

# Business Performance and Outlook

CLP's transmission network, Hong Kong

We are well-positioned  
to navigate the energy  
transition and transform  
into a utility of the  
future

# Hong Kong

Continue to support the Government's clean energy policies to make Hong Kong smarter and greener



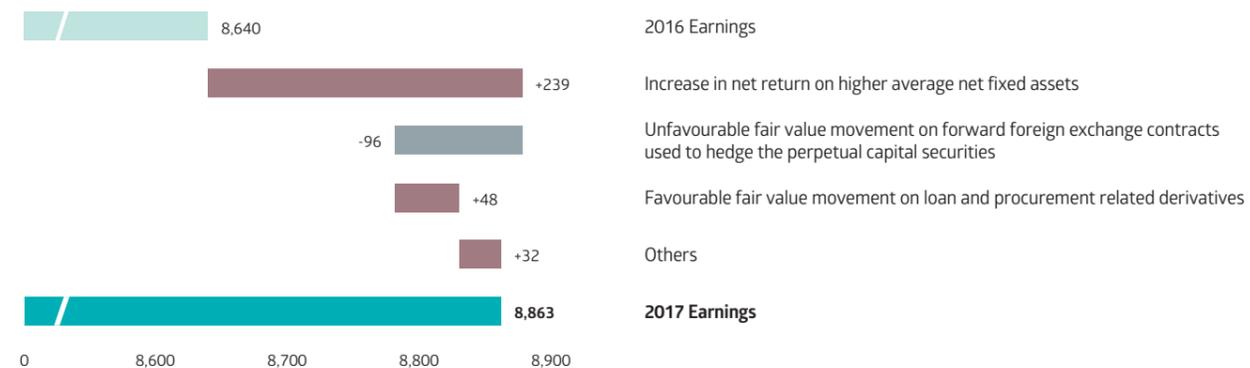
## Financial and Operational Performance

### Overview

CLP worked hard to deliver a highly reliable, environmentally responsible and safe electricity supply to customers in 2017. Regrettably, during the year there were two industrial incidents which led to four casualties.

In 2017, operating earnings from our electricity business increased 2.6% from a year ago to HK\$8,863 million.

### Operating Earnings of Hong Kong Electricity Business (HK\$M)



CLP's operations in Hong Kong have been regulated by the Government under the Scheme of Control (SoC) Agreement for more than 50 years. This arrangement has provided the stability to allow us to respond to the changing needs of Hong Kong society and deliver a constantly improving environmental performance.

A new SoC Agreement was signed with the Government in April 2017, giving CLP the opportunity to continue to power the growth of Hong Kong. It comes into effect in October 2018 and runs until December 2033. The new Agreement provides certainty for our customers, employees, shareholders, and everyone who uses the electricity infrastructure of Hong Kong. It will help us to undertake the long-term investments needed to support Hong Kong's transition to a low carbon economy guided by the Hong Kong Government's 2020 and 2030 carbon intensity targets. In accordance with the requirements of the new SoC Agreement, we have submitted a Development Plan for 2018-2023 to the Government.

### Meeting Customer Needs

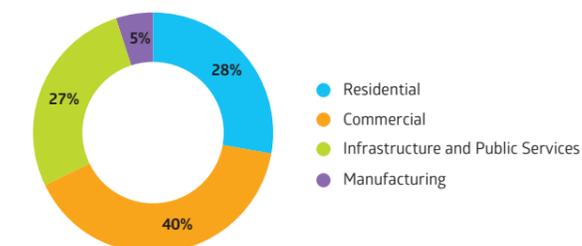
The number of customers served by CLP in 2017 increased year-on-year from approximately 2.52 million to 2.56 million. Local sales of electricity decreased slightly by 0.2% to 33,164 gigawatt hours (GWh) compared with the previous year. The reduction was caused mainly by a dip in demand from the residential sector because of mild weather in the first half of the year. Sales to Mainland China amounted to 1,341GWh, an 11.3% increase from 2016. As a result, total electricity sales in 2017 saw a marginal increase of 0.2% to 34,505GWh. We recorded a local

demand peak of 7,155MW on 22 August, 1.8% higher than the previous record set in 2014 and 4.6% above the day of highest demand in 2016. The demand peak during the year would have been higher had we not actively pursued demand response initiatives under which we incentivise key customers to reduce electricity usage.

### Local Electricity Sales in 2017

Year-on-Year Change	Increase / (Decrease)	
	GWh	%
Residential	(177)	↓ (1.9)
Commercial	(14)	↓ (0.1)
Infrastructure and Public Services	129	↑ 1.5
Manufacturing	(11)	↓ (0.6)

### Share of Total Local Sales



We are mindful of the impact of tariff increases on people's livelihood and business, and have maintained a relatively stable Basic Tariff over the past decade. For 2018, with the offering of a Rent and Rates Special Rebate, we adjusted the Average Net Tariff by 1.9% to HK\$1.154 per unit of electricity amid the pressure of continuing inflation, increasing fuel costs due to increased gas generation by 2020 and rising operating costs.

### Powering Hong Kong

Hong Kong experienced a succession of extreme weather events in 2017. The territory was affected by seven typhoons with two particularly strong ones striking in the space of five days. We were able to maintain our highly reliable service despite these challenges. During Typhoon Hato, which triggered Hong Kong's most severe number 10 storm warning for the first time since 2012, CLP customers experienced an average of just 0.7 minutes of unplanned power interruption, down from 1.8 minutes when Typhoon Vicente hit Hong Kong five years earlier. Despite Hato's closer proximity and higher wind speeds, the number of customers affected also dropped to less than 23,000, compared with 32,000 during Vicente. These figures highlight the resilience of our systems. More importantly, they underline the need for continuing careful and diligent investment in our infrastructure so that we can maintain and improve our reliability for customers as extreme weather events become more commonplace.

Solid and dependable infrastructure provides the backbone for us to serve our customers well. In 2017, we invested HK\$8.1 billion to maintain and enhance our supply systems and generation assets to meet customer demand. We are upgrading the gas turbines in our existing gas-fired generation units while constructing new facilities. To support Hong Kong's infrastructure development, we commissioned two new 132kV substations to provide power supplies to a data centre in Tseung Kwan O and the new border control facilities at Heung Yuen Wai.

### Building a Lower Carbon Economy

We are working hard to reduce the carbon intensity of our electricity supply with a significant change in the fuel mix we use at our power plants. Around one third of CLP's electricity supply is already non-carbon emitting, while about a quarter is produced by gas-fired generation with high efficiency and low emission. Gas-fired power generation produces about half the carbon emissions of coal generation, so increasing the proportion of gas-fired generation makes a significant difference to the environment over time. To support the government's target of generating about half of Hong Kong's electricity from natural gas by 2020, we are building a new 550MW advanced combined-cycle gas turbine at Black Point Power Station which will operate with a world-class efficiency and environmental performance. The project will

mainly be financed by an Energy Transition Bond issued at attractive rates under our new Climate Action Finance Framework. Construction is progressing well and we are on schedule to put the unit into operation before 2020.

As we become more reliant on gas and to meet the Government's expectations for our fuel mix for power generation, we need to ensure we secure additional reliable supplies of natural gas at competitive prices from the global market. We are therefore working to develop an offshore LNG import terminal for our city, using a Floating Storage and Regasification Unit (FSRU) located in the southern waters of Hong Kong. Good progress has been made on LNG supply and the FSRU vessel arrangements. We are now finalising the environmental impact assessment for the project and will soon submit it to the Government.

The new SoC Agreement contains important elements to support Hong Kong's transition to a low carbon economy. These include initiatives to increase the pace of energy efficiency projects undertaken by our customers, and the introduction of new programmes to promote renewable energy.

Two important new energy efficiency funds are being established. The new CLP Eco Building Fund will promote energy saving for buildings and the CLP Community Energy Saving Fund aims to encourage wider usage of energy efficient electrical appliances. We are also introducing a new Feed-in Tariff programme and Renewable Energy Certificates. The Feed-in Tariff programme will incentivise people to develop small-scale renewable energy projects by shortening the payback period of their investment. CLP will continue to facilitate easy grid connection for these projects. Renewable Energy Certificates allow customers to buy clean energy from us and recognise the contribution that renewable energy makes to lowering emissions. These two instruments will give customers the opportunity to provide practical support to accelerate the development of renewable energy in Hong Kong.

We continue to play a direct role in the development of Hong Kong's renewable energy sources by connecting the Government's large-scale waste-to-energy projects to our grid and exploring other utility-scale renewable energy opportunities in Hong Kong. For example, we are pioneering Hong Kong's largest landfill gas power generation project at the West New Territories (WENT) Landfill site. An environmental permit was granted in April 2017 and we plan to install 10MW power generation units in the initial stage of the project that uses landfill gas as fuel. The amount of energy produced will be enough to meet the annual electricity demand of around 17,000 four-person homes. A commercial agreement for the project is being finalised and we expect it to go into operation in the middle of 2019.

### Developing a Greener, Smarter Energy System

Electricity has a critical role to play in Hong Kong's transformation into a smart city. It accounts for more than half of all the energy we use in our homes, businesses, infrastructure and transport networks. CLP's world-class reliability is more essential than ever to power our daily lives including the smart phones and computers that make our lives more manageable, and we have a unique opportunity to play a key role in creating a smarter, greener city.

We are making use of new technology to transform conventional transmission and distribution networks into a smart grid. Drones are being deployed to inspect power lines and generation facilities to improve efficiency and safety, and Virtual Reality technology is being applied to operational and safety training to enhance its effectiveness.

At the same time, we want to make smart technology directly available to more of our customers. The Smart Energy Programme launched in the middle of last year provided the opportunity for 26,000 residential customers to take part in a one-year demand side management pilot study to examine how they could better manage their consumption and make real savings on bills. Smart meters directly connected to CLP's energy management and customer service systems were installed and customers were incentivised to use less electricity at times of peak system demand, save money by shifting their electricity usage to off-peak periods, and use new smart phone apps to receive energy saving tips along with up-to-date information on their consumption. We hope to extend these benefits to many more customers in future.

