



FY21 & 4Q21 results

Opportunity Day

8th March 2022



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and Upwards

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2021 highlights and recent updates



Accelerating the Banpu Transformation

Significant progress in Greener, Smarter businesses through developments in:



US & Japan Power

+841 MW operating capacity from acquisition of Temple I CCGT and completion of Nakoso IGCC



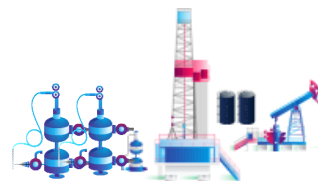
Australia, Vietnam and Japan Renewables

+320 MW operating capacity from acquisitions of 6 assets and a Vietnam solar rooftop platform and completion of 2 assets



Energy Technology

Investments in Beyond Green, EVolt Technology and Engie Services (Thailand)*



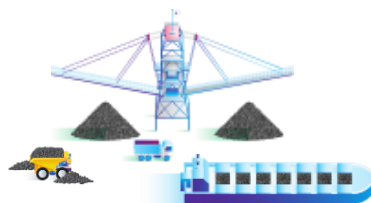
Robust Cash Flow Generation

EBITDA for 2021 increased to **\$1,778 M**, improving **216%** from 2020 with higher contribution from Coal and Gas businesses, significant incremental contribution from Greener assets



Capital Raising for *Greener, Smarter* Transition

Equity and debenture issuance to accelerate the transition and strengthen Banpu's capital structure



Energy Prices Strong

Gas price averages at **\$3.89/MMBtu** and coal price averages at **\$138/t** in 2021, driven by increasing demand and supply tightness



Strong ESG Progress

ESG committee establishment as well as ESG recognitions and awards from 8 respected global and local institutions

Banpu: ESG leadership and credit rating recognition

BANPU ESG RATING



A

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



Gold

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



Silver class

in Asia's Best SDG Reporting in 2020 for implementing strategy to support and achieve UN Sustainable Development Goals



Best Performer

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



8th

consecutive year included as a constituent of DJSI for conducting business with the highest ESG standards



Silver

for Sustainability Reporting Award in 2021 for transparent disclosure of ESG information



6th

consecutive year in the THSI for sustainable operations and responsible investment principles



Honor

Highest distinction in SET's Sustainability Excellence Award for being awarded the Best Sustainability Award for at least 3 consecutive years

SUBSIDIARIES

ESG EXCELLENCE



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



S&P SUSTAINABILITY YEARBOOK MEMBER



RISING STAR SUSTAINABILITY AWARD



4TH YEAR LISTED IN THSI

RESPONSIBLY SOURCED GAS



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

CREDIT RATING



A+

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



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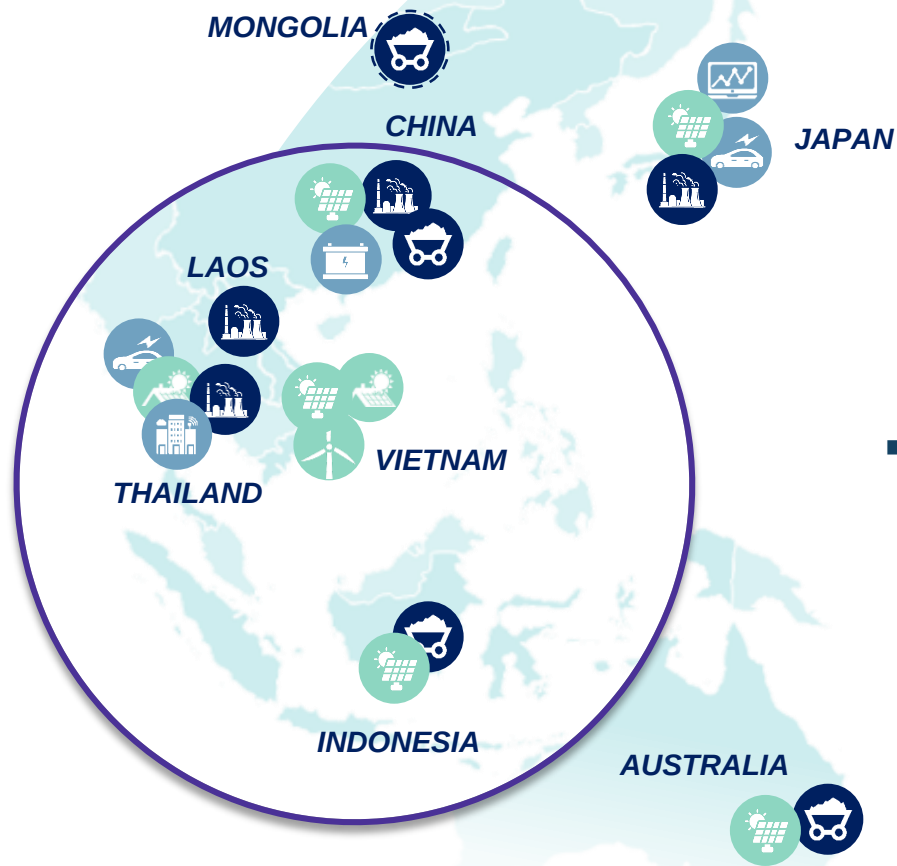
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Banpu: integrated energy solutions provider



- Pan-Pacific Rim integrated energy solutions group: **resources, generation, technology**
 - Pioneering development and change in the energy sector since 1983: *adaptable, agile*
 - Leading a responsible transition to more sustainable energy in the region

2021 year review: energy resources

BANPU ENERGY RESOURCES



POSITIONING FOR THE FUTURE

Through continuous decarbonization by integrating green energy sources and emission reduction initiatives into our operations; as well as studying high-growth, high-value opportunities across the value chain.

PORTFOLIO OVERVIEW

GAS



WELL-POSITIONED TO SCALE UP

with opportunities to synergize with existing power businesses

MINING



MAXIMIZE PROFITABILITY OF OUR RESERVES

to generate cash flow for further acceleration of *Greener, Smarter* business



IMPROVING SUSTAINABLE OPERATIONS 2021-2022 YTD



STRONG BASE PRODUCTION, RESERVE EXTENSION

Base production efficiently maintained throughout the year, overcoming natural decline of gas well production. Acceleration of Value Driven Initiatives (VDI) in a solid pricing environment, capturing upside with 1P Reserve extension of gas assets by 564 Bcfe..



CONTINUOUS DECARBONIZATION

Continued implementation of Scope 1 & 2 emission reduction program utilizing best-in-class technologies and operational methods, i.e., methane leak detection, methane capture, etc.



EXPLORING NEW VENTURES

Exploration of potential investments in strategic minerals with high growth, leveraging energy trends; as well as other clean technology opportunities.

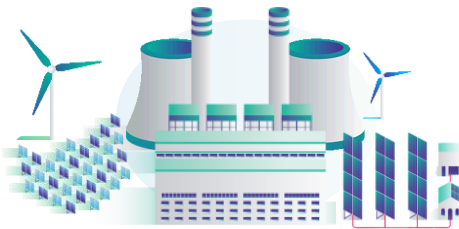


GREENER OPERATION INITIATIVES

Operation of solar PV at Bontang coal terminal with further development plans to integrate solar energy to Melak port to ensure clean and continuous power supply. Implementation of digital solutions to improve monitoring and cost control across operations.

2021 year review: energy generation

BANPU ENERGY GENERATION



STRENGTHEN PORTFOLIO WITH GROWING CAPACITY

and new investments in greener assets to facilitate *Greener, Smarter* transition

PORTFOLIO OVERVIEW



SOLAR & WIND POWER

+314 MW ▲

solar assets in high growth regions

OPERATING CAPACITY

0.6 GW*

* -142 MW from Sunseap divestment



THERMAL & HELE POWER

+1,237 MW ▲

best-of-class HELE power assets

OPERATING CAPACITY

3.2 GW

BANPU: GROWING GREEN GENERATION PORTFOLIO



OPTIMIZED
OPERATIONAL
EFFICIENCY

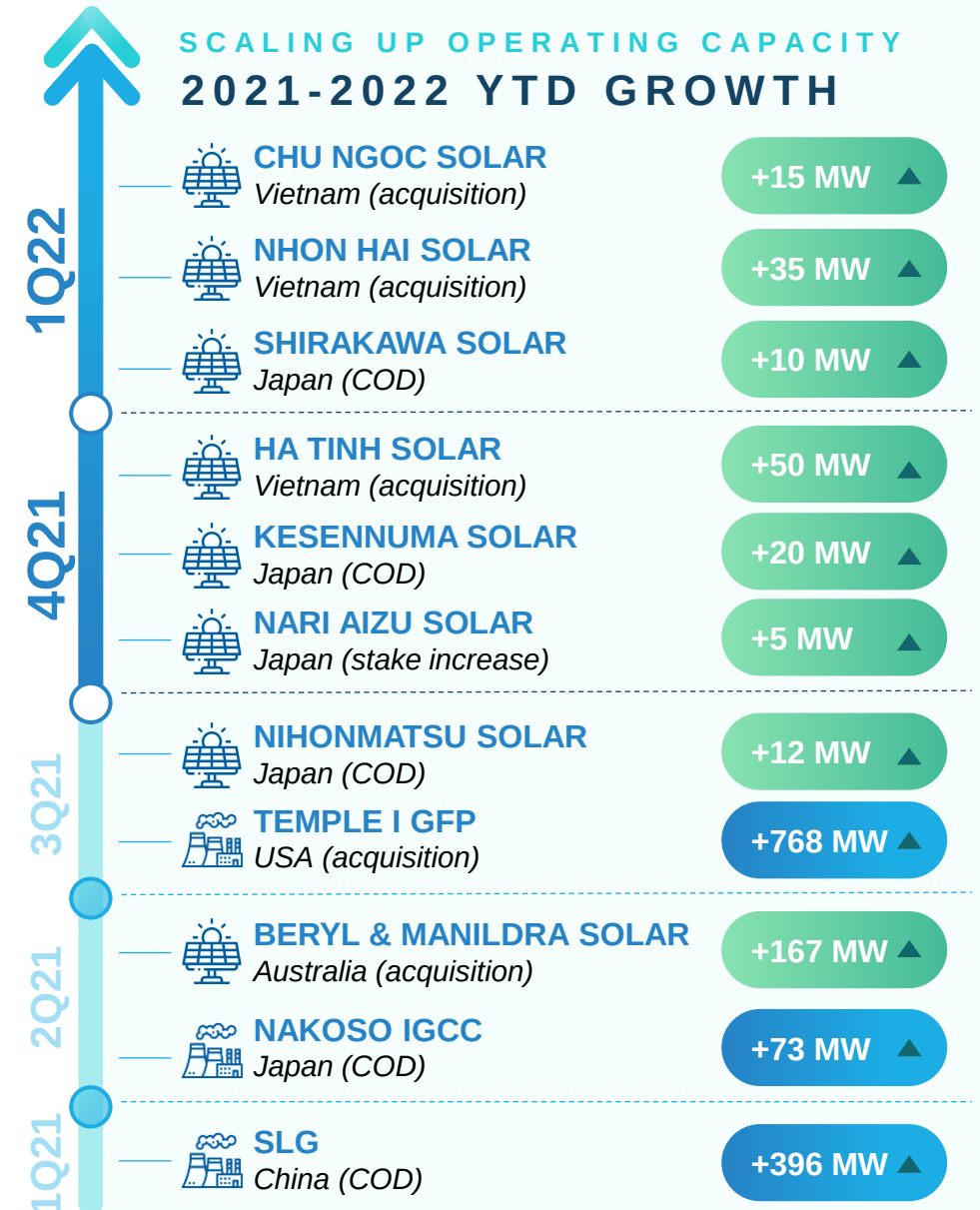


CONTINUED
EARNINGS
RESILIENCY



EXPANSION INTO
FAST-GROWING
GEOGRAPHIES

SCALING UP OPERATING CAPACITY 2021-2022 YTD GROWTH



2021 year review: energy technology

BANPU ENERGY TECHNOLOGY



PLATFORM FOR EVERGROWING FUTURE ENERGY ECOSYSTEM

to capture new energy trends and provide accessible energy-related services for all.

PORTFOLIO OVERVIEW*

SOLAR ROOFTOP & FLOATING



99 MW

-212 MW from Sunseap divestment

BATTERY PRODUCTION



1.0 GWh

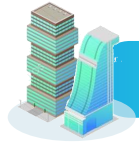
E-MOBILITY



MaaS



SMART CITIES & ENERGY MGMT.



>20 projects

ELECTRICITY TRADING

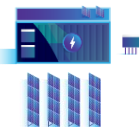


712 GWh

BANPU: INTEGRATED ENERGY SERVICE PROVIDER



SCALED-UP
ENERGY TECH
PORTFOLIO
& SERVICES



INCREASED
VALUE CREATION
FROM ENERGY
SOLUTIONS



CONTINUED
DIGITAL
TRANSFORMATION
OF BUSINESSES

ENERGY ECOSYSTEM EXPANSION 2021-2022 YTD GROWTH

1Q22

SOLAR ESCO
Solar rooftop platform (acquisition)
Expanding solar capabilities in Vietnam

OPERATING
+6 MW

PIPELINE
+56 MW



SUNSEAP CLOSING

Solar rooftop (divestment)
Unlocking significant capital to accelerate Greener, Smarter growth plan



ENGIE SERVICES (THAILAND)**
Energy management services (acquisition)
Strengthening energy management capabilities across Banpu geographies



EVOLT TECHNOLOGY

E-mobility (acquisition)
Integration of smart charging onto MaaS platform



MOBILITY AS A SERVICE

E-mobility (establishment)
Consolidation of e-mobility services



BEYOND GREEN

E-mobility (acquisition)
Expansion of e-mobility offerings through sales and service of electric club cars

4Q21

3Q21

Banpu strategy 2022-2025: onwards and upwards

ENERGY RESOURCES

MINING



Production optimization and cost rationalization to maximize value from existing reserves to generate cashflow to accelerate Greener, Smarter businesses.

Playing to our strengths

Explore non-coal mining opportunities with high growth potential, such as strategic minerals

GAS



Continued focusing on capturing price fly-ups through production ramp up with capex flexibility to maximize cash flow generation further supporting Greener, Smarter transition.

Vertical Integration

Pursue midstream and power opportunities accretive and synergistic to upstream gas assets.

ENERGY GENERATION

THERMAL



Continued implementation of initiatives to maximize plant efficiency while reducing emissions.

Greener baseload power

Seek opportunities to invest into Greener, Smarter thermal assets utilizing HELE with high return upside.

RENEWABLES



Maximize efficiency of operating assets while ensuring on-time commissioning of developing projects.

Cleaner energy generation

Grow and diversify renewables portfolio in high-growth regions, as well as regions with Banpu presence

ACCELERATING THE GREENER, SMARTER TRANSFORMATION

ENERGY TECHNOLOGY



Scale up energy technology portfolio by expanding existing energy services, including e-mobility, battery production, energy and waste management.



Acquire and develop new energy-related services with a focus on building competency and integration of services into a single digital platform.



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KEY FIGURES

EBITDA

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

\$1,778 M

NPAT

Strong performance and improved operational results.

\$304 M

ND/E

ND/E improved from 1.47x in the previous year.

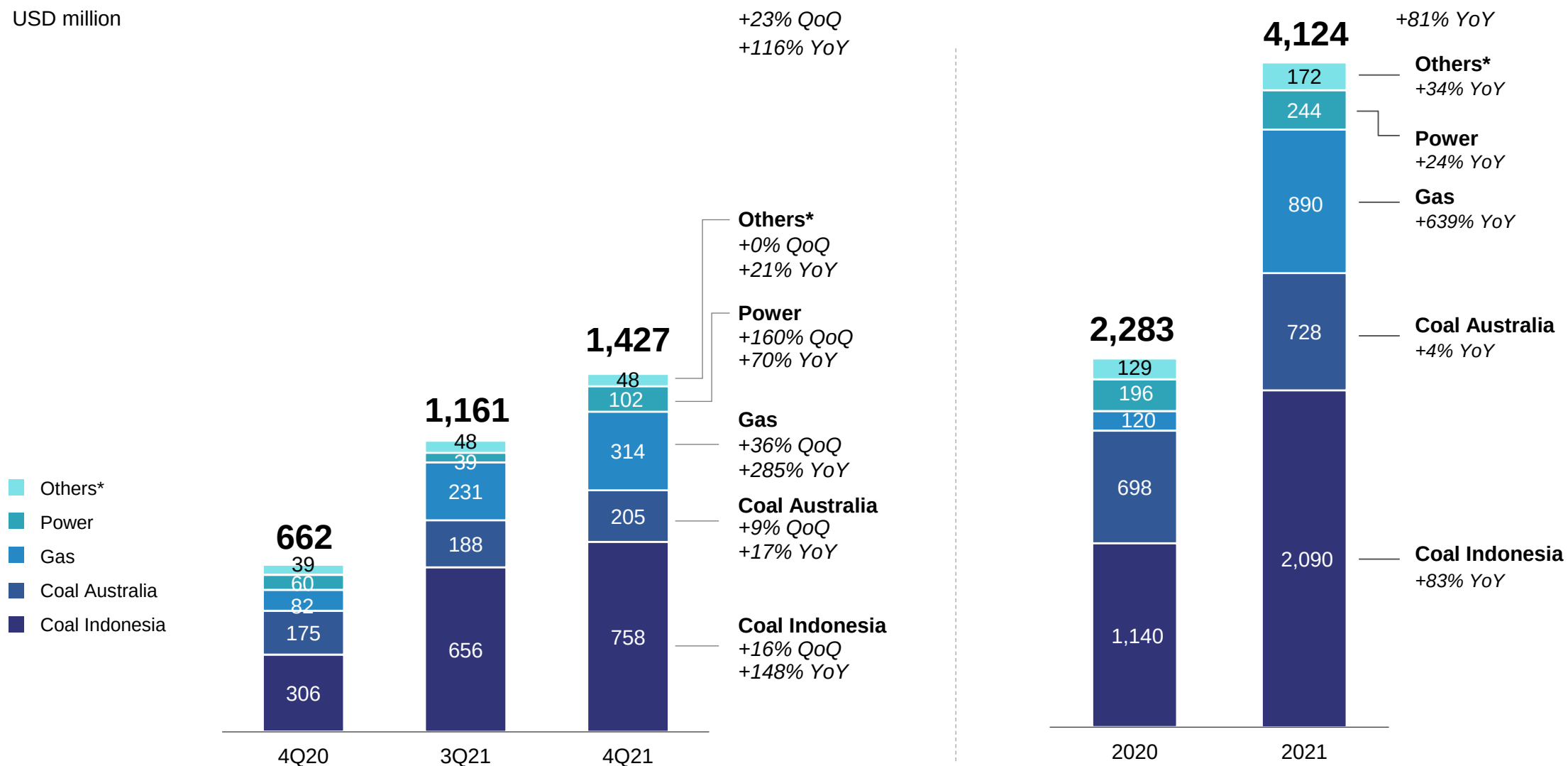
1.31 x

KEY TAKEAWAYS

- 1 Robust Coal business performance:** from significantly higher ASP, due to supply tightness and lack of availability amidst robust demand
- 2 Significant Core Gas business contribution:** led by substantial increase in gas sales volume and supported by increase in average local price* as low storage levels continue
- 3 Strategically-positioned Energy Resources business:** Coal and Gas businesses well-positioned to benefit from current and near-term commodity price levels and demand
- 4 Greener cashflow:** cashflow generation captured from new investments including Nakoso IGCC, Temple I CGGT, Australia Solar, Vietnam Wind and Japan Solar. Future near-term cashflow to be captured from new Greener, Smarter investments (i.e. Vietnam Solar)

