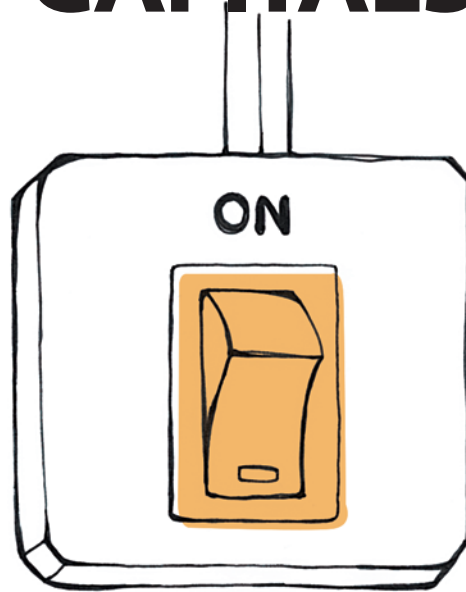


# CAPITALS



What are the “Capitals”  
that sustain our business?



*We have selected some resources and relationships - collectively known as capitals - that are critical to CLP, and explain how careful management of these capitals contribute to the sustainability of our business*







## *Our funding resources and capability*

### Financial Market Update

On 19 December 2015, the US Federal Reserve (Fed) announced the increase of Fed Funds rate from close to zero to a range of 0.25%-0.5%. This first credit tightening since 2006 officially ended the debate about prolongation of its accommodative monetary policy and signified a vote of confidence by the Fed to the strength of the US economy.

In contrast, the European Central Bank and the Bank of Japan further supplemented their quantitative easing programmes in December 2015 with new flurries of measures to arrest the lingering weak economies and combat deflationary pressures.

This has highlighted the divergence of central bank monetary policies that, if not managed properly, can lead to significantly higher market volatility and uncertainty when confidence is already fragile.

Looking back in 2015, global financial markets have been jolted by several major shocks. Firstly, in the first quarter of the year, anxiety regarding the Fed tightening too early saw the US 10-year treasury yield fluctuate. Secondly, the default of Greece on a US\$1.7 billion International Monetary Fund loan repayment in June unsettled the Eurozone and caused grave apprehension of another financial crisis. Thirdly, the massive sell-off of China's A-share index from June to August, triggered by weaker-than-expected economic data and government policy to dampen excessive speculative positions, sent shock waves through global equity markets. Fourthly, the move by China to adopt a new foreign exchange regime and devalue the Renminbi (RMB) in August took the markets by surprise.

The above market challenges, combined with a steady decline of liquidity in the financial markets and re-emerging geopolitical concerns, have reminded CLP to stay vigilant.

### CLP's Proven, Meticulous Financing and Investment Disciplines

Over the years, this "Financial Capital" section has highlighted the importance of acquiring sustainable, diversified, cost-effective, long-tenured debt and equity funding on a timely basis to support business growth as our investments are capital intensive and involve long payback periods. It is also critical to identify the financial market challenges to CLP so that we can manage the composite risk elements (including funding,

foreign currency, interest rate, credit rating, counterparty) and meet corporate and compliance objectives. In addition, our prudent financial planning and innovative approach enables us to mitigate adversities, protect customers' interest, enhance shareholder value and avoid potential impediments to business sustainability.

In November 2013, credit rating agencies put CLP Holdings and CLP Power Hong Kong under negative credit watch following the announcement of the CAPCO and PSDC acquisitions. Some of the Group's financial ratios remained tight, amidst EnergyAustralia's operational challenges in a depressed electricity market. In order to resolve the negative rating watch for CLP Holdings and its subsidiaries and deliver a more robust financial profile, we undertook proactive and multi-levered initiatives to reduce our gearing and lower our finance costs. Some of the measures are listed below and more details can be found on pages 79 and 83:

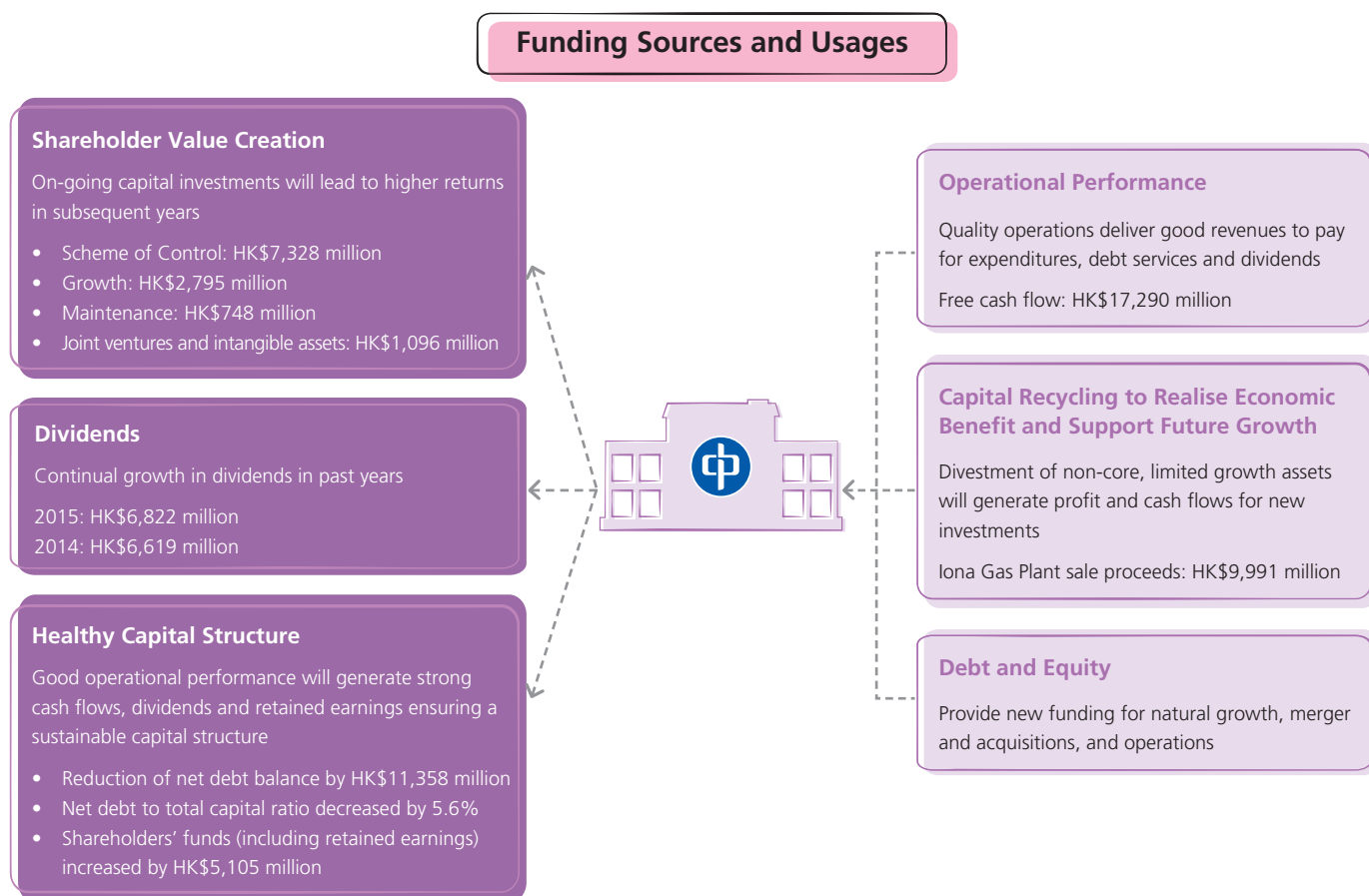
- CLP's major entities prepaid about HK\$13 billion of debt to save financing costs and lower the debt leverage ratio of the Group.
- CLP Power Hong Kong advanced the completion of its 2015 Medium Term Note (MTN) programme annual update by around one month to early April for issuing a US\$300 million bond in order to forerun potential interest rate hikes, and capture a better market window to arrange cost-effective debt. Soon after the bond placement, both the US 10-year treasury yield and credit margin of public bonds climbed considerably with renewed concerns over the future interest rate path.
- CLP Power Hong Kong continued to diversify its funding sources and tapped into the Japanese onshore market in September 2015 for a US\$125 million (HK\$969 million) cross-border bank loan.
- CLP India kicked off its fund-raising in the domestic bond market with two inaugural issuances. We issued a series of green bonds totalling Rs.6 billion (HK\$706 million) in September 2015 to fund our renewable projects, making CLP the first company in the power sector of South and Southeast Asia to issue green bonds. Earlier in April 2015, Jhajjar Power Limited also issued asset-specific corporate bonds of Rs.4.76 billion (HK\$591 million) to replace higher cost bank loans and extend duration.

- In July 2015, EnergyAustralia refinanced A\$1.8 billion (HK\$10.7 billion) of syndicated bank facilities.
- EnergyAustralia also completed the divestment of Iona Gas Plant. This enabled EnergyAustralia to take major steps of reducing debt gearing. In addition to the early repayment of external debt, EnergyAustralia repaid part of the shareholder's loan extended by CLP Holdings in February 2016.
- CLP China arranged RMB3.56 billion (HK\$4.45 billion) project loans for the development of Fangchenggang II in March 2015 with favourable lending rate amidst tighter liquidity in the first half of 2015. We reported last year that CLP would diversify into the more liquid, cost-effective offshore RMB bank loan market in Hong Kong (CNH) to fund construction and early operation of our renewable energy projects. We would also seek onshore RMB project level refinancing after the start of commercial operation to better match the asset and liability profile. In September 2015, we successfully refinanced the operating Xicun I Solar project with a non-recourse, long-term project loan of RMB302 million (HK\$360 million) by a domestic bank. This strategy enables CLP to develop and construct wholly-owned renewable projects in Mainland China with shorter timeline and better financing terms.

As a result of these actions, CLP Holdings saw meaningful improvements in the debt gearing and interest coverage ratios in 2015 (Net Debt to Total Capital as at 31 December 2015: 32.4% versus 31 December 2014: 38.0%, EBIT (Earnings Before Interest and Taxes) interest cover (2015: 10 times versus 2014: 6 times) and FFO (Fund From Operations) interest cover (2015: 9 times versus 2014: 9 times)). In addition, credit ratings outlooks for CLP Holdings, CLP Power Hong Kong and EnergyAustralia returned to their full strength (See Credit Ratings section on page 83 for more information).

In November 2015, the Vinh Tan III power project in Vietnam that CLP co-owns and takes a leading role in developing and financing achieved an important milestone when the project company, Vinh Tan 3 Energy Joint Stock Company (VTEC), signed a Financing Memorandum of Understanding (MoU) with China Development Bank Corporation, Beijing (CDB) in Hanoi, Vietnam. In the MoU, VTEC and CDB agreed to carry out investment and financing endeavours in cooperation with each other for Vinh Tan III. VTEC aims to finalise contractual arrangements with the Vietnamese Government and structure project financing in the next stage.

