

Growing into Risk

Emerging environment and security issues in
China

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Overview¹

Serious environmental degradation in China is harming public health, increasing migration, triggering social unrest and could constrain the country's economic growth. In addition, China's need to secure the supply of those resources that underpin its growth (i.e., energy and minerals) will increase international competition for them while potentially undermining the security of some of the politically fragile, resource-rich nations with which China trades. As such, the environmental challenge of China's recent economic growth carries security implications for China as well as its global neighbours.

Environmental degradation is likely to keep pace with China's economic development. The environmental cost of achieving China's self-imposed targets for GDP growth is likely to outweigh any advances in environmentally-friendly technologies that may come from freer trade.

Resource scarcity caused by China's growing population competing for limited natural resources in an increasingly compromised environment brings a number of security concerns. Arable land and freshwater, already low on a per capita basis by world standards, are growing increasingly scarce. Millions of people in big cities are exposed to dangerous levels of pollution, while environmental threats have displaced millions and undermined the livelihoods of millions more. These problems are compounded by uneven development and widening inequality across China. As a result, communities are increasingly challenging the authorities through violent protest.

We have selected four resources that serve as examples of how China's growth may have an impact on security and the global environment: **Energy** underpins the country's economic development, development upon which the legitimacy of the central government largely depends. As such, securing energy resources, both at home and abroad, is of prime concern to the state, and is reflected in China's increasingly assertive foreign policy.

Per capita, **water** resources in China are around a quarter of the world's average. A combination of environmental pressures and the demands of China's growing population and industry are increasing the competition for this scarce resource. This has led to local and provincial conflicts and, as the problem intensifies, it's possible it could become international.

China's worsening **air** quality threatens national and regional development. Air pollution is having a devastating impact on public health and kills hundreds of thousands of people annually. Moreover, food security in China and its neighbouring countries is threatened by irregular and acid rain.

With China's need for timber and **forest** products increasingly met abroad, local livelihoods, once dependent on forestry, are being lost. China's considerable demand for timber products has helped trigger violence between its trading partners by "exporting" the environmental

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degradation associated with the timber industry. Believed by some conservationists to be an increasingly important hub for illegal logging, China may also be contributing to conflict abroad by hosting illicit logging revenues and importing illegal timber.

This paper discusses the security implications of China's economic growth and environmental challenges. It raises a number of important questions: How will China secure the resources it requires if it is to fulfill its ambition of becoming the world's leading trading power? Can tensions be reduced between China and its neighbours through co-operation over shared resources and environmental concerns? And what, if anything, should the international community do to promote better environmental management in China?

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Abbreviations

APEC	Asian Pacific Economic Community
ASEAN	Association of Southeast Asian Nations
E&S	Environment and Security
EU	European Union
GDP	gross domestic product
MRW	Ministry of Water Resources
NFPP	Natural Forest Protection Program (China)
PPP	purchasing power parity
RWE	Round Wood Equivalents
SARS	Severe Acute Respiratory Syndrome
SEPA	State Environmental Protection Administration (China)
SLCP	Slope Land Conversion Program
UNEP	United Nations Environment Programme
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wildlife Fund

1. Introduction

*“We can’t grow our vegetables here anymore.
Young women are giving birth to stillborn babies.”*

Li Sanye, a 60-year-old farmer on the Dongyang protests.²

The People’s Republic of China’s economic growth is staggering. In the 10 years spanning 1992–2002, real gross domestic product (GDP) increased at an annual rate of 9.3 per cent.³ Recently, China became the world’s fourth largest trading nation, and its fifth largest economy.⁴ In 2003 it received over US\$53 billion in foreign direct investment (FDI).⁵ Per capita income has risen to \$989, and with it, private consumption. As the population, currently nearly 1.3 billion, continues to rise and as people live longer (life expectancy is now 71.5 years, up from 63.2 in 1975), more people are consuming more resources over a longer period of time.⁶

While increased life expectancy, reduced poverty and a vibrant economy are to be welcomed, a changing China has serious implications for both the environment and for national, regional and, potentially, global stability. Riots in the Dongyang township in April 2005 are a case in point. In recent years, the villagers suffered from failing crops and poor health due to pollution from local chemical and pesticide plants. Local officials, under pressure to maintain economic growth, shielded polluters from regulation and refused to respond to local protests. The frustrated villagers blockaded the plants. The protest turned violent when authorities intervened to clear the blockades and six policemen were killed.^{7,8}

Continued environmental degradation in China could contribute to large scale migration and harm public health. Moreover, there is the potential for concerns over the environment to serve as a focus for wider political discontent. Top leaders in the Chinese Communist Party have noted that environmental protest is one of the four most serious sources of social unrest in the country.⁹

Regionally, China’s economic development is contributing to transboundary problems of air pollution, the depletion of fisheries and the management of international resources such as the Mekong River. Also, with few natural resources of its own, China must look beyond its own borders. China’s 2004 encroachment on Japanese territory to develop the Chunxiao gas fields is indicative of its increasingly assertive foreign policy to secure the resources it needs for continued economic growth. In effect, China may be “exporting” the security implications of its economic growth to the resource-rich countries with which it trades.

² Johnson, T. “In China’s Dash to Develop, Environment Suffers Severely,” *Knight Ridder*, July 25, 2005.

³ The Economist. *World in Figures 2005*. London: Profile Books, 2005, p.130.

⁴ And the second largest using purchasing power parity (PPP). Ljunggren, B. “*Xiaokang and the reformed one-party state*,” 2004, p.21.

⁵ By comparison India received US\$4.2 billion in the same year UNDP, *Human Development Indicators 2005*, p.281.

⁶ *ibid.*, p.251.

⁷ Johnson, T. “In China’s Dash to Develop, Environment Suffers Severely,” *Knight Ridder*, July 25, 2005.

⁸ French, H. “Anger in China Rises over the threat to the environment,” *The New York Times*, July 19, 2005.

⁹ Economy, E. “The River runs black – the environmental challenge to China’s future,” Council on Foreign Relations, 2005, p.19.

China's accession to the World Trade Organization (WTO) in December 2001 and the central government's continued focus on economic development are likely to increase both trade and environmental degradation. Moreover, China's growth in recent years, driven by trade, has firmly entrenched it within the global economy in such a way that China's domestic policy choices have increasingly profound security implications for other countries. This paper outlines some of the ways in which China's economic growth, need for resources and environmental challenges have contributed to instability within China and abroad.

