



# BPP Sustainability 2023

12<sup>th</sup> September 2023

## AGENDA

**1**

### **BPP Introduction**

Continuing pursue Greener & Smarter strategy

**2**

### **Managing economic aspects that affect competitiveness and long-term business growth**

Enhance competitiveness in dynamic power merchant market  
Pursue Greener & Smarter strategy for **“Quality Megawatt”** growth

**3**

### **Climate Changes Risk Management**

Climate-related governance, strategy, metric& target and disclosure

**4**

### **Light & Learn project**

Light up learning opportunities for kids in remote area

**5**

### **Q&A**

01

# Introduction

# BPP Members



**Kirana Limpaphayom**  
Chief Executive Officer



**Teerapat Wongraveekul**  
Chief Financial Officer



**Dechapong Yuwaprecha**  
SVP – Strategy and Business  
Development



**Issara Niropas**  
SVP – Power Operations



**Panuwat Pitakteeratham**  
VP – Asset and Engineering  
Management



**Thassanee Passarapark**  
Manager - Company Secretary



**Nittaya Chatsirisakul**  
Manager – Corporate Services



**Sanruetai Anuvongnukroh**  
Manager – Investor Relations



**Anuttara Tonwong**  
Manager – HR Business  
Partner



**Sanicha Pinyocheep**  
Manager – SD and Risk  
Management

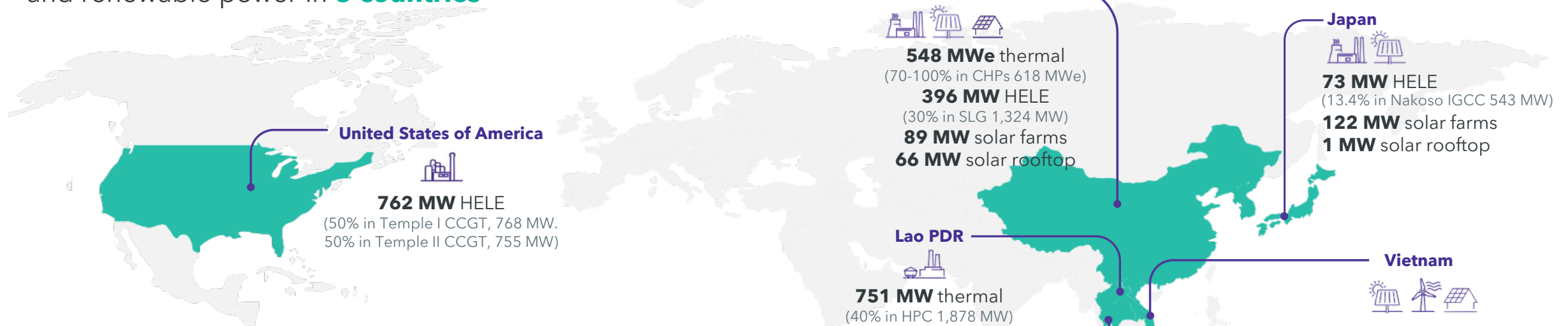
# Banpu Power assets: continuous focus on Greener, Smarter growth

Leading power-generating company operating both thermal and renewable power in **8 countries**

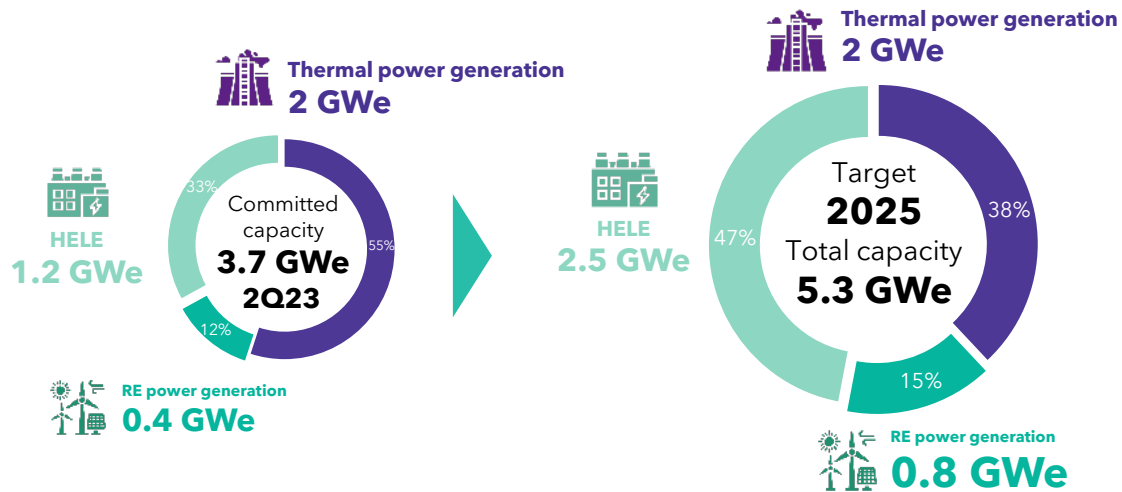
TOTAL **3,693 MW**

THERMAL & HELE **3,247 MW**

RENEWABLES **446 MW**



## Banpu Power's committed equity capacity and target



# BPP strategy: delivering sustainable energy

## “Powering Energy Sustainability with Quality Megawatts”

by incorporating a **“Triple E”** approach



### ECOSYSTEM

Leveraging BPP’s ecosystem by continuously developing and expanding the thermal power and renewable power businesses.

#### Strong and growing ecosystem within Banpu Power and across Banpu group

Knowledge, technology, partner and expertise sharing across 8 countries with established synergies with the Banpu group



### EXCELLENCE

Achieving operational excellence through efficient operations, cost management, and an EAF to ensure consistent cash flows and seize profit opportunities in growth markets.

#### Enhanced Temple I gas-fired power plant's stability and capacity

Implementing real-time machinery monitoring application and a 'Wet Compression System' to reduce forced outages and increase production capacity in summer



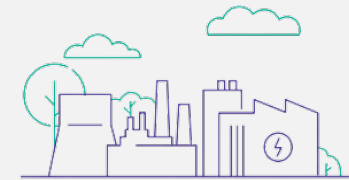
### ESG

Adhering to sustainability guidelines, including ESG principles, and be a responsible corporate citizen in all operating countries.

#### Establishment of ESG Committee in March 2023

Overseeing the company's ESG policy targets and performance, aiming to create long-term stakeholder value, promote sustainable practices, and contribute to societal betterment

## Portfolio growth by 2025



### HELE & THERMAL

# 4,500 MW

*From 2,869 MW in 1Q23*

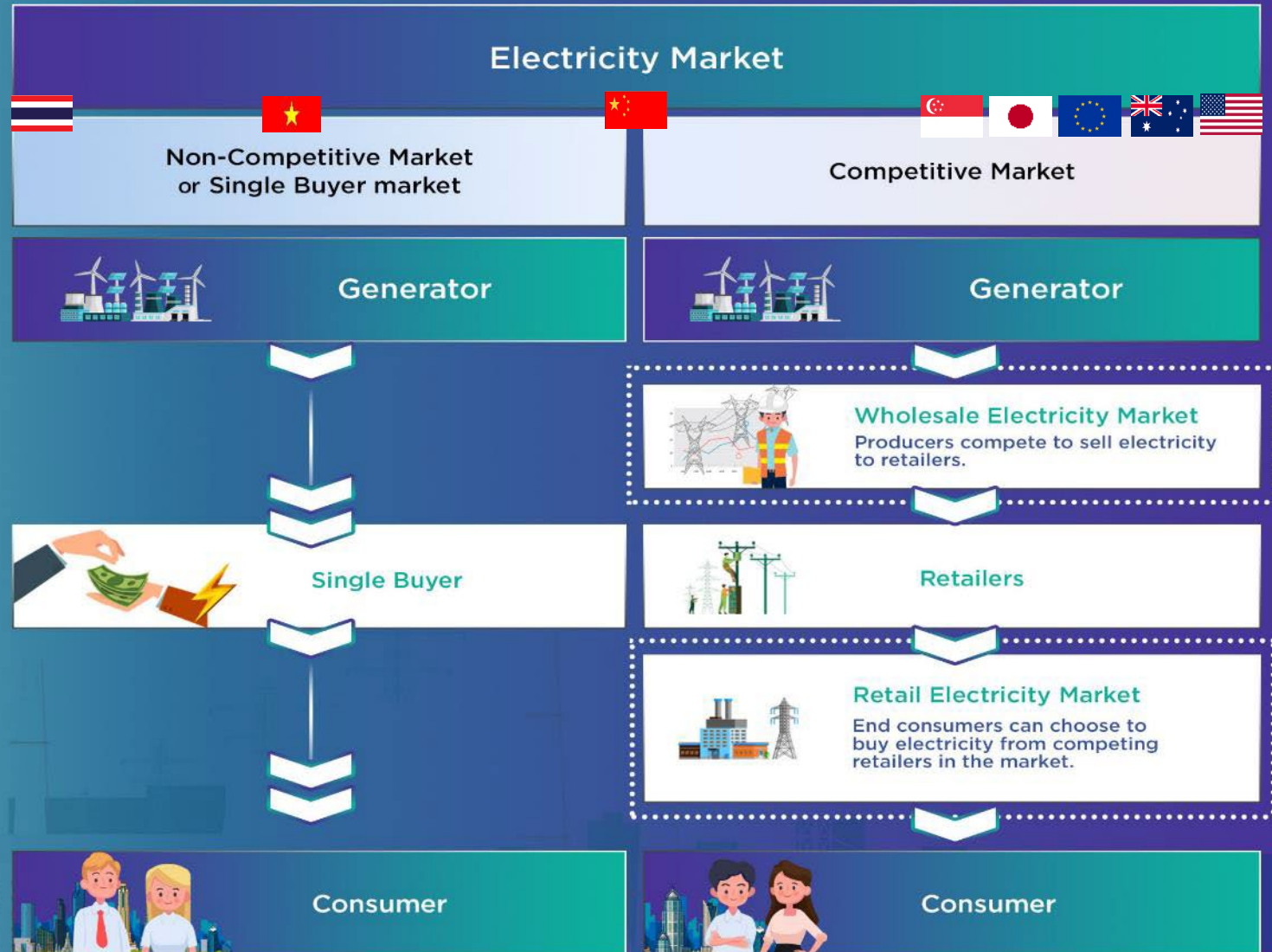
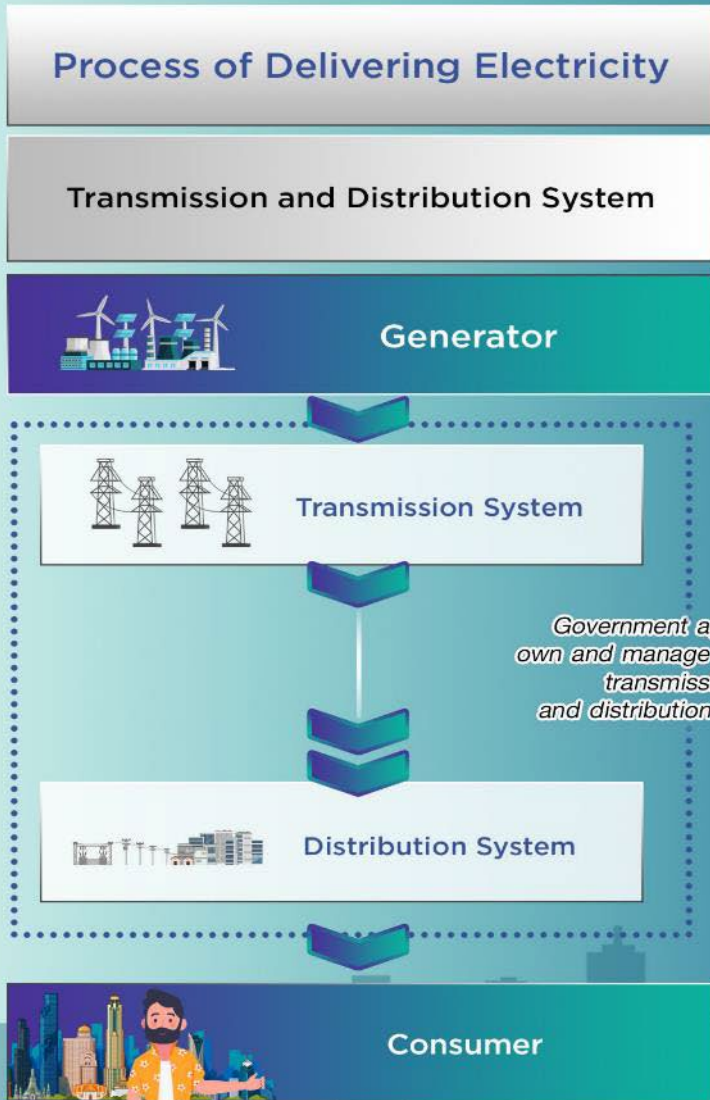


