



Banpu

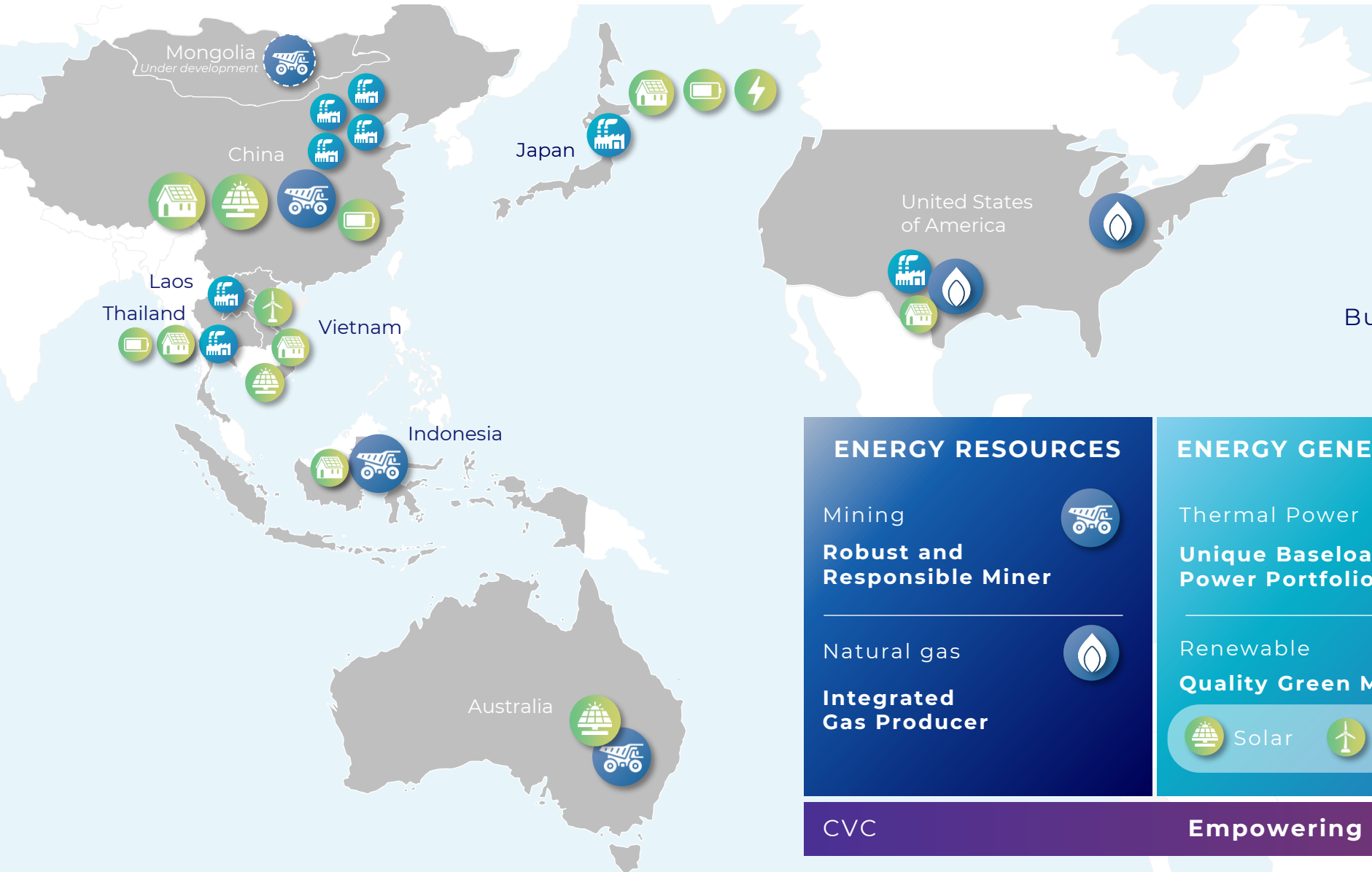
SET Awards 2024

September 2024

An aerial photograph of a large industrial power plant facility. The plant is situated on a peninsula or near a large body of water. It features numerous tall smokestacks, complex piping, and several large cylindrical storage tanks. In the foreground, there is a large, calm body of water reflecting the sky. The background shows a flat landscape with green fields and some distant buildings under a clear blue sky.

Strategy & Challenges

Banpu Group



INTEGRATED ENERGY SOLUTIONS

Building a balanced portfolio for a sustainable energy transition.

ENERGY RESOURCES

Mining



Robust and Responsible Miner

Natural gas



Integrated Gas Producer

ENERGY GENERATION

Thermal Power



Unique Baseload Power Portfolio

Renewable

Quality Green Megawatts



Solar



Wind

ENERGY TECHNOLOGY

New S-Curve in Energy & Beyond



E-mobility, EMS, Energy Trading, etc.

Vertically-integrated Battery Player



Battery Production, BESS Deployment, Battery Recycling

CVC

Empowering Innovation, Fueling the Future

Banpu Strategy 2024-25

MINING



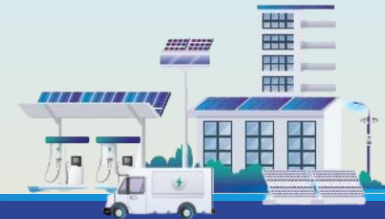
GAS



POWER



ENERGY TECH



2024-25 STRATEGY

Robust and Responsible Miner

Continuing to optimize production, decarbonize, and cut costs to **maximize value and cash flow from existing reserves, with a strategic focus on minerals and nature-based solutions.**

Integrated Green Gas Producer

Optimizing operations, reducing emissions through CCUS and **committed to achieving Net Zero for Scope 1 & 2 by the early 2030s.**

Thermal: Unique Baseload Power Portfolio

Balanced cashflow from **PPA-based assets** and capturing high upside potential of assets in **merchant markets.**

Renewable: Quality Green Megawatts

Emphasis on **strategic synergies of renewable energy and electricity trading** in key growth regions.

