BANPU

FY20 & 4Q20 results

Investor and analyst update

25th February 2021

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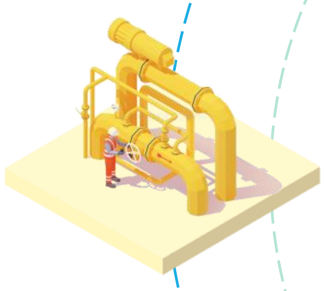
01	02	03	04	05	06
2020 Highlights	Focus: Strategy Review	Financial Summary	Energy Resources	Energy Generation	Energy Technology

2020 highlights

Greener, Smarter power expansion

Growth in renewables capacity, **140 MW** from solar rooftop and floating solar, and **92 MW** from wind and solar farms in 2020

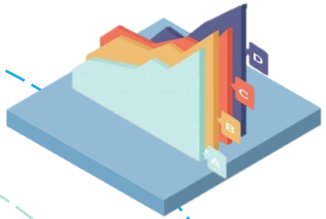


Major growth of US Gas business

Expansion through Barnett acquisition (**~700 MMcfed** total production capacity) and new strategic partnership with Oaktree Capital Management

SLG power plant completion in China

1.3 GW ultra-supercritical (HELE) thermal power plant construction completed



Stronger commodity price environment

Gas and coal prices rebounding to **$2.5-3.0/MMBtu** and **$80-90/tonne** levels driven by supply tightness and increasing demand

Robust cash flow generation

$563 M EBITDA generation in 2020, despite Covid-19, with significant increase in the second half of the year. Higher contributions from Coal and Gas businesses

Innovation across the energy ecosystem

Growing Clean Energy Tech ecosystem portfolio: solar rooftop and floating, ESS, e-mobility, smart cities and energy trading solutions

Banpu: continued ESG leadership and credit rating recognition

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ESG RATING

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

The DJSI, managed by S&P Global, is the leading international standard for corporate sustainability

Gold

Class on SAM Sustainability Award since 2015. In 2020, Banpu's combined ESG performance scores were 3x the industry average

MSCI ESG RATINGS — A

CCC	B	BB	BBB	A	AA	AAA

The MSCI ESG Ratings is managed by MSCI, one of the most experienced ESG performance measuring agencies

A

ratings for having a track record of managing the most significant ESG risks and opportunities relative to peers

Sustainability Award
Gold Class 2021
S&P Global

The Sustainability Yearbook 2021, published by S&P Global, showcases the sustainability performance of top companies

Gold

Class distinction, achieving an ESG score within 1% of the industry's top-performing company's score

THSI
THAILAND SUSTAINABILITY INVESTMENT 2020

The THSI, prepared by SET, shortlists Thai companies following the highest ESG standards

5th

consecutive year included in the THSI for sustainable operations in-line with responsible investment principles

CREDIT RATING

TRIS RATING
A Strategic Partner of S&P Global

As a strategic partner of S&P Global, Tris Rating has over 20-year experience as a leading credit rating agency in Thailand

A+

ratings with a ***'stable'*** outlook on the company and senior unsecured debentures

"reflecting the company's stable business growth, strategic shift towards sustainability and leading position in the energy sector"

Banpu: 'integrated energy solutions' 2020

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ENERGY RESOURCES

Shale Gas

~700 MMcfed
Net production

Mining

38.8 Mt
Coal sales

ENERGY GENERATION

Renewable Power

657 MW
Committed capacity

Thermal Power

2,403 MW
Committed capacity

ENERGY TECHNOLOGY

Solar: Rooftop & Floating

249 MW
Committed capacity

Clean Energy Tech

1.0 GWh (100% basis)
Li-ion batteries

E-mobility services
E-mobility solutions

5 smart city
projects

280 GWh
electricity trading

01 2020 Highlights

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Banpu transformation: 'antifragile' for >30 years

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2000-2015: TRANSFORMATION

1983-2000
Banpu begins

Coal mining

2000-2015
Diversification

Venture into international coal, power, and renewable energy businesses

Low coal prices

1997: Asian Economic Crisis

2008: Lehman Crisis

2009: European Debt Crisis

2016-2020: GREENER, SMARTER

2016-2019
Banpu Power SET IPO

First steps into Shale Gas in US

Renewable Energy investment

Durapower battery investment

2020
Banpu NEXT launch

BKV corporatization

2019-Present COVID-19 Pandemic

2021-2025: ACCELERATION

STRATEGY

- **ACCELERATION** Accelerating *Greener, Smarter* growth transitions in Banpu's four core pillars: Gas, Mining, Power and Energy Tech
- **ANTIFRAGILE** Weathering global disruptions and economic cycles by diversifying risks through integrated portfolio
- **AUGMENTATION** Utilization of capabilities and core competencies to capitalize on new business opportunities

COAL MINING | COAL-BASED ENERGY | INTERNATIONAL VERSATILE ENERGY PROVIDER

Banpu strategy 2021-25

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FOUR PILLARS TO ACCELERATE GREENER, SMARTER GROWTH TRANSITION

	GAS	MINING	POWER	ENERGY TECH
	Expansion and integration of gas business	*Strong cash flow generation to accelerate the transformation*	*Growing Greener, Smarter power portfolio*	*Scaling-up energy technology ecosystem*
OPERATIONAL INITIATIVES	▪ Integrate asset portfolio to maximize synergies ▪ Programs to capture gas price fly-up opportunities in-place	▪ Optimize production to maximize cash flow ▪ Further implement cost rationalization measures	▪ Maximize operational efficiency ▪ Ensure on-time project development	▪ Scale-up existing Clean Energy Tech businesses
GROWTH INITIATIVES	▪ Expand upstream and midstream portfolio ▪ Potentially integrate with gas-fired power projects	▪ Increase third-party coal trading activities ▪ Explore other new businesses	▪ Grow Greener, Smarter power portfolio (renewables and gas-fired power)	▪ Further expand the Energy Tech ecosystem to capture upside from new energy trends

Gas: strategic plan 2021 and beyond

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WELL-POSITIONED TO SCALE UP

WITH SUPPORT FROM NEW LONG-TERM STRATEGIC PARTNERSHIP, **OAKTREE CAPITAL MANAGEMENT**, A GLOBAL INVESTMENT MANAGEMENT FIRM WITH OVER US$140 BN ASSETS UNDER MANAGEMENT

Gas asset enhancement & integration

Maintain base production volume of ~700 MMcfed and reserve life with effective production development program

Establish centralized planning system technology transfer (field automation, real-time monitoring) from Barnett for greater operational and cost efficiency

GAS UPSTREAM

Capture upside from increasing gas price

Utilize hedging programs & capex flexibility of gas portfolio to ramp up production to capture price fly-ups

Gas upstream and midstream expansion

Scale up and capture opportunities across upstream and midstream gas value chain

OAKTREE

Oaktree invested US$100 M in preferred stock in BKV Corporation

16 December 2020 - A key strategic milestone

BKV

Strategic partnership

Strong American-based global partner with expansive network and access to opportunities

Strong funding for future expansion

Access to additional attractive funding option necessary to grow gas business

Mining: strategic plan 2021 and beyond

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MAXIMIZE PROFITABILITY OF OUR RESERVES

TO GENERATE CASH FLOW FOR FURTHER ACCELERATION OF GREENER, SMARTER BUSINESS

COAL MINING

Capture high commodity price

Focus on cash flow maximization through production and marketing optimization

Ensure cost-competitiveness

Ensure cost-competitiveness of mining operations to maximize profitability of reserves

Increase coal trading business

Increase third-party coal trading activities to ~3 Mt per annum to capture high growth markets with higher margins

BEYOND COAL MINING

Maximize value from existing assets

Utilization of assets to maximize value creation (e.g. powering mines with waste coal mine gas from operations at Mandalong, pumped hydro in old underground mine voids, mine-site solar)

Explore non-coal mining business opportunities

Explore potential investments capturing high growth from new energy trends

Power: strategic plan 2021 and beyond

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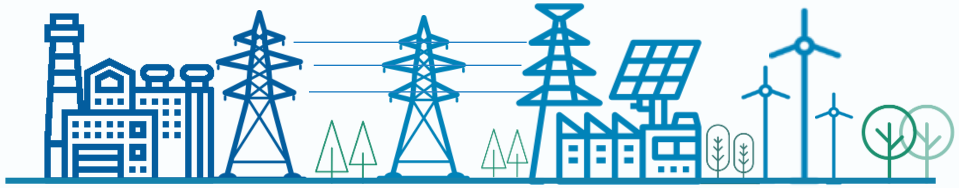
STRENGTHEN PORTFOLIO WITH GROWING CAPACITY

AND NEW INVESTMENTS IN GREENER ASSETS TO FACILITATE GREENER, SMARTER TRANSITION

THERMAL POWER



RENEWABLE POWER

Maximizing operational efficiency

Ensure operational stability and maximum EAF of all assets through scheduling regular maintenance to minimize unexpected shutdowns

Focus on asset under development

Maintain scheduled COD of 212 MW of solar and wind projects in the pipeline in Japan and Vietnam

Capacity expansion in existing geographies

Focus on growing thermal capacity as well as continued expansion of renewables portfolio in Japan, China, and Vietnam

Explore potential investments in Greener businesses

Such as gas-fired power opportunities in the US to create synergistic values with existing assets

Diversify into fast-growing geographies

Expand into the US and other Southeast Asia countries to harness renewable resources and capture robust power demand

MORE MEGAWATTS!

Note: Renewables capacity is based on 100% Banpu NEXT

Energy Technology: strategic plan 2021 and beyond

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PLATFORM FOR EVERGROWING FUTURE ENERGY ECOSYSTEM

TO CAPTURE NEW ENERGY TRENDS

ENERGY TECHNOLOGY

Scale up Energy Tech portfolio

Scale up existing businesses by growing portfolio of solar rooftops, battery production, e-mobility solutions, smart city projects and electricity trading to become one of the leading players

Establish leadership in Energy Technology

Continue to develop energy technology solutions and build on existing core competencies and capabilities

Digital transformation

Digitalization of operations, processes to optimize business performance and efficiency

Expand and integrate energy ecosystem

Continuous expansion of energy tech portfolio, development of new core competencies and capabilities in areas that can fit into the Banpu energy ecosystem

Value creation through energy solutions platform

Establish digital platform to capture synergistic value between existing businesses and facilitate the integration of future businesses to position Banpu NEXT as the leading energy technology solution provider

BANPU NEXT STEPS!

Accelerating downstream smart energy ecosystem

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RENEWABLE GENERATION

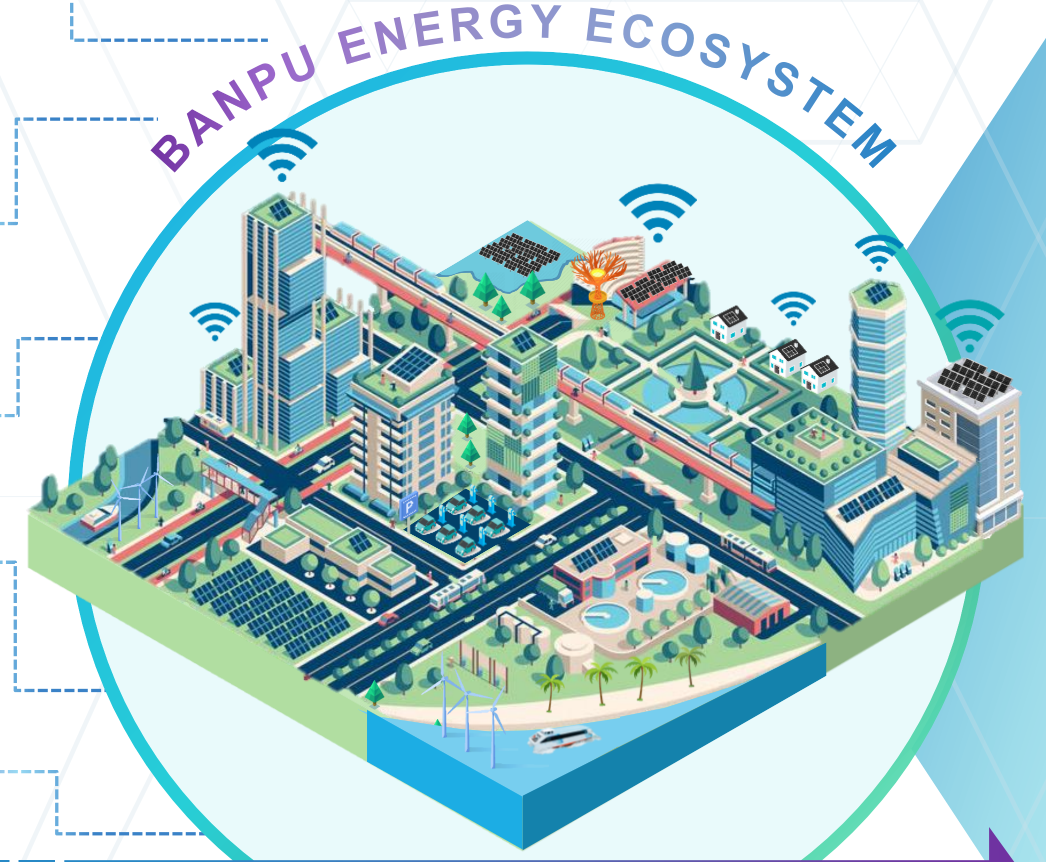
SOLAR ROOFTOP

SMART CITY & INFRA.

E-MOBILITY

BATTERY PRODUCTION

ENERGY TRADING



Continuous portfolio expansion and integration

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BANPU ENERGY SOLUTIONS PLATFORM

muvmi

HAUP

E-MOBILITY / FLEET MANAGEMENT

Integration of e-mobility services, including car sharing, ride hailing, EV charging, etc. onto a singular, easy-to-access digital platform

ENERGY MANAGEMENT

Supply- / demand-side energy management through digital tools including demand response, direct load control via virtual power plant model

ENERGY TRADING / ELECTRIC & GAS SUPPLIER

Ability to trade electricity on the open market as well as select power & gas supplier

FUTURE VISION


22.608
27.017
6.956
25.001
23.795
35.891
19.307
4.852
1.803
18.63
5.004
2.062
7.958
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Banpu consolidated financial summary 2020

KEY FIGURES

Unit: USD million

EBITDA — **$563 M**

Resilient performance despite low coal and gas prices supported by power business

