1.4 Climate Action

1.4.1Climate Change Management Framework

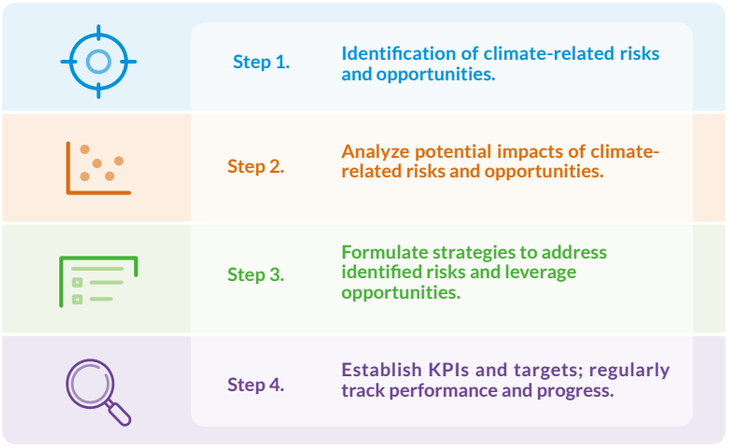
Global climate change has increasingly impacted the energy industry and broader socioeconomic systems. As Taiwan's primary electricity provider, Taipower has long paid close attention to climate-related risks and challenges and actively taken measures in response.

Since 2007, Taipower has disclosed its greenhouse gas (GHG) emissions and carbon reduction strategies. Beginning in 2009, the Company has followed the Global Reporting Initiative (GRI) Standards to report climate-related risks and opportunities. In 2022, Taipower further adopted the Task Force on Climate-related Financial Disclosures (TCFD) framework to identify climate risks and opportunities, assess their potential impacts, and develop appropriate strategies, thereby enhancing its overall climate governance and action planning.

In 2024, Taipower deepened its identification of climate-related risks and opportunities in line with the TCFD framework, initiating a structured and systematic management process. A high-level workshop was held with the participation of the Chairman, President, senior executives from the four major business divisions, four corporate systems, and the Research Institute. The workshop comprehensively assessed the potential short-, medium-, and long-term impacts of climate change on Taipower's operations.Senior leadership collectively evaluated these issues in the context of overall corporate strategy and operational realities to guide the next phase of climate risk and opportunity management.

Taipower continues to strengthen its climate resilience by systematically managing risks and opportunities under the four TCFD pillars: Governance, Strategy, Risk Management, and Metrics & Targets.

Climate Change Management Framework



To strengthen climate resilience, Taipower manages climate-related issues in accordance with the four core elements of the TCFD framework: Governance, Strategy, Risk Management, and Metrics and Targets. Current practices are outlined below:

Core Element	Current Actions
Governance	● The Board of Directors serves as the highest-level decision-making body on climate risk and regularly reviews climate-related topics. ● The Sustainable Development Commission (SDC) oversees climate issues, ● The Risk Management Committee conducts rolling reviews of environmental and climate risks. Both bodies report regularly to the Board. ● A TCFD Task Force under the SDC, supervised by the Executive Secretary and coordinated by the Corporate Planning Department, is responsible for advancing climate-related management. The task force convenes regular meetings with relevant departments. ● A Net-Zero Transition Strategy that is aligned with Taiwan's 2050 pathway has been established and approved by the Board.
Strategy	● Climate-related risks and opportunities are identified annually across business divisions and systems for the short term (<3 years), medium term (3–5 years), and long term (>5 years) Senior executives evaluate these issues from the perspective of company-wide operations and select annual material risks and opportunities. ● Impact assessments, response strategies, and evaluations of significant financial impacts are conducted for key physical and transitional risks and opportunities.
Risk Management	● A company-wide climate risk identification process has been established based on the TCFD framework. ● Each year, major climate-related risks and opportunities are assessed across divisions, taking into account trends and regulatory developments. Outcomes are reviewed by the TCFD Task Force, disclosed in the Sustainability Report, and reported to the SDC and the Board. ● Climate risk has been formally included in the Risk Management Committee's annual rolling review and is also addressed through ad-hoc topic discussions under the SDC.
Metrics and Targets	● Indicators and targets are defined for identified risks and opportunities, referencing the seven major TCFD indicator categories. ● Taipower conducts GHG inventories and discloses emissions as required under the Climate Change Response Act and related regulations, and has formulated voluntary GHG reduction plans.