Major funding sources and usages of the Group are summarised below:

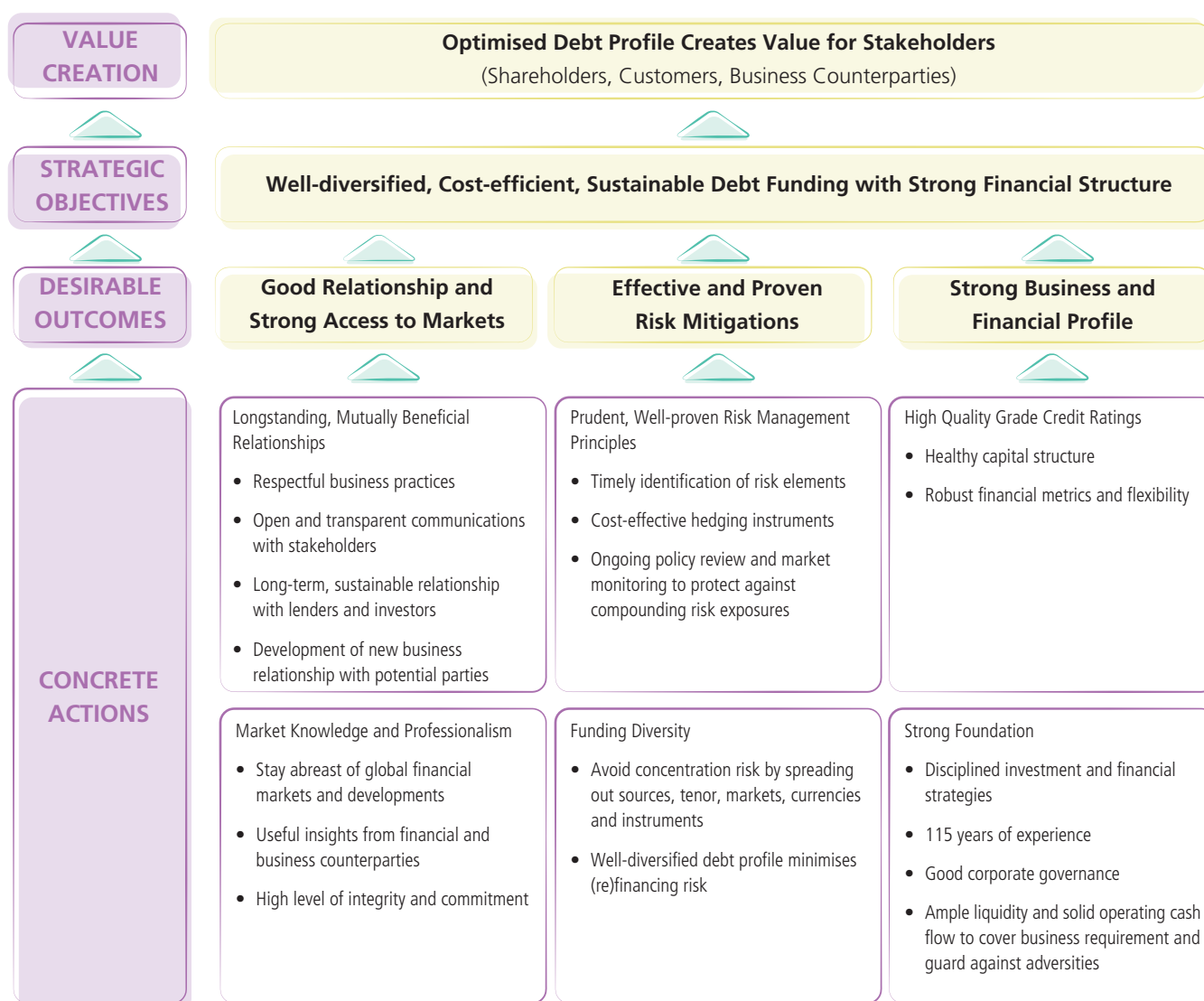


## A Vigilant, Evolving and Pragmatic Financing Approach

Our financial management is dedicated to maintaining good investment grade credit ratings that help preserve a healthy capital structure to meet CLP's business objectives and employ sound risk management policies to weather through cycles in the financial markets. Such approach provides CLP the ability to access global financial markets in a cost-effective and timely way, even in highly volatile periods during financial crises. As at 31 December 2015, the Group maintained business relationships with 74 financial institutions. This number had significantly increased over the last decade from about 40 financial

institutions in 2005, demonstrating our continued efforts in developing and broadening our business relationship base. Apart from conventional bank loans, CLP Power Hong Kong has the ability to tap into the global debt capital markets denominated in multi-currencies under their MTN programmes of up to US\$4.5 billion. This enables us to diversify funding sources and achieve long-tenured asset and liability matching. As at 31 December 2015, CLP Power Hong Kong has outstanding 41 tranches of bonds (denominated in US dollars, HK dollars, Japanese yen and Australian dollars) issued under its MTN Programme comprising a notional value of approximately HK\$27 billion whilst EnergyAustralia has one tranche of US dollar bond (US\$30 million) issued in the US private placement market.

### The Essence of CLP's Financial Framework



## Major Achievements in Financing Activities

<b>CLP Power Hong Kong</b>	<p><b>US\$300 million<sup>1</sup> (HK\$2.3 billion) 10-year bond</b></p> <ul style="list-style-type: none"> <li>Issued in April 2015 at 3.125% fixed coupon with an order book of US\$2.8 billion (9 times coverage) from around 200 global investor accounts</li> <li>The bond was priced at US Treasury yield plus 1.25% which was issued at a time when US 10-year Treasury rate remained at a low level of around 1.9%</li> <li>This bond is a Regulation S issue with listing on the Stock Exchange of Hong Kong</li> </ul> <p><b>US\$125 million<sup>1</sup> (HK\$969 million) 3-year syndicated bank loans</b></p> <ul style="list-style-type: none"> <li>The third tranche of cross border syndication loan placed to Japan-based financial institutions since 2013</li> <li>Borrowing cost after swapping to Hong Kong dollars was lower than loans offered by Hong Kong-based banks</li> <li>Syndicated to six regional and city banks in Japan, three of which are new lenders</li> </ul> <p><b>HK\$618 million 12 and 15-year bonds</b></p> <ul style="list-style-type: none"> <li>Long-dated multi-currency bonds<sup>1</sup> (49% in Hong Kong dollar, 32% Japanese yen, 19% Australian dollar) at favourable fixed interest rates</li> </ul> <p><b>HK\$600 million 5.5-year bank loan facilities</b></p> <ul style="list-style-type: none"> <li>Arranged at preferential rate</li> </ul>
<b>CLP China</b>	<p><b>RMB3.56 billion (HK\$4.45 billion), 18-year project loan</b></p> <ul style="list-style-type: none"> <li>Non-recourse project loan in the name of Fangchenggang (70% owned by CLP) to develop the phase II extension of 1,320MW coal-fired generation units</li> </ul> <p><b>RMB1.7 billion (HK\$2.04 billion) 12 to 15-year project loans</b></p> <ul style="list-style-type: none"> <li>Non-recourse project loans for the Sandu Wind, Xundian Wind, CLP Laizhou Wind, Laiwu Wind and Xicun I Solar projects (all wholly-owned by CLP) at competitive rates</li> </ul> <p><b>RMB276 million (HK\$329 million) 3-year CNH loan</b></p> <ul style="list-style-type: none"> <li>A portion of the offshore, more liquid and cost-effective CNH bank loan in Hong Kong to fund construction of the Xicun II Solar project (wholly-owned by CLP)</li> </ul>
<b>CLP India</b>	<p><b>Rs.4.76 billion (HK\$591 million) 10 and 11-year bonds</b></p> <ul style="list-style-type: none"> <li>One of the first power companies in India to issue asset-specific corporate bonds in the name of Jhajjar Power Limited (AA+ credit rating from India Ratings and Research Private Limited) in April 2015 and listed on the Bombay Stock Exchange</li> <li>Coupon at 9.99% which was lower than the bank loans that it replaced and extended debt tenor</li> </ul> <p><b>Rs.6 billion (HK\$706 million) 2.5, 3.5 and 4.5-year green bonds</b></p> <ul style="list-style-type: none"> <li>Issued in the name of CLP Wind Farms (India) Private Limited in September 2015, the first CLP entity to issue green bonds, to fund renewable projects</li> <li>At 9.15% coupon rate which was more competitive than Indian rupee bank loans and carried AA credit rating from India Ratings and Research Private Limited</li> </ul> <p><b>Rs.3 billion (HK\$365 million) 1-year and Rs.1 billion (HK\$122 million) 10-year bank loans</b></p> <ul style="list-style-type: none"> <li>For working capital and construction purposes of wind projects in CLP Wind Farms (India) Private Limited</li> </ul>
<b>EnergyAustralia</b>	<p><b>A\$1.8 billion (HK\$10.7 billion) 3 to 5-year syndicated loan</b></p> <ul style="list-style-type: none"> <li>Reduced from A\$2.1 billion (HK\$12.5 billion) reflecting improvement of the business</li> <li>Lower interest margins and extended average tenor of facilities by 1.5 years</li> </ul> <p><b>A\$700 million (HK\$4.2 billion), 3-year working capital loan</b></p> <ul style="list-style-type: none"> <li>Lower interest margins and extended average tenor of facilities by one year</li> </ul>

Note:

<sup>1</sup> Foreign currency proceeds were swapped back to Hong Kong dollars to mitigate foreign currency risk.

## A Disciplined Follower of Effective Risk Management

The power industry is characterised by 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 in equity and debt markets is crucial in managing and growing our business. Our shareholders and business partners value our commitment to prudent and vigilant financial management. We are dedicated to preserve a healthy capital structure, retain good investment grade credit ratings, maintain sound business

relationships with lenders and investors whilst developing new ones, and reserve financial strength and flexibility to withstand unforeseen contingencies driven by financial market volatilities.

Our substantial and expanding businesses portfolio exposes CLP to multiple risks of liquidity, (re)financing, foreign exchange, interest rate, counterparty and compliance. CLP Group requires all business units to clearly identify, diligently monitor and effectively manage their financial related exposures, both in policy formulation and implementation.

Our financial risk mitigation approaches and results are highlighted below:

### Liquidity

The risk of not being able to fulfil payment obligation

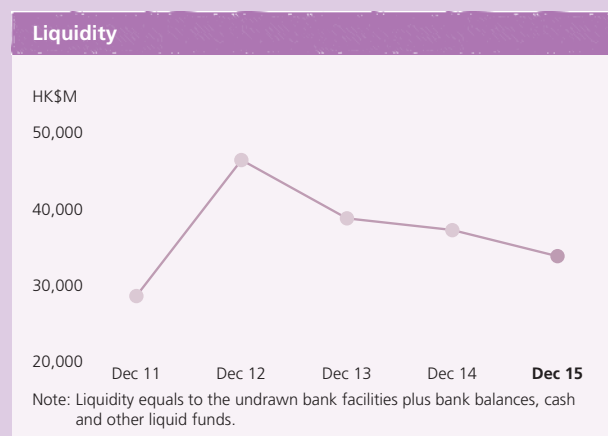
#### Mitigation

CLP is risk adverse. We believe it is imperative to maintain sufficient liquidity by:

- keeping adequate committed credit facilities / cash balances at cost effective terms
- preserving strong financial flexibility to support potential strategic moves and meet contingencies

#### Result

As at end 2015, CLP Group is highly liquid with HK\$33.5 billion of undrawn bank facilities and internal resources.



#### Debt profile as at 31 December 2015

	CLP Holdings HK\$M	CLP Power Hong Kong HK\$M	CAPCO HK\$M	Other Subsidiaries HK\$M	CLP Group HK\$M
Available Facility <sup>1</sup>	9,400	39,202	7,165	29,401	85,168
Loan Balance	306	35,002	5,974	14,201	55,483
Undrawn Facility	9,094	4,200	1,191	15,200	29,685

Note:

- <sup>1</sup> For the MTN Programmes, only the amounts of the bonds issued as at 31 December 2015 were included in the total amount of Available Facility. The Available Facility in EnergyAustralia excludes a facility set aside for guarantees.