NPAT — **-$56 M**

Impacted by lower commodity prices and Covid-19 pandemic

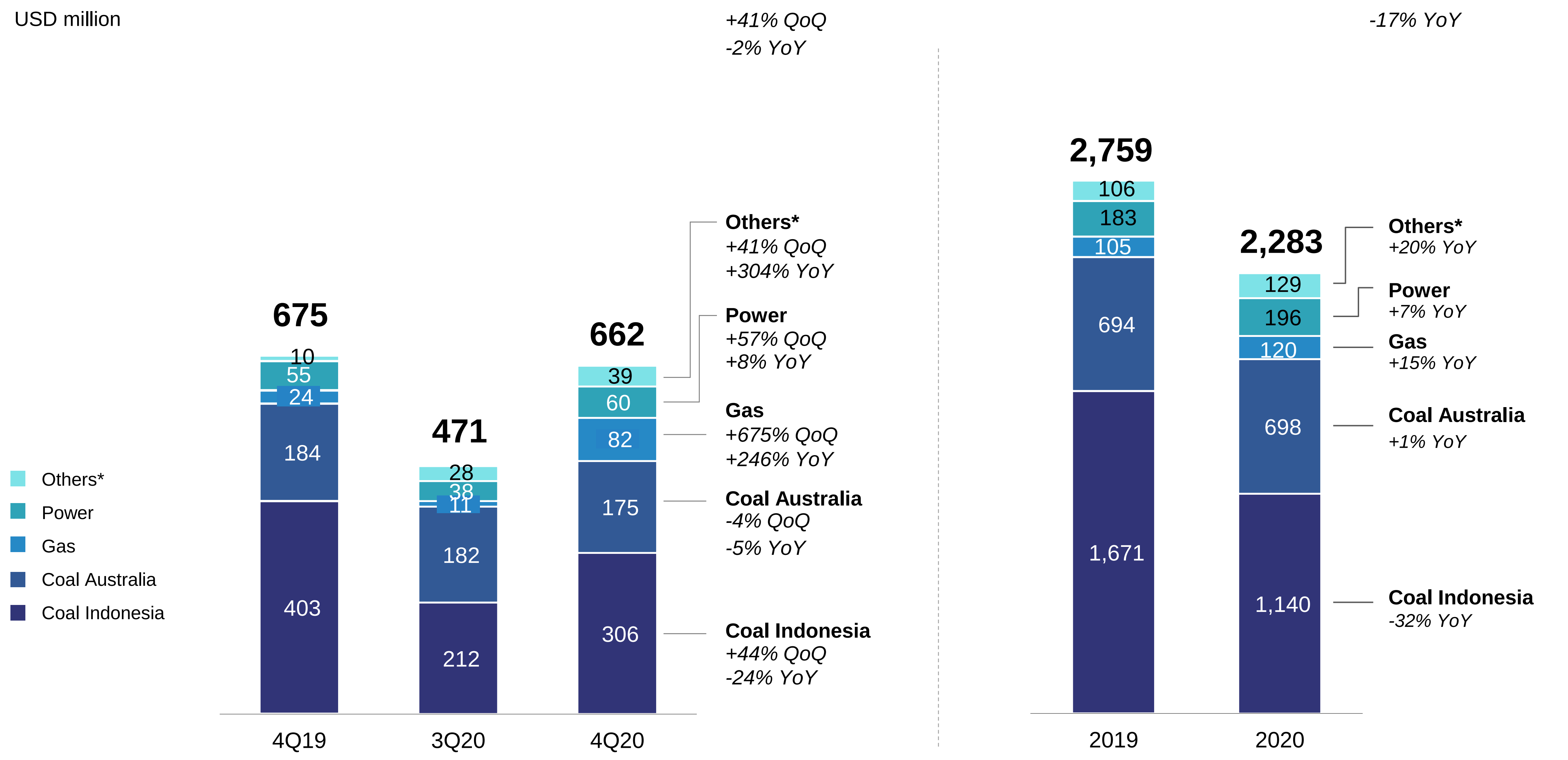
ND/E — **1.47 x**

ND/E increased from 1.23x in 2019

KEY TAKEAWAYS

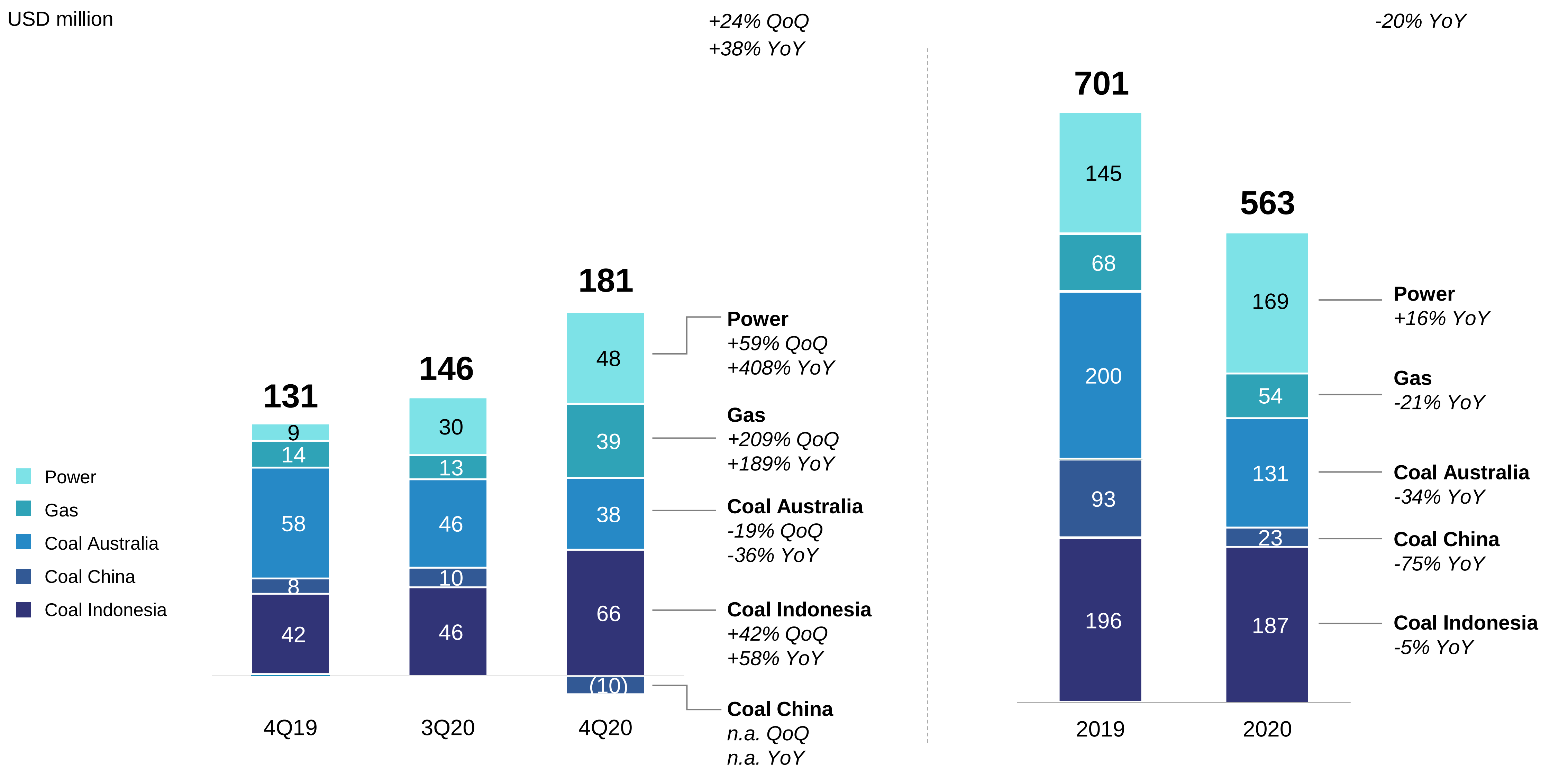
1. **EBITDA:** supported by strong contribution from power business with higher power demand in China and stable efficiency at HPC and BLCP
2. **Cost reduction:** achieved cost reduction target across the group
3. **One-time expenses:** as a result of regulatory impact and from group restructuring to capitalize on future growth opportunities
4. **Strategic positioning:** with rising coal and gas prices, Banpu is well-positioned to capture upside from both commodities

Banpu consolidated sales revenues – 4Q20 and FY20



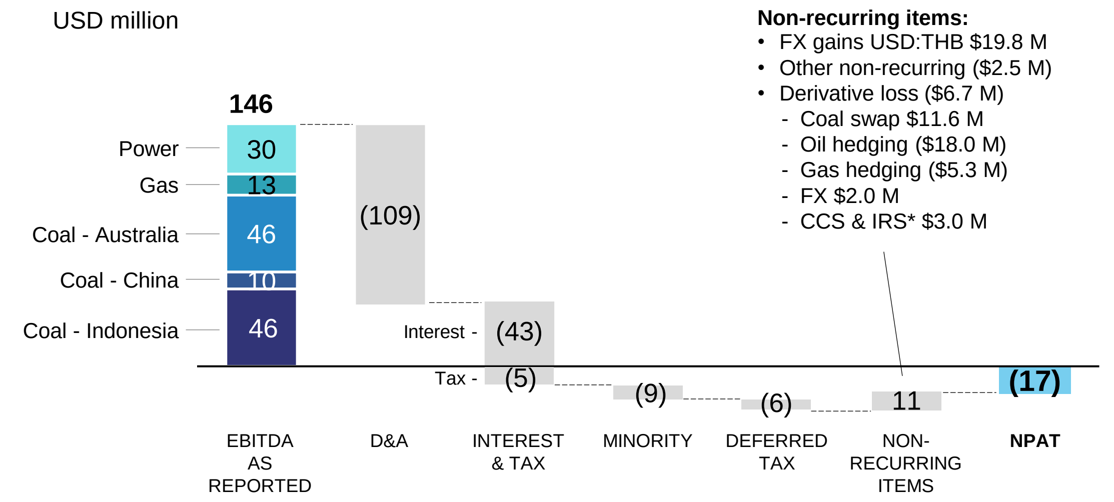
Note: *Revenue from others includes coal trading, fuel business and other businesses

Banpu consolidated EBITDA – 4Q20 and FY20

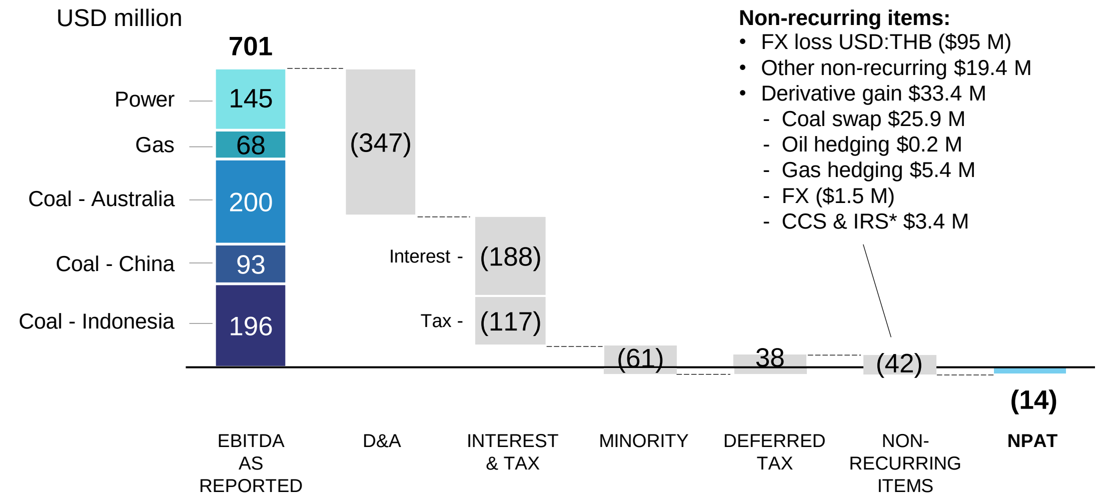


Banpu consolidated NPAT – 4Q20 and FY20

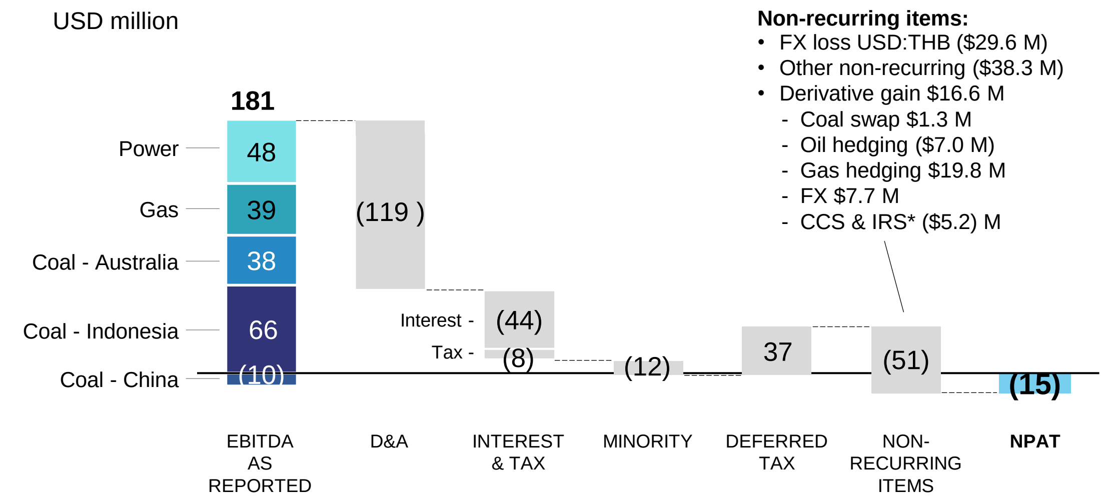
3Q20 NET PROFIT AFTER TAX



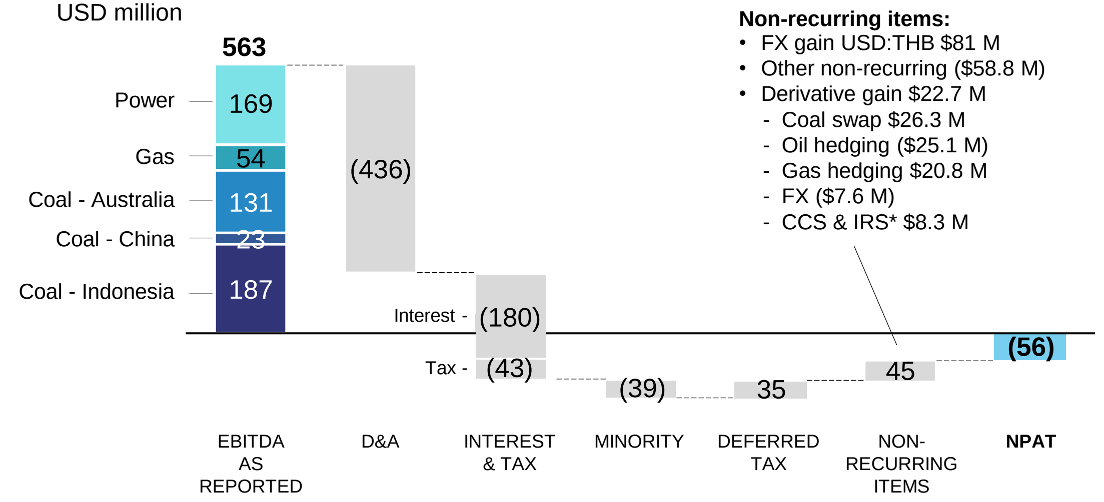
2019 NET PROFIT AFTER TAX



4Q20 NET PROFIT AFTER TAX



2020 NET PROFIT AFTER TAX

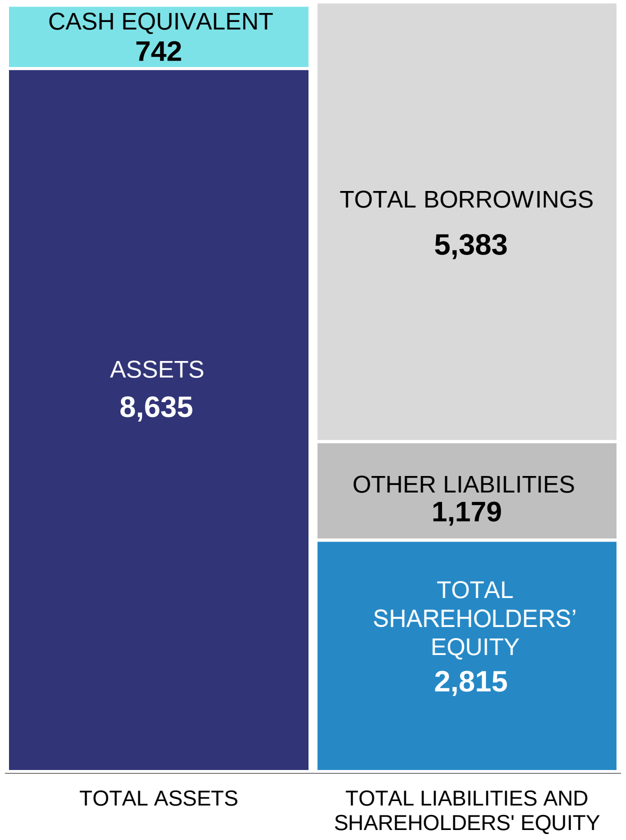


Note: *interest rate swap, cross currency swap

Banpu consolidated balance sheet – 2020

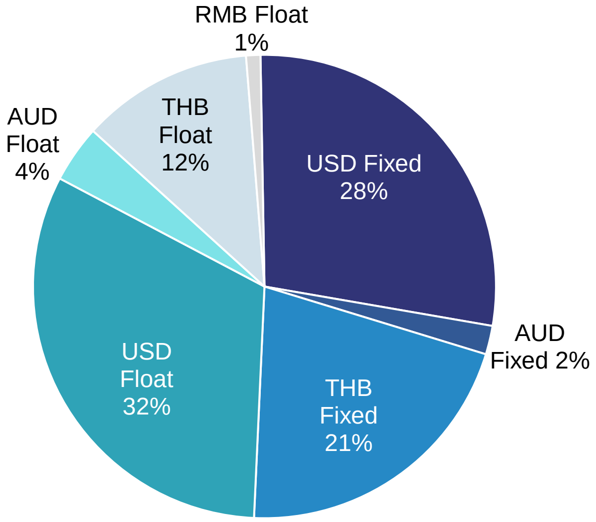
2020 CONSOLIDATED FINANCIAL POSITION

USD million



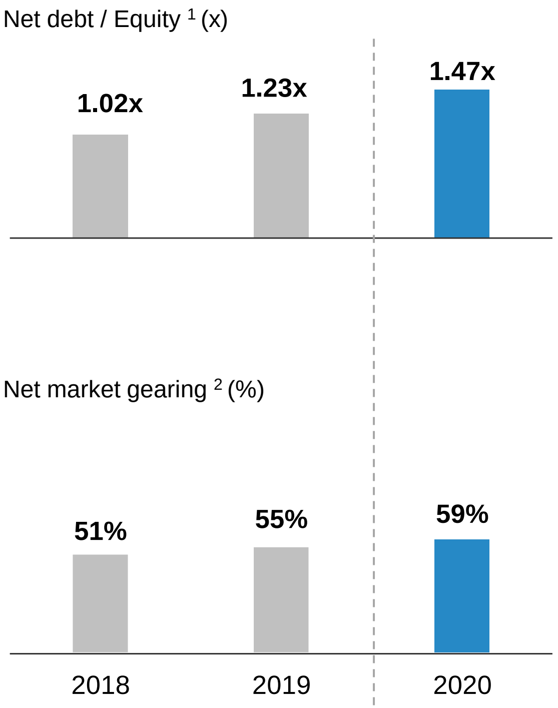
Note:
1 Net debt to book value of shareholders' equity
2 Net debt to enterprise value (enterprise value = net debt + book value of shareholders' equity)

