# Performance and Business Outlook

How have we performed against our strategy? What opportunities and challenges will influence our future performance?



### **Financial Performance**

In 2012, the earnings from our Hong Kong electricity business were HK\$6,654 million, a 5% increase from HK\$6,339 million in 2011. This increase was due to the permitted return from a higher level of average net fixed assets over the year, partially offset by the higher interest costs on increased borrowings for the financing of fixed assets.



# **Operational Performance**

#### **Meeting Demand**

As we have long said, the most important aspect of our performance remains our ability to meet the demand for electricity in Hong Kong, every day of every year. We achieved this again in 2012.

Local sales of electricity were 31,995GWh, representing an increase of 2.7% from 2011. This growth was mainly attributable to higher humidity in the first quarter and hotter weather in the second quarter of 2012. Strong growth was recorded for sales to the residential, infrastructure and public services sectors, whereas sales to the commercial sector showed only moderate growth. There was slight sales growth for the manufacturing sector.

Local Sales			
	Inc	rease	As Percentage of
	GWh	%	Total Local Sales
Residential	306	3.6	28%
Commercial	247	1.9	40%
Infrastructure & Public Services	270	3.4	26%
Manufacturing	4	0.2	6%

Sales to the Chinese mainland decreased by 37.8% to 1,838GWh in 2012. Total electricity sales in 2012, which included both local sales and sales to the Chinese mainland, decreased by 0.9% to 33,833GWh.

CLP has recorded a double-digit annual growth in electricity demand from data centres within our supply area. In the Tseung Kwan O Industrial Estate alone, there are around ten large-scale international data centres under various stage of development. To support the HKSAR Government's vision of developing Hong Kong into a regional data centre hub, the Chun Yat Street 132kV transmission substation, which is dedicated to powering high-tier data centres in Tseung Kwan O Industrial Estate and is designed with a segregated twin switchgear room and connected to two independent power sources, is being constructed on a fast track basis for commissioning in 2014.

#### **Capital Investment**

In 2012 we invested HK\$8.6 billion in generation, transmission and distribution networks, as well as in customer services and supporting facilities. These investments enhance the reliability, stability and efficiency of our supply network and quality of our customer service. They also ensure the timely provision of electricity supplies for residential property developments and ongoing infrastructure projects in our supply territory, such as the Express Railway Link, Shatin to Central Link, Hong Kong-Zhuhai-Macau Bridge and the development of West Kowloon and Kai Tak. In addition, the construction of a new gas receiving station and modifications for equipment at the Black Point Power Station continued through 2012 to enable the plant to migrate from the gas received from the existing Yacheng field to the future gas supplies arriving from the Chinese mainland.

#### **Gas Supply**

In 1996, we secured a supply of natural gas at Yacheng with a 20-year contract. This helped us to supply Hong Kong with abundant, reliable power as well as supporting significantly enhanced environmental performance and a stable tariff regime. The Yacheng supply of natural gas is now depleting. The MOU signed between the HKSAR Government and the Central People's Government in 2008 provided for the long-term gas supply to Hong Kong from three new sources in the Mainland. Of these, the Second West-East Gas Pipeline (WEPII) is the earliest available source.

The approval of a Gas Supply Agreement (GSA) with PetroChina in December 2012 for the import of natural gas from PetroChina's WEPII was a major step forward in the implementation of the MOU. Natural gas to be supplied through this 9,000 km long pipeline arrived in Hong Kong before the year-end. This new gas resource is delivered through a launching station at Dachan Island in Shenzhen, a subsea gas pipeline and the end-station at Black Point. These new facilities, collectively referred to as "The Hong Kong Branch Line" (HKBL), are jointly owned by PetroChina (60%) and CLP (40%). The gas receiving station at Black Point is now complete. Modifications to the eight gas-fired generation units are scheduled for completion by mid-2013.

Under the approved GSA, the gas price will be set using a clear and transparent mechanism, based on a formula reflecting the cost of the commodity and the transportation elements, as well as being in accordance with PRC regulatory guidelines.

The HKBL project is an important step in the integration of Hong Kong with Guangdong's energy infrastructure and brings access to a vast gas supply resource from Central Asia. The total investment cost of the HKBL is around RMB4 billion, of which CLP will bear 40% in line with its shareholding. CLP's investment in the HKBL will not be included as an asset under the SoC. The investment return level is in line with the PRC's regulatory guidelines, and constitutes a reasonable and stable return which will be recovered through a transportation charge payable by CAPCO under the GSA starting from 2013.

Subject to the further development of the Hong Kong Government's energy, environmental and climate change policies, we expect the use of natural gas to increase. If so, gas supplies beyond the volume provided under the recent agreement with PetroChina are likely to be required in the second half of this decade. We are exploring new supply options, as contemplated under the MOU. These include PetroChina's proposed Shenzhen liquefied natural gas terminal, targeted for approval by the National Energy Administration in 2013, as well as gas from new fields in the South China Sea. Discussions on various long-term supply arrangements are ongoing.

#### Reliability

Hong Kong needs a reliable electricity service. Most of our population live and work in high-rise buildings – they could not get to their homes or places of work without the uninterrupted services of lifts and escalators. This, together with Hong Kong's hot and humid climate, heavy reliance on air-conditioning and high population density, means that individual power failures could quickly cause inconvenience and distress to many thousands of people. Moreover, Hong Kong's role as a financial service and tourist centre depends on high quality infrastructure, including electricity to power our society and our economy.

CLP meets our society's expectation by delivering one of the most reliable electricity services in the world. Since 2000, unplanned Customer Minutes Lost per year, a standard measure of supply reliability, has been improved by 80%. In the last three years, a typical CLP customer would have experienced an average of only 2.6 minutes of unplanned power interruptions per year, as compared to 19-40 minutes in New York, Sydney and London (between 2009 and 2011 – the latest available data). This world-class performance evidences CLP's ongoing drive to enhance the performance of its supply network through the use of advanced technology, leading operating and maintenance practices and the dedication of our workforce. One example of our efforts in this area is the comprehensive risk assessment conducted on the impact of natural disasters on our transmission and distribution network. Mitigation measures are being implemented, including strengthening the structure of over 150 towers (and some foundation slopes) supporting our 400kV power lines to withstand wind gusts up to 300km/h, and flood mitigation measures implemented at some transmission substations. Another example is the move towards a condition-based maintenance approach. This combines predictive and preventive maintenance with condition monitoring techniques being used to detect potential fault sources before any failure actually occurs.

#### **Power Quality**

The increasing use of sophisticated technology in financial, medical, communication and industrial facilities has made power supply quality more critical. With overhead lines still forming a major part of our 400kV grid and rural distribution network, voltage stability is vulnerable to weather conditions such as typhoons and lightning strikes which are common in Hong Kong. To reduce the susceptibility of overhead lines to stormy and thundery weather, substantial efforts have been made in vegetation management and lightning protection. We also offer a wide range of expert services to our customers including hospitals, railways, hi-tech manufacturers, telecommunication operators, banks and other businesses to protect their sensitive equipment and processes against voltage fluctuations. In 2012, we helped over 140 major customers in this way. The solutions we offer are customised to our customers' specific problems and adopt the latest electronic and energy storage technology.

#### **Customer Service**

Our 12 performance pledges express our commitment to excellence in customer service. These set out our targeted performance in areas we know are of particular importance to our customers, such as reliable electricity supply and prompt response to our emergency service hotlines. These pledges, and our performance, are set out on our website at www.clponline.com.hk. In 2012, we once again met all of our service pledges.

#### Has the power sector done all it can to improve Hong Kong air quality?

When I joined CLP in 1992 nearly all of our electricity was generated from coal. Today coal generation comprises less than half of our energy mix with the remainder being produced from much cleaner natural gas and nuclear power. In addition, our emissions control project at Castle Peak, that was completed in 2010 and required an investment of around HK\$9 billion, has made our plant at Castle Peak one of the cleanest coal-fired power stations in the world in terms of emissions. Combined with many other initiatives, such as the use of low sulphur coal from Indonesia, we have made enormous efforts to reduce emissions.

We have done a lot, and we can do even more. As you will know, we are working hard to bring additional gas supplies to Hong Kong to increase the use of gas for power generation and there is also the potential for nuclear energy to play a greater role in meeting Hong Kong's energy needs. So, with supportive and realistic government policies and a stable regulatory framework, we can continue to help improve Hong Kong's air quality. However, despite all CLP has done to reduce emissions from power generation, I and many Hong Kong citizens will have noticed that local air quality is actually worse than it was in the early 1990's. For that reason, I welcome the recognition in the Chief Executive's recent Policy Address that a much broader effort is required, involving many different sectors of the economy, as well as changes in our own lifestyles to achieve the substantial and durable improvements to local air quality which all of us are looking for.