New S-curve in energy & beyond

Portfolio optimization focusing on **financial returns.**

Vertically-integrated battery player

Strengthen position and **build opportunities for revenue stacking** with energy trading.

KEY STRATEGIC FOCUS

1 **Diversified and integrated portfolio**

2 **Robust return from existing and new assets**

3 **Digitalization and Decarbonization**



Banpu 2030



Strengthening Banpu's cash position and balance sheet resilience

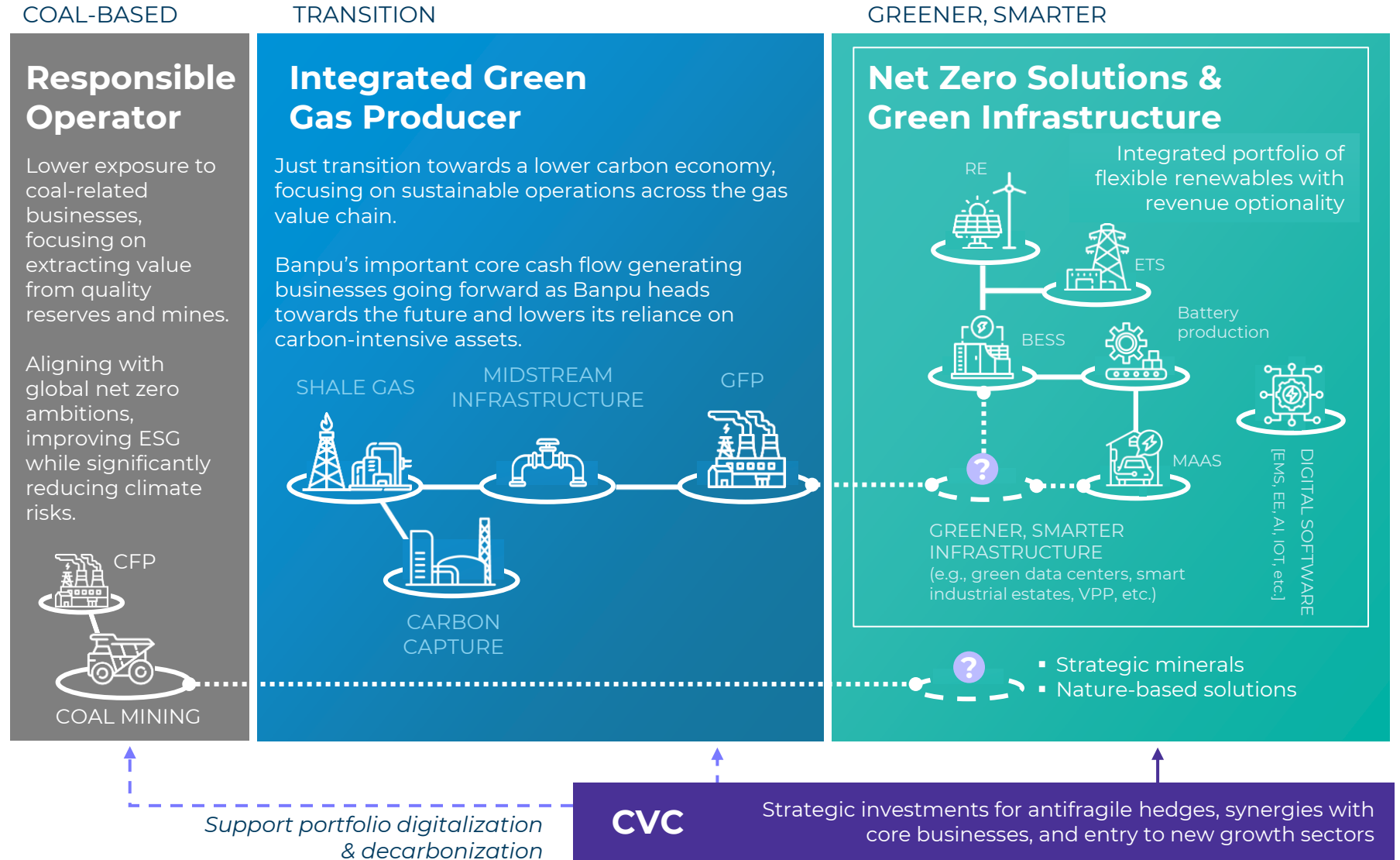
Focused strategy involving an integrated value chain in strategic countries

Driving initiatives for significant emission reduction and implementing AIoT* across all operations



Note: *Artificial intelligence of things (AIoT)

BANPU ILLUSTRATIVE ENTERPRISE VALUE BREAKDOWN 2030



Key Challenges



Banpu's businesses aims to provide affordable and reliable energy supply, ensuring a sustainable transition



CLIMATE CHANGE

As the world shifts toward a low-carbon economy, climate change poses both regulatory and operational risks to the company. Failure to adapt could result in financial penalties, reputational damage, and lost market opportunities. Proactively addressing climate change can also unlock benefits such as enhanced resilience and positioning as a leader in the growing green economy.



