

Capitals



We explain how CLP manages a number of critical resources and relationships – known as the Six Capitals – to create value for our stakeholders and contribute to the sustainability of our business

Financial Capital

Despite uncertainties arising from new global political and economic order, financial markets continued to advance through much of 2017. However, as the good economic conditions started to wane towards the end of the year, controlled monetary tightening by most central banks and deleveraging efforts by the Chinese authorities led to some fluctuations in the financial markets, especially for interest rates.

The 10-year US Treasury yield, for instance, topped 2.6% in March 2017 on comments by the Federal Reserve that signalled a higher interest rate environment, before dropping to 2.1% in September 2017 after authorities used more benign wordings and then rebounding to 2.5% by the end of 2017. Meanwhile, one-month Hong Kong Interbank Offered Rates (HIBOR) spiked to 1.2% in December 2017, their highest level since the global financial crisis. China's 10-year sovereign bond yield breached 4% in November 2017 after bottoming out at 2.6% in October 2016.

Such market movements presented corporates with challenges and opportunities depending on their financial discipline, competency, and readiness to deal with market fluctuations. At CLP, we remained focused on our well-proven financial philosophy and deployed our financial flexibility and capability to diversify so that we could navigate through the volatile market in support of the business strategy.

Financial Prudence, Perseverance and Responsiveness

In 2017, CLP continued to make strategically important, measured investments to enhance value for our shareholders, customers, governments, NGOs, financial institutions and business partners. This would not have been achieved without effective, timely financing arrangements which delivered cost-effective funding and a well-mitigated risk profile.

In Hong Kong, CAPCO invested in a HK\$5.5 billion 550MW CCGT generation unit at Black Point Power Station to meet the long-term energy demand of the city and support the Hong Kong Government's low carbon transition by increasing the portion of gas in Hong Kong's fuel mix for power generation.

In January and March 2017, CAPCO arranged HK\$5.7 billion diversified, cost-effective, long-tenured funding, comprising a HK\$1.4 billion 15-year loan facility supported by export credit agency (ECA) and a HK\$4.3 billion five-year commercial loan facility which were adequate to fully cover the project cost. The credit margins of the two loan facilities were one of the tightest among Hong Kong corporates since the global financial crisis and the ECA insurance premium rate was very favourable.



CAPCO issues its first Energy Transition Bond to fund Black Point Power Station's new gas-fired generation unit

In line with our prudent but warranted policy of diversifying debt funding in terms of tenor, market and instrument for capital expenditure with a long payback period, CAPCO identified a good opportunity to execute an inaugural US\$500 million (HK\$3.9 billion), 3.25% coupon, 10-year Energy Transition Bond in July 2017 under CLP's new Climate Action Finance Framework (CAFF) to refinance a major portion of the five-year commercial loan facility.

The bond attracted keen interest from over a hundred global investors, including Environmental, Social and Governance (ESG) investors in Europe and Asia, particularly Japan. It carried a very competitive 1.025% interest margin over the 10-year US Treasury Note, the tightest spread in such tenor ever achieved by a utility company in Hong Kong. The bond also had the distinction of being the first benchmark US dollar Energy Transition Bond issued globally. Its arrangement, execution and listing status in Hong Kong will support the city's ambition to become a regional hub for green financing.

In Mainland China, we expanded our non-carbon generation portfolio with the acquisition of a 17% equity stake in the Yangjiang Nuclear Power Co., Ltd. In October 2017, CLP arranged HK\$5.1 billion two-year bank loan facilities at preferential interest rates to fund the acquisition, after applying HK\$1.7 billion of RMB denominated internal resources to finance the transaction.

Strong Financial Profile, More Firepower to Pursue Business Opportunities

CLP recognises that good, unrestricted access to global capital market and bank funding is critical to allow the Group to carry out its business operations, sustain long-term growth and guard against contingencies. To do this, we remain vigilant of our inherent duty to maintain a sound balance sheet, robust financial structure and strong investment grade credit ratings, while delivering on business performance and earnings objectives.

This dedication paid off when Standard & Poor's (S&P) upgraded the credit ratings of CLP Holdings from A- to A, CLP Power Hong Kong from A to A+ in May 2017 and EnergyAustralia from BBB to BBB+ in July 2017. In June 2017, S&P assigned CAPCO a first-time credit rating of AA-.

We see these upgrades as a vote of confidence. Our continued efforts to restore value to our Australian business and deleveraging (notably in CLP Holdings, CLP Power Hong Kong and EnergyAustralia) have further reduced financing costs and strengthened our financial ratios.

CAPCO's financial structure was further strengthened by replacing 75% of shareholders' loans with an equity-like instrument in April 2017. It was a key factor in obtaining the inaugural AA- credit rating of the company and preferential commercial terms for the Energy Transition Bond and ECA-supported loan facility.

Q Nippon Life has been very committed to ESG investments. What is your stance in moving into cleaner energy sources and green projects in the medium term?

A CLP is committed to growing our investment in low carbon electricity generation as manifested by our Climate Vision 2050. We have already made significant progress as our equity-based renewable energy generation capacity has almost tripled since 2007. We are keen to keep up the momentum by further expanding our low carbon portfolio. In Hong Kong, we continue to move away from coal to a more balanced energy fuel mix to support the Government's climate targets. Our Australian business has been purchasing wind and solar energy from third parties to further diversify its generation mix. In India and Mainland China, we continued to expand our renewable portfolio in the last 12 months and commissioned our first and fourth solar projects in the two countries respectively. Last but not least, we launched the CLP Climate Action Finance Framework in 2017 and issued our first Energy Transition Bond within the framework, and we were delighted to see Nippon Life taking up a substantial part of that initiative as well as the participation of over 100 other ESG investors.



Mr Ryu Hihara
General Manager
Credit Investment Department
Nippon Life Insurance Company



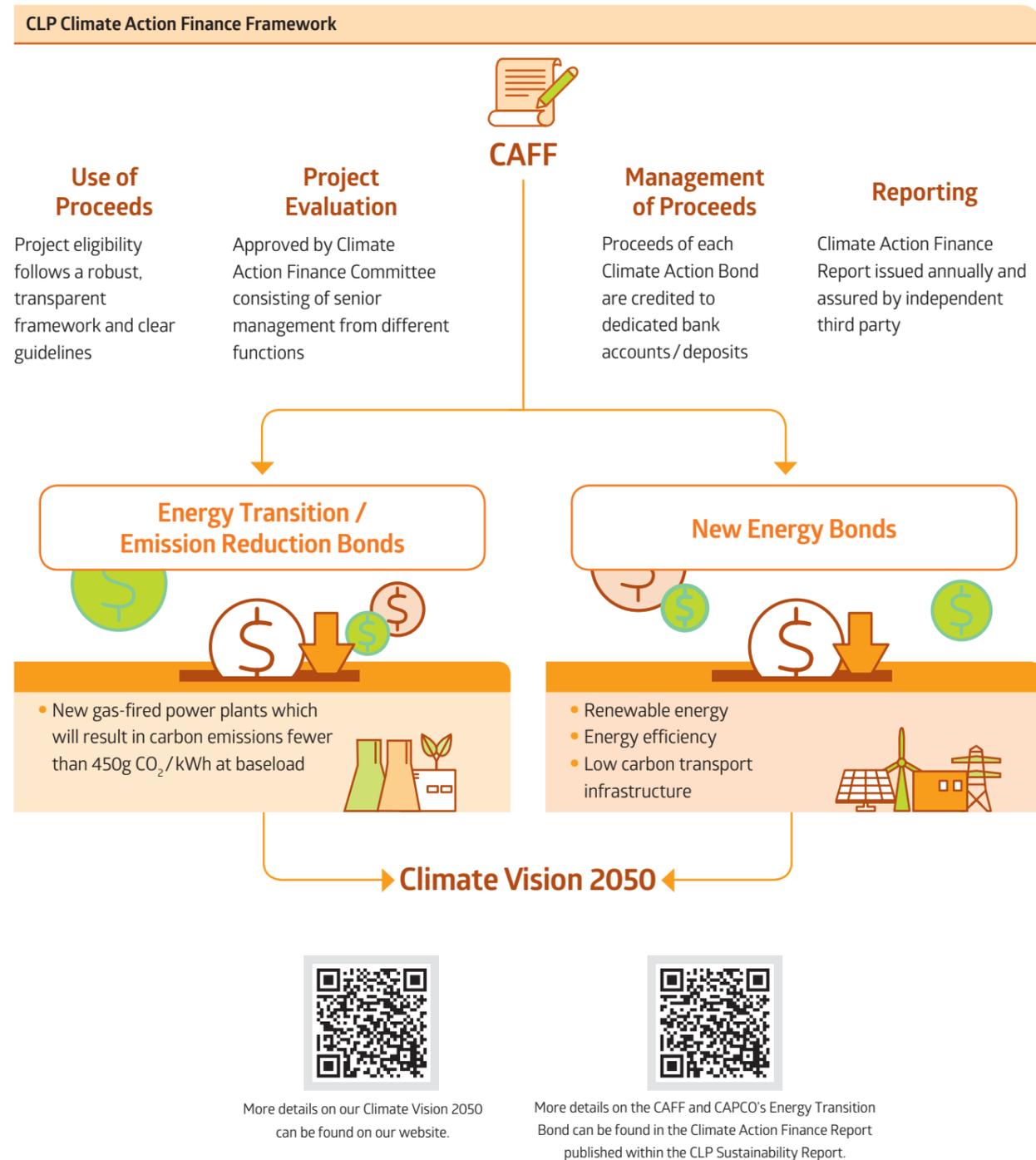
Geert Peeters
Executive Director &
Chief Financial Officer

The upgrades in credit ratings brought immediate benefits as bond investors and banks quickly recognised the stronger financials and improved credits of CLP entities which translated into lower funding costs.

A Financing Framework for a Greener Portfolio

To source funding for our energy transition efforts, CLP Holdings launched the CAFF in July 2017 after two years of contemplation, refinement and communication with

stakeholders. The CAFF sets out a holistic approach for us to provide more options for financing the transition towards a low carbon energy future by tapping into a fast-expanding community of green and ESG investors. It enables CLP entities to arrange financings through two types of Climate Action Bonds: New Energy Bonds for renewables and energy savings projects, and Energy Transition Bonds to fund projects that help reduce emissions. The US\$500 million bond issued by CAPCO in July 2017 to fund a new highly efficient CCGT project was the first CLP Energy Transition Bond.