DEBT FX STRUCTURE



Total gross debt: US$5.4 billion
As of 31 December 2020

GEARING RATIOS



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U.S. gas market update

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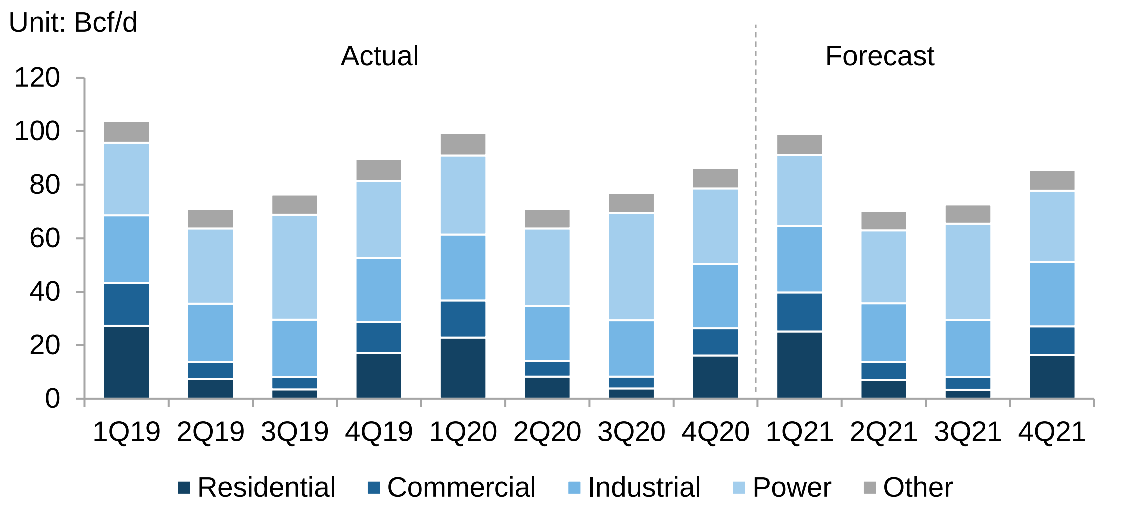
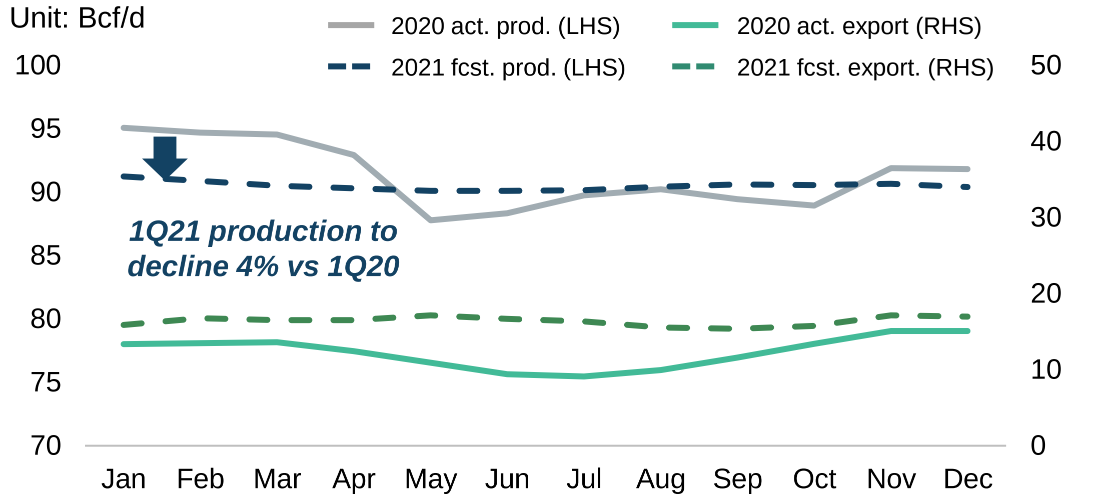
RESILIENT DEMAND PROJECTION

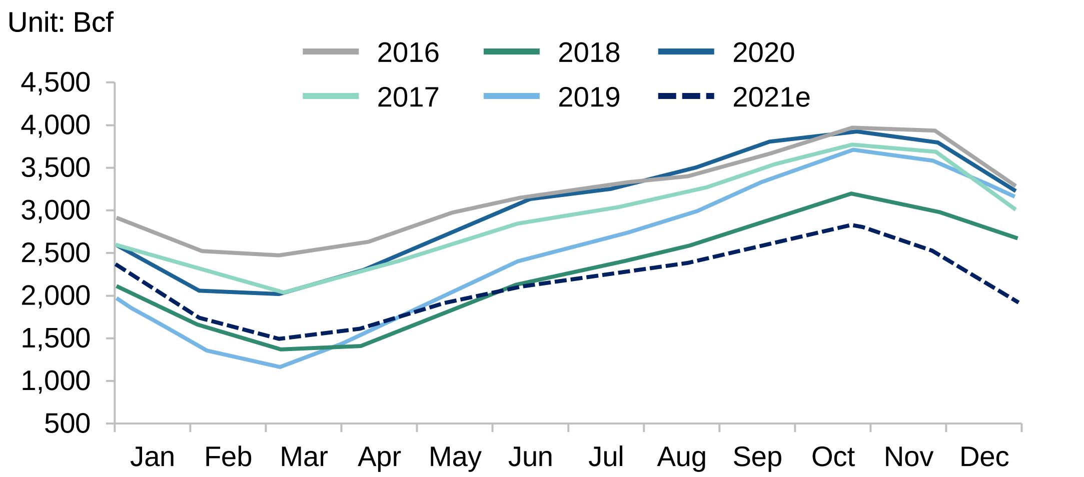


- Majority of US gas demand is domestic consumption. Price determined by local demand and supply with indirect linkage to oil via associated gas production.
- U.S. gas domestic demand remains resilient despite Covid-19, domestic gas demand is expected to average around 99 Bcf/d in 1Q21, almost the same level as 1Q20. While export is expected to average around 16.4 Bcf/d in 1Q21, a 22% increase compared to 1Q20.
- Production is expected to average around 90.8 Bcfd in 1Q21, 4% down compared to 1Q20, amidst a sharp drop in drilling activity (rig count decline) and production curtailment.
- The current drilling activity level is unable to keep pace with the rising LNG utilization winter demand in 1Q21 and the cold blast in various states. These will be the tailwinds supporting the price rally in the short-term.

US NATURAL GAS PRODUCTION



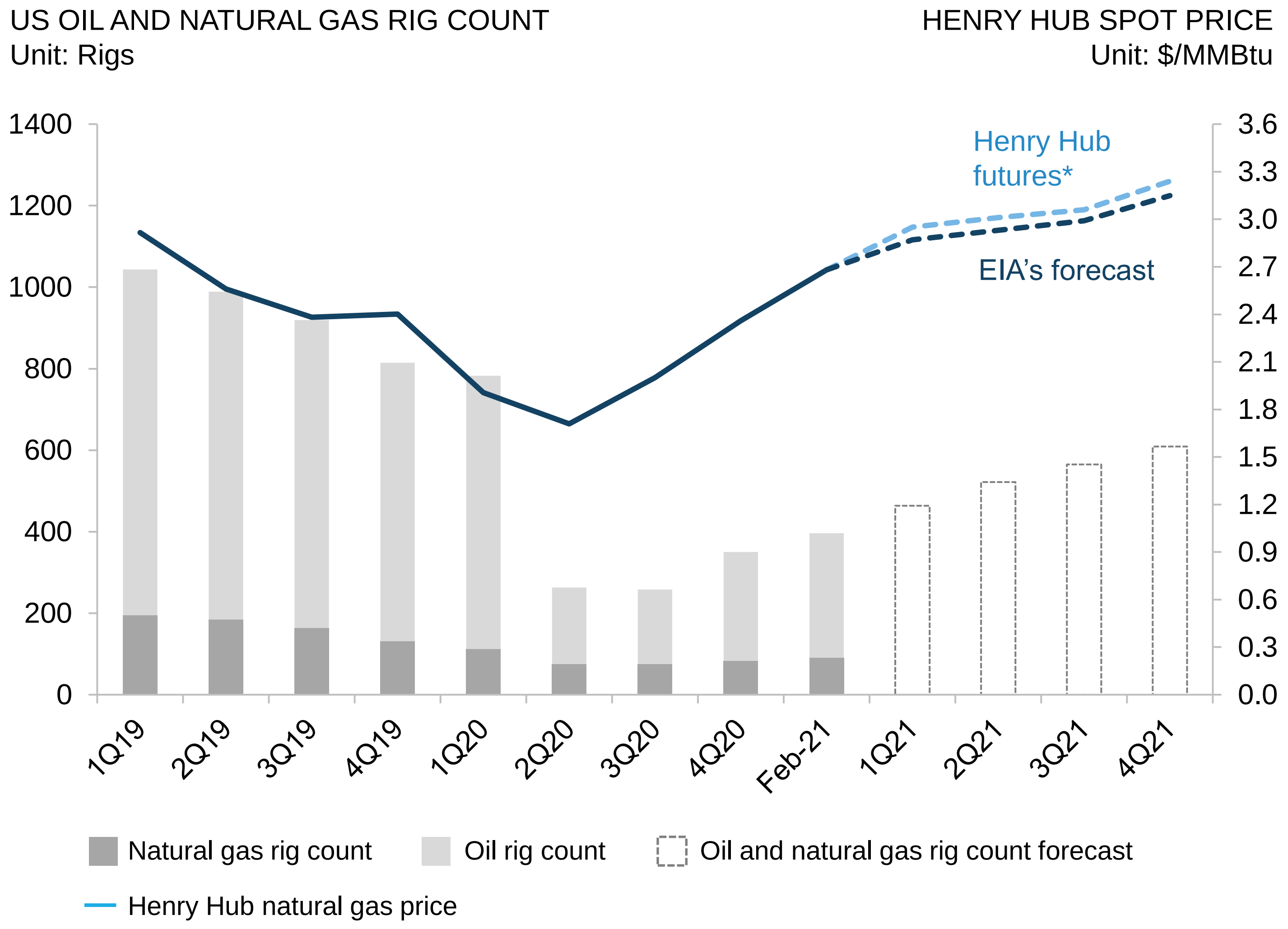
US NATURAL GAS STORAGE



Source: EIA, Wood Mackenzie, Goldman Sachs

U.S. gas: declining production will support gas price outlook

US RIG COUNT VS HENRY HUB PRICE



Note: *as of Feb 23rd, 2021
Source: IHS Markit report and Baker Hughes US natural gas rotary rig count (January)

COMMENT

- Rising oil & natural gas prices lead to an increase in upstream investment
- Oil and gas rigs are expected to increase slightly in 1Q21, but remain at levels 40% lower than 1Q20.
- Increase in rig count and capital spending may indicate higher gas production (associated gas from oil wells and from gas wells)
- Henry Hub futures signal further increase, as new supply is expected to only offset natural decline leaving 2021 production relatively flat, inventory is expected to decline.

Banpu Gas: 2020 highlights

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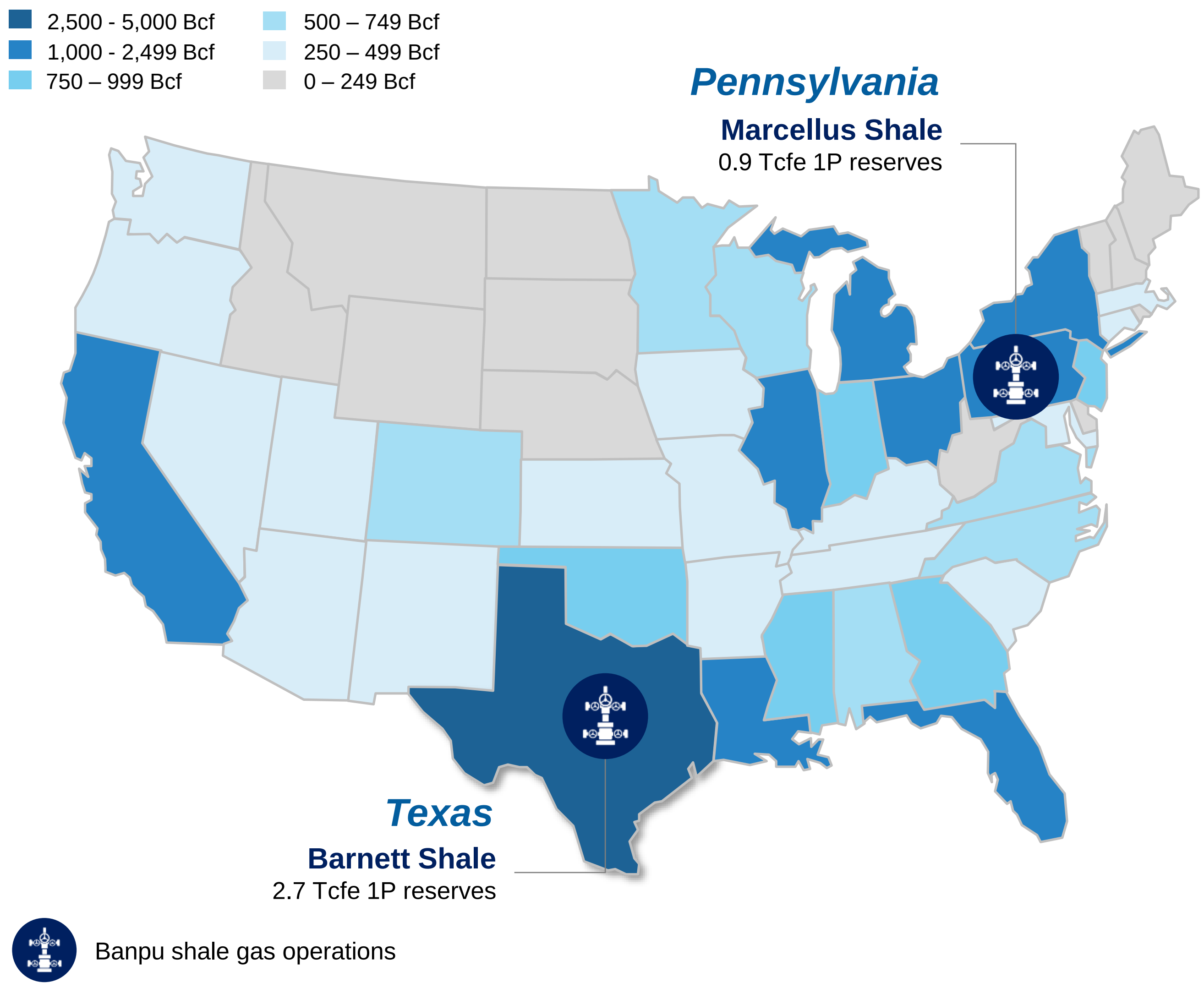
US DRY GAS CONSUMPTION 2019 BY STATE (Bcf)



Source: EIA

Average netback price

$1.06/Mcf

-23% YoY

Sales volume

113.3 Bcf

+64% YoY

EBITDA

$53.7 M

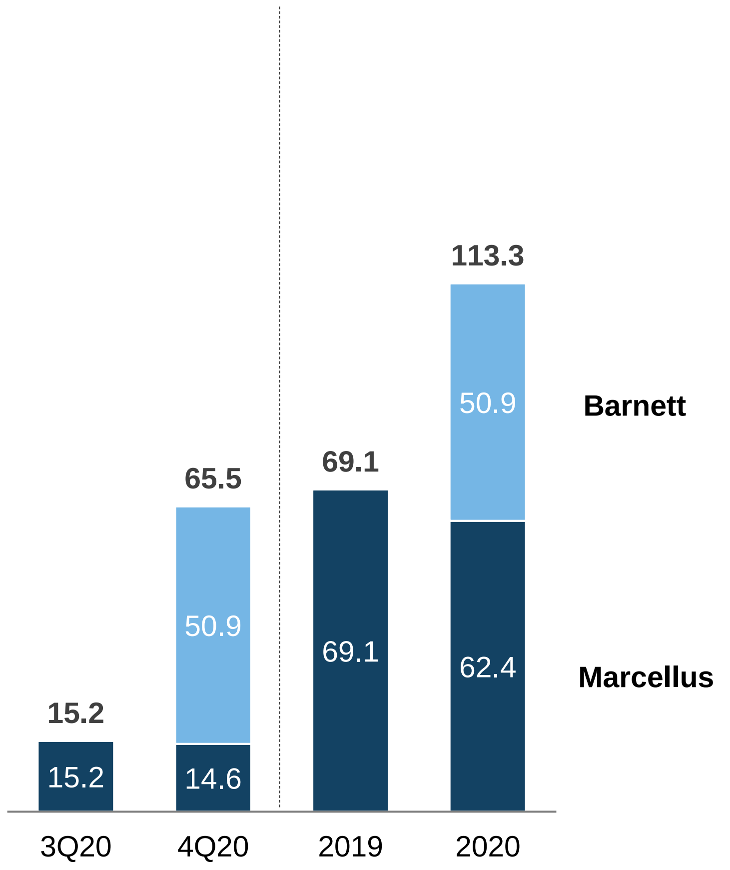
-21% YoY

Banpu Gas: 4Q20 and FY20 performance

$54 M Ebitda generation in 2020, amidst pricing headwinds and strategic production curtailment, uplifted by capital and spending discipline. Barnett acquisition proved to be a crucial milestone and provided significant uplift to the Group's cash flow.