2. China: The security implications of growth

*“This miracle will end soon because the environment can no longer keep pace.
Acid rain is falling on one-third of the Chinese territory (and)
half the water in our seven largest rivers is completely useless.”*

Pan Yue

Vice Minister of the State Environmental Protection Administration (SEPA)¹⁰

2.1 China’s Internal Development Strategy

At the 16th Congress of the Communist Party of China in 2002, the government set out as its central strategy of quadrupling the GDP from 2000 levels by 2020. They estimated an average annual growth rate of 7.2 per cent would be necessary if China is to reach its goal of a per capita income of US\$3,000 by 2020.¹¹

Economic growth in China has helped reduce the absolute number of its citizens living in poverty. China has already achieved its Millennium Development Goal of halving income poverty from 1990 levels.¹² However, the benefits of economic growth have not been shared across the country and have had serious environmental consequences (see Box 2a). With an aging labour force (the proportion of the population over 65 is expected to reach 9.6 per cent by 2015, from 5.9 per cent now), there is a pressing need to increase the productivity of the country’s working population.^{13,14}

National and foreign policies are now geared toward the achievement of “*xiaokang*,” or “moderately well-off” society for all within China. While economic growth through trade will remain the focus, social and environmental considerations are supposed to feature prominently in the government’s development strategy. The goals of *xiaokang* are referred to as the Five Harmonizations:

1. Co-ordinated rural and urban development
2. Regional development
3. Economic and social development
4. Human and natural development
5. Opening to the outside world

Local realities stand in stark contrast to these central goals. Coastal regions attract 70 per cent of the country’s new investment and are far wealthier than the interior provinces of western China.¹⁵ While human development in Shanghai is comparable to that of Portugal, the interior province of Guizhou carries a Human Development Index (HDI) ranking similar to Namibia.¹⁶ China’s “Develop the West” campaign attempts to address such

¹⁰ “The Chinese Miracle will End Soon,” *der Spiegel*, March 7, 2005.

¹¹ World Bank. “China: Promoting Growth with Equity” October 15, 2003, p.17.

¹² *ibid.*, p.29.

¹³ *ibid.*

¹⁴ UNDP. *Human Development Report 2005*, p.233.

¹⁵ “Income gaps have to be closed,” *China Daily*, February 25, 2004.

¹⁶ UNDP. *Human Development Report 2005*, p.59.

regional inequality by lifting up rural western provinces on the strength of growth in urban and coastal areas. However, it remains to be seen if current equity gaps are in fact bridgeable.

Already pressured by a rising population and life expectancy, internal rural to urban migration is also driving demographic stress on the Chinese environment. In 1975, 17.4 per cent of the Chinese population lived in cities. In 2003 that figure stood at 38.6 per cent, and it is expected to increase to 49.5 per cent by 2015.¹⁷

Box 2a A snapshot of China's environment

China's dramatic economic growth has had serious implications for the environment. Air and water pollution have increased dramatically over the past few decades. Acid rain affects around a third of the country and 300,000 people a year die prematurely from respiratory illnesses.¹⁸ Where water is not scarce, it is rarely clean – it is estimated that half the population drinks from water supplies that are contaminated with animal and human waste.¹⁹

Environmental degradation is most pronounced in the cities. By 2002 China had become home to six out of 10 of the world's most polluted cities²⁰ and 86 per cent of urban water is considered unsuitable for either drinking or fishing.²¹

Rampant deforestation contributed to the 1998 floods and droughts which claimed 3,000 lives and caused \$12 billion in property damage.²² Deserts cover a quarter of China's territory and land degradation continues fast.²³ The statistics present only a snapshot of the serious environmental challenges that face China. Nevertheless, it is clear that the country must deal with the legacy of decades of environmental mismanagement.

Economic growth has outpaced health and educational progress. Despite moving up 32 places in the annual United Nations Development Program (UNDP) Human Development Report's wealth index since its inception, China has only climbed 20 places in the overall index.²⁴ Slower reductions in child mortality (from 2.3 per cent in the 1980s to 1.9 per cent from 1990–2003) lead many to fear that China may miss its MDG commitment to cut child mortality by two-thirds by 2015.²⁵ Despite the central government's supposed commitment to the environment, local officials are under pressure to deliver economic growth at the expense of the environment, often corruptly shielding polluters and ignoring environmental laws.²⁶

¹⁷ *ibid.*, p.233.

¹⁸ "A Great Wall of Waste," *The Economist*, August 19, 2004.

¹⁹ Kunmin Zhang, "Ke Chi Xu Fa Zhan Yu Shong Guo De Shi Jian" (Sustainable development and its practice in China), *Shanghai Environmental Science*, Vol. 16, July 1997, p.1-5.

²⁰ Economy, E. "The River runs black – the environmental challenge to China's future," Council on Foreign Relations, 2005, p. 18.

²¹ Economy, E. "Painting China green," *Foreign Affairs*. New York: March/April 1999. 78:2; p.14.

²² Runsheng Yin *et al.* "China's Ecological Restoration: The Unprecedented Efforts and Dramatic Impact of Reforestation and Slope Protection in Western China," China Environment Series 7, Woodrow Wilson International Center for Scholars, 2005, p.17.

²³ Economy, E. "The River runs black – the environmental challenge to China's future," Council on Foreign Relations, 2005, p. 19.

²⁴ *ibid.*, p.22.

²⁵ *ibid.*, p.29.

²⁶ Johnson, T. "In China's Dash to Develop, Environment Suffers Severely," *Knight Ridder*, July 25, 2005.

Social freedoms and political reform remain secondary to economic concerns. With income and environmental inequities generating grievances throughout the country, the central government is not as “in control” as it appears. Violence has erupted in villages, such as Hanyuan, Huankantou and Wanzhou, as local livelihoods are lost to the demands of economic growth, such as dam construction and land appropriation. These conflicts are indicative of the rising discontent within the country; many of the 74,000 protests reported last year (up from 10,000 a decade earlier) were linked to environmental degradation and pollution.²⁷

In the past 10 years, China has faced numerous crises (e.g., the 1997 economic crisis, the 1998 floods and SARS) toward which it has demonstrated considerable resilience. Despite a troubled banking sector and inefficient state-owned enterprises, these crises did not significantly cool China’s growth. However, China cannot assume that it is immune to such problems.

China’s biggest environmental challenges lie ahead. A report in 2001 predicted that by 2020 there will be a 25 per cent loss of arable land, a 40 per cent increase in water demand, a 230–290 per cent increase in wastewater and a 150 per cent increase in sulphur emissions.²⁸ The extent and manner in which these problems are addressed will depend upon the outcome of continuing internal debate in the Communist Party.

2.2 Looking Outside

“An unprecedented need for resources is now driving China’s foreign policy... China’s boom can no longer be understood in regional terms alone; as Beijing’s economic influence brings it international political influence and the potential for more military power, China’s growth will have worldwide repercussions.”

David Zweig and Bi Jianhai,
*Foreign Affairs*²⁹

Any strategy aimed at maintaining China’s nine per cent annual GDP growth rate will depend to a large extent on the country’s foreign and trade policies, and may significantly impact the environment. China’s trade has grown significantly over past decade, and will likely accelerate as China integrates more closely with international markets. The structure of Chinese economy indicates the extent of this shift to foreign markets. From 1990 to 2003, as a proportion of a rapidly growing aggregate GDP, imports of goods and services increased from 14 per cent to 32 per cent; exports from 18 per cent to 34 per cent.³⁰ The structure of these exports increasingly reflects China’s growing industrialization – with primary products dropping from 27 per cent to nine per cent of goods sent abroad over the same time period.

The sheer scale of this trade growth will place pressures on the environment which may outweigh the benefits derived from China’s increased integration with the global economy.

