CLP 中電

2018
Sustainability Report

Contents

ESG Key Performance Data and Supplementary Documents Download PDF 〉

Chairman and CEO message

"As part of our efforts to become a 'Utility of the Future', we recognise the need to decarbonise and digitalise our business, and attract the right talent to our workforce."

The Honourable Sir Michael Kadoorie, Chairman (right) and Richard Lancaster, CEO (left)

Over 2018, we saw significant change on many fronts. At the international level, the financial and economic outlook remained uncertain; the effects of climate change became more evident in the extreme weather events experienced around the world; social unrest resulting from inequality continued to increase in many regions; and technological developments disrupted our lives while boosting productivity and innovation. Amid these complexities and uncertainties, it is important for us to be resilient and continue to create long-term value for our stakeholders.

At CLP we understand that our purpose is to deliver reliable, competitively priced, and environmentally sustainable electricity to our customers. As part of our efforts to become a "Utility of the Future", we also recognise the need to decarbonise and digitalise our business, strengthen our cyber resilience, and attract the right talent to our workforce. In 2018, we announced new decarbonisation targets to further respond to impacts of climate change and we have committed to strengthening these targets at least every five years.

Powering community development

When CLP was founded in Hong Kong in 1901, the public expectations placed on us were simple: keep the lights on. We have met those expectations ever since by delivering safe and reliable electricity to our customers while keeping the cost of generation under control. Providing reliable power to local communities aside, we deploy our power expertise to help those who are in need in the communities we serve. This has been a legacy we are proud to uphold. Our updated flagship programme, Power Connect (formerly known as Power Your Love), has assisted around 20,000 less fortunate Hong Kong households each year since its launch in 2015. In Australia, the EnergyAssist Programme is similarly providing assistance for customers experiencing financial hardship.

Addressing climate change

Public expectations now extend beyond reliability and affordability to include environmental matters. As a responsible energy provider, we have invested considerable time and resources in addressing the urgent challenges associated with climate change. In 2018, we announced new targets for Climate Vision 2050, a roadmap for decarbonising our operations. This updated trajectory aims for a reduction in carbon intensity of 20 percent by 2020, 33 percent by 2030, 55 percent by 2040 and 80 percent by 2050, compared with the 2007 baseline. Together with our commitment to regular reviews, this demonstrates our dedication to the Paris Agreement objective of limiting global warming to 2°C above pre-industrial levels.

The financial risks associated with climate change are also informing our future strategy. We have embraced the recommendations of the Task Force for Climate-related Financial Disclosures (TCFD) and have started working with industry peers to support the development of guidance of disclosure that is appropriate for the electric utilities sector. The introduction of two advanced combined cycle gas turbine

(CCGT) units in Hong Kong, which will help us begin the process of retiring the oldest coal-fired units at our Castle Peak Power Station, is a key component of our decarbonisation strategy.

Digital technologies and new opportunities

Digital technologies are the second critical component of our transition to a "Utility of the Future". The digitalisation of our business includes deploying best-of-breed technologies to optimise existing operations, and developing new products and services to improve the customer experience. For example, we have started rolling out smart meters in our key market of Hong Kong to help customers better manage their consumption habits.

Investing in bulk generation from large thermal assets, particularly coal, is not how we intend to grow our business. Instead, we are focused on the opportunities associated with advanced renewable technologies, battery storage solutions and demand side management tools that help our customers reduce their energy consumption.

Participation in leading accelerator programmes such as Free Electrons and Startupbootcamp has offered us opportunities to invest in promising, later stage startups. We are also excited to announce that, after months of incubation, we will launch Smart Energy Connect – a one-stop-shop for helping customers manage and optimise their energy usage – in the second quarter of 2019.

Safeguarding our systems and customers

Cyber resilience and the protection of data is another area we take very seriously. We are relentless in our efforts to improve our approach to effectively managing these issues including through the upgrade of the information and operational technologies that keep our systems and customers safe. We are also focused on providing the training our workforce needs to manage our cyber security and data privacy obligations, and to ensure the organisation maintains a culture of vigilance.

Our employees help us deliver

The digitalisation of the energy sector – combined with our transition to a low carbon future and the impact of energy policy changes – has made our long-standing efforts to build an agile, inclusive and sustainable workforce more important than ever. Competition for STEM qualified individuals, in particular, is intensifying as many sectors of the economy digitalise. In response, we are committed to attracting diverse and high-quality talent, and to fostering a culture of open communications, mutual understanding, trust and respect.

Our track record of safety performance has not yet improved as much as we would like. While injury rates are declining, the fatalities of one employee and one contractor in 2018 saddened us greatly, and serves to remind us of the urgent need to further strengthen a culture of safety in our business.

Outlook

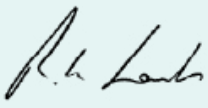
Looking ahead, stakeholder expectations on the role CLP plays in society will continue to increase. Climate change, in particular, will be a key consideration guiding our future growth, and we are mindful of how an ever-changing regulatory and political environment might interact with our commitments under Climate Vision 2050. We are committed to playing our part in addressing this global challenge and in 2019, we will initiate another round of internal studies to review the feasibility of strengthening our recently updated targets once again.

We have streamlined our reporting approach this year to reflect a sharper strategic focus on the environmental, social and governance

(ESG) topics that we have identified as being the most important to CLP and our stakeholders, now and in future. We hope this report provides useful insights into how we are future-proofing our business through decarbonisation and digitalisation, and accurately reflects our very real determination to create sustained value for stakeholders, including local communities and the planet on which we all rely.

The Honourable Sir Michael Kadoorie
Chairman

Hong Kong, 25 February 2019



Richard Lancaster

Chief Executive Officer Hong Kong,
25 February 2019

About this report

About this report

Welcome to our 2018 Sustainability Report

We are embarking on a journey to become a "Utility of the Future", and in so doing, are increasingly focused on the need to understand and respond to the changes occurring in the energy sector and society more broadly. Change has never happened so fast, nor has it been so transformative. As a result, CLP faces a broader set of opportunities and risks than at any other time since we were founded in 1901. In recognition of this, we have taken a new approach this year by structuring our reporting around the most important environmental, social and governance (ESG) issues facing the company.

These issues were not chosen lightly. From October 2018 to January 2019, we conducted a rigorous materiality assessment to determine the topics most important to our future prospects and the needs and interests of our stakeholders. This process included in-depth analysis of the megatrends relevant to our industry and markets, engaging with a broad range of subject matter experts to gauge their opinions, and hosting a workshop with senior management to identify and prioritise the material topics outlined in this year's report. Of course, sustainability covers a broad range of topics, many of which are important to a business but not material. We therefore continue to disclose our management approach and performance in relation to a large number of these secondary topics in the Standard ESG disclosures section.

We hope this new, focused approach assures stakeholders of our ability to adapt and thrive in a changing operating environment. After all, 2018 was a tumultuous year: financial markets returned to volatility in the face of an escalation in Sino-US tensions, rising US interest rates and Brexit uncertainty; the destructive effects of climate change were increasingly evident; rising social and economic inequality fuelled political populism in many countries; while innovation and technological development continued to disrupt jobs and lives. Amid these complexities and uncertainties, CLP remained focused on what really matters – creating value for our stakeholders over the long-term.

We hope you will like these changes to our report and welcome your feedback through the online survey or via email. As a token of our appreciation, each stakeholder who sends us feedback on or before 30 June 2019 will receive four CLP Carbon Credits, which can be used to offset your carbon footprint.

Materiality assessment

Assessment process

- Review of internal strategy papers and desktop research
- Extensive interviews with internal subject matter experts to gauge their views and that of their stakeholders

- Identification of relevant ESG topics for each megatrend, and summarised for prioritisation

- A workshop with the SEC to reach shared agreement on the material topics

102-46

From 2014–2017, we employed the Boundary Scoping and Materiality Identification (BSMI) methodology to guide our sustainability disclosure. In 2018, we updated our materiality assessment process to focus the discussion of our report on topics that are strategic to our business in the medium- to long-term.

A rigorous and evidence-based process was followed to identify our material topics. This process was guided by the *Applying enterprise risk management to environmental, social and governance-related risks* guidelines published by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) and the World Business Council for Sustainable Development (WBCSD) in October 2018.

The assessment began with a horizon scanning exercise, in which 17 megatrends were identified as potentially relevant to CLP. Following extensive desk-based research, a review of internal strategy papers and a close examination of CLP company policies, we conducted interviews with 38 internal subject matter experts across CLP, representing diverse functions and all our business units. Each of these experts regularly engage a range of CLP stakeholder groups, which helped us better understand their vastly different expectations.

Twelve megatrends sitting under three primary drivers provided us with a clear structure for grouping every topic that was conceivably material to CLP's current and future prospects, and our ability to create, preserve or erode value for stakeholders over time. In November 2018, the CLP Group Sustainability Executive Committee participated in a workshop – and through both a quantitative scoring exercise and deliberation – reached shared agreement on CLP's material topics for this report.

Key drivers and megatrends

Our materiality assessment process started with a megatrends analysis. We define megatrends as "large, transformative global forces that define the future by having a far-reaching impact on business, economies, industries, societies and individuals." A megatrend is distinguished from other trends in that it cannot be stopped or significantly altered, even by powerful actors such as governments.

The rationale for examining megatrends first (as opposed to moving directly into an analysis of material topics), was that the exercise would deepen our understanding of how broad changes in the environment, society, technology and governance were affecting CLP's operating environment. This, in turn, would make it easier for us to identify and prioritise the ESG topics which CLP should be managing and reporting on. Starting with the big picture would also decrease the likelihood of our process overlooking "grey swans" – horizon risks and opportunities that might not be readily apparent.

Guided by this stakeholder feedback and other research, we grouped the 12 most important megatrends under three primary drivers:

- **Climate Change**
- **Industrial revolution 4.0**
- **Demographic change**

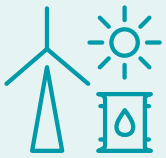
The most important ESG topic for each of these megatrends was identified and shortlisted for senior management's consideration. These topics were:

Climate change mitigation and adaptation

The adverse impacts of climate change are growing in frequency and severity, taxing the resilience of built and natural environments. Stakeholders are increasingly focused on how a business identifies, responds and discloses its mitigation and adaptation efforts.

Demand for renewables

Technological innovation, regulatory incentives, cost efficiencies and growing consumer and industrial demand are increasing the commercial viability of clean energy. Renewables accounted for almost 50 percent of the growth in global power generation in 2017.



Changing energy mix

Governments, cities, institutional investors and energy companies are leading players in the slow but inevitable transition to a lower-carbon global economy. Clean air initiatives, tighter environmental regulations and green finance mechanisms are prompting a range of energy transition pathways.

Evolving energy business models

Decentralisation is increasing consumer options for sourcing and managing energy. As a result, traditional utilities may need to change their business models to respond to the competitive pressures associated with solar PV systems, new storage technologies and microgrids.

Technology as enabler and disrupter

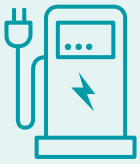
New technologies such as the internet of things, robotics and autonomous vehicles are changing the world faster than ever. Traditional business models are being challenged by new market entrants. But new business opportunities – even whole industries – are also coming into being.

Smart systems

The world is entering the fourth industrial revolution; a computing revolution which has Artificial Intelligence (AI) and machine learning as its cornerstone. Because AI is able to advance exponentially, the Director of Engineering at Google predicts the 21st Century could achieve a thousand times the progress of the 20th Century.

Data privacy and security

An exponential rise in the use of data has increased the scale and severity of successful cyber-attacks. With customers increasingly concerned about how their personal information is protected and used, the financial and reputational cost of a major breach can be significant.



Electrifying transport and energy

Electric vehicles, smart factories and cities, more efficient cooling systems and rapidly rising energy demand in the developing world are spurring the electrification of energy systems.

Changing society

Many developing societies are young and growing, with expanding labour forces and increased consumer spending by millennials. Others, especially in the developed world, are ageing, with negative implications for productivity and government budgets. By 2030, the world will have 43 megacities, most of them in developing regions.

Digitally adept and diverse workforce

Given the pace of changes resulting from the energy transition and digitalisation of the energy sector, the workforce must be agile. In addition, social and demographic changes, combined with increasing competition for STEM skills, are driving the need for an inclusive and sustainable workforce.

Changing role of business

The role of business is changing. Stakeholders increasingly expect organisations to demonstrate how they are creating value for communities and the environment, but not for shareholders alone, and to act ethically in their interactions with governments, suppliers and consumers.

Asian growth

Strategic competition between great powers, an increase in protectionism and the continuing re-invigoration of Asian economies are increasing global uncertainty, opportunities and threats.

Materiality results

102-44, 102-47

During a workshop in November 2018, the Sustainability Executive Committee conducted a prioritisation exercise for the 12 topics outlined above. For each topic, participants considered:

CLP's level of control over management of the topic;

its likelihood to influence the decisions and actions of CLP's stakeholders; and its impact on people, the environment and/or the economy in CLP's markets.

Scores were then tallied and consolidated to prioritise the issues. The Committee decided that some of the material topics presented for discussion could be amalgamated, and made several changes in phrasing. The five material topics agreed upon are discussed in detail in the Building the "Utility of the Future" section.

Materiality Assessment

The purpose of this materiality assessment is to identify and prioritise the environmental, social and governance (ESG) topics that are most important (material) to CLP Group and its stakeholders.

Most Material Topics

- Reinforcing cyber resilience and data protection
- Harnessing the power of technology*
- Responding to climate change**
- Growing our business with purpose
- Building an agile, inclusive and sustainable workforce

Industrial Revolution 4.0

- Cyber security
- Digital innovation
- Artificial intelligence and machine learning
- Electrification

Climate change

- Decarbonisation and climate resilience
- Pace of energy transition
- Decentralised energy
- Rise of renewables

Social and demographic change

- Social licence
- Transitioning workforce
- Demographics
- Shifts in global political and economic power

12 Megatrends

grouped under 3 Primary Drivers

* Includes Evolving energy business models

** Includes Changing energy mix, Decarbonising electricity production and Strengthening resilience

Reporting scope and data verification

102-45

This report covers the CLP Group's sustainability performance for the calendar year ending 31 December 2018. It is published at the same time as our Integrated Annual Report. Our previous report was published in March 2018.

102-48, 102-49

As our business needs evolve, scenarios have arisen where our previously defined reporting scope was not able to fully capture the material impact of our overall portfolio. For example, a fossil fuel power station divested during the year would fall out of our environmental scope, and the generation capacity sourced from the power purchase agreements (PPA) would be out of the carbon emission intensity's scope. To better reflect the material impacts of our portfolio, we have adjusted the reporting scopes of the following data points in 2018:

- **Health and Safety, Environmental:** the scope is expanded to include more assets, i.e. from including those which have been operating for a full calendar year to those which have been operating at some point during the year. As a result, Lingyuan solar farm, which commenced operation in July 2018, is included in the scope and Paguthan, the PPA of which expired in December 2018, is retained. The environmental data of Jeeralang and Newport power stations, acquired in April 2018 by EnergyAustralia, were not included in the 2018 data points, but will be included in the 2019 reporting cycle. Similarly, Tornado solar farm, acquired in November 2018, will report its data starting in 2019. In addition, CLP will start reporting verified environmental data for its Indian wind farms in 2019.
- **Climate Vision 2050:** while we still report on the longstanding equity-based scope, the equity-based scope is added with long-term capacity and energy purchases to reflect more holistically on the developments of our generation capacity from other sources.

See our portfolio changes for the year 2018 〉

- Limited assurance is provided by PricewaterhouseCoopers (PwC) on a selected set of environmental, social and governance-related Key Performance Indicators for this Report in accordance with International Standard on Assurance Engagements 3000 (Revised), ***Assurance Engagements other than Audits or Reviews of Historical Financial Information***, and, in respect of greenhouse gas emissions, International Standard on Assurance Engagements 3410, ***Assurance Engagements on Greenhouse Gas Statements***.

Download the assurance statment 〉

- Below is the definition of the company boundary for each of the main categories of data included in this Report. Please refer to our 2018 Annual Report for more details on the entities included in our consolidated financial statements.

Governance	Includes all people employed by CLP entities or their subsidiaries. It does not include non-CLP employees in our joint ventures, joint operations or associates.
Finance	Selected financial figures are extracted from our Annual Report and the consolidated financial statements of CLP Holdings Limited and its subsidiaries (the Group) in accordance with Hong Kong Financial Reporting Standards (HKFRS) issued by the Hong Kong Institute of Certified Public Accountants (HKICPA). For a detailed description of the financial reporting scope, please refer to the Significant Accounting Policies – Consolidation on pages 218-219 of our 2018 Annual Report.

Employees

Includes all people employed by CLP entities or their subsidiaries (excluding part-time staff unless otherwise specified). It does not include employees of our joint ventures, joint operations, associates or contractors.

Health and Safety

Includes all power assets/ projects, transmission and distribution infrastructure, fuel storage facilities or regional office areas:

- That are majority owned by CLP or under CLP's operational control, defined as full authority to implement CLP's operating policies; and
- That are under construction or in operation at some point during the reporting year.

100 percent of the performance data for in-scope assets is reported without adjustment based on our equity share, unless otherwise stated.

Environment
Resource Use
GHG & Air Emissions
Environmental Compliance

Includes all power assets, transmission and distribution infrastructure or fuel storage facilities:

- That are majority owned by CLP or under CLP's operational control, defined as full authority to implement CLP's operating policies; and
- That have been in operation at some point during the reporting year; and
- That pose material impact to the environment.

100 percent of the performance data for in-scope assets is reported without adjustment based on our equity share, unless otherwise stated.

Climate Vision 2050

Data are consolidated on an equity basis with two variations:

- Equity ownership
  Includes all power generation assets/ projects where CLP has an equity share.
  - Assets are included on an equity ownership basis (i.e. performance data for in-scope assets are reported based on the portion of our shareholding), meaning CLP's operational control over the asset is not considered; and
  - The scope includes all projects (committed / under construction), and assets that were in operation at some point during the reporting year.
- Equity ownership & long-term capacity and energy purchase
  In addition to (1) above, this scope also includes the additional capacity and energy purchased by CLP to meet customer demand where:
  - Purchase agreement duration is at least 5 years; and
  - Capacity or energy purchased is no less than 10MW.

Some statistical data derived from our overseas operations may not be strictly comparable because local and / or regulatory definitions may vary.

CLP Power Hong Kong Carbon Emissions Intensity of Electricity Sold

Includes all power generation assets involved with the delivery of electricity to CLP Power Hong Kong customers, and:

- The total annual CO_2 and CO_2e emissions are from all assets in Hong Kong only (as nuclear power does not result in significant carbon emissions); and
- The GWh is from our Total Electricity Sales for CLPP HK and includes generation from Daya Bay Nuclear Power Station.

Reporting frameworks and content indices

We reference different reporting guidelines and frameworks to ensure our reporting is comprehensive and aligns with international best practices.

GRI

Global Reporting Initiative

- The GRI is an international independent organisation which provides widely-used standards for sustainability reporting.
- This report has been prepared in accordance with GRI Standards: Core option. It also reports on the GRI G4 Electric Utilities Sector Disclosures, which are disclosures which cover key aspects of sustainability performance that are meaningful and relevant to the Electric Utility sector. We have been reporting with reference to the GRI since 2007 and have adopted the GRI Standards for the third year since it was launched in 2016.

Download the GRI Content Index 〉

IIRC

International Integrated Reporting Council

- The IIRC is a global coalition behind the International <IR> Framework, which has become a widely-used guideline for integrated reporting.
- This report applies its guiding principles to illustrate how integrated thinking has been embedded in CLP. In particular, it adopts a forward-looking view and considers the material trends that affect our ability to create value over time.
- CLP's Annual Report has been prepared with reference to this guideline since 2011. This includes incorporating content specified in the Framework and a discussion of how we create value for stakeholders under different capitals (financial capital, manufacturing capital, human capital, social capital, intellectual capital and natural capital).

Hong Kong Stock Exchange ESG Guide

- Companies listed on the Stock Exchange of Hong Kong (HKEx) are now required to meet the "General Disclosure" and Key Performance Indicators (KPIs) in the "Environmental" Subject Area, in a "comply or explain" manner.
- As a Hong Kong listed company, CLP first began reporting in line with the HKEx ESG Reporting Guide in 2012. This report satisfies its "comply or explain" and "recommended disclosures" provisions.

Download the HKEx Content Index 〉

TCFD

Task Force on Climate-related Financial Disclosures

- TCFD develops voluntary, consistent climate-related financial risk disclosure recommendations for use by companies in providing information to investors, lenders, insurers, and other stakeholders. The recommendations consider the physical, liability and transition risks associated with climate change and what constitutes effective financial disclosures across industries.
- TCFD covers four main areas of disclosure: governance, strategy, risk management, and metrics and targets. CLP's climate-related disclosure in these areas has been made available to the market in our Annual and Sustainability Reports, as well as via CDP (formerly Carbon Disclosure Project). We will continue to enhance our disclosure to better align with TCFD in the coming years.

GHG Emissions

- CLP's greenhouse gas (GHG) emissions inventory covers the six greenhouse gases initially specified in the Kyoto Protocol. We have also considered the seventh mandatory gas added under the second Kyoto Protocol compliance period, namely nitrogen trifluoride (NF3), but have deemed it immaterial to our operations.
- Our GHG emissions are reported with reference to: The World Resources Institute (WRI) / World Business Council for Sustainable Development (WBCSD) GHG Protocol, the Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories (2006), and the International Standard for GHG Emissions ISO 14064.
- To facilitate implementation, in 2007, we developed the first version of our Group-wide GHG reporting guideline which referenced the guidelines above. Our reporting guideline is reviewed in accordance with CLP practice at least every three years.

Financial data

All financial data in this report is consistent with the figures published in the audited financial statements of our 2018 Annual Report. These financial statements were prepared in accordance with the Hong Kong Financial Reporting Standards (HKFRS) issued by the Hong Kong Institute of Certified Public Accountants (HKICPA) and the Hong Kong Companies Ordinance.

Our business

Our business

Our Value Chain

CLP Holdings Limited is a publicly held company with a history in the electricity business dating back to 1901. Based in Hong Kong, we also have presence in Mainland China, India, Southeast Asia and Taiwan, and Australia.

Our core business is to provide energy for customers reliably at a competitive price, with the least impact on the environment, while delivering positive impacts to the communities in which we operate.

As a Group, our main focus is on electricity services and our products span the entire value chain from power generation to transmission and local distribution, to gas and electricity retail services supported by smart energy services. In our diverse markets we play different roles across the electricity value chain, depending on local circumstances and market characteristics.

Much of our business outside Hong Kong lies in the production of electricity, and all of our business units own sizable generation assets. Our generation fleet has a balanced portfolio consisting of coal, gas, nuclear, wind, hydro and solar power facilities. This diverse range of generation assets and power services helps us deliver reliable, competitively priced and sustainable electricity supply in all our markets. Our portfolio also contains flexible generation assets to manage intermittent and peak demand as well as storage solutions that enable system balancing and the deployment of additional renewable resources.

Through our retail businesses in Hong Kong and Australia, we serve both commercial and residential customers. Our wholesale customers include grid companies in Mainland China and electricity distribution companies and intermediaries in India, which purchase power directly from our generating assets.

Electrification and digitisation are changing the electric utilities industry. To capture the opportunities they present, we are also exploring various energy services such as battery storage, smart meters and other digital energy management solutions.

We procure, operate, sell and engage responsibly throughout our value chain in line with our commitment to transparency and sustainability. A significant share of our third-party spending is with local suppliers, which has the mutually reinforcing benefit of supporting both the communities in which we operate and our own business needs.

Asset Map

CLP is headquartered in Hong Kong where we are listed on the Hong Kong Stock Exchange. Hong Kong is also where our largest business operates under the brand of "CLP Power Hong Kong". We have additional business units in Mainland China, India (under the brand of "CLP India"), Southeast Asia, Taiwan and Australia (under the brand of "EnergyAustralia").

As of 31 December 2018, we had 7,634 full-time employees and a market capitalisation of HK$224 billion. Our revenue in 2018 amounted to HK$91,425 million. The electricity sent out from our assets was 92,333 GWh (on an equity plus long-term capacity and energy purchase basis).

Find out more about our assets and services

Portfolio changes

Under our Climate Vision 2050, we are committed to growing our investment in non-carbon emitting energy projects across the Group. We continue to make significant progress. In 2018, contributions from the non-carbon emitting portfolio increased to HK$2,687 million and represented 19.2% of the Group operating earnings. Major portfolio changes for 2018 are shown below.

To provide an indication of whether our significant investment agreements and contracts include human rights clauses, CLP reports the percentage of funding for all non-recourse financing and refinancing provided by banks which have adopted the Equator Principles – a widely adopted framework for determining, assessing and managing environmental and social risk. In 2018, around 40 percent of this funding came from banks which have adopted the Equator Principles, compared to around 60 percent of funding in 2017. The financing in 2017 by CLP Holdings for Yangjiang investment and CAPCO for construction of combined cycle gas turbine were executed mostly with banks adopting the Equator Principles, but with lower borrowing requirements in 2018 this percentage was reduced.

Mainland China

An overview of our main asset portfolio changes this year

- commissioning of a fifth generating unit at the 6,516 MW Yangjiang nuclear plant (1,108 equity MW) in Guangdong Province in July 2018 (four units were in commercial operation before July);
- purchase of the remaining 49 percent of the Jinchang solar plant (85 equity MW) in Gansu Province from our partner in May 2018;
- completed construction of the CLP-owned and operated CLP Laizhou II wind project (49.5MW equity MW) in Shandong Province in November 2018;
- obtained project approval from statutory bodies to construct the Laiwu III wind project;
- commencement of commercial operations at the Lingyuan solar plant (17 equity MW) in Liaoning Province in July 2018; and
- ceasing of operations at Shenmu Power Station (108 equity MW) in February 2018.

India

An overview of our main asset portfolio changes this year

- CLP Group introduced Caisse de dépôt et placement du Québec (CDPQ) as a strategic 40 percent shareholder of CLP India Private Limited (CLP India), deal completed on 28 December 2018;
- commissioning of Veltoor (49 equity MW) in February 2018;
- addition of two new solar farms after acquiring the Tornado project (12 equity MW) and the acquisition of a 49 percent stake in the Gale project (15 equity MW) from our long-term partner Suzlon in November 2018; and
- expiration of Paguthan Power Station's Power Purchase Agreement in December 2018.

Australia

An overview of our main asset portfolio changes this year

- acquisition of Ecogen in April 2018, which included the Newport (500MW) and Jeeralang (440MW) gas-fired power stations
- EnergyAustralia completed a programme to help financially underpin the development of 500MW of renewable generation capacity to support new wind and solar farms in eastern Australia. The long-term purchase arrangements will help meet our obligations under the Australian Government's Renewable Energy Target, which requires retailers to have 23.5 percent of total energy in the national electricity market provided by renewable sources by 2020.

Key sustainability ratings

Dow Jones Sustainability Asia Pacific Index

The DJSI is a globally recognised index which includes companies from a wide spectrum of industries. Inclusion in DJSI is based on a company's score in the Robeco Sustainability Assessment Methodology. CLP has been a constituent of the Dow Jones Sustainability Asia Pacific Index (DJSI Asia Pacific) and Dow Jones Sustainability Asia Pacific 40 Index (DJSI Asia Pacific 40) since the launch of both indices in 2009.

	2018*	2017	2016
Company score	69	70	73
Electric utilities industry average score	46	50	52
Asia-Pacific average score	60	67	68

* The introduction of a revised scoring methodologvy means the result cannot be compared directly with that of the previous year.

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

Hang Seng Corporate Sustainability Index

The Hang Seng Corporate Sustainability Index helps us better understand our sustainability performance relative to other Hong Kong and Mainland Chinese companies listed on the Stock Exchange of Hong Kong. CLP has been listed on the Hang Seng Corporate Sustainability Index and Hang Seng (Mainland China and Hong Kong) Corporate Sustainability Index since their inception in 2010. HKQAA conducts the assessment and provides a rating for assessed companies.

	2018	2017	2016
HKQAA Rating	AA-	A+	AA

Hang Seng Corporate Sustainability Index Series Member 2018-2019

FTSE4Good

The FTSE4Good Index Series is designed to measure the performance of companies demonstrating strong Environmental, Social and Governance (ESG) practices. CLP was included in the FTSE4Good Index in June 2018.

	2018	2017	2016
Overall scores	4.0	3.3	3.3

MSCI ESG Leaders Indexes

CLP has been included in the MSCI ESG Leaders Indexes (previously MSCI Global Sustainability Indexes) since 2015. We are encouraged to see our sustainability efforts recognised by an improved score in 2018.

	2018	2017	2016
HKQAA Rating	AA	A	A

CDP

CDP, formerly Carbon Disclosure Project, runs a global disclosure system for companies, cities, states and regions to measure and manage their environmental impacts. We have provided data for CDP – Climate Change since its launch in 2002, and currently disclose through the Climate Change and Water initiatives.

	2018*	2017*	2016
CDP Climate	B	B	A-
CDP Water	B-	A-	B

* The introduction of a revised questionnaire and scoring methodology means the result cannot be compared directly with that of the previous year.

Key ESG Awards

We are encouraged by the awards and recognition we received during the year. They serve to remind us of the growing public expectations on our businesses.

Best Corporate Governance Awards – Sustainability and Social Responsibility Reporting Award

Hong Kong Institute of Certified Public Accountants

For the eighth successive year, CLP received a Sustainability and Social Responsibility Reporting Award in the Best Corporate Governance Awards presented by the Hong Kong Institute of Certified Public Accountants.

BDO ESG Awards

BDO

CLP won the ESG Report of the Year, Best in ESG and Best in Reporting awards in the Large Market Capitalisation category.

Sustainability Reporting Award

The Hong Kong Management Association

CLP was bestowed with The Hong Kong Management Association's Sustainability Reporting Award in the general category for the seventh successive year since the award was introduced in 2012.

Best Risk Management Solution – Overall Winner

Adam Smith Awards Asia

CLP won the award after having successfully implemented a comprehensive risk management oversight complemented by effective solutions.

Our approach to sustainability

Our approach to sustainability

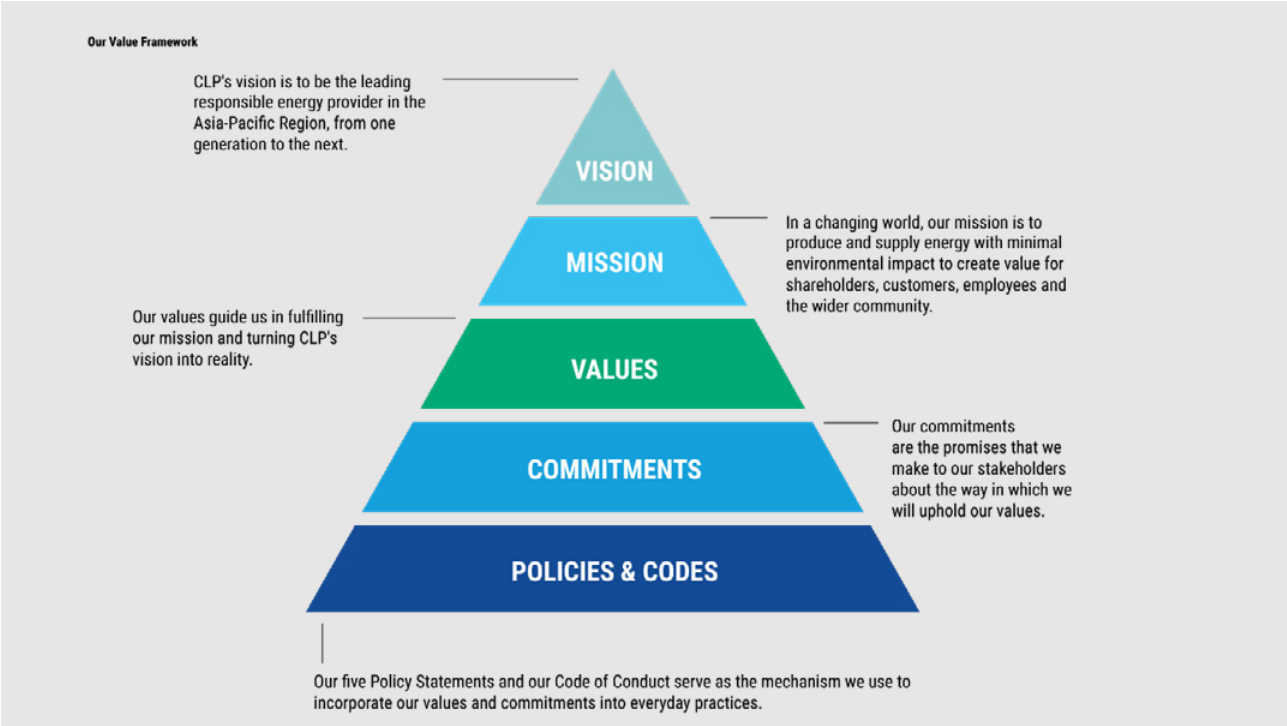
Our Value Framework

Our Value Framework reflects the moral compass of the company, articulating our values, as well as our vision, mission and commitments to stakeholders.

Our vision is to be the leading responsible energy provider in the Asia-Pacific region, from one generation to the next. Our mission is to produce and supply energy with minimal environmental impact to create value for shareholders, customers, employees and the wider community in the context of a changing world. This vision and mission, together with our values and the commitments we make to our stakeholders, demonstrate why sustainability is at the heart of our business.

Holding true to a set of principles is particularly important in a fast-changing operating environment, because it helps us navigate an ethical way forward, even when rules or precedents to establish best practice do not yet exist. When making any business decision, we are guided by 'doing the right thing'. This simple idea has underwritten the growth of our business for more than a century by allowing us to establish mutually beneficial relationships with our stakeholders. It has also helped us avoid the unnecessary risks that arise from business decisions that focus only on short term profits. The following remains universally true: conducting business in a socially and environmentally responsible way is not just an ethical obligation – it is good for business.

See our Value Framework and Code of Conduct ❯



Sustainable Development Goals

In 2015, inspired by the announcement of the United Nations Sustainable Development Goals (SDGs), we developed principles to help guide us in our activities and to better align our business objectives with value creation. Our Sustainability Principles are consistent with our Value Framework and cover four focus areas: community, people, environment and economic sustainability.

In 2016, we mapped priority SDGs across our sustainability principles, and in 2017, based on further deliberation by the Sustainability Executive Committee and the Sustainability Committee, we committed to setting and reporting on the four SDGs we consider most relevant to CLP and on which we can make a significant impact. These goals are also aligned with the four focus areas under our Sustainability Principles.

CLP's Priorities & some relevant SDGs mapped on to our Sustainability Focus Areas

SDG 13 – Climate Action

SDG 7 – Affordable & Clean Energy

Climate Vision 2050, launched in 2007, is evidence of our practical commitment to tackling climate change. In 2018, we announced we were once again updating our decarbonisation targets. The details of how targets are set and our progress in decarbonising our portfolio is described in the Climate Vision 2050 section below.

Targets include:

- Decarbonisation targets: a set of decadal carbon intensity reduction targets spanning out to 2050, contributing to SDG 13; and
- Clean energy targets: renewable and non-carbon emitting capacity targets for 2020 and 2030, contributing to SDG 7.

SDG 8 – Decent Work & Economic Growth

SDG 8 makes specific reference to equal pay for work of equal value, which is a target we have set internally to support our gender diversity initiatives. We have also developed a set of targets to help widen the pipeline of female employees to support our future business strategy. Report on progress in this area can be found in the *Building an agile, inclusive and sustainable workforce* section.

Targets include:

- A Women in Leadership (WIL) target: achieve gender balance in leadership positions by 2030 compared to a 2016 baseline of 22 percent;
- A Women in Engineering (WIE) target: 30 percent of engineers to be female by 2030 compared to a 2016 baseline of 9 percent;
- and ensuring equal pay for work of equal value is maintained in all our businesses, any gender pay equity gap is eliminated, and that CLP meets all relevant local compliance and disclosure standards.

SDG 9 – Industry, Innovation & Infrastructure

As outlined in the sections *Harnessing the power of technology* and *Reinforcing cyber resilience and data protection*, the electric utilities sector is undergoing rapid change. We see an important role for CLP in building resilient infrastructure and fostering innovation, in line with SDG 9. We acknowledge the need to set ourselves targets to monitor our progress with respect to innovation and how we intend to create value for the communities in which we operate. As reported in previous years, we established a Group Innovation team in 2016, and remain committed to develop relevant metrics and targets to measure our progress in support of SDG 9.

Climate Vision 2050

Climate Vision 2050 is our commitment to support the transition towards a sustainable, low carbon future and guides our strategy to manage climate-related risks and opportunities. The associated targets are integrated into strategic decision-making for our asset portfolio management, including acquisitions and divestments, write-downs and asset impairments.

Our targets

Climate Vision 2050 sets out a series of decadal targets from 2010 to 2050 compared to 2007 levels. The targets consist of two types:

- **Decarbonisation targets**
  - Measures the carbon emissions intensity ($kgCO_2/kWh$) of our generation capacity based on equity plus long-term capacity and energy purchase basis. Emissions are calculated in line with the Greenhouse Gas Protocol.
  - A decarbonisation target of 0.15 $kgCO_2/kWh$ in 2050 is our cornerstone target, supported by interim targets in 2020 (0.60 $kgCO_2/kWh$), 2030 (0.50 $kgCO_2/kWh$) and 2040 (0.34 $kgCO_2/kWh$).
- **Clean energy targets**
  - Measures the renewable and non-carbon emitting share (percentage) of our generation portfolio.
  - This includes renewable energy and non-carbon (including nuclear) emitting shares of our generation capacity, set for the year 2020 (20 percent renewable, 30 percent non-carbon) and 2030 (30 percent renewable, 40 percent non-carbon).

These key metrics help us track how our electricity generation portfolio has evolved over the years and provides guidance on how our business strategy will need to transform over the coming decades. The carbon intensity metric also provides an indication of the financial risk associated with climate change; an area of disclosure we will continue to improve in line with the recommendations outlined by the Task Force for Climate-related Financial Disclosure (TCFD). Our clean energy targets indicate how well we are capitalising on low carbon investment opportunities. The targets guide our investment pipeline by helping us focus on high quality renewable energy resources as well as nuclear investments with credible, trusted partners.

Our decarbonisation journey

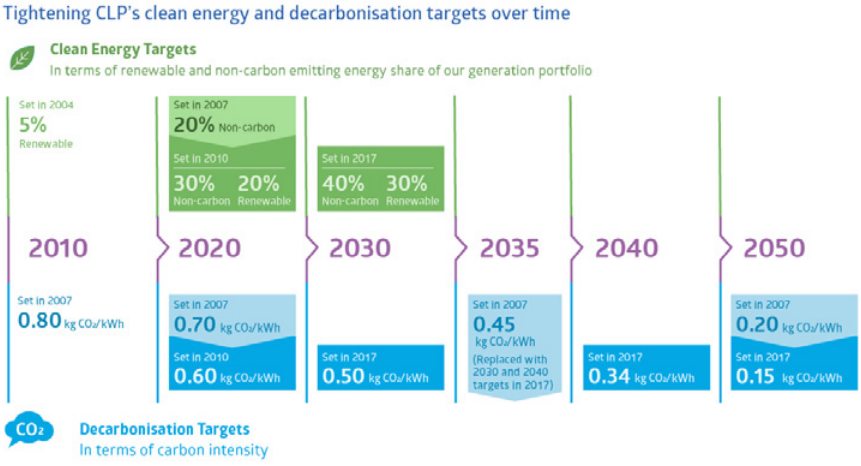
Our climate change journey began back in 2004, when we published our first renewable energy target of 5 percent by 2010. Since 2007, we have established different targets and metrics to facilitate our energy transition to the year 2050. In line with changing policy drivers and the implementation of new technologies, we reviewed and updated our decarbonisation targets and clean energy targets in 2010 and 2017 (publicly announced in 2018). The timeline below captures how these targets have been tightened over time.

In the last review, we have adopted the equity plus long-term capacity and energy purchase as the basis of our targets. Hence, we have re-calibrated our decarbonisation target reductions to reflect this revised basis, meaning that our updated trajectory now aims for a reduction in carbon intensity of 20 percent by 2020, 33 percent in 2030, 55 percent by 2040, and 80 percent by 2050. Our ambitious clean energy targets to have non-carbon emitting generation at 40 percent by 2030 and renewable energy capacity at 30 percent by 2030 remains unchanged. We are on track to reach our decarbonisation targets but reaching our clean energy targets in 2020 will be challenging.

Further details on how we have tightened our targets over the years and how we intend to meet our commitments to 2050 is described in our upcoming Climate Vision 2050 publication. Importantly, our decarbonisation journey does not stop here. We have recently committed to reviewing our targets at least every five years.

Find out our progress towards these targets ›

Tightening CLP's clean energy and decarbonisation targets over time



Sustainability governance

Board Oversight

A strong governance framework is key to ensuring the sustainability issues that CLP faces are incorporated into our corporate agenda. To ensure senior management oversight of crucial ESG issues, sustainability governance is integrated into corporate governance structures throughout the Group – from board-level committees to management-level group functions and business units.

Our highest governance body is the CLP Board, which discharges some of its responsibilities by delegating to six board-level committees. As a result, the Sustainability Committee and the Audit & Risk Committee have primary roles in overseeing the management of the Group's sustainability issues.

Sustainability Committee

The Sustainability Committee oversees our positions and practices on sustainability issues, principally in relation to social, environmental and ethical matters that affect shareholders and other key stakeholders. Chaired by the CEO, it is the highest governance body charged with oversight on our ESG performance. The Committee meets no less than two times a year.