1.4.2 Climate Risk and Opportunity Management 201-2

Annual Scenario Analysis

To ensure scientific rigor and reliability in its scenario analysis, Taipower references the World Energy Outlook published by the International Energy Agency (IEA) and the Sixth Assessment Report (AR6) issued by the Intergovernmental Panel on Climate Change (IPCC). Multiple scenarios are analyzed to evaluate potential impacts related to extreme weather events, changes in climate-related policies and regulations, and technological transitions driven by climate change.

Physical Risk Assessment

For physical risk assessment, Taipower employs two climate scenarios-Shared Socioeconomic Pathways (SSPs)-from the IPCC's AR6 to simulate future climate trajectories and impacts:

Scenario	Description and Impact	Projected Temperature Rise by 2100	Source
Low Emissions Scenario (SSP1-2.6)	Assumes a strong global commitment to environmental protection, active carbon reduction policies, and a rapid advancement of clean energy technologies, leading to a significant transformation of the energy system.	~1.8℃	IPCC Sixth Assessment Report
Very High Emissions Scenario (SSP5-8.5)	Assumes continued global reliance on fossil fuels, weak environmental policies, the slow development of clean energy technologies, and increasing energy demand, resulting in persistently high-emission energy systems.	~4.4℃	

Transition Risk and Opportunity Assessment

In light of accelerating global efforts toward net-zero emissions, Taipower uses the key scenario outlined in the 2024 World Energy Outlook published by the International Energy Agency (IEA) as a reference framework to assess potential transition risks and opportunities related to energy policy, technology development, and market trends.

Scenario	Description and Impact	Projected Temperature Rise by 2100	Source
Net Zero Emissions by 2050 (NZE)	This scenario envisions a global achievement of net-zero emissions in the energy sector by 2050. It aligns with energy-related United Nations Sustainable Development Goals (SDGs)-particularly universal access to modern energy services by 2030 and significant improvements in air quality. It requires countries to take broad carbon reduction measures, including energy transition, reduce fossil fuel use, increase adoption of renewables, and set policies that ensure continued economic growth and energy security.	~1.5℃	2024 IEA World Energy Outlook

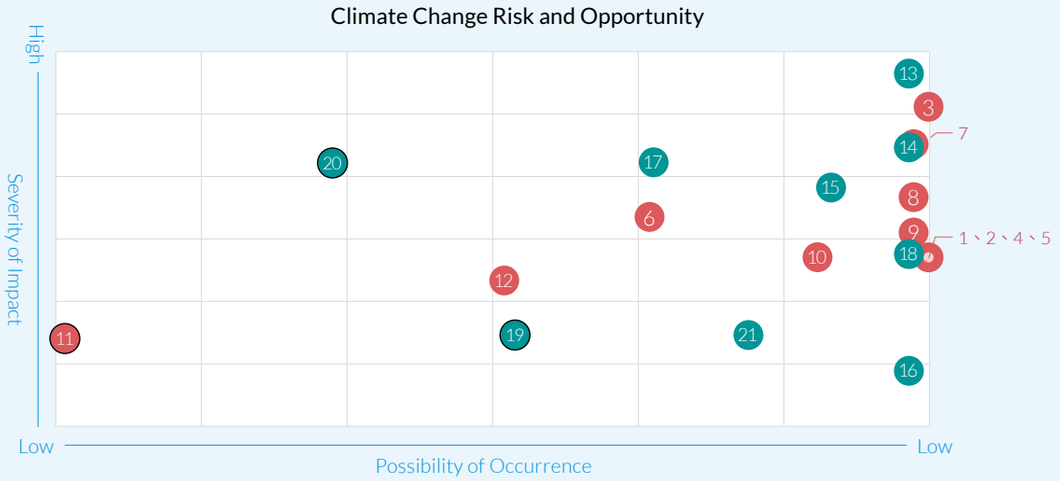
Identification, Analysis, and Assessment of Climate Change Risks and Opportunities

In 2024, Taipower continued to deepen its identification of climate-related risks and opportunities in accordance with the TCFD framework. A high-level workshop was convened with participation from the Chairman, President, senior executives from the four major business divisions, four core systems, and the Taiwan Power Research Institute. The workshop evaluated the potential short-, medium-, and long-term impacts of climate change on Taipower's operations.

