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An Integrated Approach to Air Quality and Climate Change Policy in Asian Cities

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CONTENTS

I. Problems with Existing Approaches to Air Quality Management and Climate Change Mitigation in Asian Cities

Air pollution and climate change represent two of the most serious threats to sustainable economic development in Asia, and the problems are particularly serious in urban areas. Despite rising standards of living, in many cities the health costs of air pollution are still estimated at many millions of dollars per year.[1] In addition, numerous publications have recently identified key Asian cities as the most vulnerable in the world to the impacts of climate change in terms of population and wealth.[2]

Although promising steps are being taken – governments are implementing successful control strategies, [3] and organizations are succeeding in raising awareness, promoting best practices, and providing finances[4] – these actions remain inadequate compared to the severity of the problems.

Why is this the case? Three key barriers have been identified:

- Weak institutions for monitoring and enforcing policy;
- The higher priority of economic growth compared to environmental protection; and
- A shortage of money, expertise, technology, and capacity.

However, underlying these barriers is a more fundamental problem: the lack of an integrated approach to development, energy, climate mitigation, and air quality management policy in Asian cities.

Weak institutions, monitoring, and enforcement are major barriers to air quality and climate change policy in China and other countries in Asia.[5] Targets are set, but there are inadequate consequences for not achieving them. Monitoring equipment is installed, but not switched on. Questionable numbers are not questioned by authorities, and cronyism remains a problem among some local officials.

Although reform is necessary in some cases, in many cases the problem also lies with the priorities and incentives of these institutions caused by which problems are prioritized and how scarce resources are allocated.

In many cases cities in Asia have no problem successfully making and enforcing policy – including binding targets. However, problems occur when goals are in direct conflict – such as when a provincial official receives targets for both economic growth and air pollution reduction.[6] Since consequences are greater for failing to meet the development target, environmental quality suffers. This greater emphasis on economic development also causes many air pollution and climate change policies to – whether explicitly or in practice – take on a 'voluntary' rather than 'mandatory' status. These include incentive schemes for outdated vehicles that are virtually ignored by struggling industries and emissions trading schemes that fail to induce participation from conservative plant managers.[7]

Underlying these problems is another, more serious one: although China's 'harmonious society'[8] (和諧社會)approach and the idea of 'co-benefits'[9] are promising, Asian governments largely continue to view economic development, energy security, air quality management, and climate mitigation as separate and competing policy objectives.

They claim – with validity in many cases – that using scarce political and financial resources on environmental problems will negatively affect economic growth and security goals, and that developed countries should provide the money and capacity required to reduce emissions and adapt to climate change.[10] Since these transfers are proceeding and almost certain to increase, many developing countries are altering their action to capture this technology and funding.[11] The lack of an integrated economic development, air quality, and climate change policy approach has also led cities to ignore more serious local air pollution problems that can be significantly improved with existing resources, and negative-cost economic opportunities for reducing greenhouse gas emissions – such as energy efficiency improvements.[12]

Therefore, overcoming these three key barriers – weak institutions, development priority, and a lack of resources – requires incentives and policy measures that are structured around the more fundamental obstacle – the lack of an integrated approach to policymaking on economic development, energy, air quality management, and climate change mitigation in Asian cities.

II. Outline of New Policies on Air Quality and Climate Change

1. Integrated Sustainable Development Policy Approach[13]**:** Align Economic Development, Energy Security, Air Quality Management, and Climate Change Mitigation Objectives

Although many cities and organizations, large and small, have produced 'sustainable development' strategies,[14] few have attempted or managed to fully integrate these four policy objectives. Although the plan will have to be tailored to local political and economic factors, it should include a number of key elements:

Economic Development:

- Mass-transit led infrastructure development plan.[15]
- New metrics for measuring growth beyond GDP.[16]
- Promotion of green industries and jobs through innovative programs.[17]

Energy Security:

- Adoption of overall energy policy.[18]
- Promotion of renewable energy and energy efficiency through mandatory auditing, disclosure, and target setting.[19]

Air Quality Management:

- Adoption of a total air quality management framework.[20]
    - Air quality standards based on protection of public health.
    - Real-time monitoring and public disclosure of key pollutants.
    - Continued reassessment based on evaluation of policy and the latest scientific research.