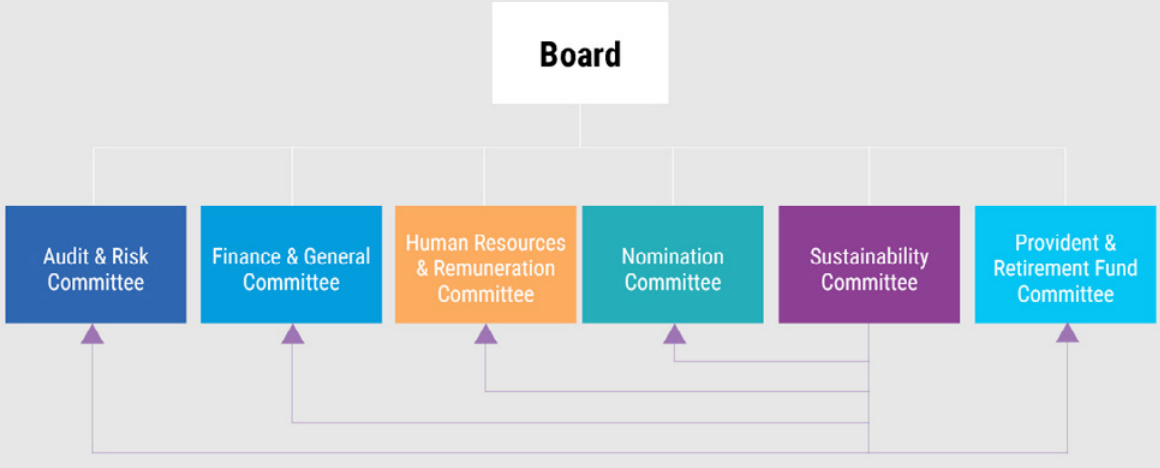
The Committee's primary responsibilities include:

- reviewing, endorsing and reporting to the Board on CLP's sustainability frameworks, standards, priorities and goals, and overseeing Group-level strategies, policies and practices on sustainability matters to attain those standards and goals;
- reviewing and reporting to relevant board committees on key international sustainability trends, benchmarking against peers, sustainability risks and opportunities and other emerging issues, benchmarking against peers;
- overseeing, reviewing and evaluating CLP Group's sustainability performance in terms of internationally-recognised metrics, as well as the requirements of sustainability stock indices and the desirability of CLP's inclusion in those indices;
- reviewing and advising the Board on CLP's public reporting with regard to its performance on sustainability matters; and
- overseeing our community, charitable and environmental partnerships, strategies and related group-level policies, and making recommendations to the Board on any changes to those partnerships, strategies and policies.

The Terms of Reference of the Sustainability Committee are available here.

The full report on the Sustainability Committee's activities for 2018 is available in our Annual Report.

Role of the Sustainability Committee



Audit & Risk Committee

A key responsibility of the Audit & Risk Committee is to maintain oversight of CLP's risk management process, including by ensuring that adequate risk management and internal control systems are in place and followed. Risks are managed at both the strategic and operational levels to support the long-term sustainability of our growth objectives, while at the same time supporting the operational needs of the current business.

With respect to sustainability issues, the Audit & Risk Committee is responsible for ensuring that data in the Sustainability Report is appropriate, including assurance of the accuracy of our metrics and reporting. Our financial auditor is also responsible for assuring key ESG data, and their findings and observations are presented to senior management and the Board through the Audit & Risk Committee.

The Terms of Reference of the Audit and Risk Committee are available here.

The Audit and Risk Committee Report for 2018 is available here.

Read about our Corporate governance ›

Management Roles

The Sustainability Executive Committee (SEC) and Group Sustainability Department (GSD) have the strategic and operational responsibility to assess and manage sustainability issues.

Sustainability Executive Committee

The Sustainability Executive Committee (SEC) is chaired by the CEO as part of his executive level responsibility for economic, environmental and social matters. Set up in 2016, it comprises of the corporate senior management team:

- Mr Richard Lancaster (Chief Executive Offer), Chairman, also Chairman of the Sustainability Committee
- Ms Quince Chong (Chief Corporate Development Officer), also a member of the Sustainability Committee
- Mr Geert Peeters (Chief Financial Officer)
- Mr Derek Parkin (Chief Operating Officer)
- Mr David Simmonds (Group General Counsel & Chief Administrative Officer)
- Mr Roy Massey (Chief Human Resources Officer)

Full biographies of the members are set out on the Group's website. ›

The SEC steers the sustainability strategy of the Group and approves relevant deliverables. The Committee convenes four to six times a year, including before each Sustainability Committee meetings and when otherwise required to develop or initiate strategic sustainability projects. SEC meetings provide a platform for the executive team to shape and receive progress updates on current projects and to engage in strategic discussions on emerging issues. Meetings are facilitated by CLP's Director – Group Sustainability.

Key themes discussed in 2018 included:

- the integration of ESG-related risks into our Enterprise Risk Management strategy;
- climate change-related risks and opportunities, including Climate Vision 2050 and our response to the TCFD recommendations;
- performance on key sustainability indices and how benchmarking results can drive improvements in operational performance;
- preparation and development of the Sustainability Report, including a materiality assessment, reporting standards and the assurance of key metrics.

Our CEO and CFO also hold management responsibilities for the assurance of our ESG data, including by jointly signing off the General Representation Letter connected with the assurance process.

Group Sustainability Department

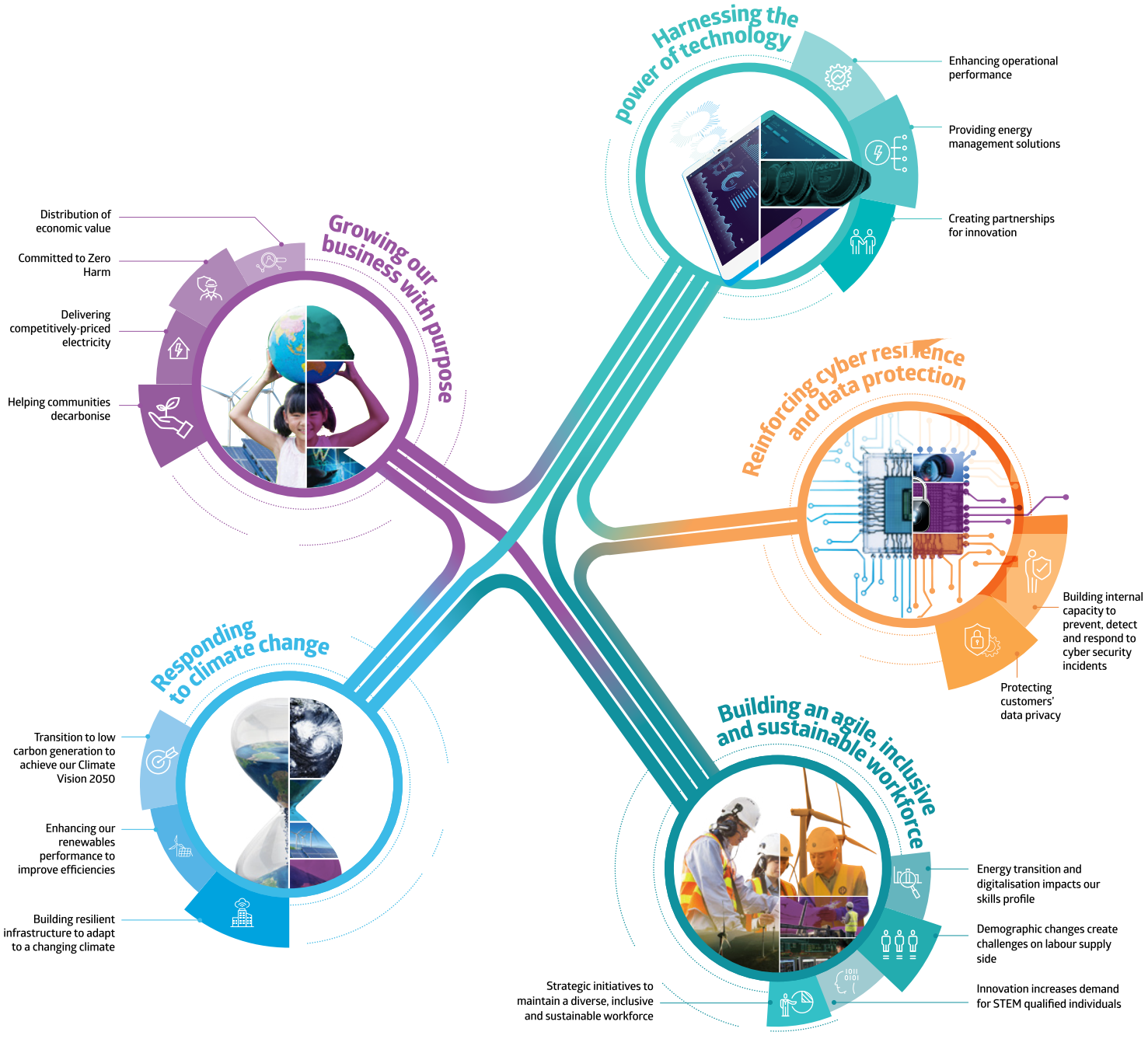
The Group Sustainability Department (GSD) is led by Director – Group Sustainability and delivers regular reports to, and seeks guidance from, the SEC and Sustainability Committee.

GSD aims to embed sustainability into our existing processes and systems by informing the development of our business strategy and planning processes. The department monitors sustainability issues and informs the SEC and Sustainability Committee of emerging risks and opportunities. It leads corporate reporting on sustainability and facilitates identifying improvement areas for our operational performance. GSD also manages the Group's climate change strategy, including reporting our progress on Climate Vision 2050 and TCFD implementation.

GSD is also tasked with developing capacity within the organisation to better manage emerging sustainability risks and opportunities material to our business. It communicates and works closely with other Group functions and business units via the Group Sustainability Forum; a quarterly meeting to share experiences in operationalising sustainability across the Group and to communicate CLP's sustainability strategy internally.

Building the "Utility of the Future"

Building the "Utility of the Future"



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From a humble local company providing electricity services to the Kowloon peninsula of Hong Kong, we now have operations across the Asia-Pacific region. To ensure our long-term success, we need to remain competitive in a global business environment which is rapidly changing. Through the materiality exercise conducted in the 4th quarter of 2018, we have identified and prioritised five topics we consider most likely to impact our business in the medium to long term. These topics are often closely interlinked:

- Our purpose is to power social and economic development by providing energy in a reliable, safe, competitively priced and environmentally sustainable manner. We seek to do so in a manner that creates value for all our stakeholders including by being a responsible employer, collaborating with responsible partners, investing in the communities where we have a presence, and working together with our customers and regulators to address global challenges such as climate change.
- Climate change presents a potentially existential risk to both our modern way of life and the health of the planet, such that solving the challenge will require a coordinated global effort. While electric utilities have historically used thermal generation to run their operations, the industry is already on track to decarbonise. CLP is at the forefront of the industry response to addressing the enormous challenges associated with climate change. We aim to do the right things for the planet and the communities in which we operate while keeping our business sustainable to power economic growth. While many commentators focus on the time and expense associated with decarbonisation, we view the reframing of how traditional utilities deliver electricity to customers as a chance to strengthen our competitive advantage and future-proof our business. For instance, integrating low-cost, more commercially viable and (increasingly) reliable renewable energy into our supply mix is a central tenet of our plan to build a utility of the future.
- Capitalising on the opportunities that digitalisation presents is the other key component of our future-oriented business strategy. Innovations that seemed like science fiction a decade ago – including the internet of things and self-learning algorithms trained by big data – are helping us decarbonise our portfolio faster than ever. New technologies associated with decentralised energy and battery storage are also posing challenges to the traditional, asset-heavy business model of our industry. We have chosen to embrace the opportunities inherent within this disruption, and look forward to continually refreshing our operations, products and services to capture the latest in innovation, efficiency and customer convenience.
- Of course, an increasingly digitalised world has led to heightened cyber security risk, whether in relation to the operational technology (OT) we need to operate our plants and systems, or the information technology (IT) we deploy to serve our customers. We are fully aware that any cyber-attack or data leakage would greatly damage the trust that our communities have long placed in us, and we continue to work diligently to protect our assets and keep the private information of our customers safe.
- Finally, our business strategy is only relevant if we can implement it. In light of all the changes and technological advancements described above, we need a workforce with the skills, mindset and agility to thrive in an ever-changing operating environment. To maintain our strong local and international recruitment brand, we must meet the expectations from our stakeholders of being a business with purpose.

In the following sections, we will discuss how these changes relate to our value proposition as a company, and how we are seeking to address them.

For a discussion of how we make use of different capitals to address the challenges and opportunities outlined above, please refer to the Capitals section in our Annual Report.

Growing our business with purpose

Why this matters | How we're responding

Why is this material?

Milton Friedman's idea that "the business of business is business" dominated much of 20th century thinking about capitalism and markets. Although it is undeniable that businesses have been pivotal in driving economic growth and social development since at least the Industrial Revolution, expectations on the role of business in society are changing. Companies are increasingly expected to create value not only for shareholders, but also for communities and the environment.

Millennials are often portrayed as having different values and aspirations from previous generations and a large number of reputable quantitative studies seems to bear this out. They now make up a larger proportion of the workforce, and their purchasing and investment power will continue to increase. As the largest generation in history commanding a growing slice of the global economic pie, companies cannot afford to ignore their expectations. For instance, millennials routinely place a greater weighting on purpose compared to material well-being, and when they seek employment opportunities or make purchasing decisions, they often prioritise companies whose values align with their own.

Investors are also increasingly aware of the importance of considering environment, social and governance issues. As of April 2018, there were almost 2,000 signatories to the UN Principles for Responsible Investment (PRI), collectively controlling US$80 trillion under management. In 2019, for the second year in a row, Larry Fink, the CEO of BlackRock, stressed the importance of purpose in his annual letter to CEOs, arguing it was "a company's fundamental reason for being".

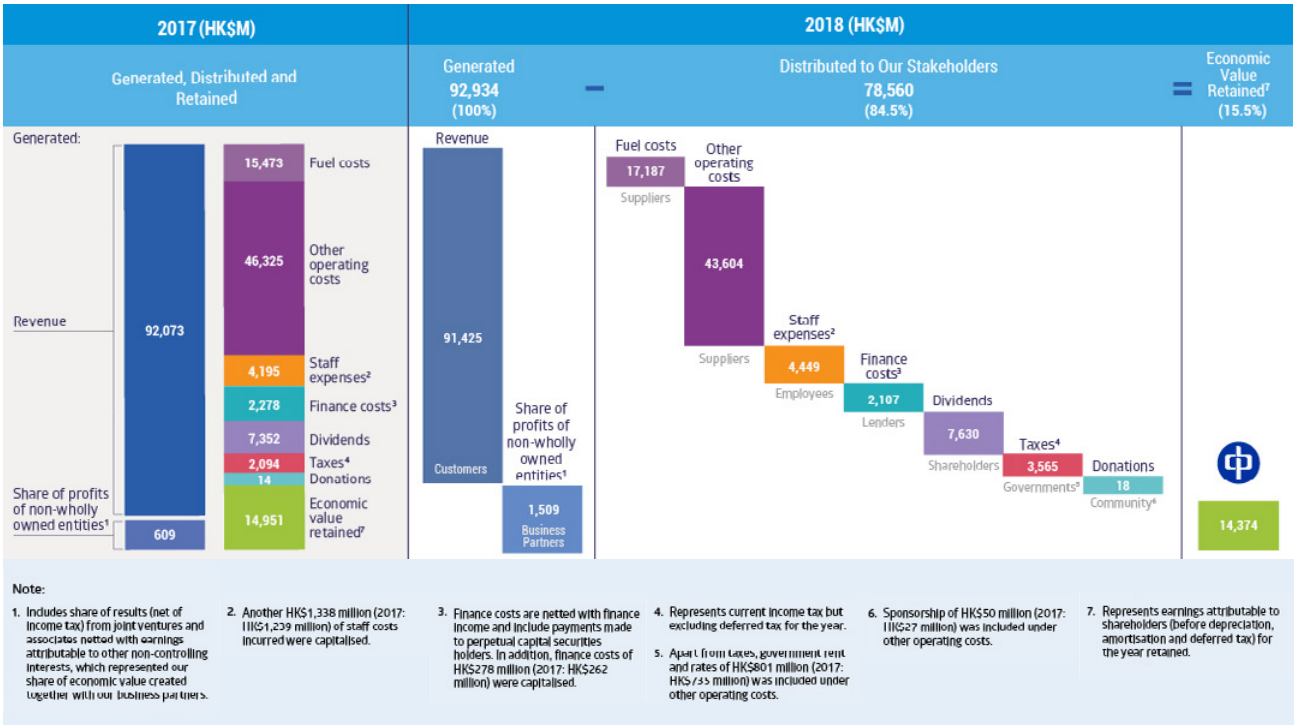
The United Nations Sustainable Development Goals (SDGs) are an important expression of the global appetite for socially inclusive and environmentally-minded growth. The goals call on governments, businesses and the non-for-profit sector to work together to end extreme poverty, fight inequality and protect our planet. Companies around the world are increasingly referencing the SDGs in their strategy and reporting, including by mapping their material issues against the SDGs they feel they can most meaningfully contribute to.

What this means for CLP

At CLP, our relationship with the communities we serve is much more than a business transaction. By providing reliable, safe, competitively priced and clean electricity to our customers in the Asia-Pacific, we are proud to support – directly and indirectly – the development of the world's fastest growing region. In essence, we are providing a service that is fundamental to modern life.

In the Responding to climate change section, you will read about our climate change mitigation and adaptation efforts, and how we are helping our customers decarbonise. At the local, regional and global level, we are mindful of the need for more strategic collaboration to decarbonise the energy sector. As a result, our engagement with peers as well as governments and regulators will be crucial to building a low carbon energy sector in future.

Our success is measured in the long term, and we cannot thrive in isolation to our community. In 2018, 84.5 percent of the economic value we generated was distributed back to our stakeholders. As previously mentioned, we are also doing our part in the concerted global effort to tackle some of the most pressing issues of our time. In this context, in 2017, we prioritised four SDGs which we believe to be most relevant to our business and on which we can make a significant impact.



Our Zero Harm vision

CLP is committed to ensuring all our activities and operations result in Zero Harm for our employees, contractors, customers and the public. We strive to deliver the highest standards at every level of our operations and to continually improve our safety performance.

We were deeply saddened by two fatal incidents resulting in the death of two workers in Australia in 2018 – one employee and one contractor. Incidents such as these have a profound and lasting effect on all of us. This is why safety remains an absolute priority at CLP. They are also a tragic reminder that we must be forever vigilant in our efforts to protect the safety of everyone associated with our business.

Following any incident with the potential to cause serious injuries – as well as any incident where serious injuries occur – we conduct a thorough investigation to look into the root causes. A review of our safety standards and procedures also follows, and is used to inform future Health Safety Security and Environment (HSSE) policies. For fatal incident investigations, the Group Chief Operating Officer and regional Managing Director review the report to ensure that recommendations are implemented to avoid reoccurrence. Our strategy is to focus increasing attention on those activities which include the potential for causing harm and to eliminate risks where possible. We are also committed to understanding how behaviour drives safety performance and continue to support behavioural-safety observation programmes in each region.

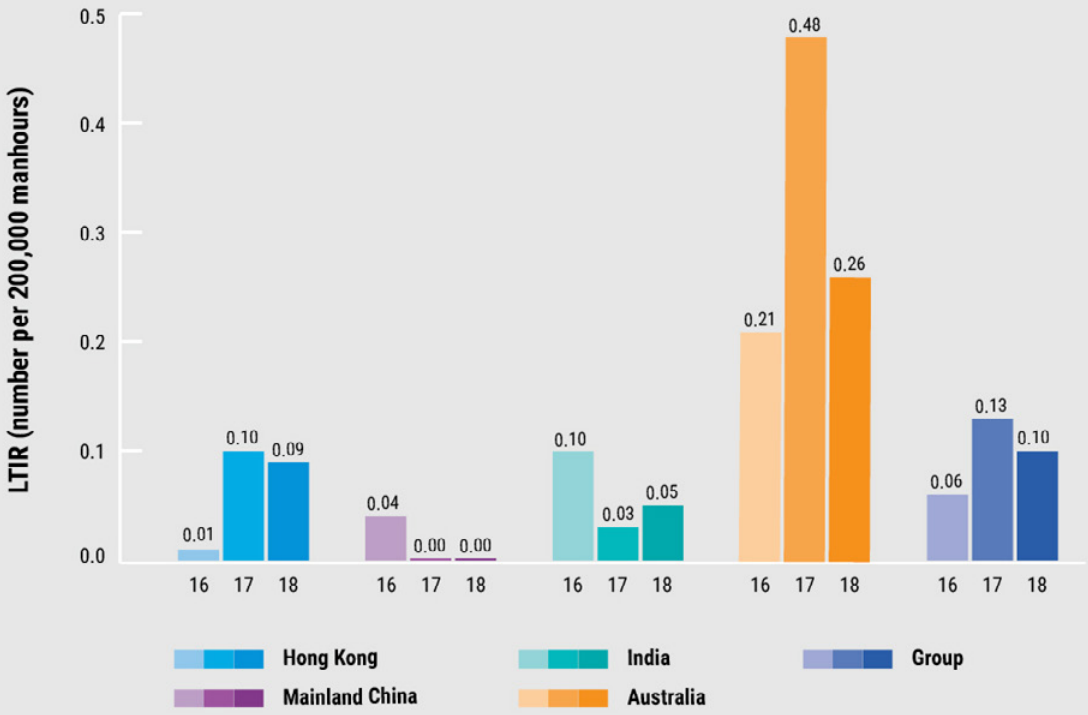
To refocus our efforts, we have formulated a new Group-wide Health, Safety and Environment (HSE) Improvement Strategy in 2018, which served as a basis for each region to develop its own action plan for delivery in 2019. This Strategy is being implemented with a sense of urgency and aims to take us towards our Zero Harm vision, underpinning the need for increased vigilance, proactivity and rethinking of risk management. These values will support the step-change in HSE management required by this Strategy. The Improvement Strategy was developed following a "landscape survey" completed by the Group HSE team, covering seven areas across both Group and the regions.

We are encouraged to see that our injury rates have declined by more than a third in the past four years and this year saw a slight reduction compared to 2017. Our performance as measured in Lost Time Injury Rate (LTIR) and Total Recordable Injury Rate (TRIR) is outlined below. Minor injuries such as hand injuries and sprains continue to make up the majority of our injury statistics. However, the number of fatal incidents has plateaued in recent years.

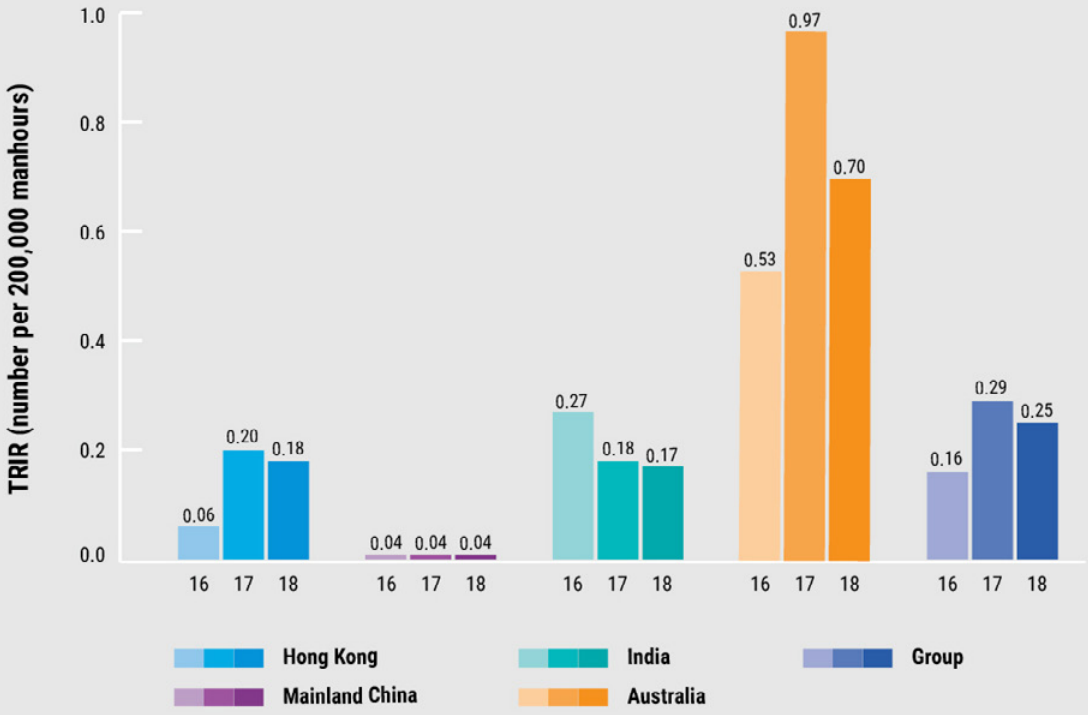
The quarterly HSSE risk review provides a standardised approach regularly reviewing how each of our assets and regions addresses safety risks.

Find out more in the Safety section 〉

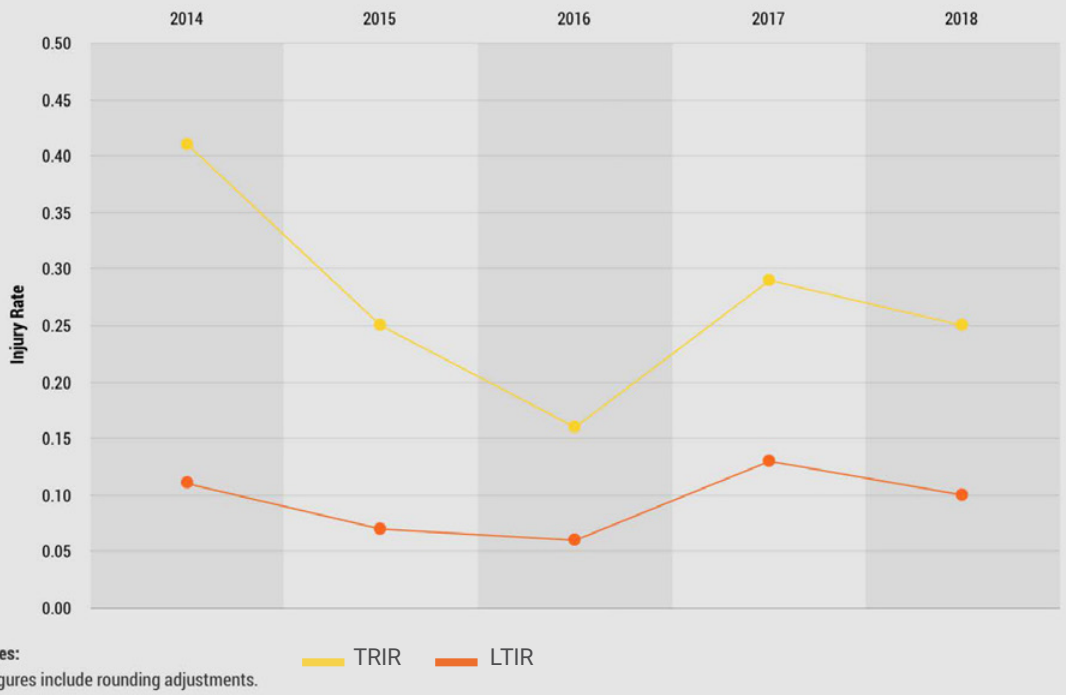
Lost Time Injury Rate at Group and Regional Level



Total Recordable Injury Rate at Group and Regional Level



Group Lost Time Injury Rate and Total Recordable Injury Rate



Notes:
[1] Figures include rounding adjustments.

	2018	2017	2016	2015	2014
Lost Time Injury Rate (LTIR)	0.10	0.13	0.06	0.07	0.11
Total Recordable Injury Rate (TRIR)	0.25	0.29	0.16	0.25	0.41

Embedding ESG performance into remuneration considerations

In assessing organisational performance, which directly affects the remuneration of senior management as well as our employees, the Human Resources and Remuneration Committee (HR&RC) takes into account not only what was achieved from a financial and operational perspective, but also how we achieved our performance from the safety, environmental and governance perspectives. Specific safety measures include fatalities, lost time injury rate and total recordable injury rate.

In addition, the HR&RC also sets a number of specific objectives each year reflecting the strategic priorities of the Group. In 2018, one of those objectives was to review safety culture, practices and processes, and address safety performance issues, with particular emphasis on contractors.

Other operational aspects considered include environment and internal control.

Find out more from the HR&RC Report ❯

Delivering competitively-priced electricity

Over the years, we have developed and invested in a wide range of initiatives to serve our communities. We understand that although our tariff level in Hong Kong is reasonable and competitive when compared to other major metropolitan cities around the world, it could potentially act as a financial burden to vulnerable groups. To ensure our customers have access to electricity, we deliver programmes to assist those in need.

In Hong Kong, CLP Power offers concessionary tariffs for the elderly who receive Comprehensive Social Security Assistance. Special arrangements for customers in arrears are also in place, including programmes to help those at risk of supply disconnection. Payment deferral or interest free payments by instalment are offered in demonstrated cases of hardship.

Our flagship programme Power Your Love was launched in 2015 and was the first of its kind in the world. It combines energy saving with a mission to help the less fortunate in society. Residential customers are encouraged to save energy, and the conserved units of electricity will be "transferred" to households in need to offset their energy bills. In the past four years, over 650,000 residential customers have taken part in the programme, saving a total of around 32GWh of electricity, which is enough to power 7,300 households for a year. Each year, the programme has helped relieve electricity cost of around 20,000 underprivileged households including elderlies, disabled people, the families of boarders in special schools and subdivided unit households. CLP Power also provides free energy efficient appliances to eligible households.

In 2019, with public support for Power Your Love, we are launching Power Connect under the new Scheme of Control Agreement. The new initiative also aims to save energy and help people in need, so as to further encourage energy saving and caring. It will be a year-round programme, and will introduce more elements in daily life to encourage participation and support more underprivileged households.

In Australia, the 'EnergyAssist' hardship programme helps our customers by offering tailored payment plans, payment matching and debt waivers. Customers may also be referred to external community organisations such as financial counsellors. We monitor the number of customers in the programme, their debt levels and how many successfully complete it. In late 2018, we began a study to measure the social impact of the programme, the results of which will guide our thinking in the future. Our Financial Inclusion Action Plan (FIAP) sets out a programme of activities and public commitments to improve financial inclusion within the community and will be completed in early 2019.

In 2018 EnergyAustralia committed to invest more than A$70 million in initiatives to ease pressure on household energy bills. Rates have been held flat or reduced, and business processes have been introduced to ensure our most vulnerable customers benefit from automatic discounts and our best in-market offers.

In addition, we have a range of other community initiatives focusing on four pillars: Environment, Education and Development, Community Wellbeing, and Arts and Culture.

Read more about our community initiatives 〉

Helping our communities decarbonise

Many of our customers would like to contribute to combating climate change. We seek to help them in doing so by providing data on their power consumption patterns. In Hong Kong, we are upgrading the conventional meters to smart meters for all our residential and small to medium-sized business customers. This programme commenced in November 2018 and is being rolled out in phases to 2025. Smart meters are connected through a telecommunications system to ultimately build an Advanced Metering Infrastructure (AMI) system. This provides electricity usage data and supports a range of digitalised services and solutions to customers, empowering them to more efficiently manage their consumption. In addition, it gives us greater end-to-end visibility of the conditions in the power system and enhances overall reliability and safety.

While many would like to personally play their own part in reducing the carbon intensity of their energy usage, installing renewable energy assets in their own premises is not an option for everyone. The newly developed Renewable Energy Certificates (REC) scheme allows our customers in Hong Kong to support local renewable energy development. Members of the community are also welcome to purchase carbon credits from our Indian windfarms through the CLP Carbon Credits platform. Since March 2017, this platform has sold almost 2.6 million metric tonnes of CO_2-equivalent credits through both its online and offline channels.

CLP Power Hong Kong has a range of other initiatives to promote smart and green living: the Eco Building Fund, the Community Energy Saving Fund (CESF) and energy audits that help our customers save energy and raise public awareness about the need for power conservation.

Read more about our community and environmental programmes in Hong Kong ›

Customers of EnergyAustralia can subscribe to PureEnergy, based on which we will purchase accredited green energy to feed into the grid on their behalf. We also help residential customers who have opted in to GoNeutral to fully offset the carbon emissions associated with their home electricity usage. Our aim is to have one million Australian homes opt-in for carbon neutral electricity. We also made the Melbourne Cricket Ground (MCG) and the Yarra Park precinct a carbon neutral territory for September 2018. This is the busiest month in what is often referred to as Australia's home of sport. The amount of emissions offset was equivalent to taking 50,000 cars off the road for one month.

Facilitating informed engagement

The power utility sector is heavily regulated, and government policies and regulations remain a major influence on our business. In Hong Kong, the Scheme of Control Agreement (SCA) defines our role as an electricity provider, and provides a regulatory framework for the Hong Kong Government to monitor our operating performance and financial affairs. The current SCA, signed in April 2017 and effective for 15 years from 1 October 2018, takes into consideration the Government's long-term carbon reduction target, while providing the policy certainty CLP needs to invest for the long-term.

In terms of broader engagement, we participate in a range of industry and professional bodies to discuss the major issues we deem important to our ongoing viability and success, such as climate change and energy. Below are the organisations to which we currently devote the most resources:

- Energy Transition Commission – joined in August 2018, our CEO is one of a diverse group of leaders from the public, private and NGO sectors working together to accelerate change towards low carbon energy systems that enable both robust economic development and limit the rise in global temperature to below 2°C.
- International Solar Alliance – this treaty-based, inter-governmental organisation was established in December 2015 at COP-21. In June 2016, the Alliance entered into an agreement with the World Bank to raise US$1 trillion by 2030 to meet the Paris Agreement objectives. As part of these efforts, CLP is supporting the Indian Government's plan to deploy solar technology across the country.
- Australian Energy Council – EnergyAustralia is represented on the board of the AEC and is an active participant in its various working groups which cover a range of competitive energy market issues. These include reviews of wholesale market operation, competitive retail markets and emissions reduction policies.
- World Business Council for Sustainable Development – is a global, CEO-led organisation of over 200 businesses working together to accelerate the transition to a sustainable world. CLP is currently participating in various programmes such as the Climate Policy Working Group, the New Energy Solutions project, and REscale.
- Business Environment Council – is an independent, charitable organisation established by the business sector in Hong Kong. It promotes environmental excellence by advocating for the uptake of clean technologies and practices. Our CEO has been a Director since 2012 and is currently Chairman of the Board of Directors. We actively participate in events, public consultations and working groups organised by BEC.

Outlook

We know from generations of experience that it takes a long time and a lot of effort to build and maintain the trusting relationships we have with our communities. As a consequence, we are keenly aware that if a community relationship is damaged, it takes a long time to repair. We believe that every part of the business and each of our employees must take responsibility for building and maintaining relationships grounded in trust, fairness and respect. We also seek continual improvement. In 2018, we launched an HSE Improvement Strategy. Implemented over a three-year period, the initiative aims to further improve our health, safety and environmental performance.

We will continue to frame the way we serve our communities around the four pillars of Environment, Education and Development, Community Wellbeing, and Arts and Culture, as we recognise that our long-term success depends on the support of strong and thriving communities. In 2018, we conducted impact assessments on several of our community investment initiatives, the results of which will help refine existing initiatives and inform the design of new ones.

Stakeholder engagement, participation in industry and professional groups to contribute to policy discussion, and support for smart city development are critical to the decarbonisation and digitalisation efforts required to meet our objective of building a utility of the future. So too is aligning our strategic transformation with government policies. For instance, in Hong Kong, we will continue to pursue projects under the Development Plan with a focus on gas infrastructure and increased gas fire generation.

The expectations on CLP go beyond our own operations. Our stakeholders include customers, the communities in which we operate, suppliers and contractors – all of whom are impacted by our actions. In order to ensure our operations take their considerations into account, we have established codes and guidelines on responsible procurement, and are working on improving the labour practices of our suppliers.

Responding to climate change

Why this matters | How we're responding

COP 24 in Poland, in 2018 delivered the Rule Book to provide guidance for countries to implement the Paris Agreement

Our Climate Vision 2050 supports: **SDG 7** Affordable and Clean Energy; **SDG 13** Climate Action

Carbon Intensity

- 2018: 0.66 $kgCO_2$/kWh
- Our targets
- 2020: 0.6 $kgCO_2$/kWh
- 2030: 0.5 $kgCO_2$/kWh
- 2040: 0.34 $kgCO_2$/kWh
- 2050: 0.15 $kgCO_2$/kWh

Growing our non-carbon generating portfolio

- 12.8% is renewable
- 24.1% is non-carbon

Strategic partnership with Caisse de depot et placement du Quebec (CDPG) in India

Increased generation from Yangjiang Nuclear Power Station, solar and wind farms in China and India, and additional long term purchase agreements in Australia

Massive electrification (from today's 20% to over 60% of total energy demand) will help achieve net zero emissions by around 2060 if electricity generation switches from high-carbon to zero-carbon power sources

5-YEAR DEVELOPMENT PLAN

New Combined Cycle Gas Turbines	Offshore LNG Scheme	Clean Energy Transmission System

Why is this material?

As demonstrated by the 2015 Paris Agreement and the 2018 Intergovernmental Panel on Climate Change (IPCC) Special Report: Global warming of 1.5°C, there is broad international consensus of the need for rapid decarbonisation if the most serious consequences of climate change are to be avoided. In December 2018, following climate change negotiations in Katowice, Poland, participants delivered a 'rule book' to provide guidance for countries on how to practically implement the Paris Agreement. This is a small but welcomed step forward.

The electric utility sector is facing mounting regulatory and social pressure to reduce carbon emissions. According to the International Energy Agency (IEA), the power and energy sector as a whole contributed to around 40 percent of global GHG emissions in 2017. The IEA estimated that 1,715GW of fossil fuel generation will need to be prematurely closed worldwide if human-induced global warming is to be limited to less than 2 degrees Celsius. Economic considerations are also increasingly relevant: the prospect of massive losses through stranded assets and value chain disruption is forcing the industry to accelerate the pace of decarbonisation.

While these risks are real and severe, the electric utility sector is undoubtedly part of the solution. Technological innovation, regulatory incentives, cost efficiencies and growing consumer and industrial demand for renewable energy are rapidly increasing the commercial viability of clean electrification. The Energy Transition Commission projects that increasing the share of electricity to 60 percent of the total energy mix (up from the current 20 percent), would help achieve net zero emissions by around 2060.

Unfortunately, the adverse impacts of climate change are already apparent. Extreme weather events, for instance, are growing in frequency and severity, taxing the resilience of built and natural environments. Future storms are predicted to be even more severe, with Asia's coastal cities on the front line. Ensuring the integrity of our assets and building resilience – including rapid recovery after a service disruption happens – is becoming ever more important.

What this means for CLP

As CLP has developed over the last century, we have stayed true to our purpose of addressing the challenges of the utility sector in our markets: safety and reliability, affordability and environmental responsibility.

In 2007, we were the first power company headquartered in Asia to set carbon intensity reduction targets. Climate Vision 2050 is our decarbonisation commitment, which also aligns with our support for the UN Sustainable Development Goals. Throughout the years, as technologies and expectations change, we have updated our targets regularly, with the latest targets announced in 2018. Given the market realities of the Asia-Pacific region in which we operate, these targets are realistic yet remain challenging. While current targets do not meet the technical specifications for being considered science-based, we intend to update our targets at least every five years as part of our commitment to decarbonising our business model.

During these reviews, we are keenly aware of the fact that the markets in which we operate have different needs. In India, Southeast Asia and China, electricity has lifted millions out of poverty and will continue to play a pivotal role in economic growth and human development. Ensuring reliable and safe access to electricity at affordable rates therefore remains a priority. In more developed markets such as Hong Kong and Australia where demand growth is slower or flat, the transition away from fossil fuel-fired power plants requires careful planning. With these differences in mind, we have calibrated our rate of change and energy transition against the ambitions of each country, in order to best support their respective pledges under the Paris Agreement.

Transitioning to low carbon generation

Land constraints and a densely populated area in Hong Kong make it difficult to deploy renewable generation at scale. To support the Government's low carbon policy, our focus is on gas infrastructure and increasing gas fired generation, and gradually phasing out older coal-fired capacity. Our new Five-year Development Plan (2018–2023) included several important capital projects that are helping accelerate our transition to lower carbon energy.

Notably, we are building a new 550MW combined cycle gas turbine (CCGT) at Black Point Power Station, which will assist in keeping Hong Kong on track to meet the Government target of having around 50 percent gas in the fuel mix by 2020. Another gas-fired generation unit of around 550MW will also be built by 2023. These lower-carbon gas units will greatly assist in meeting the Government's environmental and fuel mix objectives once they commence operations, and will contribute to the gradual phaseout of the oldest coal-fired units at Castle Peak Power Station when they reach the end of their operating life in the mid-2020s.

The proposed offshore liquefied natural gas (LNG) terminal is another critical project, as it will enhance the diversity and security of our gas supply, providing a long-term alternative source of gas to meet increased demand. The Government has approved the Environmental Impact Assessment report of the project, and granted an environmental permit in October 2018. Good progress has also been made in finalising the contractual arrangement for the supply of LNG and the chartering of the Floating Storage and Regasification Unit (FSRU) vessel for the project, which is expected to complete construction before the end of 2021.