Several climate scenarios were considered, in light of Taipower's businesses, and used to identify potential physical risks, transitional risks, and opportunities. The workshop demonstrated the strong commitment of senior management to assessing climate impacts with a broad and forward-looking perspective.

Through its detailed discussions, the workshop identified 6 categories of physical risks, 6 categories of transitional risks, and 9 categories of opportunities. These were then analyzed based on their likelihood of occurrence and the severity of their impacts, and subsequently prioritized.

Taking into consideration Taipower's business development strategy, its core mission of ensuring a stable power supply, and the direction of the national energy policy, a final set of 5 key physical risks, 3 key transitional risks, and 3 key opportunities was selected as a priority focus areas to guide management and resource planning.



Physical Risks

1. Changes in typhoon intensity and invasion patterns
2. Changes in rainfall patterns (heavy rainfalls and droughts)
3. Increase in extreme temperatures and average temperature rise
4. Increase in lightning intensity and frequency
5. Sea level rise
6. Changes in topography and landforms

Transitional Risks

7. Adjustments in policies and regulations
8. Adoption of low-carbon technologies and products/services
9. Increase in raw material procurement costs
10. Changes in customer demand
11. Increased difficulty in protecting intellectual property rights
12. Rising risks of climate-related litigation

Opportunities

13. Develop new products/services and enter new markets
14. Adopt low-carbon energy or new technologies
15. Enhance power supply resilience
16. Increase the proportion of green buildings
17. Improve production process efficiency
18. Strengthen internal business continuity management
19. Issue green financial products
20. Participate in government incentive programs
21. Proactively enhance corporate reputation

- Red:Risks
- Green:Opportunities
- Black outline:Long-term risks /opportunities
- No outline:Short-term risks /opportunities

Climate Change Risk and Opportunity Response Strategy Development

In 2024, Taipower completed a comprehensive identification and evaluation of climate-related risks and opportunities across its operational environment. Based on the results, the following material risks and opportunities were identified:

- Physical Risks:Extreme and rising average temperatures, changes in typhoon intensity and trajectories, altered rainfall patterns, increased lightning intensity and frequency, and sea level rise.
- Transition Risks:Policy and regulatory changes, increased demand for low-carbon technologies and products/services, and rising costs of raw material procurement.
- Opportunities:Development of new products or services and expansion into new markets, adoption of low-carbon energy and emerging technologies, and enhanced power supply resilience.

In response to these identified items, relevant departments have developed corresponding strategies based on the anticipated operational and financial impacts. Through cross-departmental meetings and targeted interviews, Taipower assessed the implications of climate-related issues on business continuity and overall performance. These assessments were consolidated from a company-wide perspective, and the detailed results are presented in the table below.

Physical Risks

Factor	Impact Description	Financial Impact	Response Strategy	Financial Implications
Increase in Extreme High Temperatures and Average Temperature	Increase in Peak Load and Extended Summer Impacting Dispatch and Demand Management	Increased Operating Costs	● Conduct load assessments and reserve capacity studies that consider extremely high temperatures. ● Construct or expand gas-fired combined cycle units to enhance the system's power reserve. ● Install energy storage systems equipped with automatic frequency controls. ● Deploy smart meters on a large scale to guide users in adjusting electricity usage behavior.	Increased Operating Costs and Capital Expenditures
	Decrease in Power Generation Efficiency and Output		● Adjust gas turbine intake air temperatures based on historical weather data to maintain efficiency. ● Conduct regular inspections to reduce unnecessary electricity consumption.	Increased Operating Costs
	Restricted Working Hours and Project Delays Due to Heat Illnesses Among Outdoor Workers		● Incorporate extreme temperature risks into workforce scheduling and establish heat hazard prevention measures. ● Adjust construction schedules based on temperature changes. ● Conduct high-temperature emergency drills to enhance response capability.	
Changes in Typhoon Intensity and Track	Damage to Power Equipment Leading to Increased Outages	Increased Operating Costs and Decreased Asset Value	● Assess risks based on typhoon forecasts and develop emergency dispatch plans, using smart meters to quickly identify and repair outages. ● Complete inspections and drills before typhoon season, enhance lowland area inspections and flood prevention measures, and test emergency generators for outage response. ● Evaluate the feasibility of undergrounding power facilities in high-risk areas and promote undergrounding projects where suitable.	Increased Operating Costs and Capital Expenditures
	Aggravation of Salt Contamination Causing Prolonged Outages	Increased Operating Costs	● Regularly clean insulators and apply silicone grease , use monitoring systems to track salt contamination. ● Plan to increase manpower to improve insulator cleaning frequency.	Increased Operating Costs
	Increased Water Turbidity from Heavy Rain Affecting Hydropower Plant Operations		● Include turbidity factors in hydropower plant feasibility studies to mitigate dispatch risks from high turbidity.	
Changes in Rainfall Patterns	Extreme Rainfall or Drought Impacting Hydropower Plant Dispatch	Increased Operating Costs	● Conduct early water resource management and equipment inspections based on drought warnings issued by the Central Weather Bureau. ● Incorporate extreme rainfall and drought hydrological data into future hydropower plant development.	Increased Operating Costs
Increase in Lightning Intensity and Frequency	Damage to Power Facilities Causing Outages	Decreased Asset Value	● Install lightning arresters, enhance lightning protection designs, and strengthen maintenance in high-risk areas to promptly repair damaged equipment. ● Build convective storm cell monitoring systems and analyze data to improve automated grid monitoring and emergency response by dispatchers to reduce disaster impacts.	Increased Operating Costs and Capital Expenditures
Sea Level Rise	Damage to Distribution Systems and Equipment Due to Storm Surges or Flooding	Decreased Asset Value	● Reinforce flood protection measures at existing power plants and substations, including floodgates, levees, and waterproof walls. ● Select higher-elevation sites for new plants or substations and install flood protection facilities.	Increased Capital Expenditures
	Reduction in the Inflow Cross-Sections of Power Plant Cooling Water Systems	Increased Operating Costs	● Regularly record water intake depths and cooling pump outlet pressures, make comparisons to historical averages to monitor condenser pressures and maintain vacuums.	Increased Operating Costs

