



# Managing What Matters to Our Business

Enabling our enduring focus on  
long-term growth, creating value  
for our stakeholders.



## Overview

Responsible energy providers must adapt to shifting economic landscape as societies move away from fossil fuels to greener foundations for future generations. To support the transition, CLP manages its key business issues and delivers sustainable energy solutions in a way that creates value for capital providers, customers, employees and the wider community.

CLP is keenly aware of its responsibility to help shape a new energy future by transforming the way electricity is generated and delivered. We also have deep-rooted responsibilities to the communities in which we operate, the societies we energise, the governments and regulators we answer to and the customers we serve.

The journey to long-term success requires a strategic roadmap to ensure we maintain a world-class electricity supply to customers while moving towards our decarbonisation objectives in a rapidly changing world. That is why we conduct annual materiality assessments to track the topics of sustainability most likely to impact our business, our stakeholders and the natural environment. The assessments support our ongoing strategy review and development, uncover any emerging risks or opportunities and maintain transparency as we navigate a route to transform our business.



## Maintaining the double materiality approach



CLP continued to adopt the double materiality approach for the 2024 Annual Report and Sustainability Report. The approach – which has a three-year cycle – was first applied in 2021 to inform the sustainability-related content of CLP’s annual suite of reports. The double materiality concept expands the traditional focus of materiality on stakeholder impacts to also consider the financial effects of sustainability topics that may reasonably be expected to affect the business’s cash flows, access to finance or cost of capital in the short, medium and long term. These topics are covered in the *Managing What Matters to Our Business* chapter of the Annual Report, which also discusses the identified sustainability and climate-related risks and opportunities, as well as relevant metrics and targets in accordance with the Hong Kong Financial Reporting Standard (HKFRS) S1 General Requirements for Disclosure of Sustainability-related Financial Information and HKFRS S2 Climate-related Disclosures. The [Sustainability Report](#), meanwhile, explores sustainability topics that have a material impact on people, the environment and the economy.

As 2024 was Year 1 of the current cycle, a comprehensive assessment including a megatrend analysis, a peer review and interviews with CLP’s Group Executive Committee members and senior executives was carried out to identify key sustainability-related impacts, risks and opportunities (IROs). The double materiality assessment complements CLP’s risk management process, which is detailed in the Risk Management Report within the Annual Report and takes into consideration material topics identified by the assessment. Our materiality assessment process and results were also externally assured, underlining the rigor of our methodology and maintaining our long-standing commitment to best practice in sustainability reporting.

What are IROs?

*Sustainability-related financial risks and opportunities*

*Stakeholder impacts*

## Identifying priorities in how we manage our business



As part of the comprehensive assessment, an analysis was conducted to determine the nine megatrends considered most relevant to CLP, based on the executive interviews and other information such as university research, consultant reports, industry surveys, media reports and government resources. The megatrends identified in the previous three-year cycle were updated to reflect our changing business and the evolving operating environment, although most changes involved refining and rephrasing aspects of the previous megatrends. For example, while geopolitics and cybersecurity were featured previously as megatrends, they have become more acute amid rising societal concerns. Nature loss, meanwhile, was added as a new megatrend after analysis confirmed it was a subject of increasing focus for governments and investors.

Megatrends form the basis for us to identify and assess sustainability-related IROs. In addition, we referred to a range of internal and external resources, including CLP's strategy, risk assessment and relevant international reporting standards. This process initially identified 89 IROs which were then assessed for materiality using our own enterprise risk framework with reference to the latest International Sustainability Standards Board and Global Reporting Initiative (GRI) standards.

After being evaluated for their magnitude/severity and likelihood, 57 IROs were assessed as being high or extreme and therefore material to CLP. These sustainability-related IROs were organised under six material topics and 20 sub-topics.

The assessment process was conducted by a working group of internal and external materiality experts with participation from CLP's Group Sustainability, Group Risk Management, Investor Relations and Corporate Affairs teams. Assessment outcomes were refined and validated

by the management-level Sustainability Executive Committee and endorsed by the CLP Holdings' Board-level Sustainability Committee.

### 9 Megatrends



Electrification



Disruptive Technologies



Distributed Energy



Future of Work



Changing Societal Expectations



Geopolitics and Supply Chain Resilience



Data Use and Cybersecurity



Decarbonisation



Nature Loss

### 89 IROs identified

57 high / extreme IROs assessed as material to CLP

### 6 Material Topics and 20 Sub-Topics



Net-Zero Transition



Energy Growth Opportunities



Digital Innovation and Cybersecurity



Future-Ready Workforce



Operational and Supply Chain Resilience



Community Stewardship\*

\* This material topic is not discussed in the Annual Report as no high or extreme sustainability-related financial risks and opportunities were identified and therefore not considered financially material. Please refer to the Sustainability Report for more details.

CLP aims to manage and respond to the sustainability-related financial risks and opportunities which may reasonably be expected to affect our cash flows, access to finance or cost of capital in the short, medium and long term. With reference to HKFRS S1, we disclose material information about these risks and opportunities to investors in this *Managing What Matters to Our Business* chapter of the Annual Report. Information is considered material if omitting, misstating or obscuring it could reasonably be expected to influence investment decisions.

CLP manages and responds to significant positive or negative impacts on people, the environment and the economy. These impacts, which are set out in the GRI standards, are covered in the [Sustainability Report](#) and address the concerns of a broad range of stakeholders on CLP's positive and negative contributions to sustainable development.

## CLP's Business Matters

The following five sections are dedicated to the discussion of sustainability-related financial risks and opportunities that were considered high or extreme by the assessment that matter to our business.



### Net-Zero Transition

CLP is transitioning to low-carbon energy by phasing out coal, investing in non-carbon energy infrastructure, managing climate-related risks and meeting environmental responsibilities. The transition creates opportunities in renewable energy, transmission, distribution and energy storage. In line with [Climate Vision 2050](#), CLP is committed to reducing greenhouse gas emissions to meet business and government targets while ensuring energy reliability and affordability, and addressing potential risks including grid instability, stranded coal assets and geopolitical uncertainties.



### Energy Growth Opportunities

CLP is focused on providing reliable, sustainable energy at a reasonable cost. As electrification and digitalisation raise demand for low-carbon energy, it is well-positioned to capture new energy growth opportunities through investing in lower-carbon electricity infrastructure to support the net-zero transition in line with government objectives and providing decarbonisation solutions for customers.



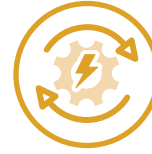
### Digital Innovation and Cybersecurity

CLP is prioritising digital innovation to improve operations and provide smarter energy services while ensuring cybersecurity. It is continuously enhancing its digital capabilities to become a data-driven and secure utility. Digitalisation is crucial for transforming the energy sector, enabling CLP to create a more efficient, connected and customer-centric business.



### Future-Ready Workforce

CLP is dedicated to creating a future-ready workforce by fostering employee development in a safe, diverse and inclusive environment. Talent acquisition and development are essential for staying competitive and adapting to new strategic goals in the evolving energy sector. Continuous investment in succession planning and a more agile culture enables CLP to innovate, seize opportunities, attract top talent and enhance employee satisfaction.



### Operational and Supply Chain Resilience

CLP prioritises the resilience of its operations and supply chains to safeguard its business and ensure access to critical technologies and resources. This involves addressing risks that could disrupt energy security, logistics networks and cost stability, while integrating new technologies. By focusing on resilience in strategic planning, CLP aims to mitigate risks from geopolitical uncertainties, regulatory changes and technological dependencies that might impact energy costs, innovation capacity, project timelines and operational stability.

## Our material topics

Topic	Sub-topic	Risk and opportunity	Value chain	Time horizon
<b>Net-Zero Transition</b> 	<b>Acting as a trusted stakeholder</b>	<b>Financial risk:</b> Missing greenhouse gas emissions intensity reduction targets and failing to deliver on Climate Vision 2050 could erode investor confidence in CLP's ability to profitably manage the energy transition, potentially resulting in a lower share price, higher capital costs and reduced access to funding.	Own operations	Medium-term
	<b>Enhancing grid resilience and flexibility</b>	<b>Financial risk:</b> Ageing and insufficient power grid infrastructure may constrain ability to accommodate distributed energy resources and renewable connections, potentially compromising supply reliability and hindering the low-carbon transition.	Own operations	Medium-term
	<b>Expanding into new products and services</b>	<b>Financial opportunity:</b> Increasing use of battery storage enables CLP to enhance energy dispatch and strengthen energy reliability. Improved flexibility to respond to demand fluctuations helps stabilise the power grid and enhance supply resilience.	Own operations	Short-term
		<b>Financial opportunity:</b> Developing expertise in low-carbon energy technologies such as green hydrogen will help CLP attract investors and customers eager to participate in the energy transition.	Own operations	Short-term
	<b>Managing physical climate risks</b>	<b>Financial risk:</b> Climate-related extreme weather events such as wildfires, windstorms, and heatwaves may damage CLP's energy infrastructure and impact business operations.	Own operations	Short-term
<b>Financial risk:</b> Repairs and maintenance of energy infrastructure will increase operational costs as extreme weather events become more common.		Own operations	Short-term	
<b>Financial risk:</b> Increased risks of extreme weather events may result in higher insurance premiums and affect profitability.		Own operations	Short-term	
<b>Navigating geopolitical instability</b>	<b>Financial risk:</b> Trade policies aimed at limiting dominance of materials and technologies from countries where CLP sources its equipment and properties may increase CLP's cost of acquisition and project execution.	Own operations	Medium-term	
<b>Energy Growth Opportunities</b> 	<b>Acting as a trusted stakeholder</b>	<b>Financial risk:</b> Public sensitivity to any potential electricity tariff adjustments may affect progress of government-approved electricity infrastructure investments/service lines.	Upstream	Short-term

Topic	Sub-topic	Risk and opportunity	Value chain	Time horizon
	Adapting to regulatory changes	<b>Financial risk:</b> Uncertainty in Australian energy and decarbonisation policies could affect EnergyAustralia's operations and energy transition plans.	Own operations	Medium-term
		<b>Financial risk:</b> Evolving net-zero policies internationally may push CLP to accelerate its coal-fired power plant closures, forcing it to bear the transition costs (such as revenue loss, decommissioning costs) ahead of schedule.	Own operations	Long-term
		<b>Financial risk:</b> Potential adverse changes in energy regulations in the markets where CLP operates may affect its operating environment and business model in the long term.	Upstream	Long-term
	Capitalising on electrification trends	<b>Financial opportunity:</b> Supporting the electrification of various transportation segments, including commercial vehicles, taxis, ferries and private cars can generate diverse business opportunities for energy suppliers.	Own operations	Long-term
		<b>Financial opportunity:</b> CLP can leverage its EV charging expertise in Hong Kong and Mainland China in other markets to develop potential new opportunities from transport electrification.	Own operations	Medium-term
		<b>Financial opportunity:</b> Electrification needs to quadruple by 2050 globally, offering CLP opportunities to diversify into new lines of business and establish joint ventures with potential partners.	Downstream	Short-term
	Capturing international market opportunities	<b>Financial opportunity:</b> CLP can capitalise on potential gaps in Asian energy markets left by the withdrawal of some companies due to geopolitical concerns.	Own operations	Short-term
		<b>Financial opportunity:</b> CLP can leverage its strong supply chain relationships in Mainland China to seek potential energy investment opportunities in Asian markets in China's Belt and Road Initiative.	Own operations	Medium-term
	Ensuring energy affordability and reliability	<b>Financial risk:</b> Potential volatility in natural gas supply may affect gas-fired power generation in Hong Kong and increase costs, leading to possible pressure to adjust electricity tariffs.	Own operations	Medium-term
		<b>Financial risk:</b> With energy affordability a growing concern for Hong Kong customers and the Government, CLP is expected to continue delivering reliable, sustainable energy at a reasonable cost.	Own operations	Short-term

Topic	Sub-topic	Risk and opportunity	Value chain	Time horizon
		<b>Financial opportunity:</b> Ageing populations, rising incomes and urbanisation in Asian markets have continued to support growth in electricity demand, presenting opportunities for CLP and other energy suppliers.	Own operations	Long-term
	<b>Expanding into new products and services</b>	<b>Financial opportunity:</b> Utilities should meet growing customer demand for low-carbon energy with a diversified range of distributed energy solutions including solar energy, home batteries and EV charging.	Own operations	Short-term
	<b>Capitalising on growth in AI and digital technologies</b>	<b>Financial opportunity:</b> CLP can capitalise on AI's growing energy demands by investing in energy infrastructure to deliver reliable and scalable energy solutions to data centres.	Own-operations	Medium-term
	<b>Navigating geopolitical risks</b>	<b>Financial risk:</b> Regulatory changes in Hong Kong, Mainland China, Australia and India could increase operational costs and complexity for utilities.	Own-operations	Medium-term
<b>Digital Innovation and Cybersecurity</b> 	<b>Capitalising on growth in AI and digital technologies</b>	<p><b>Financial risk:</b> CLP's digitalisation agenda could be derailed by cost and time over-runs, an inability to scale, disruptions caused by imperfect implementation, and/or failing to meet customer expectations.</p> <p><b>Financial opportunity:</b> Leveraging AI to improve network diagnostics and realise cost efficiencies in maintenance operations.</p>	Own operations	Short-term
	<b>Protecting customer data and privacy</b>	<b>Financial risk:</b> Tightening data privacy regulations could increase operational complexity and compliance costs.	Own operations	Medium-term
	<b>Strengthening cybersecurity measures</b>	<p><b>Financial risk:</b> The increased vulnerability of smart grid technology to cyberattacks on critical infrastructure poses a significant risk of operational disruptions, regulatory penalties and reputational damage.</p> <p><b>Financial risk:</b> Insufficient investment in advanced cybersecurity systems and digitisation could leave CLP vulnerable to cyberattacks and data breaches. As AI integrates more deeply with operational technology, these vulnerabilities could intensify.</p> <p><b>Financial risk:</b> A major cybersecurity breach would present a serious risk to CLP's financial position and reputation, causing a loss of market share.</p>	Own operations	Short-term
				Own operations

Topic	Sub-topic	Risk and opportunity	Value chain	Time horizon
<b>Future-Ready Workforce</b> 	<b>Cultivating agile ways of working</b>	<b>Financial risk:</b> CLP is required to strike a balance between operating a regulated business in Hong Kong and being agile to business uncertainties and unforeseen risks. This may affect responsiveness to industry megatrends and market dynamics, potentially limiting the company’s capacity to capture emerging opportunities and resulting in reduced operational efficiency, lost revenue opportunities, and diminished competitiveness in a rapidly evolving energy market.	Own operations	Medium-term
	<b>Upskilling and reskilling employees</b>	<b>Financial risk:</b> Failure to attract and develop the talent required for a digitally enabled, low-carbon future will hamper CLP’s ability to meet its strategic objectives and expand capabilities in new areas.	Own operations	Short-term
<b>Operational and Supply Chain Resilience</b> 	<b>Navigating geopolitical risks</b>	<b>Financial risk:</b> Escalation of geopolitical conflict in the Middle East, Europe or Asia may threaten energy security, shipping and prices. Even a temporary lapse in the security and affordability of fossil fuel supply could force CLP to pass on costs, leading to a loss of customers and/or significant tariff implications.	Upstream	Short-term
		<b>Financial risk:</b> While CLP is a regional business, its strong presence in Hong Kong and proximity to Mainland China may create complications for its operations in other markets amid geopolitical tension.	Own operations	Short-term
	<b>Ensuring resilient operations and supply chains</b>	<b>Financial risk:</b> Operational resilience is foundational to CLP’s position as an essential service provider, and maintaining reliability is core to the business. Many nations are moving towards increased geopolitical competition and away from free trade. CLP’s technological dependencies may compromise its innovation capacity, and access to critical platforms and tools.	Own operations	Short-term
		<b>Financial risk:</b> Intensifying US-China tensions may complicate efforts to secure advanced US technologies such as semiconductors.	Own operations	Short-term

**Time horizon is defined as:**

Short-term	Medium-term	Long-term
0-1 year	1-5 years	5+ years



# Net-Zero Transition

CLP has pledged to achieve net-zero greenhouse gas (GHG) emissions across its value chain by 2050. While the pathway to net zero is not linear and there may be short-term fluctuations, the Group is committed to decarbonising its own generation and operation, while supporting customers to reduce their carbon footprint.