### RENEWABLES

# 800 MW

*From 442 MW in 1Q23*

# Merchant Power Market





**Managing economic aspects that affect competitiveness and long-term growth**

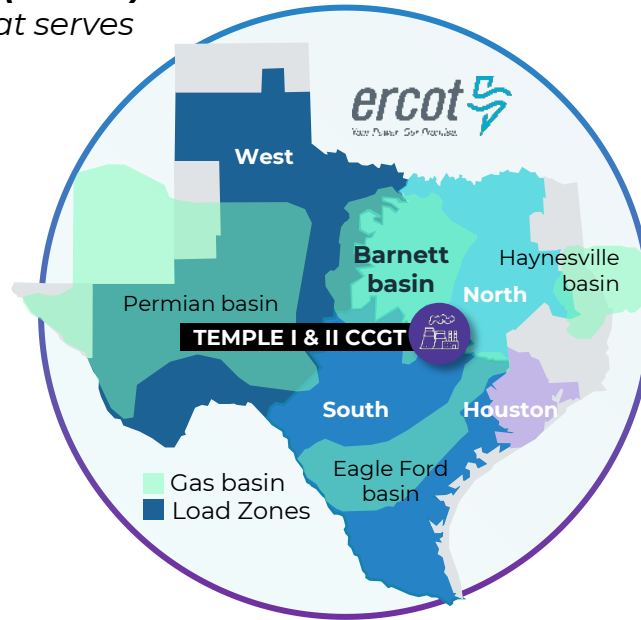
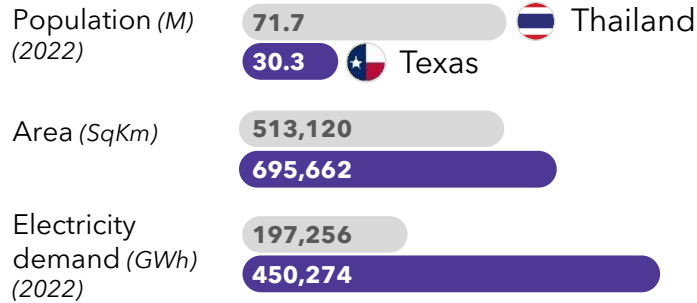


# ERCOT power market dynamics

The **Electricity Reliability Council of Texas (ERCOT)** is an independent system operator (ISO) that serves around 90% of Texas' electricity demand

## Market overview

Thailand vs. Texas



## Supply & demand outlook

### DEMAND

- Large flexible loads (LFLs) such as crypto mining activities is expected to drive electricity demand as grid interconnection requests growth from **2 GW in 2022** to **27 GW by 2026**
- Projections show **continued population growth** with forecasts of up to 33% increase in the next 20 years

### SUPPLY

- Planned capacity additions of wind and solar in Texas raise concerns that heavy reliance on **intermittent renewable energy** will leave the grid vulnerable to disruption
- Continuous retirement of coal-fired power plants** in Texas due to poor economics is expected to push for other energy sources i.e, natural gas and renewables to fill in the lost capacity to support growing demand

## ERCOT Pricing Mechanisms



**Gas prices & Availability**  
Primarily impact gas units



**Renewable output** from wind and solar with total c. 34 GW, less predictable pattern on wind output and load coinciding solar output



**Transmission Capability**  
Generation output can be capped by transmission limits



**Outages** forced/scheduled generators, increase price or may trigger operating reserve demand curve (ORDC)



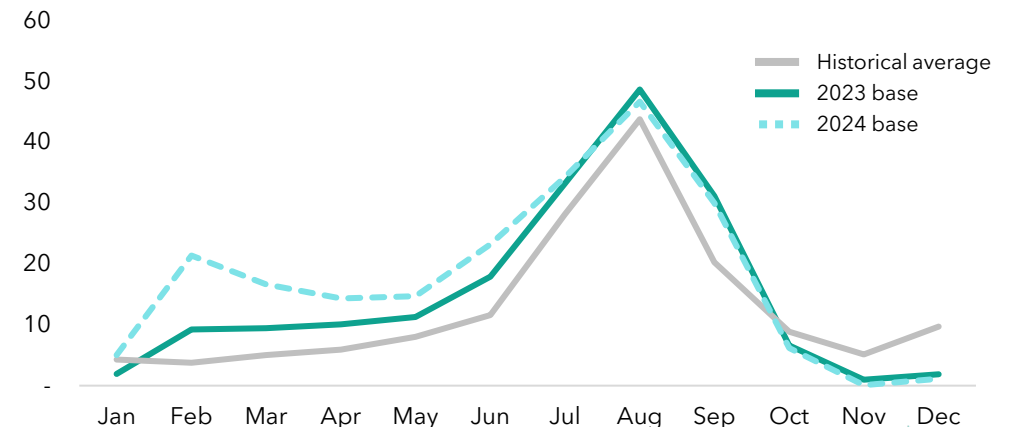
**Temperature** driven (summer & winter peaks)

## Spark spread (US\$/MWh)

$$\text{Spark spread} = \text{Electricity price received by generator} - \text{Cost of the natural gas needed to produce electricity}$$

## ERCOT spark spread (US\$/MWh)

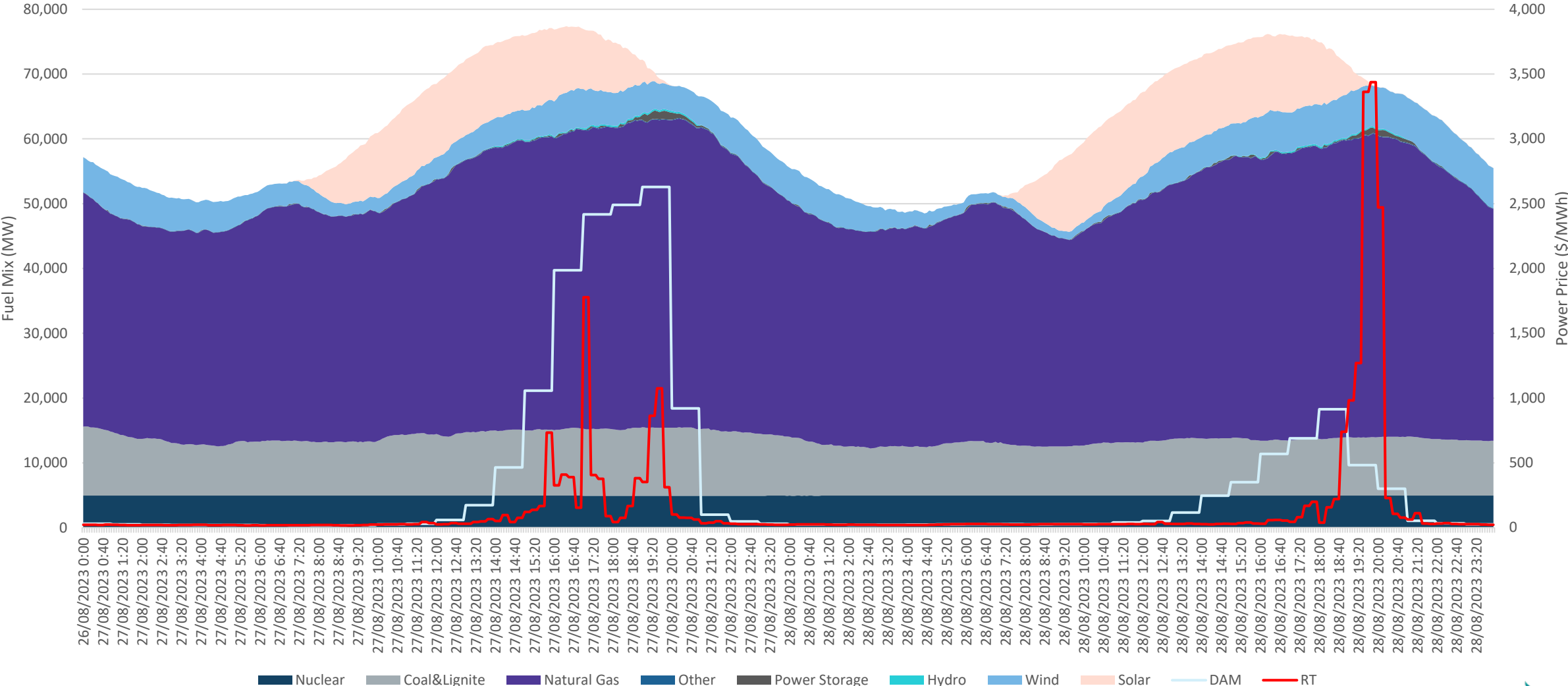
Source: BloombergNEF as of Feb 14, 2023



# ERCOT power market dynamics on daily basis

supply and demand driven by gas prices & availability, transmission Capability, temperature, renewable generation and power plant outages