While more limited in scope, we are also seeking to increase the use of non-fossil fuels. We have introduced the Feed-in Tariff (FiT) Scheme to encourage adoption of RE in Hong Kong. By connecting small-scale RE projects to CLP Power's electricity grid, CLP will pay for electricity generated by these systems at a rate offered through the scheme. In addition, we started to construct the largest landfill gas power generation system in Hong Kong at the West New Territories Landfill in November 2018. Phase 1, with generation capacity at 10MW, will tentatively be commissioned by the end of 2019, and Phase 2, at 4MW, is expected by 2021. In addition, the Clean Energy Transmission System connecting the CLP grid to Guangdong is planned to be enhanced by 2025, enabling the additional import of clean energy from the mainland to further phase down our use of coal in Hong Kong.

Growing our non-carbon portfolio

Diversifying our asset portfolio with non-carbon sources of energy helps lower our GHG emissions, as well as reduce our reliance on revenue from fossil-fuel based generation. In 2004, we commenced building our renewable energy portfolio, and, as of 31 December 2018, our renewable generation capacity in operation and under construction across the Asia-Pacific had increased to 2,387MW of equity generating capacity, supplemented by an additional 652MW of long-term capacity and energy purchase. Our non-carbon portfolio has also grown over the years, with nuclear generation capacity standing at 1,600MW of equity generation capacity plus 1,085MW of long-term capacity and energy purchase in 2018. Financial contributions from the non-carbon emitting portfolio represented 19.2% of Group operating earnings.

In the past, we grew our renewable portfolio by directly constructing new projects primarily in mainland China and India. In recent times, we have expanded our approach beyond green field development to include the acquisition of high-quality renewable energy projects, including, for example, capacity purchases of renewable energy in Australia. We will continue to seek such opportunities where appropriate.

In 2018, we made several capital investments* that contributed to the growth of our non-carbon portfolio. Major items include:

- HK$687 million (vs. HK$946 million in 2017) of growth capital expenditure (Growth capex) related to our renewable projects in India and Mainland China
- Acquisition of business mainly related to Jinchang Solar (2017: Yangjiang Nuclear)

* Capital investments include additions to fixed assets, leasehold and land use rights, investment property and intangible assets, investments in and advances to joint ventures and associates, and acquisition of business.

During the year, we also announced a strategic partnership for our operations in India with Caisse de dépôt et placement du Québec (CDPQ), a leading global institutional investor. As part of the partnership agreement, CLP India has committed to expanding investments in low carbon growth areas such as renewable energy investments, in addition to non-generation business opportunities in transmission, distribution and other services.

Nuclear power plays an important role in our decarbonisation journey in Mainland China and Hong Kong, given its status as the only commercially viable lower or zero carbon solution currently available for meeting baseload demand. Having nuclear power as part of our generation mix allows CLP to transition more quickly away from coal. In 2018, our carbon intensity (based on equity plus long-term capacity and energy purchase) reduced to 0.66 $kgCO_2/kWh$. The reduction was primarily driven by the Yangjiang Nuclear Power Station being in operation for a full year under CLP's equity ownership, increased generation from our renewable assets in India and Mainland China, as well as additional long-term purchase arrangements in Australia. The expected commissioning of the sixth and final unit at Yangjiang in 2019 will help to further reduce our carbon intensity.

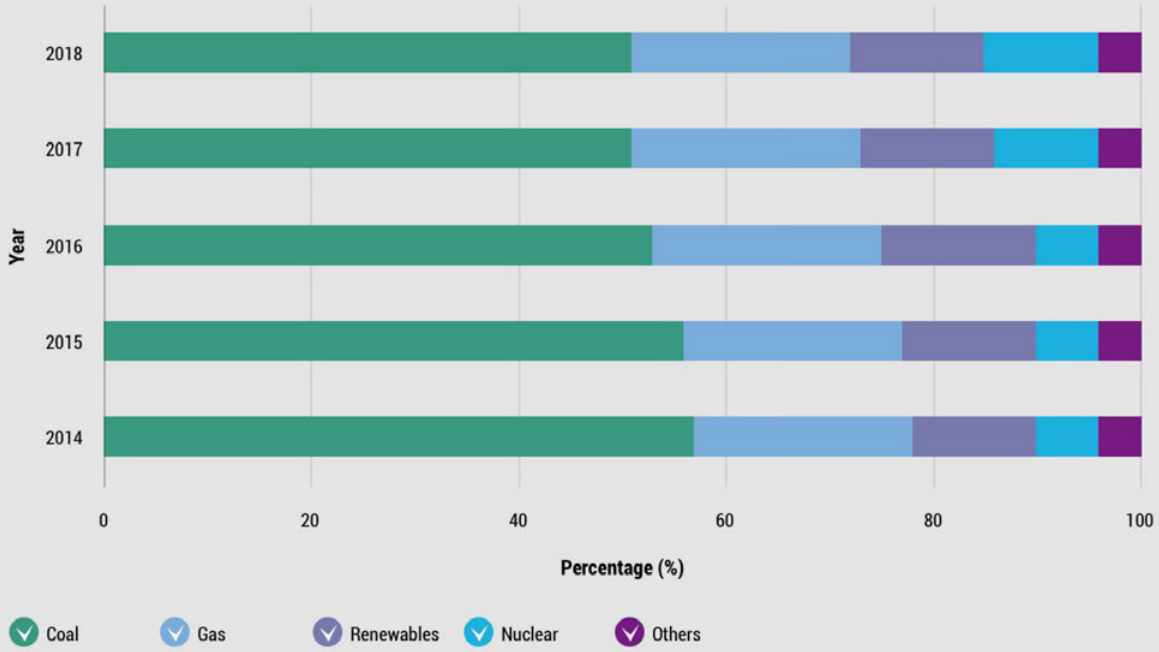
Our progress towards our Climate Vision 2050 targets

(On an equity plus long-term capacity and energy purchase basis)

	Carbon intensity ($kgCO_2/kWh$)	Renewable energy capacity (% of total capacity)	Non-carbon emitting energy (% of total capacity)
2020 Targets	0.6	20%	30%
2018 Performance	0.66	12.8%	24.1%

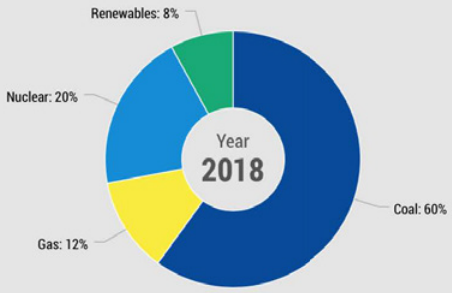
Read more about how we help our customers decarbonise ›

Generation Capacity (on Equity and Long-term Capacity and Energy Purchase Basis) by Fuel Type (%)



	2018	2017	2016	2015	2014
Coal	51%	51%	53%	56%	57%
Gas	21%	22%	22%	21%	21%
Nuclear	11%	10%	6%	6%	6%
Renewables	13%	13%	15%	13%	12%
Others	4%	4%	4%	4%	4%

Energy Sent out by Fuel Type (%)

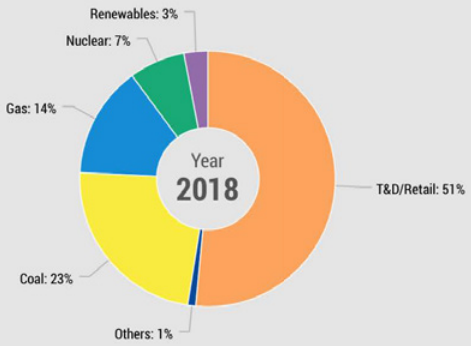


Coal Gas Nuclear Renewables

Notes:
[1] Figures include rounding adjustments.

	2018	2017
Coal	60%	61%
Gas	12%	15%
Nuclear	20%	15%
Renewables	8%	9%
Others	0%	0%

Revenue by Fuel Type (%)



T&D/Retail Others Coal Gas Nuclear Renewables

Notes:
[1] All numbers are rounded to nearest MW. Any minor discrepancies in totals is due to rounding.

	2018	2017
T&D/Retail	51%	52%
Coal	23%	23%
Gas	14%	14%
Nuclear	7%	7%
Renewables	3%	2%
Others	1%	2%

Enhancing performance of our renewable assets

Rapid growth in the development of renewable energy across the Asia-Pacific was initially driven by extensive government subsidies. But technology improvements and cost reductions have made renewable energy projects cost competitive with other types of generation. We are seeking to leverage our significant technical expertise, operational presence and proven track-record in the region to achieve further growth.

While electric utility companies, including CLP, have often relied on external service providers for operational support and maintenance services, we recently began to internalise these capabilities at many of our sites in India and China. Increasing the level of operational expertise in renewable energy has added to our expertise in project development and construction, and is helping accelerate our transition to a low carbon future.

Within our existing portfolio, technology is helping optimise and improve asset performance. In 2018, we completed the testing of a smart diagnostics tool, and plan to deploy it to a wider selection of renewable assets in India and mainland China by 2020. The performance of our renewable assets is monitored remotely from a centralised, cloud-based system in real time, allowing us to notify staff on site to handle any problem promptly.

Nonetheless, the introduction of more renewable energy into the grid is not without its challenges. Some renewable energy sources such as solar are intermittent by nature, and their generation does not necessarily follow the local load profile. Energy storage technologies offer a solution.

EnergyAustralia recently became the first retailer in Australia to integrate battery storage into its portfolio at scale, and now has the largest battery portfolio of any retailer in the National Electricity Market. Our two storage plants at Ballarat and Gannawarra went into operation in October 2018. These plants recharge from the grid at night when excess generation capacity is available and prices are low, and provide dispatchable energy during times of peak demand when prices are high. While they only have the capacity to store 80 megawatt-hours (MWh), the plants can respond to demand and supply imbalances within a fraction of a second, which helps improve grid stability and reliability. Today, battery storage solutions require a government subsidy. But we expect battery costs will continue to decline over time, allowing us to further deploy storage solutions that help build a flexible energy supply market.

Building resilient infrastructure

Extreme weather events are perhaps the most visible and imminent risk that arises from climate change. We have seen many high-impact events including typhoons, floods, heatwaves and drought around the world in recent years. These events can cause physical damages to our assets and operational disruption, which in turn, can result in reduced output, increased repair and maintenance costs, and service disruptions for our customers. It is critical that our systems are resilient enough to withstand extreme conditions to minimise disruption and to help facilitate faster recovery for affected communities.

Aside from direct physical damage, climate change can also adversely impact our operations in other ways. For instance, shifts in rainfall and drought patterns may reduce the availability of cooling water for some of our power plants. In recognition of this possibility, our Jhajjar power plant in India has measures in place to prepare for water scarcity. Damage to assets along the supply chain, in particular the procurement of fuel, is another way that extreme weather events may affect our ability to reliably deliver electricity.

In response, we have undertaken a number of assessments over recent years to better understand the resilience of our assets. In the case of our Hong Kong operations, CLP Power constantly reviews and enhances its emergency preparedness measures. These include:

- **strengthening the tower structures and foundations of 400kV overhead lines** that can withstand super typhoons with wind gusts of up to 300km/h;
- **introducing an Emergency Restoration System** that enables rapid construction of temporary masts which can shorten the restoration of power supply to just two weeks in the event of an existing tower being damaged;
- **upgrading mitigation measures for flood-prone transmission and distribution substations** including installing flood gates, sealing cable inlets and equipping substations with sump pumps and flood alarm systems. These measures ensure that all CLP Power's transmission and distribution substations can withstand storm surges from super typhoons.

In 2019, we plan to deliver a series of customer engagement events to inform our Hong Kong stakeholders of the initiatives already undertaken to increase the resilience of our generation, transmission and distribution networks. In addition, we plan to work with our customers to help them better understand the measures they should take to prepare themselves for a changing climate.

Find out more about our resilience efforts ❯

Super typhoon putting our system resilience to test

In September 2018, our power systems in Hong Kong were challenged by the super typhoon Mangkhut. Due to the large circumfluence of the typhoon and its destructiveness, its impacts on power supply facilities were more severe than expected. Power supply to some of our customers, mainly in villages and remote areas in the New Territories, was affected after many overhead power lines and poles were damaged by fallen trees.

When the typhoon had weakened and the conditions were safe, power restoration work was immediately undertaken. But our work crews faced extreme challenges such as fallen trees, flooding and landslides, which meant complicated repairs were required. In addition, many roads were blocked and some areas required sea transport to reach the affected overhead power lines. To rapidly restore power, helicopters were deployed to help assess damage and accessibility, to transport personnel, and to deliver mobile generators to enable temporary power supplies.

We should expect that the frequency and severity of such extreme weather events will increase. We are therefore allocating more resources to sharpen our emergency preparedness, aiming to maintain a reliable power supply to our customers and minimise the impact on critical services and infrastructure.

Water management initiatives

Although our power stations do not consume water intensively, some of them depend on water for cooling as in the case of our fossil fuel fleet, or for cleaning in the case or our solar farms. We have a range of water management initiatives in place, taking into account site-specific conditions, operational situations and age.

Water scarcity is one of the key business continuity risks for our Jhajjar power plant. The plant draws water from the Jawahar Lal Nehru (JLN) canal, which is fed by rivers from the snowy Himalayan region. During winter, water availability in the canal goes down as most catchment areas remain frozen. Recently, we also experienced a shortage of water during the summer as demand for potable water and agriculture use was high due to lower rainfall.

We have a water supply agreement with the Haryana Irrigation Department (HID). Whilst we did not face any serious water shortage so far, due to high water demand or during maintenance undertaken by HID, HID deviated twice from 16 non-supply days to 24 days during the summer, and resulted in water stocks at power station reaching its lowest levels, and posed a risk of plant availability loss. In view of this, we have planned to construct an additional reservoir in 2020.

Water efficiency has always been a focus area for us and we have taken the following measures to improve our performance:

- Installation of drift eliminators in cooling tower to reduce water loss by capturing water droplets from air drifts which resulted in water savings of about 2 percent;
- Installation of water meters at various points to enhance monitoring of water usage and implementation of conservation measures; and
- Improving cycles of concentration in our cooling tower which resulted in signification reduction of water consumption.

Outlook

Addressing climate change will remain a principal focus of our future business development. We are diversifying our generation portfolio based on geography and fuel type. Specifically, we are reducing the use of coal across our markets while increasing the use of renewables and lower or non-carbon emitting fuels. We also intend to increase our presence in transmission and distribution, as well as develop new energy services and solutions for our customers.

In some markets, fossil-fuel based generation remains essential for meeting baseload demand in the short term. In the past decade, Vietnam's policy has, consistent with its pledges under the Paris Agreement, called for coal-fired generation to support its economic growth. In 2018, we continued negotiations with Vietnamese authorities regarding the commercial and financial arrangements for the Vung Ang II and the Vinh Tan III projects. Looking forward, CLP will continue to assist Vietnam explore options to meet its energy needs.

Our coal-based generation assets in Australia are also expected to be gradually phased out. We will continue to deploy renewable energy alongside a flexible capacity portfolio, in addition to exploring a range of demand side opportunities. EnergyAustralia's focus is to play a proactive role in the transition to lower emissions in Australia.

Capital providers are another key stakeholder in the fight against climate change, given their critical role in ensuring that climate action is properly funded. Investors, lenders and insurers are demanding reliable and consistent climate financial risk assessments to inform their decision-making. In this context, CLP will continue to disclose its climate-related information through CDP and supports the recommendations outlined in the Task Force on Climate-related Financial Disclosures (TCFD). We are eager to play a leading role in the Asia-Pacific's region's decarbonisation journey, including by attracting and engaging with like-minded investors to address this great and pressing global challenge.

Harnessing the power of technology

Why this matters | How we're responding

Industrial Revolution 4.0
Interconnecting everyday devices through the internet of things (IoT)

No. of IoT devices worldwide:

- 21.5 billion 2025
- 7 billion 2018
- 3.8 billion 2015

Data-driven technology
- cater to consumer expectations for integrated solutions
- enhance operational performance

We are supporting SDG 9
and will continue to work on advancing technology in renewable energy and energy management solutions

137 employees
in the Group Innovation team and the NextGen team in Australia

Working together with startups through:
- HKSTARS
- Startup bootcamps
- Free Electrons

A range of energy management solutions on offer:
- Smart Charge
- Smart Building
- Smart Energy Connect

digitalisation

Why is this material?

The world is entering a fourth industrial revolution built on Artificial Intelligence (AI), digitalisation, automation and advanced robotics. This latest wave of innovation and disruption is shifting the way we work, live and interact with the world around us. Change has never happened so fast, nor has it been so transformative.

Previous industrial revolutions were ground-breaking, but progress was incremental. The first deployed steam power to mechanise production. The second used electricity to create mass production and assembly lines. The third introduced computing into industrial systems. The fourth is advancing exponentially by contrast – blurring the lines between the digital, physical and biological spheres – and connecting cities, farms, power plants, homes and factories through an emerging technology platform called the Internet of Things (IoT).

In 2018, there were seven billion connected IoT devices globally, up from 3.8 billion in 2015, with the number expected to reach 21.5 billion by 2025. AI and machine learning make it possible to sift through large quantities of data to identify patterns and anomalies in order to make predictions far more quickly, cheaply and efficiently than ever before. In every sector, transformative opportunities are arising from algorithms that can learn, reason, plan and perform tasks at increasing speed and accuracy.

These advancements present serious challenges to the business models of incumbents in traditional sectors of the economy. For example, renewables and energy storage technologies are already improving efficiency and facilitating flexibility within energy systems. Nimble and data-driven competitors have the opportunity to bring further disruption to the industry. At the same time, consumer appetite for new, better and often more integrated experiences continues to present tremendous opportunities for established players with the financial capacity to develop or invest in the latest innovations.

What this means for CLP

The digital revolution underway in the electricity utilities sector presents both risks and opportunities for CLP. Given the importance of digitalisation to our ambition of becoming a "Utility of the Future", we are already investing heavily in a future-focused energy ecosystem that will drive operational innovation and provide the foundation for new products and services. This involves the:

- collection, storage and analysis of data across the entire value chain of CLP so we can harness efficiencies and further improve our services;
- transformation of legacy manual processes to digital and automated processes to improve business performance and efficiency;
- creation of smart infrastructure to prepare for future market disruption and potentially help us move into new markets;
- generation of new business models or the reshaping of existing ones based on the insights provided by big data.

Following the establishment of the Group Innovation team and EnergyAustralia's NextGen team in 2016, now comprising 137 employees in total, we instituted a process for scouting, assessing, trialling and deploying new technology and innovation projects. Current projects are in various phases, with some set to be launched in our markets in the near term. To support these activities, we recently opened an Innovation Hub, a physical space for collaboration and development, which acts as a living lab at Hong Kong Science and Technology Park (HKSTP) to trial new technologies and actively participate and contribute to Hong Kong's technology scene.

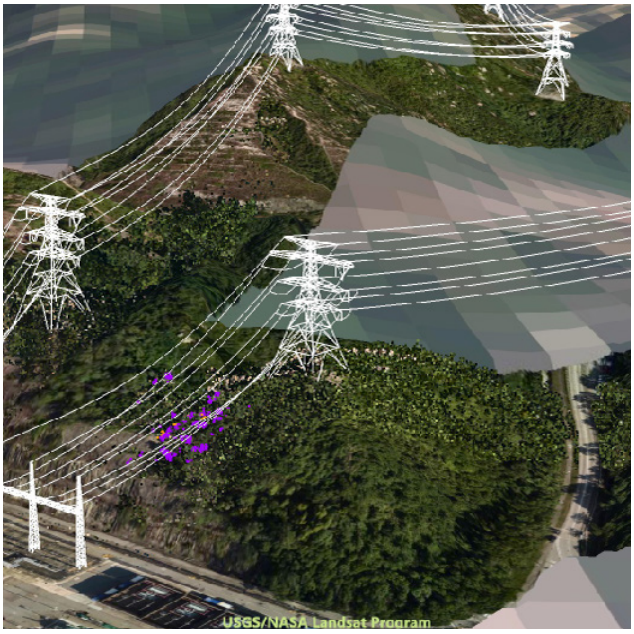
In our home market of Hong Kong, the integrated nature of our value chain (which covers generation, transmission, distribution and retail), offers unique piloting opportunities. With the infrastructure needs of the city continuing to expand, we see opportunities to support urban growth in greener and smarter ways.

Enhancing operational performance

New technologies can also assist in improving the operational performance of our existing assets, for instance, through predictive maintenance or the early detection of system defects. We have different technologies at various stages of development and trialling these throughout the value chain.

Air emissions are a major environmental concern associated with coal-plants. In response to stakeholder concerns and in line with our decarbonisation agenda, we have deployed a pilot emissions forecasting model for our Castle Peak Power Plant in Hong Kong. Using machine-learning, it facilitates SO2 and NOx emissions projections based on the physical properties of consumed coal and loading demand of the generation units. The model provides us with reference data for coal procurement that will help limit emissions and improve air quality for the community.

The demand for electricity varies throughout the day and we plan our generation units' operation and maintenance schedule accordingly. Demand is also affected by the weather, holidays or special events. With this in mind, we have invested in a new short-term load forecast model to improve the accuracy of our one-day and seven-day demand forecasts. The model can be fine-tuned for special events, allowing for better plant operation and maintenance scheduling.



Energy management solutions for smart cities

Increasingly, our customers want more control over their energy consumption to maximise efficiency and minimise costs. We recognise the exciting opportunities inherent within this trend. Energy management solutions (EMS), for example, combine localised energy generation and storage, smart devices that can be monitored and controlled remotely, and a suite of computer-aided tools that optimise the performance of the generation and transmission system.

As EMS become more widely adopted in Hong Kong and elsewhere, they will help our customers and facility managers to visualise the status of energy use, and offer greater control over how energy is stored, distributed and used. These could help reduce energy waste and hence consumption, without adversely affecting operations.

At CLP, we recognise the exciting opportunities that lie ahead of us in this space. With the goal of making sustainability a practical reality, CLP will be launching the Smart Energy Connect within the second quarter of 2019, which is the combination of an energy app store, a data platform, and a commercial channel that accelerates the adoption of EMS. At present the EMS market is fragmented with many solutions out there, but no single trusted source to find the right solution for customers to meet their goals. Therefore, this will be a new chapter which will enable customers to adopt solutions more rapidly and achieve their sustainability goals.

Some of the initial EMS solutions include building analytics solutions that help to save energy for buildings. We deployed Smart Enterprise for numerous enterprises in Hong Kong, such as schools, offices, shopping malls, small businesses. It is an IoT office solution that allows control and monitor of devices with ease. Another example is our Smart Building solution, an AI-based platform delivering data driven insights on how best to manage a building ranging from automated energy saving insights, all the way to fault prediction, detection and diagnostics. Being true to our principle of being a trusted source, some of these solutions also go through rigorous use within CLP to be clear on the value to customers, but also helps employees to keep abreast of the latest developing technologies.

Electric vehicles (EVs) are another area of focus. Smart Charge, a joint venture between CLP and HKT, combines technological know-how and customer management to provide EV users with unparalleled one-stop EV charging solutions. It continues to expand its network EV charging infrastructure to cover key residential buildings and estates in the New Territories, Kowloon and Hong Kong Island.

It is not enough to embark on this journey alone. We recognise our obligation to cultivate an open and innovative environment within our local communities, including by reaching out to customers. In 2018, we opened SmartHub, a centre that showcases the concept of the smart city to Hong Kong. Outside Hong Kong, we are working with several partners in Thailand to explore smart energy microgrid solutions for industrial estates, including utility-scale floating solar systems and EMS in a smart city environment.

In search for ideas and partners

As we evolve from our century-long history into a data-driven organisation, our deep energy domain knowledge combined with investment in cutting-edge software has become a competitive advantage. At EnergyAustralia, we are harnessing the collective talents of our 2,500 employees to find innovative solutions to our biggest opportunities and challenges through the programme. Several challenges are run every year and employees are encouraged to collaborate on their responses. The strongest ideas progress through to a trial with customers.

We understand the need to look outside of CLP for ideas and emerging technologies. As a result, we are selectively investing in venture capital, as well as systematically scouting for and assessing new technologies. This includes working with or investing in venture capital funds in Hong Kong and mainland China, Silicon Valley and Israel. These partnerships allow us to gain market knowledge, pre-empt disruption, identify technologies ahead of competitors, and invest in early-stage companies strategically important to the Group on a selective basis. When reviewing these funds, in addition to market and commercial factors, we also consider factors such as strategic and cultural fit, management quality, as well as the fund's governance and transparency. During the course of 2018, we made several key strategic investments of minority stakes in early-stage growth companies that offer strategic value to our core business. This included investing in startups in areas such as demand response management, cyber security and smart lighting solutions.

Another strategic investment includes Autogrid – an AI-based data analytics platform that optimises energy resource management at the grid level, as well as En-Trak – a cleantech IoT company offering cloud-based solutions that helps enterprises manage and optimise energy consumption. CLP is excited to partner with these innovative companies and looks forward to make the strategic alliance a success.

CLP is committed to building and promoting a vibrant energy ecosystem serving both our customers and partners in Hong Kong and abroad. To this end, we formed a new joint venture with TUS-Holdings, which will focus on developing and deploying new energy and smart city technologies amid growing demand for digitalized energy infrastructure and services in Mainland China. We are also piloting active grid solutions at HKSTP, where we are jointly working on testing the application for potential commercial deployment.

Accelerating promising projects

The race to innovate has never been so intense. As the energy challenges of tomorrow mount, the key to success is to adopt new working practices made popular by startup companies and become more agile and responsive to dramatically changing market needs.

The STARS programme was launched by the Hong Kong Startup Council of the Federation of Hong Kong Industries (FHKI) in 2017. It helps up-and-coming startups develop operational skills and practical experience to support business growth, and connect them with traditional enterprises and investors. CLP Power Hong Kong Limited was the programme collaborator for the 2018 STARS Programme, and provided mentorship to startups of the "Smart Energy and Eco-home" cohort from Hong Kong, South Korea, Sweden and the US. In the "Meet Our Stars" Demo day in January 2019, ten startups of the cohort showcased and pitched their latest products and solutions to investors at Jumpstarter, a major startup organized by the Alibaba Entrepreneurs Fund, and successfully obtained expression of investment interest totally over HK$26 million.

Similarly, in Australia, we partnered with Startupbootcamp to bring ten start-ups to Melbourne, where they pitched ideas for revolutionising Australia's energy industry. In June, they presented to potential investors, members of the business community, mentors and family and friends. We have identified a number of promising projects for collaboration. These include using AI to maintain complex equipment, applying block-chain to a green energy trading business, and improving digital engagement and demand response programmes for residential energy customers. EnergyAustralia will continue as the major partner of the Accelerator program until 2020.

In 2018, we became a part of the Free Electrons programme, a global accelerator programme where later stage start-ups present their business cases to ten prospective power utility partners. The startups with promising technology are selected to develop pilot projects and with the collective strengths of the group of utilities, will enable faster value to both utilities and customers. The programme provides us access to high-quality talent with industry expertise, and facilitates innovation-sharing between utility companies. We had the opportunity to review over 500 startups through the programme and are already running several pilots, including a simulation and optimisation software provider for adoption on electric distribution grids, a cyber security solutions provider, and a smart monitoring system catering for the elderly. As the only Asian host, CLP will hold a Free Electrons event in Hong Kong in June 2019. We look forward to the collaboration opportunities that will inevitably arise for energy sector investors and participants.

Free Electrons

10
Utilities

515
Applicants

65
Countries

15
Startups

Outlook

We are keenly aware of the almost exponential rate of change brought about by digital technologies, and the crucial role they will play in decarbonising the electric utility sector. As we transform to become a "Utility of the Future", we will need advanced capabilities to manage additional system complexity and to develop new products and services along the value chain, including solutions for providing our customers with greater control over how they receive, store and use energy.

Given the rapid pace of technological development, it remains difficult to discern which of the emerging technologies will be most transformative. That said, we believe smart cities will likely become a diverse and promising new business line. Examples of smart city opportunities include sustainable power for data centres, the development of smart airports, and safety monitoring and environmental control in elderly care.

We remain committed to supporting SDG 9 and will continue to invest in renewable energy technologies that support economic growth and development in a sustainable manner, and to set ourselves targets that will further contribute to sustainable development in this area.

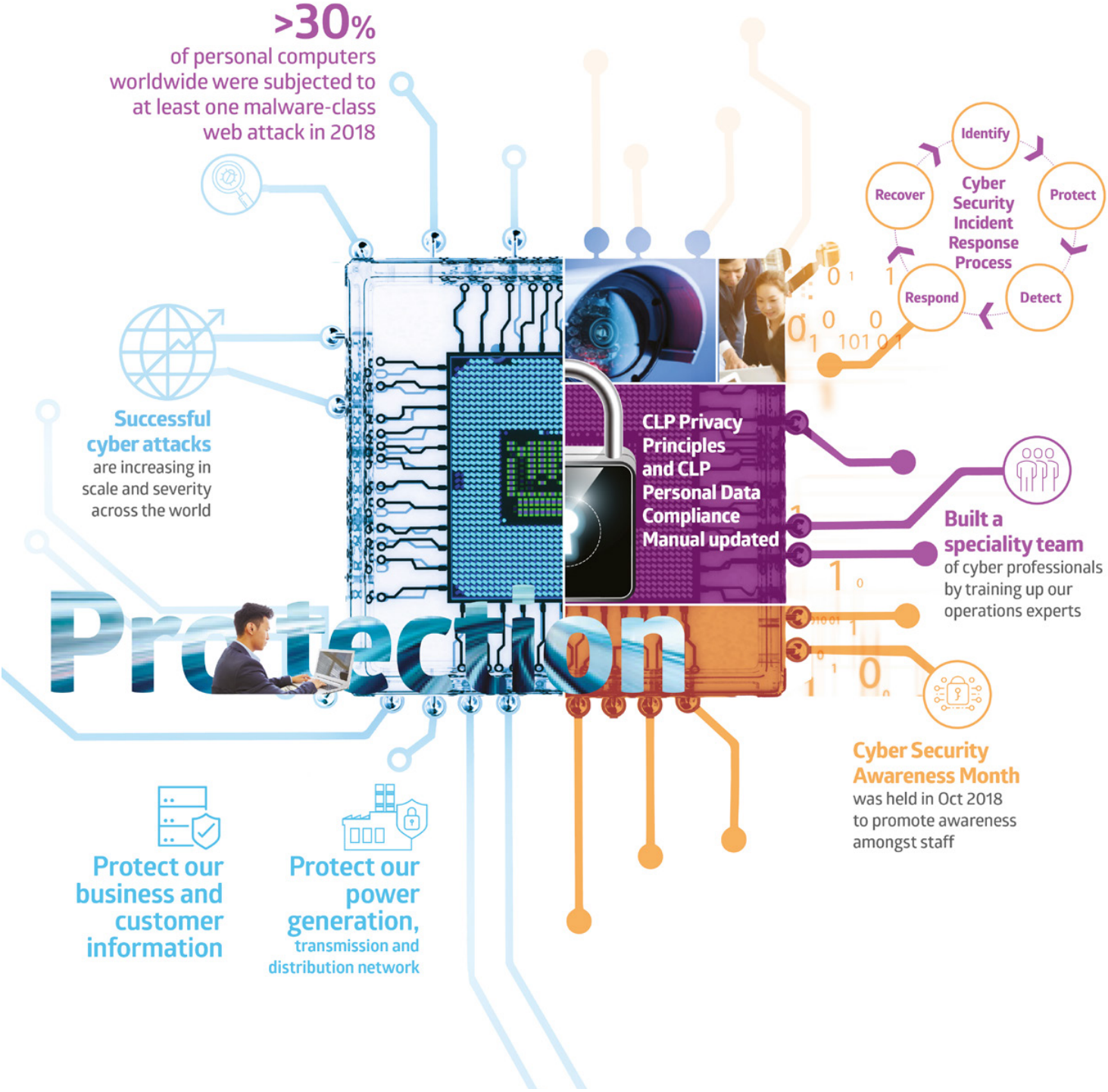
The energy industry is undoubtedly experiencing a wave of technological disruption. But we are confident that our industry expertise, experience in different markets and extensive partnership networks will allow us to capitalise on the opportunities ahead.

Reinforcing cyber resilience and data protection

Why this matters | How we're responding

>30%
of personal computers worldwide were subjected to at least one malware-class web attack in 2018

Successful cyber attacks are increasing in scale and severity across the world



Built a speciality team of cyber professionals by training up our operations experts

Cyber Security Awareness Month was held in Oct 2018 to promote awareness amongst staff

Protect our business and customer information

Protect our power generation, transmission and distribution network

Why is this material?

In 2018, over 30 percent of personal computers were subjected to at least one malware-class web attack. As connected digital ecosystems become common place, even the most innocuous device, terminal or endpoint can provide an entry point for stealing sensitive information. Indeed, both individuals and organisations are more exposed to cyber security risks than ever before. With perpetrators facing low barriers to entry and little to no prospect of prosecution, cyber-crime is increasingly seen by organised criminals as a low-risk, high-reward alternative to traditional crime.

Successful cyber-attacks are increasing in scale and severity across the world. In 2017, a widespread attack by WannaCry ransomware affected organisations across 150 countries. In 2018, we continued to see attack attempts across our business sector. While all industries are vulnerable to cyber-attacks, critical infrastructures such as electricity grids, water plants and airports, are especially prone due to the large social implications when their services are disrupted. In response to these increased activities, in 2018 we have observed increased government focus on critical infrastructure cyber security legislations across our regions.

A related concern is data protection and data privacy. As more personal information is stored as data on the servers of private organisations, consumers are becoming increasingly conscious of how their data is gathered and used. Companies which fail to adequately protect customer privacy risk significant financial or reputational costs. The data privacy landscape also continued to grow more complex, as the General Data Protection Regulation ("GDPR") went into force in the European Union and is likely to shape future regulations in other jurisdictions.

What this means for CLP

For CLP, cyber resilience has two dimensions: to protect our systems and to detect and respond to any anomalies promptly.

We need to protect the systems that process information, some of it being commercially sensitive or related to our customers' privacy. We also need to protect the operations of our power generation, transmission and distribution networks and other critical infrastructure components, given that anomalies in any part of our value chain may compromise safety or lead to power disruptions.

It is not only our own systems that we are concerned about. The cyber security protocols of our business partners may also impact us. For instance, one of our service providers in Australia had their system compromised, which risked the potential release of our data to unauthorised parties. We took swift action to notify employees and members of the public who might have been affected.

While any incident could lead to some level of reputational damage, we are more concerned about the potential of an attack to disrupt the safety of our employees and customers, for whom electricity is an indispensable requirement. As uncomfortable as it sounds, we recognise there is no perfect solution to protecting our business, especially considering the rising sophistication and frequency of cyber-attacks and data breaches globally. Early detection coupled with effective response and recovery measures are essential.

We constantly ask ourselves: how secure is our organisation? Which part of our value chain is at risk? How do we compare to our peers? Are we investing enough in cyber risk mitigation and resilience?

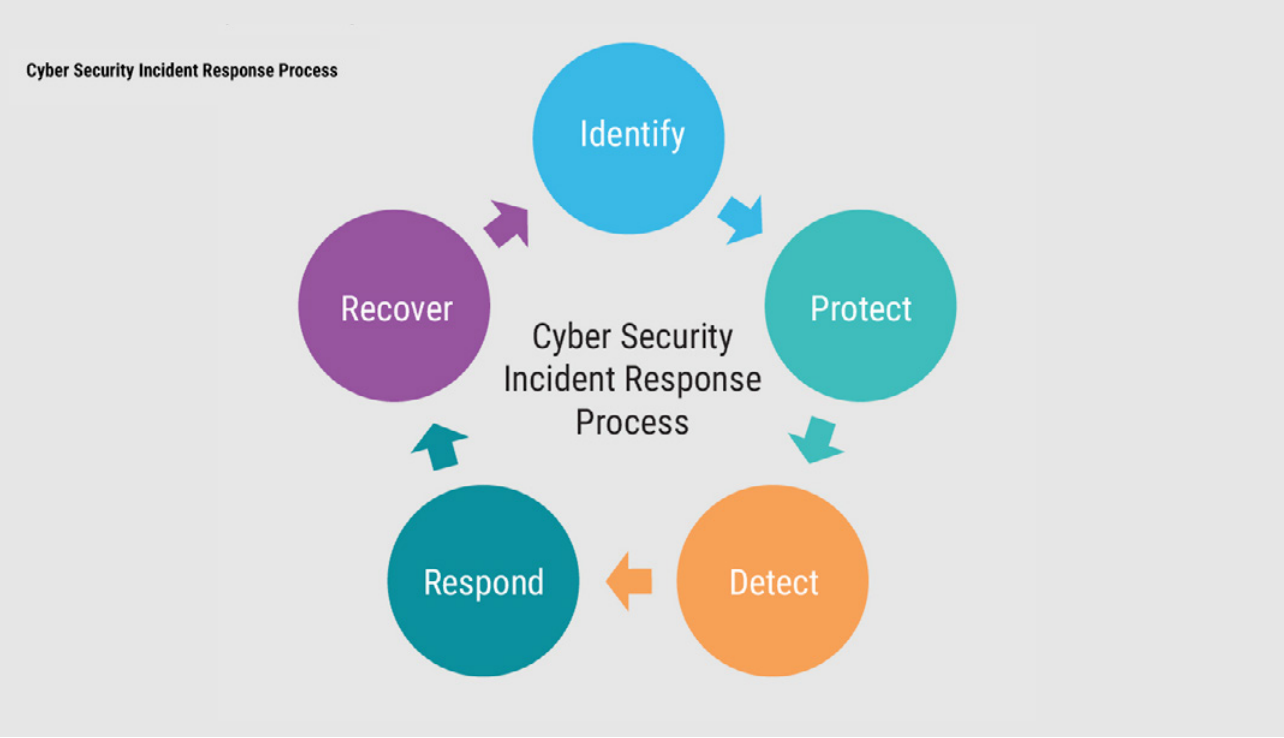
Enhancing cyber security governance

We recognise that security technology plays a meaningful role in addressing cyber risks. Our perspective however is that a comprehensive governance framework also needs to be in place to ensure the effectiveness of existing and planned cyber security activities and investments. We are focussed on building an industry-leading cyber security governance framework which starts with a business impact driven assessment of our current cyber security position based on which we establish clear priorities for cyber risk mitigation.

Specific policies or processes are developed for these activities. Information security is already embedded in our Group Operations Security Policy and Information Security Standards. Its focus is on protecting our business information, and the systems processing this information. In 2018, we have developed the Operational Technology (OT) Cyber Security Policy to ensure the protection of OT operations along our value chain, including generation, distribution and transmission of energy.

Under the Group OT Cyber Security Policy, we developed Regional OT Cyber Security Standards as well as OT Standard Operating Procedures, to provide clear and practical guidance across all levels. The Policy was developed with representatives from different regions, to ensure that it aligns with local regulations and context, and is implementable.

We are vigilant in being prepared for a cyber-induced crisis. We monitor alerts from our information technology and operational systems and provide continuous upskilling and training for staff to equip them with the skills required to identify and detect anomalies. We regularly review and practise through drills our Cyber Security Incident Response Process, which establishes a consistent response protocol upon detection of an incident. It provides a detailed process flow showing the interactions between different virtual teams that are likely to be involved in the response, and define their roles and responsibilities along with the incident escalation to the Emergency Control Team or the Emergency Management Team as needed. The process is firming up our incident response capabilities, improving our cyber crisis management, and preparing our executives to lead in cyber crisis situations. Ultimately the goal is to restore operations and services as soon as possible.



Building internal capacity

We are conscious that some areas of the business may be more vulnerable than others – an especially important consideration given cyber security defences are only as strong as their weakest link. As a consequence, we are investing significant time and resources in enhancing CLP's internal cyber security capabilities. In 2018, we established a specialist team of cyber security professionals by training internal experts from electricity operations. This initiative will help embed cyber security practices into our day-to-day business. We have also conducted a range of awareness-raising activities throughout the year, including the distribution of a regular publication, CyberNews, to all staff, and the hosting of Cyber Security Awareness Month during October 2018 in Hong Kong.

In light of the new mandatory data breach reporting obligations legislated under the Australian Privacy Act 1988 (Privacy Act), EnergyAustralia underwent an internal risk assessment to understand its ability to comply. Company-wide communications, employee training and briefing sessions with leadership were conducted to ensure all staff had current privacy and data management training. In addition, a Data Breach Response Plan was implemented, which included the establishment of a Data Breach Response Team to ensure the business has the capability and procedures in place to respond swiftly. The Plan aims to instil a heightened vigilance in our staff in relation to potential data breaches, whether in their work or in their personal lives.

We will continue to make structural changes to ensure that our cyber security capabilities, governance, management and execution is effective and world class.

Protecting customers' data

We hold several broad categories of personal data to support our day-to-day operations and to improve our services. These include data from customers, employees (both current and former employees and prospective job applicants), contractors and service providers, in addition to data on business partners, shareholders, visitors and members of the public as they interact with us.

We continue to build a holistic approach to managing and protecting data through the implementation of a variety of processes, roles, controls and metrics. The CLP Privacy Principles set out our commitment to protecting personal data. There is also an accompanying CLP Personal Data Protection Compliance Manual that provides guidance to business units with operations in Hong Kong on what these principles mean in practice. Both of these documents are enhanced periodically to ensure they meet the latest regulatory requirements and continue to reflect the expectations of our stakeholders.