CLP works hard to maintain a healthy diversity of funding sources to ensure access to global financial markets in a cost-effective and timely manner. At the end of 2017, CLP had business relationships with 52 financial institutions, about half of which have been partners for more than a decade. These long-standing relationships reflect CLP's constant efforts to forge mutually beneficial partnerships and maintain our outstanding reputation in financial markets. In addition to conventional bank loans, CLP Power Hong Kong and CAPCO are able to tap into the global debt capital market and achieve asset-liability matching funding in a time and cost efficient manner through Medium Term Note (MTN) programmes.

Our Credit Ratings		
	S&P	Moody's
CLP Holdings	▲ A / Stable	A2 / Stable
CLP Power Hong Kong	▲ A+ / Stable	A1 / Stable
CAPCO	AA- / Stable	A1 / Stable
EnergyAustralia	▲ BBB+ / Stable	not applicable
Positives	<ul style="list-style-type: none"> CLP Holdings' financial performance to improve after Yangjiang investment Enhanced capital structure of CAPCO Favourable regulatory and operating conditions in Hong Kong EnergyAustralia's secured long-term fuel supply to support stable operation 	<ul style="list-style-type: none"> Strong financial profile, supported by predictable regulated cash flows from Hong Kong business Well-managed debt maturity and sound liquidity profile, supported by good access to diversified funding
Negatives	<ul style="list-style-type: none"> Lower permitted rate of return on assets under new SoC Agreement Uncertainty from the legal proceedings against EnergyAustralia with respect to its sale of Iona Gas Plant 	<ul style="list-style-type: none"> Overseas and unregulated business investments increase risk profile The upcoming reduction in permitted regulated returns in Hong Kong

Our Debt Profile as at 31 December 2017					
	CLP Holdings HK\$M	CLP Power Hong Kong HK\$M	CAPCO HK\$M	Other Subsidiaries HK\$M	CLP Group HK\$M
Availability Facility*	11,278	37,211	11,942	22,834	83,265
Loan Balance	4,388	30,755	9,606	12,592	57,341
Undrawn Facility	6,890	6,456	2,336	10,242	25,924

Note:
* For the MTN Programmes, only the amounts of the bonds issued as at 31 December 2017 were included in the total amount of Available Facility. The Available Facility in EnergyAustralia excluded a facility set aside for guarantees.

More information about our credit ratings can be found on our website.

More information about major financing activities in 2017 and our debt profile can be found on pages 34 and 35 of CLP Holdings 2017 Annual Results Analyst Briefing.

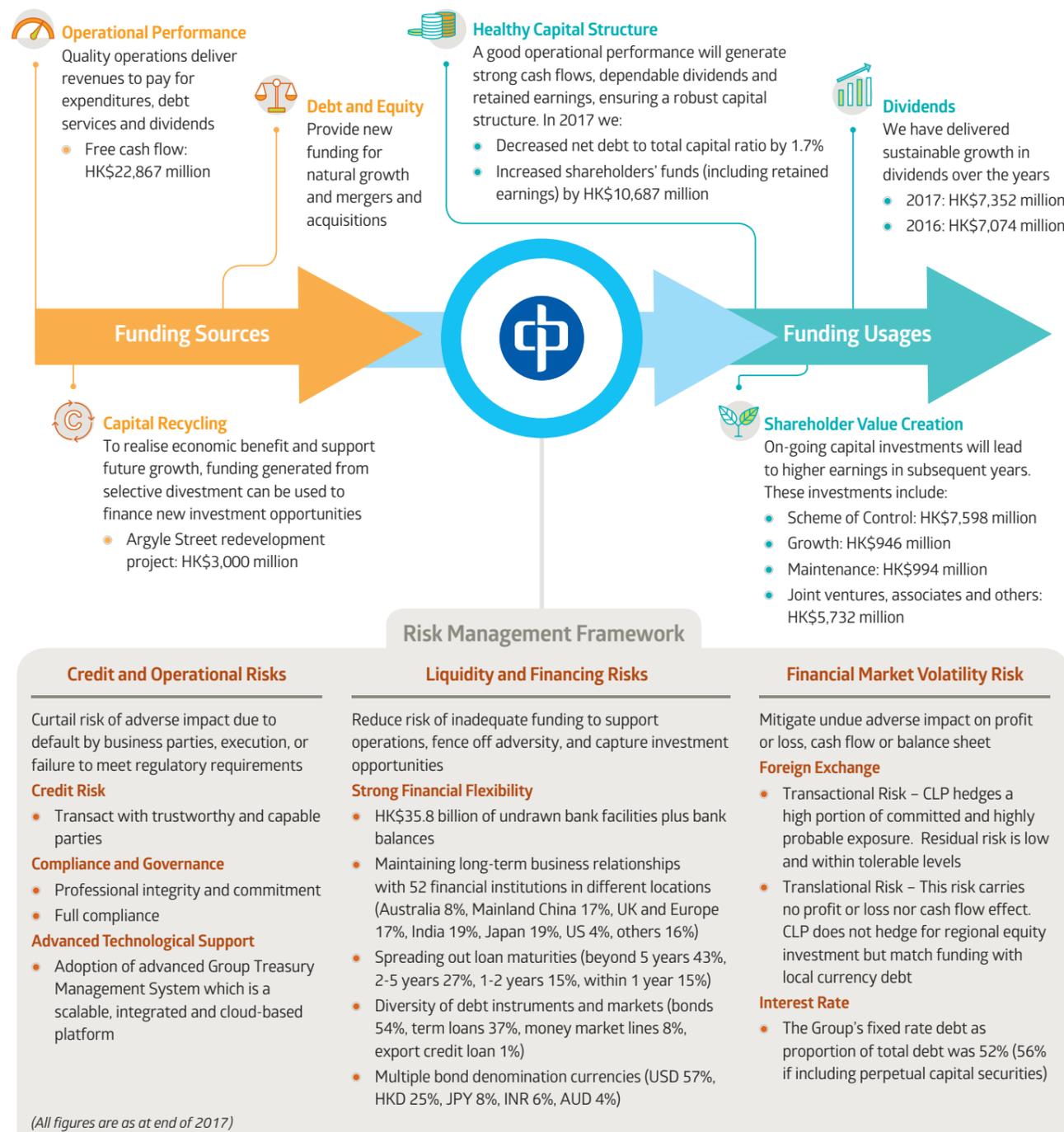
Analyses of loan balance by types and bond funding by currencies can be found on page 44 of Investor Presentation Introductory Pack.

A Vigilant, Diligent Risk Management Approach

The power industry is known for its high investment costs, capital intensity and long payback periods with compounding risk factors. The ability to arrange timely, cost-effective, diversified, multiple-tenured and sustainable funding is a critical factor in managing and expanding our business.

With our growing, cross-border business portfolio, we are exposed to multiple risks of liquidity, financing and refinancing, foreign exchange, interest rates, counterparties and compliance. Risk management is a key component in CLP's financial framework. A holistic risk management framework with effective implementation helps CLP protect profit and improve the reliability of cash flows to contribute to the financial strength of CLP and create value for shareholders.

The diagram below highlights our funding sources, usages and risk mitigation strategies.

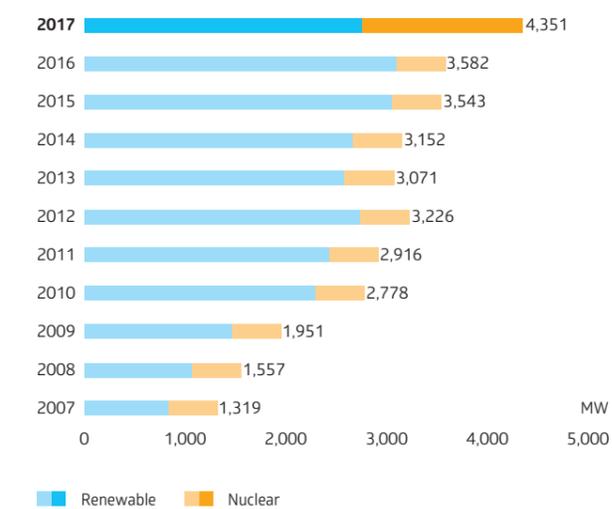


Our business mainly entails owning and operating power generation assets across the Asia-Pacific region, a transmission and distribution network in Hong Kong, and energy retailing services in Hong Kong and Australia. To deliver the energy needed to fuel the growth of our communities, we procure and invest in physical assets such as equipment, buildings and infrastructure.

Generating Cleaner Power

Since our first 75kW generator was commissioned over a century ago in Hong Kong, our generation capacity on equity basis, in operation and under construction, across the Asia-Pacific region has increased to 19,395MW, supplemented with an additional 5,159MW of capacity purchase. Our generation portfolio utilises diverse types of energy sources, including coal, gas, nuclear and renewable energy (wind, hydro and solar). In 2017, the Group's total generation capacity on equity basis and including capacity purchase increased by 3.25% to 24,554MW mainly due to our investment in Yangjiang Nuclear Power Co., Ltd. Coal-fired generation capacity remained at about the same level whereas renewable capacity, including capacity purchase, decreased by 9.56% primarily because of the divestment of our minority interest in CGN Wind Power Company Limited.

CLP Group Non-Carbon Generation Capacity on Equity Basis



Developing Non-carbon Energy

Our investment in Daya Bay Nuclear Power Station in the mid 1980s marks our entry into non-carbon generation. In 1997, we acquired our first renewable project, Huaiji Hydro. The scale of our non-carbon generation portfolio, on an equity basis, has since then grown to 4,351MW by the end of 2017. Today, we are one of the largest external investors in wind power in India and Mainland China, with over 2,700MW of equity renewable energy capacity in the Asia-Pacific region.