#### Ms. Jenny Cosgrove

Director, Regional Head of Utilities and Alternative Energy Research, Asia-Pacific, Global Research, The Hongkong and Shanghai Banking Corporation Limited **Richard Lancaster** Group Director – Managing Director Hong Kong



Like other aspects of our business, customer service requires continuous review and improvement. In 2012 we launched over 30 customer service improvement initiatives. These initiatives, which are aimed at all types of customers, target power quality, service standards and practices, account management, billing and payment, enhanced customer communication, value-added services and customer engagement.

We also encourage our residential and business customers, and for that matter the Hong Kong community at large, to use energy more efficiently so that they save energy and money, as well as help create a better environment. We follow a four-step approach to helping people change their habits and reduce their energy consumption. These steps are:

- educating the public;
- providing customers with information and energy saving tips;
- equipping customers with tools and technical support; and
- means to make greater energy efficiency possible (we call these "enablers").

The following diagram summarises the scale and variety of CLP's commitments to help our customers and our city move towards an energy-efficient lifestyle.

# Energy-Saving Support for Homes

#### Education •-

- Electric Green Studio
- Energy Innovation Project Competition
- Exhibitions & Promotion
- "Save Now For Better Future" Campaign

#### Information •

- Energy use information on electricity bill
- Green Home Starter Guide
- Green Information Hub
   on CLP Online

#### Tools / Support

- Eco Home
- Eco Optimizer
- CLP Mobile App
- CLP Eco Ambassadors

#### Enablers •

- Advanced Metering Infrastructure
   (AMI)
- Energy & Carbon Calculator on CLP Online

# Energy-Saving Support for Businesses

#### Education

- Energy Efficiency Exhibition Centre
- Energy Efficiency and Conservation Workshops
- GREEN<sup>PLUS</sup> Recognition Award

#### Information

- Green Enterprise Info Pack
- Meter Online
- Green Information Hub on CLP Online

#### • Tools / Support

- GREEN<sup>PLUS</sup> Programme, GREEN<sup>PLUS</sup> Gallery and GREEN<sup>PLUS</sup> Resort
- GREEN<sup>PLUS</sup> Energy Billboard
- Account Manager

#### Enablers

- Advanced Metering Infrastructure
   (AMI)
- Energy Efficiency Loan Scheme
- Energy Audit Services
- Energy Calculator on CLP Online

A few figures may illustrate the scale of these efforts, which are perhaps not widely recognised:

- since 2009, the Green Studio Mobile Classroom has spread the green message to over 57,000 school children;
- the Energy Innovation Project competition has sponsored over 140 projects;
- 12,000 visitors have been to the CLP Eco Home;
- since 2011, over 27,000 users have signed on to our Eco Optimizer web-based energy assessment tool;
- over 32,000 users have downloaded the CLP mobile application;
- 26,000 business and community leaders have visited the Energy Efficiency Exhibition Centre;
- since 2009, CLP's Energy Audit Services have helped customers save 60GWh of electricity equivalent to the annual supply to almost 20,000 typical homes; and
- the Advanced Metering Infrastructure (AMI) pilot scheme will target 3,000 residential customers and 1,400 small and medium-size enterprises over its 18-month trial period.

In the second half of 2012, we refreshed our longstanding brand, reinforcing our ties with Hong Kong for over a century. A multi-pronged approach was adopted to connect the community with our Company through "Energy for Life", where the four pillars of our brand: Customer Excellence, Community Commitment, Environmental Protection and Power Expertise, were introduced through a wide range of communication activities.

#### Tariff

Supply reliability, power quality, excellent customer service and environmental improvement come at a price, which must be reflected in the tariff paid by our customers for their electricity. We do everything possible to maintain tariffs at reasonable levels. Even so, a tariff increase for 2013 was unavoidable. CLP was able to keep its average 2013 basic tariff unchanged due to continued stringent cost management of capital and operating expenditures and the effect of higher than expected electricity sales due to warmer weather in 2012. However, because of the increase in fuel costs and an adjustment to the rent and rates special rebate, the Average Net Tariff increase in 2013 was 5.9%. Of this, 4.7% was due to the increase in the fuel clause charge as new natural gas supplies arrive through the WEPII. Whilst this gas is priced at the prevailing international market level, it will be around three times the price of that from the existing Yacheng field, which was contracted 20 years ago when energy prices were significantly lower.



Gas Receiving Station at Black Point

CLP will also provide a rent and rates special rebate of 2.1 cents per unit to all customers in 2013. We expect that, by the end of 2013, this rebate will complete the return to CLP's customers of all the rent and rates payments overcharged by Government and subsequently refunded to CLP.

CLP introduced a new Energy Saving Rebate Scheme with effect from 1 January 2013. This scheme will assist low consumption customers and encourage energy efficiency. 35% of domestic customers and 44% of small business customers will bear no increase, or even enjoy a small reduction in their electricity bills depending on their consumption levels. To promote energy saving, the tariff structure for residential users has been adjusted in order to encourage high electricity consumption customers to consider energy saving (this will affect around 1% of domestic customers). At the other end of the scale, CLP introduced a one-off community care subsidy of HK\$300 per eligible household as a way to alleviate tariff pressure for lower income households. This is expected to help over 10,000 low-income families across CLP's service area in 2013.

Even with the tariff adjustment in 2013, CLP's tariff is still highly competitive when compared with other major metropolitan cities. This is particularly striking since many of these cities do not benefit from the same level of supply reliability, power quality and customer service provided by CLP.



#### Stakeholder Engagement

In 2012, we further strengthened our communications with stakeholders to ensure that they are well-informed on CLP's business operations, initiatives and challenges. To keep the public abreast of the latest developments on issues such as future fuel mix and tariff pressure arising from the new gas supply, we have used a number of channels such as the media, chambers of commerce and professional associations. We aim to support a balanced discussion in the media and public forums and to promote a better understanding of CLP's operations.

The Daya Bay Nuclear Power Station, in which CLP holds a 25% shareholding, plays an important part in meeting Hong Kong's demand for electricity. Whilst our community appreciates the importance of Daya Bay in providing clean energy to Hong Kong, we recognise that there are ongoing community concerns about nuclear safety. We continue to address these directly. The CLP Nuclear Resources Centre, which offers extensive information on nuclear energy, was launched in May 2012. Since then, the Centre has welcomed over 3,200 visitors including shareholders, government officials, professional groups, academics, secondary and university students as well as visitors from overseas. The Centre, along with other initiatives such as our participation in stakeholder engagement forums, forms part of our widening efforts to enhance understanding of nuclear related matters.

## Outlook

Hong Kong is a small and open economy whose economic performance is closely tied to its major trading partners. The uncertain external environment may adversely impact local economic activity, and therefore restrain growth in electricity demand. The increasingly stringent environmental regulations imposed on CLP will also impact our business, both operationally and financially. These factors, together with the continuous pressures of fuel costs, operating costs and new capital investments, mean that we must work more efficiently and innovatively than ever before. In 2013 this will involve:

- Continuing to monitor and manage the gas supply from the existing Yacheng gas field and evaluate the gas supply options outlined in the MOU;
- Ensuring the safe and reliable operation of the Hong Kong Branch Line Project, and completing all gas receiving infrastructure and plant modification works on schedule to accept deliveries of new gas supplies;
- Securing HKSAR Government approval for our Development Plan covering the period from 2014 to September 2018;
- Engaging actively with the HKSAR Government, key stakeholders and the wider community on the SoC Interim Review;
- Managing our operating costs amidst volatile international fuel prices and rising local labour costs, so as to minimise tariff increases for our customers;
- Stepping up efforts to promote energy efficiency through public education and the provision of energy efficiency related services;
- Exploring the options for importing additional nuclear energy or providing additional gas generation capacity in Hong Kong, both to meet increasing electricity demand and to ensure that this is done in line with any decision by the Government regarding the role of nuclear energy in Hong Kong;
- Enhancing stakeholder engagement activities and communication plans on nuclear safety issues to promote an informed debate on the future energy mix for Hong Kong;
- Engaging actively with the HKSAR Government on a practical plan for meeting proposed climate change goals and achieving air quality objectives, as well as starting to plan and pursue the major infrastructure developments in our business which will be needed if these policies are to be successfully implemented on time; and
- Taking forward innovative initiatives, such as piloting smart grid projects including AMI and facilitating the development of the best local renewable energy projects and their integration with the grid.