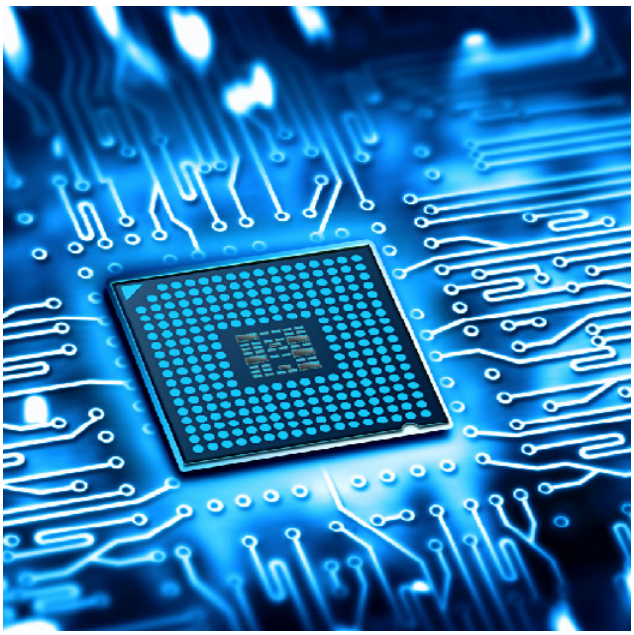
EnergyAustralia has an information security framework in place to assess and manage the cyber security risks that can arise from engaging with third parties. In this context, we work with our external partners on additional safeguards to limit the risk of privacy breaches occurring. Their Privacy Policy applies to the activities of the EA group of companies in Australia. In addition to mandatory annual training for all employees on privacy, information security and our Code of Conduct, we regularly review who can see and download customer data. We also have in place strict access controls and data masking programmes to protect sensitive information. Consultants are required to verify a customer's identity prior to providing personal account information to them, and quality assurance is undertaken to check that correct processes have been followed.

In 2018, our retail business in Hong Kong had no customer privacy or data loss cases reported.

EnergyAustralia's retail business received six privacy complaints relating to information being provided to unauthorised parties. Three were received from the Australian Privacy Commissioner (with two related to the same customer). Following investigation of the complaints, however, the Commissioner closed all files after determining that EnergyAustralia had not interfered with customer privacy. One of these cases was reopened in December 2018 after the customer requested further information. EnergyAustralia has resolved the remaining complaints. We had four notifiable breaches in 2018 that have been reported to the Office of the Australian Information Commissioner (OAIC). Remediation has been undertaken to prevent reoccurrence.

Outlook

Cyber resilience is especially important for companies like CLP that provide critical infrastructure, in which a cyber breach could have a significant impact not only on the company, but also on the environment and the economy at large. We continue to upgrade our capabilities in detecting and responding to an ever-growing range of cyber risks. In this context, we are working closely with cyber security startups, while also leveraging global insights from established technology providers, cyber security professionals, and closely collaborate with industry peers as well as government and law enforcement.



Building an agile, inclusive and sustainable workforce

Why this matters | How we're responding

Changing demographics

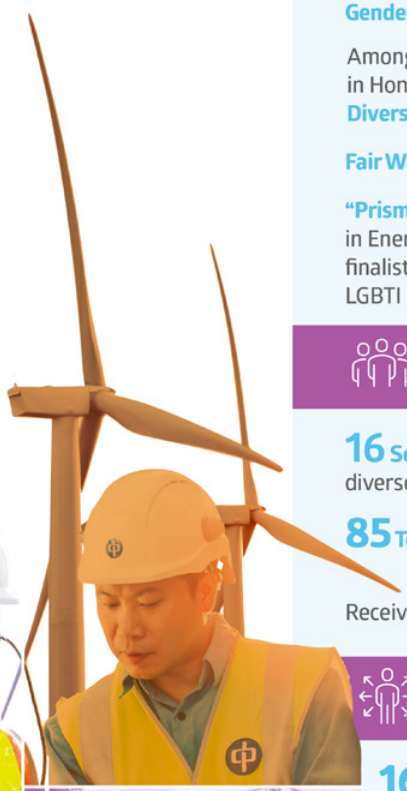
Hong Kong:
Ageing population and percentage of working age individuals reducing but female percentage of working age increasing

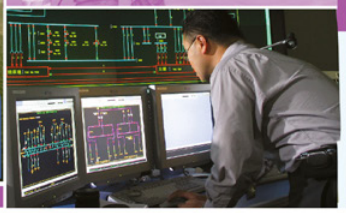
India:
Low ratio of female participation (24%) in the economy

Competition for STEM talent

Digital disruption

Inclusion





Supporting diversity and inclusion

Gender pay equity

Amongst the first signatories in Hong Kong of the **Racial Diversity & Inclusion Charter**

Fair Wage Certificate in Hong Kong

"Prism", an LGBTIQ+ network in EnergyAustralia, named a finalist in the Michael Kirby LGBTI Inclusion Award

Attracting the right talent

16 **Senior strategic hires** from diverse locations and sectors

85 **Technical trainees** intake

Received Good MPF Employer award

Managing our contingent workforce

16% Labour supply

84% Service contractors & sub-contractors

Innovation and digitalisation: a changing skills profile

Targeted training programmes on digital skills

Allocating human capital: Innovation & renewable energy

Why is this material and what this means for CLP?

Compared to most other industrial sectors, the utility industry is unusual in that for many years it has not been exposed to the competitive and technological pressures that have driven change in other sectors. A long period of stability has now come to an end as the combined impact of energy policy changes, the transition to low carbon, and digitalisation of the energy sector creates a wave of disruptive change throughout the industry.

Consequently our core task of attracting, developing and retaining a skilled technical workforce has become more complex as we address multiple challenges:

- managing the skills transition from conventional energy
- building capabilities and strengthening resources to support the expansion of renewable energy (RE);
- building digital and commercial capabilities to support the increasing digital intensity of all aspects of our business, and resource the new business models emerging from our investments in innovation.

The impact of the energy transition and digitalisation on our skills profile is compounded by challenges on the labour supply side.

The first challenge is the impact of demographic changes in the countries in which we operate, although the impact of these changes differs from country to country. In Hong Kong, the population is ageing, and the percentage of working age individuals is reducing. However within this the percentage of females of working age is increasing. India on the other hand has a relatively much younger labour force, but conversely a very low rate of female participation in the economy due to cultural factors.

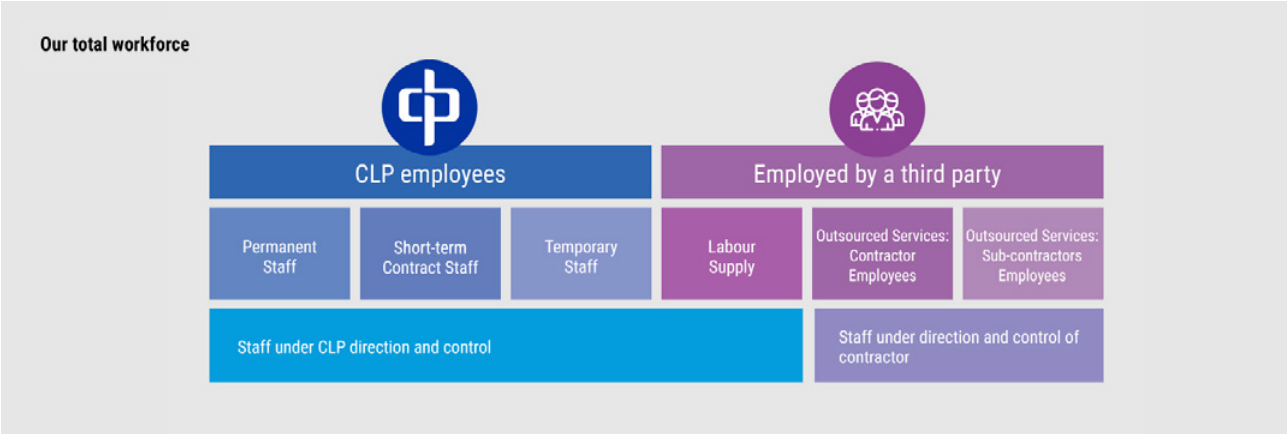
The second supply-related challenge is the increase in demand for STEM-qualified individuals as all sectors of the economy digitalise. This creates more competition for the same talent pool who are our future technicians and engineers.

We are also mindful that we operate in a social context where there is growing concern over inclusive growth and equality of income and opportunity. Consequently employees and other stakeholders expect us to demonstrate values based management in dealing with potentially divisive social issues.

There is no single solution to maintaining an agile, inclusive and sustainable workforce in the face of these challenges, it requires a coordinated and integrated range of strategic initiatives.

Our current and future workforce

We are openly addressing the fundamental and challenging issue of what constitutes our real workforce. In addition to permanent, short-term contract and temporary staff, we have a large contingent workforce composed of different categories of contractors.



Employees and contractors by region

	Employees	Contractors			Total workforce
		Labour supply (1)	Service contractors and sub-contractors (2)	Sub-total	
Hong Kong	4,538	1,316	3,993	5,309	9,847
Mainland China	596	14	342	356	952
India	458	80	2,872	2,952	3,410
Australia	2,042	167	1,247	1,414	3,456
Total	7,634	1,577	8,454	10,031	17,665

Note 1: Labour supply refers to manpower supplied by contractor companies under labour supply agreements for providing manpower to work under the direction and control of CLP or subsidiary staff. The figures above reflect the average of quarterly reported contractor numbers from our regions.

Note 2: Service contractor refers to the full-time equivalent number of contractors in each region. The numbers above are converted from number of manhours incurred in 2018, assuming 48 hours of work per week.

Increasing transparency over our contingent workforce enables us to ensure we are taking a responsible approach to managing the associated costs and risks, for example whether we have the right strategic balance between insourcing and outsourcing of capabilities, and whether the working hours and remuneration of workers employed by contractors are fair and reasonable.

2018 was the first year we have reported the number of contractors across regions. As contractors are not our direct employees, reporting of these numbers presents significant data collection and validation issues, and it will take more than one reporting cycle to be able to report fully and completely.

However from this first information we can see that the ratio of contractors to employees varies significantly between our regional operations, with 87 percent of our total workforce being made up of contractors in India, compared to 37 percent in Mainland China. In some regions the use of contractors reflects outsourcing of operations and maintenance activities, and in other cases it reflects temporary increases in manpower due to the resourcing of capital projects.

The highest utilisation of labour supply contractors (that is contractor staff under CLP direction and control) is in our Hong Kong business, where it is equivalent to 29 percent of our employees. Of these contractors, 71 percent have been working with CLP for one year or more as at the end of December 2018.

In 2018 we carried out an independent review of the wage practices of three major contractors in Hong Kong. We will follow up on the detailed results of this in 2019, but an early conclusion is that we need more transparency over labour practices in sub-contractors.

Supporting diversity and inclusion

Given the opportunity presented by increasing levels of female workforce participation, we have set a number of Group-wide targets which support the UN SDGs, in particular our commitment for SDG 8 Decent Work & Economic Growth. Women in leadership increased to 22.9 percent, while Women in engineering increased to 11 percent. This progress reflects our commitment and efforts in attracting and developing our female employees, and our focus on creating a diverse and inclusive workplace.

We continue to implement initiatives to encourage more females into our workforce. In Hong Kong we have progressively enhanced maternity related benefits, expanded flexible working possibilities, and are monitoring gender pay equity issues actively.

There are two concepts commonly used to identify and address gender pay issues. Gender Pay Equity is a measure of the median earnings of females compared to males and reflects the demographic profile of the organisation, in particular the percentage of females in senior roles. On the other hand Equal Pay for Work of Equal Value is a measure of relative pay for jobs at the same grade or level.

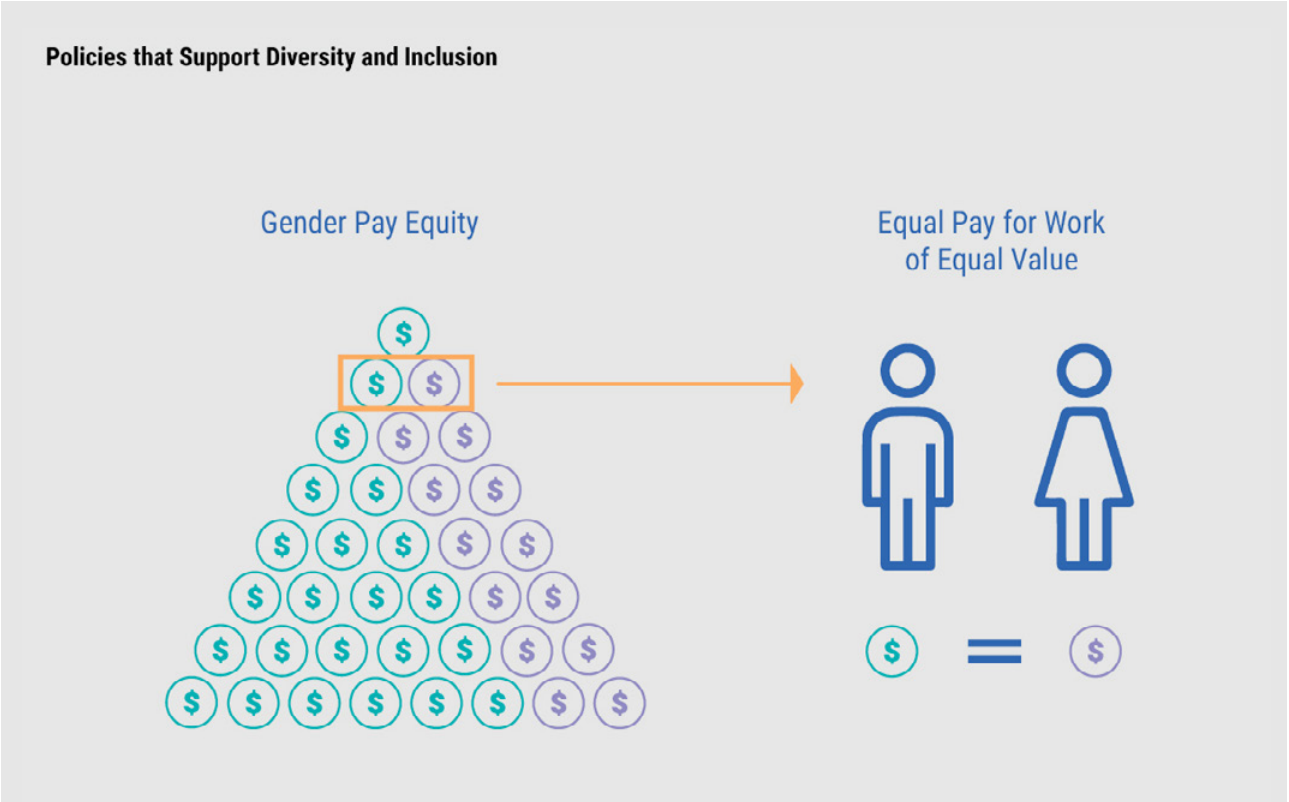
To assess Gender Pay Equity in our Hong Kong workforce we commissioned an independent audit using the UK gender pay equity disclosure methodology. The results of this confirmed that median actual earnings of our female employees are higher than male employees. This reflects the structure of our workforce, with relatively low percentage of females in operational roles, but conversely higher percentages in professional and managerial roles.

We ensure Equal Pay for Work of Equal Value by applying objective and non-discriminatory processes of job evaluation, grading and pay determination. We have confirmed that our processes comply with the Hong Kong Equal Opportunities Commission guidelines on equal pay between men and women under the Sex Discrimination Ordinance.

Our Group-wide human resources policy guidelines also require all of our subsidiary businesses to have similar objective and non-discriminatory processes in place. For example, EnergyAustralia undertook a gender pay equity exercise in 2018 to address pay differentials between pay for men and women in salaried positions.

This year we received external recognition with the Family Friendly Employers award in Hong Kong and were amongst the first signatories in Hong Kong of the Racial Diversity & Inclusion Charter.

Policies that Support Diversity and Inclusion



There are multiple dimensions of diversity

We recognise that we operate in a culturally diverse region, consequently each subsidiary has the freedom to respond appropriately to local diversity and inclusion (D&I) priorities. In 2016, EnergyAustralia has established Prism – an internal Lesbian, Gay, Bisexual, Transgender, Intersex and Queer (LGBTIQ+) network which is open to all employees who identify as LGBTIQ+ and their allies. In less than three years, Prism has gone from being selected as one of EnergyAustralia's four D&I pillars to being recognised as the Employee Network of the Year by the Australian Workplace Equality Index (AWEI) and named a finalist in the Michael Kirby LGBTIQ Inclusion Award by the Australia Human Resources Institute.

Guided by a diverse committee comprised of volunteers from across the organisation, Prism has focused on creating a safe place where employees are able to share personal stories and promote inclusion. This has been done through programs and activities such as revising policies to be more inclusive, partnering with not-for-profit organisations and sponsorships.

Prism has made a significant impact within EnergyAustralia, with over 36 percent of employees being active members of the network. The result has been a 5 percent increase in the number of staff who feel safe to identify as LGBTIQ+ at work from 2017 to 2018 and an improvement in the engagement score of employees who identify as LGBTIQ+.

Attracting the right talent

We continue to build our capabilities with the recruitment of new competencies in renewable energy and innovation, together with strategic hires to strengthen our existing core competencies. Our attraction rate is consistently high, which demonstrates that CLP is a globally recognised employer brand within the energy sector. The impact of this is that our management group is increasingly diverse with respect to their backgrounds, experience and origin. In 2018 we recruited 16 senior strategic hires from diverse locations and sectors.

Find out more from our Annual Report 〉

We are broadening and diversifying our recruitment sources and channels, for example recruiting engineering graduates directly from a number of overseas universities. Last year we provided industrial placements in Hong Kong for engineering students from the Universities of Manchester and Aston in the U.K., EPFL in Switzerland, and the University of New South Wales in Australia.

From a longer term perspective we are also taking supply side initiatives. In addition to our regular apprentice, technician and graduate recruitment schemes, we continued our established female engineer mentoring programme in Hong Kong.

The CLP Power Academy in Hong Kong provides high quality professional training to nurture talent who want to pursue a career in the power industry. In partnership with The Hong Kong University of Science and Technology and the University of Strathclyde, the Power Academy offered the first academic and industry-run Dual Master's Degree Programme. The aim is to nurture next generation professionals and promote research into the application of innovation and technology in the power industry. Following the Academy's launch in 2017, the first batch of its 33 graduate students completed the Professional Diploma in Power Engineering and Certificate for Junior Electricians programme in early 2019.

Our technical trainees intake in 2018

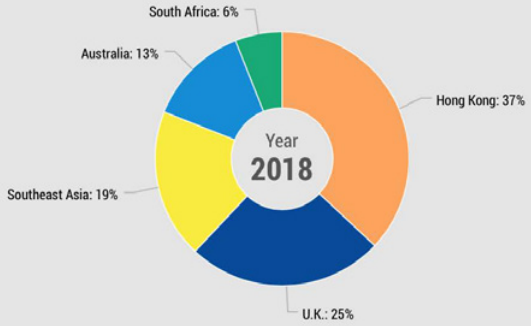
	Male	Female	Total
Hong Kong	75.8%	24.2%	66
Mainland China	87.5%	12.5%	8
India	–	–	–
Australia	90.9%	9.1%	11
TOTAL	78.8%	21.2%	85

Our technical trainees intake in 2018

	Male	Female	Total
Hong Kong	65.1%	34.9%	307
Mainland China	87.2%	12.8%	47
India	89.7%	10.3%	29
Australia	60.5%	39.5%	582
Total	64.1%	35.9%	965
Average Age of total new hire			35.9

Competitive pay and sustainable benefits play a key role in attracting and retaining staff. We monitor pay carefully to ensure that it is competitive, and reward all staff in relation to individual and company performance. Our core benefits are also reviewed regularly to ensure they are fit-for-purpose and sustainable. This year we received the Fair Wage Certificate award from the independent Fair Wage Network for our Hong Kong wage practices. In recognition of our placing high value on sustainable retirement benefits, we also received a Good MPF Employer award from the Mandatory Provident Fund Schemes Authority in Hong Kong, and an award for the best Occupational Retirement Schemes Ordinance (ORSO) scheme from the Asia Asset Management publication.

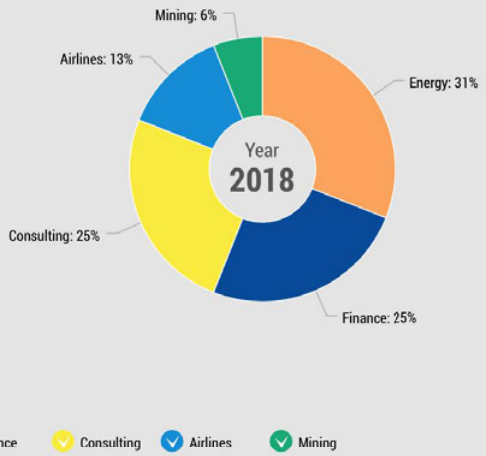
Recruitment of Senior Strategic Hires By Region (%)



Notes:
[1] Figures include rounding adjustments.

	2018
Hong Kong	37%
U.K.	25%
Southeast Asia	19%
Australia	13%
South Africa	6%

Recruitment of Senior Strategic Hires By Sector (%)



Notes:
[1] Figures include rounding adjustments.

	2018
Energy	31%
Finance / Investment	25%
Consulting & others	25%
Airlines	13%
Mining	6%

Innovation and digitalisation: a changing skills profile

The transition to renewable energy presents a number of challenges. Whilst some skills are transferrable from the conventional energy business, we also need to build new skills and capabilities. For example, any venture into offshore wind will present new technical challenges for us, and will require new capabilities. Microgrid expertise is also becoming more important on the distribution side. Other challenges are presented by the remote locations of many RE assets, and the common practice of contracting out operations and maintenance activities. Consequently, developing a resourcing model for RE that is value-adding and sustainable, and applying that consistently across the Group, is a priority.

We are allocating more resources to our innovation related teams. There has been a significant expansion in resources allocated over the past two years, and this year we reviewed resource allocation to ensure it was efficient, effective, and aligned with our innovation priorities. We are also strengthening our subsidiary CLPe Solutions, formerly-named CLP Engineering, in preparation for it being the vehicle for commercialisation of our innovation business. EnergyAustralia embarked on a major restructure of the Customer Business Unit in 2018, providing the foundation for an agile and sustainable workforce where employees will operate in project-based teams to respond efficiently to the rapidly-changing customer environment.

The development of our employees to prepare them for the digital economy is important. A key aspect of this is ensuring an adequate level of executive awareness of the challenges presented by the energy transition and digitalisation to prepare them for an increasingly volatile, uncertain, complex and ambiguous business environment. This year we continued to work with our partners Chatham House, IMD and EPFL to deliver topical industry briefings to key executives.

We also delivered a number of targeted training programmes on digital skills. These programs included managing digital disruption with IMD, and an intensive data analytics programme that will be delivered by technology educator Decoded. We have also introduced Design Thinking training into our Hong Kong business.

Outlook

Looking to the future, a key challenge will be optimising the potential for productivity and safety gains presented by automation and artificial intelligence (AI), whilst balancing that with the potential impact on employment and job security.

McKinsey & Company estimates that there are significant potential productivity gains from automation / AI in the utility sector. This potential can help us to balance the challenges presented by the combined pressures of demographic trends and increased demand for STEM qualified staff. Our ten-year retirement projection also gives us a window of opportunity to manage this transition progressively, and in a socially responsible manner.

Given demographic changes we expect to see increasing political and social pressure to extend retirement ages. Whilst there are some persuasive arguments for this, in an organisation with a high average age and very low staff turnover rates, the potential dysfunctional consequences also have to be anticipated and managed. Given the need to refresh and digitalise the workforce, our retirement projection is an opportunity to both recruit new talent and reskill to meet the challenges of digitalisation. It also offers a valuable career development and promotion opportunity for our younger employees. Deferring this opportunity would have a potentially negative impact on our ability to retain young talent.

Changing social values and expectations also present employer branding and recruitment challenges to energy companies. As societal concerns over sustainable investment increase, companies in the energy sector have to demonstrate to current and future employees that they are managing responsibly in accordance with clearly articulated values, and are committed to supporting the transition to a low carbon future.

Standard ESG disclosures

Standard ESG disclosures

Sustainability covers a broad range of topics, many of which are important to a business but not material. We continue to disclose our management approach and performance in relation to these topics. Our performance data are also available in Data and downloads.

- Corporate governance
- Safety
- Environment
- Climate change
- Operations
- Stakeholder engagement
- Employees
- Customers
- Supply Chain
- Materiality assessment
- Reporting scope and data verification
- Reporting frameworks and content indices

Corporate governance

Corporate Governance Framework and Code

Management approach

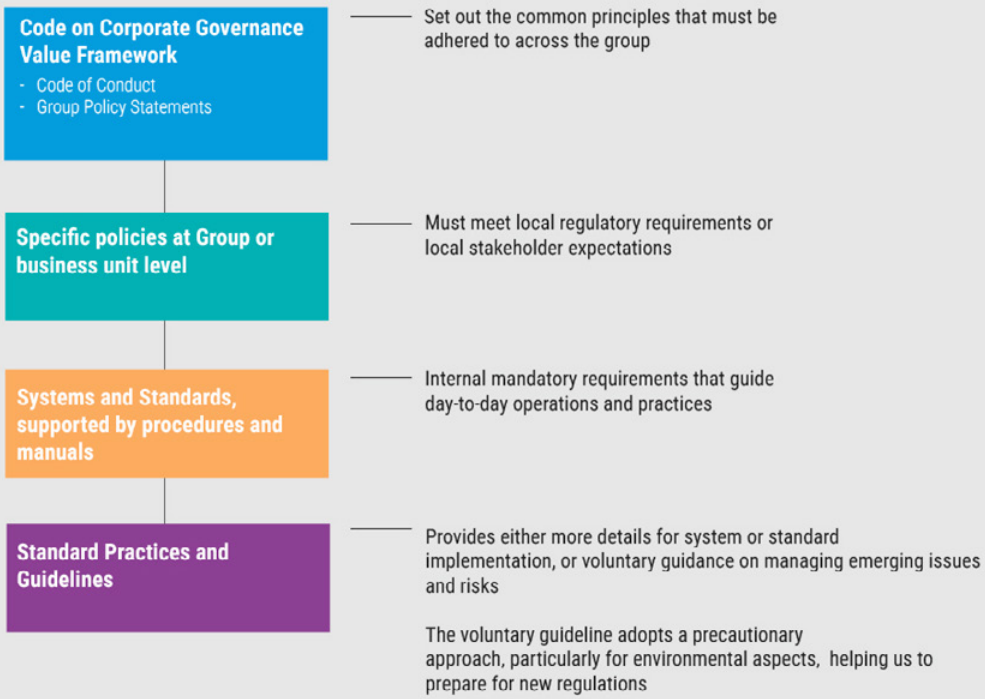
The CLP Code of Governance (The CLP Code) is the commitment of the Board and senior management to good standards of corporate governance. It sets out common principles and guides a set of policies, systems, standards and guidelines to govern our corporate behaviour at different levels of the organisation. The CLP Code guides us to uphold our values and conduct our affairs with different stakeholders in an ethical, transparent and accountable manner.

The CLP Corporate Governance Framework identifies all the key participants and defines the framework and process for monitoring the management of the CLP Group to ensure that it is run in the interests of our shareholders and meets the expectations of our stakeholders.

A comprehensive set of policies and guidelines provides guidance on appropriate conduct in our day-to-day work. Above all, corporate governance is a matter of culture, driving us to continually make conscious decisions to do the right thing.

A culture of ethical behaviour – alongside our long-term commitment to stakeholders – has enabled us to integrate sustainability into our overall corporate governance structure and decision-making processes.

How We Approach Corporate Governance



Year in review

The Board is our highest governance body and it actively promotes the success of the Group by directing and supervising its affairs in a responsible and effective manner. Some of its responsibilities are discharged through delegation to six Board Committees. The two committees most involved in sustainability-related matters are the Sustainability Committee and the Audit & Risk Committee.

Find out more about Sustainability Governance ›

The Corporate Governance Report in the Annual Report discloses our governance performance in detail, including on the following topics:

- disclosure of conflicts of interest;
- training and development programmes for Directors and Senior Management;
- Board evaluation;
- Board independence;
- Board diversity; and
- The process for appointing a Director.

Find out more from the Corporate Governance Report ›

The Human Resources and Remuneration Committee Report covers our Remuneration Policy, including the non-financial metrics considered for executive's remuneration.

Code of Conduct and anti-corruption

Management approach

Our Code of Conduct specifies how we should act with integrity in our activities, and serves as a tool to guard against corruption within CLP. The Code is available to the public and applies across the entirety of CLP Group – including CLP Holdings, its wholly owned subsidiaries, and joint ventures or companies in which CLP holds a controlling interest. All employees of CLP, irrespective of their position and function, are expected to fully adhere to the principles contained in the Code. In the case of joint ventures or companies in which CLP does not hold a controlling interest, the representatives concerned are expected to act in accordance with the Code themselves and to make a concerted effort to influence those with whom they are working to follow similar standards of integrity and ethical behaviour. Likewise, contractors working for CLP are encouraged to follow CLP's Code of Conduct for the duration of their contract.

We also have a Whistleblowing Policy that encourages employees and related third parties (such as customers and suppliers) who deal with CLP to raise concerns about any real or perceived misconduct, malpractice or irregularity through a confidential reporting channel.

Monitoring and follow-up

Training in relation to the Code of Conduct is mandatory for all staff after joining the company. We conduct a Business Practice Review (BPR) process for all staff every four years to refresh a company-wide understanding of the principles of the Code, and to ensure our business practices remain compliant. Any potential issues are raised and reviewed with management. A number of case studies based on past violations are also included to highlight how to properly handle potential and actual situations in which the Code has been violated. Contractors are encouraged to attend the BPR sessions alongside CLP employees.

The General Representation Letter (GRL) process is one of the means by which non-compliance with the Code can be reported. The process reinforces personal responsibility for good governance and sets controls at all levels within CLP. For instance, business practices are reviewed and fraud risks in different areas assessed as part of the process, while irregularities or exceptions are reported for senior management's attention. Managers in the Group are also required to sign the Code of Conduct Compliance Statement on an annual basis. We promote the Code of Conduct and Whistleblowing Policy to our employees regularly, including by advising of any updates or revisions.

The CLP-wide reporting system for Code of Conduct violations applies to any alleged or potential breach. All CLP staff are expected to co-operate fully in the investigation of an alleged violation, and disciplinary action applies to any staff member found to be in breach of the Code. The number of breaches of the Code and any cases of corruption are reported annually, with the relevant data verified by a third party.

Operational responsibilities

Potential violations of the Code of Conduct are reported to our Group Internal Audit (GIA) by employees, vendors, contractors and GIA auditors. Communications are received via anonymous letters, anonymous emails or phone calls.

GIA regularly reviews compliance with the Code, and investigates any potential violations, except for those related to human resources, which are investigated by Human Resources (HR).

Non-compliance with the Code results in disciplinary action. The Group Code of Conduct Committee, which comprises the Executive Director and Chief Financial Officer, Group General Counsel & Chief Administrative Officer, and Chief Human Resources Officer, reviews and endorses any disciplinary measures taken.

For a quicker response to Code of Conduct violations in Australia, EnergyAustralia (EA) has been delegated the responsibility to manage and take action for potential violations committed by EA employees. EA will inform the CLP Holdings Audit & Risk Committee for cases involving senior EA employees.

In 2017, a separate Internal Complaints Committee was established for CLP India to handle complaints of sexual harassment at the workplace in accordance with Indian law.

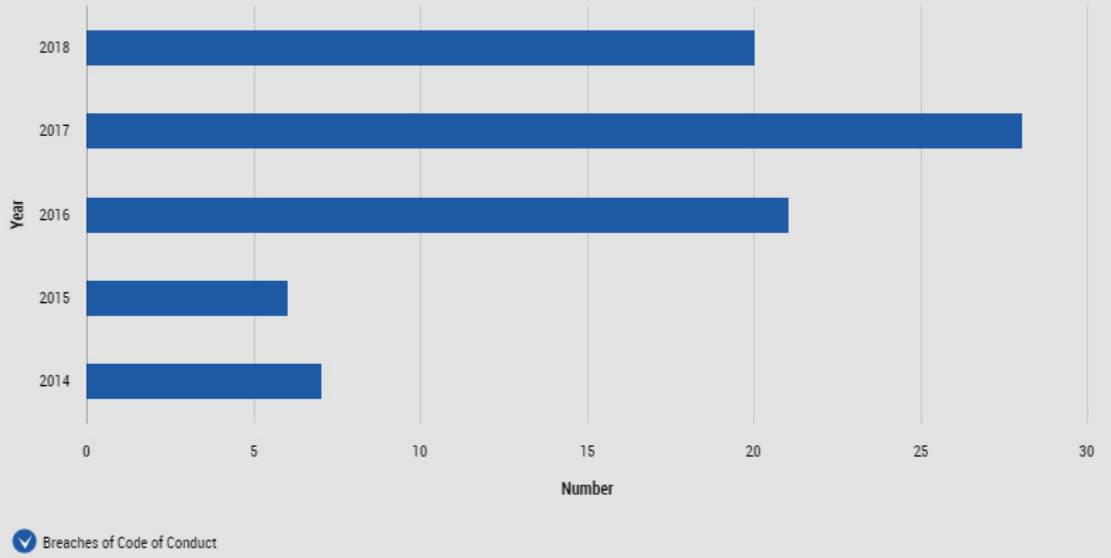
Year in review

In 2018, all employees in the Group completed the latest BPR training. In addition, CLP completed the review and updating of key control policy/procedures, including the *Policy on Making Political Contributions, the Management Controls Standard Manual,* and *the Procedure on Gift and Entertainment – HK, China and Southeast Asia*.

During 2018, there were 20 breaches (compared with 28 in 2017) of the Code of Conduct. In 2018, there were no convicted cases of corruption at CLP (as in 2017). There were 16 cases of whistleblowing (compared with 11 in 2017).

None of the 20 breaches of the Code of Conduct in 2018 was material to the Group's financial statements or overall operations. None involved senior management. The breaches were mainly related to issues of workplace behaviour and individual's ethics and integrity. Sanctions ranged from reprimand to dismissal. The relatively higher number of breaches in the last several years reflects the improved identification and stricter enforcement of work place behaviour requirements.

Breaches of Code of Conduct



	2018	2017	2016	2015	2014
Breaches of Code of Conduct	20	28	21	6	7

Legal compliance

Management approach

Compliance with all laws and regulations is the basic requirement for maintaining the social license to operate. The CLP Group operates in a number of different jurisdictions with different legal and regulatory requirements. Compliance with the requirements in the jurisdictions that we operate in has always been and will continue to be a matter of top priority for us.

Our commitment to comply with laws and regulations is specified in the Code of Conduct. There are also additional policies, codes and guidelines that apply to our operations and practices under the Code of Conduct including competition law compliance, compliance with personal data and privacy, health, safety and environmental (HSE) policies, and human resources policies, etc.

We are prepared to forego opportunity or advantage in order to maintain our high standards of corporate governance and integrity. Beyond compliance, we voluntarily follow other standards that reflect our principles and values.

Monitoring and follow-up

One of the responsibilities of the Audit & Risk Committee is to ensure that CLP is satisfying the compliance principles laid out in the Value Framework and the Code of Conduct, as well as compliance with applicable legal and regulatory requirements such as the Listing Rules, the Companies Ordinance and the Securities and Futures Ordinance. The Committee also reviews regulatory and legal cases. Every six months, Group Legal Affairs compiles a "CLP Group Key Regulatory and Legal Compliances Issues Report", which covers key regulatory compliance issues as well as legal cases in which CLP is a named defendant for the Board-level Audit & Risk Committee.

We often find ourselves confronted with changes in the legal and regulatory regimes that affects our operations. As a result, we closely monitor emerging regulations, and ensure we are prepared for new regulations before they become effective.

Accordingly, we reviewed new and amended laws/ regulations which came into effect during the 2018 reporting year to identify those which have a significant impact on the business. The threshold applied for assessing the impact of new and amended laws/ regulations is whether there is significant investment/ expenditure required to ensure compliance. The following relevant aspects form part of this review:

- **Emissions** – air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non- hazardous waste
- **Employment** – compensation, dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination and other benefits and welfare
- **Health and Safety** – safe working environment and protecting employees from occupational hazards
- **Labour Standards** – prevention of child and forced labour
- **Product Responsibility** – consumer data protection and privacy.
- **Anti-corruption** – bribery, extortion, fraud and money laundering.

The results of this review are described in the relevant sections of this report.

Year in review

To uphold the spirit of transparency and accountability, we report any cases of legal non-compliance annually in our Sustainability Report. These include convicted criminal cases against CLP (as a named defendant), and major breaches that result in significant fines or non-monetary sanctions. Our 2018 performance is summarised below, grouped based on the GRI Standards and the HKEx ESG Reporting Guide:

		Number of cases	Supplementary information
Business practices	**Anti-corruption**	No reportable case.	Read more in the Code of Conduct and anti-corruption section
	Anti-competitive behaviour	No new reportable case in 2018. There is one existing and previously reported case involving our Ho-Ping Power Station in Taiwan, in which the CLP Group has a 20 percent equity interest.	The Ho-Ping litigation is for alleged concerted action with other independent power producers (IPPs) in violation of the **Taiwan Fair Trade Act**. The Taiwan Fair Trade Commission (FTC) in 2013 ruled and fined nine IPPs for alleged cartel behaviour. The FTC's decision was eventually overruled by the Taipei High Administrative Court (THAC) in October 2014. However the FTC successfully appealed the THAC's decision to the Supreme Administrative Court (SAC), and the case returned to the THAC for re-examination. In May 2017 the THAC ruled again in favour of Ho-Ping and rejected the FTC's decision. In June 2018, the SAC accepted FTC's further appeal and, for the second time, returned the case to the THAC for re-examination. Ho-Ping will continue to defend its position in the THAC.
Employees and contractors	**Employment practices**	No reportable case.	
	Labour standards (child and forced labour)	No reportable case.	
	Occupational health and safety	No reportable case.	
Customer	**Customer privacy**	No reportable case.	Find out more from "Protecting customers' data"
	Product and service Information and labelling and marketing information	No reportable case.	
	Customer health and safety	No reportable case.	
Community	**Rights of indigenous people**	No reportable case.	
Environment		No reportable case.	There were two environmental licence limit exceedances in 2018. Our Jhajjar plant in India was fined in relation to ash disposal requirements; but our view is Jhajjar is compliant. Read more in the Environmental regulations and compliance section.

We are exposed to the risk of contractual disputes and litigation in the course of our normal operations. The Group considers each instance separately in accordance with legal advice and will make provision and/or disclose information as appropriate. Refer to Note 30 – Contingent Liabilities in our 2018 Annual Report.

Risk management

Management approach

Effective risk management that takes into account the need to balance risk and opportunity is critical to the long-term growth and sustainability of our business.

Risk Management Framework

Risk is inherent in our operations and the markets in which we operate. We aim to identify risks early so that they can be understood, managed, mitigated, transferred or avoided. This demands a proactive approach to risk management.

CLP's risk management framework comprises four key elements:

1) Risk management philosophy;

2) Risk appetite;

3) Risk governance structure; and

4) Risk management process.

CLP's overall risk management process is overseen by the Board through the Audit & Risk Committee. We recognise that risk management is the responsibility of everyone within the Group. As a consequence, risk management is integrated into our company-wide business and decision-making processes. This includes strategy formulation, business development, business planning, capital allocation, investment decisions, internal control and day-to-day operations.

CLP's risk management objectives are two-tiered:

1. Strategic

At a strategic level, CLP focuses on the identification and management of the material financial and non-financial risks associated with the pursuit of our strategic and business objectives. In pursuing growth opportunities, we aim to optimise risk and return decisions as defined and quantified through a diligent and independent review process.

2. Operational

At an operational level, CLP aims to identify, analyse, evaluate and mitigate all operational hazards and risks. We do this in order to create a safe, healthy, efficient and environmentally-friendly workplace for its employees and contractors. Other considerations include ensuring public safety and health, minimising environmental impact, and securing asset integrity and adequate insurance.

Risk Management Framework

Emerging Risks

CLP recognises that global trends have a significant impact on our operating environment. These trends are responsible for significant political, economic, social, environmental and technological changes, which have crucial implications for our strategic execution and operational performance. We recently conducted a megatrend analysis to identify the ESG topics most material to CLP. Following a review of dozens of prospective megatrends, the following five material topics were identified.

- Increased expectations of business purpose
- Climate change and mitigation
- Technology as enabler and disruptor
- Risks to cyber security and data privacy
- Ever-changing operating environments require an agile, inclusive and sustainable workforce

Going forward, we will continue to strengthen the integration of ESG risks into our risk management framework and processes, including how we consolidate and assess climate-related risks at the Group level.

Read more about how CLP manages the five topics ›

Year in review

ICLP categorises its risk profile into five key risk areas: regulatory, financial, market, commercial, and industrial and operational. Climate change-related risks are embedded in these key risk areas, and reported in the Risk Management Report of the Annual Report. In this Sustainability Report, we report on how climate change impacts our business in the medium to long-term. Additional information on climate-related risks is disclosed through CDP.

Read more about the Risk Management Report ›

Read what climate changes means for CLP ›

Holistic assessment of new investment projects

CLP's investment decision process includes non-financial due diligence to identify an investment project's safety, security, social and environmental risks. Early assessment enables a reduction in the business and reputational risks associated with a project and helps guide our stakeholder engagement. Non-financial due diligence covers different stages of project development, including the pre-investment approval, planning and design, construction, and operational phases. Non-financial due diligence is conducted for all projects which fall within the scope of the CLP Group Investment Committee, which is mandated to review and assess acquisitions, investments, project funding, restructures and disposals proposed by the CLP Group. The Committee is made up of senior management and is chaired by the CEO.