²⁷ French, H. “Anger in China Rises over the threat to the environment,” *The New York Times*, July 19, 2005.

²⁸ Tamar Hahn, “China dealing with a Wealth of Environmental Challenges,” *The Earth Times*, March 27, 2001.

²⁹ Zweig, D. & Jianhai, B. “China’s Global Hunt for Energy,” *Foreign Affairs*, September-October 2005, pp. 25-26

³⁰ UNDP. *Human Development Report*, 2005, p.274.

At the very least China will continue to require huge quantities of natural resources. These challenges are present both within China's borders and within those of its trading partners – from timber exporting nations such as Indonesia to oil exporters such as the Sudan.

Box 2b Staking a Claim: China's assertive foreign policy

China's economic rise has been accompanied by maritime expansion, most notably in the South and East China Seas. The 1996 United Nations Convention on the Law of the Sea (UNCLOS) allows for the establishment of exclusive economic zones (EEZ) within a 200 mile radius of the coast.³¹ This convention expanded China's control over maritime areas from 370,000 km² to 30 million km² and increased China's control of the South China Sea, the world's second busiest sea lane and a region rich in oil and gas reserves.³²

In 1995, China annexed the Paracel and Spratley Islands, a group of small islands in the South China Sea between Vietnam and the Philippines, contesting the sovereignty claims of both those nations. The islands now constitute what K. Scott Holder of the Defence Intelligence Agency calls a "threat to Asian regional stability."³³

There is also a longstanding dispute between Japan and China over another small cluster of uninhabited islands and reefs in the south-eastern sector of the East China Sea (known as Senkaku in Japan and Diaoyu in China). The EEZs permitted by UNCLOS increase the value of the islands not so much for their territory, but rather for the mineral resources of their surrounding seabed. Both countries have in recent years claimed sovereignty over the islands, and tensions worsened in February 2004 with the discovery of possible oil deposits near the islands.³⁴ China began sending research and drilling ships into the Japanese-claimed EEZ and developing the Chunxiao gas field.³⁵ Japan is considering sending its own test-drilling vessel, which would be accompanied by Japanese navy and coastguard.

Two islets collectively named Okinotori in the Pacific Ocean south of Japan have sparked similar controversy. Claims over Okinotori have long helped Tokyo control an exclusive economic zone over an ocean area larger than Japan. The smaller of the two is roughly the size of a twin bed and sits only 2.9 inches out of the ocean, while the larger, the size of a small bedroom, manages to rise up 6.3 inches. China has recently challenged Japan's exclusive rights to these economically and militarily important waters, describing Okinotori as just a "rock" which should not be regarded as an island under UNCLOS, as "rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone." Japan has protected its claim by encasing the islets in concrete to increase their size at a cost of US\$600 million.³⁶ The importance of shipping lanes and abundance of maritime energy resources in the region has continued to aggravate already-strained relations between China and Japan.

³¹ Fedorova, M. "The Roots of Sino-Japanese Differences over the Senkaku (Diaoyudao) Islands," *Far Eastern Affairs*, Vol 33, Issue 1, 2005, p.109.

³² "South China Sea Region," Energy Information Administration, September 2003.

³³ Holder, K. Scott. "The Spratly Islands," Defence Intelligence Agency, 1995, p.1.

³⁴ Fedorova, M. "The Roots of Sino-Japanese Differences over the Senkaku (Diaoyudao) Islands," *Far Eastern Affairs*, Vol 33, Issue 1, 2005, p.109.

³⁵ "So hard to be friends," *The Economist*, March 26, 2005, p.24.

³⁶ "Japan and China dispute a Pacific Islet," *The New York Times*, July 10, 2005.

On the other hand, China's increased openness offers some hope for the environment. Access to international energy markets may improve the flow of cleaner fuels and technologies to the country.³⁷ Increased competition with more efficient international companies is likely to encourage the more prudent use of resources. Similarly, international environmental and social standards required by the WTO and by markets to which China exports, such as the EU, could also drive investment in environmental improvements.³⁸

2.3 Environment and Security Challenges

*"Before people felt like they could resolve their problems through the government.
Now people no longer have any confidence in the government,
so small cases turn into riots."*

Li Qiang,
Chinese labour activist³⁹

Conflict, within or between states, is most likely where interacting structural conditions, (such as population density, wealth distribution, environmental degradation, ethnic and social divisions, and the history of inter-group relations) set the context for violence.⁴⁰ Subsequent triggers for conflict can include:⁴¹

- Incentives or motives for participation in violence (“grievance” and “greed”);
- Access to financial, organizational and human resources that facilitate the mobilization and expansion of violence;
- Institutional inability to manage and respond to violence;
- Regional or international drivers (e.g., neighbouring conflicts and transboundary arms flows); and/or
- “Windows of vulnerability” that permit the outbreak of violence, such as contested elections, natural disasters, or social, economic and environmental shocks.

In China, the security concerns that come from a changing environment are driven in large part by the degradation and scarcity of its natural resources. Despite its varied climate and topography, China has few natural resources to meet the growing needs of its population. When compared to the United States – the country closest to China in land area – China has significantly less arable land (14.1 per cent compared to 19.1 per cent) and forest cover (11 per cent compared to 27 per cent), while its per capita freshwater resources per capita stand at 2,210m³ (versus 9,772m³ in the U.S. and 8,513m³ in the world).⁴² In per capita terms China's oil, natural gas, copper and aluminium resources are just 8.3 per cent, 4.1 per cent, 25.5 per cent and 9.7 per cent of the respective world averages.⁴³

³⁷ *ibid.*, p.5.

³⁸ *ibid.*, p.4.

³⁹ Chen, K. “Chinese protests grow more frequent, violent,” *Wall Street Journal*. November 6, 2004.

⁴⁰ FEWER, International Alert, Saferworld. “Conflict-sensitive approaches to development, humanitarian assistance and peace building: tools for peace and conflict impact assessment,” 2003.

⁴¹ USAID. “Conducting a Conflict Assessment: A Framework for Strategy and Program Development,” October 2004, p.4-5.

⁴² World Resource Institute, *EarthTrends*.

⁴³ Bijian, Z. “China's ‘Peaceful Rise’ to Great Power status,” *Foreign Affairs*, September-October 2005, pp. 18-24

Rising resource scarcity threatens local resource-dependent livelihoods and intensifies inter-group competition. Scarcity is the result of limited or declining supply, of rising demand, and/or of unequal distribution. The threat China faces from scarcity conflicts stems from the country's geography, its limited natural resources, its growing population and worsening environmental degradation. A relatively uneven distribution of resources across the country also may encourage those regions with more natural resources, such as Xinjiang, to seek greater autonomy from Beijing (see Box 2c). This is not to say that all conflicts have environmental triggers or underlying causes as ideology, inequality, ethnicity and power politics can all play important roles.