Transition Risks

Factor	Impact Description	Financial Impact	Response Strategy	Financial Implications
Adjustments in Policies and Regulations	Adjustment of Supply, Grid, and Demand Planning and Financial Requirements to Comply with Net-Zero Policies	Increased Operating Costs and Capital Expenditures	Supply Side: ● In response to government net-zero policies, short-term efforts focus on low-carbon gas, solar, and wind power; medium- to long-term efforts invest in advanced net-zero technologies such as hydrogen, ammonia, and carbon capture.	Increased Operating Costs and Capital Expenditures
			Power Grid: ● In line with national policies, promote grid connection projects for wind and solar power, enhance grid capacity, and establish overload protection mechanisms. ● Build smart grids using AI and big data technologies to optimize dispatching and reduce resource waste. ● Promote energy storage R&D and applications to stabilize the renewable energy supply.	
			Demand Side: ● Promote smart meter systems and provide users with real-time electricity information via the Taiwan Power App and the high-voltage customer service portal to support autonomous electricity management; offer energy-saving visits and diagnostic services for industrial and commercial users.	Increased Capital Expenditure
	Increase in Costs Due to Carbon Pricing	Increased Operating Costs	● Set quantified GHG reduction targets and submit self-reduction plans in line with national net-zero policies to secure carbon fee discounts.	Increased Operating Costs

Transition Risks

Factor	Impact Description	Financial Impact	Response Strategy	Financial Implications
Adoption of Low-Carbon Technologies and Products/ Services	Increase in Costs Due to Replacement of Transmission and Distribution Equipment with Low-Carbon Products	Increased Operating Costs and Capital Expenditures	● Strengthen supply chains to ensure a stable supply of low-carbon equipment and products. ● Collaborate with domestic manufacturers to develop eco-friendly low-carbon equipment, reducing overseas transportation needs and procurement-related emissions and costs.	Increased Operating Costs and Capital Expenditures
	Increase in Costs Due to Deployment of Advanced Energy Technologies (e.g., Marine Energy, Geothermal, Hydrogen/ Ammonia Energy, CCS)		● Maintain international exchanges to monitor advancements in ocean energy, geothermal, hydrogen/ammonia energy, and carbon capture and storage (CCS) technologies. ● Conduct small-scale pilot projects to evaluate technical feasibility and cost-effectiveness, and to accumulate experience to reduce adoption risks.	
	Delays or Increased Resources Required Due to a Shortage of Green Energy Talent and Technical Skills		● Adopt construction methods that reduce labor demand, minimize material waste, shorten construction time, and introduce foreign labor or equipment when necessary. ● Enforce contractor compliance and manage project timelines.	
Increase in Raw Material Procurement Costs	Increase in Investment Costs, Delivery Delays, and Fuel Costs Due to Transition to Low-Carbon Energy and Hydrogen Technologies	Increased Operating Costs and Capital Expenditures	● Improve fuel utilization efficiency through gas infrastructure projects and high-efficiency units. ● Build proprietary receiving terminals to mitigate supply risks, promote long-term fuel contracts, and invest in promising domestic and international fuel producers to ensure stable and cost-effective supply.	Increased Operating Costs and Capital Expenditures
	Increase in Raw Material Prices and Higher Costs for New Facilities and Decommissioning Projects Due to Carbon Cost Pass-Through		● Utilize Building Information Modeling (BIM) during design and construction phases to detect clashes between MEP systems and structures, minimizing design changes and material waste during construction. ● Incorporate the latest technological developments and international best practices to enhance work efficiency and strengthen cost and budget control.	Increased Operating Costs