Currently, we are considering several opportunities to construct new sites or acquire operational assets as well as potential strategic investment partnerships. If successful, these will help us achieve our existing target of having 20% renewable energy capacity by 2020 and an additional new target of 30% renewable energy capacity by 2030 that was set as part of our Climate Vision 2050 review. Details on our performance in achieving the renewable and non-carbon targets are set out in the Natural Capital chapter on pages 90-93.

Planning for Efficiency

We are constantly identifying opportunities to improve the operational efficiency of all our assets. Such efforts start from the project planning stage when we select the site with the highest yield and the best available technology, which sets the foundation of the operational efficiency or capacity factor range of the asset throughout its entire life. Quite often, the choice of site, technology and energy source may be constrained by incumbent project requirements set typically by the local authority. However, even if the type of energy source to be used, such as coal, gas or renewable is already set, we can still choose the most efficient technology that is available and proven for the specified energy source.

For instance, in Hong Kong, the new gas-fired generation unit being constructed at Black Point Power Station features an advanced design with a CCGT configuration that will give it an efficiency of around 60%. Such a performance standard is not only significantly higher than that of existing gas-fired units in Hong Kong, but also among the highest in the world. The design allows for greater electricity output without the use of additional fuel, leading to a reduction in emissions intensity. In addition, the installation of advanced Selective Catalytic Reduction system can further reduce the nitrogen oxides emissions.

Maintaining Asset Quality

For plants in operation, we continued to invest in improving operational efficiency. These efforts allow us to maintain our standards of efficiency for generation plants across the Group and to meet increasingly stringent regulations on emissions and fuel efficiency in certain jurisdictions.

For example, in 2017, at our Fangchenggang Power Station in Mainland China, we completed the emission control retrofit project for one of the two supercritical units of Phase I, thereby increasing its efficiency and ensuring compliance with Mainland China's 2020 emissions requirements. The second unit at FCG Phase I will be retrofitted in 2018. At Black Point Power Station in Hong Kong, with the proven operating performance of the first upgraded gas turbine unit, we prepared for two more units to be upgraded in 2018. On completion of the third gas turbine systems upgrade, we expect to see benefits such as an increase of 75MW in capacity (25MW for each gas turbine unit), enhancement in nitrogen oxides emissions performance, minor improvement in efficiency and a reduction of fuel cost.

Optimising Asset Performance

Technologies supporting data processing, storage and management continue to advance and are becoming more affordable and accessible. Consequently, the opportunities arising from big data and data analytics are also increasing, with a wide range of potential applications including performance optimisation.

As our fossil-fuelled assets age, not only will their operational efficiency decline, but the probability of plant component failure will also increase. We need to detect abnormalities in performance or potential premature failure so that we can take appropriate preventive actions in a timely manner to help slow down the efficiency decline and reduce the probability of unplanned disruptions. In 2017, we embarked on a pilot project in Hong Kong to test an innovative product on its ability to detect premature failure on critical plant components as well as to provide deeper insights into operational trends and performance optimisation. Results of the project will be assessed in early 2018 to determine the next steps needed in making improvements to overall asset fleet performance by using data analytics and insights.

Given our current portfolio of over 2,700MW of equity renewable energy, the dataset we have accumulated over the past decade can provide us with a foundation for developing new insights and ultimately solutions for renewable energy management systems. This in turn will enhance our ability to predict and respond appropriately to resource variability so as to optimise the operational efficiency of our renewable energy fleet. Hence in 2017, we explored this possibility further by carrying out a pilot of a smart data platform to optimise operational performance of our wind and solar plants. We have also established a renewable energy team within our Group Operations Department to focus on renewable energy performance and optimisation.



The gas supply deal between CAPCO and CNOOC China is a good example of our procurement strategy which emphasises on establishing long-term relationships with suppliers

Delivering World-Class Reliability

Our transmission and distribution network in Hong Kong serves about 80% of the population of the city. The reliability of our system is above 99.999% and is higher than other major cities such as London, New York and Sydney. At the end of 2017, we had approximately 1,164 km of overhead lines and about 14,514 km of underground circuits at medium or higher voltage. In addition, we also had 232 primary and 14,483 secondary substations in Hong Kong.

Investing in a Climate-Resilient Grid

Last year was not only among the hottest on record in Hong Kong, but also saw many high-impact extreme weather events including typhoons, floods, heatwaves and drought around the world. Such events can often cause disruptions to power supply. Therefore it is critical that our system is resilient enough to

withstand these extreme conditions to minimise disruption to critical services and infrastructure and to enable faster recovery of affected communities. In 2017, Hong Kong experienced seven typhoons, including Super Typhoon Hato with wind speed of up to 185 km per hour. Due to the strength and resilience of our power system, there were no systemic power failures.

Overhead lines make up a significant part of CLP's Hong Kong transmission and distribution network, and more than 700 pylons of 400kV overhead lines form the backbone of our supply system. If a pylon is destroyed by strong winds or collapses because of a landslide, it can take several months to be restored. Over the years, we have taken steps to reinforce the pylons ensuring that they can withstand the impact of adverse weather such as super typhoons. CLP conducts regular emergency typhoon drills, particularly ahead of Hong Kong's typhoon season to help reduce the vulnerability of the power

Q There are a lot of construction of major infrastructure and property development projects going on within CLP's service area in Hong Kong as part of the Guangdong-Hong Kong-Macao Bay Area development initiative and other Government's New Development Area plans. Can you outline how significant the impact will be on CLP's power supply infrastructure spending over the next few years?

A A safe and reliable electricity supply is vital for Hong Kong's stability, competitiveness, and ability to attract organisations to set up business in Hong Kong. As a responsible electricity provider, the majority of our capital investment is in our transmission and distribution network. We must meet several key challenges in the coming years, including continued load growth with new housing and infrastructure developments as well as refurbishment, replacement, and reinforcement of our network to maintain our world-class reliability levels and enhance customer service through the deployment of digital technology.

We will make significant capital investment not only to meet the electricity needs of a number of major infrastructure development projects such as the Kai Tak Development and the West Kowloon Cultural District, but also to support several key transportation development schemes such as the Hong Kong-Zhuhai-Macao Bridge, the Third Runway System at the airport and the Hong Kong Boundary Crossing Facilities Island. The scale of these investments and the need to sustain the assets involved drives a considerable part of our investment programme. We will liaise closely with the government to optimise our resources and meet the rising demand for power.



Mr Angello Chan
Managing Director
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Head of Hong Kong / China & Taiwan
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Group Director &
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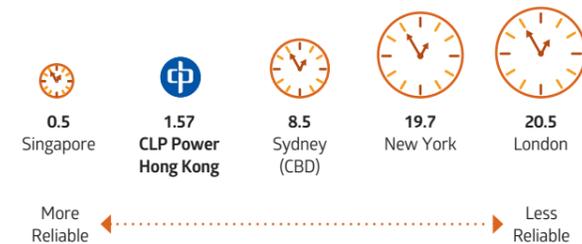
system and minimise the downtime required for recovery from extreme weather events. Emergency restoration systems were introduced to construct temporary pylons quickly to reduce the recovery time. We have also implemented additional measures to counter the potential impact of severe typhoons and storm surges. These include installing smart switchgears on distribution overhead lines, putting in place flooding prevention measures and alarm at lowlying flood prone substations and establishing a typhoon response protocol and coordinating system.

Ensuring Efficiency and Reliability

In 2017, we continued our efforts to improve the reliability of our power supply network. Our average network loss for the past five years was around 4.04% of the total energy, which is slightly lower than the 2016 figure. Between 2015 and 2017, a CLP customer on average experienced 1.57 minutes of unplanned power interruptions per year, which is higher than the 1.48 minutes in the previous three-year period mainly due to the significant impact of Super Typhoon Hato.

Reliability Levels in Major Metropolitan Cities

Unplanned customer minutes lost per year



- Notes:
- 2015-2017 average for CLP Power Hong Kong.
 - 2014-2016 average for all other cities (the latest available data).
 - Singapore's power supply network is mostly underground, and is less exposed to the influence of weather and other external interferences than overhead lines.

Developing New Grid Management Capabilities

Given the continued growth of renewable energy and its role in the power sector, grid management capabilities will become increasingly important. Services to integrate renewable energy into the grid and manage these variable sources while maintaining grid stability will be in demand. In Hong Kong, CLP provides expert advice to help our customers understand and resolve technical issues so that they can connect their renewable energy systems (normally less than 200kW) to the electricity grid. There are to date approximately 300 distributed

renewable energy facilities connected to CLP Power's grid, with a total generation capacity of over 40MW. As the number of renewable installations connected to the grid rises, we will have the opportunity to gain more insights into the impacts of these variable sources on the grid and proactive grid management actions.

One of the measures to help counter the volatility of renewable energy is the use of energy storage. The EnergyAustralia/Redback energy storage system, for instance, enables us to build our capability and observe the possible effects of energy storage on the grid as well as its potential role in grid management.

Procuring for Power

Shifting from Transactional to Strategic Procurement

In 2017, we began implementing our CLP Group Procurement Standard and several strategic procurement initiatives with the aim of developing and institutionalising leading procurement practices and capabilities across the Group companies.

We conducted a comprehensive review of our third party spend across products and services received, resulting in the establishment of group-level Categories of spend governed by Category Councils. Each Council comprises supply market, category and business experts from across the CLP Group. Category business plans are developed in consultation with internal business stakeholders to address current and future business needs while leveraging group synergies and achieving best value for CLP and for our customers.

Developing Long-Term Supplier Relationships

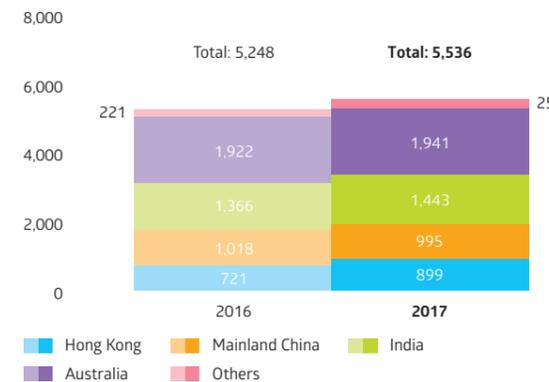
In addition, the relationship with our suppliers is critical to our long-term business success and we take a collaborative approach in regularly engaging with our partners across the different levels of our respective organisations. We have developed a Supplier Relationship Management framework for our key strategic suppliers to jointly review delivery performance, continuous improvement and innovation opportunities. This enables us to strengthen and align our business relationships, mitigate supply chain risks, drive continuous improvements in the areas of Sustainability, Health, Safety, Security and Environment (HSSE), Quality and Innovation, and optimise value from a CLP Group perspective.