Banpu consolidated sales revenues – 4Q21 and FY21

USD million

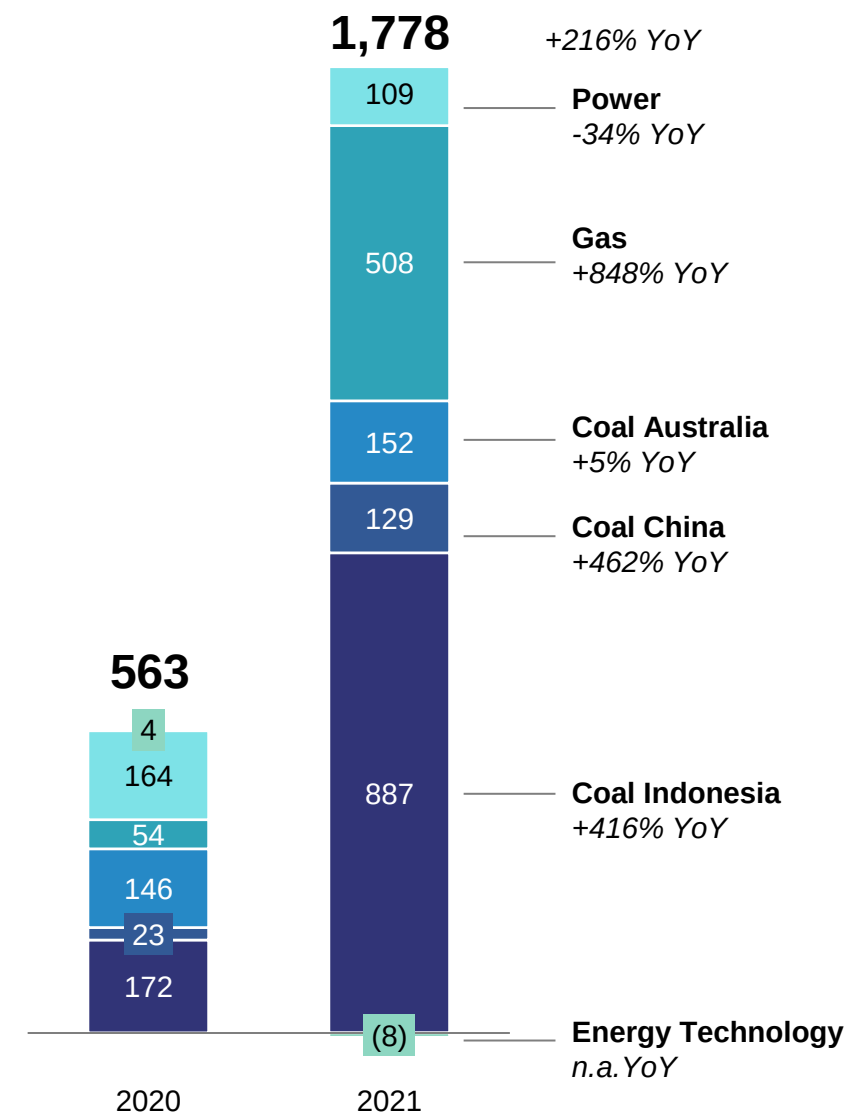
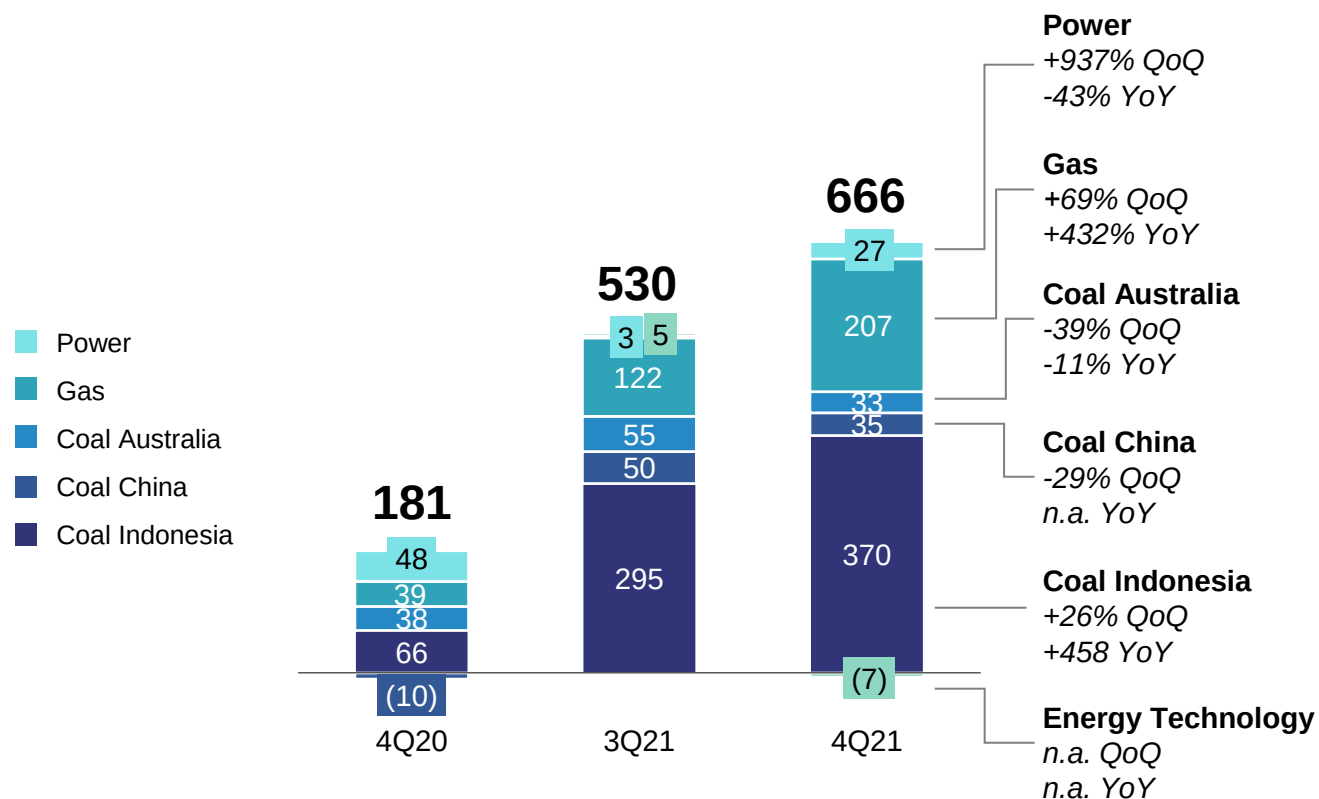


Note: *Revenue from others includes coal trading, fuel business and other businesses

Banpu consolidated EBITDA – 4Q21 and FY21

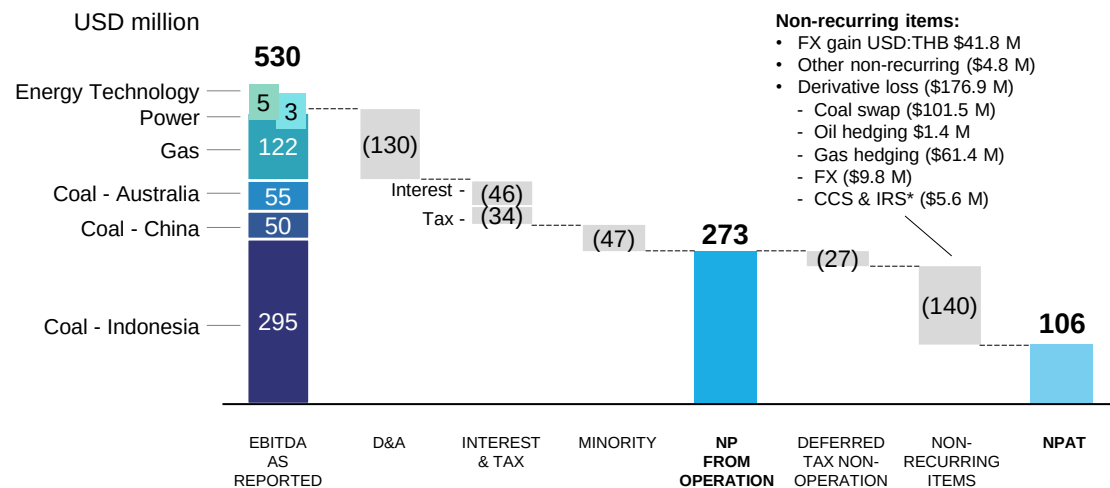
USD million

+26% QoQ
+268% YoY

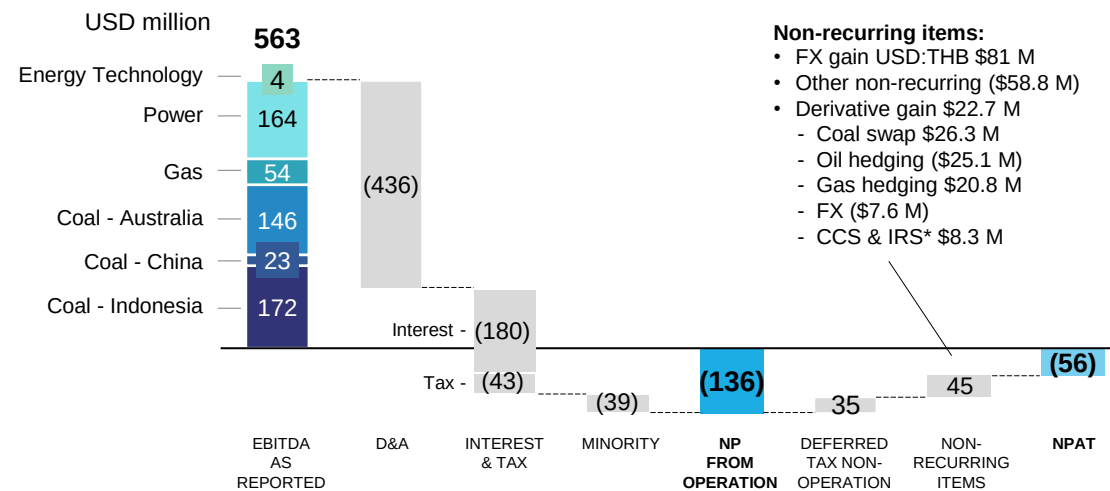


Banpu consolidated NPAT – 4Q21 and FY21

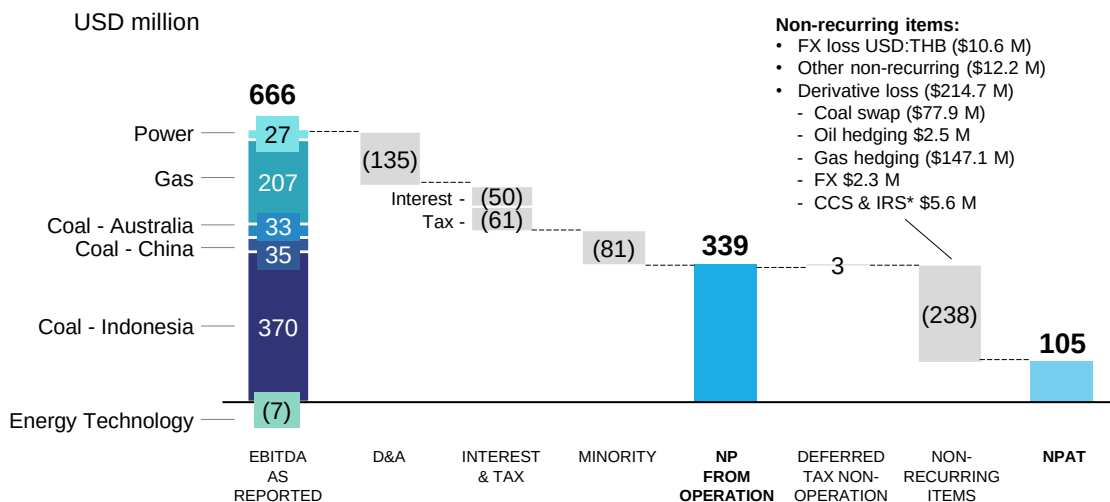
3Q21 NET PROFIT AFTER TAX



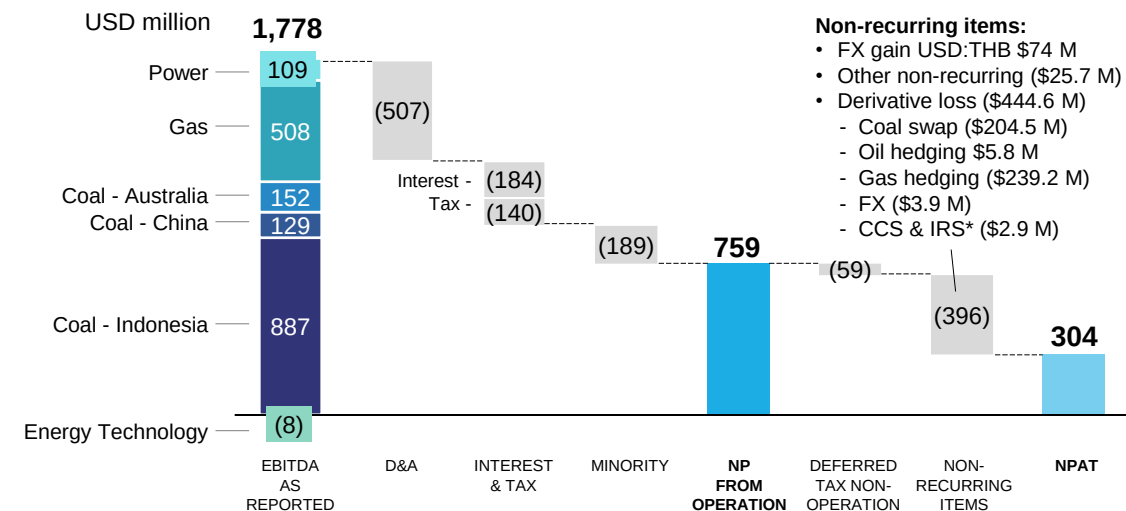
2020 NET PROFIT AFTER TAX



4Q21 NET PROFIT AFTER TAX



2021 NET PROFIT AFTER TAX



Note: *Cross currency swap, interest rate swap

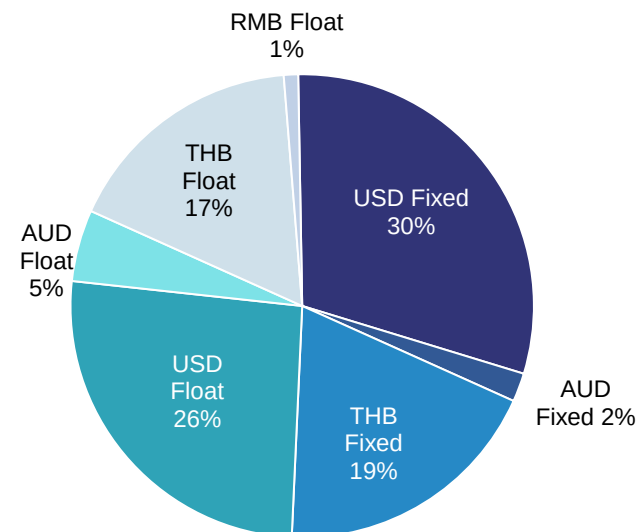
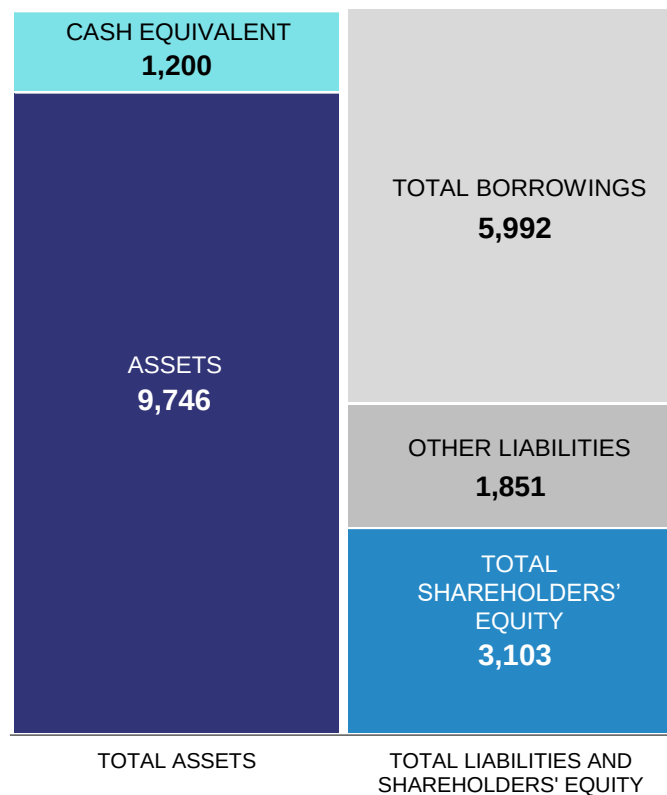
Banpu consolidated balance sheet – 2021

2021 CONSOLIDATED FINANCIAL POSITION

DEBT FX STRUCTURE

GEARING RATIOS

USD million



Total gross debt: US\$5,992 million
As of 31 December 2021

Net debt / Equity ¹ (x)

1.23x

1.47x

1.31x

Net market gearing ² (%)

55%

59%

57%

2019

2020

2021

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)



