

Brief September 09

Developing a low-carbon economy in China: the contribution from British business

Guy Dru Drury | chief representative | CBI China
email: Guy.DruDrury@cbi.org.uk

Creating a low-carbon economy in China will be vital if the country is to achieve its ambitious environmental targets. As China develops a new Five Year Plan, the role of government and business in increasing energy efficiency and promoting low-carbon and training will be crucial in continuing efforts to transition to a low-carbon economy. And CBI believes that this transition will also make China a better place to do business.

CBI members are committed to building a competitive global low carbon economy as set out in the CBI Climate Change Task Force report, *Climate change: everyone's business*, published in November 2007.¹ As responsible international corporate citizens, our members are committed to increasing the energy efficiency of their operations in China and to lowering the carbon content of their energy sources in the country.

It is clear from the case studies of British businesses in China featured in this brief that supporting the development of a low carbon economy brings firms considerable financial and carbon savings, improved reputation and new business opportunities. These are benefits not to be missed, particularly in the current economic climate.

This brief highlights that:

- Work has already begun to build a low-carbon future in China
- Opportunities exist for business to make further cost and carbon savings
- Businesses can help stimulate consumer demand
- British companies are investing in low-carbon solutions in China

Work has already begun to build a low-carbon future in China

China's rapid economic growth over the past 30 years means that today it is the fastest-growing energy consumer in the world. This growth has been underpinned by a dependence on coal as the main source of power, which has contributed to making it the world's largest carbon dioxide (CO₂) emitter.² Experts predict that between now and 2030 China will account for about 40% of the world's growth in carbon dioxide emissions.³

At the same time, China is very vulnerable to changes in the climate. The *China Green National Accounting Study Report 2004*, published in 2006, calculated that the economic loss caused by environmental pollution in China was RMB511.8 billion (US\$74.9 billion), or just over 3% of its total GDP.⁴

The *National Assessment Report on Climate Change*, also published in 2006, concluded that rising emissions due to human activities are causing severe global climate change and that China has to actively tackle the negative impacts of this change.⁵ The report forecasts that by 2020 the average temperature in China will rise by between 1.3 to 2.1 degrees Celsius and by between 2.3 to 3.3 degrees Celsius by 2050. Northern China is becoming increasingly vulnerable to drought, while southern China is suffering from more serious floods. The report also predicts that by 2030 the overall crop productivity in China could decrease by between 5% and 10%, if no action is taken.

Recognising this threat, the Chinese government has set ambitious targets to reduce pollution, increase energy efficiency, promote energy security, and increase the proportion of renewable energy in its energy mix in its 11th Five-Year Plan which runs from 2006-2010.

(See Exhibit 1 for more information)

Exhibit 1: China's 11th Five-Year Plan (2006-2010)

China's 11th Five-Year Plan sets high environmental objectives to be fulfilled by 2010:

- Energy consumption per unit of GDP down 20%;
- Water consumption per unit of industrial added value down 30%;
- Rate of comprehensive use of solid industrial waste up from 55.8% in 2005 to 60%;
- 70% of wastewater and 60% of residential garbage in cities will be treated;
- Total discharge of major pollutants down 10%;
- Forest coverage up from 18.2% in 2005 to 20%.

Opportunities exist for business and consumers to make further cost and carbon savings

Industry in China is responsible for approximately 70% of energy consumption (compared to 40% in the UK or 32% in the US).⁶ It therefore has an important role in improving energy efficiency in order to contribute to the government's energy efficiency goal. Minimising wasted energy will also bring an immediate bottom-line benefit.

All businesses can gain from energy efficiency. Companies can not only reduce overheads, but also reduce carbon emissions and gain reputational benefits. Energy efficiency can also increasingly become an issue of competitiveness, and as customers demand evidence that business considers the environmental impact of its actions, firms will begin to look to 'greening' their supply chains.

Measuring energy use and associated greenhouse gas emissions is the first step to being able to manage and reduce it. The processes involved in accurately measuring energy and emissions help focus management's attention on a company's operational inputs and outputs, allowing inefficient 'hotspots' to be identified and improved.⁷

We believe energy efficient practices can become mainstream in business operations and that by adopting these practices, Chinese businesses can leap-frog up the learning-curve. To show China is serious about meeting its commitments to tackle climate change, the use of energy must be carefully managed. The UK has some exemplar businesses (some are showcased in this brief), which demonstrate highly energy efficient working practices.