## Refinancing

The risk that refinancing may become difficult or costly thus impairing the ability to fulfil payment obligations

### Mitigation

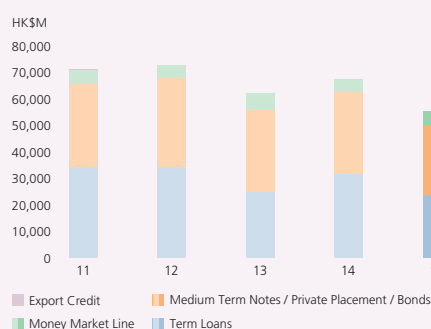
CLP seeks longlasting, trustworthy relationships with bond investors, lending banks and financial derivative counterparties. We act promptly to secure diversity (tenor, currency, instrument, market, geographical region) and cost-effectiveness.

### Result

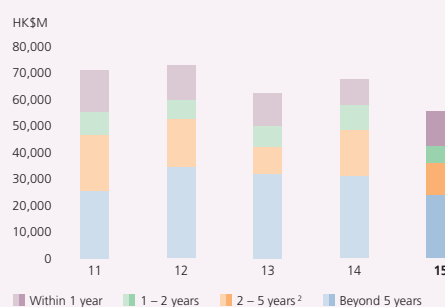
As at end 2015, CLP achieved a very well-balanced debt portfolio with well spread-out key attributes:

- long-term business partnership with 74 financial institutions (2014: 77) minimising concentration risk
- evenly distributed loan maturities in multiple tenors (beyond 5 years: 43%, 2-5 years: 22%, 1-2 years: 11%, within 1 year: 24%)
- type of debt (medium term notes/private placement/bonds: 48%, term loans: 42%, money market line: 10%)
- bond denominations in USD (49%), HKD (35%), JPY (8%), INR (5%), AUD (3%)

Loan Balance – Type<sup>1</sup>



Loan Balance – Maturity<sup>1</sup>

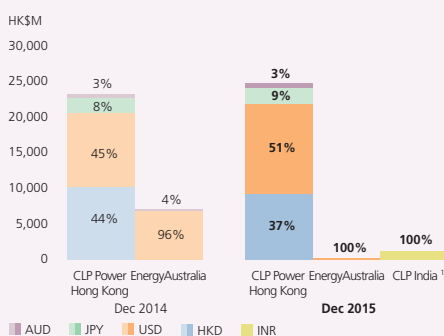


Notes:

<sup>1</sup> The 2014 and 2015 figures include CAPCO and PSDC as subsidiaries of the Group after the acquisitions. For comparative purpose, we have included CLP Group, CAPCO and PSDC in the 2011, 2012 and 2013 figures.

<sup>2</sup> Loan balance between two and five years as at 31 December 2015 included loan drawdown with current tenor less than one year under revolving facility with maturity falling beyond one year.

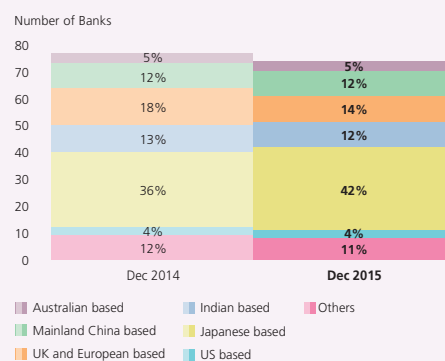
Currency of Bond Funding



Note:

<sup>1</sup> Jhajar Power Limited arranged its inaugural issuance of Rs.4.76 billion (HK\$591 million), 10 and 11-year asset-specific corporate bonds in April 2015. CLP Wind Farms (India) Private Limited also arranged its inaugural issuance of Rs.6 billion (HK\$706 million), 2.5, 3.5 and 4.5 years green bonds in September 2015.

CLP Banking Relationship –  
Balanced Mix of Lending Financial Institutions



Note: Geographical bases of the financial institutions are determined according to the places of incorporation of their respective holding entities.

## Interest Rate

The risk of adverse impact on profit or loss or cash flow as a result of interest rate fluctuation

### Mitigation

CLP proactively manages interest rate risk through a carefully calibrated use of fixed rate debt and interest rate swaps.

### Result

CLP Power Hong Kong arranged an aggregate HK\$24.7 billion long-tenured fixed rate bond since the global financial crisis in 2007 to lock in favourable interest rates in low interest rate environment. As at 31 December 2015, the Group has borrowings in fixed rate of 57% (without perpetual capital securities) or 61% (with perpetual capital securities).



Foreign Exchange	
The risk of adverse impact on profit or loss, cash flow or balance sheet as a result of foreign exchange volatility	
Mitigation	Result
<b>Translational</b> This relates to the foreign currency element of our equity investment for the business outside Hong Kong but carries no profit or loss nor cash flow effect. CLP does not hedge such risk as per its policy (unrealised in nature, long-term investment, geographically diversified).	Our initiative to hedge a high level of foreign exchange exposure on behalf of customers is but one example of this, allowing all parties to avoid undue tariff volatility. CLP’s tariffs in Hong Kong and overseas remain fairly stable despite much increased foreign currency volatility during regional and global financial crisis.
<b>Transactional</b> This arises from mismatch of revenues generated in host country currencies of the respective business units whilst debt or invoice payments are paid in other currencies. CLP hedges a high portion of committed and highly probable transactional foreign currency risk to deliver a more certain economic outcome.	

Counterparties	
The risk of adverse impact on profit or loss or cash flow due to default of business parties	
Mitigation	Result
CLP transacts only with trustworthy, capable parties. Our business units have a list of authorised financial institutions that are financially sound and competent in executing financing and risk management transactions and will persistently perform their obligations over a long period of time.	CLP has not faced any loss from default or potential default by its financial counterparties over the past decade.

Compliance	
The risk of adverse impact as a result of failure to meet regulatory requirements	
Mitigation	Result
CLP has a high level of corporate governance and always strives to maintain full compliance of all rules and regulations for financial and risk management. This requires a high level of professional integrity and strong commitment. CLP is implementing a new Group Treasury Management System to further enhance the efficiency and effectiveness of treasury management, compliance and report.	CLP achieves satisfactory audit outcomes by internal and external auditors, and meets all regulatory and internal compliance requirements with high standard of corporate control and governance procedures.

**CLP has an ambitious growth plan in the field of non-carbon emitting generation. How does CLP plan to finance its new investments?**

We take pride in the track record of our team for diversified and innovative financing. Last year, we set a milestone by issuing our first green bond in Indian rupees through our wholly-owned subsidiary CLP Wind Farms (India) Private Limited to fund the development of renewable projects in India. In China, we make use of a mix of short-term funds from the offshore Renminbi market to fund construction, supplemented by long-term project financing from Chinese financial institutions once the project operates. Looking forward, we plan to issue Renminbi-denominated green bonds in China, or known as "green panda bonds", as a means to fund our renewable projects in the country like what we did in India.



## Credit Ratings

CLP is committed to maintaining high quality grade credit ratings. Our effort to further enhance the capital structure of the Group by issuing US\$750 million (HK\$5.8 billion) perpetual capital securities in 2014 and deliver a more robust financial profile by further reducing debt gearing and lowering debt funding costs in 2015 paid off. The credit rating agencies revised the outlooks of CLP Holdings (by S&P and Moody's) and CLP Power Hong

Kong (by S&P) from negative to stable after the annual credit rating review in May 2015. In parallel, both S&P and Moody's affirmed the credit ratings of CLP Holdings and CLP Power Hong Kong at A-/A2 and A/A1 respectively. In May 2015, S&P revised EnergyAustralia's rating outlook to stable from negative and affirmed its BBB- credit rating. These rating actions demonstrated that the two credit rating agencies recognised CLP exercised a high level of discipline in managing its investments and financials.

	CLP Holdings		CLP Power Hong Kong		EnergyAustralia
	S&P	Moody's	S&P	Moody's	S&P
<b>Long-term Rating</b>					
Foreign currency	A-	A2	A	A1	BBB-
Outlook	Stable	Stable	Stable	Stable	Stable
Local currency	A-	A2	A	A1	BBB-
Outlook	Stable	Stable	Stable	Stable	Stable
<b>Short-term Rating</b>					
Foreign currency	A-2	P-1	A-1	P-1	–
Local currency	A-2	P-1	A-1	P-1	–

More information about the [credit ratings](#) of our major companies is shown on our website. [🌐](#)

### S&P

Positives	Negatives
<ul style="list-style-type: none"> <li>The Group has good financial flexibility and strong access to banking facilities</li> <li>CLP Holdings' focus on organic growth should lead to the steady improvement of credit metrics</li> <li>CLP Power Hong Kong has excellent business risk profile and provides sound and stable cash flows</li> <li>EnergyAustralia's new retail billing system and expected lower operating cost should bring stable earnings</li> <li>CLP India's Jhajjar power plant has improving coal supply and higher utilisation</li> </ul>	<ul style="list-style-type: none"> <li>Strengths of Hong Kong's favourable regulatory conditions are tampered by the future regulation-reset risk and clean energy policy</li> <li>EnergyAustralia is facing moderately high industry risk</li> </ul>

### Moody's

Positives	Negatives
<ul style="list-style-type: none"> <li>CLP Holdings' credit profile, though constrained in 2015, will strengthen in the next two to three years</li> <li>Gradual decline in financial leverage of the Group</li> <li>Predictable cash flows from Hong Kong operations</li> <li>EnergyAustralia's operations have higher visibility and more steady performance</li> <li>Increasing earnings from operations in Mainland China and India</li> </ul>	<ul style="list-style-type: none"> <li>Expansion into riskier, non-regulated electricity and retail businesses has raised CLP Holdings' overall business risk</li> <li>EnergyAustralia's performance has remained weak since 2012 due to challenging operating environment but modest growth in revenue is expected</li> </ul>




## *Our respect for the environment*

Care for the environment is one of the four “key values” of our Value Framework that guides us in fulfilling our mission and turning our vision into reality. The Framework mandates us to responsibly manage the short-term and long-term impacts of our business on the environment. Since our business covers the entire energy supply chain, the suite of potential environmental issues that we need to manage depends on the type of generation, site specific conditions and the nature of the business.

### Environmental Management Approach

Our Group Environmental Policy Statement, which is included in the [CLP Value Framework](#) and available on our website, sets out the principles that our business units must follow. The topics covered by the combination of our Group Environmental Policy Statement, standards and guidelines include: compliance; use of resources such as materials, energy and water; impacts such as emissions, effluents and waste; and biodiversity. Through this Policy Statement, we commit to:


- Comply fully with all applicable environmental laws and regulations;
- Ensure that all key environmental impacts are identified and managed in a responsible manner;
- Use all resources, including fuel, water and other natural resources efficiently and conservatively, and increase the use of renewable resources;
- Continuously improve our environmental performance;
- Monitor and report the environmental performance of our business;
- Provide the training and resources necessary to meet our environmental responsibilities;
- Share our knowledge of environmental issues and management practices with others in our industry and our communities; and
- Support the development of effective government policy to address environmental issues. 

To support the delivery of the principles laid out in the Group Environmental Policy Statement, our operationally controlled assets are required to develop their own site

specific Environmental Policy Statement, using the Group Environmental Policy Statement as a framework. Furthermore, we have developed and implemented internal environmental standards and guidelines to cover a range of material environmental issues.

In respect to regulations and compliance, CLP has two primary components to its management of environmental impacts and resource use. The first is to ensure full regulatory compliance in the diverse set of regulatory jurisdictions in which we operate. The second is to both monitor evolving environmental regulations which apply to our operations and respond to anticipated regulatory developments as necessary – whether by making specific investments at an asset level or adjusting our core business strategy.