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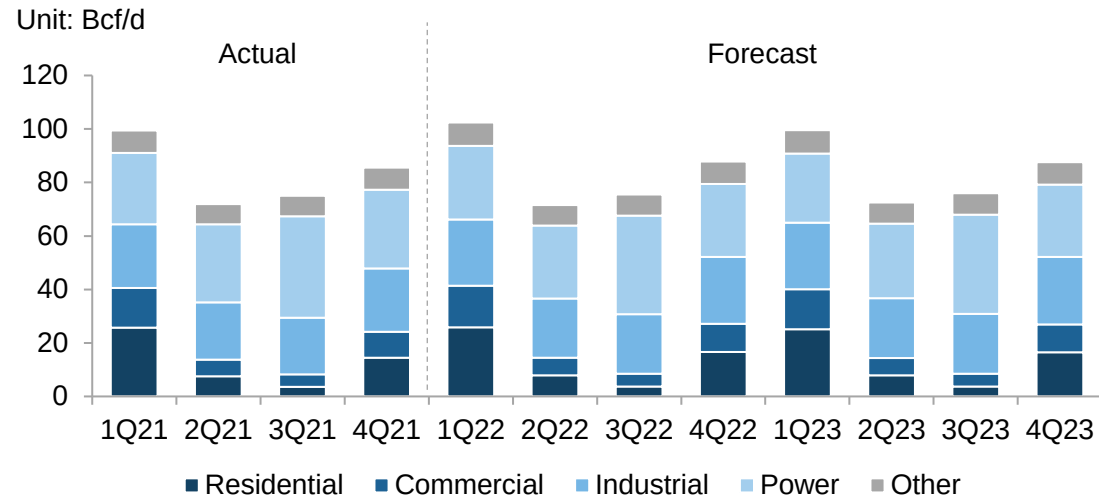
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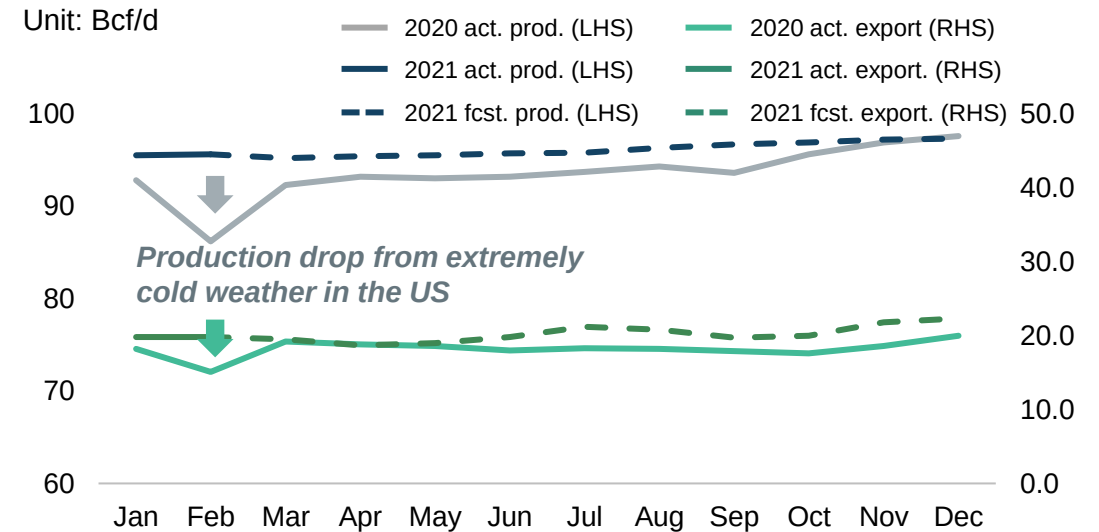
U.S. gas market update

RESILIENT DEMAND PROJECTION

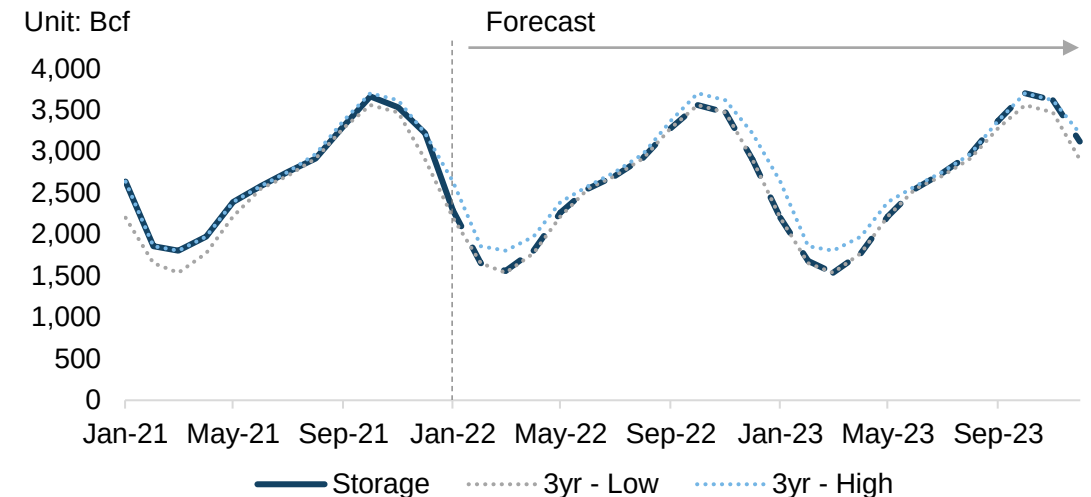


- Majority of US gas demand is domestic consumption. Price is determined by local demand and supply with indirect linkage to oil via associated gas production.
- U.S. gas production averaged at 95.5 Bcf/d in January, down 2.1 Bcf/d from December 2021 due to freezing temperature in certain producing regions. Gas production is forecasted to average at 96.1 Bcf/d for 2022 up from 93.5 in 2021, driven by high natural gas and crude oil price levels supporting drilling activities.
- U.S. LNG exports averaged at 11.2 Bcf/d in January, up 0.8 Bcf/d from 4Q21, supported by large price differences between Henry Hub prices in the U.S. and spot prices in Europe and Asia. LNG exports are expected to continue at high levels into 2022, averaging at 11.3 Bcf/d, up 16% from 2021.
- Natural gas inventories in January 2022 ended at 2.3 Tcf, falling below 5-year average due to colder-than-normal temperature. The inventories are expected to fall by c.730 Bcf for the rest of the withdrawal season, ending March below 1.6 Tcf, which would be 8% less than the 2017-21 average for the time of the year.

US NATURAL GAS PRODUCTION



U.S. STORAGE LEVEL

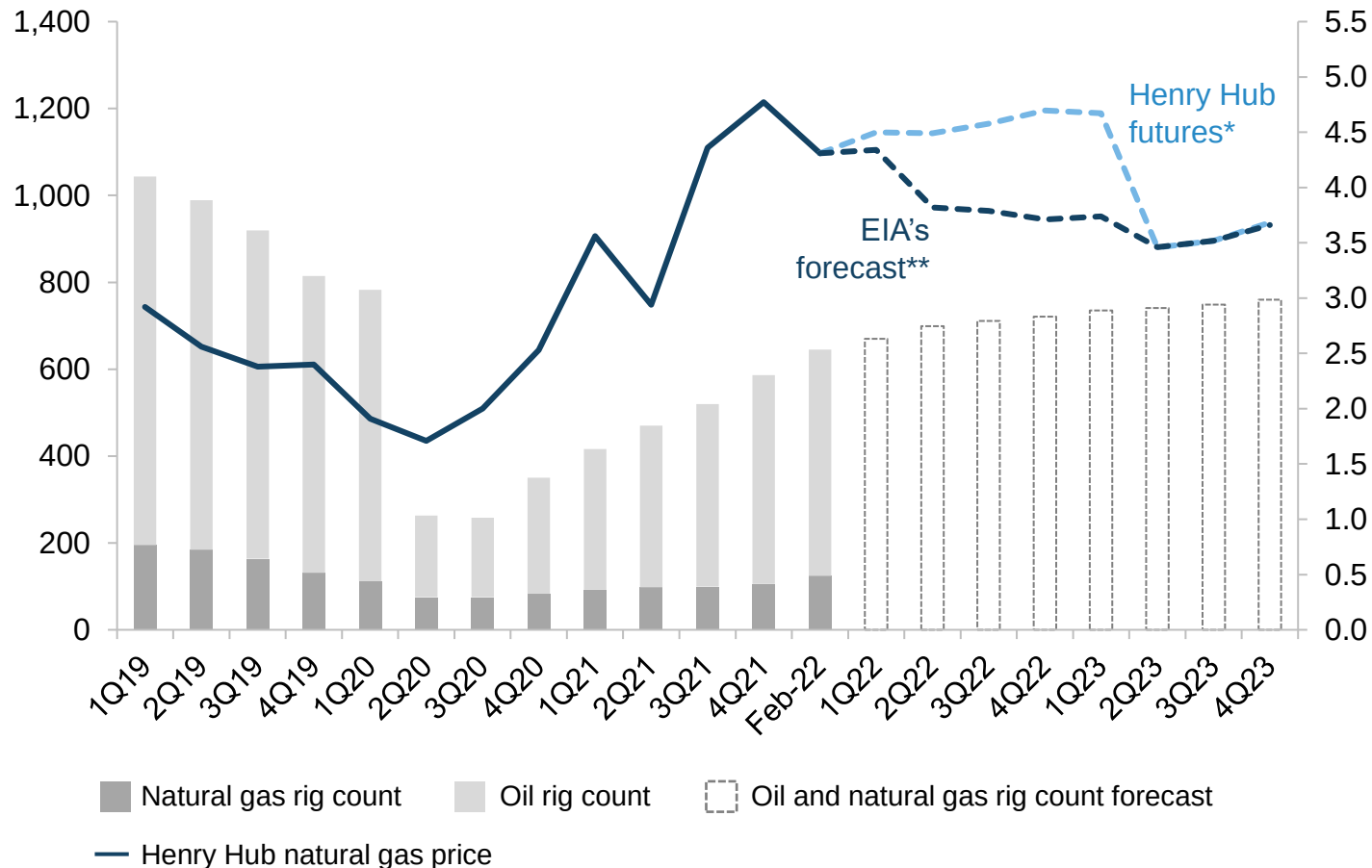


U.S. gas: gas prices expected to remain high amid low storage level

US RIG COUNT VS HENRY HUB PRICE

US OIL AND NATURAL GAS RIG COUNT
Unit: Rigs

HENRY HUB SPOT PRICE
Unit: \$/MMBtu



Note: *As of February 22nd, 2022, **Short-Term Energy Outlook (February 2022)
Source: IHS Markit report (February 2022) and Baker Hughes US natural gas rotary rig count (February 2022)

COMMENT

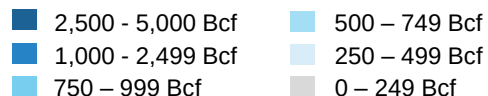
- Natural gas prices in 4Q21 increased from the previous quarter driven by continued surge in gas demand in Europe.
- Capital spending is expected to increase significantly in 2022 relative to 2021 in response to sustained high crude oil and natural gas prices but remain low in total compared to 2015-2019 average as operators continue to prioritize cash flow maximization.
- With the increase in capital spending, oil and gas rigs are expected to continue to increase in 1Q22, up 29% from 3Q21 but remain at levels 36% lower than 1Q19.
- Henry Hub futures remain around \$4.5/MMBtu levels in 2022 but signal a decline after 1Q23 to around \$3.5/MMBtu levels.

Banpu Gas: 2021 highlights

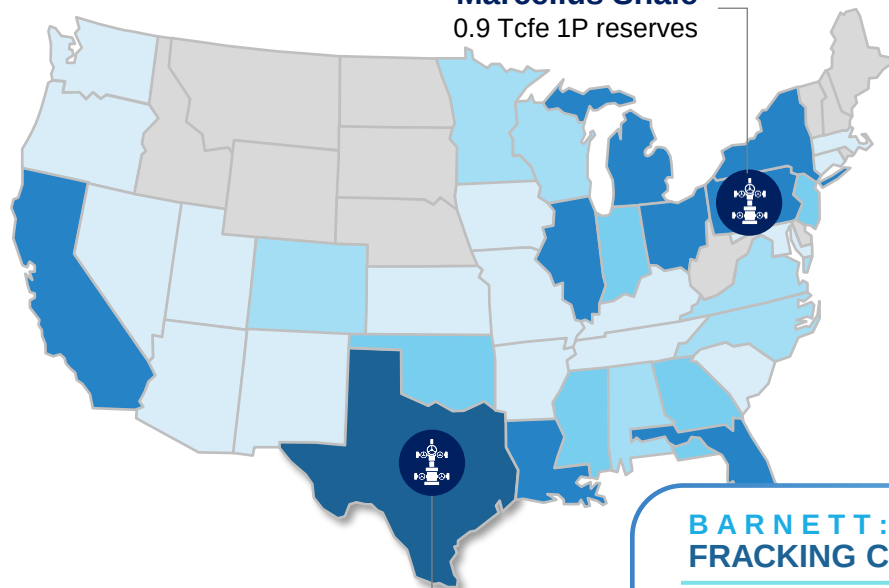
US DRY GAS CONSUMPTION 2019 BY STATE* (Bcfe)



Banpu shale
gas operations



Pennsylvania
Marcellus Shale
0.9 Tcfe 1P reserves



Texas
Barnett Shale
3.3 Tcfe 1P reserves

Average local price**

\$3.61/Mcfe

+100% YoY

Sales volume

246 Bcfe

+117% YoY

EBITDA

\$508 M

+848% YoY

2021 ACHIEVEMENTS & RECOGNITION

BARNETT: FRACKING CHAMPION



Most number of wells restimulation in the US

Demonstrating efficient
operations and ability to maintain
base production, mitigating
effects of natural well decline

MARCELLUS: RESPONSIBLY SOURCED GAS (RSG) CERTIFICATION



Gold accreditation:
top 25% -
most responsible
gas operators

BKV's NEPA wells and facilities was awarded with TrustWell Gold accreditation for operational excellence, safety, and environmental stewardship, allowing BKV to market and sell certified RSG to the market.

- BKV will market and sell up to 75 MMcfd of NEPA RSG in 2022 with targets to obtain certification for an addition 50 MMcfd in Barnett
- TrustWell certification provided by Project Canary, a leading and widely regarded 3rd party certification company representing highest operating standards from ONE Future, the American Gas Association, NORSOK, ISO and American Petroleum Institute (API)

*Source: EIA

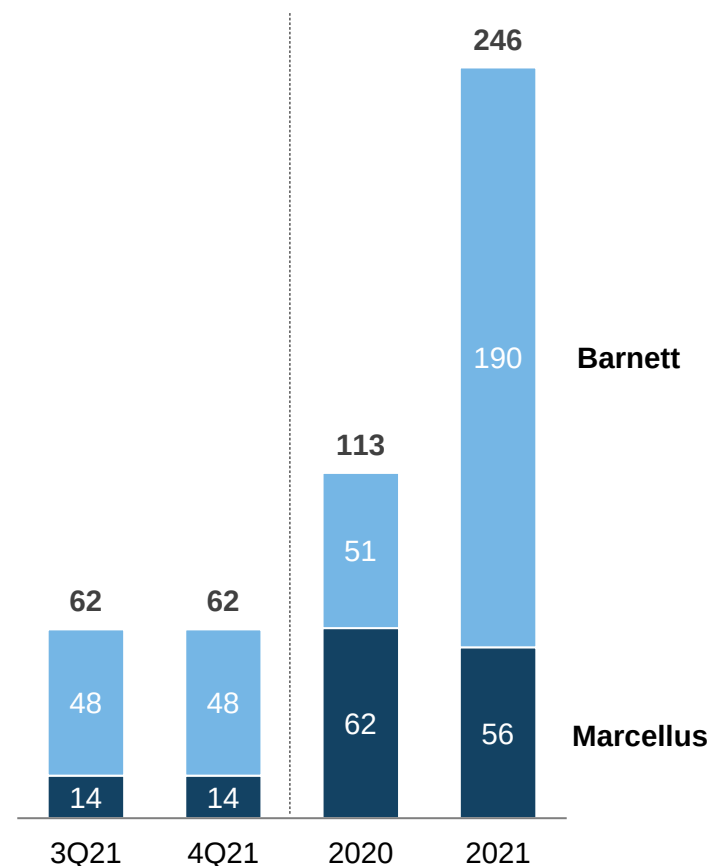
**Average local price = Henry Hub - basis differential

Banpu Gas: 4Q21 and FY21 performance

2021 highlighted our agility to successfully deliver strong production and capture upside from price fly-ups. Record EBITDA of \$508 M including \$53M of other income from our trading JV.