Procuring Responsibly

We take a collaborative approach to engaging with our suppliers to uplift their sustainability capabilities. Suppliers for critical projects, which constitute the majority of our 2017 project base, are assessed on their relevant sustainability status and practices through self-declaration, tender evaluation, site visits or checks, and two-way performance reviews as appropriate.

In addition to assessing new suppliers, we conduct risk assessments on our existing key suppliers. In the past year, we have assessed 78 key suppliers against sustainability requirements and conducted follow-up site visits with three key suppliers to verify responsible procurement practices. Our overall assessment and monitoring mechanisms have confirmed that there were no significant risk findings related to our Responsible Procurement Policy Statement in 2017.

Number of Suppliers by Geographical Region



No supplier relationship was terminated due to the assessment and monitoring result. Given the nature of our business, we collaborate with suppliers in managing environmental impacts during operations. We also actively seek opportunities to advocate responsible procurement to peer companies through organised practice and experience sharing activities.

Our business operations involve construction and site work, for which subcontracting is a common practice within the industry. We engaged with some critical sub-contractors in Hong Kong to understand their sustainability status and practices in 2017, and will continue such engagements in 2018, with the aim of further uplifting supplier sustainability capabilities.

Keeping Abreast of International Best Practice

We keep abreast of the external trend and latest development on sustainable procurement, such as the ISO Guide on Sustainable Procurement (ISO 20400:2017) that provides guidance to organisations on integrating sustainability within procurement, for the purpose of continuous improvement.

In addition, we are committed to protecting the company's intellectual property rights, as well as all applicable laws and regulations, including observing the intellectual property rights of our suppliers and vendors.

Serving Our Customers and Communities

We take protection of customer privacy and information seriously, as indicated by our CLP Privacy Policy Statement, which stipulates measures to respect and protect the personal data we receive. In 2017, in our Hong Kong retail business, no customer privacy and data loss cases were reported or noted. Our EnergyAustralia retail business received 56 privacy complaints relating to information being provided to unauthorised parties. EnergyAustralia has adequately dealt with the resolution of each complaint. Of the 56 complaints, three were received from the Australian Privacy Commissioner regarding potential breaches of customer privacy. Following investigation, however, the Commissioner closed all files on the basis that EnergyAustralia had not interfered with the customer's privacy.

Electricity needs to be provided safely. We take this responsibility seriously and place the highest priority on both customer and employee safety. Working near electricity supply lines could impose public health and safety concerns. We conduct regular construction site inspections and provide cable plans and safety talks to road work contractors to enhance safety awareness. Electromagnetic fields (EMF) arising from the power system is another public health concern. Our power supply equipment fully complies with the guidelines issued by the International Commission on Non-Ionizing Radiation Protection. Regular EMF measurements on our power supply equipment are carried out jointly with the Electrical and Mechanical Services Department in Hong Kong. The measured EMF levels are well below the guideline limits.

Intellectual Capital

Our intellectual capital includes our knowledge, experience and expertise in developing and operating projects as well as managing the business. Against a fast changing environment, our capabilities need to evolve over time to keep pace with technological developments and societal changes. Our commitment to innovate at all levels is crucial for our sustainability: using technologies to improve processes, developing new products and services, and formulating long-term business strategies that prepare ourselves for future trends and customer needs.

The Pioneer

CLP was founded over a century ago in Hong Kong. We have embraced new ideas and technologies along the way as we grew from a Hong Kong-based power company to a leading energy service provider in the Asia-Pacific region. We have taken the lead in investing in advanced power generation technologies available at the time, ventured into new markets and developed up-to-date operational processes and services that could spearhead our business strategy and growth.

We helped introduce nuclear power into Mainland China in the 1980s with our investment in Daya Bay Nuclear Power Station, China's first large-scale commercial nuclear power project. We made another milestone in 1996 when our Black Point Power Station went on stream and became the first gas-fired power generating plant in Hong Kong. Our Lopburi Solar Farm is Thailand's first utility scale solar power project. Today, our

renewable energy equity capacity stands at 2,700MW and we are one of the largest external investors in wind power in India and Mainland China.

We take pride that we have achieved excellence in many areas of our operations. Our supply reliability in Hong Kong is among the best in the world, for instance. The fact that we are an established energy company with businesses spanning the entire energy value chain means that we have over the years accumulated a wealth of experience and expertise in what we do. Such capabilities and insights are valuable assets for any energy company trying to navigate through today's challenging and ever-changing environment.

Strength and Foresight

We are keenly aware that the industry is constantly evolving and we must continue to seek improvement in our operations and adapt in order to stay ahead of the competition. Over the years, we have adopted and improved best available and proven technologies that could enhance efficiency and improve our operational performance. We share the view that instead of constantly seeking to reinvent the wheel, we can achieve the best outcomes by combining our expertise with the application of technological advancements.

For example, we have implemented boiler optimisation programmes at our Castle Peak Power Station to reduce nitrogen oxides emissions and increase boiler efficiency.



Conducting study tours to some of the world's smartest cities in the Netherlands, Israel and other countries to gain insights of their digital asset infrastructure, and establishing partnerships with Siemens to further strengthen our smart city capability



We also introduced a nine-day load forecast and alert services based on weather modelling, enabling our customers with large air-conditioning loads to reduce their electricity usage and demands.

Such a mindset also helps to shape how we plan and implement our investment decisions. As energy investments run for decades, we plan for the long-term, taking into account the changing regulatory requirements and evolving market trends. By doing our homework diligently so as to make the best predictions of the future, we are able to make investments that can stand the test of time and save costly investment down the road. One such example was our decision in 2009 to install FGD technology at our Jhajjar power plant – a significant investment although the technology was not required by Indian environmental regulations at the time. FGD is now no longer an option but a standard mandated for coal-fired power plants in India under the country's new and more stringent emissions regulations.

Digital Age

We are now in the digital age and the energy landscape is changing even faster. On the one hand, utilities need to address the customers' desire to switch to low-carbon fuel sources. On the other hand, the digital revolution has reshaped the playing field of the energy market. Bits and bytes enable new entrants – many of them asset-light and technology-focused – to quickly seize market opportunities.

To compete, we need to capitalise on our existing strengths and capabilities and allocate more resources into developing a new competitive edge. We also need to forge new strategic partnerships that help enrich our knowledge and deepen our insight, while exploring new markets and areas that we have yet to tap into. All of these are part of a journey of innovation that will allow us to stay ahead of the competition.

Data Power

Like everyone else, one area that is of particular importance to our innovation drive is data. By unlocking the immense potential of data, we can better manage our operations using analytics, seize new business opportunities, and deepen our relationships with customers and stakeholders.

In 2017, we set up a new team of data experts and allocated resources to boost our analytic capabilities. At the same time, we have collaborated with external partners to launch trials and pilots, which apply analytics tools to improve the operational efficiency of our assets and develop our ability to detect anomalies in performance or potential failure. For example, we have carried out a pilot of a smart data platform to optimise the operational performance of our wind and solar plants. For more details, see Manufactured Capital chapter on pages 73-77.

By investing in our data capability, we aim to develop an energy ecosystem that orchestrates the flow of data and applications throughout our business, which will provide a foundation for driving operational innovation and developing new products and services.

Smart City

The worldwide pursuits of a "smart city" have accelerated in recent years. There are now thousands of smart city projects and pilots underway around the globe. While some of them have begun to take shape, others are still in their infancy stage. In 2017, we conducted learning visits to cities that are recognised as front runners in the field and where energy companies are playing a significant role in the development. The experiences of the world's leaders helped to inform the positioning of CLP as a smart city orchestrator. Our vision is to become a preferred partner for delivering smart city infrastructure and services in each of the markets and regions where we operate.

For instance, we signed a Memorandum of Understanding (MoU) with Siemens Limited in November 2017 in Hong Kong to develop smart city solutions, and we have established a pilot study of Smart Energy Community in support of the Energising Kowloon East project.

Demand response initiative is another area we are looking at. Last year, our peak demand in Hong Kong would have been higher than the 7,155MW on 22 August we reported, had we not utilised some demand response measures to incentivise key customers to lower electricity usage on another hot summer day.

Meanwhile, EnergyAustralia has committed to deliver 50MW of demand response reserve capacity as part of a pilot programme by the Australian Renewable Energy Agency and the Australian Energy Market Operator to keep lights on at times of peak demand, such as on extremely hot days by reducing energy consumption. The capacity will be made available using technologies like remote monitoring systems and battery storage.

Cyber Security

Today, cyber security has become a key concern for critical infrastructure including power generation and transmission. In 2015, a power grid in Ukraine was crippled by a malware attack, affecting 225,000 people. Similar attacks have happened although few have drawn public attention. The lack of publicity can be explained by the fact that most utility companies are reluctant to discuss such incidents for fear of causing public alarm or damage to brand reputation.

While utility companies rarely talk about their cyber security strategy and encounters, the hackers constantly share information. Such an unequal playing field has put the companies at a disadvantage and so we believe that the industry must work more closely together. To keep up to date in this challenging area, we have taken steps to strengthen our cyber resilience through collaboration with leading international utilities. In June 2017, we leveraged upon the Guangdong, Hong Kong and Macau Power Industry Summit platform to organise a symposium on cyber security issues with our regional partners including China Southern Power Grid, China General Nuclear Power Corporation and Companhia de Electricidade de Macau.

Given the clear threat of cyberattacks, the proper risk management approach is no longer just about how we keep cyber criminals out, but also how we know when our assets or systems are compromised. We must also ensure that we can recover in the shortest time possible with the smallest impact.

