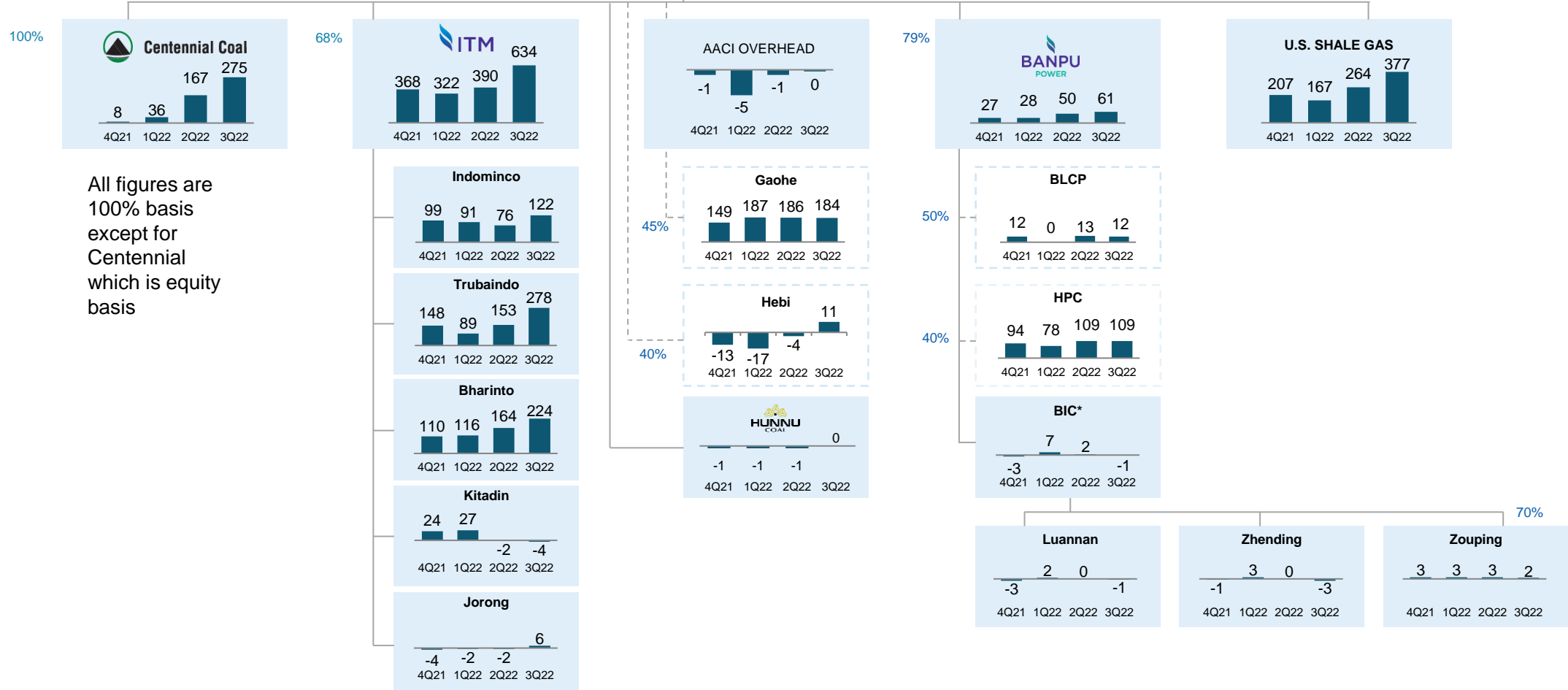
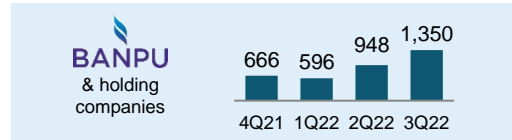


Note:

- 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

USD million



All figures are 100% basis except for Centennial which is equity basis

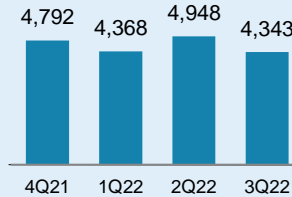
Note: all ownership 100% unless otherwise shown  
\*BIC = Banpu Investment China

