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Jean-François Huchet

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神州展望



Workers in a coal mine,
Shandong province
Song Chao, the author of this
photograph, is a former colleague
of these miners
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Dear Readers,

This is the first issue of *China Perspectives* to appear in its new format. The journal will now be a quarterly publication, allowing us to expand the depth and range of our coverage. Of course this will in no way affect the number of issues covered by current subscriptions.

From now on, each issue will contain a special feature devoted to a specific topic. These features will take a multidisciplinary approach, supported by the latest academic research in each field, to provide in-depth analysis of the major issues confronting the contemporary Chinese world. The current issue contains a dossier that looks at the impact of global warming and China's place in the negotiations on the follow-up to the Kyoto Protocol after 2012. In addition, readers who wish to consult our website will also find further reports and audiovisual documentation, as well as links to other research institutions, enabling them to continue to explore the topics addressed in the dossier. Furthermore, a new section designed in collaboration with the *Asia Centre*, and drawing together articles from the electronic journal *China Analysis*, will now give access to critical commentaries and analyses of the Chinese press. Finally, in addition to the special feature in each issue, *China Perspectives* will continue to publish other research articles and reviews.

The editorial team wishes to thank you, our readers, for your continuing support, and we hope that you will find the current issue a rewarding and enjoyable read.

Jean-François Huchet
Director of Publication

Sébastien Billioud
Chief Editor

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Editorial

JEAN-FRANÇOIS HUCHET

With an annual GDP growth rate well above the 7% to 8% forecast by the Government at the start of the decade, and in spite of significant attempts over recent years to conserve energy, China is being hurled faster than was foreseen into the global problems associated with climate change. It is estimated that by 2007, China will have overtaken the United States in absolute terms as the world's largest producer of carbon dioxide. Unlike other environmental problems related to water, air or soil pollution, greenhouse gas emissions from a small number of countries are capable of causing irreversible damage to the whole planet. Historically it has been the most industrialised countries, led by the United States and followed by the European Union and Japan, which have been mainly responsible for global warming due to human activity, while between 1950 and 2002 China only accounted for 9.3% of total global emissions. Currently, however, that situation is being rapidly reversed. The International Energy Agency (IEA) has calculated that by 2030, China's production of greenhouse gases could be double the amount emitted by the United States⁽¹⁾. Consequently, China, together with other large developing countries like India, Brazil or Russia, now finds itself facing an ethical, economic and diplomatic dilemma: how can it secure a legitimate economic development without undermining the international attempts currently incorporated into the Kyoto Protocol to resolve the problem of climate warming? The dossier presented here is organised around the different aspects of this complex dilemma. The first article, by Jean-Paul Maréchal and Jean-François Huchet, presents a general overview, analysing the ethical and economic aspects, as well as tracing the diplomatic path followed by China in the international climate negotiations, which is constrained by the high probability of its continuing rapid economic growth in the coming decade. The article in which Alexandra Tracy, Kate Trumbull and Christine Loh look at the Pearl River Delta, demonstrates that, unless there is a swift and coordinated response by the authorities, there could

be very serious repercussions from global warming in this industrial region, which is the largest in China and which, we need to remember, represents 10% of its GDP and 30% of its exports. The article by Nathalie Rousset focuses on the impact of climate warming on agriculture through an analysis of its potential repercussions in northern China. She shows that it could have a serious effect on water supplies and agricultural production in a region which is home to 42% of the total population and comprises 60% of the country's arable land. These two articles remind us that, while China will not be solely responsible for global warming, it will be as much a victim of it as other countries. Paradoxically, this offers some hope to the rest of the world. The Chinese government will be afraid of the country's growth rates slowing down, and therefore will have to take urgent steps towards implementing more environmentally friendly policies, and these in turn will affect the level of greenhouse gas emissions. Among all these policies, the ones dealing specifically with coal production and building towns with less greenhouse gas emissions, seem to us to be decisive in answering the question as to whether China can become a credible and responsible participant in international climate negotiations. Jean-Marie Martin-Amouroux's article on the coal issue reminds us that there is a very difficult balance to be struck. Up until 2030, China will continue to be largely dependent on coal for its enormous energy requirements. In order to reach their goals in carbon dioxide reduction while mass-producing coal, the authorities will have to promote the rapid introduction of technological solutions of which the economic viability and widespread acceptance by the producers are far from certain. In his article, Julien Allaire examines the relevant policies in housing and transport. The prospects look better in the latter field, even if major problems remain, particularly in achieving wide use of bio-fuel engines in the Chinese car industry at a time when the country is set

1. *World Energy Outlook 2006*, International Energy Agency, Paris, 2006, 599 pp.

to possess one of the largest stocks of vehicles on the planet between now and 2030.

The next three articles examine how China is going to participate in the international talks on global warming, and most probably disrupt them. Béatrice Quenault draws our attention to the non-binding framework that the developing countries have built into the Kyoto Protocol⁽²⁾. She also analyses how the structure of the post-2012 agreement will have to find a place for China and India, and accommodate their legitimate desire for development while limiting their greenhouse gas emissions. Michal Meidan's article addresses Chinese diplomacy, showing how domestic factors have had a great influence on China's refusal to have greenhouse gas emission quotas imposed on it by international agreements. Yet he also indicates that China's position is far from being set in stone. The Chinese government might shift its position in response to various, sometimes contradictory, pressures. Admittedly these are likely to be more national than international, even though China knows that, along with the United States, it has become a major player in the post-Kyoto negotiations, and that it will have to make some concessions. Philippe Delhaise, who is a director of one of the main firms specialising in

launching projects within the Clean Development Mechanism (CDM) set up under the Kyoto Protocol, describes the progress and the limitations of the CDM and examines how China, within a few years, has become the leading recipient of funds transferred from the industrialised countries through the CDM.

Finally, the contribution from He Gang describes the ways in which the Chinese population is slowly becoming aware of climate warming and is beginning to tackle the issue through energy-saving measures. For the time being, the initiatives by Chinese NGOs are very limited in comparison with what is happening in the rest of the world, especially in India, even if they are heading towards expansion in the coming years. These initiatives are currently hampered by the political control over civil society in China, and by the lack of co-ordination between the different NGOs concerned with environmental matters. Nevertheless, the active participation of the population will become imperative, insofar as the war against climate warming will be waged in the field of energy saving, as Prime Minister Wen Jiabao has recently pointed out. •

• **Translated by Jonathan Hall**

2. Most of the developing countries have signed and ratified the Kyoto Protocol but, unlike the industrialised signatories, they do not have to keep within any greenhouse gas emission quotas.

Ethics and Development Model

China's Economic Growth Challenges the Future of World Climate

JEAN-FRANÇOIS HUCHET
AND JEAN-PAUL MARÉCHAL

The consequences of global warming are now well defined and particularly alarming. In view of the stupendous economic advances of the larger NICs, with China in the first rank, no "business as usual" scenario in the matter of GHG emissions can be acceptable. The aim of this article is to expose the challenges posed to the Chinese economy in adapting to the disciplines of sustainability.

« Cela n'est pas volontaire, vous êtes embarqué. »
Blaise Pascal, *Pensées*

Although we have still a long way to go in the field of modelling the earth's climate, the consequences of global warming are now pretty well understood. Such doubts as still persist do not indeed justify any illusions about what humanity may expect if, facing this ever more precise threat, we indulge in time-wasting. The consequences would of course vary according to how high temperatures might rise, but in any case they would affect food supplies (lower agricultural output), supplies of drinking water (the melting of glaciers), salt water (rises in sea level leading to salinisation in river deltas and the flooding of some cities, such as New York and Hong Kong), ecosystems (coral reefs) and the frequency and intensity of extreme meteorological phenomena (hurricanes and forest fires). Moreover, rising temperatures and humidity levels would threaten us mortals and our livestock with the proliferation of numerous pathogenic agents. Lastly, the disappearance of the polar ice-cap and the disruption of ocean currents might very well lead to rapid and generalised disturbances of the climate. In fact, according to the overwhelming majority of scientists, many of these phenomena are already with us. If we do not take swift and far-reaching measures, Nicholas Stern⁽¹⁾ explains in a report published last autumn, climatic change will cost the world economy the astronomic sum of 5,500 billion euros over the next half century and create more than 200 million migrants. Assuming an average increase of between 5°C and 6°C in global

temperatures (a perfectly reasonable expectation), the writer estimates that global GDP would fall by between 5% and 10%.

Reading this data forces us to a conclusion: all of us, human beings and nations, have a collective interest in arresting the present course of climate change. But there is another argument just as blindingly obvious and no less persuasive: all of us have just as great an interest, with a view to maximising our short-term benefits, in keeping up our voracious consumption of fossil fuels. Thus, each of us—states and individual citizens, rich and poor alike—ends up, with the fine reasoning of *homo economicus*, by being unreasonable . . . at the deepest level of reason. Economists call that "the prisoner's dilemma." Furthermore, as if that were not enough, this dilemma has been sharpened by the staggering economic advances made by some Newly Industrialised Countries (NICs). In their first rank is China which, this very year, is expected to overtake the United States in emissions of greenhouse gases (GHGs). Despite the undeniable historical responsibility of developed countries for anthropogenic global warming, recent forecasts by the International Energy Agency (IEA) indicate that the increase in China's emissions of CO₂ between now and 2030—four additional gigatons (Gt)—would by itself constitute 40% of all additional emissions by all the world's countries and nearly double those of the industrialised countries⁽²⁾. China's right to development and that of

1. Nicholas Stern, *The Economics of Climate Change*, Oxford, Oxford University Press, 2006, p. 188.

2. International Energy Agency, *World Energy Outlook 2006*, Paris, 2006, p. 188.

other big NICs such as India and Brazil is entirely legitimate, but it does raise a very particular ethical problem in the context of future climate change: how can the legitimate economic development of these great nations be assured without nullifying international efforts to limit GHG emissions? What is more, the effects caused by the size and population of these countries make it impossible for us to argue solely in relative terms. The fact that each American emits (expressed as a yearly average) three times more CO₂ than a Chinese person cannot in any way lead us to conclude that, in the interests of “justice,” no measures for controlling Chinese emissions should be taken so long as Chinese individual emissions lag behind American ones. Indeed, if individual emissions in China did reach levels comparable to those in America, one can easily imagine the state that the world climate would be in.

International negotiations on climate control are thus held up pending the outcome of a sort of team poker game. Facing each other over the cards are not, as people too casually assert, the North and the South; the teams are, on one side, the developed countries and, on the other, the NICs—and China in particular⁽³⁾. The interaction between the American and Chinese positions throws light on the internal logic of this kind of rivalry, the immensity of the problem that humankind absolutely must solve over the next decade. At the risk of over-simplifying, one might say that, so far at least (even though at the level of a few big American cities and one state, California, things seem to be developing favourably)⁽⁴⁾, Washington is tied up in knots seeking to defend its rejection of the Kyoto Protocol while Beijing refuses any coercive measure that might limit China’s emissions of GHGs. Admittedly, each government has excellent arguments to deploy. The United States asserts that any unilateral reduction of its CO₂ emissions would not only be likely to harm its overall economic performance but also—and this is true enough—would have no really positive effect on the world’s climate unless the developing countries (China in particular) followed suit. In answer, the Chinese authorities counter—not unreasonably—that they have no historical responsibility for global warming and that it is outrageous to suggest curtailing their right to economic growth and, therefore, to the benefits of the consumer society. It would be hard to imagine a more intractable deadlock—or a more troubling one, in that the resulting clash of state urgently threatens a “global public good”: climatic stability.

The “business as usual” scenario is not an option if we want to avoid in the medium term throwing the earth’s climate out of balance. Thus, we must find a way out of the logical, eth-

ical and practical trap that we are in, by devising a solution acceptable to all. Adopting a more sustainable form of growth on a global scale seems to be the only answer to the dilemma posed by the big NICs. As we shall show in the first part of this article, in terms of GHG emissions, China is the prisoner of its own growth model. Since the Chinese government wishes, quite legitimately, to continue improving its people’s living standards over the decades ahead, the only possible way of solving the equation lies in the rapid emergence of a more sustainable form of growth. This development would, in addition, allow China to take a more active stance in international climate negotiations: it might even break the stalemate with the United States which, deprived of any realistic arguments against, ought to play a full part in the “post-Kyoto” processes. Nevertheless, as we shall amplify in the second part, despite a new awareness on the part of the Chinese government and the launching of multiple political initiatives designed to control emissions, there still remain numerous setbacks on the technological and economic fronts, as well as problems with political incentives for industrial managers to change their behaviour.

A non sustainable form of growth

In 1950, China emitted 79 million tons of CO₂, which was 1.13% of the total for world emissions at that time⁽⁵⁾. In 2004, it emitted 6.1 Gt of GHGs⁽⁶⁾, an amount equal to 15% of world emissions and all experts now agree that China is about to overtake the United States and to become the world’s biggest emitter of GHGs. The rapid expansion of these emissions in China, averaging a yearly increase of nearly 4% between 1994 and 2004⁽⁷⁾, is obviously linked to the acceleration in the rate of economic growth since the

3. Indeed, the Kyoto Protocol, which came into force on 16 February 2005, was on that date ratified by 156 countries (22 developed countries, 13 newly industrialised countries and 121 developing countries); six countries signed without ratifying (among them the United States and Australia who declared they had no intention of so doing); lastly, 30 countries neither signed nor ratified the Protocol. The signatories are divided into two groups. The smaller group, the developed countries, have signed Annex I, committing themselves to reduce their emissions of GHGs. The “non Annex I” countries include the developing countries and the NICs (including China): none of them are yet committed to reducing emissions. And after the failure of the Hague Conference of 2001, the countries of the European Union decided to adhere to the Kyoto Protocol at a time when it was not legally binding.
4. See for example Philippe Grangereau, “La Californie prend l’auto par les cornes,” *Libération*, 22 September 2006 and Guillaume Serina, “Climat. La révolte des maires américains,” *Le Monde*, 12 October 2006.
5. People’s Republic of China National Climate Change Programme, 4 June 2007, 56 pp.
6. Or 6.1 Gt of CO₂ equivalent (GtCO₂e), *ibid.*, p. 4.
7. *Ibid.* p. 5.

launch of the reforms in 1978. But beyond that observation, it is important to identify some basic factors in China's economic development that have caused such a phenomenon. This analysis will help us, secondly, to identify the challenges facing the Chinese government as it attempts to promote a more sustainable form of development.

The increase in China's population is most certainly the most fundamental indirect factor in explaining the huge growth in emissions of GHGs and, more generally, the rapid pollution of the environment that we have been witnessing over the past half-century in China. The campaign to raise the birth rate that Mao launched at the end of the 1950s led to an exponential increase in the population. Today there are estimated to be 750 million more people in China than were registered in the first census in 1953. Although each individual Chinese person emits three times less CO₂ than do individuals in the OECD countries, the demographic weight of China is such that it is impossible to calculate only in relative terms when assessing the impact of China's GHG emissions on world climate⁽⁸⁾. The economic takeoff of so populous a country leads inevitably to an explosion in the demand for energy. Last year alone, five new 300 megawatt power stations came into production each week in China, raising its energy output in just one year by the equivalent of the total output of France⁽⁹⁾. Between 1990 and 2004, China's additional production of electrical energy has caused emissions of 2.5 Gt of CO₂⁽¹⁰⁾, this sector being principally responsible for the country's emissions of GHGs.

Furthermore, as is shown in the article by Jean-Marie Martin Amouroux published in this dossier, 83% of China's electricity is generated by conventional coal-burning power plants. It so happens that coal, compared with the other forms of fossil fuel traditionally used in power plants, namely gas and oil, releases into the atmosphere twice as much CO₂. That explains the rapidly growing contribution made by power stations to China's total GHG emissions: it has risen from 14% to 43% between 1980 and 2000⁽¹¹⁾. In Guangdong province, China's biggest industrial and exporting region, electricity production has doubled between 1998 and 2004 and, by themselves, the conventional coal-burning power plants supplied nearly two-thirds of overall production as against the 20% supplied by oil-fired power stations⁽¹²⁾. For so populous a country, achieving such record rates of economic growth, China's dependence on coal for its enormous electricity requirements is an additional exacerbating factor in its unfavourable performance in atmospheric pollution.

The importance of industry in China's economic growth has also played a crucial role in the rapid increases in GHG

emissions. The country's socialist heritage strongly influenced the choice of investments in favour of heavy industry, which is highly energy-intensive. Despite the emergence of market mechanisms within the Chinese economy, industry (and, even more so, heavy industry) remains the sector in which investment rates and production growth rates are highest. Economic development normally tends to promote a lessening of energy intensity⁽¹³⁾ (and, in consequence, lower levels of gas emission in relation to GDP) due to faster growth in the services sector than in industry. Even so, despite better accounting methods in the informal services sector (leading in December 2005 to an official revaluation of Chinese GDP by nearly US\$300 billion), the services sector has levelled off at around 40% while industry has seen its share going up ever since the start of the 2000s. Yet, between 1980 and 2000, energy intensity did fall steadily at an average 20% every five years. In other words, whereas 100 energy units were used in 1980 to produce 100 GDP units, Chinese producers were using only 40 energy units by 2000 to produce the same quantity of GDP⁽¹⁴⁾. That amounts to a remarkable performance for an emerging country. However, since 2002, energy intensity has started going up again, which may portend serious difficulties for the government in its attempts to limit GHG emissions. The high growth of investment observed in heavy industry since the start of the 2000s is directly connected to that development. Within industry, it is precisely the steel, chemicals and cement sectors—very high consumers of electricity—that have recorded the highest growth. The fact that industrial sectors consuming most energy have grown more quickly than industrial sectors using less energy creates a paradoxical effect: energy intensity has certainly continued to fall in all industrial sectors but, because the production growth in sectors using more energy was more rapid, energy intensity measured across the

8. The value of international comparisons based only on per capita emissions is further weakened to the extent that, in a country like China, calculations include a significant part of the rural population that plays no part, other than marginally, in the modern economy centred upon the cities and on mass consumption. China's GHG emissions are principally the product of a modern market economy in which at best only 400-500 million people are taking any part.

9. Reuters, 23 March 2007.

10. *World Energy Outlook 2006*, *op. cit.*, p. 80.

11. *Ibid.*

12. Bill Barron *et al.*, "Owning up to Responsibility for Manufacturing Contributions to the Pearl River Delta's Poor Air Quality," Institute for the Environment, The Hong Kong University of Science and Technology and Civic Exchange, Hong Kong, 2006, 37 pp.

13. As measured according to the following formula: quantity of energy consumed divided by GDP.

14. Jiang Lin, "Managing Energy Demand: the Bridge to Sustainability", *China Economic Quarterly*, 4th quarter, 2006, p. 30



Baotou Steel works at dusk

whole of industry has increased⁽¹⁵⁾. Of course, this development has an undesirable impact on GHG emissions. Two adjustments would be necessary to limit their growth. Firstly, a production slowdown in those industrial sectors where energy consumption was strongest and, secondly, fast growth in services than in industry. Sadly, nothing suggests that, for the present, the Chinese economy is moving in that direction.

Lastly, we should take a detour by way of the political economics of the Chinese reforms, to understand the last fundamental factor explaining the rapid upward trend of GHG emissions. Political, fiscal and financial incentives offered to state officials at the local level led to over-investment and to fragmentation of the industrial structure. Decollectivisation of the countryside in 1978 opened the way to the creation of a multitude of small enterprises in rural areas, known as Township and Village Enterprises. At first they sprang up from the repair workshops of the people's communes but later on they widened their fields of activity into all industrial sectors. The development strategy of the Maoist period—"counting on one's own strengths"—applied also to rural areas which, in the context of the people's communes, were required to be largely autonomous when it came to producing and repairing agricultural equipment. In these cir-

cumstances, starting from the late 1960s and continuing through the 1970s, there was an explosion of small production units for cement, fertiliser, steel⁽¹⁶⁾ and even electricity. The 1978 reforms allowed these production workshops to expand into enterprises and to extend their scope of activity. From 1978 onwards, provincial and local leaders were judged not only on their political loyalty but also on their capacity to develop local industry. Their control over local financial dealings (and particularly over provincial branches of the big state banks) enabled them to pursue all-out industrialisation without worrying about any national effects arising out of the duplication of investments. China holds some unfortunate world records for the fragmentation of its industrial fabric. Thousands of small, indeed undersized, producers making the same products are scattered the length and breadth of the country. By the end of the 1990s, 8,000 independent cement producers were operating on Chinese soil, whereas in the rest of the world the number is put at no more

15. See the studies done by the Lawrence Berkeley National Laboratory.

16. The census records nearly 500 enterprises making steel at the end of the 1970s. See D. Perkins, "China's Economic Policy and Performances," in D. Twitchett and J. K. Fairbank, *The Cambridge History of China*, vol. 15, *The People's Republic*, Part 2, Cambridge Mass., Cambridge University Press, 1991, pp. 475-539.

than 1,500⁽¹⁷⁾. The same situation could be observed in practically all sectors of industry: 123 car producers, 1,500 steel plants, 2,900 glass producers⁽¹⁸⁾. Since the mid 1990s, the authorities have tried—with results varying according to sector—to rationalise industrial structures by closing and merging a large number of state and collective enterprises⁽¹⁹⁾. Fragmentation of the industrial fabric to this extent has had direct consequences for GHG emissions in that it has prevented quite a number of producers from reaching the critical mass allowing rationalisation of the means of production or the replacement of old, energy-intensive technologies. Moreover, this fragmentation has also affected the electricity production sector. The proliferation of conventional coal-burning power stations has impeded concentration of production, which would have allowed energy economies and, in particular, the introduction of new, less polluting technology. A study recently carried out in Guangdong⁽²⁰⁾ reveals that many factories operating in the textile, paper and agro-alimentary sectors have elected to produce electricity themselves, building small coal-fired power plants on their own sites. Obviously, such decisions slow down the provincial government's efforts to control SO₂ and CO₂ emissions. More generally, the government's repeated attempts to rationalise industrial structures have been blocked by the strong political (and monetary) incentives for local officials to favour quantitative growth; this in turn is dictated by the concern, at all state levels, to avoid uncontrolled growth in unemployment, so as to maintain social stability and, in the last resort, the legitimacy of the Communist Party.

All these factors—rapid increases in population, dependence on “conventional coal burning” for the generation of electricity, the high proportion of heavy industry in the economy and the fragmentation of industry—have combined, ever since the end of the 1970s, to create economic growth characterised by heavy GHGs. So when we consider the present rate of global warming, China appears in some ways the prisoner of its own non-sustainable form of growth. Its diplomatic status in international climate negotiations is thus weakened: being anxious not to endanger its own economic development or the stability of the present political system, Beijing has very tight margins for manoeuvre when asked to accept concessions on limiting GHG emissions. The only possible way forward for China, and likewise for the future of international climate control, would be a progressive transition to a more sustainable and more energy-saving form of development.

Towards sustainable development in China: the narrow path towards a domestic and diplomatic solution

The requirement for sustainable development on the international scale

In economics, as in other fields of knowledge, progress has always arisen from two phenomena (simultaneous or independent): taking account of a new reality and/or conceiving of a new perspective. When states are confronted by climate change, just as the “business as usual” approach is ineffective, the same applies to the neo-liberal economic approach, which sees in *laissez-faire* the remedy for all evils affecting both the social sphere and the biosphere. What is needed is a change of viewpoint, supplied in present circumstances by this notion, both new (it was formulated just about twenty years ago⁽²¹⁾) and also, in a certain sense, very old (one can trace its beginnings back to the Old Testament⁽²²⁾) but at any rate wholly at odds with the market forces ideology: sustainable development.

A development process is known as “sustainable” when it can “satisfy the needs of the present without compromising the chance for future generations to satisfy theirs.” This is a programmatic concept that calls for the creation of a double form of solidarity: sustainable development is “horizontal” as regards the most impoverished people of today and “vertical” between the generations; it invites us to think of economic activity in a global sense both in space (all the real economies are involved) and in time (the fate of generations to come must be taken into account). The influence of this

17. China Research Team, “China: Price War and Price Control,” in Warburg Dillon Read, December 1998, p. 14.
18. Zhongguo shehuikexueyuan gongye jingji yanjiusuo, Zhongguo gongye fazhan baogao 1997 (Report on industrial development in China 1997), Beijing, Jingji guanli chubanshi, 1997.
19. Jean-François Huchet, “Privatisation et restructuration des PME d'État en Chine,” *Critique internationale*, n° 32, July 2006, p. 173-197 and “Industry Reorganisation and Restructuring: Prospects, Problems and Policy Priorities,” in OECD (ed), *China in the World Economy. The Domestic Policy Challenges*, Paris, OECD, 2002, pp. 161-192.
20. Bill Barron *et al.*, “Owning up to Responsibility for Manufacturing Contributions to the Pearl River Delta's Poor Air Quality,” *op. cit.*
21. The notion of sustainable development was defined for the first time in WCED (World Commission on Environment and Development), *Our Common Future*, Montreal, Les Éditions du Fleuve, 1988 (1st English edition 1987). For a brief history of the idea, see Jean-Paul Maréchal, “Développement durable,” in Jean-Louis Laville and Antonio David Cattani (dir.), *Dictionnaire de l'autre économie*, Paris, Gallimard, col. “Folio”, 2006, pp. 153-163.
22. See Jean-Paul Maréchal, “L'éthique écologique de la Bible,” *Écologie et politique*, n° 33, 2006, pp. 187-200.

expression has been such that the very meaning of the term “development” has been affected by it. It does not hark back to what French people remember as the “Glorious Thirty”—the three decades following the Second World War, when the so-called “economics of development” consisted of a collection of analyses and proposals aimed at helping the third world to catch up with the industrialised countries; rather, it derives from an all-embracing reflection, taking in all countries, on the ultimate ends of economic life and thought, and from the requirement to look afresh at the relationships between economics, society and the biosphere.

Sustainable development is a normative concept opposed to any sacrificial approach by economic life: it demands that, in all circumstances, only equitable solutions should be conceived and put into effect, this being an essential condition of their being accepted. From Emmanuel Kant to John Rawls by way of Michael Walzer, Charles Kindleberger or Jürgen Habermas, there is no shortage of ideas from around the world offering peace between nations and co-operation to assure wellbeing for all⁽²³⁾. Yet, whatever may be the theory advanced, the institutional arrangements imagined, the mechanisms devised, yearly emissions of GHGs must not exceed 5 Gt of CO₂ equivalent (that figure representing only 12% of the present rate of emissions, now estimated at 42 GtCO₂e)⁽²⁴⁾. This limit for the planet must be applied as a constraint over and above all political and economic calculations.

A feasible mechanism, one that is fundamental to the Kyoto Protocol and also to the European Emissions Trading Scheme (ETS), which took effect on 1 January 2005, is that known as “cap and trade.” By this expression is meant an approach whereby a maximum limit is set upon the overall amount of a pollutant that can be emitted (the cap) and a market is created where polluters who emit more GHGs than their agreed allowances must buy credits from those who pollute less (the trade).

However, while the cap and trade method does settle the question of the overall limits to pollution, it does not resolve that of the initial allocation of emission rights. Possible solutions range between two opposing cases. At one extreme there is the proposal for “acquired rights” (also known as “grandfathering”) whereby each polluter, state or company, is allocated a quantity of polluting rights calculated on two bases: the overall target for emissions reduction and its own level of emissions during a trial year. At the other extreme, there is the proposal for quotas based on a uniform allocation per inhabitant: the scheme is based upon the notion that each human being should have the individual and uni-

versal right to emit a certain quantity of GHGs. Between these extremes, of course, other schemes are proposed. One idea, for example, is for polluters to start with an initial allocation based on acquired rights, but each would be set the long-term target of reaching convergence of emission levels⁽²⁵⁾.

To achieve that demand, despite the obvious need for it, is no easy thing. In fact, the formulation of a Global Public Good is complicated by the absence of any transnational authority. Unlike a private good, a public good such as the climate—and this is also the case with national defence or internal security—has, according to economic theory, the following two properties: “non-exclusion” and “non-rivalry.” What is understood by the first is that no economic agent may be deprived of the benefit of the production of the good in question; the second is that the consumption of the said good by one person does not in any way lessen its availability for others to consume it. It is this double condition that makes the market incapable of producing these goods, indispensable though they are to the proper functioning of the economic sphere⁽²⁶⁾ itself; and, by that very fact, it makes it essential for the state to intervene, being the only agent in a position to finance the production of public benefits out of taxation. Originally conceived as relating to the national economy, the notion of public goods has, these past few years, been extended to the international sphere. Hence the expressions International Public Good, World Public Good or Global Public Good and figuring among these goods, of course, are peace and units of measurement—and also climatic stability.

Added to the failures of the market, however, which justify state intervention to produce National Public Goods, are the failures of states themselves in supplying Global Public Goods; what is true for economic agents in the framework of the domestic market (namely, opportunistic behaviour) is also true for states in the relationships they maintain with each other.

So, one thing is essential: to progress from rivalry to co-operation. For that, game theory teaches us that there is no

23. See Philip Golub and Jean-Paul Maréchal, “Hyper-puissance américaine et biens publics globaux,” *Géoeconomie*, n° 30, summer 2004, pp. 9-40.

24. Nicholas Stern, *The Economics of Climate Change*, *op. cit.*

25. For further details on these measures, see Renaud Crassous and Sandrine Mathy, “Peut-on étendre le système des quotas échangeables aux PED?,” *Problèmes économiques*, n° 2, 904, 19 July 2006, pp. 25-29; Philippe Roos, “Les marchés de droits à polluer,” *Problèmes économiques*, n° 2, 904, 19 July 2006, pp. 21-24; Annie Vallée, *Économie de l’environnement*, Paris, Seuil, col. “Points”, 2002.

26. Indeed, in such circumstances, no consumer has any interest in paying for something that is available free; and in consequence no enterprise has any incentive to produce it.

need for friendship (fortunately: if there were, we should consider moving at once to another habitable planet!), but only for interactions taking place in time. To put it more precisely, co-operation may be created out of the sustainability of the relations between the players, in that the latter may be ready to meet each other again. Who could deny that negotiations on climate control are an example of this kind of situation? But there is still the possibility of tit for tat: one player failing to attend might push others into retaliating by staying away themselves. This outcome would, in the case of climate negotiations, be a recipe for disaster.

Of course, a desirable solution would consist in finding a central power capable of enforcing support for a set of standards⁽²⁷⁾. Here, there is a French idea that might turn out particularly apt (targeting specifically the United States and Australia)⁽²⁸⁾. The proposal is for a “carbon tax” on imports of industrial products coming from countries refusing to commit themselves post-2012 to some mechanism similar to that adopted at Kyoto. Such a tax would work well in the European context in the fight against environmental dumping. One would remind those who assert that such a measure would be as Peter Mandelson stated “contrary to the spirit of international co-operation,” that Article 4 of the Montreal Protocol of 16 September 1987 (came into force on 1 January 1989) on substances weakening the ozone layer, obliged all participating countries to ban, by 1 January 1990 at the latest, any CFC trade with states which did not sign up to the said Protocol.

In the absence of any such transnational power, it is for the present the example set by national policies—adopted unilaterally or in concert—that might turn out to be decisive. Some countries have the courage to take measures harmful to their own immediate interests, even though, in the long run, these measures serve the common good (including their own). In so doing, they are able to make an impact—at least a partial one—on the way their partners and rivals prepare themselves to face climate change. Thus, they exert a persuasive influence, they play a constructive role, they are (to borrow a phrase from François Perroux) “active units,” which is to say that they are agents likely to change the context within which they act. One example was the perseverance of the European Union after the failure of the Hague Conference and the US withdrawal from the process begun in 1997: this made it possible, following Russian ratification in 2005, for the Kyoto Protocol to come into force. The emergence of a more sustainable form of development in a country like China would represent, clearly, a historical crossroads.

Is China the prisoner of its growth model?

China is facing serious damage to its environment. According to the “Environmental Sustainability Index” produced in 2005 by the American universities of Yale and Columbia, out of 144 countries listed, China lies in 133rd position⁽²⁹⁾. All studies are unanimous: Chinese growth must now be reshaped into a more sustainable model, if it is not to cause irreversible damage to the environment and a severe threat to human health⁽³⁰⁾. The question of GHG emissions is at the heart of this crisis: policies must be adopted to allow less intensive use of energy and to reduce the pressure on the environmental resources of the country and the planet. The sheer extent of the damage so far has shocked China’s leaders and its people. And, ever since the mid 1990s, numerous measures favouring the environment have been introduced. To control GHG emissions, China has in recent years introduced several energy-saving plans setting ambitious targets for the decades ahead. The Eleventh Plan (2006-2010) contains an important section on the environment and on steps towards a more sustainable form of economic development. Moreover, the law on renewable forms of energy came into force on 1 January 2006. The target set in the Plan is to reduce dependence on coal from the present level of 74% to something less than 60%, to restrict usage of oil because of China’s dependence on foreign suppliers and to exploit renewable sources of energy (including nuclear and hydroelectric) to the point where they provide 30% of China’s energy needs by 2030. Last June, the Chinese government published a national plan on global warming⁽³¹⁾ partly taking up the measures in the Eleventh Plan and those in the law on renewable energy sources while proposing a series of institutional innovations and specific measures on agriculture, industry, services and R&D with the aim of promoting growth less dependent on GHG emissions. Further, China is an active participant in the Clean Development Mechanism as provided for under the Kyoto Protocol. The mechanism is designed to help reduce GHG emissions in the developing world using technologies funded by companies in the developed countries (see the interview

27. See Robert Axelrod, *Donnant donnant. Théorie du comportement coopératif*, Paris, Odile Jacob, 1992.

28. See Dominique de Villepin, “Allocution à l’occasion du Comité interministériel pour le développement durable,” 13 November 2006.

29. Jin Bei, “China Under Resource and Environmental Constraints,” *China Economist*, March 2006, pp. 11-23.

30. See the most recent report by the World Bank, “Cost of Pollution in China,” Washington, World Bank & SEPA, 2007, 151 pp.

with Philippe Delhaise published in this dossier). And indeed, Chinese enterprises are the first, among the developing countries, to benefit from such financial transfers. A grant for an exchange of CO₂ emission rights modelled on the European experiment is being examined between Guangdong province and Hong Kong⁽³²⁾. Lastly, among the initiatives launched in recent years, several pilot trials to cut air pollution have been carried out in collaboration between environmental protection agencies of industrialised countries and Chinese municipalities, notably in the cities of Benxi (in the north-east) and Taiyuan. Even though these pilots are mainly designed to limit SO₂ emissions, they do contribute directly to reducing CO₂ emissions by cutting consumption of coal. Also, the measures put in place during these experiments could be used in other Chinese cities⁽³³⁾. In sum, if one takes account of all these government initiatives, China is certainly, at this stage of economic development, ahead of other NICs in its efforts to introduce measures to reduce energy consumption.

These projects, including initiatives being taken by private citizens, are detailed and discussed at length in articles within this dossier. We seek here merely to assess in a more general way their chances of success. Indeed, the Chinese government has commissioned more than one official report on the environment. This type of document, indicating the direction of the country's industrial and technological policy, is often no more than a declaration of intent, too ambitious and without any precise operating plans, one that fades on contact with reality and local clientelism. Pan Yue, Vice Minister of the State Environmental Protection Administration (SEPA), declared recently, "China has signed [. . .] nearly fifty international agreements on respect for the environment, and we do very little to honour them. [. . .] Although the new five-year plan sets some good targets, many provinces have not yet succeeded in respecting the objectives set in the previous five-year plan⁽³⁴⁾." Also, before going back over the uncertainties attending China's capacity to advance towards a sustainable form of growth, let us try to estimate what might contribute to the success of these policies or, at the very least, to their being more effective than those adopted in the past.

The sense of urgency combined with the seriousness of the damage to the environment and the concomitant threat to the pursuit of growth might play a positive role. They may push the central government into maintaining over time its pressure on local government officials, thus limiting the effects of local clientelism. Further pressure is also exerted on different levels of the state via the press and Web discussion forums, the latter increasingly reflect the growing awareness

in Chinese society of environmental questions⁽³⁵⁾. When it comes to financing these policies, the Chinese government is in a far more favourable situation than it was during the 1990s. Savings rates continue to be among the highest in the world and government finances are considerably more healthy thanks to economic growth and the introduction of far-reaching fiscal reforms in 1994. The Chinese government has become far more competent at devising and implementing its industrial and technological strategy than it was in the 1990s⁽³⁶⁾. It enjoys the special advantage of being a late comer in terms of power-generating technology, particularly at a time of strong growth in energy demand. Between now and 2015, China is planning to build new power stations whose combined output will equal the total output of all countries of the European Union⁽³⁷⁾. The building of these new plants provides an opportunity for concentrating production of electricity in large-scale units emitting much smaller quantities of GHGs, unlike those countries where growth in energy demand is weak, the stock of existing power stations can respond to new requirements. Accordingly, China can expect to achieve a significant reduction in energy intensity by building power stations using new technology⁽³⁸⁾. Similarly, the relative price of substitution technology is likely to drop far more quickly in China in view of the extent of demand. Between now and 2010, the cost per kilowatt in US dollars of an IGCC (Integrated Gasification Combined Cycle) power plant could well be halved, because of Chinese demand for this type of plant⁽³⁹⁾. In sum, these different factors are likely to play a positive role in the success of government policies designed to limit GHG emissions and to achieve energy savings. They are nevertheless counterbalanced by the grave uncertainty weighing on China as to its capacity to break swiftly with the existing growth model that we have described in the first part, and

31. National Development and Reform Commission, *China's National Climate Change Program*, Beijing, June 2007, 63 pp., available at: www.en.ndrc.gov.cn/newsrelease/P020070604561191006823.pdf.
32. Simon Powell *et al.*, *The Emissions Game. How Markets Can Help Save the Planet*, CLSA, Blue Book, Global Environment, January 2007, p. 41.
33. *Ibid.*, p. 39.
34. "Towards a Green GDP, *South China Morning Post*, 2 December 2006.
35. Susan Shirk, *China, Fragile Superpower*, New York, Oxford University Press, 2007, 320 pp.
36. Shulin Gu and Bengt-Åke Lundvall, *China's Innovation System and the Move Towards Harmonious Growth and Endogenous Innovation*, working document, Copenhagen Business School, Department of Industrial Economics and Strategy, Department of Business Studies, 2007, 33 pp.
37. *World Energy Outlook 2006*, *op. cit.*
38. James Brock, "Energy Substitution, when China Is Different", *China Economic Quarterly*, 4th quarter, 2006, p. 20.

to advance towards a more sustainable method of developing its economy.

The government's stated aims are still to maintain growth fast enough to quadruple China's GDP by 2020. The fundamentals of the Chinese economy (education, infrastructure, domestic market, exports, budget, foreign debt) are certainly on course to achieve that rate of growth, even to surpass it. In this context, the demand for energy is likely to continue to grow at a steady rate. The IEA, in its forecast up to 2030, considers that China will by itself represent 30% of the world's extra demand for energy. For its part, the Chinese government has forecast, consistent with its aim of quadrupling GDP by 2020, only double the usage of energy⁽⁴⁰⁾, which would imply a significant fall in energy intensity. We noted earlier that China recorded considerable gains in energy intensity between 1980 and the early 2000s but that, from 2002 onwards, energy intensity began to increase. In line with those factors associated with the growth of industry that we have remarked on, several elements suggest that this turnaround could also reflect that the improvements most easily achieved are coming to an end. In fact, easy progress was recorded by replacing obsolete technology dating back to Maoist times and to the start of the reforms. Important sectorial and regional advances were also made between 1993 and 2002 after the launch of massive restructuring of the state sector. That had led in turn to the closure or concentration of enterprises set up during the period of socialist industrialisation, these being inefficient in their consumption of energy⁽⁴¹⁾. Such readily accessible forms of improvement are now perhaps in short supply: consequently it is increasingly difficult to maintain the rate of reduction in CO₂ emissions per unit of GDP, all the more so since strong growth in industrial sectors will continue⁽⁴²⁾.

To this difficulty is added another, probably lasting, problem: strong dependence on conventional coal-burning in the production of energy and, more particularly, of electricity. According to the IEA, Chinese demand for electrical power will continue to swell at a high rate, rising by an estimated 7.6% annually up until 2015 and afterwards by nearly 5% until 2030. Because of still relatively low coal prices and the growing external dependence on oil, the IEA estimates that most of this extra electrical supply will be provided by coal-burning power stations⁽⁴³⁾. When we come to the promotion of renewable energy sources (not including hydroelectric), even with the best will in the world, their contribution would rise no higher than 10% by 2030⁽⁴⁴⁾. In passing, it is interesting to note that, as a proportion of China's overall investment allocated to energy, investment in energy-saving has

fallen considerably over recent years: from 8% in the 1990s to 4% since the start of the new millennium⁽⁴⁵⁾. One of the most important concerns relating to GHG emissions is whether China will be able to promote widespread use of the new "clean coal" technology and the CO₂ capture process in coal-fired power plants. We saw a little earlier that, in the context of strong demand and falling prices for new technology, China could mark a technological leap in the new plants that it plans to build over the next two decades. But as Jean-Marie Martin Amouroux points out elsewhere in this dossier, the general application of new technology, such as the building of IGCC plants, will be possible only in twenty years' time. It is also interesting to note that the IEA, in its energy scenario for 2030, includes none of the technologies for capture and stocking of CO₂ in coal-fired power plants⁽⁴⁶⁾. In 2030—and particularly in Asia where demand will be strongest—coal would remain the main source of energy; according to the IEA, China and India would be responsible for up to 60% of the additional emissions of CO₂ from the new coal-fired power stations.

As regards the concentration of the industrial system, including the total stock of power plants, despite the progress since the mid 1990s, one has to observe that China's industrial structure will still be widely dispersed, compared with prevailing world trends⁽⁴⁷⁾. Studies by the OECD show, moreover, that concentration indices have varied hardly at all since 1998⁽⁴⁸⁾. Market forces, which traditionally favour concentration, operate differently in China: political, fiscal and monetary incentives induce local government officials to favour the building of factories in their areas without worrying about the effects of duplication on the national scale. The decentralisation of the decision-making system as regards investment, launched in 1978 by Deng Xiaoping, is at

39. *Ibid.*, p. 22.

40. *World Energy Outlook 2006, op. cit.*, 2006.

41. See studies by Johanna Lewis *et al.*, "Sectorial and Geographical Analysis of the Decline in China's National Energy Consumption in the Late 1990s," prepared for the ACEEE conference; also "Energy Efficiency in Industry," Rye Brook, New York, July 2003, available at http://china.lbl.gov/china_pubs-ind.html. Jiang Lin, "Managing Energy Demand. The Bridge to Sustainability", *op. cit.*, p. 30.

42. *World Energy Outlook 2006, op. cit.*, p. 138.

43. *World Energy Outlook 2006, op. cit.*, p. 138.

44. Research Centre for Sustainable Development, *Understanding China's Energy Policy*, Background Paper for Stern Review on the Economics of Climate Change, Academy of Social Sciences, Beijing, 2006, p. 41.

45. *Ibid.*, p. 185.

46. OECD, *China Economic Survey*, Paris, OECD, 2006, pp. 116 and 117.

47. *Ibid.*

48. Barry Naughton, *The Chinese Economy: Transitions and Growth*, Cambridge Mass., MIT Press, 2007, 504 pp.

the heart of the economic reforms. And Prime Minister Zhu Rongji's attempts during the 1990s to recentralise the system did not fundamentally change it. In a system where the state continues to account (via its own public enterprises) for a little over half of all investment⁽⁴⁹⁾ and where the banking system remains under state control, decentralising the decisions on investment to the local authorities continues to cause serious dispersal of investment. The proof is that, despite constant calls to order by central government since 2003, and warnings about over-investment and the creation of bubbles in several industrial sectors, provincial and local administrations have turned a deaf ear. They have continued to authorise and to finance the building of factories in their own areas, in such sectors as steel, car making, construction and chemicals where production capacity was already excessive. Central government is well aware that decentralising decisions about investment to regional and local administrations is just as much a source of dynamism (growth rates) as of inefficiencies (in terms of energy and financing). Even so, as Susan Shirk demonstrates⁽⁵⁰⁾, social stability is an obsession with the Chinese Communist Party: and only a high rate of growth can guarantee it. So it is probable that the central authorities are opting to keep this decentralised and somewhat anarchic mode of decision-making on investments, in preference to a more centralised system that might lead to a concentration of the industrial machine but would impair the decision-making autonomy of the provinces and remove the local officials' incentives. Population growth is less likely to play an unfavourable role. The demographic transition has been largely under way ever since the start of the 1980s. China's population is expected to continue increasing at a moderate rate until around 2031, and thereafter to decline sharply from 2050 onwards. Nevertheless, rapid urbanisation will inevitably have negative effects on GHG emissions since it is estimated that nearly 400 million people will migrate from the countryside to the cities over the next thirty years⁽⁵¹⁾. This huge movement of people is expected to bring about significant growth in the demand for energy as rural lifestyles change. China's Academy of Social Sciences estimated recently that city-dwellers were consuming 3.5 times more energy than people living in the countryside⁽⁵²⁾. The demand for energy generated by the construction and residential sectors, which already amounts to 11% of total demand (ranking second after industry), will therefore grow considerably over the decades ahead. As is shown in the article by Julien Allaire in this dossier, inasmuch as, once built, cities' levels of GHG emissions are more or less fixed, the decisions taken over the coming years

on the building of energy-saving residential apartment blocks will be crucial, if Chinese cities are to keep GHG emissions low. Lastly, urbanisation is also likely to contribute in substantially increasing private car usage. The total number of cars in the country could thus rise from 25 million vehicles in 2004 to over 150 million by 2030⁽⁵³⁾. It goes without saying that, if the Chinese authorities do not resolutely pursue public transport and strict controls over vehicle pollution, accompanied by the promotion of clean alternative fuels, this exponential increase in the numbers of vehicles on Chinese roads will lead to big increases in GHG emissions, threatening to cancel out all the efforts being made in other sectors of the economy.

So it is still difficult to see whether China will really commit itself to the path of sustainable development over the coming years. Despite a genuine awareness in government and society, as reflected in the proliferation of plans to limit GHG emissions, numerous uncertainties and difficulties remain. As we pointed out at the start of this article, inertia and the pursuit of short-term prosperity are formidable foes when it comes to tackling environmental problems: they push individuals and governments into maintaining irrational options that imperil their long-term survival. In a country like China, where nearly two-thirds of the population have only marginal stakes in the market economy, this "prisoner's dilemma" is more real than in the developed countries, inasmuch as access to material well-being will remain the first objective for several hundred million people over the decades ahead. The Chinese state is modernising rapidly, but is it truly ready to pursue policies that will have to alter lastingly and profoundly the behaviour of economic agents, sometimes risking unpopularity, at a time when many other states, economically more developed, are meeting many difficulties along this path? It is legitimate to express doubts, as we have shown in the second part of this article. It is not surprising that, in its forecast for 2030, the IEA took a prudent, even pessimistic, line in its predictions for China as regards GHG emissions: these could amount to 8.8 Gt of CO₂ by 2030, which would be 28% of world emissions. They would

49. Susan Shirk, *China, Fragile Superpower*, *op. cit.*

50. Research Centre for Sustainable Development, *Understanding China's Energy Policy*, Background Paper for Stern Review on the Economics of Climate Change, *op. cit.*, p. 12.

51. *Ibid.*, p. 14.

52. Doug Ogden, *China's Sustainable Energy Prospect*, The Energy Foundation, The China Sustainable Energy Program, Beijing, 2006.

53. *World Energy Outlook 2006*, *op. cit.*. See also the estimates in Research Centre for Sustainable Development, *Understanding China's Energy Policy*, Background Paper for Stern Review on the Economics of Climate Change, *op. cit.*, pp. 10-13.

represent half the emissions by NICs; and, between now and 2030, China's additional GHG emissions might be double the combined total emissions of the OECD countries⁵⁴. If this scenario were realised, it would be disastrous news for the global climate. China's emissions (together with India's) would go a long way towards confirming the pessimistic forecast in the Stern report. Confronted by these challenges, one can only hope that the anxieties expressed in this article turn out to be unfounded, and that the arguments for China being capable of swift development towards more sustainable economic development will prevail. The

role of the United States in this international and domestic "poker game" will be decisive. A gesture and a full commitment towards climate control, similar to those made by the European Union, Japan and Canada, would give extra time for China (and for India too) to adjust their energy strategy. Further, it would place China in an increasingly isolated diplomatic situation in its refusal to accept restrictions on GHG emissions. The need for China to switch to a more sustainable form of development would become still more urgent. •

54. Nicholas Stern, *The Economics of Climate Change*, *op. cit.*

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Impact of Climate Change in Hong Kong and the Pearl River Delta

ALEXANDRA TRACY, KATE TRUMBULL
AND CHRISTINE LOH⁽¹⁾

This article represents a first attempt to pull together relevant materials with the aim of providing a broad-brush view of how climate change may affect Greater Pearl River Delta (GPRD) region (Hong Kong, Macau and the Pearl River Delta). Among the various consequences of climate change, rising sea levels are a matter of great concern for the GPRD region, which is made vulnerable both by its physical geography (the southern part of the delta lies between -0.3m to 0.4m relative to mean sea level (MSL)) and its urban development. More in-depth research and modeling remain to be done so that the authorities, business and civil society can better understand climate impacts on the region, but this article shows that climate change could have a big impact on the regional economy, which represents nearly 10% of China's GNP. The paper concludes with a discussion of the measures that government and businesses will need to consider in order to adapt to these future conditions.

China's fast-growing contribution to global warming is well recognised. The largest emitter of the greenhouse gases that are believed to accelerate warming is currently the United States, but industrialising China is catching up rapidly. The GPRD region of Guangdong province is one of the world's leading manufacturing centres (representing nearly 10% of China's GNP), itself becoming a major contributor to China's emissions total. The physical realities of climate change are already being felt in many parts of China: from drought, to floods, to a demonstrable rise in sea level. The GPRD region faces a severe threat on two fronts: firstly, in that it is particularly vulnerable to the effects of climate change, especially a rise in sea levels; and secondly in that it is one of the wealthiest areas in China, with much to lose.

Because climate change is expected to happen over decades or centuries, policy-makers seem to succumb to the phenomenon of "creeping normalcy": that is, a failure to recognise fully that conditions are worsening because the baseline standard for what is "normal" is gradually shifting⁽²⁾. Other issues appear far more immediate, and industrial development and rapid economic growth tend to take priority in the decision-making process. The purpose of this article is to demonstrate that climate change is not a remote possibility, and that its impact on the economy of the GPRD region

could be considerable. Any physical problems or disruption that may occur as a result of climate change are likely to have a damaging effect on business operations. The GPRD region has been the most dynamic regional economy in China for more than two decades, attracting a significant percentage of Foreign Direct Investment (FDI) into China and acting as a major contributor to the country's total Gross Domestic Product (GDP). The impacts of climate change in the Pearl River Delta, therefore, could have serious economic repercussions for the country as a whole.

This article provides an overview of the scientific discussion of the potential effects of global climate change, focusing in detail on predictions for the GPRD region and the resulting environmental changes that might occur in the region. While fully supporting the critical need for mitigation (the effort to limit climate change by reducing greenhouse gas emissions), The purpose of this article is not to discuss mitigation strategies for the region. It deliberately makes the assumption that

1. We also wish to acknowledge the important contributions of Darren Lam. We must also thank Alexis Lau and Jimmy Fung of the Institute of the Environment at the HKUST for their advice on meteorology and climate, Dr. James Hansen of the Goddard Institute, NASA, USA on the latest scientific evidence, and Dr Tim Flannery for his expert comment.
2. Jared Diamond, "Why do some societies make disastrous decisions?", Lewis Thomas Prize Lecture, The Rockefeller Institute, New York City, Thursday 27 March 2003.

changes will continue to occur at currently predicted rates, in order to examine the possible effects in the GPRD region. It then identifies a number of likely practical effects on the region's infrastructure and built assets and looks at potential effects on selected individual industry sectors that are important to the region. It concludes with a discussion of the measures that government and businesses will need to consider in order to adapt to these future conditions.