Poor communities are often the most dependent on natural resources (e.g., forests, land and freshwater) for their livelihoods, and tend to be less able to adapt to a rapid decline in their availability. In July 2000, for example, about 1,000 villagers in Anqui in the rural province of Shandong fought for two days with the authorities after police attempted to block access to the makeshift culverts that were irrigating their crops. One policeman was killed in the fighting and a hundred people were injured.⁴⁴

Pollution-induced resource scarcity, when combined with the effects of poverty and an inability to air grievances, has already led to rural violence. Clashes have occurred in Dongyang over pollution, in Hanyuan over the location of hydroelectric dams, in Wanzhou over the economic effects of the Three Gorges Dam flooding, in Huankantou over health and crop damage and land appropriations) and in Xinchang over industrial pollution.^{45,46,47,48,49}

It is estimated that during the 1990s between 20 and 30 million Chinese were displaced as a result of environmental degradation.⁵⁰ According to Elizabeth Economy, a China analyst at the U.S. Council on Foreign Relations, Beijing expects 30 to 40 million Chinese to migrate as a result of depleted resources and land degradation over the next decade. If not managed properly, she argues, "the combination of migrant labourers and unemployed workers could trigger serious conflict in urban areas; as has already happened in some cities."⁵¹

⁴⁴ *ibid.*, p.86.

⁴⁵ Johnson, T. "In China's Dash to Develop, Environment Suffers Severely," *Knight Ridder*, July 25, 2005.

⁴⁶ Beck, L. "China halts dam, sacks official after protests," *Reuters*, Nov. 18, 2004.

⁴⁷ Chen, K. "Chinese protests grow more frequent, violent," *Wall Street Journal*, November 6, 2004.

⁴⁸ Watts, J. "A bloody revolt in a tiny village challenges the rulers of China," *Guardian*, April 15, 2005.

⁴⁹ French, H. "Anger in China Rises over the threat to the environment," *The New York Times*, July 19, 2005.

⁵⁰ Economy, E. "The River runs black – the environmental challenge to China's future," Council on Foreign Relations, 2005, p.85.

⁵¹ *ibid.*, p.19.

Box 2c The threat of secession in Xinjiang

The western province of Xinjiang is rich in natural gas and mineral resources. The ethnic majority of Uyghurs (a Turkic Islamic group) in Xinjiang and the relative wealth of energy resources make a secessionist movement more likely. To address this, the central government is investing in the West-to-East Gas Pipeline (as part of the Develop the West campaign) in an effort to assert their influence and authority in the Islamic region, despite the uncompetitive costs of exploration, production and transportation.⁵² Similarly, unprofitable investments in Kazakh oil fields and pipelines have been made by the Chinese in part to persuade the Kazakh government to discourage groups active within its borders from supporting greater autonomy for Xinjiang.⁵³

One consequence of China's limited supply of natural resources is that it must look beyond its borders for commodities such as oil and timber, thereby exporting a portion of its ecological footprint overseas. A growing body of research indicates that countries heavily dependent on the export of primary commodities are at significantly greater risk of conflict than other poor countries, particularly during periods of economic decline.⁵⁴ China's growing demand for natural resources overseas may well have the effect of increasing trading partners' reliance on the export of primary commodities, thus potentially increasing the risk of violent conflict within these states.

Sharing land borders with 14 other nations, the environmental concerns affecting China are felt throughout the region. China's economic growth and need for natural resources will encourage further exploitation outside of its immediate borders. The region's need for timber, freshwater and fossil fuels, among others, and the environmental degradation its economic growth generates could serve to increase tensions across borders.

How China chooses to manage its growing international stature, its increasing willingness to stake territorial claims (as illustrated with Taiwan and Japan over independence and gas fields respectively), and its need to secure resources to maintain economic growth, will have significant security repercussions. As the *Economist* argued, the management of this growing influence will determine "whether East Asia remains stable enough to continue to prosper, or stumbles back into rivalry and conflict."⁵⁵ However, with China's increasing integration into the global system, the security implications of its influence extend beyond East Asia alone.

⁵² Andrews-Speed *et al.* "Searching for Energy Security: The Political Ramifications of China's International Energy Policy," China Environment Series 5, Woodrow Wilson International Center for Scholars, 2003, p.21.

⁵³ *ibid.*, p.23.

⁵⁴ Collier, P. *et al.* "Breaking the Conflict Trap: Civil War and Development Policy." World Bank, 2003.

⁵⁵ "China and the key to Asian peace," *The Economist*, March 26, 2005.

3. Scarcity and Pollution: Four resource examples

“Top leaders have commented on the danger that environmental protest poses to the authority of the Communist Party and the stability of the state; noting that it is one of the four most important sources of social unrest in the country”

Elizabeth Economy, China analyst⁵⁶

China’s economic growth continues to have an impact on the global environment. The following will outline how the impact of China’s economic growth on four resources: energy, water, air, and timber is linked to potential security threats within and outside of the country. These four examples should not be considered in isolation, and remain only an illustration of particular impacts of China’s economic growth on the environment and potential sources of instability.

3.1 Securing Energy

China’s economic growth has driven up the country’s energy demands. With energy consumption increasing at four per cent per year, China has recently overtaken Japan as the world’s second largest importer of oil, and is the world’s largest coal producing and consuming country, with nearly 30 per cent of the world’s consumption in 2000.^{57,58,59} In 1997 China used 10 per cent of the global energy supply. By 2020 that figure is expected to grow to 14-16 per cent.⁶⁰ Securing this energy supply and addressing the environmental degradation of energy use and production will be of prime importance to China’s continued development.

China’s policy for securing its energy supplies involves maximizing the domestic output of oil and gas, diversifying the sources of oil bought overseas, investing in overseas oil and gas resources, and upgrading and expanding national infrastructure to bring overseas oil and gas into the Chinese market. These moves have been accompanied by a deliberate policy to enhance political and economic links with oil and gas exporting states.⁶¹

Domestically, “easy” reserves have already been largely exploited, and those that remain carry with them increasingly high costs of production.⁶² Attempts to address energy shortages through infrastructure development have often met with resistance and violence from affected communities. Displacements and inadequate compensation surrounding both

⁵⁶ Economy, E. “The River runs black – the environmental challenge to China’s future,” Council on Foreign Relations, 2005, p. 19.

⁵⁷ Jiang Kejun, Hu Xiulian. “Energy,” in IISD, An Environmental Impact Assessment of China’s WTO Accession, 2004, p.139.

⁵⁸ “So Hard to be Friends,” The Economist, March 26, 2005.

⁵⁹ Jiang Kejun, Hu Xiulian. “Energy,” in IISD, An Environmental Impact Assessment of China’s WTO Accession, 2004, p.140.

⁶⁰ Baldinger and Turner. Crouching Suspicions, Hidden Potential: US Energy and Environment Co-operation with China. Washington, DC: Woodrow Wilson Center, 2002, p.11-12.

⁶¹ Andrews-Speed *et al.* “Searching for Energy Security: The Political Ramifications of China’s International Energy Policy,” China Environment Series 5, Woodrow Wilson International Center for Scholars, 2003, p.20.