Over the longer term, perhaps through to the turn of the decade, our priorities will include:

- Strengthening infrastructure integration with Guangdong, notably through gas pipelines and potential arrangements to import additional nuclear power;
- Finalising a cleaner fuel mix. This will involve using more gas, carefully considering the potential import of more nuclear energy and reducing our reliance on coal, as well as promoting the use of local renewable energy sources to the limited extent that this is practical;
- Continuing implementation of the inter-Government MOU on energy cooperation so that new long-term gas supplies are brought to Hong Kong in a timely fashion;
- Further introducing different kinds of energy efficiency services and tools to assist our customers in managing electricity use in both their living and working environments;
- Managing the ongoing capital expenditure which our business will require, both to timetable and within budget;
- Engaging actively with the HKSAR Government, key stakeholders and the wider community on the post-2018 regulatory regime; and
- Maintaining excellence in operations at all times, including supply reliability, environmental and safety performance.



More Q&As about our Hong Kong Business



## **Financial Performance**

EnergyAustralia's operating earnings in 2012 were HK\$1,685 million, compared to HK\$2,911 million the previous year. This 42.1% decrease in earnings was caused by a combination of factors including reduced customer demand, suppressed wholesale electricity prices, higher operating costs and higher fair value loss on energy contracts. Operating costs increased by HK\$1,450 million or 35.7% year-on-year. Factors contributing to this included higher employee and contractor costs, increased marketing expenditure, bad and doubtful debts, and increased costs associated with the TSA and Delta Western GenTrader contracts.



# **Operational Performance**

#### Corporate

CLP's wholly-owned subsidiary in Australia previously operated as "TRUenergy". As TRUenergy we acquired the retail customer base of EnergyAustralia and the Delta Western GenTrader contracts from the NSW Government in March 2011. That acquisition more than doubled our customers, increased our generation capacity, and significantly expanded our presence in Australia's largest energy market, NSW. As a consequence, in October 2012 TRUenergy was rebranded – merging the best of the legacy brands in Victoria and NSW into a single, new and revitalised EnergyAustralia brand.

EnergyAustralia aspires to be Australia's leading electricity and gas company. Our goal is to increase the value of the business significantly through industry leading customer service, the highest levels of employee engagement, and continuous improvement in the economic return on its assets. EnergyAustralia's aim is to be dependable, reliable and safe. The notion of helping Australians with efficient energy solutions underpins everything we do.

In 2012 we continued to build our people capability to support our growth. Through this demanding year of change the focus of our employees on continually improving safety has been maintained. Our Total Injury Frequency Rate (which measures the number of injuries per million hours worked) was 4.73 for the year, well below our target of less than 8.0. While we will not be content until we can achieve our goal of zero, this performance is an encouraging sign of our employees' diligence in this area.

#### Australia

#### Retail

EnergyAustralia is one of Australia's three largest energy retailers. We supply gas and electricity to households and businesses across four states and one territory: Victoria, NSW, Queensland, South Australia and the Australian Capital Territory with a total of 2.8 million customer accounts. In NSW and Victoria we hold market shares in excess of 25%, approximately 12% in South Australia and less than 5% in Queensland.

In order to achieve leading customer service and help Australians with efficient energy solutions, EnergyAustralia is working to four key customer-focused objectives. These are to improve our existing services, deepen customer relationships, develop new service and sales channels and build the future business model. All our initiatives in 2012 and those planned for the months ahead are intended to further one or more of these objectives.

In September we launched our new Customer Care and Billing platform. This is easier and more efficient to use than its predecessor and materially improves the quality of retail data used in the business, positioning EnergyAustralia to offer a level of service to our customers which is far superior to that possible under the previous legacy system. The system also provides a platform for a more effective launch of new customer products, such as our "Rate Fix" product which was launched in NSW and provides customers with a fixed price for their electricity for a two-year period. In October, EnergyAustralia launched MyEnergyReport which is designed to help customers to better understand their energy use and to make informed choices about their energy consumption. This marks an important change in the customer relationship. In keeping with the promise at the heart of the EnergyAustralia brand to help Australians with efficient energy solutions, MyEnergyReport is a shift away from simply being a supplier of energy and a move towards partnering with customers to help them to use energy more efficiently.

Retail electricity prices for both mass market and industrial customers in all States were increased on 1 July 2012 as a result of the introduction of a cost of carbon by the Australian Government. Prices in NSW, Queensland and South Australia were also increased at the same time in line with the annual price review process. The corresponding annual process for Victoria results in an increase in retail prices in the State with effect from 1 January each year. Such increases are understandably unwelcome to customers. Combined with the highly competitive retail energy market in Australia, such increases reinforce the need for EnergyAustralia to enhance customer service, whilst controlling cost, in order to retain existing customers and to attract new ones. We defended our market position well in 2012. Our churn out rate, which measures customers switching from one energy retailer to another, was 22.4%, below the industry average of 25.4% in Victoria. At 18.5% we were only marginally above the market churn of 18.3% in NSW despite the aggressive push for market share in the electricity market by non-incumbent retailers.

In Australia, Smart Meters are reaching critical mass in the state of Victoria and being considered in other states. There's been a lot of discussion about the value of Smart Meters to consumers and the opportunity to help consumers use energy more wisely, by using the information that the Smart Meter provides. How is EnergyAustralia planning to use Smart Meter data to strengthen the relationship with its customers? How does EnergyAustralia's strategy reflect the experience of other markets like the European Union and U.S., which have been dealing with Smart Meters for some time?

Smart Meters provide the potential for customers to understand their energy usage at very granular levels. In Victoria customers with Smart Meters will be able to see their usage for every half hour. However, few of us will want to see all 17,520 half hour reads each year. As a leading energy retailer one of our tasks is to present this data to customers in ways which enable them to understand and act on it, whether this be via a web portal such as MyEnergyReport or via a printed home energy report. The half hour data also allows us to develop pricing structures more closely aligned to our customers usage so that customers who use a lot of off-peak energy get the benefit of this. Coupled with flexible pricing and an appropriate feedback technology, Smart Meters provide significant potential for us to put customers in control of their energy usage.

Mr. Nadeem Sheikh Managing Director, Asia Pacific Opower

**Richard McIndoe** Managing Director – EnergyAustralia This was a particularly strong result given that up until September the retail business was focused on the implementation of the new billing and customer management system. While our account numbers declined by 71,000 in the first half of the year as we focused on preparations for the billing system implementation, we were able to reverse this trend and increase our accounts by 31,000 in the second half. In addition to customer-centred initiatives such as MyEnergyReport and new customer offerings we were also better able to focus on the retention of existing customers.

During 2012 we witnessed a decline of electricity usage across our customer base. For instance, in our legacy, predominantly Victorian customer base (previously serviced by the TRUenergy brand), we saw a decline of around 10% in average mass market electricity consumption from 6.5MWh in 2011 to 5.8MWh in 2012. A number of factors contributed to the reduction in customer electricity consumption including the underlying demand changes of a more cost aware consumer, energy efficiency, weather and the impact of increased residential solar photovoltaic penetration.

In keeping with our objective of building pathways to changing energy demand, EnergyAustralia was named by the Australian Government as the retail partner for its "Smart Grid, Smart City" Project, under which households in Sydney and the Hunter Valley can participate and save money on their energy bills by signing up to take part in voluntary energy retail trials. As part of this Project, EnergyAustralia is running trials whereby customers can participate in initiatives such as air-conditioning cycling during peak times, dynamic pricing notifications by SMS, and discounts for customers maintaining their accounts in credit. The trials will continue until September 2013 and should provide valuable insight into how customers alter their usage in response to different combinations of price signals and feedback technologies, and which products most benefit customers.

#### Wholesale

The generation business faced a number of challenges through the course of 2012. These included decreasing demand for electricity, which in turn led to suppressed wholesale prices, the introduction of a carbon pricing regime, as well as disruption to operations at the Yallourn Power Station following the collapse of the Morwell River Diversion and ingress of water into the Yallourn coal mine. The changes in demand, wholesale prices and carbon drove our decision to reduce generation output and operate to a different profile than in past years.

EnergyAustralia's operated gas-fired power stations, at Tallawarra and Hallett, performed safely and reliably during the year. The energy produced by Tallawarra was more cost competitive after the introduction of the carbon price and a decrease in the cost of gas which resulted in the power station performing well over the second half of the year. The Iona Gas Plant also performed well with high commercial availability. In NSW we control the output from the Mount Piper and Wallerawang Power Stations under the Delta Western GenTrader contracts. During 2012 we decided to scale back generation in response to changing market conditions. The Mount Piper plant, which is the more modern and efficient of the two stations, demonstrated high levels of reliability and now has additional coal stockpile capacity which increases generation flexibility. In 2012, EnergyAustralia acquired the Pine Dale coal mine near Lithgow in NSW. This supplies around 350,000 tonnes of black coal each year to the Mount Piper Power Station and is a strong strategic fit for EnergyAustralia.