DIGITAL TRANSFORMATION & CYBERSECURITY

Digital transformation allows for improved efficiency, but it also introduces heightened risks of cyberattacks. Integrating advanced cybersecurity strategies into digital transformation efforts safeguards the company's data, infrastructure, and reputation while enabling future growth.



CAPABILITY TRANSFORMATION

The ability to attract, develop, and retain skilled talent is critical to the company's long-term success. The energy transition and digitalization of industries require a workforce with specialized skills in areas like renewable energy, data analytics, and automation. Engaging employees in sustainability also enhances company culture and appeals to the future workforce.

01

Climate Change

Establishment of Banpu ESG Committee (since 2021)



Banpu established the Environment, Social and Governance (ESG) Committee to reinforce its commitment to pursuing sustainable business growth along with creating value and trust for stakeholders and the society

Mr. Piriya Khempon

Chairman of the Environment, Social and Governance (ESG) Committee of Banpu PLC.



Environmental

Banpu places importance on the issue of greenhouse gas emissions, energy and water management, and air pollution management.



Social

Focus on human resources management and capability development, occupational health and safety management, community relations and community development

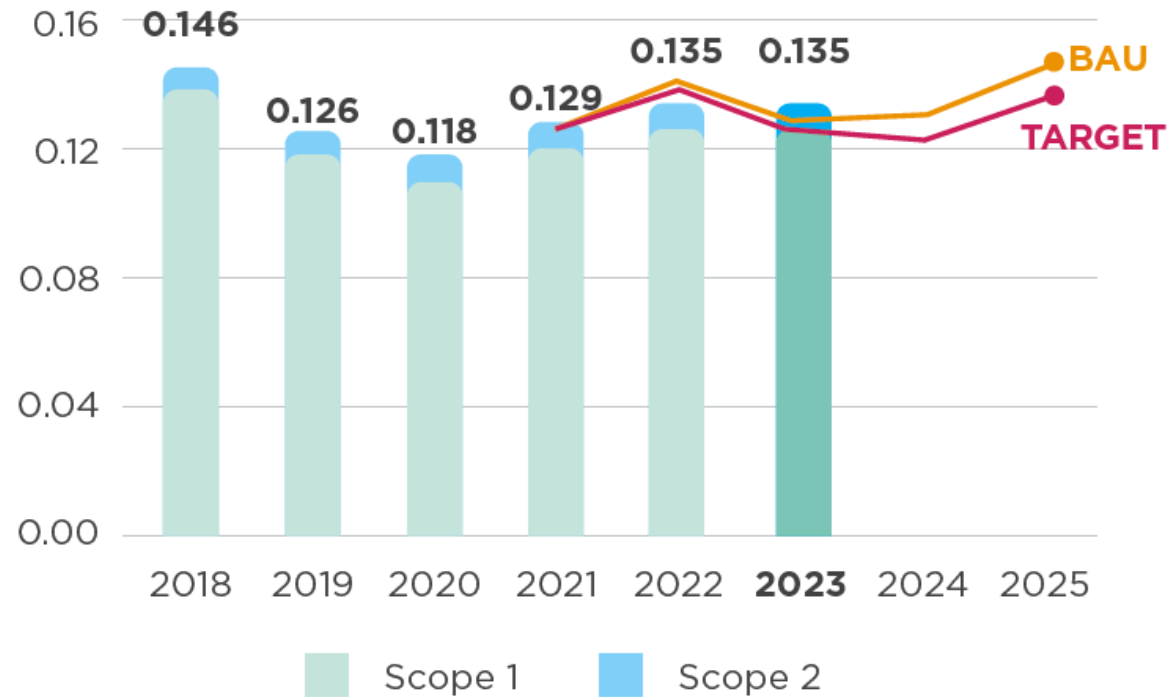


Governance

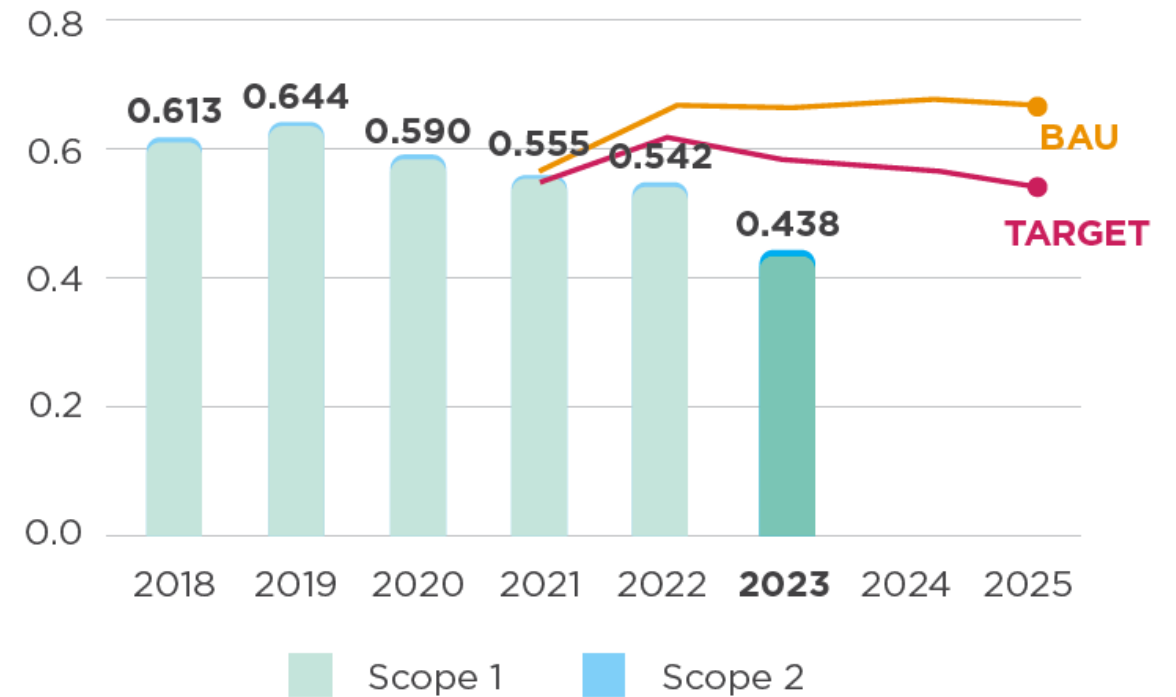
Address the issue of sustainable corporate governance, business ethics, business partner and contractor management, business continuity management, and data privacy and cybersecurity.