Before major investments receive funding approval from the Investment Committee, there is a review process to assess the risks and financial impacts of the potential investment. This process considers the environmental and climate change-related risks of the proposed projects. The Pre-Investment Environmental Risk Assessment identifies the environmental-related risks that may be material to the proposed project, in addition to potential mitigation measures for a more accurate assessment of the budget needed for delivering the project. The Pre-Investment Carbon Intensity Assessment, which assesses the proposed project's impact on CLP Group's portfolio carbon intensity levels, confirms how the potential investment will fit into our Climate Vision 2050.

Our Environmental Impact Assessment (EIA) standard mandates conducting an EIA before a project can begin. The assessment is applied to all projects over which we have majority ownership or operational control. A series of Health, Safety, Security and Environmental (HSSE) standards and guidelines support the process. A Biodiversity Impact Assessment Guideline provides guidance on managing biodiversity risks where appropriate. The IUCN Red List of Threatened Species and national conservation lists of threatened species are considered well before any investment decision on a new project is made.

In 2018, a Social Due Diligence (SDD) process was deployed to collect information about the impacts of the target investment or project on its surrounding community. Social impacts assessed include the impacts of land acquisition, displacement and resettlement, restriction of access, community safety, influx (that is, effect on local area services, supplies and infrastructure by the project or operational staff), community unrest and cultural heritage. Information obtained during the SDD allows CLP to assess social impacts alongside other risk management exercises such as the Environmental Due Diligence (EDD) to build a complete picture of the project's risks. The SDD process is an opportunity to assess potential mitigation measures and remedial actions during the planning stage. This helps maintain a constructive relationship with the host community throughout the project's lifecycle and ensures we meet our policy obligations. The SDD is now firmly embedded within CLP's Project Management Governance System (PMGS).

Safety

Health, Safety, Security and Environment management

Management approach

Integrating Health, Safety, Security and Environment (HSSE) elements into our assets and processes helps achieve our goal of safe, secure and environmentally responsible operations.

The CLP Group HSSE Management System Standard sets out a structured approach to HSSE risk management, which:

- is executed through a set of standards and guidelines to meet the requirements of the policy statements set out in CLP's Value Framework;
- enables our regional organisations to incorporate HSSE requirements into their business programme; and
- promotes and encourages compliance with the international standards for health and safety and environmental management such as OHSAS 18001, ISO 45001 and ISO 14001.

The Standard contains 15 elements, each of which, is supported by a set of expectations which encourage excellence in HSSE performance across the Group, while allowing some flexibility for implementation at a regional level.

The effectiveness of the HSSE Framework is reviewed and evaluated by the Board-level Sustainability Committee. CLP's investment projects also undergo a variety of HSSE assessments. The results are presented to the Group Investment Committee, comprising of senior management and chaired by the CEO, to support decision-making.

Download the HSSE Management System Standard ❯

Download an overview of the safety and environmental management systems of our assets ❯

HSSE Leadership

Goals and targets

To support safe operations, our HSSE plan has clear targets, objectives, programmes, timelines, and quantifiable Key Performance Indicators (KPIs), as well as sufficient resources including HSSE professionals and an appropriate budget.

Operational responsibilities

The Group HSSE Committee, chaired by the CEO, has the highest executive responsibility on HSSE-related issues. The cross-regional Operations HSSE Coordination Committee, chaired by the Group COO, reports to the Group-level committee. The Committee meets monthly to coordinate, monitor and share knowledge and experience in relation to HSSE practices across the Group, with a special focus on achieving a higher overall level of safety performance.

In addition, various HSSE committees have been established to engage employees at the operational level, which also involves project partners and contractors. HSSE professionals facilitate the overall engagement effort and advise on HSSE matters, while the responsibility for implementing high levels of HSSE standards rests with line management.

Continuous improvement

We regularly review the effectiveness of managing HSSE risks. Using a standardised approach, we regularly review how each of our assets and regions are managing and addressing HSSE safety risks. To support ongoing alignment in risk management, we continue to implement comparable standards for our security risk framework, which includes identifying generic environmental risks and the review of our HSSE standards and management at the Group level. Quarterly HSSE risk reviews are also undertaken to provide detailed information for the Group HSSE Committee and for risk management reporting.

An annual HSSE improvement programme is developed, approved and communicated to staff and contractors in each region. Recommendations are implemented on agreed timescales and programme processes are monitored regularly.

Occupational health and safety

Management approach

In line with our Zero Harm vision, an occupational safety and health management system is in place to meet CLP Group's safety values, expectations and goals, which is equivalent to international standards such as ISO 45001.

We also monitor the occupational diseases of our staff. All health-related incidents are reported according to our incident reporting process. Other Group-level guidelines relating to occupational health include:

- Fitness to Work Guideline;
- Medical Emergency Response Plan;
- Communicable Disease Management; and
- Hearing Conservation.

Goals and targets

Our goal is zero fatalities and injuries for our employees and contractors. We aspire to meet this target as part of our commitment to creating a healthy and safe workplace.

Monitoring and follow-up

The Safety Performance Monitoring and Reporting Standard sets out the safety performance indicators and requirements of safety data reporting. It utilises indicators to show trends which may require more attention to prevent an incident from occurring.

Safety performance is reported internally on a monthly basis. Safety performance data of the assets which fall within CLP's safety reporting scope is collected and presented in the Group HSSE coordination meeting. Data collection is centralised via the Group Operations Information System (GOIS) to facilitate Group-level reporting. We adopt international standards in managing our performance – for example, OHSAS 18001, NOSA and AS 4801. The safety management systems applied to our assets is available for download in the section above.

Training and awareness

Personnel will only be asked to undertake tasks which they are competent to handle. This requires the careful selection, placement, training, and ongoing competency assessment and authorisation of employees, with third-party independent assessment where appropriate. A system is in place to identify and deliver the training necessary to ensure every individual understands the hazards, risks, and control measures associated with their work.

Assets within the Group have the flexibility to structure their own Health and Safety organisations and to design their approaches to providing health and safety training. Safety training requirements are in all contracts and every contractor is expected to undergo safety training relevant to their duties. Spot checks are conducted to ensure compliance.

An appropriate number of trained personnel and supervisors are present at all our sites. Site induction processes are provided to new employees and contractors, and induction training, specialist skill training and checks are provided to ensure all contractors understand their responsibility to work safely. Training plans, modules and authorisations are recorded for all personnel. Appropriate levels of access control are in place at all sites.

Continuous improvement

We conduct thorough investigations into all incidents that have the potential to cause serious injuries. In addition, we are committed to understanding how behaviours drive safety performance and continue to support behavioural safety observation programmes in each region.

Our Incident Management Standard sets out the minimum requirements for the implementation and maintenance of a safety incident management system across the Group. In the event of a major incident, the CLP Group Accident Investigation Panel (AIP) and Investigation Report Format Standard are followed. The AIP, chaired by senior members of staff from outside the business unit in which the accident occurred, conducts a thorough investigation. The AIP's reports are critically reviewed by the Group Chief Operating Officer and regional Managing Director. The intention is to identify root causes and contributing factors in relation to every incident, and ensure it does not happen again.

Year in review

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 2018.

We were deeply saddened by two fatal incidents of one employee and one contractor in Australia this year. A fatality also occurred to a contractor in the Ho-Ping power station in Taiwan where we have minority ownership but no operating control, i.e. out of our reporting scope for safety. Regardless we report this case given it being a serious injuries and fatalities (SIF) case.

Read a detailed discussion of safety performance in Our Zero Harm vision section ›

CLP Group safety performance by region in 2018 (Employees/ contractors)

	CLP Holdings	Hong Kong	Mainland China	India	Australia	Total	Combined (Employees and Contractors)
Fatalities	0/0	0/0	0/0	0/0	1/1	1/1	2
Fatality Rate (number per 200,000 manhours)	0.00/0.00	0.00/0.00	0.00/0.00	0.00/0.00	0.04/0.06	0.01/0.01	0.01
Number of Lost Time Injuries	0/0	5/5	0/0	0/2	6/4	11/11	22
Lost Time Injury Rate [LTIR] (number per 200,000 manhours)	0.00/0.00	0.10/0.08	0.00/0.00	0.00/0.06	0.26/0.26	0.13/0.09	0.10
Total Recordable Injury Rate [TRIR] (number per 200,000 manhours)	0.00/0.00	0.15/0.20	0.00/0.07	0.00/0.19	0.44/1.09	0.19/0.29	0.25
Number of days lost/ days charged [employees only] (Number)	0	120	0	0	133	253	253
Number of occupational diseases [employees only] (Number)	0	0	0	0	0	0	0

Note: In 2018, the total number of days worked by contractors and sub-contractors was approximately 2.9 million, assuming a nine-hour work day.

Our HSE Improvement Strategy was formulated in 2018. It is based around five pillars, each of which emphasises a key fundamental principle to effective HSE management, as summarised in the diagram below. The critical theme across all pillars is a focus on reducing the number of serious incidents. Each pillar contains a number of elements that will work together to deliver the Strategy in a cohesive manner. The Strategy will be implemented over a three-year period, with an initial focus on putting enablers in place and followed by embedding and reviewing actions.

HSE Improvement Strategy

Uplifting Our Safety Culture	We will focus on involving both employees and contractors to build on the existing safety culture across all regions in which we operate. The enhanced safety culture will support more effective intervention by managers, promote questioning attitudes, and encourage vigilance against complacency.
Rethinking Risk	We will rethink our risks to move beyond considering compliance alone as the end goal. We will demonstrate that we learn from incidents both within our own company and in other industries. Our actions will generate a shift towards a proactive culture where risk exposure is continuously analysed and reduced.
Involving Our Stakeholders	Employees, partners, contractors, and local authorities all play important roles in driving HSE performance improvements. Engagement with these stakeholders will be critical for success and we will include contractors as well as all employees in safety culture surveys.
Maintaining a Healthy and Engaged Workforce	Physical and mental wellbeing are central to helping people stay motivated and valued. Occupational health management has so far largely concentrated on regulatory compliance, but this pillar of our HSE Improvement Strategy provides an opportunity to go beyond compliance and support more positive attitudes and innovative thinking in health and wellbeing.
Ensuring Environmental Sustainability	Environmental non-compliance is an emerging risk area for us, particularly with the changing regulatory landscape. We are committed to ensure we support sustainability by operating in an environmentally responsible manner.

Customer health and safety

While the Group's HSSE Management System Standard sets out an overarching approach to managing the safety risks in our operations, we also take responsibility for preserving public health and safety, including for people who work in proximity to our electricity supply lines.

Hong Kong is the only location where we operate a transmission and distribution network. Working near electricity supply lines can pose public health and safety concerns. In Hong Kong, we conduct regular construction site inspections and provide cable plans and safety talks to road work contractors and site management personnel to enhance safety awareness.

Electromagnetic fields (EMF) arising from the power system can be another public health concern. Our power supply equipment fully complies with the guidelines issued by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Regular EMF measurements on our power supply equipment are carried out jointly with the Electrical and Mechanical Services Department. The measured EMF levels are well below the guideline limits. In 2018, we did not have any reportable case affecting customer health and safety in Hong Kong.

Nuclear Safety

Management approach

Electricity generated from the Guangdong Daya Bay Nuclear Power Station (GNPS), in which we hold a 25 percent equity share – provides roughly 30 percent of the power supplied to our customers in Hong Kong. Safe operation is always the top priority for us, and site management is covered by our HSSE Management System Standard. At GNPS, the defence-in-depth principle (the application of multiple independent and redundant layers of protection) is applied across a full spectrum of areas ranging from plant design to operational procedures. These measures seek to ensure robust safety back up support.

In line with good business practice, the entity which owns GNPS – Guangdong Nuclear Power Joint Venture Company Limited (GNPJVC) – has provisioned for the expenses associated with the decommissioning of GNPS as required under the joint venture contractual agreement. The amount of this provision is commercially sensitive.

Monitoring and follow-up

Radiation exposure for workers is closely managed by GNPS both collectively and at the individual level as part of operating protocols. Workers incur most of their radiation dosage during planned refuelling outages, when much of the work is undertaken at the nuclear generating units. The level of radiation dosage is typically associated with the number of planned outages carried out at the units, which require inspection and maintenance activities in radiation-controlled areas.

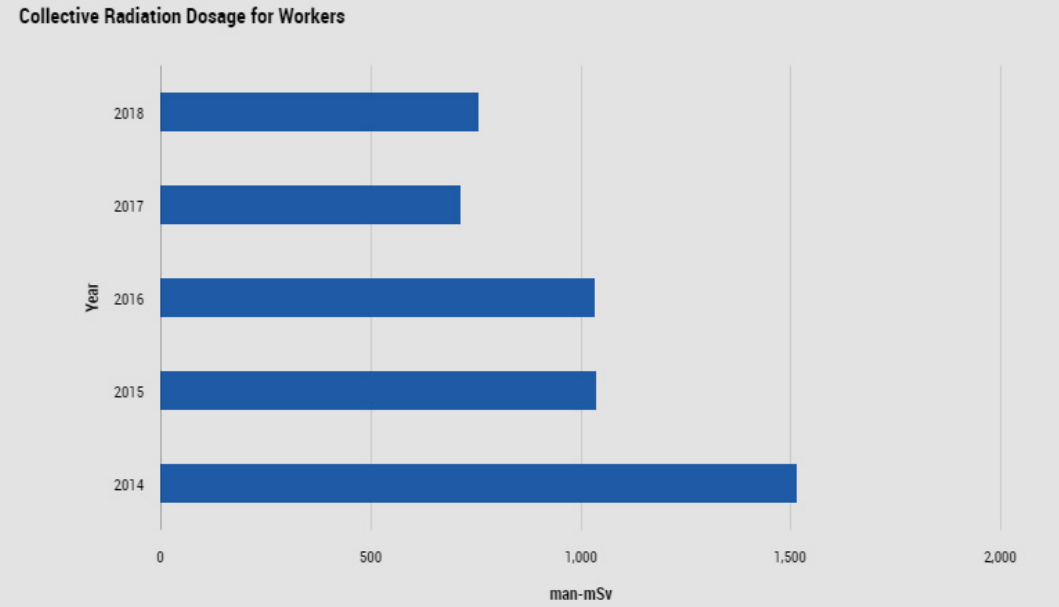
Training and awareness

An on-site training school provides professional nuclear training within a well-established system. Stringent training and regular review of qualifications help ensure the professionalism of nuclear operators. A biannual requalification mechanism ensures operator competency in plant operation, and includes training in procedures, nuclear safety and the human error awareness.

Year in review

Nuclear is a reliable, cost-effective and virtually emission-free electricity source. CLP has partnered with CGNPC on the Guangdong Daya Bay Nuclear Power Station (GNPS) since 1994. GNPS continued to operate smoothly in 2018. There was one Licensing Operational Event (level 0).

One planned outage was carried out in 2018. The collective radiation dosage for the year was 753 man-mSv (similar to 712 man-mSv in 2017). The 2018 figure translates into an average of less than 0.4 mSv per person per year, compared to the annual radiation dosage received in Hong Kong of 2.4 mSv per person per year from the natural environment and about 3 mSv per person per year from all sources.



	2018	2017	2016	2015	2014
man-mSv	753	712	1,032	1,035	1,512

Environment

Environmental management

Management approach

The HSSE Framework and the Group-wide Environmental Policy are supported by a suite of standards and guidelines that mandate good practices and align our Group-wide environmental management efforts. The material environmental issues covered include:

- environmental impact assessment
- environmental monitoring
- environmental management system development
- environmental due diligence
- data management systems

Strategies and procedures

The Group HSSE Standard states that the environmental risks associated with a project's operational life-cycle should be appropriately managed. At the project planning stage, the relevant assessments include a Pre-investment Environmental Risk Assessment (PIERA), an Environmental Impact Assessment (EIA), and air emissions and biodiversity assessments – whichever is applicable. Social due diligence is also part of our initial holistic assessment.

We take great care in conducting our **Environmental Impact Assessments (EIA)**, and are committed to fulfilling the requirements and recommendations stipulated in EIA reports and local regulations. We also have a process in place to ensure the EIA recommendations are implemented. Our planning procedures extend beyond compliance in less developed countries, where regulations are not as mature. For instance, we mandate conducting an EIA for all major generation projects in India, even though it is not a statutory requirement for renewable energy projects in the country.

The **Environmental Management System Standard** is a management tool that helps us identify and manage significant environmental risks arising from our operations. It also provides a systematic approach to continually improving our assets' environmental performance. We require power generation assets over which we have operational control to achieve third-party certified ISO14001 environmental management systems within two years from commencement of operation or acquisition.

We are pleased to report that in 2018, all assets of this nature achieved ISO14001 certification on time, and all our assets successfully completed the upgrading from ISO14001:2004 systems to the ISO14001:2015.

Monitoring and follow-up

The **Group Operations Information System (GOIS)** is a customised system we use to collect and manage data in relation to asset management, environment, safety and community initiatives. The built-in data approval sequence and automated presentation and reporting functions strengthen data governance

We recognise that the development of goals and targets can help monitor our progress in using environmental resources efficiently. In 2018, we started to assess the potential for developing a set of environmental performance targets. The data required to support these targets will be collected by the GOIS, enabling us to regularly review our performance.

We have also developed an **Environmental Monitoring** process to be applied at the project level. It specifies how environmental conditions should be assessed and assists with the design and implementation of suitable measures.

Download the safety and environmental management systems of our assets in the HSSE section ›

Read about how environmental aspects are considered in new projects ›

Environmental regulations and compliance

Management approach

In addition to fully complying with applicable environmental laws and regulations in the jurisdictions in which we operate, we have developed voluntary standards which go beyond legal requirements. For new investments, established processes are in place to review relevant environmental requirements.

See our holistic approach to new investment assessment ›

When an incident occurs at an asset under our operational control, it is classified and recorded at the time of notification of the fine or prosecution from local authorities, based on prevailing regulatory or legal definitions.

Year in review

In the year ending 31 December 2018, there was no environmental regulatory non-compliance that resulted in a fines or prosecution. Our Jhajjar plant in India was notified by the Haryana State Pollution Control Board to pay Rs 50 million, after the National Green Tribunal (NGT) announced penalties in November 2018 on thermal power plants that did not meet ash disposal requirements. Our view is Jhajjar is compliant1. We continue to explore viable options for ash utilisation, which remains a key environmental challenge for the Jhajjar plant.

There were two licence limit exceedance incidents in 2018. The significant reduction of licence limit exceedances in 2018 was due to the enhancement of pollution control equipment at Jhajjar. One incident related to particulate emissions at Jhajjar. This was a minor operational incident that did not result in any penalties. The other was an exceedance of acceptable carbon monoxide emissions for three brief periods at Yallourn in Australia. A later assessment determined there was no harm to the environment and the environmental protection authority in Victoria was notified. Corrective action has been taken to prevent a repeat incident in future.

Note: (1) Our Jhajjar plant collaborated with the Association of Power Producers and filed a petition before the Supreme Court, pursuant to which the Supreme Court has stayed the NGT order and directed the thermal power stations to approach the NGT within three weeks.

Environmental regulatory non-compliance and licence exceedances

	2018	2017	2016	2015	2014
Environmental regulatory non-compliances resulting in fines or prosecutions	0	0	0	1	1
Environmental licence limit exceedances and other non-compliances	2	13	2	13	3

Environmental regulatory requirements are becoming more stringent in many locations. We are monitoring these developments closely to prepare for the possibility of additional compliance requirements in future. The key emerging environmental regulations that could affect our business units are summarised below:

Hong Kong

All Hong Kong assets under our operational control maintained full compliance with environmental regulations in 2018.

Mainland China

Under the 'Opinions on Formulating and Strictly Observing Ecological Protection Zone' jointly issued by the Communist Party of China's Central Committee and State Council in February 2017, a national ecological protection zone will be established by the end of 2020. Respective provincial ecological zoning plans are also being developed. We are proactively managing the potential impacts on our assets and operations.

India

Deteriorating air quality has emerged as a key issue in India after capturing the attention of the public, the media and policy makers. Coal-fired power stations face stringent requirements on emissions of particulates, ash utilisation, nitrogen oxides, sulphur dioxide and mercury, as well as water usage.

The Government of India recently announced the National Clean Air Program (NCAP) as a national level strategy to improve ambient air quality within a prescribed timeframe. New limits for air emissions limits at thermal power plants will enter into force in 2019. Accordingly, our Jhajjar power plant needs to ensure that its particulates, nitrogen oxides, sulphur dioxide and mercury emissions do not exceed 50, 300, 200 and 0.03 mg/Nm^3 respectively, while water consumption needs to fall below 3.5 m^3/MWh. We implemented a combustion optimisation solution and overhauled the Flue Gas Desulphurisation (FGD), Electrostatic Precipitator (ESP) and bag filters at Jhajjar to meet the new standards.

Australia

The Australian Government has introduced new standards on phasing out the use of a group of per and poly-fluorinated chemicals in firefighting equipment. South Australia is the only state in which we operate that has banned the use of these substances in firefighting foams. Other states are yet to adopt a formal regulatory position, although they are requiring sites to undertake soil and groundwater sampling to understand the extent of contamination in these jurisdictions. We are investigating the extent and risk profile of the impact of the group of chemicals at our sites and establishing appropriate control process and considering options for replacement across the Group.

The Victorian State Government legislated the Victorian Renewable Energy Target (VRET) in October 2017. This requires 25 percent of state generation to be sourced from renewable energy by 2020, and 40 percent by 2025. In addition, the Government recently committed to a 50 percent target by 2030, which is expected to be legislated in the coming months. If met, the target will lead to a significant increase in renewable energy generation (currently around 18 percent for the state). This will financially challenge existing coal-fired generators and may place pressure on energy prices and reliability. The Emissions Reduction Fund, the Safeguard Mechanism and the Renewable Energy Target operate as national mechanisms to help Australia meet its Paris Agreement commitment of a 26-28 percent reduction in emissions by 2030 from 2005 levels. A national energy policy called the National Energy Guarantee (NEG) was recently dropped after internal divisions about its merits within the ruling Government. The Government is now pursuing a new mechanism called the Retailer Reliability Obligation, which will put a legally binding obligation on retailers to contract with generators and demand response providers to ensure power supplies are there when needed.

Taiwan

In 2017, amendments were made to the Electricity Act (Electricity Act 2017) in Taiwan, which stipulated, inter alia, that electricity generation enterprises with carbon emission intensity above an announced threshold are required to allocate portions of their annual profits to measures of improving the operation and maintenance of the machinery, investing in the pollution-minimising infrastructure and facilitating further advancement in renewable energy. This affected Ho-Ping Power Company (Ho-Ping) in Taiwan, in which CLP has a 20 percent shareholding. Ho-Ping made its first allocation in 2018 in accordance with the Electricity Act 2017 and has been reviewing power plant emissions improvement projects as well as opportunities to invest in renewable energy.

Air emissions

Management approach

Air quality remains a challenge in many of the geographies where we operate. As we expand our renewable and nuclear energy portfolio, our air pollutant emission intensities have reduced. Nonetheless, further reductions on the net emissions from our thermal power stations remains high on our agenda. We consider air quality throughout every project's life cycle, from design, construction and operation to decommission.

Strategies and procedures

Our **Power Plant Air Emissions Standard** stipulates that any fossil fuel-based power plant developed after the effective date of our Power Plant Air Emissions Standard is required to operate within CLP's prescribed limits on sulphur dioxide (SO2), nitrogen oxides (NOX) and total particulates emissions (total PM), or alternatively, must fully comply with local regulations (whichever is more stringent).

Apart from incorporating state-of-the-art air emissions mitigation measures into our plant management processes, we also design new power stations with advanced generation technologies that produce electricity as efficiently as technology allows, which assists in lowering emissions further.

Monitoring and follow-up

We continuously monitor air emissions (SO2 / NOx / Total PM) for facilities under CLP's operational control using a continuous emissions monitoring system and/or stack sampling and mass-balance calculation methodologies prescribed under local regulation.

Year in review

Our total air emissions slightly decreased to 145.5 kT in 2018 even though total electricity generation increased. In Mainland China, an emissions control retrofit at Fangchenggang Power Station was completed in October. In India, we completed an enhancement evaluation of our flue gas desulphurisation plant at Jhajjar, in order to meet more stringent emissions requirements for 2019. This led to a reduction of sulphur dioxide emissions at the plant. We are also conducting studies to enable us to improve our nitrogen oxides (NOx) performance at Jhajjar to meet the new limits. In Hong Kong, a new emission limit on mercury will be imposed at Castle Peak Power Station in April 2019. In Australia, we continue to monitor the introduction of tightening emissions requirements.

Hong Kong

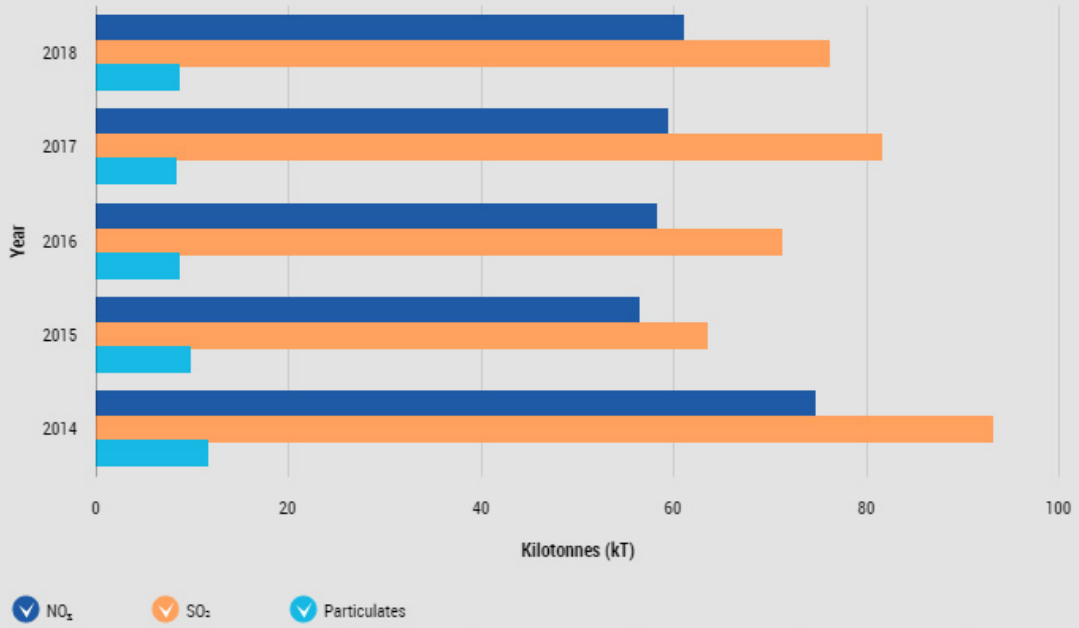
Since 1990, we have concentrated our efforts on reducing emissions and, despite a more than 80 percent increase in electricity demand, we have managed to reduce emissions of sulphur dioxide, nitrogen oxides and respirable suspended particulates by more than 85 percent.

The emissions caps of CAPCO power plants have been progressively tightened over time. The emissions caps applicable for 2018 were the same as those in 2017, which required us to further reduce emissions by six to nine percent from the base set in 2015 and 2016 (same caps for both years).

In 2018, CLP Power Hong Kong complied with all emissions caps set by the Hong Kong Government. This was achieved in spite of emissions caps for sulphur dioxide, nitrogen oxides, and respirable suspended particulates being reduced by 67 percent, 38 percent, and 37 percent respectively compared with 2010 base levels, when the Government introduced emission allowances under the first Technical Memorandum (TM) of the Air Quality Control Ordinance.

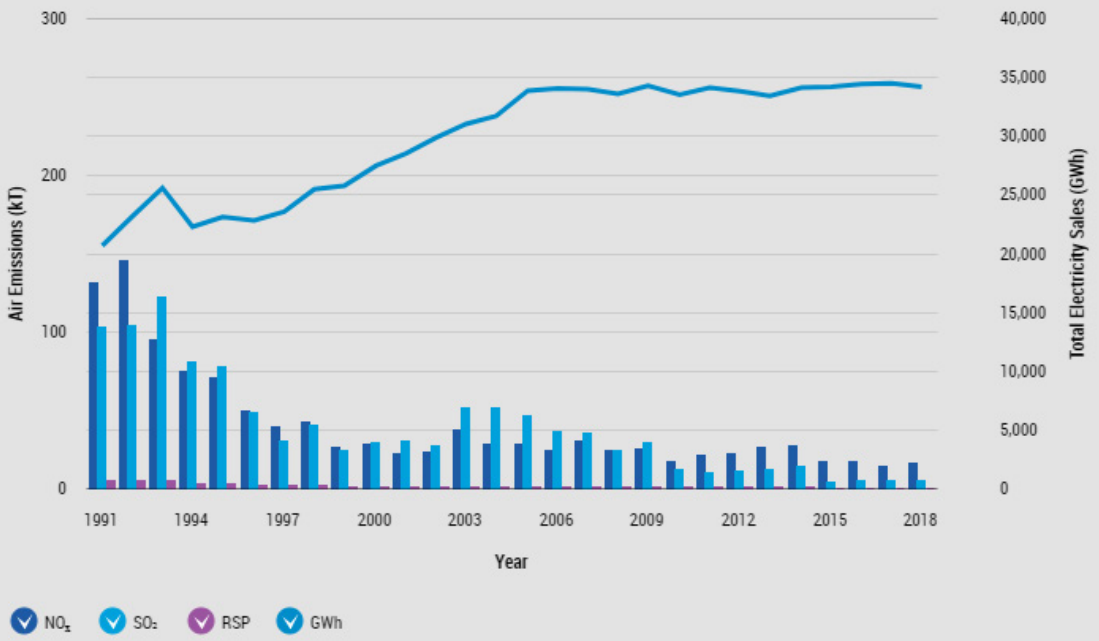
Optimising our diversified fuel mix and maintaining the effectiveness of our emissions control facilities allowed us to comply with these targets while maintaining supply reliability and a reasonable tariff level.

Annual Air Emissions



	2018	2017	2016	2015	2014
NO_x	60.9	59.3	58.1	56.3	74.6
SO_2	76.1	81.6	71.2	63.4	93.0
Particulates	8.5	8.3	8.5	9.8	11.5

CLP Power Hong Kong Air Emissions and Total Electricity Sales since 1991



Note: The electricity sales data from 1990 - 1998 is on a financial year basis ending 30 September. The 1998 data covers the period 1 October 1997 - 30 September 1998 and the 1999 data covers the period 1 January 1999 - 31 December 1999.

Waste

Management approach

We endeavour to reduce the waste we produce and work with qualified parties and partners to reuse or recycle whenever we can. The volume of solid and liquid waste we generate is relatively small, although projects that involve demolition and construction produce more inert waste.

Strategies and procedures

We seek to avoid the use of hazardous materials and use alternatives wherever possible. At our coal-fired power stations, coal ash from coal combustion and gypsum from the flue gas desulphurisation process generates the majority of our non-hazardous waste. All hazardous waste in accordance with local regulations, collected by licensed collectors, or sold for recycling.

Monitoring and follow-up

We monitor our waste generation monthly by tracking solid and liquid forms of hazardous and non-hazardous waste produced and recycled at our facilities.

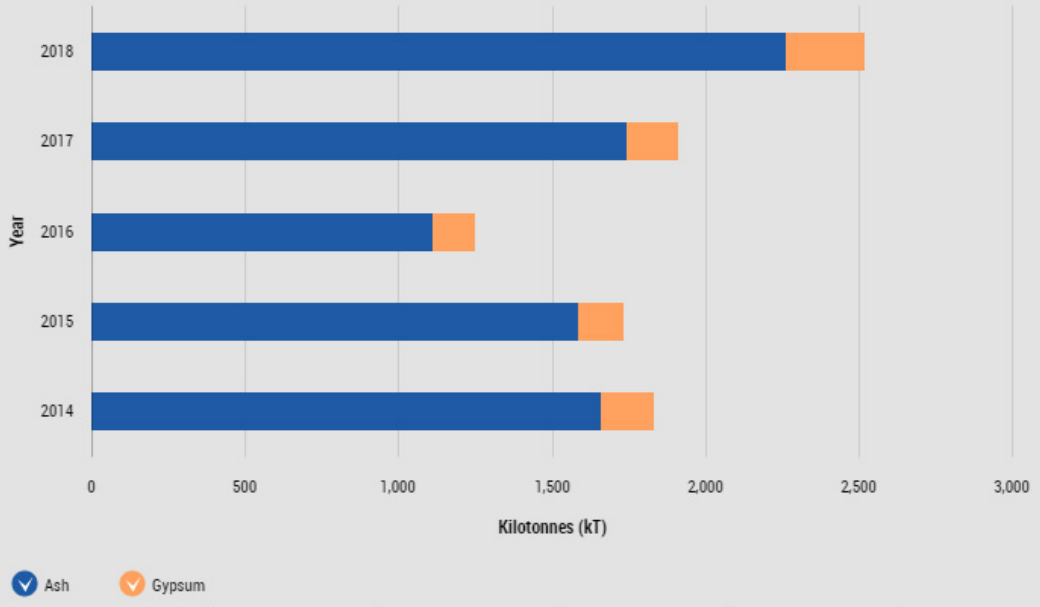
Year in review

Our total solid waste decreased to 12,906 tonnes in 2018 with the total amount being dependent on plant maintenance and other operational activities. We continued to sell our generation by-products such as ash and gypsum for use in other industries where feasible. No significant spills were reported in 2018.

Our power stations run different programmes to manage waste, and learning is shared with both our colleagues and contractors to raise awareness and build capacity. Examples of our programmes in 2018 included:

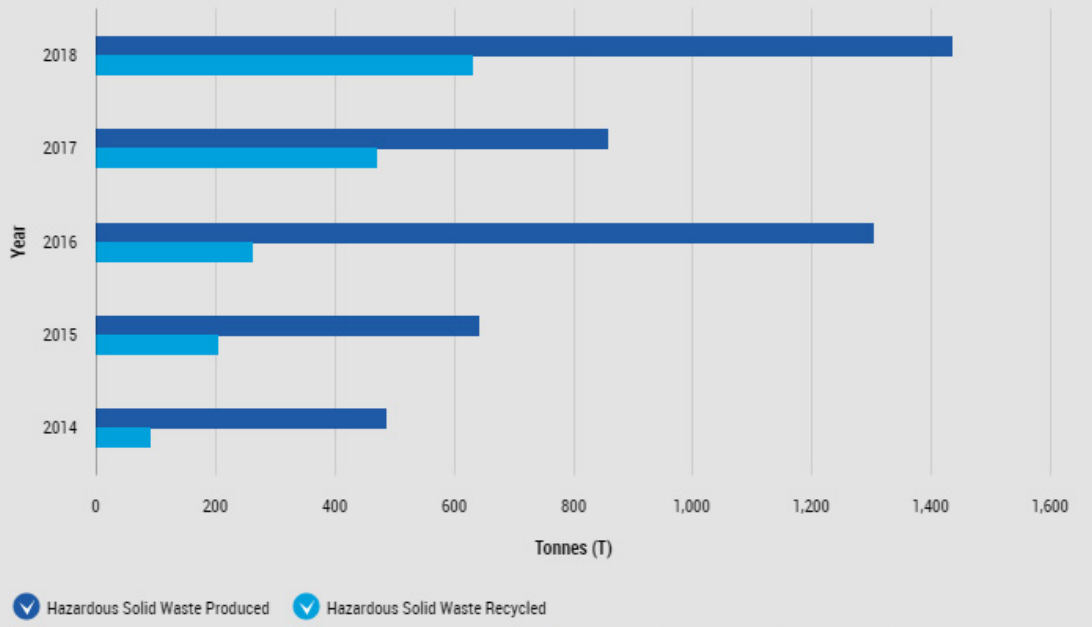
- Jhajjar Power Station, India – In 2018, fly ash was provided to cement plants and brick-making plants, while surplus fly and bottom ash is being provided to a construction company for re-use in road construction. Gypsum from the FGD operation was sold for cement manufacturing.
- Jinchang Solar Power, Mainland China – more than 1,000 damaged solar panels were taken back by the manufacturer to reduce waste.
- Hong Kong – a plastic reduction campaign was launched in our Hong Kong offices to avoid single-use plastic products and to raise staff awareness of plastic pollution.

Levels of Ash and Gypsum By-Products Recycled and Sold



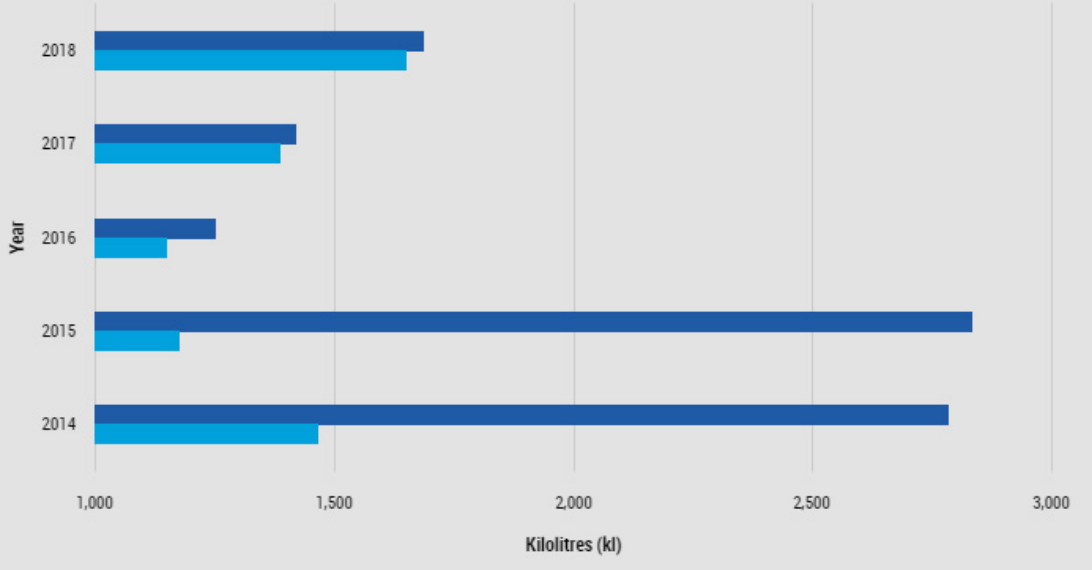
	2018	2017	2016	2015	2014
Ash	2,263	1,745	1,111	1,587	1,663
Gypsum	250	161	134	143	166

Hazardous Solid Waste Produced and Recycled



	2018	2017	2016	2015	2014
Hazardous Solid Waste Produced	1,435	857	1,302	641	484
Hazardous Solid Waste Recycled	631	469	260	203	89

Hazardous Liquid Waste Produced and Recycled



	2018	2017	2016	2015	2014
Hazardous Liquid Waste Produced	1,685	1,420	1,251	2,832	2,783
Hazardous Liquid Waste Recycled	1,648	1,384	1,149	1,176	1,463

Nuclear waste

In accordance with national policy and international practices, Guangdong Daya Bay Nuclear Power Station (GNPS) stores its spent nuclear fuel onsite in a dedicated storage pool for each reactor. The spent fuel remains onsite for a number of years before being passed on to a service provider licensed by the Mainland Chinese Government for reprocessing. The service provider is supervised by the National Nuclear Safety Administration (NNSA) and its environmental impact is monitored by the Ministry of Ecology and Environment (MEE). The policy in Mainland China on reprocessing spent nuclear fuel is similar to that of a number of European countries.

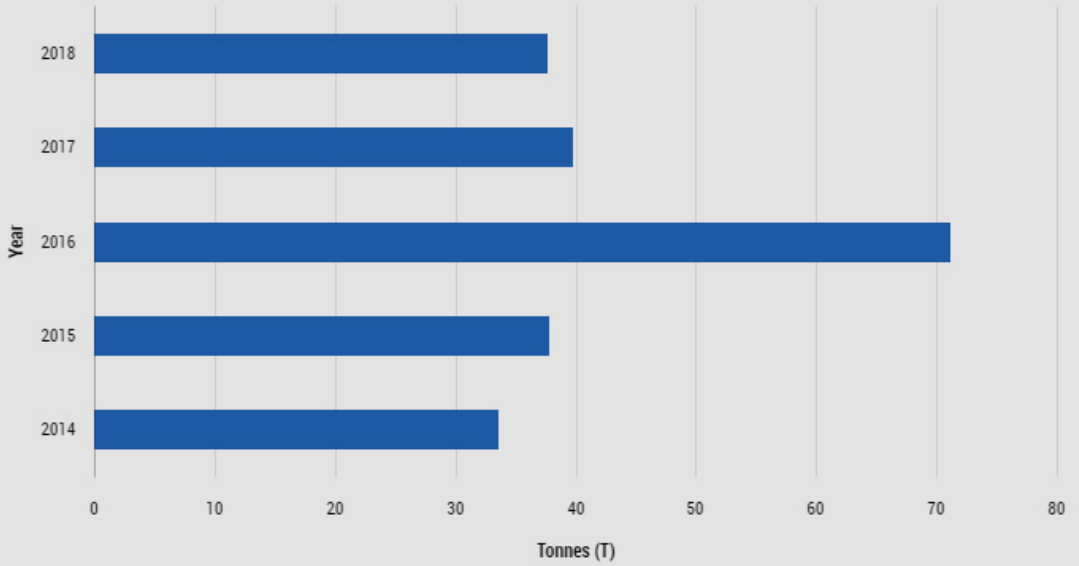
Intermediate to low-level solid radioactive waste is packed and stored in a dedicated facility onsite on an interim basis, and is secured to prevent unauthorised access. The waste will be transferred to a final repository operated by a service provider, using the shallow burial method commonly adopted in the United States, France and the United Kingdom. The operation of the offsite repository is expected to come under the supervision of the national nuclear regulator and relevant nuclear safety regulations.