To do that, we have been working to establish a threat detection capability for our industrial control systems. We have also made progress in establishing a brand monitoring and protection service at the Group level, including digitally managed online asset protection such as websites and social media presence. We are committed to continuing our efforts to strengthen our system, improve our solutions and shorten the time needed to react and recover in case of an attack.

Q Small and Medium Enterprises (SMEs) often have limited resources to adopt energy conservation initiatives. How does CLP support SMEs in energy efficiency and conservation (EE&C)?

A CLP provides a wide range of EE&C services to customers. We offer businesses an energy audit service to identify energy saving opportunities, a Meter Online service for better energy management, and an Energy Billboard programme to benchmark energy consumption and help customers better understand their consumption levels.

In addition, CLP has launched a new digital and mobile EE&C service this year called Smart Enterprise that offers tailor-made energy management solutions to our commercial and industrial customers. Riding on an Internet-of-Things platform, Smart Enterprise collects static as well as real-time data through different sensor devices for conducting analysis. Users can monitor and control operating systems on a real-time basis to enhance their operational and energy efficiency with just a few touches on a smart phone screen by using mobile apps. Smart Enterprise provides comprehensive functions to enhance business performance including air-conditioning control, lighting control, sense control, energy management, and security surveillance. These solutions can be used in different business environments including hotels, restaurants, factories, and estate management offices. CLP will continue to introduce and implement new initiatives to support SMEs and encourage energy saving.



Mr Motonobu Yanai
Executive Director & CEO
A-1 BAKERY CO., (HK) LTD.



Quince Chong
Chief Corporate Development Officer
CLP Power Hong Kong

We operate in a complex and rapidly changing business environment. Major trends with implications for our human capital are the energy transition to a low carbon economy, the impact of digitalisation on the energy sector, demographic trends and the social and economic consequences of an ageing population, and the future impact of artificial intelligence and robotics on jobs.

At the end of 2017, the Group employed 7,542 people compared with 7,428 in 2016. A total of 4,269 were employed in the Hong Kong electricity and related businesses and 2,978 by our businesses in Mainland China, India, Southeast Asia, Taiwan and Australia, with the remaining 295 employed by CLP Holdings. Total remuneration for the year ended 31 December 2017 was HK\$5,573 million compared with HK\$5,151 million in 2016, including retirement benefit costs of HK\$561 million compared with HK\$440 million in 2016.

Safety First

To look after our human capital, we are committed to ensuring the highest standards of safety at every level of our operations and to continually improving our safety performance. We have reduced our injury rates by up to a third over the past eight years. Despite this downward trend, however, we had two fatal accidents resulting in the death of four workers of our contractors in Hong Kong in 2017. A fatality also occurred in March 2017 at a coal plant in Shandong where we have minority ownership but no operating control.

We have conducted thorough investigations into the incidents and an internal panel has looked into their causes and reviewed our safety standards and procedures. It was clear from our analysis that while our injury rates are generally lower, fatal incidents have declined only marginally. In addition, we have studied safety records worldwide as part of our examination for possible remedies and interventions.

Minor injuries such as hand injuries and sprains make up the majority of our injury statistics. However, focusing on them disproportionately does not help us prevent serious injuries and fatalities, which together account for around one in five incidents. We need to focus more intensively on those incidents to reduce serious injuries and fatalities in the workplace.

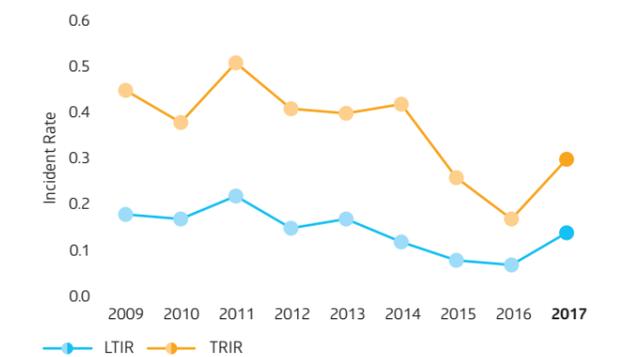
In view of this, we took a number of steps to strengthen our safety management system. We implemented six life-saving rules for employees and contractors involved in higher risk activities, improved reporting and investigation procedures for cases involving potential serious injuries and fatalities, and launched our first Behavioural-based Safety Observation programme in India at Jhajjar in July 2017 which included workshops and training. Similar safety programmes have been adopted in other regions.

We also reviewed in detail how each of our assets and regions addressed safety risks and concluded that a bottom-up approach of detailed risk registers was in place enabling us to ensure safety in our daily operation. In September, a risk management workshop was held where regional representatives shared their views and agreed on a standardised approach going forward.

We have since made progress in the alignment of risk management, setting comparable standards for the security risk framework, identifying generic environmental risks, and enhancing of the review of our HSSE standards and management at Group level. We will continue with the standardised approach and refine it through quarterly HSSE risk reviews so that better information is available for the Group HSSE Committee and for risk management reporting. To ensure this work is coordinated and reported to the highest level of the organisation, we have recruited a new Senior Director for Health, Safety and Environment in 2017 who has also been tasked with reviewing the capabilities of our safety resources, assessing the suitability of the new approach, and addressing any issues found.

The following charts show the safety performance of all CLP employees and contractors in the Group and individual regions in terms of Lost Time Injury Rate (LTIR) and Total Recordable Injury Rate (TRIR) in 2017. Our injury rates saw a notable rise in 2017 mainly because of increases in the number of non-serious incidents in Australia and Hong Kong. Both regions have undertaken safety improvement activities to address their injury performance. For example, safety coaching was made available to employees and contractors in Australia to raise safety and risk awareness.

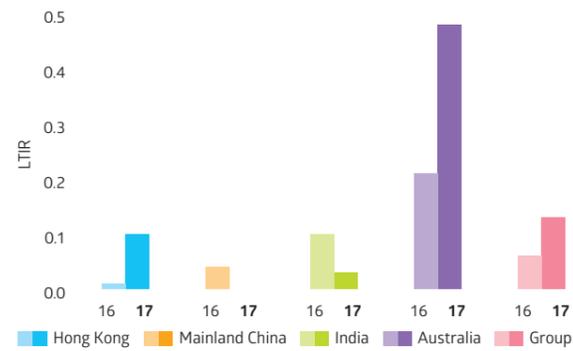
Group Lost Time Injury Rate and Total Recordable Injury Rate



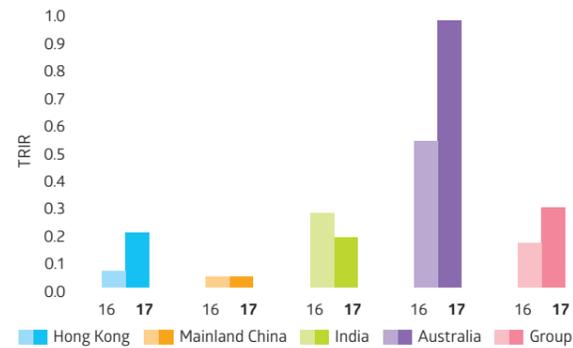
Notes:

- The LTIR and the TRIR are the number of lost time injuries or recordable injuries measured over 200,000 working hours of exposure, which is equivalent to around 100 persons working for one year.
- A first aid case at CLP Power Hong Kong in 2016 was reclassified as a medical treatment case.

Lost Time Injury Rate at Group and Regional Levels



Total Recordable Injury Rate at Group and Regional Levels



Building a Sustainable Workforce

To build and maintain a sustainable and innovative workforce, we emphasise diversity, equality of opportunity, competitive benefits, and respect for human rights.

Diversity and Equality of Opportunity

The energy sector is facing transformational change. In this complex environment, it is essential for our leadership team to have diverse thinking and background in order to strengthen organisational decision-making capability, agility, and resilience.

The diversity of our leadership team is shown in the tables below:

Percentage of Group Executive Committee (GEC) members by Gender

Male	69%
Female	31%

Percentage of Group Executive Committee (GEC) members by Nationality

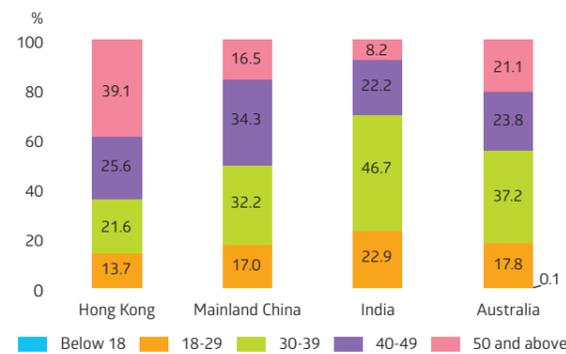
Chinese	23%
European	23%
American / Canadian	15%
Australian / New Zealander	31%
Indian	8%

Note:

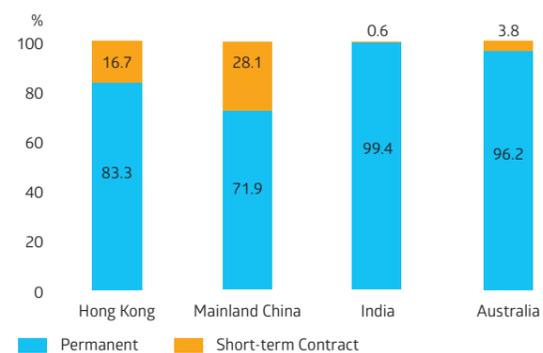
The statistics are based on GEC members' passport nationality, which does not necessarily reflect their ethnic origin.

The diversity of our broader workforce is also important, both as a reflection of the different communities in which we operate, and because a sustainable workforce requires us to have a broad base of recruitment. Workforce diversity, particularly of tenure, also supports innovation capability.

Age Distribution by Region



Employment Type by Region



How we manage diversity must take into account that we operate in countries with very different social and cultural contexts. This means we must be sensitive to differences in culture, values, traditions, and religions, and respect local approaches to the regulation of diversity issues.