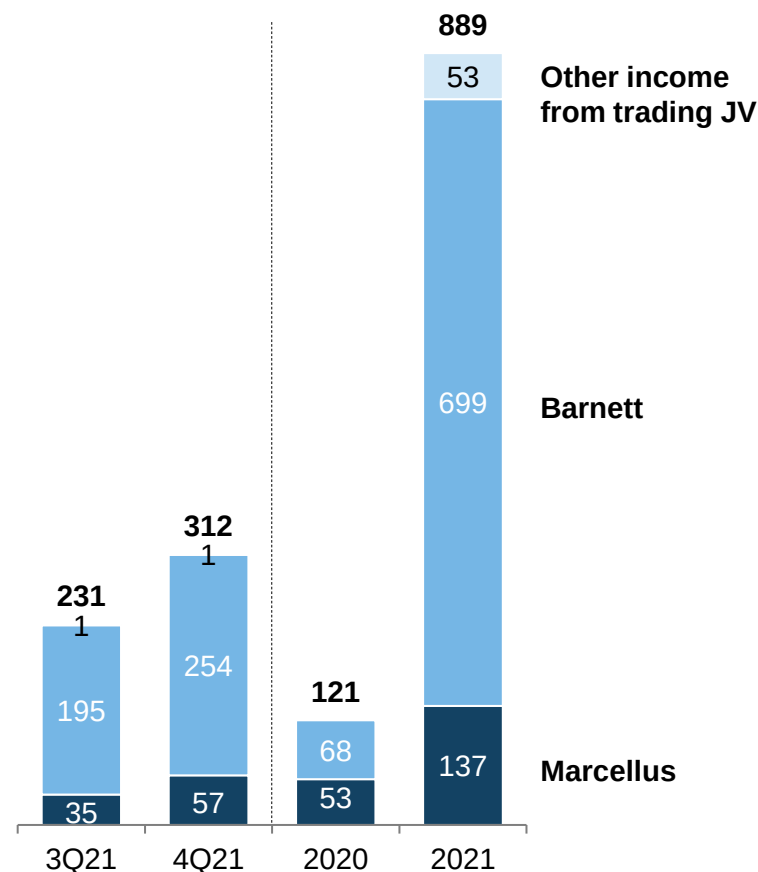
SALES VOLUMES

Unit: Bcf*



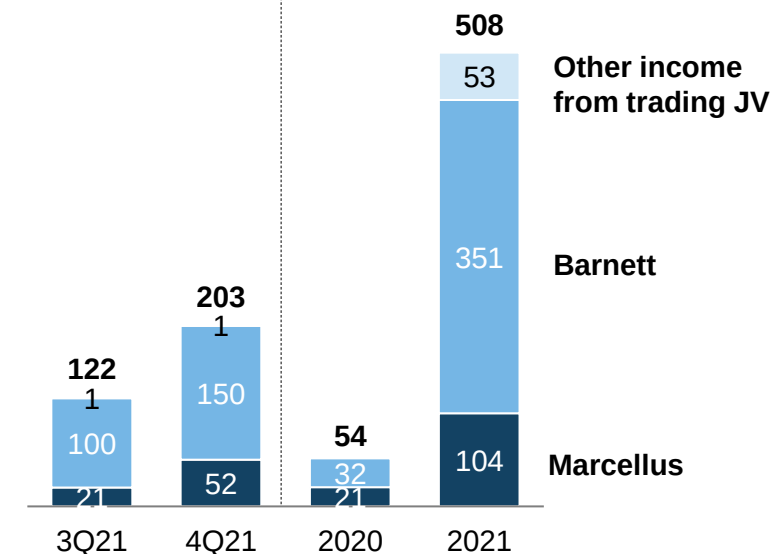
TOTAL REALIZED REVENUE

Unit: US\$M



EBITDA

Unit: US\$M

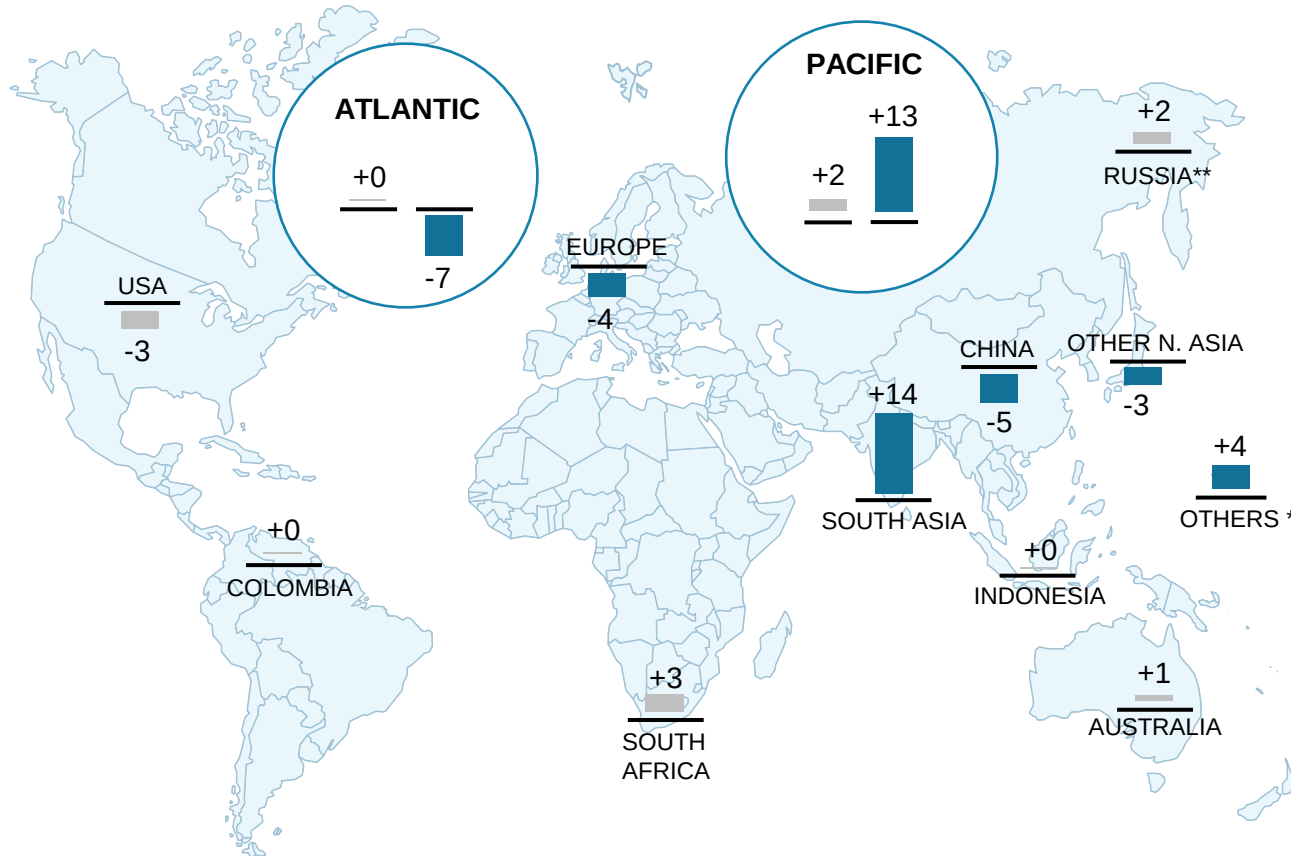


Note: *Bcf = Billion cubic feet

Global thermal coal market

COAL DEMAND AND SUPPLY CHANGE – 2022E VS 2021

Unit: Mt ■ SUPPLY ■ DEMAND



TRENDS

DEMAND

Spike in coal prices exceeded our expectations primarily due to unexpected supply issues. Coal demand is expected to grow on continuing economic recovery but at a slower pace. High natural gas prices support coal demand and price.

- **China:** Strong growth in domestic coal production and expected weaker economic growth in 2022 will hamper imports. Government's intervention to stabilize coal price, import control and unofficial ban on Australian coal imports are expected to persist.
- **India:** Ongoing economic growth and increasing power demand points to growing coal imports. Prioritization of domestic coal for the power sector due to insufficient supply, leaves non-power sector to rely on imports.
- **JKT:** Cold weather and high gas prices led to a rise in coal demand at the start of 2022. But overall import demand is expected to be steady with downside risk on coal curtailment in South Korea and Taiwan.
- **Europe:** High gas prices, poor gas supply, cold weather and a shortage of alternative power sources supported coal demand into 2022.

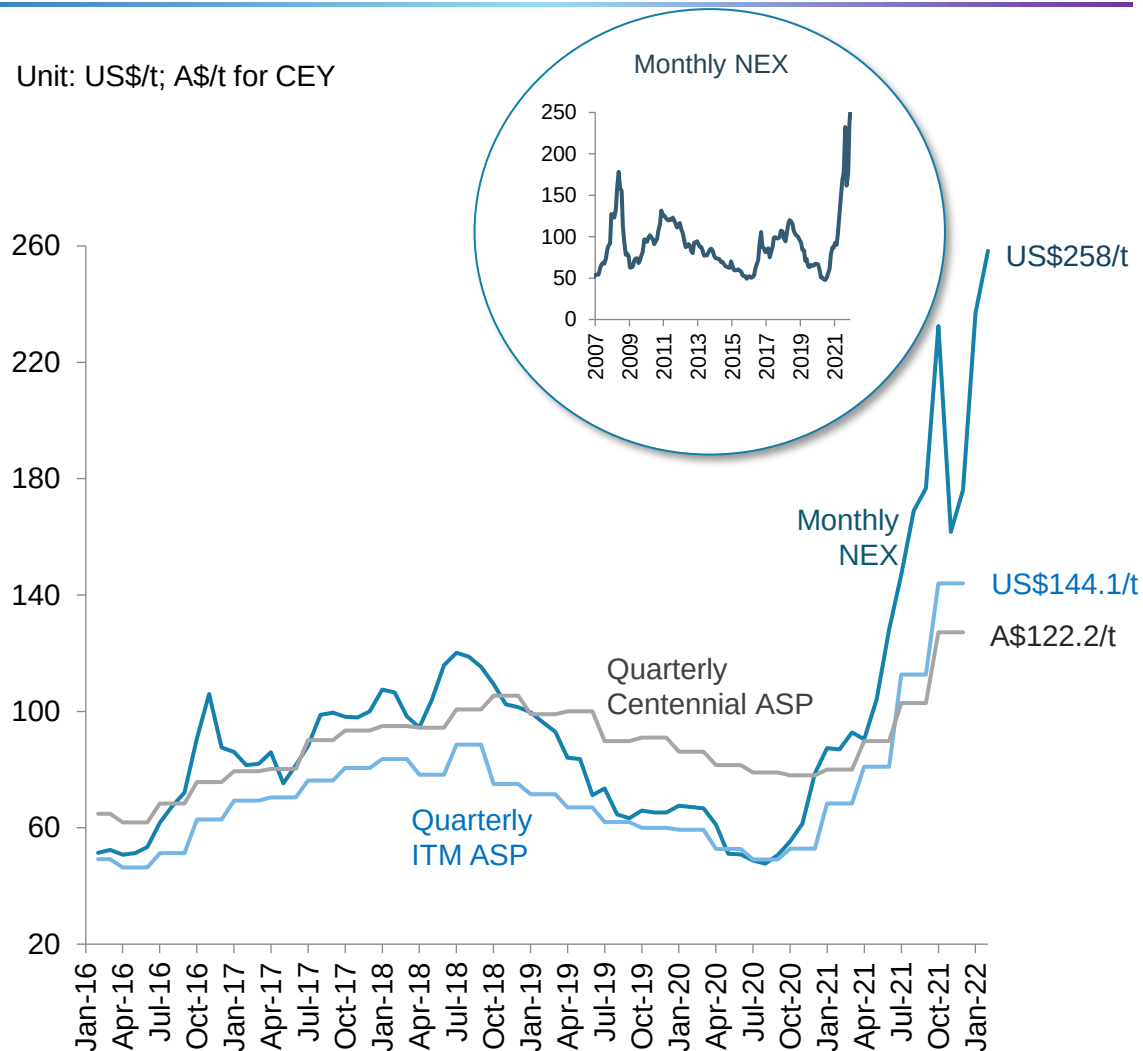
SUPPLY

Global markets were short of coal in January due to Indonesia's coal export ban. Geopolitical tension, weather disruptions and further transportation issues in South Africa, Russia and Colombia will continue to contribute to a tightened coal market.

- **Indonesia:** January export ban, new export control regulations and high domestic demand will tighten availability for export but the loss tonnage in January is expected to recover in the later part of the year.
- **Australia:** adverse weather tighten supply while Omicron outbreak in New South Wales impacted coal supply chain and worsen coal supply.
- **Others:** Rail issues are expected to improve in South Africa and Russia. A slow ramp-up out of Colombia exports with uncertainty over mines performance. Most US coal suppliers and transportation providers have reached maximum output with little to no room for additional short-term growth, despite high prices.

Banpu ASPs vs thermal coal benchmark prices

BANPU ASP VS BENCHMARK PRICES



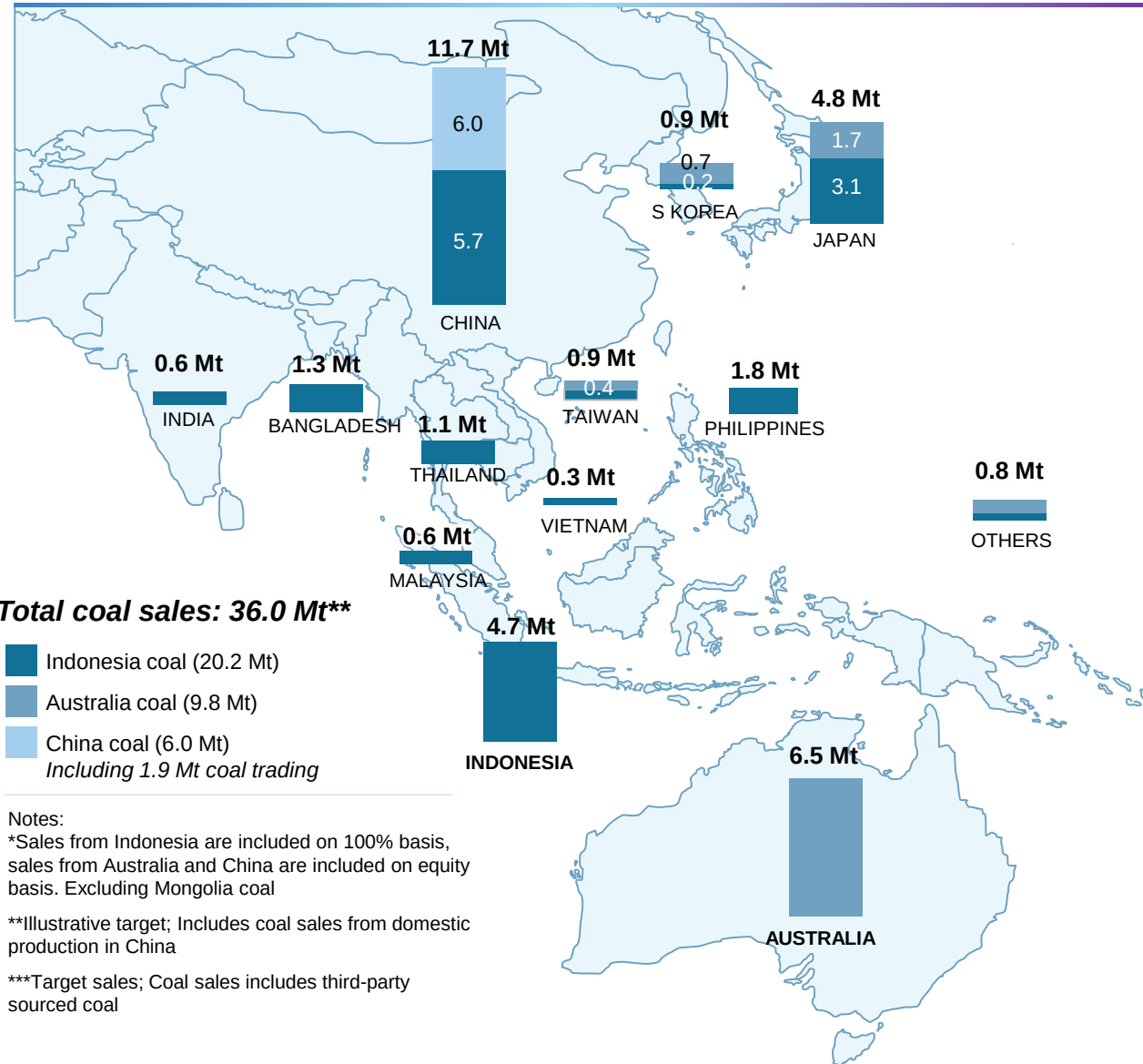
COMMENTS

- Seaborne thermal coal market has been extremely volatile during 4Q21, mainly due to the sudden policy changes in China, strong gas price, coupled with the supply tightness in major coal export countries.
- China continues to play a major role in the global thermal coal market. In Oct., NDRC introduced stricter regulations to control domestic thermal coal price, at the same time, relaxed the regulations for most of the coal miners to increase coal production. As an initial result of these efforts, domestic market prices dropped from RMB2000 levels to below RMB1000 within 4 weeks. This was one of the most important factors that weakened the international thermal coal market in Oct.-Nov 2021
- Since mid-late Nov 2021, the market recovered significantly, supported by the supply shortages in major coal export countries. Particularly due to weather conditions in NSW, Australia and Kalimantan, Indonesia. As a direct result, GCNewc surged significantly in Dec 2021, and the tightness of supply is expected to continue for the foreseeable future.
- Group ASPs in 4Q21 continue to increase, particularly for export portions.
- Key price metrics:
 - ITM ASP 4Q21 : US\$144.1/t* (+28% QoQ)
 - CEY ASP 4Q21 : A\$122.2/t* (+23% QoQ)
 - ASP Domestic A\$74.6/t (-1% QoQ), ASP Export A\$202.5/t (+24% QoQ)
 - NEX (March 4, 2022)**: US\$350.8/t

Note: *Includes post shipment price adjustments as well as traded coal
 **The Newcastle Export Index (previously known as the Barlow Jonker Index – BJI)

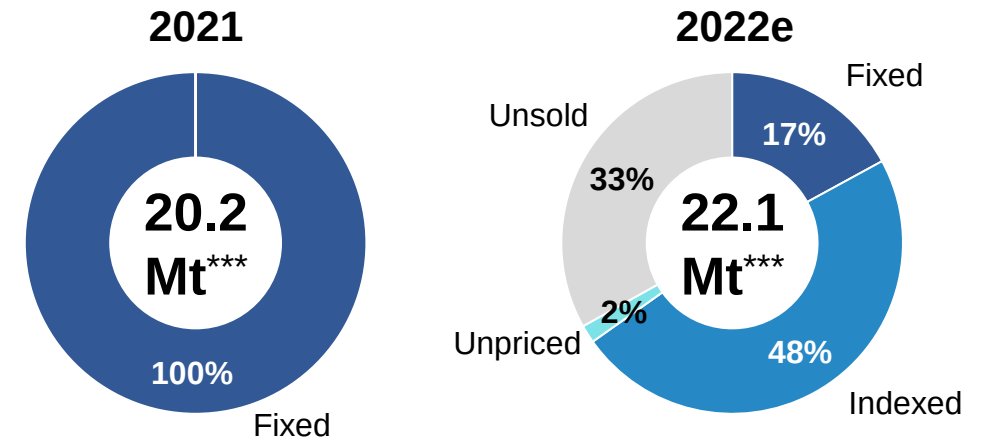
Banpu Mining: group coal sales and pricing status 2021