To promote smart living, we launched a mobile app in July 2017 that allows customers to manage their electricity accounts, settle bills, shop for energy efficient appliances, and gain quick access to useful information including the locations of CLP customer service centres.

We opened the new CLP Smart Energy Experience Centre in Yuen Long in April 2017 to introduce one-stop advisory services on smart technology for homes and offices. The centre also acts as a shop window for home-grown companies by showcasing innovative products and services such as smart home controls, facial recognition devices, and voice-controlled appliances developed by local start-ups.

For business customers, we provide an energy audit service to assess their energy efficiency performance. This helps them identify savings opportunities and areas in need of improvement. More than 160 audits were conducted in 2017. We also launched the Smart Enterprise Service app, deploying an Internet of Things platform for total energy management solutions which enable customers to control and monitor their electrical equipment and devices remotely.

Green transport is a key requirement for any smart city. To promote green motoring and encourage the use of our city-wide electric vehicle (EV) charging service, we have expanded our EV charging network to 49 charging stations with 154 charging points across our service area. In parallel, we have upgraded the CLP mobile app which now provides users with the latest status of CLP's charging stations and helps drivers locate their nearest available charging points.



We use drones to inspect power lines, significantly improving efficiency and safety

**Promoting Education and Learning**

The continuing success of the power industry in Hong Kong depends upon expertise, innovation and the ability to nurture talented individuals capable of keeping pace with the sector's rapid evolution. To ensure we have the best possible talent pool to help our city and country grow, we established the CLP Power Academy in October 2017, offering for the first time accredited professional programmes for electrical and mechanical tradespeople and people interested in joining our industry.

We also produced a milestone documentary film called *A Century of Power* which told the parallel and intertwined histories of CLP and Hong Kong. We hope the film will inspire our new generation to appreciate the contribution of electricity to our past, present, and future success of our city.

Meanwhile, we arranged a broad range of educational activities aimed at ensuring we have quality human resources for the development of both CLP and Hong Kong. More details can be found in the Social and Relationship Capital chapter on pages 87-89 and the highlights below illustrate how we provide support for every stage of life's learning journey.

**CLP's Education Programmes**

Distributed a **POWER YOU Kindergarten Education Kit** to about 1,000 kindergartens for free with subsequent visits by graduate trainees to share basic knowledge of energy and safety, and to promote energy efficiency and conservation (EE&C).

CLP Power Academy and Vocational Training Council jointly launched the Professional Diploma in Power Engineering, attracting more than 170 applications for 40 available places.

Professor Charles Ng inaugurated as first **CLP Holdings Professor of Sustainability** at the Hong Kong University of Science and Technology.

**Green Elites Campus Accreditation Programme** helps primary school students develop green lifestyle.

Around 8,400 secondary school students took part in the **Engineer in School** programme to learn about energy issues and career prospect in engineering.

**LS-energy.hk** is Hong Kong's first one-stop e-Learning portal to support the senior secondary Liberal Studies programme.

A new multi-purpose promotion vehicle joined CLP's **Green Studio mobile classroom** to deliver EE&C messages to schools and communities.

**CLP Power Low Carbon Energy Education Centre** was opened at the City University of Hong Kong.



**Environmental Performance**

**Air Emissions**

Reducing air emissions is a vital step in creating a better living environment. We engage a comprehensive and robust system for our generation portfolio to carefully monitor environmental performance, ensure full compliance, and explore opportunities for improvement.

In 2017, we were able to comply with all the emissions caps set by the Government seeking a 9% reduction in emissions

compared with 2016. We were able to achieve the targets while maintaining supply reliability and a reasonable tariff level by optimising our diversified fuel mix, and maintaining the effectiveness of our emissions control facilities.

We also completed a review with the Government for a new set of emissions caps for our power stations which will come into effect from 2022. The emissions caps for sulphur dioxide, nitrogen oxides, and respirable suspended particulates will be substantially reduced by 80%, 53%, and 53% respectively compared with 2010 levels.

**Environmental Regulatory Compliance**

All Hong Kong assets under our operational control maintained full compliance with environmental regulations in 2017.

**Social Performance**

The sustainable success of our business is closely aligned with the wellbeing of the communities we serve. We work closely with non-governmental organisations and community groups to identify society's evolving needs and develop programmes that help meet those needs. Our community initiatives focus on three areas: environment, education and development, and community wellbeing.

Throughout the year, we initiated and supported 425 community projects in Hong Kong. Some of the key projects are highlighted below while more details can be found in the Social and Relationship Capital chapter on pages 87 – 89.

**Ensuring a Safe Workplace**

Safety is our utmost priority. We were therefore deeply saddened by two fatal incidents in 2017 which resulted in the death of four workers of our contractors. To prevent similar events in future, we undertook a thorough review of our safety management system with a focus on avoiding serious injuries and fatalities, enhancing our safety leadership and improving the management of contractors. Details can be found in the Human Capital chapter on pages 81 – 86.



Three Hotmeal Canteens have provided over **430,000 hot meals** to people in need since 2011.



A record **17GWh of electricity saved** in the Power Your Love programme by more than **410,000 customers**, equivalent to the annual electricity consumption of 4,000 households.

**HK\$6 million** donated from CLP shareholders' fund helped ease pressure from electricity costs for **20,000 underprivileged households**.

**Community Wellbeing**



More than **3,000 elderly people** have celebrated festivities with CLP volunteers since the Sharing the Festive Joy programme was launched in 2014.

**Volunteering**



More than **1,600 CLP volunteers** contributed nearly **15,000 hours** of community services.

**Education and Development**



Over **166,000 students** in different learning stages participated in our **56 education programmes**.

**Outlook**

At CLP, we strive to provide our customers with a world-class electricity supply with high supply reliability, an improving environmental performance, and reasonable tariffs. We are committed to continuing to do so in the future despite the challenges of extreme and changing weather, an uncertain global economic outlook, volatile international fuel markets, and rising environmental performance expectations. We will ensure the safe and timely construction of the new combined-cycle generating unit at Black Point Power Station. We will press ahead with the development of an offshore LNG terminal to maintain our supply reliability, fuel source diversity, and our ability to procure fuel on competitive terms. We will work closely with the Government on the next Development Plan to ensure appropriate investment and resources are available for us to maintain our world-class service to customers. We will also explore options to further reduce Hong Kong's carbon emissions in the long term, including the possibility of an even cleaner fuel mix and the import of clean energy.

We are committed to working with our customers to put the new SoC Agreement into effect and to energetically promoting

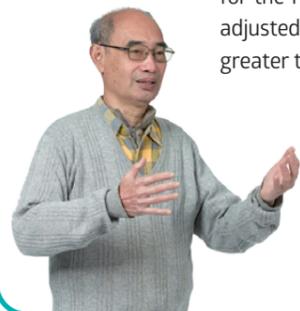
renewable energy and greater energy efficiency. We will make more details of the Feed-in Tariff programme and Renewable Energy Certificates available during 2018 and preparation is underway to launch the new Eco-Building Fund and the Community Energy Saving Fund to help lead Hong Kong towards a lower carbon future.

In a fast-changing world, CLP will capitalise on technological advances to continually improve our operations and to provide better value for our customers. We will make use of data analytics and robotics to optimise our asset management and improve our predictive operational management capability. New forms of technology such as chatbots will be deployed to enhance our services and customer offerings. We will also continue to work closely with our stakeholders and support the community in practical and meaningful ways, providing environmental education, supporting youth development, and helping disadvantaged people in our community. As Hong Kong becomes a world-class smart city, it needs a smart utility to support and facilitate the transformation. CLP is ready to take that role.

**Q Under the new SoC Agreement, there will be a more frequent Fuel Cost Adjustment mechanism. Will it result in a lower balance of the Fuel Clause Recovery Account?**

**A** Currently, the Fuel Cost Adjustment is reviewed and adjusted annually during the tariff review process. The balance in the Fuel Clause Recovery Account serves as a buffer to help stabilise tariffs against fuel price volatility and CLP does not profit from it. The Fuel Clause Recovery Account mechanism has already proved effective in stabilising tariff levels over the years. However, as fuel prices have dropped in the past couple of years, there has been some criticism over the high level of balance of the Fuel Clause Recovery Account.