⁶² *ibid.*, p.15.

the Three Gorges Dam and a hydroelectricity dam in Sichuan province have led to violent protest between the state and local communities. Such protests appear to be growing in frequency, scale and intensity.⁶³

Regionally, China and its neighbours increasingly compete for long-term oil and gas resources.⁶⁴ The region's sea bed is thought to contain fossil fuels, and as such territorial disputes are on the rise for ownership of the various small islands within the surrounding waters (see Box 2b). China's recent development of the maritime Chunxiao gas field which encroaches upon Japan's exclusive economic zone, demonstrates China's increasingly assertive methods of meeting its energy needs.⁶⁵

China is equally concerned with securing its energy needs from global sources. Investments and partnerships with Russia, Central Asia, Latin America, Africa and the Middle East attempt to reduce the probability of disruptions to China's energy supply.⁶⁶ In so doing, China – through its energy policy – now often provides a counterbalance to western influence. Increased global competition for scarce energy resources, China's need to defend overseas energy supplies and transport routes, its developing strategic partnership with Russia, and its greater involvement in the Middle East are all aspects of this strategy.⁶⁷

Conversely, new linkages between China and its energy suppliers could help integrate it into existing and new regional and global institutions, with its energy strategy pushing it toward greater co-operation and interdependence with the rest of the world.⁶⁸ In the Middle East, China's largest supplier of energy, China's interests lie in stability to ensure the security of its energy supplies. China would have little to gain from instigating conflict or tension in this sensitive region.

The pollution generated from China's energy production and use also threatens the country's development. Coal meets 70 per cent of China's energy demand. While this proportion will drop as China increasingly looks to cleaner sources of energy, coal will continue to play a major role in satisfying the country's energy needs in the coming years. With this comes a host of environmental and health issues: air pollution, acid rain and respiratory illness among others.

While efficiency in the Chinese coal sector is increasing, it lags behind the world on technology and cleanliness.⁶⁹ While the country's mounting openness may allow cleaner fuel sources and technologies to gain access to its market, it will also increase the movement of energy-intensive industries into China. As an example, through tariff reductions, consumer

⁶³ Chen, K. "Chinese Protests Grow More Frequent, Violent," The Wall Street Journal, November 6, 2004.

⁶⁴ "So Hard to be Friends," The Economist, March 26, 2005.

⁶⁵ *ibid.*

⁶⁶ Andrews-Speed *et al.* "Searching for Energy Security: The Political Ramifications of China's International Energy Policy," China Environment Series 5, Woodrow Wilson International Center for Scholars, 2003, p. 17.

⁶⁷ *ibid.*, p.25.

⁶⁸ *ibid.*, p.13.

⁶⁹ *ibid.*, p.14.

demand for cars will grow and thus emissions will rise. Access to the international energy markets and stable world prices could also stimulate more energy use within the country.⁷⁰

3.2 Increasingly Scarce Water

China's freshwater resources are a quarter of the global average (2,210m³ compared to 8,513m³ per capita). According to the World Bank's definition of water scarcity (2,000m³ per capita), this does not classify China as a water scarce country, though the figure hides significant regional variation. Much of China's water is concentrated in the south, while the north and west of China regularly experience drought. Yet despite favourable geography and climate, high demand from individuals and industry mean that even southern provinces such as Guangdong (China's most populous) suffer from frequent water shortages.⁷¹

Pan Yue, deputy head of SEPA, calls water pollution "the bottleneck constraining economic growth in China."⁷² Inadequate investments in the infrastructure for the supply and treatment of water means that even where water is not scarce, it is rarely clean. Despite more than 90 per cent of wastewater receiving preliminary treatment, 45 per cent still cannot meet government quality standards, with much of it only reaching government standards of Degrees IV or V (suitable for industrial usage or recreation in which humans do not have direct contact with the water or for agricultural purposes, but not for drinking).⁷³

Chemical, ferrous metals, paper and energy industries are the biggest culprits.⁷⁴ Of the hundreds of thousands of heavy polluting enterprises in China, 300 key polluters account for 31 per cent of the nation's wastewater discharges.⁷⁵ As a result of poor environmental management and regulation, effluent from China's factories, pollution from intensive resource extraction and sewage flowing from China's cities have rendered much of the water in its seven largest rivers entirely unusable. Fisheries have been destroyed, wildlife and ecosystems devastated and livelihoods disrupted.

While economic integration could bring access to cleaner technologies to abate pollution, reduced tariffs and continued economic growth are likely to spur higher aggregate pollution, as industrialization continues throughout the country and increases both the demand for water and effluent discharges into waterways. Lower export tariffs on agricultural products could similarly increase the demand for clean freshwater, further generating scarcity within the country.

Much of this scarcity is linked to inefficient pricing. While higher prices would reduce freshwater waste, promoting conservation, the state is wary of such a raise in rural areas for

⁷⁰ Jiang Kejun, Hu Xiulian. "Energy," in IISD, An Environmental Impact Assessment of China's WTO Accession, 2004, p.156.

⁷¹ "Guangdong becomes most populous province," China Daily, May 19, 2005.

⁷² "A Great Wall of Waste," The Economist, Aug. 19, 2004.

⁷³ Kunmin Zhang. "Ke Chi Xu Fa Zhan Yu Shong Guo De Shi Jian" (Sustainable development and its practice in China), Shanghai Environmental Science, vol. 16 (July 1997), p. 1-5.

⁷⁴ Yaoqi Liu. "Wo Guo Gong Ye Wu Ran Xian Shuang Fen Xi Ji Fan Zhi Dui Ce" (The analysis and strategies of current industrial pollution), Huan Jing Bao Hu (Environmental Protection), (March 1995), pp. 23-26

⁷⁵ *ibid.*

fear of the destabilizing consequences. As such, cities and industry will continue to subsidize inefficient irrigation and agricultural practices through artificially cheap water delivery.⁷⁶

Domestic water conflicts are already emerging. Numerous user conflicts have erupted over the use of the Miyun reservoir outside of Beijing, a critical source of drinking water for the 14 million people living in the Beijing area (see Box 3a). Reports have emerged from the Chinese authority that the reservoir faces diminishing supply and quality which has raised competition between rural and urban users and sparked inter-provincial conflict.⁷⁷ The majority of water conflicts arise between citizens and local industries, or among provinces, counties and cities. Such domestic water conflicts are increasingly common in China; from 1990 to 2002 over 120,000 water quantity conflicts were reported to the Ministry of Water Resources.⁷⁸

Box 3a The Miyun Reservoir and Water Conflict

Diminishing water quality and quantity in Beijing's dry northeastern plateau has been brought on by regional demographic, agricultural and industrial growth. In recent years, the demand has far exceeded the renewable freshwater supply. Competition among user groups is growing and conflicts have emerged in the region over water distribution and quality.⁷⁹

Two-thirds of the Miyun catchment area is in Hebei, and the water's quantity and quality depend to a large extent on this province. Much of the pollution associated with the water in Miyun can be attributed to upstream activities, such as open-pit ore mining, intensive agriculture and deforestation. Restrictions have been placed on Hebei's use of the water, and have required the displacement and resettlement of local populations.⁸⁰

The province of Hebei argues that while most of the water for the reservoir does come from that province, their per capita consumption is lower than that of Beijing – and as such, Beijing should compensate Hebei accordingly. This money could in turn be used to protect the upstream basin. But Beijing accuses Hebei of polluting the water and threatens fines. In addition, dams and reservoirs throughout Hebei and Shanxi have reduced the flow of waters arriving in Miyun. Beijing's use of the Miyun reservoir has also sparked outrage in the region's other major city, the similarly water-deprived Tainjin.⁸¹

The South-North Water Transfer project, meant to relieve northern supply constraints, also has the potential for causing inter-provincial conflicts. Wuhan and other southern provinces are concerned that diverted water will decrease their own supply and that Beijing, as the seat

⁷⁶ Workshop on Emerging Environment and Security Issues in China, IISD, May 24, 2005.