The transition presents a mix of financial risks and opportunities. One of the new opportunities is the application of energy technologies such as battery storage and hydrogen produced from non-carbon emitting sources. This will not only support CLP's energy transition, but also improve grid reliability and flexibility.

There will be challenges arising from the complex dynamics in the energy sector but finding a route forward is essential for CLP to achieve sustainable growth and a successful energy transition.

GHG emissions intensity of electricity sold decreased to



**0.53**  
kg CO<sub>2</sub>e/kWh

(0.54kg CO<sub>2</sub>e/kWh in 2023)

Total GHG emissions (Scope 1, 2 and 3) across the value chain dropped



**4.3%**  
year-on-year

**77%**



Planned proportion of CLP's total capital investments in non-carbon generation assets, transmission, distribution and retail operations for 2025-2029 (Estimate for 2024-2028: 64%)

## Nations and regions strengthen climate regulatory frameworks

United Nations member states convene every year to assess progress in dealing with climate change and make plans for future actions, with the most recent meeting – the 29<sup>th</sup> United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP29) – held in Azerbaijan in November. There was limited progress in COP29 – dubbed the “Finance COP” – in terms of accelerating the energy transition because pathways to carry forward some COP28 proposals including tripling renewable energy capacity and doubling energy efficiency worldwide by 2030, as well as phasing out inefficient fossil fuel subsidies were not included in its decision. Nevertheless, some new agreements were reached on climate finance, carbon markets, transparency in climate reporting and adaptation strategies.

Governments around the world meanwhile took steps of their own to strengthen climate action. In 2021, Hong Kong pledged to raise the ratio of zero-carbon energy in the fuel mix for electricity generation to 60-70% before 2035 with a goal of net-zero electricity generation before 2050. Recognising the key role played by the finance sector in supporting global action on climate change, the Hong Kong Monetary Authority (HKMA) in May launched the Hong Kong Taxonomy for Sustainable Finance, which covers economic activities in four sectors including power generation. The

taxonomy considers significant sustainable finance taxonomy developments that have occurred in other jurisdictions, particularly Mainland China, the European Union and the Association of Southeast Asian Nations, and aligns with the overall need to transition the global economy to net-zero emissions by 2050. As a next step, the HKMA will seek to expand the coverage of the taxonomy to include more sectors and activities, including transition activities.

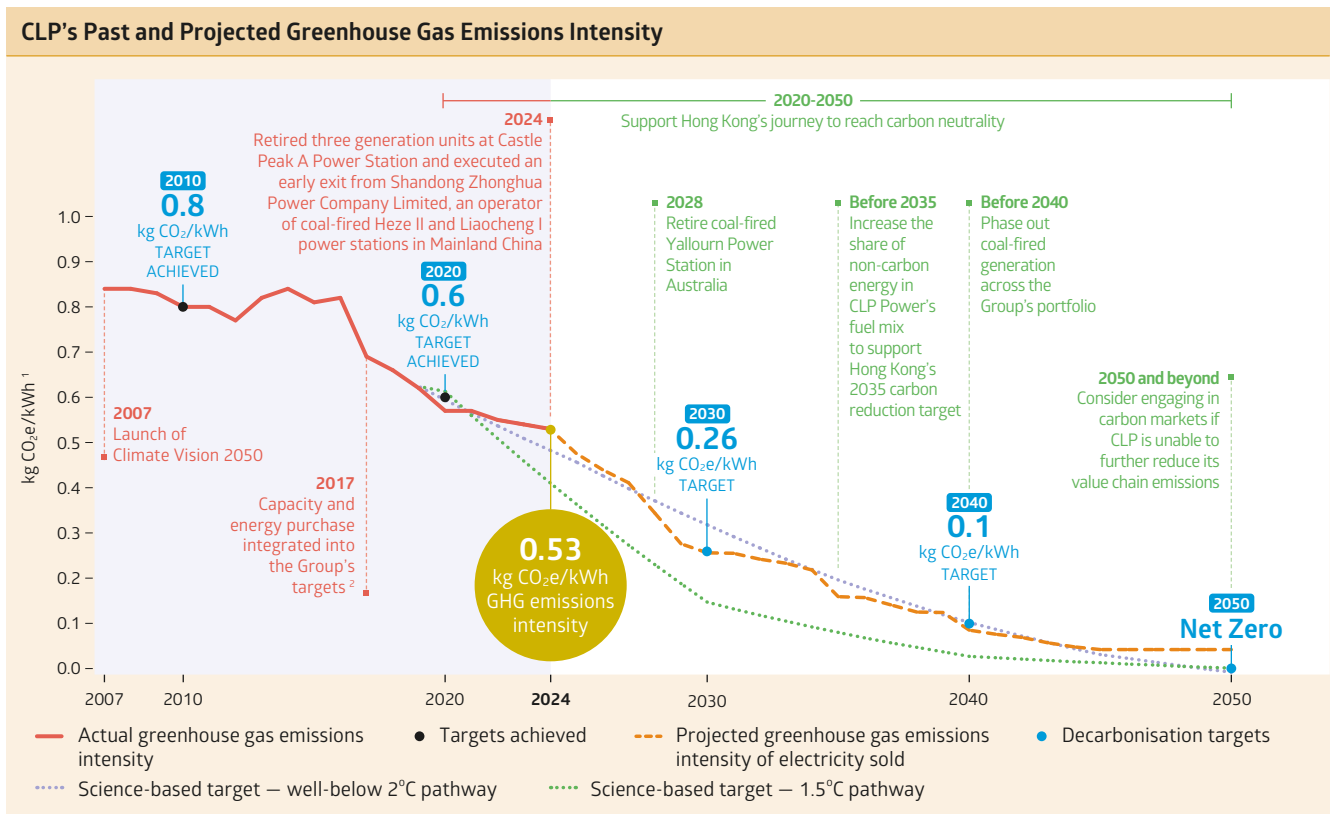
As transportation contributes to about a fifth of total carbon emissions in the city, the Hong Kong SAR Government also announced new policies including a HK\$750 million fund to electrify taxis and franchised buses and to subsidise the trial use of hydrogen by heavy vehicles, plans to develop a maritime fuel bunkering centre and new targets for sustainable aviation fuel consumption.

China has dual carbon targets of achieving peak carbon emissions by 2030 and carbon neutrality by 2060 and invested heavily in renewable energy and storage technologies. In July, for example, its wind and solar capacity surpassed 1,200GW, exceeding a target set by President Xi Jinping almost six years ahead of schedule.

India meanwhile remained firmly on track to achieve its target of increasing the ratio of non-fossil fuel-based energy sources for power generation to 50% by 2030, with renewable energy accounting for more than 46% of the country's total installed capacity by the end of 2024.

Firmly committed to Climate Vision 2050 targets

In 2024, CLP's total GHG emissions (Scope 1, 2 and 3) across its value chain decreased 4.3% year-on-year to 50,692 kilotonnes of carbon dioxide equivalent (kt CO<sub>2</sub>e) on an equity basis. Its GHG emissions intensity of electricity sold declined to 0.53kg CO<sub>2</sub>e per kilowatt hour (kWh), lower than the 0.54kg CO<sub>2</sub>e per kWh a year earlier. This was largely attributed to the execution of an early exit from Shandong Zhonghua Power Company Limited (SZPC), an operator of two coal-fired power stations in Mainland China, and the increasing use of gas in replacement of coal in Hong Kong, albeit partly offset by the increase in the energy sent out from coal assets at EnergyAustralia. Details of CLP's approach in measuring its GHG emissions and further information on its Scope 1, 2 and 3 emissions can be found in the [Sustainability Report](#).



Notes:

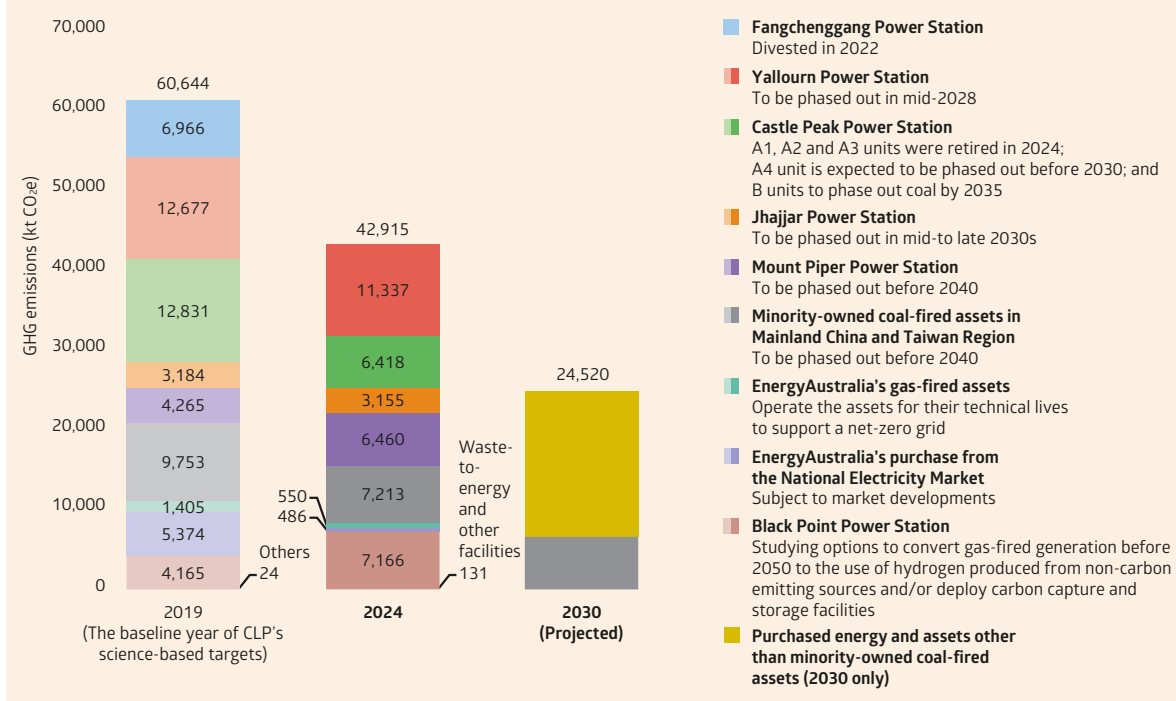
- CLP's trajectory from 2007 to 2020 was based on the Group's carbon emissions intensity (kg CO<sub>2</sub>/kWh). Since 2021, in line with global best practices, CLP has reported its GHG emissions intensity based on kg CO<sub>2</sub>e/kWh.
- CLP's trajectory from 2017 to 2050 is on an equity plus capacity and energy purchase basis.

CLP remains committed to the targets set out in the Group's Climate Vision 2050, which has guided its business strategy since 2007. It has also pledged to review the targets at least every three years. The last update was released in 2024 when CLP strengthened its commitment to reduce the GHG emissions intensity of electricity sold to 0.26kg CO<sub>2</sub>e/kWh by 2030, compared with a previous target of 0.3kg CO<sub>2</sub>e/kWh. The goals of reducing the GHG emissions intensity of electricity sold to 0.1kg CO<sub>2</sub>e/kWh by 2040 and achieving net zero by 2050 remain unchanged. In the interim, CLP also targets to reduce Category 11 of its absolute Scope 3 emissions – use of sold products from combustion of the natural gas supplied to customers – by 28% by 2030 from its

2019 baseline level. Based on Moody's Net Zero Assessment, CLP was assigned an NZ-2 (advanced) score to its updated transition plan. It is the second-best score on a five-point scale, reaffirming the alignment of the Group's emissions reduction targets with the Paris Agreement goal of limiting global warming to well-below 2°C above pre-industrial levels as well as its solid implementation and adequate governance.

CLP's subsidiary EnergyAustralia released its Climate Transition Action Plan 2024 in December following the publication of its inaugural plan in August 2023. The latest document reaffirms its commitment to achieve net-zero Scope 1 and Scope 2 emissions by 2050, and its ambition to extend the undertaking to Scope 3 emissions.

## CLP's Past and Projected Absolute Greenhouse Gas Emissions of Electricity Sold and Phase-out Schedule of Fossil Fuel Assets



### Notes:

- 1 The figures are on an equity plus capacity and energy purchase basis.
- 2 Numbers have been subject to rounding. Any discrepancies between the total shown and the sum of the amounts listed are due to rounding.

CLP has published its long- and short-term strategy to manage Scope 1 emissions, emissions reduction targets and an analysis of its performance on how to achieve those targets in *CLP's Climate Vision 2050: Powering an orderly transition* (published in March 2024), which also details its sustainability governance and risk management. Please see the publication for more details. For CLP's other environment-related targets, please refer to the [Sustainability Report](#).