EnergyAustralia has a 20% equity stake in the Narrabri coal seam gas (CSG) project, in the Gunnedah Basin, Northern NSW. This secures 500PJ of 3P reserves and provides an alternative source of gas supply, further diversifying the forward gas supply portfolio. The project is operated by Santos, an experienced CSG developer and operator. In 2012, the project was delayed due to government review of regulations and community concerns. The regulatory framework is now issued and the key licences for the project have been renewed. Santos has implemented a programme to resolve legacy issues with integrity of equipment and water treatment facilities and raised safety, health and environment standards to its corporate standard. Progress on the project in 2013 will include further exploration and appraisal drilling and gas production to expand and confirm reserves, engineering design and implementation, community engagement and preparation of an Environmental Impact Statement. EnergyAustralia has established a joint venture management team and is developing its knowledge of the critical CSG sector.



More Q&As about EnergyAustralia

#### Australia

The following tables set out the utilisation and availability of EnergyAustralia's generating portfolio and Iona gas storage facility, and demonstrates the high level of operating performance which was achieved in 2012.

Wholly or Partly-Owned by EnergyAustralia									
	Rating (MW)		Generation (at plant) (GWh)		Utilis (	ation* %)	Availability* (%)		
Power Stations	2012	2011	2012	2011	2012	2011	2012	2011	
Yallourn	1,480.0	1,480.0	8,965.0	11,620.0	69.0	89.6*	* 88.4	88.9	
Tallawarra	420.0	420.0	2,758.0	2,307.0	75.0	63.0	95.9	82.4	
Hallett	203.0	203.0	5.5	11.4	0.3	0.6	93.8	92.8	
Gas Storage Facility	Capacity (Terajoule / Day) 2012 2011		Throughput (Petajoule) 2012 2011		Utilisation (%) 2012 2011		Availability (%) 2012 2011		
lona	500.0	500.0	49.8	48.9	27.2	30.5	98.4	99.5	
Wind Forms	Installed Capacity (MW)		Wind Turbines (Number)		Generation (at Farm Gate) (GWh)		Availability (%)		
vvina Farms	2012	2011	2012	2011	2012	2011	2012	2011	
Cathedral Rocks	66.0	66.0	33	33	180.9	185.0	91.4	92.4	
Waterloo	111.0	111.0	37	37	335.0	298.0	97.3	95.6	

\* In this table and elsewhere, "availability" is the extent to which a generating unit is made available by its operator for generation to the grid system, whereas "utilisation" is the extent to which the unit actually generates as compared to its rated capacity applied over the period in question.

\*\* In 2011 utilisation was slightly higher than availability at Yallourn due to two units generating above rating.

#### Generating Capability under Contract to EnergyAustalia

Delta West	Ra (N	ting /W)	Net Generation (at node) (GWh)		
Power Stations	2012	2011	2012	2011	
Mt Piper	1,400.0	1,400.0	7,942.0	7,683.0	
Wallerawang	1,000.0	1,000.0	4,692.0	4,782.0	
	Ra (N	ting /W)	Net Generation (at node) (GWh)		
Ecogen	2012	2011	2012	2011	
Newport / Jeeralang	966.0	966.0	241.0	370.0	

On 6 June 2012 water from the Morwell River Diversion entered the Yallourn mine, following the collapse of a coal conveyor tunnel that runs beneath the diversion. This flood impacted coaling operations and reduced the output from Yallourn Power Station. No one was injured in the incident and work swiftly commenced to stem the flood and remove the water from the mine. Whilst this was a serious and costly event, the response from EnergyAustralia's staff, and those of the partner companies that work alongside them, was outstanding. Coal transport via conveyor was re-established from 11 July, allowing generation to increase from one to three units. All four units were available from early August. On 8 October the second coal conveyor

was returned to service. An additional liner system and drainage in the river diversion is being installed to help prevent future breaches. This will cover an area of 120,000 square metres along 800 metres of the diversion and is due to be completed by August 2013. While the Yallourn Power Station was able to run all four generation units from August onwards, EnergyAustralia decided to scale back generation to three units. Factors influencing this decision included the introduction of a carbon price on 1 July, combined with falling electricity demand and a suppressed wholesale electricity price environment. Planned maintenance operations were brought forwards for some units during this time.

One of the drivers of the weak wholesale electricity environment is the impact of the Federal Renewable Energy Target (RET). An unintended consequence of the RET has been to require new renewable generation to be built at a time when current and forecast demand is actually falling. This fall in demand has been driven by general economic conditions, significant declines in demand from industry and small to medium-size enterprises and the impact of both rising energy prices and energy efficiency policies on residential customer demand. The overall effect of these market conditions meant that during 2012, generating companies announced they would reduce operations or close approximately 3,000MW of coal-fired generation in eastern Australia. At Yallourn we employed a three unit operating strategy over most of the second half of 2012 to optimise the profitability of our energy supply portfolio. In late 2012 we also announced that plans to build a gas-fired power plant at Yallourn had been put on hold. Nonetheless, the Yallourn Power Station will continue to play an important role in brown coal-fired generation in the Latrobe Valley and in the National Electricity Market as a whole and we returned to a four unit operating strategy in early January 2013 due to increased summer demand.

In 2012 we undertook extensive advocacy on issues which impact our business. We successfully engaged with the Australian Energy Market Commission for individual rule changes in the market. We also addressed broader issues such as greater gas market transparency as recognised in the Energy White Paper and for State Governments to support the development of a model terms of reference for retail price regulation to promote greater predictability where these prices continue to be regulated. Managing the compliance obligations under environmental regulations imposed by State and Federal Governments remains a key area of concern for the business. These regulations result in a number of markets for environmental instruments which are driven by inherent regulatory uncertainty, and these markets can be fragmented, illiquid and volatile. While we have continued to benefit from prudent management of our exposure in these markets, year-to-year variations may add volatility to our earnings going forward.



Remediation at Yallourn - restoring a coal conveyor tunnel and rebuilding the river diversion embankment

## Outlook

One of the key challenges for EnergyAustralia is to manage the changes to our industry resulting from the Australian Government's Clean Energy Legislation Package which came into effect on 1 July 2012. Key elements of this package included:

- a default target of 5% abatement on year 2000 CO<sub>2</sub> equivalent emissions by 2020 across the Australian energy supply systems;
- a fixed carbon price for the first three years, beginning on 1 July 2012 and starting at A\$23 per tonne for liable entities. The fixed carbon price will rise at 2.5% a year in real terms;
- from 1 July 2015 Australia will move to an emissions trading scheme (ETS) with the carbon price set by the market;
- up to 50% of the annual emission liability under the ETS may be met by the purchase of international units; and
- an Energy Security Fund has been established to administer transitional assistance provided for generators with initial carbon emissions intensity between 1 tonne/MWh and 1.3 tonnes/MWh. The total compensation available to the generation sector will be A\$1 billion, provided as cash compensation in the first year, and 41.7 million permits available annually for four years.

The passage of the Clean Energy Legislation led to an impairment of A\$350 million for the Yallourn Power Station in 2011. On 22 June 2012, EnergyAustralia received a cash payment of A\$257.5 million (or 25.75% of the total first year's cash compensation) and will receive a corresponding percentage of the annual allocations of 41.7 million free carbon permits between 2013 and 2016. The Clean Energy Package did include a "Contract for Closure" Programme, whereby generators with high carbon intensity could negotiate payment in exchange for closure of some or all of their generation units by 2020. EnergyAustralia lodged an expression of interest to participate in this programme with the Federal Government in respect of the Yallourn Power Station. However, the programme was not taken further by the Government. There are substantial differences between Australia's leading political parties regarding the future of the Clean Energy Legislation. This may be one of the major issues in the Federal Election to be held on 14 September 2013.

EnergyAustralia's intention is to optimise and grow its integrated business through a focus on return on capital, cost and productivity, service, advocacy and enhancing capability. In doing so, the business will be well positioned for changing trends in energy generation and demand, irrespective of shifting political, regulatory and market influences. In the coming year, EnergyAustralia will continue to focus on enhancing the existing business by:

- completing remediation works at Yallourn following the Morwell River Diversion failure;
- participating in the privatisation of electricity generators in NSW if, and only if, there is a clear economic case for this;
- maintaining the retail customer base, improving the customer experience and progressing the integration activities of the NSW business acquired in 2011;
- developing a strong talent management and succession planning programme;
- continuing effective policy advocacy and improving data management, compliance and controls;
- continuing to manage industrial relations to provide valuable outcomes for employees and the company;
- building pathways to adapt to changing energy demand by focusing on new markets, decentralised energy and data management, as well as continuing to find the best opportunities for new conventional developments; and
- systematically implementing initiatives to reduce costs and improve business performance.