As a minority shareholder of GNPS, CLP is not in a position to report the mass or inventory of high-level radioactive waste (HLW) from reprocessing spent fuel from the plant, as this is the responsibility of the licensed service provider. The licensed service provider is obliged to dispose of HLW safely as required by the Chinese authorities.

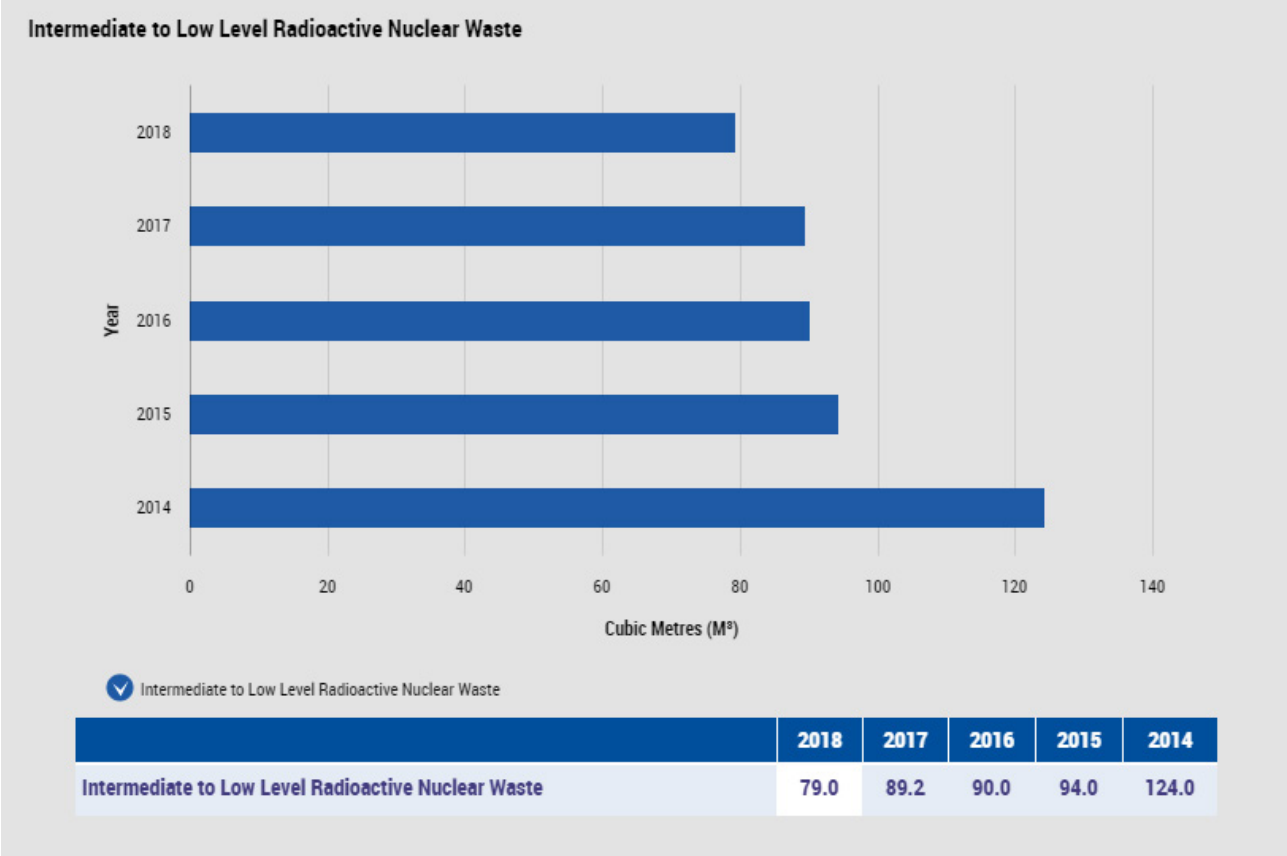
The quantity of spent nuclear fuel produced by GNPS for the past several years is presented on the right. Quantities were similar in 2017 and 2018 because there was only one planned refuelling outage in each year, while there were two in 2016.

Read about Nuclear Safety ❯

Spent Nuclear Fuel



	2018	2017	2016	2015	2014
Spent Nuclear Fuel	37.6	39.7	71.1	37.7	33.5



	2018	2017	2016	2015	2014
Intermediate to Low Level Radioactive Nuclear Waste	79.0	89.2	90.0	94.0	124.0

Water

Management approach

The quantity of water withdrawal and discharge in CLP's operations is dominated by thermal plants using once-through seawater cooling. In this process, large quantities of seawater are used for cooling and returned to the sea with only a slight increase in water temperature. Two of our plants in India, Paguthan and Jhajjar, operate on the basis of using river water, with either limited discharge or without any water discharge. Both plants are designed with a water re-circulation process, requiring limited quantities of water to be topped up to make up for evaporation losses. As in previous years, the total volume of water withdrawal and discharge was related to the total electricity generation of our operating assets.

Strategies and procedures

We manage our water resource risks through a number of means. For instance, we employ the World Business Council for Sustainable Development's global water tool to assess our operating assets and mitigate any risks that are identified. We also participate in the CDP water survey, consulting with industry peers to benchmark and share good practices in relation to water resource management.

We assess water availability in the planning stage of projects including the likelihood of water scarcity in the future and during plant operations. Engaging with and understanding the needs of local stakeholders is also prioritised, to ensure we maintain our licence to operate. As a result of the water treatment processes we have put in place at our power stations, none of our operations significantly impact their respective water receiving bodies.

Monitoring and follow-up

We conducted an in-depth assessment on water risk in our portfolio in 2017. The assessment covered parameters such as water availability, water sensitivity, water stress mapping, potential competing use with other stakeholders, and the management strategies in place in each of our regions. The results of the assessment confirmed that we have a sufficiently robust regime in place for managing our water risks. We will continue to monitor our water use, and manage this precious resource respectfully.

Our power stations, in particular our fossil-fuel fleet which uses more water, carry out a range of water conservation initiatives depending on site-specific conditions, operational situations and age. We place considerable emphasis on sharing initiatives across CLP Group to maximise the benefit of an individual power station's efforts.

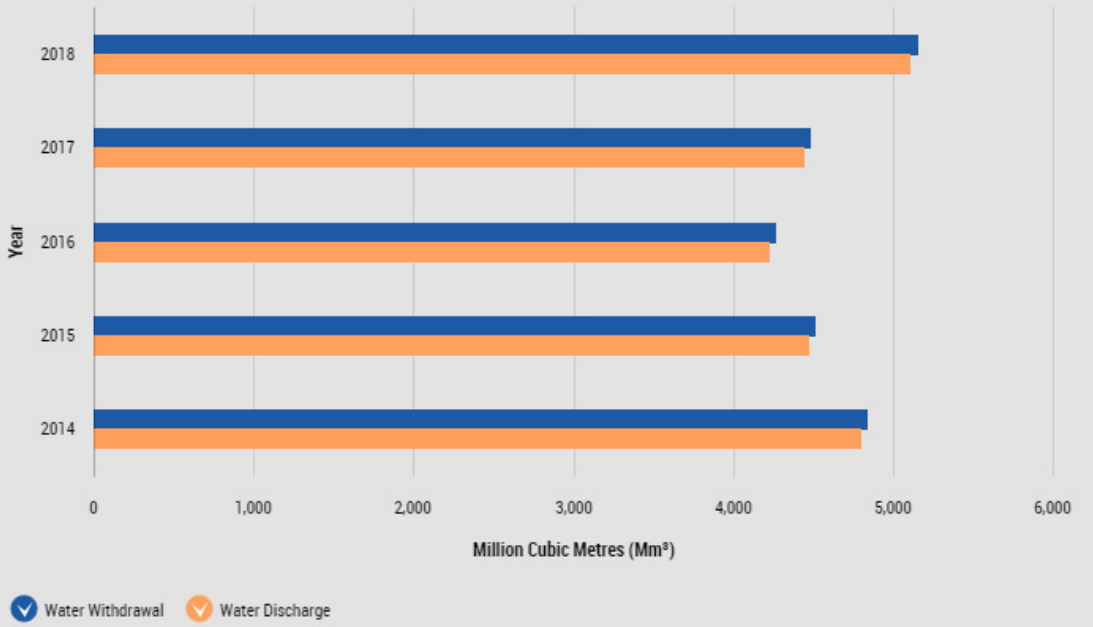
Year in review

The water intensity of our power generation process in 2018 of 1.11 m^3/MWh (similar to 1.07 m^3/MWh in 2017). The amount of water we can recycle depends on factors such as location, power station design, and regulatory requirements. We encourage our power stations to track their total water recycling and report this for indicative purposes.

In Australia, a new 14km water transfer supply pipeline and water treatment facility is being constructed to support the long-term operation of the Mt Piper Power station. The water plant will be commissioned during the second half of 2019 and will ensure that the station no longer requires water from local catchments for its cooling system. It also means there will be no discharge from the mine into the local river systems

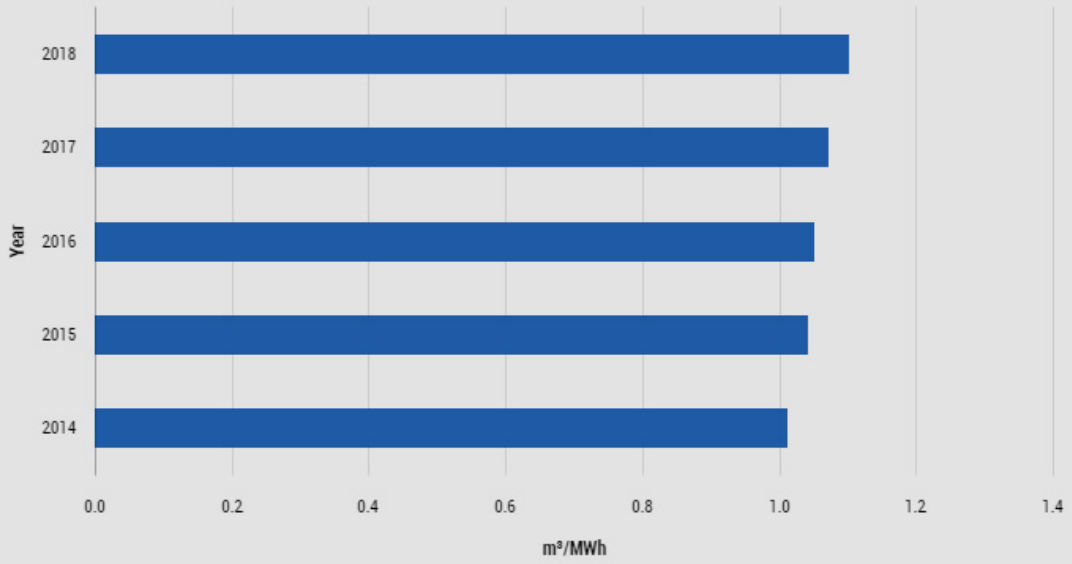
Read more on water management initiatives in Jhajjar power plant ›

Annual Water Withdrawal and Discharge



	2018	2017	2016	2015	2014
Water Withdrawal	5,153.7	4,480.8	4,257.0	4,503.0	4,834.0
Water Discharge	5,103.1	4,437.7	4,219.2	4,463.0	4,792.2

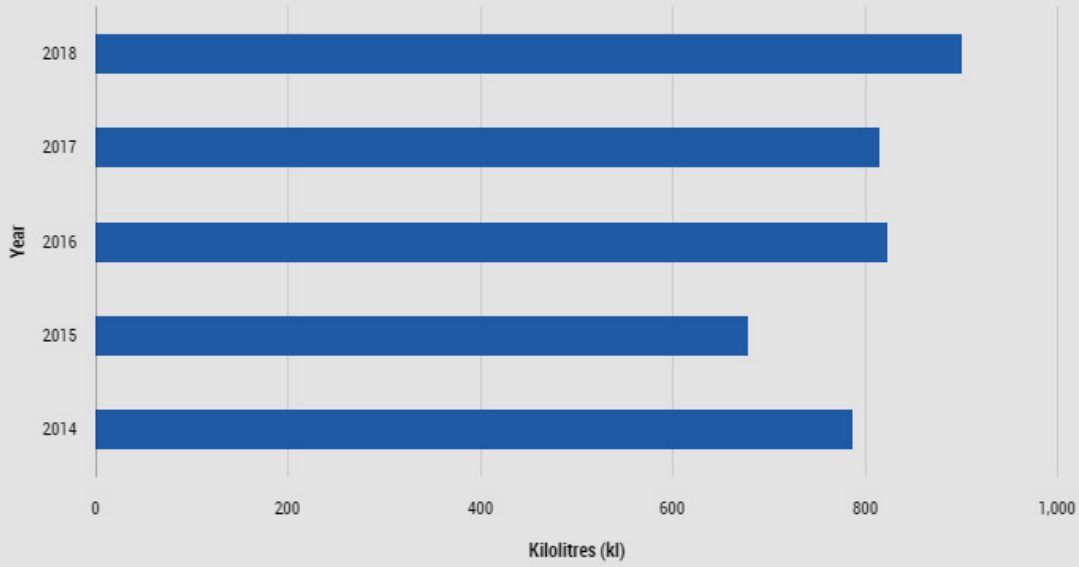
Water Intensity of Our Power Generation Process



m³/MWh

	2018	2017	2016	2015	2014
Water Intensity	1.10	1.07	1.05	1.04	1.01

Water Recycled Volume



Kilolitres (kl)

	2018	2017	2016	2015	2014
Water Recycled	899	814	822	677	785

Biodiversity and land use

Management approach

There is no one-size-fits-all approach to how we manage our biodiversity impacts, because all our operations interact with the local ecosystems in different ways, depending on factors such as location, the level of development in the vicinity and the surrounding environment.

Goals and targets

The Group's goal is 'no net loss of biodiversity'. Targets are site-specific depending on the different levels of regulatory controls on biodiversity, from assessment requirements to ecological compensation. For example, the target is net gain in habitat hectare score in our Yallourn Mine's programme.

Strategies and procedures

In addition to implementing an internal Environmental Impact Assessment (EIA) standard that mandates an environmental assessment for all new projects, the Biodiversity Impact Assessment Guideline provides a framework for a more systemic assessment of biodiversity impacts.

The Guideline falls under the HSSE management system and are applicable to power generation, transmission and distribution, mines and other power-related projects. Any new operations that could affect IUCN Red List of Threatened Species and national conservation list species are flagged well ahead of any investment decision is being made.

At the EIA stage, we partner with qualified personnel to conduct a biodiversity impact assessment. The assessment includes describing baseline conditions, evaluating the magnitude and significance of project impacts, and investigating options for mitigation. If necessary, the assessment contemplates offsets after consideration of options relating to avoidance, minimisation, and restoration or rehabilitation. The assessment also observes local legislative requirements and references the International Finance Corporation Sustainability Framework.

See our holistic approach to new investment assessment ›

Year in review

Biodiversity

Much of our biodiversity work across the Group is ongoing in nature. This includes activities such as vegetation management along our transmission lines in Hong Kong, the fish management regime in place at our Jiangbian hydro power station in Mainland China, and the bird cataloguing work undertaken by our Paguthan Power Station in India.

For our transmission and distribution network in Hong Kong, biodiversity within protected areas is particularly material. Protected areas with high biodiversity value include country parks, marine parks and the Mai Po Nature Reserve (a RAMSAR site), where we have approximately 104 kilometres of 400kV overhead lines. A series of ordinances regulate and guide our design, construction and decommissioning work and the equipment used in these areas to minimise our impact on the surrounding ecosystems.

At our Yallourn mine in Australia, we have implemented a Progressive Rehabilitation Plan and a Conservation Management Plan to oversee the life of the mine and its final rehabilitation. These plans require a net vegetation gain in exchange for losses due to mining, which is expected to result in a net biodiversity gain. The mine is located in a predominantly industrial area which is recognised as a modified ecosystem. The habitats protected or restored include plains, grassy woodland, swampy riparian woodland, riparian scrub and lowland scrub. Resident flora and fauna featured in the IUCN Red List of Threatened Species and national conservation lists include the Strzelecki Gum (eucalyptus strzeleckii), and the Great Egret.

Land Remediation

A resource recovery project is underway to reuse clean fill material from Sydney-based construction projects rather than dispose of them into landfill. The regulatory approvals have been obtained to allow Wallerawang to import the clean fill that will be needed to comprehensively remediate the ash and asbestos repositories. Environmental impact studies are underway to determine how the land and water will be remediated to meet the required environmental standard.

Our Wallerawang Power Station in New South Wales is currently undergoing decommissioning, demolition and rehabilitation (DDR) which will require large areas of land to be remediated. Assets such as ash dams, coal stockpiles and asbestos repositories will be remediated to an agreed environmental standard that ensures the land and associated ground and surface water will be suitable for redevelopment or closure.

In addition, the management of water in and around the DDR site will be crucial to ensuring the long-term success of the land remediation. Modelling of groundwater options to allow for the closure of the ash repositories is currently underway.

Climate change

Climate-related financial disclosur

We seek to disclose transparent, reliable and consistent climate-related information to our stakeholders, including capital providers. Our efforts centre on providing information through CDP and supporting the Financial Stability Board's Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

We are collaborating with industry peers on TCFD implementation that is relevant and appropriate for the electric utilities sector. While we are not yet able to fully disclose in accordance with the TCFD recommendations, climate change considerations have been integrated across our various business processes. Given the critical importance of climate change to CLP, we have detailed key elements of how we respond to the TCFD recommendations in key sections of this report:

Governance	Strategy	Risk Management	Metrics and Targets
Sustainability Governance	Climate Vision 2050	Risk Management	Responding to Climate Change GHG Emission (see below)

We anticipate making further progress on responding to TCFD in 2019, and will enhance our disclosure and reporting on climate change over time.

Climate change is one of the most material megatrends of our industry. How CLP responds to the risks and opportunities arising from climate change is discussed throughout the report, and the summary table below provides easy reference to the relevant sections:

Risks and Opportunities

Short term (0-1 year)	Medium term (1-5 years)	Medium to long term (5+ years)
Physical risks from extreme weather events (also see the section below)	New regulatory requirements in relation to climate change	Potential stranded fossil fuel assets
Securing the skills and capability required to implement our climate strategy	Transitioning to low-carbon energy in Hong Kong to meet the Government's decarbonisation targets	Growing our non-carbon portfolio to reach our Climate Vision 2050 targets
New products and services to help our communities decarbonise	Energy management solutions to enhance efficiency at a systemic level, for instance in building smart cities	
Technologies to enhance the performance of our renewable assets		

The Risk Management Report in the Annual Report further outlines how climate-related risks have been integrated in CLP's Risk Management Process.

Climate Action Finance

Management approach

Strategies and procedures

The Climate Action Finance Framework (CAFF) supports the transition to a low carbon economy by attracting socially responsible, sustainable financing, that supports CLP's investments in reducing carbon emissions and increasing energy efficiency.

Established in July 2017, the CAFF sets out how CLP proposes to raise climate action bonds (CLP Climate Action Bonds) to invest in projects that are consistent with both our climate strategy and the Group's investment strategy. Our majority-owned business units may issue bonds under the CAFF. We have two types of Climate Action Bonds:

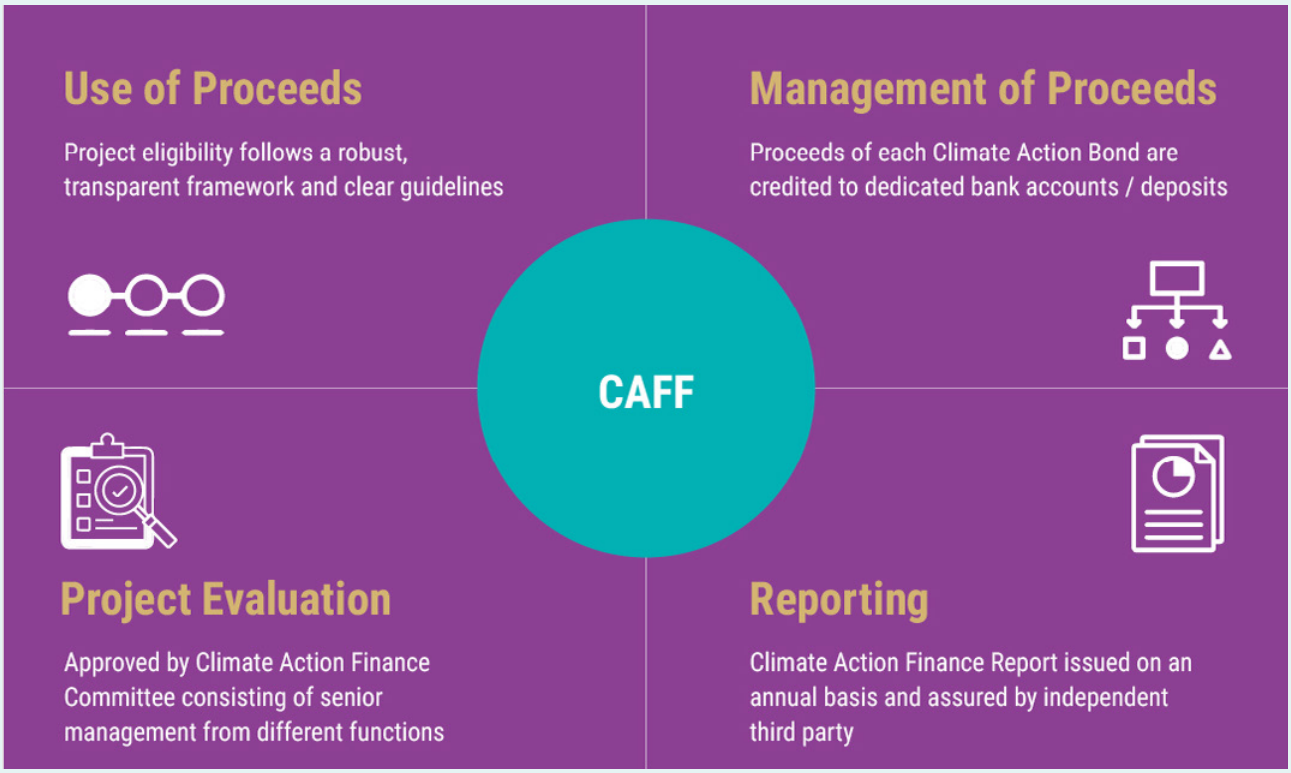
- **New Energy Bonds** – the proceeds of which help develop renewable energy, energy efficiency and low emissions transportation infrastructure projects; and
- **Energy Transition / Emission Reduction Bonds** – the proceeds of which help develop gas-fired power plants to support the transition from coal-fired generation in markets with limited renewable energy resources.

New Energy Bonds are aligned with the Green Bond Principles, which provide guidance in four key areas: the use of proceeds, the process for project evaluation and selection, the management of proceeds and reporting. Energy Transition / Emission Reduction Bonds are aligned with the governance components of the Green Bond Principles (process for project evaluation and selection, management of proceeds and reporting).

All bond proceeds must deliver clear environmental benefits through investment in qualified projects identified by a transparent screening process. Controls are also in place to ensure that bond proceeds are only used for designated green projects. CLP produces a Climate Action Finance Report annually to help track the appropriate use of bond proceeds and provide insight into their estimated environmental impact. The content of the report is independently assured by an auditor.

It is the opinion of DNV GL, an independent consultant, that there are environmental benefits from investments to be funded under the CAFF.

Overview of CLP Climate Action Finance Framework



Operational responsibilities

All eligible projects of the CAFF undergo a rigorous review and approval process within a transparent framework with clear guidelines. CLP has established a Climate Action Finance Committee with the responsibility for governing the CAFF. The Committee is responsible for approving issuance of Climate Action Bonds and determining the eligibility of the proposed use of proceeds. Committee membership consists of the CLP Executive Director and Chief Financial Officer, and senior management from our sustainability, finance and legal departments.

Monitoring and follow-up

Our first Energy Transition Bond was issued in July 2017. See past reports on our corporate website.

Download CLP Climate Action Finance Report 2018 ›

GHG emissions

In addition to investing directly in generation assets, we have entered into long-term capacity and energy purchase agreements to meet local market needs. In order to qualify for inclusion in tracking our progress towards our Climate Vision 2050 targets, these purchase agreements must have a duration of at least five years and the equivalent capacity of 10 MW or more. We made this change in 2018 to reflect more holistically our generation capacity. We will continue to report on an equity only basis to allow for year-on-year comparisons.

Our progress towards our Climate Vision 2050 targets

	2020 Targets	2018 Performance	
	On an equity plus long-term capacity & energy purchase basis	On an equity plus long-term capacity & energy purchase basis	On an equity basis
Carbon intensity ($kgCO_2/kWh$)	0.60	0.66	0.74
Renewable energy capacity (percentage of total capacity)	20%	12.8%	12.5%
Non-carbon emitting energy (percentage of total capacity)	30%	24.1%	20.9%

In 2018, our equity generation capacity in operation and under construction across the Asia-Pacific region stood at 19,108 MW, which was supplemented by an additional 4,597 MW of long-term purchases. Our generation portfolio utilises diverse types of energy sources, including coal, gas, nuclear and renewable energy (wind, hydro and solar).

The Group's total electricity sent-out on an equity plus long-term capacity and energy purchase basis increased to 92,333 GWh in 2018 (from 83,897 GWh in 2017). Our total generation capacity decreased from 19,395 MW in 2017 to 19,108 MW in 2018 on an equity basis – and 24,554 MW to 23,705 MW on an equity plus long-term capacity and energy purchase basis.

This change in our generation capacity was mainly due to divestment of our 40 percent stake in CLP India to CDPQ. In 2018, coal capacity decreased from 11,401 MW to 10,765 MW of equity generating capacity, while our non-carbon equity generating capacity decreased from 4,350 MW to 3,987 MW. Despite our acquisition of the Jinchang solar farm, the Laiwu III wind farm, the Gale and Tornado solar farms, our new partnership with CDPQ in India resulted in a net reduction of renewable equity generating capacity from 2,751 MW to 2,387 MW.

Our Group's carbon intensity decreased to 0.66 kgCO_2/kWh as compared to the 2017 level of 0.69 kgCO_2/kWh. Total carbon emissions (Scope 1) increased primarily due to our coal-fired plants Jhajjar in India and Fangchenggang in China, which also resulted in proportionally higher electricity sent out (GWh). As such, the reduction in carbon intensity was mainly due to full-year contributions from our Yangjiang Nuclear Power Station, increased output from our renewable assets in India and Mainland China, as well as additional long-term purchase arrangements in Australia. The expected commissioning of the sixth and final unit at Yangjiang in 2019 will help to further reduce our carbon intensity.

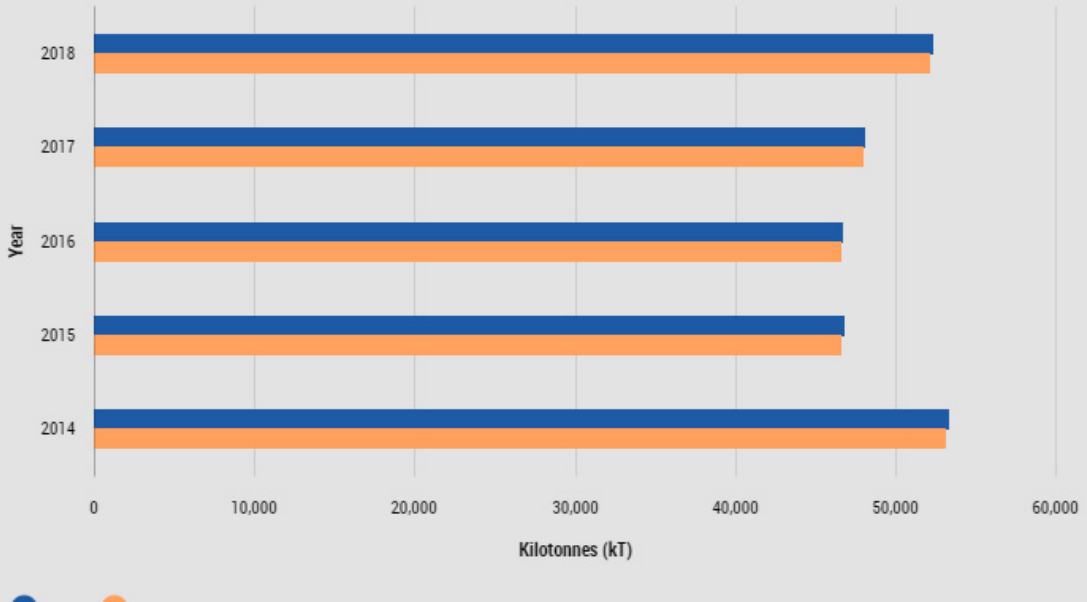
The carbon intensity of the electricity used by our customers in Hong Kong in 2018 was 0.51 kgCO_2e/kWh (which was same as the 2017 level). CLP Power Hong Kong's total carbon emissions for Castle Peak Power Station and Black Point Power Station were relatively stable as compared to last year. After completion of a new gas fired generating unit in 2020, we expect the share of natural gas to increase in order to meet the Hong Kong Government's emissions and carbon reduction requirements. For 2020, we currently expect that the equivalent carbon intensity figure will be reduced to around 0.4 kgCO_2/kWh.

Some renewable energy generated in 2018 was sold to our customers in the form of Renewable Energy Certificates (REC). Taking these REC sales into account, the equivalent carbon intensity was still 0.51 kgCO_2e/kWh for 2018.

See our generation portfolio in 2018 〉

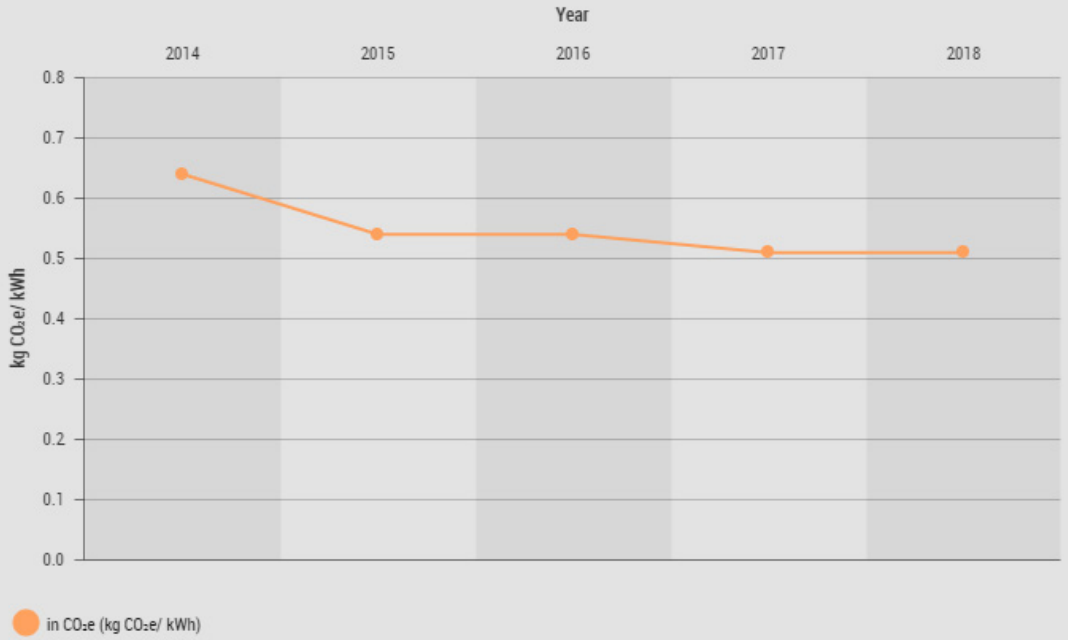
In order to manage our Scope 3 emissions – that is, all indirect emissions (not included in scope 2 of the Greenhouse Gas Protocol) that occur in our value chain – we have begun collecting data on our employees' business travel. CLP will offset the emissions of all CLP Group business travel via the CLP Carbon Credit Platform. For 2018, a total of 13,228 tonnes of CO_2e emissions were offset.

Greenhouse Gas Emissions from Power Generation



	2018	2017	2016	2015	2014
CO_2e	52,304	48,082	46,681	46,723	53,258
CO_2	52,048	47,921	46,518	46,553	53,044

Emissions Intensity (Scope 1) of CLP Power Hong Kong Electricity Sold



	2014	2015	2016	2017	2018
in CO_2e (kg CO_2e/ kWh)	0.64	0.54	0.54	0.51	0.51

Our fuel mix strategy in Hong Kong

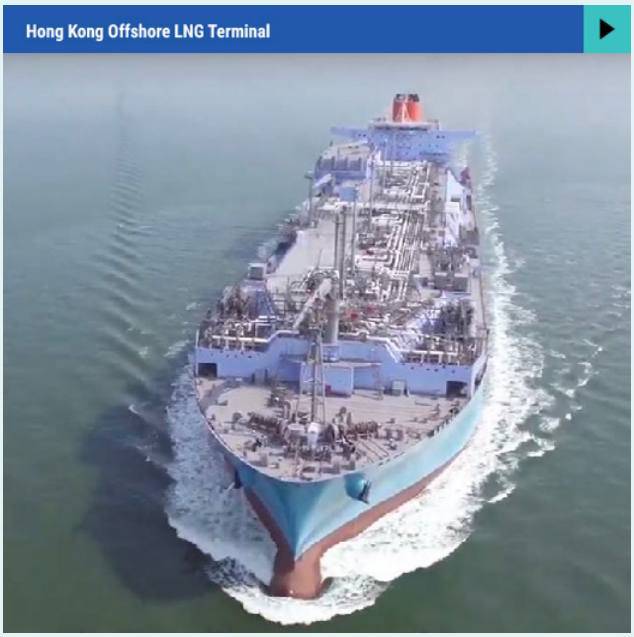
A diversified fuel mix is crucial for energy security and maintaining a balance between meeting emission caps requirements and mitigating fuel cost pressures. Under the current Scheme of Control Agreement (SCA), the first five-year Development Plan aims to support the Hong Kong Government's carbon reduction target by constructing the infrastructure needed to secure a reliable and stable electricity supply.

The Development Plan covers the period from October 2018 to December 2023. The projected capital investment covered by the plan is $HK52.9 billion. Around 30 percent of the total approved investment will be dedicated to lowering carbon and air emissions. Approximately 38 percent will seek to maintain supply reliability, 24 percent will meet new electricity demand, and 8 percent will focus on digitalisation and building a smart city.

To support the Government's carbon reduction target, CLP has introduced a number of initiatives, including the construction of additional gas-fired generation units at the Black Point Power Station. Two new units will be commissioned by 2020 and 2023 respectively to increase the local gas-fired generation.

In August 2018, we started to source natural gas from the Wenchang gas field in the South China Sea using the existing Yacheng pipeline. To meet long-term gas demand, we will also construct an offshore liquefied natural gas receiving terminal in Hong Kong waters by the end of 2021. It will enable us to have direct access to a range of gas sources from around the world and strengthen the reliability of Hong Kong's fuel supplies.

See our other initiatives aimed at responding to climate change and supporting Hong Kong's carbon reduction targets ›



Carbon trading schemes

The Chinese government announced the official launch of the national Emissions Trading Scheme (ETS) in December 2017, alongside its work plan for the Power Sector in the 2017-2020 period. The roadmap consists of three phases: an 'Infrastructure completion' phase, a 'simulation trading phase' and, a 'deepening and expanding phase'. The period 2018-2019 falls within the first phase, which focuses on building the carbon market support systems and in-depth capacity.

China's ETS starts with the power sector and will eventually cover other key emitting sectors on a step-by-step basis. Within the power sector alone, the initial market scale is significant, as it will cover more than 1,700 enterprises with estimated total carbon emissions of more than three billion tonnes once fully operational. The Government will grant power generators free carbon emission allowances up to a certain allocation. Generators emitting beyond that allocation will need to procure the shortfall from the soon to be introduced national carbon market.

Fangchenggang and our minority-owned coal-fired power stations in Mainland China monitor and report their carbon emissions annually to the regulatory body. We are monitoring the development of China's national ETS and adopting a proactive approach in making all necessary preparation ahead of the national carbon market's introduction.

Climate resilience

CLP Power Hong Kong's transmission network consists of more than 30 percent of overhead lines and over 700 400 kV transmission towers. These are exposed and susceptible to the influence of extreme weather and the external environment.

Measures against super typhoons

In light of the increasing frequency and impact of extreme weather conditions in Hong Kong and elsewhere, we have instituted a number of measures over the years. These included:

- Strengthening the tower structures and foundations of our 400 kV overhead lines to withstand wind gusts of up to 300 km/h;
- Installing smart switchgears on overhead distribution lines;
- Introducing an emergency restoration system to enable the rapid construction of temporary masts which can shorten the restoration of power supply to just two weeks in the event of an existing tower being damaged;
- Establishing a typhoon response protocol and coordinating system; and
- The implementation of regular drills and post-typhoon reviews to ensure the smooth execution of contingency plans when needed.

Measures against storm surges and flood prevention

Similarly, we introduced measures to mitigate the effects of floods and storm surges. These included:

- The introduction of a flood calculator to evaluate the flooding risk at substations during typhoons based on real-time data and forecasts released by the Hong Kong Observatory (which allows us to monitor and coordinate our disaster response in real time); and
- The upgrading of mitigation measures for flood-prone assets. The measures at the transmission and distribution substations included the installation and maintenance of flood gates, sealing cable, sump pumps and flood alarm systems. The Castle Peak Power Station and Black Point Power Station located on the waterfront have a variety of measures, including the engineering of the ground-level and drainage systems to accommodate extreme weather, the building of sea walls along the power station shoreline, and the installation of flood gates and flood barriers.

Vegetation management

There are a number of fast-growing tree species in Hong Kong, and fallen trees or branches that make contact with overhead lines can disrupt power supply. As a result, CLP Power Hong Kong has adopted vegetation management (VM) techniques since 2001. Our VM team carries out pruning work on trees which might affect overhead lines, and steps up inspections in the run-up to the typhoon season. Tree pruning can be carried out even when the lines are carrying electricity.

More recently, we have established an Integrated Vegetation Management Operation Centre to strengthen our vegetation management capabilities. We also completed a pilot project using an airborne LiDAR scanning technique to measure the clearance between overhead transmission conductors and nearby vegetation. As part of this project, a VM system was developed to visualise 3-D models of overhead line assets and surrounding terrain, which enhances the efficiency and effectiveness.

Round-the-clock system monitoring and emergency support

Our System Control Centre provides online, intelligent, round the clock surveillance to identify any changes in the network status. Our emergency services teams maintain close contact with the System Control Centre to respond instantly to any power incidents, increasing our capacity to immediately rectify discrepancies and minimise supply interruptions.

Operations

Availability and reliability

Management approach

Goals and targets

Availability and reliability are two key performance metrics for CLP assets. Targets for each asset are set annually and included in the business plan. Performance is reported on a weekly basis to senior management. Any significant variations to plans are analysed and corrective action is taken where appropriate.

For our generation assets, we monitor the availability factor – defined as the amount of time that an asset is able to produce full load equivalent electricity over a certain period, divided by the amount of time in that period. Typical values range from 70 to 90 percent.

Strategies and procedures

While CLP has generation businesses across the Asia-Pacific region, Hong Kong is the only location where our business is vertically integrated, including a transmission and distribution network. CLP Power Hong Kong is regulated under a Scheme of Control Agreement (SCA) framework that requires us to forecast electricity demand and plan for investment to provide a safe and reliable electricity supply. In Hong Kong, we use various measures to maintain high supply availability and reliability. These measures include:

- maintaining sufficient generating capacity to meet forecasted demand, planned and unforeseen outages;
- implementing demand response and other demand side management measures to mitigate demand growth and to improve utilisation of our existing assets;
- upgrading generation and network facilities to meet new electricity demand;
- adopting advanced technology such as smart grid;
- improving the quality of power supply to minimise voltage dips; and
- mitigating the impact of adverse weather by enhancing our power systems.

Year in review

We report the annual operating performance of our generation portfolio for those assets which fall within our environmental scope. The performance metrics include the availability factor, generation sent-out, thermal efficiency and energy intensity.