Apraava Energy aims to reduce the intensity of its Scope 1 and Scope 2 emissions by 46.3% by 2027 compared with 2022. The target was validated by the Science Based Targets initiative (SBTi), making Apraava Energy the second Indian power company to receive SBTi validation. Apraava Energy remains on course to achieve its SBTi target following a 6% year-on-year reduction in its Scope 1 and Scope 2 emissions intensity in 2024.

### Moving away from coal

Under Climate Vision 2050, CLP is committed to phasing out coal-fired generation before 2040. The Group stepped up efforts to ensure a smooth transition by maintaining a reliable and affordable supply of electricity that is increasingly ready for a future without coal.

In Hong Kong, three out of four generation units at Castle Peak A Power Station have been retired. CLP Power has received an environmental permit to carry out the decommissioning and demolition of the plant. The use of coal at Castle Peak B Power Station will be phased out by 2035. Meanwhile, the completion of the D2 gas-fired generation unit at Black Point Power Station in 2024, adding to the existing D1 unit, significantly bolstered CLP's ability to deliver a reliable, lower-carbon power supply as coal-fired generation is being phased out. CLP also executed an early exit from SZPC.

Mount Piper Power Station in Australia was originally designed as a large-scale, base load coal-fired generator. Based on EnergyAustralia's decision to phase out coal, however, a series of initiatives have been launched to target short duration flexibility and give the power station the ability to remove units from service for longer periods of time. By doing this, the plant can in future assume a reserve or back-up role for incidents such as prolonged wind droughts. All necessary modifications are expected to be completed by the end of 2025 and the power station is scheduled to transition to a back-up role for renewable energy by mid-2030s before retirement by 2040.

EnergyAustralia's only other coal-fired plant, Yallourn Power Station in Victoria, will close in mid-2028. To safeguard employees and communities, workers are being provided with transitional support as part of EnergyAustralia's A\$10 million Power Your Future programme. Since the programme was launched in November 2022, it has resulted in over 600 individual career coaching sessions, nearly 350 individual transition plans, over 100 training activities, 25 financial advice sessions and more than 50 employee financial plans. Around 60% of employees want to remain living in the Yallourn region after the power station's closure and EnergyAustralia is exploring partnerships with potential employers in the area to find openings for secondments and jobs.

Fast-start peaking gas-fired power stations will play a vital reserve role in ensuring the system's reliability during Australia's net-zero transition. That is why EnergyAustralia invested in the 320MW Tallawarra B Power Station, which went into service in 2024 and will provide electricity in response to market conditions, such as the wind drought lasting several weeks in mid-2024. The plant's fast-start gas turbine can come online and operate at full capacity within 30 minutes. EnergyAustralia expects both Tallawarra A and B power stations to use a proportion of renewable hydrogen for their operations when such locally produced fuel becomes available and economic.

Apraava Energy's sole coal-fired asset, Jhajjar Power Station, continued to set new benchmarks for responsible power generation. It increased the use of biomass for co-firing in 2024 to 3.9%, one of the highest levels for power plants in India.

### Advancing zero-carbon energy infrastructure investment

Throughout the year, CLP focused on investments to accelerate the energy transition. Non-carbon generation assets, transmission, distribution and retail operations accounted for 55% of the Group's capital investments of HK\$19,005 million, on an accrual basis. For 2025-2029, CLP plans to increase the ratio to 77%.

Investments in Hong Kong included the upgrading of the cross-boundary Clean Energy Transmission System (CETS) for the import of more zero-carbon energy from Mainland China. The enhancement, which is expected to be completed by the end of 2025, will provide Hong Kong with the flexibility to use more zero-carbon energy in future.

CLP China stepped up its pace of renewable energy investment with around 1,530MW of wind and solar projects in execution by the end of the year. The business has 2,690MW of projects already in operation and is on track to double its portfolio of renewable energy assets within the next three to four years.

EnergyAustralia is targeting up to 3GW of renewable energy committed or operational in its portfolio by 2030, supported

by partnering activities such as power purchase agreements (PPAs) with a focus on large-scale wind generation assets. The business secured a PPA in 2024 for 230MW from the Golden Plains Wind Farm to begin in the late 2020s. EnergyAustralia's renewable energy purchasing strategy complements its existing strategy to deliver a pipeline of new assets such as battery systems to reduce reliance on fossil fuels.

Apraava Energy upheld its status as a pioneer in tapping the vast renewable energy potential of India, growing its non-carbon energy portfolio in line with the nation's net-zero aspirations. It further expanded the portfolio in 2024, beginning construction work on 900MW of renewable energy projects and winning four advanced metering infrastructure (AMI) contracts to install 3.8 million smart meters in four states. Apraava Energy also continued to develop world-class transmission infrastructure and substations to ensure seamless power distribution across states.

### Enhancing reliability through battery energy storage

Utility-scale battery energy storage system (BESS) projects allow intermittent sources of renewable energy such as solar and wind to make a steady and reliable contribution to power grids, regardless of the weather conditions and time of day.

Plans were prepared for a grid-scale BESS of around 100MWhr at Castle Peak Power Station in Hong Kong to start operating in 2028. This will help regulate peak system demand and allow for the integration of more clean energy sources into the grid as part of CLP Power's 2024-2028 Development Plan.

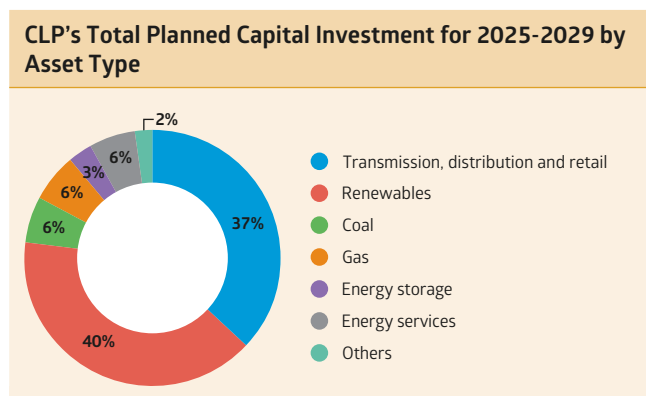
CLP China meanwhile has built three BESS projects next to its renewable energy assets to strengthen their operations and invested in its first standalone BESS in 2024, located in Guanxian in Shandong province. The project is expected to take part in domestic spot electricity market trading to support renewable energy consumption and grid operation stability when it enters service in 2025.

EnergyAustralia took significant strides in the development of BESS projects. It won support from the Federal Government for its Wooreen and Hallett BESS projects, made progress with another project near Mount Piper Power Station, and secured a virtual toll agreement with Akaysha Energy's Orana BESS. The business also promoted two customer battery initiatives in line with its commitment to reduce emissions and promote sustainable energy solutions.

The first is Battery Ease, which enables customers to integrate their home batteries into its virtual power plant (VPP) and optimise the timing of their battery charging in return of financial benefits. The second is a community battery programme, which offers access to energy in shared storage

to customers in New South Wales without home batteries or solar panels as well as customers with solar panels but no battery storage. The community battery programme was launched in partnership with electricity distributor Ausgrid and supports the growth of neighbourhood-level mid-sized battery systems.

EnergyAustralia will have operational control of the 250MW Kidston pumped hydro project in Queensland when it goes into operation in 2026. It is the first pumped hydro project in Australia for more than 40 years and is underpinned by EnergyAustralia's offtake agreement with developer Genex Power. Meanwhile, preliminary designs were completed for the Lake Lyell pumped hydro energy storage project in New South Wales. EnergyAustralia will continue to pursue a commercial way forward for the project.



Notes:

1. Capital investment includes: i) capital expenditure in fixed assets, right-of-use assets, investment property, intangible assets; ii) changes in investments and advances to joint ventures and associates; and iii) acquisitions of asset/business. Any minor discrepancy in total is due to rounding of percentages.
2. Renewables include wind, solar, hydro and waste-to-energy.
3. Others include oil, other businesses outside of power generation, transmission, distribution and retail, as well as corporate or enterprise items.

### Potential effects of climate-related physical risks

Extreme weather events including super typhoons and wildfires, as well as chronic weather pattern changes such as reductions in regional wind speeds can significantly affect CLP's operating assets. As part of its climate strategy, CLP regularly reviews the potential impacts from climate-related physical risks based on different climate scenarios.

For example, damages to power stations, transmission lines and other energy infrastructure from tropical cyclones may result in additional capital investment for equipment maintenance and replacement. In Hong Kong, the capital investment loss for CLP is estimated to be more than HK\$800 million in the worst-case scenario, under which multiple power stations are being severely damaged, leading to a

prolonged period of power supply disruption. The estimate increased in the past year in line with the growth in CLP's asset portfolio.

Another example is how changes in weather patterns such as reduction in wind speeds could affect the electricity generation of CLP's wind farms. The estimated potential loss from wind intermittency for CLP may be as much as 5% of the Group's operating earnings from wind assets of HK\$630 million in 2024, or HK\$31.5 million.

### Protecting assets against extreme weather risks

CLP holds comprehensive insurance coverage for its investment as a cost-effective way of managing the financial risks associated with its operations and ensuring stability of service. This is especially important given the increasing frequency and severity of extreme weather events which can lead to liability claims resulting from accidents, injuries or damage to property.

Insurance premiums are affected by a range of factors, including claims history, risk assessment and market conditions. Emerging technologies which are new to insurance markets and lack historical performance track record can complicate insurers' assessments thereby affecting premiums. Those technologies may, however, strengthen the resilience of infrastructure and enhance the overall reliability of operations, which will in turn lower the chance of losses and ultimately reduce insurance premiums.

CLP is prudent in assessing insurance terms provided by the market and in striking a balance on coverage and premiums. In recent years, CLP has not seen any noticeable changes in premiums. In some cases where there were increases, they were generally lower than the market average, largely because insurers recognise CLP's efforts in risk control.

When CLP China first sought coverage for its BESS for renewable energy projects, for instance, it initially met with a tepid response as insurers were not familiar with the technology. CLP China resolved this by demonstrating its prudent risk management over the life cycle of projects to successfully alleviate the insurance market's concerns.

Please see [Operational and Supply Chain Resilience on page 76](#) and [Risk Management Report on page 125](#) for further information on CLP's efforts to manage climate-related physical risks from an operational perspective. CLP has discussed its exposure to climate-related transition risks, physical risks and opportunities in [CLP's Climate Vision 2050: Powering an orderly transition](#) (published in March 2024) and there has been no further update. Please see the publication for more details.

**Bank of China (Hong Kong) is a committed partner of businesses in different economic sectors seeking low-carbon transformation and high-quality development. Electricity systems play a pivotal role in the low-carbon transformation of society. CLP has a long history in Hong Kong and a deep commitment to the Mainland. How do you ensure high-quality development in operations as you participate in the fast-growing new energy sector, contributing to the nation's new energy development?**



**Mr Liu Chao**  
General Manager, Global Corporate Banking Department, Bank of China (Hong Kong)



CLP has roots in Hong Kong stretching back more than 120 years and a vision to be a responsible and leading energy provider in Asia Pacific, from one generation to the next. Our future planning is guided by our commitment to create sustainable, high-quality value and to steadfastly support the nation's dual carbon goals.

CLP is one of the largest external investors in the energy sector in Mainland China. At the end of 2024, zero-carbon energy made up over 70% of CLP China's installed capacity and we have a target to double our renewable energy portfolio in the medium term.

Innovation and digitalisation are essential to accelerating the transformation and growth of our business. CLP China achieved an important milestone in 2024 when a new regional centre was opened in Jiangsu province to remotely monitor and control the operations of renewable energy assets, the Group's first such facility in Mainland China. When the advanced monitoring system at the centre is fully deployed, it will strengthen our ability to manage our assets across their entire lifecycles, making our business smarter and more digitalised, further enhancing the operational performance and resilience of our assets. Another centralised control centre is currently being built in Shandong province, which will be the focal point of big data analytics development and will provide us with even stronger data handling capabilities to support our low-carbon business strategy. In addition, smart technologies including robotics and drones are also widely used for operational maintenance and automated monitoring of our plants.

CLP's decarbonisation strategy comprises several key facets: developing more zero-carbon energy sources, using a diversified fuel mix, promoting electrification and smart city development. Looking ahead, we will continue to work closely with Bank of China (Hong Kong) as we deepen our ties in areas related to the energy transition, drawing on our rich experience of managing domestic and international projects in the development of new electricity infrastructure. The new quality productive forces unleashed by our partnership will contribute to higher energy security and a more sustainable future.



**Roger Chen**  
Managing Director – China

### Firm financial footing for decarbonisation efforts

CLP maintained robust financial foundations to drive its ongoing investments in decarbonisation in 2024, supported by good access to diversified and sustainable sources of cost-effective funding. In a period of continuing global economic uncertainty and interest rate volatility, businesses across the Group completed financing activities in a timely and orderly manner to ensure their operations were well-funded. Adequate reserves and good investment-grade credit ratings provided strong financial flexibility to capture new growth opportunities from the energy transition and manage unexpected contingencies.

The Group continued its prudent financial management, conducting stringent reviews of liquidity, risk profile and market conditions to ensure ongoing financial integrity, and maintaining a proactive approach to identify and mitigate risks.

The Group's strong financial position is reflected in its healthy liquidity levels, with undrawn bank facilities of HK\$31.0 billion and bank balances of HK\$5.0 billion as of 31 December. CLP Holdings had HK\$12.5 billion of liquidity at the end of 2024. The high level of liquidity is expected to be maintained throughout the coming year, bolstered by dividend payments and inflows from subsidiaries, joint ventures and associates.

CLP Power arranged HK\$7.6 billion in debt facilities for refinancing business needs. This included HK\$3.7 billion of two-year emission reduction-linked bank loan facilities, a HK\$625 million three-year private placement bond and an inaugural A\$500 million (HK\$2.6 billion), three-year public bond in the Australian market. This Australian dollar bond issuance is a milestone transaction and marks the first Kangaroo bond issuance by a Hong Kong commercial corporate entity. The issuance is structured into two tranches: a three-year A\$350 million (HK\$1.8 billion) floating rate note tranche at 0.85% over three-month Bank Bill Swap rate and a three-year A\$150 million (HK\$791 million) fixed rate note tranche at an annualised rate of 5.1%. The Kangaroo bond offering expanded CLP Power's debt capital market financing activities to the Australian onshore public market, broadening funding options and enhancing resilience against market volatility. The proceeds were swapped to Hong Kong dollar floating rate debt.