Climate change predictions for the GPRD region

Specific estimates of the effects in the GPRD region are subject to a high degree of uncertainty and are the subject of debate. Nevertheless, published climate projections for the GPRD region broadly concur with the Intergovernmental Panel on Climate Change (IPCC)⁽³⁾ analysis. The GPRD region encompasses Hong Kong, Macao and the Pearl River Delta of south-central Guangdong province, an alluvial plain formed by the lower west, north and east rivers of the Pearl River water system, characterised by a network of criss-crossing rivers and low elevations⁽⁴⁾. Ground level in the delta is close to MSL, with the northern and central parts lying at between 0.4 metres and 2.4 metres above sea level and the southern part of the delta slightly lower, ranging from 0.4 metres to -0.3 metres relative to MSL⁽⁵⁾. Since 1979, the area between Hong Kong and Guangzhou and around Macao has been rapidly developed, and former agricultural land converted to industrial use (see figure n°1). Forty million people are living in this region.

The northern fringe of the delta plain was reclaimed as early as the Tang Dynasty (around 1,400 years ago). The speed of reclamation has gradually increased since then, and during the last fifty years, reclaimed land was merged into just over one hundred enclosures, protected by flood defences. Much of the land recently developed into urban areas and industrial facilities lies in the flood plain of the Pearl River and its tributaries. Due to its topography, the history of land reclamation and the fact that much of the area is a natural flood plain, the GPRD region has always been under threat from natural hazards such as river or tidal flooding, typhoons and saline water intrusion. These will be intensified by climate change.

Increase in temperature

The Hong Kong Observatory (HKO) has published its predictions of temperature in the final decade of this century relative to the "climatological normals" of the period from

1961-1990. By that time, the HKO predicts that annual mean temperatures will have risen by 3.5°C. The annual number of very hot days (maximum temperature of 33°C or above) in summer will roughly double, rising from 11 days to 24 days; while hot nights (minimum temperature of 28°C or above) will rise by 30 per year—four times the current normal level. The number of cold days (minimum temperature of 12°C or below) in winter will decrease from 21 to less than one day per year.

Rainfall

In East Asia and China, simulations have revealed that rainfall will increase under a scenario of doubled carbon dioxide concentration⁽⁶⁾. The HKO predicts that average annual rainfall will increase by about 1% per decade in the 21st century. This additional rainfall will not be evenly spread: the HKO also warns that year to year variability in rainfall will increase, meaning more years with either above average or below average rainfall. By the end of this century, the number of heavy rain days in a year is projected to increase by around one day per year. In the years of low rainfall, there will be increased pressure on water resources in the GPRD region, which are already under enormous stress from increased population, urban development and large-scale manufacturing operations, many of which are extremely water intensive. Conversely, heavy and prolonged rainfall may produce excess run-off (rainwater that neither evaporates nor penetrates the surface to become groundwater), which will increase the risk of flooding, already a serious problem throughout the GPRD region, and landslide damage.

Storms

There is some debate among climate scientists concerning the impact of global warming on the frequency and intensity

3. The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by two United Nations organisations, the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP), to evaluate the risk of climate change brought on by humans, based mainly on peer reviewed and published scientific/technical literature.
4. H. Yang, "Potential effects of sea-level rise in the PRD area: Preliminary study results and a comprehensive adaptation strategy," in J. N. Smitj *et al.*, (ed), *Adapting to Climate Change: an International Perspective*, New York, Springer Verlag, 1996, 475 pp.
5. Huang Zhenguo *et al.*, "Coastal inundation due to sea level rise in the PRD, China," in *Natural Hazards*, n° 33, pp. 247-264, 2004.
6. Z. Zhao *et al.*, "Advances on detection and projection of impacts of human activity upon climate change over East Asia and China," in *1999-2002 China National Report on Meteorology and Atmospheric Sciences for the 23rd General Assembly on International Union of Geodesy and Geophysics*, Beijing, China Meteorological Press, 2003.

of tropical cyclone activity. The HKO recently confirmed that there is not yet a definitive answer to whether tropical cyclone activity has or will increase due to global warming⁽⁷⁾. In fact, the HKO reports that “according to the observations in the past forty years, the annual number of tropical cyclones landing over the south China coast within 300km of Hong Kong has been decreasing at a rate of about 0.17 per decade, from about three tropical cyclones in the 1960s to about 2.5 tropical cyclones in the 1990s.”⁽⁸⁾ Scientists from Hong Kong University of Science and Technology (HKUST) believe that it is likely that typhoons will track further east, meaning that they will be more likely to miss Hong Kong and hit Japan.

There is some emerging evidence, however, to suggest that warmer sea surface temperatures (SST) could lead to a modest increase in the intensity of tropical cyclones. Some Chinese scientists maintain that the unusual ferocity of the 2006 typhoon season, which began about a month earlier than usual and left thousands dead in southern China, was related to global warming. Qin Dahe, Director of the China Meteorological Administration, recently said that “against the backdrop of global warming, more and more strong and unusual climatic and atmospheric events are taking place. The strength of typhoons is increasing, the destructiveness of typhoons that have made landfall is greater and the scope in which they are travelling is farther than normal.”⁽⁹⁾

As it is, typhoons regularly hit southern China and can cause enormous destruction and loss of life where they make landfall. For example, Typhoon Prapiroon, in August 2006, killed more than fifty people and caused an estimated US\$675 million worth of damage in Guangdong province alone⁽¹⁰⁾.

Even if there is no change to the current level of tropical cyclone activity, the destruction wreaked by storms in coastal regions can be expected to increase because of higher storm surges associated with higher sea levels. The likelihood and frequency of overtopping and breaches of coastal defences will be greatly increased. If climate change does in fact lead to more frequent or more violent tropical storms hitting the GPRD region in the future, the damage inflicted by these severe weather events could be intensified even further.

Relative sea level rise

A number of detailed studies have been carried out in China over the last 10-15 years which attempt to predict relative sea level rises in the GPRD region and the consequent risk of flooding and inundation of parts of the region. There

is still a great deal of work to be done to reach agreement on the extent of the rise in sea level, its effects on water levels in the estuary and river systems and the consequent impact on the region.

There is a consensus, however, that sea level rise of some magnitude is happening and will continue to take place in the GPRD region, and that both the physical geography and urban development of the region render it extremely vulnerable to the effects of that sea level rise. Many lowland areas are likely to be inundated. Research led by Du Bilan of China's National Bureau of Oceanography in 2002 noted that the GPRD region is one of the regions most vulnerable to rising sea levels⁽¹¹⁾.

Investigation by the Chinese Academy of Sciences in 1994 found that natural progradation (seaward change in the shape of the coastline due to build-up of sediment) of the coast and active land reclamation activities have resulted in an annual sea level rise of 0.5-1 mm in the distributaries in the estuarine area, which is expected to continue for some time. The Academy predicted that sea level in the GPRD region will rise 15cm-30cm by 2010, 30cm-40cm by 2030 and 40cm-60cm by 2050⁽¹²⁾.

Coastal and river flooding in the Greater PRD is influenced by several factors: rainfall, high tide, high winds and typhoons, and storm surge. Due to backwater effects and the funnel-like shape of the estuary, water levels are higher upstream. A combination of weather and tidal factors which causes water levels to reach more than three meters is already well-known in parts of the Pearl River estuary. A 30cm rise in sea level would have a significant impact on the high tide levels in the GPRD region. Similarly, increased sea level would magnify the effect of storm surges on the delta. On the occasions where all these weather and tidal factors coincide, storm surge in the region can be dramatic. When sea level rise is added into the equation, the potential for extensive flooding is considerable.

7. K. H. Yeung, *Keynote Address III. Issues related to global warming – myths, realities and warnings*, Hong Kong Observatory, June 2006, 16 pp.
8. Hong Kong Observatory, 1 August 2003, “Global warming - the Hong Kong connection”. <http://www.hko.gov.hk/wxinfo/news/2003/pre0801e.htm>
9. Agence France Presse, “Warming reportedly behind China's killer typhoons,” 15 August 2006. <http://www.taipetimes.com/News/world/archives/2006/08/15/2003323278>.
10. Dartmouth Flood Observatory, 2 October 2006. <http://www.dartmouth.edu/~floods/Archives/2006sum.htm>
11. Zhang Zhiping, “Rising Seas Threaten Coastal Cities,” in *Beijing Review*, 47, n°9, March 2004. [http://www.bjreview.com.cn/200409/Nation-200409\(A\).htm](http://www.bjreview.com.cn/200409/Nation-200409(A).htm)
12. Earth Science Division, Chinese Academy of Sciences (ed), *Impact of Sea Level Rise on the Deltaic Regions of China and its Mitigation*, Beijing, Science Press, 1994, 353 pp.



Floods in Guangdong province

Extensive modelling work has been carried out by the Institute for the Environment at HKUST, in order to assess the impact of sea level rise during flood seasons and to estimate the geographical extent of possible future flooding in the GPRD region.

If the water level rises 3.0 metres—the average level of severe floods today—inundation of the Guangzhou metropolitan area, Zhuhai and Jiangmen, as well as of the floodplain would occur. If the water level rises 4.0 metres, inundation would hit almost the entire area between Zhuhai, Jiangmen and Guangzhou and there would be severe flooding towards Dongguan. If it was to rise 6.0 metres, flooding would spread further into the western PRD, and around Dongguan and Hong Kong would also be severely affected.

Climate change impact

Impact on human health

Very hot weather can be deadly. An increase in the frequency or severity of heatwaves is likely to increase (predominantly cardio-respiratory) illness and mortality. Based on data collected for persons in Shanghai aged over sixty-

five during the period 1980-1989, the threshold temperature for heat-related mortality in summer is 34°C. IPCC models estimate that in 2050, heat-related deaths in Shanghai will increase to 3.6 to 7.1 times the present figure⁽¹³⁾. Increased temperature is likely to make conditions more favourable for mosquitoes, increasing the risk of mosquito-borne diseases such as malaria and dengue fever. Food-borne and water-borne diseases are also predicted to become more intense and more frequent, as conditions become more favourable for bacteria and micro-organisms.

Analysis by IPCC predicts that global warming will accelerate the photochemical reaction rates among chemical pollutants in the atmosphere, increasing oxidants in many urban areas⁽¹⁴⁾. To the extent that higher temperatures cause inconvenience to residents and visitors—be it uncomfortable working conditions, higher air conditioning costs, or, far more seriously, increased air pollution and attendant health risks—Hong Kong and the cities of the Pearl River Delta will suffer a negative public response, which could have a serious impact on the livelihood of those cities in the future.

13. <http://www.grida.no/climate/ipcc/regional/276.htm>

14. *Ibidem*.

Ecological impact

Ecological problems that are likely to occur in the GPRD due to sea level rise include coastal erosion, salinisation of soil and groundwater and deterioration of shoals and marshes. This could cause the loss of coastal wetlands, a substantial change in the ecosystem and further encroachment on the habitat of rare species, according to Professor Chen Manchun, director of the Environment Department of China's National Marine and Data Service Centre, speaking in 2004⁽¹⁵⁾.

Flooding could result in increased sediment and nutrient levels in estuaries and coastal ecosystems, which has an enormous potential effect on habitat areas essential to many fish species. Wetlands in the GPRD, such as Mai Po in Hong Kong, the sixth largest coastal wetland in China, are important bird habitats and vital spawning grounds for many species of fish and invertebrates. These wetlands are seriously threatened by sea level rise and saltwater intrusion, and their ability to adapt naturally by retreating inland is blocked by human constructions, such as concrete roads and dikes or coastal defences.

Impacts on infrastructure

As discussed above, there is no firm consensus as to whether climate change is influencing the occurrence of more frequent or more severe tropical cyclones, but it is clear that larger concentrations of assets and populations in hazard-prone regions, like the GPRD region, contribute substantially to higher financial losses from such events. As discussed in the previous section, the GPRD region could be extremely vulnerable to large-scale flooding from heavy rainfall, typhoons and storm surges. Floods can damage building structures and cause soil erosion which can lead to softening of building foundations. Resulting sedimentation can impact water management systems, damage buried pipes and semi-buried tanks and harm dam structures and pump equipment⁽¹⁶⁾. Conversely, in dry periods, as soil moisture decreases, subsidence may affect underground pipes and cables. Windstorms bring additional loads to bear on buildings, affecting both structural and non-structural elements, but only minimally affecting foundations and underground elements. They can also damage distribution and high tension lines.

The GPRD region currently has infrastructure that is better than anywhere else in China. The extent of potential damage to infrastructure and buildings due to climate-related

events is therefore significant. Flood control on the Pearl River relies mainly on levees and reservoirs. In 2001, there were 34 large reservoirs with a total storage capacity of 312 billion m³; and 11,000 km of dikes or levees. Levees along the main stream and the delta area are designed to withstand a ten- to twenty-year flood. Only the most important dikes have been designed according to a fifty to one hundred year flood and tide standard. Most infrastructure was originally planned in the 1950s, and was designed in accordance with the climate related estimates at that time. The 2003 study by the Guangdong Academy of Sciences warned that the present network of dykes and anti-flood measures would be inadequate in these circumstances⁽¹⁷⁾.

A general increase in temperature could have negative effects on elements of transportation infrastructure, which would cause disruption and require increased spending on repair and maintenance. Enormous investment is planned to develop an extended network of highways throughout the GPRD region, some of which will involve the construction of major bridge projects. In low-lying communities, roads tend to be lower than the surrounding lands so that land can drain into the streets, and are consequently the first to flood. In cities, road transportation is often greatly disrupted by repairs to underground water mains, pipes or electric cables. For example, in London increased shrinkage and expansion of the local clay caused by rising temperatures is expected to damage under-road water mains, meaning more frequent repairs and consequently greater disruption to road traffic⁽¹⁸⁾. Again, further research is needed to determine whether similar effects will be felt in the GPRD region. Rail links, such as the express rail train between Guangzhou and Hong Kong, are also an important element of the transportation infrastructure in the GPRD. Storms and flooding can disrupt rail transport and temporarily close stations, as well as causing damage to infrastructure. For example, during Typhoon Bilis in July 2006, flooding cut the main Guangzhou to Beijing railway line, stranding thousands of passengers. The underground train systems in Hong Kong, Guangzhou and Shenzhen, which are being rapidly built out at present, will also be vulnerable to flooding, as well as to possible effects

15. Zhang Zhiping, *op. cit.*, 2004.

16. Paul Freeman and Koko Warner, *Vulnerability of Infrastructure to Climate Variability: How Does this Affect Infrastructure Lending Policies?*, Washington D. C. World Bank, October 2001.

17. Guangdong Academy of Sciences, *The Impact of Rising Sea Level on Guangdong Coastal Economy and Solutions*, Guangdong Academy of Sciences, 2003.

18. London Climate Change Partnership, *Climate Change and London's Transport Systems: Summary Report*, Greater London Authority, September 2005, 30 pp.

on tunnel structures caused by changes in groundwater, such as greater hydraulic pressure on the tunnel walls.

The economic success of the GPRD was built on international trade, and the shipping and logistics sectors continue to make an important contribution to economic growth. The upper delta and western delta areas have serious silting problems that limit the operations of their ports, and for many years Hong Kong possessed the only deep-water, modern container facilities in the region. Several container ports have recently been developed in Shenzhen. Sea level rise, and its effects on storm surge and flooding, is a serious potential threat to harbour and wharf installations. Sea level rise and associated increase in storm surge will increase the probability of inundation of wharfs and breakwaters, reducing the wharf's working platform. Heightened wave action would also accelerate the scouring effect of the tide on hydraulic equipment, which could shorten its service life. Changes in sea level are likely to alter the balance of coast and beach erosion and sedimentation around harbours and their access channels⁽¹⁹⁾. This could pose significant operating challenges for ports in the region which already have a problem with sedimentation and is likely to increase their operating costs for additional dredging.

There are five airports in the GPRD region. Hong Kong has the leading airport at Chek Lap Kok, with over 36 million passengers in 2005. The new Baiyun Airport in Guangzhou, one of the three air hubs of China, is the largest and most advanced airport in China, handling over 20 million passengers and over 500,000 tonnes of cargo in 2004. Coastal cities, like Hong Kong, tend to have airports built along tidal waters, sometimes on reclaimed land. Therefore, their runways are vulnerable to flooding. Although Chek Lap Kok airport is currently at 6m above sea level, the sea level rise predicted for the region could increase its vulnerability to flooding. Incremental damage could be caused if typhoons increase in intensity, including damage to parked aircraft, hangars or terminal buildings. As is the case for roads throughout the region, higher temperatures could also affect runways and airport roads, for example through deterioration of concrete, rutting or subsidence. Airports in the GPRD region may also be affected by damage to other transportation networks which affects delivery of aeroplane fuel or cargoes, thus slowing aeroplane turnaround time, or otherwise impacts on the operations of the facility.

Impact on water resources

Water resources in the GPRD region are already under pressure due to increases in demand caused by population growth and industrialisation. Development of water and sewerage management systems is not always adequate to meet these demands in certain areas, while unregulated exploitation of groundwater exacerbates problems of water quality and land subsidence. Climate change is likely to increase the stress on rivers already under pressure from salinity, over-allocation and declining water quality. Reduced rainfall would mean that less water is available for human consumption. Reduced water supply can also affect water quality in rivers, while drought conditions can increase erosion, leading to higher sediment loads entering rivers following rainfall events⁽²⁰⁾. It is likely that water treatment facilities throughout the GPRD region would need extensive expansion and upgrading to cope with lower raw water quality. A rising sea will cause a large amount of tidal water to travel upstream in the delta. According to the China Climate Change Country Study's preliminary results in 1994 and investigations by the Chinese Academy of Sciences, the tidal boundary will move, bringing salt water further upstream: perhaps as far as 3km further if there is a sea level rise of 40cm to 60cm in the GPRD region. Salt water will intrude even into Guangzhou in a low-water period, affecting the drinking water supply. Rising sea levels and heavy rains put pressure on drainage systems. When the sea level rises relative to ground level, storm water drainage pipes fill with sea water. The sea water may flow back up the pipes; or simply make it harder for rainwater to be discharged to the sea, resulting in both cases in flooding. Existing drainage systems in many GPRD cities are inadequate. Guangzhou, for example, regularly experiences tidal flooding caused by water intruding up through the drainage systems. This would clearly be worsened by sea level rise with resultant higher tides. Sea level rise and tidal saltwater intrusion upstream will also cause the GPRD region natural irrigation and drainage system to lose its effectiveness. It will become more difficult to drain waste water from cities and towns, which will increase pollution of the river network and embankment area.

19. Yang Guishan and Shi Yafeng, "Impacts of Sea Level Rise on Major Projects and Urban Development in China's Coastal Plains," in *Journal of Chinese Geography*, vol. 6, n° 4, 1996, pp. 66-74.
20. Australian Greenhouse Office, Department of the Environment & Heritage, *Impact & Adaptation - Water Resources*, 2006, <http://www.greenhouse.gov.au/impacts/water.html>
21. Fung Wing Yee, *Characterising the Climate Change Impact in Hong Kong*, Hong Kong, Environment Protection Department, 2004, 132 pp.

Power supply

Climate change could have a significant impact on the infrastructure associated with fuel distribution and electricity transmission, both by increasing demand and disrupting supply.

Demand for energy is temperature sensitive, increasingly so as greater per capita incomes in the GPRD region increase the use of domestic air-conditioning and as industry in the region involves sophisticated manufacturing processes which require cooling and constant temperatures. Research carried out for Hong Kong's Environmental Protection Department in 2004 into the impact of global warming on the energy sector concluded that an increase in the ambient temperature of 1°C would increase electricity consumption by 9.02%, 3.13% and 2.64% in Hong Kong's domestic, commercial and industrial sectors respectively⁽²¹⁾. As Hong Kong's industrial sector is extremely small, it can be estimated that this figure would be considerably higher elsewhere in the GPRD region.

While coal and diesel/fuel oil are used to generate the bulk of Guangdong's electricity supply (69% of generating capacity in 2003), around one-fifth of supply is derived through hydro power. Hydroelectric dams are also considered to be vulnerable to climate change events. On the one hand, reduction of water flow in rivers during dry years could reduce the amount of power that can be generated.

Economic impacts

The science of climate change is still under development, and the analysis of the costs and economic impact of projected climate events is also at an early stage. While it is impossible here to make detailed economic forecasts for the GPRD region, this paper identifies some of the ways in which continued economic growth in the region, vital to the economy of China as a whole, could be threatened by climate change. As far as we know, no detailed analysis and quantification of the economic effects of climate change in the GPRD region has been published, although some estimates have been released in individual studies (some of which are quoted below). A great deal of further research in this area is required.

The GPRD region is extremely important to the economy of China as a whole. The region is an enormous contributor to national GDP, exports and industrial output, as well as attracting high levels of FDI and technology transfer to China (see table 1). It is an important industrial and consumer market and an important gateway to China. If the region suf-

1. The GPRD's importance in China's economy

Land area	0.4%
Census population (2000)	3.2%
GDP (2004)	9.9%
Exports (2004)	30.7%
Imports (2004)	28.4%
FDI (2003)	24.4%

Source: "The Greater Pearl River Delta".

fers, there would be a negative multiplier effect on the wider economy in China.

Potential threats

The PRD Economic Zone (PRDEZ), which is formed by the cities of Guangzhou, Shenzhen, Foshan, Zhuhai, Jiangmen, Zhongshan, Dongguan, four districts and counties of Huizhou and four districts and counties of Zhaoqing, has been the most dynamic regional economy in China since the launch of China's reform programme in 1979. In the last fifteen years, the PRDEZ has become one of the world's leading manufacturing centres for electrical and electronic goods, watches and clocks, toys, garments and textiles, plastic products and other goods. Hong Kong has for many years been a regional centre for financial and professional services, and is one of the main transportation and logistics hubs in North Asia.

According to the World Bank, recent estimates indicate that sea level rise of one to five metres would reduce China's GDP by 2.4% to 10.8%⁽²²⁾. It is not clear what this would imply for the GPRD region, which is an enormous contributor to the country's GDP. Average growth in the PRDEZ over the last twenty-five years was over 16%, compared to a national figure of 9.5%, and GDP in the zone alone in 2004 was approximately 1,357.2 billion yuan (US\$163.9 billion)⁽²³⁾, or 9.9% of China's total GDP. (GDP of the GPRD region, including Hong Kong and Macao, in 2004 was US\$336.98 billion)⁽²⁴⁾.

22. P. Buys *et al.*, *Sea Level Rise From Global Warming: Potential Impact on Developing Countries*, Washington D. C., World Bank, 2006.

23. Figure is slightly overstated as it includes the whole of Huizhou and Zhaoqing, including parts that fall outside the defined area of the PRD economic zone see Michael J Enright *et al.*, *The Greater Pearl River Delta*, Hong Kong, InvestHK, 2005, 146 pp.

Several studies suggest that climate change could have a significantly harmful impact on the Pearl River Delta economy. For example, one simulation announced by the China Meteorological Administration in 2002 suggested that a historical high tide, combined with sea level rise of 65cm, would lead to flooding of about 3,400 square kilometres, causing an economic loss of 180.8 billion yuan (about US\$21.9 billion)⁽²⁵⁾. For comparison, China's Ministry of Civil Affairs reported that between 1 January and 26 July 2006, flood-related disasters, including Typhoon Bilis, caused Guangdong province a direct economic loss of 19.9 billion yuan (approximately US\$2.5 billion)⁽²⁶⁾.

There is no consensus on projected figures in the published studies, and no generally accepted methodology for analysing conditions, but it is clear that climate change could threaten economic performance in the GPRD region in many ways, some of which are outlined below.

Allocation of public funds to disaster management

Management of severe flooding events, caused by a combination of sea level rise and potentially violent weather, and occurring more frequently in future decades, would require significant financial resources. It is likely that government will bear the greatest part of the responsibility for many aspects of preparation and response, such as the following: monitoring and public warning systems, emergency response and evacuation of the public, cleaning-up operations, repair and replacement of public infrastructure, and economic assistance to communities and businesses.

While some funding for these activities may be drawn from the central government's budget, much of it is likely to come from local government funds. The necessary allocation to disaster management of capital which would otherwise have been invested in activities more directly related to economic activity, such as improved transportation infrastructure, technology or workforce training, may have an adverse effect on the level of economic growth in the region.

Allocation of public funds to adaptation

Greatly increased coastal and river defences will be required to protect the existing settlements of the GPRD region from increased flooding due to sea level rise. One estimate suggested that engineering work needed to raise the design standard of 95 key defences in the delta to meet a 30cm sea level rise, would require 17.5 million cubic metres of soil and

stone. Based on the price in 1998, the cost of this work—a fraction of the total infrastructure requirement—would be 2,103 million yuan (US\$262.9 million). Again, this defensive infrastructure may be funded from a variety of sources, but allocation of public funds to construction of sea walls and dikes will reduce the capital available to invest more directly in the GPRD region economy. In the longer term, it is possible that the results of cost-benefit analyses of adaptation alternatives will show that increasing coastal defences is no longer a sustainable strategy and that it is necessary to withdraw from some areas and relocate assets or communities. Such an operation would incur considerable costs, including compensation for foregone assets. It would also entail significant non-economic, social costs.

Lower business revenues

It is likely that there will be heightened risk of frequent business interruption in the GPRD due to climate change. As described above, transportation infrastructure is vulnerable to storm and flooding events and this could lead to major delays and bottlenecks, disrupting delivery of raw materials, components or finished goods. Much of the industry in the Pearl River Delta is supply chain driven and prompt delivery is vital to business competitiveness.

Electricity supply problems already hamper business operations in the Pearl River Delta. For example, in the first quarter of 2005, Guangzhou reported acute power shortages when power had to be restricted in specific areas on 716 occasions. Those periods cost the city 10 billion yuan (nearly US\$1.3 billion) in industrial output⁽²⁷⁾. More frequent interruptions to power supply caused by damage to transmission lines or delays to fuel delivery could slow production and lower output even more seriously.

Lower output and loss of orders by factories in the GPRD region could impact seriously on the region's overall export earnings. In 2004, the PRDEZ exported goods worth US\$182.43 billion, which was equal to 30.74% of all China's exports. If buyers start to believe that companies in the GPRD region cannot reliably deliver, albeit due to external factors, they are likely to withdraw their custom and

24. *Ibidem*.

25. "Global Warming Accelerates China's Sea Level Rise", in *People's Daily*, 13 April 2002.

26. International Federation of Red Cross, <http://www.ifrc.org/docs/appeals/06/MDRCN001a.pdf>

27. Christine Loh, *Energy Supply and Fuels Supply in Guangdong*, Hong Kong, Civic Exchange, 2006.

relocate their supply chain business outside the region. In addition to the manufacturing centre in the delta, this would also have a devastating impact on the ports and airports in the region and to the logistics and services industries in Hong Kong, whose companies have invested heavily in the Pearl River Delta.

Increased taxation and business costs

Greater pressures on the financial resources of the government at provincial or municipal level will, even if central government is willing to assist financially, almost certainly lead to increased taxation. This burden is likely to be heaviest on businesses and could include direct levies for flood control projects, as contemplated in the national Law of Flood Control, adopted in 1997. A higher tax burden on GPRD region businesses will increase their overall operating costs, with consequent negative effects on profits and on the level of retained earnings available for reinvestment or expansion of the businesses. Paradoxically, this may mean that total tax revenues collected by the government fall, even as the tax burden on individual companies or employees increases.

Decreased foreign direct investment

Loss of supply chain orders, lower turnover and higher business costs would generate less attractive returns to shareholders, which may decrease investor appetite for the region. Currently, foreign capital plays a major role in the GPRD's industrial development, with FDI into the PRDEZ in 2004 of US\$13.05 billion—over 24% of total FDI into China. The Federation of Hong Kong Industries estimated in 2002 that there were 53,000 Hong Kong invested factories in the PRDEZ, and over 80,000 Hong Kong-invested factories in Guangdong as a whole. Much of this investment will have flowed through from FDI into Hong Kong itself, which in 2004 was a further US\$13.63 billion⁽²⁸⁾. In that year, more than 3,600 overseas companies had regional offices in Hong Kong. It is likely that a sizeable reduction in FDI would significantly inhibit the region's ability to maintain the pace of industrial development and consequent economic growth. The delta area, particularly, might suffer not only from a reduction in capital investment, but also from a reduction in technology transfer by foreign investors, which has been instrumental in the development of local industry.

Disruption of supply-chain production and transportation

In the GPRD region, an extensive supply chain has taken shape, where it is convenient to source all parts, components and accessories of a product, so that upstream and downstream industries are closely connected and orders can be completed quickly. This inter-dependence on upstream and downstream activities may be an important factor in making manufacturing companies in the GPRD region vulnerable to climate change impacts. Supply chain companies typically run on very tight margins, and they compete on low cost and speedy delivery. Many companies could have very little flexibility to respond to delays or higher costs. Moreover, late deliveries of components or finished goods could very likely result in lost orders. While this could force individual companies out of business, the wider implications for the GPRD region as whole are also extremely grave. Once the efficiency of the supply chain in the region is called into question, international buyers could very rapidly choose to source goods and build a new supply chain infrastructure elsewhere in Asia, undermining the strong economic performance of the region.

The transportation, storage, post and telecommunications sector is the single largest service sector in the PRDEZ, with an output of US\$14.32 billion in 2003, equivalent to approximately 24% of the total service sector output in the PRDEZ. In Hong Kong in the same year, transport and storage recorded the third greatest output at US\$19.75 billion⁽²⁹⁾. Hong Kong International Airport is the largest international air cargo handler in the world with a throughput of 3.4 million tonnes in 2005, which is expected to triple by 2020. Hong Kong's seaport handled 22.42 million Twenty Foot Equivalent Units (TEUs) (standard unit for containers) in 2005, and this volume is expected to increase to over 40 million TEUs by 2020⁽³⁰⁾. Ports in the PRDEZ are also being expanded to handle increased volumes of freight, reaching a combined volume of 17 million TEUs in 2004⁽³¹⁾. Shenzhen, which has the fourth largest container port in the world, is also a logistics centre, with over 2,000 logistics companies located there, the top 32 of which have assets exceeding 100 million yuan⁽³²⁾.

28. Michael J. Enright *et al.*, *op. cit.*, 2005.

29. Michael J. Enright *et al.*, *op. cit.*, 2005.

30. Hong Kong Trade Development Council, <http://www.investhk.gov.hk/pages/1/306.aspx>

31. Hong Kong Trade Development Council, <http://www.tdctrade.com/mktprof/china/prd.htm>

32. *Idem.*

As described in detail above, climate change could negatively affect transportation infrastructure of all kinds in the GPRD. This would have a significant impact on the operations of both transportation and logistics companies.

Adaptation of transportation facilities would require additional capital expenditure include additional dredging to manage silting at port facilities; construction of flood defences, especially on wharfs and coastal airport runways; and elevation of road and rail networks and adaptation of tunnels and other infrastructure.

Damage and disruption of transportation networks can mean that companies may face penalties for delays; logistics companies compete on delivery time and could become uncompetitive; loss of business will hurt these companies' margins; relocation of supply chain business outside the region will greatly damage the sector; and passenger traffic may also be reduced.

Lower throughput of cargo and/or less passenger traffic would diminish core revenues for companies throughout this sector, such as airport operators: with regard to parking and landing fees, airport handling charges, lease payments from terminal concession and retail outlets; port operators: mooring fees, handling charges, lease payments from associated properties; ground transportation operators: road, bridge and tunnel tolls, service station revenues, ticket fares; airlines: ticket fares, cargo transportation fees; and shipping and logistics companies: freight forwarding fees, handling fees, warehousing charges, charter fees.

The impact of climate change on this sector would affect a wide range of companies, from airport and port operators, to airlines and shipping companies, to trucking and logistics companies. Both public and private sector operations could be significantly disrupted, with resulting loss of business. The sector has become increasingly dependent on the manufacturing activities in the GPRD region to power its growth, and there is likely to be a high degree of correlation between the economic performances of the two sectors.

Adaptation

The IPCC concluded in its Third Assessment Report that climate change is a reality and that adaptation is a necessary strategy to complement emissions mitigation efforts. While mitigation can be viewed as reducing the likelihood of adverse conditions, adaptation can be viewed as reducing the severity of many impacts if adverse conditions prevail⁽³³⁾. An adaptation strategy aims to increase the resilience of natural, human and economic systems to possible changes and to re-

duce the level of damage that might otherwise occur. It is a framework for managing future climate risk, which will influence both public policy and private sector decision-making.

Adaptation strategy frameworks

To be effective, an adaptation strategy must consider climate risk as a normal part of decision-making, allowing governments, businesses and individuals to reflect their risk preferences just as they would in other risk assessments and strategic plans⁽³⁴⁾. While there will be many ways to develop adaptation strategies that are appropriate for specific users, a framework for considering the issues is likely to include the following: identification of vulnerability of region, economy, environment or population to climate change; identification of the likely impacts and ranking of these impacts in order of importance, probability and urgency; monitoring to assess whether anticipated climate changes are taking place, and if so, at what speed; calculation of the costs and benefits of a range of adaptation strategies: no response, relocation, physical infrastructure, change in business practice etc; sensitivity analysis of adaptation strategies and outcomes; awareness raising and communication with stakeholders about climate risk and adaptation; and ongoing risk assessment and strategic review.

To reach a point at which climate risk and adaptation strategies can be realistically assessed will require enormous activity across multiple fields. Better information on regional climate change and potential outcomes is a key requirement. Climate change modelling techniques are still under development and global climate models, or general circulation models, show large differences in the timing, direction and magnitude of climate change on a regional scale. Such differences often make it difficult for policy-makers to accept the results of vulnerability analyses and to address adaptation⁽³⁵⁾.

Responsibility for adaptation strategies in the GPRD region

While climate risk analysis and adaptation strategy will need to be executed at all levels of both public and private sector

33. William Easterling *et al.*, *Coping with Global Climate Change: The Role of Adaptation in the United States*, Arlington, Pew Centre on Global Climate Change, 2004, 40 pp.

34. Barrie Pittock (ed), *Climate Change: An Australian Guide to the Science and Potential Impacts*, Sydney, Australian Greenhouse Office, 2003.

35. http://www.gcric.org/CSP/WORKSHOP_01_1996.html

activity in the GPRD region, it is clear that strong government leadership is important. Much of the implementation of any adaptation strategy would inevitably be the responsibility of the national, provincial and local governments, given their key roles in public infrastructure, safety, health and land-use planning and control.

Most of the public infrastructure in China, for example, is owned by the state or by provincial government, which bears the responsibility for any damage to it. Governments also assume some risk for privately owned or managed infrastructure, as contracts governing most of these arrangements allocate financial responsibility for natural disasters to government parties⁽³⁶⁾. In addition, where insurance is not widely available or used, the government will tend to take on reconstruction or renewal activities after a natural disaster. Key adaptation issues span virtually all portfolios and levels of government.

Due to the complex bureaucracy in China, co-ordination of climate change activities among the various bodies with authority over the GPRD region will be challenging. For example, taking water management as one area of activity, it is apparent that interaction between relevant national government departments and regional authorities is not straightforward. Despite the fact that the Ministry of Water Resources was mandated in 1998 to govern the management of water resources, water sector activities are fragmented, with other ministries handling water quality management, urban water supply and many other activities. Meanwhile, regional and municipal authorities represent their own interests, and there is often conflict between different regions and levels of government⁽³⁷⁾.

Similarly, the leading agency for management of coastal regions in China is the Department of Sea Area Management, situated in the State Oceanic Administration (SOA). However, the SOA does not have the authority to co-ordinate all the sectors which may be affected by sea level rise: agriculture, industry, fisheries, tourism, urban planning, construction, ports, etc. In addition, the SOA is subordinated to the Ministry of Land Resources, which might indicate weak political standing. Moreover, at provincial and local level there are again many agencies, with varying levels of autonomy and their own priorities⁽³⁸⁾.

Co-ordination could be improved if the GPRD region were to set up a dedicated body responsible for climate change strategy, as has been done in many other regions and cities in the world. For example, the UK government set up a task force, the UK Climate Impacts Programme (UKCIP) in 1997, and London has its own body, the London Climate Change Partnership. Several countries in Asia also have inter-agency task forces, including the Inter-Agency Commit-

tee on Climate Change in the Philippines and the National Committee on Climate Change in Indonesia⁽³⁹⁾.

In order to improve the understanding of the pace and extent of climate change effects in the GPRD region, it is vital to put in place an accurate monitoring network that will accumulate sufficient data to provide a scientific foundation for strategic decisions. For example, with regard to sea level rise, it will be necessary to monitor tides, vertical crustal movements, surface subsidence, coastal erosion, river bed and bay deposits, ground softening and subsidence⁽⁴⁰⁾. A sea level rise of 30cm by 2030 will require a comprehensive policy response. If no progress is made towards developing that policy in the immediate future, the GPRD region could be left extremely vulnerable.

Policy should be developed along several lines simultaneously, water resource management, flood management systems, coastal and river defence, long-term land use planning in order to protect the economy and communities of the GPRD region, and also to limit future actions that may increase existing problems. The implementation of any large-scale policy decisions will require significant financial resources. One of the biggest challenges for policy-makers will be to allocate responsibility for funding their climate change initiatives. The central government budget for investment in the water sector, including flood control, is only 2-3% of the total capital investment budget⁽⁴¹⁾. At the provincial and municipal level, it seems that governments have been reluctant to invest in any areas that are not perceived to have a direct impact on GDP growth. It is likely that governments will seek to share the financial burden with the private sector in the GPRD region via increased taxes or specific fees for flood protection.

Conclusion

This article has identified some of the ways in which climate change may affect the landscape and economy of the

36. Paul Freeman and Koko Warner, *op. cit.*, 2001.

37. Zhang Hai-lun and Wen Kang, "Flood control and management for large rivers in China", in *Proceeding of Workshop on Strengthening Capacity in Participatory Planning and Management for Flood Mitigation and Preparedness in Large River Basins: Regional Cooperation in Flood Control Management in Asia and the Pacific*, Phase II, Bangkok, November 2001, pp. 41-67.

38. "Coastal Zone Management in the People's Republic of China—A Unique Approach", M Lau, Centre for Marine and Climate Research, University of Hamburg, 2003.

39. http://www.gcric.org/CSP/WORKSHOP_01_1996.html

40. H. Yang, *op. cit.*, 1996.

41. Zhang Hai-lun *et al.*, *op. cit.*, 2001.

GPRD region. More in depth research and modeling remain to be done so that the authorities, business and civil society can better understand climate impacts on the region, including ecological impacts. Economic valuation techniques should also be developed to allow more accurate assessment of the net costs of these impacts. It is clear that these impacts are broad, and that the region's response must likewise be so. Policy-makers in Hong Kong, Macao and Guangdong need to consider both mitigation and adaptation measures. In relation to mitigation measures, the goal must be to reduce the emissions of greenhouse gases. This needs to be driven by an explicit energy policy that promotes energy efficiency, energy conservation and demand-side management and promotes switching to renewable energy resources where possible, so as to reduce the burning of fossil fuels. It does not appear to be sufficiently appreciated by policy-makers

and businesses that the cheapest and fastest way to reduce greenhouse and other polluting emissions is to drive efficiency. This is likely due to a pervasive supply-led mindset. Policy-makers and businesses should look into the latest research on energy efficiency when considering mitigation measures, so that they become more familiar with demand-side opportunities and compare relative costs to find the least cost and most effective path.

Finally, policy-makers and businesses in the GPRD region must start to incorporate climate change risk into all long-term policies, infrastructure projects and strategic investments. Around the world, decision-makers are beginning to realise they must be proactive rather than reactive to meet the challenge of climate change. Planning today for climate change and its potential risks is the only way to properly prepare the region and communities living here. •

The Impact of Climate Change, Water Security and the Implications for Agriculture

The Case of Northern China

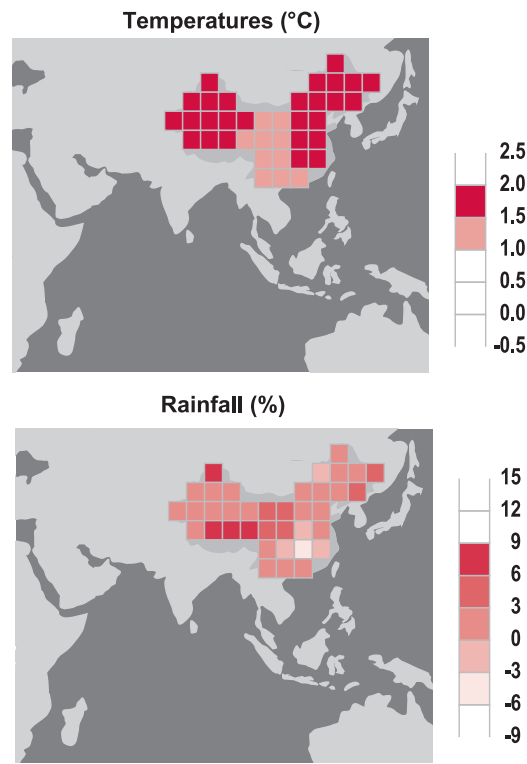
NATHALIE ROUSSET

The intensification of the greenhouse effect through human activity poses global environmental problems of a kind never previously encountered in history. A potential victim, but also a cause of the current dramatic climatic changes, China must, as a matter of urgency, take stock of the risks it runs and establish workable strategies to respond to the problems. The aim of this article is to highlight the potential impacts of climate change on the water resources and agriculture of northern China⁽¹⁾.

The application of the MAGICC-SCENGEN⁽²⁾ model to China shows that temperatures could well increase by between 0.6°C and 1.3°C between now and 2030 and from 1.2°C to 2.3°C by 2050. If this happens, the north of the country would warm up more rapidly than the south. The rainfall pattern would also be affected and the model predicts a slight increase over most of the country with a reduction in the central plains (Figure 1).

To analyse the implications of climate change we need to begin with the risks involved in climatic variability and the management of natural resources, and to analyse how the anticipated climate changes might increase those risks. In China, the water resource situation in the northern plains is central to developmental issues. The balance between water availability and water use has already been upset and this trend could be aggravated by climate change. The increasing scarcity of water, together with competition from industry and urban centres, places the capacity of agricultural irrigation under great pressure. Cereal production, a sector heavily dependent on irrigation, is thus faced with an unprecedented challenge.

Figure 1. Variations in temperatures and rainfall in 2030 compared with 1990, scenario A1B



Source: MAGICC-SCENGEN

1. IPCC, *Climate Change 2007, The Physical Science Basis, Summary for the Policymakers*, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Geneva, 2007.
2. Mike Hulme et al., *Using a Climate Scenario Generator for Vulnerability and Adaptation Assessments: MAGICC & SCENGEN Version 2.4*, Climatic Research Unit, UEA, Norwich, 2000.

The water challenge in China: shortages in regions and cities

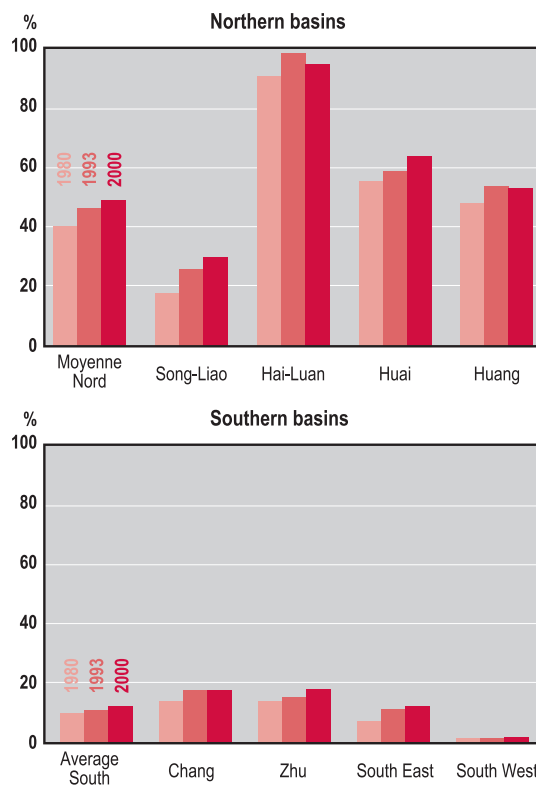
Limited resources, unevenly distributed and overexploited

At first glance, China seems to be a country with relatively abundant water resources. Usable resources are estimated at 2,812 billion cubic metres per year, putting China sixth in world ranking. Seen in terms of population, however, available resources are only some 2,200 cubic metres per capita per year, one of the lowest levels in the world, although one that still places China above the threshold of “water stress.”⁽³⁾ But the seriousness of the water situation in China is best illustrated by the large regional disparities. While demand is growing across the whole country, available water supplies in the north (757 cubic metres per head) represent only one quarter of those of the south (3,208), which places the whole of the northern region in a state of water scarcity. Northern China, where 42% of the population live and, above all, where 60% of all arable land is located, have only 14% of China’s water resources. Seen in terms of hydrographic basins, the contrasts are even more striking (Graph 1). The rates of resource utilisation in the northern basins are often three or four times those in the south and frequently exceed overexploitation thresholds. In the basin of the Hai River, in particular, these rates exceed 95%.

Despite these limited resources, we are now witnessing a significant increase in total demand, principally from industry and urban centres. Crop irrigation continues to be the heaviest user of water resources accounting for 67% of the water consumed, followed by industry which now accounts for 21% of demand⁽⁴⁾. Water used by agriculture has, however, only increased marginally since 1980, although China has, for several years, been pursuing its program of food self-sufficiency. On the other hand, in the context of China’s substantial economic growth and accelerated industrialisation, use by industry has increased threefold. The growth in domestic use is also due in very large measure to the needs of towns and cities. Consumption grows strongly as urban households, where the middle classes increasingly live, adopt characteristic levels of use.

Despite the shortages, water is used relatively inefficiently. The pollution of most Chinese waterways is also a contributing factor to the scarcity of the resource. According to the SEPA⁽⁵⁾, 34% of the waters of the seven main Chinese rivers are heavily polluted. The Pearl River and the Yangtze are generally of good quality, but the same cannot be said of

Graph 1. Water resource usage rates in the principal Chinese water basins



Source: Chinese Statistical Yearbook, 2003

most of the waterways in the north of the country which suffer from chronic pollution, and where the state of the Hai River is particularly alarming.

Water is particularly scarce in the basin of the “3-H”. This region encompasses the three principal rivers of northern China, the Huanghe (Yellow River) and the Hai and Huai rivers. It includes the cities of Beijing and Tianjin as well as China’s main agricultural provinces. The basin of the 3-H, China’s “cereal granary”, accounts for 39% of its arable land, is home to 460 million people, and produces one-third

3. The United Nations and the World Bank consider that a country is in “water stress” when the annual available resources per capita are less than or equal to 2000 cubic metres, and in water scarcity when they are less than or equal to 1000. Below 500, a country is in absolute water scarcity. These figures include both domestic usage and water used for productive purposes.
4. World Bank, *China Agenda for Water Sector Strategy for North China*, Main Report, Washington DC, 2002.
5. SEPA (State Environmental Protection Administration), *Report on the State of the Environment in China*, 2005.

of its GDP, but has only 10% of the country's water resources. The World Bank estimated that the region's water deficit in 2000 had already reached 39 billion cubic metres and average availability per head to be only 525 cubic metres per year, well below scarcity levels. Water shortages are also emerging in the rapidly growing urban centres. It is estimated that of China's 600 cities 400 are in water poverty and of the latter, 110 are experiencing serious shortages. They are concentrated principally in the north of the country.

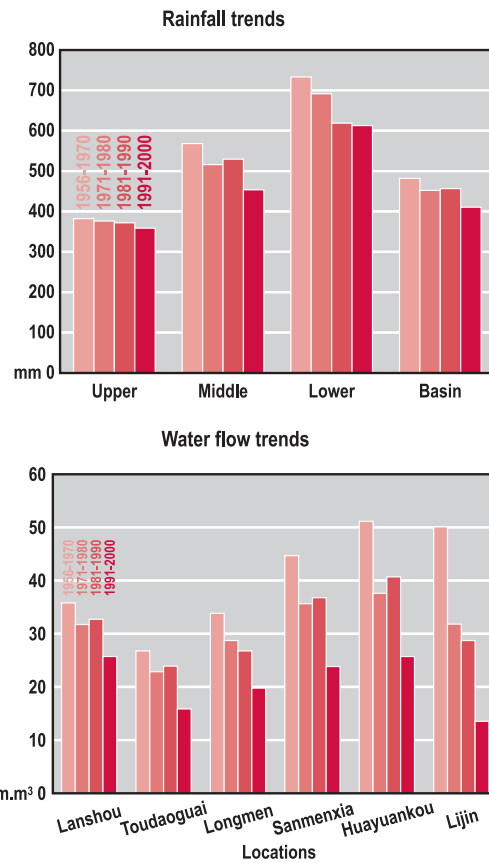
To make up for shortages of surface water, underground sources are tapped more and more frequently in the north and their rates of utilisation are often higher than their rates of replenishment. In 1995, it was estimated that underground water sources met about 60% of the need in the urban areas of the 3-Hs region, and every year Beijing takes 75% of its consumption from non-renewable aquifers. As a result of this overuse, the levels of underground reserves have fallen from 50 metres to 90 metres in the Hai river plains and from 100 metres to 300 metres in the Beijing region, resulting in problems of saline intrusion in the reserves near the coast and severe damage to buildings in Beijing, Tianjin and Shanghai.

The effect of worsening drought conditions

The structural scarcity of water is thus the result of the unequal distribution of water resources between the north and the south, of the size of the population and of the increasing pace of urbanisation and industrialisation. It is also the result of climate trends observed in recent decades. The long-term data show that temperatures have increased steadily since the 1960s resulting in increased evaporation. At the same time, rainfall levels show a downward trend, particularly in the northern plains⁽⁶⁾. These changes partly explain the sometimes dramatic decreases in surface flows. A major contributing factor in the water crisis is the impact of drought. Since the 1980s, the frequency, magnitude and length of droughts have been increasing, with severe consequences. China has been seriously affected over the last ten years and the northern plains have experienced seven consecutive years of drought, a record since the establishment of the People's Republic of China. The years 2000, 2002 and 2006 saw the worst droughts for fifty years.

The greater frequency of droughts and increasing water utilisation result in particularly worrying situations such as that of the Yellow River, cradle of the Han civilisation and heartland of the main cereal growing area, which today looks like a "worn out old man." Water flows have been decreasing for

Graph 2. Rainfall and water flow trends in the basin of the Yellow River



Source: YRCC, 2002

thirty years⁽⁷⁾ and every year between 1985 and 2000 the river dried up before reaching the Yellow Sea (Graph 2). The drought periods are getting longer and the geographical area affected is growing: in 1996, for the first time, the waters of the Huanghe (Yellow River) did not reach the province of Shandong. In 1997, the situation was exacerbated by drought and these waters barely reached Hebei province. In that year, the drought lasted 227 days compared with 40 at the beginning of the 1990s a record⁽⁸⁾.

Thus, water shortages in north China are alarming and

- Jianping Yang *et al.*, "Fluctuations of the Semi-Arid Zone in China and Consequences for Society," *Climatic Change*, 72 (1-2), 2005, pp. 171-188.
- YRCC (Yellow River Conservancy Commission), *Yellow River in the 20th Century*, Yellow River Water Utilization Publisher, 2001.
- Jean-Pierre Cabestan, "Towards a Food Crisis in China and the World," interview with Lester Brown, *Perspectives Chinoises*, n° 18, 1997, p. 1.

numerous indicators show that the situation has been getting worse over the last twenty years in the wake of economic development, urbanisation and worsening droughts. Water scarcity is especially costly for the country's economic and social development. The drought that struck China in 2002, for example, affected 65 million people and cost US\$1.2 billion⁽⁹⁾.

The future to 2030: increased risks due to climate change

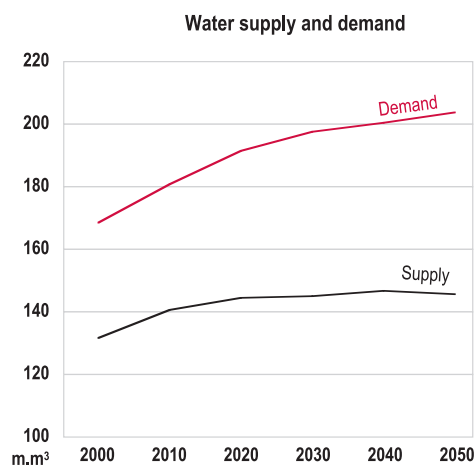
Water shortage trends...