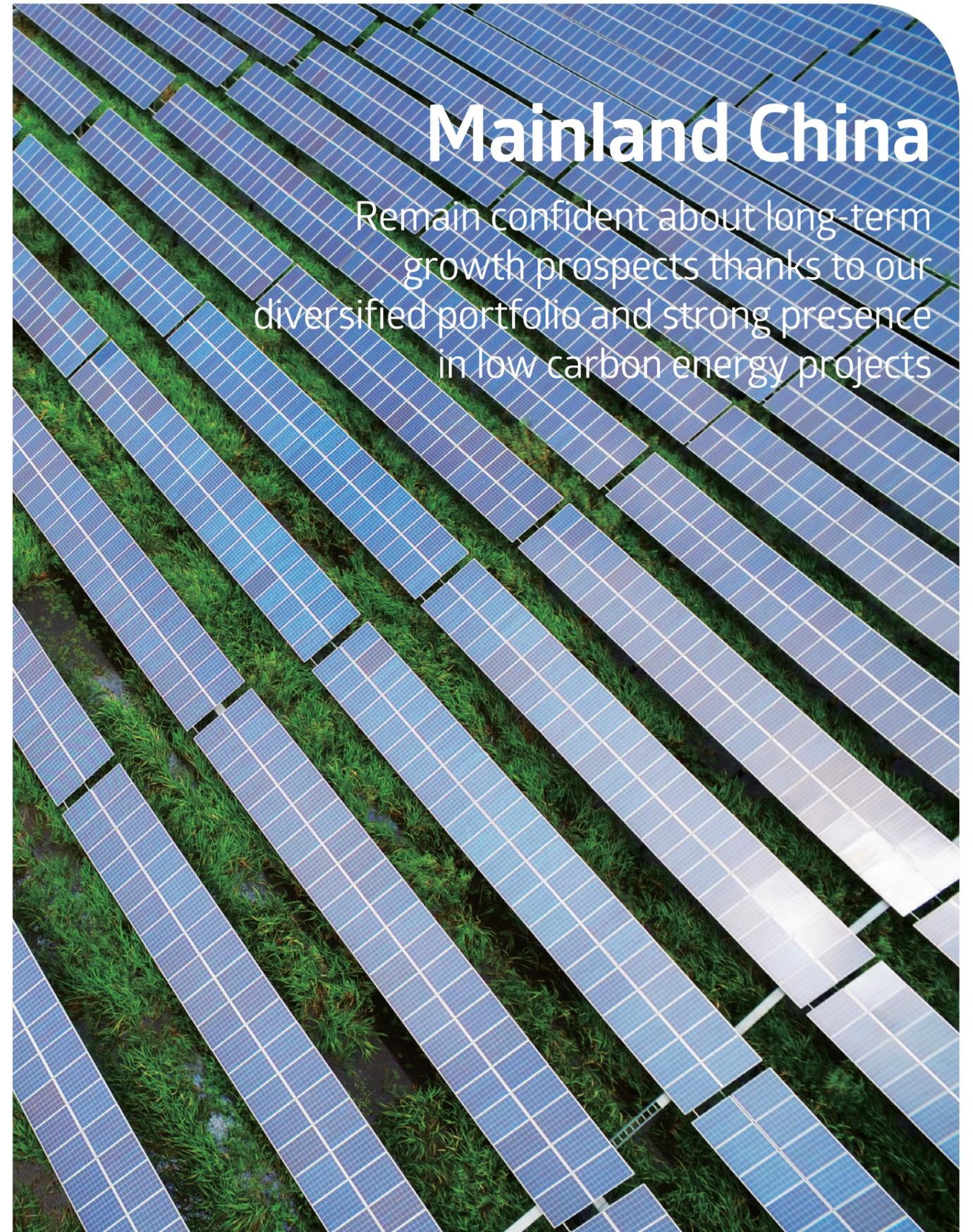
Following the implementation of the new SoC Agreement, a new arrangement for the Fuel Cost Adjustment in the total tariff will be put in place so that it will be adjusted more frequently to reflect changes in fuel prices in a more timely way with greater transparency.



**Mr Wan Ho Kin Haywood**  
CLP Customer



**TK Chiang**  
Managing Director  
CLP Power Hong Kong



## Financial and Operational Performance

### Overview

China maintained strong economic growth in 2017 with GDP expanding 6.9% from a year earlier, contributing to a 6.6% growth in demand for electricity. However, the Central People's Government has launched a series of campaigns to address coal oversupply issues over the last few years, leading to coal mine closures. Coal costs started to rise rapidly in the second half of 2016. This, together with overcapacity in the industry, has a major impact on the profit levels of electricity generation facilities, most notably for our thermal plants. Meanwhile, as the electricity market reform continued to gather pace, an increasing portion of our sales were carried out through competitive bidding, which often resulted in tariff levels that are lower than the approved benchmark rates.

Against this background, the operating earnings of CLP in Mainland China fell 18.6% to HK\$1,238 million. However, earnings of our renewable projects were higher, benefitting from the addition of five new projects since 2016. Daya Bay Nuclear Power Station operated reliably with higher generation and stable earnings. Our performance in Mainland China is summarised below.

Operating Earnings	2017 HK\$M	2016 HK\$M	Change %
Renewables	441	404	+9.2
Thermal	45	429	-89.5
Nuclear	913	863	+5.8
Operating and Development Expenditure	(161)	(175)	-8.0
<b>Total</b>	<b>1,238</b>	<b>1,521</b>	<b>-18.6</b>

### Operating Earnings of Mainland China (HK\$M)



### Nuclear Projects

A highlight of CLP's operations in Mainland China in 2017 was the completion of the acquisition of a 17% equity interest in Yangjiang Nuclear Power Co., Ltd. in December. Yangjiang Nuclear Power Station is located in Guangdong and consists of six generation units, of which four are in commercial operation while the remaining two are under construction with commissioning targeted for 2018 and 2019. The transaction was significant for a number of reasons. It increased our investment in low carbon technologies, strengthened CLP's longstanding relationship with the CGN Group which commenced with our investment in Daya Bay over 30 years ago, and made an immediate contribution to our earnings.

Daya Bay Nuclear Power Station continued to perform well and maintained a good safety performance without any licensing operational events or abnormal incidents as defined by the International Atomic Energy Agency.

### Renewable Projects

The addition of 62MW of new projects and higher output at our wind and solar projects were the major drivers behind the better performance of our renewables business in 2017.

The Laiwu II wind project in Shandong was commissioned towards the end of the year. Together with the full-year contribution of the three projects that started commercial operations in 2016, the energy sold from our wind portfolio increased by more than 8% compared with 2016.

The performance of our hydro projects was satisfactory in general but variable reflecting local conditions. Dali Yang\_er Hydro Power Station in Yunnan reported stable generation. However, Jiangbian Hydro Power Station in Sichuan was affected by grid curtailment while there was lower rainfall at Huaiji Hydro Power Station in Guangdong.

Generation from our solar portfolio increased slightly compared with the previous year. In June, we commissioned a new project at Hua'an in Jiangsu, which is our second solar-agriculture integrated farm in Mainland China.

### Thermal Projects

Last year was challenging for coal-fired projects in Mainland China as coal prices were high while tariffs did not keep pace with costs and overcapacity was severe. The Central People's Government's clean energy policies also meant output from renewable or nuclear projects were often given priority. This affected our thermal projects across the board and was particularly severe at our Fangchenggang Power Station which was also impacted by the restrictions to import coal at certain ports.

As a result of these factors, we focused on optimising our current operations and finding ways to boost future output. At Fangchenggang, we responded quickly by increasing the portion of market sales from two-fifths in 2016 to 100% in 2017. As we expected competition on the supply side to remain strong in the short to medium term, we also sought to secure some longer term market sales contracts with large industrial customers so that, going forward, the plant could increase sales and secure more generation hours.

Our other minority-owned thermal projects were similarly affected by high coal prices, oversupply, and low tariffs.



CLP's investment in Yangjiang Nuclear strengthens our position in Mainland China and underscores our support for the country's low carbon transition

The table below shows the performance of our projects in Mainland China.

Renewable Projects – Performance							
	Installed Capacity Equity MW	Electricity Sent Out <sup>1,2</sup> GWh		Availability <sup>2</sup> %		Utilisation <sup>2</sup> %	
		2017	2016	2017	2016	2017	2016
<b>Wind</b>	1,129.9	<b>2,190</b>	1,909	<b>98.5</b>	97.6	<b>22.3</b>	20.7
Wholly-owned	444	<b>838</b>	603	<b>99.4</b>	98.9	<b>23.8</b>	22.3
Qian'an I and II	99	<b>180</b>	142	<b>98.5</b>	97.6	<b>20.8</b>	16.5
Penglai I	48	<b>88</b>	94	<b>99.8</b>	99.8	<b>20.9</b>	22.4
Laiwu I	49.5	<b>69</b>	75	<b>99.8</b>	99.7	<b>16.5</b>	16.9
Laiwu II <sup>3</sup>	49.5	<b>25</b>	n/a	<b>98.9</b>	n/a	<b>25.9</b>	n/a
Xundian I	49.5	<b>127</b>	138	<b>99.4</b>	99.6	<b>29.2</b>	31.8
Sandu I	99	<b>238</b>	126	<b>99.8</b>	99.1	<b>27.5</b>	28.9
CLP Laizhou I	49.5	<b>112</b>	28	<b>99.6</b>	99.6	<b>26.5</b>	25.6
Minority-owned <sup>4</sup>	403.3	<b>744</b>	726	<b>98.7</b>	98.2	<b>22.0</b>	20.5
CGN Wind JV <sup>5</sup>	282.5	<b>609</b>	579	<b>98.2</b>	97.2	<b>22.1</b>	20.1
<b>Solar<sup>6</sup></b>	233.6	<b>382</b>	324	<b>99.8</b>	99.7	<b>18.9</b>	18.3
Jinchang Solar	43.4	<b>66</b>	62	<b>99.9</b>	99.6	<b>17.4</b>	16.4
Sihong Solar	93.4	<b>138</b>	97	<b>99.7</b>	100.0	<b>17.0</b>	16.5
Xicun	84	<b>166</b>	165	<b>100.0</b>	99.6	<b>22.6</b>	22.2
Huai'an <sup>7</sup>	12.8	<b>12</b>	n/a	<b>98.7</b>	n/a	<b>17.5</b>	n/a
<b>Hydro</b>	489.3	<b>1,533</b>	1,792	<b>87.8</b>	88.2	<b>37.2</b>	43.6
Dali Yang_er Hydro	49.8	<b>183</b>	185	<b>80.3</b>	79.8	<b>42.3</b>	42.2
Huaiji Hydro	109.5	<b>341</b>	487	<b>87.4</b>	86.8	<b>36.7</b>	50.7
Jiangbian Hydro	330	<b>1,009</b>	1,120	<b>89.1</b>	90.0	<b>36.7</b>	41.0
Thermal Projects – Performance							
<b>Majority-owned</b>							
Fangchenggang I & II	1,806	<b>3,248</b>	2,157	<b>80.6</b>	97.2	<b>21.9</b>	28.1
<b>Minority-owned</b>	2,255	<b>10,216</b>	10,111	<b>95.4</b>	95.6	<b>55.5</b>	53.6
Shiheng I & II	370.4	<b>1,843</b>	1,869	<b>91.8</b>	91.3	<b>61.3</b>	61.1
Heze II	176.4	<b>735</b>	1,023	<b>88.2</b>	96.7	<b>50.9</b>	70.0
Liaocheng I	352.8	<b>1,779</b>	1,738	<b>95.9</b>	93.1	<b>60.9</b>	59.2
Panshan	206.7	<b>938</b>	967	<b>93.8</b>	99.8	<b>55.4</b>	56.9
Sanhe I and II <sup>8</sup>	219.5	<b>1,005</b>	972	<b>97.2</b>	96.9	<b>57.2</b>	55.4
Suizhong I and II	564	<b>2,555</b>	2,305	<b>95.9</b>	96.0	<b>55.0</b>	49.6
Zhungeer II and III	257.4	<b>984</b>	850	<b>98.6</b>	95.1	<b>48.5</b>	41.8
Shenmu	107.8	<b>376</b>	388	<b>100.0</b>	98.1	<b>45.5</b>	46.6