Targets & Performance

GHG Emissions Intensity (tonnes CO₂e/tonne coal) Mining Business



GHG Emissions Intensity (tonnes CO₂e/MWh) Power Business



Initiatives – Power generation from CH₄ emission of gassy mine



Project description:

Mandalong, one of underground mine in Australia, has been classified to be gassy mine which produce high amount of CH₄ from mining activities. Mandalong has joint with EDL power station installing an equipment to generate electricity from CH₄ instead of releasing to the atmosphere or flaring. Once electricity has generated, Mandalong can buy cheaper electricity from EDL.

Benefit:

- Reduce GHGs emission
(Oct 23 – Jul 24 at 81,672 tons CO₂e)
- Reduce electricity cost

CCS progress and development

Barnett Zero

183,000 t



OPERATING

BARNETT ZERO
Up to 183 ktons CO₂e
 Est. avg. annual injection rate



- CO₂ sequestration from Barnett operations
- **One of the first commercial carbon sequestration wells** in the US
- **COD: 4Q23**

Cotton Cove

45,000 t



DEVELOPING

COTTON COVE
Up to 45 ktons CO₂e
 Est. avg. annual injection rate



- CO₂ sequestration from Barnett operations and utilization of BKV's midstream infrastructure
- **COD target: 1Q26**

GROWTH 2030s

30,000,000 tons CO₂e

Reviewing CCS potential opportunities:

30 Mt CO₂e per year

Additional projects
 +26.5 million tons CO₂e

Value creation from CCS



Decarbonization



Additional revenue generation



Future synergies with power business



The background features a complex digital interface with various data visualizations. In the center, there's a prominent candlestick chart with green and red bars. To the right, a 3D bar chart with vertical bars of varying heights is visible. The interface is overlaid on a dark blue grid with glowing lines and points, suggesting a network or data flow. The overall aesthetic is high-tech and data-driven.

02

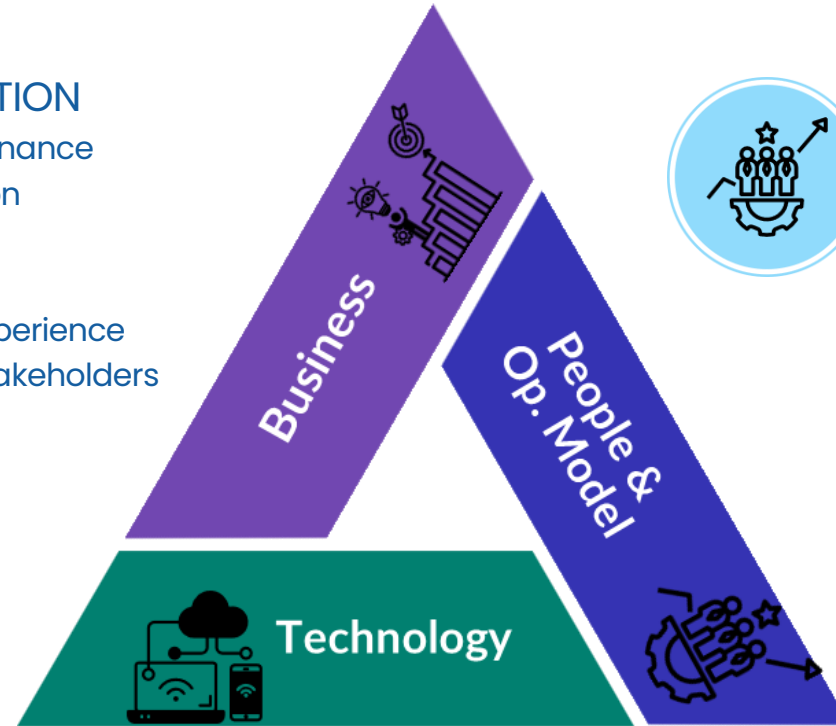
Digital Transformation & Cybersecurity

BANPU DIGITAL FRAMEWORK



DATA-DRIVEN ORGANIZATION

- Data Management & Governance
- Greener & Smarter Operation
- Optimize Asset Utilization
- Minimize Business Risks
- BANPU Customer Service Experience
- Maximize Value of Banpu stakeholders



DIGITAL CITIZEN & COMMUNITY

- Talent Management Strategy
- Digital Leadership
- Digital Steering Committee
- Digital Learning & Culture
- Digital Business Partner Ecosystems
- Tech Innovation



DYNAMIC TECH PLATFORM

- AI/IoT and Advance Analytics
- Cloud and DevOps toolchain
- Ecosystems Integration
- Global EA and Cybersecurity
- Customer platform