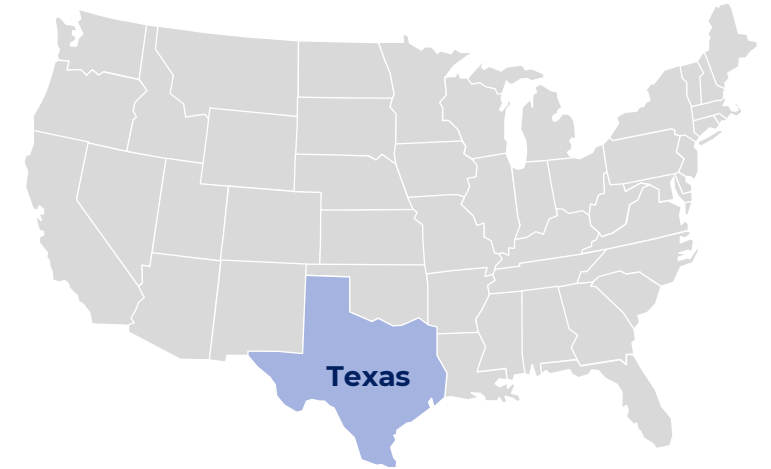
### Fuel Mix & Electricity Price



# Challenges

## Volatility during energy transformation & climate change era

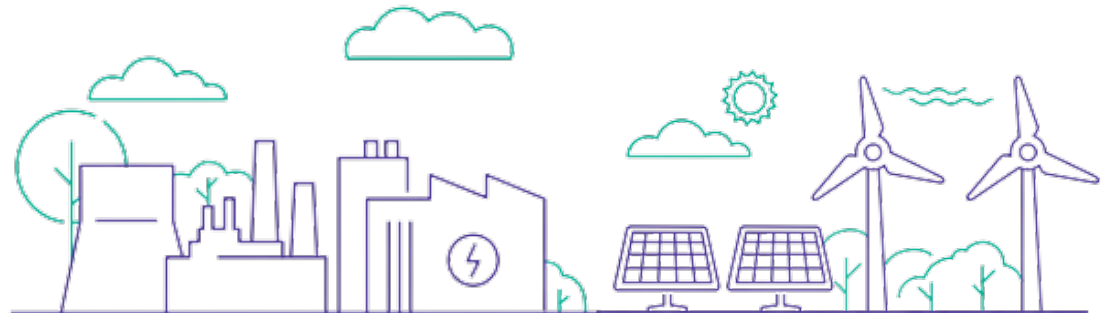
- Government **policy** and & tightening **regulations**
- Highly dynamic in electricity merchant market, facing uncertainty “supply” and “demand”, creating **pricing risks & opportunities**
- Uncertainty and extreme **climate pattern**
- Timing of **decarbonization** technology commercialization



# Managing to maintain BPP competitiveness and long-term growth

**1** **Manage electricity merchant market risks & opportunities** and **enhance business synergy** across value chain for competitiveness and generate stable cashflow + capture upside electricity price opportunities

**2** Balancing investment portfolio for **“Quality Megawatt” growth in thermal, renewable power and energy technology**  
+ decarbonization technology investment



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# Power Merchant Market Strategy

## Temple II investment: unlocking the optimal performance

Banpu Power is eager to implement these measures to ensure Temple II CCGT achieves its utmost potential and operates at optimal financial performance levels

### 1 Pursuit of Operational Excellence



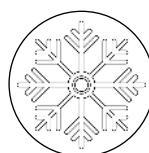
#### Efficiency enhancement

*Through well-planned maintenance and equipment upgrades e.g., installation of Wet Compression to increase capacity in summer*



#### Data-driven maintenance

*Implement data analytics and predictive maintenance techniques and monitor equipment health*



#### Robust winterization plan

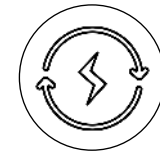
*Thorough planning for a reliable and resilient operation during winter e.g., ensure availability of winterized equipment and fuel supply system*

### 2 Strategic Trading Approach



#### Market intelligence and load forecasting

*Utilize data from market intelligence and load forecasting for informed and strategized trading decisions and maximize plant's capacity factor*



#### Trading Offer optimization

*Explore various approaches incl. collaboration with operations team to optimize offer quantity and pricing based on capabilities of the power plant*

# Temple II: unlocking the optimal performance (cont'd)

Banpu Power prudently assess risk, market conditions and hedging strategies to bolster stability and optimize the financial performance of Temple II

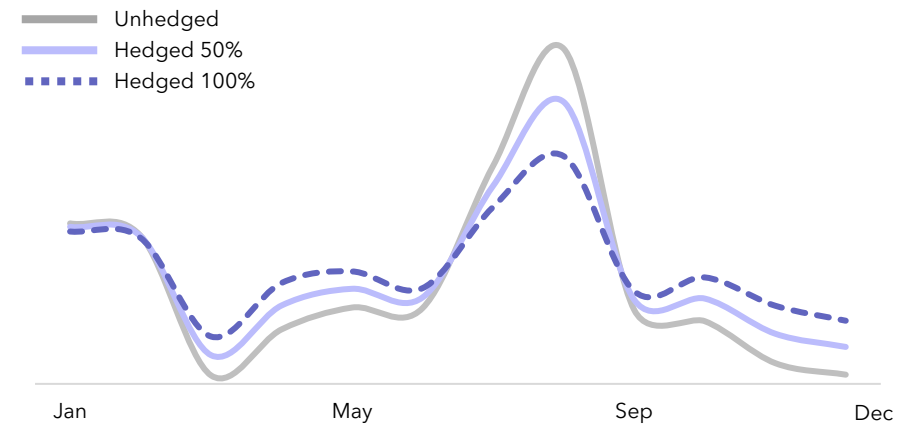
## 3 Effective Hedging and Risk Management

Effective hedging and risk management strategies to **achieve consistent cashflow** through utilization of financial instruments, such as:

Implemented by BPP

	Pros	Cons
<p><b>Heat rate call option (HRCO)</b> Power generators offer the right to buy electricity and in return receives a monthly premium and power revenue (if called)</p>	<ul style="list-style-type: none"> <li>Steady cash flow and income</li> <li>Higher capacity factor &amp; reliability</li> </ul>	<ul style="list-style-type: none"> <li>Trade off for upside</li> <li>Buy back obligation during plant outage</li> <li>MTM quarterly, but it is a non-cash item</li> </ul>
<p><b>Spark spread hedging</b> Hedge the difference between electricity price and fuel costs</p>	<ul style="list-style-type: none"> <li>Lock gross profit</li> <li>Mitigate exposure to market volatility</li> </ul>	<ul style="list-style-type: none"> <li>Trade off for upside</li> <li>MTM quarterly, but it is a non-cash item</li> </ul>

### Monthly gross profit comparison: Hedge vs. non-hedge

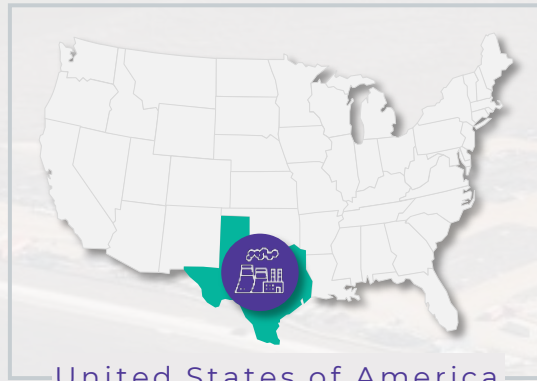


### Hedge cash flow stability vs. seasonality

Hedging provides stability and predictability towards revenue and cashflow, while mitigates risk and provides financial **protection from potential losses during shoulder seasons**

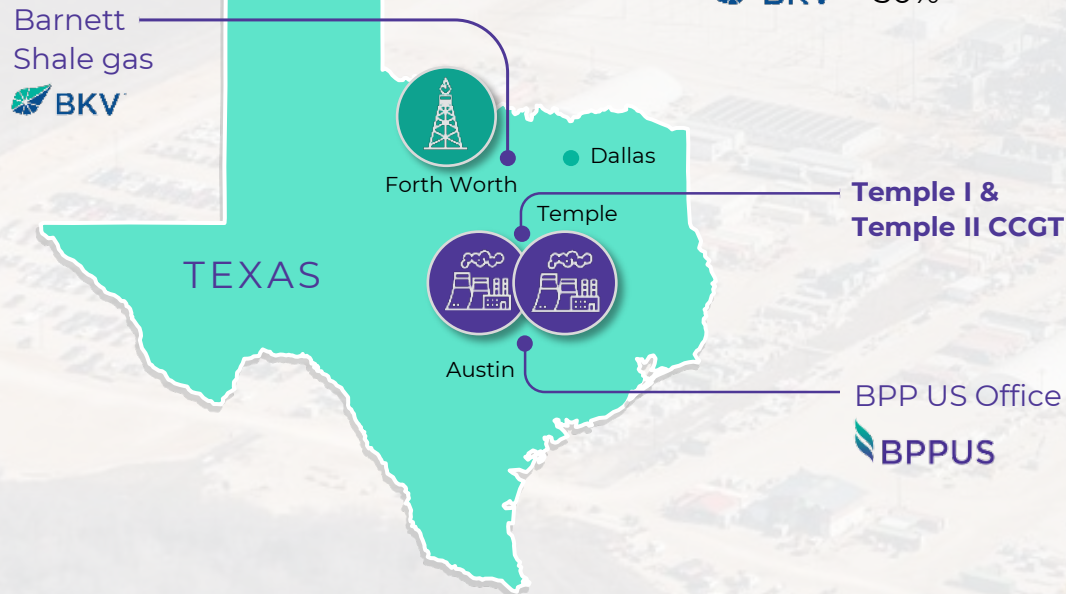
# Temple II: investment highlights

## Acquisition of Temple II gas-fired power plant



- 📍 Location: Bell County, Texas, US
- ⚡ Capacity: 755 MW
- ⚡ BPP Equity Capacity: 377.5 MW
- 📅 COD: 2015
- 💰 Total Acquisition: US\$460 M  
(US\$230 M for BPP equity portion)
- 🤝 Deal close: 10 July, 2023
- 🏢 Shareholding:
  - BPPUS 50%
  - BKV 50%