Any minor discrepancies in totals are due to rounding

## Notes:

- 1 Indicates CLP's equity sent-out.
- 2 Apply only to projects that have been commissioned for a full year's operation.
- 3 The project went into commercial operation in October 2017.
- 4 Changdao Wind Farm ceased operation in the second half of 2017.
- 5 CLP divested its interest in the joint venture in December 2017. Before the divestment, our interest amounted to 314MW, of which 282.5MW was operational and 31.5MW was under construction.
- 6 Alternate Current (AC) capacity is used to align with the calculation method for other power plants in the CLP portfolio.
- 7 The project went into commercial operation in June 2017.
- 8 A 30MW retrofit expansion was completed in 2017.

## Environmental Performance

## Air Emissions

While the newer, Phase II of Fangchenggang Power Station was designed and built to fulfill the latest higher energy efficiency and air emissions requirements in Mainland China, we completed retrofitting Unit 1 of Phase I of Fangchenggang in 2017 to comply with energy and environmental standards. The upgrade of Unit 2 is expected to be completed in 2018, upon which both phases of the coal-fired plant will meet the stringent new energy saving and air emissions requirements in Mainland China which take effect from 2020. Despite an increase in output of around 66% compared to 2016, total air emissions at Fangchenggang were similar to 2016. This is testimony to the effectiveness of the emissions controls of Phase II that commenced operation at the end of 2016.

## Water

At Fangchenggang, a water recycling system has been installed to collect used water from the coal yard. The water is treated and used for suppressing the dust of the coal piles and general cleaning.

## Environmental Regulatory Compliance

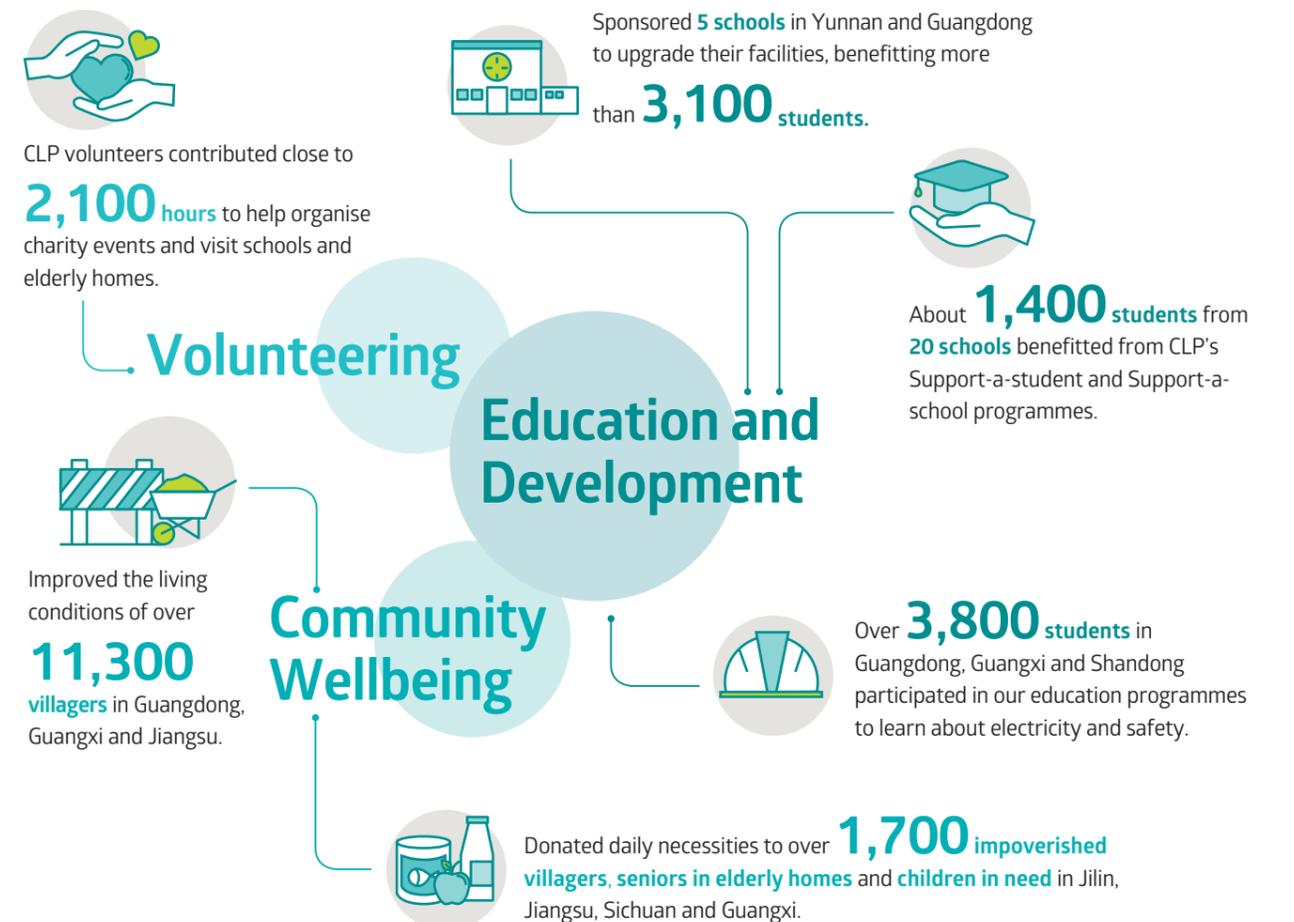
During 2017, there were no fines or prosecutions arising from environmental-related regulatory non-compliances for any of our assets in Mainland China which we had operational control. In 2016, some environmental and forestry land damages occurred relating to the construction of the Sandu I Windfarm in Guizhou province. All site environment restoration and seasonal revegetation works were completed in 2017.

## Social Performance

## Stakeholder Engagement

Over the course of the year, we met with government officials and business partners at different levels to strengthen our relationship with key stakeholders and promote the operational and safety excellence of CLP.

As a founding member of the Guangxi Power Exchange Centre, we organised a visit to Australia in March for the Guangxi Power Sector Reform Research Delegation. The main purpose of the trip was for delegation members to gain a comprehensive



understanding of the history, governance structure, set-up, and experience of their counterparts in Australia's power market reforms. The visit provided us with an opportunity to contribute our knowledge and to capitalise on our experience in competitive markets such as Australia.

In July, Chairman Sir Michael Kadoorie led a team of senior CLP executives to Beijing to further enhance relations with key stakeholders in Mainland China, learn more about the Central People's Government's energy policies, and explore collaboration opportunities.

#### Community Initiatives

In 2017, community initiatives were conducted at different sites with an emphasis on promoting safety awareness and community well-being. Some of the key projects are highlighted on the previous page while more details can be found in the Social and Relationship Capital chapter on pages 87 – 89.

#### Outlook

The energy market in Mainland China is expected to remain challenging in the short term, largely because of overcapacity, keen competition for new projects, and the Government's commitment to transform the country into a low carbon economy. As a result of the import coal restrictions at certain

ports, we have started to diversify our fuel sources and utilise more domestic coals at Fangchenggang.

Nevertheless, we remain positive about long-term growth prospects in Mainland China thanks to our diversified portfolio and strong presence in low carbon energy projects.

In December 2017, the Government announced the launch of a nationwide carbon market which is expected to be the world's largest carbon trading system and underscores Mainland China's determination to see carbon emissions peak by the end of 2030. The initial phase of the market will cover only power generation. Power generators will be given an emissions ceiling by the Government and those emitting beyond their allocation will have to procure the shortfall from the market. We will closely monitor the impact on our assets and ensure that all our projects comply with the new rules.

In the renewables sector, as competition for solar and wind quota intensifies and the Government phases out subsidies, we plan to adopt a more cautious approach and maintain our stringent investment discipline as we look for new investment opportunities. We expect the two nuclear projects in particular Yangjiang to continue to contribute to our future earnings growth on the Mainland.

**Q** In 2014, I participated in the feasibility study for a solar-agriculture integration model at CLP Xicun Solar Power Station in Yunnan. What has the project achieved and what is its significance towards CLP's development of new energy in Mainland China?

**A** We have planted honeysuckle and other cash crops beneath the photovoltaic panels at CLP Xicun Solar Power Station to tackle soil erosion and maximise land use. The initiative has provided work for villagers and raised living standards in the rural area. It has been a great success and has become a model for combining scientific use of land resources, clean energy, and ecological protection.

Following the success of the Xicun project, CLP Sihong Solar Power Station in Jiangsu now uses its surrounding abundant local water supply to develop a fish farm underneath the photovoltaic panels, breeding crabs, crayfish and mandarin fish. The initial results have been positive and have provided work and income for residents.