⁷⁷ Peisert and Sternfeld. "Quenching Beijing's Thirst: The Need for Integrated Management for the Endangered Miyun Reservoir," China Environment Series 7, Woodrow Wilson International Center for Scholars, 2005, p.33.

⁷⁸ Hildebrandt and Turner. "Water Conflict Resolution in China," China Environment Series 7, Woodrow Wilson International Center for Scholars, 2005, p.99.

⁷⁹ *ibid.*, p.36.

⁸⁰ *ibid.*, p.36-38.

⁸¹ *ibid.*, p.38.

of government, will receive preferential treatment. It is predicted that this water transfer project will increase the likelihood of urban-rural water conflicts.⁸²

Solutions exist. The Jiang River has seen far fewer conflicts among neighbouring provinces because of newly introduced water transfer schemes. Under the new inter-provincial agreements, water-rich areas in the upper reaches of the Jiang River can sell excess water to parched areas in the lower reaches. The provinces have viewed the transfers as a far more equitable solution than previous top-down responses from the central government.⁸³

Box 3b Yellow River Basin Conflict⁸⁴

Stretching across northern and eastern China for 5,464 km, the Yellow River (*Huanghe*) flows through nine provinces before emptying into the Yellow Sea. While small-scale disputes between provinces during irrigation seasons have been present for the past 50 years, post-1978 economic development and recent droughts have greatly increased inter-provincial tensions among river users.

Contrary to historical precedent, drought conditions throughout the 1990s reduced the river's flow to all provinces, culminating in 1997 with a record 226-day drought. In 2002, continued drought conditions drove the river's easternmost province, Shandong, to request intervention from the central government. Despite established allocation quotas throughout the river system, the central government agreed, and had to restrict upstream usage to ensure the requested amount of water reached Shandong. This required the closing of irrigation gates throughout the river's upper reaches, hurting agriculture in provinces such as Inner Mongolia and Ningxia (where economic losses were estimated to be RMB 3 billion).

Most provinces within the river system typically withdraw more water than 1987 allocations permit. While initial quotas have been adjusted for recent droughts, the over-withdrawal of water and a lack of inter-provincial water trading schemes to compensate for differing needs have served to increase the tensions surrounding this increasing scarce resource. Provinces also lack incentives for water conservation, extracting their full quotas regardless of need when faced with the threat of reallocation should their need not be demonstrated. Without addressing waste, livelihoods will continue to be lost and provincial tensions will remain.

Dormant conflict surrounding the water of the Zhang River exploded again in the 1990s due to drought and the growing water needs of competing communities. In 1991 villages mortared each other and the next year one village sabotaged a water diversion tunnel, which fuelled the resentment that led to mass clashes. By the end of the decade, the conflict reached a point where major explosions and mortaring resulted in the injury of nearly 100 villagers.⁸⁵

⁸² Turner and Hildebrandt. "Navigating Peace: Forging New Water Partnerships," China Environment Series 7, Woodrow Wilson International Center for Scholars, 2005, p.95.

⁸³ *ibid.*, p.96.

⁸⁴ Wang Yahua. "Water Dispute in the Yellow River Basin: Challenges to a Centralized System," Woodrow Wilson International Center for Scholars, *China Environment Series 6*, 2004, p. 94.

⁸⁵ Hildebrandt and Turner. "Water Conflict Resolution in China," China Environment Series 7, Woodrow Wilson International Center for Scholars, 2005, p.100.

Water quality is an increasing problem throughout the country. Suffering from the effects of pollution from the city of Shengze's textile industry in Jiangsu province, residents of the downstream villages in Zhejiang province took direct action when their complaints failed to spur the provincial government into action. Pollution had hurt economic development in the area, with losses to aquaculture, fishing, and other industries in Zhejiang reaching \$6 million in 2001 alone. The villagers' health was also suffering; from 1996 to 2002, the incidence of alimentary tract cancer grew by 58 per cent. Consequently, locals dammed the 50-metre-wide river at the border by filling and sinking 28 boats loaded with cement and tens of thousands of sandbags. Ma Jun of the consultancy Sinosphere believes such drastic measures and rural instability are increasingly common throughout China's countryside.⁸⁶

Box 3c China's role in the Mekong River Delta

Supporting forests, fisheries, wetlands and agriculture throughout Laos, Vietnam, Myanmar, Thailand and Cambodia; the Mekong River is the lifeblood of one of the most densely populated regions of the world. While the livelihoods of many in within these countries depend on the Mekong a significant portion of the river's source remains in its upstream section, the Lancang River of China.^{87, 88} Effective co-operation and management of the waterway is therefore crucial among the neighbours in ensuring the human security of those downstream.

However China is not a member of the Mekong River Commission leaving the management and development of the water resources to the downstream countries. Economic development, dam construction and agriculture in the region are increasing the competition for water. Meanwhile, water flows are being made increasingly irregular by upstream logging and wetland exploitation which may heighten downstream tensions during the dry season.⁸⁹ China has begun to share information on upstream water levels, helping to reduce flood losses through prevention measures in the downstream countries. However, increased collaboration will be needed in the future, as pollution levels rise and river transport develops, to ensure water is fairly shared and cross-boundary disputes do not escalate into conflict.⁹⁰

3.3 Deteriorating Air Quality

Smog, tropospheric ozone and poor air quality represent to some the most pressing threats to national and regional development.⁹¹ The scale of the problem is enormous – an estimated one-third of China's 1.3 billion people breathe badly polluted air every day, with air pollution contributing to an estimated 300,000 premature deaths annually from respiratory disease.⁹² In 2002, the State Environmental Protection Administration (SEPA) found that the air quality in almost two-thirds of the 300 cities it tested failed World Health Organization (WHO) standards.⁹³ In Beijing, concentrations of fine particles are almost

⁸⁶ *ibid.*, p.100-101.

⁸⁷ "The Land and its Resources," Mekong River Commission.

⁸⁸ "Huge drop in Cambodian fish catch threatens poor," *The Ecologist*, May 2004, Vol. 34 Issue 4, p.10.

⁸⁹ GEF Global Action on Water. "Preventing Conflict," April 2005, p.2.

⁹⁰ "China's River Data Helps Stop Mekong Flood Losses," *People's Daily*, June 30, 2002.