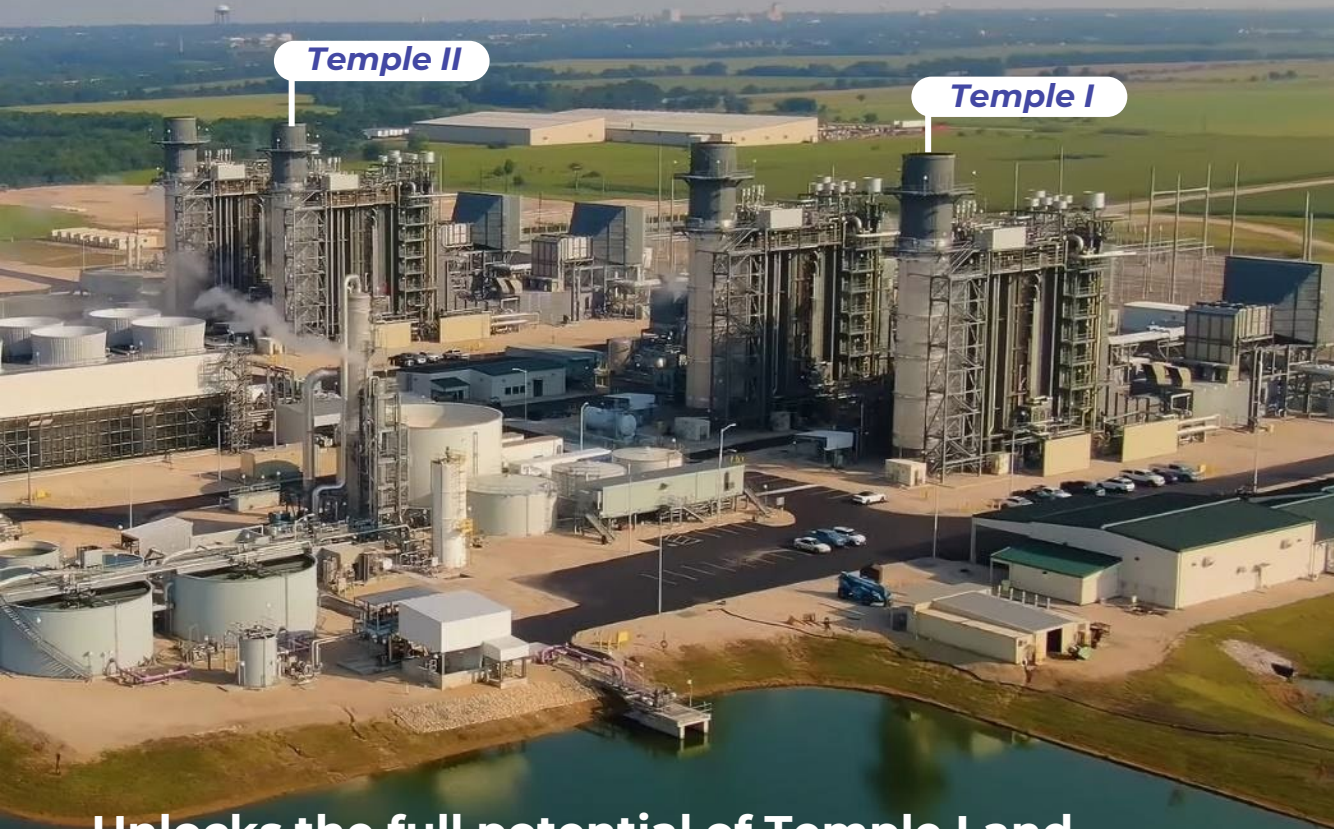
MAP OF TEXAS



This investment is aligned with BPP's Greener & Smarter Strategy and marks a significant milestone in the ongoing power expansion in the United States



# Successful investment in Temple II



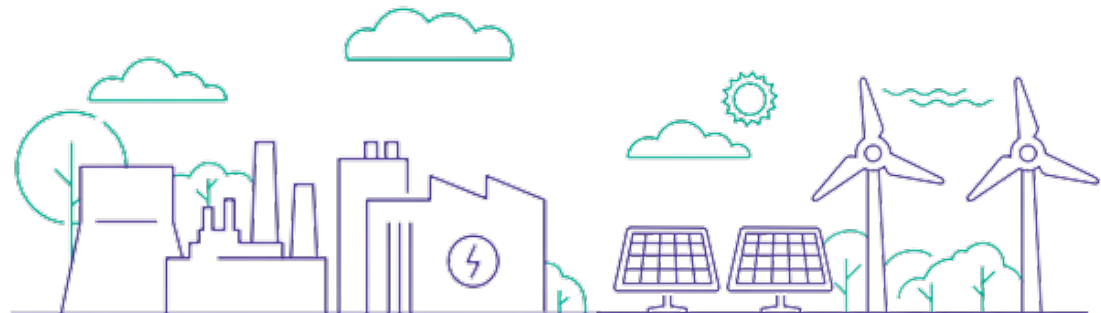
Unlocks the full potential of Temple I and Temple II by leveraging synergy through expanding BPP's US power portfolio

- 1 Significant growth potential**  
Acquisition allows for significant growth potential for BPP's US power business and improved **flexibility, reliability, and efficient operations**
- 2 State-of-the-art plant technology**  
Well-suited to serve the changing ERCOT market and respond to market demand real time
- 3 Strategic location**  
Strategic proximity with Temple I allows for optimization of **resource utilization**, capturing **merchant market profits**, and achieving **economies of scale**
- 4 Risk diversification**  
Expansion strengthens BPP's competitive position, enables **effective breakeven management**, and **diversifies risk along the power business value chain**
- 5 Commercial agreements signed**  
Secures its competitive edge with **commercial agreements**, fortifying its position in the market

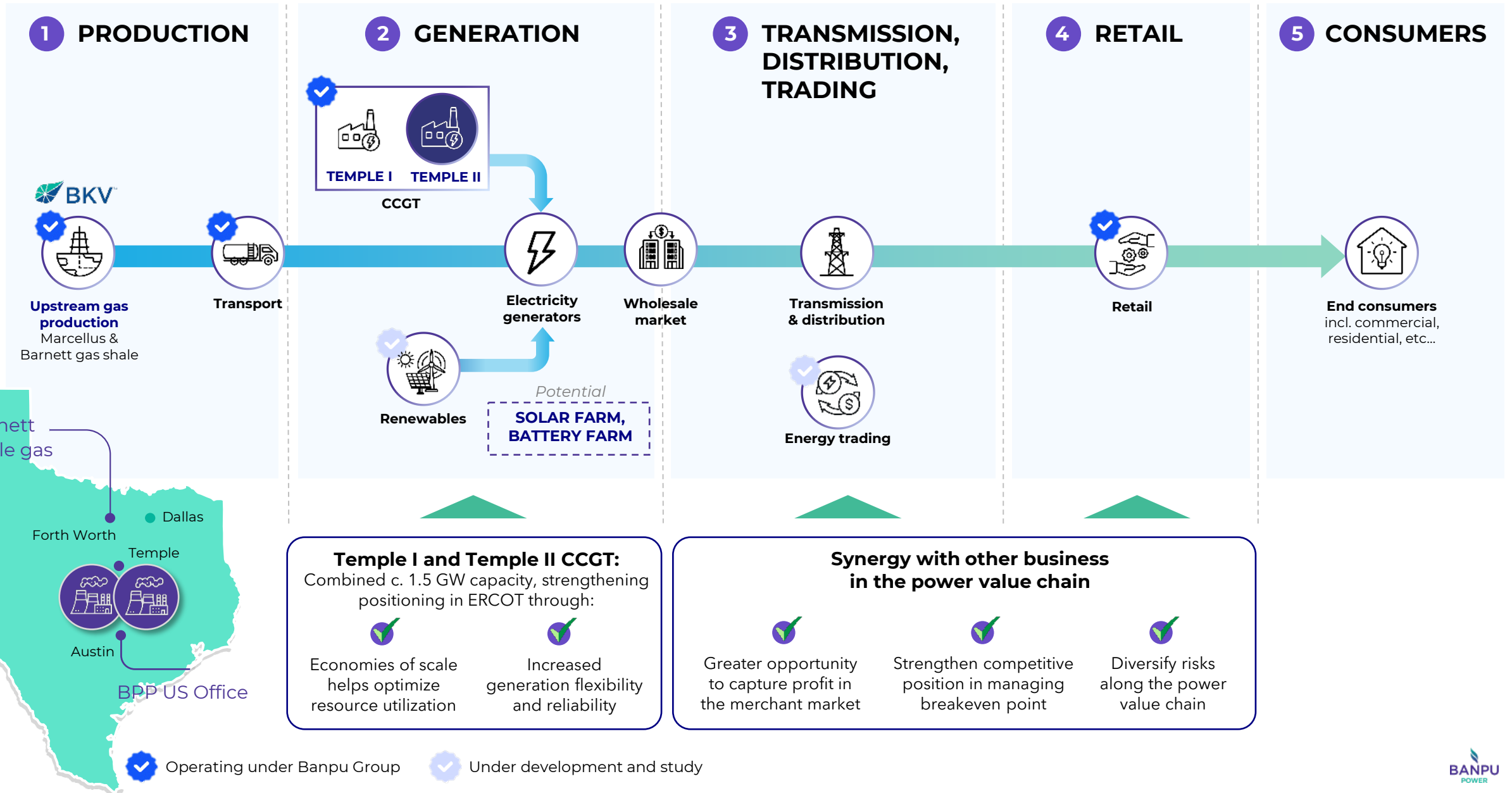
# Managing to maintain BPP competitiveness and long-term growth

**1** Manage electricity merchant market risks & opportunities and enhance business synergy across value chain for competitiveness and generate stable cashflow + capture upside electricity price opportunities

**2** Balancing investment portfolio for **“Quality Megawatt”** growth in thermal, renewable power and energy technology + decarbonization technology