These actions will lay strong foundations for the business. In the longer term, we will:

- create options for growth through new technologies and extracting brand value through new products and services;
- maintain our focus on safe, effective and cost efficient operations and maintenance of all our plant;
- address the impact of climate change policy and continue moving towards lower carbon emissions intensity generation;
- manage the implications of suppressed wholesale prices and slowing growth in electricity demand;
- maintain current credit ratings, while refinancing existing debt facilities when due and obtaining loans for new projects; and
- consider options to source new capital to fund the long-term growth of EnergyAustralia and explore such opportunities which the capital markets, whether for debt or equity, offer to support this growth.

However we are operating in a dynamic and challenging environment. This means we must remain flexible, innovative and responsive in our approach to the business.

# **Chinese Mainland**

### **Financial Performance**

Earnings from the Chinese mainland totalled HK\$1,411 million in 2012, an increase from HK\$1,155 million in 2011.

This includes earnings from our 25% stake in the Daya Bay Nuclear Power Station, 70% of whose output serves our Hong Kong electricity business. Those earnings decreased slightly, mainly because of lower average shareholders' funds, offset by a dividend income of HK\$55 million from DNMC (the management company of Daya Bay Nuclear Power Station – in which CLP has a 12.5% interest).

Earnings from CLP's coal-fired projects increased by 56.5% as a result of higher tariff and lower coal prices. Fangchenggang continues to make a significant contribution to earnings. Significant improvements to earnings were also seen from our investments in the Guohua International and Shandong joint ventures due to the combination of an increased on-grid tariff and the drop in domestic coal prices in 2012.

Earnings from renewable projects were also higher due to the commissioning of new wind projects, but partly offset by lower earnings contribution from hydro projects due to less rainfall and lower demand.



## **Operational Performance**

#### **Coal-fired Power Stations**

Fangchenggang is one of the most reliable power stations in Guangxi and has a competitive advantage through its use of imported coal. During 2012 we successfully completed trials with a wider range of coal types than originally assumed in the boiler design, thereby giving more choices in coal supply and scope for reducing fuel costs further. The National Energy Administration has given in-principle approval for the Fangchenggang II expansion, which would add two further 660MW units on the same site. We will be using advanced ultra-critical technology to improve generating efficiency and emissions performance beyond the high standards already achieved in Fangchenggang I. Preparatory work is well underway and full-scale

#### **Chinese Mainland**

construction will start as soon as final approval has been issued by the National Development and Reform Commission. We hope this will be received in the first half of 2013.

The following table shows the high standards of availability and utilisation that have contributed to the strengthened earnings performance of CLP's coal-fired investments in China during 2012.

Coal-fired Power Stations – Performance										
	Rating (MW)	Gener (GV	Generation (GWh)		Utilisation (%)		bility )	Operating Hours (Hours)		
		2012	2011	2012	2011	2012	2011	2012	2011	
Fangchenggang	1,260	6,085	7,896	55	72	90	87	4,830	6,266	
Shiheng I & II	1,260	6,319	6,390	57	58	89	89	5,015	5,071	
Heze II	600	3,310	3,334	63	63	93	95	5,516	5,556	
Liaocheng I	1,200	6,909	6,788	66	65	88	94	5,757	5,657	
Panshan	1,030	6,092	6,225	67	69	93	93	5,914	6,044	
Sanhe I and II	1,300	7,410	7,660	65	67	97	96	5,700	5,892	
Suizhong I and II	3,600	16,506	18,830	52	60	92	90	4,585	5,231	
Yire	400	2,344	2,394	67	68	95	95	5,860	5,985	
Zhungeer II and III	1,320	6,605	6,960	57	60	97	96	5,004	5,273	
Shenmu	220	1,367	1,471	71	76	97	98	6,215	6,686	

What do you think is the main problem facing wind power generation in China at the moment? What responsive measures can be taken?

One of the key issues currently encountered by the China wind industry is the weak infrastructure of the transmission network in certain areas of the Chinese mainland.

This is a well-acknowledged issue by the PRC Government as well as the grid operators. A number of measures have been, or will be, implemented to alleviate the grid restriction issues encountered by many wind projects, especially in the northern parts of China.

This will take some time and CLP remains positive about the outlook of wind project development in the medium to long term. In the meantime, CLP is shifting its development focus to regions that, so far, have no or low grid restrictions. For expansion projects at locations where grid restrictions are known to be an issue, CLP will delay project developments until the situation improves.

In addition to grid restrictions, another potential issue for the wind industry in China will be the consequence of the rapid development pace of wind farms in the past few years. With so many new wind farms being built within such a short period, there may be a shortage of operating and maintenance expertise in the wind energy sector. The upcoming challenge for the industry is to broaden O&M know-how and expertise to ensure that the wind energy capacity which has been added is operated to full capacity.

Mr. Dong Feng Liang Chairman, Huadian Laizhou Wind Power Company Limited **Benjamin Lui** Director – China

#### **Renewables – Wind Energy**

CLP's investments in wind energy in the Mainland are held in three forms:

- minority shareholdings in individual projects (reflecting the limitations in earlier years on non-Mainland companies holding a majority stake in such projects);
- our shareholding in the CGN Wind joint venture (diluted from 32% to 15.75% in January 2013); and
- more recently, wholly-owned projects which are also operated and maintained by CLP itself.

20 out of 22 minority-owned projects were in commercial operation in 2012 without significant operational issues. Of the remaining two, the 48MW Chongming project in Shanghai entered commercial operation in January 2013 following delay in the construction of the related transmission infrastructure, and the 49.5MW Haifang project in Shandong was delayed by local land permitting issues. In line with CLP's focus on wholly-owned projects, we expect that further expansion of minority-owned projects will be limited to a second phase at Laizhou in Shandong Province.

#### Wind Energy Portfolio – Performance

	Rating Generation <sup>(1)</sup> (MW) (GWh)		Utilisation <sup>(1)</sup> (%)		
		2012	2011	2012	2011
 Minority-owned					
Changdao	27.2	50.4	55.3	21.1	22.8
Changling II	49.5	51.7	67.7	11.9	15.6
Datong	49.5	60.8	81.2	14.0	18.7
Hekou	49.5	101.2	93.9	23.3	21.7
Laizhou	40.5	72.5	69.8	20.4	19.7
Lijin I	49.5	88.4	81.6	20.3	18.8
Lijin II	49.5	99.7	94.5	22.9	21.8
Mazongshan	49.5	89.7	105.5	20.6	24.3
Nanao II	45.1	117.4	124.2	29.4	31.5
Nanao III	15.0	37.9	36.9	28.6	28.1
Qujiagou	49.5	77.1	90.6	17.7	20.9
Rongcheng I	48.8	97.1	94.5	22.7	22.1
Rongcheng II	49.5	112.0	108.9	25.8	25.1
Rongcheng III	49.5	107.3	100.0	24.7	n/a
Shuangliao I	49.3	46.0	74.6	10.6	17.3
Shuangliao II	49.5	79.0	89.8	18.2	20.7
Weihai I & II	69.0	137.0	143.7	22.6	23.5
Zhanhua I	49.5	98.6	92.1	22.7	21.2
Zhanhua II	49.5	105.3	97.8	24.2	22.5
CGN Wind JV	1,794(2)	3,043	2,663	<b>20.5</b> <sup>(3)</sup>	16.9(3)
Wholly-owned					
Qian'an I	49.5	85.8	92.3	19.7	21.3
Qian'an II	49.5	88.2	36.3	20.3	n/a
Penglai I	48.0	97.7	n/a	24.1	n/a

Notes:

(1) n/a (not applicable) is for projects which had not yet commissioned for a full year's operation.

(2) CGN Wind JV completed a restructuring in January 2013. Its gross capacity under operation and construction has been reduced from 1,878MW to 1,794MW. The total capacity of CGN Wind JV under operation stated here is that following this restructuring.

(3) The utilisation applies to projects with full-year operation in the JV.

We have previously explained that CLP and our partner, CGNPC have different views about the speed and scale of the expansion of the CGN Wind joint venture. CGNPC wishes to expand the business more quickly than originally expected, whereas CLP has been concerned that such growth might result in the development of projects that do not match our own investment criteria. In these circumstances, we agreed to a restructuring of the CGN Wind joint venture that reduces CLP's equity stake from 32% to 15.75%. Approval for this was granted by the Mainland authorities in January 2013. CLP expects to hold its investment in CGN Wind at the current level of approximately HK\$1.2 billion, whilst exploring divestment opportunities as and when these arise.