2021 COAL SALES* SOURCE – DESTINATION ANALYSIS

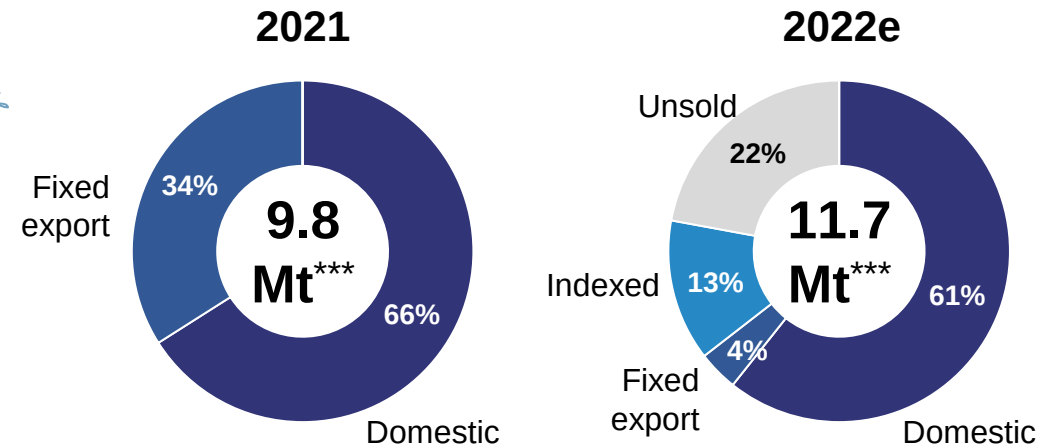


COAL SALES PRICING STATUS

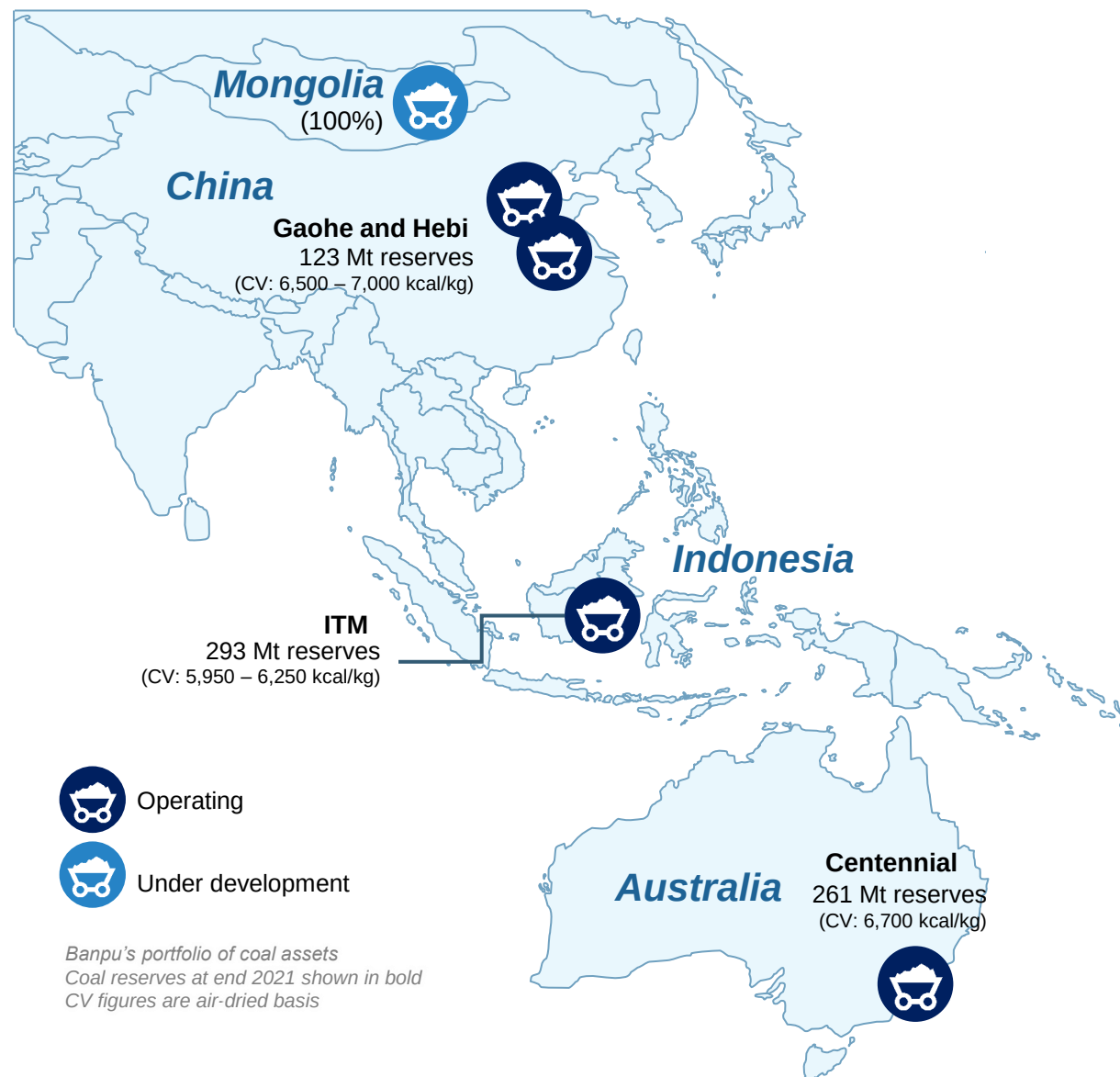
INDONESIA



AUSTRALIA



Banpu Mining: 2021 highlights



Production volume*

32.1 Mt

-9% YoY

Sales volume*

36.0 Mt

-7% YoY

EBITDA

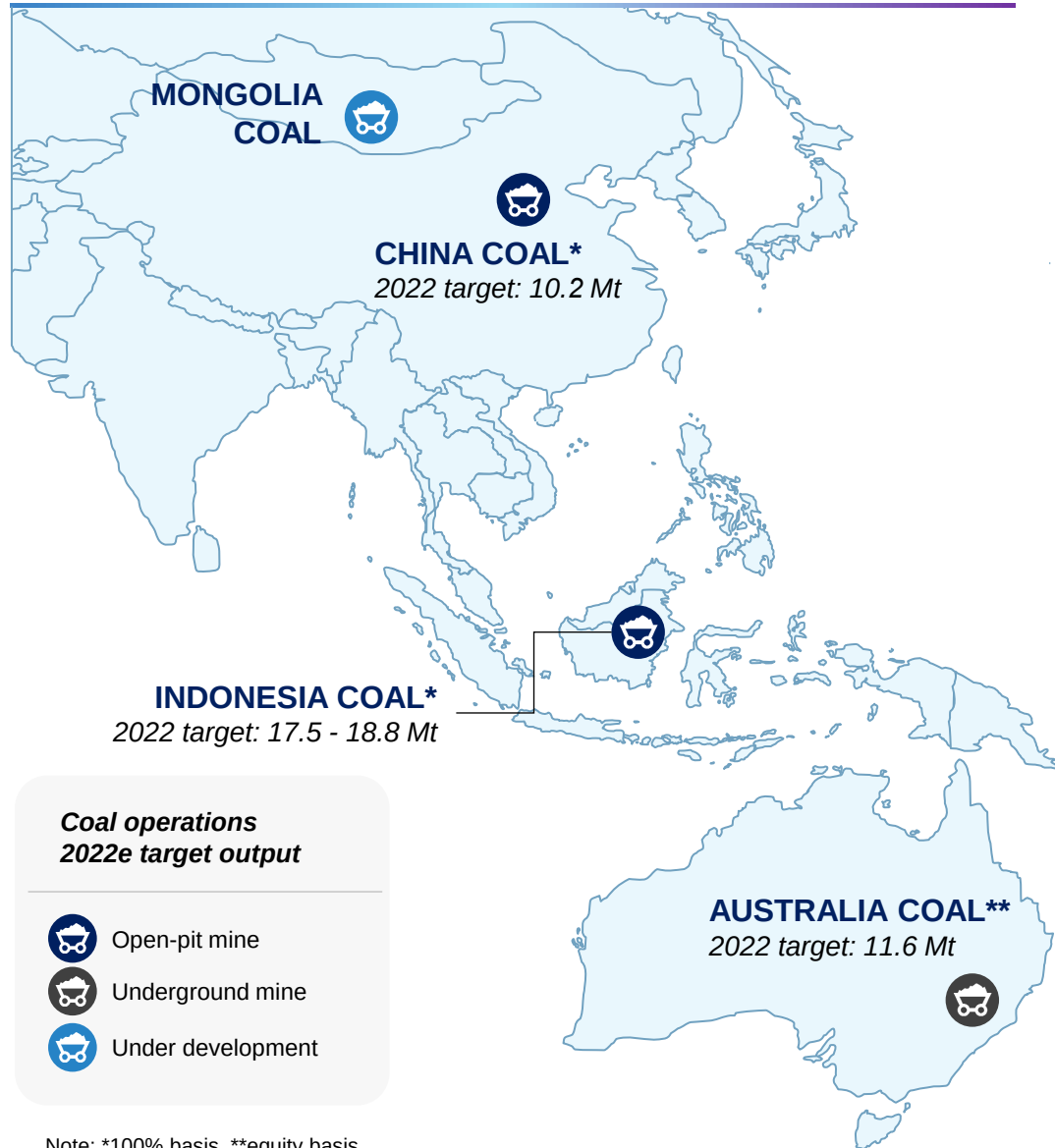
\$1,169 M

+243% YoY

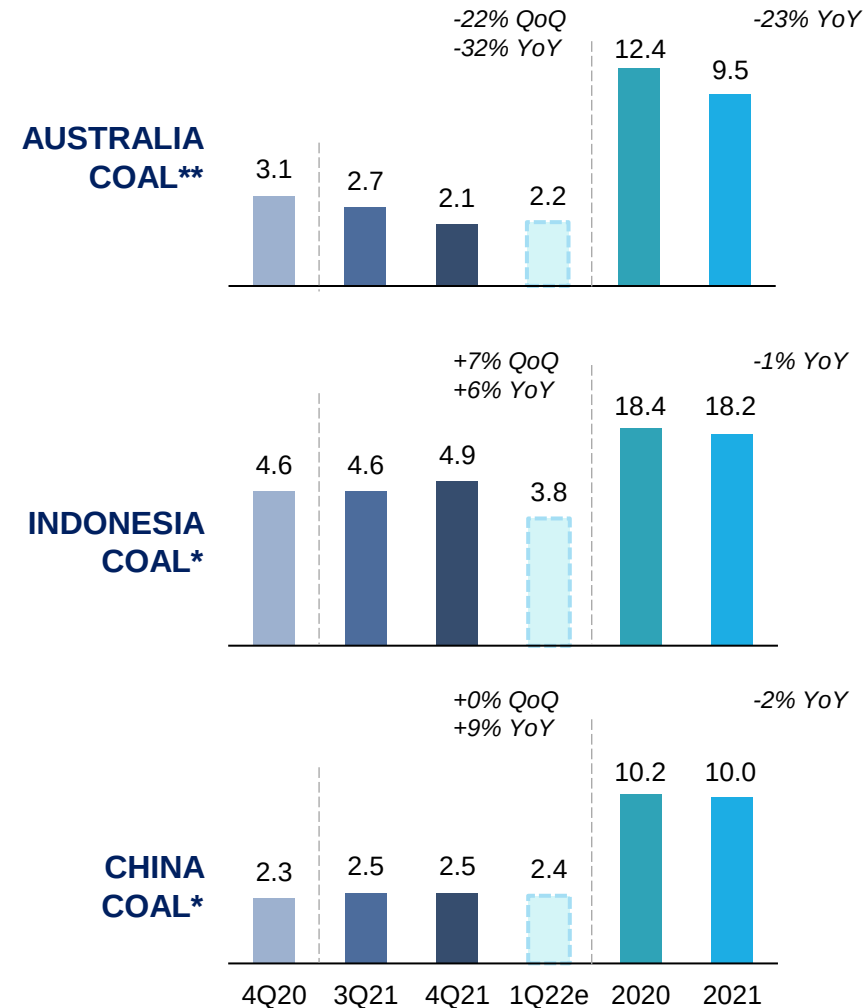
Note: *Based on 100% basis

Banpu Mining: operational summary

2022E COAL OUTPUT



ROM PRODUCTION AND KEY UPDATES

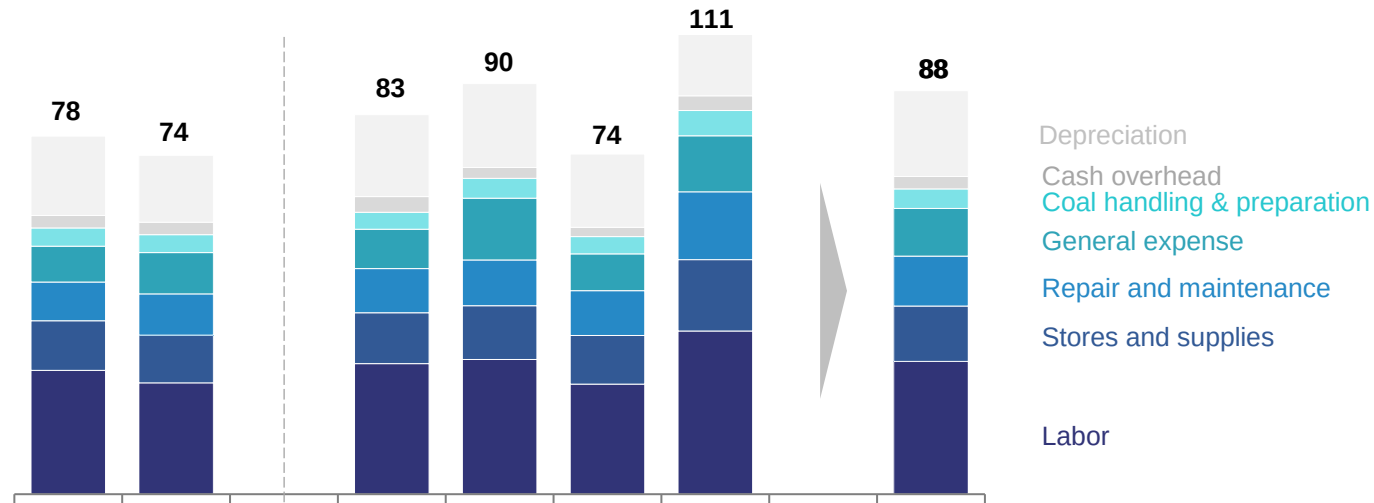


- Covid-19 substantially impacted production (and sales) in 4Q21.
- Northern operations production was down, with a geological issue resulting in a 600 kt shortfall against budget.
- Despite the challenging weather, 4Q21 production increased by 7% QoQ and 6% YoY. Lower expected production in 1Q22 is due to lower contribution from Indominco and delayed production of new GPK mine.
- Gaohe: Stable production in Q4 amidst strong demand and supply tightness.
- Hebi: Slightly lower production in Q4 due to longwall change.

Banpu Mining: average production cost breakdown

AUSTRALIA COAL – AVERAGE PRODUCTION COST¹

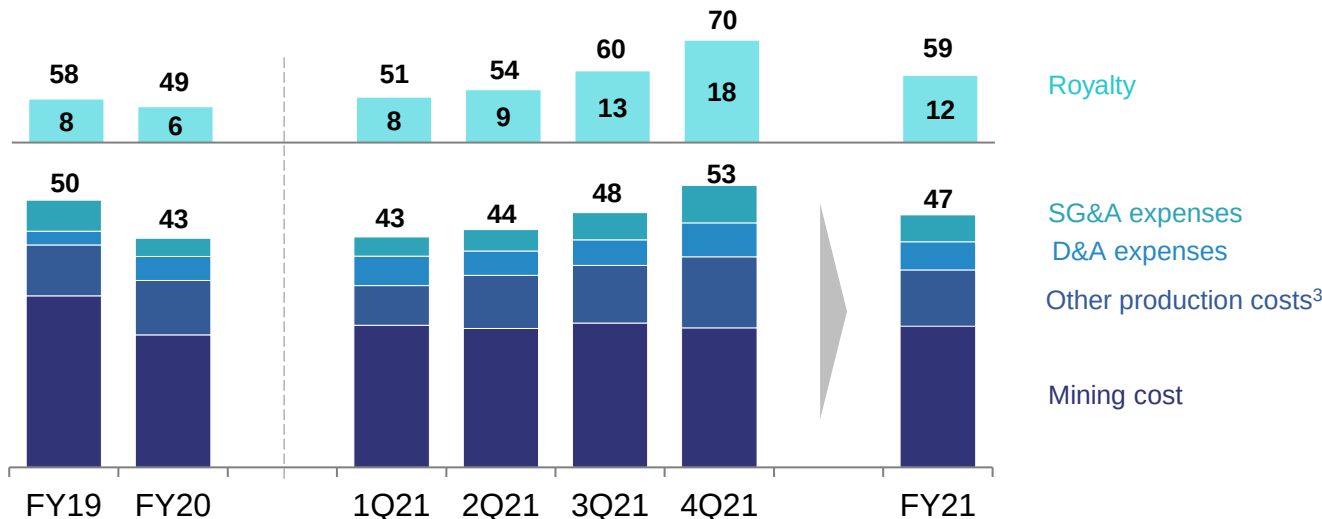
Unit: A\$/t



- 4Q21 unit costs were primarily impacted by a 24% reduction in ROM production from 3Q21 levels.
- Project Challenge delivered cost savings and CAPEX reductions across all departments. Initiatives were delivered by mine design optimization to reduce development costs and reductions in contract labor.
- Focus remains on improving production and cost performance.

INDONESIA COAL – AVERAGE TOTAL COST²

Unit: US\$/t



- Average total cost per ton (excl. royalty) rose to \$53/t in 4Q21 due to increase in fuel price and additional equipment rental at Jorong for infrastructure repair due to flooding.
- Royalty costs increased alongside strong coal price during 4Q21.