### Internal Environmental Standards

CLP's commitment to environmental protection goes beyond basic regulatory compliance. CLP takes the view that, as a leader, we should require our operations, in particular those in locations where environmental regulatory controls are weaker, to perform beyond compliance and our internal environmental standards reflect that. For example, all power generation facilities in which we have operational control must establish effective environmental management systems which conform to the globally recognised ISO14001 Standard and achieve third-party certification within 2 years from commencement of operation or acquisition. All our assets in this category obtained the required certification on time in 2015. More details are available in our [2015 Sustainability Report](#). Another example is that for air emissions, fossil-fuel based power stations developed after the effective date of our Power Plant Air Emissions Standard are required to operate within CLP prescribed limits on SO<sub>2</sub>, NO<sub>x</sub> and particulates emissions, or to comply with local regulations, whichever is more stringent. 

On the business development side, we also assess our potential environmental liability carefully before we commit to projects. CLP's Pre-Investment Environmental Risk Assessment process ensures that sufficient environmental considerations are given to every project as part of the approval process by the Investment Committee.

## Performance on Group Environmental Goals

This year, we continue to report on our performance on the three aspirational environmental goals under CLP Group's Sustainability Framework to move towards:

- zero emissions;
- a more sustainable rate of resource use, and
- no net loss of biodiversity.

Our performance in these areas is summarised below:

Group Goal	Aspect	Group Highlights	2015	2014
Move towards zero emissions	Greenhouse gases	<ul style="list-style-type: none"> <li>• Total CO<sub>2</sub> emissions (from power generation)</li> <li>• Carbon intensity (on equity basis)</li> </ul>	<b>46,553kT</b> <b>0.81kg CO<sub>2</sub> / kWh</b>	53,044kT 0.84kg CO <sub>2</sub> / kWh
	Air pollutants	<ul style="list-style-type: none"> <li>• Total SO<sub>2</sub> emissions</li> <li>• Total NO<sub>x</sub> emissions</li> <li>• Total particulate matter emissions</li> </ul>	<b>63.4kT</b> <b>56.3kT</b> <b>9.8kT</b>	93.0kT 74.6kT 11.5kT
	Water discharged	<ul style="list-style-type: none"> <li>• Total water discharged</li> </ul>	<b>4,463.0 Mm<sup>3</sup></b>	4,792.2 Mm <sup>3</sup>
	Waste	<ul style="list-style-type: none"> <li>• Total solid waste produced</li> <li>• Total liquid waste produced</li> </ul>	<b>12,096T</b> <b>3,031kl</b>	21,626T 2,861kl
Move towards a more sustainable rate of resource use	Fuel	<ul style="list-style-type: none"> <li>• Total coal consumed</li> <li>• Total gas consumed</li> <li>• Total oil consumed</li> <li>• Non-carbon % (on equity basis)</li> <li>• Renewable energy % (on equity basis)</li> </ul>	<b>450,937TJ</b> <b>95,591TJ</b> <b>2,892TJ</b> <b>19.5%</b> <b>16.8%</b>	541,865TJ 63,268TJ 2,345TJ 16.7% 14.1%
	Water	<ul style="list-style-type: none"> <li>• Total water withdrawal</li> </ul>	<b>4,503.0 Mm<sup>3</sup></b>	4,834.0 Mm <sup>3</sup>
Move towards no net loss of biodiversity	Air / Terrestrial	<ul style="list-style-type: none"> <li>• Group guidelines</li> </ul>	<b>Implemented</b>	Endorsed by Group HSSE Committee

### Climate Vision 2050

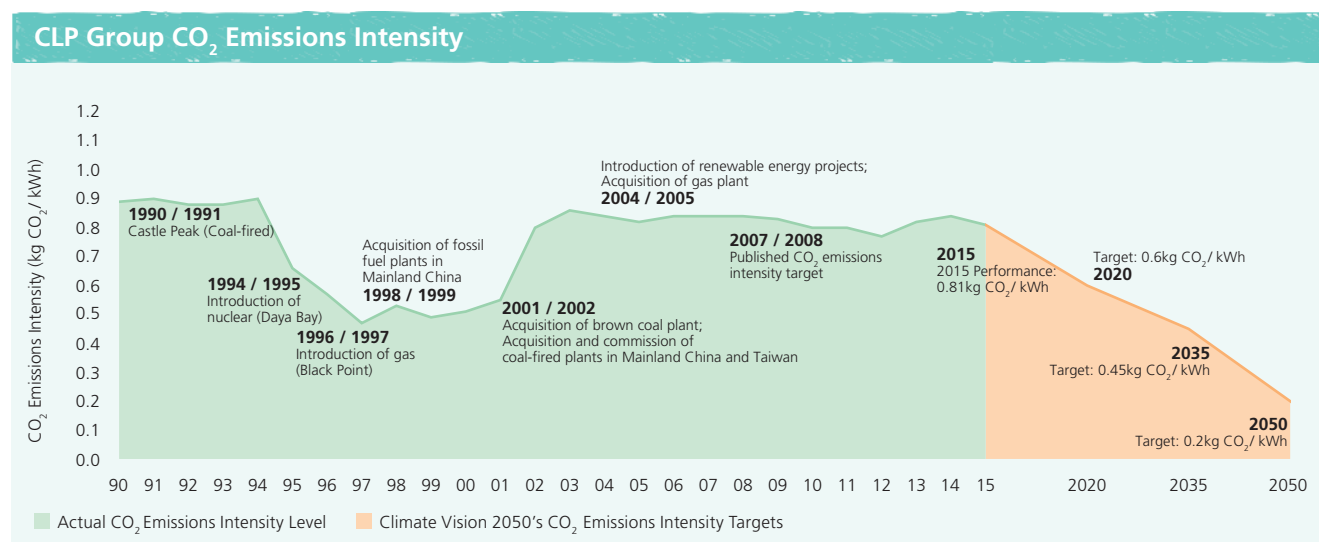
In 2007, we developed our Climate Vision 2050, which was centred around an ambitious science-based target of reducing the carbon intensity of our generating portfolio by approximately 75% by 2050, compared to our 2007 level. We also developed milestone reduction targets in between, taking into account assumptions on technological advancements and regulatory change.

Our performance up to 2012 was quite encouraging, however local priorities in Asia on energy security and access, favoured the continued development of fossil-fuelled assets. In 2014, the Group's carbon intensity increased back up to 0.84 kg

CO<sub>2</sub> / kWh. However, in 2015, the Group's carbon intensity has fallen back down to 0.81kg CO<sub>2</sub> / kWh, mainly due to:

- less generation from our coal-fired Castle Peak Power Station in Hong Kong, and more gas-fired generation at Black Point Power Station to further reduce emissions from power generation;
- less generation from our coal-fired Fangchenggang Power Station in Mainland China, as demand has become suppressed, and
- less generation from our coal-fired Mount Piper Power Station in Australia, due to maintenance and uncertainty over coal supply.





Although our present portfolio composition makes it challenging for us to achieve our interim targets within the original timeframe set, we remain committed to our original long term Climate Vision 2050 target. With the Paris Agreement delivered at COP21 in December, articulating the greater ambition to move from maintaining the global average temperature rise from below 2 degrees to 1.5 degrees, we remain committed to this longer term target and will review it once the new projection scenarios are released by the Intergovernmental Panel on Climate Change (IPCC) in 2018.

The Paris Agreement provides the policy signals we need to continue to scale up our renewable energy business, as well as for meeting our Climate Vision 2050 targets, particularly the next set of targets for 2020, which include 20% renewable energy and a carbon intensity reduction of over 28% compared to our 2007 level.

CLP will review the potential business opportunities as well as risks, arising from the Nationally Determined Contribution (NDC) commitments submitted by the nations we operate in. We aim to complete our post-COP21 review soon after the Paris Agreement is open for ratification.

Emerging economies will continue to require new coal-fired power stations for some time in order to meet their need for affordable, reliable electricity supply. Where that is the case in those countries in which we currently have a presence, we commit to utilising technology of the highest possible efficiency for our thermal projects and continue to invest in renewables. We will ensure our approach to climate change is consistent with both international and national policies in the countries


we operate, and we will continue to regularly monitor global and national developments and adjust our investment profiles as required.

## Non-Financial (Operations) Data Management


The demand on reporting robust, accurate and timely non-financial data in the jurisdictions where CLP operates has increased over time. With some of these requirements progressively becoming mandatory, effective data reporting processes are essential to ensure that our non-financial data reported and communicated to our stakeholders and the community is accurate and robust.

In 2015, we introduced an updated process for non-financial data reporting and assurance. More responsibilities are now placed with responsible staff at asset, regional and Group level, thus achieving a desired level of check and balance. At the same time, an upgraded online system for operational data was introduced to facilitate effective and streamlined data collection and approval, whilst reducing the chance of human error. Through the design and implementation of such a data system, we also aligned the non-financial data reporting process and timeline with financial data. The new requirements have been formally documented under the internal Standard for Non-Financial (Operations) Data Reporting and have been fully implemented. Corresponding requirements on non-financial (human resources) data reporting have been developed separately by our Human Resources department due to their sensitive nature.

## Environmental Regulatory Compliance

As at 31 December 2015, we had 14 environmental incidents that resulted in license breaches. One of them resulted in a penalty infringement notice. Details can be found in the Performance and Business Outlook section of Australia, the Environmental section of the Five-year Summary and the [2015 Sustainability Report](#). 

### Air Quality

Our Group's total air emissions have decreased compared to 2014. This was due mainly to lower utilisation at some of our coal-fired power stations, use of more gas in Hong Kong and some improvement in air emissions mitigation measures at our Jhajjar Power Station in 2015. The [2015 Sustainability Report](#) has more details. 

### Emerging Environmental Regulations

We continue to be alert on the development of environmental policies and regulations, both in the countries we operate and other advanced economies such as the US and the European Union. We carefully keep ourselves abreast of these emerging issues in order to be prepared to meet similar requirements when they become applicable in our operational locations. For example, we have carried out extensive research in the past two years on issues related to mercury emissions from coal-fired power stations. We face increasing regulatory control on mercury emissions in the locations where we operate, and we have just completed a research on the suite of control technologies available.

## HSSE Integration

We reported last year that we have spent a substantial amount of effort in integrating our management approach on Health, Safety, Security, and Environment (HSSE) issues. We were able to demonstrate the success of this integration in 2015. Firstly, the overall HSSE management structure is clear and our approaches are now unified. This includes clear definition of roles at asset and regional level, as well as a consolidation and streamlining of how internal requirements are implemented. Secondly, the Group level HSSE Committee, chaired by our CEO, established a clear link between our assets, regions, and other related corporate committees in particular the Sustainability Committee. Thirdly, as the integration became more mature, we were able to share knowledge, expertise and lessons learnt much more effectively throughout the CLP Group. Going forward in 2016, we have plans to instigate an even closer working relationship under the HSSE functions, with the objective to achieve excellence in HSSE performance.



CLP's Chui Ling Road Substation in Tseung Kwan O is Hong Kong's largest Sky Woodland hosting 80 trees made up of 32 native species



*Our people and safety performance*

## Safety Comes First

Safety has always been a central pillar of how we conduct our business. For decades, a “Safety Comes First” culture has guided CLP well. Today, we employ 7,360 people across the Asia-Pacific region and we apply the same principles and values in all our businesses. Our goal is zero injuries in all our operations and safety is always our top priority wherever we do business.

We benchmark our safety performance by measuring our Lost Time Injury Rate (LTIR) and Total Recordable Injury Rate (TRIR). They refer to 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.