Opportunities

Factor	Impact Description	Financial Impact	Response Strategy	Financial Implications
Development of New Products and Services and Entry into New Markets	Development and Provision of Diversified Green Power and Low-Carbon Products	Increased Revenue	● Conduct renewable energy certificate reviews and install sub-metering systems at company-owned sites. ● Conduct market surveys to understand customer needs and develop green electricity products aligned with market demands.	Increased Operating Costs
	Promotion of Diversified Demand-Side Management Measures (e.g., Time-of-Use Pricing, Demand Response, Energy Conservation)	Reduced Capital Expenditures	● Introduce demand response programs and new time-of-use pricing schemes for residential and commercial users to encourage off-peak electricity consumption. ● Promote the installation of smart meters to enhance the convenience of electricity management.	Increased Operating Costs and Capital Expenditures
Adoption of Low-Carbon Energy or New Technologies	Early Investment in Advanced Energy Technologies (e.g., Marine Energy, Geothermal, Hydrogen/Ammonia Energy, CCS) to Lead Domestic Development, Reduce Carbon Demand, and Expand International Cooperation Opportunities	Enhanced Corporate Reputation	● Actively engage in international exchanges and collaborations, and continue selecting pilot sites for testing ammonia/ hydrogen co-firing gas turbines and carbon capture and storage (CCS) technologies. ● Enhance green competitiveness by carefully evaluating investment returns, securing government subsidies, utilizing green power feed-in tariffs, and participating in carbon trading. ● Leverage forward-looking government technology programs and research budgets to support relevant technology development.	Increased Operating Costs and Capital Expenditures
	Expansion of Low-Carbon Energy (e.g., Wind, Solar, Hydro, Gas) to Increase Low-Carbon Power Supply	Increased Revenue and Enhanced Corporate Reputation	● Continuously plan wind, solar, hydro, and gas projects to support low-carbon renewable energy development. ● Integrate carbon capture technologies with gas-fired units and develop hydrogen/ammonia co-firing to reduce carbon emissions. ● Form cross-industry alliances with enterprises and major electricity users to jointly promote low-carbon power initiatives.	
Enhancement of Power Supply Resilience	Enhancement of Microgrids and ICT Development to Strengthen System Resilience and Future Growth Potential	Reduced Operating Costs	● Strengthen data centers and ICT infrastructure to enhance cloud computing and data storage capabilities; support power system data analytics and diversified operational needs. ● Improve cybersecurity capabilities to enhance system resilience. ● Promote disaster-resilient microgrids and continuously provide technical support to assist local governments in their development.	Increased Operating Costs and Capital Expenditures
	Expansion of Participation in the Power Trading Market to Support Grid Security and Stability		● Utilize the electricity trading platform to encourage privately distributed energy resources to provide ancillary services; expand supply sources.	Increased Operating Costs

1.4.3 Metrics and Targets 305-1 305-2 305-4

In line with the seven major categories of metrics recommended by the TCFD, Taipower has established corresponding indicators and targets to measure performance and track progress in climate change management.
In addition, Taipower systematically inventories and monitors its greenhouse gas (GHG) emissions, strengthens the management of its total carbon emissions, mitigates climate risks, and supports its low-carbon transition goals.

