

# Performance

We must deploy our experience and expertise to maximise the performance of our assets and investments to realise our strategy.

- 36 Hong Kong
- 40 Australia
- 45 Chinese Mainland
- 51 India
- 54 Southeast Asia and Taiwan

# Hong Kong



### **Business Environment**

Hong Kong has a small open economy which is closely tied to the economic conditions prevailing in its major trading partners, especially the Chinese mainland and North America. Hong Kong's growth prospects will follow the pace of recovery of the global economy. In the past decade and more, Hong Kong's economy has matured and the HKSAR has moved from a manufacturing-based economy to one based on services. Electricity demand has tracked these developments – since 1990, electricity demand growth for local customers has averaged 3% per annum, compared to 17%, 10% and 9% in the 1960s, 70s and 80s respectively. In the longer term, we expect Hong Kong's economic growth, and therefore electricity demand growth, to be moderate – perhaps in the region of 2% per annum. We also expect that neighbouring Guangdong Province will reduce its reliance on power supply from CLP as its own electricity supply and demand moves into balance.

Even though underlying electricity demand growth may be moderate, there will still be a need for substantial ongoing investment in Hong Kong's electricity infrastructure. First, to maintain the reliability and quality of supply which Hong Kong has come to expect. Secondly, to comply with increasingly stringent environmental regulations. In that regard, the HKSAR Government has published the final study report on Hong Kong's Air Quality Objectives. This envisages a number of measures on emissions control, including increasing the share of natural gas used in local electricity generation and further tightening of emissions from our coal-fired generating plant. Over time, it may be that Government will seek to phase out entirely the use of coal in electricity generation to serve Hong Kong – although the implications of this on energy security, supply reliability and tariffs have not yet been fully evaluated. The specific proposals emanating from Hong Kong's Air Quality Objectives will be accompanied by growing public awareness of environmental issues. This may lead to more initiatives on demand side management and energy efficiency and conservation. The increasing focus on climate change may also lead to close scrutiny of the carbon footprint of electricity generation and, in turn, support CLP's gradual shift towards more nuclear power and gas-fired generation – building on the transition that started in the 1990s when CLP moved from exclusively coal-fired generation to a balanced mix of coal, gas and nuclear.

The current SoC is scheduled to end in 2018. The development of the Hong Kong electricity market after that time remains uncertain. Government has commissioned a consultancy study to analyse options for regulatory models after 2018. The introduction of competition in wholesale and retail power markets has been a main policy direction in a number of countries in recent years. However, these models are being re-evaluated, especially in the light of concerns about the ability of market forces to support policy objectives on matters such as environmental performance and timely investment in electricity network infrastructure. CLP will engage with Government and its advisors on the shape of Hong Kong's future electricity market. We are also working with both Government and Hongkong Electric on whether and, if so, how, enhanced interconnection between the two companies could benefit Hong Kong – this study is expected to conclude in 2010.

In December 2008, the Central People's Government announced the "Outline of the Plan for the Reform and Development of the Pearl River Delta 2008 – 2020". The continuing economic integration of Hong Kong with the Delta will bring both opportunities and challenges to Hong Kong – and to CLP. However, we look at this process with some confidence. We were an early mover in cross-border links in the electricity sector with our investment in, and interconnection with, Daya Bay Power Station in the early 1990s. The Government-to-Government Memorandum of Understanding (MOU) on energy supply signed in 2008 is also an example of how CLP is playing a full role in the growing integration of Hong Kong with neighbouring Guangdong Province – we are working constructively and productively with the Central People's Government and our Mainland counterparties to secure the continuing supply of nuclear electricity and natural gas to Hong Kong which will be critical both for maintaining power supply reliability and meeting our environmental objectives.

## Performance

During 2009, our performance centred on four main objectives:

- meeting Hong Kong's electricity demand in a reliable, cost-efficient and environmentally responsible manner;
- making the capital investment necessary to maintain the quality of Hong Kong's electricity infrastructure;
- making the best and most efficient use of our resources; and
- implementing the MOU between the Central People's Government and the HKSAR Government on the continued supply of nuclear energy and natural gas to Hong Kong.

#### Meeting the Demand for Electricity

Overall, local sales in 2009 grew by 1.7%, compared to only 0.3% in 2008. This growth, particularly in the residential sector, was primarily attributable to warmer weather which increased the cooling load and an improving economy. The decline in sales continued in the manufacturing sector. Such sales now only represent 6.3% of CLP's local total sales volume, compared to around 45% in 1976. This is a vivid illustration of the scale and speed of Hong Kong's transformation from a manufacturing-based economy towards a service-based economy in the past decades.

Sector	20 Number of customers ('000)	009 Electricity sales (GWh)	Sales increase / (decrease) over 2008 (%)	Average annual sales change over 2005-2009 (%)	Notes on 2009 performance
Residential	2,016	8,331	5.6	3.1	Warmer summer and cooler autumn compared to 2008
Commercial	184	12,488	1.4	2.4	Warmer summer and positive sentiment about the economic recovery
Infrastructure and and public services	96	7,813	2.0	0.6	Commissioning of public facilities
Manufacturing	25	1,938	(12.0)	(7.3)	Sales reduction continued, particularly in the textile industry
Total local sales	2,321	30,570	1.7	1.3	
Export sales	_	3,731	5.0	3.9	Notable growth in demand for electricity in Guangdong
Total Sales	2,321	34,301	2.0	1.6	

Sales to the Chinese mainland rose by 5% compared to 2008 levels, mainly driven by the strong demand growth as a result of the economic recovery in Guangdong during the second half of the year.

Overall, total unit sales by CLP in 2009, including sales to Guangdong, increased by 2.0% from 2008, as against a decrease of 1.1% in 2008.

#### **Capital Investment**

The largest capital investment currently underway in the Hong Kong electricity business is the emissions control project at Castle Peak "B" Power Station. This HK\$9 billion project is being commissioned in phases from 2009 to 2011. The work includes the installation of flue gas desulphurisation equipment, nitrogen oxides reduction plant and other facilities. Upon completion of the emissions control project, over 90% of SO<sub>2</sub> emissions and over 50% of NO<sub>x</sub> emissions from Castle Peak "B" Power Station can be

removed, while particulates can be further reduced from the existing low level. This resulting emissions performance is expected to be comparable to European Union standards. The timely and successful completion of this work is essential in order for CLP to comply with tightening emissions regulations. Currently, there are about 2,700 staff and contractors working on this project and works are progressing largely to schedule.

During 2009, we invested approximately HK\$7.8 billion in generation, transmission and distribution network, customer services and other supporting facilities – all aimed to enhance supply quality, reliability and customer service levels as well as to meet the demand created by ongoing infrastructure development projects.

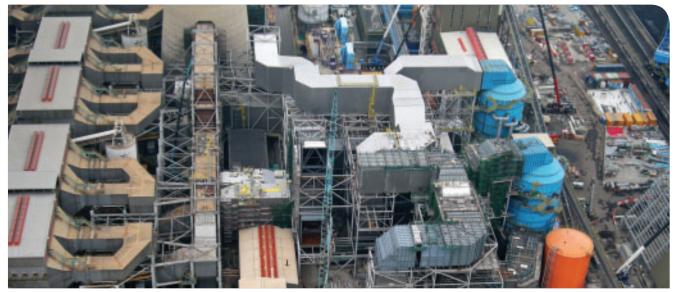
We have also taken forward the feasibility study for an offshore wind farm development in Hong Kong, involving an initial phase of 90MW with further potential expansion up to a total of 180MW. The Environmental Impact Assessment (EIA) study was presented for public consultation in June 2009. The EIA report was approved and the environmental permit was awarded by the Environmental Protection Department in August. The current stage of this project involves the collection of onsite environmental data as well as the review of the underlying business case for the project, including the quality of the wind resources.