# Enhancing our synergies across the US power value chain



# COTTON COVE PROJECT | OVERVIEW

BKV dCarbon Ventures + BKV Midstream

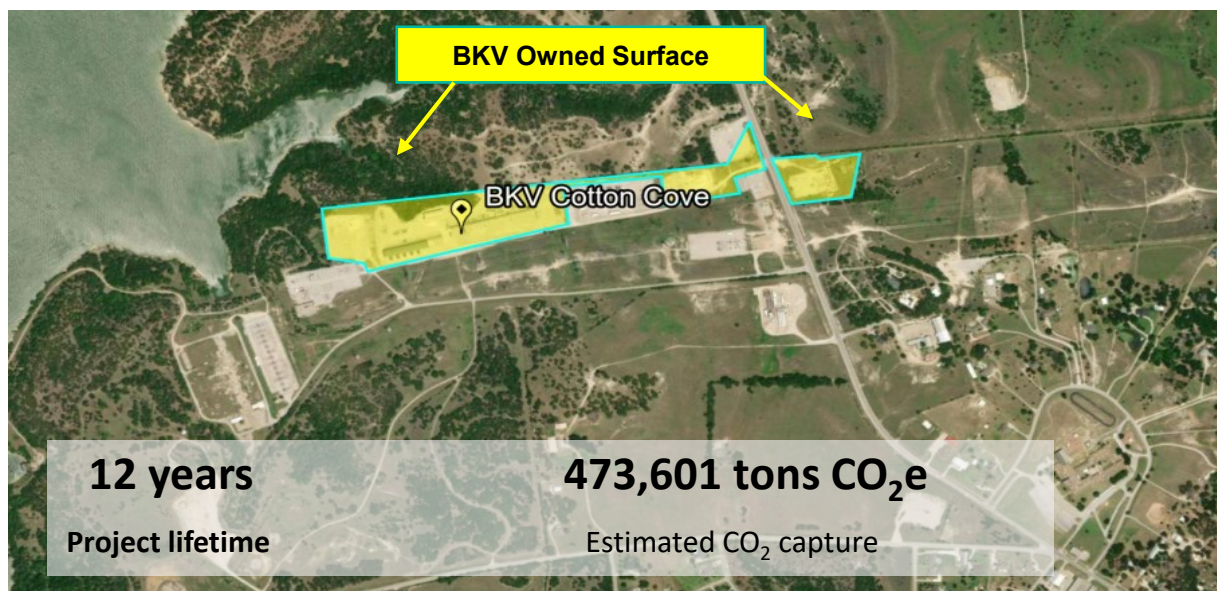
- Will separate, dispose of, and geologically sequester CO<sub>2</sub>e generated as a byproduct of our natural gas production in the Barnett, and will utilize our midstream assets to do so.
- In October 2022, the project reached FID and we are targeting commencement of CO<sub>2</sub> sequestration activities by the end of 2024.

**US\$14-24 M**

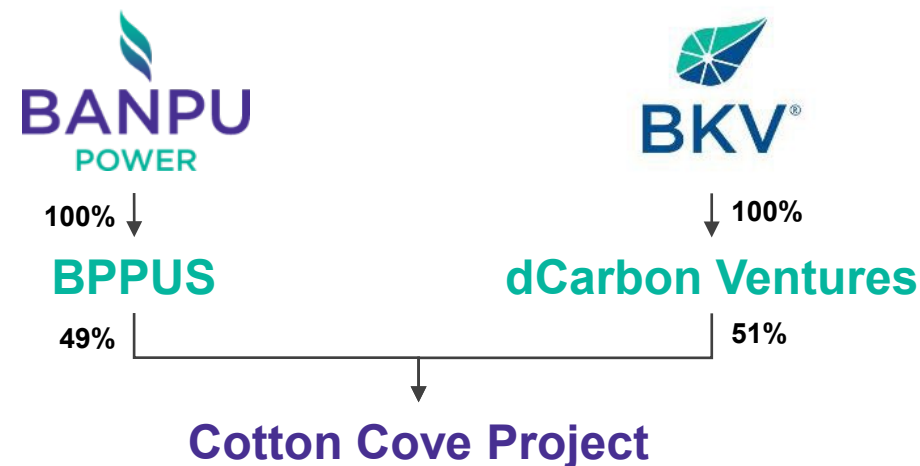
Estimated project cost

**Up to 80,000 tons CO<sub>2</sub>e**

Estimated average injection rate per year



## INVESTMENT STRUCTURE



- BKV Midstream Cotton Cove compressor station generates high concentration CO<sub>2</sub>. Subsurface study shows Cotton Cove site is suitable for sequestration.
- The project will be separated development into two phases:
  - Phase I:** Class II well designed for initial pre-combustion CO<sub>2</sub> volumes from existing amine unit. Project scope will include installing compression and drilling a Class II well at or near the facility with capacity around ~40,000 ton CO<sub>2</sub> per year.
  - Phase II:** Post-combustion CO<sub>2</sub> captured off compressor engines and sold to third-party for utilization or compressed and injected into Class II well with capacity ~25,000 ton CO<sub>2</sub> per year.

# Moving forward to decarbonization technology



## Pilot Project for Ammonia co-firing at BLCP's power plant

MoU signed in January 2023 at the Japan-Thailand Energy Policy Dialogue

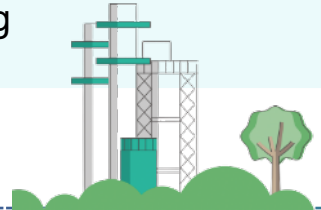


### TARGETS

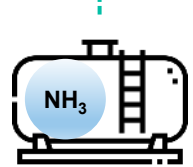


- Support Thailand's climate ambitions to become a **low-carbon society**
- Achieve **up to 20%** ammonia co-firing

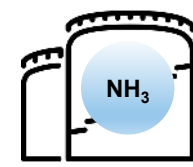
### Partners for the Feasibility Study



1 Examine the procurement and transportation of ammonia fuel



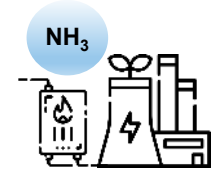
2 Explore port facilities, receiving terminals and storage facilities



3 Collaborate on R&D and strategies



4 Study the supply of ammonia burners, boiler facilities, and ammonia co-firing equipment



# Moving forward to decarbonization technology

## Iwate Tono Battery

Investment in a **Large-Scale Battery Project** to contribute to Japan's carbon neutrality target, through the government's subsidy program

**58 MWh**

Tesla Megapack 2: 19 units  
Guaranteed by and maintenance with Tesla



Approx. **3,000 sqm of land**  
With one landowner

**EPC Consortium**




Sinsanpei, Matsuda



## Project Schedule

- Design and site preparation** **Completed**
- 1st Phase construction** **Completed**  
*(battery system installation)*
- 2nd Phase construction** **18 months**  
*(extra-high voltage electric equipment and substation)*
- COD** **2025**

## Benefits



**Lower carbon emissions**



**More employment opportunities**



**Less obtrusion to nature**



**Improved energy access**

# Energy technology: current position and future targets



**Solar: rooftop & floating**  
incl. 49% in Solar ESCO

**2Q23**

**226 MW**  
Committed capacity

**2025 target**

**500 MW**



**Battery & ESS solutions**

Li-ion battery production capacity

**Durapower**  
**Thailand battery production JV**

Battery farm

**Iwate Tono project**

**1.0 GWh**

In progress

In progress

**3.0 GWh**

**1.0 GWh**

**58 MWh**



**Smart cities & energy management**

**27 projects**

Energy management, smart infra, etc.

**60 projects**



**Energy trading**

**268 GWh**

Electricity sales (in 1H23)

**2,000 GWh**  
(annually)



**E-Mobility**

**movmi** Ridesharing

**Fann** BEYOND GREEN EV

**HAUP** Carsharing

**evolt** EV charging

**OYIKA** Battery swapping

**MaaS**  
Mobility-as-a-service

**2030 target**

**INTEGRATED  
CLEAN ENERGY  
ECOSYSTEM**



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

# 1H23 highlights

## Key financials

**THB 4.1 bn**  
Consol. EBITDA

Significant contribution from thermal assets especially from HPC, Temple I, and extraordinary gain from battery business

**THB 3.5 bn**  
NPAT

Strong performance supported by resilient and excellent operational results

**0.25x**  
Net D/E

Low net D/E demonstrated strong financial position to support growth target.

## Key operational performance



### Renewables

Renewables performed well with increased power sold and favorable capacity factors in solar plants across countries, except for some that saw a seasonal drop



### Thermal

Smooth and efficient operation supported by BPP's continued commitment to operational excellence, HPC and BLCPP achieved an impressive EAF level of 93% in 1H23

## Key developments



### Acquisition of Temple II Power Plant

To create synergistic value through merging with Temple I power plant, and provides greater opportunities to capture profits in the merchant market and optimize resource utilization



### Establishment of ESG Committee

ESG committee is established with the target to support BPP to achieve its sustainability goals, deliver long-term value to its stakeholders, and make positive impact to the society



### Decarbonization efforts at BLCPP

Ammonia co-firing pilot project and CCS validity assessment



### Sustainable Energy expansion by Banpu NEXT

Banpu NEXT invested in Iwate Tono battery farm, and 14.2% stake in Oyika's 2-wheeler battery swapping. Durapower expands to 2 GWh production, while Banpu NEXT bolsters EV presence through increased investment in EVOLT charging to 23.81% stake.



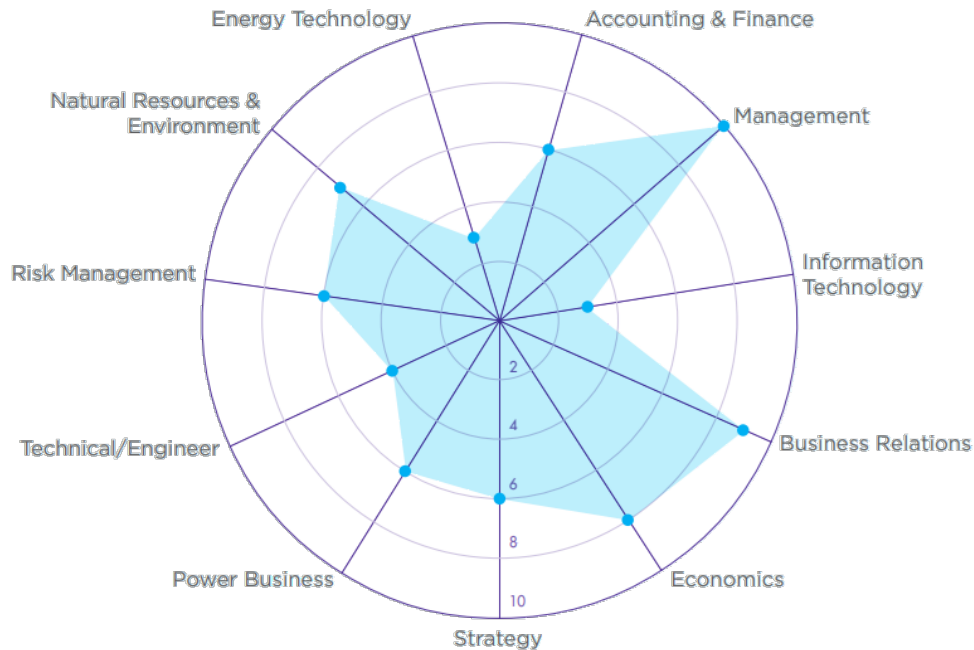
# Corporate Governance

The Board of Directors' structure of BPP



Independent directors account for **50%** of all directors.