The CBI's Climate Change Board, a cross-sector grouping of 16 major UK businesses,⁸ took the lead by committing to bettering the UK government's emissions reduction targets⁹ for their UK offices. These companies have subsequently achieved a 15% reduction in carbon emissions from their office buildings,¹⁰ driven by investments in energy efficiency solutions.

CBI members are steering energy efficiency initiatives in China, as demonstrated in the case studies in this brief. Building on the best practice examples from these companies, there are a range of ways in which other businesses could contribute to the development of a low-carbon economy in China:¹¹

- ✓ **Conduct an energy audit;**
- ✓ **Install an energy management system;**
- ✓ **Implement efficiency measures in IT systems and lighting;**
- ✓ **Effectively manage heating, air conditioning and ventilation;**
- ✓ **Raise awareness about and share best practice in energy efficiency;**
- ✓ **Provide capacity-building and training to government officials and business;**
- ✓ **Develop and provide low-carbon goods and services; and**
- ✓ **Encourage and facilitate low-carbon technology-transfer.**

Case study – Siemens: Intelligent building management

To make its building more energy efficient, Siemens decided to equip their new China headquarters in Beijing with intelligent building technology. The building consumes around one third less energy than comparable office buildings. These types of intelligent building systems can make long-lasting reductions in energy costs.

The result

Siemens has carried out energy-saving projects for around 6,500 buildings. The projects will bring about guaranteed savings of around US\$ 1.4 billion as well as CO₂ reductions of 2.4 million tonnes.

Case study – HSBC: Energy efficient IT and lighting

HSBC China has installed double-sided printers to save paper, video-conferencing units to reduce the need to travel for meetings and energy-saving light bulbs that last longer across its 83 outlets, including 19 branches in China.

The result

HSBC estimates that the simple exercise of replacing normal light bulbs for energy-saving ones will help reduce the bank's electricity consumption by about 650,000 kWh per year. This results in an annual reduction of carbon dioxide emissions by more than 429 tonnes.

Case study – Tesco: Energy efficiency enabled reduced bottom line costs

Tesco's first energy-saving outlet in northeast China was opened in January 2009 in Tieling. Built in accordance with Tesco's standard for energy-saving stores, the Tesco Tieling Guangyu store has an advanced energy management system.

The energy management system involves large-scale use of energy-saving equipment, including a brand new ventilation system, electronic expansion valves, high efficiency energy saving draught fans, and high efficiency electronic ballasts that help reduce the power consumption of air conditioners and refrigerators.

The result

It is expected that Tesco's Tieling Guangyu store can reduce energy consumption by 25%, the use of electricity by 760,000 kilowatt hours and carbon emissions by the equivalent of 758 tonnes of CO₂ each year.

Businesses can help stimulate consumer demand

Businesses can also provide customers with the products they need to help save money on energy bills and shrink their carbon footprint. Information and advice will help stimulate consumer demand for these products and therefore accelerate the market. The China Energy Label¹² and the UK's Carbon Trust Carbon Reduction Label¹³ could play a clear role in making consumers aware of their energy use, and subsequently delivering energy savings.

Government can also encourage progress by providing targeted information and advice, and focused help for State-owned Enterprises (SOEs) and Small- and Medium-sized Enterprises (SMEs).

Here are two key ways in which consumers can increase their energy efficiency and feel the benefit:

Purchase energy efficient appliances – an efficient household air conditioner, refrigerator or lighting

Benefit: In Beijing, 5 million government-subsidised compact fluorescent lamps (CFLs) were installed between June and August 2008. These lamps reduced energy usage by an estimated 200 million KW/h and saved RMB120 million (US\$17.6 million) in electricity bills a year.¹⁴ The energy-efficient bulbs also saved 84,000 tonnes of coal and will cut CO₂ emissions by 226,200 tonnes every year. In 2009, the government will subsidise 100 million bulbs across China.¹⁵

Avoid wasting energy – washing clothes on lower temperatures, turning appliances off stand-by and turning lights off when not in the room

Benefit: Washing clothes at 30 degrees Celsius rather than 40 degrees Celsius uses 40% less energy.¹⁶ Standby power is 20-50 Watts per household in China, ranging from 2-10% of total residential power consumption.¹⁷ An International Energy Agency study into energy efficient stand-by power, concluded that by 2020, this could bring about a reduction of 250 million tonnes of CO₂ in China and total savings of US\$14.1 billion in electricity generation.

If businesses can successfully promote these actions alongside government policies and campaigns, and stimulate demand for new energy efficient products, China will be better positioned to meet its environmental targets and be less vulnerable to changes in the climate.

Case study – Aviva Hong Kong: Raising awareness in Hong Kong

Aviva Hong Kong sponsored the 'Power Smart Contest 2007' organized by Friends of the Earth, Hong Kong. This project was an appeal to the public to reduce their electricity consumption and the emissions of power plants in Hong Kong in order to mitigate the dangers of air pollution.

Aviva was the first company from the commercial sector to sponsor this campaign. The contest required each participating household to save at least 3% on electricity consumption in any two consecutive months from June to August in 2007 as compared to the same period in 2006.

The result

The Aviva teams collectively saved 5,059 kWh of electricity, which is enough to power 50,000 light bulbs (100w) for one hour. One Aviva team achieved a 39.1% (820 units) cut in their consumption.

Over 400 housing estates, 500 families and 80 schools took part in the contest. A total of 4,023,525kWh electricity was saved, equivalent to saving US\$4 million in electricity costs, as well as a reduction of 3,018 tonnes of CO₂, normally required to produce that amount of power.

Case study – British Airways: Using wind and water to power local communities

British Airways has two carbon offset programmes in China. The Bayin'aobao windfarm is located in Inner Mongolia and has 33 wind turbines supplying 119,311 MWh of electricity to local business and communities per year. The Xiaohe hydro-electric power plant in Gangsu Province will help reduce regional shortages of electricity by supplying a reliable source of energy.

The result

So far 160,000 people have bought offsets and the fund is US\$ 1.7 million in value. The Bayin'aobao windfarm will save approximately 121,757 tonnes of CO₂ per year, or the equivalent to taking 22,300 cars off the roads or 16,130 households' electricity use per year. The Xiaohe hydro plant will save 36,000 tonnes of CO₂ annually, which equals to taking 8,000 cars off the roads or 4,696 households' electricity use per year.

British companies are investing in low-carbon solutions in China

Business will play a key role in enabling further energy efficiency across the economy by providing state-of-the-art low-carbon solutions. Current product standards and energy labelling are driving change, and new appliances are increasingly energy efficient compared to older models.¹⁸

There are growing commercial opportunities in this sector, with low-carbon and environmental goods and services reaching US\$35 billion in 2006, 1.2% of annual GDP.¹⁹ Total environmental protection investment during China's 11th Five-Year Plan will amount to US\$200 billion. The United States Department of Commerce estimates the sector to be worth US\$186 billion in 2010 and predicts that by 2020 it will be worth US\$550 billion.²⁰

Given the current economic climate, this presents an exciting opportunity for companies offering low-carbon, energy efficient solutions. Highlighting companies moving into this market, a recent study by the Economist Intelligence Unit reported 40% of respondent firms had developed new products or services in the last two years which help reduce or prevent environmental problems.²¹ The expectation is that demand for such goods and services is likely to rise as other firms and consumers seek to improve their energy efficiency.

Case study – Shell: Solar power to rural communities

Shell has already installed more than 7 MWp of solar power in more than 50 projects in China. Photovoltaic panels developed by Shell are being used in a US\$25 million development project to provide electricity to some 65,000 homes in rural areas in Xinjiang. These households can purchase the panels via micro-credit mechanisms.

The result

Since 2002, the project has sold more than 26,000 systems. Another project has enabled Shell to provide 200 KWp worth of solar-powered electricity to 26 remote Yunnan and Xinjiang Province villages.

Case study – BP: Training local energy officials and future professionals

BP is working with the Chinese Ministry of Industry and Information Technology (MIIT), which is accountable for industrial energy efficiency, in an international partnership programme aiming to mobilise world-wide resources and expertise to greatly improve the technical capability for industrial energy saving. Focusing on improving the technical capability of hundreds of local energy conservation centres, the framework programme has 12 individual modules.

The result

The programme will provide training, sharing of best practice and international capacity-building over 10 years to over 10,000 officials annually. The 200 energy conservation centres, which are government funded and in charge of monitoring energy consumption levels, will be able to measure consumption more effectively and offer better solutions and technical advice to companies seeking their advice.

References

- 1 The report is available at
<http://climatechange.cbi.org.uk/reports/00051/>
- 2 A Netherlands Environmental Assessment Agency report in July 2007 recorded China's emissions as 8 percent higher than those of the US
<http://www.pbl.nl/en/news/pressreleases/2007/20070619Chinanowno1inCO2emissionsUSAinsecondposition.html>

The International Energy Agency *Cleaner Coal in China* report of April 2009 states that coal accounts for about 70% of primary energy consumption in China
http://www.iea.org/Textbase/npsum/coal_china2009SUM.pdf
- 3 International Energy Agency
- 4 http://www.gov.cn/english/2006-09/11/content_384596.htm
- 5 In Chinese,
http://www.most.gov.cn/tpxw/200612/t20061226_39257.htm
- 6 *Energy futures and urban air pollution: challenges for China and the United States* by National Academies Press et al., 2007, page 170 and World Resources Institute
<http://earthtrends.wri.org/updates/node/274>
- 7 The CBI published a common approach to measurement and disclosure of greenhouse gas emissions in the UK in May 2009, refining how businesses apply the UK's Greenhouse Gas Protocol and improving consistency and comparability in corporate emissions reporting. In China, organisations like the Carbon Trust and the Carbon Disclosure Project can help measure emissions.
- 8 For a list of CBI Climate Change Board members,
see <http://climatechange.cbi.org.uk/cbi-climate-change-board/>
- 9 As set out in *Sustainable Operations on the Government Estate*, see <http://www.defra.gov.uk/sustainable/government/gov/estates/targets.htm>
- 10 2007/08 emissions compared to the 1999/00 baseline year
- 11 These measures are intended as a list of ideas rather than a comprehensive list of actions
- 12 The Administrative Measures on the China Energy Label took effect in March 2005 and cover a range of the energy intensive manufactured goods, such as household air-conditioners, refrigerators and motors. More information at www.energylabel.gov.cn
- 13 <http://www.carbon-label.com/>
- 14 'Campaign gets China to switch on to energy efficiency', 4 August, 2008
<http://www.ccchina.gov.cn/en/NewsInfo.asp?NewsId=13700>
- 15 'China ramps up subsidies for energy-efficient light bulbs', 25 February, 2009
http://www.google.com/hostednews/afp/article/ALeqM5gmtZqpwDkkTkjTJei_cQFupXPS_Q
- 16 *Heat and Energy Saving Strategy*, UK Department of Energy and Climate Change (DECC), p32
- 17 *Raising the Profile of Energy Efficiency in China*, October 2006
<http://www.iea.org/textbase/papers/2006StandbyPowerChina19Sep06.pdf>
- 18 The China Energy Efficient Refrigerator project 1999-2005 between the United Nations Development Programme and the China State Environment Protection Administration (SEPA) estimated that in the ten years following implementation of the project, refrigerators in China will have reduced electricity consumption by about 120 billion kWh. If this electricity is all from coal, this will save 7.175 million tonnes of coal, resulting in emissions reductions of 143 million tons of CO₂.
- 19 UK Trade & Investment, *Market opportunities in environmental goods and services, renewable energy, carbon finance and CATs*, October 2008
<https://www.uktradeinvest.gov.uk/ukti/ShowDocBEA+Repository/345/424980>
- 20 US Department of Commerce, *Clean Energy – an exporters guide to China*, July 2008
www.ita.doc.gov/media/Publications/pdf/china-clean-energy2008.pdf
- 21 Economist Intelligence Unit 2009, 'Road to Copenhagen',
http://a330.g.akamai.net/7/330/25828/200900224161310/graphics.eiu.com/marketing/pdf/copenhagen/Sustainability_2009.pdf

For further information about CBI work on climate change or a copy of this report in large text format contact:

Guy Dru Drury
Chief representative, CBI China
T: +86 210 85 25 3100
E: Guy.DruDrury@cbi.org.uk



INVESTOR IN PEOPLE

September 2009

© Copyright CBI 2009
The content may not be copied, distributed, reported or dealt with in whole or in part without prior consent of the CBI.

Climate change: everyone's business

The CBI climate change board:
building a low-carbon economy

The CBI climate change board was set up in 2008 to deliver the commitments set out in the CBI 2007 climate change taskforce report 'Climate change: everyone's business.' The report recognised that government, business and consumers all have a role to play in making the shift to a low-carbon economy. The board brings together senior business leaders from a range of sectors to demonstrate business commitment to managing the risk of climate change by:

- Promoting business-led policy solutions to realise carbon savings
- Showcasing business opportunities for green growth
- Leading by example on corporate commitments to manage carbon footprint
- Monitoring progress by government and business in realising the UK's carbon targets
- Influencing a post-2012 international climate change agreement.