⁹¹ Vaclav Smil, Workshop on Emerging Environment and Security Issues in China, IISD, May 24, 2005. .

⁹² "A Great Wall of Waste," *The Economist*, August 19, 2004.

⁹³ *ibid*

seven times that of the air quality standard proposed for the U.S.⁹⁴ The health crisis brought on by China's continued air pollution is likely to hamper both domestic and regional economic development.

The main reason is that approximately 70 per cent of China's increasing energy needs are provided by coal-fuelled power stations⁹⁵ compared with an average of 27 per cent in other countries.⁹⁶ Such high coal production, along with car emissions, are likely to increase in step with economic growth. Respiratory health is likely to continue to deteriorate, along with increases in acid rain. In some cities in the southwest, pH levels in rain are the same as that of vinegar.⁹⁷ Such conditions have already contributed to localized violence: protests in Dongyang, for example, were caused by the destruction of crops by acid rain. Regionally, Japan and South Korea blame China for many of their acid rain problems; a situation that has contributed to the persistent tensions in the East Asian region.⁹⁸

The meteoric increase in the number of cars on China's roads is likely to worsen air pollution. Under WTO entry terms, China's import tariffs on cars will drop from 80–100 per cent to 25 per cent and foreign automakers will be allowed to both set up full-service operations (they were previously limited to sales only) and make car loans. Opening up the credit market for loans to individuals could lead to an increase in car purchases and subsequent emissions.⁹⁹

High emissions throughout the region have contributed to the creation of the Asian Brown Cloud, a dense blanket of air pollution resulting from burning biomass and industrial emissions. Sulfate is the largest contributor to this haze and can be largely traced to China's reliance on sulfur-rich coal energy. Estimated to be three km thick, the haze extends over South, Southeast and East Asia. It is already responsible for hundreds of thousands of deaths per annum from respiratory disease, and further threatens the lives of millions in the region.

The haze carries with it implications for regional and global security. Sixty per cent of the world's six billion people live in Asia and the affected region is the world's most densely populated. The region's economic growth, which has taken off in recent years, has brought with it pollution levels which aggravate problems of water stress, agricultural productivity, and health. Some argue that, by blocking sunlight, the haze has cooled the ground temperature and led to erratic weather across the Indian subcontinent. It has affected the rainfall to the area, one of the world's most important agricultural regions. Altered rainfall, it is alleged, has led to flooding in Bangladesh, Nepal and India, as well as droughts in Pakistan and India.¹⁰⁰

⁹⁴ UNEP. "Asian Brown Cloud: Climate and Other Impacts," Centre for Clouds, Chemistry and Climate, 2002, p.10.

⁹⁵ "A Great Wall of Waste," *The Economist*, August 19, 2004.

⁹⁶ World Resources Institute, "China's Health and Environment: Air Pollution and Health Effects," 1998.

⁹⁷ Weijiong Zhang *et al.*, "Can China be a Clean Tiger?," *Pacific Affairs*, Vol 72. No. 1, Spring 1999, p.24.

⁹⁸ Economy, E. "The River runs black – the environmental challenge to China's future," Council on Foreign Relations, 2005, p.84.

⁹⁹ Collier, R. "WTO Bid Stirs Fears about Environment: Auto Boom may add to China's pollution," San Francisco Chronicle, May 18, 2000.

¹⁰⁰ Bray, M. "Asian Brown Cloud poses global threat," August 12, 2002.

3.4 Deforestation and Conflict

In the late 1990s, drought and floods brought on in part by unsustainable domestic forestry practices convinced the Chinese government that action was required to curb national deforestation. Killing 3,000 and causing \$12 billion in property damage and lost output, these crises spurred the establishment of two of the world's largest ecological restoration projects – the Natural Forest Protection Program (NFPP) and the Slope Land Conversion Program (SLCP). If implemented properly, these programs could contribute to combating some of China's most pressing environmental problems, such as soil erosion, desertification, flooding, climate change and biodiversity loss.¹⁰¹

Prior to the establishment of these two programs, construction and manufacturing demands within the country resulted in unsustainable domestic harvesting rates, environmental degradation and an increase in the disaster vulnerability of China's citizens. To address these concerns, the NFPP calls for logging bans in the southwest of the country, and reduced harvests in the northeast and elsewhere, while the SLCP aims to convert sloping cropland and degraded rangeland to grass and tree coverage, primarily in the upper reaches of the Yellow and Yangtze Rivers and other regions of western China.¹⁰²

This could generate grievances within China. Under the NFPP logging bans, jobs will be lost and community forests (representing half of those in the southwest) appropriated.¹⁰³ A failure on the government's part to adequately compensate farmer losses could destabilize the affected rural regions. Additionally, with tariff reductions, domestic prices will fall and could hurt the livelihoods of those in the forestry industry, previously protected by higher domestic prices.

While the government states that China can meet its own timber needs from domestic supplies, demand trends indicate that it will prove increasingly hard to do so.¹⁰⁴ With NFPP logging bans and restrictions, China will increasingly have to look beyond national borders to meet the growing domestic demand for timber. This is a pressing issue, for according to the World Wildlife Fund (WWF-International), by 2010 China will only be able to meet half of its demand through domestic supply.¹⁰⁵

As such, domestic timber production has started to decline significantly, substituted by imports. This is impacting the China's trading partners. Logs and lumber are increasingly imported into China, while value-added timber product imports are decreasing as China

¹⁰¹ Runsheng Yin *et al.* "China's Ecological Restoration: The Unprecedented Efforts and Dramatic Impact of Reforestation and Slope Protection in Western China," China Environment Series 7, Woodrow Wilson International Center for Scholars, 2005, p.17.

¹⁰² *ibid.*, p.17.

¹⁰³ *ibid.*, p.25.

¹⁰⁴ "Green Guise," *The Economist*. March 23, 2005.

¹⁰⁵ *ibid.*

invests little into the manufacturing capabilities of its regional trade partners.¹⁰⁶ It now ranks second in the value of total forest product imports, and first in industrial round wood.¹⁰⁷

It remains uncertain what effect such changes will have on China's role in the illegal logging trade and the impact of the country's timber industry on regional and global security. While tariff reductions could potentially decrease the amount of illegal logging coming into the country (as smuggling becomes less attractive), the country has become the main hub for illegal timber, according to the Environmental Investigation Agency.^{108, 109}

China is importing large quantities of timber from around the world – and from many countries with poor management of their own forests.¹¹⁰ Should China's demand be met by illegal timber imports from its forest-rich neighbours, it could be “exporting” the security issues related to deforestation (i.e., local grievances from deforestation/erosion, funding rebel groups) while contributing to unsustainable forestry abroad. Thus, the increase in imports brought on by WTO entry (projected at a substantial 497 million m³ round wood equivalent volume from 2002 to 2010) could have potentially devastating effects within the borders of China's trading partners.¹¹¹

China's investments in the forestry sectors of its trading partners continue to increase and in some cases are generating considerable tension and violence with local communities. The in-progress Pheapimex pulp project in Cambodia, for example, the nation's first major pulp mill, is a joint venture between Cambodia's largest concession holder (Pheapimex) and the China Co-operative State Farm Group. This project led to protests at the local level in 2001, which slowed plantation development. Recently, several individuals were injured in a grenade blast, as a group of 600 protesters attempted to block bulldozers that had begun clearing the forest for an acacia plantation.¹¹²

¹⁰⁶ Xiufang Sun *et al.*, “China and Forest Trade in the Asia Pacific Region: Implications for Forests and Livelihoods: An Overview of Import Trends, Ports of Entry, and Supplying Countries, with Emphasis on the Asia Pacific Region,” CIFOR and Forest Trends, 2004, p.4.