Climate Change Mitigation:

- Completion of a full carbon footprint measurement, greenhouse gas inventory, and adaptation assessment including mitigation costs. [21]
- Adoption of a 'co-benefits' strategy that targets policies that reduce greenhouse gas emissions and improve air quality. [22]
- Focus on existing low and negative-cost reduction opportunities in buildings and transport.[23]

2. Urban-scale Commitments from Developing Countries in the Post-2012 International Climate Change Agreement

Making the mandatory adoption of this framework by large urban regions the commitment of developing countries in the post-2012 international climate change agreement could provide the powerful incentive needed to make it happen.[24] This would also channel the enormous amounts of political and financial capital behind a global climate change agreement in the way most beneficial for Asia,[25] use United Nations (UN) institutions to promote stronger monitoring and enforcement of environmental regulations in Asia,[26] and allow Asian developing countries to make a significant contribution to the global greenhouse gas reduction effort.[27]

The mandatory adoption of some type of 'measurable, reportable, and verifiable commitments' has already been agreed upon by developing countries in the Bali Road Map. [28] Based on current negotiations voluntary national-level targets for carbon reduction, energy efficiency, or renewable energy is the most likely outcome. However, given the nature of environmental policymaking in Asia this is not necessarily the best outcome. Although national governments negotiate the agreement, governments at the urban-regional level will implement policies and targets, making them key actors for ensuring meaningful results.[29]

The key elements of this proposal are as follows:

A. Require the implementation and enforcement of a 'Sustainable Development Policy Approach' in a set number of a country's largest urban regions as a developing country's national commitment under the post-Kyoto agreement.

This commitment would require these urban regions to adopt the 'key elements' outlined in Section I, including eight targets as described below. To prevent

leakage, the geographic scope can be expanded in later agreements and these commitments can be combined with voluntary national goals.[30]

- **Economic Development**
  - Target for carbon productivity
  - Target for mass transit infrastructure development
- **Energy Security**
  - Target for renewable energy
  - Target for energy efficiency
- **Air Quality Management**
  - Target date for real-time monitoring and public disclosure of pollution levels
  - Target for reduction of key pollutants
- **Climate Change Mitigation**
  - Target for overall greenhouse gas reduction
  - Targets for key sectors (buildings, transport, petrochemicals, etc.)

B. Channel international financial flows from the public and private sectors in support of these commitments. Reforms of the UN's financing and market mechanisms will be necessary to achieve this objective.

- **Public Sector**
  - Financing and support for the implementation of these plans should be provided from an international fund with mandatory contributions from Annex I countries, or from a levy on certain types of CDM projects. This could be similar to the fund that was proposed by Mexico in Bonn in June 2008.[31]
- **Private Sector**
  - CDM should be streamlined and deepened to promote low-cost urban mitigation opportunities such as building energy efficiency, transport, and co-benefits projects.[32]
  - Along the lines of 'policy-based' or 'programmatic' CDM, large urban regions that adopt this 'Sustainable Development Policy Approach' should be allowed to submit their associated city-wide GHG reduction plan for CDM crediting.[33]

III. Endnotes

[1] Loh C., Stevenson A., Weldon M., Hedley A., McGhee S., Lai H.K., Chau J., Chau P., Wong C.M., Wong T.W., Ng S. and Lau A. (2008). A Price Too High: The Health Impacts of Air Pollution in Southern China. Hong Kong: Civic Exchange. http://www.civic-exchange.org/eng/upload/files/200806_pricetoohigh.pdf

GOI (2003). Auto Fuel Policy. Ministry of petroleum and Natural Gas, Government of India, New Dehli. http://petroleum.nic.in/autoeng.pdf

World Bank (2002a). Philippines Environment Monitor 2002. The World Bank, Washington, DC

World Bank (2002b). Thailand Environment Monitor 2002. The World Bank, Washington, DC

Chen B., Hong C. and Kan H. (2001). Integrated Assessment of Energy Options and Health Benefits in Shanghai. Final report to USEPA and USNREL. (in English & Chinese). http://www.epa.gov/ies/documents/shanghai/full_report_chapters/ch9.pdf

[2] Satterthwaite D., Saleemul H., Mark P., Hannah R. and Lankao-Romero P. (2007), Adapting to Climate Change in Urban Areas, IIED Human Settlements Discussion Paper Series. http://www.iied.org/pubs/display.php?n=1&l=7&s=HSDP

Nicholls R.J., Hanson S., Herweijer C., Patmore N., Hallegatte S., Corfee-Morlot J., Jean Château and Muir-Wood R. (2008), 'Ranking Port Cities with High Exposure and Vulnerability to Climate Extremes: Exposure Estimates', OECD Environment Working Papers, No. 1, OECD Publishing. doi:10.1787/011766488208.