In 2015, we recorded 16 cases of LTI in our majority-owned assets or assets under our operational control. The combined TRIR of CLP employees and contractors fell from 0.41 in 2014 to 0.25 last year. However, one fatality happened in 2015 when a worker was electrocuted whilst carrying out maintenance work on site at a minority-owned asset in Dagangzi of Jilin Province in Mainland China.

The table below summarises the overall safety performance of our majority controlled assets and assets under our operational control in 2015 for both employees and contractors:

Safety Performance												
Location	Employees						Combined Employees and Contractors					
	2015			2014			2015			2014		
	LTI	LTIR	TRIR	LTI	LTIR	TRIR	LTI	LTIR	TRIR	LTI	LTIR	TRIR
CLP Holdings	0	0.00	0.53	0	0.00	0.00	0	0.00	0.49	1	0.32	0.32
Hong Kong	0	0.00	0.07	1	0.02	0.11	4	0.04	0.13	6	0.06	0.17
Australia	6	0.28	0.42	3	0.14	0.42	8	0.28	0.84	8	0.27	0.83
Mainland China	0	0.00	0.00	0	0.00	0.44	1	0.02	0.13	1	0.03	0.31
India	2	0.54	0.54	0	0.00	0.71	3	0.08	0.28	7	0.19	0.86
Total:	8	0.10	0.18	4	0.05	0.26	16	0.07	0.25	23	0.11	0.41

In 2015, we issued a number of supporting guidelines and developed an e-learning package to assist our regional business units to implement the Health, Safety, Security and Environment (HSSE) Management System Standard that we rolled out in the previous year. The Standard enables our regional organisations to incorporate the HSSE requirements into their business programmes. This allows us to continue to maintain high standards in health, safety, security and environmental areas of our operations as we expand.

## Our Organisation and Resources

To successfully implement our investment strategy, we must ensure that we are effectively organised, adequately resourced, and equipped with the necessary capabilities. We continuously review our organisation to ensure that it supports our investment strategy and the continued efficient and safe

operations of our businesses. In addition, we need to have the organisational agility to adapt to an increasingly complex and volatile business environment and meet the challenges presented by the accelerating pace of technological innovation and digital disruption. The tables below and on page 89 show more details of our employee distribution at the end of 2015.

	Age Distribution by Region (% of Employees)				
	Below 18	18 to 29	30 to 39	40 to 49	50 & Above
Hong Kong	0.1	12.3	20.7	27.4	39.5
Mainland China	0.0	18.8	27.9	38.3	15.0
India	0.0	32.0	42.1	19.4	6.5
Australia	0.0	25.0	34.5	20.0	20.5

**Gender Distribution by Region (% of Employees)**

	Male	Female
Hong Kong	82.2	17.8
Mainland China	79.3	20.7
India	90.2	9.8
Australia	57.4	42.6

**Employment Type by Region (% of Employees)**

	Permanent	Short-term Contract
Hong Kong	80.8	19.2
Mainland China	70.0	30.0
India	99.7	0.3
Australia	98.3	1.7

Last year, we reviewed the use of short term contracts in Hong Kong, and set a limit on the use of these in order to ensure that short term contracts were not used where permanent employment would be more appropriate.

In addition to our employees, all our businesses make use of external contractors, that is staff who are employed by third party contractors to CLP rather than directly by CLP.

Enhancing our information on the use of contractors is important for three reasons:

- So that we have a full and accurate picture of the total human resources needed to meet our business needs;
- To ensure that the employment and other rights of staff employed by contractors are respected, and
- To support our strategic workforce planning and ensure that we are not outsourcing core capabilities.

In 2015, we have taken steps to strengthen our data collection and in future years we plan to report more fully on our use of contractors, taking into account the definitional, data collection and procurement policy issues associated with this.

In all of our operations the majority of employees are local. As an international business, however, we also need to move selected staff between operations for reasons including individual development, transfer of know-how, and project resourcing. We plan and manage these movements through our Management Development and Succession Planning process.

In 2015, a total of 510 headcounts were employed in wind, solar and hydro projects, reflecting the progressive shift in our generation portfolio to renewable energy.

## Ensuring Our Capabilities to Implement Our Strategy

Our core requirement is to ensure that we attract, retain and deploy employees with the capabilities needed to construct, operate and maintain power facilities across the full range of fuel types. In particular, we need to retain and maintain our excellence in engineering.

The recent Group Investment Strategy Review highlighted the importance of greenfield projects to our future, particularly in our primary growth markets of Mainland China and India. Given this strategy, in 2015 we strengthened Group Operations resources and capabilities significantly, through a combination of external recruitment and internal transfers of staff, in order to allow us to unlock value and enhance performance through common standards and processes in project management, asset management, procurement and safety.

In EnergyAustralia, a major reorganisation was undertaken through the third quarter of 2015 to provide a clear, fit-for-purpose and accountable operating model that would ensure we meet the business challenges in the Australian operating environment.

In India, the focus has been on developing our talent through initiatives like cross-functional transfers, short-term assignments and mentoring by seniors from other functions.

Our career development opportunities reflect our high rate of internal promotion compared to external recruitment, and this is based on our strong management development and succession planning process. For example, of our current 11 members of Senior Management, four were external appointments and seven internal promotions. Two members of our Senior Management team joined CLP as graduate trainees.

In addition to the on-the-job experience, we are also committed to formal training and development programmes covering job specific skills, generic management or supervisory skills, and language training. The tables below and on page 90 show the percentage of employees trained by gender, employee category, and the average training hours completed per employee.

	% of Employee Trained by Region and Gender		Average Training Hours Per Employee
	Male	Female	
Hong Kong	96.9	98.9	55.1
Mainland China	100.0	99.1	66.8
India	86.3	87.2	34.3
Australia	100.0	100.0	63.5



## Human Capital

% of Employee Trained by Region and Professional Category

	Managerial	Professional	General & Technical Staff	Total
Hong Kong	98.7	99.3	95.4	97.2
Mainland China	100.0	99.4	100.0	99.8
India	90.7	86.1	85.5	86.4
Australia	100.0	100.0	100.0	100.0

To support our succession planning process, we run a number of regular management development programmes at the Group level for high potential staff. In 2015, a number of our employees took part in the following programmes:

- Personal leadership programme for executive development at the Institute for Management Development, a leading European Business School;
- Accelerating Management Talent Consortium Programmes at the Ivey Business School;
- Tsinghua Executive Consortium Programme;
- Hong Kong Young Leaders Programme organized by the Global Institute for Tomorrow supported by the Hong Kong Government's Efficiency Unit and the Hong Kong Jockey Club;
- World Business Council for Sustainable Development Future Leaders Programme, and
- Emerging Leaders Programme at the Indian Institute of Management, Ahmedabad.

Our industry is changing rapidly and we have expanded our range of strategic partnerships related to learning and development to help us navigate the future successfully.

Our senior management team has access to the strategic thinking and research capability of the globally respected Chatham House, and we are working closely with them on an industry specific research project.

During the year we also began a pilot programme with École Polytechnique Fédérale de Lausanne, a leading technology research institute. Twenty-three of our high potential staff from across the Group attended the programme to strengthen their understanding of the disruptive changes driven by technological innovation and digitisation that are happening to the electricity industry. Through the programme, participants learned about the impact of such changes on European utilities, how that may affect our business model, and the need to prepare CLP for the transformational changes facing the industry.

We also held regular expert briefings for senior staff on key emerging topics. In 2015, these briefings included digital disruption, electromobility and the future of coal.

Our ability to retain staff is reflected in our voluntary turnover (VTO) rates, which are typically below the local market average

in most of our operations. The VTO for Australia of 13.7% is above the local market average of 10%, predominantly because a large percentage of EnergyAustralia's staff work in call centers, which typically have a VTO rate significantly higher than for other staff groups. In the tables below, we show our voluntary staff turnover rate by age group, gender, and geographical location.

Voluntary Turnover Rate by Region and Age Group (%)

	Below 18	18 to 29	30 to 39	40 to 49	50 & Above	Total
Hong Kong	–	5.3	6.1	2.0	1.7	2.8
Mainland China	–	5.9	4.1	0.5	1.3	2.6
India	–	9.9	11.6	6.5	8.3	9.8
Australia	–	15.6	18.9	11.2	5.5	13.7

Voluntary Turnover Rate by Region and Gender (%)

	Male	Female	Overall
Hong Kong	2.5	4.7	2.8
Mainland China	2.7	1.9	2.6
India	9.6	11.5	9.8
Australia	12.6	15.2	13.7

## Leveraging Our Capabilities to Implement Our Strategy

Leveraging our capabilities means both being able to deploy key skills to where they are needed across the Group, and capturing and retaining critical experience in order to ensure we are not losing it through retirement or sub-contracting our core capabilities.

An important example of leveraging our capabilities was our resourcing plan for the Fangchenggang II construction project in 2015. We posted seven employees to the project last year, in order to expose them to project management and construction experience, and capture that learning to support our future project resourcing requirements around the region.

## Addressing Long-term Human Capital Challenges

To be a sustainable business, we also have to anticipate and plan for the longer term internal and external Human Capital challenges that we face. The most significant of these are:

- We have an ageing workforce in our core Hong Kong business, as a result of low turnover and a high average length of service. However, it is also important to recognise that retirement creates opportunities. The percentage of staff eligible to retire in the next five years is shown in the table on page 91. In 2015, we recruited 315 new staff in Hong Kong. The average age of these new recruits is 23.3, which is significantly below the average age of our Hong Kong workforce.

#### % of Employees due to retire in the next 5 years

Hong Kong	16.2
Mainland China	11.9
India	0.8
Australia	10.9

- We face demographic pressures in some markets due to ageing populations and the high demand for engineers. Consequently, we will continue to diversify our sources of recruitment for engineers, both geographically and in terms of gender diversity.
- Historically we have had limited geographical mobility of our Hong Kong-based staff due to cultural and personal reasons. This has inhibited our ability to deploy our core capabilities effectively outside of Hong Kong, and we are now taking active steps to increase mobility.
- Young engineers in some parts of the world have an increasing preference to work in renewable energy. Given that our renewable energy business is concentrated in India and Mainland China, we have created opportunities for Hong Kong-based engineers to be seconded to these projects, and six assignments were confirmed last year.

To address our long-term challenges we have implemented a number of initiatives.

Firstly, we have had established a senior management forum, which meets regularly, to review and optimise the use of our engineering resources. A key task being addressed by this forum is increasing the mobility of engineering staff across the Group. For example, we seconded three young engineers from India to Hong Kong last year. These cross-business assignments contribute to the transfer of know-how, sharing of best practices and individual development.

Secondly, we are progressively increasing the number of graduate engineering trainees, and diversifying the sources of recruitment. In addition to Hong Kong, last year we hired more extensively throughout China and India, and we will seek to increase our number of female engineers. We recruited nine graduate trainees locally in China and India last year including four female engineering graduates. Our apprentice and technician intakes have also been progressively expanded.

## Increasing Diversity and Inclusiveness

Given that we employ predominantly local staff in each of the markets that we operate in, CLP is already a very diverse organisation from an ethnic perspective.

Historically, utilities have had a significantly higher percentage of male than female employees. In our case this is compounded by our operating in countries across Asia-Pacific and, for

cultural reasons, there have been relatively low levels of female participation in the workforces of these countries.

The tables below show the breakdown of male and female staff by level and geographical location, and also the ethnic and gender diversity of our current senior executives.