¹⁰⁷ *ibid.*, p.2.

¹⁰⁸ *ibid.*, p.4.

¹⁰⁹ “Green Guise,” *The Economist*, March 26th, 2005.

¹¹⁰ Changjin Sun, “Forestry,” in IISD, *An Environmental Impact Assessment of China's WTO Accession*, October 2004, p.59.

¹¹¹ *ibid.*, p.61.

¹¹² Katsigris *et al.*, “The China Forest Products Trade: Overview of Asia Pacific Supplying Countries, Impacts and Implications,” *International Forestry Review*, 2004, Vol. 6, p. 243.

4. Discussion

“In China, social discontent is evident everywhere. It is expressed in forms as diverse as mounting labour unrest, peasant protest and increased religious activity. As government has diminished its role in guiding the economy its role in managing society has decreased as well. For this reason it retains few levers to shape public opinion and action, with the exception of suppression.”

Elizabeth Economy, China analyst¹¹³

The environmental implications of China’s continued economic development are significant both at home and abroad, in terms of the resources such growth requires and the environmental degradation it generates. This paper has attempted to describe some of the ways in which environmental change driven by China’s economic growth may contribute to potential tensions and violence. This is not to suggest that such violence will spring from environmental issues alone; politics, ethnicity, and inequality, among other things, might prove to be drivers of conflict as well. The analysis does however raise some important questions:

How significant are the linkages between environment and security for China?

Two of China’s principal geo-strategic security concerns are the independence of Taiwan and North Korea’s nuclear arms program, neither of which relate directly to the environment. While pollution, degradation, and the need to secure resources for economic growth have spurred local conflicts (i.e., riots in Dongyang and Anqui), arguably China’s environmental footprint has yet to threaten security at a regional level. As such, how useful is the environment as a starting point when considering China’s security concerns?

Is the science any good? Is the modelling useful? Are the data reliable?

With much of the information concerning the Chinese environment coming from the country’s central government, there is reason to question it without the ability to confirm via multiple sources. It remains to be seen whether such information is improving over time to give us a fuller picture of the true state of the environment within the country – an improvement which may come with China’s increasing integration into the world economy. Regulations and standards associated with trade may serve to increase the reliability of the data (i.e., WTO reporting requirements, EU trade standards), however until the data can be confirmed through increased openness, they will remain questionable.

Self-preservation is a principal goal of the central government and the Communist Party, and as such they will not release data which could threaten their position. Whether the true picture is different from that released by the authorities is unclear, however it is unlikely that the state would retain information concerning a more positive environmental picture than that believed by the outside world.

¹¹³ Economy, E. “The River runs black – the environmental challenge to China’s future,” Council on Foreign Relations, 2005, p. 252.

Can tensions be reduced between China and its neighbours through co-operation over shared resources and environmental concerns?

China remains cautious in committing to formal agreements for a number of reasons; it does not want to commit to long-term political and financial duties outside of its own borders; it does not want to be recognized as a source of pollution within a neighbouring country's borders; and it will not risk its sovereign right to pursue economic growth.¹¹⁴

Without China's participation, the effectiveness of any protection program in the region will be compromised. A lack of full participation from China has hampered the effectiveness of other multilateral environmental agreements aimed at increasing co-operation and dialogue, among them the Acid Deposition Monitoring Network in East Asia (EANET), the Northeast Asia Sub-regional Program of Environmental Co-operation (NEASPEC) and the Northwest Pacific Action Plan (NOWPAP).¹¹⁵

However, trade links, solidified by regional agreements such as ASEAN and APEC, do strengthen the interaction and trust between regional trading partners. These could serve as a stabilizing force. China's dialogue with the group has been established through ASEAN+3, and it has begun to look at air and biodiversity issues. The environment can be an entry point for low-risk dialogue, for confidence-building through technical co-operation, and – in cases where mutually-vital resources are at stake – collaborative management.¹¹⁶

How will China get the resources it requires to become the world's premier trading power?

To maintain economic growth, China requires resources beyond those found within its borders. How it chooses to secure these remains to be seen. Important factors in answering this question include China's increasingly assertive foreign policy (see Taiwan, Chunxiao gas fields), its increased confidence in the global economy, the growth in its military expenditures (up 12.6 per cent to nearly \$30 billion in 2005¹¹⁷), its ownership of large pools of foreign currency and its participation with regional trade agreements such as ASEAN; there are a myriad of possible directions in which China could move to secure its resource needs.

These resource demands will place significant pressure on the environment within both China and its trading partners. Driven by both the scale of resource extraction and the efficiency with which the resources are used, this demand will continue to grow with China's economy. However the sustainability of this extraction will largely depend on the concerns and actions of the Chinese government both at home and abroad.

What's the right balance for de-centralized versus centralized decision-making?

To address the environmental concerns of a country the size of China – both in terms of population and physical size – a balance is required between national and local governance.

¹¹⁴ Sangmin Nam. "Ecosystem Governance in a Cross-Border Asia: Building a Tumen River Transboundary Biosphere Reserve," in Woodrow Wilson International Center for Scholar's *China Environment Series 7*, 2005, p.83.

¹¹⁵ *ibid.*, p.83.

¹¹⁶ Conca, K. and Dabelko, G. *Environmental Peacemaking*. Woodrow Wilson Center Press/Johns Hopkins University Press, 2002.

¹¹⁷ "So Hard to be Friends," *The Economist*, March 23, 2005.

The country is far too ethnically, topographically and economically varied to allow for effective decision making at the highest level only.

However, efforts to decentralize this power have not succeeded in addressing the country's environmental problems. The devolution of power to local officials has produced a patchwork of environmental protection that is inconsistent and irregular, as many are concerned more with continued economic growth than with the enforcement of national environmental regulations. Local environmental bureaus remain weak and under-funded, unable to spur.

On the national level, the State Environmental Protection Administration (SEPA) suffers the same fate as its local contemporaries; its priorities remain secondary to those of the party, namely continued economic growth. However, this goal is indicative of the market's increasing role (over that of the state) in driving the Chinese economy. It is likely that the capacity of the Chinese government to intervene will be increasingly constrained in the coming decades.

What, if anything, should the international community do to promote environmental management in China?

The environmental implications of China's economic growth are global; China's air pollution, resource extraction and water management have important repercussions outside of China's own borders. Yet the country's high regard for its sovereignty and its growing economic and political power leaves the international community with few levers with which to promote change. As China's economic growth continues, the world will increasingly feel environmental consequences over which they have little control.

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