CLP's second wholly-owned wind project, Penglai Phase I (48MW) in Shandong was commissioned in January 2012. Final approval was received for the wholly-owned Laiwu Phase I (49.5MW) project. Construction is expected to commence in early 2013 and commissioning targeted for early 2014.

#### Renewables - Hydro, Biomass and Solar

Lower than average rainfall, particularly during the first half of the year, reduced output from Jiangbian and Dali Yang\_er hydro stations. However, rainfall at Huaiji, in Guangdong Province, was above average and resulted in an increase in generation of around 50%, as compared to the previous year.

We continued our efforts to improve the performance of our biomass plant at Boxing in Shandong Province by optimising both operating procedures and the availability of biomass feedstock. However, operating losses were still recorded due to the high cost and low quality of the fuel. These issues are worsened by a regulatory framework that does not provide adequate tariff support and does not control the development of additional biomass generating capacity where feedstock supply is limited. In the circumstances we have recognised an impairment of HK\$94 million in respect of the Boxing Biomass plant. Without substantial improvement in the business model for biomass projects in China, we do not envisage any further investment in this type of generation.

We aim to increase our renewable energy portfolio and have considered the development of solar power projects as part of our strategy. With the growing maturity of solar photovoltaic technology, the significant reduction in solar panel prices and China's feed-in tariff for solar power stabilising at a relatively attractive level, we have explored investment opportunities in solar projects with a focus on regions with good solar energy resources and strong local power demand.

On this basis, following a framework agreement in November 2012, CLP has now acquired a 51% equity interest in the Jinchang Solar Project (100MW) in Gansu Province. This is our first solar project in China and the country's largest tracking system solar farm to date. The final approval of the project was granted by Gansu Provincial Development and Reform Commission in December 2012 and change of business registration of the project company to a joint venture was completed in January 2013. Construction is underway and targeted to complete in the second quarter of 2013.

Hydro and Biomass Power Stations – Performance										
	Rating (MW)	Generation (GWh)		Utilisation (%)		Availability (%)		Operating Hours (Hours)		
		2012	2011	2012	2011	2012	2011	2012	2011	
Boxing Biomass	15	83	93	53	61	76	82	4,715	5,329	
Dali Yang_er Hydro	50	126	181	29	42	76	90	2,522	3,638	
Huaiji Hydro	125	452	307	41	28	94	90	3,613	2,455	
Jiangbian Hydro*	330	1,225	1,143	42	66	89	93	3,713	4,002	

\* All three units entered commercial operation in June 2011

#### Nuclear

The Daya Bay Nuclear Power Station achieved a utilisation rate of 92% in 2012, compared to 93% in 2011. The nuclear power station has continued to maintain smooth operation and its radiological releases into the environment are well within regulatory limits, without any adverse effect to nearby residents or the environment.

The PRC Government issued its findings and improvement measures in June 2012, following a comprehensive safety review of the nuclear installations in the Mainland after the Fukushima accident. This review concluded that operating nuclear power units in the Mainland have fully adopted the national nuclear safety standards and the latest International Atomic Energy Agency safety standards. Daya Bay Nuclear Power Station has been confirmed to have adequate guidelines in place to manage severe accidents, including the impact of a potential regional tsunami. Even so, a number of enhancements have been implemented at Daya Bay to reinforce the continuation of its longstanding, excellent safety record.

In January 2011, an enhanced public notification mechanism was introduced for non-emergency Licensing Operating Events (LOE) for Daya Bay Nuclear Power Station. There was a Level "0" LOE incident in April 2012. In line with this notification mechanism, the incident was reported within two working days, even though it had no nuclear safety significance nor any impact on external environment and public safety.

The State Council approved the National Plan for Nuclear Power Safety (2011-2020), the Nuclear Power Development (2011-2020) and the National Energy Development for the 12th Five-Year Plan (2011-2015) in October 2012. This paves the way for the possible resumption by 2015 of the review and approval of new nuclear projects at coastal sites. These will use third-generation technology meeting the highest international safety standards.

CLP continues to work with CGNPC, our longstanding partner in Daya Bay, to pursue regulatory approval for the acquisition of a 17% equity share in the Yangjiang Nuclear Power Station project (6 x 1,080MW) in Guangdong. The project is to be commissioned in phases, with the commissioning of Unit 1 expected in 2013 for supplying power to Guangdong.

### Outlook

China's power industry grew at a lower rate in 2012 due to the effects of the weak global economy on export demand. Total installed capacity reached 1,144GW, including the commissioning of around 87GW of new generating capacity. Electricity demand grew at 5.5% during the year, compared to 11.7% in 2011, and the average utilisation rate of power plants reduced slightly. The 12th Five-Year Plan places an emphasis on energy efficiency and reduced carbon intensity, which may also affect



Supplying reliable clean energy to Hong Kong – Daya Bay Nuclear Power Station

demand growth and lead to closer scrutiny of new projects. The Chinese government will continue to support clean electricity generation in the form of renewables, nuclear power and efficient coal-fired plant. This policy direction provides opportunities for growth in the Mainland power sector that are consistent with CLP's own business and climate strategy.

Wind projects in North-eastern China have encountered significant levels of grid restriction and output has been constrained. The provincial grid has been unable to accept all the local wind power production and is attempting to improve transmission connections to allow power export to other provinces. CLP has deferred new wind projects in the northern provinces until the situation improves. Our efforts have shifted towards the south, where wind resources may be less favourable, but grid restrictions are much less severe. During the coming year we aim to:

- improve the environmental performance at Fangchenggang I by the addition of catalytic NO<sub>v</sub> reduction;
- obtain final approval to proceed with the construction of Fangchenggang II;
- reduce our positions in minority owned coal-fired joint ventures if the opportunity to do so arises on commercially
  acceptable terms;
- complete the construction of the Laiwu Phase I and Laizhou Phase II wind projects in Shandong and obtain final project approvals for four wholly-owned wind projects, namely Penglai Phase II, CLP Laizhou Phase I and Laiwu Phase II projects in Shandong and Xundian Phase I project in Yunnan;
- complete the construction of the Jinchang Solar Project and explore investment opportunities for other solar power projects;
- maintain high operational standards at Jiangbian, Yang\_er and Huaiji hydro plants; and
- work with CGNPC to complete the process for the acquisition by CLP of its minority stake in the Yangjiang project, including the necessary state-level approvals, and thereafter monitor progress towards completion on time and within budget.

Beyond 2013 we intend to continue our "niche" strategy in the Chinese mainland including:

- completing the construction of the Fangchenggang II project;
- completing the divestment of CLP's interest in minority-owned coal-fired joint ventures;
- exploring further participation in the ongoing growth of the Mainland's nuclear energy generating capacity;
- maintaining a development pipeline of viable wholly-owned wind projects; and
- exploring investment opportunities in other renewable energy projects, especially small to medium size hydro and solar.



What is the potential for increased power exchange between Hong Kong and Guangdong and how could this impact CLP's returns?

CLP has been supplying power to Guangdong for more than 30 years. During the past few years, power shortages could still be observed in Guangdong. In the near term, it is likely that CLP Power may still have the opportunity to supply Guangdong.

In the longer term, not only may the balance of supply and demand improve in Guangdong but CLP's capacity to supply energy is likely to reduce, as we need to comply with the new 2015 and 2017 emissions caps in Hong Kong. If sales are reduced, this is not expected to have a material impact on the Group's earnings as about 80% of the profits are actually returned to our Hong Kong customers, through credits to the Tariff Stabilisation Fund.

Ms. Jenny Cosgrove Director, Regional Head of Utilities and Alternative Energy Research, Asia-Pacific, Global Research, The Hongkong and Shanghai Banking Corporation Limited

Betty Yuen Vice Chairman – CLP Power Hong Kong



### **Financial Performance**

The financial performance in 2012 of CLP's investments in India was disappointing with an operating loss of HK\$182 million, compared to earnings of HK\$154 million in 2011. Jhajjar reported an operating loss due to low availability. This was a result of coal shortages and technical problems caused by the poor quality of coal which has been supplied by CIL since the commissioning of Units 1 and 2 in March and July 2012, respectively. We have taken an impairment of Rs.2,470 million (HK\$350 million) to the book value of our investment in Jhajjar. The post-tax impairment loss is Rs.2,227 million, or HK\$315 million.