#### Maximising our Resources

We go to considerable lengths to save costs and enhance productivity.

For example, in our network operations, we have adopted the strategy of minimising the total life cycle cost of electrical equipment. This means that we calculate the total cost to customers of equipment over its entire working life, from initial capital investment through to operating and maintenance costs, costs of mid-life refurbishment and, ultimately, retirement or replacement. Our maintenance strategy is moving from basically routine preventive maintenance, which is based on the time between maintenance inspections, to more condition-based preventive maintenance which focuses on the latest performance condition of the equipment. This has been accompanied by the application of online monitoring technology. This allows us to assess the condition of equipment continuously so that maintenance can be carried out at the right time – striking the best balance between using the equipment to its maximum capability and minimising disruption from possible failure. Moreover, through refurbishment projects, such as those on our transmission overhead line systems and gas insulated switchgear, we are able to extend the life of critical assets and reduce their overall life cycle costs. Cost savings have also been achieved through improved procurement practices, such as those applied in our outsourcing contract for meter reading and for IT infrastructure equipment.

Our efforts to make better use of resources are illustrated by our Castle Peak Cable Tunnel Project. This reused underground water for tunnel boring and site washing. In our rebuilding of the Shatin Data Centre, we successfully reused most of the original assets and reduced construction waste by about 15 tonnes.



🔿 The emissions control project at Castle Peak Power Station – a massive undertaking

We are in the process of applying smart grid technologies to our supply network in order to deliver clean energy, better services and value to customers. The fundamental concept of a "smart grid" is the integration of digital, telecommunication, information and metering technologies with the power system itself, so as to improve monitoring, analysis control and information collection capabilities. This is a long-term and challenging project. The enhanced capabilities which we seek include enhanced substation and network automation, self-healing and condition monitoring, improved network efficiency, flexible connections with renewable energy sources, electric vehicles and energy storage installation, as well as smart metering and advanced metering infrastructure for better connection with customers.

#### Implementing the MOU

The inter-governmental MOU (which can be viewed at www.epd.gov.hk) contemplates the delivery of gas for electricity generation in Hong Kong from three sources:

- new gas fields planned to be developed in the South China Sea;
- the second West-to-East Gas Pipeline, bringing gas from Turkmenistan; and
- a Liquefied Natural Gas (LNG) terminal to be located in Shenzhen that will supply Hong Kong.

All of these three sources are essential to the continued adequacy and reliability of Hong Kong's electricity supply. Good progress was made on each in 2009. For example, preliminary arrangements are in place with China National Offshore Oil Corporation (CNOOC) and PetroChina International Company for long-term gas supplies starting early this decade. Significant strides were made in the permitting, design, and commercial arrangements for a new pipeline necessary to deliver natural gas from new sources in the Mainland. Work advanced on the preliminary design and PRC approval process for the Shenzhen LNG terminal, the shareholding structure for the terminal joint venture was agreed between PetroChina (51%), Shenzhen Gas (24%) and CLP (25%), and the future terminal use arrangements are taking shape. The formal submission of the EIA was made in December 2009, in cooperation with Environment Bureau. An area of concern remains the speed at which the HKSAR Government will be able to issue the environmental and other necessary permits for the gas pipeline from the Shenzhen LNG terminal to the gas receiving station at Black Point Power Station – timing is becoming tight if security of gas supply is to be ensured.

The MOU also contemplated the ongoing supply of nuclear electricity to Hong Kong. An extension of the Guangdong Daya Bay Nuclear Power Station joint venture and supply contracts was approved by the HKSAR Government in September. The contracts were signed in Beijing in the presence of the Vice President of the PRC, Mr. Xi Jinping and the Chief Executive of the HKSAR, Mr. Donald Tsang. These contracts will enable the continued supply of non-carbon emitting electricity to Hong Kong for a further term of 20 years from 2014.

How this business performance delivered **economic value** is on page 63.



O Signing ceremony for the Daya Bay contracts' extension

# Australia



#### **Business Environment**

The most significant challenge for the energy industry in Australia during the year continued to be the uncertainty around the final form of the Australian Government's CPRS and its potential impact on existing generators, particularly those operating brown coal-fired power stations.

In May 2009 the Government introduced its CPRS legislation to the House of Representatives. This largely reflected the proposals included in the White Paper that was issued in 2008. The legislation was passed by the lower house in June 2009, but was rejected by the Senate in August by the Coalition opposition, Greens and Independent Senators, who each resisted the CPRS for diverse reasons.

In October, following limited consultation with stakeholders, the Government reintroduced its CPRS legislation to the House of Representatives, including government-proposed amendments. This was again passed by the lower house and subsequently sent to the Senate for a vote. Facing certain defeat again in the Senate the Government agreed to further amend its legislation during November, based on widely publicised and difficult negotiations with a divided Opposition. The legislation prompted a leadership challenge within the Opposition, which was divided over whether to support the legislation. Following a change of leadership within the Liberal Party, the legislation was defeated in the Senate in December by the Opposition, Greens and Independents.

The Government has indicated that the amended legislation in the form most recently rejected is now its policy, and re-introduced the legislation into the Parliament for a third time at the beginning of 2010. The CPRS is currently expected to return to the Senate in May 2010. The Opposition continues to oppose the current form of the CPRS legislation, and instead supported a direct action policy on climate change, outside any emissions trading scheme. It is not yet clear the extent to which the outcome of the Copenhagen Summit on climate change, widely regarded in Australia as disappointing, will affect Government policy. Nothing about this situation is predictable. However, the result may be that the Government goes to an election later in the year with its current CPRS as policy. The political impasse means that in the short-term there will be ongoing uncertainty about the final policy framework.

In New South Wales (NSW) the State Government has continued with its electricity reform plan, although with some delay. This plan includes the sales of the State's three retail businesses – EnergyAustralia, Integral Energy and Country Energy – and the sale of generation development sites. The process excludes the sale of state-owned generators and instead opts for a complex trader model whereby the rights to the output of these state-owned generators are sold.

Investors were invited to submit Expressions of Interest in November 2009, with potential bidders expected to be short-listed in early 2010 under the original reform plan. TRUenergy lodged an Expression of Interest. In December, Kristina Keneally replaced Nathan Rees as Premier, the State's third since the last State elections in 2007. Shortly after her appointment, the Premier recommitted the State to the privatisation process. However, the State Government's ability and determination to see through the privatisation process, either in its present form or to the revised timetable, remains unclear.

As regards renewable energy, the Australian Government introduced legislative amendments to the 2% Mandatory Renewable Energy Target (MRET) in August 2009. The amendments, which became effective from 9 September 2009, increased the amount of electricity that retailers are required to source from renewable energy generation by 2020 to 20%, or 45,000GWh. The new Renewable Energy Target (RET) also absorbed existing and proposed State and Territory renewable schemes into one national scheme.

Under the previous MRET and the new RET, retailers are required to purchase increasing amounts of renewable energy using tradeable renewable energy certificates (RECs). The RET came into effect on 1 January 2010. It significantly expands the target for renewable energy usage to 12,500GWh in 2010, up from 8,100GWh in 2009.