The problem of water security in the northern regions is a priority developmental concern for China. Analysis of consumption trends and for possibilities of increasing supplies over the coming decades shows that water deficits are going to get worse, and could be exacerbated by climate change. The situation in the northern plains and the future of the 3-H basin give a clear picture of the challenge that China will have to face between 2000 and 2050.

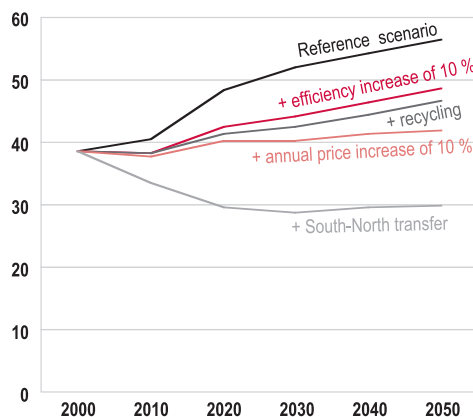
According to World Bank projections⁽¹⁰⁾, the total demand for water in this region will increase by 20% between 2000 and 2050⁽¹¹⁾, reaching a volume of 200 billion cubic metres. The increase in requirement, particularly pronounced between 2000 and 2020, approximately 7% each decade, will be due essentially to domestic and industrial needs in the urban areas which are expected to increase by 66% and 56% respectively between 2000 and 2020. On the supply side, the potential for additional capacity is very limited in the basin of the 3-H, all options already being utilised more or less to their maximum. Supply in this region will in all likelihood increase by only ten billion cubic metres between now and 2020 and then stabilise rapidly.

The water supply deficit in the basin of the 3-H is bound to get much worse. Estimated at 39 billion cubic metres in 2000, it will increase by 25% by 2020 and by 46% by 2050, to reach 57 billion cubic metres. *Kaiyuan jieliu*, which literally means "open up new sources and economise on use," is a well known saying in the management of water resources in China. The introduction of further measures of adaptation to scarcity would enable a reduction in the gap between needs and availability⁽¹²⁾. On the demand side, an increase in the price of water of 10% per year and a 10% improvement in irrigation efficiency above the baseline scenario would reduce the water deficit by 14% in 2020 and by 22% in 2050. On the supply side, recycling waste water would further improve the situation by 4%, while the intro-

Graph 3. Supply and demand trends and water deficits in the 3H basin



Water deficit under various scenarios



Source: World Bank, 2002.

duction of inter-regional transfers from the south to the north would reduce water deficits by an additional 22%. Taken together, these four measures would therefore reduce the gap between supply and demand by 39% by 2020. However, despite the significant effects that such a scenario would entail, water deficits would remain substantial (Graph 3).

9. EM-DAT, The International Disaster Database, <http://www.em-dat.net/>
 10. World Bank, *China Agenda for Water Sector Strategy for North China*, op. cit.
 11. These projections assume an 8% improvement in irrigation efficiency and a 2% annual increase in the price of water.
 12. World Bank, *China Agenda for Water Sector Strategy for North China*, op. cit.

Table 1. Expected variations in temperature, rainfall, evaporation and water flows in four river basins in northern China

Basins		Liao	Beijing-Tianjin-Tangshan	Huanghe	Huaihe
Climate scenario	ΔT (°C)	1.2	1.2	1.2	1.1
	ΔP (%)	3.9	1.1	0.3	0.1
Response of water variables	ΔE (%)	1.2	3.8	2.5	3.9
	ΔE_c (%)	6.9	-4.4	-5.9	-11

Source: Ying Aixen, 'Impact of Global Climate Change on China's Water Resources', *op. cit.*

...exacerbated by climate change

Water shortage trends in northern China could be made worse by climate change. Changes in temperature and rainfall patterns anticipated by 2030-2050 will alter the timing and magnitude of water flows in rivers, with major implications for water resources and their management.

The adaptability of water resources to climate change depends on their vulnerability and their sensitivity to the changes. Given the amount of water being taken out, the overexploitation of deep aquifers, and the variability of flows, the water supply systems in northern China seem increasingly vulnerable. Thus, there is, generally speaking, little room for manoeuvre. The sensitivity of water resources to climate change increases as one moves from the wet south to the semi-arid north: small changes in rainfall or temperature would have major effects on water resources. Model results show that water flows will decrease significantly in many northern basins and increase in the north-east and the south⁽¹³⁾. The basins of the Huai and Huang rivers seem particularly at risk as flow reductions of 11% and 6% respectively are expected. The Beijing-Tianjin-Tangshan region, already severely affected by limited water availability, would also not be spared (Table 1).

In addition to these average flow variations, climate change will increase the frequency and magnitude of extreme meteorological events such as droughts. Changes in drought patterns are a key aspect of risk assessment since such events are already having severe socio-economic impacts. In the 3H basin, drought years lead to increased water deficits of about 75% compared with normal years, due both to a decrease in annual supply of 5.5% and an increase in demand from irrigation of some 15%⁽¹⁴⁾. Given the impact of droughts over

the last fifteen years, one can anticipate that the effects of climate change on the frequency of such events over the coming decades will involve enormous risks for water resource management and the satisfaction of needs.

An agricultural region particularly vulnerable to climate change

Water shortages issues for agriculture in northern China

The increasing scarcity of water, and competition from other economic sectors, put the irrigation capacity of the northern regions under great pressure. Cereal production, a sector heavily dependent on irrigation, is thus faced with an unprecedented challenge. In the 3H basin, agriculture is the principal consumer of water, but the sector also bears the brunt of most of the shortage since it accounts for more than 80% of the region's total deficit. Every year more than a quarter of the demand from agriculture is not met. In drought years, deficits for crops are roughly doubled and reach 62 billion cubic metres. Agriculture, whose needs increase during drought years while availability falls, ends up acting as a buffer to ensure that the needs of other sectors are met. In those years, agriculture is often sacrificed to limit water shortage increases in industry and domestic households.

The structural inadequacy of water supply and the increased frequency of droughts are substantially reducing the poten-

13. Ying Aiwon, Impact of Global Climate Change on China's Water Resources, *Environmental Monitoring and Assessment*, 61(1), 2000, pp. 187-191.

14. World Bank, *China Agenda for Water Sector Strategy for North China*, *op. cit.*



Peasants working in the fields in the vicinity of a power plant, Shanxi province

tial of the agricultural sector. In average years, models show that water shortages reduce annual grain production by 15%, or 20 million tonnes, in the 3-H basin. In the Hai river basin, potential cereal production is reduced by more than 20%. Water resources available for irrigation have not increased for twenty years although the area of land under irrigation has grown by nearly 17%, indicating a decline in water availability per hectare⁽¹⁵⁾. Together with the increased number of drought years, this unfavourable condition has resulted in a decline in cereal production over five consecutive years. Between 1999 and 2003, crop yields fell by 17.5%, and in 2000 alone, when drought was particularly severe, grain production have fallen by 10.5%⁽¹⁶⁾. This sector's strong sensitivity to water and climate conditions suggests that it could be one of the hardest hit by global warming.

Vulnerability and sensitivity of the agricultural sector

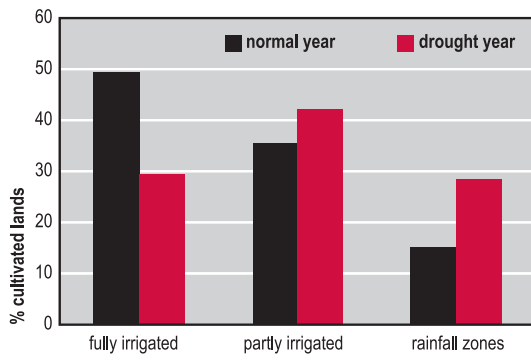
The agricultural situation suggests that many areas of northern China would be at once very sensitive and very vulnerable to climate change. Expected changes in temperature and rainfall over the coming decades point to an increase in irrigation needs in a context in which there will be a drop in the amount of water available. An increasing frequency of

droughts would seriously exacerbate this problem. Broadly speaking, climate change will lead to a shift in agro-climatic belts towards the north of China, thus posing a challenge to the semi-arid regions of the 3-H basin. The overall impact on yields in the principal cereal growing areas will be negative⁽¹⁷⁾.

Agro-climatic models indicate that the combination of changes in temperatures, rainfall and evapotranspiration will increase water deficits in cultivable soils from 20mm to 60mm in the northern plains, with corresponding increases in irrigation needs⁽¹⁸⁾. Four regions in northern China which are particularly sensitive to climate change are in danger of falling below certain crucial water thresholds: the region close to the Great Wall, the plains of the Huanghe and Hai rivers, the north of the Huai River and the Loess plateau. These areas are likely to experience an increased risk of drought, an increase in water deficits, and problems of

15. Hong Yang, Zehner A., "China's Regional Water Scarcity and Implications for Grain Supply and Trade," *Environment and Planning A*, n° 33, 2001, pp. 79-95.
16. FAO, <http://faostat.fao.org>, 2006.
17. Ana Iglesias *et al.*, "Climate Change in Asia: A Review of the Vulnerability and Adaptation of Crop Production," *Water, Air, and Soil Pollution*, n° 92, pp. 13-27, 1996.
18. Fulu Tao *et al.*, "Future Climate Change, The Agricultural Water Cycle, and Agricultural Production in China," *Agriculture, Ecosystems & Environment*, 95(1), 2003, pp. 203-215.

Graph 4. Distribution of irrigation possibilities in the 3H basin according to climatic conditions, projected to 2030



Source: World Bank, 2002.

desertification. Vulnerability indicators based on the agricultural context and the socio-economic capacity to adapt show that among the thirty Chinese provinces, Shanxi, Inner Mongolia, Gansu, Hebei and Ningxia would be especially at risk and the least able to adapt to climate change⁽¹⁹⁾. In northern China, the most sensitive regions are thus also the most vulnerable and comprise the greater part of the 3-H basin.

An unfavourable context of inter-sectoral competition for water

The context of inter-sectoral competition for water in which climate change is taking place is an essential consideration in anticipating the risks for agriculture. In the 3-H region, 80% of cultivated land is irrigated and these water flows are a vital factor in the system of double annual harvests which characterises the region and which underpins its status as China's cereal granary. Agriculture is the main consumer of water but it is not a priority sector. Water allocation increasingly favours industrial and domestic needs, especially during periods of drought. Thus, reductions in water availability due to climate change place a double burden on agriculture: its need for water grows as drought conditions worsen, while at the same time reductions in supply mean that its share of the water available will be correspondingly less. Variations in irrigation according to climatic conditions illustrate the situation well: droughts reduce the area of cultivated land totally irrigated by 20 points and increase the rainfall dependent areas and those partly under irrigation by 13.5 and 6.5 points respectively (Graph 4). To the extent that climate change will increase the frequency of drought years, the risks for irrigation capacity seem enormous.

While it is conceivable that adaptation policies for water supply and demand can be found for the north of the country, it is clear that agriculture will have to rely very largely on its own capacity to use water more economically. The potential for water saving in this sector is sizeable in the short term, but it could, nonetheless, be limited by climate change. As far as south-north transfers are concerned, which is the principal source of future additional water for north China, there is little cause for optimism because, like all the large-scale projects planned or under construction, the aim is not to increase irrigation⁽²⁰⁾. At best, agriculture would only receive a residual part of the transfers, priority always being given to urban needs⁽²¹⁾. Irrigation's marginal status in water allocation seems unavoidable: the economic gain from each unit of water consumed by agriculture is small compared with other sectors, and the low price paid for irrigation water, compared with water for industrial and domestic uses, encourages local administrators to divert water from agriculture to other sectors⁽²²⁾. In this context, climate change could exacerbate inter-sectoral conflicts about water which have already turned violent at times⁽²³⁾.

Impact on agricultural yields

Models indicate that climate change will have a generally negative effect on Chinese agricultural performance even though new areas in the extreme north of the country could become suitable for agriculture. The three principal crops, wheat, rice and maize, will see their yields reduced by an average of 10% during the first half of the twenty-first century. Increases in temperatures will shorten the growth periods of crops and the nutritional quality of cereals, but the main effects on agriculture will come from increasing droughts and water shortages. It is anticipated that wheat yields will decrease by an average of 4% in the irrigated zones to 16%

19. Lin Erda, "Agricultural Vulnerability and Adaptation to Global Warming in China," *Water, Air, and Soil Pollution*, n° 92, pp. 63-73, 1996.
20. Hong Yang, Zehner A., "China's Regional Water Scarcity and Implications for Grain Supply and Trade," *op. cit.*
21. ZSN, *Chinese Water Conservation Yearbook*, Water and Electricity Publishing House, Beijing, 1997.
22. The economic benefits of inter-regional transfers through the central route are estimated at 0.99 yuan per cubic metre of water in urban and industrial sectors as against 0.56 for agriculture. For the same project, the average price of water provided to industry is thought to be 0.31 yuan per cubic metre and 0.06 yuan for agriculture (ZSN, *Chinese Water Conservation Yearbook*, *op. cit.*)
23. For example, on 6 July 2000, thousands of farmers from the northern plains clashed with police, reacting angrily to a government project which allocated water from certain dams to cities and industry rather than irrigation.



Hebei province, 130 km from Beijing : desertification at the doorstep

in the rainfall-dependent areas⁽²⁴⁾. Maize crops will also be affected since models indicate that harvests will fall by 5%. Here again, rainfall-dependent crops seem much more sensitive to climate change⁽²⁵⁾. Finally, in the case of rice, productivity would decrease progressively from 6% to 17% from north to south⁽²⁶⁾. Increases in climate variability and droughts will further increase the probability of poor harvests. Climate change could also aggravate problems of desertification given rising temperatures and the greater unpredictability of rainfall; it would also lead to an increase in the use of fertilizers and pesticides, which would have implications for water and soil quality.

The impact of increasing droughts on farming could be severe bearing in mind the vulnerability of irrigation capacity. Given the poor economic yield of cereal production per unit of water consumed, and the increased scarcity of this resource in the north of China, one could expect a reduction in the area of irrigated land. Decreased capacity for seasonal irrigation could jeopardise the system of double annual harvests. Given the monsoon climate prevailing in the

region, winter crops, more or less wholly reliant on irrigation, would seem to be under particularly threat.

These changes in the agricultural capacity of China imply major economic and social risks for farmers. The increased probability of poor harvests could undermine improvements in their standard of living at a time when they already seem to be the forgotten people of China's rapid economic development. In particular, increased droughts and resultant crop losses could very soon put at risk farmers' capacity to absorb these shocks and lead them to swell the ranks of the rural exodus to the flourishing urban centres or to other more promising farming regions. These "climate refugees" are already a reality and their movements could even be directed

24. The fertilizer effect of CO₂ could limit these impacts very considerably, but these effects are still poorly understood.

25. Wang Jinghua, Lin Erda, "The Impacts of Potential Climate Change and Climate Variability on Simulated Maize Production in China", *Water, Air, and Soil Pollution*, n° 92, 1996, pp. 75-85.

26. UNFCCC National Communication, *The People's Republic of China, Initial National Communication on Climate Change*, 2004.

by the central government as in the case of the 2006 drought which saw nearly 30,000 peasant farmers move from Chongqing and Chengdu to Xinjiang.

Food self-sufficiency versus importation of virtual water

Finally, one can view the risks to agriculture of climate change in the context of the uncertainty surrounding future cereal production and China's capacity to meet its own needs. The issue of food security and the potential impact of China's entry into world agricultural markets are burning questions. In 1994, L. Brown, in an article entitled "Who will feed China?" highlighted the issue and sparked a lively debate. His analysis is simple: China's decreasing capacity to produce cereals in consequence of the loss of arable lands that follow industrialisation and growing water deficits will require it to import enormous quantities of cereals⁽²⁷⁾. The consequences of this would be significant price increases on world markets and a growing threat to the food security and political stability of developing countries. Climate change could accelerate these trends, exacerbating water deficits and adding greatly to the loss of arable lands through increased desertification.

This need for large-scale reliance on world markets to meet cereal requirements has not yet arisen. Nevertheless, falls in production between 1999 and 2003 could be sustained, without any real increase in imports, only through repeated calls on cereal stocks built up between 1996 and 2002 to make up for an annual deficit of 30 million tonnes. If, as is likely, climate change reduces production capacity, it does not necessarily follow that an agricultural crisis in China will be likely. The effects on world markets would depend more specifically on the strategies China adopted to respond to the water crisis. The physical capacity to produce the cereals China needed to feed itself would still be sufficient, but the rational response would not necessarily make maximum use of land and water resources⁽²⁸⁾.

It could in fact become economically efficient to have recourse to world markets and participate in "virtual water trade,"⁽²⁹⁾ by importing water in the form of cereals. At present, one cubic metre of water is needed to produce one kilogram of cereals. If ten million tonnes of cereals were imported rather than produced in the northern plains, close to ten billion cubic metres of water would be saved. The limited water and land resources could then be used more efficiently, planting different crops with a high value-added component, for example, with a view to export possibilities. Given

China's increasing comparative disadvantage in cereal production and its progressive integration into the world economy, larger cereal imports seem inevitable. Importing virtual water would seem to be an appropriate strategy not only because it would significantly reduce stress on northern China's water resources, but also because it would be in keeping with the direction in which the Chinese economy is moving. It remains to be seen if the China of market socialism will be prepared to challenge the Maoist regime's principle of self-sufficiency in food.

The fact remains, however, that there are continuing uncertainties surrounding trends in the world's capacity for cereal production, particularly in a context of climate change. The effects of such a strategy on the ability of the poorest developing countries to purchase the cereals they need on world markets may not all be benign.

Conclusion

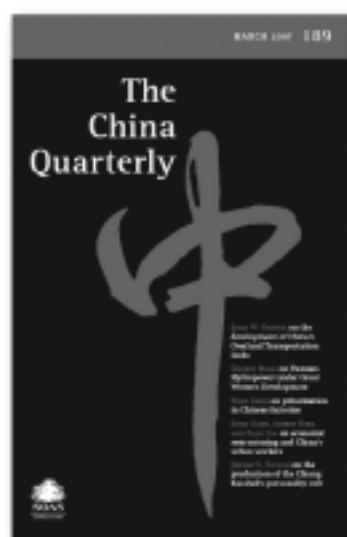
Climate change poses an unprecedented challenge to the water and agricultural systems of northern China. Although the balance has often been upset, expected rises in temperatures could accelerate the existing situation of worsening water deficits and the deterioration of arable lands. In addition, there are risks of flooding in coastal cities threatened by rising sea levels, and the enlargement of areas affected by certain vector diseases such as malaria. The early implementation of appropriate response measures to respond to the new situation, which in the case of agriculture would involve water policies structured around the scarcity of the resource, could reduce these risks and at the same time deal with present problems. In this context, the international community should, while striving to reduce greenhouse gas emissions, formulate proposals to help developing countries adapt to the changing circumstances. •

• Translated by Peter Brown

27. Brown's analysis is consistent with other studies, in particular those of the World Bank and the United States Department of Agriculture.

28. G. K. Heilig, *China Food, Can China Feed Itself?*, IIASA, Laxenburg, 1999.

29. T. Allan, *Water, Peace and the Middle East: Negotiating Water in the Jordan Basin*, IB Tauris, London, 1996.



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Chinese Coal and Sustainable Development

JEAN-MARIE MARTIN-AMOUROUX

A dust cloud over the Pacific visible from orbiting satellites, an alarming growth in mercury content throughout the biosphere in North America, global CO₂ emissions greater than those of the United States from 2009: the formidable growth of China's thermoelectric generating capacity, based on coal production that crossed the threshold of two billion tons (2Gt) in 2005, is becoming one of the major industrial evolutions threatening the global environment. What is more, while the developed world's ecological impact should, in the future, be moderated by the slowdown in energy growth and far-reaching technological changes, China's impact is only now beginning to make itself felt. Its current consumption per capita of 1.25 tons equivalent petroleum (TEP) and of 1,607 kWh is still closer to the average of developing countries than to that of the developed world (4.73 and 8,204). Who, and in the name of what principle, could demand of China that it willingly renounces modernisation, which cannot be achieved without an increased supply of electricity, fuelled by coal, the only abundant and cheap energy source at its disposal? ⁽¹⁾

Both at the local and the global level, the environmental degradation resulting from China's economic growth thus seems inevitable for the next few decades. On the other hand, the question concerning the forms of and the timeframe for the reactions that this degradation will provoke remains open. Atmospheric pollution in the cities and its cortege of premature deaths from pulmonary disease, the degradation and the warming of water in industrial regions, the premises of climate change (the winter of 2006-2007 has been the warmest for 167 years in Beijing) are no longer ignored ⁽²⁾. Legislative initiatives have sometimes been taken by the central authorities directed against certain provincial and local leaders. Chinese industries, both in the electricity and coal-producing sectors, are progressively adopting technologies that are as efficient as those being used in the United States and Europe. In some cases, they are even demonstrating more boldness. How far will they go on this path? Will the beneficial environmental effects that can be anticipated succeed in offsetting the inevitable degradation already forecast? When could it be possible for the rising trajectories of greenhouse gas emissions (GGS) to be reversed?

Coal in China's energy landscape

Irresistible growth in energy and electricity

From 1980 to 2005, China accomplished the feat of ensuring that its GDP grew at an average annual rate of 10%

while limiting to 5% the growth rate in its consumption of primary energy sources. One part of the discrepancy has not been voluntary, as is attested to by the energy shortfalls that recur in the cities and even more so in the rural areas condemned to rely on supplies that have been made precarious by the increasing scarcity of biomass (crop waste and firewood). The other, most important part has resulted from a sharp increase in the efficiency of coal use through the modernisation of thermal power stations and high energy consuming industries: coking, steel-making, cement production, chemicals, non-ferrous metals. Result: the energy intensity of GDP decreased by more than 60% up to 2001, before stabilising and then setting off on an upward trend again ⁽³⁾. Is the evolution over the last four years nothing more than a stage, as in 1988-89, on the path of a long decline in energy intensity, or does it signify a reversal of the trend? Adhering to the first premise of this question, the Eleventh Five-Year Plan (2006-2010) has set as a target a new reduction of

1. To measure the distance already covered and the road still to be travelled, it should be remembered that the number of inhabitants without access to electricity has dropped from 245 million in 1979 to 20 million in 2004. Thomas C. Heller, "Diversifier la production électrique en Chine," in Pierre Jacquet, Laurence Tubiana (eds.), *Regards sur la terre. Dossier Energie et changement climatique*, Paris, Presses de Sciences Po, 2006, pp. 119-130.
2. Geoffrey York, "Will China be able to take the heat?," *Globe and Mail*, 7 February 2007.
3. Among the numerous works that have tackled the question, reference can be made to: Jeffrey Logan, "Diverging Energy and Economic Growth in China: Where Has All The Coal Gone?," *Pacific and Asian Journal of Energy*, vol. 11 n° 1, pp. 1-13, and more recently to: Ma Chunbo and David I. Stern, "China's Changing Energy Intensity Trend: A Decomposition Analysis", *Rensselaer Working Papers in Economics*, n° 0615, December 2006.



Peasants collecting coal in Shanxi province

20% in intensity in five years. Even if it were achieved, this goal would not, however, be enough to maintain at under 4% the annual growth rate in primary energy consumption, which, already standing at 1,700 million TEP (Mtep) in 2005, could exceed 3,200 Mtep by 2020⁽⁴⁾. Several developments support this prospect: the target of the government to quadruple GDP between 2000 and 2020, that is an annual growth rate of 7% over the period, a growth rate that has already been exceeded in the course of the last six years; the pursuit of a strong growth of industries that are high energy consuming, foremost among which is steel-making⁽⁵⁾; the energy impact of rapid urbanisation⁽⁶⁾; the necessary spread of commercial energy sources to Chinese rural areas confronted by the serious threat of complete deforestation⁽⁷⁾. This energy flux will primarily be absorbed in two forms; fuels intended for road, air, water and maritime transport; and electricity demanded by industry and domestic households for the purposes of lighting, motive power and heating. China, like the rest of the world, can only modernise and urbanise on the basis of electricity growth that is more rapid than that of its total energy consumption. In industry, as in the residential and tertiary sector, coal is being replaced by electricity⁽⁸⁾. Over the last ten years, China has paid for the

inadequate anticipation of this evolution through frequent black-outs. Since then, it has shifted into high gear, installing annual power capacity of a scope never before encountered

4. Zhao Jianping, "China: Powering the Growth", CEPPI seminar "L'énergie et la Chine", 27 April 2006. This evaluation, judged the most likely at the beginning of 2007, renders null and void all the scenarios from 2004. Cf. Noureddine Berrah, "La Chine réveillée", *Revue de l'Énergie*, n° 563, January-February 2005, pp. 9-13. It also prompts a re-examination of the hypothesis according to which China's accession to the World Trade Organisation (WTO) might moderate the growth in energy consumption via a reduction of the production structure and the elimination of energy subsidies. Cf. Andreas Oberheitmann, "Le secteur de l'énergie et la protection de l'environnement en Chine," *Perspectives chinoises*, n° 69, January-February 2002, pp. 39-52.
5. Steel production capacity is to be increased from 270 to 400 Mt between 2005 and 2020.
6. Under the effects of the rural exodus, the urban population is growing by 4% a year. Aside from the megalopolises of Beijing and Shanghai, 72 cities in China already have populations greater than one million inhabitants. An inhabitant of Hong Kong still only consumes 20 megajoules (MJ) a day set against 70 MJ in the big cities of the developed world.
7. And this dates from a long time ago, as is analysed very well by Vaclav Smil, *Energy in China's modernisation. Advances and limitations*, New York, East Gate Books, 1988, p. 44-84. This is confirmed by the shorter but more recent article by Frédéric Obringer, "Environnement", in T. Sanjuan (ed.), *Dictionnaire de la Chine contemporaine*. Paris, A. Colin, 2006, p. 95-97.
8. Between 1996 and 2001, the coal consumption by industry decreased by 36.4%, while electricity consumption grew 46%. In the big cities, the majority of small boilers and coal stoves have been replaced by non-polluting electric installations. Cf. Yang Hongliang, *Overview of the Chinese Electricity Industry and its Current Uses*, CWPE 0617 and EPRG 0517, February 2006, p. 34.

in the history of the electricity industry: 50GW in 2004, 70 in 2005, 102 in 2006 and possibly 90 in 2007⁽⁹⁾. At a stroke, the projection of 950GW in 2020, drawn up in 2004 by the National Development and Reform Commission (NDRC), is already null and void. The Chinese electricity industry is now aiming at power capacity in the magnitude of 1,200 to 1,300GW, persuaded that it will have to satisfy an electricity demand that will be greater than 5,000 TWh in 2020. In the longer term, production of 12,000 TWh in 2050 seems considerable, but it would only supply 6,480 kWh for each inhabitant, that is 20% less than the current average consumption in developed countries.

Coal, a fuel without serious competitors



















How can this amount of electricity be produced? Excluding autogeneration of electricity by industry using small diesel engines, which are going to disappear, the generation capacity that supplied the public networks in 2006 was made up of hydroelectric power stations (24%) and some other renewable sources (0.7%), nuclear power stations (2%), gas-fired thermal power stations (2.3%) and coal-fired thermal power stations (71%). The share of this last sector was voluntarily reduced to 66% in 2000 in the name of a diversification of electricity production that benefited the protection of the environment. Very quickly, however, the development of the other sectors encountered several obstacles. Hydroelectric power has progressed and will continue on this path, as its economic potential is still considerable, but the installations, especially when they are gigantic, require long lead times (officially launched in 1994, the Three Gorges project will not supply all of its planned 18GW until 2009), as well as certain environmental safety measures (Wen Jiabao, prime minister, is said to have intervened personally to suspend another very big project on the Nu river)⁽¹⁰⁾. Since the first two reactors at Daya Bay, the Chinese nuclear industry has constructed nuclear production capacity of 6.2GW in twenty years. It has proceeded at this voluntarily prudent rate out of a concern to master the whole field (construction of reactors and fuel cycle) before embarking on the target of 40GW by 2020, which will represent, at best, 3% to 4% of the installed power capacity. Neither the efforts already undertaken to give advantage to the small hydroelectric power stations (capacity less than 10 MW), wind power and biogas in the remote rural regions, nor the law of 28 February 2005 that set at 20% the share of renewables in the supply by 2050, should change the marginal character of these energy sources in the overall electricity production in the next

few decades⁽¹¹⁾. This is even more true as the distance between the locations in the west where the largest part of their potential is situated and the large centres of consumption on the southeast coast reduces still further a competitiveness that is already undermined by the intermittency and the dispersal of these energy sources.

Within the framework of the Tenth Five-Year Plan (2001-2005), gas-fired thermal power stations appeared to provide a solution capable of rapidly and cleanly satisfying the demand of the large agglomerations on the southeast coast, but it had to face disappointment. The national production of 50 Gm³ in 2005, of which 12 Gm³ is transported via the "West-East" gas pipeline put into service in October 2004 and, with 5 Gm³ of Australian gas gasified at the terminal in Guangdong since 2006, is intended as a priority for industry (the chemical industry in particular) and for urban residential usage. Unless the growth in national production is more rapid than foreseen, the 60GW generated by gas-fired thermal power stations planned for 2020, of which 18GW will come from liquid natural gas (LNG), will therefore not see the light of day, as the evolution of international gas prices will by then have moved too far away from the 2.2 \$/MBtu (British thermal unit) of the first contract with Australia (the Guangdong terminal) and even from the 3.8\$ /MBtu of the contract with Indonesia (the Fujian terminal, operational in 2009)⁽¹²⁾. Coal thus has every chance of remaining China's principal source of electricity for a long time, based on installed capacity that will represent 64% of total generation in 2020 and 48% in 2050 (see table 1). The competitiveness of the sector is related to the capacity of Chinese electromechanical construction to supply thermo-electrical kW at unbeatable prices (\$530 per kW with wet desulphurisation in 2005), while it does not have experience in building gas turbines, as well as to the very favourable con-

9. David Kelly, "China's power capacity soars", *Financial Times*, 6 February 2007. The installed capacity in 2006 is far greater than what had been announced. A revision may be necessary in the light of definitive data.
10. Thomas Land, "China puts its faith in nuclear power", *Energy Economist*, no. 273, July 2004, p. 15-19.
11. 20% in 2050 is not unrealistic if large-scale hydroelectric power is included, which the documents in our possession do not specify. Responsibility for the other sources is supposed to be assumed by the China Energy Conservation Investment Corporation (CECIC), which is proposing to invest 2.47 billion dollars over five years in wind power, biomass and biogas, profiting from the obligation made to the electricity companies in this sector to purchase "green electricity" at a price greater than that of the other branches. Cf. *Enerpresse*, 29 December 2005.
12. Important gas discoveries were made in 2006 in the Tarim basin, in the Bohai Gulf, the Songliao basin and the Ordos basin, but the time it will take to start exploitation does not seem compatible with strong growth in gas-fired thermal power stations before 2020. Catherine Locatelli, Jean-Pierre Angelier, *Quel développement pour le gaz en Chine?*, LEPII, Grenoble, pre-print, January 2007.

Table 1. China Electricity generation in a business-as-usual scenario

	2005	%	2020	%	2050	%
Total	470	100	1200	100	2700	100
- Thermal, coal	303	64 	767	64 	1306	48 
- Thermal, oil	40	9 	37	3 	26	1 
- Thermal, gas	10	2 	78	7 	269	10 
- Hydro	105	22 	211	18 	339	13 
- Nuclear	9	2 	34	3 	196	7 
- Renewable	3	1 	73	6 	564	21 

Sources. For 2005: NDRC, China Energy Development Report. Also: WETO-HE. Note: the oil-fired plant corresponds in large part to private electricity generation by industry using diesel engines. It is not always included in the electricity statistics, which are limited to the production capacity of the public network. The place given to gas-fired plant is no longer in line with the most recent price developments.

ditions for the supply of the power stations with solid fuel. Present underground in almost all of China's regions, of excellent quality in those of the north (Shanxi, Shaanxi, Mongolia and Ningxia in particular), exploitable at average depths of 300-500 metres, most often in rich, shallowly sloped veins, coal is and will remain abundant. With reserves evaluated at 96Gt (12.2% of the world's reserves), China is ranked just behind the United States and Russia. Its resources, estimated at 888Gt, or 22% of global resources, make it the second coal power behind Russia¹³. The best deposits can be exploited at costs less than \$20/ton, which ensures a low price for the electricity at the modern power stations built at the pit heads. The length of transportation (800km on average), and the mediocre quality of some of them, makes the fuel delivered to the south-east coast dearer, but at a price of \$60/ton, it is still without rival for the generation at the thermoelectric power stations. Outside its use as a means of industrial and domestic heating which will not totally disappear, the growth in demand for it in steel-making and in the electricity industry sets its production on a trajectory that will see it double, as a minimum, from here to 2050, perhaps even more if the great adventure of synthetic fuel succeeds.

China, taking the lead in coal-to-liquids (CTL) projects

Everything had started well for the Chinese oil industry. The prospecting campaigns conducted with the assistance of

the Soviet Union at the time of the First Five-Year Plan (1953-1957) resulted in the discovery of several deposits, including those at Daqing in 1959 and Shengli in 1962. Rapid (too rapid?) exploitation brought production up to more than 100Mt in 1978, encouraging China to become an exporter and inspiring the dream of becoming a new Saudi Arabia! The 1980s were marked by a return to reality, soon followed by a call for imports and by a growing external dependence. Since that period, the experiences of Germany in the 1930s and South Africa in the embargo years have interested China. The idea of reducing imports of crude petroleum by liquefying coal has gained ground.

Numerous projects have been launched in the course of the last few years. The most ambitious is that of the Shenhua Group in the autonomous region of Mongolia: on the basis of a direct liquefaction process (Bergius type) perfected in China, it has the ambition of producing 5Mtep by 2010, then 15Mtep and 30Mtep by 2015 and 2020. Parallel to that, indirect liquefaction (Fischer-Tropsch type) has not been forgotten: in partnership with the big South African company Sasol, the Shenhua Group and its subsidiary

13. While the reserves are of measured quantities and judged to be exploitable at current prices, the resources are not and result only from the geological knowledge of the ground. The above data is taken from the Bundesanstalt für Wissenschaften und Rohstoffe (BGR), *Reserves, Resources and Availability of Energy Resources* 2004, 68 p. The BGR estimates of the resources seem more reasonable than those of the US Department of Energy, which has suggested volumes four times as high. The Chinese studies suggest recoverable resources of 1,000Gt and proven reserves of 114.5Gt, which could be increased to 284.5Gt by 2020 depending on large-scale investments in exploration.

Dandong, Liaoning: statue of Mao in front of a factory



Photo by Mark Henley

Ningxia Coal Industry is planning the construction of two plants of 3.6Mtep in the province of Shaanxi and in the autonomous region of Ningxia. Thirty or so other projects have been announced, including those of the Lu'an Group in Shanxi (5.2Mtep in 2016), of the Yankuang Group in Shaanxi (10Mtep in 2020) and the one of Shenhua in partnership with Shell. If all of them materialise, China could produce within 15 years more than 70Mtep, absorbing around 210Mtep of coal that for reasons of quality has little recoverable value otherwise on the fuel market⁽¹⁴⁾. Moreover, it would take a certain lead over the industries of other countries also attracted by synthetic fuels, but less convinced of the possibilities and thus not ready to commit heavy investment to them at the moment.

An increasingly high-performance coal industry

The high coal demand prospects for coal will have more chance of becoming reality as Chinese industry becomes capable of fulfilling them. Without excluding an increased recourse to the importation of certain types of coal required by the industries on the southeast coast, a strong expansion of Chinese coal capacities seems highly likely. After having encouraged the development of the Local State Mines (LSM) and Small Local Mines (SLM), which has enabled it to get around the rigidities and the delays in the expansion of the Central State Mines (CSM) between 1978 and 1996, the Chinese government has instigated a far-reaching restructuring of the whole coal industry centred around a dozen very large companies (from 50 to 100 Mt/year), which have been called on to become vertically integrated and oriented on electricity generation and the production of synthetic fuels. Gradually, these latter are taking over the market shares of other categories of mines, including the very small peasant mines that the authorities are attempting to close with more or less success⁽¹⁵⁾. At the head of this new industry, companies such as Shenhua, Shanxi Coking, Datong Coal, Yankuang, Yanzhou, Huainan, Pingdinghan, Zaozhuang, which are modernising the extraction and the processing of coal, are raising productivity and the safety of the miners' work, installing large-scale thermal power stations at the pit heads and constructing railways to loosen the bottleneck affecting the coal's outlet. Concerned about geographically diversifying their mining patrimony, some have not hesitated to open new mines in Mongolia or take shares in Australian mines⁽¹⁶⁾. According to the latest report by the National Development and Reform Commission (at the end

of January 2007), production should become established at 2.6Gt in 2010, of which 56% will be supplied by the very large mines, and perhaps at 3.4Gt in 2030.

The government confronted with the challenge of atmospheric pollution

Environmental impact: taboos that are being knocked down

The combustion of coal by domestic households, industry and the thermal power stations is not the only source of polluting emissions in a country that continues to burn huge quantities of biomass in installations of little efficiency and that is playing the card of a rapid expansion of road transport (see table 2). But, while in the developed world today these diverse sources of pollution have happened one after the other, in China they are being combined. Their emis-

14. This programme could be reduced according to a NDRC authority (9 June 2007). Among the reasons for this possible reduction, are the high costs of investment, the insufficient evaluation of water resources and the Shenhua Group lack of experience in direct liquefaction. The indirect liquefaction projects, however, would not be changed.
15. The small mines are responsible for 74% of the 2.73 miners killed per million tons extracted, compared with 0.24 in India and 0.04 in the United States in 2005. Tu Jianjun, "Safety challenges in China's coal mining industry", *China Brief*, The Jamestown Foundation, vol. 7, n° 1.
16. Jean-Marie Martin-Amouroux, "Le charbon-roi, jusqu'à quand?", *Revue de l'Energie*, n° 563, January-February 2005, pp. 14-18; "Charbon: les métamorphoses d'une industrie", *Revue de l'Energie*, n° 573, September-October 2006, pp. 305-313; article "Charbon" in T. Sanjuan (ed.), *Dictionnaire, op. cit.*, pp. 36-37.

Table 2. Pollutants and CO₂ emissions by sector in China (2004)

%	SO ₂	Particulates	CO ₂
- electricity production	54.2	25.3	40.0
- non-metallic ores	11.2	42.1	10.1
- other industries	23.1	21.9	24.7
- transport, residential	11.5	10.7	15.2
Total	100.0	100.0	100.0

Source. Hongliang Yang, *op. cit.*, pp. 13-14. Coal mines are included in non-metallic ores.

sions are known and have been published since 1980 (see table 3). The volumes of sulphur dioxide (SO₂) seemed to increase by 50% and those of particulates by 67% between 1980 and 1995, before falling 20% and 60% respectively up to 2002. At this date, the two polluting emissions, of which 80% to 90% comes from the burning of coal, resumed their rise, a particularly pronounced rise for SO₂⁽¹⁷⁾. Emissions of nitrogen oxide (NO_x) have never ceased growing, but their doubling between 2000 and 2004 can be blamed on road traffic and not electricity production, which now only represents 35% of the 20Mt discharged into the atmosphere each year.

At the beginning of the 1990s, particulates ranging from 10 to 100 t/km² per month fell on the residential districts of the big Chinese cities, several hundreds and sometimes a million t/km² on the industrial zones. The norm for suspended particulates of 0.15 g/m³ was exceeded ten to twentyfold in these same places, particularly in winter when all the buildings were heated using coal. While the concentrations of sulphur dioxide (SO₂) topped out at a ceiling of between 20 to 100 µg/m³ in urban zones in North America, they have frequently reached 500 to 2,000 in the big cities of northern China⁽¹⁸⁾. The situation does not seem to have improved appreciably since then. In 2005, 40% of Chinese territory was affected by acid rain that permeates the soil, the water-courses and the vegetation, especially in the south. Much underground water has become unfit for consumption. The elevated content of SO₂, NO_x, particulates and heavy metals in the atmosphere of urban and industrial zones is the root cause of the abnormally high rates of morbidity and mortality⁽¹⁹⁾. What is more, these environmental impacts are spreading outside China, in the direction of Korea, Japan and even the United States if one believes those who de-

nounce the wrongdoings perpetrated by the mercury emitted by Chinese coal on the health of the populations of North America⁽²⁰⁾.

Pushed to act, the central authorities promulgated in 1987 a law governing the control of atmospheric pollution, the rigour of which has been reinforced several times, particularly by the law of 1995 governing the electricity industry. They also set up the State Environmental Protection Administration (SEPA), equivalent to a ministry, in 1998. SEPA, which has set emission standards and put in place monitors charged with the job of ensuring their compliance, is succeeding in getting very polluting installations closed down and in interrupting projects undertaken without a prior environmental impact study. In spite of the limits relating to its administrative partitioning and the weakness of the investments in environmental protection⁽²¹⁾, SEPA has worked actively in the energy field. It has made obligatory the installation of desulphurisers in all new thermal power stations (50GW have been fitted out), forced the closure of the most polluting small units (<50MW) with 30GW having been closed in 2005, and the rest to be closed by 2010—, urged the electricity industry to equip itself with electrostatic dust

17. The verb “to seem” is used to take into account the change in the statistical base that was made in 1995 (see note to table 3).

18. Vaclav Smil, *Energy in China*, *op. cit.*, p. 214-224.

19. Lung cancers, 70 to 80% of which are attributed to atmospheric pollution, have become the leading cause of mortality in Beijing, according to the State Environmental Protection Administration (SEPA).

20. “Invisible Export: A Hidden Cost Of China Growth: Mercury Migration”, *The Wall Street Journal*, 17 December 2004.

21. These have grown from 1% of GDP in 2001 to 1.3% in 2005, but not yet reached the 2% recommended by the World Bank. “The health of a nation”, *Business China*, 26 February 2007.

Table 3. Evolution of pollutants and CO₂ emissions in China

M tons	SO ₂	Particulates	CO ₂
1980	16.00	14.85	1,396
1985	13.24	12.95	1,728
1990	14.95	13.24	2,256
1995	23.70	24.71	2,977
2000	19.95	11.65	2,935
2001	19.48	10.70	2,999
2002	19.27	10.12	3,208
2003	21.59	10.49	3,719
2004	22.55	10.95	3,831
2005	25.49	11.83	

Sources. For SO₂ and particulates: China Energy Databook. The bases for the series were modified in 1995. For CO₂, IEA, CO₂ Emissions from fuel combustion (2006).

collectors (the State Power Corporation installed 318 of them in the course of the Ninth Five-Year Plan) and, more recently, selective catalytic reducers for reducing nitrogen oxide⁽²²⁾. Furthermore, from July 2003, a tax of 0.6 yuan per equivalent standard pollutant has been imposed on emissions of SO₂, dust, mercury, carbon monoxide and soot. The influence of the tax on the costs of kWh is so feeble, however, that it only has little stimulating effect, but the authorities are committed to progressively raising the amount⁽²³⁾. Recently, these measures have not yet borne all their fruit. The authorities are anticipating a reduction in polluting emissions of 10% in the course of the Eleventh Five-Year Plan, then of 30% to 60% of their 2000 levels by 2020. Their task will not be easy if one trusts the projections for the emission of SO₂ and NO_x that were published by the Energy Research Institute in China (ERI) at the end of 2003⁽²⁴⁾.

The prevention of climate change not yet a priority

Does the desire to reduce polluting emissions extend to emissions of CO₂, 80% of which can be attributed to the burning of coal? From 1980 to 2003, these emissions rose from 1.4 to 3.7Gt, that is an annual growth rate of 4.3%, far

greater than that of 1.5% for the whole world⁽²⁵⁾. But the evolution from 2004 to 2006 is even more worrying, as the interruption to the lowering of the energy intensity is being translated by a rise in China's GDP carbon intensity, something which could advance by a dozen years the date when China tops the table of the largest worldwide emitters of CO₂, with 7Gt in 2020 and then 9Gt in 2030. This prospect does not seem capable of inflecting the policy of the Chinese government. Since it ratified the Kyoto protocol, it has adhered to the principles of "common but differentiated responsibilities" and of "to each according to its means". In its eyes, the risks of global warming must be combated first of all by the developed countries, who have the historical responsibility for it, then by the other countries who will subordinate their efforts to the requirements of their own development⁽²⁶⁾. The Eleventh Five-Year Plan

22. At the end of 2006, 15 units were installed in the power stations of Houshi, Songyu, Taicang, Henyun and Ninghai.

23. Asia Pacific Energy Research Center, *Energy in China: Transportation, Electric Power and Fuel Markets*, 2004, pp. 68-69.

24. They are recapitulated by Nouredine Berrah, *La Chine*, op. cit., p. 12.

25. International Energy Agency, *CO₂ Emissions from Fuel Combustion*, Paris, OCDE, 2005.

26. Xu Huaqing (project leader), *China National Energy Strategy and Policy 2020. Subtitle 7: Global Climate Change: Challenges, Opportunities, and Strategy Faced by China*, National Development and Reform Commission. Document not referenced, 45 pp.



Baotou, Inner Mongolia: employees of industrial plants on their way back home

(2006-2010) therefore does not mention the question of carbon emissions. On the day following the publication of the latest report by the Intergovernmental Panel on Climate Change (IPCC), at the end of January 2007, Mrs Jiang Yu, spokesperson of the Ministry of Foreign Affairs, reaffirmed the official position of her government, while recalling that, since 2005, China has been drawing up a climate plan, the contents of which could be revealed in spring 2008⁽²⁷⁾. While waiting, the government is approving a growing number of investment projects that are financed by carbon credits and thus come under the Kyoto protocol. It would also be interested, it is believed, in an emissions rights trading market in which Chinese sellers and foreign buyers would meet⁽²⁸⁾. Furthermore, any progress in the direction of clean coal technologies will contribute to putting a brake on the growth in CO₂ emissions.

Clean technologies: a race against time

Cleaner, more efficient conversion of coal

The very mediocre average output of China's thermoelectric power stations is not an expression of indifference on the

part of the companies to the environmental impact of their installations. Since the 1960s, Chinese engineers have perfected their own models of small circulating fluidised beds (a process for combusting coal), capable of burning mediocre quality fuels and of destroying at source a number of pollutants, thanks to a more complete combustion of the coal and despite a relatively low temperature in the furnace. Around 2,000 units of this type have already been installed, while 300 were still under construction in 2004⁽²⁹⁾. Of a very modest size (<100MW), the fluidised beds, however, only represent a small fraction of China's electricity generation system, the majority of which is made up of pulverised coal power stations, the efficiency of which is no greater than 30%. The age and the small size of a large number of these units (in 2000, 67% of thermoelectric capacity came from units smaller than 200MW) are the primary cause of this

27. Published in 4 June 2007, this plan lays out China's policy principles on climate change. It fixes no quantitative goals but states that China will participate in international efforts against climate change by engaging in energy efficiency, reforestation and by adapting agriculture to scarce water resources.

28. Shai Oster, "China Tilts Green", Shai.oster@dowjones.com.

29. Jean-Marie Martin-Amouroux, "L'incontournable charbon", in Pierre Jacquet and Laurence Tubiana, *Regards*, *op. cit.*, pp. 85-96.

poor efficiency. It is therefore by renewing its thermal power generation with more modern power stations that China's electricity industry will make the most significant contribution to the reduction of pollution and GGS. And this is something it has been doing since it adopted large size (600MW) supercritical cycles which allow efficiency of 45% and which are all fitted with equipment to eliminate dust and most of the SO₂. In 2005, 132 such units were ordered, and when they come on stream they will contribute to a net improvement in air quality⁽³⁰⁾, especially if the coal industry supplies them with a higher proportion of washed coal.

In the longer term: coal gasification, combined cycle turbines and capture and storage of CO₂

The supercritical cycles could constitute only one step towards coal burning that is cleaner and that at the same time emits less CO₂. China is therefore working on several paths, most often in partnership with large foreign construction groups such as Mitsubishi, Hitachi, Mitsui Babcock, Alstom or Siemens: ultra-supercritical cycles, recommended by the National Development and Reform Commission (NDRC), which could achieve efficiency of 50% by 2020⁽³¹⁾; large circulating fluidised beds—the experience that has been accumulated on them is considerable⁽³²⁾; gasification integrated with a combined cycle (Integrated Gasification Combine

Cycles-IGCC)—a demonstration unit is planned at Yantai (Shandong)—while the Thermal Power Research Institute (TPRI) is studying another project of 120MW and the China Huaneng Group (CHNG) embarked in 2005 on the ambitious implementation of GreenGen, which in 2020 is supposed to produce electricity and hydrogen with no pollutant or CO₂ emissions; polygeneration, which consists in producing, on the basis of a synthesis gas (*syngas*) that results from mixing several fuels, a large range of products: electricity, hydrogen, fuels, chemical products⁽³³⁾ (very advanced in the field of coal gasification, Shell has granted several groups, such as Sinopec, Shenhua and Dahua, the right to exploit its patents⁽³⁴⁾); the capture and storage of CO₂, with several research and development programmes all set to be launched, one of which enjoys the support of the European Union, which is prepared to take on the additional cost of a demonstration operation in a timeframe up to 2015; the extraction of coal-bed methane, which has taken off since the creation in 1996 of China United Coal Bed Methane (CUCBM), the first implementation of which on the Huabei site (Anhui) could produce 500 Mm³/year of methane (CMM)⁽³⁵⁾; on-site gasification and transportation by gas pipeline.

If one day it manages to progress from supercritical cycles to IGCCs, China would significantly reduce the polluting emissions of its electricity power stations (see table 4). This

Table 4. Pollutants emissions from three types of power stations

Ib/MWh	Sub critical	Super critical	IGCC
SO ₂	11	1.28	0.42
NO _x	3	0.94	0.18
Particulates (PM 10)	0.3	0.12	0.02
CO	1.8	1.6	0.15-0.34
Ash	120	85	0
Slag	0	0	127.5
FGD sludge	150	110.5	0

Source: CERA, *op. cit.*, p. 6.

30. It would be possible to go even further in this direction through a programme involving the retrofitting of old power stations with supercritical boilers, which, averaging an additional cost of 10%, would reduce polluting and CO₂ emissions by 20%. Cf. Eloise Logan, "New coal-burn technology helps China present a cleaner face to the world", *Energy Economist*, n° 283, May 2005, pp. 9-12.
31. Mitsui-Babcock, which joined forces with Harbin Boiler Co (HBC) to push through the take-up of this technology in China, states a figure of 75%. Eloise Logan, "New coal-burn technology", *loc. cit.*, p. 11. This information is either incorrect or spin.
32. Six constructors are building installations of more than 100MW: Harbin Boiler Works (49 sold), Dongfang BW (50), Shanghai BW (12), Wuxi BW (12), Jinan BW and Wuhan BW. These last three constructors are working in particular with the IET, which has just brought on stream a 150MW unit in Inner Mongolia, while TPRI has developed a 200MW unit with Harbin Boiler Works and is working on the design of a 300MW unit. In co-operation with Alstom, twenty or so blocks of 300MW should soon have been constructed. Let us add that China has sold CFBs to Vietnam and to Turkey and that offers have been made in India.
33. Yamashita Kei and Leonardo Barreto, "Energyplexes for the 21st Century: Coal Gasification for Co-producing Hydrogen, Electricity and Liquid Fuels", *Energy*, n° 30, 2005, pp. 2453-2473.
34. Martin Clark, "No longer a dirty word", *Petroleum Economist*, October 2004, pp. 30-31.
35. By 2015, the production of methane extracted from Chinese coal mines could reach 20 Gm³/year, that is 20% of production or 12.5% of the national consumption of natural gas.

technology furthermore presents numerous other advantages: it demands far less cooling water (350-450 gallons/MWh in place of 600-700), which is significant for China's northern regions; it lends itself well to the capture and storage of CO₂, something which is indispensable from the perspective of the fight against climate change.

Changes in trajectory? No doubt, but when?