■ Consolidated □ NOT consolidated

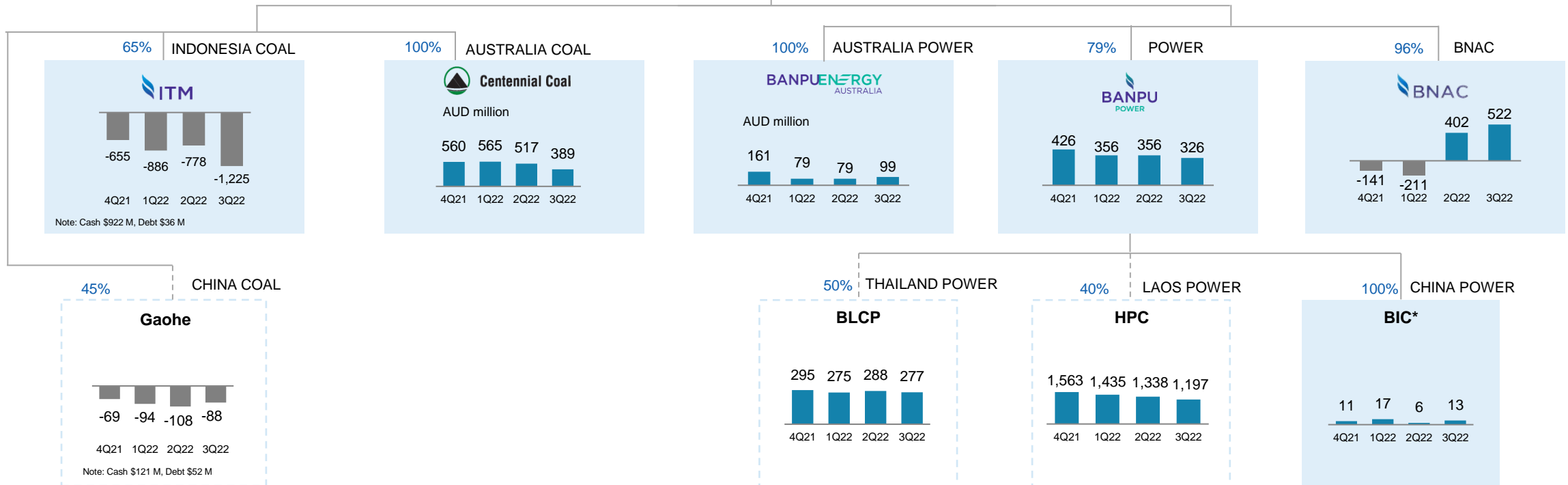
# Banpu group net debt breakdown

USD million

**BANPU**  
& holding  
companies



- Consolidated
- NOT consolidated
- Net debt
- Net cash



Note: all ownership 100% unless otherwise shown  
\*BIC = Banpu Investment China

# Banpu consolidated: operating profit

| USD million                  | 3Q22         | 2Q22         | 3Q21         | QoQ%        | YoY%         |
|------------------------------|--------------|--------------|--------------|-------------|--------------|
| <b>Total sales revenues*</b> | <b>2,397</b> | <b>1,773</b> | <b>1,161</b> | <b>+35%</b> | <b>+106%</b> |
| Sales revenue – Coal**       | 1,659        | 1238         | 870          | +34%        | +91%         |
| Sales revenue – Gas          | 573          | 387          | 231          | +48%        | +148%        |
| Sales revenue – Power        | 149          | 139          | 39           | +7%         | +281%        |
| Cost of sales                | (964)        | (842)        | (619)        |             |              |
| <b>Gross Profit*</b>         | <b>1,433</b> | <b>931</b>   | <b>542</b>   | <b>+54%</b> | <b>+164%</b> |
| Gross profit – Coal**        | 1,026        | 661          | 417          | +55%        | +146%        |
| Gross profit – Gas           | 380          | 254          | 121          | +49%        | +214%        |
| Gross profit – Power         | 22           | 19           | 0            | +17%        | +4405%       |
| <b>GPM</b>                   | <b>60%</b>   | <b>53%</b>   | <b>47%</b>   |             |              |
| <i>GPM – Coal</i>            | <i>62%</i>   | <i>53%</i>   | <i>48%</i>   |             |              |
| <i>GPM – Gas</i>             | <i>66%</i>   | <i>66%</i>   | <i>53%</i>   |             |              |
| <i>GPM – Power</i>           | <i>15%</i>   | <i>14%</i>   | <i>1%</i>    |             |              |