Digital Transformation Strategy

AI & IoT Technology Adoption

- AI & IoT Adoption
- AI & IoT Center of Excellence
- Data Center of Excellence

Smart Tools for Business

- Self Service Coding
- Self service Analytics

Automation and Integration Architecture

- Automation Center of Excellence
- Composable Architecture
- Modelized Infrastructure

Digital Enabler

- D&I is Service Provider
- D&I Capability
- Tech Function x D&I

Digital Capability of BU

- D&I Business Partner.
- BU Capability
- BUXD&I

Digital Commerce

- D&I is Business Unit
- D&I Capability
- BANPU's Customer x D&I

SMARTER Business Operation



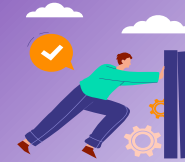
Digital-enabled GREENER Business



Innovative through PARTNERSHIP



Robust and Resilience Business



Sustainable Technology Adoption

- AI & IoT Adoption for ESG
- Security & Privacy Excellence

Decarbonized Computing Power

- Migrate to Greener Power Source
- Share Use of Enterprise-wide Computing

Digital Business Incubation

- Digital Business Exploration
- Flag-ship Product Incubation

Secure & Complied DNA

- Conscious Mindset for Digital Security & Compliance
- Modernize Digital Development Process for Governance, Risk & Compliance

Digitalized ESG

- Unlock value of ESG data
- Assurance of Risk, Compliance and Quality Accuracy for AI

Tech Talent Development

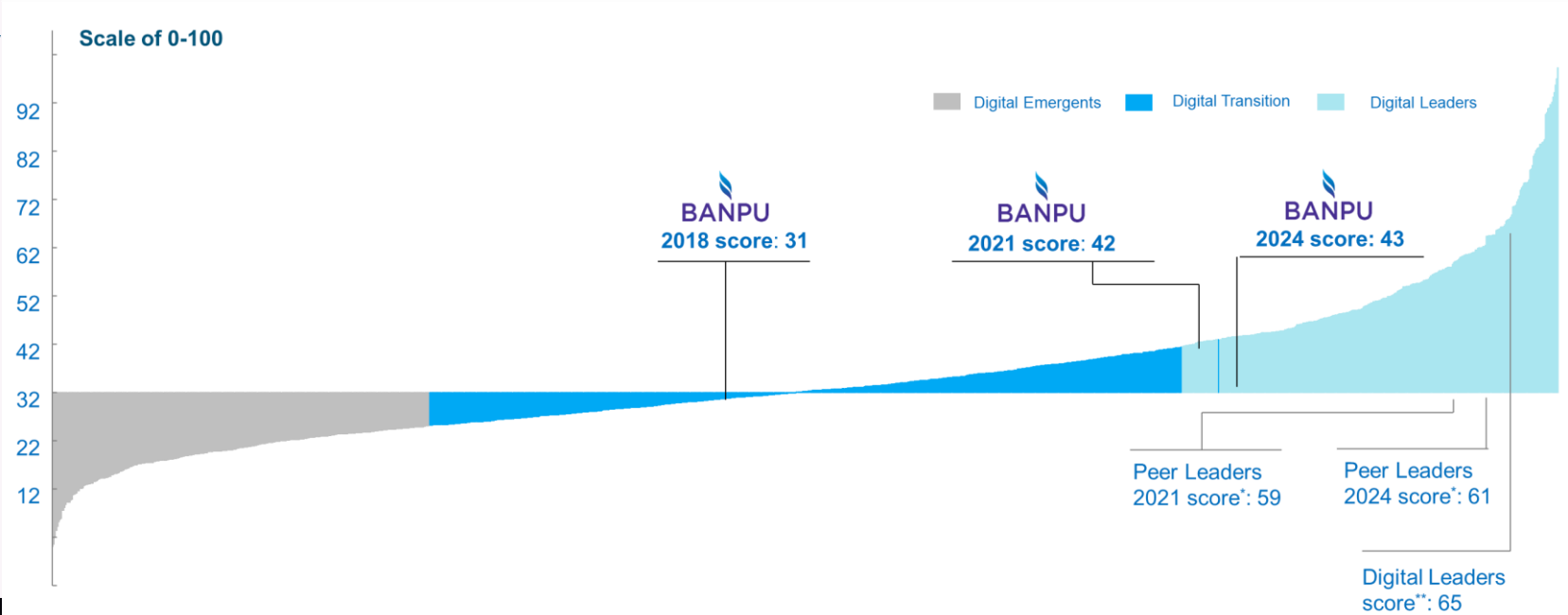
- Sustain Homegrown Tech Talent
- Financial Mindset for Tech Adopters

Sustainable Maturity in Digital Transformation

Digital Maturity Survey

Self-diagnostic benchmarking of future-ready management best practices - digital strategy alignment with business

- Innovative & agile culture
- The right organization structures and internal processes
- Modern technology stack
- Data readiness
- Level of digital adoption

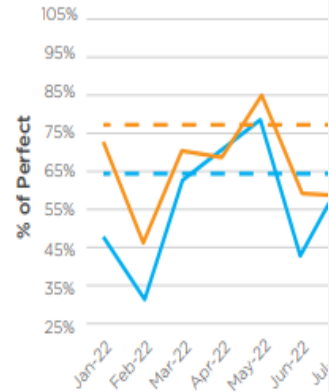


* Average of 80+ energy, gas & mining companies across geographies

** More than 550 companies across industries and geographies

Initiatives – AI Adoption

Forecast Performance



AI-Assisted Energy Trading

Location: Japan

To maximize revenue from short term trading opportunity in the energy market



AI-Assistant Talent Management

Location: Thailand

To retain high potential staff and enhance performance management with AI assistance