Each REC is equivalent to one MWh of electricity generated. RECs can be produced by accredited renewable energy generators or are deemed to offset electricity consumption, as is the case for solar water heaters. RECs must be surrendered to the Office of the Renewable Energy Regulator to show that each retailer is meeting the RET target and therefore contributing to the development of additional renewable energy in Australia. In 2009 TRUenergy surrendered 555,000 renewable certificates, which corresponded to 3.91% of the company's total Australian sales. TRUenergy holds power purchase agreements (PPAs) with major wind farms and bioenergy plants which provide it with additional ongoing RECs. During the year the price for RECs fell substantially and the Council of Australian Governments (COAG) initiated a review of the factors impacting the market. It was widely considered that a large uptake of residential solar hot water systems was a major contributing factor.

#### Performance

#### Asset Management

The 420MW combined cycle gas-fired Tallawarra Power Station began commercial operations on 23 January 2009 and officially opened on 31 March. Following unscheduled outages in the early stages of operation, the plant has generally performed well.

Total generation from Yallourn Power Station during 2009 set a new record for a calendar year with gross generation totalling 11,641GWh. This follows the upgrade and overhaul of Unit 2 in March 2008. TRUenergy sought government approval for a re-alignment of the boundaries for the Maryvale field within the Yallourn coal mine. The re-alignment will allow coal that is closer to the surface to be mined. This will mean that less overburden has to be removed from the mine. The realignment will allow significant cost savings and will reduce the overall carbon emissions from mining compared to the original mine alignment. Yallourn was still awaiting a final decision from the State Government at the time of going to print.

The Hallett Power Station operated with a start reliability of 97% against a plan of 96% during 2009 with a high capture of the peak pricing in South Australia to support the TRUenergy portfolio. During the year a project to increase the output of Hallett during hot weather was approved and implemented. The objective was to increase Hallett's output at an ambient temperature of 40°C by 20MW by fogging the air inlet of the gas turbine. On 16 December the new equipment was tested with the results corresponding to more than a 22MW increase at the project's reference conditions.

The Iona Gas Plant performed well during the year, ensuring consistent and reliable supply of gas. A key measure of good performance is safety – Iona reached a significant safety milestone in July when it achieved 10 years without a lost time injury. In September the plant was granted a five-year licence as a major hazardous facility, following submission of a safety case and external assessment of the plant's safety and management systems. The Iona Gas Plant expansion project, which aims to increase daily processing capacity from 320 terajoules to 500 terajoules and gas storage capacity from 12 petajoules to 22 petajoules, is moving to completion. The additional storage capacity was completed by December and Iona is accepting additional gas. Full commissioning and performance testing of compression equipment is scheduled to occur shortly.



O TRUenergy's Tallawarra Power Station

#### **Business Performance – Australia**

Asset/Station		Rating (MW)		neration GWh)	Util	isation* (%)		lability* (%)	•	erating ours
	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008
Yallourn Power Station	1,480	1,480	11,641	11,422	89.8	87.9	90.0	89.4	8,070	8,015
Hallett Power Station	180	180	32.88	21.5	2.1	1.4	97.8	96.4	2,937.5	1,840.7
Tallawarra Power Station (since 23 January 2009)	420	N/A	1,853	N/A	53.6	N/A	88.4	N/A	6,146	N/A
	Capacity Throughput (Terajoule / Day) (Petajoule)		5 1	Utilisation (%)		Availability (%)		Compressor Hours		
	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008
lona Gas Storage Facility	320	320	44.3	43.8	38	37	93.5	92.3	24,680	24,134

\* 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.

#### Retail

Our efforts to enhance our customer service are described in "CLP and our Customers" on pages 24 to 25. Here we focus on the underlying business implications of the work we are doing in our retail business.

TRUenergy launched a Retail Profit Improvement Programme in 2009. The aim of the programme is to coordinate, prioritise and fast-track key initiatives aimed at improving the profitability of the retail business. The programme should deliver meaningful savings and earnings enhancement towards sustained annual profit improvement by 2013. The business has made good progress towards meeting this target. Key improvements delivered through this programme have included:

- initiatives to reduce revenue leakage;
- management of credit risk; and
- process changes to ensure retention of our most profitable customers.

TRUenergy has focused strongly on the way it manages retail credit risk. There have been improvements to our processes at the point of sale, as well as in our collections department. As a result the business expects lower bad debt write-offs in 2010.

In January 2009, Victoria fully deregulated energy pricing. This allowed our prices to better reflect the cost to serve customers. TRUenergy also substantially changed its retail pricing strategy for South Australia, the Australian Capital Territory, Queensland and NSW by creating our own market-based tariff, rather than one reflecting the government tariffs. This improved profitability in these states.

Development of a new retail customer service and back office information technology platform (we call this Project Odyssey) is underway. A comprehensive review of the functionality and processes built to date was undertaken during the year. That review highlighted the need for further work on both the proposed platform design, as well as the quality of data in our existing system, to support a smooth transition. As a result, we agreed with IBM on a new delivery timeline, including formal customer pilot testing. This agreement has led to improved resources being made available by the suppliers to the project. Nonetheless, Project Odyssey remains a challenging exercise, which we are supervising closely. In the event of further slippage beyond an end-2010 delivery of the first phase, we shall need to review the viability of the current system solution.

#### **Renewable Energy**

The Paralana geothermal project deep well in South Australia was successfully cased and cemented to a depth of 3,725 metres. The Paralana joint venture is led by Petratherm and includes TRUenergy and Beach Energy. Completion of the drilling programme was slower than anticipated because the rock formations below 600 metres were significantly harder than expected. Following well completion, evaluation of the well was undertaken using techniques which allows us to better determine the long-term well temperature and the viability of the project as a geothermal source. Assessment of data in early December strongly indicated natural fractures below 3,400 metres. Expectations are that the target temperature can be achieved. Well completion and release of the special rig occurred late in December. The joint venture will undertake testing and stimulation of the zones below 3,400 metres during 2010.

In August, Roaring 40s announced that contracts and financing for the 111MW Waterloo wind farm project in South Australia were in place. The turbine manufacturer, Vestas, has begun supplying the 3MW turbines and has entered a long-term operating and maintenance agreement with Roaring 40s. Major civil and construction works are well advanced. The wind farm, involving 37 turbines, is expected to be fully commissioned in late 2010. This will be Roaring 40s' fourth wind farm in Australia.

Wind Farm	Installed Capacity (MW)	Number x Wind Turbine Size	Generation at Farm Gate (GWh)		Ava	ailability (%)	Wind Speed (m/s)		
			2009	2008	2009	2008	2009	2008	
Bluff Point	65	37 x 1.75MW	231.6	217.7	93.8	96.5	9.2	8.8	
Studland Bay	75	25 x 3MW	244.9	215.5	95.0	98.3	8.7	8.5	
Cathedral Rocks	66	33 x 2MW	184.9	202.7	93.0	97.0	8.3	8.1	

Availability at both Bluff Point and Studland Bay wind farms was lower than the previous year mainly due to a gearbox maintenance programme. Production was assisted by the removal of a transmission constraint in May 2009 and higher average wind speeds. Production from Cathedral Rocks was lower than the previous year due to transmission constraint and lower availability, in part due to a turbine fire in February 2009.