#### % of Employees by Region, Professional Category and Gender

	Managerial		Professional		General & Technical Staff	
	Male	Female	Male	Female	Male	Female
Hong Kong	76.6	23.4	79.3	20.7	85.0	15.0
Mainland China	90.0	10.0	83.1	16.9	77.1	22.9
India	93.0	7.0	92.8	7.2	83.8	16.2
Australia	71.0	29.0	58.4	41.6	55.0	45.0

#### % of Senior Executives by Nationality

Chinese	32
European	14
American / Canadian	14
Australian / New Zealander	23
Indian	14
Latin American	3

#### % of Senior Executives by Gender

Male	86
Female	14

We are taking a number of initiatives to increase gender diversity:

- We measure and report gender diversity across the Group to increase the visibility of the issue to the Group Executive Committee and the Human Resources & Remuneration Committee.
- In Hong Kong, we have sought the views of female employees, via focus groups, on how to ensure that we remain a female-friendly employer. In 2015, we have enhanced our facilities for female employees, including breastfeeding facilities and guidelines on lactation breaks.
- We successfully completed the female engineer mentoring programme with the Hong Kong Institute of Engineers last year, with the support of a number of our female engineers from across the Group.
- In India, there was a greater focus on gender sensitisation with sessions organised for the Internal Complaints Committee (which investigates and deals with complaints relating to sexual harassment) as well as the senior leadership team and staff in Human Resources on aspects including relevant law, gender sensitivity, and best practices.

We operate across a number of culturally diverse countries and respect the local differences that result from this.

## Human Capital

Consequently some diversity related initiatives reflect locally specific considerations. An example is the evolving role of EnergyAustralia's Diversity and Inclusion Council which aims to build an inclusive culture within the company.

### Dealing Effectively with Grievances and Complaints

Each of our businesses has an employee grievance procedure in place that reflects our Value Framework and any applicable local legal requirements. The numbers of complaints related to harassment, discrimination, human rights and labour disputes that were found to be substantiated following investigation during 2015 are set out in the table below.

Substantiated Complaints in 2015	
Harassment	1
Discrimination	0
Human Rights grievances	0
Labour practices grievances	0

With respect to complaints of discrimination and harassment, we have clear policies in place, supported by employee training. Our Group-wide harassment policy sets a common framework of principles and our detailed policies in each country are fully compliant with local legislation. Following the introduction of a Hong Kong specific policy to ensure compliance with Hong


Kong legislation and codes of practice, a series of refresher training sessions were held last year for Hong Kong staff.

In the case of any employee having concerns, we follow established procedures to address grievances. We investigate all complaints of discrimination and harassment. These procedures ensure fairness and independence in the investigation process, and respect for the confidentiality of the parties involved. In Hong Kong and Australia, complaints may also be made to relevant external bodies such as the Equal Opportunities Commission in Hong Kong and the Human Rights and Equal Opportunity Commission in Australia.

### Employee Engagement and Communication

We conduct regular Employee Opinion Surveys to understand our employees' views. These surveys are carried out by independent external consultants to ensure objectivity and to maintain confidentiality of the responses.

The most important outcome of the survey is the measurement of an overall Employee Engagement Index in relation to the local market norm. The most recent Employee Opinion Survey result for Hong Kong payroll staff was completed in early 2015. Our Employee Engagement Index was significantly above the Hong Kong norm.

For more details on CLP's human capital, please refer to our [Sustainability Report online](#). 

**The power industry requires a workforce with specialised skills and is generally considered as male-dominated. How does CLP nurture female engineers?**

Given demographic trends and our dedication to promote gender diversity, we are keen to increase the number of female engineers we employ and have teamed up with industry partners to attract females to the profession. To help engage female engineering students, we partnered with the Hong Kong Institution of Engineers (HKIE) to run a mentoring programme for female engineering students in 2015, in which 20 of our female engineers volunteered to provide one-on-one mentoring for female HKIE student members, the first of its kind by our staff. Through a series of site visits and sharing sessions, the mentees learned more about the engineering profession and the power industry.

In addition, we have also reviewed and enhanced the facilities for female staff and introduced lactation breaks for our nursing colleagues and an enhanced maternity leave policy that allows female employees to take four more weeks of unpaid leave in addition to 10 weeks of full-paid leave.



**Venus Tam**  
Acting Senior Engineer – Smart Grid  
CLP Power Hong Kong

**Roy Massey**  
Chief Human Resources Officer

More Q&As

# Social and Relationship Capital

*Our commitment to connect with our stakeholders*

People are at the heart of CLP's corporate values, as enshrined in our Value Framework first published in 2003. In our pursuit of sustainable development for the future, we put special emphasis on our relationship with people across a wide spectrum of internal and external stakeholders. They include our customers, shareholders, business partners, suppliers, employees, policy makers and the wider community.

The recent adoption of 17 Sustainable Development Goals (SDGs) aimed at tackling poverty, hunger, climate change and other global problems by 2030 at the United Nations Sustainable Development Summit has provided the international community with a clear direction on the transformative steps that are urgently needed for sustainable development.

As a responsible energy provider, we participated in the United Nations Private Sector Forum in New York in September 2015 to understand more about the roles of businesses in contributing to the SDGs. Based on the adopted goals, we have developed our new Sustainability Principles, which will succeed our Sustainability Framework (for more details, please refer to our [Sustainability Report](#)). In line with the SDGs, CLP will continue to develop community initiatives, business solutions and stakeholder engagement strategy to make people's lives – and the world – better. 

## Climate Action and International Engagement

CLP recognises our role to play in helping the world achieve the SDGs, especially those on combating climate change, and ensuring access to sustainable and affordable electricity. In just over a decade, CLP has developed over 3,000MW of renewable energy in our generation portfolio. At the same time, we invest in the cleanest coal-fired technology to generate electricity in markets such as India and China, where affordable electricity remains a concern.

CLP has been proactively engaging different sectors in the area of climate action and promoting the use of renewables and energy efficiency, both internationally and in the communities where we operate. The highlight last year was the attendance by CEO Richard Lancaster at some of the side events at COP21 in Paris during which he shared our views of a low carbon future and reform of the electricity market in China. He also reiterated the importance of clarity and predictability in the area of energy policy across nations at the World Business Council for Sustainable Development (WBCSD) Paris Council Meeting.

Our other engagement efforts included participating in the Low Carbon Technology Partnership initiative (LCTPi), which is led by WBCSD, the International Energy Agency and the

## SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



Reprinted with permission of the United Nations



## Social and Relationship Capital

Sustainable Development Solutions Network. CLP is one of the 82 global companies that have endorsed the LCTPi, which aims to develop action to accelerate low carbon technology development and scale up deployment with the aim of limiting global warming to below 2°C.

### Dialogues with Policy Makers

Strengthening dialogues with policy makers is also important to CLP in achieving the SDGs of ensuring the public's access to affordable, reliable, sustainable and modern energy. In our home market in Hong Kong, we actively participated in the consultation on the future development of the electricity market in 2015 and shared our knowledge and expertise with different stakeholders in the discussions.

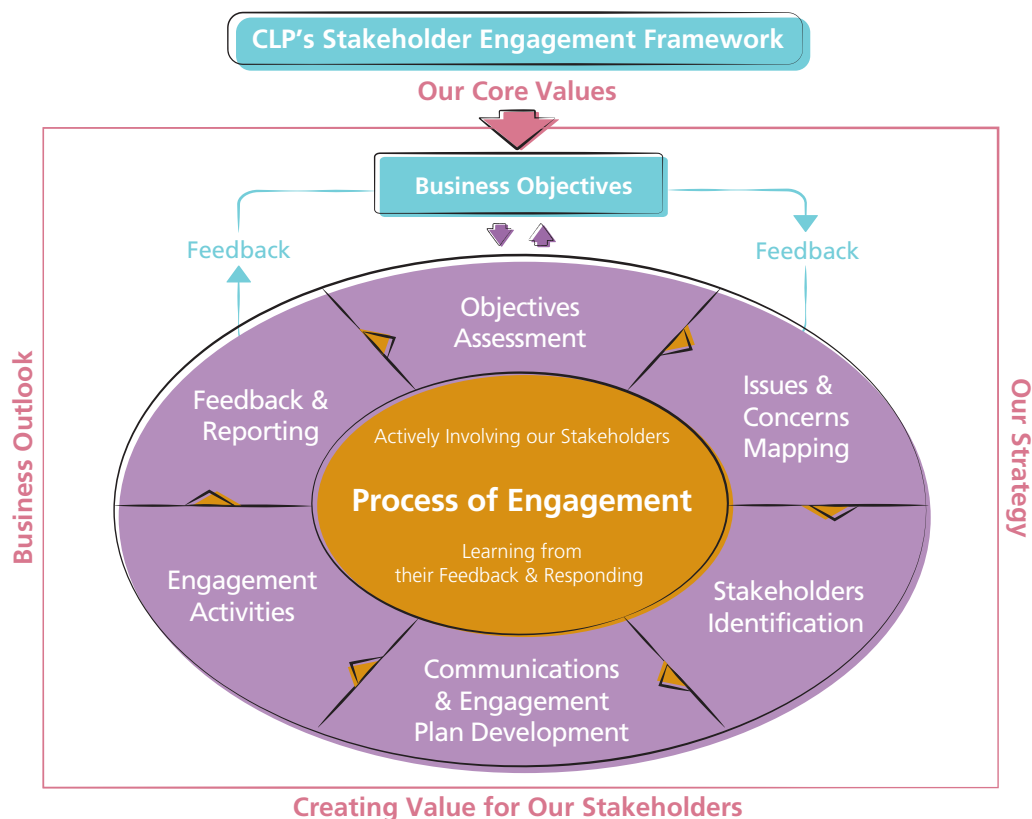
Since our business spans five different markets, we also make special efforts to engage and communicate with policy makers in all of the markets where we operate. For example, we joined the business roundtable chaired by Indian Prime Minister Narendra Modi in Shanghai during his visit to China in May. Most recently, Mr Lancaster participated in a delegation to India led by Hong Kong Special Administrative Region Chief Executive Leung Chun-ying to promote trade and business. To enhance the Chinese Government's understanding of our efforts in promoting sustainable energy, we invited central and provincial officials to visit our power stations and engaged them in discussions over the prospects of clean energy. In Australia, our government and regulatory advocacy in 2015

concentrated on key focus areas of market sustainability, environmental performance, climate change, consumer affordability and customer experience.

### Relationship with Suppliers and Contractors

In our relationship with our suppliers and contractors, we put special emphasis on compliance and adherence to the principles set out in our Responsible Procurement Policy Statement (RePPS), which is included in our Value Framework. We are committed to supply chain sustainability and will progressively consider RePPS in supplier selection and contract monitoring at a pace and depth that suits local business conditions. When designing project specifications and engaging suppliers, we always take environmental impact and resource usage into consideration.

Furthermore, safety of our contractors is a top priority. Across the Group, we organised safety workshops to raise awareness of our contractors. In 2015, CLP Power Hong Kong conducted site visits to seven key suppliers to understand their sustainability practices. Currently, Fangchenggang II in China is the largest and most complex construction project ongoing in CLP. Several behaviour safety workshops were held on site to enhance the safety awareness of both employees and contractors. In Australia, all operational sites were required to conduct back to work safety workshops when employees returned from their break as part of the "Summer of Safety" campaign, launched at the end of 2014.



## Relationship with Customers

Engagement with customers and raising their awareness in energy conservation are equally important to responsible energy providers like CLP. In fact, we believe our customers are our biggest asset as we strive to achieve some of the SDGs.

The innovative “Power Your Love” programme launched in 2015 in Hong Kong was an exemplar of how we partner with our customers to support the underprivileged whilst achieving energy conservation (for more details, see page 47). We are also engaging with our commercial and industrial customers by providing them with free energy audit services under the GREEN<sup>PLUS</sup> programme in Hong Kong.