Coal Supply Chain Optimization

Location: Australia

To maximize revenue by recommending an optimal coal delivery plan and enhancing production plan reliability



Battery Dispatch Optimization

Location: Australia

To maximize profitability by enhancing future value of batteries

Cybersecurity Strategy

Vision



To provide security across the energy business value chain with industry standards

Strategic Goals

>90% IT and IoT assets securely managed by Security Operation Center

100% Regulatory Compliance

Achieve **HIGH** Cybersecurity maturity score in Energy sector benchmark

Key Enablers

Agile Way of working

Risk & Compliance management

Skills transformation

BANPU Digital & Innovation

Strategic Focus



People-centric cybersecurity



Unified governance IT and IoT



Core process with security and privacy mindset

Path to Success

- Balancing between Agility & Risk
- Manage IT and IoT in the overall risk management
- Implement Security by Design & Privacy by Default approach
- Customize cybersecurity awareness for target group
- Redefine cybersecurity skills and careers path
- Adopt industry standard for security management



**Cyber-Physical
(CPS) Security
across IoT/OT**



**Self-Hacking by
White Hackers**



**Standardized
Security Process for
Global IT Functions**



**Third-Party Cyber
Risk Management**



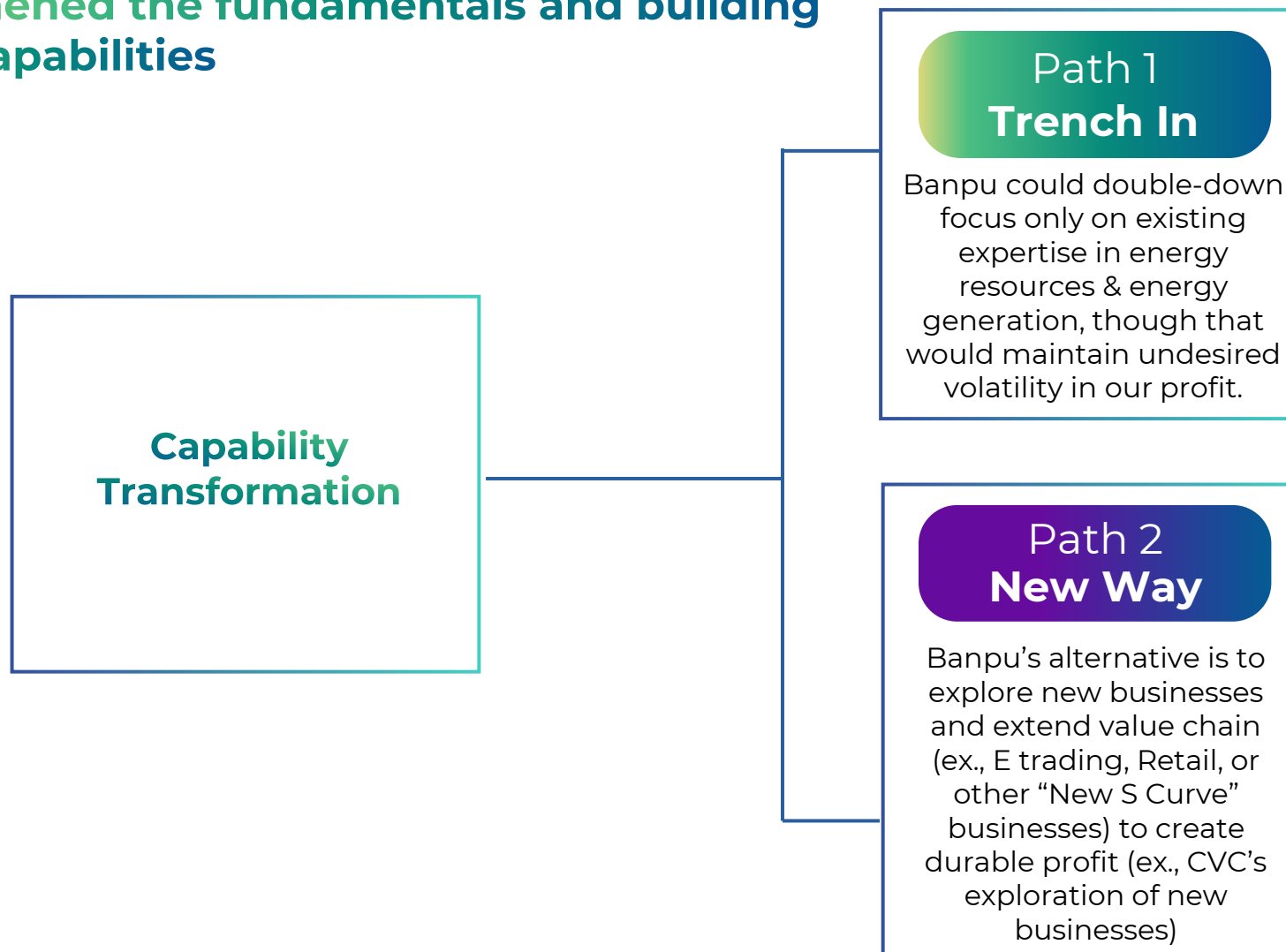
**Cyber Security
Behavior Change
Program**

03

Capability Transformation & Talent Management

Capability Transformation Strategy

The 2-path transformation approach needs both strengthened the fundamentals and building future capabilities



TRANSFORMATION



Our Transformation is a Combined Transformation.

While trying to build new S-Curve, Banpu will need to increase efficiency of legacy assets (Mining, Power).

These are the cash machines for Banpu's growth engine, allowing us the resources to transform and penetrate new business lines.