Solar Systems, the solar technology development company in Australia in which CLP holds a 20% equity stake, had difficulty raising further capital to enable the continuous development and eventual commercialisation of its solar technology. Although Solar Systems' technology shows technical promise, its fund-raising efforts took place in a very challenging financial market, particularly for start-up solar companies facing the difficulties of obtaining financing for large scale projects, uncertain valuations and increased competition from established solar companies, who have reduced their margins in response to the recent demand slowdown. We did not believe that it was justifiable for CLP to continue funding a technology business without an additional strategic or financial partner to share the ongoing development risks. Therefore, in accordance with our prudent approach towards our financial accounts, in our Interim Report we made a provision for the investment in Solar Systems resulting in a net loss to the Group of HK\$346 million. In September, Solar Systems was placed in voluntary administration. In February 2010 Australian listed company, Silex Systems Ltd, in a statement to the Australian Stock Exchange, advised that it had entered a conditional agreement to acquire the Solar Systems assets from the company's Administrators and that subject to finalisation of various arrangements, completion was expected to take place in mid-March 2010.

The placing of Solar Systems into voluntary administration in 2009 was a setback for our move towards solar energy. We will take a more cautious approach to future technology investment opportunities which involve early-stage technology. However we will continue to look at solar opportunities both as an investor and operator. While we have lodged an interest in the Federal Government's Solar Flagship programme, we will only take forward any investment if we are satisfied that the maturity of the chosen solar technology, and the level of government support, is sufficient to provide the necessary level of confidence in the commercial viability of any project.

#### **Business Development**

Permitting for a Tallawarra Stage B gas-fired power station is now in its final stages with a submission completed by TRUenergy following public exhibition, as well as review and comment on the proposed development by the Department of Planning and other statutory bodies, including the Department of Environment and Climate Change, the Civil Aviation Safety Authority and the Wollongong and Shellharbour Councils.

Initial site assessment and concept study work has been undertaken for a gas-fired power station at Yallourn. This allowed us to better understand the development and site challenges associated with developing a co-located integrated gasified combined cycle plant and identifying a separate suitable site at Yallourn for a gas-fired combined cycle plant.

TRUenergy undertook a five-well exploration programme for coal seam methane (CSM) across two permit areas in southern Queensland as part of our joint venture with Rawson Resources and Energetica Resources. The wells found coal seams, with one of the permit areas showing some prospects for CSM. Evaluation of potential next steps is now under consideration.

TRUenergy entered into a MOU with Ignite Energy Resources (IER) enabling IER to develop a commercial demonstration plant of their direct coal-to-oil and upgraded dry coal processes using the brown coal at Yallourn. IER's supercritical water technology transforms brown coal into high-value oil and coal products. A study commissioned by IER predicts that CO<sub>2</sub> emissions could be reduced by more than 40% by using IER's upgraded coal for power generation, compared to brown coal (carbon capture would further reduce greenhouse gas emissions). The first demonstration unit is expected to be operating in 2010.

In January 2010, TRUenergy was offered funding under the Victorian Government's Energy Technology Innovation Strategy (ETIS) for pre-feasibility studies for three Carbon Capture and Storage (CCS) projects. The projects include work in partnership with Southern Company to assess a low emissions integrated gasification combined cycle plant with pre-combustion carbon capture at Yallourn, a multi-user carbon storage and transport system in Gippsland, which is being undertaken with Carbon Store Australia and Mitsubishi Corporation, and a proposal in conjunction with Loy Yang Power and Mitsubishi Heavy Industries and Worley Parsons to demonstrate large scale post-combustion carbon capture at Loy Yang A Power Station.

How this business performance delivered **economic value** is on page 64.

**Mr. Brad Page** Chief Executive Officer Energy Supply Association of Australia

Mark Takahashi Group Director & Chief Financial Officer

Following the Global Financial Crisis, capital has been more difficult to secure and costs have been higher. We know that electricity supply is a growth industry in the Asia Pacific region and will demand enormous new capital allocation over the next few decades. What are the key settings you will look for in deciding where to allocate your capital?

We look at several factors in allocating capital to potential investments.

First, we seek to ensure that the investment is consistent with the overall strategic direction of the Group. This takes into account the individual country strategies as well as a perspective on the impact of total investments on the overall carbon intensity of our business.

Secondly, we look for investments where we have a reasonable degree of control and we have the opportunity to utilise our capabilities. We believe our skills, particularly in construction and operations, help differentiate CLP and ultimately result in better underlying performance.

Thirdly, we look at the project financial returns associated with potential investments vis-à-vis the underlying risk profile. We traditionally analyse investments on a discounted cash flow basis relative to our risk-adjusted cost of capital.

Fourthly, we consider the local regulatory risk and policy settings, in particular consistency in policy settings. In this regard, the current uncertainty in Australia is resulting in less international capital flowing into long-term investments in the sector.

# **Chinese Mainland**



### **Business Environment**

In response to the economic downturn, the PRC Government deployed several measures during 2009 such as an RMB4 trillion stimulus package and a relaxed monetary policy. The economy appears to be recovering with GDP growth in 2009 of 8.7%.

In line with underlying economic conditions, electricity demand bottomed-out in August 2009 with a sustained recovery in electricity demand from then until December. By the year end the total power consumption in 2009 was 5.96% higher than the previous year.

On the supply side, installed generating capacity showed a 10.23% year-on-year increase during 2009, reaching 874GW. The combination of over-capacity, slow economic recovery and reduced exports meant that the average utilisation rate of power plant in the Mainland declined in comparison with 2008.

The availability of hydro generation also has a significant impact on the use of thermal plants, such as CLP's Fangchenggang Power Station. Unlike 2008, which was a "wet" year with abundant hydro generation, 2009 was a "dry" year, with a corresponding reduction in hydro generation output. Although such things are by nature highly uncertain, 2010 is forecast to be between "average" and "dry" with corresponding implications for thermal plant output.

In the first half of 2009, production of raw coal in China increased by 8.7% year-on-year. With coal supply and demand achieving reasonable equilibrium in the near term, coal prices (both contract and spot prices) fell during 2009. They are expected to remain relatively stable with a slight increase in 2010 compared to the highly volatile prices of 2008.

In November, the Central authorities announced a nationwide average increase of RMB2.8 fens/kWh in the electricity tariff for non-residential use. The benchmark tariffs for coal-fired plants will increase in 10 provinces and will reduce in seven provinces. The impact of this tariff adjustment to CLP is minimal. The timing and magnitude of the next coal price-linked tariff adjustment remains uncertain.

Also in November, the PRC Government announced a target of a 40-45% cut in China's carbon intensity relative to economic output by 2020, from the 2005 level. Emissions standards are steadily being tightened as Government continues to strengthen environmental protection measures. These measures will increase the costs of conventional coal-fired generating assets in the PRC.

## Performance

#### Asset Management

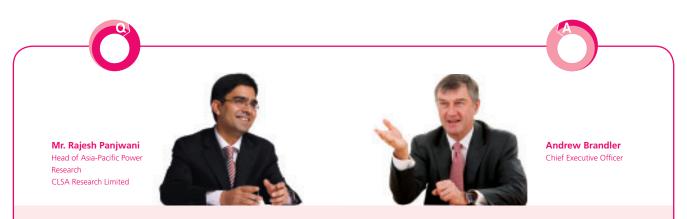
Our Fangchenggang Power Station (2 x 630MW supercritical coal-fired units) entered its second year of operation with reliable plant performance. During the first half of 2009, the despatch of Guangxi's coal-fired plants was adversely affected by both a slump in electricity demand as a result of the economic downturn and a surplus of hydropower supply due to high rainfall. The situation turned around in July 2009 on the back of the rebound of the domestic economy. Coal-fired generation increased significantly due to the increase in power demand and reduced hydro generation, with both Fangchenggang units operating at almost full load in the fourth quarter of 2009. We believe the upward trend of utilisation is sustainable for 2010, due to the continuing recovery of the Guangxi economy.