In January 2025, CLP Power issued US\$500 million (HK\$3.9 billion) non-call 5.25-year perpetual capital securities priced competitively with a coupon of 5.45% payable semi-annually in arrears. This marked the third issuance of US dollar-denominated hybrid capital securities and reinforced CLP Power's presence among the top investment-grade corporate issuers in Asia for hybrid transactions. This structure allowed CLP Power to achieve 50% equity credit from Moody's and S&P (for the first 5.25 years from issuance), as well as 100% equity accounting treatment. The securities were nearly seven times over-subscribed with over US\$3.5 billion in orders from global investors.

Castle Peak Power Company Limited (CAPCO) executed HK\$4.8 billion of one-year and two-year energy transition loan facilities under the Climate Action Finance Framework for refinancing at competitive interest margins. CAPCO also arranged a US\$70 million (HK\$548 million) three-year fixed rate private placement bond to refinance existing bank loans for the newly commissioned D2 gas-fired generation project at Black Point Power Station. The proceeds were swapped to Hong Kong dollar floating rate debt. CAPCO also executed HK\$2.1 billion of one-year and two-year emission reduction-linked bank loan facilities.

Both CLP Power and CAPCO have Medium Term Note programmes in place under which bonds in aggregate amounts of up to US\$4.5 billion and US\$2 billion respectively can be issued. Notes with aggregate nominal values of around HK\$26.4 billion and HK\$10.0 billion had been issued by CLP Power and CAPCO respectively as of 31 December.

EnergyAustralia maintained adequate liquidity and paid A\$385 million (HK\$1.9 billion) in principal repayment and interest payment of shareholder loans. EnergyAustralia refinanced A\$150 million (HK\$721 million) of syndicated loan facilities and A\$830 million (HK\$4.0 billion) of bank guarantee facilities. It also arranged A\$350 million (HK\$1.8 billion) of three-year working capital facilities.

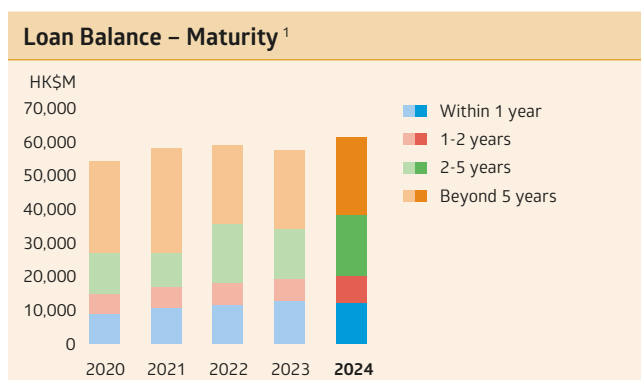
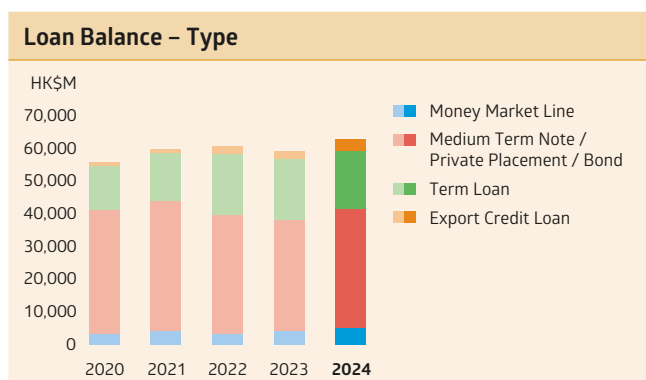
CLP China obtained a RMB2.5 billion (HK\$2.7 billion) two-year non-recourse revolving loan facility in February with favourable market pricing to support the development of new renewable energy projects in Mainland China. The facility amount will be effective in tranches. CLP China also executed a total of RMB4.9 billion (HK\$5.2 billion) onshore non-recourse project loan facilities for five renewable energy projects at competitive interest rates.

The Group's net debt, excluding perpetual capital securities, to total capital ratio was 33.0% at the end of 2024 (2023: 31.6%), and the fixed rate debt as a proportion of total debt was 51% (2023: 57%), excluding perpetual capital securities. Funds from operations (FFO) interest cover for the year ended 31 December 2024 was 11 (2023: 11) times.

Debt Profile as of 31 December 2024					
	CLP Holdings HK\$M	CLP Power <sup>1</sup> HK\$M	CAPCO HK\$M	Other Subsidiaries HK\$M	CLP Group HK\$M
Availability Facility <sup>2</sup>	9,300	36,375	25,351	21,226	92,252
Bank Loans and Other Borrowings	–	29,091	23,049	9,131	61,271
Undrawn Facility	9,300	7,284	2,302	12,095	30,981

Notes:

- 1 The Bank Loans and Other Borrowings amount excludes perpetual capital securities.
- 2 For the Medium Term Note programmes, only the amounts of the bonds issued as at 31 December 2024 were included in the total amount of Available Facility. The Availability Facility in EnergyAustralia excluded a facility set aside for guarantees.



Note:

- 1 The maturity of revolving loans is in accordance with the maturity dates of the respective facilities rather than the current loan drawdown tenors.



Information about  
[CLP Climate Action Finance Framework](#)  
 can be found on our website.

## Diligent risk management adds to foundations for strong credit ratings

The energy sector is capital intensive with long payback periods. As market risks increase, CLP's ability to arrange sustainable, commercially attractive funding, supported by an effective risk management framework, is a critical factor in managing and expanding the business and creating value for its stakeholders.

CLP transacts only with credible financial institutions and financially sound business counterparts with strong credit ratings. These measures ensure CLP's businesses do not face undue financial or credit risks, and provide assurance to stakeholders, including shareholders and other capital providers, governments, customers and business partners.

CLP has a reputation for a high standard of financial discipline and well-established, regularly-reviewed policies. Its strategy is to manage and mitigate its risk exposure effectively, ensuring a high degree of financial stability and certainty that safeguards robust capital structure and consistently earns strong credit ratings.



In May and August, Standard & Poor's (S&P) and Moody's affirmed the existing credit ratings of CLP Holdings, CLP Power and CAPCO respectively, all with stable outlooks. Moody's affirmed the Baa2 credit rating of EnergyAustralia with a stable outlook in November. At the time of the report's publication, the credit ratings of major companies within the Group were as follows:

	CLP Holdings		CLP Power		CAPCO		EnergyAustralia
	S&P	Moody's	S&P	Moody's	S&P	Moody's	Moody's
Long-term rating	A	A2	A+	A1	AA-	A1	Baa2
Outlook	Stable	Stable	Stable	Stable	Stable	Stable	Stable
Short-term rating	A-1	P-1	A-1	P-1	A-1+	P-1	-

S&P also assigned environment, social and governance (ESG) credit scores of E-3, S-2, G-1 to CLP Holdings, while Moody's assigned its scores of E-3, S-3, G-2. Both agencies recognised CLP's commitment to take action on climate change and ensure a low-carbon transition as well as its strong governance and risk management.



More information on [credit ratings](#) can be found on the Group's website.



More information about major financing activities in 2024 and debt profile can be found on pages 37 and 38 of [2024 Annual Results Presentation of CLP Holdings](#).



Analyses of loan balance by types and bond funding by currencies can be found on "Financial Capital" page in the [Investor Presentation Introductory Pack of CLP Holdings](#).

### Leveraging carbon credits in achieving net-zero emissions

The pathway to net zero involves both decarbonisation and carbon offsets. At COP29, an agreement was reached on the creation of a UN-sponsored global compliance market for carbon credits from sustainable development-oriented projects that reduce or remove GHG emissions. This will help accelerate progress towards global climate targets.

CLP currently issues carbon credits through its renewable assets in Mainland China and India. All projects are registered under the Clean Development Mechanism (CDM) or Verified Carbon Standard (VCS) international programmes. Going forward, CLP is studying a range of options including credit procurement, upstream project involvement and in-house carbon development to build a portfolio that balances budget, risk appetite and credit supply.

EnergyAustralia's Tallawarra B Power Station, which commenced commercial operations in June, is Australia's first net-zero emissions gas-fired power station. Under its funding arrangement, EnergyAustralia has committed to offset emissions over the asset's life and will use Australian Carbon Credit Units to achieve this until at least the end of 2030.

As at the end of 2024, EnergyAustralia has commenced the process of discontinuing its carbon offset product, Go Neutral, for mass market customers. This will occur progressively in accordance with the terms that apply to customers. While Go Neutral provided an opportunity for customers on the programme to offset their energy usage, EnergyAustralia's current focus is on helping its customers to directly reduce their emissions.

CLP has discussed the impact of carbon pricing on its assets in [CLP's Climate Vision 2050: Powering an orderly transition](#) (published in March 2024) and there has been no further update. Please see the publication for more details.

# Energy Growth Opportunities

Global electricity consumption posted strong growth in 2024 as power demand from data centres and electric transport continued to surge. The boom in AI is creating opportunities for utilities with the capabilities to provide a highly reliable power supply to data centres while making these energy-intensive digital infrastructure more environmentally sustainable. The electrification of transport is another growth catalyst for energy companies with effective solutions to support fast-growing EV charging demand.

Meanwhile, many emerging markets are rich in natural resources for renewable energy development, presenting growth opportunities for energy companies. Wherever utilities operate, a stable energy policy environment is key to enabling them to invest in power infrastructure and keep pace with rising energy demand, while ensuring affordable tariffs to retain customer trust. Managing these complex risks and opportunities is essential for energy companies to achieve sustainable growth.



Over **600**

energy audits completed for CLP Power customers in 2024, exceeding annual target



**404 MW**

of renewable energy capacity approved under CLP Power's Feed-in Tariff Scheme since 2018



**2** utility-scale battery projects

by EnergyAustralia won support from the Federal Government's Capacity Investment Scheme

The energy transition is generating new opportunities for CLP to develop less carbon-intensive and more energy-efficient solutions to meet rising power demand from industries including data centres and electric transport. CLP's decarbonisation approach is two-pronged to address both energy supply and demand. As well as delivering a lower-carbon energy supply, the Group is focused on helping customers improve their energy efficiency and lower their carbon footprint through innovative, sustainable energy solutions.

## Capitalising on growth in AI and digital technologies

The global boom in AI and supercomputing technologies is driving increased electricity demand as new, bigger data centres are built worldwide to support the rapid growth in smart, data-heavy computing applications. However, the International Energy Agency has noted that the proliferation of these energy-intensive supercomputing infrastructure will strain local electricity networks and potentially impact global decarbonisation efforts.

CLP provides the reliable electricity supply that is crucial to the data centre industry while promoting the use of lower-carbon energy and improvements in energy efficiency to reduce environmental impact. In Hong Kong, CLP Power provides comprehensive services for data centre operators, from

technical support on site selection, tailored power supply systems, to energy management solutions enabling more efficient energy use.

With its world-class electricity supply and expertise, CLP Power continued to work closely with data centre operators and the Government to deliver reliable, flexible energy to support the rapid growth of Hong Kong's digital infrastructure. In 2024, CLP Power completed power supply connections for three data centres in development.

Data centres are typically developed in several project phases, and CLP Power adopts a flexible approach to deliver the electricity supply infrastructure in stages. For example, CLP Power can provide transitional electricity supplies at short notice to support the initial operational needs of data centres quickly, and gradually increase the power supply capacity as required by customers.

Spearheading Hong Kong's growth as a leading regional data centre hub is the Northern Metropolis, which serves a vital role in the Government's plans for the city's technology development. CLP Power has reserved sufficient capacity in its power systems to meet the electricity needs of advanced new supercomputing infrastructure as well as energy demand from other industrial, commercial and housing developments in the Northern Metropolis.



- CLP plans ahead to cater for the potential increase in energy demand in the Northern Metropolis through investing in new power system facilities such as Kwu Tung North Substation.

In October, Hong Kong Chief Executive Mr John Lee announced plans to speed up innovation and technology development in the Northern Metropolis. In November, CLP Power signed Memorandums with the Government in support of the Northern Metropolis Development, and will carry out grid extension works to provide timely, reliable and low-carbon electricity supply to this important engine of growth for the city.

### Decarbonising data centres

To support the sustainable development of advanced digital infrastructure underpinning Hong Kong's transformation into a smart city, CLP Power continued to step up efforts to support data centre operators to decarbonise their operations. Renewable Energy Certificates (RECs) provide an effective way for CLP Power customers to reduce carbon emissions and continue to be a popular option for data centre operators.

Hong Kong's largest data centre provider SUNeVision announced a six-year agreement with CLP Power in November to purchase RECs generated by a solar farm built on a landfill in the south-eastern part of the New Territories. The solar farm is operated by Green Valley Landfill Limited (a joint venture between Veolia, Sun Hung Kai Properties and CITIC Pacific), and the environmental attributes of the renewable energy generated by the solar farm will offset some of the energy consumption of SUNeVision's data centre campus.

In addition to RECs, CLP Power conducts energy audits for data centre operators to identify areas for energy saving. Customers can also get support from the CLP Electrical Equipment Upgrade Scheme and the Eco Building Fund to install more energy-efficient lighting and air conditioning. CLP Power offers tailored technical solutions, such as air flow optimisation to lower energy consumption by data centres.

Technology companies on the Mainland are increasingly turning to renewable energy to power data centres. CLP China continued to invest in the development of new wind and solar energy projects and is well-positioned to meet rising demand from data centres for low-carbon energy. A 10-year Green Electricity Certificates (GECs) contract was signed by CLP China in July with a multinational software company. GECs enable users to claim the environmental benefits of renewable energy generation in China.

CLP China further expanded its portfolio of power purchase agreements (PPAs) with corporate users of renewable energy in October by signing a 10-year contract with chemical company BASF. The PPA will provide BASF with renewable energy from CLP China's three solar farms in Jiangsu province, ensuring the German company's three Jiangsu-based manufacturing sites operate on 100% renewable energy over the next 10 years. Under an innovative sleeved arrangement, technology company Envision Energy will serve as the power retailer, handling the settlement of electricity delivered from CLP China to BASF.

Since the establishment of the eMobility Network over a year ago, I am pleased to see our collaborative efforts in advancing the electric vehicle (EV) ecosystem. In what ways can CLP support to accelerate the development of a fast-charging network?