Barring unforeseeable events (war, serious economic crisis or "miraculous" discovery of giant hydrocarbon deposits), China has no reason to abandon its prospects of strong growth in electricity production primarily based on the burning of coal, which ensures that it enjoys both the lowest costs and security of supply, something to which its leaders are particularly attached. The more widespread application of dust collectors and gas desulphurisers, the replacement of old boilers with higher output supercritical cycles and the use of an increased percentage of washed coal should enable

the growth in polluting emissions to be staunch. On the other hand, any change in the trajectory of CO₂ emissions seems to be ruled out for a long time. For that to come any earlier would require China to renounce its goals of low electricity prices and security of supply, while resorting massively to Russian gas and sharply accelerating its nuclear and "renewable" programmes. The cost paid for the few years gained on the calendar for the fight against global warming would certainly seem too expensive. On the other hand, it cannot be ruled out that beyond 2020, having mastered the main technologies that emit less CO₂ (nuclear, IGCC and carbon capture and storage), and sufficiently powerful to accept a stronger external dependence (on Russian gas, in particular), China will decide to commit itself to the path of reducing its annual GGS. The raising of living standards at home and the concern to gain international respectability abroad should compel it in that direction. •

• **Translated by Nick Oates**

Extrême-Orient, Extrême-Occident

Hors série

QU'ÉTAIT-CE QU'ÉCRIRE UNE ENCYCLOPÉDIE EN CHINE ?

WHAT DID IT MEAN TO WRITE
AN ENCYCLOPEDIA IN CHINA ?

... termes ambigus, superfétatoires, détachés...
... que le docteur Franz Kuhn¹ attribue à cette en-
... chinoise intitulée *Le Marché silencieux* du...
... Dans les pages lointaines de ce livre, il est en-
... se divisent en a) appartenant à l'Empire...
... c) apprivoisés, d) cochons de lait, e) ...
... (g) chiens en liberté, h) inclus dans la ...
... i) qui s'agitent comme des fous, j) ...
... k) dessinés avec un très fin pinceau de ...
... l) en caetera, m) qui viennent de ...
... de leur, semblent des mouches.

EXTRÊME-ORIENT  EXTRÊME-OCCIDENT
HORS SÉRIE

Qu'est-ce qu'écrire par compilation, par assemblage d'extraits ? Le volume pose la question en s'appuyant sur des matériaux qui nous viennent de l'histoire de Chine et fait dialoguer à leur sujet des sinologues et des historiens de l'Europe spécialistes de ces genres. En Chine, l'art de compiler et de classer des extraits de textes ou des textes entiers pour faire de nouveaux livres est attesté à partir du III^e siècle. Ces œuvres « encyclopédiques » se diversifient et se multiplient dès le X^e siècle. Les articles réunis dans ce numéro analysent ces formes d'écriture au fil des siècles, examinent les continuités et discontinuités de ce genre littéraire, se penchent sur les enjeux politiques à l'œuvre dans la production de ces ouvrages ainsi que sur les usages qui en furent faits au cours de l'histoire.

Numéro dirigé par Florence Bretelle-Establet et Karine Chemla.

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The Impact of Urban Development in China on Global Warming

JULIEN ALLAIRE

As a proportion of China's energy bill, the non-industrial sectors appear almost secondary, so great is the amount of industrial consumption. Energy consumed for transport, housing and services adds up to only half the energy required by Chinese industry. Yet, since the start of the reforms, total urban consumption has grown ever larger alongside the secondary or industrial sector. The structure of China's energy consumption has altered considerably during this period because of industrial changes and the rapid urbanisation of the country. Urban development has led to strong growth in energy consumption within these sectors.

During the Maoist period, urban development was limited. The regime fostered anti-urban sentiment and cities were designed for production. With the reforms, things changed. Surplus labour in the countryside migrated to the cities to work in the new areas of economic activity: in twenty-five years, the urban population tripled, exceeding the half billion mark by 2003. Over the period, there were marked changes in living conditions for urban households. Their purchasing power was reduced, apartments became more spacious and comfortable and the consumption of energy rose sharply.

Urban development can cause a city to emit more or less greenhouse gases according to the energy intensity of two specific consumption areas: thermal comfort and transport. The energy efficiency of these two urban systems, which represent a significant proportion of total energy consumption, is a key element in achieving the Sustainable City in China—as it is, moreover, in other countries where rapid urbanisation is in process. So the initial phase, the building of the city, is crucial. In effect, it fixes the city in a particular model of energy dependence.

Over twenty years, China has managed big reductions in the energy intensity of its industry. But how energy efficient is China's urbanisation? Are its housing conditions and transport energy efficient, or do they threaten adverse effects on the climate for decades to come?

In this article, we shall look first at the extent of urban development before going on to estimate the consumption of

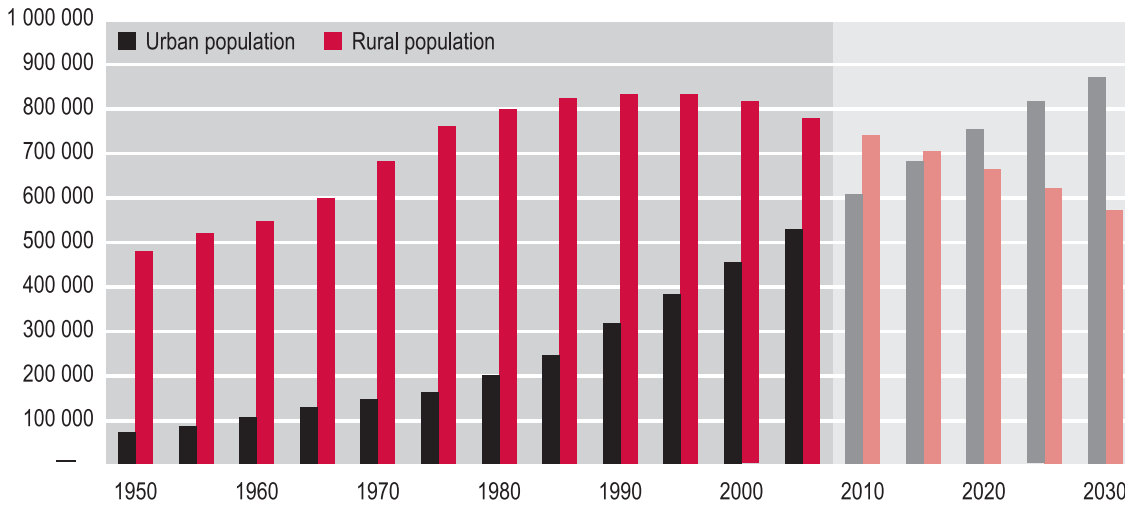
fossil energy in building the cities. Then we shall examine the energy dependence that develops at the same time as the cities are erected, focusing on consumption related to housing conditions and transport.

Demographic explosion in the cities

The urbanisation of populations is statistically difficult to estimate, in China even more than elsewhere. The designation criteria for the urban population have been modified several times over since the start of the reforms, and one has to accept some margin of error. Here we take as our source the United Nations data, which have been adjusted to present-day criteria ⁽¹⁾.

According to these statistics, the rate of urbanisation has officially increased from 17.9% in 1978 to 36% in 2000 and 40.5% in 2005. Thus, the urban population has tripled in twenty-five years, between 1978 and 2003, reaching a total of 520 million city dwellers. According to the UN, by 2030 the number will have risen to 870 million (see figure 1). So between 10 and 16 million newcomers are expected in the cities every year.

1. United Nations, *World Urbanization Prospects: The 2003 Revision*, New York, United Nations, <http://www.un.org/esa/population/publications/wup2003/WUP2003Report.pdf>, [site visited 4 February 2006].

Figure 1. Rural population and urban population from 1978 to 2003 (in thousands)

Source: United Nations (2004)

While these figures do allow us to estimate the urban demographic explosion, they do not give us a precise picture. There are elements within the urbanisation process that cannot be effectively estimated. First of all, there is the “floating population”, those people from the countryside who have arrived in the cities without residential permits: they are estimated at 20% of the urban population⁽²⁾. Then, one cannot ignore “latent urbanisation”, the industrialisation of rural counties in the east of the country that have not yet acquired the status of towns⁽³⁾.

Indeed, town status requires official approval. Towns, once designated as such, are entitled to financial grants from government, funding for investment, and for the improvement and maintenance of the infrastructure. The designation of new towns or the downgrading of old ones is thus a means whereby the state can accelerate or slow down urban development. In the mid 1980s, the central government relaxed its control over designating towns. Numerous rural counties or prefectures were then upgraded into towns⁽⁴⁾. These changes of administrative status were facilitated by the new development strategy favouring the cities (SEZs and open coastal cities) and industrialisation in rural areas⁽⁵⁾.

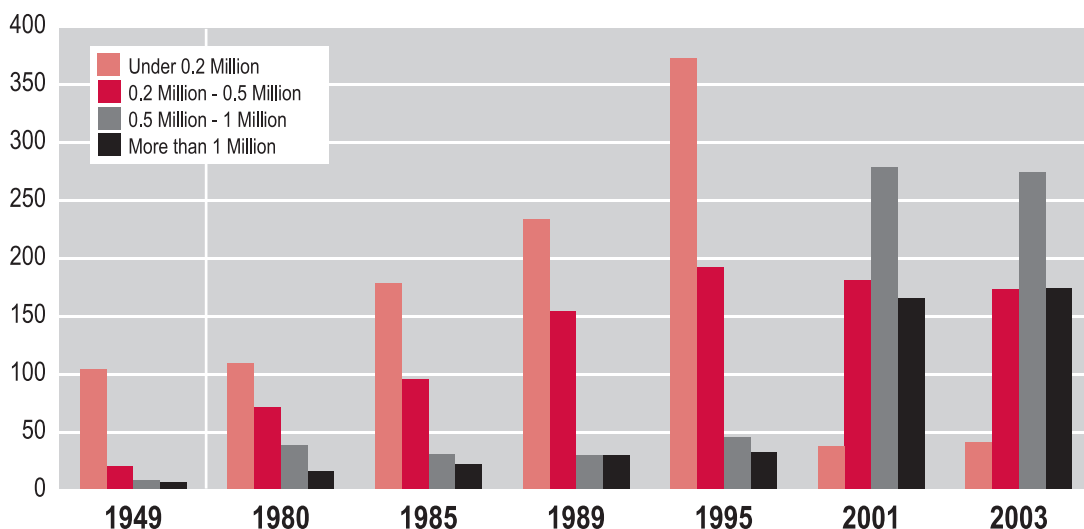
Faced with the rapidly increasing numbers of towns and cities, Beijing resumed control from 1997 onwards of the re-designation of rural counties. Central government reduced by more than 10% the number of cities with that status. In 2003, 660 cities were listed, two-thirds of them having populations of over 500,000 people. At that date, 174

cities were officially listed as having more than a million inhabitants, 33 of them having over two million (see figure 2). Between 1978 and 1998, 475 cities were created, whereas only 61 had been created during the thirty years of the Maoist period. Demographic growth within the cities and the increase in their number was reflected in an unprecedented surge of construction.

Rapid urban construction

This burst of city-building saw the creation of new cities and the rebuilding of those already existing. The construction of buildings and urban infrastructure expanded rapidly. Table 1 describes this development between 1990 and 2004. Within those fourteen years, built-up areas, road surfaces and sewage systems quadrupled. Over the same period, residential areas increased in extent five times over. Speaking generally, more than half China’s buildings were built during the 1990s and that total was increased by half again at the start of the new century.

2. C. W. Pannell, “China’s Continuing Urban Transition”, *Environment and Planning A*, vol. XXXIV, n° 9, 2002, pp. 1571-1589.
3. L. J. C. Ma, “Urban Transformation in China, 1949-2000: a Review and Research Agenda”, *Environment and Planning A*, vol. XXXIV, n° 9, 2002, pp. 1545-1569.
4. The procedure governing the change of status, from county to town, was validated in 1984, with the tacit acceptance at central government level of an amalgam of several enacted principles.
5. G. C. S. Lin, “The Growth and Structural Change of Chinese Cities: a Contextual and Geographic Analysis”, *Cities*, vol. XIX, n° 5, 2002, pp. 299-316.

Figure 2. Growth in the number of cities according to size

Source: China Statistical Yearbook

Since the start of the 1980s, growth in the national stock of accommodation has been faster than the growth in population. Living space per resident in urban areas has gone up from ten square metres in 1990 to almost 14 square metres from 2000 onwards. While the number of people per household is falling, living space is rising, though it is still far behind the average living space in developed countries, which is 35 square metres per person. So the outlook for the building sector remains good for decades to come.

Urban development is at the heart of China's economic growth, placed there by the transition from planned economy to market economy. Suppliers of raw materials have been under heavy pressure to respond to the growing demand for building materials.

Early on, the authorities sought to improve the energy efficiency of these very intensive industries, which were held back by archaic technology, inefficient production methods and ill-adapted industrial organisation. Thus, the Sixth Five-Year Plan (1981-1985) and the Seventh Five-Year Plan (1986-1990) had a significant impact on the energy efficiency of heavy industry. Over the period 1980 to 1990, it is estimated that 85% of the drop in the energy intensity of industry was due to falls in the intensity of production processes for chemicals, machinery, metals and building materials⁽⁶⁾. But as market pressures built up in these sectors, programmes for controlling energy became less effective. In the 1990s, the relative liberalisation of prices accentuated

this process still further. Yet, there is still a long way to go before reaching the levels of energy intensity in the developed countries.

In the industrial field, it is heavy industry that is responsible for nearly 80% of energy consumption. The highest consuming sectors are ferric metals and building materials, which accounted respectively for 30.7% and 21.4% of all industrial energy consumption in 2000. By itself, Chinese steel-making accounts for nearly 10% of the country's total consumption of energy. Industries supplying non-metallic materials, and most importantly the cement producers, also account for 10% of the country's total energy consumption. In energy terms, China's steel-making and cement-production are inefficient industries. Their production processes use about one-third more energy than those in developed countries.

The construction of buildings and infrastructure in urban areas are the main outlets for the national suppliers of raw materials. So Chinese cities have been built from materials with a carbon content one-third higher than in developed countries. What is more, the quality of these materials seems partly responsible for the buildings' low energy efficiency. After a twenty-year tendency for the energy intensity of the Chinese economy to fall, the increase over the early

6. J. E. Sinton and M D Levine, "Changing Energy Intensity in Chinese Industry the Relative Importance of Structural Shift and Intensity Change", *Energy Policy*, vol. XXII, n° 3, 1994, pp. 239-255.

Table 1. Growth in city size and growth in urban infrastructures

	1990	1995	2000	2004
Ground-level area of buildings (millions of square metres)	3,980	5,730	7,660	14,910
Ground-level area of residential buildings (millions of m ²)	1,996	3,100	4,401	9,620
Length of roads (kms)	94,820	130,308	159,617	223,000
Surface area of paved roads (square kms)	892	1,358	1,904	3,530
Length of gas network (kms)	16,312	33,890	48,376	148,000
Area heated by central heating (millions of square metres)	213	646	1,108	2,160
Length of waste water network (kms)	57,787	110,293	141,758	219,000

Data: China Statistical Yearbook

2000s marks a worrying development. Energy consumption is increasing exponentially because of the pace of urban construction (the space occupied by buildings has doubled over five years). The high demand for raw materials is in large part responsible for this new tendency, taken together with the new urban demand. For the first time since 1980, the energy intensity of the Chinese economy is on the rise.

Alarming prospects for energy consumption in construction

Drawing up an urban balance-sheet for the consumption of energy and CO₂ emissions is not an exact science. On the one hand, the energy data is not helpful because the inventory of emissions is compiled at the national or provincial level. On the other, the geographic data depends on the definitions and limits accorded to the cities: sometimes these yield very contrasting results. Thus we shall attempt here to account for emissions for urban non-industrial purposes, based on national data ⁽⁷⁾.

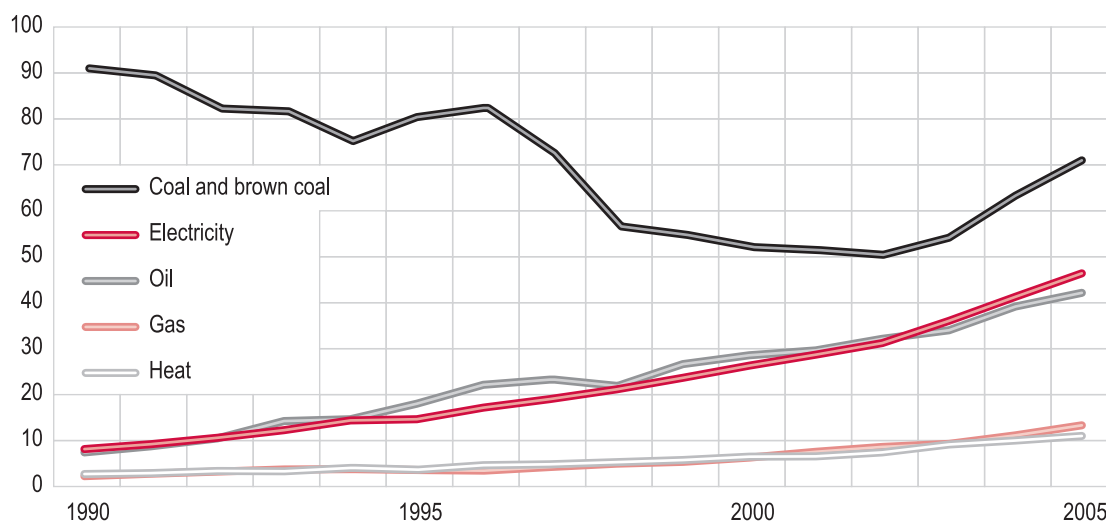
The energy consumed in construction can be understood as being in addition to that consumed by the residential and service sectors. It represents a quarter of all the energy consumed in 2000 and is expected still to represent over one-third by 2020 ⁽⁸⁾. Figure 3 shows the total cumulative consumption by the residential and service sectors since 1990. We may observe a sizable drop in the consumption of coal

during the 1990s; a switching of energy sources during that same decade; and a return to coal in recent years.

Between 1990 and 2000, urban emissions of CO₂ from construction remained stable, but this development is associated with a combination of different dynamics observed since the start of the reforms. Firstly, the authorities invested heavily in energy efficiency programmes to reduce coal consumption. In addition, numerous technological and organisational improvements were adopted to solve various problems: the shortage of mining enterprises, mining accidents, atmospheric pollution in the cities, environmental damage in rural areas, overcrowding on the railways and wasting of resources.

Then, the more the Chinese economy was taken over by the market, the greater became the need for price reforms to control the consumption of energy. So from 1993 onwards, the authorities deregulated energy prices. Between 1993 and 1996, the price of coal tripled, the price of electricity went up by 3.5 times and oil prices rose by more than 4.8 times ⁽⁹⁾.

7. We offer these figures without including those for biomass, much used in rural areas. In terms of energy consumption, biomass would represent at least as much as the total for other residential and services consumption. We should remember that biomass is not counted in CO₂ emissions. It is considered as renewable energy so long as it is not consumed faster than biological renewal.
8. R. M. Yao, B. Z. Li, K. Steemers, "Energy Policy and Standard for Built Environments in China", *Renewable Energy*, vol. XXX, n° 13, 2005, pp. 1973-1988.
9. Oil prices went on rising after the 1990s because of the increase in world prices, whereas the price of electricity went up by very little between 1998 and 2003. By contrast, coal prices fell between 1998 and 2000.

Figure 3. Total cumulative consumption by residential and services sectors (1990-2005)

Data: Enerdata S.A.

In the second half of the 1990s, the fall in the pace of economic growth had a considerable impact on coke consumption. Experts are agreed that the officially declared growth rates were greatly overvalued. Indeed, the drop in the consumption of energy indicates a greater level of economic deflation over that period⁽¹⁰⁾. Lastly, the programming errors in the electronics sector in the early 1990s were reflected several years afterwards in an under-capacity of production, which also limited the demand for coal. In the end, we may observe a direct lessening in the demand for coal at the end of the decade. It enabled consumers to choose a better quality coal producing less cinder and having a higher calorific value. This phenomenon allowed the electronics sector to cut its coal consumption by thirty megatons and its end users to cut theirs, probably by the same amount⁽¹¹⁾.

The fall in the consumption of coal during the 1990s was reflected in the development of new energy sources. In 1980, in the residential sector, coal furnished 90% of the energy consumed. By 2000, it accounted for 36%. On the one hand, coal burning had become more efficient; on the other, new energy sources were developed. With the rebuilding of the cities, China's urban households used less and less coal for heating and cooking. Increasingly, they had access to electricity, to town gas, to natural gas and to district heating networks, as evidenced by the rate of growth of such networks (see table 1).

The pace at which consumers were turning to alternative fuels was remarkable. Consumption of gas, oil and electricity grew at an annual rate, for all three, of 30% over a period of fifteen years. Thus, consumption of electricity and oil grew six-fold between 1990 and 2005. Each of these fuels now provides a quarter of the total energy consumed in the residential construction and service sectors.

Two-thirds of the energy usage in construction goes into heating and air conditioning (see figure 4). Thermal comfort is therefore one of the key factors in the potential energy demand of developing countries. In China, district heating networks are considered three times less efficient than those in developed countries, climatic conditions being equal⁽¹²⁾. To achieve an improvement in the energy performance in this field, it seems necessary for heating sources and distribution networks to be upgraded. Above all, it is essential for buildings to be better insulated.

Ever since 1950, only the 15 provinces to the north of the Yangtse are entitled to central heating. To the south of the river, no heating system is deemed necessary. In the north,

10. T. G. Rawski, "What is Happening to China's GDP Statistics?", *China Economic Review*, Vol. XII, n° 4, 2001, pp. 347-354.

11. J. E. Sinton and D G Fridley, "What Goes Up: recent Trends in China's Energy Consumption", *Energy Policy*, vol. XXVIII, n° 10, 2000, pp. 671-687.

12. C. Barbier, "Secteur résidentiel dans les pays émergents et politique climatique internationale, *Idées pour le débat*", n° 5, Iddri, 2005, 34 pp.

city heating systems are based on archaic infrastructure designed by the local administrators. City districts were provided with little boilers, coal-burning and very inefficient. The old pipes were leaky and there was no provision for regulating or programming the supply of heat. So there was considerable wastage. For some years, the authorities have been attempting to renew the stock of boilers, so as to reduce coal consumption and improve the quality of the air in the winter. Most importantly, numerous combined heat and power plants were built helping to improve output of energy and to develop heating networks. The invoicing system has also been adapted to allow households to pay for their heating on an individual basis. Since 2003, bills are sent out to the end users and meters have to be installed in existing networks (which is already compulsory for new buildings).

To the south of the Yangtse, the concept of thermal comfort is relatively new, but it is of particular concern with the development of air conditioning. Electric ventilating fans are used, which provide warmth in winter as needed and coolness in summer. Since the end of the 1990s, this technology has been quickly developed. In 1995, there were about ten air conditioning units per 100 houses; within ten years there were over 70. A survey carried out in 1999 showed that 61% of apartments in Beijing had an air conditioner, 72% in Shanghai and 88% in Guangzhou⁽¹³⁾. The usage of these appliances depends on the local climate and on the cost of

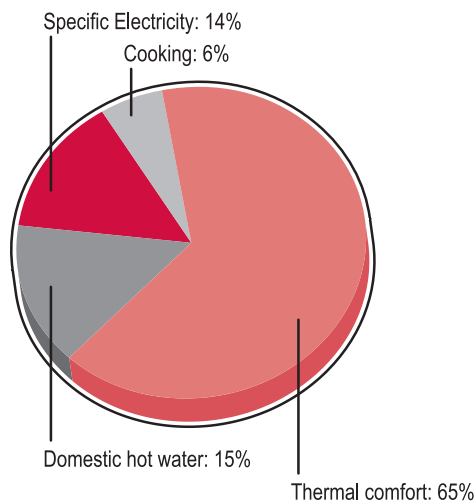
electricity relative to household income. Generally speaking, in the big southern cities, air conditioning consumes more household electricity than anything else.

So air conditioning is a major factor in the growth of electricity consumption. For that reason, Shanghai's electricity usage for the summer is twice as great as for spring or autumn⁽¹⁴⁾. Thus, energy demand arising from air conditioning has a still more worrying impact on greenhouse gas emissions than that arising from heating: firstly, because the output from these appliances is very poor and their power requirement is very high; and, secondly, the leakages and recycling problems with these appliances can have a serious effect on the climate⁽¹⁵⁾. According to Long *et al.* (2005), the use of air conditioning in the richest provinces during 2005 caused emissions of 32 megatons of CO₂.

Apart from the energy efficiency of heating or air conditioning appliances, the thermal insulation of buildings is a crucial factor in controlling energy consumption due to heating and air conditioning, which in turn has an impact on the consumption of coal. Good insulation means lower energy demand for thermal comfort; so it plays a significant role in limiting China's emissions of CO₂.

From 1986 onwards, the state attempted to impose thermal standards on the design of residential buildings in the cold regions (the north, north-east and north-west). These standards were designed to reduce by 30% the consumption of energy for heating, as compared with non-insulated accommodation. Unfortunately, these guidelines were not compulsory and so were largely ignored. In 1995, the central authorities upped their demands, asking for a 50% reduction in energy consumption for heating in new buildings. For these standards to be applied they had to be endorsed by regulations issued by the provincial authorities. But these authorities do not always appreciate what is at stake. It is estimated that only 5.7% of buildings conform to the ruling because of poor communications across the country and the absence of any mechanism for validating the results⁽¹⁶⁾. In

Figure 4. Distribution of energy consumption in construction



Source: Yao *et al.* (2005)

13. D. Brockett, D. Fridley, J. M. Lin, J. Lin, "A Tale of Five Cities: The China Residential Energy Consumption Survey", ACEEE Summer Study on Building Energy Efficiency, 2002, www.china.lbl.gov/publications/crecs.pdf, [site visited 4 February 2006].

14. W. D. Long, T. Zhong, B. H. Zhang, "Le conditionnement d'air résidentiel en Chine", *Revue générale du froid*, Jan-Feb, 2005, pp. 25-28.

15. The refrigerating gases used in these appliances (Hydrofluorocarbons: HFCs) have an overall heating effect that is from 12 to 12,000 times higher than CO₂; they also contribute to the damage to the ozone layer. The Montreal Protocol relating to these substances allows China a period of grace during which it has no obligation to eliminate the release of these gases. China is merely offered incentives to switch to using elements less harmful to the ozone layer.

16. C. Barbier, *op. cit.*

absolute terms, out of the 5.5 billion square metres of buildings erected between 1986 and 2002, no more than 320 million square metres do conform to national guidelines⁽¹⁷⁾. That also corresponds to a reduction in emissions of 23 megatons of CO₂. Thus, out of the entire built-up area in all Chinese cities, only 2.1% conforms to national standards.

In 2001, the central authorities set new standards for the other Chinese regions, thus extending to the whole country the objective of halving energy consumption for thermal comfort. Air conditioning was particularly targeted because of its growing use in the southern provinces, but the application of these standards remains at the discretion of the local authorities, some of whom do not enforce the regulations.

A programme for co-operation (on the French side, the Agence de l'Environnement et de la Maîtrise de l'Energie, the Agence Française de Développement, and the Fonds Français pour l'Environnement Mondial; on the Chinese side, the Ministry of Construction), has afforded us data on energy efficiency in construction. The first phase of this programme focused on building apartment blocks on sites totalling about 789,000 square metres in the provinces of Heilongjiang, Liaoning and Beijing. By building these apartments in line with national standards, yearly emission reductions of 44,000 tons of CO₂ have been achieved. This saving of 50% of energy consumption compared with standard equivalent accommodation was achieved in these cold regions at an extra building cost of around 7%. Unfortunately, without the programme for co-operation, no incentive was in place that might justify this extra cost⁽¹⁸⁾.

Conforming to national standards of efficiency in construction is essential for Chinese cities to rid themselves of such excessive energy consumption on heating an air conditioning. By 2005, buildings covering more than fifteen billion square metres had already been erected in Chinese cities. The low energy efficiency of these buildings doubles the consumption of energy for heating or air conditioning in these fully equipped apartment blocks. So Chinese urban development appears to be very energy intensive for thermal comfort purposes.

Alongside this worrying conclusion however we can emphasise some very positive developments in the provision of domestic hot water. For this purpose, representing 15% of the energy consumed in construction, China is exceptional in having very quickly become the world's leading market for solar water heating. In 2004, 13 million square metres of solar panels for heating water were installed. 90% are installed in an urban environment, of which 30% is in big cities and 60% in suburbs and smaller towns⁽¹⁹⁾. This market

is experiencing rapid growth and the National Development and Reform Commission (NDRC) is calling for the installation of 150 million square metres of solar panels in 2010 and 300 million square metres in 2020.

Growing motorization and physical constraints

The consumption of energy on urban transport is not based on the use of coal but of oil, of which China has been a net importer since 1993. During the Maoist era, consumption of energy on urban transport was very low. At the end of the 1970s, there were practically no motor vehicles. Cities were organised as collections of relatively autonomous work units. In these very densely populated built-up areas, commuting distances were reduced to the minimum. Pedal cycles and walking were almost the only means of travel.

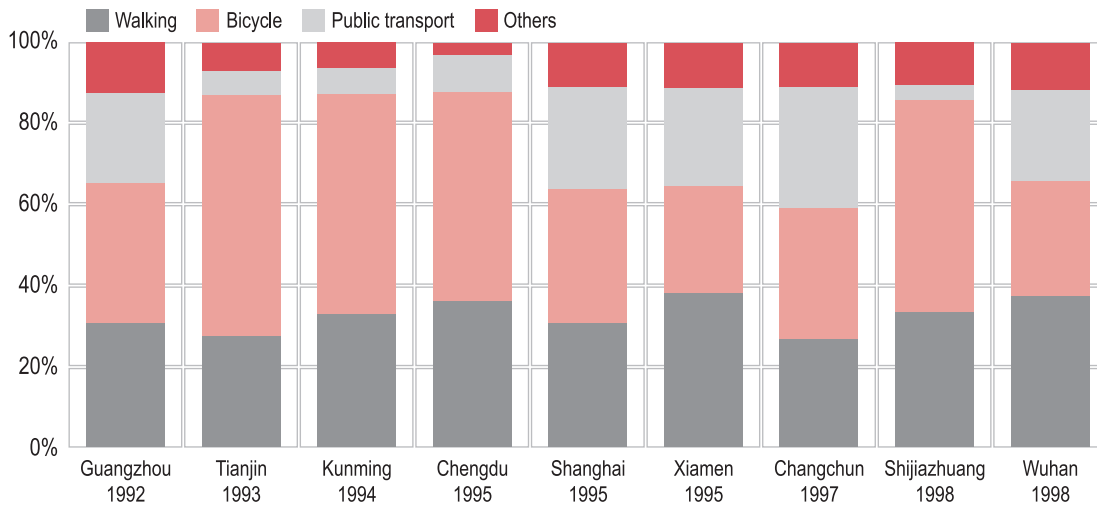
In the 1980s, the cities began to spread outwards. This phase of urban development was driven above all by the rapid development of the bicycle. During the 1990s urban transport began to be organised around buses, taxis and minibuses used by enterprises to provide shuttle services. Speaking generally, walking and cycling still accounted, during the 1990s, for nearly two-thirds of journeys (see figure 5). Private cars were still more or less unavailable to Chinese households, but company cars were increasingly to be seen in the big cities.

With the development of the land ownership market and the housing market during the 1990s, social and spatial relationships between employers and employees diminished. Families now found themselves able to choose where they lived: consequently, commuting distances greatly increased. Industries moved outward from city centres, pushed towards the suburbs by growing land prices or by political pressure to reduce city centre pollution. The enterprises yielded their space to service industries and to prestige housing. So as the cities develop they become much less heterogeneous. This spatial reorganisation of urban activity led to a general increase in the length of people's journeys, which in turn made it more and more necessary for people to use motorised forms of transport.

17. Xinhua News Agency, 23 February 2005.

18. G. Rieb, A. Bernard, M. Bernard-Herve, "La construction en Chine", in Jacquet et al., *Regards sur la Terre*, Les Presses de Sciences Po, 2007, pp. 93-97.

19. W. Wallace & Z. Y. Wang, "Solar Energy in China: Development Trends for Solar Water Heaters and Photovoltaics in the Urban Environment", *Bulletin of Science, Technology & Society*, Vol. XXVI, n° 2, 2006, pp. 135-140.

Figure 5. Means of transport in various Chinese cities during the 1990s

Sources: various.

The early 2000s saw a real take-off in private car-ownership. Ever since 1994, the Chinese state has pursued a pro-automobile industrial policy. The authorities sought to make this sector of industry a pillar for economic growth; they supported the development of car-manufacture right across China⁽²⁰⁾. The aim was that in a few decades the country would have exporting businesses; it would favour their development by profiting from the resources of the domestic market⁽²¹⁾.

In March 2002, in his report on government activities, the then Prime Minister, Zhu Rongji, outlined the aims on car ownership. He proposed to equip 20% of households with cars by the year 2020. Starting in 2002, car sales rocketed⁽²²⁾. The national stock of cars doubled in four years rising from 8.5 million vehicles in 2000 to 17.4 million by 2004. This stock is particularly concentrated in the eastern coastal cities and the provincial capitals. Nationally speaking, the rate of car ownership is less than fifteen cars per 1000 people; but in the big cities it is more than fifty cars per 1000 people. Beijing has the greatest concentration of cars in China. Of the total national stock of cars 10% is concentrated there: ownership per 1000 people has risen to more than 100.

This rapid growth in the national stock of cars is reflected, of course, by a big rise in consumption of fuel. The vehicles sold in China have far lower energy efficiency than do vehicles of similar weight and size in industrialised countries. In

the Tenth Five-Year Plan (2001-2005), the state did encourage the production, independently of foreign car makers, of an economic Chinese car with a 1.3 litre engine. In fact, it was difficult to realise this aim, because foreign car-makers were reluctant to pass on their technology to Chinese enterprises and because fuel quality was still very poor⁽²³⁾.

Even though the stock of cars is growing very rapidly and the low energy efficiency of engines accentuates the increase in energy consumption for urban travel, China's urban transport is not tending towards energy intensity in line with Western countries. Admittedly, the increase in household income does increasingly permit car ownership; but physical constraints in the cities still limit the interest in using cars. Everywhere, in the richest cities, road congestion has become chronic. The time taken for car journeys has become considerably longer and rush hour average speeds by

20. Lin Gan, "Globalization of the Automobile Industry in China: dynamics and Barriers in Greening of Road Transportation", *Energy Policy*, vol. XXXI, n° 6, 2003, pp. 537-551.

21. S Stares and Z Liu, "Motorization in Chinese Cities: Issues and Actions", in S. Stares and Z. Liu, *China's Urban Transport Development Strategy*, Washington DC, World Bank, 1995, pp. 43-104

22. We should note that the big Chinese cities advanced directly to the automobile. They bypassed the motorcycle to avoid atmospheric and noise pollution in the city centres. Yet, motorcycles proliferated in small towns and in the countryside.

23. J. Allaire, "Le casse-tête de l'Etat chinois: encourager la consommation automobile en décourageant la consommation d'énergie" (The Chinese Headache: Encouraging Car Use while Discouraging Energy Consumption), *Revue de l'énergie*, vol. LVI, n° 563, 2005, pp. 29-35.



Beijing: heavy traffic during rush hour

car are sometimes lower than those by bicycle. In fact, car owners in China are competing for the available space. Cities in China lag behind those in developed countries in terms of road space (see table 2). This continuing problem

Table 2. Area occupied by roads in cities, as a percentage of total city area – early 1990s

Washington	45.0 %	
London	35.0 %	
Paris	25.9 %	
Tokyo	23.0 %	
Seoul	18.0 %	
Beijing	11.0 %	
Guangzhou	6.4 %	
Shanghai	5.0 %	
Average for Chinese Cities	11.0 %	

Source: Stares & Liu (1995), 2003 average: Cherry C (2005)¹.

derives from the density of the population, which in turn effects energy consumption for transport.

The population density of Chinese cities is at present above 10,000, even 15,000, persons per square kilometre. The prospects for greater car use should therefore be compared above all with developed Asian cities of similar population density. Thus, in 1990, the great agglomeration of Tokyo and Yokohama, with a population density of 7,000 persons per square kilometre, has car ownership of around 225 cars per 1,000 inhabitants. By comparison, American and European cities with average population densities of 1,400 persons and 5,000 persons per square kilometre respectively, had car ownership of around 600 and 400 cars per 1,000 inhabitants. The inhabitants of Tokyo-Yokohama emit an average of 1.2 tons of CO₂ per head from transport. In European cities, emissions from transport are estimated at 1.8 tons of CO₂ per head, whereas in the United States they reached 4.21 tons per head⁽²⁴⁾.

24. J. Kenworthy, F. Laube, P. Barter, T. Raad, C. Poboorn, B. Guia, *An International Sourcebook of Automobile Dependence in Cities, 1960-1990*, Boulder, University Press of Colorado, 2000.



Beijing : bicycles and car advertisement

In dense urban areas, because of the concentration of individual movements, the development of the motor car quickly encounters the obstacle of congestion. Collective transport systems are by contrast very efficient; they make it possible for large numbers of people to move about within limited space. Moreover, travelling on foot or by bicycle becomes easier when distances are shorter⁽²⁵⁾. The Asian cities, because of their density, have stronger incentives than Western cities for developing alternatives for motor transport. Thus, long-term use of cars will depend on whether cities can quickly find room for them.

This observation has been confirmed in China with the recent growth in the stock of cars. In consequence, to prevent congestion in the big cities, the Chinese authorities have planned big increases in public transport infrastructure. Taking account of the backwardness of public transport, they have since the late 1990s supported plans for building rail

transport networks in the big cities. In 2000, only 165 kilometres of metro or tram lines were in use: by 2010, a further 800 kilometres will have been built.

The consumption of energy on transport during the coming decades will thus depend above all on investment choices: decisions will have to be taken between railed infrastructure and road infrastructure, as well as between collective and individual forms of transport. Street design is also critical if non-motorised forms of transport are to be encouraged. The bicycle, which is still widely used across China, is the most efficient form of transport in terms of energy consumption. Whereas some cities are tempted to ban bicycles, city authorities should keep enough cycle lanes on public roads for as many people to use them as possible. The decisions reached regarding mass transport or non-motorised travel will

25. P. Newman and J. Kenworthy, *Cities and Automobile Dependence. An International Sourcebook*, Brookfield, Gower Technicals, 1989.

dictate the shape of Chinese cities and will thus determine their dependence on oil.

Conclusion

Urban development bears heavy responsibility for energy consumption and consequently for CO₂ emissions. Two sectors are particularly significant: thermal comfort and transport. Firstly, the question of thermal comfort seems in China to be of serious concern. The system of national standards does not work as it should. Because of the rapid increase in the national stock of individual electric appliances, and bearing in mind the low energy efficiency in apartment blocks, Chinese cities are developing high energy dependence on heating and air conditioning. That is reflected in a significant demand for electricity and coal. To reduce the contribution of the construction sector to global warming, the national recommendations need to be applied: new buildings must be better insulated and existing buildings should be renovated. Secondly, the rapid development of motor travel leads to ever higher consumption of oil and is restricted by shortage

of space. However, the congestion of city centres also favours the development of alternative solutions to private car ownership. Chinese cities could thus limit the energy consumed in travel by providing viable collective transport systems and by designing streets for non-motorised transport. If the present policy for investing in collective transport is pursued and spreads to medium-sized towns, it can lessen dependence on oil and limit the dynamic towards reducing arable land.

However, some elements of the Chinese model for growth are likely to threaten these positive developments. The development of the cities is beginning to have a significant impact on people's demand for energy. Urban growth is encouraged by improving living conditions. The central authorities are increasingly losing control of the demand for energy. With the expectation of rapid economic growth over the years ahead, these uncontrolled elements could hamper the effectiveness of government strategy in the fight against global warming. •

• **Translated by Philip Liddell**

The Concerted Effort to Fight Climate Change

Towards a Fair Arrangement for Southern Countries to Become Partners in the Post-2012 Commitments?

BÉATRICE QUENAUULT

In 1992, in Rio, the industrialised countries (grouped as Parties included in Annex 1), conscious of their historic responsibility for the growing concentration of greenhouse gases (GHGs) in the atmosphere, agreed to take the initiative in the battle to counter the greenhouse effect. Under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC), they committed themselves to stabilise, by around 2000, their GHG emissions at 1990 levels. In 1997, they decided to go further by adopting the Kyoto Protocol⁽¹⁾ and committing themselves to legally binding targets: by 2008-2012, they have to reduce their GHG emissions by an average of 5.2% below 1990 levels. This is the first of the five-year targets. According to the Intergovernmental Panel on Climate Change (IPCC), the Protocol's targets are not ambitious enough to reverse the process whereby GHGs are growingly concentrated in the atmosphere⁽²⁾. They are sufficient only to slow this process down⁽³⁾. This slowing down must be seen in relation to the requirements of the Convention's ultimate objective, which is the "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system⁽⁴⁾."

The experts consider that it is necessary first to impose a ceiling on GHG concentration and then to reduce it so that, by around 2050, global temperatures would be held at a level no more than 2°C higher than in the pre-industrial period. This would assume that global emissions be halved by that date – and that the developed countries reduce theirs by three-quarters⁽⁵⁾.

To succeed, the industrialised countries would have to agree, by the second target period of the Kyoto Protocol (2013-2017), to reduce their emissions far more drastically than they are committed to do during the first period (2008-2012). But a still greater challenge for the post-2012 negotiations to confront is the determined opposition by southern countries, particularly China and India, hitherto exempt from targets, to subscribe in their turn to commitments on limiting their emissions. In the absence of climate control policies

(and according to IPCC forecasts), emissions from the developing countries will by themselves equal or exceed, over this century, the world total of emissions, rendering ineffective any preventive action limited to the industrialised countries.

Montreal: the debate opens on post-2012 obligations

The Montreal Conference (December 2005) was an opportunity for governments to officially open discussions on how, after 2012, they should reduce emissions⁽⁶⁾. In fact, the Protocol includes two articles, Article 3.9 and Article 9, requir-

1. In 1995, the first Conference of Parties (COP 1) to the Convention, bolstered by new scientific evidence of the extent of climatic change, agreed on the need to extend the commitment of the Parties included in Annex 1 beyond 2000 to a specific target date (with no new commitments by the southern countries). This "Berlin Mandate" was the forerunner of the Kyoto Protocol, agreed upon in 1997 at COP 3. Thus, the Protocol brought into being four significant advances on the Rio aspirations: delegates pledged to reduce emissions by legally enforceable quotas (before, they had merely made declarations of principle); to create two categories of government with different aims, the Annex 1 developed countries and the Non-Annex 1 countries (where previously all governments had the shared aim of stabilising emissions); they accepted specified targets for 2008-2012, these to be succeeded by further five-year target periods (replacing the targets for 2000); and they increased the number of targeted gases from three to six. To counterbalance the acceptance of these tougher commitments, an element of flexibility was introduced to realising these quantified aims. For this reason, in addition to putting in place policies and national measures aimed at attenuating climate change and its impact, the Protocol includes what are defined as "flexible mechanisms" allowing for International Emissions Trading (IET), Clean Development (CDM) and Joint Implementation (JI). These are designed to help Annex 1 economies to meet their targets in the most cost-efficient way.
2. *IPCC Fourth Assessment Report on Climatic Change, 2007, Working Group 1 Report: "The Physical Science Basis", Summary for Policymakers, Paris, February 2nd 2007, www.ipcc.ch*
3. The global atmospheric concentration of carbon dioxide, the most important of the greenhouse gases, has increased from its pre-industrial level of about 280 parts per million (ppm) to 379 ppm in 2005. *IPCC Fourth Assessment Report, op. cit.*
4. *Ibid.*
5. Annual CO₂ emissions from fossil fuels have grown from 6.4 gigatons of carbon (GtC) over the period 1990-1999 to 7.2 GtC for the period 2000-2005. 1 GtC corresponds to 3.67 GtC. *IPCC Fourth Assessment Report, op. cit.*
6. We are concerned here with the structures adopted at Kyoto. We shall not be raising the question of US abstention. Nor can we address here the Asia-Pacific Partnership, the new agreement that the Americans reached in July 2005 with Australia, China, India, South Korea and Japan.

ing that the process for discussion on post-2012 should begin by 2005 at the latest, the deadline having been fixed with the adoption of the Montreal Action Plan (MAP), setting out three stages for opening the negotiations.

The first stage, according to Article 3.9, is to adopt a process leading to the definition of new commitments by the industrialised countries, the Parties to Annex 1/B (PA1/B). The task at Montreal was to determine which negotiating mechanism to favour (workshop, say, or working group) and to create a timetable for the work, including a deadline for industrialised countries to adopt new targets⁽⁷⁾.

The second stage, based on Article 9, proposes a complete review of the Protocol (co-ordinated with the reviews under the Convention required by Article 4.2.d) "in the light of the best available scientific information and assessments on climate change and its impacts, as well as relevant technical, social and economic information." This reassessment⁽⁸⁾ must include an evaluation of the level of effort accepted by all Parties as well as establishing the availability of technical and financial support for the developing countries. Progress should be made towards a decision that will intensify the commitments of the industrialised countries and, at the same time, widen the participation of the developing countries.

The third stage, designed to launch a process for adopting a post-2012 package is to be conducted under the aegis of the Convention. It is to be a "dialogue on long term cooperative action to fight climate change". All the parties to the Convention are involved. This process, embarked upon in Bonn in May 2006, consists of four workshops that must concentrate on innovative ideas to induce the developing countries to commit themselves further (such as sectoral approaches and non-binding, flexible targets). The process will consist only of exchanges of views, information and non-binding ideas and "will not open negotiations likely to lead to new commitments⁽⁹⁾". This process will open the way towards lasting development; it will provide a response to difficult changes; and it will exploit the new technologies and market opportunities in the fight against climate change.

The search for a mutually advantageous and fair agreement

The participation of the southern countries will require that the question of fairness in the burden of sharing should be addressed; and it must be reflected in commitments adapted to each country's specific situation and to the ultimate objective of the Convention. However, the Kyoto Protocol offers only a rough framework, one that may well be adapted to the particular circumstances of the industrialised countries but

remains totally inadequate for enabling southern countries to join the system of emissions quotas.

It would be unrealistic to expect the developing countries, those wishing to participate in the system of tradable emissions permits implemented by the Protocol, to join Annex B: that would require them first to be members of Annex 1 and therefore to accept all the concomitant obligations of the Convention. So the idea of creating a new annex to the Protocol, Annex C, was put forward during the fourth Conference of Parties (COP 4, Buenos Aires, November 1998). Ahead of the debate on the second period commitments, some southern countries suggested voluntary commitments for the first period, hoping to join the system for trading emissions quotas. As it happened, their proposals opened the debate and began to circulate the idea of creating the new annex. It would include developing countries wishing to make different kinds of commitments from those by industrialised countries envisaged in Annex B: commitments that would be non-binding and that might take the form of, for example, diminishing the intensity of GHGs within their economies, rather than imposing defined limits on emissions. Aside from bringing the developing nations into Annex 1/B (which is unthinkable), on what basis might one now ask them for targeted commitments under Annex C?

Towards a contraction and convergence principle for reducing emissions

When it comes to the form that the developing countries' future commitments might take, several options are today

7. It was decided that an ad hoc working group of no fixed composition, the "Special Working Group on New Commitments by the Parties defined in Annex B," would lead the consideration of how to amend the targets listed in Annex B. Although no timetable was fixed, the Group would have to wind up its work as soon as possible (before 2008) so as to assure continuity between the first and second target periods. The Group had its first meeting in Bonn (17-25 May 2006), and the second in Nairobi (November 2006) without making any significant progress.
8. Although it was on the agenda at the Nairobi conference, the Conference of Parties has not yet begun its assessment. Switzerland, supported by the European Union and Norway, proposed at Nairobi that a "process" should be embarked upon leading to the evaluation of the Protocol. Because of this, discussions were focused on the reach, the subject matter and the manner in which this evaluation should be conducted.
9. Because the southern countries have several times made clear their refusal to sign any binding commitment on climate control, the decision is free of any constraints. During the first workshop of the Dialogue (Bonn, May 2006), the debates and informal exchanges between the participants revealed a number of common viewpoints on the Convention's long-term future. Yet, some delegates pointed out that divergent points of view on active measures and future directions might emerge as the process advanced—and this is what happened at the second workshop in Nairobi, in November 2006. Unsurprisingly, when the Russian Federation suggested the possibility of voluntary commitments by developing countries, member countries of the Group of 77 objected strongly.

under discussion⁽¹⁰⁾. Assuming that negotiations on climate stabilisation continued to favour collaboration in the form of allocating emissions quotas, the adoption of a common, long-term emissions criterion per head of population and convergence criteria taking account both of initial situations and demographic and economic developments would be likely to create the conditions for a compromise between countries attaching primary importance to starting positions and countries whose immediate demand was to establish the emissions rights of each individual⁽¹¹⁾. The combined effect of these two principles could lead, starting with global, medium-term targets at each stage for the entire world, to the search for a differentiated distribution of efforts by each country (or each region) with a concern for their objectives to converge in successive stages.

The Kyoto Protocol implicitly recognises that the lowest emitting industrialised countries with least purchasing power have the possibility of increasing their emissions in line with their demographic and economic development needs: this recognition represents the start of a process of integrating long-term emissions quotas in terms of units of carbon per head or of units of carbon in relation to GDP per head, starting from very different initial circumstances. These early steps towards differentiation are an important advance in the debate on how to bring several, even possibly all, the developing countries, post-2012, into some arrangement for common commitments. The process needs to be explicit and fit for the purpose of extending the present system to southern countries according to a generic formula, applicable to each country and not based on exceptional arrangements accepted only by some. The kind of exceptions that the Protocol has created for a few countries is in fact too specific to serve as a basis for the participation of all developing countries. The idea of mastering the GHG-emissions of these countries, which is now current at least in the minds of northern negotiators, could never be realised on an equitable basis. Most importantly, it must be founded on an explicit logic, acceptable to all sides over the long term, based on GHG-emissions per head of population and leading to common values compatible with climate change.

Conclusion

If we seek to reach an agreement acceptable to all, it is essential to clarify the debate surrounding future participation of the developing nations. Alongside the delicate question of how emissions rights can fairly be allocated, these discussions ought to pave the way for a constructive approach to a

contraction and convergence timetable for stabilising emissions. So it is right for us to explore further the various rules and criteria likely to be applied and their redistributive effects in terms of wealth and the allocation of emission rights⁽¹²⁾.

If dialogue on future commitments could be dispassionately pursued on the basis of clear, firm principles, while the range of possible options was explored, the Kyoto Protocol would be reinvigorated, along with the global management of climate change. The governments concerned would then have the extra incentives to implement effective and efficient policies and measures to tackle the intensifying greenhouse effect.

The fact remains that the future of the concerted battle against climate change, waged under the aegis of the Kyoto Protocol, is problematic: one can perceive a sharp deceleration in the rhythm of advance—even a pause—when we look at global ecological management. The last Nairobi Conference (November 2006), at which those parties present sat tight in their respective positions, did nothing to dispel that perception. The interplay of co-operation and conflict has become more complex with the growing influence exerted by newly industrialised countries such as India, China and Brazil. Those governments have joined the United States in holding back the formulation of new international rules on the environment. And the negotiations to devise common, long-term procedures for this “global ecological management” have become all the more difficult. •

• Translated by Philip Liddell

10. Numerous proposals have already been put forward. See, in particular: D Bodansky *et al.*, *International Climate Efforts Beyond 2012: A Survey of Approaches, Prepublication Draft*, Pew Center on Climate Change, Washington, DC, June 2004, www.pewclimate.org. Alain Chetaille, *Consolidation du régime multilatéral et préparation de l'agenda climat et développement post-2012*, Pôle politiques publiques et régulations internationales (PPRI) du Groupe de recherche et d'échanges technologiques (GRET), Paris, January 2006, www.gret.org. N. Höhne, E. Lahme, *Types of Future Commitments Under the UNFCCC and the Kyoto Protocol Post 2012*, WWF Briefing Paper, Washington DC, 20 September 2005, www.panda.org. William D. Nordhaus, *Life after Kyoto: Alternative Approaches to Global Warming Policies*, Yale, 7 December 2005, www.econ.yale.edu/nordhaus/kyoto_120805.doc. Cédric Philibert, *Climate Mitigation: Integrating Approaches for Future International Cooperation*, information note on OECD and AIE Environment Management, 14 November 2005, www.iea.org.
11. In the aftermath of Kyoto, the most extreme positions—the Brazilian notion of historical responsibility, the American assertion of continuing divergence justified by domestic imperatives, the Indian proposal for emissions to be shared out equally per head—have been set aside. Negotiations have gradually inclined opinions towards the differentiation of efforts. The initial criterion of “acquired rights” (in the allocation of emissions rights, objectives are founded upon a country's history and its particular circumstances) has been filled out by the notions of demographic evolution, initial wealth and development needs. Admittedly, these different notions have not become explicit criteria, but they have allowed all sides to justify their varying aims in the service of a shared goal.
12. For more on this, see: Béatrice Quenault, “Protocole de Kyoto et gouvernance écologique mondiale: enjeux et perspectives des engagements post-2012”, in *Mondes en Développement*, vol. 34, n° 136, April 2006, pp. 29-47; “Changements climatiques – Quelles stratégies post-Kyoto?”, in *Vie & Sciences Économiques*, n° 166-167, November-December 2004, pp. 95-103.