In our Customer Service Quality Statement, which is included in our Value Framework, we state our commitment to service excellence. We have made great strides in this area during the past year. In Hong Kong, our simplified application procedures for customers to connect their distributed renewable energy facilities to our power grid was one of the many examples of how we supported our customers on the one hand whilst protecting the environment on the other.

In Australia, our new business strategy is to grow the business by focusing on our customers. EnergyAustralia is currently evaluating alternative energy management systems that will enable customers to identify opportunities for improvements in how they manage their energy requirements, particularly to do with energy efficiency and usage.

In addition, EnergyAustralia is pursuing a number of opportunities to offer customers greater choice. These include working with potential partners on energy-efficient lighting retrofits to improve energy efficiency and evaluating a range of potential battery systems to increase customer energy independence.

## Community Engagement

To collect feedback from different sectors, we have set up or joined committees at various levels for continuous service enhancement. In Hong Kong, apart from establishing the Customer Consultative Group, Local Customer Advisory Committee, Green Elites Campus Accreditation Programme Steering Committee and Eco Building Fund Vetting Committee over the past years, we were actively involved in the extensive stakeholder engagement exercise on our plan to add a gas-fired generation unit at the Black Point Power Station. Through their feedback, we can constantly assess our business objectives for creating the greatest possible value for our stakeholders. This approach is summarised in our Stakeholder Engagement Framework, which reflects our stress on the integration of stakeholder engagement into all aspects of our



CLP India staff and family members deliver nutritional kits to HIV-infected children

business, from project development to operation, management and decommissioning, and on the transparency in our environmental, social and governance reporting.

## Community Initiatives

We consider our interaction with the community we serve a long-term investment. Over the years, CLP has developed and invested in a range of initiatives to serve our communities. One of the keys to the overall success of our business is the public acceptance of CLP as a provider of essential services. We believe we can strengthen our social licence to do business if we engage and empower the communities in which we operate. In 2015, our cash donations alone amounted to HK\$14.5 million.

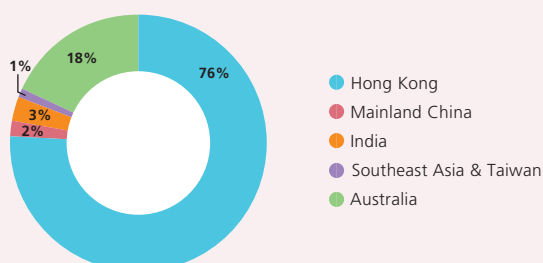
Our approach is to apply our skills and resources strategically to projects, programmes and initiatives that have a positive impact on community development for the short- and long-term, as we have committed under our Value Framework. We strive to create impact through collaboration, capacity-building initiatives, employee volunteerism and strategic giving. Our community initiatives focus on four pillars: (1) Climate Change and the Environment, (2) Youth Education and Development, (3) Community Wellness, and (4) Arts and Culture. This is in tandem with the SDG integrated approach which emphasises the universal need of development and progressive improvement.

## Social and Relationship Capital

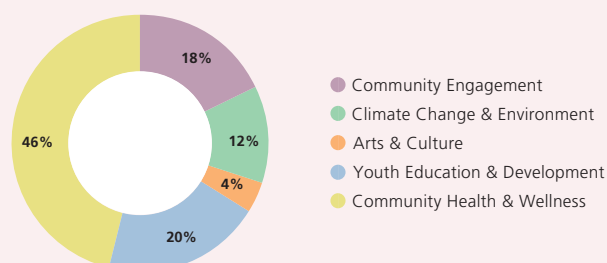
Specifics of our 2015 community initiatives, including CLP-initiated programmes, sponsorship and donations to third parties, are illustrated below:

### Our Community Spending

Community Spending by Region<sup>1</sup>



Community Spending by Theme<sup>1</sup>



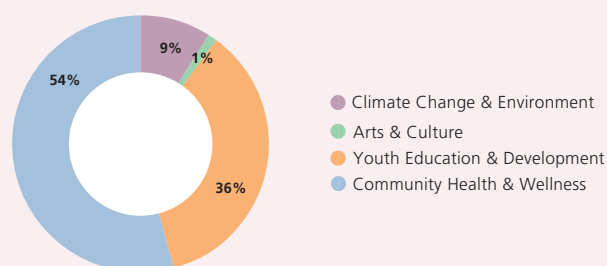
### Our Beneficiaries

**620** activities implemented

Over **178,000** direct beneficiaries<sup>2</sup>

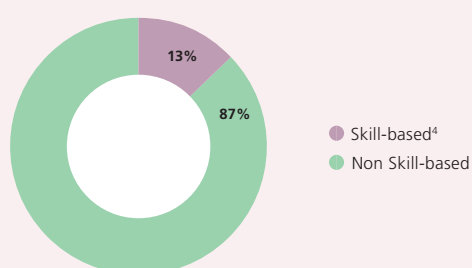
**418** organisations benefited<sup>3</sup>  
including professional bodies,  
academic institutes, NGOs and community groups

Direct Beneficiaries by Theme<sup>1</sup>



### Contributing Our Time and Expertise

**11,675** volunteer hours from CLP Staff



### Highlights on Our Contribution

**200,000** customers  
took part in Power Your Love Programme in Hong Kong

**10,000 meals per month**  
distributed through 3 Hotmeal Canteens in Hong Kong


**58,950** meals  
were provided in Goals to End Hunger Campaign in Australia

**2 tonnes of food**  
packaged by EnergyAustralia's volunteers in Foodbank  
Victoria

**Over 400 swimming schools**  
benefited from the SwimSAFER Week in Australia

#### Notes:

- Figures include rounding adjustments.
- The number of people directly reached by or engaged in a community initiative, such as those who have participated directly in the programme, or benefited from the improvements made to relevant facilities or environment.
- In some cases, the impact of the initiatives is better reflected by the benefiting organisation as a whole instead of the countable number of people.
- Volunteering work that requires electrical engineering skills.

Details of our community initiatives and stakeholder engagement efforts in the different countries in which we operate can be found in the Performance and Business Outlook section and our [Sustainability Report online](#). 

## Measuring Our Impact

To understand the impacts of our community initiatives, we adopt global standards that measure a company's contribution to the community. These standards also support companies in evaluating the outputs and long-term benefits of the community investments.

Since 2009 we have been periodically using the London Benchmarking Group methodology to measure and evaluate the social-economic impact of our community investment initiatives. We are now exploring new impact measurement tools to more comprehensively reflect the value of our wide range of contributions.

Furthermore, as part of our efforts to improve the integrity of our community investment data across the Group, a standardised online reporting system will be launched in the coming months.

### CLP's Value Framework



**Our school strives to instil lifelong energy conservation habits in the younger generation. How can CLP help us in this respect?**

Sustainable development is one of CLP's core values. We have made enormous efforts to raise students' awareness of the importance of energy conservation and greener lifestyles through the GREEN<sup>PLUS</sup> School Programme and Green Elites Campus Accreditation Programme. Through various education initiatives including an online learning portal, seminars, visits to CLP facilities and energy audits for schools, CLP works closely with participating schools to put energy conservation into practice and help strengthen students' understanding of energy saving and carbon footprint reduction in an interesting manner. We organised the GREEN<sup>PLUS</sup> Award for four consecutive years to recognise organisations which excel in energy saving and encourage more companies to practise sustainable development and conservation. The Award also provides a platform for winners to share their best practices. Going forward, we will join hands with partners such as S.K.H. Mung Yan Primary School to promote a low carbon future to the younger generation.



**Mr Sam Lok Kwok Sum and Law Lok Hin**  
Principal of S.K.H. Mung Yan Primary School and Primary Six student



**Quince Chong**  
Chief Corporate Development Officer



**More Q&As**



# Intellectual Capital

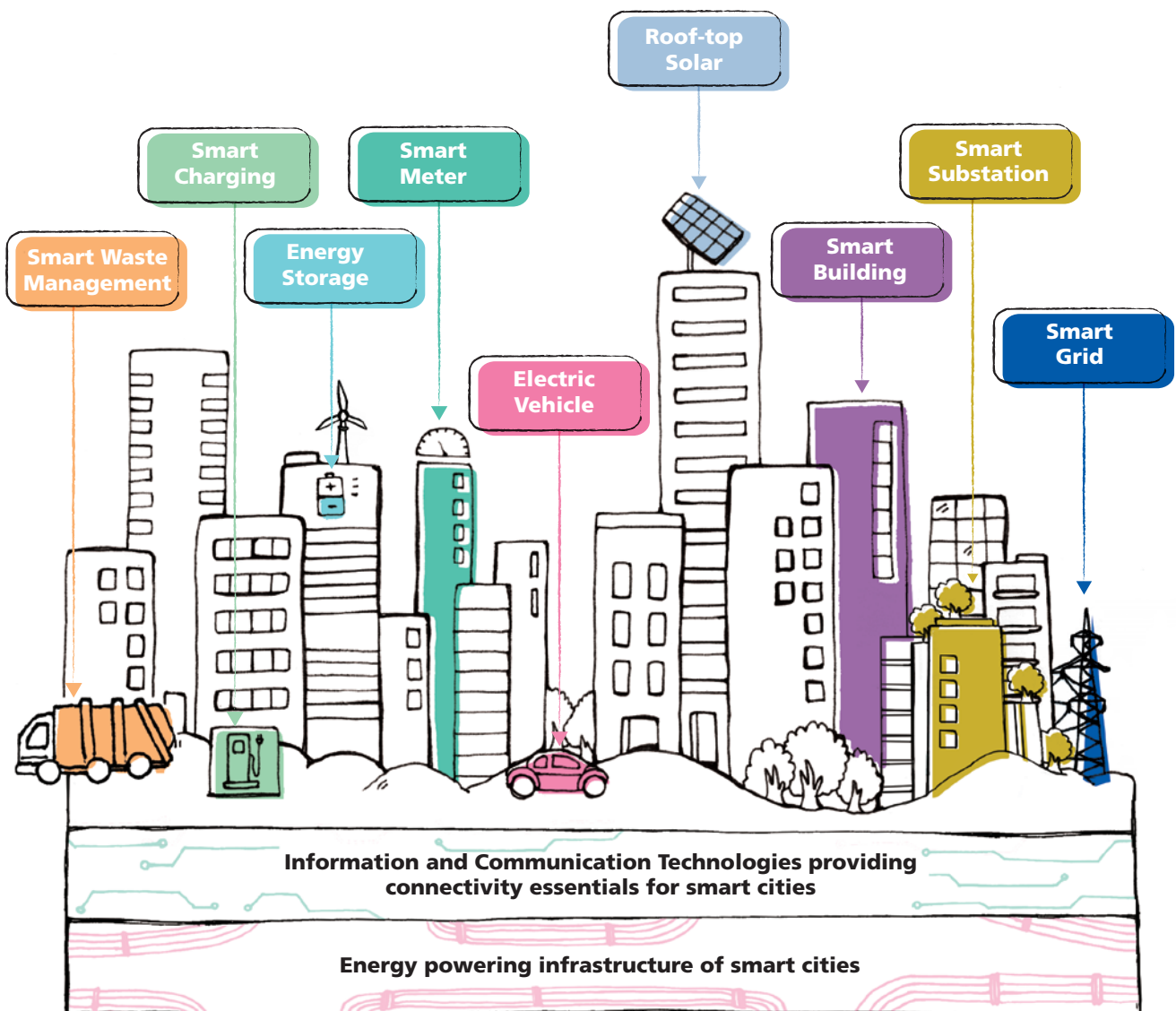
*Our expertise and innovation*

## Smart Cities

During the period of 1990 and 2014, urban population in the Asia-Pacific region has increased by nearly 1 billion people, with almost half of that growth in China. According to a report by the International Migration Organisation, an estimated 120,000 people are expected to flock into cities daily by 2050. Rapid urbanisation is now being considered one of the megatrends that will shape our future. It demands attention from governments, businesses and the public as it requires significant resources to support the new infrastructure that we need.