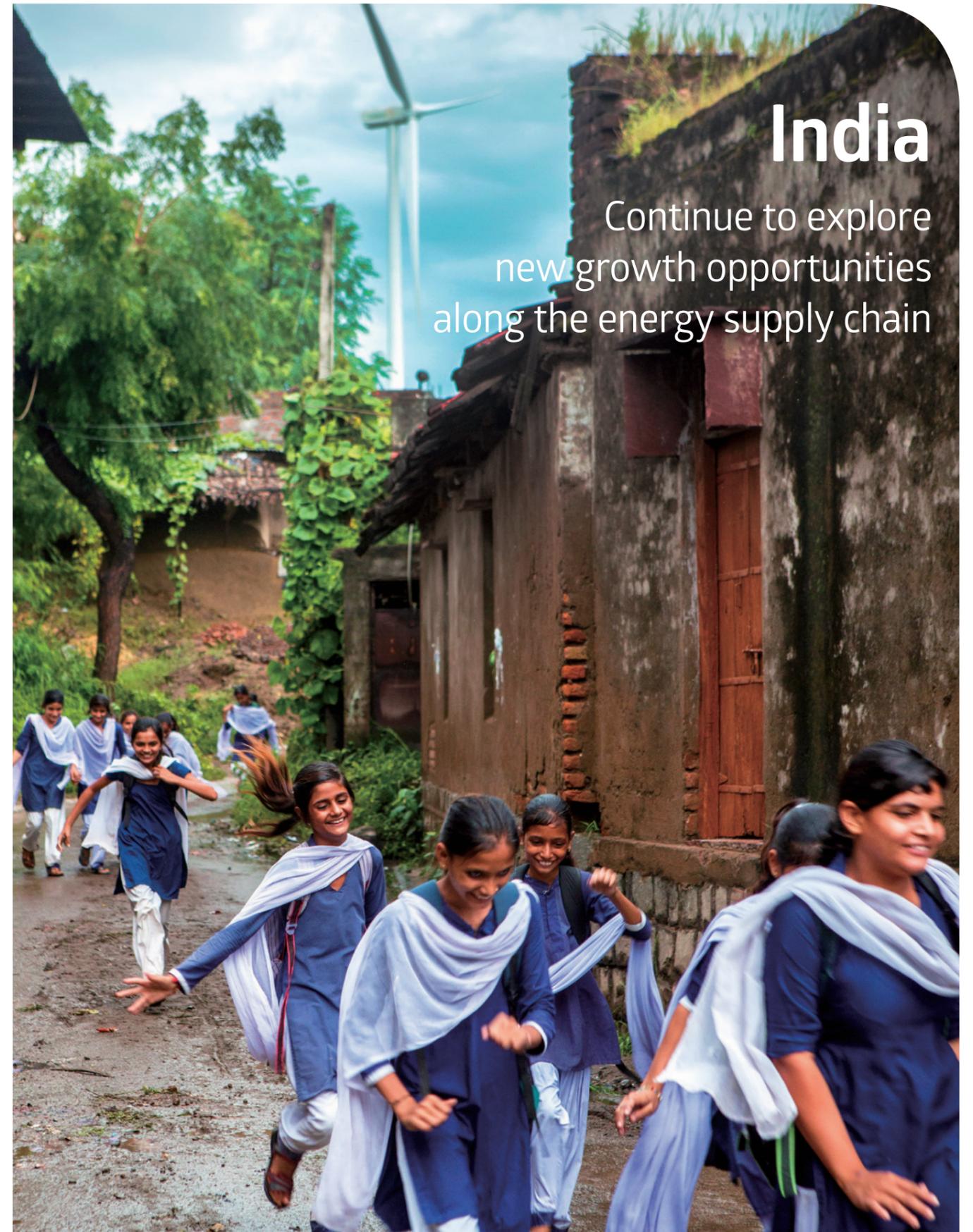
The two solar projects demonstrate our support of the Central People's Government's goals of tackling climate change and reducing carbon emissions. The addition of cash crops and a fish farm at Xicun and Sihong respectively have helped generate income and jobs and raise living standards in an environmentally sensitive way. We are proud to have played a part in the process and will continue to look at innovative ways of bringing benefits to the communities in future energy projects.



**Dr Li Jing**  
Associate Professor  
Department of Agriculture, Kunming University



**Chan Siu Hung**  
Managing Director - China



# India

Continue to explore new growth opportunities along the energy supply chain

## Financial and Operational Performance

### Overview

Electricity demand continued to rise in India in 2017. However, the growth rate slowed compared with previous year and was unable to keep pace with the expansion in supply. The market therefore continues to have spare capacity, limiting utilisation of thermal plants. Meanwhile, in light of India's big push for renewable energy, opportunities in grid-connected solar projects were fiercely competitive, making winning projects at financially attractive terms difficult. This was because India's renewables sector has transitioned from a feed-in tariff regime to competitive auctions, and aggressive bidding drove tariffs down to new lows.

In spite of that, CLP India achieved a 38% rise in operating earnings to HK\$647 million in 2017. This strong increase was driven chiefly by better operating efficiency and higher utilisation of our coal-fired Jhajjar project, the steady performance of our gas-fired Paguthan plant and lower interest cost. Our renewables performance included the contribution from our first solar plant in the country as well as termination costs linked to the cessation of the development of a wind project. The performance of our operations in India is summarised below.

	2017 HK\$M	2016 HK\$M	Change %
<b>Operating Earnings</b>			
Renewables	110	135	-18.5
Thermal	537	334	+60.8
<b>Total</b>	<b>647</b>	<b>469</b>	<b>+38.0</b>

### Operating Earnings of India (HK\$M)



### Renewable Projects

The addition of the Veltoor Solar Farm in Telangana in southern India marked a major achievement for CLP India, taking the size of our commissioned renewable portfolio to about 970MW. In a testament to our "safety first" culture, we recorded zero lost time injuries during Veltoor's construction. This was achieved despite the long construction period, the vast size of the site and the large number of workers involved. CLP currently owns 49% of Veltoor and we have an option to acquire the remaining 51% in future from our partner Suzlon.

The operational performance of our wind business was strong. Although wind resources were lower than a year ago, our output remained steady due to higher machine availability and lower load restriction. Financially our operational improvement was offset by a loss recorded after we decided to cease construction of the Yermala project because of land issues.

Performance of our renewable projects can be seen in the table below.

	Installed Capacity		Electricity Sent Out <sup>1,2</sup>		Availability <sup>2</sup>		Utilisation <sup>2</sup>	
	Equity MW	GWh	GWh		%		%	
			2017	2016	2017	2016	2017	2016
<b>Wind</b>	924.2	1,693	1,692 <sup>3</sup>	94.5	92.9	20.9	21.0	
Andhra Lake	106.4	200	191	92.6	84.8	21.4	20.4	
Bhakrani	102.4	144	130 <sup>3</sup>	91.3	89.0	16.0	15.1	
Chandgarh	92	177	185	97.3	97.0	22.0	22.9	
Harapanahalli	39.6	93	89	99.6	95.6	26.7	25.6	
Jath	60	105	118	97.7	97.1	20.1	22.4	
Khandke	50.4	79	85	88.1	84.7	17.9	19.3	
Mahidad	50.4	91	98	90.7	92.1	20.7	22.0	
Samana I	50.4	96	91	93.3	92.3	21.7	20.5	
Samana II	50.4	104	100	93.9	92.2	23.6	22.5	
Saundatti	72	132	132	97.0	96.0	20.9	20.9	
Sipla	50.4	71	76 <sup>3</sup>	89.5	90.4	16.2	17.8	
Tejuva	100.8	185	168 <sup>3</sup>	98.1	96.9	20.9	19.5	
Theni I	49.5	114	119	94.1	97.8	26.4	27.4	
Theni II	49.5	102	110	98.0	98.1	23.5	25.2	
<b>Solar</b>								
Veltoor <sup>4</sup>	46	23	n/a	99.6	n/a	18.9	n/a	

Notes:

1 Indicates CLP's equity sent out.

2 Apply only to projects that have been commissioned for a full year's operation.

3 Sent-out figures for Bhakrani, Sipla and Tejuva in 2016 have been restated to exclude the rebates the plants received as reimbursement for line loss.

4 Veltoor is a 100MW project. Of the 49MW owned by CLP, 46MW was operational and 3MW was under construction as at 31 December 2017.

### Thermal Projects

In 2017, Jhajjar's profitability increased sharply by about 170%, driven by a nearly 85% rise in utilisation and improvement in coal supply in terms of both quantity and quality. This resulted in significantly higher efficiency as well as record ash-sales. In fact, utilisation increased to nearly 65% in the second half of 2017, as the better coal quality helped reduce heat rates and improve efficiency. This in turn translated into lower costs for our customers. Meanwhile, the plant's availability reached 78.9% for 2017 despite an extended planned maintenance outage in the first half. We expect it to exceed 80% by the Indian fiscal year ended 31 March 2018, at which level the entire capacity charges will be recovered. For the 2017 fiscal year, the plant not only fully recovered its fixed costs, but also earned an incentive for availability exceeding 85%.

At Paguthan, performance remained steady during the year. Availability remained high at 95.5% as we were able to use imported re-gasified LNG (RLNG). However, utilisation continued to be low because of the high cost of spot RLNG, which discouraged our customer from buying electricity from us.

The table below shows the performance of our thermal projects.

Thermal Projects – Performance							
	Installed Capacity Equity MW	Electricity Sent Out GWh		Availability %		Utilisation %	
		2017	2016	2017	2016	2017	2016
<b>Coal</b>							
Jhajjar	1,320	5,463	2,965	78.9	93.2	50.4	27.3
<b>Gas</b>							
Paguthan	655	376	547	95.5	94.4	6.7	9.7

### Environmental Performance

#### New Environmental Regulations

A set of new statutory limits applicable to coal-fired power plants in India have been announced and Jhajjar will be required to meet these in 2019. The new limits cover particulates, nitrogen oxides, sulphur dioxide, and mercury. There is also a water use intensity requirement. Jhajjar is already equipped with environmental control systems to comply with the particulates, sulphur dioxide, and mercury emissions limits. For nitrogen oxides, some tuning or modifications may be required and a cross functional team has been formed to investigate and address this.