China in a Post-Kyoto Architecture:

Reconciling Internal and External Pressures

MICHAL MEIDAN

The questions of climate change and environmental protection are now a clear component of Beijing's official rhetoric. Already taken into account in the Tenth Five-Year Plan (2000-2005) with few concrete results, the reduction of greenhouse gas emissions, energy efficiency and conservation have become some of the leading priorities in the roadmap set down by the government for 2006-2011. Despite the scientific uncertainties surrounding the question ⁽¹⁾, there is no longer any doubt in China that the country's exponential economic growth is a major contributor to the degradation of the natural environment. ⁽²⁾

The protection of the environment may, finally, have reached the top of China's political and economic priorities. Beijing is declaring its readiness to commit itself to the international fight against climate change, but in what form?

In order to evaluate the role of China in a post-Kyoto architecture, it is necessary to analyse the diverse and sometimes contradictory pressures that are being exerted on it both nationally and internationally. Some of these pressures target the pursuit of economic growth as the first priority (represented by industrial interest groups and certain ministries at the local and national level): "energy security takes priority over climate security" ⁽³⁾. These pressures are, however, being attenuated by a concern expressed ever more strongly by the National Environmental Protection Agency, or NEPA, which became SEPA State Environmental Protection Agency—in 1998, by some researchers at government think tanks—the Chinese Academy of Social Sciences (CASS), the energy research centre affiliated to the National Development and Reform Commission (NDRC)—, by the environmental non-governmental organisations (NGOs) and the media. Finally, the efforts of the international community and of the international scientific communities are playing their part in advancing the environmental cause in China.

It is the power relationship between these different pressure groups that will, ultimately, determine the policies enunciated in Beijing. The question that has to be asked is thus the following: will China be able to translate its rhetorical prior-

ities into concrete measures at the national level? On the international level, how does it see its role in a post-Kyoto order?

To assess these problems requires a more in-depth analysis of the origins of environmental policy in China and of the obstacles to its application, something which underlines the great difficulty that Beijing has in implementing its priorities. First of all, the weakness of the government actors charged with the environmental issue leaves them struggling to compete against the industrial interests. Second, as implementation of environmental policies is conducted primarily through political campaigns—a practice strongly anchored in the tradition of environmental management ⁽⁴⁾—and by means of administrative tools, it remains largely inadequate in getting local and industrial actors on board. Moreover, the framework convention on climate change necessitates adaptation of national legislation and the establishment of administrative mechanisms capable of achieving the objectives set, and its application depends to a large extent on internal processes of responsibility and reporting.

1. For more details on this debate, see David G. Victor, *Climate Change: Debating America's Policy Options*, Council on Foreign Relations, New York, 2004, pp. 8-19.
2. "China is determined to curb use of fossil fuels," www.zoomchina.com.cn, 6 February 2007, http://www.gasandoil.com/goc/frame_nts_news.htm, consulted on 1 March 2007.
3. Xuedu Lu, Jiahua Pan, Ying Chen, "Sustaining Economic Growth in China under Energy and Climate Security Constraints," *China & World Economy*, vol. 14, n° 6, 2006, pp. 85-97.
4. Hyung-Kwon Jeon, Seong-Suk Yoon, "From International Linkages to Internal Divisions in China: The Political Response to Climate Change Negotiations," *Asian Survey*, vol. 56, n° 6, November-December 2006, pp. 846-866.

Finally, if the external pressures on China have in the past been effective to a certain extent⁽⁵⁾, it is nevertheless still true to say that any Chinese commitment to an international architecture remains fundamentally rooted in the belief that it must, first and foremost, benefit China's growth objectives, as Beijing considers that the current environmental situation is, after all, attributable to the developed world.

Pressures in favour of change—and resistance

The evolution of “green” rhetoric and policies in China

The “green” debate is not a recent development in China. The initial primer for “environmental governance⁽⁶⁾” dates back as far as 1972, the year when, following a series of ecological calamities in China, premier Zhou Enlai established a leading group with the aim of protecting the country's water reserves, but also in preparation for China's participation in the first United Nations conference on human environment (one year after China's accession to the UN). Two permanent committees for the protection of the environment were created under the aegis of the National People's Congress and under the State Council. Despite the existence of these committees as well as abundant legislation integrated in the constitution of 1982⁽⁷⁾, the protection of the environment remained a secondary priority, notably as a result of the weakness of the political and judicial bodies entrusted with its implementation. NEPA, created in 1988 under the State Council, was charged with the entirety of the environmental legislation, the drafting of administrative regulations and national standards, the management of pollution problems and the co-ordination with the United Nations, but did not enjoy the benefits of a ministerial rank or of a sufficiently large workforce. Moreover, NEPA often had to negotiate with more powerful ministries that were promoting economic development, and had at its disposal few tools to translate its priorities into real measures, in the absence of a sufficiently powerful judicial system or market incentives⁽⁸⁾. More fundamentally and in the tradition of the great environmental campaigns in China, if the political campaign is not launched by the very highest political authorities⁽⁹⁾, the environmental cause will have little chance of getting anywhere.

First changes

Since the arrival in power of Hu Jintao and Wen Jiabao, environmental priorities have prominently featured in the

official rhetoric and have been fully incorporated in the vision of what constitutes China's energy insecurity. Several factors have in fact contributed to placing these questions at the heart of Beijing's socio-economic priorities.

The question of the degradation of the natural environment is tightly linked to Chinese energy consumption habits: 70% of the primary energy of the country is supplied by coal, while a further 25% is covered by oil. Its energy consumption structure has propelled China to second place in the list of worldwide CO₂ emitters behind the United States, but as of 2009, according to the International Energy Agency (IEA), China will sit at the top of the table of the world's polluters. Its SO₂ emissions in 2006 amounted to 25,944 million tonnes, an increase of 1.8% from the previous year⁽¹⁰⁾, in terms of CO₂, the country has gone from 2,289 billion tonnes of CO₂ emitted in 1990 to 3,307 billion tonnes in 2002⁽¹¹⁾, and 5,6 billion tonnes in 2006⁽¹²⁾.

Arable land in China is in constant decline, water pollution is reaching alarming proportions and the rare resources that are available are of poor quality: 70% of the water that flows into the five major rivers is dangerous for human consumption. Similarly, between 300,000 and 400,000 people die every year from respiratory problems, while seven of the ten most polluted cities in the world can be found in China⁽¹³⁾. The winter of 2006 was the hottest for 50 years⁽¹⁴⁾, following a constant trend over the last few years, which has led scientists to warn the authorities that a temperature rise on the Qinghai-Tibet plateau would alter the

5. Lester Ross, “China: Environmental Protection, Domestic Policy Trends, Patterns of Participation in Regimes and Compliance with International Norms,” *The China Quarterly*, n° 156, special edition, *China's Environment*, December 1998, pp. 809-835.
6. Elizabeth C. Economy, *The River Runs Black*, London, Cornell University Press, 2004, pp. 93-98.
7. For more details concerning the legislation, see Michael Palmer, “Environmental Regulation in the People's Republic of China: The Face of Domestic Law”, *The China Quarterly*, no. 156, p. 788-808.
8. *Ibid.*
9. Hyung-Kwon Jeon, Seong-Suk Yoon, *op. cit.*; E. Economy, *op. cit.*
10. “Experts analyze increase in key pollutants during 2006”, *People's Daily Online*, 13 February 2007, http://english.people.com.cn/200702/13/eng20070213_349778.html, consulted on 1 March 2007.
11. Vivien Wu, Ray Cheung, “Beijing likely to face more pressure to cut emissions; Environmental movement will get new momentum”, *South China Morning Post*, 17 February 2005.
12. Brice Pedroletti, “La Chine devient championne du monde des émissions de gaz à effet de serre,” *Le Monde*, 24 May 2007
13. Jennifer L. Turner, Juli S. Kim, “China's Filthiest Export”, 7 February 2007, *Foreign Policy in Focus*, www.fpiif.com, consulted on 20 February 2007.
14. “Report says 2006 was China's warmest year in half a century”, *Associated Press*, 20 February 2007.

quantities of water that flow into the Yangtze and the Yellow River⁽¹⁵⁾ as the glaciers continue to melt.

The desertification and the erosion of arable land mean that sandstorms have become a regular occurrence in the Chinese capital, their effects even reaching Seoul and Tokyo since 2001. While massive reforestation programmes have somewhat moderated the rate of deforestation in China, the area devoted to arable land continues to diminish, something that is not without consequence for the country's food security. Pollution is said to cost China 8% to 12% of its GDP in direct losses: agricultural products damaged by acid rain, medical expenses, aid to victims of ever more frequently occurring natural disasters and costs engendered by the rarefaction of resources.

The problem of the degradation of the natural environment is not restricted to China's national borders, leading to rising international pressures for action⁽¹⁶⁾, and China, thanks to its contribution to pollution, cannot be excluded from any global arrangement.

The internal pressures in China echo the voices that are being raised internationally. The different Chinese NGOs as well as the organisations set up by the government for the protection of the environment have been among the only ones to obtain authorisation to work in China. With the creation of *Friends of Nature*, the first environmental NGO in China, in 1994, Beijing opened the door to these kinds of associations, but the government's ambiguous attitude towards them makes their activities difficult. Because of that, the different Chinese NGOs (*Friends of Nature*, *Green River*, *Wild China*, among others) maintain a delicate and sometimes tense alliance with the authorities, but avoid openly defying the policies decided on by the central government⁽¹⁷⁾. Nevertheless, the activists are gradually becoming more critical of the authorities and now have at their disposal an information and support network among the NGOs and the international media⁽¹⁸⁾. Even if they do not always obtain the desired results, these activists perform functions within the environmental protection system that are otherwise left unfilled by institutional gaps: supervising the execution of laws and regulations, and education in the field of environmental protection. They also allow the government to demonstrate a certain degree of political tolerance⁽¹⁹⁾. The support of the government for the NGOs thus remains partial: the restrictions imposed on the registration and financing of and employment at the NGOs have limited their number and their activities in China, but despite the risks that they might present for Beijing, they fulfil an important bridging function, with the particular encouragement of SEPA.

The fourth generation sets out a new environmental commitment...

A new perspective on energy security, expressed through the theme of the "conservation-minded society," (*jiyuexing shehui*) has emerged following the accession to power of Hu Jintao and Wen Jiabao. The two leaders initially introduced the concept of "scientific development," which seeks to balance economic development with its human and natural costs. Since then, this concept has been elevated to the rank of a doctrine and relayed to all levels of the state⁽²⁰⁾. This new vision of development relies heavily on the development of technologies, on the energy savings generated by the transformation of the industrial structure and the reduction in energy intensity, on the education of the people and on the intervention of the state in the choice of investments. The emphasis has thus been placed, first and foremost, on measures aiming at improving the energy efficiency of the country, while relying on the gradual modification of its economic structure from a manufacturing industry, highly polluting and energy-consuming, to the services industry—and enhancing the energy-saving measures by raising standards, replacing old equipment and introducing more efficient technologies.

Since 2004, the losses in terms of natural resources have been estimated approximately thanks to the calculation of a "green GDP" that deducts the environmental costs from the traditional calculation of GDP⁽²¹⁾ and would thus allow local mindsets, up to now greedy for growth figures, to be changed. Finally, the Eleventh Five-Year Plan has introduced the very ambitious goal of reducing the country's energy intensity by 20% over the period⁽²²⁾.

Several initiatives have also been launched in order to promote the introduction of renewable energy, to facilitate trade in carbon emissions rights and the Clean Development

15. Jo Johnson, Richard McGregor, "Dry reality – China and India face up to curbs on carbon", *Financial Times*, 27 February 2007.
16. Michael Richardson, "Watching through the haze", *South China Morning Post*, 15 July 2005.
17. E. Economy, *op. cit.*, p. 136. The activities undertaken during the construction of the Three Gorges Dam were essentially initiated by international NGOs.
18. *Ibid.*
19. E. Economy, *op. cit.*, p. 173-175.
20. Joseph Fewsmith, "Promoting the Scientific Development Concept", *China Leadership Monitor*, no. 11 (2004), <http://www.chinaleadershipmonitor.org>.
21. Thibaud Voita, "Le PIB vert, si proche et si loin", *China Analysis*, n° 9, October 2006.
22. "China sets major goals for 11th Five-Year Plan period", *People's Daily*, 13 October 2005, http://english.people.com.cn/200510/13/eng20051013_214194.html, consulted on 27 February 2007.

Mechanism (CDM) established by the Kyoto protocol, for which 300 projects were reportedly launched by January 2007. In the fight against atmospheric pollution generated by the use of coal, the NDRC is planning to gradually shut down small thermal power stations in the country. China relies on these thermal power stations for 82% of its electricity, but the majority of them are inefficient and polluting⁽²³⁾; furthermore, a large number of them were built without approval and often in contradiction with the priorities enunciated by the central government. This approach of the NDRC forms part of a series of initiatives formulated in January 2007 by the central government in order to reduce the country's coal consumption by 2010.

At the national level, the fight for environmental protection has been launched both in rhetoric and in practice. China is creating funds to finance "green" projects, to encourage research and development of new technologies, to reduce the emission of pollutants, to progressively organise a trading system in emission permits⁽²⁴⁾ and to help increase the country's arable land. Beijing has also strengthened the legal establishment with regulations concerning the use of dangerous materials by industry and the Renewable Energy Law (2005), which should allow an increase in the share of renewable energy in the country's energy consumption.

... not without difficulties

Despite the efforts to raise awareness, the public campaigns and the amended laws, China will have trouble reaching the goals set by the Eleventh Five-Year Plan. The goal of reducing energy intensity by 20% already seems impossible to achieve⁽²⁵⁾, and the central government is finding it difficult to impose its priorities on all provinces.

It is true that such a radical transformation of the structure and model of economic growth may well be difficult to implement so fast in China. Beyond the redefinition of priorities, numerous fundamental obstacles prevent progress to more efficient energy consumption and to the adoption of energy-saving measures that can be applied on a national scale, particularly the absence of a legal tradition and market mechanisms⁽²⁶⁾. As long as the price of energy products remains controlled and maintained artificially low by Beijing, it will be difficult to introduce new sources of energy. Similarly, environmental legislation in China remains incomplete and difficult to apply (as is the case, for example, with the Renewable Energy Law)⁽²⁷⁾, few regulations and standards have been formulated and the current legal body seems more like a general roadmap than operative laws.

Civil participation, despite the activity of the NGOs, remains limited, and the protection of the environment is perceived as a problem of rich countries, or in the case of China, of well-off provinces⁽²⁸⁾. It is nevertheless still true that the environmental protection initiatives are political and administrative, favouring a rationale of political campaigns. Because of that fact, at the local level, the priority of economic development at all costs remains *de rigueur*, even more so as the cost of non-compliance with environmental objectives remains very low for the public actors⁽²⁹⁾.

Finally, even within the leadership, the commitment to environmental protection remains nuanced; while environmental protection and participation in international mechanisms are priorities for Beijing, their importance should not be overestimated. The pursuit of the country's economic development cannot be allowed to suffer from it.

The role of external pressures

Despite the national difficulties in translating the initiatives into applicable measures, the international community and the international mechanisms in which China participates exert a supplementary pressure on the Chinese decision-makers. Since 1972, when China took part in the first UN conference on Human Environment, the Chinese leadership has set up specialist teams within NEPA, the Ministry of Foreign Affairs and the scientific community to represent China at these international forums and help accommodate them in national policies. China's environmental diplomacy is thus strongly influenced both by these external pressures, by the internal power relationships within the country, and by the way in which China sees its place and its role in international efforts.

The origins of China's environmental diplomacy

The timid beginnings of China's environmental diplomacy can be traced back to the 1970s with its guarded member-

23. "Just hot air?", *The Straits Times*, 4 February 2007.

24. "China mulls new measures in environmental protection", *Xinhua*, 20 February 2007.

25. Ding Jun, Wang Shiling, "Reducing energy intensity by 20%: the goals will not be met," *21 Shiji jingji baodao*, (Chinese) 14 September 2006.

26. Hyung-Kwon Jeon, Seong-Suk Yoon, *op. cit.*

27. Interview with a researcher at Tsinghua University, January 2007.

28. Zhou Jigang, meeting with Pan Yue, "The Rich Consume and the Poor Suffer from the Pollution," *21 Shiji jingji baodao*, 27 October 2006 (Chinese).

29. Hyung-Kwon Jeon, Seong-Suk Yoon, *op. cit.*

ship of a number of environmental forums. It was not, however, until the 1980s that the commitment became more active with the signing of over fifty international environmental treaties, including more than fifteen conventions and 27 bilateral agreements⁽³⁰⁾. China has progressively developed close ties with scientific and political communities throughout the world. However, in the same way that it has encountered difficulties in gaining compliance with its national regulations, the implementation of international initiatives has been partial, as much because of the internal pressures, mentioned earlier, as because of a preference to limit its commitment to international environmental mechanisms to the extent that they risk slowing down the rate of the country's growth. China has in fact preferred to maximise the benefits drawn from the "public good" in question while minimising the constraints and limitations that are exerted on the country's political choices⁽³¹⁾. According to Johnston, if Chinese diplomacy favours the pursuit of unilateral interests (judging that these are often incompatible and irreconcilable with multilateral interests), their pursuit at any price is moderated by the need to preserve a favourable image of the country. While Johnston's analysis remains pertinent today, one nuance should be introduced, for China is now more familiar with the multilateral forums and thus less distrustful of them than was previously the case. There is no longer such a clear distinction between unilateral (national) and multilateral interests, the number of international organisations of which the country is a member has grown, and the experience, in particular in the World Trade Organisation, has ultimately proved a positive one, in spite of the apprehensions at the time of China's accession⁽³²⁾. It is nevertheless still true that Chinese participation in these forums, although more active than in the past, aims first and foremost at preserving its national interests, such as they are perceived by the leading circle, and with promoting an image of a responsible country. While this concern with image guarantees China's participation in the multilateral efforts, it does not, however, ensure that China will take on an active or dominant role in the promotion of interests to which it does not fully adhere. In order to understand better the limits of any possible role it might play, it is necessary to examine China's motivation as well as the interests that are at stake.

Constant principles

From the first negotiations on the United Nations Framework Convention on Climate Change, Beijing has highlighted certain principles, defended more or less virulently

over the years⁽³³⁾, perhaps the most notable of which is the principle of sovereignty and the right of the country to utilise its natural resources for its development without outside interference⁽³⁴⁾. This approach makes it difficult not only to adopt constraining commitments concerning the methods of exploiting natural resources and emissions, but, implicitly, also the work of reporting and of evaluating progress, especially given that the role of the NGOs, which are supposed to fulfil this function, is limited.

Secondly, economic growth continues to be a top priority of the Chinese government. Although Beijing affirms the importance of moderating the natural and human costs of the current growth mode and rate, China has preferred to let other international actors contribute more to this public good so that it can extract the benefits while making a minimal contribution. This approach is also justified by the decision-makers with the affirmation that the degradation of the global environment is primarily due to the industrialised countries which exploited natural resources extensively during their economic development. If the "polluter pays," it would thus be up to the developed world to bear the majority of the costs and clearly to take the lead in any commitments undertaken⁽³⁵⁾. On this point, the Chinese position has been constant ever since the first negotiations in 1992, and the American refusal to ratify the Kyoto protocol in 2005 has indeed reinforced it, as it was perceived as a manifestation of the weakness of the West's commitment. In terms of image, this position, which has been more extensively adopted by the Group of 77 (G77), allows China to promote its image as a champion of the developing world.

30. Hyung-Kwon Jeon, Seong-Suk Yoon, *op. cit.*

31. Alastair Iain Johnston, "China and International Environmental Institutions: A Decision Rule Analysis", in McElroy, Nielsen, Lydon (eds.), *Energizing China: Reconciling Environmental Protection and Economic Growth*, Cambridge, Harvard University Press, 1998, p. 558.

32. Shi Dian, "Five Years After China's Accession to the WTO", *21 Shiji jingji Baodao*, 14 December 2006 (Chinese); Hu Shuli, "The WTO After Five years", *Caijing*, n° 172, 21 December 2006 (Chinese).

33. Chayes and Kim note an evolution of the Chinese position between the negotiations of the intergovernmental negotiating committee in February 1995 and the first conference of the parties, held in March and April 1995, but this change is rather one of form: in February 1995, China actively defended the position of the developing nations while two months later it supported more discreetly the efforts of India, thus positioning itself in the end as a moderator between the developed and the developing worlds. It would not seem, however, that China has given ground on the principles to which it has held. See Abraham Chayes, Charlotte Kim, "China and the United Nations Framework Convention on Climate Change", in McElroy *et al.*, *Energizing China, op. cit.*, pp. 503-531.

34. Hyung-Kwon Jeon, Seong-Suk Yoon, *op. cit.*

35. Zhang Zhongxiang, "Reconstructing Climate Policy: How Best to Engage China and Other Developing Countries", East West Center Study Draft, May 2003.

36. *Ibid.*

While China is rapidly joining the ranks of polluters, and should thus bear the cost of that, Chinese diplomacy draws a distinction between “survival emissions” and “luxury emissions”⁽³⁶⁾.

In sum, the role of this environmental diplomacy has to date been to avoid high-cost commitments, in particular any imposition of emission quotas, targets and ceilings, all the while providing more signs of greater activity as far as that is possible. Between 1990 and 1994, China hosted at least eighteen international conferences on the subject and signed and ratified all the international agreements on the environment.

Conditional participation

China is indeed active in the international forums on climate change, all the more so as any arrangement for a post-Kyoto architecture will inevitably place more constraints on developing countries. How to reconcile, then, the image of a responsible country with its hesitation to deliver on concrete targets for the reduction of emissions?

There is a chance that China’s position will evolve very little, particularly on its insistence to see developed countries bearing the costs. But the American refusal to ratify the Kyoto protocol will persist as long as there is no firm commitment of the developing nations, and China in particular, nor any constraint on them. This vicious circle could be interrupted, however, especially with the change of administration in the United States in 2008. The refusal to ratify the Kyoto protocol does not represent a fundamental rejection of the problem of climate change, the United States being a signatory to the United Nations Climate Convention, which came into force in 1994, and it is as a signatory of this convention that the United States takes part in the conferences on Climate Convention and on the Kyoto protocol. How to reconcile American environmental policy with that of China should therefore form part of the questions broached in the strategic dialogue between the two countries. This is not an impossibility, and the prospect of a jointly elaborated architecture cannot be ruled out, particularly in a relatively favourable bilateral political context, and in light of the creation in July 2005 of the “Asia Pacific Partnership on Clean Development and Climate” (AP6), announced on 12 January 2006. This partnership brings together Australia and the United States (neither of whom have ratified the Kyoto protocol), India, Japan and South Korea. In contrast to the Kyoto protocol, the partnership does not provide for any mandatory targets for the reduction of emissions or for any

restrictive application mechanisms; each country is free to decide its own targets.

Similarly, the turnaround taken by President Bush in his annual address to the US Congress⁽³⁷⁾ has put the question of climate change back on the international agenda. Although the priority advertised by the United States concerns energy independence, the introduction of new technologies and clean energy sources (and not a volte-face on Kyoto), this change of tone has succeeded in producing a new declaration at the G8 summit, in the presence of representatives from China, India, Brazil, Mexico and South Africa, concerning the creation of a global CO₂ emissions market⁽³⁸⁾. While this declaration is not in any way restrictive or operative, it does mark the beginning of negotiations on the architecture of a future agreement, albeit still allowing for a weakening of the Kyoto protocol framework.

In the same way, China will be reluctant to accept emission quotas it has so far refused to adhere to them unless the calculation of the level of emissions were based on a per capita calculation, given that its per capita emissions are low, and unless the emission targets were calculated as a function of future growth and development prospects⁽³⁹⁾.

The negotiation process promises to be long and complex; China will perhaps moderate its positions but will be highly reluctant to abandon its underlying positions, in particular in view of its image within the G77. The imposition of emission quotas and any concerted action aimed at changing the structures and the modes of the Chinese economic system may become a major point of contention. However, changing the level of quotas could be acceptable for China, with a transition from an initial period of non-binding targets to a higher and more solid commitment in a second phase. China would, no doubt, like to limit the international agreements to a regime that would facilitate concrete co-operation as well as funds intended to promote research and development in the field of new energy sources and for the introduction of renewable energy. But in the absence of other alternatives, and not wishing to withdraw from the negotiations on the Kyoto protocol, China would make concessions, while attempting to reduce these to a minimum. A progressive approach could thus moderate Chinese reticence, on

37. Cf. <http://www.whitehouse.gov/news/releases/2007/01/20070123-2.html>.

38. “Politicians sign new climate pact,” *BBC World Service*, 16 February 2007.

39. Zhang Zhongxiang, *op. cit.*. The emissions for the countries in Annexe B are calculated on the basis of past levels. With the standard of living in the developing nations still low, the emission quotas should, according to China, take into account the pursuit of economic development and future needs, which remain, however, difficult to evaluate.

condition that the United States also takes part, and that the new architecture allows a progressive and joint elaboration of more long-term targets⁽⁴⁰⁾. Moreover, if alternatives to Kyoto that are viable and more beneficial to China exist (such as the AP6 for example), China could withdraw from any agreement, judged to be too restrictive.

The question of time remains key, however. In the course of the three decades that have elapsed since the first UN conference, the tools of environmental policy in China have undergone a considerable evolution in terms of scientific and legal expertise and know-how, allowing the consolidation of a regulatory framework, the creation of a community of ex-

perts and exchanges with their foreign counterparts to deepen. The role of the NGOs, with all the related difficulties, is playing a part in changing mind-sets and in giving rise, timidly and gradually, to civil participation.

If few concrete results can be foreseen before the change in the American administration in 2008, it may well be that the real evolutions in China will have to wait for the advent of the “fifth generation” of leaders in 2012. At present, the external pressures, as influential as they may be, are still limited by internal resistance. •

• **Translated by Nick Oates**

40. See also Sheila M. Olmstead and Robert N. Stavins, *An International Policy Architecture for the Post-Kyoto Era*, AEI-Brookings Joint Center for Regulatory Studies, January 2006. The study proposes a gradual and evolving architecture that could provide more flexibility. However, one of the principles is the introduction of policy tools made up essentially of market mechanisms, a point that remains difficult to apply in China.

10 YEARS AFTER 1997

CIVIC EXCHANGE has produced a four part series of publications that review various aspects of post-handover Hong Kong. *Reflections of Leadership: Tung Chee Hwa and Donald Tsang, 1997-2007*; *From Nowhere to Nowhere: A Review of Constitutional Development Hong Kong 1997-2007*; *Idling Engine: Hong Kong's Environmental Policy in a Ten Year Stall 1997-2007*; and *Still Holding our Breath: A Review of Air Quality Policy in Hong Kong 1997-2007* examine different facets of the HKSAR government's policy decisions over the past ten years in the timely and controversial areas of constitutional reform, air pollution, and environmental policy. Drawing on a wide variety of sources, the authors' analysis of the successes, failures, and future direction of the HKSAR government's policies reveals a deep scholarship and understanding of the issues, as well as an in-depth look at the inner workings of Hong Kong's power structure. The insights, criticisms and recommendations that these books provide are invaluable for anyone with an interest in the politics and policies of Hong Kong: where they have come from, how they stand today, and the likely changes of tomorrow.



Reflections of Leadership: Tung Chee Hwa and Donald Tsang, 1997-2007 examines how Tung Chee Hwa and Donald Tsang led Hong Kong. Their visions, styles, beliefs, and choices made a substantial difference to how Hong Kong has been governed in the last ten years. The authors use the major speeches and decisions of the Chief Executives that best embody their values, assumptions and ideas about government and policy to analyse their leadership.



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China and the Clean Development Mechanism

Interview with Philippe Delhaise,
Director of Carbon Management Consulting ⁽¹⁾

Conducted by GEORGES FAVREAU
and JEAN-FRANÇOIS HUCHET

Q: In a few words, could you describe how the Clean Development Mechanism (CDM), as provided for in the Kyoto Protocol, actually works?

The greenhouse gases that lead to climatic warming are in the atmosphere, so the effect they have is not restricted to the states that emit them. This makes them quite different from more local forms of pollution, such as water pollution. We are dealing here with the pollution of the global environment, which requires political solutions at the global level. Although the rich countries are the main polluters, their existing technology is less polluting than that available to the developing countries. In India, for one unit of production, four times the quantity of greenhouse gases are emitted on average than in the United States. Thus, the thinking behind the CDM is that we take money from the West and give it to the developing world. European, Canadian or Japanese firms can thus cut the emission of greenhouse gases, not in their own factories, but by buying pollution rights in Indian, Bolivian or Chinese factories while investing in technology projects designed to reduce their greenhouse gas emissions. The global effects of atmospheric pollution can thus be reduced more quickly.

Q: Let's look at the details. How do countries share their responsibilities?

To participate in the Kyoto Protocol, naturally, countries must ratify the agreement. Most developing countries—known as “Non-Annex 1 Countries”—have signed up, of course, including North Korea: it's in their own interests that they should receive technological and financial transfers. Thailand is the only country to have refused, on the grounds that Kyoto allows rich countries to continue polluting while buying off the poor countries at negligible cost.

So companies in “rich” countries—known as Annex 1 Countries—may buy polluting rights in the “poor” countries. This classification is open to criticism. Some countries could be considered “rich” and yet be listed as Non-Annex 1: South Korea, for example and, to a lesser extent, China. As for the rich countries, intergovernmental agreements impose quotas on greenhouse gas emissions, quotas that are shared out between the various economic sectors at the national level. Let's take as an example a French company that has to reduce its gas emissions. It has three options: cut down its volume of production, introduce new technology or seek out a firm in a developing country—a Non-Annex 1 country signed up to Kyoto. The reduction is estimated then certified by the Executive Board of the CDM ⁽²⁾. This certificate can in due course be presented by the company in the industrialised country as justification for not having reduced its own emissions.

Q: Can you give us some concrete examples of projects that you are working on with enterprises in developing countries?

Let's take the typical case of a sugar refinery we're working with. At the end of the production process there remains a 37% residue of sugar cane waste, which is used as a fertiliser, dumped or burned. In all three cases, the CO₂ contained within this residue is released into the atmosphere. This is where we come in, to arrange for a furnace to be built, one that will burn the residue and generate electricity for the sugar refinery. There'll even be an energy surplus that the refinery can sell. The reduction in greenhouse gases is measured by the difference between the energy consumed before

1. Carbon Management Consulting is active in setting up projects as envisaged in the Clean Development Mechanism provided for in the Kyoto Protocol.
2. Itself subject to the authority of the Conference of the Parties to the Kyoto Protocol.

the furnace is installed and that consumed after the new technology is introduced. It's the same story with a paper mill where, as often happens in developing countries, the wood waste is dumped.

Further examples are cement works and steel-making plants: with their blast furnaces, they consume large amounts of energy in producing high temperatures, around 1,200°C. Instead of allowing this heat to escape, European and American furnaces have for a long time been diverting it for use in generating energy. The CDM is encouraging the use of these technologies in cement works and steel plants in developing countries, so as to reduce greenhouse gas emissions.

In the transport field, we are at present working with a cooperative of 3,000 trawler operators, modifying their engines; also with the municipal authorities in a Russian city to replace their bus engines.

Q: When an enterprise wishes to mount a project within the CDM process, what steps must it take to have it registered?

The Kyoto agreements on the CDM open up the possibility for enormous transfers of technological and financial resources from rich countries to developing countries. So very strict rules have been applied governing the validation of projects. The company submits a five-page preliminary report on the feasibility of the project. Only 22% of projects graduate to the second stage: here the long and costly administrative task begins, aimed at providing proof that the project is viable. Only 4% of projects will finally be approved by the Executive Board of the CDM and implemented.

This registration process is based on two main principles. The first comes down to two requirements. One is that any project for technological improvement that might be financially viable without receiving subsidies under the CDM, as laid down by the Kyoto agreements, is not eligible. That means, in effect, that developing countries would be in a position economically to finance it by themselves. So in this case the CDM would, at the economic level, be unnecessary. The second requirement is that the project must be equally viable from the economic and the social points of view. For example, modernising the air conditioning system in a factory using HFCs⁽³⁾ is financed over two years. Many such projects are approved. On the other hand, when it comes to building a dam, it would take twenty years to pay off the project if it were financed exclusively

by Kyoto subsidies. It would take only a slight modification of the project's parameters for it no longer to be profitable. Moreover, with such huge projects, social effects, such as the transfer of population or deforestation, are also taken into account. So this first principle leaves a very narrow leeway margin for manoeuvre in validating projects.

The second principle derives from the absence of any precise automatic approach to methodology for registration. The Executive Board of the CDM tells us: "Come to us with your projects; draw your inspiration from the methodology of a project that has already been accepted; or else propose a new method." Today there are 35 listed methodologies that can be used for reference. But, if a new method is deemed better, it replaces the preceding one. The registration procedure lasts several months and any projects half-way through a validation based upon the old methodology must now start all over again. Unfortunately, this moving of the goal posts as one approaches them is frustrating; it is expensive; and it sometimes damages the CDM's credibility.

Q: How significant is China in terms of CDM projects and what kinds of projects are implemented?

China would like to finance more dams, more mammoth projects, within the CDM. To give you some idea, the projects we generally handle might yield emission reductions of around 80,000 tons a year. In China we are looking for reductions of around one and a half million tons! As a result, that country represents more than a third of the financial transfers in CDM projects at the present time, but only 10% of the projects registered. Nevertheless, China is under the eye of the United Nations, which is not too happy about the ill effects, in social and environmental terms, of giant dams.

Q: In the circumstances you have outlined—few projects winning registration and the rapid growth of the Chinese economy based on industries emitting high levels of greenhouse gases—one might ask whether the CDM, as defined in the Kyoto agreement, adds up to anything more than a drop in the ocean where China is concerned?

Indeed, it is difficult to rely wholly on the CDM, the more so when the road to margin for manoeuvre in validation hav-

3. Hydrofluorocarbons, one of the six greenhouse gases targeted by the Kyoto Protocol: it is used in industrial refrigeration processes.

ing projects validated is so narrow, and when the odds against any single project are so high. However, I consider that, right now, this is the best mechanism we have. The Kyoto Protocol is not enough, that's true, but we must go forward. Even if it's not perfect, we are all the same reducing the emissions of greenhouse gases. Some people think that the rich countries would do better to hand out cheques to the governments of developing countries so that they could finance fiscal measures favouring the adoption of technology to reduce greenhouse gas emissions. Personally, I place greater confidence in the market created through the CDM, and in the UN regulators of the Executive Board of the CDM, which cannot easily be corrupted. Moreover, the CDM enables the two categories of enterprises to see their advantages in concrete terms. Most importantly, one can maintain very strict control, on the ground, in the enterprise, of the improvement in cutting greenhouse gas emissions. On the other hand, for enterprises that have a good project but that don't fit easily into the CDM criteria laid down by the Kyoto Protocol, it does seem more and more necessary to create parallel financial products similar to those existing on other financial markets. In this way these projects could be financed and the risks associated with this kind of operation could be limited. Markets of this kind are going to become enormous and positions need to be taken without delay.

Q: From a fiscal point of view, is it possible to move towards measures that will encourage enterprises in "poor" countries to introduce sustainable development?

Indeed, we must achieve a system whereby industry in the developing countries *will* invest in less polluting technology. But fiscal incentives are expensive; and many developing countries cannot afford to reward their taxpayers for cleaning up their act. Nowadays, countries are asked to make that effort very early in the development process. An example is South Korea, which has the means to offer fiscal incentives of this kind, whereas China does not. The multitude of Chinese SMEs might respond to fiscal incentives, but it is difficult to push them into costly imports of natural gas when they can consume domestically-produced coal, which is cheaper.

So for the present, the only incentives are exogenous, through the CDM provided for in the Kyoto Protocol. In order that a German or French company can continue producing *more* carbon emissions, it will pass financial resources to an enterprise in a developing country, enabling it to adopt technology emitting *less* greenhouse gases.

Furthermore, it's true that from the fiscal point of view, Beijing does not really play the game. The Chinese government, right from the launch of the CMD projects in China, announced the imposition of a special tax on Kyoto projects, at a far higher rate than other developing countries set for them. For example, on projects for reducing HFCs⁽⁴⁾, the special tax is set at 65% of the total amount of Kyoto subsidies. This tax sharply reduces the incentive for Chinese enterprises. Moreover, China complains that it does not earn enough from Kyoto transfers, arguing that the prices for polluting rights (that is to say, per ton of CO₂) are not high enough. In fact, it may be that both government and industry in China are wondering why they should rush into technological change now, when the price for a ton of CO₂ will be 50 Euros in five years, as against 7 Euros today. China is gambling on the fact that developing countries will benefit far more from Kyoto 2.

Q: Part of the debate over global warming is nowadays focused on responsibility per capita. On the other hand, when the emission of greenhouse gases is considered in absolute terms, several expert studies indicate that China is going to overtake the US very soon, perhaps even by the end of this year. In the interests of a world without frontiers, should we not now abandon calculations-based emissions per head, which rank China far behind the more developed countries and allow it to avoid any future responsibilities in the battle against climate change?

China's answer is that the industrialised countries are responsible for the present state of global warming and should now pay the price for their advanced status by helping the developing countries. I agree with that. Political negotiations cannot stop China industrialising. The rich countries will have to accept parting with some of their wealth to finance development in the poor countries with technology that's more efficient in restricting greenhouse gas emissions.

Q: Given its size and the impact of its economic development, which extends far beyond its frontiers, should China of its own accord not contribute, as a matter of public policy, to refining its model of economic growth, which at present is dismissive of environmental concerns?

4. Hydrofluorocarbons

I hear what you're saying. On the ecological front, China will come up against near-physical obstacles to its development. The growth of energy consumption in China and India over the years ahead will inevitably cause pollution and threaten all the advances made through the Kyoto Protocol. We know that CO₂ emissions are drastically reduced with the transition of industrial structures towards the services. But many years must pass before China, the world's vast factory floor, reaches the third (knowledge-based) stage in economic development. One cannot compare present-day China to the South Korea of twenty years ago. Admittedly, part of the population is seeing improvements in its living standards, rising levels of consumption and the accumulation of savings, but that still only affects the minority. The relative poverty of a large part of the population creates the tendency for people to favour short-term enrichment at the cost of long-term problems. For a relatively long period ahead, the structure of the labour market, combined with demographic and educational problems will keep China's growth heavily dependent on industry. What is more, the pressure that the Chinese people can exert on their government over environmental problems is still very limited.

Q: What do you judge to be the most important reforms to implement for the post-2012 period: I'm thinking particularly of large countries such as China and India?

We should certainly reduce the stringency of the registration requirements for projects within the CDM. There is the issue of the price per ton of CO₂ and the related issue of emission quotas: both are essential. All serious multinationals in the rich countries are setting funds aside for whatever they'll have to pay in order to continue production, but without having any idea what the CO₂ cost will be. We're trying to intervene in this matter: it is our job to attempt to offer companies some certainty as to the price of polluting rights by establishing new financial procedures in the marketplace. This question of quotas, as our European experience shows us, strongly influences the cost of CO₂. That's the biggest headache for everyone working now on Kyoto 2.

On top of the question of quotas, Kyoto 2 will have to rethink the two categories of country, that is to say, those that pay and those that receive. The US will certainly have to come back into Kyoto 2 because, politically, no one can be seen not to do so. Some countries (Non-Annex 1) that are today receiving subsidies from the rich countries should

perhaps be excluded from that category. At the same time, to solve the problem of the Newly Industrialised Countries, including China and India, one might envisage a third category of country to be negotiated under Kyoto 2. Countries in this category would receive no further subsidies but, to make up for that, their obligations in terms of reducing greenhouse gas emissions would be limited. Another transitional expedient might be for them to receive less in subsidies than the poorer countries, so that they would not monopolise so large a proportion of the CDM transfers. •

• **Translated from the French by Philip Liddell**

Chinese Society Confronted with Climate Change

HE GANG

At the moment that China signed the Kyoto Protocol at the United Nations on 29 May 1998 (ratification followed on 30 August 2002), most Chinese people knew hardly anything about climate change. Despite the proliferation of government environmental policies during the 1990s⁽¹⁾, Chinese society played absolutely no part in the initiatives for combating climate change. Nevertheless, as Pan Yue, the Chinese Environment Minister, has pointed out, “Without the participation of the public, there can be no protection of the environment.” Mobilising Chinese society to take an active part is all the more important since the fight against climate change will be fought in the area of energy savings: a warning given by the Prime Minister, Wen Jiabao, on the occasion of the opening session of the National People’s Congress in March 2007.

As this article will show, the mobilisation of Chinese society in the battle against climate change is still limited; but since the start of the 2000s, with the backing of the media and the State Environmental Protection Administration (SEPA), we have witnessed the launch of numerous initiatives from business circles, Non-Governmental Organisations (NGOs) and student associations. Up to now, the Clean Development Mechanism (CDM) provided for by the Kyoto Protocol has raised the greatest number of debates and initiatives in Chinese society, especially because China has been the greatest beneficiary among developing countries of CDM financial transfers from rich countries. Chinese NGOs, with significant help from international NGOs, have launched several initiatives aimed at informing Chinese opinion and changing the patterns of individual behaviour in the use of energy. Nevertheless, as we shall show in the concluding part of this article, there are still numerous obstacles preventing people from playing an active role in energy conservation.

The commitment by SEPA and the media in the fight against climate change

Three times over, between 2005 and 2007, SEPA whistled up its “environmental storm,” designed to show the full drama of the ecological problems faced by the Chinese people and its economy. Yet, alerting public opinion is not enough. Confronted by the severe extent of damage to the environment, most people feel powerless. Thus, the mobili-

sation of public opinion seems an essential element in introducing reforms aimed at promoting sustainable development. By organising the “public hearing of the *Yuanmingyuan*”, SEPA sought to complete its action of information and mobilisation with the proposal for “provisional solutions for engaging public opinion on questions relating to the environment.”

The media also played a far from negligible role. A search based on the key words “climate change” in the archives of the *People’s Daily (Renmin Ribao)* elicited no fewer than 525 replies, mainly articles on the conclusions of scientific research and international conferences. Further searches through the archives of the big Chinese dailies, over the period 2000-2007⁽²⁾, turned up 3,315 documents dealing with subjects directly related to climate change. Nevertheless, Guo Peiyuan, the CEO of the network Corporate Social Responsibility and Investments considers that it is mainly “factual reports that are favoured”.

In response to the growing interest of the international community in this subject, and coinciding with the publication of

1. In 1990, under the aegis of the State Council committee responsible for environmental protection, the Chinese government created the National Co-ordination Committee on Climate Change. In 1998, the government also put in place a Co-ordination Commission for Measures against Climate Change, bringing together a Committee for Development and Reform, the Ministry of Science and Technology, the Ministry of Foreign Affairs and 17 other ministries and committees. This Commission set in train numerous projects of research, regulation and co-ordination aimed at combating climate change.
2. Chinese National Knowledge Infrastructure. <http://ckrd166.cnki.net/Grid20/Navigator.aspx?ID=3>



Environment protection activists in front of the Consulate General of the USA, Hong Kong

the national report evaluating climate change in China, as well as the fourth report of the Intergovernmental Panel on Climate Change (IPCC), China has, between November 2006 and the present day, saw its richest harvest of published reports. At the same time, with scientific research work and international co-operation, we are today witnessing a chain reaction between several links: these are, “the government that guides, the media that mobilise and public opinion that commits itself.” This chain reaction produces a snowball effect in the awakening of public conscience and public commitment.

Nevertheless, Professor C S Kiang, the Chairman of the Peking University Environment Fund, basing himself on already existing reports, asserts: “At the present time, China is discussing the impact of global climatic upheavals on its own situation, rather than the impact of China on the global climate.” He considers: “We should change this, because forgetting the effect that China’s development has on the world will make more difficult all communication with the West.” The question of climate change derives from common responsibility between developed countries and developing countries. China must take more of an initiative in shouldering its responsibility on a world scale, to win the recognition and the support of the international community.

The CDM as a catalyst for ecological action

In the first quarter of 2007, China has already approved 344 projects within the framework of the CDM⁽³⁾. The dazzling speed at which the CDM is developing in China will lead not only to reductions in greenhouse gas emissions, but also give significant impetus to growing public awareness of the problem of climate change. Lu Xuedu, a CDM expert, considers that the latter:

is essential to the forming of public opinion, and especially in business circles, about protecting the environment. As the CDM process advances, the theme of climate change is gradually penetrating the collective consciousness.

Office of National Co-ordination Committee on Climate Change organises training sessions two or three times a year to build up a reservoir of expertise in the management of the CDM. The Commission has already published several books such as *The Clean Development Mechanism in China*. In the course of this information process, and following the commitment of researchers, enterprises and officials, the CDM once a term known only to negotiators has become an essential field of research and a business opportunity.

3. China Climate Change Info-Net, <http://www.ccchina.gov.cn/en/index.asp>

nity. Li Liyan, officer of the Office of National Co-ordination Committee on Climate Change, testifies that, "At the very beginning, no one knew what we were doing; we had to devote all our efforts to communication, to setting up a reservoir of expertise, to training; so that, gradually, everyone came to understand what the CDM was." Thanks to the profits generated by CDM projects, and to their practical and beneficial effects on the public, the CDM has encouraged many people to pay greater attention to climate change and to put their shoulders to the wheel. This development is in part an answer to the criticism addressed to China in a recent article in the *New York Times*⁽⁴⁾, which maintained that the CDM projects invested in China would represent a heavy expense for the international community. Lu Xuedu sees it differently, asserting:

This is a wrong view of China. The objective figures on these emission reductions are far higher than the funding received through CDM applications. ... It is of immense benefit to the world that China's economy should be based on low consumption of coal and sustainable development.

Maintaining international co-operation

In the *Bulletin on Chinese Development*, Fu Tao explains that China has seen the appearance of two sorts of NGO in the ecological field: those created from above and others created from below known as *caogen*⁽⁵⁾. The first type comprises official bodies founded by the government. The second is organised like a "non-profit-making lobby," defending the public good; it speaks for the elite and also for all those people who are aware of the imminent disaster and consider themselves citizens. Furthermore, two forces have emerged in the climate change field, one from outside born of international co-operation, and the other from within based on the expansion of ecological organisations and on increasing use of the Internet.

The Canadian International Development Agency (CIDA) signed an agreement, early in 2001, the Canada-China Cooperation in Climate Change Project (C5), which includes significant financial support. The programme's ultimate objective is to introduce to China the advanced methods applied in Canada, along with Canada's experience in the field of climate change, to help China confront the various aspects of the problem. The funding granted under the programme amount to Can\$6 million (about 3.5 million yuan). The Programme focuses on citizens' awareness and on communication, on broadcasting information nationwide, on research into ways of adapting to climate change and its consequences, and on the CDM.

Jia Feng, the Deputy Director of the Centre for Environmental Education and Communication (the Centre), reports that as early as 2002 the Centre and the Canadian Environment Ministry started talks on climate change. The negotiations had, among other things, entrusted to the Centre the responsibility for applying those clauses in the C5 Project bearing on public education and the broadcasting of information. Public opinion surveys, television documentaries on climate change, public information campaigns and guidance pamphlets distributed by the state are the main provisions of the Programme.

In addition, there are different agreements on climate change linking China with the United Kingdom, Europe and France, at various levels. The deal with France requires strong support for the United Nations Framework Convention on Climate Change (UNFCCC), and the launching of the CDM programme in four provinces in the south-west of China. In international programmes, co-operation includes training sessions, research seminars, observation studies, short-term attachments, technological support, planned collaboration and experimental research. The creation and development of international co-operation programmes has brought about the formation of a significant group of experts and officials in China, while building up exchanges and co-operation between all sides in the field of sustainable development and climate change.

Recently, the Chinese Science and Technology Exchange Center—part of the Ministry of Science and Technology—has launched, in partnership with the British Council China, the campaign known as "Climate Cool"⁽⁶⁾. Their aim is to raise awareness of climate change and encourage participants to take individual action to reduce the impact of climate change, by organising activities between 2007 and 2009: research and study classes designed for media journalists, to help them with their reports on climate change; promoting journalistic publications on the question, in Chinese and English; popular education projects and presentations on the problem by youth leaders; surveys on sustainable consumption and on the environment market; and programmes for the youth action in tackling climate change.

For Chinese NGOs, their international counterparts are the spearhead for climate change activities in China. Greenpeace, which opened its Hong Kong branch in 1997, as well as a liai-

4. "Outsize Profits, and Questions, in Effort to Cut Warming Gases," in *New York Times*, 21 December 2006

5. Chinese translation of the English term "grassroot".

6. Climate Cool, <http://www.britishcouncil.org.cn/climatecool/en/index.html>



A Greenpeace activist protesting against climate change in Beijing

son office in Beijing, has organised five big action programmes in China, one of which is called Stop Climate Change and Develop Renewable Energy⁽⁷⁾. WWF China has also launched a whole series of lobbying activities, together with information and education campaigns. The WWF has placed the issues of climatic change and energy at the centre of its programme for China⁽⁸⁾. On the launch of the China-Dialogue⁽⁹⁾ in 2006, bilingual articles, some very critical of the Chinese position, quickly acquired influence and exerted pressure on public opinion. The entry of these international NGOs, because of their multiple contacts and their vast networks on the global level, combined with their comparatively greater capacity for bringing in funding, organising demonstrations and launching information campaigns, has spurred on public opinion and even succeeded in influencing the Chinese government on some issues relevant to its international negotiations.

Timid expansion by Chinese environmental NGOs

According to the Ministry of Civil Affairs, by the end of 2006 there were 346,000⁽¹⁰⁾ Chinese NGOs. To this day, not one NGO specialising in climate change has been formed. According to the list of environmental NGOs

placed on the website of the China Development Brief⁽¹¹⁾, 15 NGOs out of 178, listed according to their fields of activity, have included among their concerns the question of climate change. Of these, most prominent are GONGOs⁽¹²⁾ such as the China Environmental Protection Foundation (CEPF) and the All China Environment Federation. All these organisations or associations combine their activities relating to climate change with other tasks devoted to the protection of the environment: they rarely treat the problem as a separate issue.

A few initiatives have been launched in recent years by the NGOs on the question of climate change. In 2005, the “26 Degrees Campaign” was promoted in the city of Beijing. The alarm signal that it set off matched the impact of “Switch off everything for five minutes!” in cities like Paris.

7. Greenpeace Climate Project, <http://www.greenpeace.org/china/en/campaigns/stop-climate-change>
8. World Wild Fund, <http://www.wwfchina.org/english/loca.php?loca=96>
9. China Dialogue, www.chinadialogue.net
10. “Chinese NGOs Increase to 346,000”, <http://www.china.org.cn/english/news/198832.htm>
11. <http://www.greengo.cn>
12. Government Operated Non-Governmental Organisations

According to some estimates, if all the air conditioning in Beijing's buildings were set to 26°C, the consumption of electricity could be reduced this summer by at least 300 million kilowatts an hour, lowering the required output of electrical power by around 10%, which would in turn allow savings of 15 million yuan. In terms of environmental protection, that would be reflected in emission reductions of 1,200 tons of SO₂ and 250,000 tons of CO₂. The Director of Global Village of Beijing, Liao Xiaoyi, was behind another initiative: she ordered the distribution of a commitment booklet on energy consumption in residential districts, to educate public opinion on sustainable energy sources. The booklet is made up of 12 cards printed on recyclable paper, each with a printed message: 12 cards for 12 things people can do. The messages are easy to understand, recommending different ways of saving energy: 18°C in winter, 26°C in summer, cut down on air conditioning, change your bulbs, take the stairs, no appliances left on standby, travel on two wheels, use public transport, reduce emissions, ease up on your fuel consumption, buy green electricity, trust organic products. Students have also begun organising a few activities aimed at combating climate change, on the model of the Beijing University CDM Club, the first group of higher education students to take a specific interest in the question. Du Tingting, a co-initiator of the association relates how the students interested in this problem rallied around the slogan, "We must act to change things." One of their plans is to list all emissions of pollutants at the university and to reduce them, so as to create a green campus.