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Energy
Resources

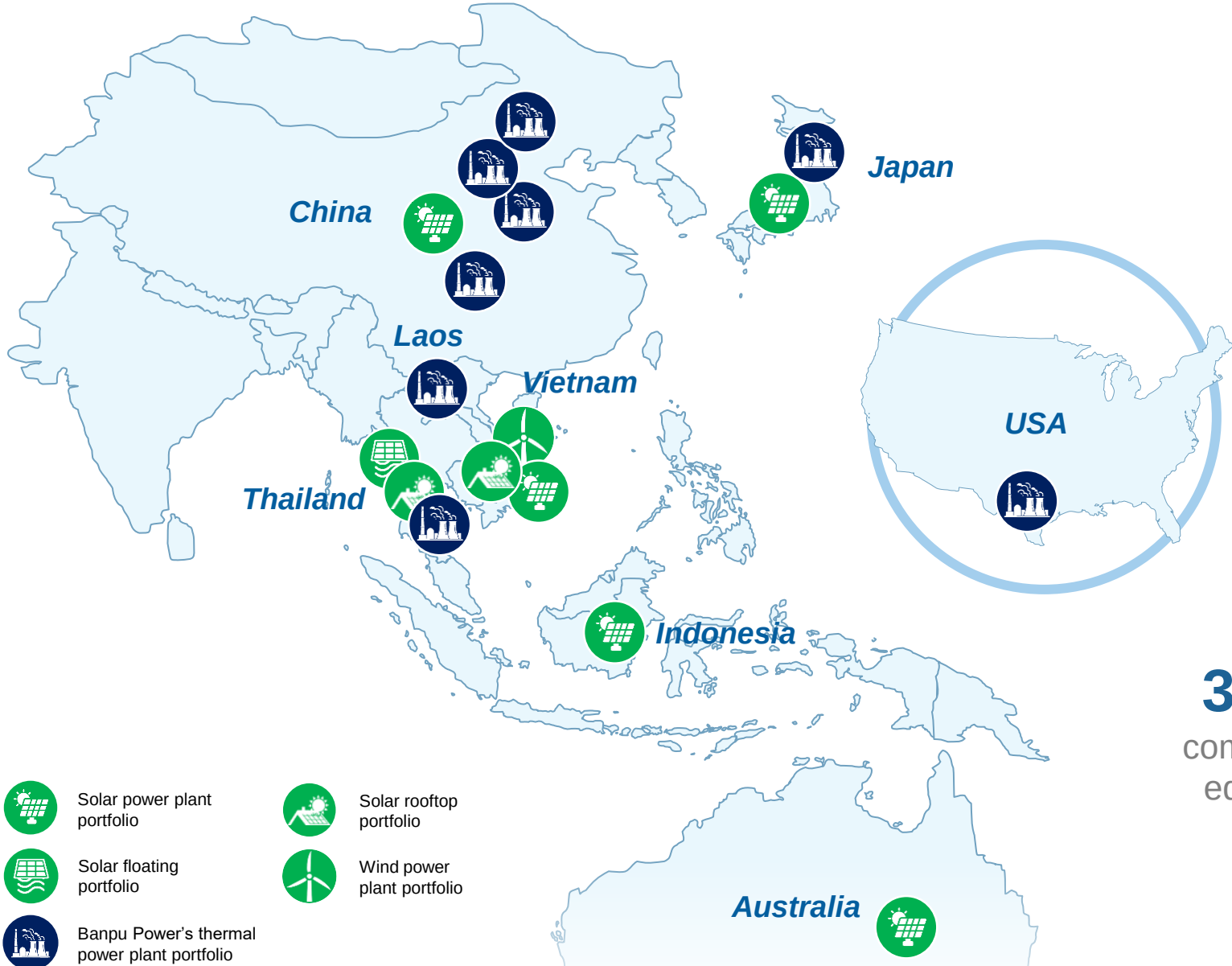
05

**Energy
Generation**

06

Energy
Technology

Banpu Energy Generation: 4,142 MW committed capacity



8 countries

operations across the
Pacific Rim



3,244 MW

committed thermal
equity capacity*



898 MW

committed renewables
equity capacity**

 Solar power plant
portfolio

 Solar floating
portfolio

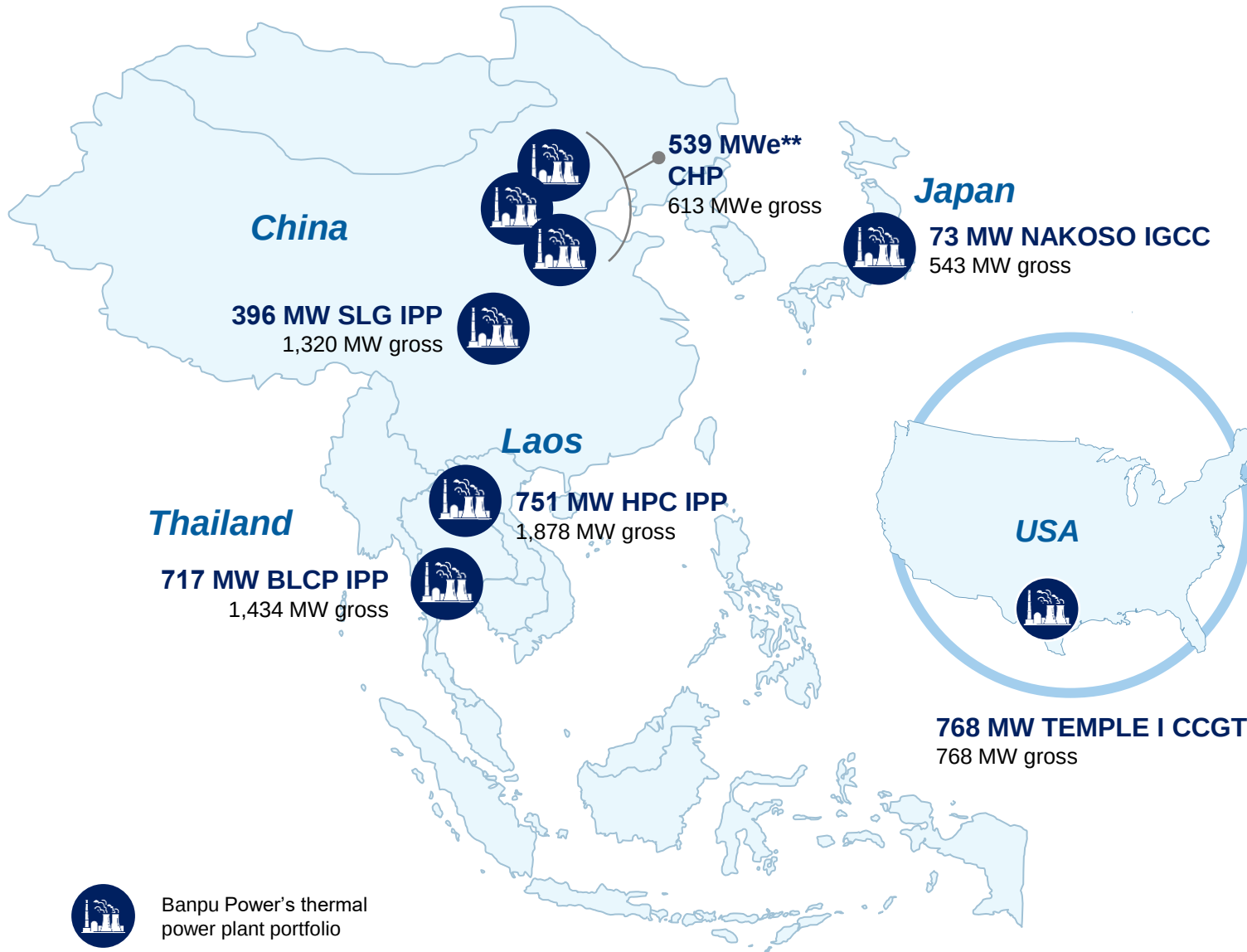
 Banpu Power's thermal
power plant portfolio

 Solar rooftop
portfolio

 Wind power
plant portfolio

*Note: Based on Banpu Power's equity capacity, **Banpu Renewable Power businesses are owned by Banpu NEXT (50% Banpu PLC, 50% Banpu Power)

Banpu Thermal Power: 2021 highlights



Banpu Power's thermal power plant portfolio

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

EBITDA

\$109 M

-34% YoY

Achieved EAF

91%

at BLCP

85%

at HPC

34%

at Nakoso

47%

at Temple

Growth update

+841 MW

Acquisition completion of Temple I and COD of Nakoso

Banpu Thermal Power: 2021 updates



BLCP

Consistent operational performance with high reliability to serve demand from EGAT.

- High reliability with EAF* reported at 91.4%, +1% YoY
- Total revenue reported at THB 15.3 bn, EBITDA at THB 3.1 bn
- Reported share of profit at THB 215 M



HPC

Improvement in plant reliability as a result of successful plant improvement plan during the year.

- Reported higher EAF of 84.5%, +3% YoY
- Total revenue reported at THB 20.7 bn, EBITDA at THB 11.8 bn
- Reported share of profit at THB 3.6 bn



SLG

Fully operational and dispatching to national transmission system with long-term coal supply contract in place.

- Report net power sold of 1,424 GWh
- Impact from high coal cost result in a reported share of loss at RMB 106 M



China CHP

Continued optimization of plant operational mode with centralized coal procurement system to lessen impact from high coal cost.

- Reported revenue of RMB 1.22 bn
- Total EBITDA of RMB 80 M
- Reported share of profit at RMB 26 M



Nakoso IGCC

Completed its plant improvement plan with additional contribution and cash flow stream.

- Reported EAF of 34%
- Reported net generation of 1,023 GWh
- Reported share of profit at THB 210 M

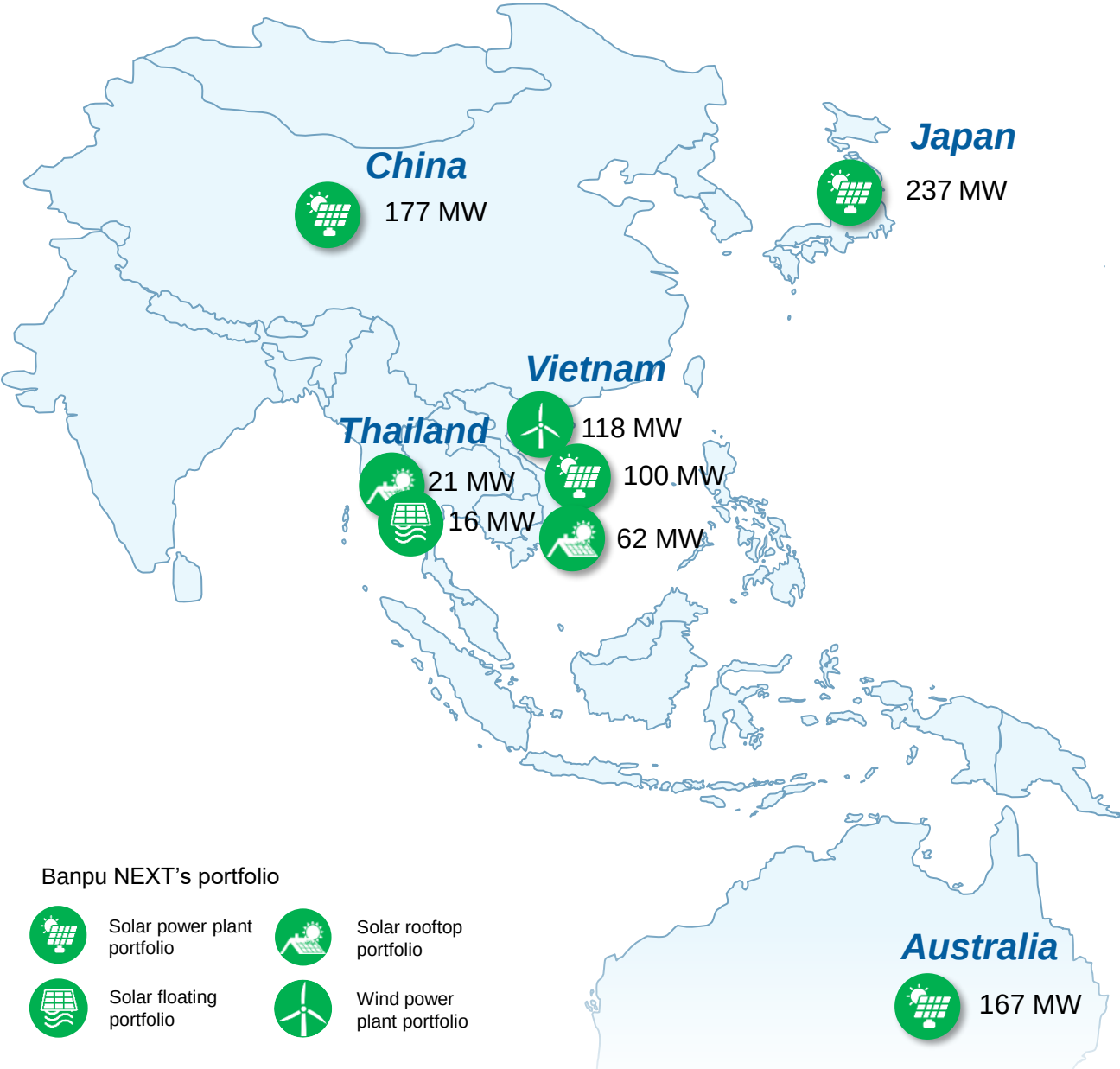


Temple I

Transaction completed on 1st November 2021; additional contribution from 2 months performance has been recognized.

- Report EAF of 47%
- Reported net generation of 417 GWh
- Reported share of profit at THB 57 M

Banpu Renewable Power: diversified Asia-Pacific portfolio*



898 MW

committed renewables capacity across Asia-Pacific



681 MW

committed solar power capacity



99 MW

committed solar rooftop and floating solar capacity



118 MW

committed wind capacity

Banpu NEXT's portfolio



Solar power plant portfolio



Solar rooftop portfolio



Solar floating portfolio



Wind power plant portfolio

Note:*Banpu Renewable Power businesses are owned by Banpu NEXT (50% Banpu PLC, 50% Banpu Power), committed capacity

Banpu Renewable Power: 2021 updates



China Solar

Capacity factors slightly improved due to favorable weather conditions with higher power sold YoY.

- Average capacity factor was 14.3%
- Power sold was 223 GWh, +1% YoY
- Reported revenue of RMB 203 M with profit contribution of RMB 75 M



Japan Solar

Higher power sold from COD of projects in pipeline, slightly lower capacity factor.

- Average capacity factor was 12.5%
- Power sold was 161 GWh, +26% YoY
- Reported TK distribution of JPY 1.1 bn



Australia Solar

Continued integration of plant operations and management. Optimization of generation and energy value through plant improvement initiatives.

- Average capacity factor was reported at 22.3%
- Power sold was 101 GWh



Vietnam Solar

Acquired 3 new operating solar farms (Ha Tinh Solar in 4Q21, Nhon Hai Solar and Chu Ngoc Solar in 1Q22) with a total capacity of 100 MW.

- Feed in tariff (FIT) for US cents 9.35/kWh
- PPA with EVN for 20 years
- Capacity factor average c. 14-16%



Vietnam Wind

El Wind Mui Dinh

- Average capacity factor was 25.5%
- Power sold was 42.4 GWh
- Profit contribution of USD 0.7 M

Vinh Chau project

- Construction progress reach 83%
- Construction completion and commissioning is expected to be in 1Q22



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**Energy
Technology**

Banpu Energy Technology: growth targets 2025



SOLAR: ROOFTOP & FLOATING

Including 49% in Solar Esco

99
MW

committed capacity

500
MW
(under review)



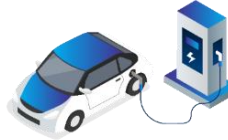
ENERGY STORAGE SYSTEMS

47.7% in Durapower

1.0
GWh

(0.5 GWh on equity basis)
Li-ion battery
production capacity

3.0
GWh
(1.4 GWh on equity basis)



E-MOBILITY

39.3% in UMT, 30% Beyond Green,
21.5% in FOMM, 15% in EVolt,
10% in Haupcar

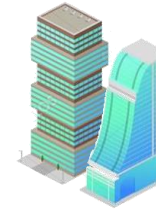
2,100 passengers/day
ride hailing via Muvmi

229 electric vehicles
under fleet management

102 Chargers

1 E-ferry sold

430,000 passengers/day
5,500+ electric vehicles
2,000 chargers
100 e-ferries sold



SMART CITIES & ENERGY MGMT.

100% ownership

20
projects

Includes energy
management, smart
infrastructure, etc.

30
projects



ENERGY TRADING

100% ownership

712
GWh

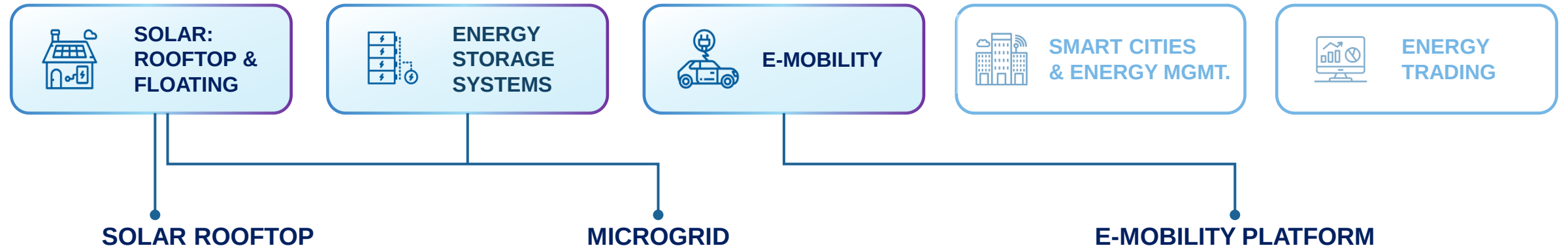
Electricity sales

1,000
GWh

2021-
YTD 2022

2025
target

Banpu Energy Technology: 4Q21 and recent updates



NEW COMMERCIAL OPERATIONS

PMC Label Materials' solar rooftop with total capacity of 446.4 kWp has been operating since October 2021.

PROGRESS OF FLOATING SOLAR 16 MW

The 16 MWp floating solar project with Tribeca Enterprise has been 95% completion with PV panel & main equipment installed, expected COD within 1H 2022.



DIVESTMENT FROM SUNSEAP COMPLETED

Divestment completion of 47.5% shareholding in Sunseap to EDPR, a listed renewables company incorporated in Spain.

REMOTE ISLAND DECENTRALIZED MICROGRID FOR 24-HOURS OF STABLE AND CLEAN ENERGY ACCESS

Banpu NEXT installed an 'all-in-one' microgrid system for Mali Resort, in Koh Lipe – allowing it to utilize 100% clean energy to reduce energy costs, lower pollution, and improve business sustainability.

The microgrid uses an integrated digital platform to provide customers with accurate real-time monitoring and automated control functions.



LAUNCHED E-BOAT FOR SUSTAINABLE WATER TOURISM

As part of the Smart Energy Solutions for Sustainability vision, Banpu NEXT launched a new e-boat that is fully powered by clean energy. The new model is smaller than the previously launched e-ferry and has a cruising speed up to 12 knot and 3-hr battery life per fully charge.

INVESTMENT IN UMT 2nd FUND RAISING

Invested THB256 M in UMT, an e-tuktuk ride sharing platform provider, for scaling up e-tuktuk fleet operation from 165 to 1000 units. Banpu NEXT shareholding in UMT is 39.3%.



Banpu Energy Technology: 4Q21 and recent updates



**SOLAR:
ROOFTOP &
FLOATING**



**ENERGY
STORAGE
SYSTEMS**



E-MOBILITY



**SMART CITIES
& ENERGY MGMT.**



**ENERGY
TRADING**

ACQUISITION OF 49% SHAREHOLDING IN SOLAR ESCO JSC – SOLAR ROOFTOP POWER PLATFORM



INVESTMENT OVERVIEW:

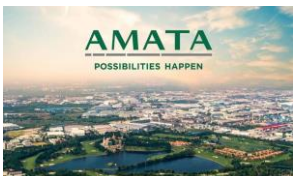
Investment of US\$14.5 M, equivalent to 49% shareholding in Solar Esco JSC, a leading solar rooftop platform with decades of experience in developing, constructing, and providing EPC and O&M services for C&I customers in Vietnam. The transaction completion is expected in 2Q 2022.

Solar rooftop portfolio - 62.1 MW* portfolio capacity

6.4 MW operational capacity, 3.6 MW under construction capacity and 52 MW in pipeline capacity between 2022-2024*

Long-term corporate PPA with large C&I customers

Including Amata, a leading industrial estate developer, and Vincom, one of Vietnam's largest retail center and real estate developer.



KEY INVESTMENT RATIONALE:



VIETNAM: ENTRY INTO HIGH GROWTH RENEWABLES MARKET

Geographic expansion of energy technology service to Vietnam, which has high renewables growth and favorable solar potential.