# Banpu consolidated: operating profit

| USD million                | 3Q22         | 2Q22       | 3Q21       | QoQ%        | YoY%         |
|----------------------------|--------------|------------|------------|-------------|--------------|
| <b>Gross Profit</b>        | <b>1,433</b> | <b>931</b> | <b>542</b> | <b>+54%</b> | <b>+164%</b> |
| <b>GPM</b>                 | <b>60%</b>   | <b>53%</b> | <b>47%</b> |             |              |
| SG&A                       | (157)        | (117)      | (124)      |             |              |
| Royalty                    | (208)        | (131)      | (87)       |             |              |
| Income from associates     | 92           | 81         | 64         |             |              |
| Other income and Dividend  | 14           | 21         | 14         |             |              |
| Mining property            | (9)          | (9)        | (9)        |             |              |
| <b>EBIT</b>                | <b>1,165</b> | <b>777</b> | <b>400</b> | <b>+50%</b> | <b>+191%</b> |
| EBIT – Coal                | 783          | 509        | 305        | +54%        | +157%        |
| EBIT – Gas                 | 326          | 228        | 95         | +43%        | +243%        |
| EBIT – Power               | 61           | 46         | 12         | +32%        | +415%        |
| EBIT – Energy Technology   | (6)          | (7)        | (13)       | n.a.        | n.a.         |
| <b>EBITDA</b>              | <b>1,350</b> | <b>948</b> | <b>530</b> | <b>+42%</b> | <b>+155%</b> |
| EBITDA – Coal              | 902          | 630        | 399        | +43%        | +126%        |
| EBITDA – Gas               | 377          | 264        | 122        | +43%        | +209%        |
| EBITDA – Power             | 74           | 58         | 10         | +28%        | +636%        |
| EBITDA – Energy Technology | (4)          | (4)        | (2)        | n.a.        | n.a.         |

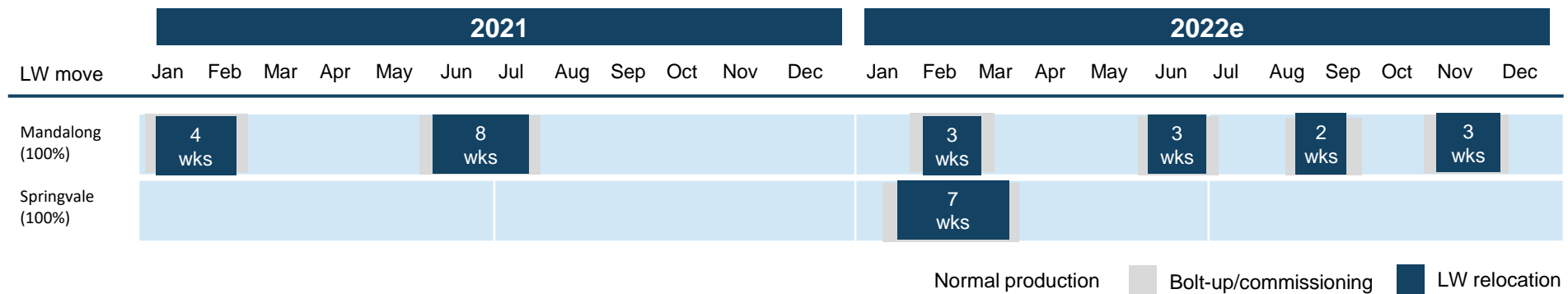
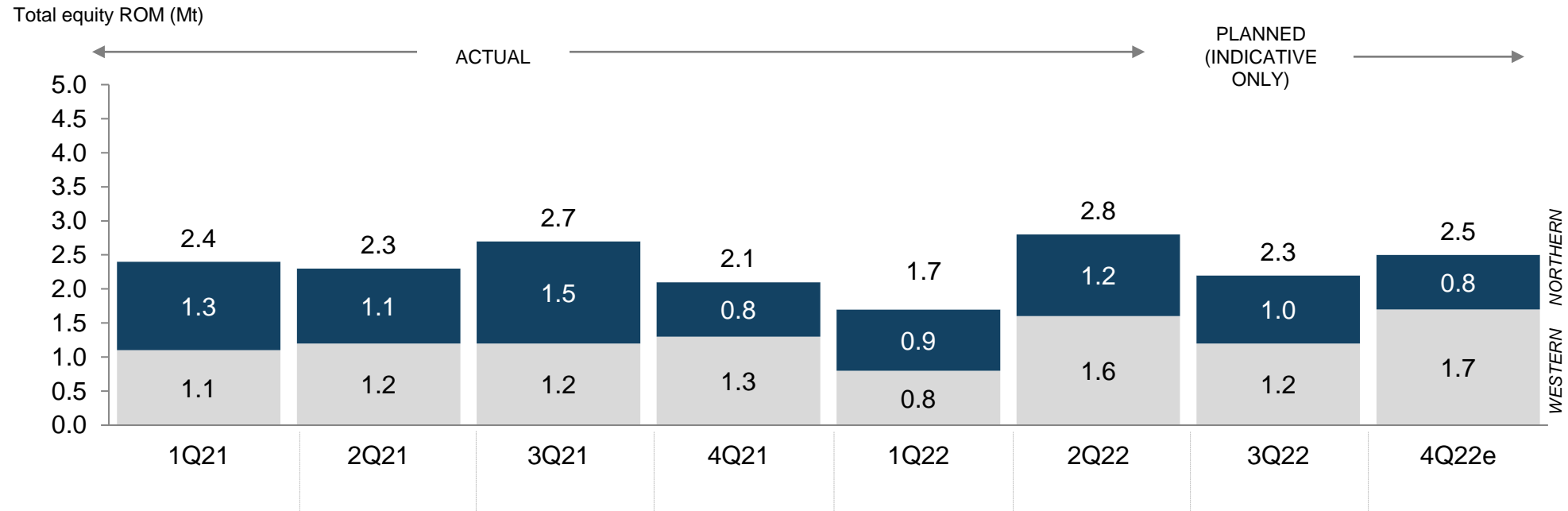
# Banpu consolidated: net profit