#### Air Emissions

As mentioned in last year's report, overall air emissions levels in 2016 for both Jhajjar and Paguthan were lower than 2015 due to low dispatch. In 2017, Paguthan's continued decline in output resulted in even lower total air emissions. However, Jhajjar's output rose back up to a level similar to 2015 and so its total

air emissions also increased commensurately. We continued to make improvements in our particulate controls at Jhajjar, resulting in further reduction in particulate emissions per unit of sent out. However, there were 13 licence limit exceedances for particulates during the year that did not result in any fines or penalties. We will continue to work hard on minimising our particulate emissions at Jhajjar.

#### Water

In 2017, the cooling water system at Jhajjar was optimised. Combined with improved efficiency brought by higher plant load, raw water consumption per unit of sent out electricity dropped by 9% and water recirculation increased by 14% in 2017 compared to 2016.

#### Environmental Regulatory Compliance

During 2017, there were no fines or prosecutions arising from environmental-related regulatory non-compliances for any of our India assets in which we had operational control.



The near completion of CLP's first solar farm in India, Veltoor Solar, expands our renewable portfolio to about 970MW in the country

### Social Performance

We believe that the best form of celebration is giving back to society. Consequently, to mark CLP India's 15<sup>th</sup> anniversary in 2017, we organised 15 community events near our sites across the country. The initiatives, ranging from hospital visits and

HIV awareness training to laptop donations, directly benefitted around 1,000 people. At the same time, we continued to run our regular initiatives for the benefit of the communities we serve. Some of the key projects are highlighted below while more details can be found in the Social and Relationship Capital chapter on pages 87 – 89.



**Outlook**

We expect India's power sector to grow steadily in the coming years, reflecting stable industry conditions brought about by the country's economic development and new growth potential from the Government's push for electric mobility. The financial health of the debt-laded distribution companies has gradually strengthened under the so-called UDAY scheme. India remains a primary focus for CLP and we will continue to explore new growth opportunities along the energy supply chain.

One of the unintended consequences of the country's rapid economic growth has been worsening pollution, which is taking a toll on some coal-fired power generation assets. Building on our experience in other markets, we constructed Jhajjar with flue gas desulphurisation (FGD) equipment that reduces emissions of sulphur dioxide, even though it was not a legal requirement at the time. The government has scheduled our FGD to begin operating in 2019 which will help improve air quality.

Over the years, we have worked hard to improve both the quantity and quality of the coal supply to Jhajjar. This will remain a key focus for us as dispatch from Jhajjar increases amid higher coal prices.

The power purchase agreement (PPA) signed by Paguthan and Gujarat Urja Vikas Nigam Limited will expire in December 2018. Even though the plant was commissioned some 20 years ago, it remains one of the country's most efficient power stations and continues to achieve the highest levels of safety and environmental standards. We do not expect the PPA to be extended in its current form beyond 2018. To best utilise this valuable asset, we are exploring various options including the prospect of merchant sales.

In the renewable energy sector, our current focus is to enhance the operation of our existing assets to improve availability, while exploring new projects to capitalise on the growing share of solar and wind generated electricity in the country.

**Q** When it comes to inclusion, how do you foster an environment where people with different backgrounds know you value their ideas?

**A** Diversity has many dimensions. In CLP India, we have decided to focus on two particular aspects: gender diversity and equal respect for all faiths. We have several initiatives on increasing the female representation among our employees and they have already started to bear fruit. In the last three years the percentage of women representation increased by 63%, while our total headcount grew by 29%. We also intend to extend the impetus to our contractor staff.

Additionally, we ensure that we treat the diversity of faiths among our staff as a source of strength, and practise this in all our policies – whether they are choosing public holidays, celebrating special days in office or having a multi-faith prayer room in office.

We have an open and non-hierarchical corporate culture that values every individual. We believe actions speak louder than words. These steps, as well as our enunciation of "Respect for People" as a core value, give our staff the confidence that diversity of backgrounds, thoughts and views will always be welcome in CLP India.

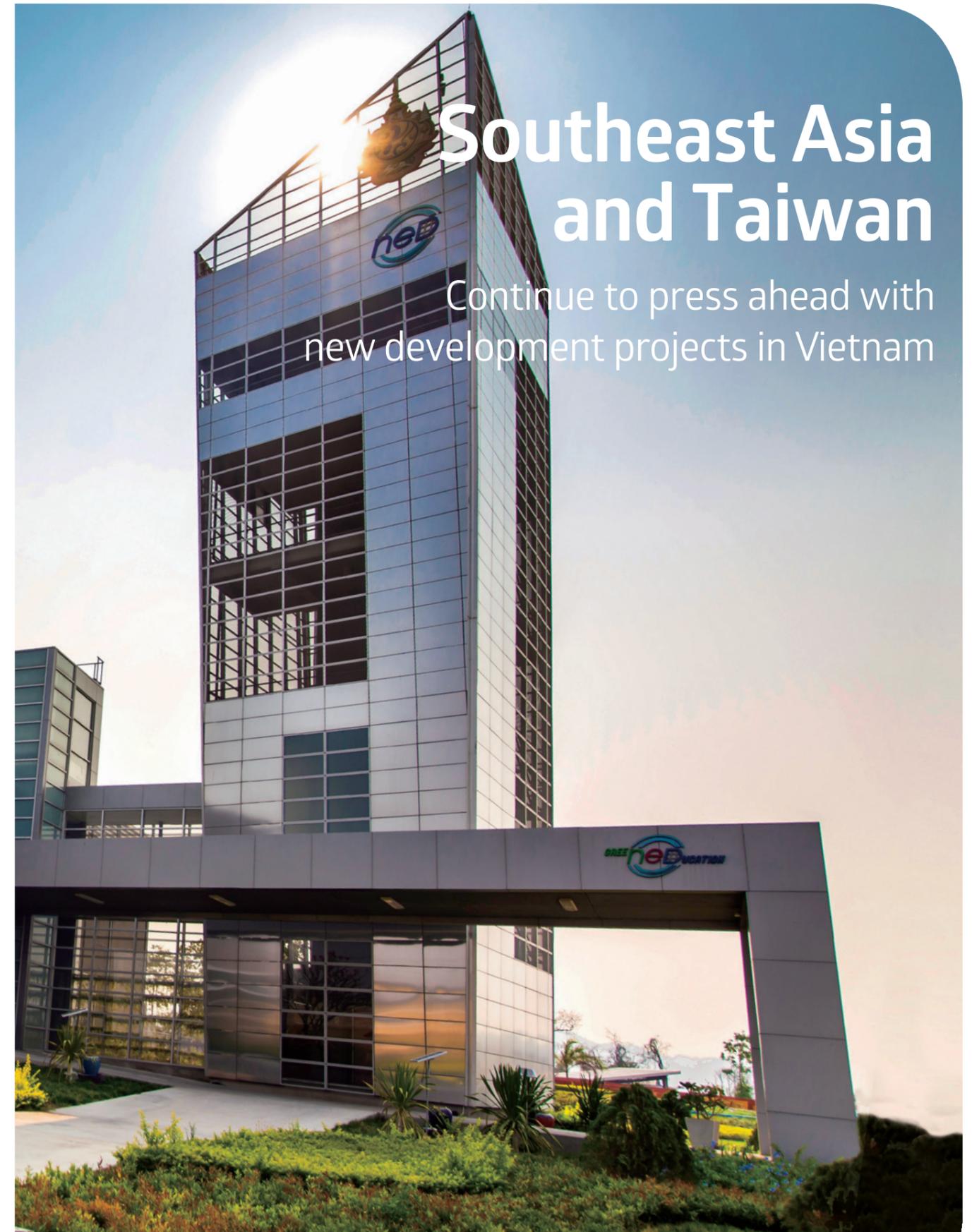
We realise that this is a journey and we need to do a lot more in this space.



**Ms Rewati Bhagwat**  
External Member, CLP India's Internal Committee  
Board Member, Abhivyakti Media for Development



**Rajiv Mishra**  
Managing Director - India



## Financial and Operational Performance

### Overview

In 2017, operational and financial performance of Ho-Ping Power Station in Taiwan was affected by high coal prices and the loss of generation in the summer after a typhoon damaged one of the transmission towers connecting the plant to the electricity grid, causing it to shut down. Through the concerted efforts of Ho-Ping and its contractors, and support from Taiwan's government agencies, a temporary transmission tower was constructed immediately after the typhoon and generation from the power plant was restored in two weeks. Construction of a strengthened permanent transmission tower is underway, and will be completed in the second quarter of 2018. We expect Ho-Ping's operation to return to normal then.

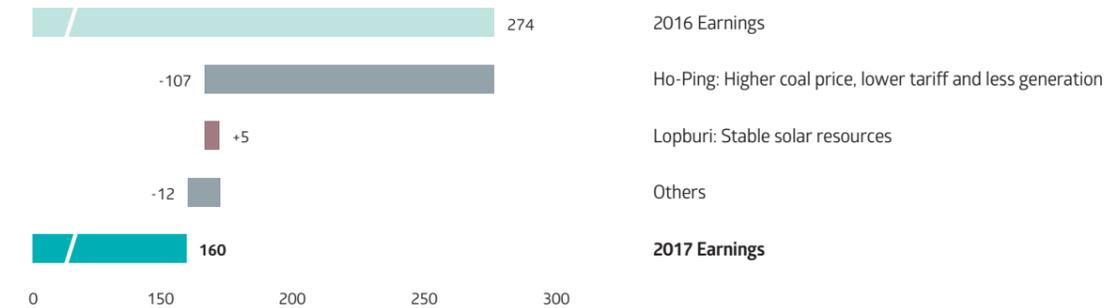
In Thailand, the Lopburi solar project recorded strong results, thanks to high availability and good solar irradiance.