GROWING SOLAR ENERGY TECHNOLOGY CAPABILITIES

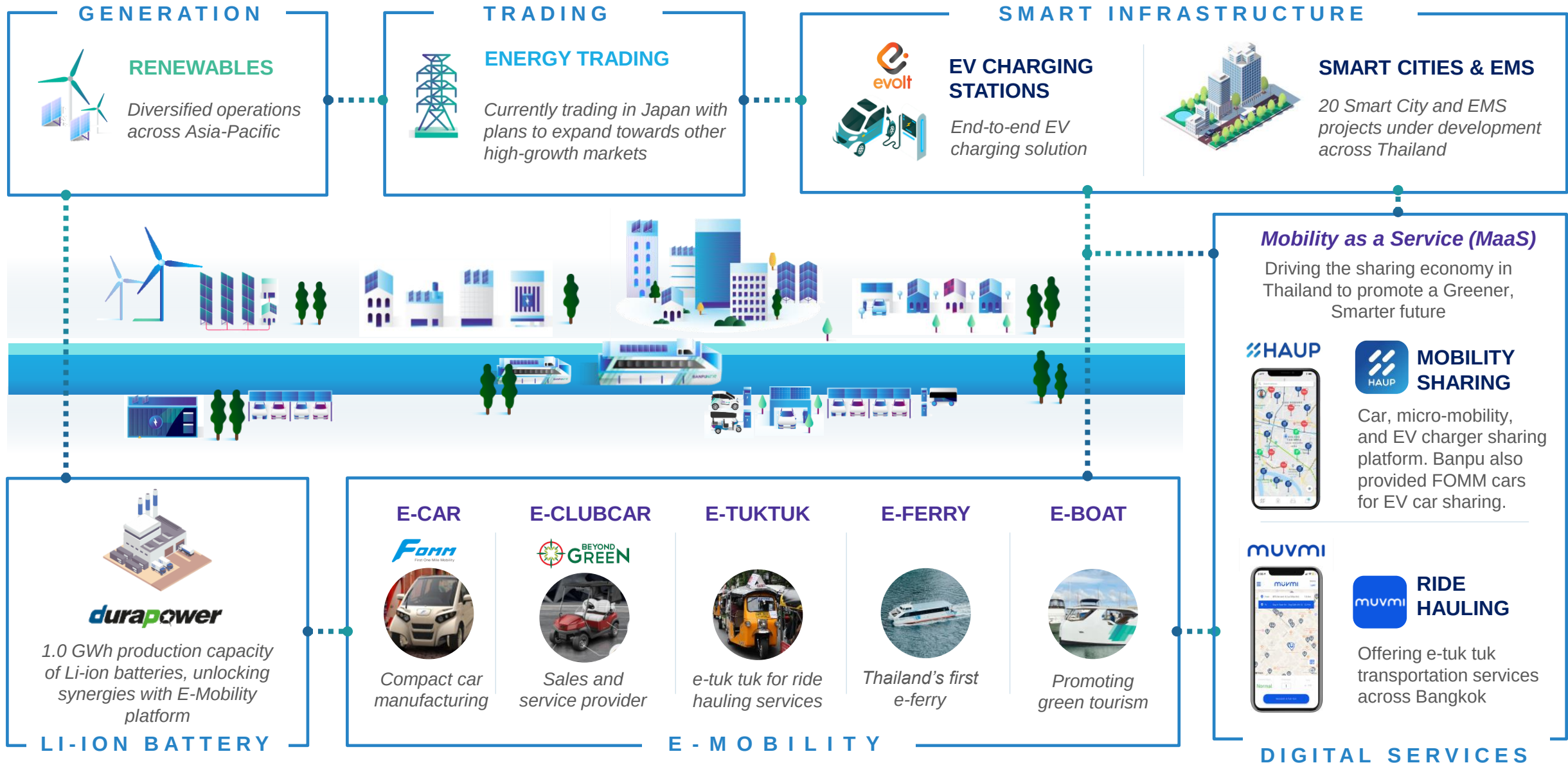
Improving end-to-end solar rooftop development capabilities from EPC to O&M.



SYNERGISTIC VALUE CREATION WITH BANPU NEXT

Leveraging Banpu NEXT's ESS, energy management, and e-mobility capabilities, combined with Solar ESCO's know-how on solar EPC, O&M, and PV modules supply chain, to capture co-development opportunities in Vietnam such as solar panel installations, community-scale microgrid systems, smart home integration, etc.)

Energy technology 2021: growing our energy ecosystem





APPENDIX

Natural gas: reserve and production term



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 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

2022 indicative guidance

ILLUSTRATIVE AND INDICATIVE ONLY

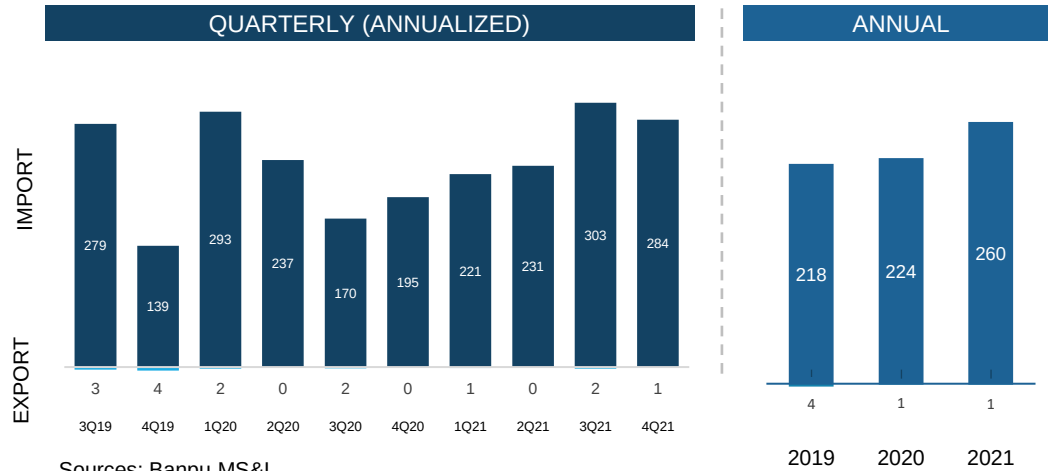
NET BACK

UNIT GUIDANCE (US\$/MCF)		COMMENTS
REVENUE		
<i>Reserves (Tcf)</i>	3.5 – 4.5	
<i>Production volume (Mmcfd)</i>	600 – 700	
Average differential to Henry Hub	\$0.10 - \$0.30	Difference selling points and Henry Hub (NYMEX basis)
GCP&T costs	\$0.86 - \$1.28	Gathering, compression, fractionation and transportation costs
Pipeline revenue	\$0.04 - \$0.06	Applicable to Chaffee Corners volume only
COSTS		
Lease operating expenses and production taxes	\$0.50 - \$0.74	Main component of operating costs
G&A	\$0.28 - \$0.42	Recurring general and administration costs
Taxes	21%	Currently benefit from tax shield from DD&A
DD&A	\$0.43 - \$0.65	Depreciation, depletion and amortization
Drilling and completion costs	\$0.22 - \$0.28	Costs incurred to drill and to make the well ready for production

China: strong import demand despite rising supply

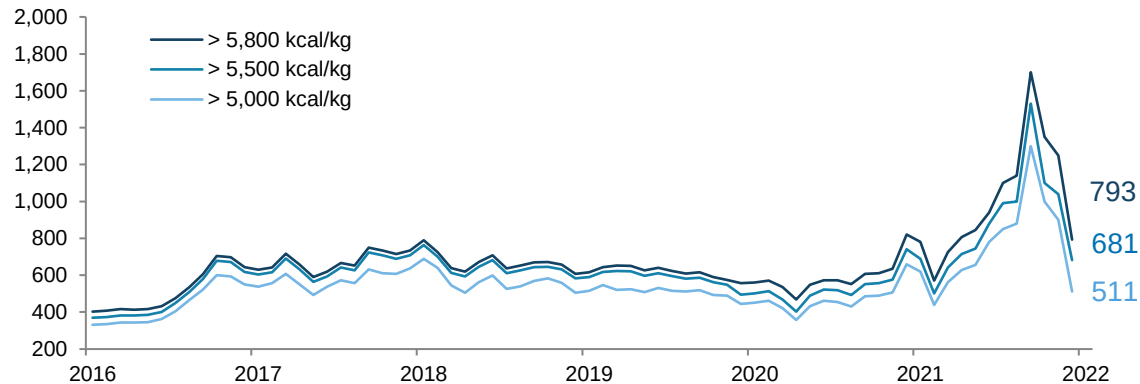
CHINA THERMAL COAL IMPORTS/EXPORTS*

Unit: Mt



CHINA DOMESTIC COAL PRICES

Unit: RMB/t



Note: *Includes lignite but excludes anthracite imports/exports
Source: www.sxcoal.com/cn 13 January 2022

4Q21

- QHD price rose to RMB2,500/t in October on strong demand due to colder-than-usual weather amid tight supply.
- But the rise turned to a fall in the last 10 days of October after the government considered applying China's price law to regulate coal prices caused the QHD price dropped to RMB801/t at the end of Q4.
- Significant increase in domestic coal supply and reduced power demand helped to stabilize coal price.
- China has restricted power supply to energy-intensive sectors since the second half of September which made thermal generation growth increase at a much lower rate on the year.
- China also cut supply to non-power consumers such as coal-to-chemicals and cement manufacturers in order to prioritize supply to utilities.
- A sharp decline in domestic coal prices has prompted some Chinese utilities to default or threaten to default on cargoes that had previously been purchased. This led to a significant drop of seaborne coal prices as sellers have to find an alternative buyer.

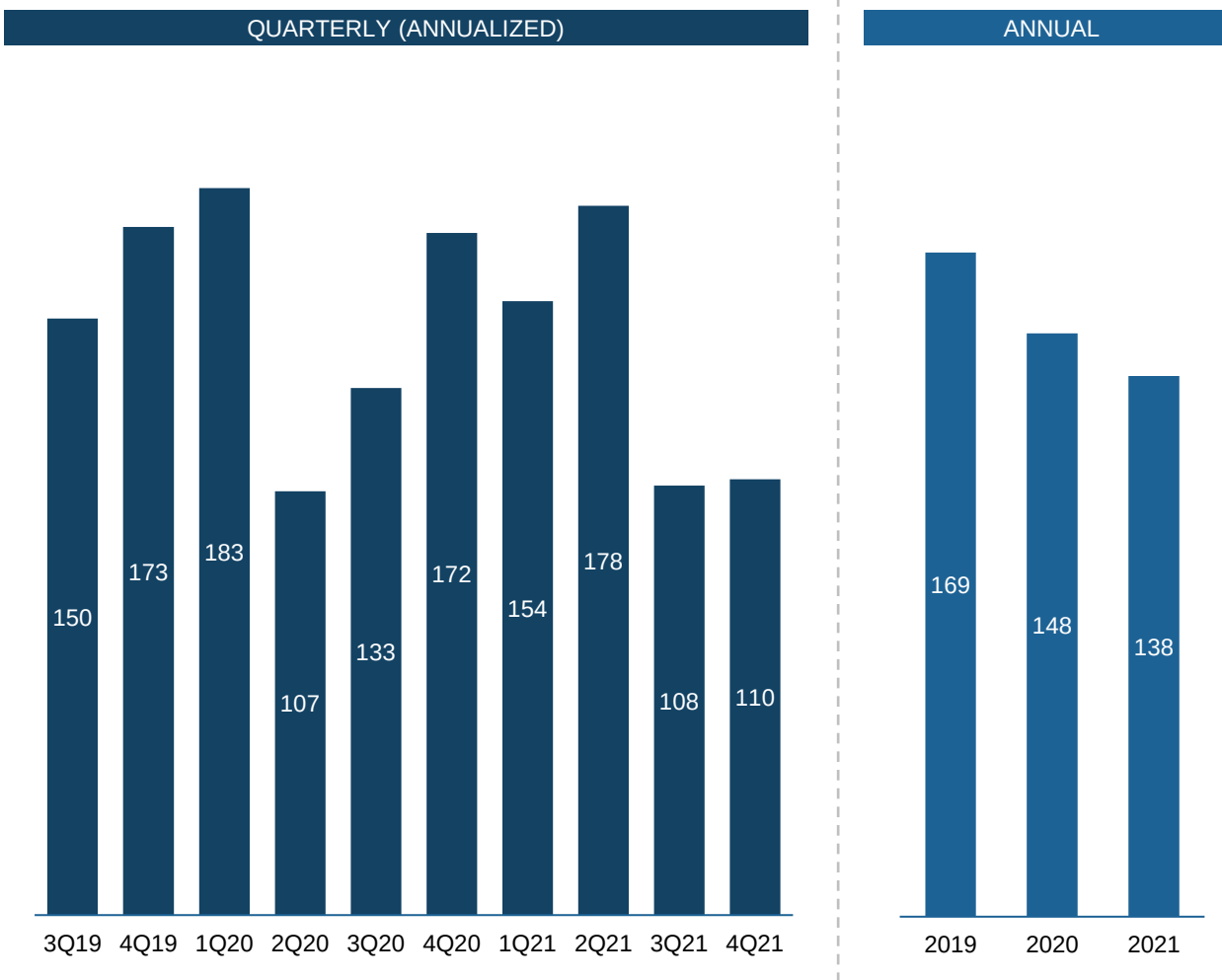
OUTLOOK

- Indonesia's January coal export ban has created limited supply shocks to Chinese consumers. Some coastal utilities are stepping up on restocking with domestic coal in the absence of Indonesian coal resulted in a sharp rise of domestic coal prices.
- Gencos have been ordered to maintain high coal stockpiles to guarantee power generation during the Beijing Winter Olympics and throughout the upcoming annual parliament meeting in March.
- A sharp rise of coal prices forced government to stabilize coal prices again by asked miners to keep prices below RMB900/t (\$141.73/t) at ports, and below RMB700/t (\$110.24) at mine gates.
- With a slower economic growth and a sharp rise of domestic coal production will turn Chinese coal market into oversupply in the later part of this year. This will lead to lower import demand. However, landed cost of imported coal into coastal area is expected to remain competitive against domestic coal.

India: high coal prices diminish imports

INDIA THERMAL COAL IMPORTS*

Unit: Mt



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

4Q21

- Total electricity generation grew by 2.3% year-on-year in Q4 with the growth in coal-fired generation at 2.4%, whereas hydro and nuclear generation recorded impressive growth while gas-fired generation declined significantly owing to the sharp increase in LNG prices.
- India has significantly ramped up domestic coal output in Q4 with thermal coal production at 194 Mt, up 9.9% year-on-year. Coal dispatches were 213 Mt, and grew 16% on the year.
- Despite high production and dispatches, coal stocks at power plants remain below a comfort level.
- Surge in seaborne coal prices also limited the options to bridge the gap through imports. Many imported coal-based plants were forced to either shut down or operate at lower utilization rates during the first two months of Q4.
- Despite government prioritization of domestic coal supply to the power sector, the Ministry of Power urged generators to begin importing again to avoid a repeat of last year's critically low coal stocks.
- Although supply to the non-power sector gradually improved, demand still significantly outstripped supply. As such, non-power sectors were forced to meet their coal requirements through costly imports.

Outlook

- However, with an improvement in domestic supply and declining contribution from alternative generation sources, the outlook for coal-fired generation in Q1-2022 remains strong.
- Ministry of Power has allowed incremental fuel cost pass-through in electricity tariffs in November 2021, coal imports by power sector should improve.
- Coal India (CIL) has set a target to increase coal stocks at power plants to 45 Mt by the end of Q1. This will leave the non-power sector continuing to rely on the seaborne market.
- We expect a firm thermal coal import demand outlook through 2022.

Coal quarterly output summary

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

Mines	CV (kcal/kg)*	2Q21	3Q21	4Q21	1Q22e
Western operations		1.2	1.2	1.3	1.2
Springvale	6,700	0.5	0.4	0.7	0.4
Clarence	6,700	0.4	0.4	0.3	0.4
Airly	6,700	0.3	0.4	0.3	0.4
Northern operations		1.1	1.5	0.8	1.0
Mandalong	6,700	0.9	1.2	0.6	0.8
Myuna	6,700	0.2	0.3	0.2	0.3
Total Australia coal		2.3	2.7	2.1	2.2

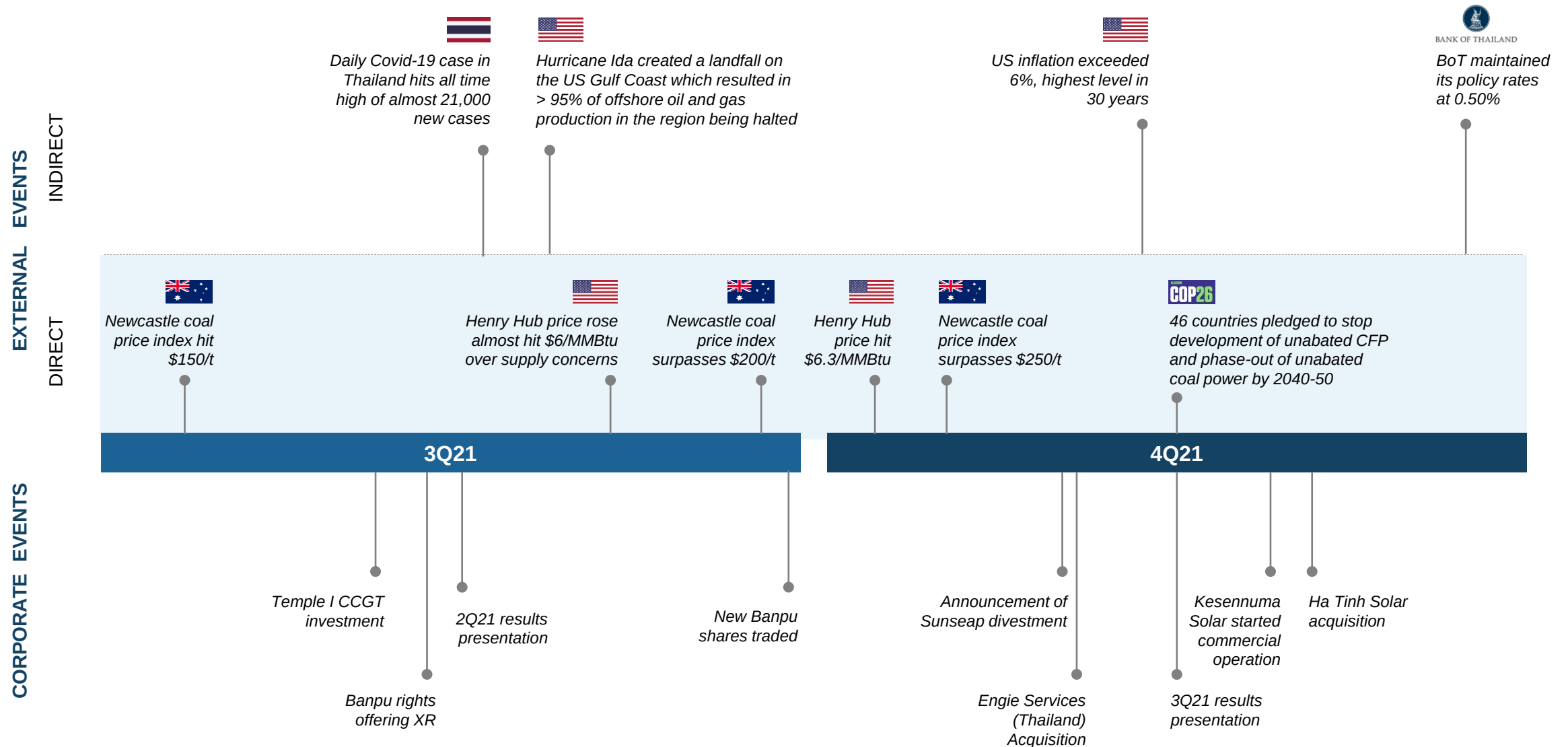
INDONESIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS

Mines	CV (kcal/kg)*	2Q21		3Q21		4Q21		1Q22e	
		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	1.9	11.0	1.8	11.5	1.9	9.6	1.5	10.4
Trubaindo	6,550 – 6,700	0.9	11.9	1.0	11.6	1.2	9.0	0.7	17.0
Bharinto		1.3	6.6	1.4	6.3	1.2	6.6	1.1	9.6
Kitadin-Embalut **	5,800	0.4	17.0	0.3	24.4	0.4	15.5	0.2	23.6
Jorong	5,300	0.3	13.4	0.2	11.8	0.2	15.5	0.3	16.1
Total Indonesia coal		4.7	10.5	4.6	10.7	4.9	9.6	3.8	12.1