Although the Chinese NGOs are determined to go further, their actions so far are limited to a few isolated schemes despite the public's growing awareness of climate change. This is attributable to a lack of support, human and financial, to structural sociopolitical obstacles affecting the development of all NGOs in China, and to the lack of information technology.

The obstacles to a more significant commitment by Chinese society

The technical complexity of questions relating to climate change

When compared with other environmental subjects, climate change is much more technical, which has demanded greater precision on the part of the media and the NGOs. Each of the four assessment reports by the IPCC is over

300 pages long, based on work by thousands of specialists and goes back through various periods of geological history. NGOs working on the environment have to learn how to digest and synthesise expert analysis.

On 10 March 2007, the British embassy in Beijing organised for the media a training session on climate change. One speaker, the head of the China region of the Science and Development Network, Gu Hepeng, estimated that the Communist Party newspapers had published four times as many articles on climate change as had the financial press. Moreover, while reporting in China is mainly concerned with confirmed and agreed facts, journalists in foreign countries are looking more for controversial subjects. Chinese articles are rarely inspired by examples taken from the domestic scene. Similarly, only 20% of Chinese reports cite Chinese scientists, whereas in foreign countries nearly all reporters quote directly from their own national experts.

In consequence, it is not difficult to understand why insightful reporting on climate change is rarely to be seen, or why the media is clearly lagging behind in scientific expertise and have little talent for popularising scientific matters. The Chinese media has its attention mainly focused on the consequences of extreme climatic conditions, such as the mild winter in Beijing, the Chongqing drought or the Shenyang blizzards. As a matter of preference, they also like to publish conclusions reached in reports, such as the "National Assessment Report on Climatic Change," or the conclusions and proposals of recent Chinese or foreign research. Without underestimating their importance in bringing climate change issues to the attention of the general public, the media's influence is still limited.

Limits to the extent and co-ordination of the NGOs' activities

For the time being, the work of the NGOs is mainly restricted to passing on information or organising debates; but their activities are still devoted to generalised discussion rather than to building networks or launching extensive and co-ordinated campaigns. Work of this kind is essential for real awareness to develop among the Chinese people. Their contribution to holding back climate change will remain negligible unless massive programmes of concerted action are put in place to bring together the different NGOs working in this field.

Furthermore, the Chinese NGOs are often the target of criticism, for "their overflowing enthusiasm, but inadequate competence". Because of structural restrictions of a political

nature, the ecological NGOs face legal limitations, and problems too with raising sufficient funding. Lastly, their long-term dependence on financial help from abroad saps the legitimacy of their efforts to become established on a national basis. At the same time, because of the considerable rise in the number of these organisations, the NGOs working in this one field are, in a sense, impeding each other's efforts to collaborate. Most NGOs are competing for the available funding while working in isolation. This restricted field of activity and lack of resources prevent most Chinese NGOs from attending international conferences; and they find it even harder to influence their own government on climate questions.

When it comes to public opinion, growing numbers of people have some knowledge of the problem of climate change, and even consider that it is a substantial problem. However, when individuals are asked directly in surveys what they might do on their own account to combat climate change, most are evasive or reply with embarrassment, as if the problem did not closely affect them. So some celebrities, such as Zhang Kejia, a well-known journalist with the *China Youth Daily* campaigns in support of individual awareness: she asks people "to calculate their own emissions of CO₂ and to assess intuitively and easily their own influence on climate change, and then to opt for a way of life and a job showing more respect for the environment."

Citizens' networks and community action: the way ahead

The most extensive online network in the field of climate change, the Climate Action Network (CAN), is a grouping of more than 300 environmental organisations representing eight large regions of the planet. It concentrates its efforts on bringing down temperatures and adapting to climatic change, encourages action by governments and individuals and places anthropogenic climate change within the field of ecologically sustainable development. It contributes to harmonising information exchanges on climate measures taken at international, national or regional levels and on the problems encountered; it explains the options and the positions and policies adopted; it works for greater co-operation; and it promotes the campaigns by NGOs aiming to fight climate change. Because of its powerful network, CAN has the power to lead and integrate in the field of climate change; it can mobilise tens of thousands of people for demonstrations; it can influence the progress of negotiations; and it can even designate which cars producing the lowest emissions of CO₂

are the most environmentally friendly. At the present time, China too has its own union-like Salon for Environmental Journalists on the Environment, journalists specialising in energy and the environment, conferences on co-operation between student environmental organisations and other seminars on the environment hosted by students from around the world, and networks linking federations and forums. A few contacts have been developed with foreign networks. However, these organisations hardly communicate with each other, and sometimes even quarrel with one another. No mechanism for exchanging and sharing information has yet been set up in China and no effective campaigning organisation has really emerged yet. This brought the China Climate Action Network (CCAN) into existence. It has 27 members from 15 organisations, and its vision is to support the network member on promoting the public on climate protection, a network modelled on CAN would enable China to confront the question of climate change from a more stable footing.

Alongside the development of networks, strengthening the role of the media and spreading the public's awareness of the problem of climate change: these are the essential starting-points for future social action. Liang Ruoqiao, communications head at the Greenpeace office in Beijing, stresses the importance of training the media. She reminds us that journalists are "the fourth estate," and the most effective educators of public opinion. The film made by Al Gore, *An Inconvenient Truth*, illustrates how the media can play a leading role in informing the population on questions of climate change. At the educational level, the textbooks at primary and secondary schools and the syllabuses taught in higher education will also have to find extra space for the subject of climate change.

Lastly, community action promoted by the NGOs must continue to develop. Just like the 26 Degrees Campaign launched in 2005 or the one promoted by the CDM Club at Beijing University, called Green Campus Initiative. Community action stimulates public participation and plays a powerful educational role among the general public. Yet, the government too needs to be involved, to guarantee a more favourable environment for the development of this kind of action. •

• Revised by Jean-François Huchet, translated by Philip Liddell

Financial Liberalisation and Democratisation:

The Prolonged Reform of Taiwan's State-Owned Banks (1989-2005)

CHIA-FENG LEOU

Following the global trend of financial liberalisation, Taiwan's government has dedicated itself to its own financial "Big Bang" since the late 1980s. An essential part of this financial overhaul has been the reform of the state-owned banks (SOBs). It was believed that privatisation and deregulation of the SOBs could effectively enhance the efficiency of Taiwan's financial sector. After almost two decades, however, the reform is still not complete. Given its importance, the question arises: why is it taking so long? This article argues that the state has been unable to implement its planned reform policies as its ability to carry out the SOB reform has been significantly constrained by the newly rising political forces resulting from Taiwan's democratisation. This study highlights the new challenges and possibilities of financial governance for the state in Taiwan in an era of democratisation, and could be interesting for future comparative study with other young democracies that also actively undertake financial liberalisation ⁽¹⁾.

Taiwan joined the global trend of financial liberalisation by launching its financial "Big Bang" ⁽²⁾ in the late 1980s. It was hoped that the financial sector could significantly enhance its efficiency and competitiveness by reducing state intervention and allowing market forces to play more important roles. The SOBs, accounting for the bulk of the banking sector and the whole financial system, inevitably became the main target in the "Big Bang". The Kuomintang (KMT, Chinese Nationalist Party) government decided to undertake two principal reform measures – privatisation and deregulation – for the SOBs. Privatisation would mean reducing the government's shareholding in a bank to below 50%. Regulations related to state-owned enterprises (SOE) would no longer apply to these banks ⁽³⁾. In contrast, deregulation of a SOB would mean keeping state ownership of the bank but freeing it from government red tape in areas such as budgets, personnel, auditing and so on. This would only apply to those SOBs that would not be privatised on the grounds of a bank's special "policy mission" ⁽⁴⁾ or in the event that a bank was experiencing technical difficulties for privatisation.

Supposedly, given their importance, the reform measures should have been undertaken and completed as quickly as possible. But the reality was quite different. Reform of the SOBs has been prolonged, lasting over eighteen years. Why have the reforms been so seriously delayed or why they

failed is what this article aims to address. It proposes that the answer lies in the rapidly changing political landscape of Taiwan and in the SOB reform itself. The delayed or failed reforms, in significant part, stem from the fact that the state's ability to control its reform agenda has been constrained by newly rising political forces as a result of Taiwan's rapid democratisation. With a new legitimacy as elected representatives or officials, in the name of checks and balances, politicians have a strong incentive to meddle and self-interest in meddling with the SOB reform policies. To be more specific, the interplay among three key policy players, including the Cabinet (Executive Yuan), the Parliament (Legislative Yuan), and the Taiwan Provincial Government (TPG),

1. This article is a revised version of a paper presented at the Third Conference of the European Association of Taiwan Studies, Paris, 30-31 March 2006. I appreciate the helpful comments from Fiorella Allio, Frank Muyard and another, anonymous, referee.
2. The term initially referred to the liberalisation in 1986 of the London Stock Exchange (LSE) and the following financial liberalisation measures adopted by the Conservative government in the UK in the 1980s. Later, when Japan pursued large-scale financial reform in 1998, it used the same term. Since Taiwan conducted large-scale financial reform in 1989, I will also use the term here. See also Lee, Lawrence L.C., "The development of banking in Taiwan: the historical impact on future challenges," Occasional Papers/Reprints Series in Contemporary Asian Studies, n° 6, School of Law, University of Maryland, 1998.
3. However, the government would still be able to control the bank to some extent as long as it held onto a significant part of the shares. (It is only after the government sells all of its shares in a bank that the bank becomes wholly private.)
4. For example, some SOBs are asked to provide cheap credit to target industries.

with its Assembly (TPA), before they were downsized in 1998⁽⁵⁾, have together decisively shaped the pace and content of SOB reform.

This article is in five sections. A review of the origins of the SOB reform presents the issue in its initial context. Attention is then drawn to the original SOB reform plans formulated by the KMT government at the beginning of Taiwan's financial "Big Bang" in the late 1980s. The rationale behind the policy designs will be explored, providing a foundation against which later changes in the reform can be seen. Parts three and four will highlight the impact of intervention from other political forces outside the Executive Yuan, the main body of the central government and the state apparatus, in two main reform areas: privatisation and deregulation. In these two parts, we will see why, in addition to the Executive Yuan, the Legislative Yuan and the Taiwan Provincial Government, as well as its Assembly, were key players, and how their interplay affected SOB reform throughout the 1990s. The final section sheds light on developments in SOB reform under the new Democratic Progressive Party (DPP) government since 2000. How this first change in ruling parties may have changed the nature of the issue will be considered. That is, as Taiwan's democratisation moves to a new level, has this significantly altered the way in which the SOB reform is to be addressed? In conclusion, the article looks at the implications of the reform for financial governance in Taiwan, and the challenges ahead for the reform as well as what this can contribute to any comparative study with other emerging democracies that also undertake aggressive state banking reforms.

Origins of the reform (the late 1980s)

The origins of SOB reform in Taiwan involve unprecedented challenges that the authoritarian KMT government faced on both the domestic and external fronts in the second half of the 1980s. Externally, due to the massive trade surplus that Taiwan enjoyed with the United States in the 1970s and 1980s, the United States forced Taiwan to take measures necessary to improve the trade imbalance with threats of unilateral retaliatory measures authorised by the US "Super 301"⁽⁶⁾. The so-called "necessary measures" could be divided into three parts, the first being to ask Taiwan to import more goods from the United States by either reducing its tariffs or undertaking special procurements for US products. The second was to ask Taiwan to open its do-

mestic market to US companies. The third was to ask Taiwan to significantly appreciate its currency against the US dollar. As the United States was Taiwan's most important export market and closest ally in East Asia, Taiwan had little choice but to accept the majority of these requirements. The second and third parts of these concessions had far reaching consequences for Taiwan's financial markets. Firstly, the introduction of new financial institutions from the United States posed a threat to the survival of local players, most of which were under state control. Secondly, the massive and dramatic appreciation of Taiwan's currency, the New Taiwan Dollar (NTD), led to financial chaos as the KMT government allowed the NTD to appreciate almost 40% from NTD40 : US\$1 in 1986 to NTD25 : US\$1 in 1989. The huge trade surplus in addition to the surge of "hot money" from abroad seeking profits from the appreciation of the New Taiwan Dollar created an excessive supply of local money, leading to an economic bubble.

The effects of the economic bubble were fast to emerge on the domestic front. At the peak of the bubble, the enthusiastic participation of the public in speculative investment in stocks, property, illegal investment companies as well as underground lotteries, etc., could be felt almost everywhere. Thus, the threat of the bubble bursting and its potentially disastrous social consequences forced the KMT government to seek effective financial solutions.

Even worse for the KMT government were the boiling democratic movements that were a serious challenge to the legitimacy of its rule at the same time. One of the main challenges was aimed at the KMT's party-state business empire. The DPP, the first opposition party established in 1986, and other anti-KMT forces fiercely accused the KMT of exploiting its status as the ruling party by using the SOEs to promote its own business. Besides this, the low efficiency and monopoly of the SOEs, which occupied a significant part of the economy in upstream industries and utility facilities, as well as public transportation, were also under heavy attack. Demands to swiftly privatise most SOEs and return

5. Taiwan previously had a redundant multi-tier government structure. From 1946 to 1998, under the central government, which is located in the national capital Taipei, a Taiwan province government had charge of all "local" affairs on a territory scale that covered almost the whole nation. The system was maintained to support the central government's claim on the whole of China after the KMT lost the civil war and fled to Taiwan in 1949. The TPG and TPA were maintained with real function until 1998. A constitutional reform in 1997 passed under the co-operation between the DPP and KMT, decided to downsize them to empty shells to streamline the government structure.
6. "Super 301" is the section of the US Trade Act that empowers the US Trade Representative to investigate US trade partners to establish whether or not they apply fair and open access to US exporters.

the KMT's "suspiciously acquired" assets⁽⁷⁾ back to the people were building momentum by gaining increasing support from the public. Thus, the political side reinforced the pressure for genuine and comprehensive economic reform as the KMT was desperate to boost its legitimacy.

Under such circumstances, the KMT government decided to push for economic liberalisation on an unprecedented scope and scale. Not surprisingly, the SOEs and the SOBs became prime targets for liberalisation. Two key measures of economic liberalisation were set in motion in 1989. The first was to set up a cabinet-level task force, the SOE Privatisation Committee (SOEPC), in pursuing the privatisation of the SOEs. Shortly after the SOEPC was set up, 20 SOEs were chosen on the first list for privatisation, among which eight were financial institutions. The second was aimed exclusively at the financial sector. By significantly revising the Banking Law, Taiwan's version of "Big Bang" was unveiled. Apart from scrapping controls on bank interest on deposits and loans, the new Banking Law increased the penalties for financial crime, strengthened the banks' capacity to manage risk and allowed the establishment of new private commercial banks, which had been banned for decades⁽⁸⁾. Although this policy did not directly involve the SOBs, the inevitable competitive pressure brought in by the new private players in the following years deepened the sense of crisis of the current major players – the SOBs.

Plan and rationale of the reform

If we look at what has happened in SOB privatisation in recent years, we might think that privatisation of the majority of SOBs has been a consistent policy since the late 1980s. But this is not the whole picture. At least, under the KMT rule before 2000, privatisation of the SOBs was, in fact, just one part of the SOB reform. As mentioned, two crucial reform methods were initially adopted: privatisation and deregulation. For the former, it was believed that a number of SOBs could get round SOE regulations by becoming "private" banks and thus could compete with private players on level ground. For the latter, while recognising the efficiency that would be brought by privatisation to some SOBs, the government also sought to enhance the operational autonomy of the rest of SOBs by taking this alternative route. Plans were made to draft a new act, *Regulations Governing State-Run Financial Institutions* (RGSFI), to push for deregulation of the SOBs. The government argued that for some SOBs it was not state ownership that hindered their

competitiveness, rather it was the excessive government regulations. If the new act could be brought in, similar positive effects as privatisation could take place. The difference was that with the new act the government could still maintain a proportion of its banks as government-owned without worrying that they would lose their competitive strength. "State-owned but run as though privately-owned" was the slogan that the KMT used to illustrate the spirit of the new act.

The former minister of finance Paul Chiu⁽⁹⁾ recalled why there was a need for this dual approach in a reply to legislators during question time in the Legislative Yuan in 1999:

(...) Despite their enormous contributions to our national economy over the past decades, the state-run financial institutions (SFIs)⁽¹⁰⁾ have been under immense pressure from competition from the newly established private financial institutions from abroad and at home due to the active opening-up of Taiwan's financial markets by the government in recent years. (...) Nevertheless, constrained by the existing government regulations on their personnel, budgets and audits, the SFIs have experienced difficulties in improving their operational efficiency and have become vulnerable to the strong and growing challenges from new rivals. Thus, on the one hand, we have been pushing the privatisation of some SFIs; on the other hand, for those SFIs that are bearing policy missions or won't be privatised in the near future, we will enact the RGSFI [to allow them to gain operational autonomy and efficiency in another way]⁽¹¹⁾.

In his later response to questions from legislators, Mr Chiu gave an example of banks with policy missions. He said that the government-owned Export-Import Bank of the Republic of China would not be privatised because it had special functions to facilitate export and import trade of Taiwan⁽¹²⁾. He went on to say that it would take time for some SOBs to be privatised because they had first to be restructured and reg-

7. When the KMT government took control of Taiwan in 1945 after Japan was defeated in World War II, it took over many assets belonging to either the Japanese colonial government or citizens. In the age of KMT party-state rule, a significant part of this property became privately-owned by the KMT itself, planting the seed for the future controversy about the legitimacy of the KMT's assets. The dispute continues today.
8. See the details of the revised Banking Law in the report of Ministry of Finance to the Legislative Yuan in *Lifayuan Gongbao* (Parliament Minutes), vol. 78, n° 50, pp. 28-31, 1989.
9. In post from 1996 to 2000.
10. Sometimes, the government uses the term SFI rather than SOB as the former includes other SFIs such as insurance firms and investment companies. As banks account for the larger part of SFIs, SOBs and SFIs are almost interchangeable terms in Taiwan's context. In this paper I treat them as the same.
11. *Lifayuan Gongbao* (Parliament Minutes), vol. 88, n° 33, p. 193, 1999.
12. Normally this was done through offering export credit insurance, re-lending, and other forms of financing facilities.

istered again as corporations; when ready, they would be transferred to private bank status as well⁽¹³⁾.

The KMT held formal and full control of state power through the 1990s at the executive and legislative levels. Ultimately, the KMT government failed to deliver these SOB reform policies as it initially planned. In SOB privatisation, it completed only a small number after 1997. In SOB deregulation, the expected RGSFI act was never passed. The delays and failures are explained below.

The delay of SOB privatisation in the KMT era (the 1990s)

SOB privatisation and democratisation

As mentioned earlier, SOB privatisation was initiated in the wider context of all SOE privatisation in 1989. Thus, the SOB privatisation process was intended to be alongside that of all SOEs. After announcing its broad direction and plan for the SOE privatisation, the Executive Yuan took its first step to implement its agenda in detail providing a legal framework for the SOE transformation. It proposed to revise the existing “*Statute of Privatisation of Government-Owned Enterprises*” (SPGOE) as the fundamental law for SOE privatisation. The purposes of the statute are made clear in the first two articles:

This Statute is enacted to facilitate the privatisation of government-owned enterprises, to exert the market mechanism, and to enhance the operational efficiency of enterprises (Article 1). The privatisation of government-owned enterprises, either in whole or in part, shall be governed by this Statute... (Article 2)⁽¹⁴⁾ Shortly after the statute was approved by the Legislative Yuan in 1991, the Executive Yuan rushed to promulgate the “Enforcement Rules of Statute of Privatisation of Government-Owned Enterprises” in 1992, to guide involved parties of government agencies, SOEs and their employees in the application of the SPGOE. The next step, as planned, after the legal foundation for the SOE privatisation was in place, was for the Legislative Yuan to review the budget and plan for individual SOE privatisation as submitted by the Executive Yuan.

As far as SOB privatisation was concerned, five banks were the focus of the debate before the late 1990s: First, Hua Nan, Chang Hwa, Farmers and Chiao Tung⁽¹⁵⁾, as the third column of table 1 shows. The first three were under Taiwan Provincial Government (TPG) control and the two remaining were under the central government.

It is not clear why the central government targeted these

TPG-controlled banks first. With hindsight, it might be for the following reasons. First, in terms of business nature, although the three TPG-controlled banks were government-owned, their banking business was basically commercially-oriented with few specific policy missions imposed by the government. Second, the government held less than 60% of shares in two of the three banks, making them relatively more easy to privatise (i.e., reduction of government share to below 50%). Also, because these banks were holding each other's shares to a certain degree, they would be linked in a change of share structure if any one of them proceeded with privatisation. Third, they were all flagship SOBs in terms of their ranking in assets and market share in lending. If they could be successfully privatised first, the remaining SOBs would be easier to address having these three as a precedent.

Whatever the reasons, the central government's efforts experienced serious setbacks from the outset. As soon as the central government unveiled the list, the Taiwan Provincial Assembly (TPA) passed a crucial resolution in November 1989 that dampened the central government's hope for a fast solution. The resolution required that the TPG shares in the three big provincial banks should be maintained at or above 51%⁽¹⁶⁾. In other words, it was impossible to privatise these banks under this resolution as the TPG would always hold more than half the shares in each. The resolution, which was in place until May 1997, was the biggest obstacle to the central government speeding up SOB privatisation. The main causes of this prolonged block are analysed below. Historically, the TPG had enormous power over the banks under its authority despite all these banks being also subject by law to the supervision of the central government. The central government barely intervened in the TPG's affairs in this area due to the TPG's special status and role in Taiwan's politics. The TPG's jurisdiction was almost totally overlapped with that of the central government except for Taipei, Kaohsiung and a number of tiny islands surrounding Taiwan, and the autonomy of the TPG was safeguarded by Taiwan's Constitution at that time. In the face of such a siz-

13. *Lifayuan Gongbao*, *op. cit.*, p. 197.

14. The full texts of these two articles and of the SPGOE are available on the website of the Council for Economic Planning and Development (CEPD) at: http://www.cepd.gov.tw/business/business_sec2.jsp?linkid=191&parentLinkID=3 (date of access: 18 March 2006).

15. Why the Taiwan Business Bank was not mentioned in the public debate about SOB privatisation is not clear as it was on the list for the first wave of SOB privatisation. A possible reason is its small size relative to its assets compared to the other three big provincial banks.

16. It was a bipartisan resolution. The KMT's attempt to stop its members from voting for the resolution failed in the end. See *Zhongguo Shibao*, 25 October 1994.

Table 1. Progress of privatisation of state-owned banks in the 1990s

Bank Names	Controlled by which authority	Year of proposal for privatisation	Planned year for completing privatisation	Year of privatisation
First Commercial Bank	TPG*	1989	n/a	1998
Hua Nan Commercial Bank	TPG	1989	n/a	1998
Chang Hwa Commercial Bank	TPG	1989	n/a	1998
Taiwan Business Bank	TPG	1989	n/a	1998
Farmers Bank of China	CG**	1992	1996	1999
Chiao Tung Bank	CG	1994	1997	1999
Taipei Bank	Taipei City	n/a	n/a	1999
Bank of Kaohsiung	Kaohsiung City	n/a	n/a	1999
Taiwan Cooperative Bank	TPG	These banks were not planned to be privatised soon. The new drafted act RGSFI would apply to them before privatisation.		
Land Bank of Taiwan	TPG			
Bank of Taiwan	TPG			
Central Trust of China	CG			

*TPG: the Taiwan Provincial Government; **CG: the Central Government — Source: The author's own collection from newspapers and parliament minutes

able provincial government, the central government had to respect the autonomy of the governance of the TPG. In addition, before 1992 the TPA was the only high-level legislature where all members were all directly elected by their constituents in Taiwan⁽¹⁷⁾. The TGA was used as a showcase for the KMT government to demonstrate to the international community that Taiwan had democracy at a time when Taiwan was still under martial law and with limited democracy. As a result, the power of the TPA was recognised for issues under its supervision⁽¹⁸⁾. Furthermore, prior to 1994, while all the TPG governors were appointed by the central government, they needed TPA approval to confirm their nomination. The power of the TPA could not be underestimated by the central government. Against this backdrop, when the central government took initiatives to firstly privatise three SOBs under the authority of the TPG and TPA, instead of forcing the TPG and TPA to accept its decision, it needed to “convince” them.

Apart from the tricky central/provincial government relationships, the new political landscape as a result of Taiwan's rapid democratisation since the mid-1980s reinforced the influence of the TPG and TPA. Taiwan's democratisation moved to a new stage in the late 1980s after the DPP, the first opposition party, was founded in 1986 and Martial Law was lifted in 1987. In appearance, the KMT was still dominant everywhere, but the importance and influence of elected officials and representatives were surging as people expected them to play a more significant role in a new democratic era. As a result, those newly elected officials and lawmakers started to challenge more often the decisions or

17. The Taipei City Council and Kaohsiung City Council also enjoyed the same status but their constituencies were small in comparison with the TPA.

18. Because of this special status, many current heavy political figures in Taiwan began to build their political reputations as members of the TPA. The incumbent Premier Su Tseng-chang and his predecessor Yu Shi-yi-kun are all good examples.

ders from the central government or their parties to reflect the concerns and interests of their constituents.

The long-upheld TPA resolution of 1989 was one of the typical examples. The resolution was passed because the TPA members claimed that they were worried the rights and benefits of the current employees in the three TPG-controlled banks would not be well-protected after privatisation, especially when they found that related laws for privatisation were not in place⁽¹⁹⁾. While it was true that those laws were not in place until 1992, the TPA members' lasting opposition to the privatisation until 1997 implied other reasons.

Most of all, these banks were convenient tools for TPA members. With these banks, TPA members could obtain cheap loans for themselves or their cronies even when lacking sufficient collateral security to back them up. They could even force the banks to purchase their branch offices in a specific location with a much higher price, just because those office buildings belonged to the cronies of some TPA members. Some TPA members held shares in these banks and engaged in insider trading on the stock market⁽²⁰⁾. This was all because, in the name of supervision, the TPA could essentially control "their" banks. For example, they could decide who would be promoted in the TPG-controlled banks and the budget these banks could be granted at annual reviews.

The TPG was also negative on the issue of privatising its banks. The TPG never openly revealed its opposition to the privatisation but consistently used the TPA resolution to defend itself. Actually, in its own first privatisation plan unveiled in 1995, the three banks were not even mentioned in the plan at all⁽²¹⁾. The fundamental reason for this negative attitude was fiscal problems that the TPG faced. The first directly elected TPG governor James Soong had even openly accused the central government of concentrating tax incomes on its own hand regardless of the fiscal difficulty of his government and constituents⁽²²⁾. Given that the three banks' revenues were important sources of annual fiscal income to the TPG, especially at a time when the TPG was in serious debt, the TPG was not about to easily let privatisation proceed soon⁽²³⁾.

The blocking by the Legislative Yuan of the two central government-controlled SOBs took place in a similar way though for slightly different reasons after a new parliament was created in 1992. Under the strong protest of the public who opposed the continuing existence of "permanent"⁽²⁴⁾ national representatives in the Legislative Yuan and National Assembly⁽²⁵⁾ for decades, the KMT undertook political reform through sending a petition to the Constitutional Court of the

Judicial Yuan for interpretation regarding the qualifications of those representatives. Consequently, the interpretation⁽²⁶⁾ disqualified those representatives in 1991, and Taiwan's first parliament where the lawmakers were completely and directly elected by their constituents was created in 1992⁽²⁷⁾. The new Legislative Yuan immediately seized centre-stage. The newly elected lawmakers were all keen to voice their opinions on public policies considering the public was constantly watching their performance, which would affect their chance of getting re-elected at the next election.

The central government initiated its privatisation plans for the Farmers Bank and Chiao Tung Bank in 1992 and 1994 respectively. While it was not very clear why these two central government-controlled banks were chosen to be privatised first, based on the way the government handled SOB privatisation at that time, by releasing its shares in the stock market, it might have been because these two banks were listed corporations and would find it easier to sell their shares quickly. Whatever the reasons, the KMT government initially assumed these two banks were qualified for privatisation and would be processed efficiently. Unfortunately, most lawmakers had different views on the issue and the Executive Yuan had difficulty in convincing them until 1998. Although most lawmakers agreed with the direction to privatise the two banks, they expressed their main concerns time and time again:

These two banks all had special policy missions. Farmers Bank was for the farming industry; Chiao Tung Bank was for mid- or long-term development of targeted industries. If they were privatised, would they continue these missions⁽²⁸⁾?

19. *Gongshang Shibao*, 15 May 1997.

20. *Zhongshi Wanbao*, 15 March 1997.

21. *Zhongguo Shibao*, 14 September 1995.

22. *Gongshang Shibao*, 17 March 1997.

23. While the TPG could benefit from immediate sale of its shares, it would lose its annual income from these banks in the future.

24. Permanent because they were elected in mainland China before the KMT completely retreated to Taiwan in 1949. The KMT used to use these representatives to bolster its claim over mainland China. These permanent representatives stayed in post for more than forty years until 1991.

25. This was Taiwan's second parliament which was mainly in charge of constitutional amendments and electing the president and vice president before 1996. It was abolished in June 2005.

26. Interpretation n° 261, full text available at: http://www.judicial.gov.tw/constitutional-court/EN/p03_01.asp?expno=261 (date of access: 20 March 2006)

27. Before 1992, when some permanent representatives died, the KMT allowed replacements who were elected by people in Taiwan to fill vacant positions.

28. *Gongshang Shibao*, 20 May 1997.

Some precedents showed that SOE privatisation would transfer shares from the government to a number of private conglomerates, putting public interests at risk. The two SOBs might end up in the same situation⁽²⁹⁾.

The government's privatisation policies were not complete while the government only tried to reduce its shareholding to less than 50%. If the government was really serious about giving up its control over the two banks, it should sell all its shares. The government was just trying to free the two banks from the supervision of the Legislative Yuan after privatisation⁽³⁰⁾.

The prices and timing in selling the government's share in the two banks in the stock market were improper. The two banks' shares deserved to fetch a higher price and their release should be undertaken under the condition that it would not affect price levels on the stock market⁽³¹⁾.

They argued that before these concerns were properly addressed by the government, the bipartisan decision in the Legislative Yuan was to continue to block the government's privatisation plan for the two banks.

Political reforms broke deadlocks of SOB privatisation

The aforementioned oppositions from the TPG/TPA and the lawmakers in the new Legislative Yuan notably disappeared in 1997 after President Lee Deng-hui launched new political reforms in 1996 and 1997. After Lee was re-elected as President – for the first time by popular vote – in March 1996, he felt that there was a need for the whole nation to seek a consensus about the development of Taiwan in several key policy areas such as cross-strait relations, economic development and constitutional reform. With support from the DPP⁽³²⁾, Lee successfully convened the National Development Conference (NDC) in December 1996 and put the political consensus reached at the NDC into practice by constitutional amendments in July 1997.

The most important result from this series of political reforms regarding SOB privatisation was the decision to downsize the TPG and TPA by the end of 1998 with almost all their functions and assets including TPG-controlled banks transferred to the central government. In response, the TPA decided to overthrow its 1989 resolution and implement the privatisation of the three TPG-controlled banks⁽³³⁾. Thus, soon after in 1998, all three banks including another smaller bank were privatised as the fifth column of table 3.1 indicates. The success of the reform triggered follow-up repercussions at the Legislative Yuan. On the one hand, the re-

form had set a precedent and all involved parties were satisfied with the results⁽³⁴⁾. On the other, the political climate pushed the Legislative Yuan to react to the privatisation issue. Because one of the resolutions passed in the NDC required that all SOEs should be privatised in five years, though not legally binding, the Legislative Yuan was under pressure to follow this requirement. As a result, Farmers Bank and Chiao Tung Bank all successfully completed privatisation in 1999.

The failed deregulation of the SOBs in the KMT era (the 1990s)

While SOB privatisation suffered serious delays throughout the 1990s, the other dimension of SOB reform – deregulation – failed completely in the end. Despite repeated attempts, the KMT government was not able to get the *Regulations Governing State-Run Financial Institutions* (RGSFI) passed. At least ten versions of the RGSFI were drafted by the KMT since the first formulation of the idea of deregulation in the 1970s⁽³⁵⁾. However, according to the study by Lee Yun-san, from the beginning an ongoing dispute among different branches of the central government meant its enactment was doomed⁽³⁶⁾.

As the draft of the RGSFI was proposed by the Ministry of Finance (MOF) under the Executive Yuan and its purpose was to free SFIs from existing regulations for all civil servants and SOEs, it ran into strong opposition from other related governing Yuan: the Control Yuan, the Examination Yuan and the Legislative Yuan. The Control Yuan had the power to audit government agencies in the use of their budgets in accordance with their original plans and amounts. The Examination Yuan was in charge of recruiting civil servants

29. Ibid.

30. *Gongshang Shibao*, 30 June 1994.

31. *Zhongguo Shibao*, 11 April 1997.

32. The DPP shared common political goals with Lee. Most important was the downsizing of the TPG and TPA. In addition to their concern for better efficiency and governance, they also wanted to reduce the power of TPG governor James Soong, whose approval rate among the public was extremely high at that time.

33. By controlling the agenda, the TPA could be involved in deciding the banks' share price and the timing for selling the shares on the market.

34. The positive reactions from the employees in the four banks were particularly meaningful.

35. See these versions of different drafts at *Gongying Yinhang Quanli Caoan Cankao Ziliao* (Collections of the documents related to the drafts of the RGSFI), Taipei: Ministry of Finance, 1991.

36. Lee, Yun-san, "Taiwan Gongyou Jinrong Jigou Quanli zhi Tantai" (On the management of state-owned financial institutions), in *Gongying Yinhang Quanli Caoan Cankao Ziliao* (Collections of the documents related to the drafts of the RGSFI), p. 150, Taipei: Ministry of Finance, 1991. Lee was minister of finance in 2002 for the DPP government.

and their promotions and pensions. The Legislative Yuan had the power to review all the budgets and plans of government agencies before they were implemented. Unless the new RGSFI could allow an exception, these Yuan contended that the Executive Yuan would cross power boundaries and create a breach of the Constitution. As a result, the MOF tried to strike a compromise among the Yuan and different versions of the RGSFI were the result. Unfortunately, the difference in views was so great that resolution was difficult.

While this explanation is convincing in a sense, it does not explain why an authoritarian regime like the KMT, before the 1990s, could not co-ordinate different views on this issue. Perhaps the real cause of the delay in putting the RGSFI into practice is that the KMT did not really want it to happen before the financial “Big Bang” of 1989. As the SOBs were still very helpful in promoting industrial policies, excluding largely the participation of private players in the banking sector and maintaining the stability of the financial system, the KMT lacked the incentive and thus the determination to enact the RGSFI⁽³⁷⁾.

To break the deadlock, a constitutional amendment with regard to the RGSFI was approved by the National Assembly in 1994. The article says:

The state shall manage government-run financial organizations, in accordance with the principles of business administration. The management, personnel, proposed budgets, final budgets, and audits of the said organizations may be specified by law⁽³⁸⁾.

The passage of the article stemmed from the strong lobby pushed by the Association of Banks when sustainable SOB privatisation was still not in sight and new private commercial banks just entered the banking sector. The SOB members of the association attempted to strengthen their position in the future market by enacting the RGSFI.

The latest draft of the act was sent to the Legislative Yuan for deliberation in 1997. Once again it did not get through. Firstly the Legislative Yuan was too focused on SOB privatisation that it did not hold a session for discussion of the draft act. Then, when the act was finally discussed in 1999, most lawmakers insisted that there was no need to enact it if the government planned to privatise almost all SOBs before very long anyway. Also, they argued that, as a number of cases of SOB privatisation were recently completed, all the MOF had to do was to keep doing the job⁽³⁹⁾.

The SOB reform in the DPP era (2000-2005)

The DPP's basic stance before 2000

Before the DPP came to power in 2000, it had an extremely negative attitude towards both the SOEs and the SOBs. In its view, the SOEs were inefficient in the economy and provided special access for profit to the KMT. Taking side with a number of liberal economists⁽⁴⁰⁾, the DPP saw the SOEs as a burden, their survival lay not in their competitiveness but in their monopolistic or oligarchic positions in their individual sectors. If they could be privatised and let other private enterprises join the competition, their productivity would pick up and the whole economy would benefit from improved product quality and lower prices spurred by open and fair competition among market competitors. It also denounced the SOEs as channels for political feedback to some high-ranking government officials and military officers after they had retired. Normally, these retired officials and officers would be granted a position as chairman or president in an SOE. What was even worse was that the SOEs were frequently contributing to the growth of the KMT's own business empire by providing massively profitable contracts, an evident symptom of the KMT's abuse of its long-time political rule.

Because of this negative stance, the DPP has upheld privatisation as a tool to dismantle the colossal SOEs and undermine the KMT's economic power base. In the DPP's party platform, the section on economic, fiscal and financial policies briefly outlined these goals: *The SOEs have to be privatised and exposed to market competition. In order to get rid of political cronyism and market monopolies, and enhance operational efficiency, this basic principle should be followed. For some SOEs enjoying monopolistic or oligarchic market positions but having difficulties being privatised in the near future, their functions have to be adjusted and put under the careful surveillance of the legislatures*⁽⁴¹⁾.

37. I am indebted to Huang Tien-lin for this argument. Mr Huang used to chair the First Commercial Bank, a top-five SOB, before 2000. He had been a senior economic policy adviser to President Chen Shui-bian from May 2000 to May 2006.

38. Article 10, Item 4, the Additional Articles of the Constitution of the Republic of China, available at <http://www.gio.gov.tw/info/news/additional.htm> (date of access: 26 August 2005)

39. *Lifayuan Gongbao* (Parliament Minutes), *op.cit.*, pp. 191-231, 1999.

40. Chen, Shi-meng, Lin, Chong-Cheng, Chu, Jing-yi, Chang, Ching-si, Shih Jun-ji, and Liu, Jin-tian, *Jiegou Dangguo Ziben Zhuyi* [Disintegrating KMT-State capitalism], Taipei: Taipei Society, 1992.

41. See the DPP platform, Section 3, Article 7. The original text is in Chinese and available on the DPP website: <http://www.dpp.org.tw/> (date of access: 13 August 2005). The author's translation.

Accordingly, the DPP should have shared a common ground with the KMT regarding SOE privatisation since the KMT's announced policies were on the track that the DPP wished. In practice, the DPP was also worried that the KMT might manipulate the process of privatisation for its own benefit. As the KMT was the ruling party, it had easy access to inside information about many projects of the SOE privatisation. In the name of privatisation, the KMT could either let its own business empire acquire some SOEs or instead let its powerful partners, the local business tycoons allied with it, benefit from similar juicy deals. As a consequence, SOE privatisation would not end in a healthier economy but a lasting twisted economic system under the dominance of the KMT business empire and its cronies. Moreover, even after privatisation, the KMT government could still control most former SOEs through controlling the majority on their boards as the biggest shareholders. Under such circumstances, while the "privatised" SOEs were still under the government's control, they were no longer under the monitoring eye of the legislature. Thus, the DPP tended to insist on a "real" privatisation of the SOEs without any interference from the government and the KMT in any way. The DPP's concerns were highlighted and addressed in the National Development Conference (NDC) of 1996 because the KMT needed the support from the DPP to avoid the failure of the conference. Under the demand of the DPP representatives and the widespread support of other participants, the NDC reached two important consensus with regard to SOE privatisation and KMT enterprises:

1. All SOEs have to be privatised in five years.
2. The KMT promises that its enterprises will not take part in investments that are involved with business in monopolistic or oligarchic positions and government projects⁽⁴²⁾.

Overall, the DPP's stance on SOE privatisation before 2000 was cautious support. It embraced the idea of using privatisation as a means to improve the SOEs in particular and the whole economy in general. But the worry that the KMT might exploit its ruling position to benefit from the process of privatisation made the DPP very careful about it.

Two stages of financial reform under a divided government

After the DPP took power in 2000, the issue of SOB reform was reduced to how much and how fast the rest of the SOBs should be privatised and controlled. Signs have shown that the DPP government has given up the idea of enacting new legislation to deregulate a number of SOBs

since the legislation has had no mention since 2000 and most SOBs are in line to be privatised shortly. But the issue of SOB reform is no less complicated for the DPP than it was for the KMT before 2000. No sooner than it came to power, the DPP faced a looming non-performing crisis and a significant number of financial institutions were on the verge of insolvency. It had to sort out the crisis before it could continue the SOB reform. Besides this, the issue of "government-run but private-owned" banks needed to be further addressed. As table 1 shows, the KMT actually had privatised eight SOBs before 2000. But these banks were still run by the government after 2000 because the government still held a high number of their shares⁽⁴³⁾. Whether the government should keep reducing its shares has caused new debate about the state's role in the banking sector. Furthermore, politics in Taiwan since 2000 makes constructive policy deliberation less likely due to the existence of a divided government. Although the DPP won the presidential elections of 2000 and 2004, the KMT and its ally the People First Party kept control of the Legislative Yuan. The constant confrontation between the opposition "Blue camp" and the ruling party's "Green camp" (composed of the DPP and its ally the Taiwan Solidarity Union) on national identity grounds and other related issues makes politics more polarised than ever. As a result, party discipline has been much more tightened in all political parties in the Legislative Yuan. The former bipartisan opposition to the KMT's Executive Yuan policies has declined. What has occurred more, instead, is that the Blue overthrows, twists or blocks the policies of the Green, putting the DPP government in a difficult ruling position⁽⁴⁴⁾.

Nevertheless, as we look back at the DPP's first term in government from 2000 to 2004, unlike its many policies in other areas, the DPP's financial reform policies suffered relatively less from its minority position in the Legislative Yuan. Despite numerous delays on approving essential bills, budgets or plans by the opposition parties, the DPP managed to attain notable credit for its financial reforms. The goal of the first stage of financial reform, initiated by President Chen Shui-bian in August of 2001, the so-called "258 financial reform": to lower non-performing loans ratios to below 5%

42. *Zhongguo Shibao*, 25 December 1996.

43. As the private share holders were scattered, it was not easy for them to have collective and concerted actions against the control of the government on these banks, even though the percentage of private shares outnumbered in total.

44. The best example is the issue of arms sale deal with the US. As the Bush administration has approved to sell a number of important weapons to Taiwan in 2001, the budget has been constantly blocked by the Blue in the Legislative Yuan.

and raise capital adequacy rates to 8% among domestic banks within two years was achieved on time. Meanwhile, following the passage of the Financial Holding Company Act in 2001, 14 financial holding companies were established from 2001 to 2002. In addition, with regard to speeding up the disposal of seriously troubled financial institutions, the Financial Restructuring Fund was established and has successfully bailed out 47 of these institutions and forced them to drop out of the market through closure or merger. Also, the DPP government has overhauled the financial regulation system by setting up the Financial Supervisory Commission (FSC), an integrated agency aiming at independent supervision and monitoring of the operation of the whole financial system.

With hindsight, two key factors contributed to these better-than-expected outcomes. First, as a looming banking crisis approached, the opposition parties were under social pressure to co-operate with the DPP on reform bills and measures. Although sometimes they disagreed on some technical matters or worried that the DPP might get too much credit, they did not totally block the DPP from implementing financial reform, especially as it attained strong support from the media and public opinion. Secondly, the convention of the Economic Development Advisory Conference (EDAC) by President Chen in 2001 reinforced the mandate of the DPP reform agenda. The conference took place at a time when Taiwan experienced its worst economic downturn in decades. By inviting representatives from the ruling and opposition parties, scholars, business leaders, and labour unions, President Chen was hoping to use the conference to determine common goals and effective solutions to the unprecedented economic challenges that Taiwan was facing⁽⁴⁵⁾. Conference approval offered such strong legitimacy that no political party could oppose the items without good cause. The conference also sped up SOB privatisation as a consensus reached required that the government-run banks should be entirely privatised⁽⁴⁶⁾. The DPP then focused on reducing government share in the “government-run but private-owned” banks.

Based on the policy accomplishments and consensus reached in the first term, in October 2004, President Chen took a further step in consolidating the banking sector by unveiling his goal of “the second stage of financial reform” to halve the number of government-run banks to six by 2005 and the number of financial holding companies to seven by 2006, increase the market share of three domestic banks to above 10%⁽⁴⁷⁾, and encourage one financial institution to be taken over by a foreign counterpart or listed on overseas mar-

kets⁽⁴⁸⁾. The rationale behind this reform agenda, according to the former Vice Premier Wu Rong-yi, who was commissioned to supervise the banking sector reform in 2005, was to solve the problem of over-banking and strengthen the competitiveness of local players by increasing their scale. The long-term goal of the second stage of financial reform was to have three to five “national champions” banking groups that would together have a market share of over 80%. But as the private players remained wary about merging with their rivals, the DPP government argued that the government-run banks should take the initiative to start the consolidation process by merging with other players⁽⁴⁹⁾.

However, the push for the second stage of financial reform in 2005 raised public concerns and surging opposition from the labour unions when government-run banks went up for acquisition by private players. Typical is the failure of the sale of shares in the government-run Taiwan Business Bank. The labour union of the bank was not satisfied with the early-retirement packages for lay-offs as proposed by the private bidder E. Sun Financial Holding Co. After a four-day strike and prolonged negotiations, the bidder dropped its bid⁽⁵⁰⁾. Since then, a controversy has arisen around the way the DPP government privatises government-run banks. Some are saying that the government is deliberately selling out its banks to private players at a low price, which not only undermines the public interest but also puts the interest of current bank employees at risk. Against the backdrop of an increasing income gap between rich and poor in Taiwan, the government’s rush attempts to sell banks to private conglomerates have been viewed by critics as adding fuel to the fire⁽⁵¹⁾. Seizing this opportunity, opposition parties have vowed to stop the government from pushing ahead the second stage of financial reform, casting more uncertainty on the reform’s future. The DPP government ended up encour-

45. See the background of the conference at a press release from the Presidential Office of Taiwan: “Background for Convening the Economic Development Advisory Conference”, available at http://www.president.gov.tw/2_special/economic/e_index.html (date of access: 14 August 2005).

46. In the common view of the finance group of the conference, which is available in Chinese at: http://www.president.gov.tw/2_special/economic/index-92.html (date of access: 14 August 2005).

47. The three banks could be privately or publicly-owned and do not rule out the participation of foreign capital. The point is to cultivate national champions of banks and make the banking sector less scattered.

48. *Zhongguo Shibao*, 21 October 2004.

49. *Gongshang Shibao*, 6 September 2005.

50. *aipai Times*, 15 September 2005.

51. A social movement group, *Fanzi Lianmeng* [Alliance of fairness and Justice], is one of the most active critics. See its view on the issue on its website: <http://www.justice.org.tw/index.htm>

aging mergers among the banks it ran and reached its deadline to halve the number of government-run banks to six by 2005⁽⁵²⁾.

Conclusion

As this study shows, rapid democratisation over the past two decades in Taiwan does significantly affect how the Taiwanese government addresses SOB reform. Due to rapid democratisation, the government has been forced to accommodate a new political environment where the power of the elected politicians at the provincial level (the TPG/TPA) or at the national level (the Legislative Yuan) has been elevated to such an extent that it puts up constant challenges to policies formulated by the administrative power centre. While the impact of democratisation on SOB reform was more felt in terms of independent behaviour by elected politicians from all political parties in the KMT era, this evolved into a clash between the ruling party and the opposition parties in the DPP era.

Democratisation has had a mixed impact on SOB reform. On the one hand, the government has suffered delay or failure; on the other hand, the accountability of the government is far improved. The prospect of financial governance particularly and economic governance generally in Taiwan will de-

pend on whether democracy can further deepen to effect a balance between governing accountability and efficiency.

As far as SOB reform is concerned, a major challenge is unresolved: the role of government-run banks is not clear. On the one hand, the majority views agree to reduce government intervention in the banking sector, but on the other, as people are also worried that the influential financial groups owned by private players⁽⁵³⁾ might control the sector and put the public interest at risk, people are expecting the government to play a more forceful role as a counterbalance. If the government keeps selling off its share in the banks it still controls, it will lose a strong leverage against the dominance of big private players from abroad or at home.

In sum, SOB reform in Taiwan is at a crossroads. In a new democratic era, the rapidly changing political landscapes behind the reform and the shifting public opinions on the issue have made it more complicated and controversial. As Taiwan is not alone in undertaking SOB reform along with democratisation, this case study is just the first step for future comparative studies on the politics of financial reform. Similar patterns, common factors or major differences might be discovered as a result of comparing Taiwan with other young or emerging democracies that also undertake large-scale financial reforms. •

52. The six government-run banks are the First Financial Holding Company (FHC), Hua-Nan FHC, Mega FHC, Bank of Taiwan, Taiwan Cooperative Bank, and Land Bank of Taiwan.

53. In the financial sector, there are three influential family financial groups: the Koo family with Chinatrust FHC (n° 7) and China Development FHC (n° 12), the Wu family with Taishin FHC (n° 2) and Shin Kong FHC (n° 8), and Tsai family with Cathay FHC (n° 1) and Fubon FHC (n° 6). The numbers behind these FHCs are their rankings in terms of total assets among the 14 FHCs in Taiwan. Politically, these families are active in maintaining their relationships with all the main political parties. Their influence is persistent no matter which party is in power.

The emergence of new African “trading posts” in Hong Kong and Guangzhou

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At a time when China is strengthening its economic ties with African countries both by sourcing raw materials and tapping a large consumer goods market, African traders are expanding their presence in China. Making the most of the conditions offered by the authorities, they have opened trading posts in Hong Kong and Guangzhou in order to sell products manufactured elsewhere in China for African customers. These traders are at the forefront of a new migration wave. This article analyses their profiles and itineraries before exploring their impact on the transformation of two specific locations: Chunking Mansions in Tsim Sha Tsui, Hong Kong, and the Xiao Beilu area in Guangzhou.

At a time when China and Africa are intensifying their diplomatic and economic ties, a number of academic works have taken an interest in these exchanges (Coussy, 1999; Hoffmann, Mabire, 2000; Niquet, 2002; Aicardi de Saint-Paul, 2004; Braud, 2005; Lafargue, 2005; Chaponnière, 2006; Gaye, 2006). Other analyses have focused at another level on the role of Chinese merchants in the economic development of Namibia (Dobler, 2005), Cameroon (Esoh, 2005), Cape Verde (Haugen, Carling, 2005) and Madagascar (Fournet-Guérin, 2006) as well as on the socio-spatial restructuring triggered by their establishment in the host country (Bertoncello, Bredeloup, 2006). If this Chinese migration to the African continent again calls into question on a global scale the capacity of host societies to integrate within them new foreign populations, it can conversely be asked to what extent the movements of African merchants, most recently spotted between Hong Kong and Guangzhou, provide a lesson on the real capacities of opening up so frequently proclaimed by the People's Republic of China. It is, undoubtedly, equally appropriate to examine the commercial forms of the African settlements established in China, which are reminiscent of those of the Greek trading colony (*emporium*), that organisation, created on the initiative of the foreigner the colonist, that was founded on an understanding between producers and vendors and the functioning of

which was very closely tied to the hinterland or took place in a foreign enclave (Tarrius, 1995).

Although the Chinese authorities praise the long-term relationship and friendship between their country and the African continent, the exchanges between these two areas, while certainly of old standing, have nevertheless remained unequal and above all built on power relationships in which China dominates. While Chinese power, through its public corporations, is exerted in these days of aggravated competition to purchase raw materials in energy and minerals across the whole of the African continent, small Chinese entrepreneurs old rural migrants or workers made redundant by state-owned factories, but also labourers recently laid off from construction sites in Africa are opening shops offering a variety of goods in Dakar, Praia, Bamako or Douala, renewing the forms of Chinese commercial migration. For their part, Africans, on the look-out for new markets, are restructuring the channels of distribution, leaving home to source supplies directly from Asia while still others settle there.