Board Skill Matrix



Established in March 2023

# Governance and Management of Subsidiaries and Associated Companies

The Chapter 9 of the Company's AOA is intended to provide measures and mechanisms to govern subsidiaries and associated companies, both directly and indirectly, together with measures to monitor the management of such subsidiaries and associated companies.

The following matters of each subsidiary or associated company shall require approval from the board of directors' meeting of the Company:

1. Appointment and nomination of person(s) to be director(s) and executive(s)
2. An increase or reduction of capital
3. An of approval dividend payments
4. An amendment to the articles of association
5. An approval of consolidated annual budget
6. An appointment of auditor of the subsidiaries
7. Entering into transaction with related person of the Company\*
8. Borrowing, lending, granting credit and guarantee\*
9. Dissolution of the subsidiary\*
10. Any other transactions which are not in the ordinary course of business of the subsidiary and shall materially affect the subsidiary\*

*Remark: The matters from (7) to (10) are deemed material, and if executed, shall materially affect the subsidiary's financial position and performance.*

# Corporate Governance

## CG Policies and Standards:

- Corporate Governance Policy
- Code of Conduct
- Anti-corruption Policy
- Whistleblower Policy

## Internal Control

- Internal Audit
- ESG data quality assurance review
- Audit Committee- 3 dependent directors

## Data Verification/ Audit by 3<sup>rd</sup> party

- Financial data audit
- ESG data assurance

## Benchmarking/ Certification/ Credit rating



ASEAN Asset Class awards in 2021 ASEAN Corporate Governance Scorecard for Excellence corporate governance



Excellent Corporate Governance Scoring



Collective Action Against Corruption (CAC) Membership Certification



A corporate credit rating of “A+” with a stable outlook



# Climate Change Risk Management

# Climate Change Risk Management

## STRATEGY

- **Lessening GHG emissions intensity** by increasing power plant efficiency through promoting innovations and using high efficiency & environmentally-friendly technologies.
- **Investing in renewable energy** in order to be a part of a low-carbon society in the future.
- Heightening an ability to **adapt itself to risks** associated with climate change.
- Disclosing climate change related data in accordance with “Task Force on Climate-related Financial Disclosure (TCFD)”.



### Governance

The organization's governance around climate-related risks and opportunities

### Strategy

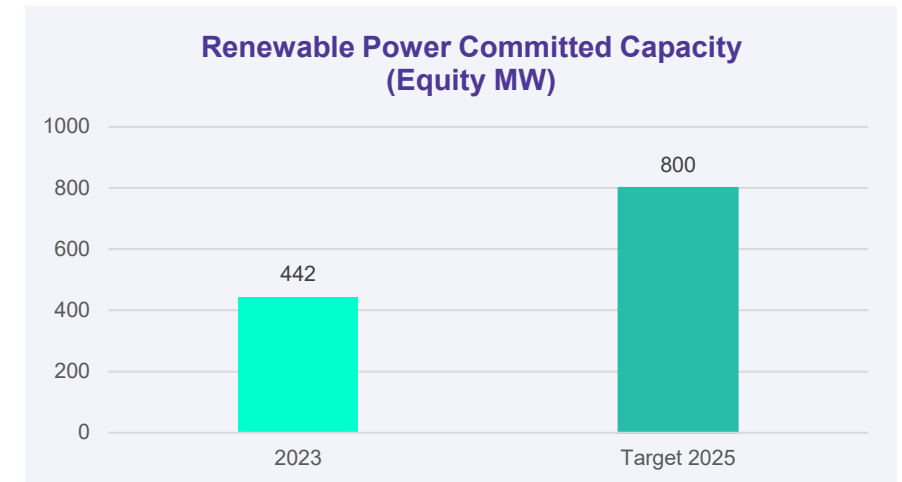
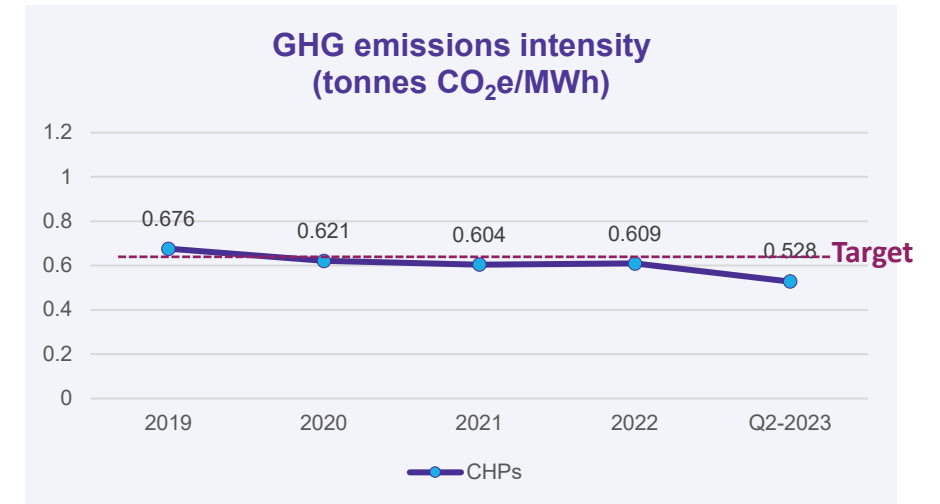
The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

### Risk Management

The processes used by the organization to identify, assess, and manage climate-related risks

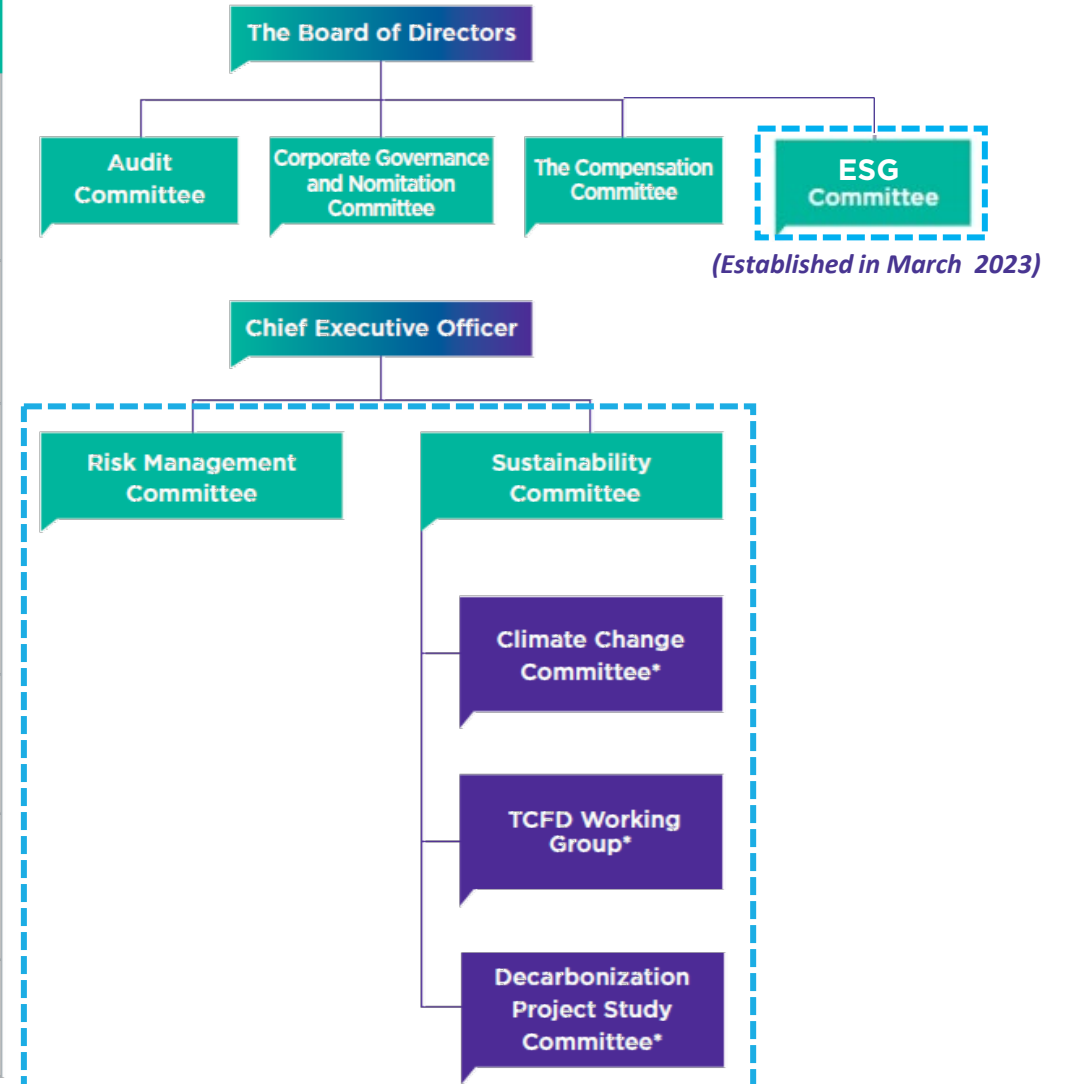
### Metrics and Targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities



# Climate Change Governance

Working Group and Supervision	Responsibility	Frequency
<b>The Board of Directors</b>	<ul style="list-style-type: none"> <li>Supervising and making strategic decisions for BPP's long-term growth, by taking into account the environmental, social and governance (ESG), including climate change.</li> <li>Overseeing the operational direction and growth in accordance with the vision and missions.</li> <li>Considering returns related to performances in accordance with ESG targets.</li> </ul>	On a monthly basis.
<b>Risk Management Committee</b>	<ul style="list-style-type: none"> <li>The Chief Executive Officer (CEO) is the chairman of the committee, while high-ranking executives are the committee members.</li> <li>Auditing, assessing and managing risks and opportunities, including issues related to climate change.</li> <li>Reporting risk management to the Audit Committee.</li> </ul>	On a quarterly basis.
<b>Sustainability Committee</b>	<ul style="list-style-type: none"> <li>CEO is the chairman of the committee, while high-ranking management are members.</li> <li>Setting up and reviewing corporate policies and strategies, taking into account the ESG operations to be presented to the Board of Directors for approval.</li> <li>Communicating on policies and assigning responsibilities to involved parties to lead them to make these policies into tangible practices throughout the organization.</li> <li>Examining and overseeing ESG operations, including issues related to climate change to be in line with the targets set.</li> </ul>	On an annual basis or more than a year as seen necessarily.
<b>Climate Change Committee</b>	The committee is accountable for driving holistic climate change operations and managing related risks to reduce GHG emissions. The committee is jointly working with Banpu Group.	On a quarterly basis, or more than a quarter as seen necessarily.
<b>Task Force on Climate-Related Financial Disclosures Working Group (TCFD Working Group)</b>	The TCFD Working Group is responsible for analyzing and assessing financial risks and opportunities, as well as disclosing information in alignment with the TCFD guidelines.	On a quarterly basis, or over a quarter as seen necessarily.
<b>Decarbonization Project Study Committee</b>	<ul style="list-style-type: none"> <li>Conducting a feasibility study to determine operating targets and a plan driving towards a "Net Zero".</li> <li>Conducting a feasibility study to jointly implement the decarbonization project with Banpu Group.</li> </ul>	On a quarterly basis, or over a quarter as seen necessarily.