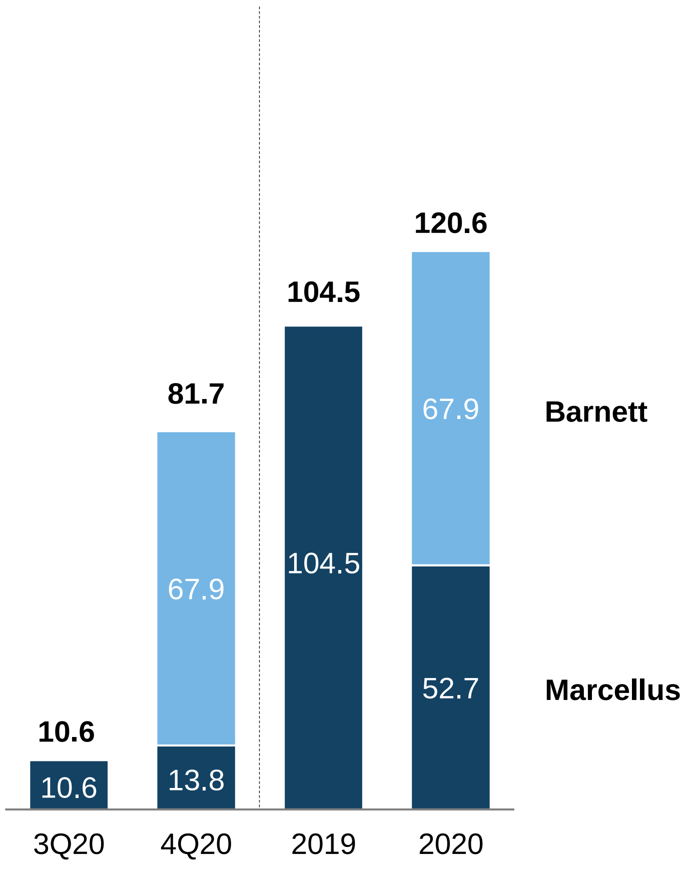
SALES VOLUMES

Unit: Bcf*



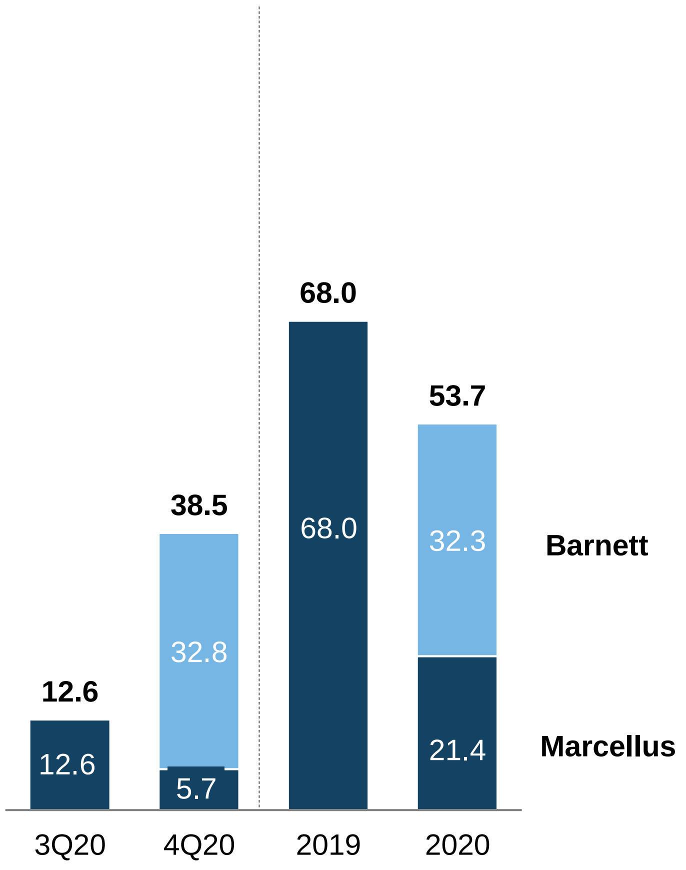
TOTAL REALIZED REVENUE

Unit: US$M



EBITDA

Unit: US$M



Note: *Bcf = Billion cubic feet

Global thermal coal market

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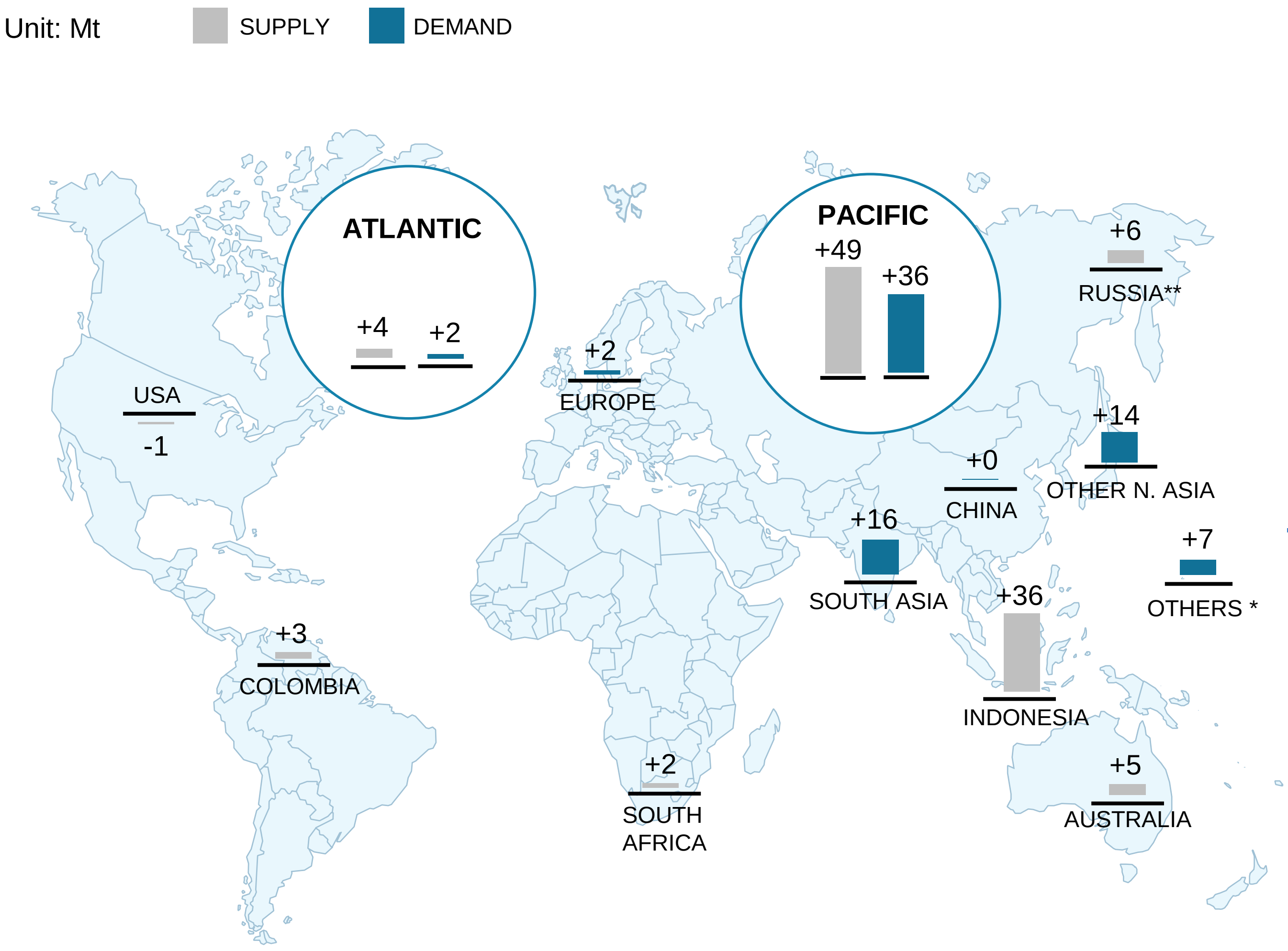
COAL DEMAND AND SUPPLY CHANGE – 2021E VS 2020



TRENDS

DEMAND

La Nina weather resulted in freezing temperatures across much of the Northern Hemisphere driving significant coal demand in the region at the beginning of the year. Economic recovery post Covid-19 will continue support coal demand towards the latter part of the year

- **China:** Import restriction and ban on Australian coal is expected to continue, but imports are likely to be flat versus last year.
- **India:** Economic growth continues to support imported coal demand as sponge iron and cement boosts demand for HCV coal while coastal power plants still focus on economic imported coal.
- **JKT:** Economic recovery is expected to support coal demand, but curbing coal burn initiatives in South Korea and Taiwan will limit growth.
- **Europe:** Coal demand is expected to recover from the bottom, but recovery remains at risk as coal retirements continue.

SUPPLY

Rainfall is expected to impact production in Indonesia and Australia at the beginning of 2021, while China's ban on Australian coal has created tighter supply for non-Australian coal. The ban on Australian coal changes coal trade routes and increases freight costs.

- **Indonesia:** Heavy rain hit production early 2021 but production is expected to improve amidst rising domestic demand.
- **Australia:** Thermal coal exports remain flat despite China import ban as shippers able to find other regional customers.
- **Others:** Production is expected to recover in almost all exporting countries, but Colombia and the US are expected to find buyers in Asia due to weak European demand. Glencore's Prodeco announced that it would be returning its mining contracts to the Colombian government, which will remove 15 Mtpa capacity permanently.

* Demand in other countries driven by Vietnam, ** Russia exports to non-CIS countries only, JKT = Japan, South Korea and Taiwan

Banpu ASPs vs thermal coal benchmark prices

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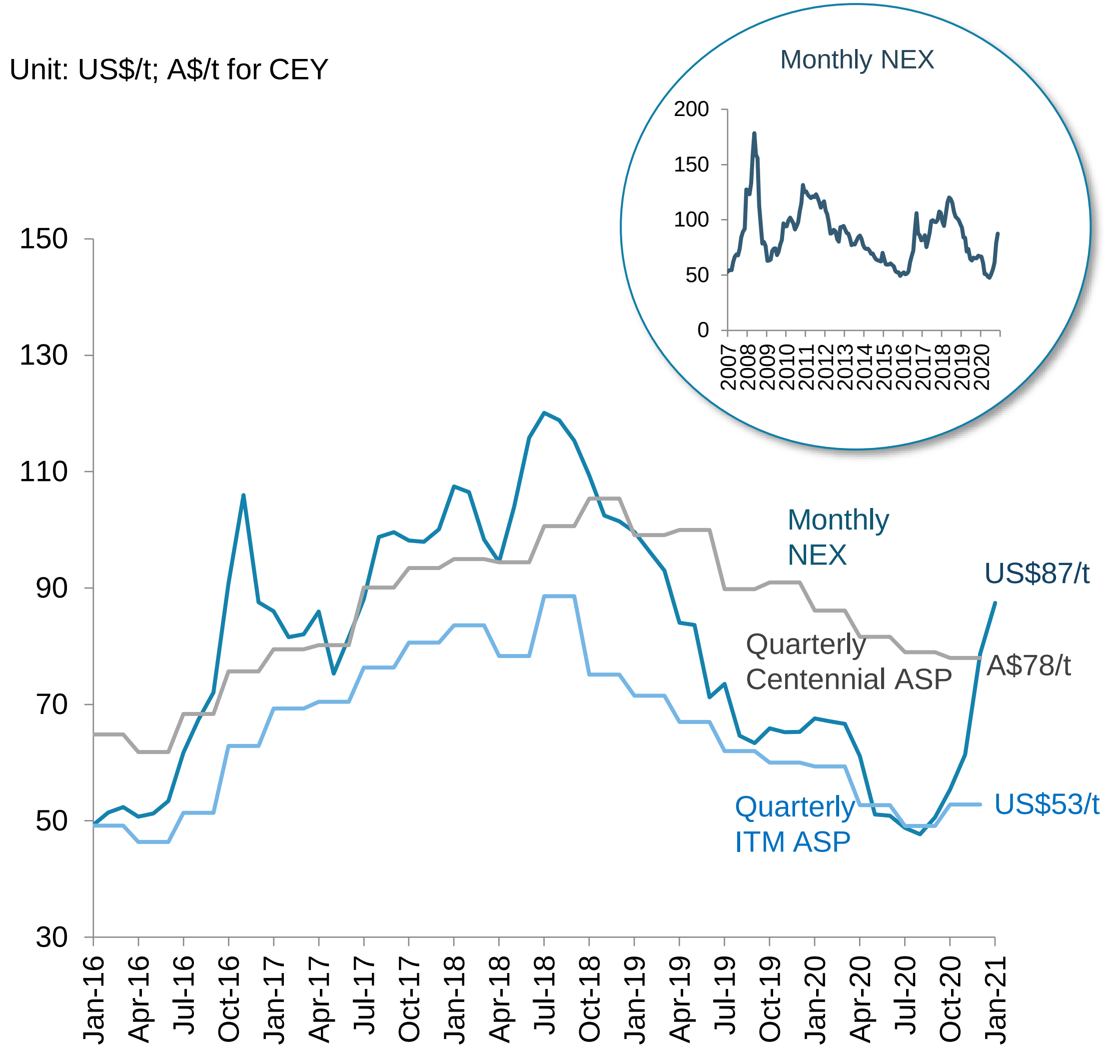
BANPU ASP VS BENCHMARK PRICES



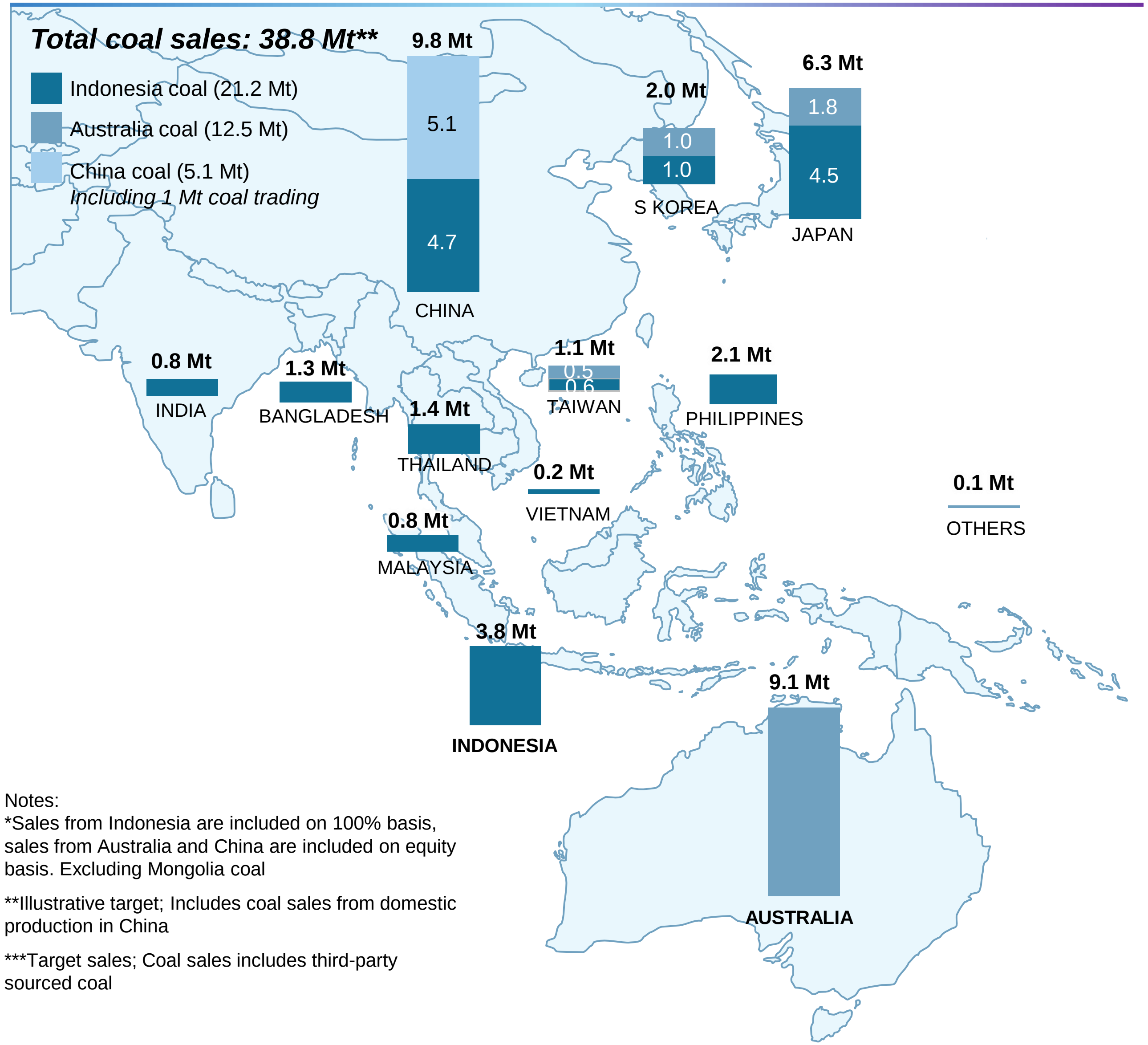
Note: * Includes post shipment price adjustments as well as traded coal
** The Newcastle Export Index (previously known as the Barlow Jonker Index – BJI)

COMMENTS

- Coal prices have recovered from September levels, drove up sharply at end 2020 as cold snap across the Northern Hemisphere and higher gas prices.
- China, opened to import coal as a result of restocking and heat requirements. Significant differential between domestic and imported coal prices create the import influx and price rally.
- Indonesian coal production interrupted by bad weather, accelerated the price rally then stabilize before Lunar New Year long holidays. Indonesian coal price were, for several weeks at a premium over Newcastle price (on heat equivalent basis).
- Demand and supply, are expected to normalize, hence price relativity, as we approach Spring, there will be the annual Japanese Benchmark price negotiation.
- ASP in Q4 recovered, shadowing the price recovery trend and is expected to surge from January, following the NEX index trend.
- Key price metrics:
  - ITM ASP 4Q20 : US$52.8/t* (+8% QoQ)
  - CEY ASP 4Q20 : A$78.0/t* (-1% QoQ)
  - NEX (February 19th, 2021)**: US$88.95/t