Arrangement of project financing for our two coal-fired projects under development in Vietnam, namely Vinh Tan III and Vung Ang II, is well advanced. However, detailed negotiations with our Vietnamese counterparties on project agreements, particularly some key terms in the PPAs, have delayed our progress in 2017. Resolution of these issues is actively being pursued.

Our performance in Southeast Asia and Taiwan is summarised below.

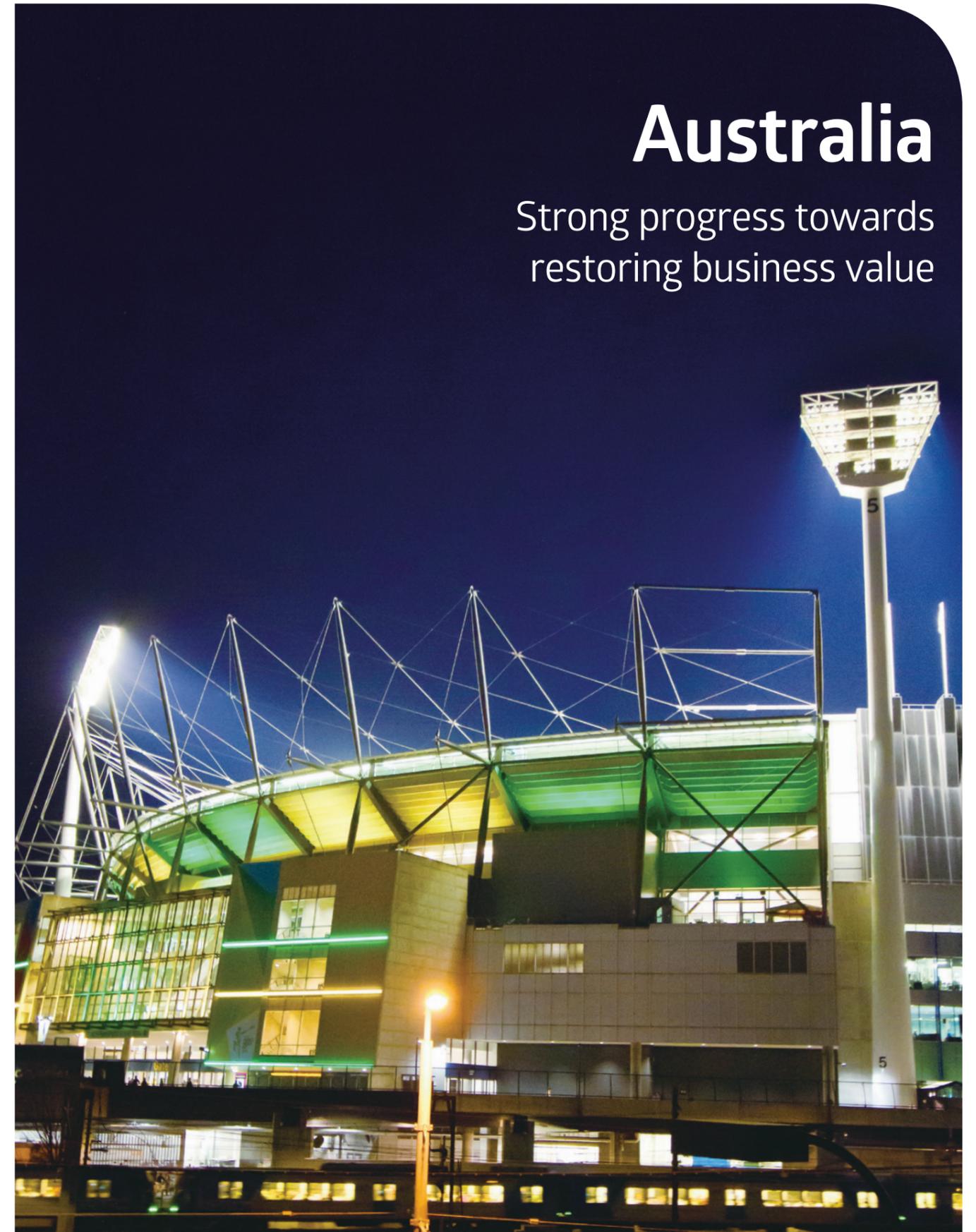
Operating Earnings	2017 HK\$M	2016 HK\$M	Change %
Renewables	65	60	+8.3
Thermal	142	249	-43.0
Operating and Development Expenditure	(47)	(35)	+34.3
<b>Total</b>	<b>160</b>	<b>274</b>	<b>-41.6</b>

### Operating Earnings of Southeast Asia and Taiwan (HK\$M)



### Outlook

We target to make final investment decisions regarding Vinh Tan III and Vung Ang II in 2018 so that we can commence construction for one or both projects. More broadly, we will continue to focus on our existing operations in the region.



## Financial and Operational Performance

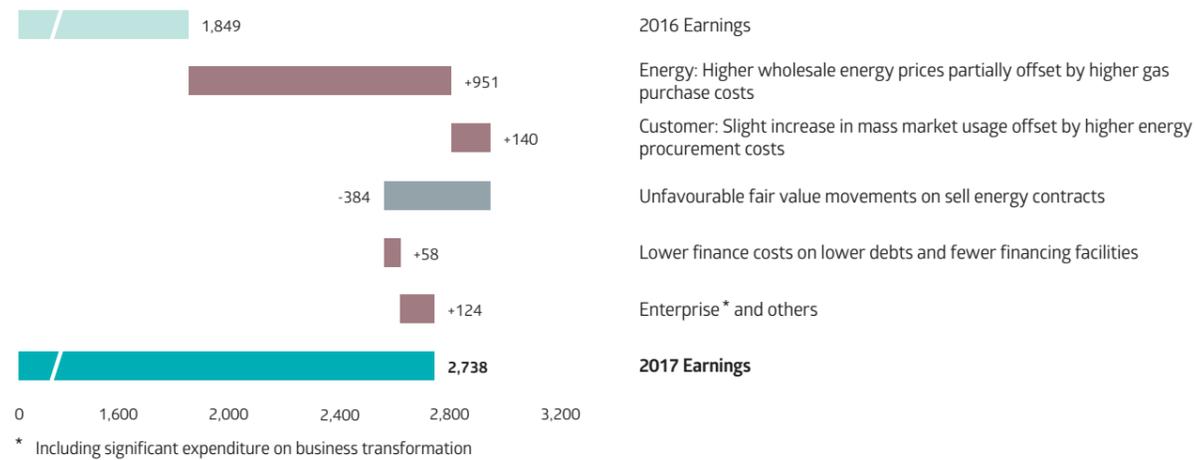
### Overview

Australia's energy sector was extremely volatile. In the National Electricity Market (NEM), wholesale prices increased sharply in response to the closure of generators on short notice without significant reduction in demand. Most notable was the closure of ENGIE's 1,600MW Hazelwood power station in Victoria in March 2017 shortly after it was announced that Victoria's Portland aluminium smelter would remain open with a multi-year support package from the State Government. In the absence of committed replacement generation, wholesale energy prices rose across the NEM, impacting millions of households and businesses.

At the same time, continued uncertainty about energy and climate policies has eroded confidence and the willingness of businesses to invest in new, long-term generation assets. These supply and price issues prompted several industry reviews and interventions in energy markets by the Federal and various State Governments.

Despite the challenging market, EnergyAustralia made strong progress towards restoring value to its business, achieving an increase in operating earnings of 48.1% to HK\$2,738 million compared to 2016.

### Operating Earnings of Australia (HK\$M)



### Customer

EnergyAustralia's transformation programme has put customers at the centre of our business and our decision-making. This approach has led us to develop a portfolio of energy products and services for both new and existing customers to move Australians towards more efficient and sustainable energy use.

In early 2017, we relaunched our brand, promising to *Light the Way* and engage customers in the transition to a cleaner energy future. We launched our carbon offset product *Go Neutral* in 2016, which is a government-certified carbon neutral programme that allows households to offset all the carbon emissions generated from their home's electricity use, at no additional cost to them. Over 100,000 Australian homes have joined this programme.

In the second half of 2017, rising prices resulted in a challenging market with intense competition leading to higher levels of customers churn. Despite this, EnergyAustralia maintained overall customer account numbers last year and achieved a churn rate below the market average.

### Customer Churn and Accounts



To help ease pressure on households, in 2017 EnergyAustralia introduced a new product, *Secure Saver*, giving customers in Victoria, New South Wales (NSW) and Queensland the option of fixing their electricity and gas tariffs for two years. We also committed an additional A\$10 million to our hardship programme, boosting our ongoing support for our most vulnerable customers through various payment plan initiatives.

Following the implementation of the government-led national electricity metering reforms, *Power of Choice*, which commenced in December 2017, EnergyAustralia is now able to directly offer customers smart meters. Previously this had been the sole responsibility of energy distributors. These reforms were aimed at providing customers with more opportunities

to make informed choices about the way they use electricity products and services.

### Energy Production

In order to ensure supply reliability as Australia transitions to a cleaner energy future, we worked hard to optimise our generating assets during the year.

As planned, Yallourn Power Station in Victoria produced less energy than the prior year due to scheduled maintenance and other repair works. Yallourn will continue to perform a valuable role in supplying reliable power and maintaining grid stability as more renewable energy is integrated into the system.



Partnership between EnergyAustralia and the Sydney Opera House aims at helping the House with its sustainability goals

Mount Piper Power Station in NSW also produced less energy than in 2016 as coal was rationed due to uncertainty about long-term supply from the Springvale mine. In October 2017, however, the NSW Government legislated to confirm planning consent for the Springvale mine. This enabled the signing of a long-term coal contract for Mount Piper. With progress on the new Water Treatment Plant which delivers a better environmental outcome than required under the planning consent Mount Piper is now positioned to supply the NEM through periods of tight supply.