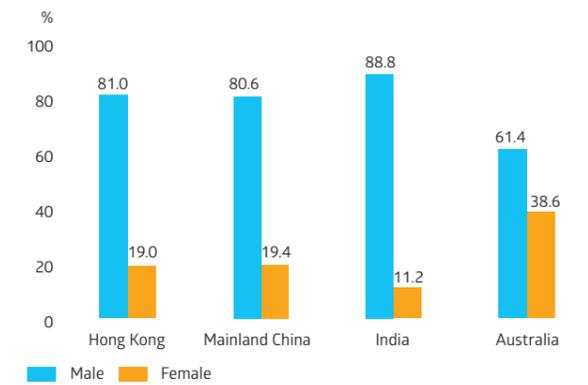
Consequently, we give flexibility to each subsidiary to develop local specific approaches to diversity, within a consistent overall framework.

Diversity, Inclusion and Gender Equality

We focus our efforts on three priorities to improve our gender diversity. These priorities have been chosen because they reflect our business needs, align with the Sustainable Development Goals of the United Nations, and support the social and economic empowerment of women.

In our 2017 independently administered Employee Opinion Survey in Hong Kong, we asked 3,794 staff their opinions on whether CLP is committed to the fair treatment of all employees regardless of age, race, ethnic background, gender, religion, sexual orientation or disability. From the survey, the percentage of staff who agreed or strongly agreed was 37 points above the Hong Kong norm.

Gender Distribution by Region



For further details on these priorities and initiatives taken in 2017, please see our [Sustainability Report](#).



CLP Power Academy facilitates zero-risk learning by applying innovative technologies such as Virtual Reality and Augmented Reality

Competitive and Sustainable Benefits

The ability to attract and retain talent with diverse thinking, background and tenure is essential to maintaining a sustainable workforce. Competitive pay and benefits play a key part in this.

We comply fully with local legal requirements with respect to minimum wage. In practice, our remuneration and benefits often significantly exceed local legal requirements. We place great importance on treating employees fairly, which includes ensuring a fair wage, fair benefits, fair working hours, and fair treatment regardless of gender, race, or other attributes recognised by the laws of the countries in which we operate. We are currently reviewing our policy on remuneration and benefits for our part-time employees in Hong Kong.

In 2017, CLP's Group Provident Fund Scheme won the inaugural Best Asian Private Pension Fund award from Asia Asset Management, in consultation with National University of Singapore Business School's Centre for Asset Management Research and Investments. The award recognises our efforts in making a marked improvement for the benefit of our members and beneficiaries, particularly over the last year.

Implementing Family Friendly Policies

We reviewed our family friendly leave policies in Hong Kong in 2017 and announced a number of changes effective 1 January 2018. These include an increase of maternity leave to 16 weeks, enhancement of marriage leave to five days, and the introduction of adoption leave.

Enhancing Employee Wellbeing

We recognise that employee wellbeing extends beyond physical health to mental health. In 2017, 84 managers in Hong Kong attended briefing sessions on the importance of mental health in the workplace.

In our 2017 independently administered Employee Opinion Survey, we asked our staff their opinions on whether our health and wellness programmes have encouraged them to live a healthier lifestyle. The percentage of staff who agreed or strongly agreed was 28 points above the Hong Kong norm.

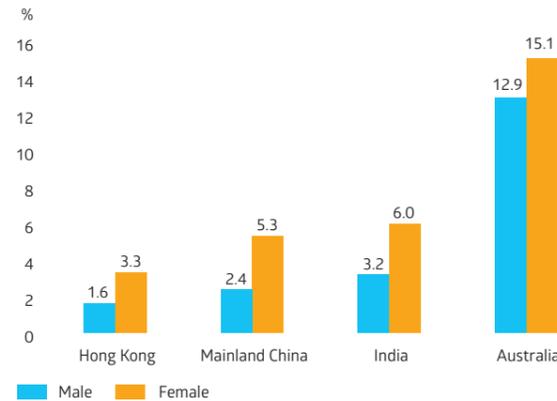
EnergyAustralia has continued its efforts in 2017 with a focus on employee wellbeing and offering resilience training to all employees, along with targeted training in the areas of mental health, and supporting employees impacted directly or indirectly by family violence. In addition, a pilot programme organised in conjunction with the Brotherhood of St Laurence to offer employment within the Geelong Call Center to refugees commenced, with the first person being placed.

In India, an employee assistance programme was launched across all locations and awareness sessions were conducted.

Our ability to retain staff is reflected in the voluntary turnover rates that are generally lower than local market averages. The following charts present our voluntary turnover rates according to age, region and gender.

Voluntary Turnover Rate

By Region and Gender



By Region and Age Group (%)

	Below				50 and above
	18	18-29	30-39	40-49	
Hong Kong	-	2.3	3.2	2.0	1.2
Mainland China	-	8.8	3.3	1.5	-
India	-	4.6	3.4	3.0	2.9
Australia	-	22.7	13.0	10.6	10.5

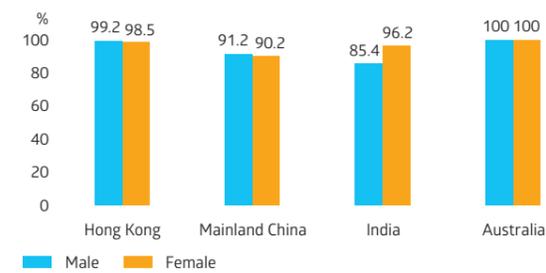
Capability Building

Maintaining our core competencies and building new capability in the areas of new technology and innovation are essential for us to cope with the challenges brought by energy transformation and digitalisation.

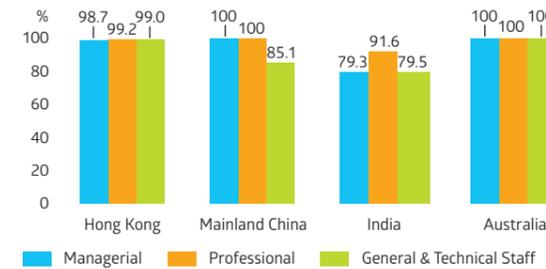
We strengthen organisational capabilities through senior level strategic hires, diversifying recruitment channels, strengthening staff deployment and development processes, making continuous investment in training and development, and leveraging our strategic partnerships with academic institutions.

Employee Training

% of Employees Trained by Region and Gender



% of Employees Trained by Region and Professional Category



Average Training Hours per Employee

By Gender	
Male	52.4
Female	29.5
By Professional Category	
Managerial	28.3
Professional	39.7
General & Technical Staff	55.5
By Region	
Hong Kong	57.5
Mainland China	71.3
India	36.4
Australia	18.8

We recruited a number of senior level staff globally for different functions including renewable energy, innovation, and big data to enhance our strategic capabilities. We also broadened our recruitment channels to hire young engineering talent to strengthen the engineering talent pipeline. We collaborated with a number of overseas universities to provide industrial placement opportunities for engineering students. For example, six students from the University of New South Wales started their placements in Hong Kong in December 2017.

In addition to our ongoing management development programmes, we have focused our efforts in the areas of innovation and new technologies to build the capabilities of our workforce and to stay aligned with our changing business environment. For example, design thinking workshops were launched to introduce a systematic thinking process of generating user-centric innovation for 40 key staff in Hong Kong. We have also launched the CLP Power Academy in Hong Kong, details of which can be found in the Social and Relationship Capital chapter on pages 87-89.

Our capabilities are also extended and broadened by leveraging external strategic partnerships. Some of the programmes with our strategic partners École polytechnique fédérale de Lausanne (EPFL) and the International Institute for Management Development (IMD) include:

- An online programme on the impact of digital disruption was provided by IMD for 22 senior employees

- An executive development programme with EPFL for 20 employees on the impact of new technologies
- Industrial placements for three MSc students from EPFL to work on complex technical challenges as part of their MSc studies
- Technology-related briefings on topics such as solar energy and digital transformation were provided for senior management and the non-executive directors by experts from EPFL, and on energy harvesting using graphene by the University of Manchester Graphene Centre

Respect for Human Rights

Our human resources policies and procedures are intended to ensure that we comply with all local laws and regulations in relation to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and those covering benefits and welfare in the markets where we operate.

Given the technical complexities and ambiguities of some local laws and regulations, the risk of unintended breaches cannot be prevented entirely. We take immediate action to investigate and address any suspected breaches or issues that are brought to our attention.

We also carry out independent audits of our human resources policies and practices to identify any risks of legal non-compliance and take remedial actions if such risks are identified.

Occasionally, there are disagreements with individual employees or unions over the interpretation or application of local laws and regulations. In such cases, we will first attempt to resolve any issues amicably within locally determined procedures. If negotiation or conciliation is not successful, we comply fully with the final decisions of any relevant arbitration, tribunal, or court.

In addition to local legal compliance, we fully respect internationally recognised human rights across our value chain. We recognise that our corporate responsibility to respect human rights extends to our network of suppliers and contractors.

Working in partnership with the independent Danish Institute for Human Rights, in 2017 we completed a pilot due diligence exercise focused on the use of contractor labour in Hong Kong and India. For further information, please see our [Sustainability Report](#).

Use of Contractor Labour

A flexible resourcing model is imperative for our business, but it needs to be managed responsibly. Our workforce includes not only our permanent staff, but also short-term contract staff, temporary staff, and labour supplied by external contractors.

It is our priority to strengthen our understanding and reporting of our use of contractor labour. We will begin to report our utilisation of contractor employed labour with effect from 2018. As contractors are not our direct employees, this presents significant data collection and validation issues, and it may therefore take more than one reporting cycle to be able to report fully and completely.

Child and Forced Labour

CLP prohibits the employment of child labour or forced labour in any of our operations. We require all our operations to ensure that they do not use child or forced labour.

We have also put an increasing focus on due diligence activities in relation to human rights, and engaged independent consultants to conduct risk assessment regarding our contractor workforce.

In 2017, we did not identify any operation or supplier as having significant risk of child labour, young workers exposed to hazardous work, or forced or compulsory labour. There was no breach of the laws and regulations in relation to child and forced labour across our Group in 2017.

Discrimination and Harassment

We have clear policies in place with respect to complaints about discrimination and harassment, supported by employee training. Our Group-wide anti-harassment policy sets a common framework of principles, and our detailed policies in each country are fully compliant with local legislation.

Q
A

How can CLP prevent serious incident after the two fatal incidents in the past year?