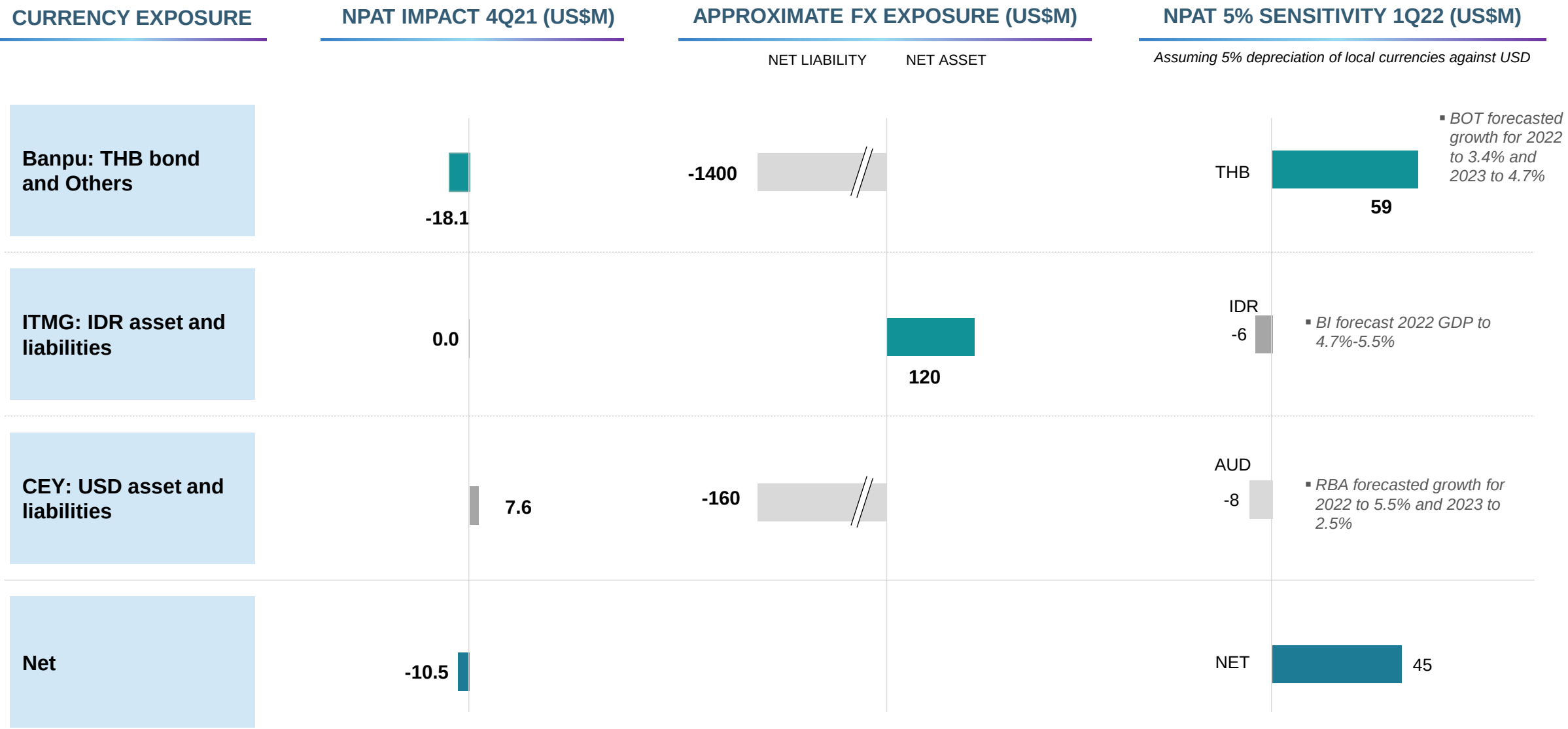
CHINA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS

Mines	CV (kcal/kg)*	1Q21	2Q21	3Q21	4Q21
Gaohe		2.3	2.3	2.3	2.3
Hebi		0.2	0.2	0.2	0.2
Total China coal		2.5	2.5	2.5	2.5

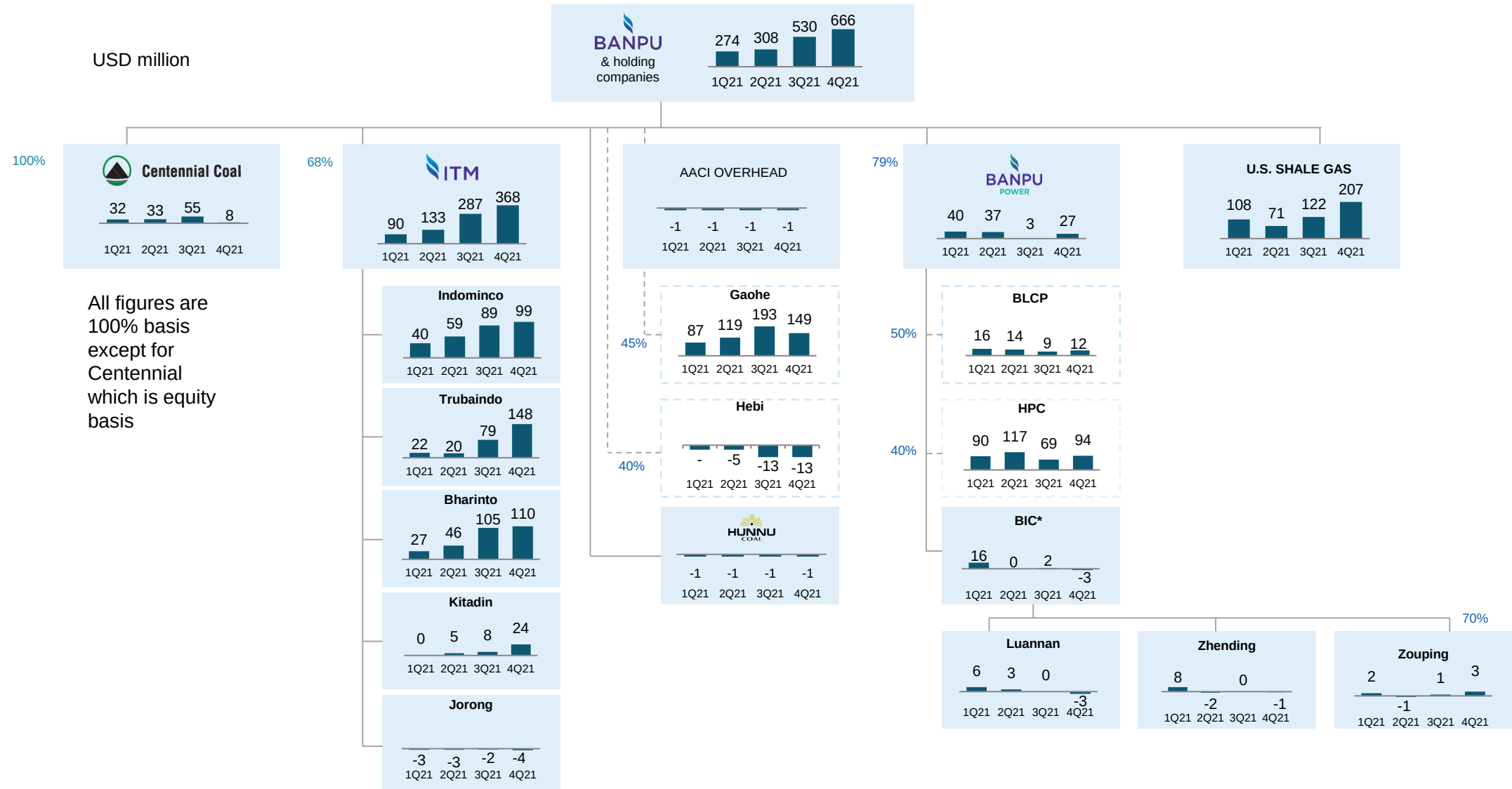
Key external and corporate events



FX impact analysis guidance on P&L



Banpu group EBITDA breakdown



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

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	2021	2020	YoY%
Total sales revenues*	4,124	2,283	+81%
Sales revenue – Coal**	2,909	1,878	+55%
Sales revenue – Gas	890	120	+639%
Sales revenue – Power	244	196	+24%
Cost of sales	(2,393)	(1,822)	
Gross Profit*	1,731	460	+276%
Gross profit – Coal**	1251	392	+219%
Gross profit – Gas	477	14	+3,309%
Gross profit – Power	15	50	-71%
GPM	42%	20%	
<i>GPM – Coal</i>	<i>43%</i>	<i>21%</i>	
<i>GPM – Gas</i>	<i>54%</i>	<i>11%</i>	
<i>GPM – Power</i>	<i>6%</i>	<i>25%</i>	

Banpu consolidated: operating profit

USD million	2021	2020	YoY%
Gross Profit	1,731	460	+276%
GPM	42%	20%	
SG&A	(423)	(298)	
Royalty	(294)	(183)	
Income from associates	231	135	
Other income and Dividend	56	44	
Mining property	(31)	(33)	
EBIT	1,271	127	+903%
EBIT – Coal	805	(2)	n.a.
EBIT – Gas	400	(19)	n.a.
EBIT – Power	86	151	-43%
EBIT – Energy Technology	(20)	(3)	n.a.a
EBITDA	1,778	563	+216%
EBITDA – Coal	1,169	340	+243%
EBITDA – Gas	508	54	+848%
EBITDA – Power	109	164	-34%
EBITDA – Energy Technology	(8)	4	n.a.

Banpu consolidated: net profit

USD million	2021	2020	YoY%
EBIT	1,271	127	+903%
Interest expenses	(174)	(173)	
Financial expenses	(10)	(6)	
Income tax (core business)	(162)	(38)	
Minorities	(189)	(39)	
Net profit before extra items	736	(130)	n.a.
Non-recurring items*	(26)	(59)	
Gain (Loss) on Derivatives Transactions	(445)	23	
Income tax (non - core business)	(10)	(6)	
Deferred tax income (expenses)	(26)	35	
Net profit before FX	230	(137)	n.a.
FX translation	74	81	
Net Profit	304	(56)	n.a.
EPS (US\$/share)	0.049	(0.011)	

Banpu consolidated: operating profit

USD million	4Q21	3Q21	4Q20	QoQ%	YoY%
Total sales revenues*	1,427	1,161	662	+23%	+116%
Sales revenue – Coal**	991	870	497	+14%	+99%
Sales revenue – Gas	314	231	82	+36%	+283%
Sales revenue – Power	102	39	60	+160%	+70%
Cost of sales	(735)	(619)	(503)		
Gross Profit*	692	542	159	+28%	+335%
Gross profit – Coal**	503	417	115	+21%	+338%
Gross profit – Gas	199	121	29	+64%	+589%
Gross profit – Power	-4	0	15	n.a.	n.a.
GPM	49%	47%	24%		
<i>GPM – Coal</i>	<i>51%</i>	<i>48%</i>	<i>23%</i>		
<i>GPM – Gas</i>	<i>63%</i>	<i>53%</i>	<i>35%</i>		
<i>GPM – Power</i>	<i>-4%</i>	<i>1%</i>	<i>25%</i>		

Banpu consolidated: operating profit

USD million	4Q21	3Q21	4Q20	QoQ%	YoY%
Gross Profit	692	542	159	+28%	+335%
GPM	49%	47%	24%		
SG&A	(124)	(124)	(79)		
Royalty	(106)	(87)	(50)		
Income from associates	57	64	25		
Other income and Dividend	19	14	16		
Mining property	(6)	(9)	(9)		
EBIT	531	400	62	+33%	+751%
EBIT – Coal	344	305	8	+13%	+4,428%
EBIT – Gas	179	95	12	+88%	+1,459%
EBIT – Power	18	(3)	45	n.a.	-60%
EBIT – Energy Technology	(10)	2	(1)	n.a.	-581%
EBITDA	666	530	181	+26%	+268%
EBITDA – Coal	439	399	94	+10%	+366%
EBITDA – Gas	207	122	39	+69%	+432%
EBITDA – Power	27	3	47	+937%	-43%
EBITDA – Energy Technology	(7)	5	1	n.a.	n.a.

Banpu consolidated: net profit

USD million	4Q21	3Q21	4Q20	QoQ%	YoY%
EBIT	531	400	62	+33%	+751%
Interest expenses	(47)	(43)	(42)		
Financial expenses	(2)	(3)	(2)		
Income tax (core business)	(76)	(46)	(5)		
Minorities	(81)	(47)	(12)		
Net profit before extra items	325	261	1	+24%	+1,372%
Non-recurring items*	(12)	(5)	(38)		
Gain (Loss) on Derivatives Transactions	(215)	(177)	17		
Income tax (non - core business)	(8)	(0)	(3)		
Deferred tax income (expenses)	26	(14)	37		
Net profit before FX	115	65	14	+124%	+278%
FX translation	(11)	42	(30)		
Net Profit	105	106	(15)	-2%	n.a.
EPS (US\$/share)	0.017	0.021	(0.003)		

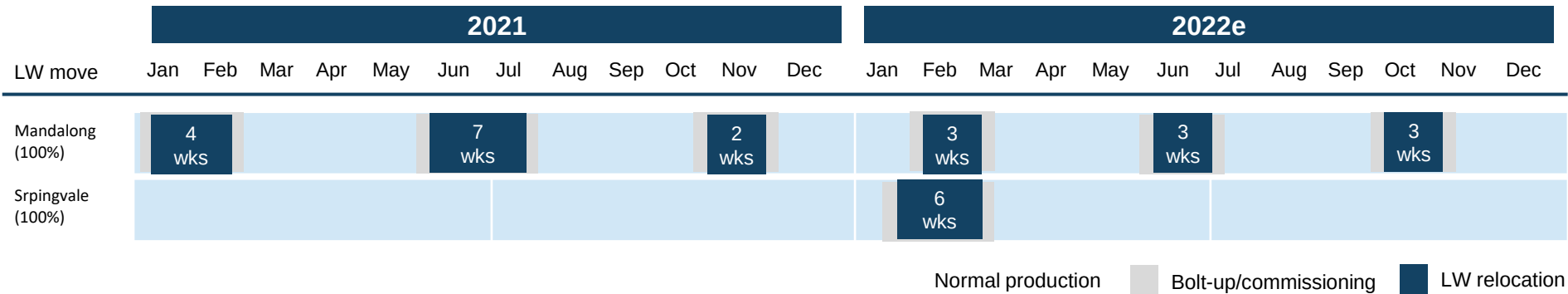
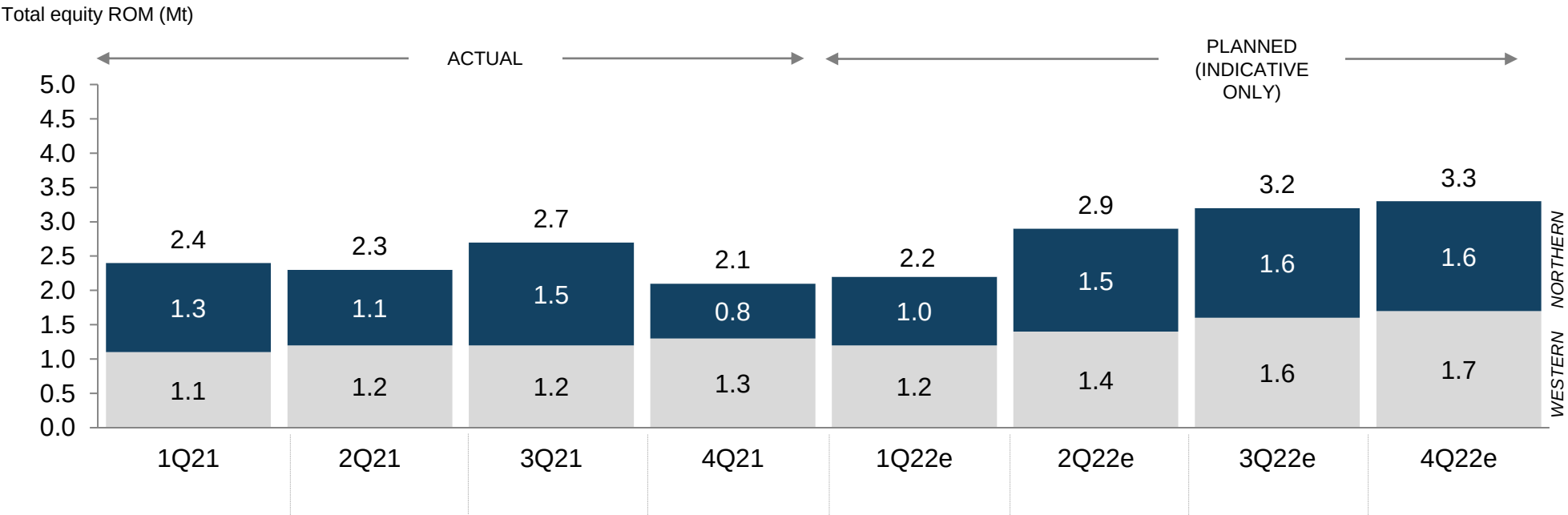
Centennial: income statement

USD million	2021	2020	YoY%
Sales volume (Mt)	9.8	12.5	-21%
Sales revenue	727.7	697.7	+4%
Cost of Sales	(677.0)	(658.1)	
Gross Profit	50.7	39.7	+28%
GPM	7%	6%	
SG&A	(96.6)	(89.6)	
Royalty	(46.6)	(46.8)	
Other income	8.6	22.3	
Other expenses	-	-	
EBIT	(84.0)	(74.4)	n.a.
Interest expenses	(24.8)	(23.0)	
Financial expenses	(4.6)	(1.5)	
Gain (loss) on exchange rate	(6.7)	13.6	
Gain (loss) on derivative	(63.2)	11.7	
Corporate income tax	0.0	-	
Deferred tax income	58.1	22.5	
Net Profit	(125.1)	(51.2)	n.a.

Centennial: income statement

USD million	4Q21	3Q21	4Q20	QoQ%	YoY%
Sales volume (Mt)	2.2	2.5	3.1	-11%	-28%
Sales revenue	205.3	187.7	174.9	+9%	+17%
Cost of Sales	(194.4)	(160.8)	(165.2)		
Gross Profit	10.9	26.8	9.8	-60%	+11%
GPM	5%	14%	6%		
SG&A	(25.0)	(23.1)	(20.5)		
Royalty	(12.6)	(12.4)	(11.8)		
Other income	2.1	1.0	16.8		
Other expenses	-	-	-		
EBIT	(24.6)	(7.7)	(5.8)	n.a.	n.a.
Interest expenses	(7.9)	(6.0)	(5.8)		
Financial expenses	(0.9)	(2.1)	-		
Gain (loss) on exchange rate	7.6	(13.4)	3.0		
Gain (loss) on derivative	(14.0)	(40.0)	2.3		
Corporate income tax	-	-	-		
Deferred tax income	15.2	20.8	2.4		
Net Profit	(24.6)	(48.4)	(3.8)	n.a.	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%.