**Ms Astor Chan**  
Chief Financial Officer,  
Sino Express Intelligence Co., Ltd.



Electrification of the transport sector has maintained a rapid pace in Hong Kong. To meet the city's fast-growing demand for EV charging and to support the development of electric commercial vehicles (ECVs), it is crucial to foster a deep and comprehensive industry ecosystem comprising different segments of the value chain. We were therefore immensely grateful to be able to draw on the industry-leading expertise and resources of Sino Express and 14 other like-minded partners from sectors such as EV manufacturing, charging and finance in 2023 for the eMobility Network, which has become an invaluable forum for knowledge and technology exchange.

We fully understand that fast-charging services are critical to ECV users. As Hong Kong's biggest power supplier, CLP Power is focused on providing the electricity infrastructure and tailored power supply solutions to serve the energy needs of ECVs as more businesses and transport operators embrace electrification. In the case of Sino Express, we have provided innovative power solutions including outdoor substations and new high voltage pillars as part of our comprehensive one-stop services to support the construction of fast-charging stations. With technical support from our engineering teams, these solutions equip you with the latest power transformer and switchgear technologies to ensure you have the energy capacity and reliability to set up fast-charging services for customers quickly and economically.

Investment in digitalisation is key to promoting the wider adoption of EVs and accelerating the development of a fast-charging network. To this end, our new eMobility Grid Management Platform helps us optimise grid planning and resource allocation by analysing data to assess the utilisation and patterns of charging stations in different locations. These insights help us better manage the network and ensure we continue to meet the needs of EV users, as well as other energy customers.

As you continue to expand your services for EV users, we look forward to deepening our partnership and supporting your requirements for reliable, effective energy solutions. Together, we will play a major role in expanding Hong Kong's EV ecosystem and supporting the Hong Kong Government to achieve its goal of zero vehicular emissions before 2050.



**Joseph Law**  
Managing Director,  
CLP Power

## Expanding into new products and services

Growing demand for low-carbon energy solutions from consumers, businesses and organisations provided further opportunities for CLP to help customers decarbonise and become more sustainable energy users.

CLP Power strengthened its support for the development of renewable energy in Hong Kong with the launch of a new CLP Solar Grant Programme in 2024. In its first year, the initiative received 17 applications from schools and non-governmental organisations to install solar energy systems, promoting decarbonisation and sustainable lifestyles to students and young people. Meanwhile, CLP Power's Feed-in Tariff Scheme (FIT) encouraged more customers to install renewable energy systems in their homes and premises. Generation capacity approved under the FIT scheme rose to 404MW at the end of 2024.

More than one million households with smart meters were invited to join CLP Power's Summer Saver Rebate Programme in late August to reduce their electricity consumption during a period of peak demand. By partnering with 13 property management companies, the programme encouraged households in more than 480 residential estates across CLP Power's supply areas in Hong Kong to save energy. Nearly 70% of participating households successfully lowered their power consumption during a two-hour period in the evening of 26 August 2024, one of the hottest days of the year, resulting in over 280,000kWh of energy savings, equivalent to 112 tonnes of carbon emissions reduction. In return, electricity customers earned points under CLP Power's Domeo programme, that can be redeemed for rewards such as retail vouchers and energy-saving appliances.

Smart meters help electricity customers keep track of their power use, and form a key part of CLP Power's growing smart grid network in Hong Kong enabling improved power supply reliability and better energy management through digitalised technologies in power generation, transmission and distribution. Smart grid development is essential to support the growth of distributed energy resources such as FiT systems and EVs, which make electricity networks increasingly bi-directional and complex.

A comprehensive range of services and solutions offered by CLP Power, including RECs, energy audits, training and subsidies for installing energy-efficient appliances, helped customers further decarbonise their energy use in 2024. CLP Power conducted over 600 energy audits for commercial and industrial customers, exceeding its annual target of 600 and resulting in around 50GWh of energy savings. CLP Power also hit its target of 48GWh of energy savings from customer projects supported by the Eco Building Fund.

Over the past five years, CLP Power has helped Link Asset Management Limited (Link) save more than 31GWh of electricity at its properties through a range of energy efficiency solutions. These include energy audits and training on retro-commissioning to further improve the efficiency of cooling systems in Link shopping malls. In August, CLP Power deepened its partnership with Link by launching a new Low Carbon Rewards Programme with DBS Bank (Hong Kong) Limited (DBS Hong Kong). The programme encourages small and medium-sized enterprises (SMEs) in Link properties to save energy through CLP Power services such as energy audits and the Electrical Equipment Upgrade Scheme. Eligible SMEs participating in the programme could enjoy subsidies to purchase CLP Power RECs offered by DBS Hong Kong, alongside other business account opening and banking privileges from the bank.

The Group's energy infrastructure and solutions subsidiary CLPe Holdings Limited (CLPe) signed a Memorandum of Understanding (MoU) with Hysan Development in May, with the aspiration to transform Causeway Bay, one of Hong Kong's busiest districts, into a sustainable low-carbon community. Under the MoU, CLPe and Hysan Development committed to working together on innovative energy management solutions, including a potential distributed district cooling system, renewable energy generation and EV charging infrastructure to support the decarbonisation and electrification of Hysan Development's core portfolio in the Lee Gardens area.

On the Mainland, CLPe is implementing a centralised cooling system for leading injection molding solution provider TK Group (Holdings) Limited's industrial park in Shenzhen. The improved energy efficiency of the new cooling system will help the customer reduce over 100 tonnes of carbon emissions annually. CLPe is also collaborating with the Shenzhen Longhua Investment Holdings (Group) Co., Ltd. to provide an energy-efficient cooling station service solution for a major industrial park in the Longhua District in Shenzhen, supporting the Longhua Government's digital energy strategy.

In addition, CLPe signed an agreement to upgrade the cooling system of Lai Sun Group's May Flower Plaza commercial complex in Guangzhou, delivering over 60 tonnes of carbon reductions annually to the customer. The system will begin operations in the second quarter of 2025.

An increasing number of customers connected their solar energy, battery storage systems and hot water systems to EnergyAustralia's Virtual Power Plant (VPP) programme, which increased its capacity to 125MW at the end of 2024. The VPP runs on digital technology and helps keep the power

supply stable by aggregating energy from customers' solar and battery systems and providing surplus electricity at times of peak power use. The programme provides additional incentives for EnergyAustralia customers to install "behind the meter" energy systems such as solar energy and battery storage to reduce emissions.



Please refer to CEO's Strategic Review on page 16 and Net-Zero Transition on page 49 for further information on CLP's efforts to decarbonise its business.

Delivering Energy to Customers - Key Metrics Table	2024	2023
<b>Number of customer accounts</b> (CLP Power, thousands)	<b>2,830</b>	2,790
– Residential	<b>2,474</b>	2,440
– Commercial	<b>218</b>	215
– Infrastructure and Public Services	<b>121</b>	118
– Manufacturing	<b>17</b>	17
<b>Number of customer accounts</b> (EnergyAustralia, thousands)	<b>2,382</b>	2,442
– Mass Market	<b>2,378</b>	2,438
– Commercial & Industrial	<b>4</b>	4
<b>Total electricity delivered</b> (CLP Power, GWh)	<b>36,125</b>	35,392
– Residential	<b>10,204</b>	9,929
– Commercial	<b>13,882</b>	13,673
– Infrastructure and Public Services	<b>10,466</b>	10,196
– Manufacturing	<b>1,573</b>	1,594
<b>Total electricity sales volume</b> (EnergyAustralia, TWh)	<b>13.7</b>	14.8
– Mass Market	<b>8.9</b>	8.9
– Commercial & Industrial	<b>4.9</b>	5.9
<b>Total gas sales volume</b> (EnergyAustralia, PJ)	<b>30.2</b>	30.6
– Mass Market	<b>28.6</b>	28.1
– Commercial & Industrial	<b>1.6</b>	2.5
<b>Length of transmission and distribution lines</b> (km)		
– CLP Power	<b>17,123</b>	16,920
– Apraava Energy	<b>494</b>	494
<b>Energy sent out</b> (CLP Group, on equity plus long-term capacity and energy purchase basis, GWh)	<b>79,760</b>	79,512
– Coal	<b>32,234</b>	32,418
– Gas	<b>19,847</b>	19,203
– Nuclear	<b>19,878</b>	20,098
– Wind	<b>4,482</b>	4,688
– Hydro	<b>1,776</b>	1,480
– Solar	<b>1,491</b>	1,626
– Waste-to-energy	<b>44</b>	45
– Energy storage	<b>8</b>	-46
– Others	<b>1</b>	1

Note: In addition to electricity generated by power plants in which it has equity ownership, CLP purchases electricity to meet the power supply needs of its businesses in Hong Kong and Australia.

## Capitalising on electrification

The electrification of transport is a key element of the transition to a net-zero future. CLP used its power expertise to enable the development of high-quality charging infrastructure and services to support the growing use of EVs.

CLP Power developed tailored power supply solutions for outdoor EV charging stations and continued to offer technical support to charging service operators in Hong Kong to accelerate the development of EV charging facilities. For example, outdoor substations and high-voltage pillars can enable charging service operators to set up fast-charging services quickly and cost-effectively.

Preliminary power supply capacity assessments were completed for around 550 applications to support the Hong Kong Government's EV-charging at Home Subsidy Scheme (EHSS) for the installation of EV charging enabling infrastructure, covering around 133,000 parking spaces in private residential buildings.

CLP Power is also collaborating with petrol station operators to facilitate the installation of EV chargers, to accelerate the conversion of existing petrol filling stations into fast-charging networks.

The eMobility Network strengthened efforts to promote the wider use of ECVs in Hong Kong by facilitating cross-sector technology exchange and collaboration. The network comprises CLP Power and more than 10 other member businesses and organisations, including ECV manufacturers and operators, charging service providers and a bank offering green finance services.

CLPe launched a network of new EV charging stations in Hong Kong in 2024, providing a selection of super-fast chargers for commercial customers, including e-taxis and corporate vehicle fleets, as well as medium-speed charging points.

In December, CLPe signed an agreement to extend its partnership with TELD New Energy Company Limited (TELD) on EV charging infrastructure and other innovative energy services in the Greater Bay Area (GBA). This strengthened collaboration between the two partners after the formation

of the CLP-TELD New Energy Technology (Guangdong) Ltd. joint venture in 2022 to provide EV charging services in Mainland China cities of the GBA in 2022. Under the latest agreement, CLPe will introduce TELD's EV charging technologies to the Hong Kong market and the partners will also cooperate on Vehicle-to-Grid, virtual power plant and microgrid projects, as well as other emerging energy technologies.

CLPe and CLP-TELD New Energy Technology (Guangdong) Ltd. also completed an Energy-as-a-Service (EaaS) project comprising 28 EV charging points and a 3MW peak rooftop solar system for MTR Corporation (Shenzhen) Limited. The project will reduce carbon emissions by around 40,000 tonnes over the duration of the 17-year contract.

Smart Charge (HK) Limited, CLP's joint venture with telecommunications company HKT Limited, continued to support customers on the installation of EV charging infrastructure in residential estates in Hong Kong. Smart Charge has built EV charging infrastructure for more than 9,000 residential carpark spaces.

As part of its increasing efforts to tap into opportunities from the electrification of Australia's transport sector, EnergyAustralia began an EV charging infrastructure project in Queensland for tours and charter bus operator Tropic Wings. When it is completed in mid-2025, the project will enable Tropic Wings to replace its diesel buses with 12 electric buses with charging infrastructure.

In addition to its efforts on electrification of land-based transport, the Group also continued to seek opportunities to decarbonise the maritime transport sector. CLPe announced a cooperation framework agreement with China National Offshore Oil Company Guangdong Water Transport Clean Energy Company Limited (CNOOC) in November to form a joint venture to provide LNG bunkering services to ships in the port of Hong Kong, supporting the development of the sector in the GBA.

The partnership with CNOOC followed the release of the Action Plan on Green Maritime Fuel Bunkering by the Hong Kong SAR Government, which promotes the city's growth as a high-quality green maritime fuel bunkering centre.

### Acting as a trusted stakeholder

CLP's continued growth is built on the highly reliable, cost-effective and environmentally sustainable energy services provided by the Group's businesses, the outcome of long-term planning and partnerships with diverse stakeholders across the energy value chain including policymakers in different markets and levels of government. Electricity investments typically have lifespans measured in decades, making effective energy policy frameworks and careful planning with governments especially critical in this capital-intensive industry.

The Scheme of Control (SoC) Agreement has provided an effective and valuable framework enabling power companies to plan and invest in Hong Kong's world-class electricity supply in line with the city's long-term development. The regulatory regime has underpinned the city's stable, competitively priced electricity supply and delivered sustainable improvements in environmental performance since the first SoC Agreement in 1964.

Under the 2024-2028 Development Plan – the second five-year programme in the current SoC Agreement with the Hong Kong SAR Government – CLP Power is investing in electricity supply systems to serve the city's growing energy needs as major infrastructure investments and dynamic new industries propel and transform the economy, including AI and electric transport. Decarbonisation is another

major objective of the plan, and CLP Power is committed to supporting the Government's target of making Hong Kong carbon neutral by 2050. In 2024, capital investments under the SoC were HK\$10.8 billion.

Since entering the electricity market in Mainland China in 1979, CLP has become one of the largest external investors in the nation's energy sector with a strong network of partnerships throughout the industry. CLP China further expanded its portfolio of wind and solar energy projects as the Government's dual-carbon policies of peak carbon emissions by 2030 and carbon neutrality by 2060 increased demand for low-carbon energy. More than 70% of CLP China's installed capacity is zero-carbon energy.

EnergyAustralia continued to work closely with partners, including governments at federal and state levels, on investments to decarbonise the country's energy system. Significant progress was made on two major utility-scale battery storage projects given support under the Federal Government's Capacity Investment Scheme in September. Another EnergyAustralia energy storage project, the proposed Lake Lyell pumped hydro project in New South Wales, secured the State Government's Critical State Significant Infrastructure designation in June. EnergyAustralia also strengthened collaboration with private sector partners, including completing a 230MW PPA with the developer of the second stage of Golden Plains Wind Farm in Victoria.



- CLP China has been expanding its portfolio of renewable projects as the government's dual-carbon policies drive demand for low-carbon energy. Pictured here is Bobai Wind Farm in Guangxi Zhuang Autonomous Region.



## Ensuring energy affordability and reliability

CLP Power continued to adopt effective measures to ensure its tariffs remained competitive in Hong Kong despite increasing operating expenses stemming from higher material costs and a tight labour market.