In learning from the two tragic incidents in 2017, we have renewed our efforts on the elimination of hazards that could cause serious injuries or fatalities, and where that is not feasible, we seek to implement engineering controls to reduce the risks to our workforce. We thoroughly investigate all cases with potential for serious injuries in order to learn lessons and share these across the organisation. We understand that policies and procedures are not the only solution to preventing incidents, and we are also focusing on the positive leadership and behaviours needed to drive safety culture improvement. We undertake regular review of the effectiveness of our control measures in managing the risks to our workforce to ensure that we are continually improving. In addition, we are working with our contractors to improve safety performance and we provide clear direction through our corporate HSSE requirements.



Lily Chau
Graduate Trainee
CLP Power Hong Kong



Vanessa Forbes
Senior Director
Health, Safety & Environment
Group Operations

As a business that aims to power the growth of not only this generation, but also the next, a purpose of CLP is to support the sustainable development of the communities in which we operate. To achieve this, we rely on various capitals to create value for our stakeholders. Social and relationship capital helps build the foundation of our reputation and the trust our stakeholders have in CLP. It comprises intangibles such as shared values, commitments and knowledge.

We live in an age of rapid and unsettling change. Technological advances, climate change, and geopolitical instability are reshaping a world that has become increasingly uncertain, unstable and divided. These forces also exacerbate the discontent among the have-nots and the younger generation. As a responsible corporate, we see our role in improving the quality of life of the communities we serve.

Shared Values

Philanthropy and social assistance programmes help address social issues. More importantly, instilling a sense of pride, achievement, and self-worth among young people can create opportunities and bring about life-lasting changes. It is an approach that reflects the core belief of CLP's founding Kadoorie family in "helping others to help themselves", which has become a guiding principle for us.

In recent years, discontent in society has grown as young people become disenchanted and lose hope in the future because of the widening social divide and the lack of opportunities. CLP sees the need to focus some of our resources on helping the younger generation. We have set up a dedicated office in 2017 to strengthen coordination and communication between departments involved in CLP's youth engagement and to support initiatives that help young people advance their careers and become more upwardly mobile.

Appreciating History

Understanding our past is an essential part to shape a successful future. By understanding where we came from, we can learn to manage change in a sensible and responsible manner, and build a brighter tomorrow.

To help inspire young people to appreciate history and have a more positive outlook on life, we premiered our documentary *A Century of Power* in 2017, which presents the history of CLP and Hong Kong's transformation in parallel. We plan to continue our engagement work through a series of education and outreach programmes in 2018 to further stimulate interest and appreciation of our shared past among young people.

CLP is a long-time supporter of arts and culture. We participated in the city's first light festival, Lumieres Hong Kong, in November as the event's energising partner. At Lumieres Hong Kong, more than a dozen international and local artists mesmerised the city with their creative light installations, art pieces and projections at various heritage landmarks. We took the opportunity to engage with young people and on social media.

Nurturing Talent

Education is the most powerful investment in our future. CLP set up its first training school more than half a century ago and has trained thousands of engineers and technical staff. In response to the acute demand for manpower in the industry in Hong Kong due to the large number of infrastructure projects planned or underway and an ageing population, we launched the CLP Power Academy in October to provide well-structured and accredited vocational training programmes for young people who want to pursue careers in the power industry. The academy introduced its first programme, the Professional Diploma in Power Engineering, in partnership with the Vocational Training Council and received more than 170 applications for 40 available places. The academy plans to roll out more diploma and degree programmes in 2018 for people within the trade who want to advance their careers, and non-degree school leavers.

To promote the electrical and mechanical trade and raise the social status of technical workers, CLP Power teamed up with the Electrical and Mechanical Trade Promotion Group in September to welcome more than 800 apprentices into the E&M sector. Through these initiatives, we hope to raise awareness of the industry and help young people to advance their career and achieve upward mobility.

Social and Relationship Capital

In 2017, we continued our education initiatives which cover the learning journey from kindergarten to university. Details can be found in the Hong Kong Business Performance and Outlook chapter on pages 38-44.



Green Elites Campus Accreditation Programme



CLP Power Low Carbon Energy Education Centre



POWER YOU kindergarten education kit



Green Studio



Engineer in School



CLP Holdings Professorship in Sustainability

External Engagement

In 2017, CLP continued its engagement activities through participation in and support of lectures, seminars and conferences, covering topics from innovation to climate change. More details can be found in our [Sustainability Report](#).

In the past year, CLP senior executives continued their active participation in external conferences and forums. For example, CEO Richard Lancaster and CLP Power Managing Director TK Chiang spoke at the Business Environment Council's EnviroSeries Conference in Hong Kong on smart city. Senior Director – Innovation Austin Bryan shared his insights on digital transformation and the opportunities available at the CIO Leadership Forum in Hong Kong. At the United Nations

Climate Change Conference COP23 in Bonn in November, Director – Group Sustainability Dr Jeanne Ng spoke about CLP's sustainability efforts at the Energy Day.

Bridging Gaps

Closing Gender Gap

Social inclusion is a key focus across the CLP Group. In Australia, we encouraged more women and girls to study to become engineers by teaming up with the non-profit group Power of Engineering. The partnership was formed after the newly-established Social Investment Committee of EnergyAustralia decided to champion the themes of education and social inclusion.

India has made great strides in the empowerment of women over the decades but Indian women still have some grounds to cover with respect to financial independence. CLP India believes women empowerment is family empowerment, and much can be achieved by equipping women with the necessary skills and resources. For example, we support women in communities near our assets to form micro-savings or credit societies. These societies not only teach them financial management skills but also give them access to low-cost capital enabling them to improve livelihoods through income generating activities.

Poverty Alleviation

People who live in sub-divided units are among the least fortunate in Hong Kong. Despite their poor living conditions, they lack adequate social protection. To ease their financial

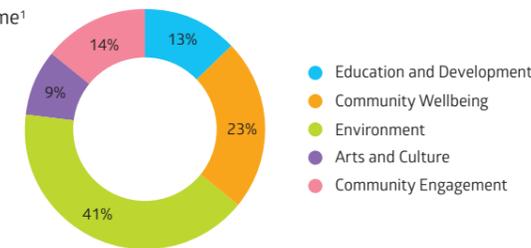
burden, CLP has lowered their electricity bills through donations made available by the Power Your Love programme. In 2017, around 10% of beneficiaries of the programme were people who lived in sub-divided units. CLP also supported the Community Housing Movement led by the Hong Kong Council of Social Service by providing underprivileged households with energy efficient electric appliances.

In Australia, the cost of energy has increased across the country impacting financially disadvantaged households. EnergyAustralia supported vulnerable customers in a number of ways – through payment plans, matching payment opportunities, debt waivers and appliance swaps. In June, the company announced an additional A\$10 million for financial and other support for some of its most vulnerable customers.

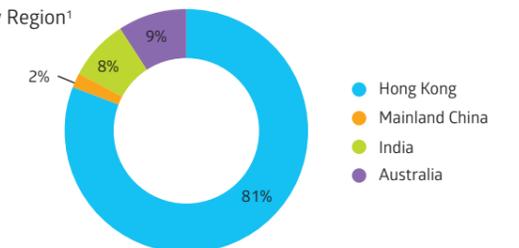
CLP's Community Initiatives in 2017

Our Community Spending

By Theme¹



By Region¹

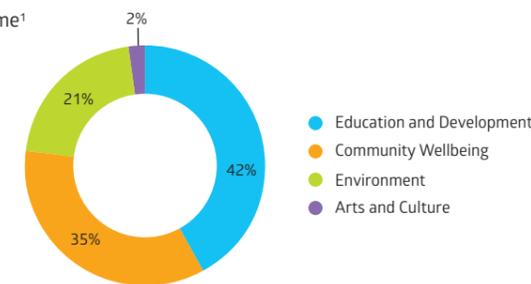


Our Beneficiaries



439,612 direct beneficiaries

By Theme¹



451 organisations benefitted



647 programmes were implemented

Contributing Our Time and Expertise



19,945 volunteering hours by CLP staff and family members

Note:

¹ Figures include rounding adjustments.

Natural Capital

CLP is committed to managing the short-term and long-term impact of our business on the environment in a responsible manner. This commitment is an essential counterbalance to the greenhouse gas, waste, and emissions which our business unavoidably produces through our reliance on natural resources such as fuels and water.

Moving Towards a Low Carbon Future

We were among the first power utilities in the world to commit to a carbon reduction pathway. Our climate change journey began back in 2004, when we published our first renewable energy target of 5% of our overall generation capacity within six years. In 2007, we set a carbon intensity reduction target of around 75% by 2050 compared with 2007 levels, based upon scenarios presented in the Energy Technology Perspectives 2006 from the International Energy Association (IEA). This target became the cornerstone of our Climate Vision 2050, and was supported by a series of interim carbon emissions intensity targets in 2010, 2020, and 2035.

In 2010, our Climate Vision 2050 was updated and the 2020 carbon intensity target was stepped up from 0.7kg CO₂/kWh – a reduction of around 15% from 2007 levels – to 0.6kg, a reduction of around 30%. Having already met our 5% target, we set a new 2020 renewable energy target of 20% and a non-carbon emitting energy target, which includes nuclear power, for the same year of 30%.

Reviewing Our Climate Vision 2050

A great deal has changed in the climate change arena since 2007. Most world leaders have signed up to the Paris Agreement and there have been giant strides in climate change science, technology and social expectations.

In reviewing our Climate Vision 2050 in 2017, we carried out scenario analyses to test the impact on our business of varying speeds of transition to a low carbon future in our markets, along with different options for implementing our approach. We developed realistic simulations of how our business would look under slow, medium, and fast transition scenarios and set them against the IEA's Energy Outlook 2016 projections for world and regional energy development. It transpired that the targets we set a decade ago had predicted the future relatively well and were close to the medium-speed scenario that assumes countries will meet the targets set out in the Paris Agreement.