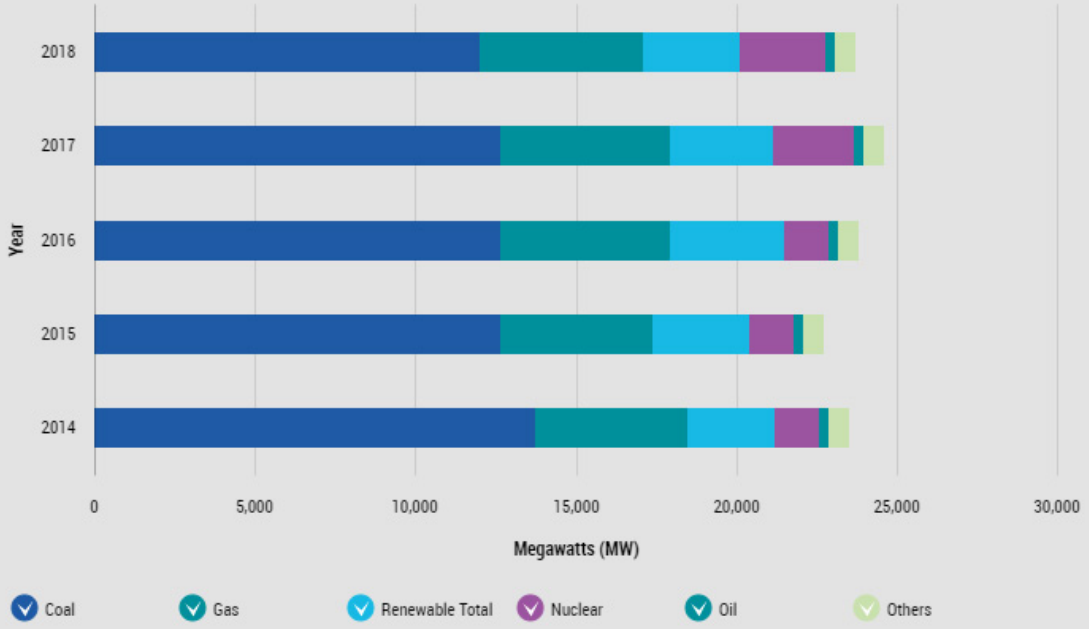
In Hong Kong, we maintain a world-class supply reliability of over 99.99 percent, higher than other major international cities like London, New York and Sydney. Between 2016 and 2018, on average a CLP customer experienced 10.29 minutes of unplanned power interruptions per year. This was higher than the 1.57 minutes experienced between 2015 and 2017, due to the impact of super typhoon Mangkhut in September 2018 (which contributed 8.85 minutes to the overall figure). Without that, our performance would have achieved a three-year average of 1.44 minutes, which is comparable to the previous three-year average. This achievement shows the value of a stable and supportive regulatory framework that encourages careful investment planning, as well as the professional expertise of our employees in power operations.

Our transmission and distribution network in Hong Kong serves about 80 percent of the population of the city and close to 100 percent of the population in our service area. At the end of 2018, we had approximately 1,160 km of overhead and approximately 14,702 km of underground circuits at medium or higher voltage. In addition, we had 232 primary and 14,685 secondary substations in Hong Kong. In 2018, our average network loss for the past five years was 3.94 percent, slightly lower than our 2017 figure of 4.04 percent.

In 2018, we continued to enhance the reliability and security of our supply system and invested HK$8.9 billion to meet both current and future energy demand. This included the commissioning of a new 132 kV substation to provide power supply to a Tseung Kwan O-based data centre.

We use a set of universally recognised supply reliability performance indicators from the IEEE 1366-2012 standard to monitor our system performance. These indicators are reported annually to the Hong Kong Government.

CLP Group Generation Capacity on Equity and Long-term Capacity and Energy Purchase Basis (MW)



Note:

1. All numbers are rounded to nearest MW. Any minor discrepancies in totals is due to rounding.

2. "Equity basis" includes all majority and minority share assets in the CLP Group portfolio.

3. Starting in 2018, "long-term capacity and energy purchase" is defined as a purchase agreement with duration of at least five years, and capacity or energy purchased being no less than 10MW.p>

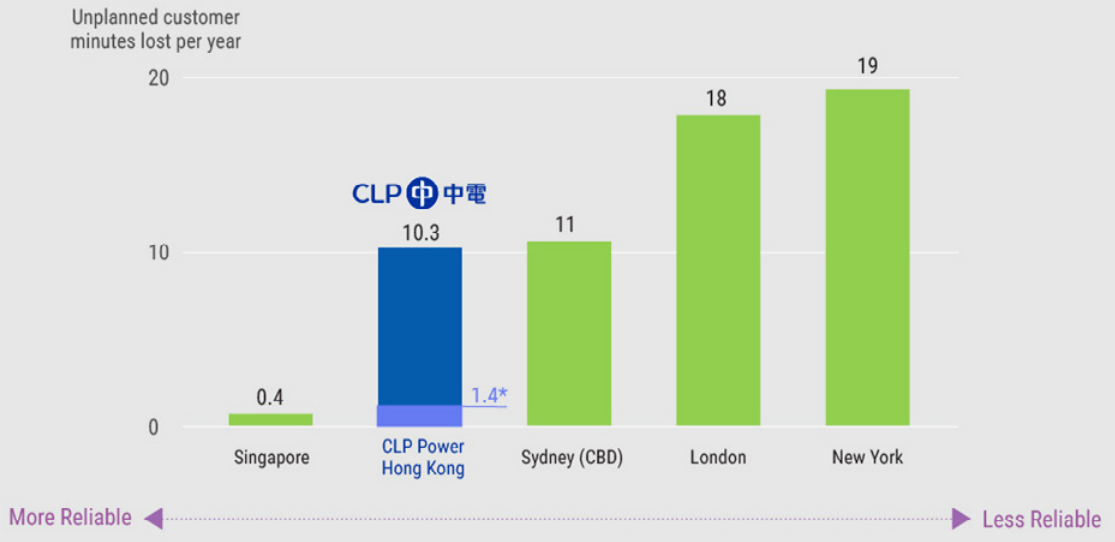
	2018	2017	2016	2015	2014
Coal	11,997	12,633	12,628	12,628	13,724
Gas	5,084	5,322	5,322	4,747	4,747
Renewable Total	3,039	3,211	3,551	3,051	2,720
Nuclear	2,685	2,488	1,380	1,380	1,380
Oil	300	300	300	300	300
Others	600	600	600	600	600
Total	23,705	24,554	23,781	22,706	23,472

Supply reliability performance indicators

System Average Interruption Frequency Index (SAIFI) The average number of supply interruptions for each customer served. Both planned and unplanned interruptions are included.	• Our three-year average SAIFI (2016-2018) was 0.19, meaning our customers experienced a power interruption approximately once in five years during this period, which was a slight increase compared to last year's three-year rolling average.
System Average Interruption Duration Index (SAIDI) The average duration of interruptions each customer may encounter in a given year.	• Our three-year average SAIDI (2016- 2018) was 0.46 hours including both planned and unplanned interruptions. • This was an increase on last year's three-year average SAIDI (2015-2017) of 0.34 hours, mainly due to the impact of super typhoon Mangkhut in September 2018.
Unplanned Customer Minutes Lost (Unplanned CML) The average duration of unplanned power interruptions per customer in a given year. These outages occur without prior notice, and happen as a result of various factors such as weather events, third party damage to the network and equipment faults.	• Our three-year average (2016-2018) unplanned CML was 10.29 minutes, which was higher than the 1.57 minutes recorded between 2015 and 2017. Note 8.85 minutes unplanned CML was due to the severe impact of Mangkhut in September, without which our performance would have achieved 1.44 minutes, comparable to the previous three-year average (1.57 minutes).

More information on the generation performance of our assets ›

Reliability Levels in Hong Kong, New York, Sydney, London and Singapore



Remarks:
*2016 - 2018 average for CLP Power was 10.3 minutes; Taking out the impact due to Super Typhoon Mangkhut, the three-year average was 1.4 minutes
2015 - 2017 average for all other cities
There are no overhead lines in Singapore

Asset management

Management approach

Strategies and procedures

The Asset Management System (AMS) Standard was developed in 2016 to standardise key practices in asset management across the Group. It sets out a framework to ensure we follow the best practice based on the ISO 55000 series of standards for asset management as well as the ISO 31000 standards for risk management.

The AMS Standard is integrated into CLP's Health, Safety, Security and Environment (HSSE) Management System and the new Project Management Governance System (PMGS) Standards to manage the complete lifecycle of an asset from the planning stage to decommissionin g. The AMS contains five key stages and ten asset management elements, as illustrated in the diagram on the right.

Monitoring and follow-up

CLP has developed and implemented a non-financial data reporting and assurance standard in-house. Relevant staff at the asset, regional and Group level are expected to take responsibility for upholding the standard. We also operate an online operational data management platform to facilitate streamlined data collection and approval, thus reducing the chance of human error.

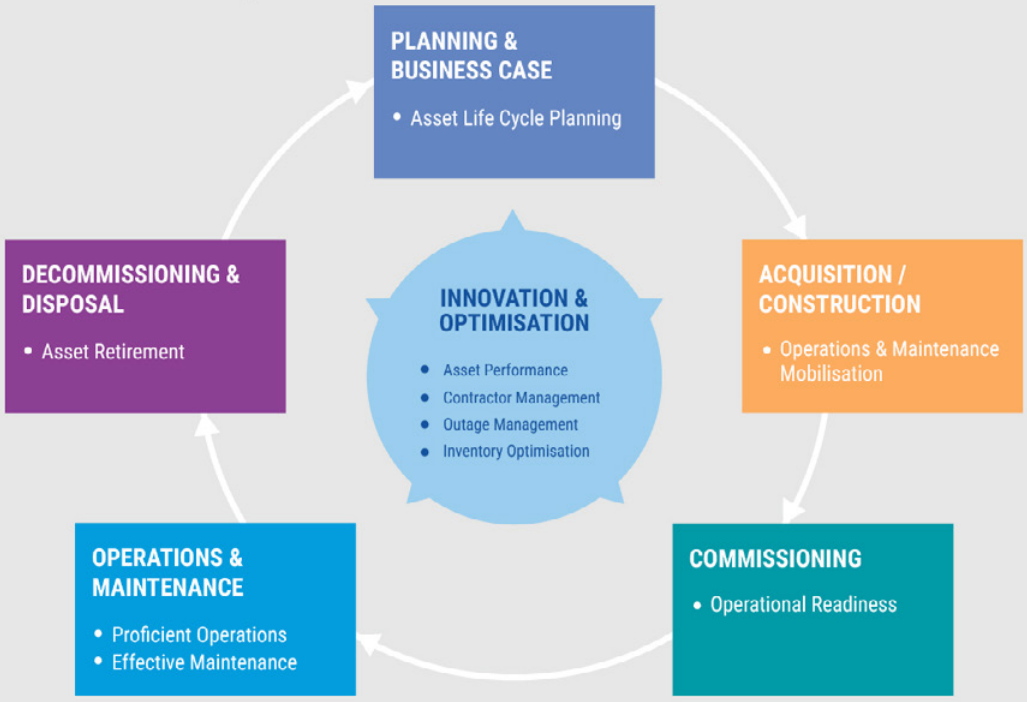
Improvement

We constantly identify opportunities to improve the operational efficiency of all our assets, which help us meet the increasingly stringent regulations on emissions and fuel efficiency in certain jurisdictions.

Our initial efforts at the project planning stage are critical in determining the operational efficiency or capacity factor range of the asset through its entire lifespan. Projects involving a major asset overhaul require stringent technical and financial scrutiny before commencement.

Opportunities arising from big data and data analytics are also increasing, with a wide range of potential applications including performance enhancement. Find out more here.

Overview of CLP's Asset Management



Year in review

In 2018, the total fossil fuel consumption for power generation increased as compared to 2017, with 11 percent more coal and 9 percent less gas and 25 percent less oil used. The increase in coal consumption was primarily due to the increased output from Jhajjar in India and Fangchenggang in Mainland China. The reduction in gas consumption was mainly due to two maintenance and upgrade outages at Tallawarra that resulted in decreased output.

The operational efficiency improvement projects carried out at our assets included:

Generation assets

At Black Point Power Station in Hong Kong, two existing combined cycle gas turbine units were upgraded in 2018. For each upgraded gas unit our generation capacity increased by 25 MW, or 8 percent, in addition to a reduction in nitrogen oxides emissions as well as improvements in generation efficiency. Upgrades of the remaining five units are planned for completion in stages before 2023.

- Yallourn Power Station in Australia completed a scheduled maintenance programme at one of its four generation units in 2018, ahead of the Australian summer. The programme, which involved the replacement of large sections of high-pressure steam pipes, will improve the plant's reliability and safety.
- Tallawarra Gas-fired Power Station in Australia implemented new upgrades to reduce start-up times for the plant and increase the speed of supply to the electricity grid. The upgrades will also improve fuel efficiency and lower emissions.

Transmission network

To meet Hong Kong's electricity demand growth, we review future transmission network developments annually in accordance with the latest system maximum demand forecast, area load growth, infrastructure development and generation development. We have developed maintenance and improvement programmes annually for major assets, based on the analysis of current conditions and performance of assets, level of investment and risk.

We continue to improve the reliability of our power supply network. Apart from vegetation management and third-party damage prevention programmes, various measures are taken to further enhance network reliability and minimise customer supply interruption. Examples include:

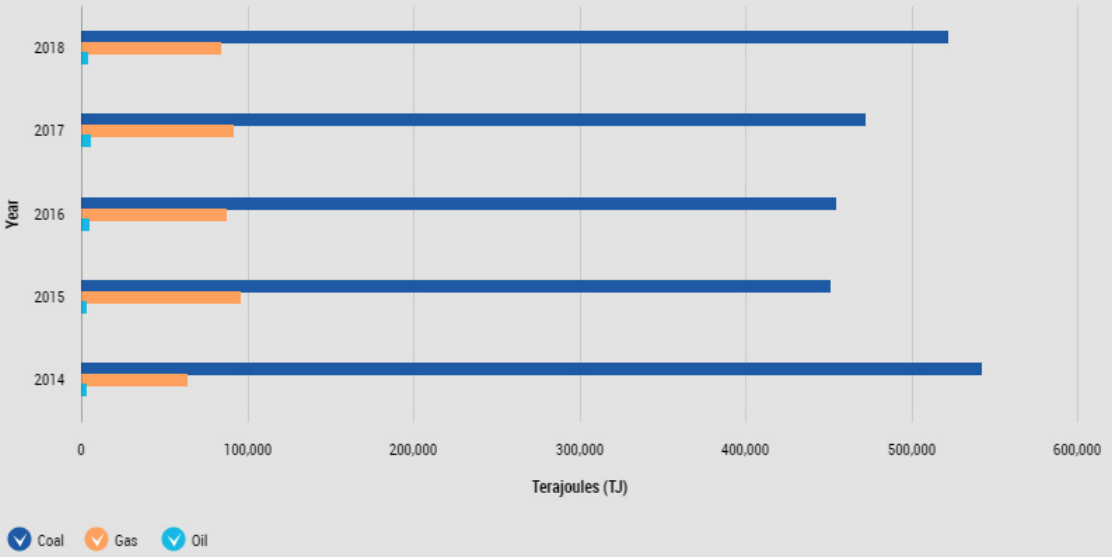
- installing on-line condition monitoring systems for switchgear and transformers to allow real-time monitoring and detection of incipient fault conditions;
- continuing the reinforcement of towers for 400kV overhead lines against super typhoons and the refurbishment of switchgear; and
- conducting regular reviews and targeted studies on network performance to drive continual improvement.

Find out how technology enhances efficiency of our renewable assets ›

CLP gets operational advantage from supporting circular economy

The Fangchenggang project in Mainland China has deepened cooperation with the Fangchenggang City Government to secure guaranteed generation hours, as we reposition the plant to be an integrated energy provider. As part of a strategic cooperative framework agreement CLP signed with the Government in July 2018, we support Guangxi's policy to promote a circular economy through buying white clay, a by-product from a nearby paper mill, to replace some of the limestone used in our flue gas desulphurisation facility. Our project also supplies steam and carbon dioxide to a neighbouring high-technology factory that grows microalgae for use in its products. These ecological initiatives have been recognised by the Government, which in turn has granted us higher minimum loading.

Annual Fuel Consumed for Power Generation



	2018	2017	2016	2015	2014
Coal	521,568	471,976	453,904	450,937	541,865
Gas	83,359	91,426	86,787	95,591	63,268
Oil	3,774	5,069	4,162	2,892	2,345

Security and cyber security

Management approach

Goals and targets

Security management helps us protect our people, property, information and reputation against associated security risks. The security management process evaluates, in a systematic and risk-orientated way, the security status of any asset operated and owned by CLP. This enables the company to continuously evaluate its security processes and enhance them according to the perceived threat and vulnerability of the site.

Strategies and procedures

CLP's approach to security can be best understood using the diagram on the right. There are five separate but co-dependant lines of activty, all of which are protected (to a lesser or greater extent) by cyber and physical security measures. These lines of activity are:

- **Information**: data is stored in both hard and electronic formats. Its confidentiality, integrity and availability needs to be protected;
- **Operational Technology (OT)**: hardware and software that detects, monitors or controls physical devices (such as a turbine) at our assets;
- **Information Technology (IT)**: the use of computers to store, retrieve, transmit, and manipulate data or information;
- **Personnel**: Staff employed by CLP; and
- **Brand**: CLP's image, identity and associated reputation.

All of these lines of activity are influenced by cyber security, particularly IT, OT and information. They are therefore protected by appropriate cyber security measures and supported by robust and scalable physical security measures. Taken together, they provide

Read more on how we reinforce cyber security ›

Training and awareness

Our security staff have a key role in preventing harm to our staff and the wider public. Standards of conduct are informed by our Value Framework and Security Management System, which requires each CLP region and their sites to develop an appropriate security system to effectively address the threats faced. All of our in-house security staff are required to comply with CLP's Code of Conduct on an annual basis. In addition to national regulations and site-specific briefings, third-party vendor security staff receive training on CLP's harassment-free policy, guidance on minimum wage policy and other non-discrimination training during their induction. Their training must be completed before personnel are granted access to their assigned workplace site(s).

CLP's Approach to Cyber Security

Emergency and crisis management

Management approach

CLP maintains a robust and regularly tested emergency response and crisis management approach, which is outlined in the diagram on the right. The framework ensures we are prepared to respond to and recover from any emergency situations in a timely and effective manner, helping us minimise disruption to our customers.

The Group Crisis Management Plan provides an overview for the effective handling of a crisis at the CLP Group level by:

- outlining our crisis management organisation, roles, responsibilities, procedures and processes;
- specifying the tools needed to ensure our collective response is well planned, well executed, and fully integrated across the organisation;
- describing the relationship and interface between the handling of regional and Group level crises; and
- detailing the processes that govern internal and external communications during emergencies and crises. This ensures the people responsible for managing a crisis have the necessary information to carry out their responsibilities and that key stakeholders are informed.

The Group Crisis Management Plan is supported at the regional level by Regional Crisis Management Plans which mirror the Group document but are tailored for each region. In addition, highly detailed emergency response plans have been developed for each asset. These plans are designed to be used by first responders and asset managers.

Training and Awareness

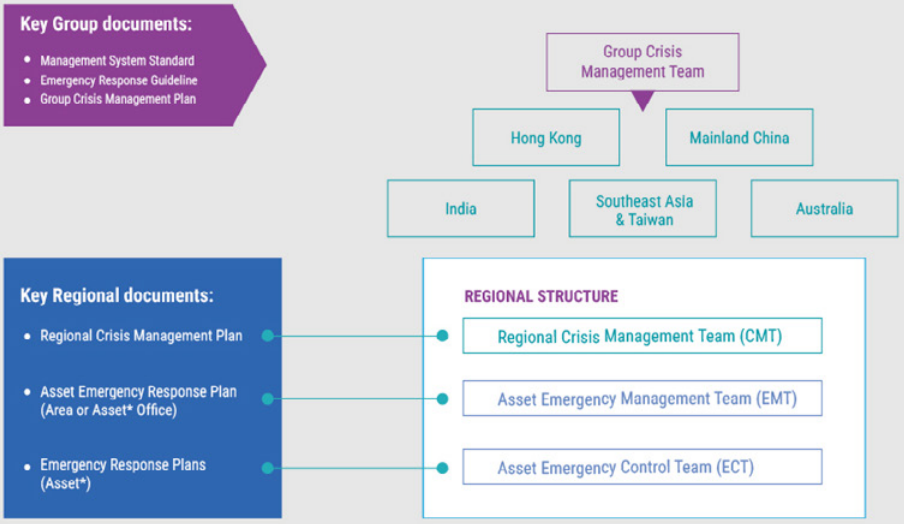
As specified in both Group and regional publications, emergency response drills are conducted at least annually at all our sites, with smaller scale drills taking place more often. Group and Regional Crisis Management plans are reviewed every three years or less. Regional crisis management exercises are conducted annually as part of our internal peer review process.

Travel Security

As our operational footprint expands, so does the frequency and range of business travel for staff members. Protocols and procedures are in place to adequately prepare staff before travel, support them when they are on the road and to respond quickly in the event of a travel emergency anywhere in the world.

CLP Crisis Management & Emergency Response Structure

Experience has shown that most emergencies are generated from the asset upwards, but the capability exists in CLP to respond top-down if the need arises. The structure will now be described from the top downwards:



* An asset is anything owned and operated by CLP. It covers power stations, depots, offices, transmission lines, customer service centres etc.

Year in review

In 2018, the Group Crisis Management Plan was refreshed once to reflect personnel changes and the adoption of the Emergency Crisis Response (ECR) notification system. At the Group level, one drill was conducted in tandem with CLP Power Hong Kong to test CLP's resilience in the event of a complex cyber-attack. Our China and India businesses also conducted crisis management drills in 2018. The recently developed back-up Crisis Communications Centre (CCC) is now operational and is included in the Group Crisis Management plan.

In terms of business travel, additional training has been granted to CLP India's domestic travellers to ensure they are better informed about security-related matters while carrying out company business. Training sessions for supporting staff and for the business travellers themselves continues to be provided on a quarterly basis, to ensure higher levels of understanding and awareness.

Stakeholder engagement

Stakeholder Engagement Framework

102-43

We are committed to communicating regularly with our stakeholders, providing open and transparent channels for their input, reviewing and considering that input and responding in a timely manner to their concerns about our business.

Our Stakeholder Engagement Framework includes the following steps:

- aligning engagement objectives with our business objectives;
- mapping issues and concerns;
- identifying relevant stakeholders;
- developing a communications and engagement plan;
- conducting the engagement activities; and
- capturing feedback and reporting on outcomes.

The effectiveness of our approach to stakeholder engagement is captured through a number of measures, which include: stakeholder feedback, outcomes following engagement, positive and/or negative news about the company, brand perception ratings, and recognition and awards.

Strategies and procedures

102-40, 102-42, 102-44

Our business activities involve a diverse range of stakeholders. For each project, we identify and prioritise the key stakeholder groups based on how they will be impacted, and their influence on the success of our business. We have a wide range of easily accessible public engagement channels through which we can receive concerns, interest or feedback at any time during the year.Text to go here

CLP'S Stakeholder Engagement Framework

The table below summarises our key stakeholders and how we engage them:

Key Stakeholders		Engagement Channels
Provide Capital	• Lenders* • Investors and shareholders • Announcements and circulars • Shareholders' visit programmes • Meetings and roadshows • ESG meetings	• Annual General Meetings • Annual and Interim Reports
Grant License to Operate	• Governments and regulators	• Regular working meetings • Regular performance reporting • Written responses to public consultations
Purchase Fuel, Materials, Equipment & Services	• Suppliers and contractors	• Regular supplier management meetings and engagements (from operational to senior management) • Periodical supplier performance evaluations (Supplier Assessment System)
Operate our Business	• Employees	• Employee engagement surveys • Employee feedback channels (forms, suggestion boxes, townhall meetings, etc.) • Regular management communications and roadshows • Two-way consultations (e.g. joint consultative committees in Hong Kong) • Employee newsletters and broadcasts • CLP intranet portal • Daily contact on employee-related issues through the human resources account management role • Discussion with trade union representatives in locations where collective bargaining power is recognised
Purchase Our Products / Services	• Residential customers • Commercial and industrial customers • Electricity boards and grid companies	• Customer Consultative Group, Local Customer Advisory Committees • SME Consultative Group • Customer satisfaction surveys and feedback forms • Customer Service Centres and Customer Interaction Centre • Online service portals • Account managers
Share Knowledge & Build Trust	• Academia and schools • Communities, NGOs and media • Industry and professional organisations	• Working committees, advisory committees, panels and meetings • Seminars, lectures and workshops • Public/ community events and partnerships on various initiatives • Community investment programmes

*Lenders include perpetual capital securities holders

We are committed to responding in a timely manner to our stakeholders' concerns about our business, which vary depending on the location and context and therefore require different actions or responses. General complaints about the company are typically handled by our Public Affairs team who work with the relevant colleagues to resolve the issue at hand.

The main topics that arose during the year in our various regions, as well as the actions we undertook to address them, are summarised in the following table by stakeholder group.

Download the Stakeholder Key Concerns or Interests of 2018 ›

Read a case study on our Reconciliation Action Plan for the indigenous communities ›

Public policy

We are committed to supporting the long-term development of the communities we serve, and contributing to the development of sound government policies and laws that balance social, economic and environmental needs

It is our policy to remain politically neutral and to avoid making political contributions. For public policy developments which apply to the electric power industry, we develop carefully considered positions and seek to provide input to support the decision-making process. By bringing our industry expertise to the table, we can add value to the discussion on how best to structure rules for our industry going forward, as both technology and public demand for our product evolves.

Our responses to public policy consultations – in addition to our Group-wide positions on critical issues such as climate change – are all published and accessible on our company websites. For example, CLP Power Hong Kong's responses to the consultations on the future development of electricity market and the future fuel mix for electricity generation in the past years are available here.

None of the companies in the CLP Group receives any significant financial assistance from the government outside of those financial incentives or subsidies, which are in place to encourage market participants to behave in certain ways. Examples of such incentives include tax holidays and preferential tariffs for renewable investment or financial assistance from export credit agencies.

Read more on how we facilitate informed engagement ›

Read our engagement with industry and professional bodies ›

Community investment

Management approach

We strive to build and maintain the trust of the communities in which we operate. 'Doing the right thing' is foundational to both our company values and our social licence to operate.

CLP is committed to contributing to programmes which support healthy, resilient and sustainable development over the short and long term. In line with the CLP Group Community Initiatives, Sponsorship and Donation Policy on community engagement, we aim to:

- support projects or programmes that reflect the needs and expectations of local communities and are sensitive to prevailing cultures, traditions and values;
- provide support to projects or programmes that are systematically managed with clearly-identified objectives;
- engage in long-term partnerships with credible international, national, regional and local community organisations, non-governmental organisations and charities;
- focus our support on projects or programmes that offer the opportunity for our employees to be involved; and
- regularly evaluate, our contributions as well as their outcomes and impacts.

Strategies and procedures

Our community initiatives focus on four pillars: Environment, Education and Development, Community Wellbeing and Arts and Culture. These focus areas cover many of the social issues faced by the communities in which we operate. They are also aligned with relevant Sustainable Development Goals (SDGs), including SDG 4 Quality Education – which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Monitoring and follow-up

CLP has a standardised online reporting system for reviewing and reporting our community initiatives. The system is designed to enhance the overall effectiveness and efficiency of our initiatives by aggregating data on theme, partner, spending, beneficiaries, volunteer hours and impact.

We have benchmarked different socio-economic impact measurement tools to better evaluate the social impact of our community initiatives. We have applied the most suitable means to evaluate the effectiveness of our community contributions.

For example, in Hong Kong, an impact assessment study was conducted by an independent consultant to measure the effectiveness of the CLP Low Carbon Energy Education Centre – a facility located at the City University of Hong Kong and sponsored by CLP. The Centre promotes climate change mitigation and the importance of low carbon energy. The study reported encouraging results, with visitors confirming that the Centre had helped them learn more about climate change and low carbon energy.

Year in review

Our community spending by theme and geography are summarised in the charts on the right. The biggest percentage of community spending was directed to environmental initiatives (50 percent), followed by community wellbeing initiatives aimed at improving quality of life and serving the needs of the socially disadvantaged (22 percent). The amount we donated for charitable and other purposes was HK$18.31 million, up from HK$14.47 million in 2017.

EnergyAustralia made it easier for employees to participate in a widening selection of community activities in 2018. We were encouraged to see a 154 percent increase in EnergyAustralia's volunteering hours compared with 2017. In October 2018, we launched the Workplace Giving programme with nine charity partners. While employee donations will commence in 2019, we demonstrated our commitment to the programme by donating A$1 per week per employee from 1 October to 31 December 2018. The Executive Management Team and Board also donated 1 percent of their salaries from 1 October 2018.

	2018	2017	2016
Amount donated for charitable and other purposes (HK$ million)	18.31	14.47	12.65
Volunteering hours* (hours)	23,661	19,945	13,302
Programmes implemented (number)	695	647	574

Note: 2017 & 2018 figures refer to volunteering hours by CLP staff and family members; 2016 figure refers to volunteering hours by CLP staff only.

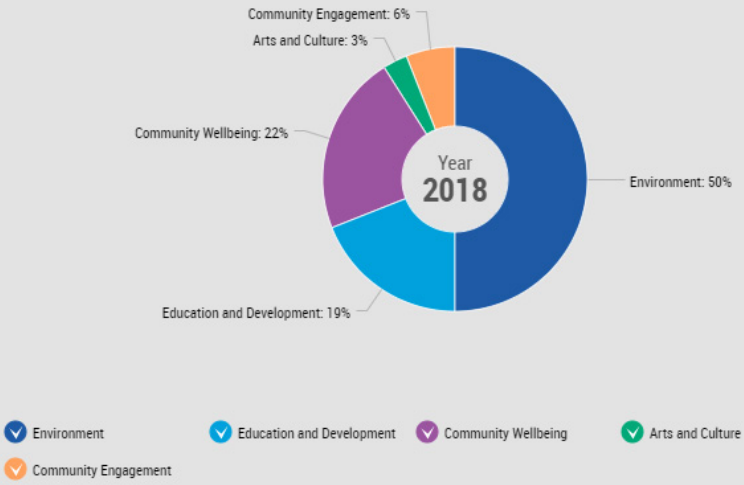
Our programmes benefitted 730,362 people in 2018, compared to 439,612 in 2017. In 2018, Education and Development accounted for the majority of direct beneficiaries in our community initiatives (69 percent).

	2018	2017	2016
Direct beneficiaries	730,000+	439,000+	359,000+
Organisations benefitted	434	451	373

Education continues to be a key focus as we see it as the most powerful investment in building a just and prosperous society. We engage with young people at all stages of their educational journey in the communities we serve in Hong Kong, Mainland China, India and Australia. We focus on areas where CLP can create value through our expertise and networks to help young people advance their career and achieve upward mobility.

Find out more about community programmes in different business units ›

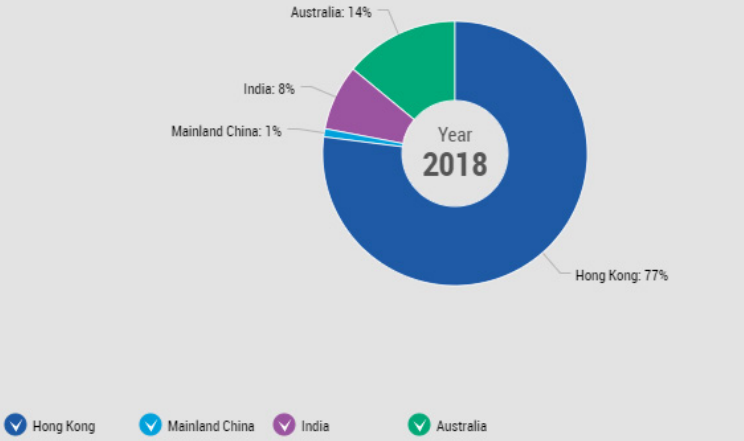
Community Spending by Theme



Notes:
[1] We started reporting the figures in 2015.
[2] Starting from 2016, community spending on Southeast Asia and Taiwan was excluded as minority assets.

	2018	2017	2016	2015
Environment	50%	41%	39%	12%
Education and Development	19%	13%	15%	20%
Community Wellbeing	22%	23%	32%	46%
Arts and Culture	3%	9%	2%	4%
Community Engagement	6%	14%	12%	18%

Community Spending by Region



Notes:
[1] Figures include rounding adjustments.
[2] We started reporting the figures in 2015.
[3] Starting from 2016, community spending on Southeast Asia and Taiwan was excluded as minority assets.

	2018	2017	2016	2015
Hong Kong	77%	81%	77%	76%
Mainland China	1%	2%	1%	2%
India	8%	8%	13%	3%
Australia	14%	9%	9%	18%
Southeast Asia & Taiwan	N/A	N/A	N/A	1%

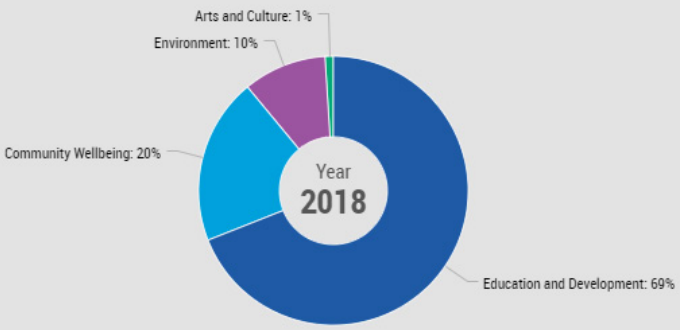
A focus on youth

The establishment of our dedicated Youth Programme Office in 2017 is testament to our focus on youth development. We also seek to form business partnerships with like-minded organisations to maximise the effectiveness of our efforts. We are targeting non-degree holders interested in technical fields in light of the need for greater technical proficiency in the Hong Kong workforce (a problem which is being exacerbated by our ageing population).

We are ramping up our long-standing student outreach efforts, including the Engineer in School programme, which aims to generate interest in power engineering among junior secondary school students in Hong Kong. In the last academic year, the programme reached some 10,000 students. Around 15,000 primary school students in 18 Hong Kong schools also took part in our Green Elites Campus Accreditation programme in 2018, learning about climate change and the benefits of green living.

As part of a new Government programme for tertiary students in Hong Kong, we offered internships at our operations in Mainland China and overseas markets such as Thailand. Participants were given work placements in engineering, information technology, and marketing roles; acquiring valuable work experience outside Hong Kong to increase their career prospects. Since 2012, our education sponsorship programme in India has supported hundreds of high school and university students in their academic studies and professional development. The CLP India Scholarship Scheme continued to grow in 2018 as we worked with non-government organisations to offer financial assistance to almost 400 students.

Beneficiaries By Theme



Education and Development · Community Wellbeing · Environment · Arts and Culture

Notes:
[1] We started reporting the figures in 2015.
[2] We started Starting from 2016, community spending on Southeast Asia and Taiwan was excluded as minority assets.

	2018	2017	2016	2015
Education and Development	69%	42%	60%	36%
Community Wellbeing	20%	35%	31%	54%
Environment	10%	21%	8%	9%
Arts and Culture	1%	2%	1%	1%

Employees

Employment practice

Management approach

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, non-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 proactively identify any risks of legal non-compliance, and take remedial action 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.

We conduct regular employee opinion surveys to understand employees' views. These surveys are carried out by independent external consultants to ensure objectivity and to maintain confidentiality of the responses. In Hong Kong we have also established joint consultative committees which act as an additional channel of communication between the company and our employees' self-elected representatives.

Competitive and sustainable benefits

Each year, we use independent external consultants to benchmark our remuneration and benefits with relevant recruitment markets to assess our relative competitiveness. In order to ensure that we balance the interests of both our employees and shareholders as key stakeholders, decisions on remuneration are subject to our corporate governance process and the approval of the Remuneration Committee.

Retirement benefits are a significant component of total remuneration at CLP. The retirement benefit plans for staff employed by the Group entities in Hong Kong are regarded as defined contribution schemes. The current scheme, the CLP Group Provident Fund Scheme (GPFS), provides benefits linked to contributions and investment returns on the scheme. There are also some legacy defined benefits schemes in EnergyAustralia (EA).

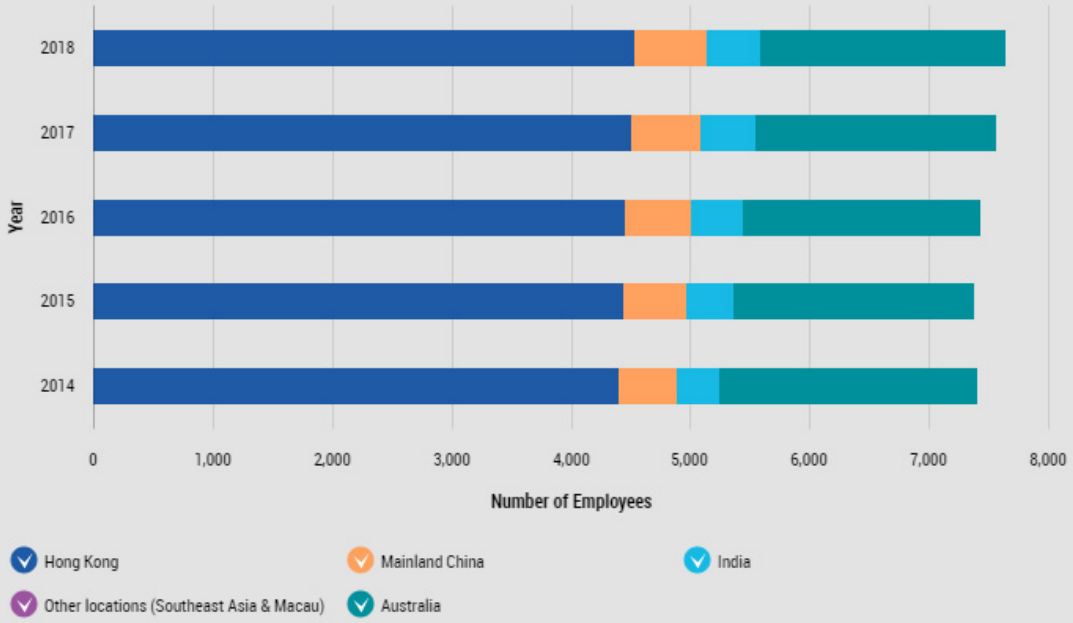
We comply fully with any local legal requirements with respect to minimum wage. In practice, our remuneration and benefits often significantly exceed local legal requirements. We place great importance on treating employees fairly, which includes ensuring competitive pay and benefits, reasonable and legally compliant working hours, and equal and non-discriminatory treatment regardless of gender, race or other attributes recognised by the laws of the countries in which we operate.

Year in review

Contributions paid in 2018 to defined contribution schemes, including GPFS and MPF as required under the Hong Kong Mandatory Provident Fund (MPF) Schemes Ordinance, totalled HK$405 million (2017: HK$396 million). Staff employed by Group entities outside Hong Kong are primarily covered by defined contribution schemes in accordance with local legislation and practices – total contributions amounted to HK$179 million (2017: HK$165 million). Out of total retirement benefits costs of HK$584 million (2017: HK$561 million), HK$147million (2017: HK$140 million) was capitalised.

Our workforce consists of different types of employees – permanent, fixed term contract and temporary staff. In addition, there are also activities which are outsourced and performed by third party contractor labour. For more information, please refer to Building an agile, inclusive, and sustainable workforce.

Regional Distribution of Full-time Employees



	2018	2017	2016	2015	2014
Hong Kong	4,538	4,504	4,450	4,438	4,405
Mainland China	596	577	560	527	480
India	458	463	435	397	359
Australia	2,042	1,998	1,983	1,998	2,143
Total	7,634	7,542	7,428	7,360	7,387

Employee wellbeing

Management approach

Enhancing employee wellbeing is important to help improve the health status of the workforce, manage the cost of medical benefits, and to reduce the impact of sickness absence on productivity.

Balancing work and family life has a significant impact on health and relationships which enhance employees' overall wellbeing and productivity at work.

We are committed to creating a family-friendly working environment and have policies in place to help our employees to balance their working life and family circumstances. For example family friendly leave policies and flexible working arrangements are in place in different parts of our businesses, work life balance programs and workshops are organised for employees covering areas of physical, social and emotional balance. Confidential employee assistance programs are also offered to assist employees who may encounter work or personal issues and need professional support.

Year in review

Subject to respect for individuals' confidentiality, we work with health professionals to use aggregate employee health data to identify common health issues affecting our workforce, so that fact-based prevention measures can be identified.

Following the mental health awareness training organised in 2017 for managers on the importance of mental health in the workplace, in 2018 we sought advice from a professional psychiatrist and developed a mental health guide for Hong Kong-based managers. This offers practical advice and guidance on managing and supporting staff who appear to be experiencing mental health-related issues.

EnergyAustralia also launched a new health and well-being programme (SPARK), which offers a number of initiatives to support mental and physical health. These include resilience sessions for all employees, supporting employees impacted directly or indirectly by family violence, flu vaccinations and skin checks, and regular wellbeing education campaigns.

In India, a crèche facility was established for employees at Mumbai to meet the requirements of the *Maternity Benefit (Amendment) Act 2017*.

Human rights

Management approach

Human rights

In addition to local legal compliance we respect internationally proclaimed human rights across our value chain. Our commitment to upholding human rights is outlined in CLP's Value Framework, and we recognise that our corporate responsibility to respect human rights extends to our network of suppliers and contractors.

Child and forced labour

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

Short-term employment and use of contractor labour

A flexible resourcing model is necessary for our business but we aim to manage this responsibly. Our policy limits the use of short-term employment contracts to a maximum of four years, following which continued employment must be on permanent terms.

It is not our Group policy or market practice to provide the same employment benefits to temporary or part-time staff as to full time or permanent staff. However, the benefits for our temporary and part-time employees are competitive with local market practice and meet or exceed local legal requirements.

Freedom of association and collective bargaining

Whilst our management philosophy is that the most appropriate way to engage with our colleagues is through direct communication rather than through intermediary organisations, our employees have the freedom of association to join organisations and professional bodies of their choice. We respect and comply fully with all legal requirements with regard to union membership and collective bargaining in the countries we operate in.

Year in review

Human rights

Following our pilot human rights due diligence in 2017, we conducted a fair wage assessment in 2018. For details please refer to Building an agile, inclusive and sustainable workforce. We are making progressive steps on our human rights journey, and will continue our work on other identified priorities, including establishing labour standard guidelines for our employees and contractor workers in our operations.

Child and forced labour

In 2018, 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 2018.