#### **Business Performance – Chinese Mainland**

The Daya Bay Nuclear Power Station has operated safely and efficiently since commissioning in 1994. In 2009, this contributed about 30% of the electricity supplied to our customers in Hong Kong. Continuous monitoring since Daya Bay started operations has shown no significant effect on the local environment. The excellent operating, safety and environmental performance of Daya Bay has given us the experience, expertise and confidence to seek to develop our involvement in the Chinese nuclear power industry through a strengthened relationship with China Guangdong Nuclear Power Holding Company, Limited, our longstanding partner at Daya Bay.

Our cooperation with Shenhua Group through CSEC Guohua is progressing well. The construction of two 1,000MW coal-fired units at Suizhong II in Liaoning Province is on schedule and commercial operation is planned for the second quarter of 2010. At the joint venture level, CLP completed its final injection of registered capital in June 2009, so that its equity interest in CSEC Guohua now stands at 30%.

Our Anshun II Power Station (2 x 300MW coal-fired units) has operated well since commissioning in 2003. Operating hours and profitability rose towards the end of 2009, in line with the overall economic recovery. Anshun II's operating and financial performance has been good against the background of high utilisation levels and low coal prices in Guizhou Province which has extensive coal resources. However, there is a complicated and sub-optimal operating regime at Anshun II, which shares common facilities and despatch arrangements with adjoining Anshun I (which has different owners). A restructuring of the ownership arrangements for the two projects, either through sale or merger, is actively being explored in order to allow both stations to operate in the most efficient manner and to realise the maximum value for their respective shareholders.



The proposed CPRS in Australia is likely to have an adverse impact on your earnings. Utilities in Europe are already being impacted by carbon taxes. When do you think developing countries like China, India, Thailand etc. will impose carbon taxes? How is the company preparing to face that scenario?

With the UNFCCC Climate Summit in Copenhagen producing few results, we are seeing more parties advocating carbon based taxes to speed up emissions reduction and to replenish government coffers. Denmark, Finland, Norway and Sweden introduced taxes back in the early 1990s. Ireland and France are likely to be next.

CLP has been monitoring the carbon tax legislation development processes within the Asia-Pacific region. Among the economies where we operate, the Chinese mainland has already gone through a few rounds of consultation. Taiwan has floated the idea of taxing all greenhouse gas emissions. India's Ministry of Finance also suggested introducing a carbon tax, but the government appears to be lukewarm about the idea.

If governments in the region decide to introduce a carbon tax, we urge them to ensure all revenues collected are earmarked for enabling the innovation, development and adoption of carbon-reducing or low carbon technologies. The taxes should be intended to encourage emissions reduction – achieving that will require proven, reliable and commercially viable low-carbon solutions.

Since carbon taxes are national policy decisions, CLP will continue to prepare for them by maintaining a balanced portfolio in every market that we operate and factoring the possibility of various taxes into our business planning. Our transition in the Chinese mainland towards lower carbon emitting generation is a particular example of this. The following table sets out the generally good levels of utilisation and availability achieved by our generating plant in the Mainland.

Station	Rating (MW)		eration GWh)		lisation (%)		ability %)	Oper Ho	5
		2009	2008	2009	2008	2009	2008	2009	2008
Daya Bay	1,968	15,662	15,430	95	93	96	93	8,428	8,221
Guangzhou Pumped Storage (Phase I)	1,200	1,331	1,589	13*	15*	92	88	2,931*	3,248*
Shiheng I and II	1,260	6,641	6,609	63	63	88	95	5,534	5,508
Heze II	600	3,326	3,311	63	63	90	88	5,544	5,518
Liaocheng	1,200	6,667	6,764	63	64	91	93	5,556	5,637
Yire	400	2,326	2,417	67	69	96	96	5,816	6,042
Sanhe I and II	1,300	6,920	6,502	61	57	93	95	5,323	5,002
Panshan	1,030 **	6,054	6,043	69	69	84	96	6,054	6,043
Suizhong I	1,600	9,408	8,317	67	59	83	75	5,880	5,198
Zhungeer II and III	1,320	5,919	6,522	51	56	93	93	4,484	4,941
Shenmu	220 ***	1,425	1,413	76	80	92	91	6,627	7,065
Anshun II	600	3,250	3,075	61	59	84	95	5,417	5,125
Huaiji	125	284	347	26	36	87	91	2,267	3,185
Fangchenggang	1,260	5,227	4,055	47	38	91	82	4,149	3,380
Dali Yang_er****	50	71	N/A	46	N/A	98	N/A	1,421	N/A

\* Generating and pumping modes.

\*\* Unit 2 of Panshan completed a capacity upgrade modification in December 2009 to increase the nameplate rating from 500MW to 530MW.

\*\*\* The total installed capacity of Shenmu increased from 200MW to 220MW due to upgrades in 2009.

\*\*\*\* Commissioned in September 2009.







O Blade-raising at Qian'an, CLP's first wholly-owned wind farm in China

#### **Business Performance – Chinese Mainland**

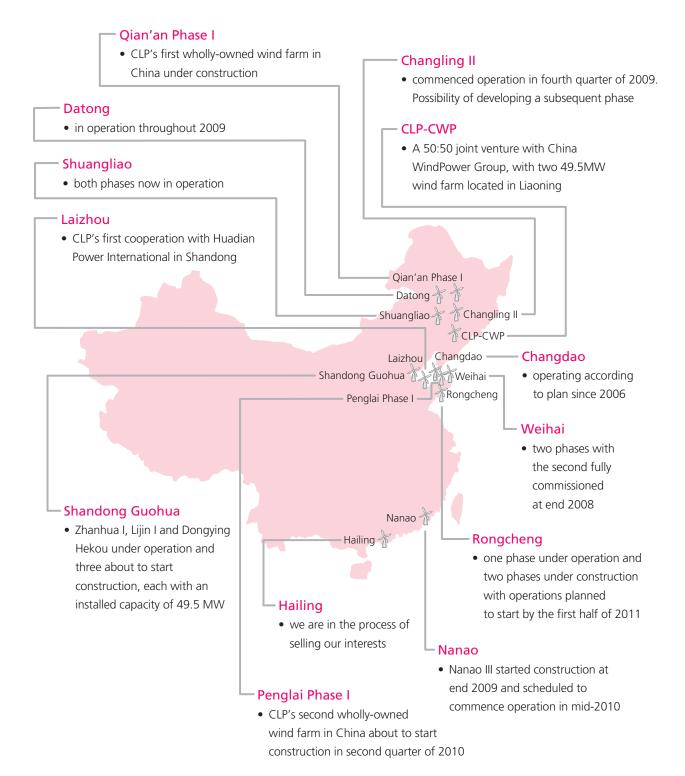
The value of our generating portfolio in the Mainland stems not only from high levels of reliability and availability, but from the security offered by diversified fuel sources and the securing and maintaining of approved tariff levels from the relevant authorities. The following table illustrates that, viewed as a whole, this generating portfolio is characterised by reasonably robust tariff arrangements and fuel supply arrangements.