Along with improved living standards, citizens around the world, in particular those living in urban areas, are demanding

sustainable energy, cleaner air and more efficient transport systems. There is a trend towards more customer control, deciding when and how they use energy. They also desire a higher quality living and working environment. The phenomenal growth of Information and Communication Technologies (ICT) being deployed in recent decades has provided ubiquitous connectivity and intelligent automation. Ultimately, the notion of smart cities has emerged and global cities like Barcelona, Stockholm, Seattle, Seoul, Singapore, New Delhi and Hong Kong are embarking on building their own version of a smart city.



Whilst there is no “one-size-fits-all” model for smart cities, they share some common attributes. ICT acts as the neuro system of a smart city connecting its citizens to enable them to work, live and travel more efficiently and comfortably. Smart cities are “smart” only if their governments are committed to supporting them through policies, incentives and investment. Energy represents the most fundamental and critical element as it is required to power every aspect of a smart city.

CLP has been providing safe and reliable energy for over a century. Over the years, we have acquired and applied our expertise to develop and operate a high quality power system to serve our customers. We have been continuously evaluating and exploring different new technologies and related economic benefits through CLP Power Hong Kong, CLP Research Institute, CLP Engineering and EnergyAustralia. One of our strengths is to embrace new technologies and tailor them to meet local needs. Some examples are highlighted in the following sections.

## From Reliable Power System to Smart Grid

A city requires a reliable, safe and cost-effective power system that can support the activities of its citizens. Advancement of ICT has led to the popularisation of smart grids around the world. With the application of smart grid technology, operators can now monitor and control their power facilities remotely, intelligently and accurately. These ICT-based systems are backed by thousands of sensors and controllers deployed in our facilities, feeding their real-time data to the control centre. The control engineers can then monitor and control the power system with a high degree of accuracy and efficiency, which in turn, delivers excellent service. The use of these ICT-based systems has greatly improved system reliability and resilience.

CLP Power Hong Kong has achieved world-class performance in areas such as safety, supply reliability and operational efficiency. In order to deliver new and improved services to our customers, we continue to explore new technologies that make the grid ‘smarter’ to meet energy challenges in an economic, sustainable and socially responsible manner. For instance, we have introduced intelligent substations which use digital technologies to improve the equipment connectivity, making them more reliable and flexible.

Our Smart Grid Experience Centre in Hong Kong, which showcases the many features and benefits of different smart grid technologies, has attracted over 12,700 visitors, including some 5,400 shareholders, since 2011.

## From Internet-of-things to Smart X

Internet-of-things (IoT) refers to different sensors, controllers or ICT systems that are linked together via the internet. They offer different products and/or services to individual customers, businesses and governments. They range from a simple switch that is controlled remotely via a smart phone to a complex traffic monitoring system. Through the IoT, citizens can get the latest information they require at or near real time. With the ease and rapid development of IoT, many functions within a smart city can be optimised and enhanced, for instance, controlling traffic dynamically, home security, energy efficiency in buildings and waste management. It enables a level of visibility and control that was not previously possible.

Smart X represents a variety of applications utilising the IoT. With connectivity and intelligent learning algorithms, these devices and systems make our living and work space more comfortable (smart thermostat), efficient (smart lighting), secure (smart home), flexible (smart meter), reliable (smart grid) and adaptable (smart building).

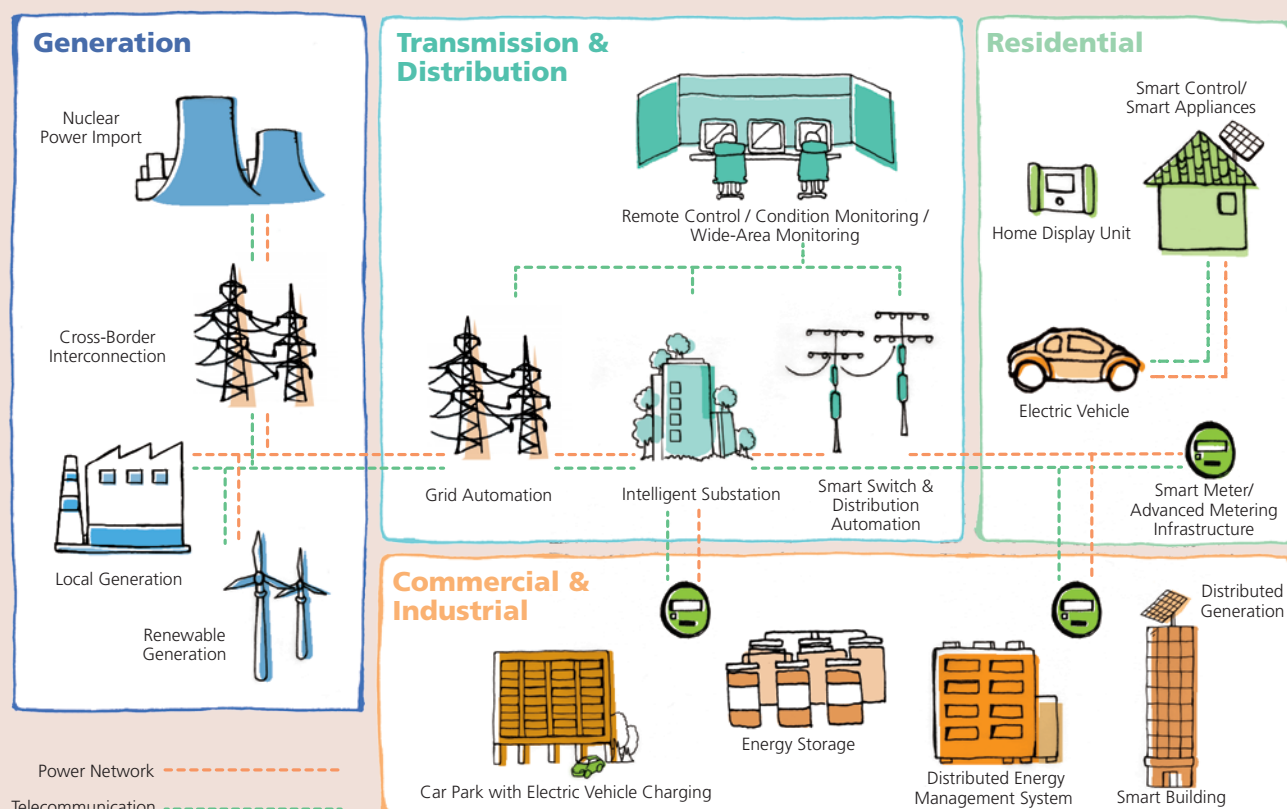
CLP has gained extensive experience and knowledge on the development of smart meters in both Australia and Hong Kong. Smart meters are electronic meters that can provide additional information on energy consumption and enable two-way communication between customers and utilities. By integrating smart meters, CLP is able to provide more energy options and choices for our customers and to help them save energy.

In Australia, our subsidiary EnergyAustralia participated in the Smart Grid, Smart City project in New South Wales, which generated significant smart meter knowledge and experience that will help us better meet our customers’ needs in the future. In Hong Kong, we have successfully completed a smart meter pilot programme, “myEnergy”, in 2014 for residential and small-to-medium commercial customers. Through the pilot programme, we helped our customers identify energy saving opportunities and better manage their electricity usage. CLP submitted the encouraging findings of myEnergy to the Government and is working with the Government to explore greater use of smart meters in the future.

## From Integrated Renewables to Energy Storage

Renewable energy generation will be an integral part of future energy systems. Harnessing unlimited renewable energy, particularly solar energy, is becoming more affordable. It also offers a low carbon solution to our constant need for cleaner and more economic energy in city buildings. However, due to the high cost of land, renewable energy will more likely be developed at a small scale and distributed locally within a city.

### Smart Grid



Highlights of a smart grid:

- A power system must be designed and operated in a safe, reliable, efficient and environmentally responsible manner;
- A smart grid enables the integration of renewable energy at all levels;
- The smart meters, a key component of smart grids, are electronic meters that can provide granular usage data, two-way communications, remote meter reading and equipment control capabilities;
- A smart grid allows utilities and customers to interact such that certain load consumptions can be controlled to meet system needs;
- A smart grid enables the integration of different distributed energy resources, including local generation and storage devices, and
- A smart grid leverages telecommunications and advanced technologies to provide better monitoring capabilities such as intelligent substations, outage management systems, equipment health monitoring and distribution automation.

Energy storage, particularly battery technology, has seen rapid growth and cost reduction within the last decade. With energy storage devices, we can overcome the intermittent generation profile of wind and solar resources and accelerate more uptake of renewable energy. In addition, energy storage can also provide emergency backup power and spinning reserve for the grid.

Today, CLP has over 3,000MW of renewable energy projects in our generation portfolio spreading across the Asia-Pacific region. These facilities include utility-scale wind and solar farms, roof-top solar panels and building integrated photovoltaic (BIPV). CLP has worked with different battery systems for various applications for years. The success of the integration and utilisation of storage devices will depend heavily on their overall economic benefits, technology maturity, performance reliability and safety considerations.

## From Mass Transit Systems to Electric Vehicles (EVs)

Electrification of mass transit systems is already very common in major cities around the world. Both public and private EVs are increasingly popular and it is largely driven by rapid technology advancement and emission control incentives. The need to equip smart cities with the necessary charging infrastructure, convenient payment model, and parking space information will eventually surface in most smart cities.

CLP has long been a supporter of EVs and public charging station deployment. In 2015, we owned and operated 77 electric vehicles including two electric buses with 142 public charging points in our service areas within Hong Kong. We have extended our free charging service until the end of 2016 and introduced a new service in 2015 to facilitate the installation of private chargers by our customers in residential or commercial buildings.

## From Data Management to Data Analytics

Data is an integral part of all smart cities. With IoT and Smart X being increasingly deployed, a large volume of real time data is generated. This voluminous and complex data, also known as Big Data, will require extensive data management, sophisticated analytics and visualisation capabilities to provide insight and enable faster decision making. In Hong Kong, we recently published the location data of our EV charging stations on the Government's open data portal, which could help facilitate the development of mobile apps.

CLP has been managing bulk metering data since the 1980s, when we first implemented interval meters in Hong Kong. The smart meter deployment in Victoria, Australia and the recent pilot programmes in Hong Kong have also enabled us to build extensive capabilities on Big Data management and analytics. As the importance of ensuring personal privacy and public security increases, cyber-security has also become our top priority and newly acquired expertise.

## Towards a Low Carbon and Sustainable Future

The definition of a smart city is constantly evolving. Each city has its own technological, economical and aspirational drivers that will define its own vision of a smart city. Ultimately, historical, cultural, political and social factors will play a role in the final implementation. However, the role of electricity supply within all smart cities will be common and the trend is towards a low carbon, economical, efficient and intelligent power system.

CLP has been actively working on the development and deployment of smart meters, demand side management, distribution automation, renewable energy, building energy management systems, micro-grid, EV charging network, intelligent substations, condition monitoring, open data and big data management. Such knowledge and experience will enable us to shape and participate in the development of smart cities in Asia Pacific.