Operating earnings from Paguthan were slightly lower than in 2011. This was mainly due to heat rate loss and higher provision for doubtful debts. The wind energy portfolio delivered earnings of HK\$47 million, due to the commissioning of new projects at Andhra Lake and Sipla and the higher wind resources experienced during the year.



## **Operational Performance**

As with any large scale power station project, the documentation which underpins the Jhajjar project, and which supported both CLP's decision to proceed with the project and the necessary project finance arrangements, is lengthy and complex. However, the viability of the Jhajjar project rested on two essential commitments. The first was a coal linkage agreement, whereby CIL agreed to provide coal of a quality and quantity to meet Jhajjar's needs from designated coal mines in Jharkhand at a declared price (with a price adjustment mechanism) for the life of the PPA. The second was a 25 year PPA with the Haryana state-owned distribution companies, which agreed to take 90% of the output of the station (with the remaining 10% being sold to Delhi) at pre-determined tariffs, which included a pass through to the off-takers of the cost of coal purchases.

Neither of these two essential commitments has, thus far, been respected to the extent which would set the Jhajjar on a longterm, sustainable and economic footing. The more serious issue is that CIL has been unable to meet the growing demand for coal which has resulted from a substantial increase of India's coal-fired generating capacity in recent years. This problem has affected numerous power stations in India, including Jhajjar. Recognising that CIL would be unable to meet all of Jhajjar's needs, in June 2012 we signed a fuel supply agreement with Central Coalfields Limited (CCL – a subsidiary of CIL) for a 20-year term and with a minimum supply guarantee of 80% of the total annual contracted quantity. However, thus far CCL has been unable to supply the agreed quantity of coal. This problem has been compounded by capacity difficulties on the Indian Railways which have impacted the delivery of coal to site.

Simply put, to generate electricity at 80% of its capacity (which is the level required to earn the capacity payment under the PPA) Jhajjar planned to receive 105 rakes of domestic coal each month. A "rake" is the equivalent of approximately 3,800 tonnes and broadly represents a single train load of 59 wagons. Between June 2012 and January 2013 Jhajjar actually received an average of 52 rakes each month. Moreover the domestic coal received has a heating value around 25% lower than originally planned. This means that significantly more coal is needed to generate the same amount of electricity.

As well as inadequate and irregular coal deliveries, the coal provided by CIL has contained substantial quantities of rock and stone. This has damaged the coal handling equipment and affected boiler performance.

As a result of the coal supply problems, plant commercial availability over the period from August 2012 to January 2013 has only been 33%, compared to our forecast of about 86%. This severely impacts revenues under the PPA, including Jhajjar's ability to recover the full capacity charge. The difficulties in commissioning the plant during a period of inadequate coal supply, combined with unreliable and reduced electricity output have contributed to a number of issues with the off-takers. These cover matters such as the commencement date for payment of capacity charges, the treatment of coal handling agent charges and payment for coal losses in transit. Jhajjar is taking these issues to the Haryana Electricity Regulatory Commission for adjudication. The sums presently in issue amount to approximately HK\$56 million. We intend to pursue these matters vigorously and in accordance with the terms of the PPA.

CLP management has made intensive efforts throughout 2012 to address these serious issues. Such efforts include:

- Extensive petitioning at all levels of the Union and State Government including directly with the Prime Minister of India, the Chief Minister of Haryana and all relevant political and governmental institutions and individuals. In this engagement we advocate strongly for structural changes to the Indian power sector to put the industry as a whole on a sound financial and operating basis and for the particular steps required to bring the Jhajjar project towards long-term viability.
- We reached an agreement with all relevant counterparts, including the Central Electricity Authority and the Haryana off-takers for the use of imported coal, representing up to 15% of total required volumes, and for the cost of imported coal to be passed on to the off-taker. The first rake of imported coal (from Indonesia) arrived at Jhajjar on 10 November and has been successfully blended with domestic coal for generating purposes. In January 2013 imported coal comprised 12 out of the 68 rakes of coal delivered to the station. This coal has a substantially higher heating value (around 60%) than the equivalent amount of domestic coal that we have been receiving.
- The coal handling plant at Jhajjar is being modified in order to better deal with the poor quality coal and numerous rocks being delivered by CIL.
- We have been engaging with the Indian Railways to enhance rake availability and to improve the quantity of coal supply to JPL.

On 16 January 2013 we received further in-principle approval to import 1.7 million tonnes of coal starting from early in the next Indian fiscal year, April 2013 to March 2014. This has been confirmed in a subsequent meeting with the Chief Minister of Haryana.

Recent months have seen some improvements in the operating performance at Jhajjar, notably as a result of the arrival of the imported coal and interim improvements to coal handling processes. We have also mastered the technical problems which arise on the commissioning of any new plant and which were aggravated by a disjointed and disrupted commissioning process caused by inadequate and poor quality coal. Plant technical availability which was only 45% in August averaged 96% over the four month period to the end of January. As our CEO has remarked in his Strategic Review in this Annual Report (page 10) we expect that our focus on the problems at Jhajjar will lead to improvement over the coming six to 18 months, although the scale of the problems affecting the coal-fired generating sector may mean that bringing the Jhajjar Project to stable economic performance might take two to three years.

Our gas-fired power station at Paguthan in Gujarat performed well and continued to be our primary source of earnings in India. Plant availability remained in excess of 91%, reflecting the high standards of operation and maintenance which have long been in place at Paguthan. The station also continued achieving first-rate safety, health and environment standards. The long-term availability of reasonably-priced gas remains a challenge for Paguthan. For example, Reliance Industries Limited (RIL), which has the lowest price gas resource available to Paguthan, indicated in May that it would be reducing gas supply by 5% following an instruction from the Indian Government to sign additional gas supply agreements with other customers.

The result of difficulties in gas supply has been that during 2012 although the availability of the plant was high, it actually only ran at a capacity of 33.2%, compared to 57% in 2011. The combination of lower gas availability and high prices for imported gas meant that for much of the second half of 2012 Paguthan was operating at a low level, normally operating only one of the three gas turbines at technical minimum load. In these conditions the station is delivering around 3.5 million electricity units per day, as compared to a capacity of about 15 million units. Todate, the shortage of domestic gas has not impacted the profitability of Paguthan significantly, since Paguthan is able to declare availability on the more expensive re-gasified LNG available on a Spot basis for the remaining capacity.

There is a longstanding dispute, on which we have reported previously, about CLP India's entitlement to receive payments when availability of the Paguthan plant was declared on the basis of naphtha, rather than gas. That dispute remains before the Supreme Court of India. The total amount of the claim, plus interest and tax, with respect to this deemed generation incentive stands at HK\$1,211 million. Further details of the claim are set out in Note 31 to the Financial Statements as a contingent liability.

#### Wind Energy

Our Indian wind energy portfolio demonstrated significantly improved performance this year. The commissioning of an additional 77.6MW of wind energy capacity at Andhra Lake and Sipla, bringing the total capacity of our wind farms to 521MW, reinforced CLP India's position as the largest wind energy producer in India. In addition, we have a further 451MW of wind energy under development at Yermala in Maharashtra, Mahidad in Gujarat, Sipla, Bhakrani and Tejuva in Rajasthan, all of which we expect to commission by March 2014.



A coal tippler at Jhajjar - we need to unload each train of around 60 wagons within five hours

The increased earnings from our wind energy investment in India reflect not only the continued growth in this portfolio, but also our increased experience in assessing wind resources when deciding which projects to pursue. In broad terms, our early projects, such as Samana in Gujarat, have not met forecast wind resources, whereas our later projects have performed more closely to expectations. We have also made a series of detailed improvements to our operating and maintenance regimes which have contributed to higher output and availability. Whilst the operation and maintenance of our wind farms is contracted out on a long-term basis to the equipment suppliers, we have become a much more active, engaged and informed supervisor of the contractors. The results of these endeavours are set out in the following table which summarises the status of performance of our wind energy portfolio in 2012.

#### Wind Energy Portfolio – Status and Performance

Droinst	Rating	Commissioned / To be	Forecast Full	Utilisation %	
Project	(10100)	Commissioned (WWV)	Commissioning Date	2012	2011
Samana I	50.4	50.4	-	23.5	21.1
Samana II	50.4	50.4	-	26.2	23.1
Saundatti	72.0	72.0	_	23.1	23.4
Khandke	50.4	50.4	-	24.1	24.4
Theni I	49.5	49.5	_	32.2	26.1
Theni II	49.5	49.5	_	30.6	24.6
Andhra Lake	106.4	106.4	_	21.4	n/a
Harapanahalli	39.6	39.6	_	29.7	31.8
Sipla	50.4	31.2/ 19.2	March 2013	n/a	n/a
Bhakrani	102.4	21.6/ 80.8	March 2013	n/a	n/a
Тејиva	100.8	0/100.8	December 2013	n/a	n/a
Mahidad	50.4	0/ 50.4	August 2013	n/a	n/a
Yermala	200.0	0/200.0	March 2014	n/a	n/a
Total	972.2	521 0 / 151 2			

Total 972.2 521.0/451.2

Note: n/a (not applicable) is for projects which had not yet commissioned for a full year's operation.