Station	Approved Tariff (fen / kWh)	Status of Tariff	Fuel Type	Future Development/ Outlook
Daya Bay	Determined at Guangdong Nuclear Power Joint Venture Co., Ltd. according to its JV Contract with consideration to the competitiveness of its electricity	Implemented	Uranium – various supplies	Fuel supply adequate
Guangzhou Pumped Storage (Phase I)	Service charge based on capacity right	Mechanisms agreed under long-term agreements	Pumped storage between dedicated reservoirs	
Shiheng I and II	48.75 for I & II	Shiheng I obtained 1.5 fens FGD tariff	Coal – Shandong and Shanxi mines	Adequate coal supply with slightly increased price
Heze II Liaocheng	44.69 44.69	Heze II obtained 1.5 fens FGD tariff	Coal – Shanxi and Henan mines	
Yire Sanhe I and II Panshan Suizhong I Zhungeer II and III	47.68 41.03 for I 38.64 for II 44.58 39.84 27.95 for II 28.49 for III	Suizhong I obtained 1.5 fens FGD tariff but lowered by 0.38 fens from November 2009 onwards	Coal – Mainly supplied by Shenhua from Shaanxi and Inner Mongolia	Adequate and stable coal supply
Shenmu	36.45	Obtained 1.5 fens FGD tariff and increased by 1.0 fens from November 2009 onwards	Coal – Local mines	Adequate coal supply with slightly increased price
Anshun II	33.71	Increased by 0.2 fens on FGD tariff adjustment from November 2009 onwards	Coal – Guizhou local mines	Adequate coal supply with slightly increased price
Huaiji	Tariffs range from 21.62 to 59.57 fens according to the wet or dry season and depending on peak / non-peak generation	Higher tariffs achieved by use of reservoir regulating capability	Small hydropower	Renewable energy source
Fangchenggang	43.57	2009 actual tariff is 36.8 fens due to tariff concession to high-energy consumption enterprises	Imported coal	Long term coal supply agreement commenced in January 2010 will substantially improve the coal supply stability
Dali Yang_er	Tariffs range from 19.40 to 24.40 fens according to the wet or dry season generation	Tariff approved in November 2009	Small hydropower	Renewable energy source

#### **Renewable Energy**

The major focus of CLP's renewable energy activities in 2009 was the expansion of our wind energy business. We used three channels to increase our presence in this sector, all of which showed growth during the year, as described on the next page. These channels are:

- a range of minority interests in individual wind farms;
- our participation in CGN Wind; and
- the development of wholly-owned wind projects.



CLP acquired a 50% equity interest in a wholly-owned subsidiary of China WindPower Group which owns two wind farms in Fuxin City, Liaoning Province with a total installed capacity of 99MW (CLP's equity capacity: 24MW). We also acquired Roaring 40s' stakes in wind farm projects in the Mainland. Capacity growth from CLP minority-owned projects is expected to come primarily from subsequent phases of these ex-Roaring 40s' wind farms.

The Ministry of Commerce of the People's Republic of China (MOFCOM) approved CLP's acquisition of 32% of CGN Wind. The injection of initial equity of HK\$1.2 billion is expected in early 2010. As the growth targets and strategy of CGN Wind became significantly more aggressive than originally expected, CLP has decided not to inject additional equity, and instead accept a dilution of our holding in CGN Wind.

The start of construction of Qian'an Wind Farm Phase I (49.5MW) in September 2009 was a significant milestone. This is CLP's first wholly-owned wind project in China. The expertise and experience gained on this project will be the base from which we can move on to expand our portfolio of wholly-owned wind farms.

In addition to wind projects, CLP has a substantial presence in hydro power. Our major project is a 330MW project at Jiangbian in Sichuan Province. This is targeted for commissioning in 2011. We are constructing this project in a location subject to earthquakes, landslides and flooding. We also experience rock bursts within the tunnels and power house. These occur without warning on recently excavated surfaces, shooting fragments of rock into the working areas. As a result construction has been delayed, but we have reprogrammed work as far as possible to mitigate the effect on the overall project schedule. On 1 February 2010, CLP agreed with its joint venture partner, Sichuan Basic Power Company Limited (Basic Power) to acquire Basic Power's 35% interest in the Jiangbian hydro project. Upon completion of the acquisition, CLP will own a 100% interest in the Jiangbian hydro project company's business.

Dali Yang\_er in Yunnan Province is a 49.8MW hydro project we acquired part way through construction and which entered service in the second half of 2009. The acquisition of a partly complete project did not turn out to be a good approach and we found various problems with construction quality. The start of operation was delayed and costs increased. Nonetheless, it was commissioned in September 2009 and the on-grid tariff was approved in November 2009. At our Huaiji Project in Guangdong, the total generation for the 12 small hydro power stations in 2009 was 18% lower than that of 2008, mainly due to reduced rainfall in 2009.

How this business performance delivered economic value is on page 64.



There has been intense media attention on the rejection of China wind farms for Clean Development Mechanism (CDM) qualification, what are your views and how do you think that would impact CLP's renewable strategy in China?

In December 2009 the Executive Board of the CDM (EB) held its 51st meeting, in which CDM registration for 10 China wind farms was rejected because these projects failed to substantiate the additionality of the project activity. However, at the same meeting the EB agreed to register, subject to satisfactory corrections, 10 PRC wind projects and to review 14 other PRC wind projects for qualification of CDM registration at its upcoming meeting in February 2010, rather than expressing an outright rejection. Our assessment is that there is a certain level of uncertainty in CDM registration for Chinese wind projects and that the EB has been getting tighter in the scrutiny of CDM registration.

A few of CLP's PRC wind projects are in the process of applying for CDM registration. If the registration and approval process is delayed, there will certainly be some impact on the returns for our wind projects (although a short delay would have only a limited impact). We will continue to pursue renewable energy projects, particularly wind power, in China, unless there is abrupt negative change to CDM or carbon-related revenues.

# India



## **Business Environment**

During the global economic crisis, Indian GDP growth dropped to 6% in 2009, compared to 9% the previous year. However, the impact on the power sector was minimal due to a sustained shortage in electricity supply, since the addition of new generating capacity continues to trail the growth in electricity demand. The per capita electricity consumption in India remains low, being between a quarter and one-fifth of that of China for example. The gap between supply and demand at peak levels remains at around 14% nationwide.

The Indian stock market showed signs of recovery during the year with the Bombay Stock Exchange Sensex up 100% at the end of 2009, compared to its level in October 2008. The combination of market recovery and positive investor sentiment towards the Indian power sector was evidenced in the second half of 2009, when the initial public offerings (IPO) of three major power sector players were heavily over-subscribed.

The Indian Rupee steadily appreciated against the U.S. dollar, rising 10.6% between March and December 2009. Although interest rates declined in the same period, they are showing signs of hardening in the first quarter of 2010, including as a result of policy changes by the Reserve Bank of India to control the risk of inflation.

The Union Government is continuing to promote a competitive bidding model for new electricity infrastructure projects, both in generation and transmission. The authorities and domestic power producers are showing a preference for merchant generation projects, as opposed to those supported by long-term PPAs at set tariff rates.

Both the Union Government and state governments are making available transmission projects for private sector investment through competitive bidding. Such projects, especially when located in progressive states, offer openings for small to medium size investments (HK\$600 million to HK\$3 billion) and are attractive vehicles for project financing, possibly with gearing levels of up to 80%.

2009 has also seen a more pragmatic approach in the formulation of renewable energy policy, with a focus on long-term sustainability and growth.