Metrics Category	Metric	2024 Results / Future Targets
Greenhouse Gas Emissions	Disclosure of Scope 1 and Scope 2 Emissions[1]	Scope1 (Direct emissions) :91.45 million tCO_2e Scope2 (Energy indirect emissions) :2.27 million tCO_2e
	Net GHG Emission Intensity of Thermal Power Units	11.7% reduction compared to 2016; target of 20% reduction by 2030
Physical Risks	SAIDI (System Average Interruption Duration Index)	15.831 minutes per household per year in 2024; the 2030 target is 15.5minutes.
	SAIFI (System Average Interruption Frequency Index)	0.209 outages per household per year
	Distribution Feeder Automation	9,784 feeders completed
Transition Risks	Cumulative Installed Capacity of Gas-Fired Units	13,953 MW; target to reach 25,924 MW by 2030
	Grid-Connected Renewable Energy Capacity	20,426 MW as of 2024; target to reach 41,718 MW by 2030.
	Renewable Energy Generation Share in Taipower System	11.9% (approx. 30 billion kWh); target of 24.1% (approx. 68 billion kWh) by 2030
Climate-Related Opportunities	Ammonia and Hydrogen Co-Firing Demonstration	The Linkou and Dalin Power Plants: feasibility study for >5% ammonia (thermal basis) by 2025; co-firing demonstration (>5%) at selected unit by 2030. The Hsinta Power Plant: completed a 5% hydrogen (volumetric basis) test in 2023; a further 7–10% hydrogen co-firing verification is planned by 2025.
	Carbon Capture and Storage (CCS) Pilot Projects	The Taichung Power Plant:2,000-ton CCS pilot project. ● Carbon Capture Facility:geological drilling completed in 2024; target to start 2,000 t/year of capture by March 2027. ● Carbon Storage Facility:procurement awarded in 2024; target to start 2,000 t/year of injection by October 2028.
	Demand Response Programs	Participation volume reached 3.4 GW
Capital Allocation	Power Grid Resilience Enhancement Plans	From 2022 to 2032: Distributed Grid Projects (NT$437.9 billion), Grid Reinforcement Projects (NT$125 billion), System Defense Capability Enhancements (NT$1.69 billion); NT$137.4 billion invested by 2024.
	Gas Infrastructure Investment [2]	Planned NT$974.63 billion investment (2011–2035); NT$298.63 billion invested by 2024.
	Green Bond Issuance	NT$111.2 billion issued as of 2024
Internal Carbon Pricing	Internal Carbon Pricing System	Taipower has established an internal carbon pricing mechanism that considers abatement costs, regulatory penalties, and market prices.

Notes: As Taipower is the primary electricity provider in Taiwan, its total direct emissions also encompass indirect energy emissions.
Gas infrastructure projects include the following:
theTunghsiao Power Plant Renewal and Expansion Project, the Datan Power Plant Gas-Fired Combined Cycle Unit Expansion Project,
the Hsieh-ho Power Plant Renewal and Reconstruction Project, the Hsinta Power Plant Gas-Fired Unit Renewal and Reconstruction Project,
the Taichung Power Plant New Gas-Fired Unit Project, the Tunghsiao Power Plant Phase II Renewal and Reconstruction Project,
the Dalin Power Plant Gas-Fired Unit Renewal and Reconstruction Project, the Taichung Power Plant Phase II New Gas-Fired Unit Project.

1.5 Sustainable Supply Chain

Taipower aims to become an outstanding and trustworthy world-class power utility group and continues to enhance its sustainable development initiatives, with supply chain management being a critical element. As a state-owned enterprise, Taipower manages various types of suppliers in accordance with regulatory requirements. Environmental, social, and governance (ESG) compliance is mandated from the tendering phase, where all bidders must meet legal standards. Based on the nature of goods or services provided, the Company selects appropriate partners during bidding and evaluation.

1.5.1 Supplier Management 2-6

Taipower's suppliers are categorized into three groups: fuel suppliers for power generation, material and equipment suppliers, and electricity providers for external purchases. The Company identifies potential risks based on each supplier type and manages them across quality, output, environmental, and social dimensions. An overview of each supplier category is provided below.

Fuel Supplier Management

The main fuels used in Taipower's thermal power plants include natural gas, coal, and fuel oil, while nuclear power plants require nuclear fuel. To ensure a stable fuel supply, Taipower employs four key strategies: diversifying fuel sources, signing long-term contracts, maintaining secure inventories, and ensuring stable coal transportation. These strategies support the timely, high-quality, and adequate delivery of fuel to each power plant, ensuring a safe and stable power supply. Specific measures and actions are as follows: