

CHINA'S RAPID ECONOMIC GROWTH AND RESULTANT NEGATIVE EXTERNALITIES

PATRICIA BLAZEY*

I INTRODUCTION

China's economic growth over the past fifteen years has turned it into the world's major manufacturing base, making it one of the world's four largest economies.¹ During this period, China's average annual real Gross Domestic Product ('GDP') grew by 9.7 per cent peaking at 11.9 per cent up to the second quarter in 2007, the highest growth rate over that period of time.² At the same time the negative environmental externalities of economic growth have escalated and are causing concern not only within China itself but also globally.

China has suffered severe ecological destruction and serious environmental problems which threaten both its economy and the health of its people. Apart from air and water pollution, unprecedented growth in household and industrial waste, loss of biodiversity, felling of rain rainforests and overfishing has occurred. On a global level, China's air pollution levels have contributed substantially to the negative effects of climate change.

China's rapid growth has been accelerated through its membership of the World Trade Organization ('WTO')³ and policies of trade liberalisation. Foreign investment has escalated due to preferential tax treatment and the relaxation of bureaucratic obstacles which in the past had slowed down the process of getting projects up and running. Special Economic Zones ('SEZs') set up in coastal provinces in order to encourage foreign investment because of easy access to port facilities have proven to be highly attractive to foreign investors. SEZs offer special incentives such as lower taxes, tax holidays, local tax reductions and greater independence in international trade activities. Today there are many such zones all over China both at the national and local level. A virtually limitless supply of cheap labour is a further bonus for investors. The overall result has

* Head of Department of Business Law, Macquarie University, Sydney, Australia. My thanks to Gisele Kapistran for her excellent research and assistance with this article.

1 While Morrison places it second, a recent Organisation for Economic Co-operation and Development ('OECD') report places it fourth. Wayne Morrison, *China's Economic Conditions*, CRS Report for Congress, 12 July 2006, 1-2; OECD, *Environmental Performance Reviews China* (2007) 15.

2 'Economic and Financial Indicators', *The Economist* (London), 21-27 July 2007, 93-4.

3 China became a member of the WTO on 11 December 2001.

been foreign direct investment surpassing US\$700 billion since China adopted its open door policy in 1978.⁴

II OVERVIEW OF CHINA'S POLLUTION PROBLEMS

As foreseen by China's political leaders in 1978, rapid growth has generated not only the urbanisation of a substantial proportion of a previously agricultural society, but also a number of unintended and undesirable effects to health and natural resources⁵ – so much so that China plays host to 20 of the world's 30 most polluted cities.⁶ The negative economic impact of environmental issues on the Chinese economy is estimated to result in an eight per cent drain on the GDP.⁷

China's air pollution levels are very high. The State Environmental Protection Administration ('SEPA') reports that almost two-thirds of the 300 cities it tested in 2002 failed to meet minimum World Health Organization ('WHO') standards.⁸ The problem is so extensive that, according to the United States Environmental Protection Agency, almost 25 per cent of the atmospheric pollution over Los Angeles can be traced back to China.⁹

Air pollution has become one of the most visible environmental problems in China. Most of the causes can be directly or indirectly linked to an increase in trade and the consequential boost to development and urbanisation.¹⁰ The high-volume output of heavy-polluting leather tanneries, chemical plants, rubber manufacturers, and the electronic and dyeing industries have been accompanied by a massive and increasing reliance on coal combustion without adequate emission controls. The Organisation for Economic Co-operation and Development ('OECD') has noted that despite declining figures at the turn of the 21st century, the number of cities suffering from acid rain and SO₂ concentrations has been steadily increasing.¹¹

The burning of more than two billion short tons of coal represents more than one third of the world total coal consumption and a 46 per cent increase since

-
- 4 Bloomberg News, 'Foreign Investment in China Rises 12 Percent in 1st Quarter', *International Herald Tribune*, 12 April 2007 <www.iht.com/articles/2007/04/12/business/yuan.php> at 20 September 2007.
 - 5 China's 1978 Constitution included provisions for the regulation and management of the environment.
 - 6 The World Bank, *ChinaQuick Facts* (2007) <<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/CHINAEXT/N/0,,contentMDK:20680895~pagePK:1497618~piPK:217854~theSitePK:318950,00.html>> at 20 September 2007.
 - 7 Elizabeth C Economy, *Economic Boom, Environmental Bust* (2004) Council on Foreign Relations <www.cfr.org/publication/7548/economic_boom_environmental_bust.html> at 20 September 2007.
 - 8 'A Great Wall of Waste', *The Economist*, 19 August 2004, 2.
 - 9 Jim Yardley, 'China's Next Big Boom Could be the Foul Air', *The New York Times* (New York), 30 October 2005 <http://www.nytimes.com/2005/10/30/weekinreview/30yardley.html?_r=1&n=Top/Reference/Times%20Topics/People/Y/Yardley,%20Jim&oref=slogin> at 24 September 2007.
 - 10 Yuhong Zhao, 'Trade and Environment: Challenges after China's WTO Accession' (2007) 32 *Columbia Journal of Environmental Law* 41, 47-48.
 - 11 OECD Working Party on Environmental Performance, *Environmental Performance Review of China: Conclusions and Recommendations (Final)* (2006/2007) OECD <<https://www.oecd.org/dataoecd/58/23/37657409.pdf>> at 20 September 2007.

2002.¹² This has increased atmospheric pollution and acid rain, accelerated soil erosion and brought about water shortages. In 2006, China required 2.2 billion tons of coal to generate 80 per cent of its electricity and 75 per cent of its home heating.¹³

The urban population in China's 668 cities is continually on the rise and reported to be in the region of 30.9 per cent of the total population figure of around 1.3 billion. One of the reasons for the increasing size of the urban population is that urban centres provide the possibility of employment in heavy industries, many of which rely on fossil fuels to provide energy for their production process.¹⁴ Around 750 million people still live in rural areas and are exceedingly poor.¹⁵ They rely on coal briquettes for heating and cooking, with consequential pollution resulting in a high incidence of chest diseases due to the emission of high levels of CO₂, arsenic and fluoride during the burning process. Indoor air pollution causes massive health problems for children and adults who do not have access to modern medicines. The WHO has ranked China as 144th out of 191 countries in terms of access to medical treatment.¹⁶ There is a common saying across China that 'small illness, don't check; big illness, await death'.¹⁷

However, China alone cannot take the blame for its dire environmental problems. For example, Nike, Sony, Polaroid and other multinationals have recently agreed to reduce their collective production of CO₂ emissions by 10 million tons annually.¹⁸ All these multinationals operate factories in China. Many foreign enterprises have been quick to invest in developing countries which have lax environmental policies and similarly quick to move to other developing countries if they are forced to reduce the pollution they produce, in order to decrease compliance costs and maximise profits. Officials in many provinces, desperate to attract foreign investment, have turned a blind eye to pollution problems in order to push ahead with economic development.

12 Energy Information Administration, *Coal* (2006) <<http://www.eia.doe.gov/emeu/cabs/China/Coal.html>> at 27 September 2007.

13 Jonathan Ansfield, 'Coal Trap: Beijing Battles for Control of a Runaway Industry that both Powers China, and Threatens its Future', *Newsweek: International Edition*, 15 January 2007 <<http://www.newsweek.com/id/56577>> at 20 September 2007.

14 These figures constantly change due to the increasing number of people moving into the cities for work. See, eg, 'China's Urban Population Grows to 376 Million', *People's Daily*, 17 August 2000 <http://english.peopledaily.com.cn/english/200008/17/eng20000817_48434.html> at 18 October 2007. See also, Han Qi, 'Urbanization exhibits Chinese characteristics', *China Daily*, 11 March 2005 <http://www.chinadaily.com.cn/english/doc/2005-11/03/content_490181.htm> at 18 October 2007.

15 Central Intelligence Agency, *The World Factbook: China* (2007) <<https://www.cia.gov/library/publications/the-world-factbook/print/ch.html>> at 20 September 2007; Embassy of the People's Republic of China in India, *Urbanization Reduces China's Rural Population* (2006) <www.chinaembassy.org.in/eng/zgbd/t236645.htm> at 20 September 2007.

16 World Health Organisation, *The World Health Report 2000* (2000) 152.

17 'Ageing China Faces Rural Healthcare Vacuum', *RxPG NEWS*, 23 November 2006 <www.rxpgnews.com/china/Ageing_China_faces_rural_healthcare_vacuum_5731.shtml> at 20 September 2007.

18 Marlowe Hood, 'Top Multinationals Pledge to Cut Carbon Pollution', *Energy Daily*, 1 February 2007 <www.energy-daily.com/reports/Top_Multinationals_Pledge_To_Cut_Carbon_Pollution_999.html> at 20 September 2007.

It is clear that China's interests are divided and (currently) irreconcilable. On the one hand, China's development goals undoubtedly require harnessing the natural and human resources available to support industry growth. While rapid growth and corresponding energy needs bring a form of wealth and prosperity to China, the toll on human health and agricultural output has resulted in negative effects on the GDP and development capacity of the nation.

China relies heavily on coal to fuel its power stations. The Netherlands Environmental Assessment Agency recently reported that China has now overtaken the USA as the greatest producer of CO₂ in the world.¹⁹ China accounts for one third of global coal consumption,²⁰ and a recent OECD study has found that China's energy intensity per unit of GDP is about 20 per cent higher than the OECD average.²¹ There appears to be little respite as demand for electricity has risen by 60 per cent since 2000.²²

Apart from CO₂ emissions and greenhouse gases, there is also the growing problem of 'brown clouds'. Pollution from China and other countries in the Asia-Pacific region are causing the formation of brown clouds which then move across the world. These clouds consist of minute particles of light absorbing aerosols and light scattering aerosols which come from pollutants produced by wood burning and other fossil fuels. These aerosols cool the land or sea below as they filter out light from the sun. The aerosols also prevent water droplets from merging and thus inhibit the formation of large rain droplets which result in rainfall. When rain does fall from brown clouds, it is typically in the form of acid rain.²³

There are other problems too. China's poor environmental practices have resulted in food exports from China which fail to meet the standards and requirements of importing countries. Recently the Chinese Government revoked the food licenses of hundreds of companies including producers of rice and monosodium glutamate because of unsafe and unclean manufacturing practices. The three worst offenders were named as the Shijiazhuang Good Cook Food Factory which produces monosodium glutamate, the Hefei Wanmaomao Quick-frozen Food Co and Kaiping Shagang District Xinfengsheng Rice Factory.²⁴ Problems with contamination of food exports was also evident in the deaths of thousands of pets in the US as a result of pet food imported from China that was contaminated with the chemical melamine.²⁵

19 Netherlands Environmental Assessment Agency, *China now No. 1 in CO₂ Emissions; USA in Second Position* (2007) <<http://www.mnp.nl/en/dossiers/Climatechange/moreinfo/Chinanowno1inCO2emissionsUSAinsecondposition.html>> at 20 September 2007.

20 Ansfield, above n 13.

21 OECD Working Party on Environmental Performance, above n 11, 4.

22 Ansfield, above n 13.

23 'Asia's Brown Clouds 'Warm Planet'', *BBC News* (International), 1 August 2007 <<http://news.bbc.co.uk/2/hi/science/nature/6926597.stm>> at 20 September 2007.

24 AP Digital, 'China punishes food producers', *Sydney Morning Herald* (Sydney), 25 September 2007 <<http://www.smh.com.au/news/World/China-punishes-food-producers/2007/09/25/1190486298726.html>> at 26 October 2007.

25 'Clamp on Food from China', *Herald Sun* (Melbourne), 22 May 2007 <www.news.com.au/heraldsun/story/0,21985,21770801-663,00.html> at 27 September 2007.

III EFFECTS OF AIR POLLUTION ON CHINA'S POPULATION

It is estimated that each year 300,000 Chinese die prematurely from respiratory disease as a direct result of air pollution.²⁶ Many thousands suffer from pollution-related illnesses such as emphysema, heart conditions and blood disorders.²⁷ Respiratory disease is now such a serious health issue that, in 2000, it was the fourth largest cause of death in urban China.²⁸ The city of Linfen, for example, which has occupied first place on China's pollution charts for the last three years, purportedly has a death rate of ten times the national average for certain age groups.²⁹

The OECD has forecast that by 2020, pollution will cause

600,000 premature deaths in urban areas, 9 million person-years of work lost due to pollution-related illness, 20 million cases of respiratory illness a year, 5.5 million cases of chronic bronchitis and health damage which could cost 13 per cent of gross domestic product.³⁰

As recently as 30 June 2007, it has been reported that Beijing recorded its worst air quality in seven years. Airborne particles are the main pollutant caused by car exhaust fumes and farmers burning stalks in nearby Hebei, Henan, Shandong, Jiangsu and Anhui provinces. Beijing, which aims to have 245 days of 'blue sky' a year, has only recorded 110 days in the first six months of 2007.³¹ Chinese traffic police are expected to have an average life expectancy of only 43 years because of the dire working conditions and pollution.³² Chinese officials are currently trying to clean up Beijing's air pollution before the 2008 Olympic Games and are now having to extend environmental measures to surrounding provinces where air pollution is still largely unchecked, the result of which is winds blowing the pollution to Beijing.³³

-
- 26 David O'Connor, Fan Zhai, Kristin Aunan, Terje Berntsen and Haakon Vennemo, *OECD Development Centre Technical Papers, No 206: Agricultural and Human Health Impacts of Climate Policy in China: A General Equilibrium Analysis with Special Reference to Guangdong* (2003) OECD 15
<<http://www.oecd.org/dataoecd/59/40/2503074.pdf>> at 20 September 2007.
- 27 Ibid.
- 28 Ibid.
- 29 Louisa Lim, 'Air Pollution Grows in Tandem with China's Economy', *National Public Radio*, 22 May 2007 <<http://www.npr.org/templates/story/story.php?storyId=10221268>> at 20 September 2007.
- 30 Jamil Anderlini, 'OECD Highlights Chinese Pollution', *Financial Times* (Asia-Pacific), 17 July 2007 <http://www.ft.com/cms/s/932c36ca-348c-11dc-8c78-0000779fd2ac,dwp_uuid=9c33700c-4c86-11da-89df-0000779e2340.html> at 20 September 2007.
- 31 'Beijing Records Worst Air Quality for June in Years', *China Daily*, 30 June 2007 <www.chinadaily.com.cn/china/2007-06/30/content_907037.htm> at 20 September 2007.
- 32 'Pollution Killing Traffic Police', *The Australian* (Sydney), 8 August 2007 <<http://www.theaustralian.news.com.au/story/0,25197,22206502-2703,00.html>> at 21 September 2007.
- 33 Rowan Callick, 'Not a Cloud in the Way', *The Australian* (Sydney), 8 August 2007 <http://www.theaustralian.news.com.au/story/0,,22206442-28737,00.html?from=public_rss> at 21 September 2007.

IV CHINA'S APPROACH TO ITS AIR POLLUTION PROBLEMS

The Chinese authorities are well aware of the rapidly deteriorating state of China's environment and have taken significant steps toward encouraging alternative and sustainable development strategies. The government's response includes incorporating environmental concerns into its formal national economic and social development plans, creating a legal framework, and establishing and strengthening environmental institutions such as the SEPA.³⁴ However, it appears that, despite these positive steps, China's legislative and regulatory framework remains largely ineffective due to what the OECD has identified as an 'implementation gap'.³⁵ Indeed, the OECD has noted a serious lack of enforcement of air pollution regulations and permit conditions.³⁶ A number of commentators attribute this gap to a failure to place environmental issues ahead of economic growth and to fully recognise that addressing such issues are an integral part of trade growth and trade relations.³⁷ For whatever reason, it is clear that China's environmental regulation regime cannot counter the pressures created by its pace of growth unless weak administrative structures are reformed and consistent monitoring is implemented nation-wide.

In recent years, China's environmental awareness seems to have grown alongside its economic development. Indeed, not only has international and domestic pressure coerced China into action but, perhaps a more powerful motivator has been the recognition of the need to ensure sustainable growth in order for China to achieve its goal of becoming a global superpower. The combination of these influences has seen the construction of a legal and administrative structure aimed at protecting China's resources.

As the OECD has noted, there have been a number of strong national level initiatives to combat the growing pollution problem. In April 2006, at the sixth national environmental protection meeting, the Chinese Premier Zhu Rongji announced three new policy directions including integrating environmental protection and economic decision-making on an equal footing, further decoupling pollutant emissions from economic growth and applying a mix of instruments to resolve environmental problems.³⁸ The commitment to reducing pollution is clearly evidenced by China's refusal to award banks loans to polluting companies until they reform their environmental practices.³⁹

This decision is only one of many in the range of regulatory and economic measures the government has taken to enforce standards and affect change. In

34 OECD Working Party on Environmental Performance, above n 11, 2.

35 Ibid 3.

36 Ibid 4.

37 Srinii Sitaraman, 'Regulating the Belching Dragon: Rule of Law, Politics of Enforcement, and Pollution Prevention in Post-Mao Industrial China' (2007) 18 *Colorado Journal of International Environmental Law and Policy* 267, 274.

38 OECD Working Party on Environmental Performance, above n 11, 3.

39 Alexa Oleson, 'China Denies Loans to Polluting Firms; May Pull 1 Million Cars Off the Road to Reduce Pollution' *Associated Press*, 5 July 2007 <<http://www.apnaavenue.com/2007/china-denies-loans-to-polluting-firms-may-pull-1-million-cars-off-the-road-to-reduce-pollution-2/>> at 8 October 2007.

2003, pollution abatement and control investment expenditure was 1.2 per cent of China's GDP.⁴⁰ The Environmental Protection Law 1989 ('EPL') which replaced the earlier 1979 version provides private citizens with the power to report or file charges against polluters.⁴¹ The issue of lax local officials was identified in the same year and led to the enactment of a criminal penalty for environmental officials who cause serious pollution accidents through 'neglect of duty'.⁴² The promotion of SEPA to a ministry-level agency in 1998 further solidified China's commitment to environmental regulation, and the agency has since codified an unprecedented number of regulations and increased its enforcement capacities, including taking proactive measures against companies who have failed to meet the regulatory standards, such as shutting down or suspending over 6800 enterprises for discharging excessive pollutants.⁴³

While the proliferation of regulatory regimes and legislation is definitely a step in the right direction, it is clear that the implementation of these regimes on a sub-national level remains the greatest obstacle to their efficacy. This is directly related to the fact that SEPA relies on local Environmental Protection Bureaus ('EPBs') to actually implement and enforce the policies it enacts. In fact, the EPBs are responsible for a number of activities crucial to the success of the national policies such as the initial permit process and follow-up inspections carried out routinely and at random. They are also capable of penalising companies that fail to meet regulatory standards. Practice and experience has shown that many of the local EPBs routinely evade and ignore national policy directives due to the competing pressures to increase the economic prosperity of the locality.⁴⁴ There is some support for this in the fact that local leaders in some of the richer provinces, who have already achieved greater relative prosperity, are responding more efficiently and effectively to the demand for better environmental conditions than the poorer provinces.⁴⁵

The structure of funding within the Chinese Government hierarchy further institutionalises this problem. EPBs receive all of their government funding from local governments who are intricately linked to the interests of local industries.⁴⁶ The interests of the individual EPB officials are also compromised as they are dependent upon the local government for promotion. This would not be such a significant problem if SEPA's policy of improved environmental quality was common to both the national and local governments, but it appears that local governments have placed economic priorities over environmental concerns.⁴⁷

40 OECD Working Party on Environmental Performance, above n 11, 3.

41 Environmental Protection Law of the People's Republic of China 1989, art 6.

42 Environmental Protection Law of the People's Republic of China 1989, art 45.

43 'China punishes 12,000 polluting enterprises', *China Daily*, 24 September 2003 <www.chinadaily.com.cn/en/doc/2003-09/24/content_267153.htm> at 27 September 2007.

44 Sitaraman, above n 37, 310.

45 OECD Working Party on Environmental Performance, above n 11, 3.

46 Sitaraman, above n 37, 310; Lee Travers, *Environmental Funds: The Chinese Experience* (1999) The World Bank <[http://lnweb18.worldbank.org/essd/envext.nsf/51ByDocName/DiscussionNote6EnvironmentalFundsTheChineseExperienceColor/\\$FILE/DiscussionNote6November1999.pdf](http://lnweb18.worldbank.org/essd/envext.nsf/51ByDocName/DiscussionNote6EnvironmentalFundsTheChineseExperienceColor/$FILE/DiscussionNote6November1999.pdf)> at 21 September 2007.

47 OECD Working Party on Environmental Performance, above n 11, 3.

The result of the fact that funding is sourced from the local government rather than SEPA has placed local EPBs in a difficult position and vulnerable to the prioritisation of the interests of local industry at the expense of meeting regulatory standards. Certainly the traditional relationships embodied in *guanxi* have removed the teeth of some of China's more powerful legislative initiatives. Perhaps of greater concern is that the lack of funding trickling down to the EPBs has created a further incentive for EPB officials to actually encourage industries to pollute and pay the necessary fine which the EPB officials use to make up their wages owing in the under-funded system.⁴⁸

However, SEPA itself cannot step in to fill this enforcement gap. Limited resources have effectively constrained this entity to voicing what the standards should be, rather than allowing it to be active in their enforcement. Numerous observers have noted that the low level of funding afforded to environmental protection has weakened the potential for SEPA to effect change.⁴⁹ With just over 300 staff in Beijing, SEPA is seriously lacking human resources, making dependence upon local government and the EPBs all the more necessary.⁵⁰ There is no quick fix to the problem either. In order to effect change, Briggs has noted that

the central government would need to somehow effectuate compliance with national law on the local level without alienating local governments in a way that would further weaken its influence in the provinces ... the central government ... would have to mount a costly and extensive campaign aimed at local officials and citizens alike and also provide local officials with personnel and resources that do not currently exist on a national level.⁵¹

Sitaraman has further noted that, in addition to the enforcement problems, there is no real incentive for industrial enterprises to incorporate pollution abatement methods into their daily operations because it is cheaper to pay the fines, 80 per cent of which will be returned in the form of a subsidy for pollution abatement.⁵² As Balfour noted, '[t]he cost of cleaning up wastewater from a yeast plant can reach [US]\$610 per 1,000 cubic meters, while the penalties are just [US]\$490 per 1,000 cubic meters. Furthermore, 'noncompliance is preferred by local officials, since fines shore up budgets'.⁵³

The price of this environmental mismanagement has been estimated by the United Nations Development Programme to be nine per cent of GDP per year,⁵⁴

48 Carin Zissis, *China's Environmental Crisis* (2007) Council on Foreign Relations <http://www.cfr.org/publication/12608/chinas_environmental_crisis.html#8> at 23 September 2007; Elizabeth C Economy, *The River Runs Black: The Environmental Challenge to China's Future* (2004) 111.

49 Zissis, above n 48; Economy, above n 48, 107.

50 Frederik Balfour, *A Big, Dirty Growth Engine: Pollution Still Chokes China, but Green Technology is Starting to Emerge* (2005) Business Week <http://www.businessweek.com/magazine/content/05_34/b3948520.htm> at 21 September 2007.

51 Adam Briggs, 'China's Pollution Victims: Still Seeking a Dependable Remedy' (2006) 18 *Georgetown International Environmental Review* 305, 312 citing Richard J Ferris Jr and Hongjun Zhang, 'Reaching Out to the Rule of Law: China's Continuing Efforts to Develop an Effective Environmental Law Regime' (2003) 11 *William & Mary Bill of Rights Journal* 569, 599.

52 Sitaraman, above n 37, 312-13.

53 Balfour, above n 50.

54 Zissis, above n 48.

and the Chinese Government has been met with increasing pressure each year from the public to address their concerns. In May 2006, the China Daily reported that around 50,000 environmental disputes occurred in 2005.⁵⁵

However, the increased trade and concomitant economic growth does not spell an entirely negative projection for the future of China's environment. Foreign investment by multinational corporations that choose environmentally-friendly technologies and internalise impact assessment costs has helped increase the profile of such practices and their workability from a business perspective. These foreign firms also increase the pressure on the Chinese Government to level the playing field through the implementation and enforcement of environmental standards on local industry so that the costs of business are equalised between foreign and local industry enterprises.⁵⁶

V DOES RATIFYING THE KYOTO PROTOCOL BENEFIT CHINA?

On an international environmental level, one of the benefits for China following its ratification of the Kyoto Protocol is its ability to take advantage of the Clean Development Mechanism ('CDM').⁵⁷ The CDM allows developing countries to host projects being undertaken by developed countries as part of the global effort to reduce greenhouse gas emissions. It is one of three market based mechanisms designed to assist developed countries in meeting their greenhouse gas emissions target and at the same time facilitate climate change mitigation in developing countries.⁵⁸ Developed countries earn Certified Emission Reduction units ('CERs') from approved projects which go towards the meeting of greenhouse gas emission targets.

CDM projects gain approval from the Clean Development Mechanism Board of the United Nations Framework Convention on Climate Change providing that they result in the promotion of sustainable development technologies and foster the move towards renewable energy. The rest of the world benefits from CDM projects through a reduction in greenhouse gas emissions and the provision of a basis for many future linked projects. There are three types of CDM projects: small scale projects which include renewables (the energy efficiency must be less than 15 megawatts in the case of energy generation); non-small-scale methodologies and consolidated methodologies which combine several different approaches (this would include renewable energy, the incineration of industrial chemical waste streams such as HFC23,⁵⁹ and Nitrous Oxide (N₂O) and methane

55 Ibid.

56 Briggs, above n 51, 319-20.

57 *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 16 March 1998, 37 ILM 22 (1998), art 12 (entered into force 16 February 2005).

58 United Nations Framework Convention on Climate Change, *Kyoto Mechanisms - Background* <http://unfccc.int/Kyoto_protocol/mechanism/items/2998.php> at 24 September 2007.

59 HFC23 is a by-product of the production of HFC22, a hydrofluorocarbon which is highly pollutive.

reduction activities such as landfill and animal waste management); and afforestation/reforestation in order to remediate degraded land.⁶⁰

The National Development and Reform Commission ('NRDC') is China's Designated National Authority responsible for initially approving CDMs before the project is referred to the United Nations Framework Convention on Climate Change ('UNFCCC').⁶¹ The NDRC and the Ministry of Science and Technology ('MOST') chair the Board as well as SEPA, the China Meteorological Administration and other ministries. It takes about 50 to 60 days for a formal decision to approve or reject a project application. If satisfied with the project, the NDRC issues a letter that certifies the Chinese Government has no principled objections to a project. This letter is required by foreign CER buyers, financiers and investment partners as a prerequisite for their continued engagement in the project. Only enterprises that are under sole Chinese ownership or joint ventures with a foreign investment stake of not more than 49 per cent can qualify as project owners. Most of the CDM projects are conducted with an industrialised country partner via the broker market. Many of the projects are being undertaken solely by Chinese enterprises which allow China to retain the carbon credits.⁶²

Project owners are required to pay the Chinese Government a share of CER proceeds depending on the CDM category. Projects that deal with energy efficiency and renewable energy and methane avoidance or use must pay two per cent of their CER earnings to the Chinese Government. The transfer benefit for nitrous oxide projects amounts to 30 per cent and 65 per cent for hydrogen chloride and perfluorocarbon projects. These proceeds are put into the China CDM fund run by the Ministry of Finance. It is used to give preferential loans to owners of CDM projects, to finance capacity building measures in the CDM sector and to promote climate change initiatives.⁶³

China now accounts for 43 per cent of the total global CER supply. The good news is that 599 CDM projects have been approved by the Chinese Government up to 13 July 2007 and out of these 95 have been registered with the CDM board. Currently there are 40 wind projects, 22 small hydro projects and eight HCF23 decomposition projects, seven landfill projects, six biomass projects, one reforestation project, five energy efficiency projects, four coal mine methane utilisation projects and two N₂O abatement projects registered. It is estimated that the CDM will yield emission reductions of more than 1.4 billion tonnes by the end of 2012.⁶⁴

60 TFS Tradition Financial Services, *Clean Development Mechanism* (2005) <www.tfsbrokers.com/environment/clean-development-mechanism/> at 24 September 2007.

61 Office of National Coordination Committee on Climate Change, *Clean Development Mechanism in China: Frequently Asked Questions and Answers* (2004) <<http://cdm.ccchina.gov.cn/english/NewsInfo.asp?NewsId=831>> at 24 September 2007.

62 Zijun Li, *CDM Market Takes Off; China Gearing Up* (2006) Worldwatch Institute <<http://www.worldwatch.org/node/3925>> at 24 September 2007.

63 Office of National Coordination Committee on Climate Change, *Measures for Operation and Management of Clean Development Mechanism Projects in China* (2005) <<http://cdm.ccchina.gov.cn/English/NewsInfo.asp?NewsId=905>> at 24 September 2007.

64 China Carbon Fund, *Facts and Figures* (2006) <<http://www.chinacarbonfund.com/>> at 24 September 2007.

VI THE ASIA-PACIFIC PARTNERSHIP ON CLEAN DEVELOPMENT AND CLIMATE ('AP6')

Another fairly recent international initiative is the setting up of the AP6, described as a collaboration between six key developed and developing countries – Australia, China, India, Japan, South Korea and the United States. It has been set up 'to address energy, climate change and air pollution issues within a paradigm of economic development'.⁶⁵ The group plans to undertake a number of projects to lower emission trajectories in member countries. The 2007–08 Australian budget committed A\$32.5 million to climate change related global health initiatives and is designed to support 'projects dealing with climate change adaptation and mitigation in the Asia-Pacific'.⁶⁶ In 2007, a Clean Coal Initiative was announced whereby a Joint Coordination Group on Clean Coal Technology is to provide strategic guidance and oversight into a range of clean coal activities in both Australia and China.⁶⁷ This kind of partnership is without doubt a move in the right direction because China's involvement with developed nations is vital in the fight against the appalling pollution conditions that the Asia-Pacific region currently experiences.

VII CONCLUSION

The picture painted above is extremely serious not only for the Chinese people but for the rest of the world. The OECD has concluded that

China will need to i) strengthen the effectiveness and efficiency of the implementation of its environmental policies; and ii) enhance the integration of environmental concerns into economic decisions (eg fiscal, energy, agriculture, transport and land-use decisions),⁶⁸

in order to combat the current situation. Furthermore, the OECD observes that:

The performance objectives of local leaders, the pressures to raise revenues locally to finance un-funded mandates, and the limited accountability to local populations have generally meant that economic priorities have over-ridden environmental concerns. There is a need for much stronger monitoring, inspection and enforcement capabilities to establish a better mix of incentives and sanctions. In addition, environmental expenditure needs to be made more efficiently, and environmental policy instruments need to be made more effective. Implementation of the polluter pays and user pays principles should be strengthened. Special provisions are needed to integrate environment into the development strategies of the less-developed regions and to ensure the affordability of environmental services for the poor. There is an increase in damages associated with disasters of climatic and industrial origin, requiring improved prevention and mitigation measures.⁶⁹

65 Australian Government: Department of Foreign Affairs and Trade, *Climate Change* (2007) <<http://www.dfat.gov.au/environment/climate/>> at 24 September 2007.

66 Ibid.

67 Ibid.

68 OECD Working Party on Environmental Performance, above n 11, 2.

69 Ibid 3.

Although there is a long way to go before China's environmental situation is markedly improved, this cursory view would seem to demonstrate that some effort is being made to reduce or mitigate some of the more critical pollution problems that exist in China. Now that the world is awake to the problem of climate change and the urgent need for action, it is hoped that the Chinese Government will accelerate its efforts in this regard sooner rather than later. The imperative to solve air pollution problems prior to the commencement of the Beijing 2008 Olympic Games should provide a substantial kick start for the Chinese Government.