Once the different types of migrants present in China have been identified, the next question is to locate the respective place held by Asian cities in the migratory and commercial routes of the nationals from sub-Saharan Africa, then to examine the role that they play in the transformation of the urban zones thus endowed (Chungking Mansions, a highly



Chungking Mansions, Hong Kong

concentrated block of buildings in Tsim Sha Tsui in Hong Kong, and the Xiao Beilu district in Guangzhou).

Types of migrants, types of merchants

For a long time, it was the student who had been dispatched to a university in Beijing in the name of «communist internationalism», though not always a national of a communist country, that typified the black African migrant in China. Reaffirming since then its co-operation with the African continent, China intends in the next five years to double the number of scholarships granted to African students, which to date has been limited to 1,200 a year. Moreover, since quite recently, other means have been used to follow a university course in China. This is how African merchants, already well established in Hong Kong as in Guangzhou, get their younger brothers to come to study at a Chinese university. Today, the majority of Africans encountered in China are migrant businessmen. Only some of them have put down lasting roots in the cities of Hong Kong and Guangzhou, having received authorisation to open offices with a view to

exporting Chinese goods. Describing themselves as *traders*, they constitute the new bridgeheads of sub-Saharan migration to China, making easier the administrative steps of compatriots wanting to launch out into the import-export business. Several generations work side by side: the oldest, nationals of the Sahel, both illiterate and polyglot at the same time, have made a career in trading since their earliest days, expanding the migratory stopovers throughout the world. This is how Mr L, a Malian national dubbed the “mayor of Hong Kong” by the African community, became the first West African to establish, step by step, his trading business in the financial metropolis, starting in 1979, after having been a gold and precious stones merchant operating between Bouka in Central Africa, Bangkok and Brussels. He directed his endeavours first of all to exporting to Africa (Mali, Senegal, Togo, Kenya, Angola, etc.) goods manufactured or converted in Asia (rice from Vietnam, tea from Sri Lanka, tomato purée and hi-fi equipment originating from factories in Shenzhen, and so on). Then he tried to find outlets in China for raw materials from Africa (exotic wood and lemons from Benin and Guinea, shea and cashew nuts from Mali). He has, moreover, invested in the trade in cattle and

sheep hides collected raw in Togo and then tanned in China. But Mr L preferred to get out of this lucrative activity when Chinese businessmen, inspired by his experience, began to compete with him on a permanent basis by directly setting up a modern tannery in Nigeria. He then changed direction, striking out into the textile sector and contracting a solid agreement with a factory located in Shenzhen's economic zone, even going so far as to take shares in the company.

At the office, the client chooses the fabric, the colour and the quality from samples, then it is made up for him. To go to the factory, you take the boat; it takes two hours, by boat. 1,900 workers work in this factory. It's exported 100,000 pieces for Angola (...)⁽¹⁾.

A section of his clientele does not travel as far as Hong Kong to place their orders for his goods, preferring to select and order them from his African offices hived off in Lomé and Nairobi. Mr L organises the transport logistics chain, also conducting the customs clearance of the goods for his clients. He is the archetype of the international trader, reinvesting as much in China (taking a stake in the capital of a factory set up in mainland China, owning a guesthouse in Chungking Mansions and managing an African restaurant), as in Africa (owning houses in Lomé, Abidjan and Dakar, and buildings and a commercial centre in Bamako).

His compatriot, Mr D, similarly hailing from the Kayes region and established in Guangzhou since 2000, presents a similar itinerary. He has also moved around a great deal in Africa, hawking cigarettes in the streets of Bamako when he was growing up before launching himself into the ready-to-wear business in Cameroon and Gabon and the traffic in precious stones from Tanzania and Madagascar. At the time of this perilous trade for the African diamond merchants, he learned the import-export business: in the producer countries, precious stones are rarely exchanged for money and are instead bartered for different goods, at the whim of circumstance. As for Mr D's establishment in China, this was facilitated by his previous experience in the import-export business at trading posts in Thailand and then in Indonesia. Taking advantage of the Canton Fair ⁽²⁾, he came to prospect the region in 1998, wishing to profit from the commercial opening-up of China to find an opportune new direction for his business. Although importing by Africans is not authorised in China, Mr D nevertheless decided to set up shop in Guangzhou in 2000, convinced that his clientele would fol-

low him and that his trading would only expand. While he has closed his offices in Jakarta and Bangkok, he has kept open those in Lomé and Dar Es-Salaam to ground his presence on the African continent. Today, Mr D is considered to be Guangzhou's major West African merchant, exporting a multitude of manufactured products, from electric toothbrushes to DVD drives and plastic sandals, Arcopal tableware, imitation African *pagnes* (wrap-skirts), made in China, even green tea:

When an African, American or European client arrives at my company, he can see the clothing samples, hardware samples and samples of household appliances, and he can then choose. In my office, we discuss the quantity, the order and the price, and when we have come to an agreement, I call my different suppliers, who deliver to me directly from the factory to a lead time that I also negotiate. The orders, it's often several dozen containers each time.

Mr D employs around fifty Chinese in his vast enterprise, where he takes care of the product from its manufacture to its export:

Here I have an office of 250 square metres and I am the tenant and I pay the taxes. I also have an apartment nearby in another building. For the office, I have 12 Chinese employees; and then for the interpreters, who are paid 500 yuan a day, I go through recruitment agencies. The interpreters speak English for the most part and some of them speak French. Me, I have three Chinese secretaries who speak a little French; the majority of our clients are French speakers. They are trained at the Alliance Française. People say afterwards: 'At D's, they speak French.' It's better! I also rent 6,000 square metres of warehouse space in the port zone and there I have 30 Chinese workers⁽³⁾.

Mr D's involvement in the production of goods exported to Africa has been strengthened over the years and should soon extend to his home country:

1. Interview with S.L., *op. cit.*
2. The international Canton Fair takes place twice a year (in April and October); it is one of the biggest fairs in the world, at which are traded textiles and electronics among many other products (Jastrabsky, 2006).
3. Interview with D.D., Malian merchant, Guangzhou, July 10th 2006.

I work with Chinese factories. There, I'm preparing to set up small factories in China and factories in Africa, in Mali.

Mr D is planning to consolidate his investments in Bamako:

I have got in contact with the ACI [Agence de Cessions Immobilières], that is the state agency that handles land in Mali and I have asked them to find me a site with a project for a commercial centre. Because we travel, we take a few ideas from abroad and we bring them back home. The commercial centres there, it's good. You can also do some offices on top, but you can't have too many storeys, Africans don't like that much. As for my country, I've also thought about buying some agricultural machines for the crops but in places where the growing is good.

Mr D can also draw value from his experience as an economic operator in China in dealings with the Malian authorities in charge of managing the Diaspora. That is how he came to play an active part in the deliberations related to the creation of a banking structure intended for migrant investors.

I signed a protocol in 2004 with the Mali ministry of investment to create an “overseas Malian bank”. If this project takes concrete shape, I will go and canvass in France, everywhere where there are Malians. (...) At the next elections, I am standing as a candidate for the presidency of the Haut Conseil des Maliens de l'Extérieur [official body responsible for relations with Malians living abroad]. Mali pays attention to its migrants. In 2004, the Malian president came here at our invitation. Look, I have a traveller's customs guide which has been published by my country. Our country supports its Diaspora. The current president of the Haut Conseil isn't a merchant, he doesn't know the problems Malians have everywhere in the world. This time, there are two serious candidates, there should be some good progress.

Similar to the consortia involved globally in the retailing and distribution industry, the African traders who have set up shop in Asia have the ability to link the centres of production to the markets. Not only are they redrawing the trading

routes, but, what's more, they are contributing to the creation of new products for an African clientele while negotiating directly with the Chinese factories and increasingly taking control of the transport logistics chain. Moreover, the system of information that they have put in place at the international level allows them to keep in direct touch with the needs of the consumers and to respond rapidly to them. Their economic and social success can also be explained in part by the relations they have been able to weave here and there with the state powers. Back at the beginning of the 1990s, E. Grégoire and P. Labazée studied these forms of co-operation between the political and commercial spheres but limited themselves to the African continent. The big African merchants who have set up shop in the strongly Asian locations have been able to negotiate their place in these societies, playing the role of an interface between their communities and the local society, a role which has allowed them to consolidate their status as economic operators. These businessmen have thus made an extensive contribution to the construction of these African trading posts in Asia.

As for the young traders who are also taking part in the consolidation of these trading places, the majority of them have pursued higher studies outside of their own country, before launching out into international trade. Mr A, a Ghanaian, who opted to take a journalism course in Great Britain and then in Holland, chose for political reasons to change direction and take up commercial activities after having practised for some time only in his own country. Mr B, for his part, a native of Futa Djallon in Guinea, left for New York in 1989 to pursue a higher education course in information technology. Convinced that he would not be able to draw full value from his engineering degree in Guinea because of the economic and political insecurity that reigned there, he chose to form a company in the United States for the export of computer equipment, benefiting both from social capital and technical abilities as well as economic capital thanks to the support of an older brother who had emigrated to the Congo:

I sell computer equipment bought here in China to American clients, clients from the Caribbean; Africans in the USA as well. I work by e-mail, by fax and by telephone; I also go on trips, I have an office down there. In fact, I started to-ing and fro-ing between New York and Guangzhou in 2002. The first time, I came here for two months [December 2002 to January 2003] and then I went back; after-

wards I did a trip in March and then another in August. That began to last longer and I set up shop here. Now, I'm more here than I am in New York⁽⁴⁾.

To diversify his activities and to get a foothold on the African market, he decided to export electrical generators made in China to Angola. Very quickly, African competitors entered this high-growth market niche, offering lower rates than his but, according to him, for products of inferior quality:

I have always had loyal relations with my suppliers. At a certain moment, I could no longer sell generators in Angola. Loads of new African merchants came on the scene with very cheap Chinese generators (...) but of very poor quality. I took a step back, I didn't change anything, I waited; the next moment, the buyers came back to the quality⁽⁵⁾.

The relations of trust that the traders manage to contract with their suppliers seem effectively to determine the success of their enterprise. Some highlight African solidarity to counter the disloyal competition.

The clientele of the traders remains predominantly African and male; it is composed both of "circulating merchants", consolidating the shuttle between the Asian trading posts (Bangkok, Hong Kong, Guangzhou) and the African markets, and of businesspeople placing their orders directly from their companies situated in Africa, Europe or the United States. These latter have become acquainted with the range of products offered by the traders, either during an initial prospecting trip or from the networks set up by these same traders in several African countries. For these different clients, the traders generally take care of the transport and transit operations and the customs clearance of the purchased goods. A feminisation of the profession can nevertheless be seen. Located just as much in Paris, Marseille and Naples as in Bamako, Conakry, Abidjan, Cotonou or even Lusaka and Dar es Saalam, these female African merchants are in fact forsaking in ever greater numbers the trading post of Dubai to come and find their supplies on the Asian markets. A lady from Zambia, dressed in *pagne* fabrics, waits in front of the Western Union counter on the ground floor of Chungking Mansions in Hong Kong. She is relating how she is reckoning on consolidating and sending goods from the port of Luanda in Angola to Lusaka, the Zambian capital. Two ladies from Tanzania encountered on

the Hong Kong-Guangzhou train⁽⁶⁾, of a very Westernised appearance (denim jeans and shirts, stiletto heels and straightened hair), were finishing their "circuit" having made their first purchases in Paris and in Italy the previous week. Accompanied by a Chinese translator, a Kenyan lady, a recent graduate in business management, comes to join a group of traders and West African nomadic merchants sat at a table in a café in a tower of Tianxiu Building in Guangzhou. She is making her debut in the profession; this is her first trip to China. Enthusiastic, very confident of the future, she is already planning her next stay. On the upper floors of the building, in the offices of the African traders, ladies from Guinea and Mali come every two months to negotiate; handbags one time, imitation wax⁽⁷⁾ the next. Students, traders, nomadic merchants but also sportsmen: the Africans play off these different status to establish their position in Asia as they have done elsewhere. Nigerian students who have failed the university courses they have begun in Guangzhou prefer to stay in the city rather than return home, and they then start out down the commercial route. Others, like Mr D, who have completed their higher studies in Nigeria but have no immediate prospects of employment there, have chosen to migrate. After running his eye over the conditions for obtaining a visa in Asia and in Europe, D spotted during his research that China offered opportunities. Once he had arrived on Chinese territory, Mr D tried to make use not of his degrees and diplomas but of his sporting ability. He initially played football for a second division club and is now coaching a young team in a district of Guangzhou.⁽⁸⁾ Old nomadic merchants convert back to being traders after a few years' activity. Or, conversely, traders abandon their offices; preferring to limit their fixed costs, they launch themselves back into the itinerant trade. Still others, taking Mr L as an example, will from now on take care of their business in the cafés of the tower blocks in the district of Xiao Beilu rather than in offices. Having been involved in an environmental survey that led him to Korea

4. Interview with H.B., Guinean merchant, Guangzhou, July 9th 2006.

5. Interview with H.B., Guangzhou, July 11th 2006.

6. Guangzhou is linked to the station in Kowloon in Hong Kong by express train (182km in two hours). The building of a new international airport at Baiyun in August 2004 should rapidly change the routes taken by the African merchants. This airport, which serves the cities frequented by the African traders (Dubai, Bangkok, Jakarta, Nairobi, Addis Ababa, etc.), is supposed to become a direct competitor with Hong Kong's international airport.

7. An African fabric made of quality printed cotton manufactured in Dutch and English factories to be sold primarily on the African markets. These waxes have gradually faced competition from fabrics produced in factories set up in Africa within the framework of an economic policy of import substitution.

8. Interview with C.D., Nigerian sportsman, Guangzhou, July 12th 2006.

and having taken a new direction with studies in e-marketing in London, this former physics and chemistry professor from Togo started out on a commercial career. He set up a trading post first of all in Kuala Lumpur (Malaysia) in 2001 and then in Guangzhou in 2003. He has just closed his offices and is counting on his reputation to establish and maintain contact with his clientele using his single mobile phone. A new category of trader based on circulation has thus been introduced for the same reason as that of the tout-interpreter:

It is necessary to distinguish between those who have an office, those who come to buy and those who don't have an office but are looking for a clientele, and those who don't have offices. There are tous; these are youngsters who speak Chinese well; us, we have offices, with Chinese secretaries who speak English, and we don't really need to speak⁽⁹⁾.

This commercial configuration, which hinges around anchorage and mobility and which is reactivating the old functions of hospitality, is not new in the world of African commerce and has been extensively explored in Africa and on other continents. The *njaatigue* (a “host” in the *bambara* language), this landlord and intermediary, facilitates relations between the traders. Not only does he provide lodging and the representation of the nomadic merchants before the administrative authorities, but he also acts as a guarantor among buyers and sellers and sometimes even takes on the responsibility of book-keeping for some merchants or interpreting services for others (Bredeloup, 2007). The traffic in gems conducted by the West African merchants has been able to develop precisely thanks to this figure, who has become the cornerstone of the diamond trade system.

The extreme porosity that exists between these types of migrants translates well the inanity of borders that are too often presented as impassable. Like the migrant identities, the migratory and market networks are just as fluctuating. The marketplaces reconstitute themselves according to the whims of economic and political events.

Dubai, Bangkok, Jakarta, Hong Kong, Guangzhou: reconstituted marketplaces

The entrepreneurs of sub-Saharan Africa, who contributed to making Dubai⁽¹⁰⁾ a major marketplace, started reconsidering their strategies once the “Asian tigers”⁽¹¹⁾, such as

Thailand and Indonesia, also embarked on a dynamic of competitive production. African traffickers of semi-precious stones already incorporated Bangkok in their transnational trading (Bredeloup, 2007) a long time ago and were able at that time to explore the potential that the city has to offer. On top of the transport and travel services available (facilities for obtaining visas, competitive air freight rates), the Thai capital is in fact home to a nursery of small highly capable enterprises capable of reproducing identically the models presented to them. The auto and textile industries are solidly established in the country. What's more, the cheap and compliant workforce allows products to be obtained at very competitive costs. At the end of the 1980s, African merchants, old traders in precious stones or import-export specialists, began to set up trading posts there. Thus they went door-to-door to local factories to have T-shirts, cosmetics and imitation *pagnes* produced for the West African markets, rerouting their trading circuits between Africa and Asia. A number of them, Malians, Guineans but also Nigerians, thus reproduced in Japan and South Korea the system that they had already tested out for a while. Thailand is regarded as an open country that has for a long time been able to weave ties overseas.

Considered a secondary market on the African routes because it offers some quite specific products (shoes and synthetic fabrics) of a higher quality and at somewhat higher prices, the trading post of Jakarta also mobilised some sub-Saharan merchants in the middle of the 1990s, before they were quickly redirected to Hong Kong, the gateway to mainland China. The Indonesian capital lost its appeal when foreign and, in particular, Chinese merchants were chased out of Jakarta in May 1998 (Izraelewicz, 2005).

Today, all roads seem to lead to Hong Kong: the traffickers in semi-precious stones who connected Bangkok to Hong Kong have thus been joined by the merchants who abandoned Jakarta or by those who wanted to adventure beyond Dubai. Despite its reintegration in 1997 into the People's Republic of China, Hong Kong remains a “useful airlock” through which transit the majority of international enterprises seeking access to the Chinese market. It constitutes a cru-

9. Interview with H.B., *op. cit.*

10. The city-state of Dubai is regarded as one of the best stocked “supermarkets” on a global scale, redistributing products manufactured in Europe as well as in Asia (Marchal, 2001; Battegay, 2005). Furthermore, since 2003, China has become the leading supplier of the Emirate.

11. A distinction is made between the “dragons” (Taiwan, Singapore, Hong Kong and South Korea) and the “tigers” (Indonesia, Malaysia, the Philippines and Thailand), the former taking off between 1970 and 1980 and the latter only from 1990 onwards.

cial financial centre and, especially well equipped in terms of transport, it re-exports a sizeable part of Chinese production, in spite of the competition from Shanghai. The first African to set up shop in Hong Kong was a Malian; he started trading in gold and precious stones in 1979 before having a go a few years later at the import-export business. However, the conditions for exercising this role are less supple than in Dubai, Jakarta or Bangkok. In the context of unbridled competition, only the few African traders possessing significant capital and social contacts have been able to open an office in Asia's business capital.

Since mainland China opened its doors, acceding in December 2001 to the World Trade Organisation, the commercial network has evolved still further. This integration of China in the world economy, following more than fifteen years of negotiations, offers new outlets that numerous African traders have not failed to seize upon. The majority of them who were established in Jakarta and Bangkok have grabbed the opportunity presented by this opening-up to set up an office in Guangzhou while sometimes maintaining their Indonesian and Thai branches, and while the few traders solidly anchored in Hong Kong only had to extend their trading networks to mainland China. The latter have thus profited from the creation of the four special economic zones⁽¹²⁾ in southern China (Shenzhen, Zhuhai, Shantou and Xiamen) and of the unprecedented delocalisation to these places of Hong Kong enterprises who aimed to take good advantage of the various tax exemptions granted by the Chinese state at the end of the 1980s. This is how, following the examples of the large distribution companies, they started to visit the factories producing textiles, electronics and toys that proliferated in the Shenzhen zone in close proximity to Guangzhou. They then began to ink contracts with industrial partners, suggest new prototypes and monitor the sometimes defective manufacture.

On a more global scale, two movements can be perceived among the African merchants: whether they arrive directly from sub-Saharan Africa or whether they stopped off at another trading post in Southeast Asia, the "nomads" are in increasing numbers incorporating the marketplaces of Hong Kong and Guangzhou in their circuit, while traders are establishing themselves in force in the capital of Guangdong:

In Guangzhou now, there are around 100 offices maintained by Malians. The Guineans have more. In sum, it's difficult. Here there are three buildings and everywhere is full. That makes hundreds of

Africans. There are also some Congolese from the RDC, there are more of them than there are Senegalese⁽¹³⁾.

But this craze also has its limits. Setting up in Guangzhou remains under the strict control of the Chinese government, and disenchantment is growing:

People believed that China, it was going to be easy, that they were going to get everything, and then all of a sudden they saw the difficulties (...) In December 2006, there was supposed to be a total opening-up: up to now, services like the banks, for example, have been a closed sector for foreigners (...) Trading is still very limited for foreigners. It is easier to open a factory than to do business in China (...). It is the big African businesspeople who can get the capital that's needed; some Senegalese have a factory for producing real wax in a province next to Shanghai and they have set up their office in Guangzhou, nearby, in another building⁽¹⁴⁾.

Apart from the administrative difficulties that endure in China, the quality of the goods produced still leaves something to be desired:

In Canton, the products are much less expensive, they are manufactured in small factories that aren't accredited, there may even be some broken equipment, not well finished (...) Here, the major problem, it's the quality: people look for the best price possible but often they get back goods of poor quality, damaged goods. Women's shoes here, that takes three days. Buyers have lost money with some containers that, once they've been unloaded, hold the surprise that they contain products where 80% don't work. Then, you're sunk! If you negotiate too low, the vendor will change the quality of the items, for example for computers they change the copper for cheaper materials; even for bags, they'll change the zip, they'll put in one of worse quality, so once it's been opened and closed a few times, it breaks. If you don't know how to verify, you'll get taken for

12. These four zones were created on the initiative of Deng Xiaoping in 1978.
13. Interview with P.B., Congolese merchant, Guangzhou, July 12th 2006.
14. Interview with J. B., Ghanaian merchant, Guangzhou, July 11th 2006.

a ride. When you buy in China, you really have to know your product. You can get good quality there if you're prepared to pay for it. In China, it's the ground floor of production⁽¹⁵⁾.

This situation explains why the African merchants maintain part of their activity in the other trading and supply posts, playing on the comparative advantages. In contrast to Hong Kong in particular, Guangzhou's port infrastructure, which sprawls along the Pearl River, cannot receive the big container ships.

Guangzhou, it's a small port and it goes out through Hong Kong. From Guangzhou, you use feeders⁽¹⁶⁾, *which only have a certain capacity; once they've arrived at a large port in Asia, there's a change of ship, they take bigger volumes. Some of Asia's big ports go directly to Africa, such as Shenzhen, Singapore, Ningbo Beilun*⁽¹⁷⁾ *and Hong Kong*⁽¹⁸⁾.

Not only do the African merchants make a contribution to the economic development of the host country, both as employers and as taxpayers, but they are also playing a part in the transformation of the districts in which they work and lodge. The following section looks at the way in which they have integrated into Chungking Mansions in Tsim Sha Tsui in Hong Kong or even the way in which they occupy the tower blocks of the district of Xiao Beilu in Guangzhou. In these spaces, do they pick up the reins from other communities or do they even allow value to be added to vacant sites?

Setting up a trading post in a Chinese city

What future for Chungking Mansions in Hong Kong: African tower of Babel or part of a new central business district?

In Hong Kong, in the “kingdom of merchants” (Le Corre, 1997), the entrepreneurs from sub-Saharan Africa are concentrated principally in the district of Tsim Sha Tsui (on Nathan Road) on the Kowloon peninsula, after the pioneers occupied the district of Mong Kok. In 2006, several hundred reside or do business in Chungking Mansions, this degraded urban island, considered to be one of the least safe points in the city. Strongly stigmatised in the tourist guides and the local press, Chungking Mansions has by turns been

called “immense dilapidated slums welcoming all the outcasts of the planet”, “a sanctum for illegal immigrants, prostitutes from the Indian sub-continent”, a place that draws together “dodgy merchants, discreet tailors' workshops and empty jewellery shops (but used all the same)”, a “hold-out for drug traffickers and criminals”. At the time it was constructed in 1961, Chungking Mansions was a residential development, predominantly welcoming Chinese from Canton, along an artery where hotels and luxury boutiques alternated with each other. Currently, the Mansions, which house on 17 storeys hundreds of guesthouses alongside import-export centres, exchange bureaus, Internet cafés, travel agencies, shops, dressmaking workshops, ivory and stone-cutting shops and ethnic restaurants, is said to constitute a real “African tower of Babel” (Bodomo, 2005). The contrast between the goods sold in the Mansions' shopping arcades and the brand-name clothing, perfumery and hi-fi products offered in the luxury boutiques outside on Nathan Road is striking. Several hundreds of clients from the four corners of the black continent come to stock up each week on cheap products from their compatriots but also from merchants originally from the Middle East, Nepal, Sri Lanka, Bangladesh and above all India and Pakistan⁽¹⁹⁾. Despite the linguistic diversity, it would seem that merchants and clients alike have found not only unifying languages in which to do business (Bodomo, 2006) but favourable working conditions in this trading post.

A legendary stopover for backpackers and those on a small budget, Chungking Mansions offers, through the intermediary of touts, sometimes windowless rooms (blind walls) at very competitive prices for travelling African merchants. The whole building is made up of five blocks, access to each of which is granted by two lifts. At the end of the day, long queues of clients staying at the guesthouses form at the entrance to these antediluvian lifts that only hold a few people. It is a dangerous place in so far as fires frequently break out. The emergency exits are often blocked and the few lifts with their limited capacity often break down. And finally, Chungking Mansions is a place that has been made mythi-

15. Interview with A.D., Senegalese merchant, Guangzhou, July 12th 2006.

16. A feeder is a ship of small tonnage that allows a cargo brought into a major port on a container ship that makes few calls to be distributed to different ports. Going the other way, the feeder can collect merchandise to be consolidated at the major port.

17. Ningbo is a coastal city south of Shanghai that hosts the port of Beilun, one of China's four deepwater, international transit ports.

18. Interview with A.B., Cameroonian merchant, Hong Kong, July 13th 2006.

19. In 1996, before the handover, records showed 22,000 Indians (part of the heritage of the British Empire) (Lau, 1996).

cal by film-makers, especially by Wong Kar-Wai in his films *Chungking Express* and *Fallen Angels*.

Despite the large-scale reclamation works that have been carried out in Hong Kong over the last several decades, its population density remains one of the highest in the world. The pressure on land compels policies of urban renewal to be implemented. Thus the neighbourhood in which Chungking Mansions is located, on the southern tip of the Kowloon peninsula, very close to the Star Ferry pier, facing Hong Kong island and directly across the harbour from the central business district, lies at the heart of the urban planning stakes. In fact, since the new airport was built in 1998 at Chek Lap Kok on Lantau Island, replacing the previous one at Kai Tak located in Kowloon Bay, the regulations that prohibited the height of constructions on Nathan Road for safety reasons have now become obsolete. It is a time for speculation in the Chungking Mansions area. Some neighbouring buildings have already been subject to rehabilitation, while others, covered in immense green tarpaulins and advertisements announcing the city of tomorrow (*Coming Soon: A New Centre of City Life*), are in the process of renewal. According to the African exporters encountered, the level of degradation of Chungking Mansions is such that the destruction of the buildings is the only possible option. In these conditions, the owners no longer maintain their properties at all, nor the communal spaces and related facilities, hoping instead to receive substantial compensation when renovation works are started. This raises the question of whether the foreign merchants will have the means to keep up their activity in a rehabilitated district with direct links to Hong Kong's international transport infrastructure. Or will they be able to transform this new constraint into an opportunity and invest in other places in Hong Kong, in mainland China or elsewhere in Asia that offer services and facilities more in tune with their transnational trading?

The Xiao Beilu district in Guangzhou: an African enclave under surveillance?

According to our investigations, the first merchant from sub-Saharan Africa – a Malian national – is said to have opened an office, in 2000, in Guangzhou in the district of Xiao Beilu two years after having conducted initial prospecting in the capital of Guangdong.

I was the first to set up in Guangzhou, the first arrival in this building. The government said to me: 'it's necessary to establish yourself in a secured building to have papers'. I met the manager here at Tianxiu Building, and he, he made

the contract. It was that, to get the papers, you had to have a contract⁽²⁰⁾.

Under the pretext of security, the African merchants who move into this tower block are subject to permanent control by officers of the security forces, a control for which they, paradoxically, are obliged to bear the financial costs:

Tianxiu Building, a modern 35-storey building, is located in the northwest of the city, close to the central railway station, on a very busy main road, Huanshi Middle Road, in an island of tower blocks. As soon as the visitor arrives in this district, he is struck by the African presence. Small groups of men, originally from sub-Saharan Africa, move from one tower block to another using the overhead footbridges, while others hail taxis from the pavement or stand around talking at the entrance to Tianxiu Building. Some are dressed down, in jeans and polo shirts with a backpack; others wear suits, attaché case in hand. The activity at the entrances to these tower blocks seems intense. Some “matrons” in *boubous* call to each other across the pavements before going off to prepare rice and fish in small, secret “greasy spoons” that they run on the upper floors of Tianxiu or Guolong Building. Younger women, dressed Western-style, meet up in the areas where the export goods are displayed. If one is to believe the Africans themselves, sticking together with one's own remains a must in a Chinese society that is foreign to them:

Here there are African families, parents with children. The babies are there, they go to kindergartens, when they are older they go back to Africa (...) We Africans, we haven't got used to Chinese cuisine. Many of the African women have done African cooking, some do deliveries to the office, to the upper floors. The Chinese authorities haven't wanted the African women to open restaurants; they exist but they are hush-hush⁽²¹⁾.

The exercise of control by the public authorities also extends to questions of religion: the foreigner is only tolerated in China and has a duty to avoid any gathering, comparable to possible subversion as soon as it exercises any activity that is not commercial.

On the seventh floor of the building, some Africans had got themselves organised to open a mosque; there was also an

20. Interview with D.D., *op. cit.*

21. Interview with H.B., *op. cit.*

Adventist church there. The Chinese authorities came and closed everything. You try to get the embassies to intervene when there is a problem, but they are not on site and then for everything to do with religion, you have to let it go. Here, the problem is that there's no possibility of association: any gathering is looked on as suspect, as a risk for the Chinese government. If you understand that, here, it's only for business, it's OK⁽²²⁾.

Fearing that they cannot grasp all the complexities of the regulatory system established by Chinese society, a system that is itself in a perpetual process of redefinition, the African merchants, to protect themselves and to conform, opt for discretion in the tower blocks and in the neighbouring streets and limit their social contacts to their compatriots.

On the ground floor of the Tianxiu tower block, two entrances: the main gate allows direct access to the commercial services. The *Lounge Coffee* and the *Moka Café*, run by Chinese staff, have become the meeting-points for the African merchants doing business. At the exit, an Internet area, doubling up as a travel agency, offers its facilities to the traders working there. A few feet away, the sign of a cargo transport company lights up the destinations Dubai, Sharjah (United Arab Emirates), Jeddah (Saudi Arabia), Aqaba (Jordan's only maritime outlet), Douala (Cameroon), Lagos (Nigeria), Pointe-Noire (People's Republic of Congo) and Matadi (Democratic Republic of the Congo). This service, offered in the confines of the same building, allows merchants who are pressed for time to gain some efficiency in their comings and goings. On the four upper floors, access to which is granted both by elevators and escalators, samples of merchandise, exportable especially to the African continent, are piled up in almost 350 shops, each about twelve square metres, spread through a maze of corridors. The majority of the exhibitors are Chinese, although Africans, of both sexes, are tending gradually to occupy the premises.

(...) There has been a kind of partition of the building between the Africans and the Chinese (...) The Africans have started occupying some offices on the upper floors; they have attracted a certain clientele. The Chinese have seen all that and they have come and occupied the lower floors. These Chinese are representatives of factories who have wanted to profit from the clients of the Africans who go up the floors to get to the offices on the 7th and 9th floors.

Within the framework of this new distribution, for two years now, Mr F⁽²³⁾, a Ghanaian national, displays shirts, blouses, T-shirts, jeans, Terylene trousers, plastic sandals, sports shoes, washing powders, nappies, handbags, umbrellas, wheeled suitcases, bikes, mopeds and more, chaotically, in

his glass-fronted premises on the fourth floor. Behind his computer, her Ugandan partner once again updates on the Internet their homepage so as to present the new items to potential clients. Buyers from all over Africa do the rounds of these floors.

The other entrance to the building, which leads directly via lifts to the upper floors where the offices are located, is under the double surveillance of guards and cameras. Ears glued to their mobile phones, chatting away in English, in French, in *soninke* or even in Swahili, the “visitors” stationed in front of the doors to the lifts are all, without exception, Africans. Starting from the fifth floor, this is the empire of the African traders, who display their merchandise in spacious show rooms:

*Here, before, there were a lot of empty offices (...)
When the Africans arrived in the tower, the Arabs
left; they still have restaurants, cafés here⁽²⁴⁾.*

If the Arab merchants established in Guangzhou have abandoned Tianxiu Building, relocating to other buildings on the same or a neighbouring island, the Arab clientele continues to frequent the tower and, in particular, to conduct their business in the cafés on the ground floor. The African trading companies share the upper floors offering, in apartments of around 150 square metres reconfigured as office and sales space, an incalculable number of recommendations. Just to take one example, an inventory conducted at Mr D's, in the room dedicated to household appliances, revealed: potato mashers, juicers, food mixers, hair-dryers, irons, electric toothbrushes. In another room, a multitude of samples of household goods (office, bedside and garden lamps, door locks, ironing boards, scales, china and plastic crockery) fill shelves and tables, alongside food products (tea bags, oil, rice, tinned food) and toys. Clothes, shoes and bags as well as televisions and hi-fi equipment are all concentrated in a third room. Finally, a last room collects on clothes racks copies of African *pagnes*, from wax to *basins* (damask fabric) and embroidery. In addition to placing his order, the client can in this space, both cosy and high tech at the same time, make use of the Internet, book air tickets, carry out customs procedures for the purchased products and take advantage of consolidation operations.

22. Interview with S.N., Togolese merchant, July 9th 2006.

23. Interview with P.F., Ghanaian merchant, Guangzhou, July 11th 2006.

24. Interview with A.K., Malian merchant, Guangzhou, July 11th 2006.

The contrast is thus striking between the towers where the activity is structured exclusively around trade according to the logic of the trading centre and where a homogenous population with shared objectives comes together, under strict surveillance, and the exterior of the buildings. In the streets, Cantonese at work criss-cross with Africans waiting for a taxi, while Chinese beggars grab positions attracted by the imagined riches that transit through this new economic focal point. The Africans encountered talk of compatriots who are said to have been recent victims of aggression and affirm at the same time that identity checks on the sub-Saharan communities have been stepped up. The evidence suggests that their visibility is growing in Xiao Beilu, where new arrivals are coming to join their compatriots who have already established themselves. Everyone now knows that money circulates in this hotbed of international trade. Is there not a risk, in the long term, that the insecurity suffered by the Africans, which already seems a reality, will be amalgamated with the staging of an insecurity, linked to the African presence, that can already be seen to be burgeoning⁽²⁵⁾? Some have come up with the hypothesis that the forthcoming arrival of the metro⁽²⁶⁾ in the district, which should see its land values rise and prompt its re-designation, could well spur the local Chinese authorities into using this argument to justify their urban planning interventions.

In conclusion

While China, under cover of the “win-win” ideology, is multiplying its economic agreements with the countries of Africa, with their wealth of hydrocarbons and other natural resources, and offering its cheap consumer products for the mass market, the African merchants, for their part, are extending to China their transnational networks that they have woven for a long time now. In a way similar to the first colonists, these businessmen from sub-Saharan Africa are exporting their experience and abilities to unknown shores as they establish themselves there. They are creating trading posts in the cities of Hong Kong and Guangzhou and benefiting from the services offered by the local, regional and national authorities. At the opportune moment, even before China’s accession to the WTO, they tapped in these trading places products manufactured in the hinterland to fulfil the demand of their African clientele. Trading post or reverse trading post? On the evidence we have seen, and all things being relative, it cannot be concluded that these African merchants are colonising China even if they are participating, from the bottom up, in the animation of certain

business districts. If Hong Kong seemed to them, for an initial period, an open city, more internationally anchored and offering a liberal, less restrictive framework, Guangzhou has gradually tempted them thanks to its proximity to the production sites located essentially in free zones. But today, the factories are not only gearing down but are also being established in other regions of China. From now on, textiles will be produced in the inland Chinese provinces, and Shenzhen is being transformed into a gigantic specialised workshop for the manufacture of televisions, computers and electronic game consoles. African merchants have already spread out to the south of Shanghai, to the city of Yiwu (Pliez, 2007) which is regarded as the new “supermarket of China-Africa”⁽²⁷⁾. In Guangzhou, regulations are slow to loosen up with regard to foreign merchants, who cannot import merchandise nor benefit, as a whole, from the support of the local banking structures. On the other hand, despite the efforts dedicated by the Chinese government to modernising the transport infrastructures, both the airport and port of Guangzhou will need time to be able to rival those of Hong Kong. This context undermines the role of Guangzhou in the merchant mechanism structured by the Africans as it undermines the inclusion of these foreign merchants in the city. If some envisage a retreat to Hong Kong or a new departure to far more promising places particularly in the province of Zhejiang (Guiheux, 2007) or even to the more southern countries of Asia, others are striving hard to legitimise and add value to their presence in Guangzhou, planning in particular to create an African business association. In this context of rapid restructuring, where the Chinese cities may find themselves in competition, the local public authorities will be forced to improve the conditions under which they offer a reception to their commercial guests. •

• Translated by Nick Oates

25. In the interviews conducted with Chinese intermediaries, xenophobia is a recurring theme. Either those interviewed themselves hold racist views on the practices of their employers, which they did not spell out in so many words but for which they sought our complicity and support, or they report comparable xenophobic remarks expressed, in other circumstances, by their Chinese compatriots.
26. The Guangzhou metro came into service in 1999. It currently has four lines.
27. “Yiwu, le supermarché de la Chine-Afrique”, M. Sztanke, A. Lewkowicz and P.-L. Lacombe, ARTE GEIE / Ligne de Mire Production, France, 2006; cf. also the article by Yue Lin (2006).

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China Analysis

Les Nouvelles de Chine

This section, prepared by the Asia Centre (www.centreasia.org), draws mainly on the press in Chinese, aiming to reflect the point of view of the People's Republic of China on international questions and issues related to Greater China.

Origins and powers of the new rich

Compiled and commented by Camille Bondois based on:

- Unsigned article, "Private business people acquire more influence in China," *The People's Daily*, 13 August 2006
- Han Fang Ming, "The new social responsibilities of the business community," *Nanfang Zhoumo*, 26 October 2006
- Lie Yin, "90% of wealthy people in China are the children of top civil servants," *Singtao Daily*, 19 October 2006
- "China's first national survey of the 'new middle class,'" 9 September 2006

Nearly thirty years after the beginning of China's economic opening-up, the fruits of the reforms launched by Deng Xiaoping are becoming apparent among the people themselves: China now has a significant number of very rich people, who regularly make headlines in the Chinese and overseas press. Every year, in China and abroad, new assessments and studies are published on this new social class that, thirty years before, hardly existed at all within the Chinese social system, and had no political legitimacy. Who are they? How have they become so rich, so quickly? What power do they really exercise within society? What commitments do they have? Those are the questions being raised by the Chinese press, which is at the same time fascinated by, and critical of this section of the population. The new rich are the product of economic development, reflecting the most conspicuous aspects of growth and its most perverse and obscure aspects as well.

The rise of the private sector

Chinese journalists seem of one mind in linking wealth with the rise of the private sector. Deng's reforms enabled private enterprises to proliferate and flourish in a now favourable environment. As *The People's Daily* reminds its readers, in the nineteen seventies the word "private" was still taboo, being considered as tainted with capitalism. And yet, gradually, the attitude towards the private sector has evolved, to the point of being completely reversed. In the official documents of the Chinese Communist Party (CCP), the private sector was seen at first as "a supplement to the state sector",

then as "an important part of the economy" and finally as "a basic element in the economic system". So the private sector has now acquired real legitimacy: the Party and consequently the government can no longer ignore the private sector's contribution to growth, among the clearest signs of which was Jiang Zemin's "Theory of the Three Represents," first enunciated in 2001.

The greatest number of Chinese businessmen to have made their fortunes are to be found in the key sectors of Chinese development. Finance, property, foreign trade and construction have been particularly profitable.

From this burgeoning private sector, a number of individuals have clawed their way upwards; a class of wealthy people has gradually emerged, seeking to make its voice heard on the political stage. It is a class that has become an essential and influential element within society and the political class.

Top leaders' children

Yet, while the private sector has enabled some to make their fortunes, the Hong Kong newspaper *Singtao Daily* reveals that actually, few are self-made men. Indeed, the paper has published a survey carried out by agencies within the Research Centre of the State Council, the Research Centre of the Party School and the Chinese Academy of Social Sciences (CASS). The survey concludes that, of the thousands of rich Chinese people, 90% are the offspring of senior officials.

More specifically, *The International Manager* has published a report showing that, in March 2006, 27,310 people had capital assets worth over 50 million yuan, and that

3,220 people had amassed fortunes worth over 100 million yuan. Of the latter, 2,932 are the children of senior government officials.

These wealthy people live mainly in the eight most flourishing Chinese provinces, among them Canton (1,566 people), Shanghai (225 people), Peking (195 people), Jiangsu (172 people), Shandong (141 people) and Liaoning (79 people).

Not only have the new rich amassed a total capital of nearly 200 billion yuan but they also occupy the top corporate jobs in the key sectors of China's burgeoning economy: finance, real estate, construction and foreign trade.

Furthermore, the survey reveals that the biggest enterprises in the country are managed by the children of top officials. For example, in Canton, the 20 leading real estate companies belong to the offspring of government officials. In Shanghai, for nine out of the ten largest real estate companies, it is the same story. In Jiangsu, the 22 biggest real estate companies and the 15 biggest construction companies belong to people whose fathers occupy or have occupied posts such as Vice-Governor of the province, or provincial deputy to the National People's Congress, or Vice-Secretary of the Provincial Committee of the Communist Party, or President of the Provincial Court . . . the list goes on.

According to the *Singtao Daily*, which speaks of a class that is bureaucratic and capitalist at the same time, wealth depends on the power wielded by the family, whether it is legal, illegal or "apparently legal" (有合法的, 有非法的, 有合法下的非法所得). In present-day China, some posts are particularly prized and are good ways of acquiring wealth: exercising control over imports and exports or over foreign investment, managing bank lending, assigning public works contracts, or controlling financial speculation.

To land a contract or secure planning permission for a building project, it is essential to have political support. Similarly, local officials are dependent on financial support and investment from private entrepreneurs. There is thus no clear dividing line between political power and economic power.

The development of special interest groups and the battle for influence

This mechanism for generating profits, in which public and private affairs are intermingled, has favoured the formation of special interest groups aimed at exerting influence over political decision-makers and legislators.

Special interest groups are so widely spread in China that the authorities, since the Sixth Plenum of the Sixteenth Congress of the Communist Party, have adopted measures designed to prevent them from destroying the social order.

Singtao Daily cites an article in the official newspaper *Liaowang* dividing interest groups into three main categories.

The first category has to do with foreign trade. It brings together the National Chamber of Commerce and the China Association of Enterprises with Foreign Investment. The article shows that this group's members go in for extensive lobbying within the political class. They "buy" or make use of the children of government officials; they recruit the leaders of departments, civil servants, as "consultants" to official bodies; they finance research centres for ministries and commissions, providing experts who will fight for their interests. They use all possible channels to exert influence upon political decision-makers and to bend the legislation to their own ends.

The second category is of the very large state enterprises enjoying monopoly status in the key fields of finance, energy, transport and construction. They seek to defend their advantages by recruiting or bribing politicians or intellectuals as spokesmen, so as to influence and control public discourse in their favour.

The third category is the heads of private enterprises in various fields of activity. They scramble for posts as deputies to the National People's Congress or to the Chinese People's Political Consultative Conference. Their aim is to make names for themselves on the political stage. Those who fail to land these posts will pay experts to exert corrupt influence on their behalf over the political decision-makers.

Thus, in 2005, as *The People's Daily* points out, among the 2,900 deputies of the National People's Congress, more than 200 were private businessmen.

Private entrepreneurs are now seeking to make themselves heard, and to influence decision-making and legislation; they are demanding political power.

And even though Hu Jintao and Wen Jiabao do attempt, as part of their policy of adjustment and control, to limit the influence of these interest groups, which unite politicians and businessmen around their shared interests, their efforts appear fruitless faced with the enormity of the phenomenon. In trying to restrain the surging property prices, as the *Singtao Daily* emphasises, Hu Jintao caused a chain reaction: the real estate company bosses joined forces with civil servants, the media and the research centres to swamp public discourse on the real estate problem and distort the regulation policy.

Yet, while the *Singtao Daily* uncovers the darker aspects of Chinese power, the corruption and the struggle for influence, it nonetheless issues a warning to Hu over his adjustment policy: the special interest groups are the by-products of growth, and seeking to stop their activities would amount to renouncing the reforms and reversing the course of development. The consequences for China, economic and political, could be disastrous.

Social responsibility

Opening up in parallel with these political and economic rivalries is a path still mostly unexplored among China's private enterprises and the new rich: social commitment.

Last October, a meeting was organised to found the China Corporate Social Responsibility (CSR) Alliance. The participants included IBM and Nokia, among the multinationals established in China and Chinese firms such as China Merchants Bank, TCL and the insurance company Ping An.

This unprecedented event, as covered by *Nanfang Zhoumo* (*Southern Weekend*), gives voice to the social commitment of prosperous Chinese companies, on the model of the charitable networks set up by big international companies (for example, the Global Leadership Network in which IBM and General Electric are prime movers).

Unlike those CEOs who meet to play golf, this alliance of businesses has a far more humane vocation: for while China now boasts a great number of rich and powerful companies, its social problems are no less numerous, as *Nanfang Zhoumo* indicates, raising the problem of the persistent lack of social legislation. Chao Fangming deplores the fact that, for example, some measures offering sustainable development are relatively overlooked by companies, measures such as saving energy resources and protecting the environment, while others are still ignored: he says that the right to work is scorned across most of the country and even economists show scant interest in it.

Even so, *Nanfang Zhoumo*, while it does see this alliance as a starting point, is still uncertain: what will Chinese enterprises really achieve in this area? Will their desire to act bear any fruit? Is it just one more bluff, so that firms can burnish their images?

Conclusion

Over these past thirty years, China's private entrepreneurs have developed from the embryonic stage to a maturity that is now encouraging them to redefine their role in society.

The Chinese state must now take account of a new social and political force: the businessmen and especially those who have become wealthy. Yet, the social composition of this new class is very ambiguous. These entrepreneurs have frequently sprung from the families of senior government officials, families with undeniable political power. So those in power, economic or political, are interdependent, which has major implications for China: the interest groups form complex networks linking civil servants, intellectuals and businessmen.

With the support of these interest groups, the businessmen having for a long time been excluded from the political arena are reckoning on making their voices heard, on exerting strong influence over political decisions and tilting the legislation towards their interests.

In parallel with these struggles for power, some enterprises are seeking to make a social contribution. In reaction to mounting criticism for their lack of responsibility to society, they are joining forces to devise a model for commitment, so that their wealth might benefit the whole community. Will this group succeed in making its voice heard?

The ultimate question might be this: does the development of the private sector and the creation of special interest groups mark the birth of new forms of power in China, forms that might come to rival the monopolistic powers of the Communist Party? •

China practices “ecological colonialism” at its own expense

Compiled and commented by Michal Meidan based on:

- Chen Shanzhe, “Entrepreneurs on the cyclic economy: waiting for real measures,” 21 Shiji Jingji Baodao, 28 November 2006
- Zhou Jigang, interview with Pan Yue, “The rich consume and the poor suffer from pollution,” 27 October 2006
- Unsigned article, “China develops renewable energy systems,” The People’s Daily, 2 November 2006
- Shao Jianrong, “Why the officials responsible for environmental regulation cannot find any way out of this mess,” Fazhiwang, 3 November 2006

How can China cope with the environmental problems it faces? The Chinese press is full of questions about protecting the environment, expressed in a variety of forms and slogans such as the “cyclical economy” (循環經濟, *xunhuanjingji*), the “conservation-minded society” (節約型社會, *jiyuexing shehui*), the “energy-saving economy” (節能經濟, *jienerg jingji*), or the “scientific development” (科學發展, *kexuefazhan*): all the contemporary political jargon carries an environmental label.

So the urgency of the situation seems to have reached political and popular awareness in China. But it is still not clear how the central government’s ambitious initiatives can be put into effect or how the obstacles can be identified. Of course, the experts are pointing to a range of problems, but these often boil down to the need for governmental action.

The selection of articles cited offers a variety of points of view: those of entrepreneurs, local authorities, the Finance Ministry and the State Environmental Protection Administration (SEPA). The result reflects economic and political interests at different levels, but does not readily lend itself to any unanimity of view. What does come through, nevertheless, are the fault lines in public policy, the legislative system and the funding mechanisms.

According to Pan Yue, Deputy Director of SEPA, protecting the environment is compatible with a socialist system of government, and even favourable to it. Drawing support for his thesis from Marx and Engels, he asserts that a socialist government is in a better position to balance the need for economic growth with that for sustainable development, since social equity lies at the heart of both. Capitalist governments have not only developed industrialisation at all costs (albeit at a far slower rhythm than that experienced in China) but, now that they have become aware of the environmental effects, they have also adopted a sort of “environmental colonialism:” they export their most polluting and energy consuming industries to the developing countries.

China, in its interior, is living through a comparable phenomenon: the polluting industries migrate from east to west,

and from the towns to the countryside. “The rich consume and the poor suffer from pollution,” Pan Yue says. As a good official, he supports the government’s efforts and considers that “scientific development” offers the right answer to Chinese problems. For too long, China has imitated the Western model (at an accelerated pace); but the model is ill-adapted to China. Contrary to some people’s thinking, scientific development is not merely a change in production methods and growth: it represents a shake-up in economic and industrial practices: “It is a new civilisation,” that China will be trying out between now and 2020. Yet, Pan Yue does not explain what “scientific development” means in terms of real measures; nor does he say how these measures go beyond the economic field and influence the political and social fields so as to end up with a new civilisation.

Thus, having created the term “socialist environmentalism,” Pan Yue adopts the stance of Party theoretician; he does not spell out the problems that might arise between now and 2020, or those already in evidence.

In the field of public policy, the entrepreneurs gathered last year at Boao Forum for Asia, cited by Chen Shanzhe, recommended that the government should make a real commitment to protecting the environment, introducing the “cyclic economy” and developing renewable energy sources. To encourage enterprises towards less polluting production methods, a real system of initiatives will be necessary alongside a real system of penalties for cases of default. The way things are currently, enterprises have no financial motivation for changing their production techniques, since the fines they risk amount to no more than 600 yuan less than the cost of making changes in equipment and production technology.

Furthermore, measures and standards (such as those devised for new buildings) are imprecise and difficult to adopt. The cited experts are unhappy that the government’s “tangible hand” is failing to direct the invisible hand of the market. Written descriptions of “the cyclic economy” are at best “an educational tool, which is not bad, designed to

spread the idea of energy conservation” (一本不錯的宣傳節能觀念的教材, *yiben bucuo de xuanchuan jieneng guannian de jiaocai*).

Similarly, among the deputies to the National People's Congress, according to *Fazhiwang*, only two represent the “environmental protection system”⁽¹⁾. The result is that [government] departments in charge of the protection of the environment do not have access to the decision-makers⁽²⁾.”

All the same, at the local level, decisions are taken in accordance with the wishes expressed by local leaders. Surveys carried out by seven different departments of the State Council have apparently revealed that extensive investment is still put into the poorest Chinese provinces, despite the contradiction implied by the “Three No's”, one of which prohibits investment in polluting industries. Indeed, a local official explains to the reporter that “standing up for the law gives you no guarantees, but standing up for your own manager does guarantee protection.” Faced with their hierarchical superiors, officials are powerless. If the central authorities gave them some measure of support, they say, they would be less dependent on the local administrative hierarchy.

Herein lies the weakness of the legal system, a problem mentioned by all. Industrial policy and environmental policy often conflict, but the central authorities are powerless and the legal system provides no adequate answers.

The experts come back to the system of initiatives. The

introduction of “clean” production methods ought to be made profitable for enterprises, hence the necessity for public funding for replacing equipment as well as for providing new energy sources or technological development.