The end game will be a diverse energy producer, provider and innovator **(together with appropriate governance mechanisms)**

Capability Transformation Strategy

Reshape our workforce to drive our strategies

- 01 Strengthen our Fundamentals**, to ensure that our corporation functions and established businesses (Mining and Power Generation) are operated efficiently
- 02 Run the Existing-New businesses prudently**, which will help our extended businesses such as Energy Trading and Energy Technology as well as CVC/PE perform as expected,
- 03 Start building Game-Changer capabilities**, which will thrust Banpu into the potential new S-Curve, and build our competitive edges,
- 04 Identify our Talent Gaps**, compared with the current capabilities embedded in our current workforce,
- 05 Strategize our way to bridge Talent Gaps**, given specific timeline, to ensure that we have desired workforce in place in timely manner.

BANPU PEOPLE

The driving force for boundless possibilities

Total employees \approx **6,000**
Including subsidiaries



*As of 30 Jun 2024

Capability Transformation Framework

Framework for the development of our desired capabilities

FUTURE CAPABILITIES FOR OUR NEW S-CURVE & COMPETITIVE EDGES

- New S-Curve Capabilities
- Capabilities to Build Diversified Businesses

BUILD CAPABILITIES FOR OUR EXISTING-NEW BUSINESSES

- Energy Trading
- CCS
- Corporate Governance
- Sustainability Management
- Digital Businesses
- Cultural Intelligence

STRENGTHEN OUR FUNDAMENTALS

- Corporate Finance
- Investment
- Mining Business
- Strategy
- Project Management

Banpu Global Talent Program

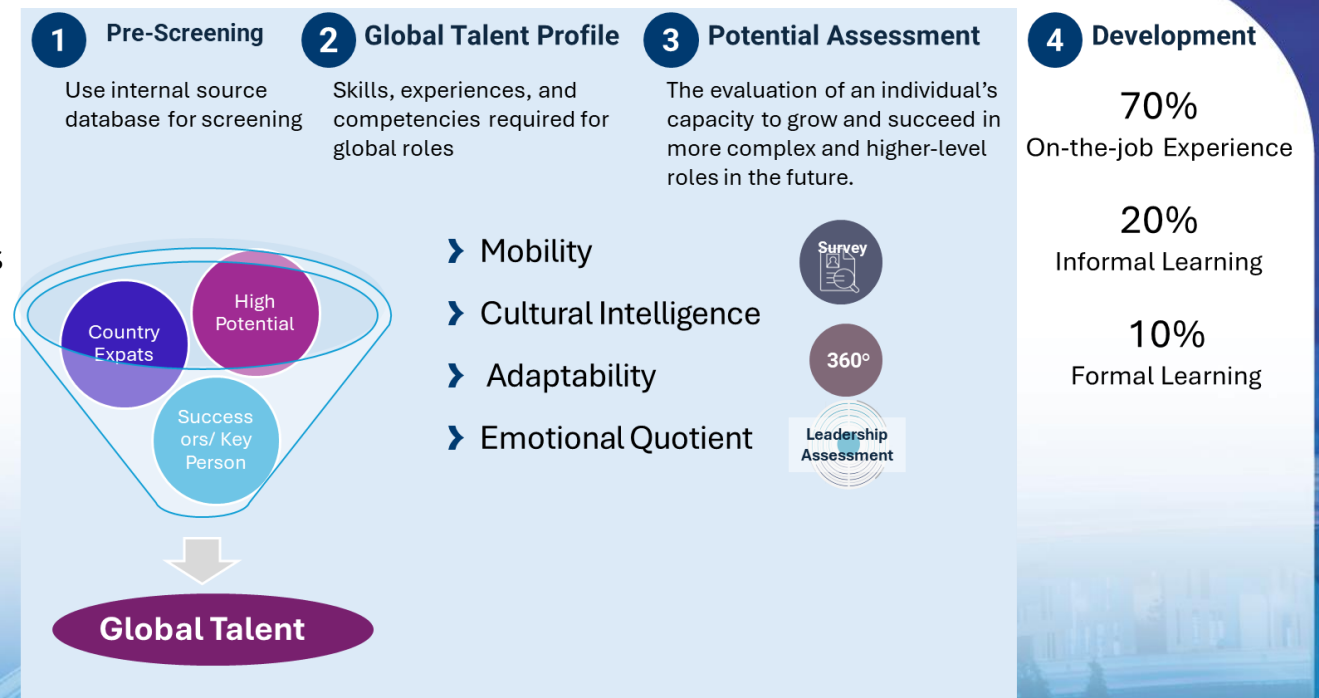
Strengthen our talent pipeline

Objectives:

- Pre-Screen with source of HiPo and Successor Databased
- Identify Global Talent Profile
- Design Criteria to Select Global Talent
- Potential Global Talent assessment

Business Requirements:

- Build certain future skills in local country.
- Build more mining skills, which are located in several countries.
- Succession plan for job holders in critical positions in Thailand, China, Vietnam, and Indonesia.
- Build strong country heads and country management in the Global Talent pool to sustain our business growth.
- We have proven success cases among Banpu's global talent; therefore, we need to continue building and developing our Global Talent to add even more value to the Banpu Group.