Banpu Mining: group coal sales and pricing status 2020

COAL SALES* SOURCE – DESTINATION ANALYSIS



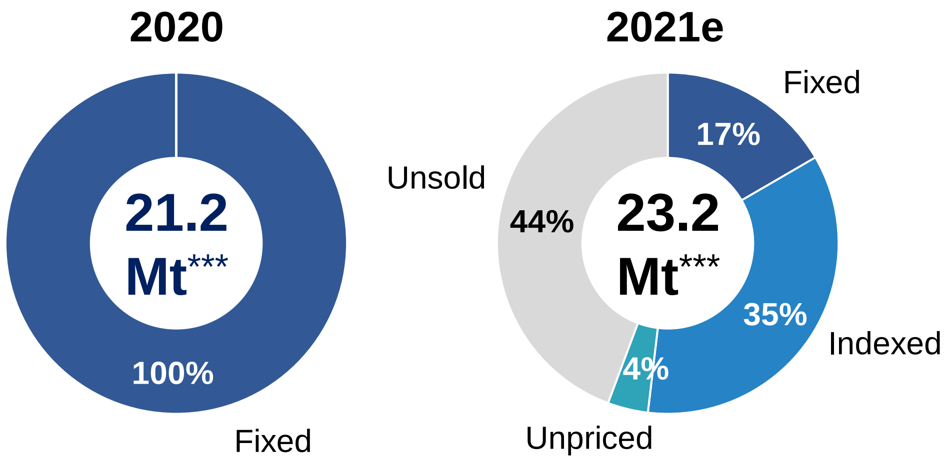
Notes:
*Sales from Indonesia are included on 100% basis, sales from Australia and China are included on equity basis. Excluding Mongolia coal

**Illustrative target; Includes coal sales from domestic production in China

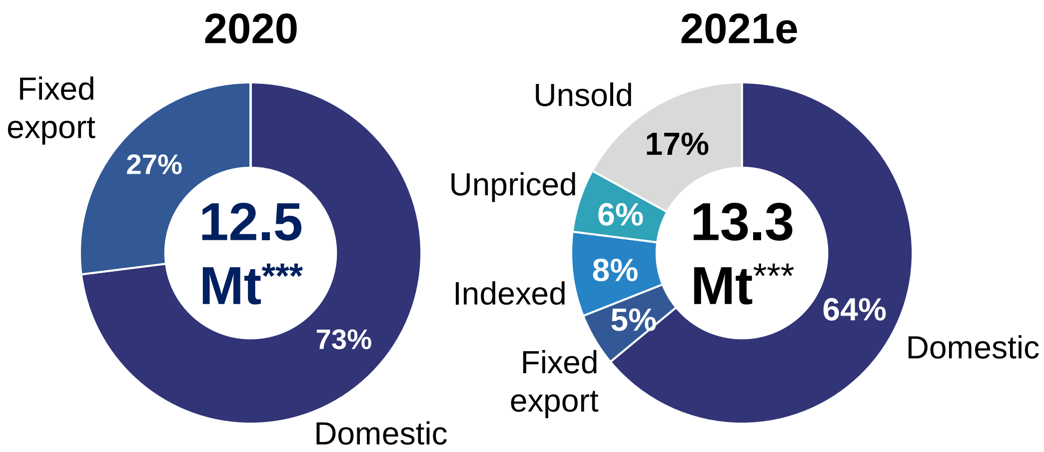
***Target sales; Coal sales includes third-party sourced coal

COAL SALES PRICING STATUS

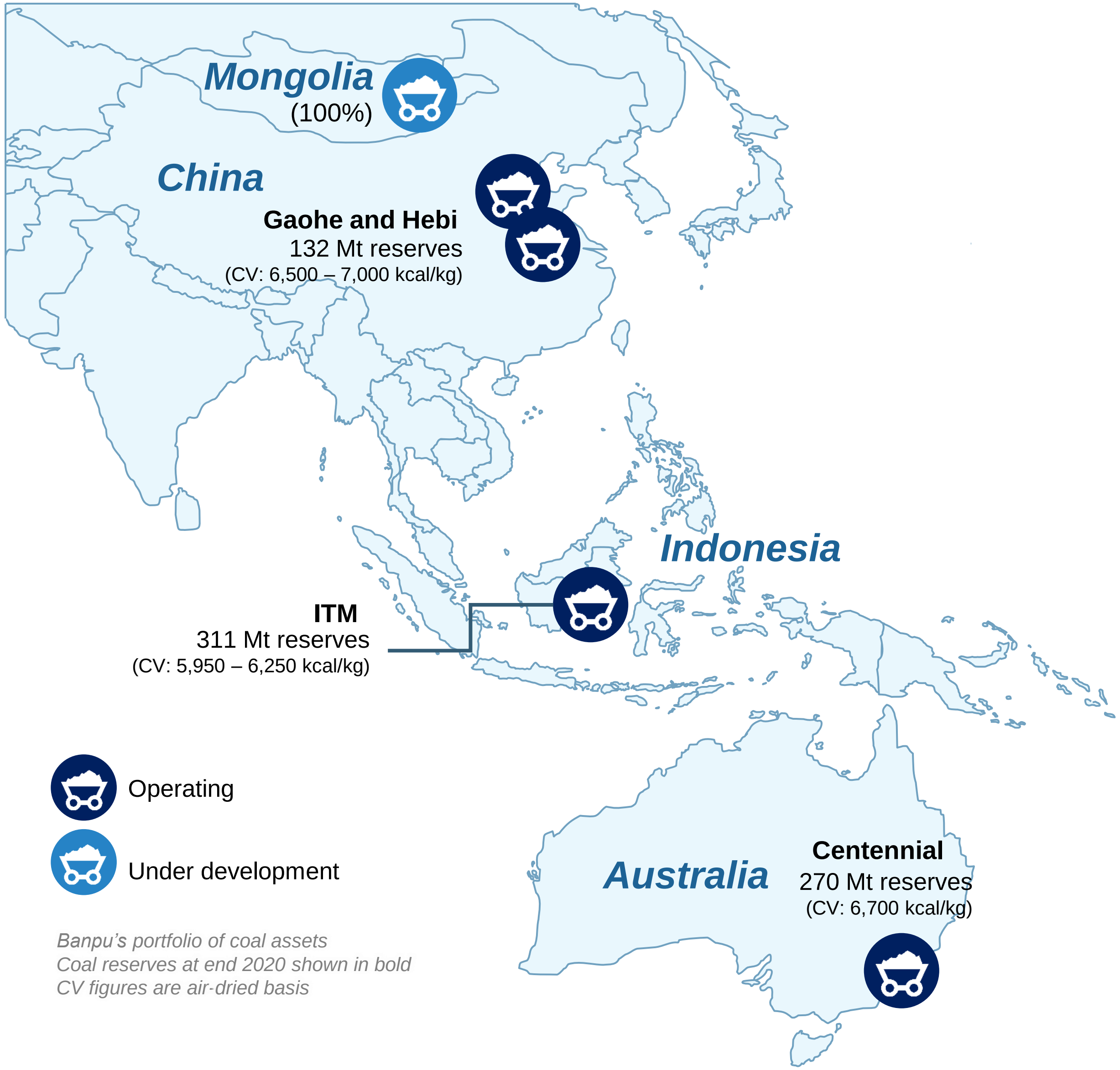
INDONESIA



AUSTRALIA



Banpu Mining: 2020 highlights



Banpu's portfolio of coal assets
Coal reserves at end 2020 shown in bold
CV figures are air-dried basis

Production volume

35.3 Mt

-6% YoY

Sales volume

38.8 Mt

-5% YoY

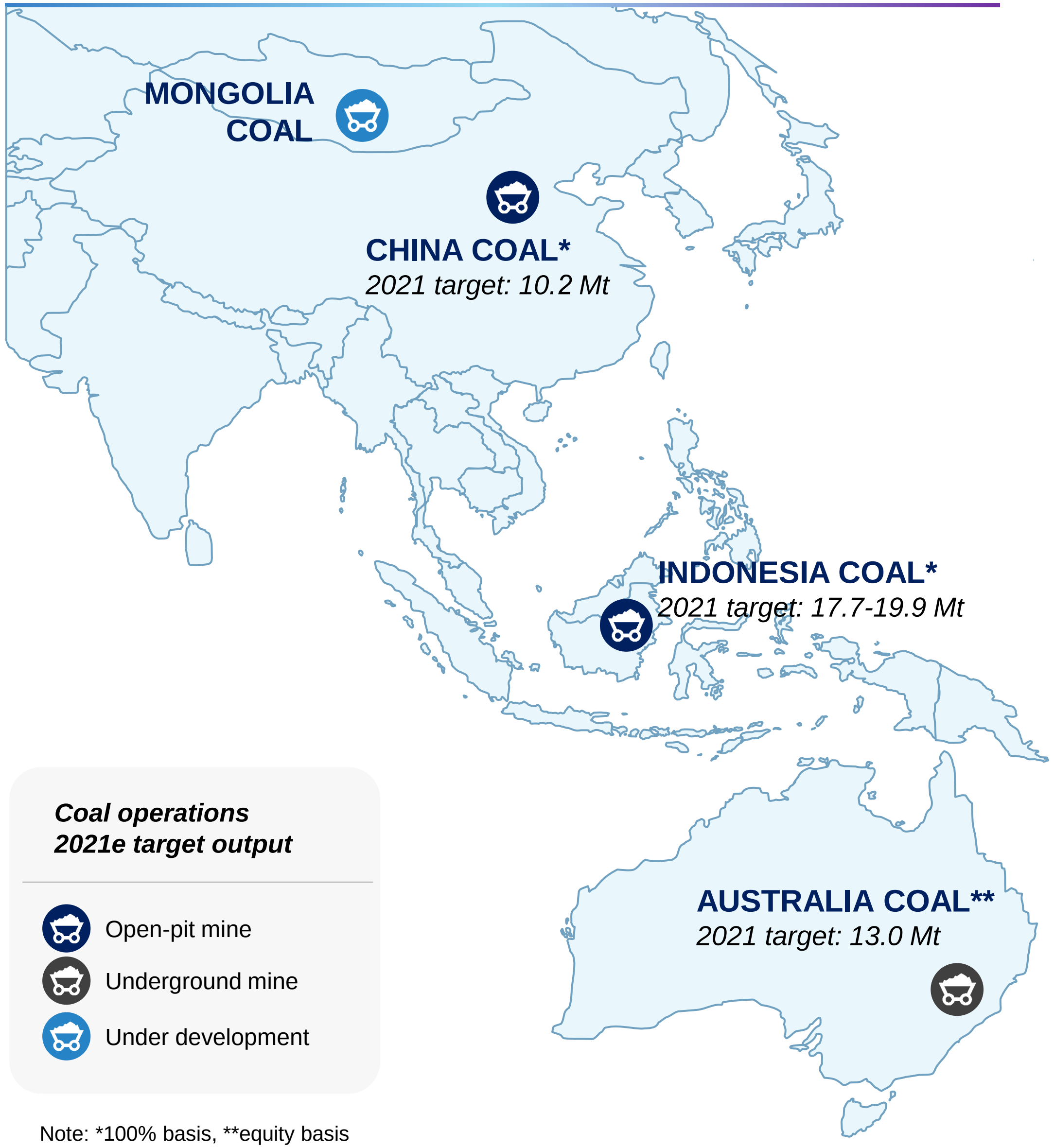
EBITDA

$340 M

-30% YoY

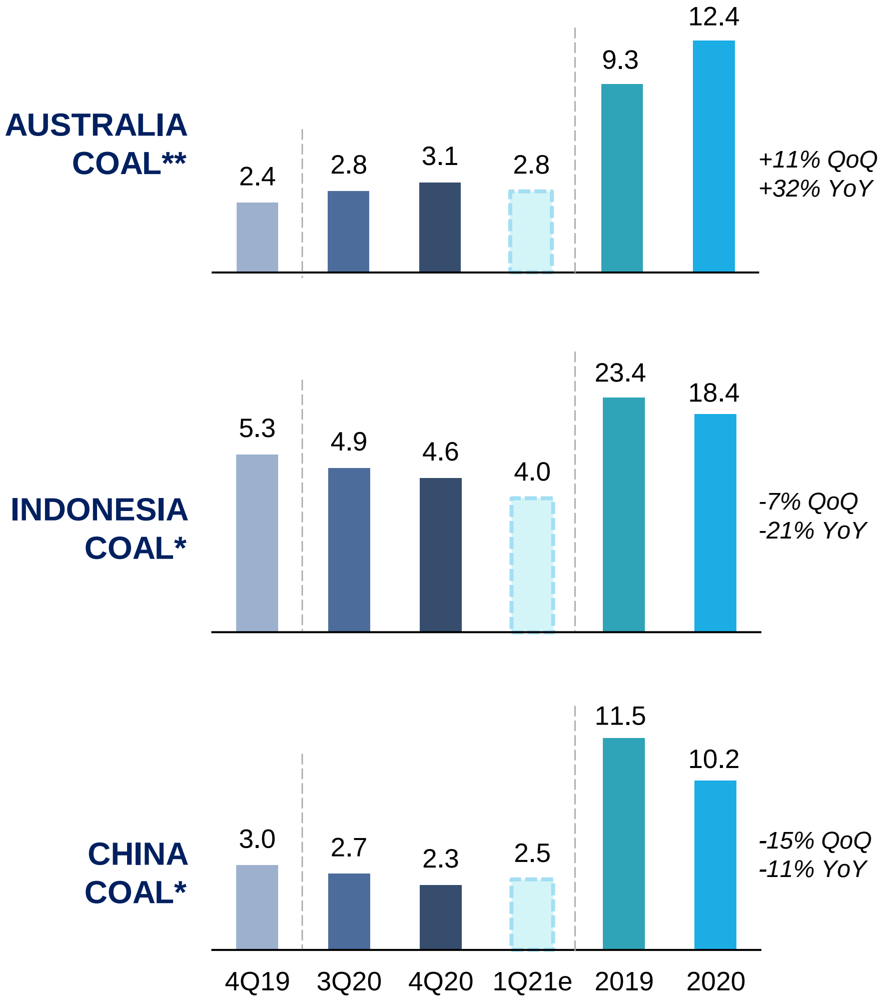
Banpu Mining: operational summary

2021E COAL OUTPUT



Note: *100% basis, **equity basis

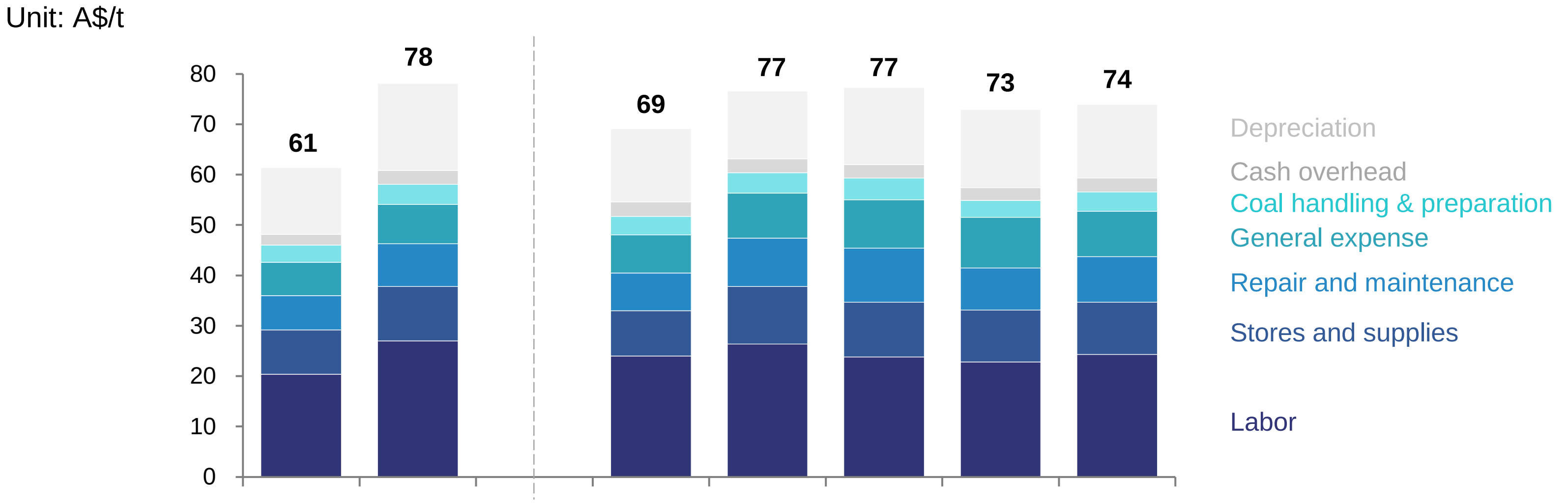
ROM PRODUCTION AND KEY UPDATES



- Western operations were up, with record annual production at Airly and strong quarter at Springvale but were partly offset by a difficult quarter at Clarence due to equipment issues.
- Northern operations production was down, with a LW move at Mandalong. Myuna's production is expected to improve since moving into new areas.
- Lower output from Jorong and Embalut due to continued heavy rainfall which induced flooding in several Kalimantan areas.
- Gaohe: Lower production in Q4 due to lithology change (sinkhole and large angle area).
- Hebi: Lower production in Q4 due to complicated running conditions of longwall panels.