By using a diversified fuel mix for power generation and maintaining prudent cost controls, CLP Power limited the increase in the Average Net Tariff to less than 1% year-on-year from January 2025. The monthly electricity bills of about 70% of CLP Power's residential customers and about 50% of commercial and industrial customers will go up by less than HK\$5.

CLP Power will channel HK\$240 million from the CLP Community Energy Saving Fund to deliver a range of community support programmes, including HK\$50 million of electricity subsidies to ease the burden of energy costs for 70,000 underprivileged customers, including disabled people and tenants of subdivided units. In the meantime, a new Community Green Programme is being launched with the fund's support to promote energy saving and decarbonisation.

EnergyAustralia lowered its electricity tariffs for most residential and small business customers between July and September in line with changes in reference prices set annually by energy regulators. There were reductions in tariffs ranging between 0.5% and 8% for electricity customers in New South Wales, South Australia and Victoria, reflecting declines in wholesale prices. Tariffs increased for some electricity customers in the Australian Capital Territory and Queensland in line with regulators' benchmark rates. EnergyAustralia also raised prices for retail gas customers.

With the cost-of-living crisis continuing to affect many families, EnergyAustralia allocated A\$34 million to support customers experiencing financial hardship through its EnergyAssist programme. This provides customers with access to a range of support measures including payment extensions and advice on lowering energy usage.



Please refer to CEO's Strategic Review on page 16 and Operational and Supply Chain Resilience on page 76 for further information on measures to strengthen supply reliability.

## Capturing international market opportunities

Many emerging markets have immense potential for renewable energy development and offer considerable growth opportunities for energy companies. In July, the Group's subsidiary CLP SEA Infrastructure Limited, entered into an MoU with CGN Energy Technology (Laos) Co., Ltd. and Krittaphong Group Co., Ltd. to explore the export of clean energy from Laos to neighbouring countries. The MoU aims to enable the three parties to examine and consider potential collaboration opportunities.

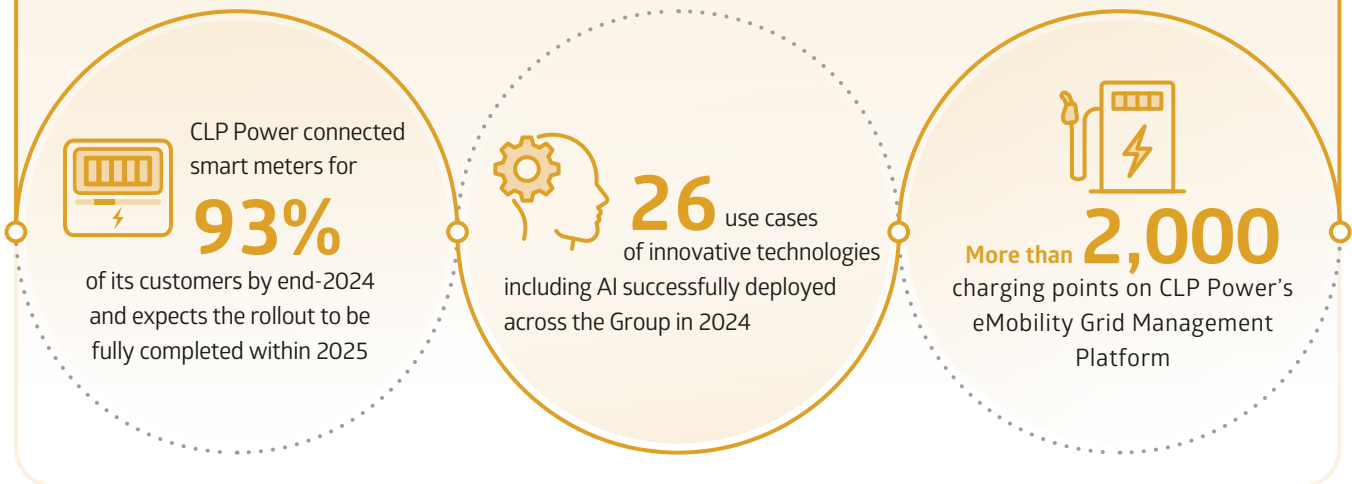
Apraava Energy previously signed an agreement with a local conglomerate to acquire a 250MW solar project in Rajasthan upon commissioning, subject to obtaining the necessary regulatory approvals from the Indian Government. In April 2024, Apraava Energy was notified that its request for approval was declined, and consequently the transaction was not pursued further. Apraava Energy has continued to expand its business by focusing on greenfield energy projects and other non-acquisition-based opportunities, after successfully renewing its registration under the General Financial Rules 2017 in late 2024, enabling the business to continue to participate in project bids issued by government agencies.

CLP will continue to explore ways to expand the Group's business internationally over the next decade by meticulously and judiciously exploring targeted growth opportunities.

# Digital Innovation and Cybersecurity

CLP leverages its expertise in digital innovation and smart grid infrastructure to enhance operational efficiency and improve customer experience. Millions of smart meters have been installed across CLP's businesses to provide timely data insights and help customers manage their energy more effectively.

Digitalisation and Artificial Intelligence (AI) carry inherent risks including challenges of implementation and scalability, and the rising threat of cyberattacks on critical infrastructure. Investment in appropriate risk management, controls and cybersecurity is crucial for CLP to protect systems and data, uphold grid reliability, and maintain a high level of service quality and trust expected by its customers and regulators.



## Standing at the forefront of digital transformation

Focusing on the digital transformation of the utility sector, CLP seeks to implement appropriate technologies including AI and Internet of Things (IoT) to optimise business processes and accelerate innovation, consistently raising efficiency with the objective of delivering improved energy services to customers.

CLP is implementing a new cloud-based enterprise resources planning (ERP) system to further enhance and streamline key operations including finance, human resources and customer services. The ERP refresh will also strengthen collaboration and communication across different departments. Adopting a cloud-based approach enables CLP to accelerate innovation by introducing new technologies such as generative AI more quickly.

CLP also established an Industrial Internet of Things network at its power plants, securely connecting diverse IoT sensors to provide new data dimensions and valuable insights into operations. This was one of the 26 use cases of innovative technologies successfully deployed across the Group in 2024, against a newly set target of 19.

## Harnessing the immense potential of AI

AI has rapidly become a part of everyday life with AI-powered functionalities increasingly playing a role across the entire spectrum of human activity. AI is set to play a transformative role in reshaping industries, driving innovation and delivering operational efficiencies. With careful planning, CLP leverages AI across its operations covering asset health management, short-term load forecasts and knowledge management.

Every day, data pertaining to the condition of 65,000 CLP Power assets are fed into AI-trained algorithms to assess and predict the health indices of the equipment. These health indicators help prioritise the maintenance of equipment having higher health risk. Separately, climate and load consumption data are consumed by AI algorithms in 30-minute intervals. These algorithms forecast network load for different timeframes: intra-day, next-day and next nine days, and the outcomes complement the dispatch process as well as equipment maintenance planning.

Reliability is the cornerstone of any power supply. CLP Power launched a new grid network monitoring system with advanced AI capabilities in 2024 to enhance its capacity for identifying and addressing threats to its grid (see case study on page 68). It also employs a wide range of other technologies for the early detection of potential risks, thus ensuring the reliability of its electricity supply. The Predictive Vegetation Management System, for instance, uses Geographic Information System (GIS) Technology to forecast the growth of vegetation and minimise any risk to overhead power lines.

AI-powered thermal imaging is also adopted to early detect anomalies of coal pulverisers to identify and alert the potential leakage of pulverised-fuel coal in a timely manner. This approach can effectively support predictive maintenance, making operations safer and more efficient by reducing the need for manual inspections.

In addition, CLPe leverages AI-equipped solutions to help commercial and industrial customers in Hong Kong and Mainland China make significant energy savings in their cooling systems. Chiller plant optimisation solutions equipped with AI technology analyse the operational data of chiller equipment, automatically adjusting system settings and operational strategy so that cooling systems perform at optimal efficiency. When the solutions are used together with more energy-efficient chiller equipment, some customers have achieved more than 50% reductions in the carbon emissions of their cooling systems.

CLP Group has leveraged generative AI to deploy knowledge retrieval capabilities to enhance operations including power generation and distribution. The use of this technology helps support improved knowledge sharing and learning across the business. Further work is underway to extend the knowledge management capability into other operations.

CLP has a risk-based approach to adopting and scaling up the use of solutions containing AI algorithms. This is accomplished through a set of principles that emphasises accountability, purposeful use, data privacy, ethical design, reliability and transparency. On the back of these CLP has developed AI standards and risk assessment tools. CLP is also committed to upskilling its employees in the knowledge and use of AI.

As AI continues to evolve and gain adoption, challenges remain: including the complexities of compliance, knowledge gaps in deployment, investment costs, incorrect or misleading information and developing the expertise required to successfully deploy these technologies. CLP is committed to protecting data privacy and ensuring compliance with all relevant laws and regulations. Through governance structures that foster an innovative environment, CLP is

well-positioned to leverage the potential of AI while seeking to maintain the stability, security and trust that are the hallmarks of its business.

### **Harnessing technology to better serve our customers**

As well as improving the reliability of its operations, CLP is using technology to support customers. In Hong Kong, CLP Power connected smart meters for 93% of its customers by the end of 2024 and is on track to reach its targets to complete the rollout by the end of 2025. Smart meters give customers more visibility of their energy usage and allow them to easily manage their energy use and join CLP Power's Peak Demand Management Programme. CLP Power also significantly enhanced its customer relationship management system in 2024, enabling customers to effectively and conveniently manage services, including billing, relocation and shopping under a single tailored profile, following a major revamp of the mobile app.

Around 895,000 EnergyAustralia customers have smart meters installed at the end of 2024. Apraava Energy, meanwhile, has won contracts to provide over 6.8 million smart meters for households across Assam, Gujarat, Himachal Pradesh, Rajasthan, Madhya Pradesh and West Bengal. To date, more than 10% of the smart meters have been installed, with the projects in Assam and Himachal Pradesh achieving "Go Live" status well ahead of their 2024 contractual deadlines. "Go Live" status is reached when 5% of the total smart meters in respective projects are installed.

In Australia, two pilot projects helped EnergyAustralia build and adapt product and platform capabilities. In the first case, EnergyAustralia became a partner of Energy Masters, a new South Australian pilot programme funded by the Australian Renewable Energy Agency to trial smart, flexible energy management in 500 South Australian households. In the second case, EnergyAustralia has commenced a trial with distributed network services provider Ausgrid on Project Edith, a dynamic network pricing project to help customers unlock better value by connecting to a virtual power plant. The trial also optimises energy providers' network investment by focusing on intelligent systems.



**CLP adheres to a set of AI guiding principles to govern the responsible use and deployment of AI, and has developed a set of AI standards and risk management tools. Please refer to the Artificial Intelligence section of the [2024 Sustainability Report](#) for information on CLP's AI principles.**

## Case Study

### Grid-V: Enhancing infrastructure monitoring for a safer future

CLP Power operates over 15,800 substations and has more than 16,900 kilometers of transmission and high-voltage distribution cables in Hong Kong. To ensure continuous monitoring of its operations, CLP Power has partnered with local network operators to create an advanced system called Grid-Visualisation, or Grid-V. This system uses AI-assisted analysis to improve the monitoring of the power grid.

Grid-V is capable of detecting potential hazards, including fire and flying objects, near critical power facilities, such as overhead transmission lines and substations. It monitors real-time signals from approximately 3,000 sensors and cameras throughout CLP Power's networks in Hong Kong, enabling engineering teams to respond swiftly to any incidents.

During its initial phase, Grid-V successfully identified a crane arm approaching overhead cables, which posed a risk to the power supply. The system promptly issued an alert, allowing personnel to assess the situation.

Grid-V proved its worth in January 2025 when it tracked the progress of a major hill fire in the northwest part of the city, allowing for the speedy implementation of measures to safeguard power supplies. The response ensured electricity was uninterrupted as the fire raged for more than 20 hours in an area where critical CLP Power infrastructure is located.

Looking ahead, CLP Power plans to expand Grid-V's coverage and capabilities, including the integration of drone imagery analysis, to further enhance network monitoring and improve operational efficiency.



■ CLP Power's Grid-V system uses AI-assisted analysis to enhance the monitoring of the power grid.

### Accelerating the switch to green motoring

EVs are booming in popularity. In response to the trend, CLP Power launched an eMobility Grid Management Platform (eGMP) which analyses EV charging data to assess the use and patterns at charging stations in different locations so that it can optimise grid planning and resource allocation as the charging network expands. By integrating near real-time data from a variety of sources, eGMP enables comprehensive network planning, reviews charging behaviour and informs resource allocation.

With an expanding network of more than 2,000 charging points, the platform covers around a quarter of public chargers in Hong Kong, displaying them on a live map with near real-time updates on their charging status, power consumption and load profiles. The granularity of data allows for more effective network planning reviews and studies, leading to better-informed decisions on grid planning and operations.

### Fortifying against cyber threats

As energy markets are reshaped by the adoption of new digital technologies, cybersecurity threats have become greater and more complex. Following the establishments of a new security operations centre in Hong Kong in 2023 to accelerate incident response capabilities, similar centres at CLP China and EnergyAustralia were upgraded in 2024, while a new centre at Apraava Energy became fully operational. Detailed frameworks have also been developed for CLP Power and EnergyAustralia to deal with the growing threat of cyberattacks, outlining procedures to guard against and handle computer security events and incidents.

Further regulatory changes are anticipated in the cybersecurity arena, including in Hong Kong with the introduction of the Protection of Critical Infrastructures (Computer Systems) Bill. CLP has participated in the Hong Kong Government's consultation sessions and shared energy sector cyber security practices and feedback as part of the consultation process. CLP is committed to continue working with the Government and other stakeholders to support the development of a code of practice to facilitate an appropriate framework to protect critical computer systems for the benefit of Hong Kong. Other jurisdictions including Mainland China, India and Australia have also sought to enhance their existing cybersecurity legislation.

In 2024, CLP China updated its compliance plan after the State Council announced in September it would launch new network data security management regulations in January 2025 to enhance data security and privacy while establishing compliance requirements for both domestic and international entities.

Australia's increasing reliance on a highly decentralised approach to energy has made the energy grid a target for hackers. The increasing adoption of smart devices and IoT technologies has also expanded the potential for attacks and made it easier for hackers to disrupt operations. Following the launch in 2023 of a detailed cybersecurity strategy setting out six steps to achieve cyber resilience, the Federal Government also launched a series of reforms to introduce new legislation and amend the existing Security of Critical Infrastructure Act 2018, allowing the Government to manage critical infrastructure businesses in the event of major cyber incidents. EnergyAustralia will continue to work diligently to implement the reforms.