The Modern Slavery Act 2018 will be in force in Australia in 2019. As a result, EnergyAustralia is working to assess any risks in our supply chain and to raise the awareness internally and with suppliers, in order to meet our reporting obligations under the Act.

Use of contractor labour

We reported on our use of contractor labour for the first time in 2018. For details, please refer to Our current and future workforce section.

Freedom of association and collective bargaining

102-41

In 2018, we did not identify any operations in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk.

In Australia we engage in collective bargaining with approximately 980 employees via certified enterprise bargaining agreements. These agreements include both notice periods and provisions for consultation and negotiation.

EnergyAustralia commenced negotiations for Hallett and Mount Piper enterprise bargaining agreements which will expire in 2019.

Diversity and equal opportunity

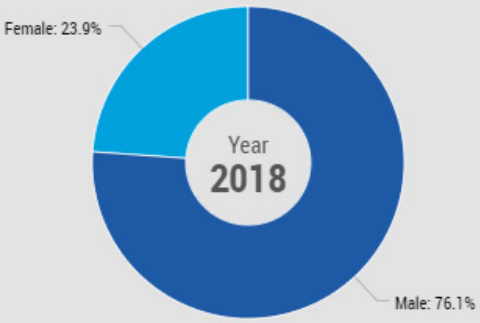
How we encourage diversity and inclusion is detailed in Supporting diversity and inclusion. More information on gender pay equity can be found in the same section.

In 2018 CLP became a signatory to the International Energy Agency's 'Equal by 30' initiative – a commitment by public and private sector organisations to work towards gender equality in the energy sector by 2030. We have also continued our initiatives of Group-wide Female Engineer Network, and the mentoring programme for female engineering students. We will continue to track our progress on the gender diversity targets.

In addition to gender diversity, EnergyAustralia continued their focus on building an inclusive culture so that everyone can bring their whole selves to work and have a sense of belonging, with a particular focus on maturing their Reconciliation Action Plan through the employment of indigenous Australians and supporting indigenous businesses. This support has been provided through our Reconciliation Action Plan – a nationally recognised framework for organisations in Australia to support reconciliation with Aboriginal and Torres Strait Islander peoples. A number of young indigenous community members have been offered apprenticeships at the Yallourn power station.

Read more from Supporting diversity and inclusion ›

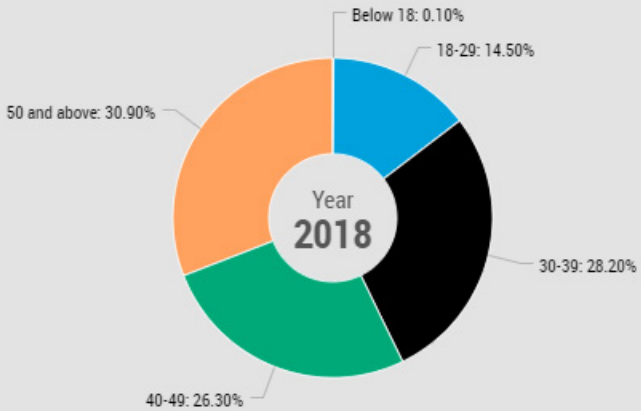
Gender Distribution (%)



Male Female

	2018		2017		2016		2015		2014	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total	76.1	23.9	76.2	23.8	76.4	23.6	75.7	24.3	75.2	24.8

Age Distribution (%)



Below 18 18-29 30-39 40-49 50 and above

	2018	2017	2016	2015	2014
Below 18	0.1%	0.01%	0.03%	0.05%	0.01%
18-29	14.5%	15.6%	16.6%	17.3%	17.4%
30-39	28.2%	28.1%	27.2%	26.1%	26.7%
40-49	26.3%	25.6%	25.4%	25.8%	27.5%
50 and above	30.9%	30.7%	30.8%	30.8%	28.9%

Discrimination and harassment

Management approach

We state in our Value Framework that we are committed to providing a work environment free of harassment or discrimination on the basis of gender, physical or mental state, race, nationality, religion, age, family status or sexual orientation; or any other attribute recognised by the laws of the country in which the company operates.

Each of our businesses has an employee grievance procedure in place that reflects our Value Framework and any applicable local legal requirements. For example, our Hong Kong Grievance Resolution Policy encourages employees to discuss any issues freely and openly with their supervisors. They are encouraged to bring issues forward to the Human Resources Department or higher level of management if they think the issues are unresolved or are being unjustly handled. There will be no discrimination, coercion or retaliation for doing so.

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.

Year in review

The number of substantiated complaints is shown in 2018 is shown in table. Our Group-wide harassment-free policy sets a common framework of principles and our detailed policies in each country are fully compliant with local legislation.

Regular refresher training is organised for employees. All new staff in Hong Kong are required to complete an e-learning program.

No. of Substantiated Complaints					
	2018	2017	2016	2015	2014
Harassment	3	3	4	1	4
Discrimination	0	2	0	0	0
Human Rights Grievances	0	0	0	0	0

Training and development

Management approach

Maintaining our core competencies and building new capability in the areas of new technologies and innovation are essential for us to cope with the future challenges. For more details, please refer to Building an agile, inclusive and sustainable workforce.

Whilst we strengthen organisational capabilities through senior level strategic hires, diversifying recruitment channels, continuous investment in training and development, and leveraging external strategic partnerships with academic institutions, external investment in the training and development of staff is also essential. This helps our staff to perform competently in their current roles and prepare them for future business challenges and opportunities

The performance management system provides a common basis for identifying individual development needs, and we have a comprehensive training and development framework in place to deliver a wide range of training and development programs:

- On-going technical and safety training is provided to develop technical competences required and ensure safety is our top priority. In our Hong Kong business, a structured CLP Power Learning Institute was established to deliver technical an safety training to strengthen our core competence.
- Business Practice Review is conducted regularly to remind staff of the Company Code of Conduct and Value Framework.
- Generic training programs are offered e.g. language training, supervisory training, computer skills training.
- In Hong Kong we have company supported education policy to support employee-initiated self-development for an encouraging continuous learning culture.
- Targeted development programs for leadership development. Examples included:
  - Strategic and general management development programs partnering with academic institutions included IMD.
  - Functional management training partnering with academic institutions included IVEY Business School, and Tsinghua School of Economics and Management;
  - Leadership in Society programs e.g. G20Y Summit, World Business Council for Sustainable Development (WBCSD) Leadership Program, etc.
  - Innovation and change management programs with academic institutions including Chatham House, EPFL and IMD. Expert briefings, workshops and online programs on latest global economic, political and technological trends, and managing digital disruption and energy transition were held to enhance organisational capability to respond to disruptive change.

Year in review

In addition to the initiatives previously mentioned, other initiatives and programmes for enhancing staff capabilities include:

- the Group General Management Development Programme, which was introduced for young engineers identified as having the potential to develop their general management capabilities and prepare for future roles;
- the Group Executive Development Programme for 22 staff across the Group, which was held at IMD and EPFL, and focused on personal leadership and the digital disruption facing the energy industry;
- partnered with Chatham House to organise a Global Insights Conference for our senior staff in Hong Kong to stay aware of key political, economic, social and technological trends in the increasingly complex environment; and
- supported six engineers in our China business to obtain certification with the State Grid Engineering Qualifications, which is widely recognised in Mainland China.

We also jointly developed the Applied Learning Course with the Vocational Training Council in Hong Kong on Electrical and Energy Engineering, with over 80 enrolled senior secondary students in 2018. Details of additional supply side initiatives to nurture young talent and encourage more STEM students to join the energy industry are available here.

Through our structured Performance Management System (PMS), 100 percent of our employees set annual individual objectives, review achievements and review performance ratings. These are key inputs in the determination of incentive payments and base pay reviews.

Average Training Hours per Employee

By Gender	Hours
Male	51.6
Female	28.5
By Professional Category	**Hours**
Managerial	28.6
Professional	37.9
General & Technical Staff	55.8

Customers

Customer portfolio

Year in review

We operate retail businesses in Hong Kong and Australia, where the local market structures, regulatory requirements, demand, customer preference and cultural norms differ significantly.

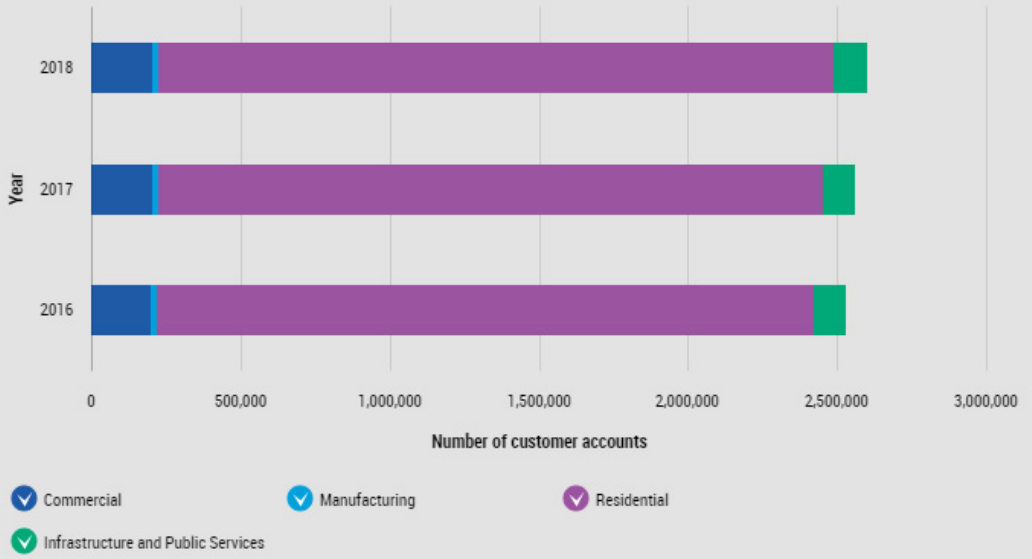
CLP Power Hong Kong is the sole electricity provider for Kowloon, the New Territories, and most of the outlying islands, serving 2.6 million customer accounts or about 80 percent of Hong Kong's population. Our total electricity sales for 2018 were 34,218 GWh, of which 33,662 GWh came from sales to our Hong Kong customers and 556 GWh from sales to the Mainland.

While our home base Hong Kong is perceived by some as a mature market, we are still seeing increased demand for electricity. This is largely driven by a number of territory-wide development and infrastructure projects, including the Kai Tak redevelopment, the West Kowloon Cultural District, the Lok Ma Chau Loop, and landmark transport development schemes such as the Hong Kong-Zhuhai-Macao Bridge, the Hong Kong Boundary Crossing Facilities Island and the Guangzhou-Shenzhen-Hong Kong Express Rail Link. In addition, as Hong Kong becomes a data centre hub, we will need to ensure highly reliable power supplies to support and facilitate the development of this energy-intensive industry.

EnergyAustralia retails electricity and gas to customers in New South Wales, Victoria, South Australia, the Australian Capital Territory and Queensland (electricity only). It is among the 30 or so retailers active in the key markets of New South Wales and Victoria.

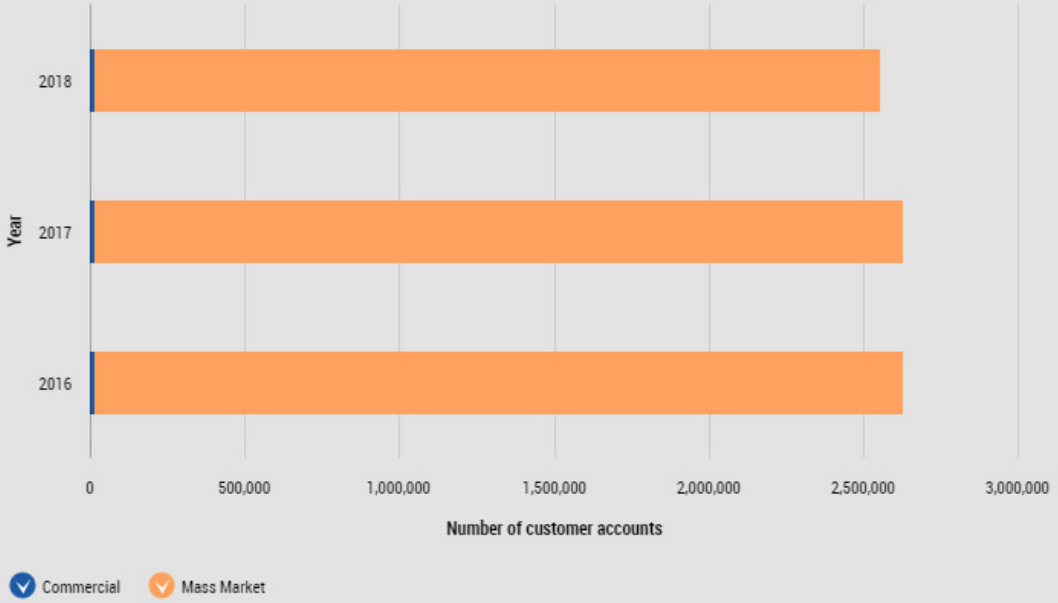
In 2018 the Australian retail market was characterised by intense competition and volatility. High customer churn across all the states in which EnergyAustralia operates, reflected the heightened competition for mass-market customers, while increased transfer activity was stimulated by Government intervention and media attention. While EnergyAustralia's churn remained below the market average, lower sales saw customer accounts decreasing to 2.55 million (2017: 2.62 million).

Hong Kong Customer Breakdown



	2018	2017	2016
Commercial	206,073	203,891	201,582
Manufacturing	17,966	18,650	19,454
Residential	2,265,151	2,228,438	2,200,009
Infrastructure and Public Services	107,893	104,543	103,284
Total	2,597,083	2,555,522	2,524,329

Australian Customer Breakdown



	2018	2017	2016
Commercial	12,526	13,234	15,238
Mass Market	2,537,612	2,610,191	2,609,954
Total	2,550,138	2,623,425	2,625,192

Power supply collaboration with Airport Authority Hong Kong

The third runway, which will enhance the city's connectivity to the world, is one of the most important infrastructure projects in Hong Kong in recent years. To meet the development needs of Hong Kong International Airport, in December 2018, CLP Power Hong Kong signed a Power Supply Collaborative Agreement with the Hong Kong Airport Authority, under which CLP will build new substations and provide power supply facilities for the three runway system. We are also working with the Authority to introduce a battery energy storage system to meet the need for additional back-up power. The system is expected to go into service in 2019.

Read more here ❯

Customer satisfaction

Management approach

Strategies and procedures

We are committed to providing quality service and value to our customers. This includes delivering on our customer service pledges, while at the same time meeting regulatory requirements.

Our customers can access information on our products and services in a timely and efficient manner through a number of communication channels, such as a welcome pack for all new customers, and information on the CLP Hong Kong websites and CLP Mobile App and the EnergyAustralia websites and Mobile Apps.

In addition to providing information, we strive to effectively respond to customer needs and preferences. The Customer Interaction Centre (CIC) in Hong Kong has an internal service pledge to follow up verbal complaints within 24 hours and to acknowledge written complaints within two working days. All escalated cases are studied thoroughly in order to appropriately resolve the issues our customers have raised.

Monitoring and follow-up

To gauge customer feedback about our retails businesses' services and performance, we regularly conduct customer satisfaction survey.

In Hong Kong, an external market research consultant conducts an annual telephone survey on our behalf. The customer satisfaction score considers overall satisfaction towards CLP and a relative rating against an ideal utility in Hong Kong. The score is benchmarked against the public utilities in the energy sector and other public service organisations. We also gauge the number of customer enquiries and complaints received by the Customer Interaction Centre (CIC) and Customer Service Centres (CSC).

EnergyAustralia has been measuring our Strategic Net Promoter Score (NPS) to assess customer engagement since 2012. This is measured monthly via an online survey, which is sent to a representative group of customers. The Transactional Net Promoter Score is also used to track customer satisfaction in relation to specific customer interactions, providing more direct feedback for our frontline staff. EnergyAustralia also measures the number of calls and complaints received.

Year in review

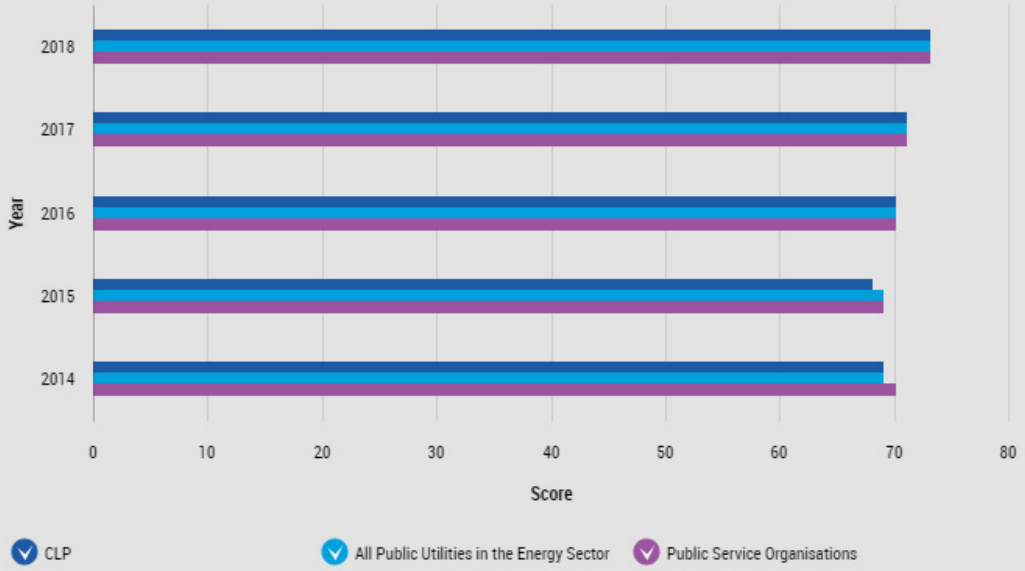
In 2018, our CIC and CSC received thousands of customer enquiries and no justified cases of complaints in Hong Kong.

At EnergyAustralia, we continued to see a reduction in the number of calls received in 2018. The total number of complaints decreased by 20 percent. This was as a result of a 23 percent decrease in internal complaints and a 2 percent decrease in ombudsman complaints. While complaints decreased in early 2018, the high media and political focus on the energy industry saw numbers increase in the second half of the year.

Strategic Net Promoter Score marginally improved (+1.7 points) in 2018. This was generally in-line with expectations, and was just under the target of +2.0 points. While tariffs remained relatively stable for customers, continued uncertainty underscored by the failure of the National Energy Guarantee (NEG), has left customers continuing to question the value they receive from their energy partner.

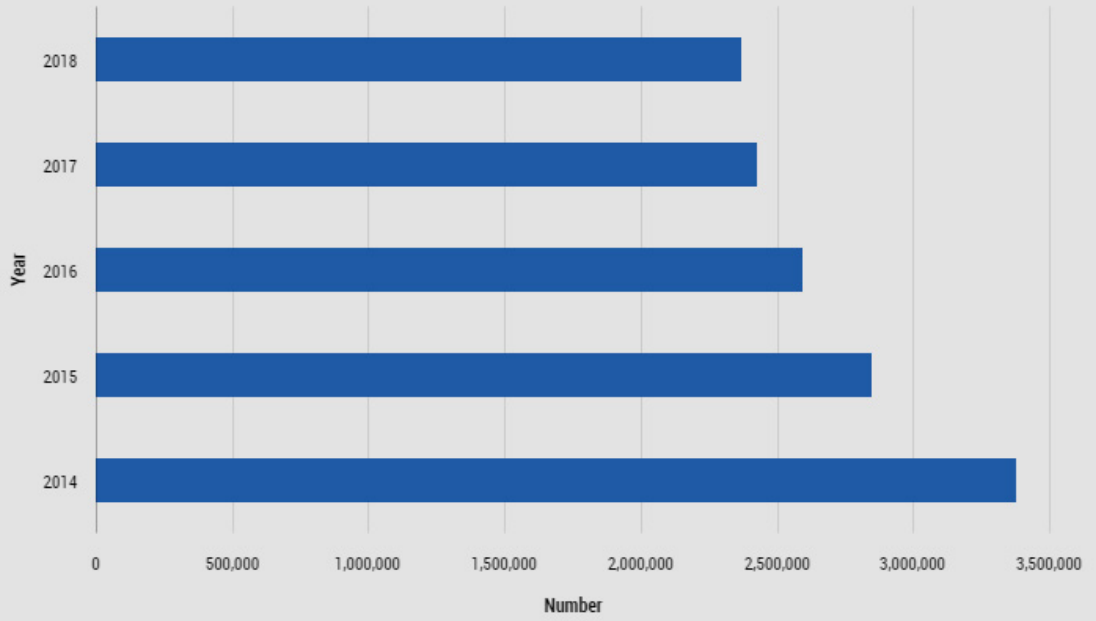
Notwithstanding the large investment we have made in customer journeys to improve performance in future years, we expect improvements for 2019 to again be marginal, with policy uncertainty likely until at least after the Australian Federal election.

Hong Kong Customer Satisfaction Score



	2018	2017	2016	2015	2014
CLP	73	71	70	68	69
All Public Utilities in the Energy Sector	73	71	70	69	69
Public Service Organisations	73	71	70	69	70

Customer Service - Calls handled by the EnergyAustralia call centre



	2018	2017	2016	2015	2014
Number	2,364,731	2,421,816	2,590,868	2,843,495	3,372,654

Customer privacy

Management approach

Under our Code of Conduct, every employee of the company must safeguard our assets – and the resources entrusted to our care, including customer information – from loss, theft or misuse. Additionally, all employees must follow CLP procedures/practices and local regulations in relation to personal data privacy.

EnergyAustralia (EA) has obligations under the Australian Privacy Act 1988 to ensure that personal information is appropriately used, handled and managed. Further to this, in February 2018, the mandatory data breach reporting obligations under Part IIIC of the Privacy Act 1988 came into effect. This new scheme requires data breaches that are likely to result in serious harm to individuals to be assessed within a specific timeframe and, if notifiable, reported to the Office of the Australian Information Commissioner (OAIC) and to the affected customers.

Strategy and procedures

We preserve the confidentiality of the personal data provided to us in accordance with the CLP Privacy Policy Statement, that was updated and brought into effect on 1 November 2018. The CLP Personal Data Protection Compliance Manual (2018 version) was brought into effect on 31 October 2018.

Monitoring and follow-up

We monitor and annually document any complaints related to breaches of customer privacy and the loss of customer data.

EnergyAustralia, has also developed a Data Breach Response Plan and established a Data Breach Response Team. The plan outlines the strategy for assessing, managing, containing and reporting data breaches within required timeframes and includes the articulation of roles and responsibilities. It is enacted each time a potential data breach is identified.

Training and awareness

Customer privacy may be compromised as a result of a cyber security incident, or by the mishandling of customer information by our employees. To this end, in 2018, briefing sessions on privacy including the General Data Protection Regulation (GDPR) of the EU were provided to CLP leadership and compliance managers. We have also implemented a cultural change programme to raise staff awareness on the proper handling of customer information. We continuously review industry threats and strengthen our controls on managing and monitoring networks, systems and mobile devices, data loss and suspicious cyber activities. We also regularly reinforce the need for timely reporting of potential privacy incidents and the reporting mechanisms available.

At EnergyAustralia, customer privacy was the focus of briefing sessions with leadership, enterprise-wide communications and employee training to ensure all staff are up-to-date with current privacy and data management

Read more on how we protect our customers' data ›

Demand-side management

Management approach

As part of our continuous efforts to drive towards a greener future, CLP is stepping up our Demand Side Management (DSM) measures.

Through closer customer engagement, the application of new technology and increased customer awareness of energy consumption, DSM aims to achieve energy efficiency by reducing customers' peak electricity demand. Energy management offers mutual benefits to our customers and our business. For customers, the bills can be reduced, and for power companies, new investment in electricity infrastructure can be deferred.

Our Customer Service Quality Policy also commits us to support our customers to use our products and services more efficiently and effectively.

Goals and targets

In Hong Kong, under the Scheme of Control Agreement (SCA), which ended in September 2018, we were incentivised with an extra 0.01 percent return on our fixed assets if we met the energy efficiency and conservation target of achieving no less than 150 energy audits for commercial and industrial customers and an extra 0.01 percent for saving at least 12 GWh of electricity consumption per year. These targets will be quadrupled under the new SCA effective from October 2018, and the incentive will be raised to approximately 0.1 percent upon achievement of the new energy saving targets and 0.04 percent for the new energy audit target.

Strategy and procedures

Drawing on our expertise in the power industry, we encourage our residential and business customers and the community at large to use energy more efficiently and to change their behaviour so that they can save more energy and help to create a better environment.

Our four-pronged approach to changing people's habits and helping them reduce their energy consumption is designed to:

- Educate the public;
- Provide customers with information and energy-saving tips;
- Equip customers with tools and technical support; and
- Support enablers to make greater energy efficiency possible.

Year in review

We provide a number of tools and technical support services to our customers in Hong Kong and Australia.

In Hong Kong, we launched several new initiatives in 2018:

- **Mass rollout of smart meters:** to support Hong Kong's transformation into a smart city, CLP Power Hong Kong announced in November 2018 that we will install smart meters for all our customers over a seven-year period, starting from 2018 until 2025. This will provide customers with a range of digitalised services and solutions to encourage energy saving and further improve supply reliability.
- **Eco-Building Fund:** provides subsidies to residential building owners to enhance the energy efficiency of the communal areas of their buildings. For 2018, under the SCA which ended September 2018, a total of 157 applications were approved, with total funding reaching HK$70.5 million since its launch. For the new SCA that started in October 2018, a total 159 applications have been approved to date, with total energy saving of 14.8GWh achieved.
- **Community Energy Saving Fund:** to promote energy efficiency and conservation, encourage residential customers to adopt low-carbon lifestyles, subsidise business customers to upgrade or replace electric appliances to more energy efficient models, and support the underprivileged.

The other initiatives that were continued from previous years include:

- **Eco Power 360, GREENPLUS Energy Billboard:** these are online assessment tools to help our residential and business customers understand their electricity consumption patterns.
- **Meter Online:** an innovative energy management tool that provides a nine-day energy forecast to both residential and business customers, to help them better manage their power consumption.
- **Energy audits** are conducted to help our commercial and industrial customers save electricity and operation costs.

See more Energy Efficiency & Conservation services in Hong Kong ›

In Australia, the 2018 initiatives included:

- **E Voltage Pro app for Commercial & Industrial customers:** the app gives customers real-time insights to the National Electricity Market (NEM) demand and generation, energy flows between states and inter-connecters, and spot and wholesale markets. Customers are able to set alerts based on spot market price events and receive Australian Energy Market Operator (AEMO) notices;
- **E-billing for Commercial & Industrial customers:** to simplify the way our customers can manage and pay their bills;
- **'Demand response' reserve capacity:** in 2017, EnergyAustralia committed to deliver around 50MW of such capacity across New South Wales, Victoria and South Australia as part of a pilot programme organised by the Australian Renewable Energy Agency (ARENA) and the AEMO. It is the largest single commitment in the three-year demand response trial. The programme aims to secure 160MW of capacity which can be called upon at short notice should availability in the national electricity market fall to critical levels.
- **Other initiatives:** New technologies to enable customers to optimise the use of solar panels and batteries, and allow them to control and monitor their operation remotely; continues to explore and implement solutions to work with customers on meeting their energy needs through products and solutions that are commodity and non-commodity orientated, i.e. power factor correction, solar PV, demand response.

See how EnergyAustralia help customers manage their energy consumption ›

Amazon Alexa answers questions from EnergyAustralia customers

EnergyAustralia customers can now check and manage their EnergyAustralia electricity and gas accounts with Amazon Alexa. Currently customers are able to keep track of their bill and when it is due with a simple voice command. Over time we will add services, such as the ability to call up data on how much energy a household is using and when, all of which will help customers better manage their energy consumption.

Read more here ›

Access to electricity

Management approach

Access is the ability to use an affordable and reliable electricity supply. We have services in place that ensure most challenges, including language, culture, literacy or disability, do not prevent people from accessing and using our products. For instance, in Hong Kong, we offer a Braille bill to assist those who are visually impaired. EnergyAustralia provides Interpreter services for those who have a first language other than English, and also offer hearing-impaired and vision-impaired billing services.

We also provide special arrangements to customers facing financial difficulties to avoid having to disconnect their electricity supply.

Year in review

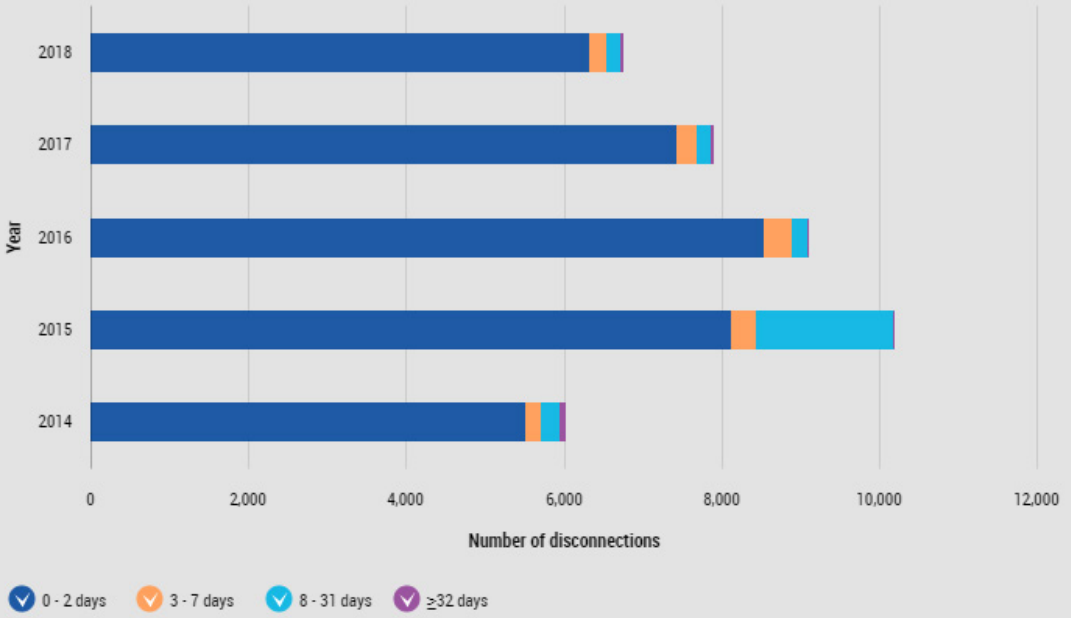
We assist those with financial difficulties. In extreme cases when our customers do not pay for their electricity, we may disconnect them from the grid after initiating communications and providing services to avoid disconnections. In Hong Kong, the total number of disconnections for our customers continuously decreased over the last three years.

See how we support customers with financial hardship ›

In Australia, the Credit and Collections team continued to focus on improving the pre-disconnection process so that customers have every opportunity to avoid disconnection for non-payment. The introduction of "Live Chat", pre-disconnection SMS and bespoke payment portals are just a few of the options available for customers facing financial difficulties.

A determination by the Essential Services Commission (ESC) in August also reduced the number of disconnections. Combined with our internal strategies, disconnections for non-payment were down approximately 47 percent in 2018 (7,981) on 2017 (15,021).

Total number of disconnections for Hong Kong



	2018	2017	2016	2015	2014
0 - 2 days	6,319	7,426	8,545	8,128	5,519
3 - 7 days	225	255	359	313	196
8 - 31 days	168	192	190	1,748	241
≥ 32 days	10	15	9	8	59
Total	6,722	7,888	9,103	10,197	6,015

EnergyAustralia's Financial Inclusion Action Plan (FIAP)

In June 2017 EnergyAustralia publicly announced it would commit an additional A$10 million in financial and other support for some of its most vulnerable customers. Since then, the Hardship Investment Plan has been created with the focus for 2018 being Program Improvements, Better Energy Use & Financial Inclusion that aimed to:

- Deliver improvement in energy efficiency for vulnerable customers participating in tailored solutions and services
- Reduce the average debt year on year of customers entering the Vulnerability programme through early intervention and proactive management
- Achieve year on year increase in customers graduating off the Vulnerability programme
- Contribute to financial inclusion by increasing FIAP collaborations and partnerships

Read about the FIAP ❯

Supply chain

Supply chain management

Management approach

Procurement and supply chain management are an integral part of our business operations. We procure a wide range of products and services, of significant value, to maintain and develop our electricity supply business to meet our customers' needs.

Operational responsibilities

From an operational perspective, our procurement professionals aim to develop and implement effective supply market strategies which enhance the quality of acquired products and services, reduce supply chain risks, realise Group-wide synergies and optimise the supply chain value delivered to our stakeholders.

Strategies and procedures

To ensure alignment with our business commitments, the CLP Group Procurement Strategy supports these objectives through key delivery pillars:

- the development of a Group Procurement Standard (GPS);
- group-level Category Planning, Sourcing and Supplier Management;
- cross-regional delivery support on key projects, supplier engagements and improvement initiatives; and
- federated functional leadership, governance and oversight.

The CLP Group Procurement Standard (GPS) aims to drive the consistent adoption of leading practices and capabilities across the Group. It is comprised of sixteen "Process" and "Enabler" elements as illustrated in the figure on the right, including Responsible Procurement, Supplier Risk Management and Supplier Relationship Management.

The CLP Group Procurement Standard

Group Procurement Standard (GPS)

Our procurement commitments comply with CLP policies, which include the CLP Value Framework, the CLP Procurement Values and Principles, CLP Group's Responsible Procurement Policy Statement (RePPS) and Procurement Policies. Our day-to-day operations are also guided by CLP's Whistleblowing Policy and Harassment-Free Workplace Policy. As trusted partners, we expect our suppliers to uphold the principles outlined in our policies and guidelines.

Procurement is actively involved in supporting category and project steering committees, and ensuring appropriate oversight and governance is applied for procurement decision-making. Furthermore, procurement commitments are made with reference to clearly defined regional- and Group-level Company Management Authority Manuals (CMAM).

Monitoring and follow-up

We regularly review our supplier spend allocation across the Group. In 2018, we introduced Group Spend Analysis and Group Procurement Pipeline dashboard systems to improve our monitoring and planning of supplier spend. The greater transparency provided by these systems is helping CLP Procurement practitioners support better business planning, assisting in monitoring supply chain risks, and revealing opportunities for collaboration between our cross-regional procurement teams.

We design fit-for-purpose sourcing strategies to select suppliers who will best meet our requirements and deliver the most value to our business. Supplier evaluations are typically conducted through competitive tendering and based on an assessment of the supplier's ability to meet our quality, safety, health and environment, delivery, innovation, sustainability and cost requirements. We ensure our contracts safeguard our stakeholder interests, and reflect our suppliers' commitments and obligations, including legal and regulatory compliance, safeguarding intellectual property rights, data confidentiality and security.

We segment our contracted suppliers into tiers which helps determine the appropriate level of governance and engagement. Segmentation is reviewed annually based on relative contract value and potential business impact, including in relation to supply chain risks and sustainability.

In line with our Corporate Risk Framework, we periodically assess our exposure to strategic supplier risks through heatmaps that reveal the likelihood of failure events and their potential impact on our business. We then develop and implement mitigation plans with suppliers to actively mitigate these risks.

Continuous improvement

We have enhanced our Supplier Relationship Management process for our strategic suppliers to consistently measure delivery performance, drive continuous improvements and ensure alignment through year-round operational, business and executive reviews.

Responsible procurement

Management approach

Our Responsible Procurement Policy Statement (RePPS) outlines the expectations we place on our suppliers, their suppliers and subcontractors. These expectations are based on four pillars: Legal Compliance, Respect for People, Ethics and Business Conduct, and Environmental Stewardship.

We believe our commitment to continuous improvement and our ongoing efforts to encourage others to use best practice creates benefits throughout the supply chain, and helps build good corporate citizenship.

Operational responsibilities

We encourage suppliers to abide by the principles stated in RePPS and expect them to adopt similar standards and practices when doing business with us. Our contract terms and conditions also outline specific project requirements and our expectations in terms of business ethics.

Our team leading "Responsible Procurement" engages with key internal and external stakeholders to promote procurement practices aimed at reducing ESG risks and enhancing supplier capabilities to meet CLP's sustainability requirements.

Strategies and procedures

We take a risk-based approach in implementing responsible procurement across our procurement lifecycle. Sustainability risks are identified and evaluated regularly at category, project and supplier levels against each of our four responsible procurement pillars . Our evaluation considers:

- country-specific risks
- product/service-specific risks
- industry/category-specific risks
- legal and regulatory compliance risks
- labour practices and sub-contracting risks
- health and safety risks
- governance and business conduct risks
- environmental risks
- brand and reputational risks

Sustainability risk assessments are also conducted for key categories of spend as part of our category management practices, and are incorporated into category business plans from which sourcing strategies are subsequently developed.

For critical projects, we assess suppliers on their sustainability practices through a combination of self-declaration questionnaires, proposal evaluation, site visits, audits and two-way performance reviews. The information we collect through self-declaration questionnaires enables us to identify opportunities to further collaborate with suppliers to enhance their sustainability capabilities during contract execution.

We also conduct quarterly sustainability risk assessments for our strategic suppliers after a contract has been awarded, in conjunction with our supplier risk management and supplier relationship management processes. Risk mitigation plans are developed to address identified risks including in relation to delivery performance, supply disruptions and business continuity, and sustainability within the supply chain.

Continuous improvement

Following the publishing of the ISO Guide on Sustainable Procurement (ISO 20400:2017), we completed a review and a benchmarking exercise of our responsible procurement practices against those of other industry leaders. We are now in the process of developing and implementing additional measures to further improve our sustainability risk management capabilities with our supply chain.

Year in review

In 2018, critical projects represented 91 percent of total procurement projects by value (compared to 73 percent in 2017) and were subject to sustainability risk assessments as described above.

A significant share of our third-party spend is with local suppliers who support local communities while meeting CLP's business needs, complying with legal and performance requirements, and maintaining internationally competitive pricing. In 2018, we procured from 5,721 suppliers representing a total of HK$39.2 billion across CLP Group – 85 percent of which originated from local suppliers based in Hong Kong, Mainland China, India and Australia.

In the past year, we have assessed 62 strategic suppliers against sustainability requirements and conducted follow-up site visits with four key suppliers with the aim of identifying opportunities to collaborate on improving sustainability performance.

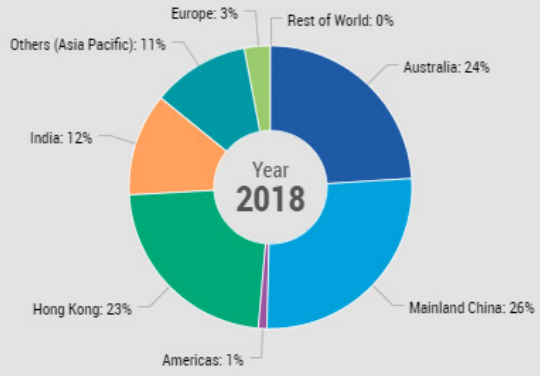
We have also engaged 43 critical sub-contractors in Hong Kong to better understand the state of development of their sustainability programs and practices. We will continue to engage with them to monitor and support their efforts to uplift their sustainability capabilities.

Overall, our assessment and monitoring mechanisms have confirmed there were no significant risk findings related to our Responsible Procurement Policy Statement in 2018. No supplier relationship was terminated due to assessment and monitoring results.

Cross-industry stewardship

To further demonstrate our commitment to sustainable procurement, CLP Power Hong Kong became a founding member of the Green Council "Sustainable Procurement Charter" in 2018. This charter replaces and expands on the "Green Purchasing Charter", of which CLP was a founding member in 2017.

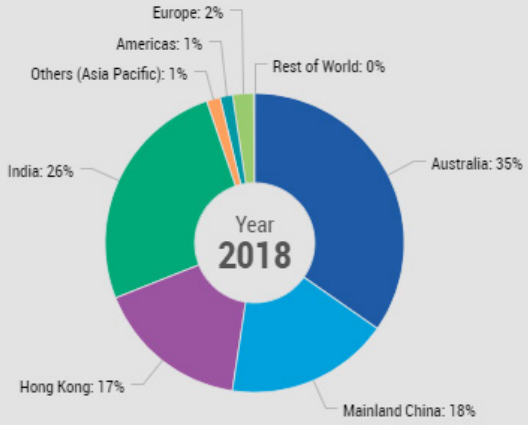
Payment to Suppliers by Region (HK$M)



Notes:
[1] Figures include rounding adjustments.

	2018	2017	2016	2015	2014
Australia	9,410	7,184	4,877	3,842	6,317
Mainland China	10,339	8,343	8,872	12,547	7,249
Hong Kong	8,917	7,264	6,301	6,985	7,083
India	4,597	2,527	2,355	2,990	3,466
Others (Asia Pacific)	4,363	4,467	3,096	3,847	5,670
Europe	1,170	830	415	514	1,081
Americas	380	241	51	60	76
Rest of World	7	12	5	2	4
Total	39,183	30,868	25,972	30,787	30,946

Number of Suppliers by Region



Australia Mainland China Hong Kong India Others (Asia Pacific)
Americas Europe Rest of World

	2018	2017	2016	2015	2014
Australia	1,986	1,941	1,922	2,190	2,071
Mainland China	1,011	995	1,018	999	1,103
Hong Kong	950	899	721	696	836
India	1,476	1,443	1,366	1,311	969
Others (Asia Pacific)	84	70	65	66	63
Europe	129	112	95	100	101
Americas	78	69	54	60	56
Rest of World	7	7	7	2	4
Total	5,721	5,536	5,248	5,424	5,203

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