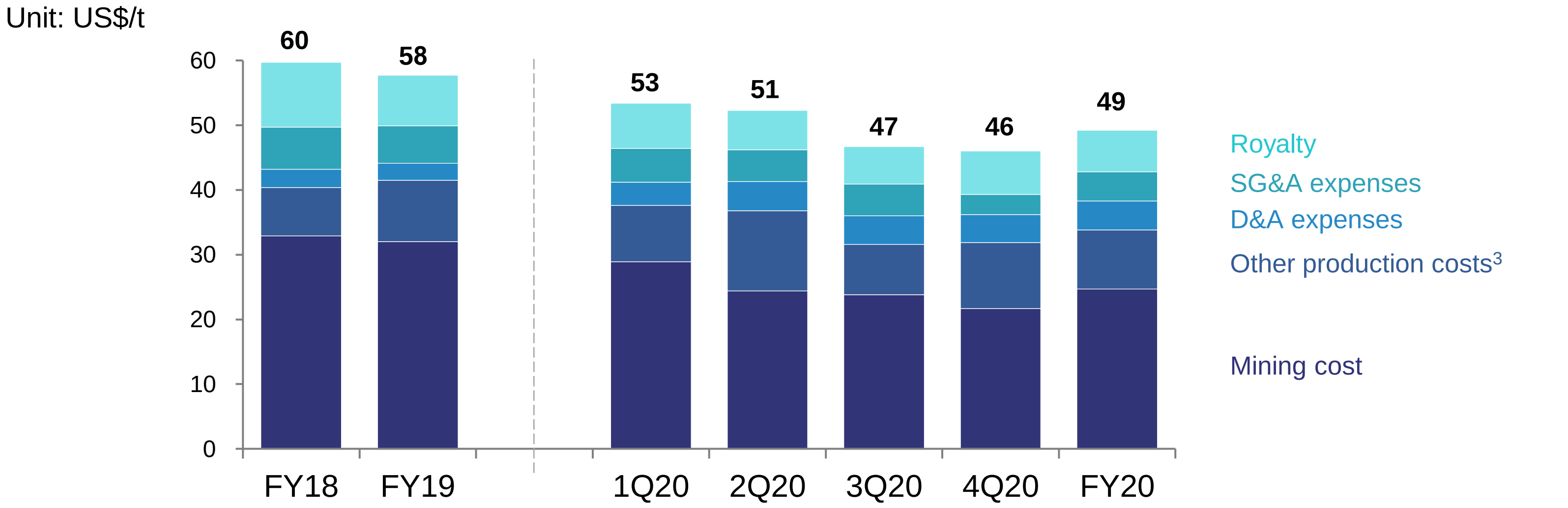
Banpu Mining: average production cost breakdown

AUSTRALIAN COAL – AVERAGE PRODUCTION COST[1]



- Costs impacted by mining conditions, a longwall changeover, equipment issues and lower sales tonnes.
- Continued cost reduction in contractor labor and overheads targeted to further drive costs down.

INDONESIAN COAL – AVERAGE TOTAL COST[2]



- Average total cost slightly decreased from the previous quarter to $46/t.
- Achieved the average total cost target of $50/t for the whole year

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.


BANPU

Banpu Energy Generation: 3,309 MW committed capacity

11 countries
operations across Asia

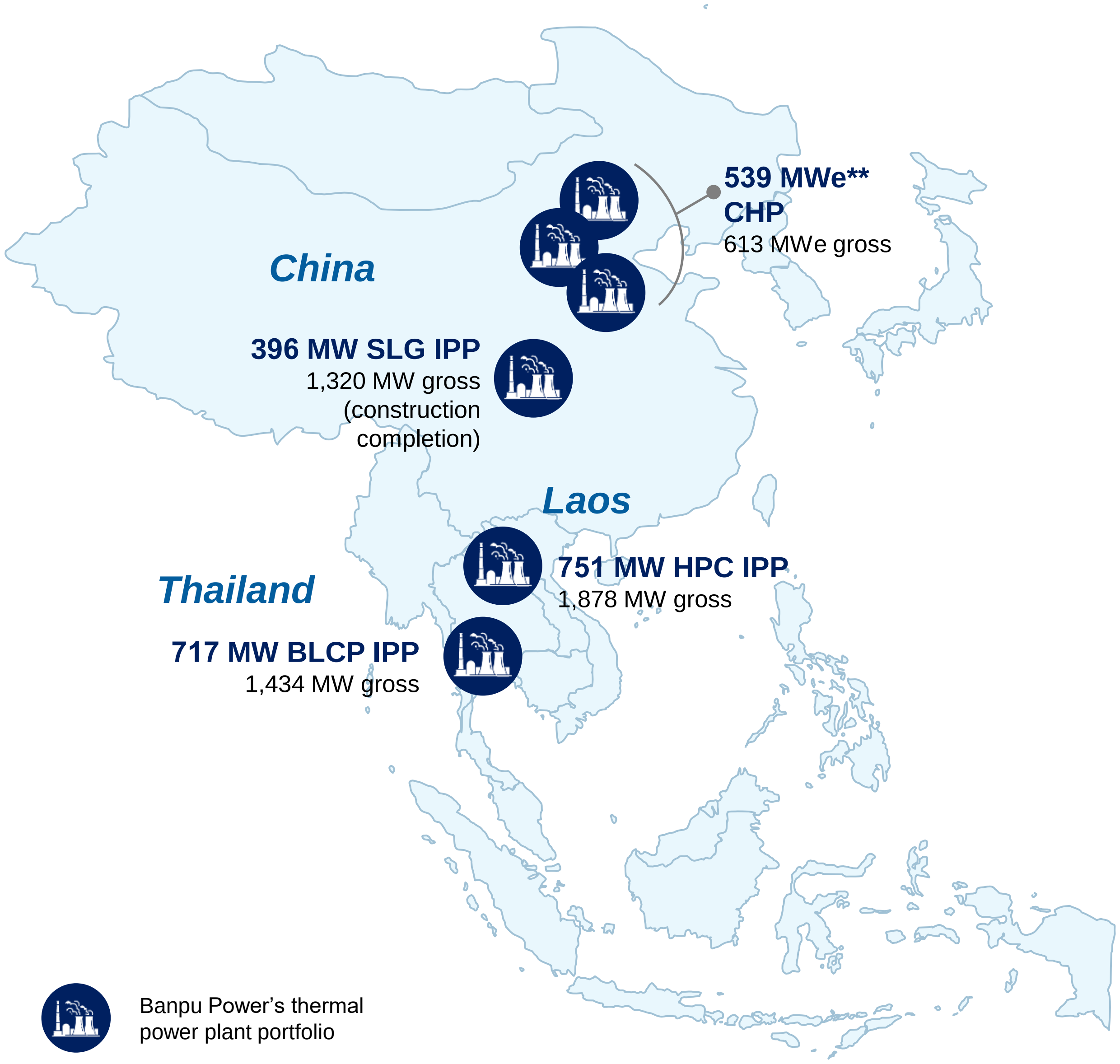
2,403 MW
committed thermal equity capacity*

906 MW
committed renewables equity capacity**

*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: 2020 highlights

BANPU



EBITDA

$169 M

+16% YoY

Achieved EAF

90%
at BLCP

82%
at HPC

Power plant update

100%

construction completed for SLG power plant

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

Banpu Thermal Power: 4Q20 and FY20 updates

BANPU

BLCP

Continued high reliability and efficiency, fulfilling CAH with strong dispatch order from EGAT

- Continued high plant efficiency and reliability with yearly EAF* at 90%
- Total FY20 revenue reported at THB 14.8 bn, EBITDA at THB 3.2 bn
- Reported share of profit at THB 0.5 bn

HPC

Implemented preventive maintenance program and reliability improvement to ensure sustainable long-term performance

- Improved reliability and achieved yearly EAF of 82% despite extended maintenance of unit 3 during the year
- Total revenue reported at THB 20 bn, EBITDA at THB 12 bn
- Reported share of profit at THB 3.2 bn

China CHP

Strong power and steam demand driven by recovery in industrial sector and higher heating demand from residential users

- Reported revenue of RMB 1.2 bn

SLG

- Under trial operation, with expected commercial dispatch by 1Q21

Note: : *Equivalent Availability Factor (EAF) is a percentage of a given operating period in which a generating unit is available without any planned- and unplanned shutdown or deratings

Banpu Thermal Power: SLG ready to COD in 1Q21

BANPU

100%
COMPLETION

SLG POWER PLANT

For construction of both Units 1 and 2

Unit 2: Completed construction, preparing for commercial dispatch
Complete set of start-up trial operations; Ready to commission and supply heat to Changzhi City by 1Q21

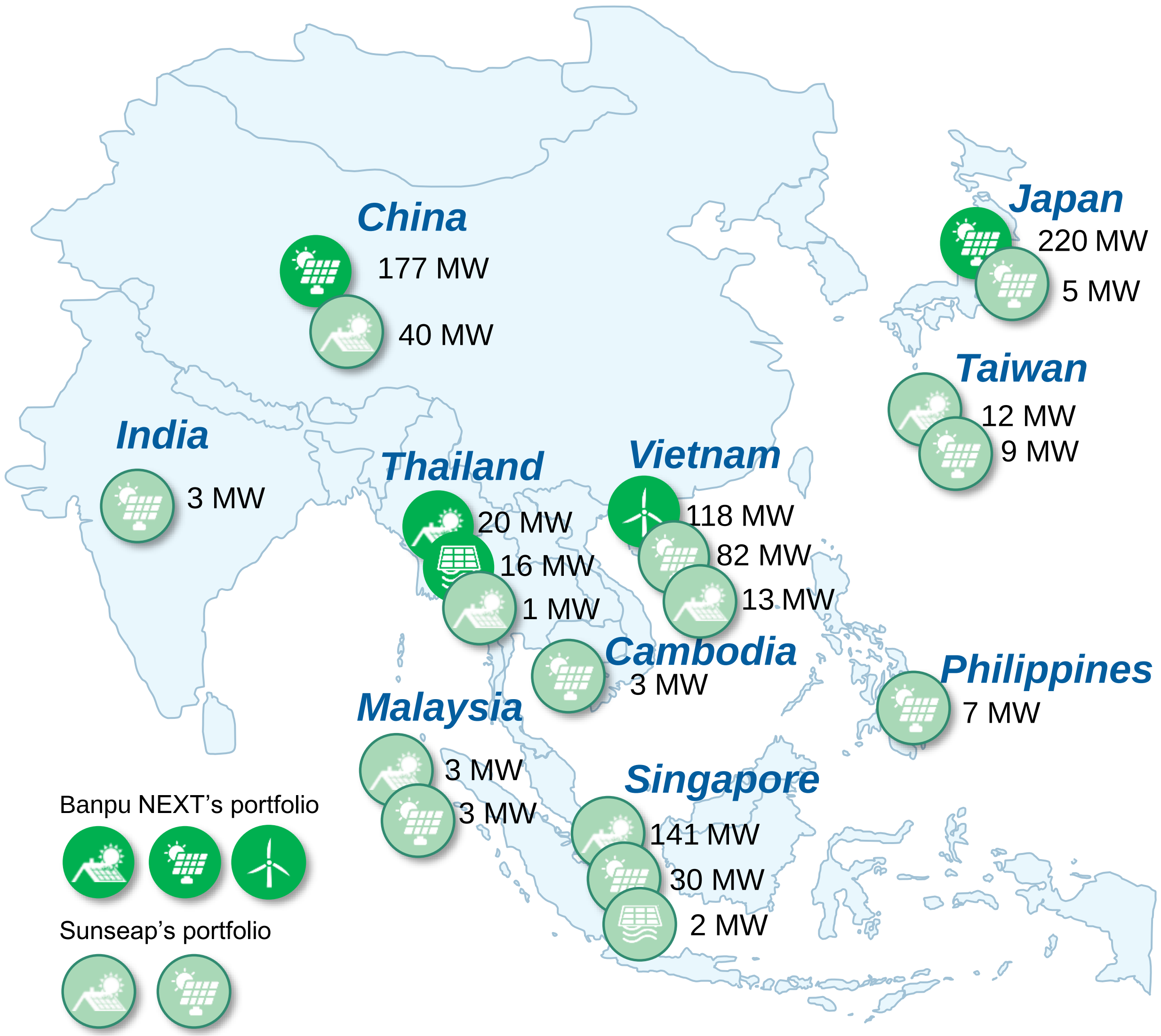
Unit 1: Completed construction, and finishing work and debugging
Scheduled to supply power and heat by 2H21

1,000 kV
POWER SUPPLY SYSTEM

1,320 MW
CAPACITY
396 MW
equity basis

POWER PLANT CONSTRUCTION COMPLETED

Banpu Renewable Power: diversified Asia-Pacific portfolio*



906 MW
committed renewables capacity across Asia

539 MW
committed solar power capacity

249 MW
committed solar rooftop and floating solar capacity

118 MW
committed wind capacity

*Banpu Renewable Power businesses are owned by Banpu NEXT (50% Banpu PLC, 50% Banpu Power)

Banpu Renewable Power: 4Q20 and FY20 updates

China Solar

Stable performance throughout the year supported by strong demand and favorable weather condition

- Average capacity factor FY20 reported at 14%
- Power sold was 220 GWh, +3%YoY
- Reported revenue of RMB 192 M with profit contribution of RMB 63 M

Japan Solar

Higher power sold from COD of Yamagata and Yabuki projects despite slightly lower average capacity factor due to unfavorable weather conditions

- Average capacity factor FY20 reported at 13%
- Power sold was 128 GWh, +45% YoY
- Reported TK distribution of JPY 433 M

Vietnam Wind

Additional capacity of 37.6 MW from operating Mui Dinh wind farm and on track construction progress of Vin Chau at 41%

- Earning contribution from Mui Dinh wind farm is expected by 1Q21
- Phase 1 of Vin Chau project in Soc Trang reached construction progress of 41%, COD target moved to 1H21

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2020 Highlights

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Focus: Strategy Review

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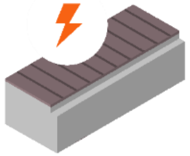
Energy Technology

Banpu Energy Technology: 2020 highlights

BANPU

	 SOLAR: ROOFTOP & FLOATING	 ENERGY STORAGE SYSTEMS	 E-MOBILITY	 SMART CITIES	 ENERGY TRADING
	Including **48.6%** in Sunseap	**47.7%** in Durapower	**30.7%** in UMT; **21.5%** in FOMM	**100%** ownership	**100%** ownership
2020	**249** **MW** committed capacity	**1.0** **GWh** (0.5 GWh on equity basis) Li-ion battery production capacity	**2,500** passengers/day ride hailing via Muvmi **98** electric vehicles under fleet management **1** E-ferry sold	**5** **projects** Includes energy management, smart infrastructure, etc.	**280** **GWh** Electricity sales
2025 target	**500** **MW**	**3.0** **GWh** (1.4 GWh on equity basis)	**10,000** passengers/day **5,500+** electric vehicles **100** E-ferries sold	**9** **projects**	**1,000** **GWh**

Energy storage systems: Durapower

BANPU

TIMELINE / PRODUCTION CAPACITY

100% basis; 80-90% utilization rate

Year	Event	Production capacity
2009	durapower Establishment	
2011	Factory set-up completed in China	80 MWh
2018	BANPU acquires 47.7% stake	
2019	Increased production capacity	1.0 GWh
2025	Planned capacity expansion	3.0 GWh

DURAPOWER PRODUCTS
LI-ION BATTERY MATERIAL TYPES:

NMC
Nickel Manganese

- High capacity, high power
- Ideal for e-mobility
- Currently, the dominant type in battery industry

LFP
Lithium Iron Phosphate

- Low-cost and stable material
- Lower power requirement
- Primarily used in stationary applications

LMFP
Lithium Manganese Iron Phosphate

- Very stable material but with lower power
- High-safety applications

TiO2
Titanium Dioxide

- Ultra-fast charge, ultra-long life cycle
- Hot climate applications due to high temperature tolerance

DURAPOWER BATTERY SYSTEM PROPERTIES:

STRONG, LIGHTWEIGHT, WITH HIGH ENERGY
exceptional for e-Bus applications

SAFE AND COMPACT
excellent for e-Vessel applications

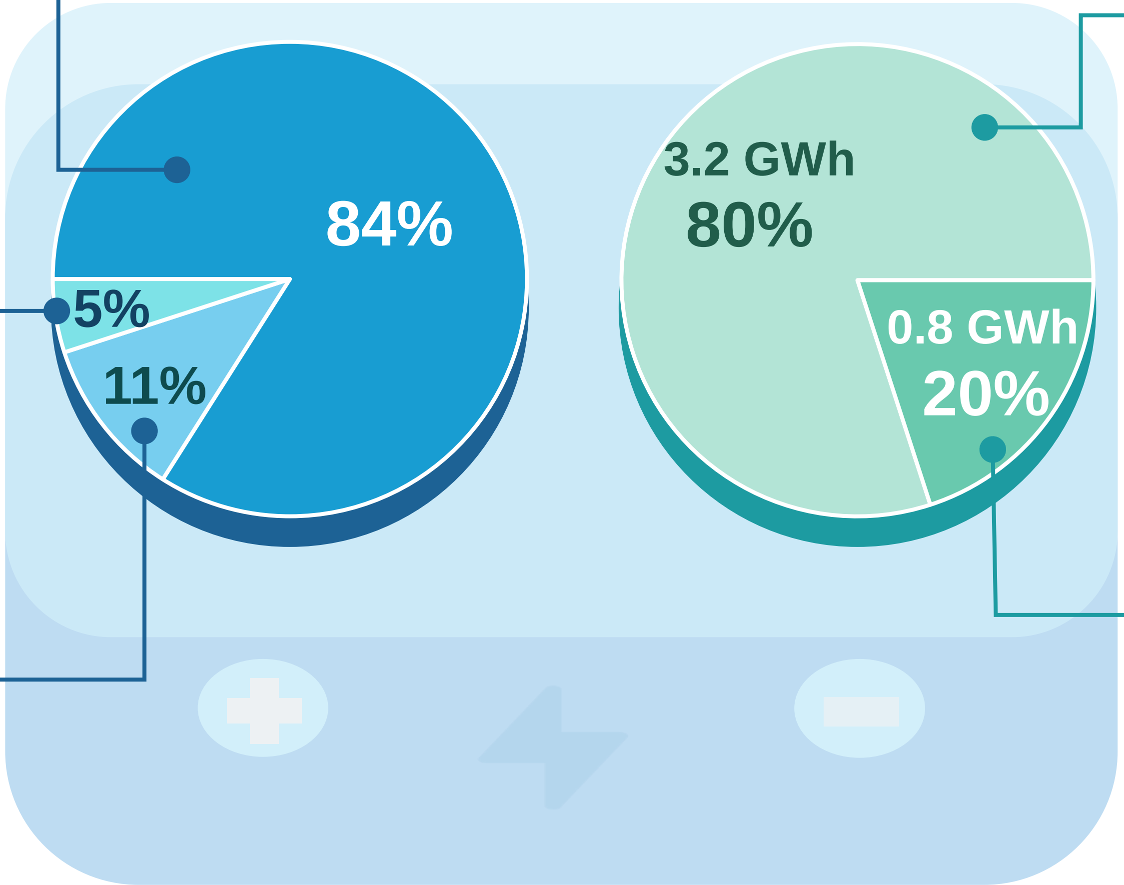
MODULAR AND READY FOR 2ND LIFE RECYCLE
for stationary applications

Energy storage systems: Durapower (cont'd)

BANPU

FOCUSED APPLICATIONS

STRONG GROWTH OPPORTUNITIES 2021-25



FOCUSED MARKETS

EUROPE

- Expand e-bus battery market in the region
- Entry in port automated guided vehicle (AGV) market across Europe
- Explore opportunity to establish local manufacturing capability in the region
- Explore strategic partnerships with local battery pack manufacturers

ASIA PACIFIC

- Expand ESS market in ASEAN
- Market entry in high EV adoption and high EV growing states in India
- Explore opportunity to establish local manufacturing capability in the India

Energy storage systems: Durapower (cont'd)

BANPU

durapower

Global presence in **20 countries**, with over **40 world-class international patents**, including quality certifications & international patents. **1 of 6** global marine certified battery producer.

NETHERLANDS

- **Durapower's largest market** with VDL, Europe's biggest e-bus manufacturer, as its biggest customers
- Benefitting from EU's Clean Vehicles Directive

CHINA

JAPAN

- **Second largest market** with Zhongtong Bus, one of the top 3 Chinese bus manufacturers, among its customers
- Current production at capacity of **1 GWh**
- Plan to expand to **3 GWh capacity by 2025**

THAILAND

- One of the focus markets with Fomm and Muvmi (e-tuktuk)
- Supplies Asia's first certified ESS for e-vessel applications to Banpu NEXT e-ferries
- Battery pack assembly plant

SINGAPORE

- Supplies batteries for autonomous EV fleets, containerized ESS and hybrid vessels to many seaports
- Also formed partner to develop seaports

Manufacturing facility

Assembly facility

Research and development facility

PROUD MEMBER OF:

EVAAP Electric Vehicle Association of Asia Pacific; SEAS Sustainable Energy Association of Singapore; SINGAPORE BATTERY CONSORTIUM; SPECS Smart Grids + Power Electronics Consortium Singapore; EUROPEAN BATTERY ALLIANCE EBA250

AWARDS:

WIPO-IPOS IP AWARDS 2019

Intellectual Property Awards 2019 from World Intellectual Property Organization

Banpu Energy Technology: 4Q20 updates

BANPU

SOLAR: ROOFTOP & FLOATING | **ENERGY STORAGE SYSTEMS** | **E-MOBILITY** | **SMART CITIES** | **ENERGY TRADING**

CAPACITY EXPANSION

SECURED ADDITIONAL CAPACITY

With industrial customers, securing 0.7 MW in Bangkok and 24.8 MW through Sunseap in Vietnam and 4 provinces in China

COMPLETED FLOATING SOLAR PROJECT

Sunseap completed its 5 MW solar project in Singapore. The project is one of the world's largest offshore floating solar

SMART CITY SOLUTIONS

LAUNCHED AI-DRIVEN SMART COMMUNITY PLATFORM

under the first phase of Phuket Smart City development, utilizing Banpu NEXT's Smart Data Analytics solution to upgrade the city's standards regarding epidemic diseases such as Covid-19, crimes, and environmental threats

ELECTRICITY SALES

SECURED 3 SUPPLY CONTRACTS

To supply the total of 50 GWh of electricity to 3 customers in Tokyo and Gifu from December 2020 - November 2021

APPENDIX

Natural gas: reserve and production term

BANPU

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

2021 indicative guidance

BANPU

ILLUSTRATIVE AND INDICATIVE ONLY

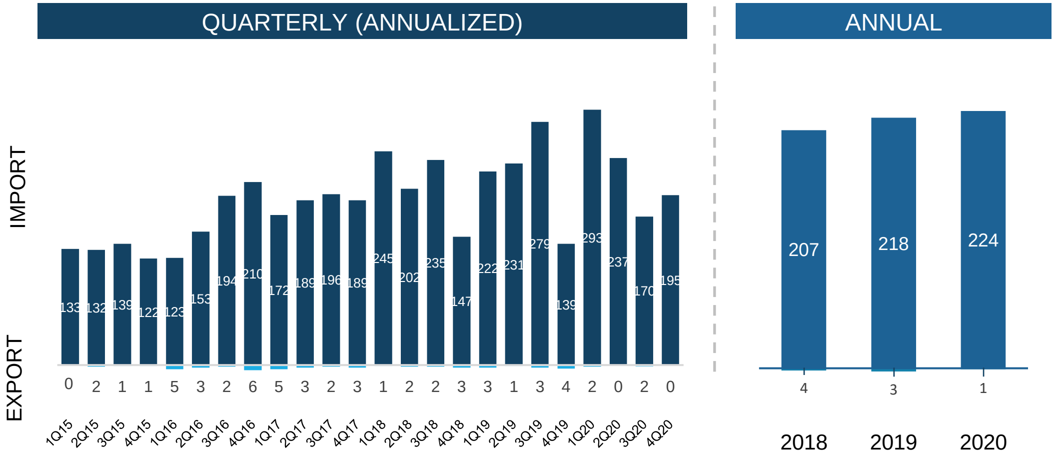
UNIT GUIDANCE (US$/MCF)			COMMENTS
	REVENUE		
	Reserves (Tcf)	*3 – 4*	
	Production volume (Mmcfd)	*600 – 700*	
NET BACK	Average differential to Henry Hub	$0.20 - $0.40	Difference selling points and Henry Hub (NYMEX basis)
NET BACK	GCP&T costs	$1.28 - $1.35	Gathering, compression, fractionation and transportation costs
	Pipeline revenue	$0.02 - $0.05	Applicable to Chaffee Corners volume only
	COSTS		
	Lease operating costs	$0.29 - $0.36	Main component of operating costs
	G&A	$0.24 - $0.29	Recurring general and administration costs
	Taxes	21%	Currently benefit from tax shield due to accelerated DD&A
	DD&A	$0.38 - $0.45	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: winter drives up demand and hampers supply

BANPU

CHINA THERMAL COAL IMPORTS/EXPORTS*

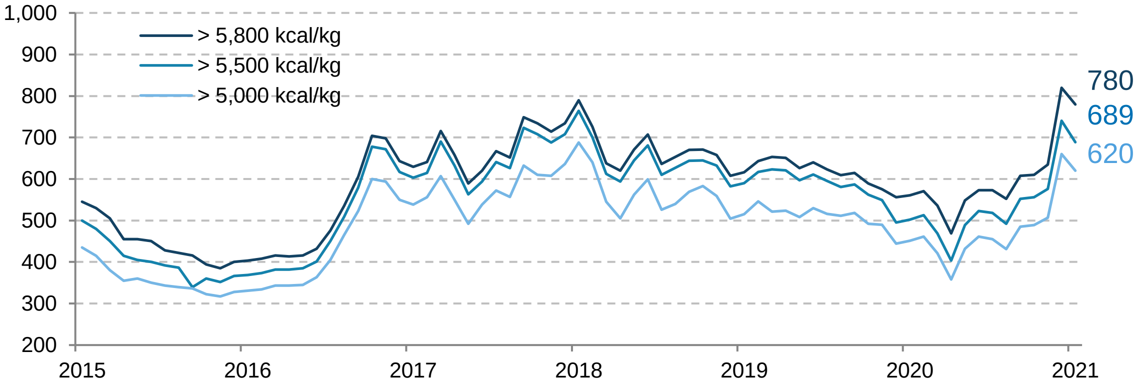
Unit: Mt



Sources: Banpu MS&L

CHINA DOMESTIC COAL PRICES

Unit: RMB/t



Note: *Includes lignite but excludes anthracite imports/exports
Source: www.sxcoal.com/cn 10 February 2021

4Q20

- Strong economic recovery and colder than normal weather are key drivers for increasing coal demand.
- Coal producers are struggling to meet winter demand as anti-corruption probes, safety inspections, weather disruptions and import restrictions drive supply tightness.
- Chinese government strengthened Australian coal import restrictions, starting in November due to elevated trade conflicts.
- Domestic coal prices rose sharply in December on strong demand and tight supply.
- The Chinese government then relaxed import quota in December except coal from Australia, aiming to stabilize coal prices, resulting in significant increase import volume in December.
- China-Australia trade dispute caused distortions in the seaborne coal market as Chinese buyers stopped buying Australian coal and purchased from non-Australian supply, pushing up non-Australian coal prices sharply, especially Indonesia.

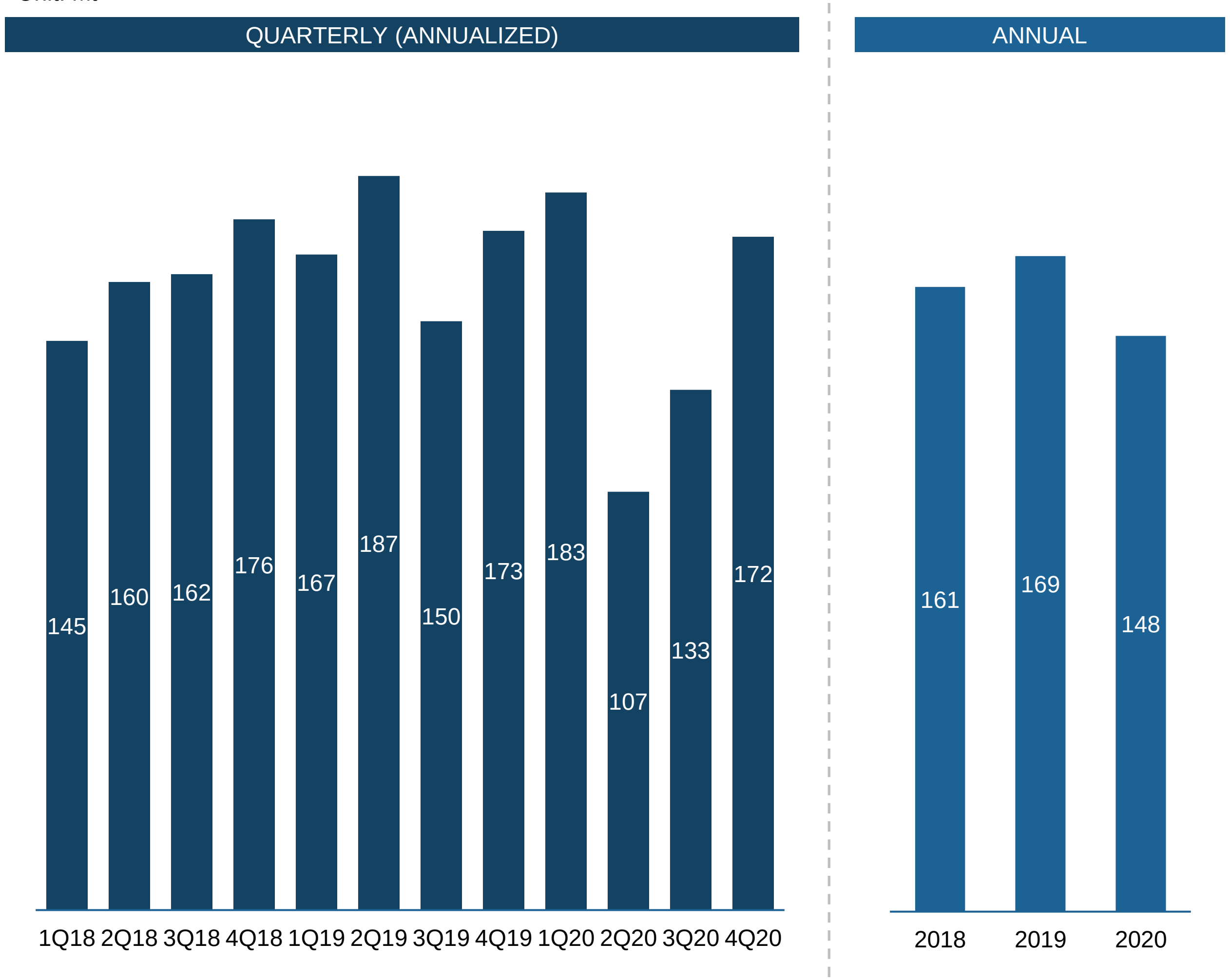
OUTLOOK

- Colder winter and tight supply continued into early 2021 which drove Chinese domestic coal prices to a record high and helped to push up Indonesian coal prices.
- Chinese import controls have rolled into 2021.
- China’s ban on Australian coal continues to distort traditional seaborne trade flows as Chinese buyers continue to purchase coal from other origins such as Indonesia and Russia to replace Australian coal.
- The influx of seaborne coal are expected to help power generation companies to increase inventories
- Chinese domestic coal prices are expected to fall after winter due to lower demand and improving supply but prices are expected to stay above RMB600/t.
- Economic recovery post Covid-19 will continue, we expect coal import in 2021 will maintain the same level of 2020.

India: continued economic recovery

INDIA THERMAL COAL IMPORTS*

Unit: Mt



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

4Q20

- Power demand continues to recover mostly driven by increased industrial demand as stimulus measures continue.
- Total power generation in Q4-2020 was up by 5% YoY but down by 3% QoQ. Coal-fired generation in Q4-2020 was up by 9% YoY and up 7% QoQ due to lower gas and hydro generation.
- Thermal coal imports continued recovered in Q4 to 43 Mt, up 29% QoQ but down by 1% YoY, bringing total year imports to 148 Mt, down by 12% on the year. A recovery in coal demand during the second half of 2020 failed to offset the steep decline in earlier months in 2020.
- A sharp rise of seaborne coal prices slowed coal purchases in late Q4.
- Sponge iron production continues to recover with supporting import from South Africa.
- A lift in construction activity and higher petcoke prices have incentivized cement producers to increase thermal coal imports.
- Imported coal demand for power sector has been weak as state own utilities focus domestic coal consumption.
- Coal India Limited (CIL) pushed more domestic thermal coal to both power and non-power sector due to high inventory.

Outlook

- The Indian economy is expected to grow in 2021 which will drive imported coal demand despite government continual push for greater domestic coal consumption.
- Sponge iron, cement and coastal power plants continue to focus on imported coal due to quality and price.
- In February 2021, the government introduced a coal import monitoring, signalling a strong push to reduce coal imports in the future.

Coal quarterly output summary

BANPU

AUSTRALIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON EQUITY BASIS					
Mines	**CV (kcal/kg)***	**4Q19**	**3Q20**	**4Q20**	**1Q21e**
Western operations		**1.0**	**1.1**	**1.7**	**1.4**
Springvale	6,700	0.3	0.3	1.0	0.7
Clarence	6,700	0.3	0.5	0.4	0.3
Airly	6,700	0.4	0.4	0.4	0.4
Northern operations		**1.4**	**1.7**	**1.3**	**1.4**
Mandalong	6,700	1.1	1.5	1.1	1.1
Myuna	6,700	0.3	0.2	0.2	0.3
Total Australia coal		**2.4**	**2.8**	**3.1**	**2.8**

INDONESIA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS									
Mines	**CV (kcal/kg)***	**4Q19**		**3Q20**		**4Q20**		**1Q21e**	
		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 – West block	5,950 – 6,250	0.5	12.8	0.7	13.6	0.5	9.7	0.1	22.5
Indominco – East block		2.1	9.6	1.3	11.1	1.8	10.4	1.6	13.5
Trubaindo	6,550 – 6,700	1.2	9.5	1.4	8.9	0.9	8.3	0.9	11.4
Bharinto		0.7	8.2	0.8	7.5	1.1	6.7	0.9	7.5
Kitadin-Embalut	5,800	0.3	8.1	0.4	10.6	0.1	10.6	0.3	20.8
Jorong	5,300	0.5	6.0	0.3	7.8	0.2	7.4	0.2	11.6
Total Indonesia coal		**5.3**	**9.3**	**4.9**	**10.0**	**4.6**	**8.9**	**4.0**	**12.7**

CHINA OPERATIONS: COAL OUTPUT (MT) – ROM OUTPUT ON 100% BASIS					
Mines	**CV (kcal/kg)***	**4Q19**	**3Q20**	**4Q20**	**1Q21e**
Gaohe		2.6	2.3	2.0	2.3
Hebi		0.4	0.4	0.3	0.2
Total China coal		**3.0**	**2.7**	**2.3**	**2.5**

Note: *CV figures are air-dried basis

Key external and corporate events

BANPU

EXTERNAL EVENTS

INDIRECT

OPEC+ agreed to ease oil output cut from 9.7 to 7.7 M bpd in August on signs of recovering demand

BoT left its key policy rates unchanged at 0.50%

Federal Reserve kept the policy rate unchanged at 0.25%

Moderna announced its Covid-19 vaccine is 94.5% effective

BoT maintained policy rates at 0.50%

DIRECT

Thai baht depreciated to 31.69 baht per US dollar, being the worst performer in Asia

Rapid increase in China domestic coal prices as thermal coal import rose 4% YoY in 1H20

Henry Hub price rose to $3.14/MMBtu

Newcastle coal price index increased to $84.5/t

3Q20 | **4Q20**

CORPORATE EVENTS

Banpu NEXT launched Thailand's first marine tour e-Ferry

2Q20 results presentation

Banpu and BPP announced dividend payment of THB 0.15/sh and THB 0.30/sh respectively

Announced completion of Barnett acquisition

3Q20 results presentation

Announced Oaktree's $100 M investment in preferred shares of BKV Corporation

FX impact analysis guidance on P&L

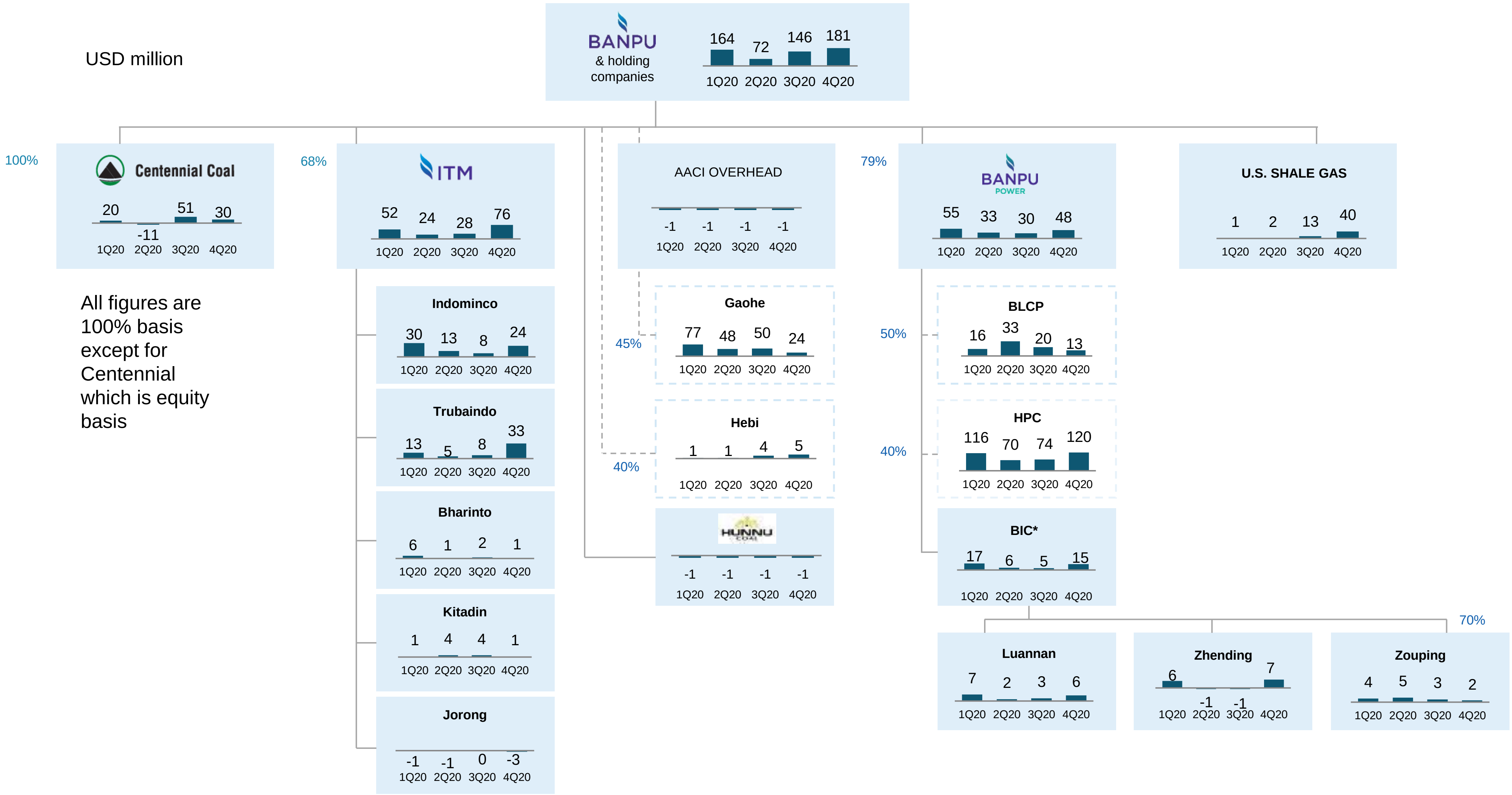
BANPU

CURRENCY EXPOSURE	NPAT IMPACT 4Q20 (US$M)	APPROXIMATE FX EXPOSURE (US$M) NET LIABILITY / NET ASSET	NPAT 5% SENSITIVITY 1Q21 (US$M) *Assuming 5% depreciation of local currencies against USD*	
Banpu: THB bond and Others	**-30.9**	**-800**	THB 38	▪ *BOT revised down growth forecast 3.2% in 2021*
ITMG: IDR asset and liabilities	**-1.7**	**5**	IDR -0.2	▪ *BI revised down growth forecast 4.3-5.3% in 2021*
CEY: USD asset	**3.0**	**-50**	AUD -3	▪ *RBA forecast revised down growth 3.5% in 2021*
Net	**-29.6**		NET 35	

Banpu group EBITDA breakdown

USD million

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



Consolidated NOT consolidated

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

Banpu group net debt breakdown

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

Banpu consolidated: operating profit

USD million	**2020**	**2019**	YoY%
Total sales revenues*	**2,283**	**2,759**	-17%
Sales revenue – Coal**	1,878	2,381	-21%
Sales revenue – Gas	120	105	+15%
Sales revenue – Power	196	183	+7%
Cost of sales	(1,822)	(2,051)	
Gross Profit*	**460**	**708**	-35%
Gross profit – Coal**	392	634	-38%
Gross profit – Gas	14	32	-57%
Gross profit – Power	50	35	+44%
GPM	***20%***	***26%***	
GPM – Coal	*21%*	*27%*	
GPM – Gas	*11%*	*31%*	
GPM – Power	*25%*	*19%*	

Note: * including other businesses ** including coal trading

Banpu consolidated: operating profit

USD million	**2020**	**2019**	YoY%
Gross Profit	**460**	**708**	-35%
GPM	***20%***	***26%***	
SG&A	(298)	(373)	
Royalty	(183)	(241)	
Income from associates	135	206	
Other income and Dividend	44	80	
Mining property	(33)	(26)	
EBIT	**127**	**355**	-64%
EBIT – Coal	(2)	216	-101%
EBIT – Gas	(19)	12	-265%
EBIT – Power	148	127	+17%
EBITDA	**563**	**701**	-20%
EBITDA – Coal	340	488	-30%
EBITDA – Gas	54	68	-21%
EBITDA – Power	169	145	+16%

Banpu consolidated: net profit

USD million	**2020**	**2019**	YoY%
EBIT	**127**	**355**	-64%
Interest expenses	(173)	(182)	
Financial expenses	(6)	(5)	
Income tax (core business)	(38)	(98)	
Minorities	(39)	(61)	
Net profit before extra items	**(130)**	**8**	n.a.
Non-recurring items*	(59)	19	
Gain (Loss) on Derivatives Transactions	23	33	
Income tax (non - core business)	(6)	(19)	
Deferred tax income (expenses)	35	38	
Net profit before FX	**(137)**	**81**	n.a.
FX translation	81	(95)	
Net Profit	**(56)**	**(14)**	n.a.
EPS (US$/share)	(0.011)	(0.003)	

Banpu consolidated: operating profit

USD million	**4Q20**	**3Q20**	**4Q19**	QoQ%	YoY%
Total sales revenues*	**662**	**471**	**675**	+41%	-2%
Sales revenue – Coal**	497	404	575	+23%	-13%
Sales revenue – Gas	82	11	24	+675%	+246%
Sales revenue – Power	60	38	55	+57%	+8%
Cost of sales	(503)	(373)	(493)		
Gross Profit*	**159**	**97**	**183**	+64%	-13%
Gross profit – Coal**	115	95	161	+21%	-29%
Gross profit – Gas	29	(6)	5	n.a.	+426%
Gross profit – Power	15	8	12	+101%	+29%
GPM	***24%***	***21%***	***27%***		
GPM – Coal	*23%*	*24%*	*28%*		
GPM – Gas	*35%*	*-60%*	*23%*		
GPM – Power	*25%*	*20%*	*21%*		

Note: * including other businesses ** including coal trading

Banpu consolidated: operating profit

USD million	4Q20	3Q20	4Q19	QoQ%	YoY%
Gross Profit	**159**	**97**	**183**	+64%	-13%
GPM	***24%***	***21%***	***27%***		
SG&A	(79)	(61)	(114)		
Royalty	(50)	(37)	(60)		
Income from associates	25	32	4		
Other income and Dividend	16	13	14		
Mining property	(9)	(7)	(9)		
EBIT	**62**	**36**	**17**	+71%	+266%
EBIT – Coal	8	14	13	-44%	-44%
EBIT – Gas	12	(3)	(1)	n.a.	n.a.
EBIT – Power	43	25	4	+70%	+871%
EBITDA	**181**	**146**	**131**	+24%	+38%
EBITDA – Coal	94	103	108	-9%	-13%
EBITDA – Gas	39	13	14	+209%	+189%
EBITDA – Power	48	30	9	+59%	+408%

Banpu consolidated: net profit

USD million	4Q20	3Q20	4Q19	QoQ%	YoY%
EBIT	**62**	**36**	**17**	+71%	+266%
Interest expenses	(42)	(42)	(46)		
Financial expenses	(2)	(1)	(1)		
Income tax (core business)	(5)	(5)	(22)		
Minorities	(12)	(9)	(7)		
Net profit before extra items	**1**	**(21)**	**(59)**	n.a.	n.a.
Non-recurring items*	(38)	(3)	23		
Gain (Loss) on Derivatives Transactions	17	(7)	5		
Income tax (non - core business)	(3)	(0)	(6)		
Deferred tax income (expenses)	37	(6)	10		
Net profit before FX	**14**	**(36)**	**(27)**	n.a.	n.a.
FX translation	(30)	20	(19)		
Net Profit	**(15)**	**(17)**	**(46)**	n.a.	n.a.
EPS (US$/share)	(0.003)	(0.003)	(0.009)		

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

Centennial: income statement

BANPU

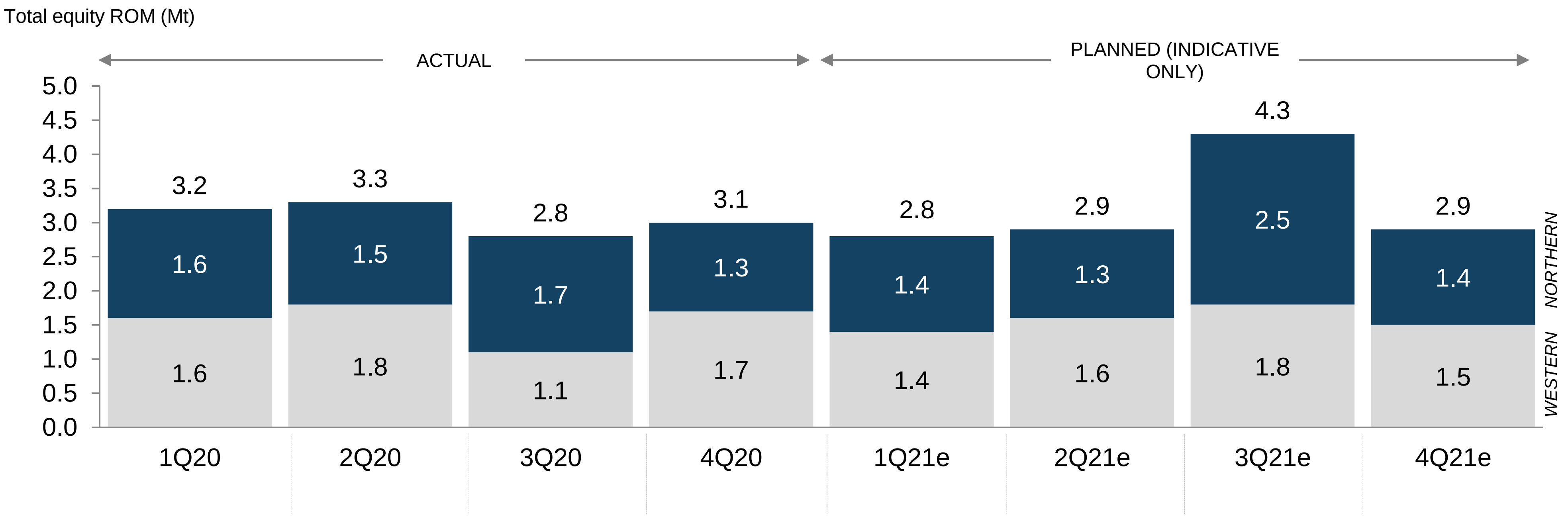
USD million	**2020**	**2019**	YoY%
Sales volume (Mt)	**12.5**	**10.6**	17%
Sales revenue	697.7	702.6	-1%
Cost of Sales	(658.1)	(599.4)	
Gross Profit	**39.7**	**103.3**	-62%
GPM	*6%*	*15%*	
SG&A	(89.6)	(104.9)	
Royalty	(46.8)	(42.6)	
Other income	22.3	103.7	
Other expenses	-	-	
EBIT	**(74.4)**	**59.4**	n.a.
Interest expenses	(23.0)	(21.4)	
Financial expenses	(1.5)	(2.0)	
Gain (loss) on exchage rate	13.6	(0.8)	
Gain (loss) on derivative	11.7	6.0	
Corporate income tax	-	1.0	
Deferred tax income	22.5	(15.9)	
Net Profit	**(51.2)**	**26.2**	n.a.

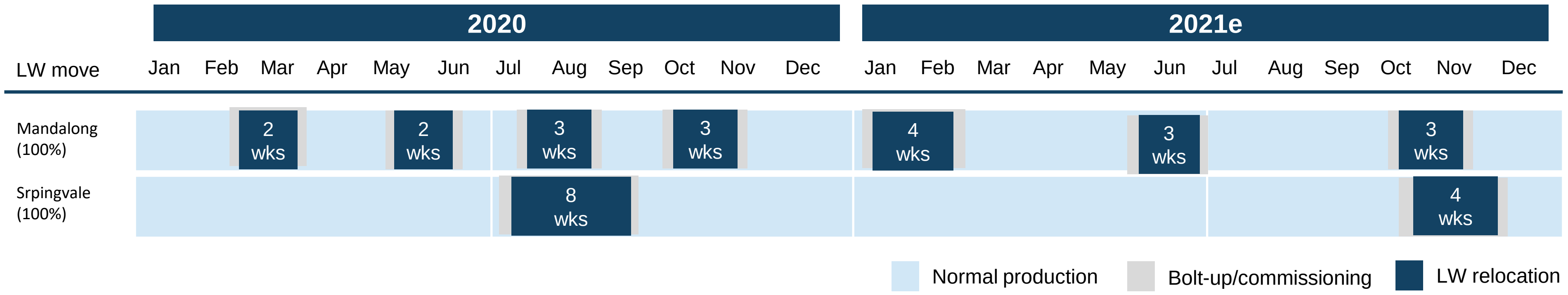
Centennial: income statement

BANPU

USD million	4Q20	3Q20	4Q19	QoQ%	YoY%
Sales volume (Mt)	**3.1**	**3.2**	**2.9**	-5%	+5%
Sales revenue	174.9	181.9	183.7	-4%	-5%
Cost of Sales	(165.2)	(161.3)	(159.4)		
Gross Profit	**9.8**	**20.6**	**24.3**	-52%	-60%
GPM	6%	11%	13%		
SG&A	(20.5)	(24.4)	(31.9)		
Royalty	(11.8)	(12.4)	(10.8)		
Other income	16.8	2.4	57.8		
Other expenses	-	-	-		
EBIT	**(5.8)**	**(13.8)**	**39.3**	n.a.	n.a.
Interest expenses	(5.8)	(6.2)	(5.2)		
Financial expenses	-	(0.6)	(0.4)		
Gain (loss) on exchange rate	3.0	11.0	(1.4)		
Gain (loss) on derivative	2.3	7.4	1.3		
Corporate income tax	-	-	-		
Deferred tax income	2.4	0.7	(12.7)		
Net Profit	**(3.8)**	**(1.6)**	**20.9**	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%.

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BANPU