Our gas-fired power facilities in NSW, Victoria and South Australia also play an important role in our generation portfolio. The flexible operation of these facilities helps provide our customers with protection from extreme pricing events caused by extreme weather and system constraints. We continue to focus on optimising the availability of our gas units so that they are available whenever needed.

In May 2017, legal proceedings were commenced against EnergyAustralia in the Supreme Court of Victoria by Lochard Energy seeking damages in relation to its purchase from EnergyAustralia of the Iona Gas Plant in 2015. EnergyAustralia is vigorously defending the action. Our view, based on available information, is that a material outflow of economic benefits from the CLP Group is unlikely.

Renewable and Thermal Projects – Performance							
	Installed Capacity Equity MW	Electricity Sent Out <sup>1</sup> GWh		Availability %		Utilisation %	
		2017	2016	2017	2016	2017	2016
		<b>Wind</b>					
Cathedral Rocks	33	81	78	91.5	86.0	29.4	27.9
<b>Gas</b>	1,592.2	2,631	1,154	90.1	89.6	19.6	9.9
Ecogen	966	966	256	92.1	87.0	12.2	5.4
Hallett	203	20	39	91.5	90.5	1.2	2.3
Tallawarra	420	1,644	858	84.9	95.2	45.5	23.8
Wilga Park <sup>2</sup>	3.2	n/a	n/a	n/a	n/a	n/a	n/a
<b>Coal</b>	2,880	16,827	17,746	79.5	82.8	72.4	76.0
Mount Piper	1,400	6,880	7,264	75.8	77.6	60.1	63.6
Yallourn	1,480	9,946	10,483	83.0	87.8	84.1	87.8

Any minor discrepancies in totals are due to rounding

Notes:

<sup>1</sup> Indicates CLP's equity sent out and capacity purchase.

<sup>2</sup> Wilga Park gas-fired Power Station is used to burn exploration gas from the Narrabri coal seam gas project (of which EnergyAustralia has a 20% equity stake).

### Supporting a Low Carbon Future

EnergyAustralia has entered into several PPAs to underpin the development of more than 500MW of renewable generation capacity since we announced in December 2016 a programme to support new wind and solar farms in eastern Australia. These PPAs will help EnergyAustralia meet our obligations under the Australian Government's Renewable Energy Target which requires retailers in the NEM to source approximately 23.5% of electricity sales from renewable sources by 2020. The table below lists the new projects underpinned by our renewable programme.

Projects	Installed Capacity / Offtake for EnergyAustralia MW	Estimated Commission Date
Coleambally Solar Farm (NSW)	150 / 100	January 2019
Manildra Solar Farm (NSW)	48.5 / 48.5	April 2018
Ross River Solar Farm (Queensland)	142 / 114	July 2018
Gannawarra Solar Farm (Victoria)	60 / 60	April 2018
Bodangora Wind Farm (NSW)	113 / 68	October 2018

At the same time, we continued buying renewable energy from projects under existing contracts with details shown in the table below.

Renewable Generating Capacity under Contract to EnergyAustralia			
	Offtake for EnergyAustralia MW	Electricity Sent Out GWh	
		2017	2016
<b>Wind</b>			
Boco Rock	113	347	373
Gullen Range	165.5	451	514
Mortons Lane	19.5	59	67
Taralga	107	282	318
Waterloo <sup>1</sup>	55.5	147 <sup>1</sup>	159 <sup>1</sup>

Note:

<sup>1</sup> EnergyAustralia purchases half of the energy generated by Waterloo Wind Farm Stage 1 (111MW) and none of the energy generated by Stage 2 (19.8MW). The electricity sent out figures indicate those purchased by EnergyAustralia.

EnergyAustralia is assessing other projects which may play leading roles in a new, modern energy system in Australia. A proposed 225MW seawater pumped hydro project in South Australia is one example. During the year this project passed a major milestone with initial feasibility work indicating there were no "show stoppers" to the development. If developed, this project would store energy like a battery for times when it is needed and would support the integration of intermittent renewable supply into the grid in a way that delivers affordable, reliable and cleaner power for customers.

Studies also determined a 27MW energy recovery project at Mount Piper is technically and economically viable. This project would use non-recyclable household waste material to fuel electricity generation. It will now progress to the next stage of planning, including preparation of a comprehensive study of environmental impacts.

### New Business

Our NextGen division focuses on new products and services that puts customers in control of their energy. It made a number of significant achievements in 2017.

The Redback Smart Hybrid System – developed through our partnership with Brisbane-based Redback Technologies – was commercially launched in September 2017. When paired with solar panels and compatible batteries, this technology transforms a standard solar system into an intelligent energy management system.

In October 2017, EnergyAustralia announced plans to deliver up to 50MW of demand response reserve capacity as part of a three-year pilot programme by the Australian Renewable

Energy Agency and the Australian Energy Market Operator. This capacity, the largest single commitment under the programme, would be called upon at short notice should NEM reserves fall to critical levels. Demand response has the potential to maintain system reliability, support the integration of new renewable energy supplies and ease some pressure on prices. It is also another option for customers looking to take control of their energy usage.

In partnership with London-based Startupbootcamp, in 2017 we established a programme aimed at fast-tracking exciting new energy related start-up businesses. We also entered into a partnership with Kiah Research, part of Australia's TCG Group, to provide EnergyAustralia with opportunities to partner with small and mid-size businesses specialising in new energy efficiency and digital application management technologies. We are studying various projects and opportunities arising from this partnership.

### Environmental Performance

#### Air Emissions

EnergyAustralia had a stable year in terms of environmental performance. Overall, emissions from our Australian power stations decreased by 4% compared with the previous year. Decreased coal-fired generation from Mount Piper resulted in an almost 2% decrease in its emissions in 2017. Yallourn also had lower energy output which resulted in an almost 8% decrease in its emissions compared to 2016. Overall emissions from gas-fired generation facilities increased in 2017 as higher wholesale prices led to higher generation volumes but total emissions remained small.

**Environmental Regulatory Compliance**

During 2017, there were no fines or prosecutions arising from environmental-related regulatory non-compliances for any of our assets in Australia where we had operational control.

We continued to implement the recommendations of our 2016 regulatory compliance audit at Yallourn. We also completed improvements to Mount Piper’s pollution incident response management plan and to data reporting from the closed Wallerawang Power Station.

**Social Performance**

In 2017, EnergyAustralia announced partnerships with two of Australia’s best-known landmarks – the Sydney Opera House in NSW and the Melbourne Cricket Ground in Victoria. These programmes are aimed at assisting the icons to achieve their sustainability targets, by developing technologies and

approaches that may one day be used in homes across the country.

Meanwhile, we progressed our Reconciliation Action Plan to increase engagement with Aboriginal and Torres Strait Islander peoples and communities. Similarly, more work was done on our Financial Inclusion Action Plan, including engaging with external stakeholders on how we might improve support for vulnerable customers.

In addition, EnergyAustralia won the Achievement Award for most improved organisation at the annual Australian Workplace Equality Index awards which celebrates LGBTI inclusion in the workplace.

Other community initiatives are highlighted below, including a near-doubling of employee participation in volunteering programmes from 2016. Please also refer to the Social and Relationship Capital chapter on pages 87 – 89 for more details.



Helped pack almost **100 tonnes** of food that was distributed to **215 charity partners**. This equates to **195,405 meals** to people in need.



With the extension of the **community grants programme** to Geelong, EnergyAustralia offered grants for projects and community supporting initiatives at **6 sites**.

**Community Wellbeing**

**Volunteering**

**Education & Development**



**31 students** successfully completed their school studies for the year under our ongoing collaborative programme with the Aboriginal AFL Academy. **12** of them graduated and will go onto **further education or seek employment**.



Around **300 employees** participated in almost **2,000 hours** of volunteering services.

**Outlook**

Energy policy was subject to intense public and political discussion in Australia in 2017, focused both on prices and supply reliability. EnergyAustralia believes that a stable and national approach to policy remains the best prospect for a lasting solution. We are optimistic that the proposed National Energy Guarantee can provide a way forward. Restoring certainty so that businesses have confidence to invest in reliable, affordable and cleaner supplies of energy is key. We believe a durable policy must begin by considering impacts on

customers and that care must be taken to avoid adding cost and complexity.

Operationally, we expect wholesale market conditions to remain tight in 2018, with asset reliability remaining a key focus. Wholesale prices are trading at high levels in the short term before easing in 2019. Meanwhile, we see no easing in the extremely competitive retail market. EnergyAustralia will help ease pressure from higher wholesale prices by running our assets efficiently, supporting vulnerable customers and helping households and businesses better manage their energy use.

**Q** EnergyAustralia is partnering with the Sydney Opera House to help Australia’s most famous “house” meet its long-term sustainability goals. How will you apply what we learn and develop together to help people around the country use energy in ways that are smarter and more sustainable?

**A** Delivering reliable, affordable and cleaner energy for all Australians is one of the great challenges of our time. The supply side – building new generation facilities gets a lot of the attention, but the demand side involving the customer is every bit as exciting.

Our partnership will do more than help “Australia’s House” to operate more sustainably. We expect what we learn and the technology we develop will contribute to people around Australia and help them use energy in ways that are smarter and more efficient. Yes, it may mean families and businesses use less energy but that’s great, because when customers save power, it’s good for their wallets and it’s good for the environment.

To achieve it, we’ve brought together the best and most creative minds from EnergyAustralia, the Sydney Opera House and Australia’s pre-eminent scientific research organisation, the Commonwealth Scientific and Industrial Research Organisation. Our think tank has already drawn up projects to explore innovative fuel-cell technology that can manage fluctuating energy consumption, provide fault-detection technology designed to reduce energy consumption and cost, and introduce solar sharing opportunities between our customers and the Sydney Opera House.

All these projects are relevant to how customers actually use energy and each of them has the potential to play an important role in a new, modern energy system for Australia.



**Ms Louise Herron AM**  
Chief Executive Officer  
Sydney Opera House



**Catherine Tanna**  
Managing Director  
EnergyAustralia