Note: \*Operating in collaboration with Banpu Group

# Risks & Opportunities arising from Climate Change

-,+

## 1. Physical Risks

- Changes in climate patterns and seasonal fluctuations
- Severe natural disaster
- Rising sea level
- A decrease of rainfall and a freshwater shortage

## 2. Transition Risks

- Policy and legal changes
- Demands for clean energy is increasing, while technology and infrastructure to deliver electricity in the area is still immature
- Rising prices of coal and other fossil fuels
- Restriction of water consumption and rising of water prices
- Higher insurance cost

## 3. Business Opportunities

- + Business development associated with renewable energy, energy technology, and CCUS

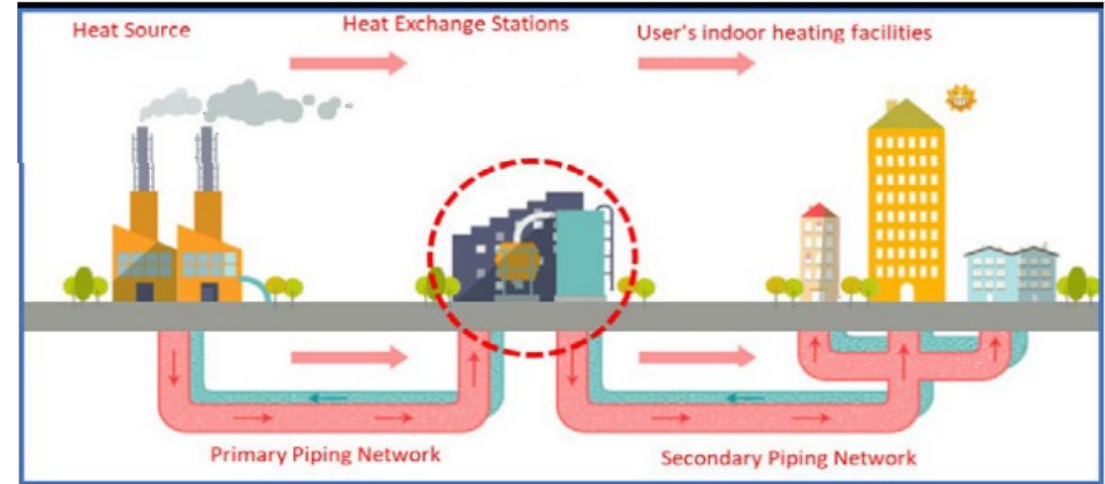
## Risk Mitigation & Response

- Business Continuity Management
- Invest in **water conservation** technology/ zero discharge project
- Fuel cost pass through mechanism in PPA
- Consider **Carbon cost** in project due diligence process
- Collaborate with Banpu Group to disclose climate impact align with **TCFD guideline** and develop Net Zero roadmap
- Invest in High efficiency low emissions power plant, renewable energy and energy technology
- Invest in CCUS, alternative energy such as hydrogen, ammonia co-firing, biomass, etc.

# Energy Conservation at Zhengding Power Plant

Thermal Energy Distribution Diagram

- **Improving equipment efficiency** at heat exchanger stations including:
  1. Removing scale deposits on tube surfaces of heat exchangers
  2. Installing a frequency converter to make a system adjusted the amount of steam and hot water appropriately for customer's needs.
  3. Improving thermal insulation of hot water pipes to reduce heat loss.
- Investment about **CNY 1 million, reduce steam consumption by 10%**, able to pay back the investment cost within a year.
- Selected as the operator of a **solar rooftop installation**
- project in Zhengding, which targets to increase solar panels installation on the roofs of all government buildings, factories and communities totaling to **167 MW by the year 2023.**



Performance	2021	2022	%Change
Total energy consumption (GJ)	2,566,771	1,796,464	<b>-30.0%</b>
Power consumption (GJ/MWh)	1.736	1.176	<b>-32.3%</b>
The amount of GHG emissions (Scope 1&2) (tonnes CO <sub>2</sub> e)	1,041,811	1,020,622	<b>-2.0%</b>
GHG emissions intensity (Scope 1&2) (tonnes CO <sub>2</sub> e/MWh)	0.705	0.668	<b>-5.2%</b>



# De-white Facility at Luannan Power Plant

- A reduction of heat loss by **installing a heat changer system**, which has 3 processes:

I. Entering cold water into the primary heat exchanger

Water input : 20°C  
Water output : 47°C

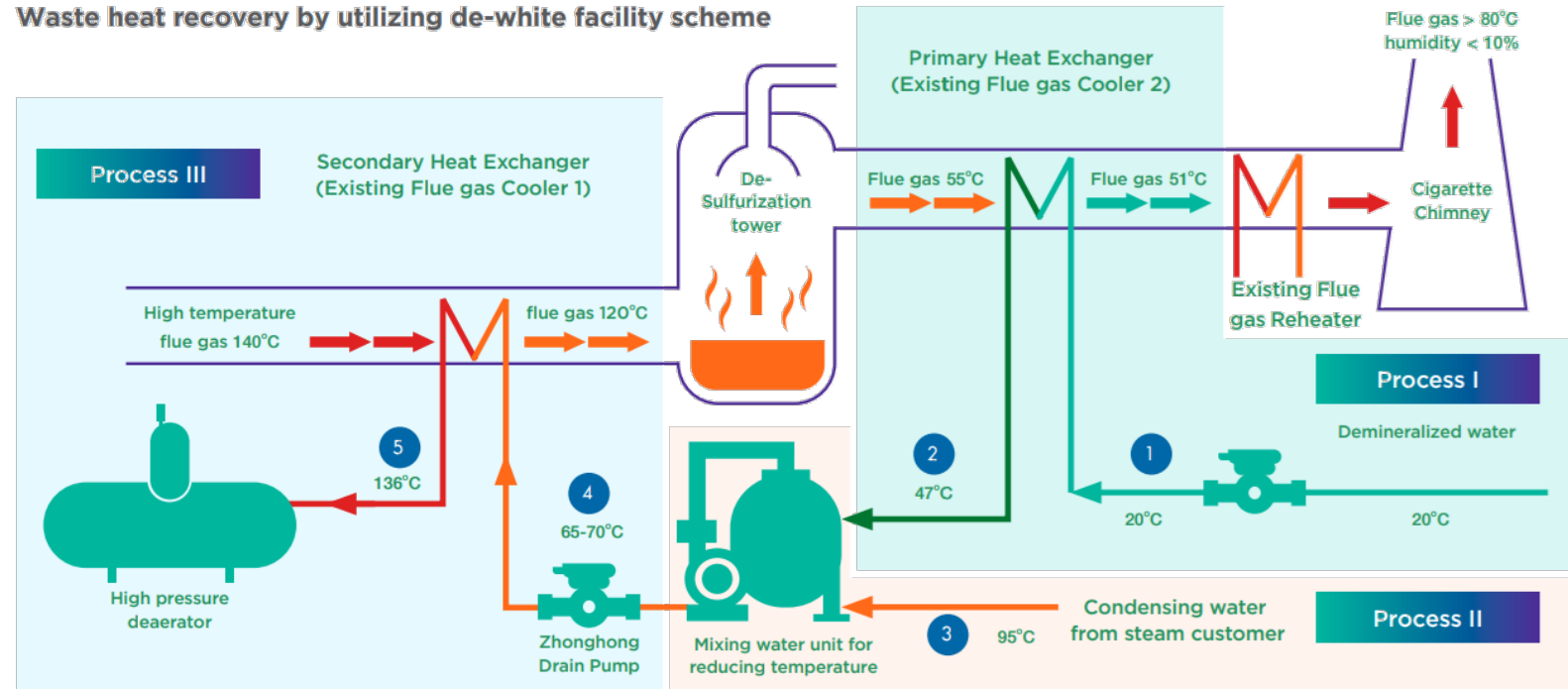
II. Mixing water before entering into the secondary heat exchanger

Water input : 95°C  
Water output : 65°C

III. Supplying water for further utilization in the power generation process

Water input : 65-70°C  
Water output : 136°C

Waste heat recovery by utilizing de-white facility scheme



- White smoke reduction process generates thermal energy able to be **recycled back** into the production processes about **15 GJ/h**.
- Exhaust gas released from stacks has **temperature about 80°C** and a **humidity about 10%** (no white smoke during low temperature).
- Project costs approximately **CNY 223,700** and pay back the investment cost within **18 days**.

# Decarbonization

## BPP has implemented in various projects including:

- Developing **Ammonia co-firing** at BLCP Power Plant.
- Investing in **Carbon Capture, Utilization and Storage (CCUS)** with BKV dCarbon Venture in Cotton Cove Project.
- Signed MOU with Cherdchai Motor Sales Co., Ltd., to build a **lithium-ion battery assembly plant for e-Buses**.
- Investing in Oyika, accelerating **battery swapping stations for electric motorbike**.
- Developing **Energy Management System (EMS)**, including utility management and energy efficiency solutions, facility management, and district cooling systems and infrastructure.