| USD million                             | 3Q22         | 2Q22       | 3Q21       | QoQ%        | YoY%         |
|---|--------------|------------|------------|-------------|--------------|
| <b>EBIT</b>                             | <b>1,165</b> | <b>777</b> | <b>400</b> | <b>+50%</b> | <b>+191%</b> |
| Interest expenses                       | (73)         | (54)       | (43)       |             |              |
| Financial expenses                      | (2)          | (2)        | (3)        |             |              |
| Income tax (core business)              | (124)        | (73)       | (46)       |             |              |
| Minorities                              | (167)        | (101)      | (47)       |             |              |
| <b>Net profit before extra items</b>    | <b>798</b>   | <b>547</b> | <b>261</b> | <b>+46%</b> | <b>+206%</b> |
| Non-recurring items*                    | (8)          | 157        | (5)        |             |              |
| Gain (Loss) on Derivatives Transactions | (248)        | (293)      | (177)      |             |              |
| Income tax (non - core business)        | (2)          | (16)       | 0          |             |              |
| Deferred tax income (expenses)          | (133)        | (76)       | (14)       |             |              |
| <b>Net profit before FX</b>             | <b>408</b>   | <b>319</b> | <b>65</b>  | <b>+28%</b> | <b>+528%</b> |
| FX translation                          | 79           | 53         | 42         |             |              |
| <b>Net Profit</b>                       | <b>487</b>   | <b>372</b> | <b>106</b> | <b>+31%</b> | <b>+358%</b> |
| EPS (US\$/share)                        | 0.072        | 0.055      | 0.021      |             |              |

# Centennial: income statement

| USD million                  | 3Q22         | 2Q22         | 3Q21          | QoQ%  | YoY%  |
|------------------------------|--------------|--------------|---------------|-------|-------|
| <b>Sales volume (Mt)</b>     | <b>2.3</b>   | <b>2.8</b>   | <b>2.7</b>    | -19%  | -16%  |
| Sales revenue                | 388.5        | 342.8        | 187.7         | +13%  | +107% |
| Cost of Sales                | (221.3)      | (221.1)      | (160.8)       |       |       |
| <b>Gross Profit</b>          | <b>167.2</b> | <b>121.8</b> | <b>26.9</b>   | +37%  | +522% |
| GPM                          | 43%          | 36%          | 14%           |       |       |
| SG&A                         | (28.2)       | (26.9)       | (23.1)        |       |       |
| Royalty                      | (24.7)       | (21.9)       | (12.4)        |       |       |
| Other income                 | 1.2          | 1.8          | 1.0           |       |       |
| Other expenses               | -            | -            | -             |       |       |
| <b>EBIT</b>                  | <b>115.5</b> | <b>74.7</b>  | <b>(7.6)</b>  | +55%  | n.a.  |
| Interest expenses            | (10.9)       | (9.2)        | (6.0)         |       |       |
| Financial expenses           | (0.6)        | (0.6)        | (2.1)         |       |       |
| Gain (loss) on exchange rate | (2.5)        | (8.6)        | (13.4)        |       |       |
| Gain (loss) on derivative    | (8.0)        | (35.7)       | (40.0)        |       |       |
| Corporate income tax         | -            | -            | -             |       |       |
| Deferred tax income          | (27.9)       | (6.4)        | 20.8          |       |       |
| <b>Net Profit</b>            | <b>65.7</b>  | <b>14.1</b>  | <b>(48.3)</b> | +365% | n.a.  |

# Australia coal: quarterly equity rom output



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%.