With millions of employees, customers, contractors, service providers, shareholders and business partners, CLP takes its data protection responsibilities and the threat of cyberattacks extremely seriously. It implements comprehensive annual cybersecurity training for all its staff to enhance awareness and safeguard personal data. The Group will continue to invest in the latest cybersecurity technologies and talent in order to prevent, detect and react to evolving cyber threats.



Please refer to the [Customer Privacy](#) section of the [2024 Sustainability Report](#) for more information on data protection and privacy.

# Future-Ready Workforce

Decarbonisation and digitalisation are reshaping the future of the energy industry. More than ever, utility companies need workforces that are diverse and skilled in areas such as renewable energy technologies, grid management, data analysis and energy solutions to capture growth opportunities associated with the transition. Failure to attract and continuously develop people and leaders with the right skills and capabilities diminishes the ability of energy companies to compete in this fast-evolving landscape.

Organisational agility is essential to innovate and stay on top of dynamic changes in the market. Energy providers that fail to modernise at the right pace and that fail to implement more agile and flexible operating models and ways of working may lack competitiveness and the required speed to capture new business opportunities.



## Upskilling and reskilling our workforce

The talent, dedication and hard work of CLP's employees and contractors are the foundations of the Group's success. CLP continued to invest in attracting and developing talent and in equipping the workforce with skills required for the future. To maintain the Group's track record of engineering excellence, CLP also focused on strengthening and expanding engineering recruitment and development in a competitive and dynamic labour market and in training, ensuring that its deep reserves of expertise are passed on from one generation to the next.

## Resourcing for growth: strengthening skills and expertise

CLP sustained its pace of hiring in 2024 with close to 900 people recruited in Hong Kong and Mainland China to address skill gaps and support increasing business needs and diversified opportunities in the two core markets, with a focus on engineering, digital technologies and customer service skills. Talent sourcing was further expanded to tap on non-traditional talent pools widening access through channels such as the Hong Kong SAR Government's labour import scheme and graduates from the CLP Power Academy. Across CLP's businesses, voluntary turnover moderated in 2024, however competition for talent remains intense.

CLP also continued to encourage internal mobility for employees to explore new roles and other project opportunities within the Group, with transfers ongoing between Hong Kong and the Mainland to enable young engineers from both markets to gain exposure to different stages of the energy transition.

CLP's flagship Group Graduate Trainee programme in Hong Kong continued to provide the Group with talent to meet the growing needs of the business. More than 30 new graduates joined the programme, which provides participants with a thorough grounding in core technical, commercial and leadership skills to work across the Group's businesses in Hong Kong and Mainland China. The programme attracted graduates from Mainland China and overseas universities as well as higher education institutions in Hong Kong. Content of the programme is regularly updated to give participants exposure to CLP's latest low-carbon and digitalisation projects.

CLP Power also made more job opportunities available by refreshing and relaunching its recruitment programmes for young engineers and technicians, while the new Engineering Cadet programme was introduced to meet future operational skills requirements.

## Investing in training and development

Utility companies must equip employees with the skills and knowledge they need to succeed in a fast-changing energy market and provide a supportive environment for them to develop. CLP's suite of training programmes focuses on technical, business, digital and leadership skills, and introduces participants to Design Thinking methodology which helps them develop problem-solving capabilities. Employees are also encouraged to explore their personal and career development and receive coaching to help them realise their potential. To further support the rapidly evolving needs of the business, CLP provides for employees to deepen their understanding of energy markets in Mainland China and overseas as the importance of synergies between different regions and countries grows.

Employees received an average of 42.7 hours of internal and external training and development in 2024, in line with a year earlier. CLP commenced a review of its training programmes and skill requirements, to enable the business to optimise resource allocation between training on existing technologies, policies and processes, versus new skills required for the future.

The initial assessment of training indicates time spent on upskilling (enhancing existing skills) and reskilling (training to enable transition to different roles) made up over 15% of training for employees in 2024, excluding activities such as on-the-job coaching and mentoring, departmental team development activities and career advisory sessions. This metric and associated training strategies will continue to be developed in 2025.

CLP continued to invest to strengthen talent pipelines and support growing business needs with close to 600 colleagues with demonstrated higher potential participating in accelerated talent development programmes. This included over 30 young engineers who participated in CLP's Leaders of the Future development programmes, which are designed to help meet managerial needs, with a focus on technical, innovation, project, commercial and change leadership skills as well as providing practical experience of regional operations.

More than 50 employees joined tours of CLP China's renewable energy operations in Yangzhou, Changzhou and Nanjing. The tours gave participants a better understanding of energy policies in Mainland China and included visits to community projects supported by CLP China. Employees took part in training courses on national affairs, business leadership and management provided by institutions including the Tsinghua School of Economics and Management in Beijing and the Canada-based Ivey Business School.

Employee Training		
	Average Training Hours per Employee	% Trained
<b>By Region</b>		
Hong Kong	50.9	97.8%
Mainland China	70.8	100%
Australia	14.6	99.6%
Group Total	42.7	98.5%
<b>By Gender</b>		
Male	50.2	98.8%
Female	22.8	97.8%
<b>By Professional Category</b>		
Managerial	17.5	95.3%
Professional	30.4	98.3%
General and Technical	60.2	99.2%

## Cultivating agile ways of working

In an era of dynamic transformation for the energy sector, utility companies need to be agile and innovative to compete successfully and respond to customer demand for lower-carbon and digitally enabled energy services.

CLP implemented a new operating model in Hong Kong and Mainland China in 2023 to enable its business units to respond more quickly to customers and growth opportunities. As the pace of renewable energy project development accelerated in the Mainland business, the new operating model strengthened CLP China's project execution and asset management capabilities. The Group also refined its operating model for digital functions to strengthen the implementation of technologies in the business.

CLP's Value Framework has for many years provided a set of principles on how the Group should work with stakeholders including employees, customers, investors and partners. CLP refreshed the Value Framework in 2024 after engaging employees extensively on how workplace values, behaviours and mindsets should evolve for the Group to remain successful in the future. The updated framework has been simplified into three core values of Care, Excellence and Responsibility, in support of CLP's purpose to Power Brighter Tomorrows.

New ways of working were introduced so that the refreshed organisational values could be embedded in employees' everyday routines, supported by a learning programme throughout the year. The programme will continue in 2025 to maintain the positive momentum, giving employees the opportunity to integrate the framework more deeply in their work. Changes were also introduced to speed up decision-making and ensure that CLP's investment and project governance processes are fit-for-purpose to suit the wide range of opportunities and commercial models now emerging.

CLP's efforts on workforce and organisational development were recognised by LinkedIn, the world's largest professional network platform. CLP won the coveted Future Ready Award, which rewards employers in Hong Kong for excelling in fields such as talent acquisition, diversity and learning and development. CLP Power also received awards recognising its human resources practices, including the Employer of the Year award from the recruitment platform CTgoodjobs.

### Case Study

#### Developing new ways of working

CLP seeks to become a more agile and innovative business to meet the needs of energy transition. This requires holistic change, encompassing new operating models, streamlined business processes, and updated systems, work environments and policies, underpinned by refreshed values and behaviours.

CLP updated its Value Framework in early 2024 anchored on the simplified core values of Care, Excellence and Responsibility with a fresh interpretation of each, emphasising embracing change and new ideas, commerciality and calculated risk taking, and speaking up. A multi-year campaign was organised to help employees learn new expectations and how to put them into practice.

More than 3,800 employees in CLP's businesses in Hong Kong and Mainland China attended introductory sessions on the updated framework and its implications for their day-to-day work. They learned about the importance of becoming more agile, flexible and efficient and taking responsibility for business outcomes.

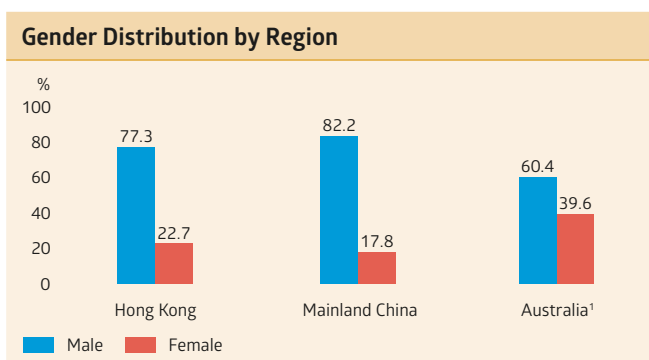
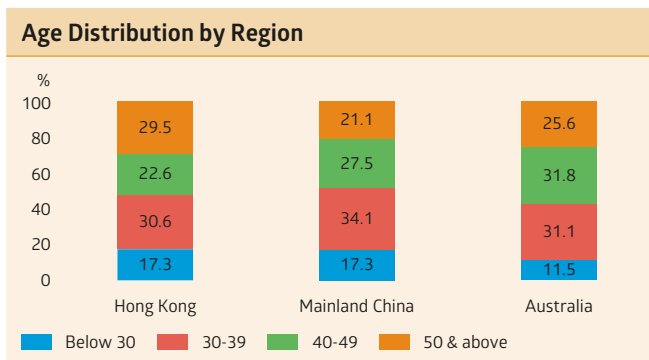
The campaign included workshops for managers and business unit leaders to help them embed changes in their teams and deliver performance improvements. A series of videos highlighted the value of the new ways of working and showcased meaningful changes made by colleagues in different parts of the business.

Feedback from colleagues was encouraging and demonstrated real and positive changes being made in teams and projects across CLP. The campaign will shift from awareness to values in action in 2025, with a focus on building skills for employees and empowering managers and employees with clear accountability to act.



- CLP colleagues learn about new ways of working through interactive workshops and games.





### Voluntary Turnover

	Voluntary Turnover Rate (%)
<b>By Gender</b>	
Male	6.1%
Female	8.8%
<b>By Age Group</b>	
Below 30	12.5%
30 – 39	8.7%
40 – 49	5.1%
50 & above	4.3%
<b>By Region</b>	
Hong Kong	5.4%
Mainland China	2.8%
Australia	11.2%
Group Total	6.8%

Note:

1 Data of other gender identities is tracked. It is statistically insignificant and is not separately disclosed.



■ The CLP Volunteer team, which marks its 30<sup>th</sup> anniversary in 2024, is the best role model for the Group's recently updated core values of Care, Excellence and Responsibility.

**The CLP Volunteer (CLPV) team celebrated its 30<sup>th</sup> anniversary in 2024 and is one of the largest corporate volunteer teams in Hong Kong. How does volunteering relate to CLP's corporate culture, values and employee engagement?**



**Mr Lin Chi Chung**  
Senior Technical Officer,  
CLP Power and a veteran  
member of the CLPV team



Firstly, I would like to thank you and your colleagues for your many years of dedicated service to the CLPV team. Our outstanding volunteers are wonderful ambassadors of CLP's people-centric culture and our longstanding commitment to our communities. Many studies have shown that corporate volunteering can make employees more engaged and empathetic, which in turn improve their work performance. This creates a win-win-win situation that is mutually beneficial to communities, employees and employers.

Our volunteers are the best possible role models for the Group's recently updated core values of Care, Excellence and Responsibility. Our values and our new ways of working are key for CLP's business to remain successful at a time of dynamic changes in the energy market, enabling colleagues to work more effectively and collaboratively together. You are already familiar with many of these attributes, which have driven CLPV's continued growth since its beginning in 1994. From a small volunteer group of frontline employees providing free rewiring services to underprivileged elderly people, CLPV now comprises more than 1,800 current and former employees together with their families and friends.

CLP is committed to innovation, and in the same way CLPV is always exploring new initiatives to serve our communities. Over the years, it has diversified into a growing range of projects including the CLP Hotmeal Canteen, caring visits to the elderly, beach cleanups and tutorial classes for students, teaming up with many different partner organisations. The recent initiatives to provide training for the young-olds to lead community tours of historical sites and upcycling workshops for them to learn how to give a second life to used clothes are perfect examples of this. As CLP has grown beyond Hong Kong, our volunteer activities have expanded to our businesses in Mainland China, Australia and India.

CLP is a diverse, international and inclusive business made up of talented people from vastly different backgrounds, and we want to ensure our deep reserves of energy expertise are transferred from one generation to the next. I hope more colleagues will join the CLPV team as we pass on the baton of volunteering to the next generation, enabling us to continue giving back to our community.



**Quince Chong**  
Chief Corporate  
Development Officer

## Key performance summary

CLP had 8,415 full-time and part-time employees at the end of 2024 serving its businesses in Hong Kong, Mainland China and Australia, compared with 8,041 a year earlier. This included 6,160 employees in CLP's core markets of Hong Kong and Mainland China compared with 5,865 at the end of 2023. Total remuneration for the year ended 31 December 2024 was HK\$7,081 million compared with HK\$6,624 million in 2023, including retirement benefit costs of HK\$696 million compared with HK\$655 million the previous year.

	2024	2023
Total Workforce <sup>1</sup>	<b>15,111</b>	16,282
Total Employees <sup>2</sup>	<b>8,415</b>	8,041
Workforce fatalities	<b>0</b>	0
Lost Time Injury Rate (Workforce)	<b>0.14</b>	0.06
Gender Diversity		
– Group Executive Committee <sup>3,4</sup>	<b>85% / 15%</b>	86% / 14%
– Employees <sup>2,3</sup>	<b>73% / 27%</b>	73% / 27%
– Women in Leadership positions <sup>5</sup>	<b>30%</b>	29.1%
– Women in Engineering <sup>6</sup>	<b>13.3%</b>	13.3%
Voluntary Turnover <sup>7</sup>	<b>6.8%</b>	8.1%
New Hires	<b>1,313</b>	1,168
Percentage of employees on permanent contract <sup>2</sup>	<b>84%</b>	85%
Percentage of labour supply <sup>8</sup> and service contractors <sup>9</sup> in workforce	<b>46%</b>	50%
Percentage of employees who received training <sup>2</sup>	<b>98.5%</b>	98.5%
Average training hours per employee <sup>2</sup>	<b>42.7</b>	44.1
Percentage of training hours dedicated to upskilling and reskilling <sup>2</sup>	<b>15%</b>	NA

### Notes:

- 1 Includes full-time and part-time employees, labour supply, and estimated service contractors on a full-time equivalent (FTE) basis. FTE calculations are based on the number of man-hours incurred and country-specific average working hours.
- 2 Full-time and part-time employees for Group and its subsidiaries.
- 3 Male/female ratio. The data of other gender identities is tracked but is statistically insignificant and is therefore not separately disclosed.
- 4 Includes Executive Director (Chief Executive Officer).
- 5 Leadership positions are defined as positions at Korn Ferry Reference Level 19 and above.
- 6 Employees with a bachelor's degree or higher qualification in engineering.
- 7 Includes permanent employees only, except for Mainland China where both permanent and fixed-term contract employees are included due to local employment legislation.
- 8 Labour supply refers to workforce supplied by contractor companies under labour supply agreements. Reporting is based on quarterly averages.
- 9 Estimated service contractors FTE are calculated based on the number of man-hours incurred and market-specific average working hours.