# Light & Learn Project

# Light & Learn Project

BANPUNEXT

*“Learning is the Power of Change and Development”*

- Starting from a small CSR project in 2560, initiated by employee, to provide solar panel for a school in Tak
- **Schools in remote area**
  - No electricity
  - Limited teacher
  - Limited access to information and internet
  - Language problem leads to unsuccessful education in border area of Thailand



# Light & Learn Project

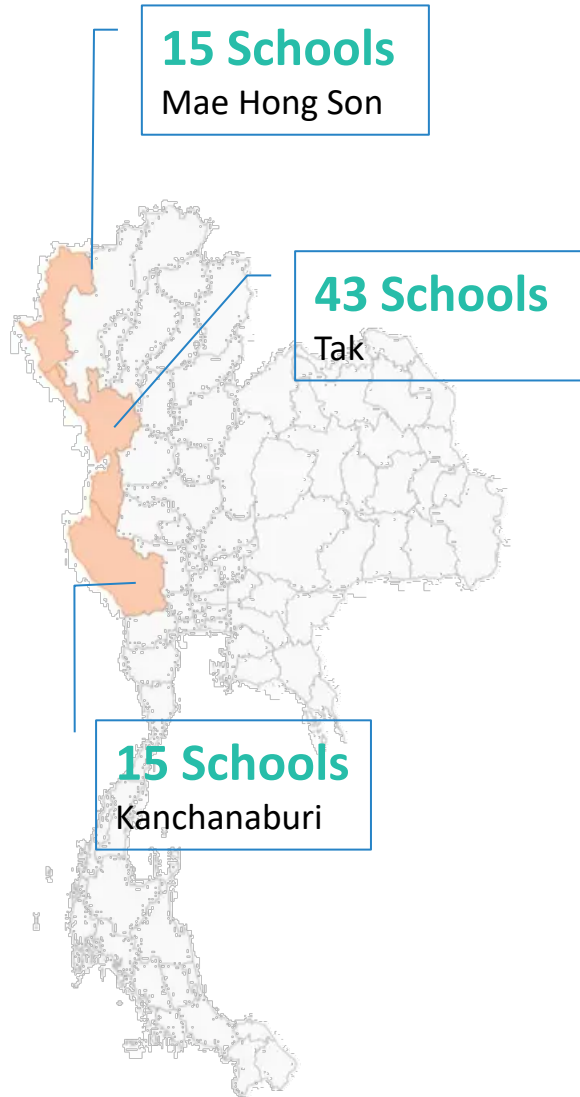


**Strategy:** Enhance brand awareness by developing real showcases and promotion

**Long-term Target:** Branding as [A leading smart energy solutions provider in Asia-Pacific with a vision, "Innovating Infinite Energy Solutions to All", and supports the global transition towards a Net-Zero society.]



# Light & Learn Project



## BENEFIT

### Social Impact:

- Total of **73 schools** (2017-2022)
- **2,400 children**
- Installed capacity **73,000 Watt** by **volunteer employees**

### Value creation to Company:

- Enhance **brand awareness** in renewable energy business
- Enhance **employee engagement**
- **PR Value 7.85 mTHB** in news media (2020 & 2022)



"Light & Learn" ปานปู เน็กซ์ เดินทางสร้างแสงสว่างเพื่อการเรียนรู้ ตลอด 5 ปี ติดโซลาร์ 73 โรงเรียนที่ขาดแคลนไฟฟ้า

# Q&A

# Appendix





## Vision:

To be recognized as a pioneer Asian power company with a strong reputation for sustainable development, friendly community relations and respect for the natural environment.

## Mission:

- To develop, own and promote both conventional and renewable power businesses using the most efficient technologies available for sustainable growth in pursuit of a position of leadership in Asia.
- To conduct all business in an ethically, socially and environmentally responsible manner.
- To create sustainable value for shareholders customers, business partners, employees and communities while being a good corporate citizen in all countries of operations.



**BANPU**  
POWER



# Banpu Power Sustainability



## Affordable

- Investing in sound properties with effective cost management.
- Creating competitive advantages through utilizing innovations and developing employees' competencies.
- Establishing business partners throughout the supply chain.



## Reliable

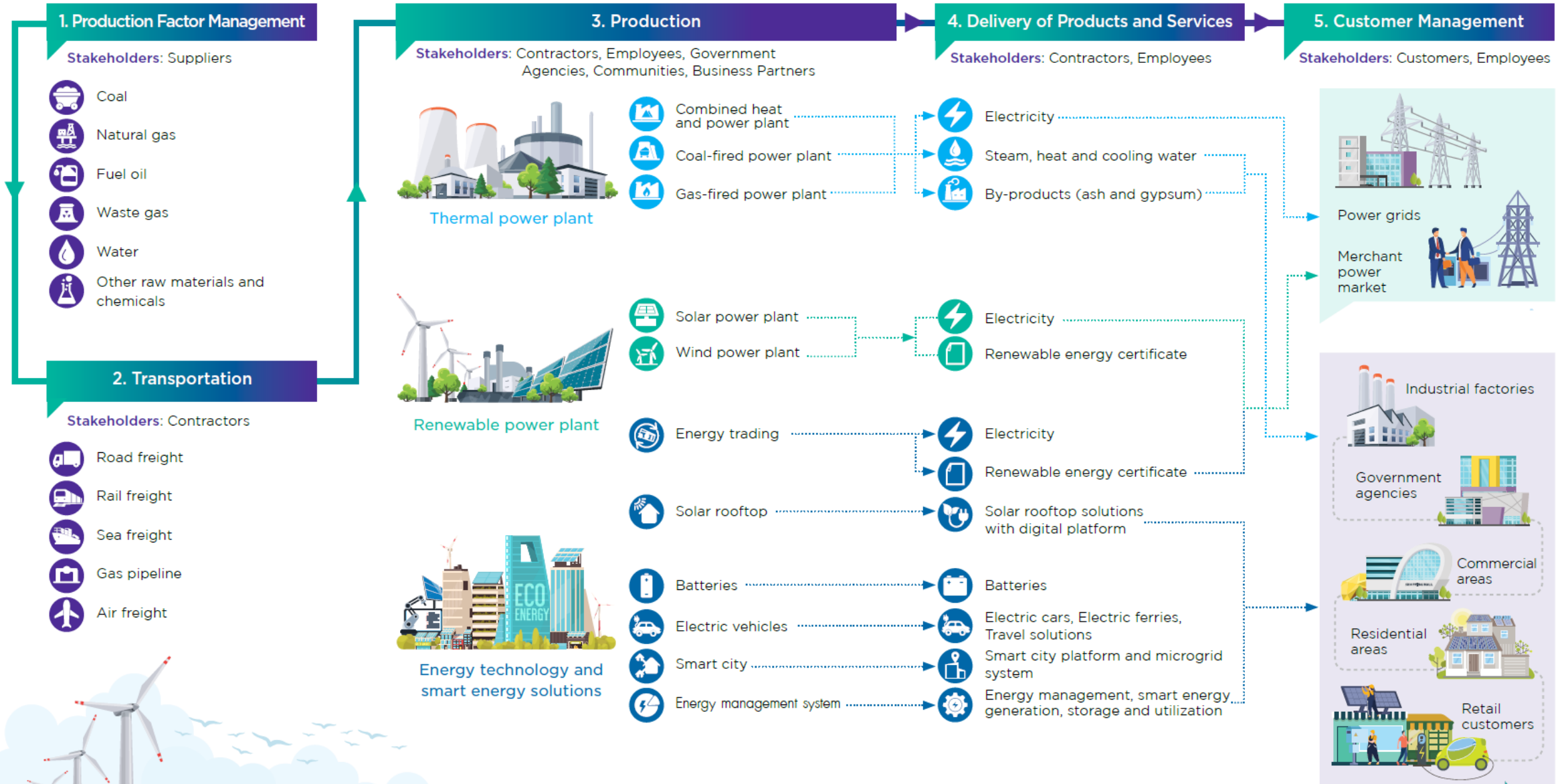
- Raising Corporate Governance (CG) standards.
- Employing a risk management system and looking for business opportunities, striving towards the integrated energy producer and supplier.
- Establishing a monitoring and evaluation system as well as communicating a transparent operating result to stakeholders.



## Eco-friendly

- Using innovations and high efficiency, low emissions technologies.
- Engaging stakeholders and communities surrounding the project areas.
- Implementing the environmental, occupational health and safety management system standards.

# Banpu Power Supply Chain





**Goal 7** AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable and modern energy for all

Achieve power generating capacity target of **5,300 MWe** by 2025  
 4,500 MWe from thermal power generation  
 800 MW from renewable power generation

Improve energy efficiency and availability with an Available Factor **not less than 90%** and Forced Outage Factor **not more than 5%**

**Goal 9** INDUSTRY, INNOVATION AND INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

**SO<sub>2</sub>** Sulfur dioxide emissions **< 0.0766 tonnes/GWh**

**N** Nitrogen oxide emissions **< 1.184 tonnes/GWh**

Particular matter emissions **< 0.0230 tonnes/GWh**

**Goal 12** RESPONSIBLE CONSUMPTION AND PRODUCTION

Ensure sustainable consumption and production patterns

Water consumption intensity **not more than 0.868 m<sup>3</sup>/MWh by 2022**

**100% reuse or recycling of fly ash and bottom ash**

**Goal 13** CLIMATE ACTION

Take urgent action to combat climate change

GHG emissions intensity per unit of product **less than 0.676 tonnes CO<sub>2</sub>e/ MWh**

Increase energy generation capacity from renewable energy to **800 MW**

**Goal 8** DECENT WORK AND ECONOMIC GROWTH

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Achieve zero fatalities and a zero lost time injury frequency rate for both employees and contractors

Employee Engagement score of **no less than 80%**

Proportion of employees having Individual Development Plan (IDP) **equivalent to 100%**

**Goal 16** PEACE, JUSTICE AND STRONG INSTITUTIONS

Promote peaceful, inclusive societies for sustainable development and provide access to justice for all

Achieve zero incidents involving non-compliance, corporate governance and corruption

All significant corporate governance complaints resolved through a dispute mechanism

Be certified as a member of the Collective Action Coalition Against Corruption (CAC)

# ESG recognition



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

5<sup>th</sup>

consecutive year included in THSI for continuous development of sustainable operations in-line with ESG principles



Prepared by SET, shortlists Thai companies with business and sustainability excellence

Commended Sustainability Award for SET-listed companies with market cap. between THB 30-100 bn



Part of ASEAN Capital Markets Forum (ACMF), awarded to listed companies in ASEAN with high corporate governance practices, in line with international standards.

ASEAN Asset Class

Awarded in 2021 ASEAN Corporate Governance Scorecard for excellent corporate governance

# Credit rating



A Strategic Partner of S&P Global

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

A+

ratings with a **'stable'** outlook on the company, reflecting the company's stable cash flow, proven track record of strong operations and quality of power portfolio