In the new Indian cabinet, formed after the 2009 general elections, the Ministry of New and Renewable Energy has been accorded the rank of a full cabinet minister with greater executive powers than before. In April 2009, the cabinet approved the National Solar Mission which aims to generate 20,000MW of power by 2022. About US\$900 million has been sanctioned by the Government for use in various aspects of solar power development (including research and development). In September 2009, India's Central Electricity Regulatory Commission (CERC) announced new regulations that include a system of feed-in tariffs for renewable energy, incentivising both wind and solar energy. This was closely followed by the announcement of the "Generation-based Incentive (GBI) policy" in December 2009 which encourages independent power producer (IPP) projects. The GBI scheme is applicable only to those IPPs whose capacities are commissioned for sale of power to the grid. Under the policy, investors, apart from receiving the tariff as determined by the respective State Regulatory Commissions will also receive an incentive of Rs.0.50 per unit of electricity for a period of 10 years, provided they do not claim the benefit of accelerated depreciation. This policy is expected to give a major boost to the wind power sector in India and promote higher efficiencies in wind electricity generation.

#### Performance

As in 2008, our activities centred on three areas: the successful management of our existing power station at GPEC, the growth of our renewable energy investments and progress on the greenfield coal-fired power station project at Jhajjar. In addition, we explored opportunities in transmission projects.

#### GPEC

A longstanding dispute, where Gujarat Urja Vikas Nigam Ltd. (GUVNL) is claiming repayment of amounts totalling around HK\$1,207 million for deemed generation, is working its way through the Indian legal and regulatory system. In February 2009 the Gujarat Electricity Regulatory Commission (GERC) made an adjudication on GUVNL's claim. The GERC dismissed a substantial amount of that claim. However, the GERC upheld part of GUVNL's claim in relation to "deemed generation incentive" paid to GPEC when it declares availability to generate on naphtha, rather than gas. The total amount of the claim allowed by GERC against GPEC was thereby reduced to around HK\$482 million. Both GPEC and GUVNL appealed the GERC decision to the Appellate Tribunal for Electricity (ATE) of India. The ATE's judgment was delivered in January 2010 and confirmed the GERC decision. We are appealing to the Supreme Court of India in respect of that proportion of GUVNL's claim against GPEC which was allowed by the ATE. We have been advised that we have a strong case in this dispute – which is also our own assessment. GUVNL's claim is treated as a contingent liability under Note 33 to the Financial Statements.

During the year, the GPEC plant operated at a high level of availability of 92.94%. GPEC delivers all electricity generated to its off-taker, GUVNL. GPEC's high operating standards were recognised when it was awarded the "Five Star NOSA Rating" status, having scored 94.85% in the NOSA 4th Grading Audit of the SHE Management System.

Station	Rating (MW)	Generation (GWh)			Utilisation (%)		Availability (%)		Operating Hours	
		2009	2008	2009	2008	2009	2008	2009	2008	
GPEC	655	4,602	4,102	80.24	71.3	92.94	87.8	8,269	7,674	

Our efforts to secure long-term gas supply for GPEC led to a five-year contract with Reliance Industries Limited for 1.3 million cubic metres/day of gas. Long-term contracts for gas supply are now in place to meet 66% of GPEC's full load capacity.

#### **Renewable Energy**

CLP is the largest wind power developer in India, with a renewable energy portfolio, in operation and under construction, of 446MW.

The first phase of our Samana project (50.4MW) was commissioned in March 2009. Construction of Samana phase II (50.4MW) and Saundatti (82.4MW) is well underway, with commissioning expected in the first half of 2010. Construction is also in hand on our 113.6MW wind project at Andhra Lake in Maharashtra – the single largest wind project being developed anywhere by the CLP Group. This project is scheduled for completion in two equal phases by June and December 2010 respectively.



🔿 Theni wind project

All of these projects use wind turbines supplied by Enercon India, who also undertook the preliminary project development work. In line with our policy of diversified power equipment suppliers, in 2009 CLP entered into an agreement with Vestas for the development of a 99MW project at Theni in Tamil Nadu and construction is well advanced. This project is expected to achieve full completion in March 2010.

#### Jhajjar

We started construction of our 1,320MW domestic coal-based power plant in Jhajjar District, Haryana in January 2009, using equipment and other resources from PRC suppliers and contractors. We chose to use a PRC main contractor with previous experience in India. Initially, we encountered problems because increases in the cost of raw materials and unfavourable currency movements during the financial crisis impeded progress. As a result it became necessary to amend the contract price. Even so, the increased pricing reflected in the revised agreement is still well below international market levels. Financial documents for the project were signed with a consortium of Indian banks and financial institutions in September 2009 and the first draw-down was achieved in December 2009. Construction is progressing satisfactorily, with the first unit of the plant due for commissioning in December 2011, followed by the second unit in May 2012. Progress towards completion, on time and to budget was the major focus of management's attention in 2009. It will remain so during the year ahead.

#### **Transmission Projects**

There are considerable opportunities available for private sector investment in transmission infrastructure. CLP has been prepared to bid for such projects provided these correspond to our investment criteria, including:

- location in reforming states;
- favourable project returns;
- creditworthy off-takers;
- credible partners, especially engineering, procurement and construction (EPC) contractors; and
- the opportunity to take a majority stake.

Although we have extensive experience in the construction, operation and maintenance of our transmission network in Hong Kong, this would be a new venture for CLP in India. Our intention is to approach such investments on a "step-by-step" basis, first testing the concept and capturing the necessary experience, before deciding to move on to further projects in this sector. In line with that approach, we have identified a number of transmission projects coming up in the near term which appear to meet our criteria. In late 2009 we submitted a bid for two transmission projects in Rajasthan, in joint venture with Gammon India Ltd., a leading Indian engineering contractor. The results of the bid are still awaited.



#### What is your biggest execution challenge in the Indian market?

Two areas stand out above all else in India – issues of fuel security and land acquisition. As a country, we are hugely hydrocarbon deficient – whether one takes coal or gas, the position is very similar. And this is exacerbated by the fact that as consumers, we are still reluctant to accept international market prices for hydrocarbon fuels (and domestic coal and gas are both priced at significant discounts to the prevailing international prices). Similarly, power (and other industrial) projects in India often get bogged-down by issues relating to land acquisition. In the near-term, we see these as the pre-eminent execution challenges to the power sector in India.

# Southeast Asia and Taiwan



### **Business Environment**

CLP's business in the Southeast Asia and Taiwan markets comprises our longstanding investments in EGCO of Thailand and the Ho-Ping project in Taiwan, and also a pipeline of development projects including coal-fired projects in Vietnam and renewable projects in Thailand. The majority of these investments and development projects are held through OneEnergy, the vehicle that we jointly set up with Mitsubishi Corporation in 2006. During 2009 we restructured OneEnergy, such that while it remains a strong alliance for greenfield developments, the corporate organisation and overheads have been substantially simplified and reduced. The restructuring also provided more flexibility for the two partners to pursue acquisition opportunities as they arise.

The global financial crisis that started in 2008 affected electricity demand growth in most of the regional markets, leading to postponement and cancellation of requirements for new power generation capacities in our incumbent markets of Thailand and Taiwan. However, we believe that the medium to long-term prospects for the regional markets remain strong, as evidenced by the modest year-on-year increase in demand in Thailand towards the end of 2009, the continued supply shortages in the emerging markets of Vietnam and Indonesia, and The Philippines government's successful sale of a number of power generation assets and contracted capacity.