Although our original targets still appeared valid considering the anticipated pace of change in our region, we believed there was room for improvement. Now, to further support the Paris Agreement goals, we have set even more ambitious targets:

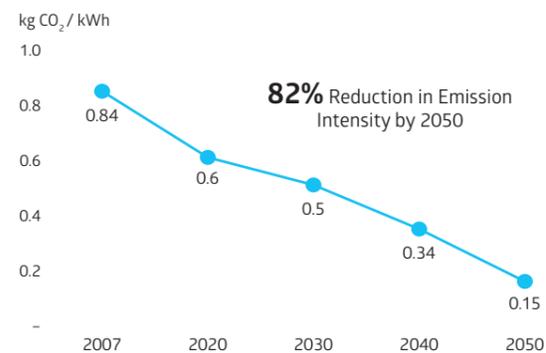
- **Tightening of our cornerstone carbon intensity reduction target from 75% to 82% by 2050** compared with 2007;

- **Developing new interim carbon intensity reduction targets of 40% by 2030 and 60% by 2040** compared with 2007. We have taken away the previous interim target for 2035 to align with the Paris Agreement timeline as well as the United Nations Sustainable Development Goals, which focus mostly on 2030; and
- **Establishing a renewable energy target of 30% and a non-carbon emitting target of 40% by 2030**, considering the growing significance of solar and wind in new capacity additions globally.

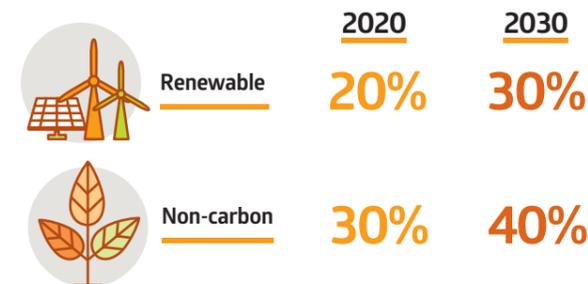
The updated targets build on the optimism of our original aspirational, science-based trajectory, but take into consideration the realities of the development of energy markets in the Asia-Pacific region. We believe these new targets are challenging and ambitious and we will review them regularly to ensure that we take into account the momentum of change over time. For a more holistic picture of power capacity requirements, we will also begin to report our progress on these targets on a basis that includes capacity purchase in addition to facilities we own. The two new targets on renewable energy and non-carbon emitting energy for 2030 will also take into account the capacity purchase we make.

CLP's Climate Vision 2050 – Our New Targets

Energy Transition Targets



Clean Energy Targets



In 2017, the carbon intensity of our Group's equity generation fell to 0.80kg CO₂/kWh from the 2016 level of 0.82kg. This was mainly due to decreased output from Castle Peak Power Station in Hong Kong, and Mount Piper and Yallourn power stations in Australia, an increase of output from the more fuel-efficient Tallawarra Power Station in Australia, as well as more generation from several renewable assets completing their first full year of operation in 2017. The significant reduction of generation from less efficient coal plants and rise in output from a more efficient gas power plant in Australia meant lower carbon emissions per unit of electricity sent out.

The 2017 intensity figure would be lower at 0.69kg CO₂/kWh if calculated on an equity plus capacity purchase basis. This is because most of our capacity purchase is generated from nuclear and renewable energy.

Meanwhile, in 2017, our investment in Yangjiang Nuclear Power Co., Ltd. has lifted our non-carbon generation capacity from 19.2% to 22.4% of our total capacity calculated on an equity basis and 23.2% on an equity plus capacity purchase basis. However, our divestment in wind power projects in China and the increase of nuclear capacity contributed to a fall in the share of renewable energy in our portfolio from 16.6% to 14.2% on an equity basis and 13.1% on an equity plus capacity purchase basis.

Reducing Our Impact on the Environment

In CLP's Value Framework, we commit to continuously improving our environmental performance in line with technological advances and evolving stakeholder expectations. We have a Group Environmental Policy Statement, which is supported by a range of standards and guidelines at the Group and business unit levels to address the environmental issues we face, including the HSSE Management Standard and the Power Plant Emissions Standard for example.

We require power generation facilities over which we have operational control to achieve third-party certified ISO14001 environmental management certification within two years of acquisition or the beginning of operations. We are pleased to report that in 2017, all assets in this category obtained the certification on time. We are upgrading our ISO14001:2004 systems to the ISO14001:2015 standard, with several of our plants including Jhajjar and Paguthan in India and Jiangbian, Sihong and Qian'an in Mainland China completing their upgrades in 2017.



The CLP Power Low Carbon Energy Education Centre at City University of Hong Kong provides an innovative and interactive platform for raising public awareness on climate change and the importance of low carbon energy sources

Natural Capital

We also continued expanding and strengthening our data governance and management system to ensure our data reporting and analytical work is robust. CLP's recent performance in key environmental categories is summarised in the table below.

Environmental Category	Aspect	Parameters	2017	2016
Emissions	Greenhouse gases	Total CO ₂ emissions (from power generation)	47,921kT	46,518kT
		Carbon intensity	0.80kg CO₂ per kWh / 0.69kg CO₂ per kWh¹	0.82kg CO ₂ per kWh / 0.72kg CO ₂ per kWh ¹
	Air pollutants	Total SO ₂ emissions	81.6kT	71.2kT
		Total NO _x emissions	59.3kT	58.1kT
Total particulate matter emissions		8.3kT	8.5kT	
Water discharged	Total water discharged	4,437.7 Mm³	4,219.2 Mm ³	
Waste	Total solid waste produced	21,191T	9,619T	
	Total liquid waste produced	1,523kl	1,335kl	
Resource Use	Fuel	Total coal consumed	471,976TJ	453,904TJ
		Total gas consumed	91,426TJ	86,787TJ
		Total oil consumed	5,069TJ	4,162TJ
		Non-carbon %	22.4% / 23.2%¹	19.2% / 20.7% ¹
	Renewable energy %	14.2% / 13.1%¹	16.6% / 14.9% ¹	
Water	Total water withdrawal	4,480.8 Mm³	4,257.0 Mm ³	

Note:

¹ Equity basis/Equity basis and capacity purchase arrangements.

Air Emissions

Our total air emissions rose to 149.2kT in 2017, mainly due to a significant increase in generation from Jhajjar in India driven by greater demand from our customer. We continued to invest in maintaining our standards of efficiency for our plants and to meet increasingly stringent regulations on emissions and fuel efficiency across different jurisdictions. An example is our emissions control retrofit at Fangchenggang Power Station in Mainland China.

Waste

Our total solid waste increased to 21,191T in 2017 because of construction at our Black Point Power Station in Hong Kong. Waste programmes continued to be implemented at our assets across the Group in 2017. For example, air-conditioners and air conditioning chillers at Castle Peak Power Station in Hong Kong were replaced as part of a rolling programme to phase out the use of refrigerant compound HCFCs. At Jhajjar Power Station in India, an oil filtering system was installed during the year through which approximately 11,000 litres of oil was filtered and reused.

Water

In 2017, we continued implementing initiatives to improve our water use, including optimising the cooling water system at Jhajjar in India. In Fangchenggang of Mainland China, we implemented a water recycling system which collects water from the coal yard, treats and stores for reuse in the coal yard water spraying system to suppress the dust of coal piles and for general cleaning of the coal plant. The quantity of water withdrawal and discharge in CLP's operations is dominated by thermal plants using once-through seawater cooling where very large quantities of seawater are used for cooling and returned to the sea with only a slight increase in temperature. In 2017, commencement of operation at Fangchenggang II and higher generation at Tallawarra in Australia resulted in an overall increase in water withdrawal and discharge.

Environmental Regulatory Compliance

In 2017, there were 13 licence limit exceedances for particulate emissions at Jhajjar in India, which were minor incidents that did not result in any penalties. This was related to the significantly greater use of Jhajjar during the year and overall, Jhajjar has reduced its particulate matter emissions per unit of electricity sent out.

For the year ending 31 December 2017, there were no environmental non-compliance incidents resulting in fines or prosecution at any of our operating sites. In 2016, some environmental and forestry land damages occurred relating to the construction of Sandu I Windfarm in Guizhou. All site environment restoration and seasonal revegetation works were completed in 2017.

Environmental Regulatory Non-Compliances and Licence Exceedances					
	2017	2016	2015	2014	2013
Environmental regulatory non-compliances resulting in fines or prosecutions	0	0	1	1	0
Environmental licence limit exceedances & other non-compliances	13	2	13	3	4

Upcoming and Emerging Schemes and Regulations

In China, a nationwide carbon trading scheme, which we have outlined in the Mainland China Business Performance and Outlook chapter on pages 45-50, was recently launched and the government has also issued Guideline on Designation of Ecological Protection Zone. We are keeping a close eye on these developments to ensure compliance of our projects and formulating our action plans in response. In India, coal-fired power stations face more stringent requirements on emissions of particulates, nitrogen oxides, sulphur dioxide, and mercury, as well as water uses. We have also taken note of the new national standards in Australia on phasing out the use of a group of perfluorinated chemicals although the standards have not yet been incorporated into state legislations. EnergyAustralia is investigating the extent and risk profile of the impact of the chemicals at its sites.

Q I understand CLP has plans to increase the usage of gas to replace coal for power generation in Hong Kong to help reduce air pollution. But that will lead to higher cost and put pressure on our electricity bills. Since we have many days with abundant sunshine here, would CLP consider making better use of solar power? Would it be possible to install floating solar panels on major reservoirs to absorb sunlight and use it for power generation?

A CLP supports the development of renewable energy and has investments in over 2,700MW of renewable energy in its portfolio. Hong Kong presents practical and economic challenges given the significant land requirements for renewable energy facilities as well as its high land prices. CLP currently supports customers' projects to connect to our grid through simplified connection procedures. In the future, CLP will also introduce new initiatives such as Feed-in Tariff (FiT) and Renewable Energy Certificates (RECs) to encourage renewable energy development as part of the new SoC. The FiT scheme will provide financial incentives for customers to connect their renewable systems to the grid. Customer who cannot install their own renewable energy systems will be able to support renewable energy development through the purchase of RECs backed by locally-generated renewable electricity. In addition, we are working closely with the Government on floating solar projects at sites including Shek Pik and Plover Cove reservoirs.



Mr Leung Ngan Kwan
CLP Shareholder



Rick Truscott
Chief Operating Officer
CLP Power Hong Kong