Whilst wind resources in India do vary year to year, in particular, as a result of annual variations in weather during the monsoon season (which runs from May to October and represents around 60-70% of annual wind resources) our wind energy portfolio as a whole is now delivering a satisfactory level of performance such as to justify continued investment in this aspect of our India business. This investment will continue to be targeted towards those states with adequate grid infrastructure and creditworthy off-takers. For example, the Tamil Nadu Electricity Board (TNEB) which takes the power from our 99MW wind farm at Theni has not been able to settle payments to independent power producers on time. This is due to its own financial circumstances, which are worsened by the unusually high proportion of wind energy generated in Tamil Nadu, as it has the best wind resources in India. We have continued to receive payments at Theni, but this has been a slow process with payments being made more than a year in arrears. As at end December 2012 TNEB had settled invoices up to September 2011 with a total invoice amount outstanding of Rs.1,009 million (HK\$143 million). The outstanding amount is not in dispute and no provision has therefore been made at this stage. Whilst we look towards growth elsewhere in our Indian wind energy portfolio, until the position at Theni has been regularised we do not expect to make further investments in Tamil Nadu, despite the quality of its wind resources.

## Outlook

The Indian economy has slowed, with only moderate year-on-year GDP growth of 5.3%. The rupee has fallen from a high of Rs.53.1/US\$1 to Rs.56/US\$1, mainly due to macroeconomic factors and political uncertainty in India (although it has recently recovered somewhat). The bank lending rate continues to be high, with the benchmark repo rate now 7.75%. Despite the addition of substantial new generating capacity in recent years, total installed capacity in India stands at only 211GW, with per capita electricity consumption at only 814kWh, compared to approximately 2,300kWh in the Chinese mainland. Despite the need for massive, continuing, private sector investment in electricity generation in India, the overall political, economic and operating climate for the sector is unfavourable, as demonstrated by the problems CLP has faced at Jhajjar and which other IPPs, including leading Indian generating companies, have experienced elsewhere. Until and unless circumstances change significantly to offer a more balanced and sustainable business environment for independent power producers, we cannot see a case for CLP to invest in new thermal power generation in India, whether fuelled by coal or gas. Instead, our priorities will be to:

- bring the Jhajjar Power Station to long-term sustainable financial viability;
- continue longstanding efforts to secure adequate, long-term and reasonably priced gas supplies for Paguthan;
- maintain steady growth of our wind energy business, through investments in new projects categorised by good wind resources, creditworthy off-takers and adequate grid infrastructure; and
- consider diversification of the portfolio through small to medium scale "run of river" hydro and solar projects. Such projects will be considered only on a selective basis having regard to critical issues such as land acquisition, reliable technology and a supportive tariff regime.

As we remarked in last year's Annual Report, we can envisage CLP India's business reaching a point where, in terms of maturity, organisational capability, quality of asset portfolio and size and stability of earnings, the business might be suitable for a local listing. This remains a long-term potential goal. However, the overwhelming priority is to tackle the current problems at Jhajjar.

Being one of the few multinational corporations in India's IPP segment, CLP is in a unique position to offer a global perspective on the current policy scenario of India's power sector. How does CLP evaluate its short-term and long-term business outlook in India?

India is an important market for CLP's presence and growth in the Asia-Pacific region and we are long-term investors. The gap between demand for and supply of electricity is huge and with the promising GDP growth forecasts over the next 4-5 years, Indian policy makers do recognise the urgent need for significant strengthening of this sector in order to continue with the growth momentum. Therein lies an opportunity not only for domestic players but also for foreign players such as CLP.

While our belief in this opportunity is strong, we will tread cautiously in the near term. In light of the current problems at Jhajjar, it would be difficult for us to make a case for further investments in thermal power projects until the fundamental issues around quality and quantity of fuel supply are honoured without dispute. These fundamental problems, which are afflicting the conventional power sector as a whole, mean that power companies are struggling with their present investments, let alone having the confidence and strength to make new investments. It would be wrong for CLP to pursue growth in thermal capacity at this point, unless these issues are resolved.

In contrast to our view of the conventional generation space, the outlook for renewable energy investment in India is encouraging. CLP is already the largest investor, foreign or domestic, in wind energy in India. In light of the performance of these investments and, on the basis of the continuation of the supportive regulatory framework, we intend to focus our further investment in India upon renewable energy.

Mr. Ashok Khurana Director General, Association of Power Producers

**Rajiv Mishra** Managing Director – India

# Southeast Asia and Taiwan

## **Financial Performance**

The operating earnings from the Group's investments in Southeast Asia and Taiwan in 2012 were HK\$243 million, a substantial increase from HK\$86 million in 2011. This increase was mainly due to an adjustment to the Ho-Ping tariff, which reflects the higher coal price paid by Taipower in the previous year, and higher generation due to a major overhaul in 2011. Coal market prices have subsequently fallen, which further improves Ho-Ping's earnings. In addition, the Lopburi solar project in Thailand, in which CLP holds a one-third stake, contributed earnings of HK\$38 million.



## **Operational Performance**

Ho-Ping continued to provide a reliable and economic power supply to the Taiwan grid, and has been dispatched at high levels of utilisation.

The 55MW Lopburi solar project in Thailand, in which CLP's 33% shareholding is held through Natural Energy Development Co., Ltd. (NED), achieved full operation in March 2012. This is the first utility-scale solar project in the CLP portfolio and was completed within budget and on schedule. Construction of an 8MW expansion at an adjacent site has commenced, with commercial operation scheduled for early 2013. CLP has provided management leadership and technical support for the development, construction and operation phases of this project.

CLP and Mitsubishi Corporation have been co-developing two coal-fired projects in Vietnam, both based on imported coal and to be developed on a build, operate and transfer basis. The 1,320MW Vung Ang II project has secured sufficiently firm pricing of capital and operating costs to enable tariff negotiations to be carried out with the Vietnam Government. The 1,980MW Vinh Tan III project is now the subject of negotiations with the Vietnam Government on key project documents. The results of both such negotiations should enable CLP to determine the viability of these projects.

## **Environmental Performance**

Ho-Ping was fined NT\$442 million (HK\$116 million) for exceeding the coal consumption limits stipulated in its environmental impact assessment in respect of 2009 and 2010. The fine was imposed even though emissions to the environment remained at all times within the permitted concentrations and total amounts. Ho-Ping contested the fine, but the Taiwan Environmental Protection Agency rejected this on appeal. Ho-Ping has filed a further legal appeal. In the meantime, full provision has been made in the accounts of Ho-Ping for the penalties.

## Outlook

Taipower, the state-owned off-taker for Ho-Ping, has put increased pressure on all independent power producers (IPPs) in Taiwan, including Ho-Ping, to reduce the tariff payable to them under the existing long-term power purchase agreements. Ho-Ping's shareholders, including CLP, consider that Taipower should honour its commitment under these agreements, noting that Ho-Ping already provides an economic supply to the Taiwan grid.

Opportunities in Taiwan are limited due to the position between Taipower and the existing IPPs on tariffs and the low probability of new IPP bidding in the near future. Thailand continues with renewable projects and is also considering a new round of IPP bidding for conventional generation but CLP is unlikely to contemplate expanding beyond the existing investment in NED.

The overall economic situation in Vietnam is still difficult, with reduced growth, high inflation, currency depreciation and low foreign currency reserves, but there has been some improvement from 2011. A key factor with regard to new IPPs is the willingness and ability of the Vietnam Government to guarantee the payment obligations assumed by the state-owned off-taker, Vietnam Electricity. We expect that only a limited number of IPPs with competitive tariffs will be granted guarantees of this nature. Our continuing development of the Vung Ang II and Vinh Tan III projects will enable an informed decision to be taken on the merits of these projects and the reliance which can be placed on the support necessary from the Vietnam Government.

In the circumstances, CLP's activities in Southeast Asia and Taiwan remain focused on the investment opportunities in hand. Our key tasks for 2013 and beyond are to:

- maintain safe and reliable operation at Ho-Ping;
- complete construction of the 8MW expansion to the Lopburi solar project; and
- finalise negotiations on the major project agreements and contracts for Vung Ang II and Vinh Tan III in Vietnam in order to determine the viability of these projects.



Ho-Ping – performing well in 2012