Su Ming, Deputy Director of the Research Institute for Fiscal Science at the Ministry of Finance, speaks of the creation of a new fund for renewable energy sources, but complains all the same about the ineffectiveness of government activity and the inefficiency of the system for fiscal support. The high costs of investment and electricity supply inhibit the development of alternative sources of energy and, for lack of new funding (subsidies, grants or loans on more flexible terms), the primacy of fossil fuels in the country's energy provision cannot be lessened. “If no one expects any increase in the contribution made by renewables to China's energy needs, their attraction can only diminish.”

Finally, the question of technology remains unanswered. While the entrepreneurs consider, surprisingly, that this is “a question for the engineers,” Su Ming takes a contrary view. He sees it as the business of the tax authorities to encourage local investment in new technology.

If the socialist system seems to lend itself to the protection of the environment, can the same be said of a bureaucratic system? •

• Translated by Philip Liddell

1. The term is still rather vague, and this assertion probably does not allow us to realise how many people do support “green” causes at the NPC, even though one must bear in mind that the Congress already has a limited role in the Chinese political system.
2. Which is perhaps not quite true: the Director of SEPA is thus a member of the top committee on energy, a committee headed by the Prime Minister Wen Jiabao.



THE FRENCH CHAMBER
OF COMMERCE AND INDUSTRY IN HONG KONG

CHAMBRE DE COMMERCE ET D'INDUSTRIE FRANCAISE A HONG KONG

FRENCH CHAMBER OF COMMERCE AND INDUSTRY IN HONG KONG

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Book reviews

GÉRARD HENRY

This biographical dictionary of modern and contemporary Chinese artists of the twentieth and twenty-first centuries is a reference work that has been keenly awaited by professionals and admirers of modern Chinese art alike. At a time when China is fascinating the world, when its contemporary artists are on show in all the biennales and major exhibitions of the planet, when the auction houses are organising special sales in

New York, Hong Kong and London, it is increasingly difficult to identify those artists who are trying their chances on the international art market in ever increasing numbers each year. The limited number of Chinese family names makes identification even more difficult and, as the art lover, the exhibition commissioner, the critic and the collector of Chinese art are generally not speakers of Chinese, they quickly get lost among all those Wongs and Huangs, Chans and Chens, whose alphabetic transcription changes depending on whether they come from the north or the south, from Beijing or Canton. This dictionary is the updated version, considerably revised and greatly enriched, of a biographical index of 800 Chinese artists that the author Michael Sullivan had published in 1996 as an appendix to his work *Art and Artists of Twentieth-Century*

China. This new version contains about 1,800 names followed by a succinct biographical entry, indicating, wherever possible, the year and place of birth, education, specialisation, places of residence in chronological order, positions held, travels, significant works and exhibitions of these artists. The

names are classified alphabetically by their romanisation (Mandarin and Cantonese for those from the south) with their Chinese characters.

The author, Michael Sullivan, is one of the major Western pioneers in the field of modern Chinese art history and criticism. After graduating from Cambridge in architecture in 1939, he left for China during the War with the International Red Cross; there, he met his wife Khoan, with whom he was to befriend many Chinese artists who had returned from abroad or would later do so, such as Zhang Daqian, Lin Fengmian and Pang Xunqin... These artists and those who followed them were to give the couple numerous works which would gradually constitute a collection, a catalogue of which Sullivan published in 2001 as *Modern Chinese Art: The Khoan and Michael Sullivan Collection*. It was while he was in China in the 1940s that he undertook an in-depth study of traditional Chinese art, before going on to write a doctorate in the history of Chinese art at Harvard. He subsequently taught at the University of Malaysia, where with Khoan he founded the University's art museum; he returned to London in the 1960s to take up a position at the School of Oriental and African Studies, and then went on to become Head of the Department of Oriental Art at Stanford from 1966 to 1984, finally settling in Oxford where he is Fellow of Saint Catherine's College. His work *Chinese Art in the Twentieth Century*, published in 1959, was the first critical study on the subject.

Although the author is an expert in his subject, it must be said at the outset that this latest publication is by no means a treatise on art but a straightforward biographical index for consultation, which will be of no use to those wanting to find out about modern Chinese art, as it contains only scant indications about either the nature of the works of these artists or the movements or schools to which they might belong, apart from an



Michael Sullivan,
Modern
Chinese Artists.
A Biographical
Dictionary,
Berkeley, University
of California Press,
2006, 250 pp.

occasional and very succinct description of their work. Michael Sullivan also makes it plain in his preface that the period covers the artists who were active during the twentieth century (even if they were born in the nineteenth century) and the early twenty-first century and that calligraphers, too numerous, have been left out of the work, except those who also engaged in painting. Furthermore, while it was begun thanks to his efforts, this is a collective work, for which many correspondents sent him information about the youngest artists, chosen on the grounds of their appearance in various exhibitions, biennales or publications in recent years. Depending on the circles in which these correspondents move, this leads to oversights or imbalances, especially so in the case of the Hong Kong artists, with the absence of ceramic artists like Fiona Wong, Chris Lo and Annie Wan who are contemporary artists in the fullest sense and perhaps among the best representatives of Hong Kong art. Also very regrettably missing from the work are cartoonists, be they artistic, satirical or political, like Zunzi from Hong Kong, who is nonetheless very much present in many contemporary art exhibitions, while some mainland Chinese cartoonists are included. It is clear, however, that this kind of work is subject to controversy, and the author does indicate in his preface its subjective character, taking full responsibility for its choices.

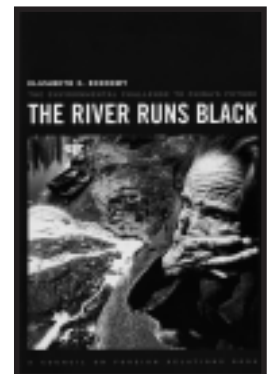
Overall, it is the notes on the early twentieth century artists that are the best documented and the most interesting, being no doubt the work of Sullivan himself. The listing of the artists' particular field is indicative of the changes undergone by modern Chinese art. Among the older artists the greatest number are painters of *guohua*, a term designating traditional Chinese landscape painting. What is interesting, however, is that these painters disappear from the index of the younger generations, not that they have ceased to exist, but that they are no longer on the crest of the wave or, for the more audacious among them, are to be found under the headings of experimental calligraphy or new ink painting. Moreover, classification is difficult, not to say impossible today, with most artists working in mixed-media, moving between performance and installation, photography and painting. Moreover, photography remains outside this index apart from a few exceptions—photographers who combine their work with another medium. In a general way, there is a blurring of the boundaries between particular fields of specialisation.

The work also contains more than seventy portraits and photos and a specific index of the major Chinese schools and academies of art with details of their development and name changes over the course of history. In a nutshell, this is a small manual that will prove very to be useful to the point of being indispensable. Finally, an additional work that researchers, critics and art professionals alike might find useful is the extraordinary bibliography compiled by the Australian scholar John Clarke, entitled *Modern and Contemporary Asian Art. A Working Bibliography*, which can be viewed on the University of Sydney's website, on the author's homepage, where one can find references to virtually everything that has been written on the subject in English. •

• Translated by Peter Brown

WEIYONG YANG

Both these works, as suggested by their titles, focus on the environmental challenges confronting China and raise the issue of the sustainability of Chinese economic development. They share a common objective, that of addressing the question of the environment in China in the most comprehensive way possible, by giving, in order, an account of the current situation with regard to the ecological problems, the administrative and legal context of environmental protection, the ecological movements and the international co-operation initiatives in terms of environmental protection. Elizabeth Economy's work provides an integrated, coherent approach, while the collective work edited by Kristen Day is composed of more or less stand-alone analyses by contributors from a range of backgrounds: academics, lawyers, environmental consultants, scientists and militant ecologists. At the same time as analysing the social, political, economic and environmental forces at play, both works are complementary of each other in the



Elizabeth C. Economy
The River Runs Black : The Environmental Challenge to China's Future,
Ithaca, Cornell University Press, 2004, 368 pp.

way they bring out the tensions between economic development and environmental protection. This complementarity is reinforced by the contribution made by Elizabeth Economy herself to the collective volume (Chapter 4).

The opening chapter of Kristen Day's work, written by Cynthia Cann *et al.* offers an overview of the environmental problems and challenges confronting China in a context of strong economic growth, particularly since the implementation of reforms in the late 1970s. Similarly, based on a detailed case study of the chronic pollution of the Huai river caused by thousands of small enterprises, especially in the paper manufacturing sector, the first chapter of Elizabeth Economy's work puts into perspective the conflict, on the one hand between the imperatives of economic development and the need for environmental protection, and on the other between the management practices of the central government and of the local authorities in the case of an ecological problem. The analysis is then extended to cover the country's other major environmental questions such as deforestation, desertification, the scarcity of water resources and air pollution in urban areas. Economy explains environmental destruction within the context of a traditional Chinese culture which paid scant respect to nature, as well as of a long history of exploitation of natural resources to the detriment of the environment (Chapter 2). However, both works are in agreement by highlighting economic, institutional and political factors as the main causes of the increasing speed of deterioration of the environment in contemporary China. Economy's Chapter 3 makes an assessment of the economic and health costs caused by damage to the environment that are thought to amount to 8%-12% of GDP annually. She also points out that environmental problems are now a serious threat to social stability, which the Chinese government is trying to preserve at all costs, given the harm in terms of public health and mass migration brought about by pollution and environmental degradation.

Faced with these challenges of various kinds—ecological, economic, social and political—the Chinese government has gone to great lengths to protect the environment by establishing a formal administrative and legal structure and by strengthening the role of civil society and foreign players. These efforts make up the major theme of both works and each devotes four chapters to it (chapters 4 to 7 in Elizabeth Economy's book and chapters 3 to 6 in the collective work). Chapter 4

of Elizabeth Economy's volume and Chapter 3 of Day's, written by Ferris Jr and Zhang, recount the central government's efforts to put in place an administrative system for managing environmental affairs since China's inaugural participation in the United Nation's 1972 International Conference on Human Environment. After many ups and downs, these efforts resulted in 1998 in the birth of the National Bureau for the Protection of the Environment (*Guojia huanbao zongju*), the highest government body (with ministerial rank), specialising in the management of environmental affairs. The efforts to establish a comprehensive legislative framework for environmental protection are also noteworthy, as is attested by the proliferation of laws, rules and standards passed by the National Assembly, the State Council and the relevant Ministries dealing with these environmental issues. However, the fourth chapters of both works, written by Elizabeth Economy, highlight the gap that exists between legislative developments and the actual application of the laws and rules. For administrative, economic and political reasons, the environmental decision-makers have neither the administrative powers nor the financial means to have the laws and rules applied and respected, as these rules and laws are in any case often poorly defined or quite simply inapplicable. As both works point out, the devolution of responsibility for the environment to local governments has made the protection of the environment locally even more complex. The local offices for environmental protection, which depend on the local governments for their budget, salaries, housing for employees, premises, etc., often give in to the wishes of the local authorities who tend to sacrifice the environment in favour of economic growth. Thus, a good many local environmental protection offices are unable to perform their role independently in terms of supervision and control of pollution in enterprises, by dint of their weak administrative powers, their limited budget, as well as lack of equipment and poor training of their employees. Moreover, decentralisation lies at the root of significant regional disparities in terms of environmental protection at the local level. Elizabeth Economy thereby shows that rich regions, like the



**Kristen A. Day (ed),
China's
Environment
and the
Challenge of
Sustainable
Development,**
New York, M.E.
Sharpe, 2005, 293 pp.

municipalities of Shanghai or Xiamen (Fujian province) allocate significantly more financial resources than do the poor regions like the province of Sichuan where environmental protection is not yet a priority for the local authorities.

In this context of decentralisation, the central government basically relies on campaigns of mass mobilisation, an old practice inherited from the bygone dynastic era and which reached its climax under Mao (1949-1976). Among these campaigns can be mentioned the National Programme for the Protection of Natural Forests (*Tianranlin baohu gongcheng*) set up in 1998 to fight against deforestation, the National Programme for Reconversion of Arable Land to Woodlands and Grasslands (*Tuigeng huanlin huancao gongcheng*) implemented since 1999 to combat soil erosion, and the major works projects underway for redirecting waters from the south to the north (*nanshui beidiao gongcheng*). For want of a participatory approach or one taking into account local conditions of application, these campaigns often encounter difficulties when it comes to implementation and have had only qualified success. Elizabeth Economy particularly emphasises the discrepancy between the formulation of central environmental policies and their application, through the case of the recent Development of the West campaign (*Xibu dakaifa*). Indeed, although protection of the environment is listed among the six basic principles of this campaign, the National Bureau for the Protection of the Environment does not appear as one of the twenty-two government agencies responsible for the programme's implementation. Faced with the scope of the environmental challenges, the Chinese government is calling on all internal and external forces dedicated to the cause of environmental protection. In particular, it has delegated a part of the responsibility for the environment to civil society by encouraging the development of environmental NGOs. Chapter 5 of Elizabeth Economy's work brings out the growing role, both centrally and locally, of these various Chinese NGOs in the preservation of nature and environmental education, in spite of severe restrictions imposed by the government on their existence and spheres of activity. In the context of China's opening up to the outside and the globalisation of environmental problems, various forms of international co-operation have also rapidly developed with all sorts of foreign players, whether they be national governments, international bodies like the UN, the World Bank and the Asian Development Bank, international NGOs or multina-

tional firms (Chapter 6 by Elizabeth Economy and Chapter 5 by Turner and Zusman in Kristen Day's edited volume). Both works seem to show that co-operation between China and its foreign partners are fruitful, most notably in four areas: the planning of environmental policies, the capacity-building for environmental management, technology transfers, and the tightening of environmental requirements in the context of trade agreements such as those of the WTO. Elizabeth Economy takes the analysis further in her Chapter 7 by presenting the experiences of other countries that could be useful for China's sustainable development, those that have managed to reconcile economic growth and environmental protection.

Similarly, the final part of Kristen Day's work (chapters 6 to 9) offers a series of case studies that enable her to illustrate on the one hand the scope of the environmental problems in China as well as the economic and institutional constraints in play, and on the other the central role played by Chinese social actors and foreign partners in environmental protection. Chapter 6 by Morgenstern *et al.* brings out the co-operation between the Asian Development Bank and the municipal government of Taiyuan (the capital of Shanxi province) in the establishment of a system of emission trading quotas aimed at reducing atmospheric pollution. In Chapter 7 Wang and Li bring out the environmental implications of the evolution in the structure of the country's energy consumption and advocate a reduction in the consumption of coal in favour of cleaner sources of energy. Chapter 8, by Millison, recounts the development in the treatment of dangerous waste materials and the gradual introduction of a "clean production system," by placing greater importance on improving management than on technological progress. Finally, Wang and Wu (Chapter 9) study the relations between human activities and desertification in northern China, pointing out the need for a participatory approach and a strengthening of the legislative and judicial system in the fight against desertification.

In conclusion, both these works offer interesting analyses of the issue of the environment in China, along with illuminating analytical and empirical case studies. It is worth noting, however, that while the contributors to the collective work edited by Kristen Day mostly confine themselves to environmental themes, Elizabeth Economy in addition addresses politically more sensitive subjects such as the relations between the effectiveness of environmental protection and democracy,

the possibility for political changes in China brought about by foreign influence, or the activities of environmental NGOs, some of which are beginning to make political demands. However, these political changes are unlikely under a totalitarian regime which gives no real signs of weakness, and are not necessarily desirable given the lack of any general awareness among the population of the need for environmental protection. Indeed, as Lee shows in Chapter 2 of Kristen Day's work, many opinion polls reveal a very low level of environmental awareness among the general public in China and the population's lack of interest in the environment compared to its major concerns in terms of income, employment and education. In this context, the environment could be further sacrificed in favour of economic development under a democratic regime. Consequently, at the present time, it seems more important for environmental NGOs and activists to concentrate their efforts on the environment itself and promote education about it rather than call for political changes. Finally, although both these works offer few concrete solutions to the current ecological crisis, they comprise two key reference works for knowledge about and an understanding of the environmental challenges and the system for environmental protection in China. •

• Translated by Peter Brown

JEAN-PIERRE CABESTAN

The central thesis of this book is that beginning in 1996 China put in place a *grand strategy* designed to create an environment

that would be favourable for its economic development and to reduce the risks of a backlash to its rise as an economic, diplomatic and military power. In fact, many changes set out by Avery Goldstein—particularly the maintaining of very close and, in the end, relatively stable working relations with the United States—are testimony to the solid foundation of his analysis. However, this book also raises quite a few questions, both about the precise date of this new strategy and the nature of the changes observed in Beijing's foreign and security policy as a result.

The author's demonstration is in many respects convincing. It is true that 1996 was the climax of Sino-American tension over Taiwan and more broadly of the difficulties between China and the West in the post-Tiananmen period, and the beginning of a new approach by Beijing to its relations with the outside world. In its realisation that the world was going to remain dominated, at least militarily, by a single superpower—the United States—for a long time to come, and would consequently evolve towards multi-polarity more slowly than it had hoped initially, that is, after the collapse of the Soviet Union, China decided to open up more markedly to multilateralism and to establish with the other major countries (Russia, France, United States) or groupings of States (European Union, ASEAN) special partnership relations.

It is abundantly clear that the growth of military pressures on Taiwan, the many gesticulations and shows of military muscle by the People's Liberation Army (PLA) in the South China Sea and the acceleration in the modernisation of Chinese defence system,—all of which was supported by a rhetoric that was at once anti-Western, nationalist and irredentist—could but favour the rise of the “Chinese threat” syndrome, not only in Japan but



Avery Goldstein,
Rising to the
Challenge.
China's Grand
Strategy and
International
Security, Stanford,
 Stanford University
 Press, Studies in
 Asian Security,
 2005, 274 pp.

also in the United States, South-East Asia and to a certain extent Europe. As Goldstein well shows, the tightening of strategic links between Washington and its main allies in the Asia-Pacific region (Tokyo and Canberra in particular) has been one of the most direct factors in the “realignment” of Beijing’s international policy.

Why 1996? For the author, the year of the “missile crisis” is also that—inferred—of a reassessment by the Chinese Communist Party of its external strategy. In support of this thesis, Goldstein refers to a number of diplomatic initiatives taken by China in 1996. Among them he cites the setting up by China, Russia and three newly independent Central Asian republics of the “Shanghai group”, the first regional multilateral structure that Beijing not only joined but to which it also gave an impetus, transforming it in 2001 into the Shanghai Organisation for Co-operation. He also discusses a strategic partnership with Russia put in place by China in April 1996, and its intention, which it made public in August of the same year, to sign the Comprehensive Nuclear Test Ban Treaty and its openness to multilateral discussions with ASEAN, particularly concerning the disputed islands in the South China Sea. Mention is also made of Beijing’s attitude, at the time of the Asian financial crisis in 1997, which met with regional approval.

Yet, in spite of all this, we may wonder whether this was a real turning point. Everyone agrees that China’s global strategy has evolved since Tiananmen, and *a fortiori* since 1979 and the start of the reform process. Moreover, through the study of many source documents, analyses by Chinese researchers and interviews conducted in China, Japan and the United States between 1998 and 2003, Goldstein sheds light on a whole set of gradual but profound transformations in Beijing’s policy. These changes underscore both the Chinese Communist Party’s capacity to react and adapt and to initiate a slow but apparently irreversible process of integration into the international community, marked, for example, by China’s accession to the World Trade Organisation (WTO) in 2001. The difficulty in analysis comes from the fact that the actor “China” has not stopped pursuing two fundamental objectives: 1) modernise the country without jeopardising the one-party political system in place today; 2) restore its status as a major power on the international stage. While these two priorities do lead the writer to discuss the relevance, and limits, of China’s Bismarkian tendencies today, they do not

lead him to conclude that the country is a “revisionist power” as opposed to being a supporter of the *status quo*, judging this to be an over-simplified debate.

In fact, it is. Nonetheless, how can an economy which is developing at the pace and to the extent it is in inter-dependence with the outside world remain a power that contributes to the *status quo* (although it is often officially in favour of it)? We see this every day—in Asia, Africa and Latin America as well as in international organisations—as the rise of China directly contributes to changing the rules of play and forces the other powers to adjust their own strategy.

Furthermore, can we say that the “diplomacy of partnerships” heralds a more clear-cut opening up by the Chinese government to regimes that are politically different? This is far from being certain. On the contrary, these partnerships were set up by Beijing first and foremost in the hope of neutralising any direct criticism of its domestic system and of channelling any such criticism into “non-confrontational” dialogues which would allow it to impose both its own view of international relations and its own strategy. It is not surprising therefore that China has experienced some difficulties in establishing such a partnership with the United States (once the Clinton era had passed, this partnership, albeit still “under construction”, was buried).

Finally, this idea of partnerships was put forward by the Chinese government with the aim of finally moving beyond the isolation of the post-Tiananmen period. While they may well have got underway in 1996, they came about under the auspices of diplomatic efforts at reintegration into the international community, which began, multilaterally, with China’s active participation in the UNO negotiations in Paris on the future of Cambodia (1990). Beijing’s signing up to the Non-Proliferation Treaty (1992) or on the contrary the tensions in 1999 (the stalled Sino-American negotiations over the WTO, the bombing of the Chinese Embassy in Belgrade, anti-American demonstrations, Lee Teng-hui’s two-state theory) show that this process of integration is a slow and rocky one.

If there was one identifiable turning-point, it seems to me to have come out of the domestic policy debate during the winter of 1999-2000. Indeed, this debate (to which Goldstein refers, p. 155) led to a change both in Beijing’s international policy and in its discourse. The failure of China’s Taiwan policy (the election of Chen Shui-bian) and the arrival in power of an American president ill-

disposed towards it have confirmed this development. We had to wait until this period for the Chinese government to really abandon a defensive and adversarial posture and to prefer instead a policy of participation and negotiation. Its denunciation of “hegemonism” disappeared from the Communist Party’s charter; its criticisms of the American alliances in Asia and the enlargement of NATO gradually toned down; in place of its policy of accelerating the process of unification was substituted a strategy which made maintaining the status quo in the Taiwan Strait a priority; and above all the great change in its foreign policy style and discourse, henceforth promoting “win-win” solutions and taking a pro-active approach in international fora. It was, moreover, in this context that the short-lived debate over “the peaceful emergence of China” appeared in 2003-2004.

It remains to be seen whether these changes are strategic or tactical in nature. Goldstein suggests that they have an important strategic component, adapting China to the international environment of the post-Cold War era. There has been some adaptation and it would be wrong to underestimate this capacity and talent of the part of the Chinese government. However, the major choices were already made back in 1979. While they were adjusted after 1989, particularly in 1992 with the relaunching of reforms, the dual objectives referred to above remain intact.

Lastly, Goldstein refers little to the internal-external nexus and the multiple economic, demographic and environmental constraints impinging on the Chinese government. Furthermore, these constraints can only take the People’s Republic of China even further from the Bismarkian model, as the challenges to Beijing’s international strategy could well come not from abroad, in particular the United States or Japan, but from within. In other terms, while the Chinese Communist Party has shown an exceptional capacity to adapt to the post-Communist world, it is not certain that it will be able to keep as successfully its stranglehold over the society that it governs and controls.

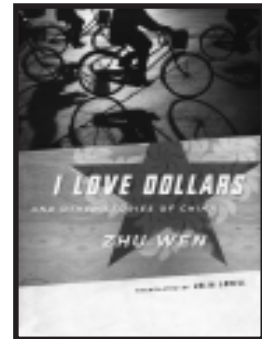
In spite of these reservations, anyone with an interest in Chinese foreign policy has much to gain from the very valuable contribution made by *Rising to the Challenge*. •

• Translated by Peter Brown

SEBASTIAN VEG

Zhu Wen, born in Quanzhou (Fujian Province) in 1967, is a writer of the 1990s whose work is now available for the first time in a Western language, thanks to Julia Lovell’s translation. After studying mechanics, Zhu Wen obtained a job in a thermal power plant, which he left in 1994 to take up full-time writing. A scandalous poet and novelist in the cynical vein of Wang Shuo during the upheavals of the 1990s, he became known to a wider international audience after 2001, when he turned to cinema. He had already authored two scenarios (for Zhang Yuan’s *Seventeen Years*, and *Clouds and Rain in Wushan* by Zhang Ming), when he directed *Haixian* (Seafood) in 2001, which won prizes at the Venice and Nantes film festivals, then *South of the Clouds* in 2004, which received a special prize at the Berlin Festival. While he has said time and again that he has done with literature, a selection of his short stories has just recently been reissued under the title *Dama de yuqi* (*Dama’s tone*).

As Julia Lovell points out in her detailed introduction, the six short stories by Zhu Wen brought together here constitute first and foremost a critique of the China of economic liberalisation where “the social contract—if it ever existed—is now in tatters” (p. xv). The second story “A Hospital Night” illustrates the tensions stemming from the traditional family obligations that reappear in the context of non-existent public services, undermined by the economic reforms. Indeed, hospitals in China for the most part provide only medical care (for a fee), while the costs of food and non-medical facilities for the patients are borne by members of the family, who must take turns at the bedside of the relative. In this story, in order not to be exposed to the criticisms of her family over her divorce, the protagonist’s female friend asks him to play the role of the son-in-law at the bedside of her father, who has had a kidney stone operation at the Workers’ Hospital. The night vigil then takes on the aura of an epic struggle between old Li, who has decided to do everything to make the



Zhu Wen, I Love Dollars and other Stories of China, trans., with a preface by Julia Lovell, New York, Columbia University Press, 2007, 228 pp.

young man's life difficult, and the protagonist who is resigned to seeing that he eats, drinks and urinates (without forgetting to make the most of it by ogling the nurses in the corridors). The hospital room, with its five convalescent patients, also presents a picture of Chinese social contrasts, placing an affluent hypochondriac alongside a retired worker with an inoperable stomach cancer. Each of the patients takes sides in the struggle between Li and his "son-in-law", and the latter's revenge, when he deprives Li of water, asking him to apologise first, cannot fail to delight the reader, however cruel it may be.

Beyond its satirical vein (which is displayed in particular around the introduction of a "pee bottle" under old Li's bed cover), the author exposes the hypocrisy of a family system in which each person makes a virtue of seemingly honouring filial piety at the same time as doing their best to avoid its least pleasant aspects. From this point of view, the text's indulgence on the scatological is nothing new, recalling Mat Fourth satires of the *Twenty-four images of filial piety*, a manual that in one instance extols a son who tastes his father's excrement in order to determine the illness he is suffering from⁽¹⁾. The failure of the local authorities to take care of the sick or the aged makes people dependent on the constraints of traditional solidarity, which is at the same time being eroded by economic liberalism. In addition, beyond any system, it is also the war of all against all that is highlighted by this fight to the bitter end between the unworthy old man and his young warden who, when he finally gives him something to drink, has all the water spat back in his face by way of thanks.

The same subject of clan solidarity in the face of illness can be found in another form in "Wheels", in which the narrator, a power-station worker, is the victim of extortion by a local racketeer who runs a roast goose restaurant, after grazing his grandfather when passing him on a bike in the street. The gangster forces him to pay firstly for a full medical exam for his grandfather, including blood and radiological tests, amounting to 781 yuan then, when the doctor diagnoses stomach cancer, asks him for a full settlement payment of 3,000 yuan, on account of the absence of any social security and his grandfather's state of material destitution. While the family also stands in for the state, which is failing in its duty, it does so in the manner of the mafia, with the restaurant owner terrorising the whole neighbourhood. The exasperated narrator ends up defying the death

threats and takes vengeance by smashing up his enemy's restaurant—and with success, it would seem, since we read at the start of the story, written in the first person, that it all took place "six years ago" (p. 252), and that therefore the narrator survived his rebellion intact.

The fact that the protagonist of "Wheels" is a worker in a power plant means that Zhu Wen is also addressing the decline of state industries, which is at the heart of "Ah, Xiao Xie" arguably the most enigmatic of the collection's stories. The electrical plant where the narrator works is a prototype purchased from the Soviet Union before 1991 and so has never been finished. In this situation in which the factory is in a bad way, different strategies emerge, the most resourceful workers selling themselves to Hong Kong or American companies. The computer programmer Xiao Xie on the other hand is constantly in negotiation, anticipating, then rejecting the management's offer of a termination package, but at the last minute hesitates to give up his medical insurance for a better-paying job. Xia Yuqing, his first room-mate (in the bachelor dorms, another symbol of the socialist world), for his part opts for a mediocre but secure career in the work unit, wondering whether he might not take advantage of the boss's alleged sexual preference for men in order to climb the ladder more quickly. He subsequently seems to transfer his plans for seduction to other colleagues, among them Xiao Xie, who all end up falling out of a window. The very name of Xiao Xie, which, thanks to a play on words in Chinese, is a homophone for sexual impotence, finally becomes the stock expression in the factory for a "loser", and the story thus brings out both the absurdity of life in the state-owned enterprises undermined from within, and the blossoming in this context of all sorts of desires felt to be shameful by the characters.

In "A Boat Crossing", which takes up the stifling atmosphere and the geographic context of the Three Gorges used in the scenario of *Clouds and Rain in Wushan*, the narrator leaves Cape Steadfast, where he is accompanied by two sinister teachers from the local Party school, Chen and Qi, who are connected to him by obscure debts, and embarks on a boat going up the Yangtze River. On it, he shares a filthy cabin with three gangsters who hint that they are carrying a corpse. They are joined by a woman whose face is familiar to the

1. Cf. for example: Lu Xun "How to carry out our role as fathers today", *Selected Works*, Beijing, Foreign Language Press.

protagonist, and who tries to sell him a 17-year-old girl for 4,000 yuan. The bag of oranges in the shape of goose eggs, a local specialty given to the narrator by Chen and Qi as a parting gift, and subsequently looted by everybody, is the symbol of the multiple links of obligation that dog the main character. But when he abandons the bag and his cabin to the woman to seek refuge in a higher class (against payment of course), his new cabin companion, a electrical batteries sales rep named Lin Yicheng and an overweight insomniac, again prevents him from sleeping by an endless monologue on his marital problems (his boss is having an affair with his wife), and finally feeds him rice soup sweetened with fruit. This time, it is the narrator who attempts to limit the relationship within the borders of a monetary transaction, by paying his oversized neighbour 5 yuan for his portion of rice soup, in order to sever the mutual bonds of duty which oblige him to listen, and finally get some sleep. In spite of that, his presence alone earns him the gratitude of Lin who follows him onto land and, through a remarkable set of circumstances, forces him back on board the boat with him to continue the trip. Beyond the undeniable role of money, and the portrait gallery of original characters (typical of the Far West that the China of the Three Gorges is today) who are connected to the narrator through money, it is more broadly the omnipresence of self-interested relations that gives this short story both its diffuse atmosphere of threat and its strain of social critique. Lastly, problematic family obligations are again at the core of the first story in the collection, "I love dollars", in which a father comes to town to pay a visit to his two sons, one a writer, whom he disturbs in full flight in bed, the other a rock musician (named Zhu Wu, which subtly suggests that the narrator is called Zhu Wen). The afternoon that the latter spends in town with his father illustrates the idea of leisure that the son feels bound to get him to enjoy, having his hair dyed black by a female hairdresser from Wenzhou and having him consume all sorts of useless products ranging from a cup of Coca Cola to fake Miao necklaces, before ending up at the movies with two young girls whose presence is designed to liven up the rest of the evening's entertainment. In actual fact, the father steals away, leaving the cinema, and giving the necklace to one of the girls before sending her packing. In the evening, during a new attempt, they end up lacking the money to pay the two girls they bring home, and when, to crown it all, the protagonist asks the woman he regularly sleeps

with to sacrifice herself for his father, he only gets a slap in the face for an answer. All the stories thus set up a parallel between the world of the family and that of the *danwei*, one being just as oppressive and dreary as the other. Zhu Wen thus aims to show the extent to which social organisations based on a clan structure remain burdensome under the mouldy crust of socialist society.

Julia Lovell puts forward the view that the pact that enabled the success of the post-Tiananmen generation rests upon the possibility of criticising everything barring politics. However, Zhu Wen has expressed himself somewhat differently on the matter. After emphasising that, for him, the main quality of a writer is "to see through things" at first glance, he adds that, when he first took up the pen, he was hoping to "change things", a hope that was dashed when he realised that it was rather writers who adapted to the times⁽²⁾. His fiction of the 1990s therefore appears to him above all as the expression of a personal revolt, faithfulness to which made him decide to give up literature. Julia Lovell tends to reduce this revolt to a moral critique of post-communist society. For her, "Zhu Wen tells China exactly as he finds it: seedy, selfish, amoral, corrupt" (p. xii), detaching himself from moralising only through the lightness of his narration. Jonathan Mirsky goes even further in a recent book review, denouncing a work that, while appearing to be scandalous, is in actual fact superficial and "devoid of any plot"⁽³⁾, written only for shock value. These assessments seem somewhat one-sided. In our view, by using a writer protagonist, the story "I love dollars" casts a different light on Zhu's conception of writing. Priding himself on the fact that this story, which made him famous, was written in three days and nights, Zhu Wen links writing to the metaphor of a biological need that he is fond of. The difference between writing poems and narrative is thus the same as that between "making love and giving birth"⁽⁴⁾; or again, the censorship of the office of cinema tries to "ban someone from pissing just because they once aimed to the side of the

2. "Zhu Wen fangtan: shenghuo de dongli jiu shi xugou" (Interview with Zhu Wen: "Fiction is the driving force of life"), *Tamen*, n° 14 (2007), <http://www.tamen.net/publish/14-4.htm>. All websites were accessed on 1 May 2007.
3. J. Mirsky, "A Negative Version of Today's China", *Far-Eastern Economic Review*, vol. 170, n° 2 (March 2007), pp. 73-74.
4. Li Hongqi, "Renmin daodi xubuxuyao Zhu Wen?" ("In the end, do the people need Zhu Wen?"), <http://culture.netbig.com/topic/935/20010130/97453.htm>.

basin”⁽⁵⁾. The narrator of the story also makes this connection, stating that he turned to writing as a palliative (“a sort of intellectual laxative”, p. 4) in order to entertain himself when he could no longer satisfy his daily need for copulation. Zhu Wen the writer, too, promotes the consumable nature of his production. He writes because he feels compelled to say new things, in the enthusiasm of youth, rejecting routine, and prefers to turn to cinema rather than repeat himself. This writing is indeed related to a particular generation; in the story, the girl-friend of the narrator’s brother admires what he writes, unlike his father, who solemnly asks him to give up writing, thereby provoking an unexpected attack of nausea right there in the restaurant (p. 32). While his father, reading his manuscripts through the night, enjoins him: “A writer ought to offer people something positive, something to look up to, ideals, aspirations, democracy, freedom, stuff like that”, the narrator merely replies, “Dad, I’m telling you, all that stuff, it’s there in sex” (p. 34). The change of generation here takes the form of a clash between two conceptions of literature, the one inherited from May Fourth (actually not far removed from a traditional view of the role of the writer), which persisted until the dissidents of the 1980s and the 1989 student movement, in which literature served to enlighten the reader; the other, a form of writing that turns its back on any attempt to put the writer above his or her readers, in the position of guide. There is, it seems to us, some hypocrisy on the part of critics (Western and Chinese⁽⁶⁾) who right up until the 1980s were denouncing the submission of literature, including literature that was critical of power, to an ideological programme, now vocally lament that this connection has been severed.

Our theory is that, beyond the cynicism of his narrators, Zhu Wen is trying to develop a critique of consumer society that is not merely moralising—a stance that, to his credit, he never adopts. While stressing the relative freedom, in particular in the life of individuals, that economic liberalisation has allowed⁽⁷⁾, he shows how individuals are crushed under an array of power structures, of which the socialist work unit continues to be a part, but which also encompass the traditional structure of the family, and the economic violence of unbridled capitalism. The humour and irony of the narrators give flesh to this diffuse resistance which, even if it contains cynicism in part, is not simply about posturing. In short, the timely publication of this collection, with the help of an excellent translation, enables us to hear the voice of an innovative

writer and filmmaker, and has contributed to shaping the present-day Chinese literary world. •

• **Translated by Peter Brown**

5. “Zhu Wen fangtan: wode dianying bu neng meiyou shiyi” (“Interview with Zhu Wen: my films cannot not contain poetry”), in Ouyang Jianghe (ed.), *Zhongguo duli dianying* (Independent Chinese Cinema), Hong Kong, Oxford University Press, 2007, pp. 141-155.
6. Cf. for example, the recent controversy surrounding the remarks by Wolfgang Kubin, a good account of which can be found on the website EastSouthWestNorth: http://www.zonaeuropa.com/culture/c20061214_1.htm.
7. In this vein, the final story in the collection, “Pounds, ounces and meat”, which we have not discussed owing to its brevity, portrays a narrator living with a woman to whom he is not married and whom he describes as his “current girlfriend”.

EDWARD FRIEDMAN

This very useful survey outlines how analysts in Europe, Japan and America cover China’s economy, its politics, and its foreign policy. Much of the book, such as Robert Ash’s chapter on “Studies of China’s Economy in Europe” offers a tour d’horizon of who is doing what and where. This review, however, will focus on the substance.

Ash highlights Chris Bramall’s “argument that the weakening of private and CCP-based interest groups was a significant factor facilitating the post-1978 reallocation of resources from inefficient heavy industries to more efficient sectors,” that a “state-led development strategy may achieve more than one based on capitalist mechanisms,” and that “China’s success derived from favorable political and institutional conditions not necessarily replicable....”

To me, the PRC government was crucial in building infrastructure, in managing the currency, in defeating opponents of openness, and in welcoming the dynamics of globalisation. China’s success, as depicted in the books of business correspondents such as James Kynge (*China Shakes the World*) and James McGregor (*One Billion Customers*) grew from an entrepreneurial frenzy in which many thousands of money-hungry entrepreneurs went, say, into motorcycle production, not selling one-third of what was produced, leading to huge numbers of bankruptcies and much pain, but also a fostering of the globally competitive China price.

Hideo Ohashi's chapter on "Studies of China's Economy in Japan" focuses on what is known about the extraordinary post-Mao economic rise and its global impact. Ohashi finds that Japan's "recovery from prolonged recession in the 1990s" was so much aided by taking advantage "of the opportunities offered by China's economic growth" that the study of China's economy is also the study of Japan's. He points out that Japanese are fixated on the frailties of the Chinese economy and worry about potential destabilisation effects. But is it useful to treat China as "in transition to a market economy"? Comparative studies of wealthier industrialised societies reveal that nations can rise with quite different mixtures of state and market. Why not hypothesise that the Chinese mixture is but another possible successful amalgam rather than assuming a necessary evolution towards a free market, which actually exists nowhere? Treating the post-Mao system as stable and successful is more in line with Ohashi's conclusion that "China has become an 'ordinary country'."

Penelope Prime's essay on "Studies of China's Economy in the United States" echoes Ohashi's finding that "Scholars with no previous training in Chinese" studies increasingly do important work on China. She also notes that analysts treat China as "... 'in transition' from planning to markets," a case of gradual privatisation and inefficient but politically necessary SOEs, rather than as one of many possible combinations of state and market. Prime's chapter importantly highlights the insightful debate on sources of growth.

Jean-Pierre Cabestan's chapter on "Studies of Chinese Politics in Europe" points out that analysts in the EU, a grouping of democracies, have been more focused than others on human rights and the prospects for democracy, working on China's gulag, democratic Taiwan, oppressed Uighurs, the environment, inequality, good governance and liberalisation. The big question is whether overall modernisation wins out or whether "the regime cannot change and will eventually collapse." If China does not democratise, it will become unstable. But why not conclude that the CCP regime has already successfully transitioned from Mao's version of Stalinism to a stable right populist authoritarianism that can win performance and nationalist legitimacy as standards of living continue to rise and as China rises in global stature?

Tomoyuki Kojima's introduction to "Studies of Chinese Politics in Japan" worries that analysts

lack an independent analytical framework and therefore are "too deeply influenced by [an understanding of] Chinese politics" as explained by the ruling CCP itself. Instead, similarities to South-east Asian development systems should be highlighted. This means focusing on "the contradiction between one-party rule" and the societal changes that stem from marketisation and globalisation (e.g., a rising middle stratum and money elites tied to power elites) in a society with strong traditional continuities. Given "institutional immaturity," a misfit between Leninist institutions and the dynamics of market-oriented growth, Kojima worries that individual leaders will appeal ever more to "nationalism to maintain (...) cohesiveness" because assertive societal groups are growing in importance while Party mechanisms of control are weakening. There are more possible futures than either inevitable, gradual democratisation or instability.

Richard Baum's chapter on "Studies of Chinese Politics in the United States" praises centrist scholars in the 1960s and 1970s who understood CCP politics in terms of "bureaucratic politics and interest groups," as in Brezhnev's Soviet Union, rather than leftists who saw Maoism as a model for poor countries. But why did China and Russia develop so differently despite similar interests and bureaucratic politics?

Using a generational analysis, Baum sees political scientists as ever more rigorously trained, focused first, in the early reform era, on a weakened CCP and a strengthened civil society, and then, after the 4 June 1989 Beijing massacre, on Latin American-type corporatism co-opting societal groups. By the end of the 1990s, analysts moved on to study state capacity, on the one hand, and a resurgence of pre-CCP societal forms, on the other. Baum worries that the recent rise of rational choice and econometric models privileges analysts who plug in a method which is "so narrowly focused" that it throws little light on what is actually shaping state-society tensions.

Since none of these models or formal approaches foresaw the post-Mao rise of China or the 1989 democracy movement, why not highlight insightful empirical, descriptive and ethnographic work,



Robert Ash, David Shambaugh and Seiichiro Takagi (eds), *China Watching: Perspectives from Europe, Japan and the United States*, London, Routledge, 2007, 261 pp.

whatever the scholar's approach? Why not be disenchanted by the overly rapid rise and fall of paradigms and approaches as Chinese policy changed? Perhaps the complex and unpredictable political reality of a very contingent realm of human endeavour, politics, cannot be reduced to any one of these ceaselessly changing American political science paradigms.

Kay Möller's chapter on "Studies of China's Foreign and Security Policies in Europe" finds that much analytical work has been mis-shaped by domestic European political imperatives. In the era of China's rise towards superpower status, there is a split between democratic publics worried about both human rights abuses in China and also threats to Europe from China and national governments promoting commercial interests and therefore arguing that engagement will transform the PRC's political system, a most soothing perspective, deconstructed for America in Jim Mann's *The China Fantasy*.

European passivity is legitimated by the notion of the CCP government as a responsible regime. "[S]haring the PRC's unhappiness with the unipolar world," Europe slighted China's "lack of sensitivity vis-à-vis smaller neighbors, not to mention Taiwan." Still, twenty-first century PRC policies in former European colonies in Africa (Sudan, Zimbabwe and Angola) have made an impact on European views. Möller sees China's rise to superpower status as "a bluff," contending that Europe should not accept the Bush-Hu consensus on "the relative unimportance of social justice and protection of the global environment."

"Studies of China's Foreign and Security Policies in Japan" by Seiichiro Takagi shows Japanese analysts portraying Mao as defensive and not as seeking to challenge the Soviet Union for leadership of the anti-imperialist movement, as instead is depicted by critical analysts in the PRC. In the post-Mao era, analysts are more concerned with an assertive Chinese nationalism, with some seeing a hard-line hegemonistic agenda. Takagi alone highlights rising concern about how the CCP is dealing with "energy security," including the building of a blue water navy, imposing control of the South China Sea, and challenging Japan in the East China Sea, all as part of "establishing a 'Sinocentric world'." As one analyst put it, "China's perception of its own conduct diverges seriously from others' perception of it...China's powerful memory of national humiliation...is responsible for the misjudgment."

In the final substantive essay, David Shambaugh's

chapter on "Studies of China's Foreign and Security Policies in the United States, the author highlights how, despite tactical flexibility, the CCP leaders view of China's rightful role in the world makes likely assertiveness against an America seen as an obstacle to China's rise. And yet "the Chinese internal discourse" assumes a declining America and Russia, a rising India, and a threatening Japan. Shambaugh's focus is security studies, issues that are openly debated, and gaps in knowledge.

These well-informed and critical overviews allow readers to judge how well analysts of China have done and what could produce yet better work. •

SÉBASTIEN BILLIQUOD

The truth is plain: there are no such [natural or human] rights, and belief in them is one with belief in witches and unicorns" ⁽¹⁾. This old saying of Alasdair MacIntyre underpins the entire intellectual itinerary of this thinker who is one of the principal contemporary critics of liberalism ⁽²⁾ and the guest of honour in the book under review here. This itinerary, which led him from Marx to Aristotelian Thomism, has seen him in more recent times engage in a dialogue with intellectuals inspired by Chinese thought and, in particular, Confucianism. Indeed, MacIntyre has now become a reference throughout the Chinese world where he is widely read and discussed ⁽³⁾.

Confucian Ethics, A Comparative Study of Self, Autonomy and Community, is a collective work edited by Kwong-shun Loi and David B. Wong. Following an introduction, it is divided into three parts, the first of which deals with rights and the community, the second with the individual subject and the cultivation of the self, with the final part

1. Alasdair MacIntyre, *After Virtue*, London, Duckworth, 2004, p. 69. Some sections of what follows are indebted to Emile Perreau-Saussine's excellent intellectual biography of Alasdair MacIntyre. Emile Perreau-Saussine, *Alasdair MacIntyre: une biographie intellectuelle*, Paris, Léviathan-PUF, 2005.
2. Alasdair MacIntyre (1929-) is often presented as being a representative of Anglo-Saxon "communitarianism," in the mould of Charles Taylor, Michael Walzer or Michael Sandel. This is a label which he rejects, however.
3. The reception of so-called "communitarian" writers in China is a very significant phenomenon which has given rise to a host of exchanges and publications, being also testimony to the dynamic nature of the circulation of ideas between China and North America. As we write these lines, in May 2007, Michael Sandel is on a lecture tour of the major Chinese universities.

being taken up by MacIntyre's response to the preceding contributions.

The pieces which focus on the subject and the cultivation of the self (chapters 5 to 8) are primarily related to ancient Chinese thought. Joel J. Kupperman shows how Confucius stresses the importance of both the community and tradition in the formation of the subject. Cheng Chung-ying proposes a very interesting theory of selfhood, although MacIntyre unfortunately seems to be ignorant of its context (the relation between Confucianism and Kantism in the twentieth century). Bryan W. Van Norden looks into the "Mencian" virtue of righteousness (*yi*), capable of manifesting itself in the life of every person through a feeling of shame. His comparative approach enables him to show, in particular, that the question of shame was of greater significance in ancient China than in Greece and that this was not without an influence on later traditions. This first part concludes with Kwong-loi Shun examining the conception of the person in early Confucian thought, how it was incorporated into society, and the problems posed by the use of Western concepts such as those of "rights" or "autonomy".

In the section of the work devoted to rights and the community (chapters 1 to 4), Chad Hansen proposes a methodology for comparative ethics which he illustrates by considering the question of human rights (Chapter 4). This part of the work also contains contributions by Craig K. Ihara, David B. Wong and Henry Rosemont, Jr., which seem to us to bring out the most interesting responses from MacIntyre.

In the first chapter, Craig K. Ihara attacks the idea according to which individual rights are thought of as being the necessary focus of any ethics. Without denying the operational character of the notion of rights in a complex world, he defends the "Confucian" view of human dignity rooted in a sense of belonging to a community where everyone has a role to play, just like in a sporting team. It is common practice to distinguish between two conceptions of morality, the one based on the rights of the individual (rights-centred moralities), the other on the promotion of the good of the community (community-centred moralities). David B. Wong defends first of all the idea that there can also be democratic rights based on the idea of community (even if they may differ from rights in relation to individual autonomy). He then puts forward the view that the very ideas of right and community are interdependent and that both are necessary to realise democratic values. As the

notion of a common good is problematic (being subject to competing interpretations), he finally advocates a community that is open to pluralism and capable of settling its differences through mechanisms of arbitration and conciliation.

Chapter 3 aims to be a "Confucian critique of modern Western liberalism." In it, Henry Rosemont Jr. regards theories of rights based on the idea of free, autonomous, rational individuals who are motivated by their self-interests as being fraught with problems. To his mind, such views only serve in the end to mask a morally condemnable distribution of wealth. Praising the social, political and economic progress of countries like Malaysia and Singapore, he considers that the "democratic" model they offer may, in spite of its deficiencies, be better than what can be found in the United States. His view is based on a Confucian conception of individuals as being located in a community, to which they have a responsibility, rather than on the idea of autonomy, which merely offers a passive invitation to respect the rights of others. The writer further suggests that we should now go beyond the Western liberal tradition by thinking about the political underpinned by the economy: the American legal system, conceived to protect the rights of autonomous individuals, comes to protect those of major companies (and their abuses) in the same way. Classical Confucianism thus offers an alternative, if one accepts the need for a critique of American ideology. MacIntyre's responses are extremely interesting and relevant, in view of his position as an outsider with respect to Confucianism. Furthermore, beyond China and Confucianism, they allow us to gain insight into some of the major ideas that he has gradually developed over the course of his long intellectual career.

MacIntyre stresses the fact that the very idea of rights evolved in the West alongside that of the Nation-State. Faced with the growing power of the State and the complex nature of modern societies, the citizen has needed, and still needs, increased protection. This is true today, in any modern state, whether it is in Asia, the West or elsewhere, failing which the relation of the individual



**Kwong-loi Shun,
David B. Wong
(eds), Confucian
Ethics, A
Comparative
Study of Self,
Autonomy and
Community,
Cambridge,
Cambridge
University Press,
2004, 228 pp.**

to the state would run the risk of taking on an unbearable, oppressive character (p. 217). It is this assertion that sees him distance himself from Rosemont's remarks, at the same time as he very certainly shares some of the latter's criticisms of the American system and individual subjective rights. We should remember that MacIntyre's intellectual development included an association with the British *New Left* and therefore with a whole critique of capitalist society grounded in Marxism, where the opposition between real and formal rights was crucial. With the failure of communism, and for want of any foreseeable and credible alternative, MacIntyre was finally won over to the cause of liberal democracy, although he continues to point out its limitations—indeed, he remains fundamentally hostile to it—and assigns responsibility for forms of sociability to the community. According to MacIntyre, therefore, the individual today has a two-fold sense of belonging. This means that classical Confucianism and the type of conception of the person that it proposes cannot for him be embodied in the modern State (p. 217); rather, it is in the community that their relevance today can be found.

MacIntyre then takes up David Wong's idea about Confucian rights being "grounded in the community," which he associates with the notion of "role" put forward by Ihara. Such rights do not simply correspond to a lack of constraint, but take on a positive dimension, as they are "those that individuals possess qua potential contributors to the goods of a harmonious social order" (p. 215). MacIntyre is at pains throughout his work to reject the notion of formal and negative freedom conceived simply in relation to an absence of constraint; according to him, this can only lead in the end to moral relativism⁽⁴⁾. The fact that his commentary makes no mention of the term "positive freedom" may be due to his caution about Confucianism of which he does not have a full understanding. Yet it is to this very term, that is to say, a freedom that is also bound up with the good and the virtuous, that he appeals. In his view, it is in the community and in tradition that this freedom is most likely to be developed.

MacIntyre sees the grounding of the practical rationality of the individual in a tradition in which living and thinking are closely associated with each other as something very positive⁽⁵⁾. In Shun and Wong's book he applies this idea to Confucianism at the same time as telling us that it needs reconfiguring as a tradition (p. 214), since the concrete forms of social practices that it might engender

cannot be those of the past (he mentions in particular the role of women). In this he echoes another aspect of his commentary regarding the notion of rights. He argues that a precondition of any dialogue with Western theorists would be for followers of Confucianism to discuss first among each other the crisis brought about in their tradition by modernity.

This brings us to our concluding remarks where we should emphasise one objective limitation of the book. The editors have chosen to give pride of place to contributions that have both an exclusively philosophical approach and a field of reference that is especially that of Chinese antiquity. The historical dimension of Confucianism, its current developments and the impact of modernity are thus largely passed over in silence. This does not take anything away from the interest and quality of the individual contributions, but the overall organisation of the work no doubt limits MacIntyre's possibilities for reacting. In defence of the editors, it can be said of course that it was plainly impossible to cover everything; indeed, the very fact that they have been able to offer a space for dialogue between specialists of Confucianism and a major representative of present-day Western philosophy is already a remarkable achievement in itself. •

• Translated by Peter Brown

4. *Ibid.*, p. 12.

5. *Ibid.*, p. 104.

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