AN INTERNATIONAL VERSATILE
ENERGY PROVIDER

Appendix



BANPU COMMITMENT 2030



- Zero hazardous waste to landfill
- <0.130 kg/MWh of non-hazardous waste disposal intensity for thermal power business
- <0.140 kg/tonne of non-hazardous waste disposal intensity for mining business



- >50% of EBITDA from greener energy and energy technology business by 2025
- >1.1 GW of renewable energy production capacity by 2025



- Zero occupational fatalities
- Zero process safety event
- 100% of business units assessed for human rights impact



- 100% recycling rate on non-hazardous waste
- 5% energy intensity reduction from 2019 by 2025 for mining business



- 7% GHG emissions intensity reduction from BAU by 2025 for mining business
- 20% GHG emissions intensity reduction from BAU by 2025 for energy generation business



- Net positive impact on biodiversity upon closure of the mine
- 100% of business units assessed for potential biodiversity impact



- Embed SDGs into all community development projects
- 100% of tier-1 supplier assessed for ESG risks

6 CLEAN WATER AND SANITATION



Move towards a circular economy by minimizing direct disposal waste to zero

7 AFFORDABLE AND CLEAN ENERGY



Support Just Transition by ensuring the benefits of sustainable energy are shared

8 DECENT WORK AND ECONOMIC GROWTH



Respect and uphold human rights as defined by UN Guiding Principles

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Ensure sustainable consumption with responsible use of natural resources

13 CLIMATE ACTION



Proactive on climate-related initiatives to reduce GHG emissions at all business units

15 LIFE ON LAND









Partner with stakeholders to ensure net gains for biodiversity at the end of project lifetime

17 PARTNERSHIPS FOR THE GOALS













Collaborate with stakeholders for achieving all other Sustainable Development Goals

ENVIRONMENT








PERFORMANCE HIGHLIGHT		2023	Target 2023	Target 2025
 GHG emissions intensity reduction • Mining business • Power business		4%	-3%	-7%
		-34%	-12%	-20%
 Energy consumption intensity • Mining business • Thermal power business • Renewable power business		0.588	≤0.438	≤0.428
		2.304	≤1.550	≤1.550
		0.121	-	-
 Water consumption intensity • Mining business • Thermal power business		1.882	≤0.144	-
		0.958	≤0.868	≤0.868
 Hazardous waste to landfill		1,176	0	0
 Business units assessed for potential biodiversity impact		100%	100%	100%
Business units assessed for biodiversity value		100%	100%	100%
 Air emissions intensity (SO₂) • Mining business • Thermal power business		21.09	≤30	≤30
		11.88	≤76.6	≤76.6
 Number of reports related to mine subsidence		0	-	-
Progress of subsidence management activities against plan		100%	≥90%	≥90%

GOVERNANCE

PERFORMANCE HIGHLIGHT			2023	Target 2023	Target 2025
	Coverage of material ESG aspects embedded in CEO's KPI and deployed to senior management	✗	86%	100%	100%
	Number of cybersecurity breaches	✓	0	0	0
	IT and IoT assets securely managed by security operation center	✗	70%	≥90%	≥90%
	Coverage of ESG risk management	✗	98%	100%	100%
	Proportion of critical tier-1 suppliers assessed for ESG risks		84%	-	100%
	Complaints regarding customer privacy	✓	0	0	0
	Significant non-compliance	✓	0	0	0
	Number of significant corporate governance complaints	✓	0	0	0
	Availability factor of power plants • Combined Heat and Power (CHP) • Combined Cycle Gas Turbine (CCGT)	✓	95.98% 82.68%	≥90% -	≥90% -
	Coverage of BCP exercise for critical business functions	✓	49%	≥30%	≥64%

SOCIAL



PERFORMANCE HIGHLIGHT			2023	Target 2023	Target 2025
	Employee engagement level	✓	78%	≥75%	≥80%
	Banpu Heart score	✓	80%	≥75%	≥80%
	Total turnover rate		40.9%	-	-
	Proportion of high critical positions with successor identified	✗	84%	100%	100%
	Employees with individual development plan	✗	70%	≥96%	100%
	Occupational fatalities				
	<ul style="list-style-type: none"> • Employees • Contractors 	✓ ✗	0 1	0 0	0 0
	Lost time injury frequency rate				
	<ul style="list-style-type: none"> • Employees • Contractors 	✓ ✗	1.56 0.22	≤2.35 ≤0.16	≤1.99 ≤0.14
	Significant human rights incidents	✓	0	0	0
	Significant resettlement complaints	✓	0	0	0
	Indigenous peoples and ethnic minorities' rights violations	✓	0	0	0
	Number of significant community complaint issues	✓	0	0	0
	Coverage of social impact assessment	✗	42%	≥50%	≥90%
	Proportion of mines with mine closure plan	✓	100%	100%	100%
	Progress of mine closure activities against plan	✓	100%	≥90%	≥90%

PATHWAY TO LOW-CARBON ECONOMY

**2006
SUSTAINABILITY
POLICY**

**2008
SUSTAINABILITY
COMMITTEE**

Established management-level
committee focused on sustainability

**2014
SOLAR POWER**

First renewable power
investment in Japan

**2016
79 MW SOLAR**

Power plants in China

**AUGUST 2020
38 MW WIND FARM**

in Vietnam

**2019
BANPU NEXT**

Established flagship company
for energy technology business

**MAY 2021
ESG COMMITTEE**

Established board-level
committee focused on ESG

**JUNE 2021
167 MW SOLAR**

Power plants in Australia

**JANUARY 2022
35 MW SOLAR**

Power plant in Vietnam

**JUNE 2022
CCUS PROJECT**

Started carbon capture,
utilization and storage (CCUS)
project in the U.S.

**JULY 2022
1 GWh
BATTERY PLANT**

JV in Thailand

**MAY 2023
CLIMATE CHANGE
REPORT**

Published first TCFD report