# Operational and Supply Chain Resilience

Operational resilience is fundamental to the ability of companies to deliver reliable services to customers. Energy companies have a particular responsibility to maintain highly resilient services because a stable energy supply is essential to society and economic development. At a time of continuing geopolitical unrest, energy companies face challenges in ensuring continued access to critical resources and technologies for their operations and future business development. Supply chain risks including the protectionist trade policies of the new US administration pose increased uncertainties for multi-national energy companies. Adopting an effective supply chain management strategy and strengthening efforts to maintain operational resilience in the face of increasingly complex risks will help energy companies build sustainable businesses for the long term.



**99.9999%**

CLP Power maintained its world-class level of power supply reliability in 2024



**New centralised control centre**

set up by CLP China in Jiangsu to enhance operational management of renewable energy assets in eastern China



About **HK\$44 billion**

products and services sourced from the CLP Group's suppliers in 2024

## Ensuring resilient operations and supply chains

CLP is committed to delivering reliable, environmentally sustainable and reasonably priced energy for customers with its diversified portfolio of assets serving millions of households and businesses in the Asia-Pacific region. In 2024, the Group continued its investments to ensure the ongoing resilience of its operations, supported by a reliable access to key materials and technologies from the best suppliers despite persisting geopolitical uncertainties.

In Hong Kong, CLP Power took steps to strengthen the resilience of its power supply systems as climate change led to an increased frequency and intensity of extreme weather events. Over the years, CLP Power has adopted an extensive range of measures, including reinforcing transmission towers for overhead lines against extreme wind speeds, installing flood protection equipment at substations and deploying digital technologies to improve the monitoring of power networks. Since 2014, CLP Power has installed anti-flood defences at approximately 700 substations. To enhance resilience against extreme weather, CLP Power collaborated with the Hong Kong University of Science and Technology in 2024 to assess the risks of severe rainstorms and landslides to the power system. Based on the assessment results, around 200 additional flood gates or devices will be installed at substations by the end of 2025, further strengthening the flood protection measures.

CLP Power's new Asset Health Management System (AHMS) has been in full operation since May 2024. The new system is capable of monitoring in real time the health of key power supply assets including transmission switchgear, transformers, cables and overhead lines.

One of the most common power quality issues of concern to CLP Power customers in recent years is voltage dips – a fluctuation in voltage over a very short period of time, typically one tenth of a second, that causes a momentary dimming or flickering of lights. Some electrical installations sensitive to voltage change such as lifts may experience tripping through activation of their own protection mechanisms.

Around 80% of voltage dips in Hong Kong are caused by external factors such as lightning strikes or interference from trees or wildlife. Since 2001, CLP Power has installed around 2,600 line arrestors at its transmission infrastructure in Hong Kong to alleviate impact of lightning strikes, and more are being fitted. CLP Power also consults international experts for the latest advice on how to mitigate the impact of voltage dips and hosts seminars and workshops to share guidance and support with corporate customers.

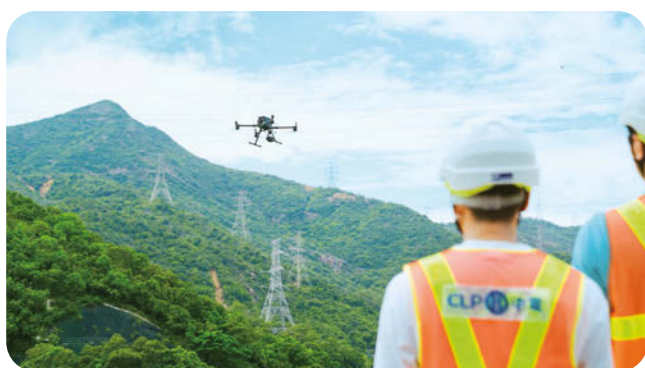
CLP Power is taking short- and medium-term measures to increase the reliability of its supply by reducing power incidents and shortening the time needed to restore power,

as well as providing improved support to affected customers. It is also cooperating with the Electrical and Mechanical Services Department on a comprehensive review on the management of the power systems, including the asset maintenance regime, contractor management practices and training requirements.

CLP Power maintained its world-class reliability of 99.999% in 2024. The average annual unplanned power interruption experienced by each CLP Power customer in 2024 was 1.2 minutes, significantly lower than other major cities including Sydney, London and New York.

Please refer to [Net-Zero Transition](#) on page 49 and pages 36-38 of [CLP's Climate Vision 2050: Powering an orderly transition](#) for further information about the Group's assessment of physical risks, including extreme weather.

Please refer to the [Access to Reliable Energy](#) section of the [2024 Sustainability Report](#) for more information and data on power supply reliability.



- CLP Power deploys smart technologies including drones to enhance inspection efficiency.

### Focusing on energy supply reliability and performance

CLP China set up a centralised control centre in January 2024 at Yangzhou Gongdao Solar Power Station in Jiangsu province to provide more efficient operational management of the company's expanding renewable energy assets in eastern China. The regional control centre is the first of its kind for CLP China as the business aims to increase operational synergies and further enhance asset performance. Similar centres are planned in other regions as CLP China's renewable energy capacity increases.

CLP China is also strengthening the resilience of its wind and solar energy projects in response to the rising risk of extreme weather. For example, new projects including the Juancheng

and Guanxian wind farms in Shandong province and the Bobai wind farm in Guangxi Zhuang Autonomous Region will use turbine towers capable of withstanding extreme winds.

Daya Bay Nuclear Power Station in Guangdong province has delivered safe, reliable, zero-carbon electricity supply since 1994. As the power station recorded 30 years of service, major maintenance outages were completed in 2024 on both of its generation units to ensure the power station's continued operational excellence. As a minority investor in Daya Bay Nuclear Power Station and Yangjiang Nuclear Power Station, CLP does not have operational control of the plants. Information on the operations and safety of the nuclear power stations is reported by their operators.

EnergyAustralia enhanced the operations of its two biggest power stations to strengthen supply reliability. An extensive maintenance programme was completed on all four generation units at Yallourn Power Station in Victoria to ensure the plant continues to perform reliably before its scheduled retirement in mid-2028. Meanwhile, improved fuel deliveries helped boost generation at Mount Piper Power Station in New South Wales after the plant reached an agreement with its coal supplier to diversify fuel supplies. The smooth operations of the two power stations are vital to maintaining a stable supply and easing wholesale price volatility in Australia's National Electricity Market.

In India, Apraava Energy's diverse portfolio of generation and transmission assets delivered a reliable supply of electricity to help meet the country's fast-growing energy demand, although wind farms in the western state of Gujarat were disrupted by Cyclone Asna in August. The wind farms in Samana and Sidhpur were back in service soon after the cyclone, but Mahidad Wind Farm only resumed normal operations in October following extensive repairs. Apraava Energy will further strengthen the resilience of its energy assets as extreme weather events become more frequent.

CLP is committed to ensuring the highest standards of safety across its entire operation. Tragically, a contractor at Apraava Energy's Sidhpur Wind Farm passed away after falling from a wind turbine in February 2025. A thorough investigation into the incident is being conducted and both CLP and Apraava Energy will continue their unrelenting efforts to prioritise safety in operations.

A powerful earthquake struck eastern Taiwan in early April, damaging vital infrastructure on the island including Ho-Ping Power Station. The plant resumed normal operations in May following weeks of repair and maintenance work. Ho-Ping Power Station has since conducted a comprehensive review and taken action to improve its preparedness against similar events in future.



- Apraava Energy's diverse portfolio of generation and transmission assets deliver a reliable supply of electricity to help meet India's fast-growing energy demand. Pictured here is the Harapanahalli wind power project in Karnataka.

Please see the [CEO's Strategic Review on page 16](#) and [Energy Growth Opportunities on page 58](#) for further information on CLP's efforts to strengthen energy reliability.



Please also refer to the [Promoting Nuclear Safety and Clean Energy section of the 2024 Sustainability Report](#) for information and data on nuclear safety measures, and the [How We Manage Impacts and Performance section in the Respecting Nature chapter of the 2024 Sustainability Report](#) for information and data on environmental performance.

### Building mutually beneficial partnerships

Decarbonisation, digitalisation and electrification have created new growth opportunities for CLP, and the Group benefited from access to the latest energy technologies and solutions through its diverse and growing network of partners and suppliers from around the world.

The D2 generation unit at Black Point Power Station in Hong Kong went into service in April, using the latest H-Class combined-cycle gas turbine (CCGT) technology provided by German manufacturer Siemens Energy. With its superior energy efficiency, the new generation unit will play a key role in Hong Kong's decarbonisation by ensuring the continued reliability of the electricity supply as coal-fired generation units at Castle Peak Power Station are retired in phases. The D2 unit project deepened CLP's partnership with Siemens Energy and is an enhanced version of the adjacent 550MW D1 generation unit, also supplied by Siemens Energy.

CLPe uses AI technology developed by Conserve It, a Melbourne-based provider of smart building solutions, to help customers improve the energy efficiency of cooling systems.

Conserve It's PlantPRO technology analyses operational data from the cooling systems of CLPe's customers to analyse system performance and identify potential system faults and determine the most optimal operational settings. These advanced capabilities have enabled CLPe to reduce energy consumption for customers in Hong Kong and the Mainland, while maintaining superior cooling system performance.

EnergyAustralia's gas-fired Tallawarra B Power Station in New South Wales uses advanced technology from US manufacturer GE Vernova, which enables the plant to start up rapidly during periods of peak power demand or low supply. Similar technology from the same manufacturer is being used in the upgrading of the adjacent Tallawarra A Power Station.

These partnerships highlight the strength of CLP's global supply chain with access to resources and capabilities of an expanding partner network. CLP sourced products and services valued at around HK\$44 billion from over 4,100 suppliers in 2024, compared with HK\$42 billion in the previous year.

In 2024, CLP invested in Future Energy Ventures Fund I – a European venture capital fund focused on technologies and business models for the energy transition and digitalisation. The transaction further strengthened CLP's portfolio of venture investments in energy technology providers in leading centres of innovation including Mainland China, the US, Europe and Israel.

CLP also deepened its collaboration with partners in Free Electrons, an international accelerator programme focused on driving innovation in energy technologies and services. Other major international utilities including Germany's E.ON, Japan's JERA and Portugal's Energias de Portugal are also members of Free Electrons. CLP also continued to benefit from innovative energy technologies developed in Mainland China through its partnership with CYZone, a platform that promotes technology development and collaboration.

### Navigating geopolitical risks

Against a backdrop of ongoing hostilities in Eastern Europe and the Middle East, and intense competition between major economies, CLP continued to enhance its supply chain management to secure the materials and technologies needed to maintain robust operations and drive business growth.

CLP harnesses the resources and capabilities of preferred suppliers around the world to support its evolving business needs through long-term, commercially viable partnerships, guided by international best practices for procurement. The Group's strategies for supply chain management are designed to deliver cost efficiencies, sustainability and resilience, while reaping the benefits of innovative technologies.

Suppliers are assessed on a wide range of factors set out in the Group's Supplier Code of Conduct, including amongst others labour practices, environmental performance, health and safety of workers and cybersecurity, with the goal of ensuring a sustainable supply chain.

At a time when international energy markets remained volatile because of geopolitical conflicts, CLP's diversified fuel strategy continued to deliver reasonably priced energy for customers. The offshore LNG terminal, which commenced service in 2023, increased Hong Kong's access to supplies of competitively priced natural gas from international markets and bolstered the city's energy security.

CLP maintained the resilience of its supply chains through a three-pronged approach: ensuring access to multiple supply sources, creating closer partnerships with suppliers, and maintaining a sufficient inventory level for materials. This approach helped CLP retain timely and cost-effective access to innovative products and services despite concerns over the potential impact of global instability on supplies of advanced technologies, including semiconductors and software. For

instance, the focus on supply chain resilience enabled CLP Power to manage a potential shortage of semiconductors and remain on track to achieve its target of 100% smart meter installations for residential and SME customers by 2025.

Supply chain management capabilities are embedded in key business units to meet the specific needs of CLP's operations across different markets. This distributed organisational structure ensures the Group's businesses have access to supply chain management resources and expertise to fulfil their customer and market needs. Localised expertise on supplier due diligence and risk assessment in the Mainland China market, for instance, has helped support the rapid pace of CLP China's renewable energy project development. Best practices and standards on supply chain management are formulated at Group level to maximise synergies with a keen focus on promoting knowledge sharing between business units.

There were no known supply chain issues that materially impacted CLP's operations in 2024, including the construction and development of new projects.

## Case Study

### Building a more resilient and sustainable supply chain

As economic uncertainties and geopolitical turmoil increase the complexity of the global business landscape, a proactive approach to managing supply chain risks is crucial for companies to ensure reliable access to key materials and technologies.

CLP Power stepped up measures to assess risks in its network of more than 1,300 active suppliers in 2024. A new software was deployed to screen suppliers against relevant laws and regulations for possible violations. Business with one supplier was suspended due to risks uncovered by the software.

CLP Power also expanded to all suppliers the requirement to complete a detailed questionnaire and provide updated business information, including ownership and manufacturing locations. This information allows CLP Power to identify and act upon potential risks at an early stage.

The two measures further strengthen CLP Power's procurement management and ability to develop mitigation plans, expediting shipments from certain suppliers and sourcing from alternative suppliers when necessary to ensure on-time delivery.

In 2022, the CLP Group released a Supplier Code of Conduct, which covers comprehensive sustainable procurement requirements such as environmental management, climate change mitigation, labour practices and human rights. At present, more than 1,800 of the CLP Group's active suppliers have acknowledged that their practices abide by the code. The Group targets to increase the coverage to over 4,000 suppliers by 2026.

Digitalisation is a powerful enabler of CLP Power's efforts to build a more resilient and sustainable supply chain. CLP Power is enhancing its enterprise resources planning system to support improved integration of procurement processes and supplier information, further strengthening supply chain management.