While CLP has pursued, and will continue to pursue, strategic acquisitions to strengthen its regional business, its advantages lie in greenfield developments where we can manage the whole cycle of project identification, development and construction through to operations. To be successful in new greenfield projects, CLP, like other developers, will need competitive equipment and construction costs, long-term and low-cost financing, and fuel supply management capabilities. CLP has successfully built the coal-fired Fangchenggang power plant in China, which went on line in 2007 and 2008 using Chinese equipment and service providers. Based on this experience, we have also used a Chinese EPC contractor for the coal-fired Jhajjar project in India which is currently under construction. We believe that CLP's experience with Chinese equipment in China and outside provide us with an edge in our efforts to achieve competitive EPC solutions for new power plant projects that we pursue within the Southeast Asian region.

The fuel markets of coal and natural gas have been highly volatile in recent years. Although prices have dropped significantly from the highs recorded in mid-2008, they are still well above the historical averages. It has also been forecast that in the medium to long-term demand will remain strong, leading to the possibility of a continued rise in fuel costs. Our experience gained over the years and the relationships built with key suppliers will be a significant advantage in the planning and management of fuel supply for power plants that are operating, or projects that are being developed.

The Bureau of Energy and Taipower asked IPPs, including Ho-Ping, to review the possibility of revising the formulae for calculating capacity charges under their respective PPAs by indexation to the prevailing Taiwan Government bond yields. The IPPs raised objections to this change, but nevertheless appointed advisors to review the matter and to formulate a formal response to the Government in early 2010. CLP believes, and has expressed its position, that the contractual terms of the PPA need to be respected and enforced, and that any mid-term changes will affect investor confidence, especially of overseas investors. In 2009 Taiwan passed the Renewable Energy Act. This provides a mechanism for the Government to collect renewable energy levies from conventional fuel power generators to provide subsidies and higher tariffs for new infrastructure projects. Ho-Ping will be subject to the levy, but the legislation also provided for recovery of the levies through the tariffs charged to the energy users. The Government has also initiated discussions on carbon emission-related taxes, but no details or the timeline for implementation are yet available.

# Performance

#### Asset Management

All major power plants in our portfolio achieved good operational performance in 2009:

Station	Rating (MW)		eration Wh)		sation %)		ability %)	•	rating ours
		2009	2008	2009	2008	2009	2008	2009	2008
Ho-Ping	1,297#	9,793	8,632	86	76	92*	81*	7,550	6,655
EGCO/Rayong	1,232	3,059	2,342	28	22	95	91	2,483	1,901
EGCO/Khanom (KEGCO)	824	5,762	5,694	80	79	94	90	6,993	6,911
EGCO/BLCP	1,434	10,513	10,701	84	85	89	93	7,331	7,462

# Capacity used for purposes of its PPA

\* Guaranteed hours

All of the operating power plants have long-term PPAs with creditworthy off-takers.

Station	Off-taker	Off-take Arrangement	Duration / Remaining
Ho-Ping	Taipower	PPA	25 years / 17 years
EGCO / Rayong	Electricity Generating Authority of Thailand (EGAT)	PPA	20 years/4 years
EGCO/KEGCO	EGAT	PPA	15 and 20 years/1 to 6 years
EGCO/BLCP	EGAT	PPA	25 years/21 to 22 years
EGCO/Kaeng Khoi 2	EGAT	PPA	25 years/22 to 23 years
EGCO/small power projects	EGAT and industrial customers	PPAs with EGAT and commercial contracts with industrial customers	21 and 25 years for EGAT PPAs/9 to 20 years
EGCO/Quezon Power	Manila Electric Company, The Philippines	PPA	25 years / 16 years
EGCO/Mindanao small power projects	National Power Corporation, The Philippines	PPAs	18 years / 5 to 6 years

Following the purchase of a 23.4% interest in the Quezon Power coal-fired project in The Philippines in late 2008, EGCO completed the purchase of a further 2.6% in early 2009. The project brought immediate accretive earnings to the EGCO group. In December 2009, CLP sold its 50% interest in Power Generation Services Company Limited (PGS) in Thailand to EGCO and the remaining 10% interest to Banpu Power. PGS is the operator of the BLCP Power coal-fired project, and EGCO had previously purchased its 50% interest in BLCP Power Ltd. from CLP in 2006. EGCO also completed the transfer of the entire Rayong power plant business, previously undertaken by a separate wholly-owned subsidiary, into EGCO. The transfer brought cashflow and tax benefits to the EGCO group.

Commissioning of the Nam Theun 2 hydro project in Laos, in which EGCO owns 25%, was originally scheduled for December 2009. However, delays in construction works and technical problems encountered during testing pushed back the commercial operation date to the first quarter of 2010. The project company will be subject to liquidated damages charged by the major power off-taker EGAT because of the delay. These will be largely compensated by liquidated damages to be received from the EPC contractor.

The coal-fired Ho-Ping project in Taiwan has been affected in past years by plant problems and extreme weather conditions, which have included turbine blade failures, coal storage domes damaged during strong typhoons, and heavy rain affecting the transportation of wet coal in the damaged domes. These problems were tackled painstakingly by Ho-Ping, with technical support from CLP, and have been largely resolved with turbine blade replacements and complete rebuilding of stronger coal domes in 2009. This has enabled Ho-Ping to achieve record operational results for the year in terms of plant availability and generation. Under the PPA with Taipower, Ho-Ping's annual energy tariff is adjusted to reflect Taipower's actual prior year average coal costs. Consequently, Ho-Ping's 2009 energy tariff reflected the surge in coal prices sustained by Taipower during 2008. This together with the operational performance and more reasonable coal price in 2009 culminated in a year of record earnings for Ho-Ping. We expect that the earnings for 2010 will return to a more normal and sustainable level, provided Ho-Ping continues to maintain its availability and manage its fuel costs.

#### **Development Activities**

During 2009, our major development activities were focused on progressing two coal-fired projects in Vietnam and renewable projects in Thailand. CLP, Mitsubishi Corporation and local partners established a project company in 2007 to develop the 2 x 660MW coal-fired Vung Ang 2 project located in Central Vietnam. In 2009 the focus was on finalising the engineering design and commencing the EPC tendering process. The project company has engaged a team of financial, legal, tax and accounting, technical and environmental advisors to assist in the upcoming financing discussions and PPA negotiations. CLP, Mitsubishi Corporation, state-owned electricity company Vietnam Electricity and a local shareholder have also joined forces to develop the 3 x 660MW coal-fired Vinh Tan 3 project in Southern Vietnam. The project company, organisation and staffing were set up in 2009. The project company has initiated the feasibility study and environmental and health impact assessment.

#### **Renewable Energy**

In line with the overall objective of contributing to the CLP Group's aim to reduce the carbon intensity of its generating portfolio, we have in recent years explored the possibilities for investment in renewable energy in Southeast Asia and Taiwan. The Thai authorities have announced a supportive regime for solar projects. This includes permitted tariff levels which may allow solar energy to be viable in circumstances where it would otherwise be prohibitively expensive, when compared with conventional, higher carbon-emitting forms of generation. In response to this initiative from the Thai authorities, CLP in partnership with Mitsubishi Corporation and EGCO has been developing a 55MW solar project. Discussions with the EPC contractors are at an advanced stage. CLP and EGCO are also studying the development of a 60MW wind project, for which wind resource measurement is ongoing.

How this business performance delivered **economic value** is on page 65.



O Ho-Ping Power Station, with repaired coal storage domes