[3] For example, see: Rock M.T. (2002), *Pollution Control in East Asia: Lessons from Newly Industrializing Economies*, RFF Press: Washington, DC.

[4] Two of the most active organizations are the Clean Air Initiative for Asian Cities http://www.cleanairnet.org/caiasia/1412/channel.html and Institute for Global Environmental Studies http://www.iges.or.jp/en/.

[5] For example, see: Organisation for Economic Cooperation and Development (2007), *OECD Environmental Performance Reviews China*, OECD: Paris.

[6] For example, see: The State Council of the People's Republic of China (2007), *China National Environmental Protection Plan in the Eleventh Five-Years (2006-2010)*.

English People's Daily Online (2007), 'China sets 8 percent growth target for 2007', 5 March 2007.

Guttman, D. and Yaqin S. (2007), *Making central-local relations work: Comparing America and China environmental governance systems*, Frontiers of Environmental Science and Engineering in China, vol. 1: 4, pp. 418-433.

[7] For example, see: Environmental Protection Department, The Government of the Hong Kong Special Administrative Region (2008), 'Air problems and solutions: To Replace Pre-Euro and Euro I Diesel Commercial Vehicles by New Commercial Vehicles - Incentive Scheme'.

Tung C. (2007), 'Air at the end of the tunnel, emissions trading in the Pearl River Delta, China', Mallesons Stephens Jacques, 14 March 2007.

[8] For example, see: Fan M. (2006), 'China's Party Leadership Declares New Priority: "Harmonious Society"', Washington Post, 12 October 2006.

[9] For example, see: Castillo C.K.G, Sanqui D.C., Ajero M. and Huizenga C. (2007), The Co-Benefits of Responding to Climate Change: Status in Asia. US EPA, Manila Observatory, and CAI – Asia: June 2007.

[10] For example, see: AFP (2007), 'Rich nations must honour climate change pledge: developing countries', 24 September 2007.

[11] For a discussion of key problems with the main transfer mechanism, the Kyoto Protocol's Clean Development Mechanism, see: Wara M. and Victor D. (2008), 'A Realistic Policy on International Carbon Offsets', PESD Working Paper #74, Stanford University.

[12] For example, see: Enkvist P., Naucler T., and Rosander J. (2007), 'A cost curve for greenhouse gas reduction', The McKinsey Quarterly. http://berc.berkeley.edu/flyers/McKinseyQ.pdf

[13] As has been discussed, the lack of an integrated approach to these issues by Asian cities has led to weak institutions and enforcement of environmental policy, the prioritization of development and downplaying of environmental problems, and reliance on the developed world to provide financing, technology, and expertise.

[14] For example, see: City of Sydney (2008), Sustainable Sydney 2030, http://www.cityofsydney.nsw.gov.au/2030/theplan/

ARUP (2005), Arup unveils plans for world's first sustainable city in Dongtan, China, 24 Aug. http://www.arup.com/newsitem.cfm?pageid=7009

Sustainable Development Unit, Office of the Chief Secretary for Administration, (2005), A First Sustainable Development Strategy in Hong Kong, http://www.susdev.org.hk/archive/archive/en/pdf/1stSDStrategyE.pdf

Office of the Mayor (2007), PlaNYC 2030, http://www.nyc.gov/html/planyc2030/html/home/home.shtml

Many city governments in the west also now have completely dedicated offices of sustainability. For example, see: Seattle. gov (2008), Seattle Office of Sustainability and Environment, http://www.seattle.gov/ENVIRONMENT/

[15] A recent report from McKinsey on urbanization in China indicates that 170 mass transit systems could be built and 5 billion meters of road could be paved by 2025 – indicating that decisions on transport mode will have a major impact on future GHG and air quality management. Refer to: McKinsey Global Institute. (2007), *Preparing for China's Urban Billion.*

Although its transport strategy is far from perfect, Hong Kong is often credited with having one of the most efficient mass transit systems in the world. The MTR Corporation that runs the railway also develops residential and commercial projects above stations, promoting concentrated development and the widespread use of mass transit. Although institutional and financial arrangements will differ, a similar model could be adopted in other Asian cities.

See: Civic Exchange (2004), *Merging Hong Kong's Railways: The Public Interest Perspective.* http://www.civic-exchange.org/eng/upload/files/200412_MergingHKRailways.pdf

Barron B., Ng S., Ho B., Ogus S. and Taylor A. (2004), *Selected Employment Benefits: West Island Line/South Island Line*, Hong Kong: Civic Exchange, http://www.civic-exchange.org/eng/upload/files/200405_EmploymentBenefits.pdf

[16] This would require accounting for environmental costs (externalities) when reporting economic growth figures and GDP, especially the health costs of air and water pollution. Development goals would then be set in line with these new figures. Given that some reports have indicated the costs of pollution completely negate overall economic growth in some Asian countries, this is an especially vital measure. China has made several attempts to implement this strategy with mixed results.

See, for example: Wen Z. and Chen J. 'A Cost-Benefit Analysis for the Economic Growth in China', Ecological Economics, vol. 65:2; and 'Pollution Costs Equal 10% of China's GDP', Shanghai Daily, 6 Jun. 2006.

Liu J. (2004), 'China Releases Green GDP Index, Tests New Development Path', Worldwatch Institute, 28 Sept. 2006, http://www.worldwatch.org/node/4626

Qiu J. (2007), 'China's green accounting system on shaky ground', Nature, 1 Aug. 2007.

[17] Innovative programs such as the Pollution Prevention and Energy Efficiency Program (P2E2) partnership between the United States and China are intended to promote the greening of polluting industries and the success of environmental service companies. This particular program takes advantage of the financial and

technical expertise of companies in Hong Kong and requires little public funding. This program could serve as an example for other cities and regions around Asia. See: http://www.buyusa.gov/hongkong/en/about_p2e2.html

[18] The idea is to create an 'energy policy' and not just an 'electricity market'. As it relates to the case study of Hong Kong, the principles are: 'ensure the public can enjoy reliable and safe energy supplies at reasonable prices within an energy system that provides energy services at least cost to society; does not waste scarce energy resources; generates and uses energy highly efficiently; seeks to spur economic growth; protects the local environment; reduces Hong Kong's contribution to climate change; increases human resource productivity; and promotes public health.' See: Loh C. (2006), *An Air Management Plan for Hong Kong,* Hong Kong: Civic Exchange, http://www.civic-exchange.org/eng/upload/files/200609_AirManagementPlan.pdf

In most Asian cities the adoption of this type of policy would require close cooperation with and potentially significant policy changes by the national government to the complex system of taxes, subsidies, and price controls that determine the economics of this heavily regulated industry. The overall goal is to promote energy conservation among power companies by decoupling growth in generation from profits – referred to as the 'negawatt' approach. See: Lovins A. (1989), *The Negawatt Revolution: Solving the CO_2 Problem,* http://www.ccnr/org/amory.html

[19] Several cities in the Asia-Pacific region, including Tokyo and Melbourne, have succeeded in improving energy efficiency by requiring large greenhouse gas emitters and companies in certain sectors to complete mandatory audits of emissions and energy use. Even if companies are not required to accept legally binding targets, completing the audits helps them identify cost-saving opportunities and forces them to disclose environmental credentials to the public. See: C40 Cities Climate Leadership Group (2008), 'Best Practices: Energy', http://www.c40cities.org/bestpractices/energy/

Recognizing the high percentage of electricity attributed to buildings in many Asian cities – 89% in Hong Kong – governments have also begun to develop and implement measurement and auditing techniques for this key sector. See: Environmental Protection Department (2008), 'Green Hong Kong – Carbon Audit', http://www.epd.gov.hk/epd/english/climate_change/ca_intro.html

[20] There are a variety of potentially successful strategies for improving urban and regional air quality, including those that rely on market-based mechanisms and those that favor technology and regulatory standards. However, the most successful strategies for managing urban air pollution and taking accounting of its full costs have several common characteristics.

First, they make the protection of public health the central basis for setting air quality targets. Economic considerations can be brought into the discussion when deciding the timeline and strategies for achieving these targets. Use of the World Health Organization's (WHO) guidelines is recommended.

Second, it includes an extensive monitoring network and publicly discloses data in real time. This is vital for researchers to measures the full health costs of air pollution, and for the public to be fully informed about their immediate and long-term health risks from a continued lack of government action. This network is also essential for effective monitoring and enforcement of policies.

Third, the re-evaluation of standards based on assessment of policies and the latest science. Policies should be flexible enough to change based on new information, and governments should be prepared to discard failing strategies and redirect resources if necessary.

For a further discussion of the application of this framework in an Asian urban region, see:
Loh C., et al. (2008), *A Price Too High: The Health Impacts of Air Pollution in Southern China,* http://www.civic-exchange.org/eng/upload/files/200806_pricetoohigh.pdf

Bachmann J.D. (2007). *2007 Critical review—Will the circle be unbroken: A history of the U.S. National Ambient Air Quality Standards*. In J. Air Waste Man.. Assoc., 57(6):652-697.

Loh C. (2007). *An Alternative Policy Address: 2007-8*, http://www.civic-exchange.org/eng/upload/files/200710_AlternativePolicy.pdf

Civic Exchange (2006). *An Air Management Plan for Hong Kong*, http://www.civic-exchange.org/eng/upload/files/200609_AirManagementPlan.pdf

[21] The Carbon Disclosure Project (CDP) and Local Governments for Sustainability (ICLEI) have also recently announced a program for 30 United States cities to audit and report their greenhouse gas emissions using a consistent methodology. This is a promising program that could be adopted in Asian cities. See: Collins T.

(2008), 'Carbon Disclosure Project, ICLEI partner to help US cities report local climate actions, emissions, CDP and ICLEI, 10 August, http://www.eurekalert.org/pub_releases/2008-08/cdp-cdp080608.php

In addition to analyzing mitigation opportunities, adaptation is also a critical component of GHG assessments for Asian cities. Since it is more difficult to quantify the costs and benefits of adaptation to climate change rather than mitigation, it is often not given significant treatment in major international climate change cost analyses such as the Stern Review and those conducted by McKinsey. However, many city governments have effectively included adaptation in their plans, including London and Singapore. However, Asian cities still need to go further and place an equal emphasis on adaptation and mitigation.

See: Sir Nicholas Stern, The Economics of Climate Change: The Stern Review, Cambridge University Press, Cambridge, UK, 2006.

Enkvist P., Naucler T. and Rosander J. (2007). 'A cost curve for greenhouse gas reduction'. The McKinsey Quarterly. http://berc.berkeley.edu/flyers/McKinseyQ.pdf

Mayor of London (2007), A*ction Today to Protect Tomorrow: The Mayor's Climate Change Action Plan*, London, UK. http://www.london.gov.uk/mayor/environment/climate-change/ccap/index.jsp

National Climate Change Committee (2008), *Singapore's National Climate Change Strategy*.

[22] Policies that produce local environmental improvements – such as reduced air pollution – and climate change mitigation are referred to as a 'co-benefits' strategy. The idea is to capture the existing political will and resources for addressing long-standing environmental problems while also taking advantage of funding sources or mitigation opportunities for climate change. There is already a significant amount of political will and ongoing research behind the use of a co-benefits strategy in Asian cities and it is branching out beyond air pollution and climate change. See: Castillo C.K.G, Sanqui D.C., Ajero M. and Huizenga C. (2007), The Co-Benefits of Responding to Climate Change: Status in Asia. US EPA, Manila Observatory, and CAI – Asia: June 2007.

[23] Many of the lowest and even negative-cost climate change mitigation opportunities are available in cities, and frequently in areas such as buildings or transport that can also produce the co-benefits outlined above. However, these opportunities are not being adequately captured by cities in Asia. Focusing on detailed emissions inventories and cost-benefit analyses, and innovative programs in these key sectors will produce the greatest reductions at the lowest economic cost. See: Enkvist P., Naucler T. and Rosander J. (2007).

[24] Although adopting this framework should already be in the best interest of cities from an economic, environmental, health, and energy perspective, previously discussed barriers – and the major changes in thinking required – indicate that strong incentives will likely be required to convince Asian cities to shift to this 'Sustainable Development Policy Approach'.

[25] There is an increasing need for a stronger Asian voice in international climate change negotiations, as the discussion so far has tended to be dominated by the interests of western countries. The greater focus on forestry and adaptation in Bali is a sign of positive change, but by most accounts measures in these areas will not go nearly far enough. For examples of efforts to develop a stronger perspective on the interests of Asian countries to feed into international negotiations, see: Loh C., Tay S., Stevenson A., Paungmalit P. and Yuk C. (2007), *Climate Change Negotiations: An Asian Stir Fry of Options,* Hong Kong: Civic Exchange, http://www.civic-exchange.org/eng/upload/files/200712_ClimateChange.pdf

Hamanaka H. et al. (2008), Climate Change Policies in the Asia-Pacific: Re-uniting Climate Change and Sustainable Development, Hayama, Japan: Institute for Global Environmental Studies, http://www.iges.or.jp/en/pub/pdf/whitepaper/whitepaper2.pdf

[26] The Clean Development Mechanism has been credited with producing significant improvements in environmental management in Asia, well beyond the introduction of new technology. These improvements include the introduction of environmental management practices such as, 'environmental accountability of projects; transparency in reporting; and third-party validation and verification'. It has also introduced markets as a tool for environmental management, which are likely to be first used by many Asian regions to address air pollution problems but also as part of a co-benefits strategy. For example, see: Raufer R. (2008), 'Carbon Markets and Emissions Trading in Asia', in Loh C., Stevenson A. and Tay S. (eds.), *Climate Change Negotiations: Can Asia Change the Game?* , Hong Kong: Civic Exchange.

[27] By any ranking, several developing countries in Asia are currently among the largest overall GHG emitters in the world – although still low in historical and per-capita terms – and are projected to continue rapidly growing in this future. This makes their efforts essential to any global strategy to combat climate change. See: International Energy Agency (2008), IEA Energy Statistics, http://www.iea.org/

[28] UNFCCC (2007), 'Bali Action Plan', adopted at UNFCCC COP 13, Bali, Indonesia, December, 2007, http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3

[29] In China, the national government has established energy and climate change policies requiring energy efficiency targets to be met by 2010 and renewable energy targets to be met by 2020. National-level authorities are requiring state-owned corporations and provincial officials to improve environmental performance. The national government expects more developed cities and regions, such as Hong Kong and the Pearl River Delta and Shanghai and the Yangtze River Delta, to lead the way and produce significant results.

[30] 'Leakage' of heavily polluting industries from locations with strict to those with weak standards is a concern for any environmental regulation. However, including national targets and scaling-up this framework in future commitment periods would help address this problem. There would also likely be a natural dissemination of technology and capacity across countries. The hope is that by convincing developing countries to adopt and enforce stricter environmental standards in key urban regions, the more serious concern regarding global leakage of industries can be addressed.

For example, the Chinese government could make a mandatory commitment to implement this 'Sustainable Development Policy Framework' – including the eight described targets – in 10 key cities across the country from 2012-2016. It would also commit to national voluntary targets for energy efficiency, pollution reduction, and renewable energy – as it has already done. In the next phase (2016-2020) China would be required to deepen national targets and expand the 'Sustainable Development Policy Framework' to all cities above a certain size across the country.

[31] Xinhua (2008). UN climate change conference fails to reach concrete agreement. http://www.ccchina.gov.cn/en/NewsInfo.asp?NewsId=12699

[32] Although some examples exist, such as the Delhi Metro, streamlining the CDM Executive Board's approval process and helping cities develop methodologies for these preferred projects would help expand their scope. Clarification of the additionality criterion and discounting of less-desired projects are other necessary reforms for supporting this transition to more 'policy-based' CDM.

For a discussion of this type of CDM reforms, see: Chung R.K. (2007) 'The use of targets or market mechanisms for emissions reductions in developing countries', in Sustainable Development International and United Nations Environment Programme (eds.) Climate Action, London: Sustainable Development International, pp. 114-117, Accessed Jan. 2008, http://www.climateactionprogramme.org/images/uploads/book_pdfs/climate_action_book_lowres.pdf

Bartolucci F., Oliver P., Shao Jie, S. and van Sambeek E. (2008), *The Value of Carbon in China: Carbon Finance and China's Sustainable Energy Transition,* Hong Kong: WWF, http://wwf.org.hk/eng/pdf/references/pressreleases_hongkong/20080721.pdf

Wara M. and Victor D. (2008) 'A Realistic Policy on International Carbon Offsets', PESD Working Paper #74, Stanford University.

Loh C., et al. (2007), Climate Change Negotiations: An Asian Stir Fry of Options, Hong Kong: Civic Exchange, http://www.civic-exchange.org/eng/upload/files/200712_ClimateChange.pdf

[33] This reform would be consistent with the 'sustainable development' criterion of CDM. It would also introduce large volumes of credits into the market that would help developed countries meet their commitments at a lower cost. However, a variety of issues related to the redundancy of credits and additionality would need to be worked out. See sources in endnote 19 for further discussion of potential CDM reforms.