

**China's Environmental Crisis:
Why Should We Care?**

Simona Alba Grano

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*Simona Grano is Dr. of Chinese Studies at Ca' Foscari University of Venice. She is currently assisting in various scientific activities organized by Ca' Foscari regarding green social movements and environmental laws in China.
Email:sgrano@unive.it

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Abstract

In this essay¹ I address the main problems regarding Chinese environmental pollution and the failure, at least up until now, to enact a series of regulations able to solve or at least partially “revert” the current situation. Why, even though Chinese environmental laws have standards as high as those of their American counterparts, do they fail to curb these problems?

My contention is that laws are present but not enforced; which is especially true at the local level where economic growth is what matters the most. Aside from these problems, I argue that the rest of the world can not simply ignore China’s ecological disaster because, ultimately, the whole planet is affected by many of the devastating catastrophes originating in China making a situation that was previously thought of as “confined” within its borders, a global, “contagious” problem.

¹ This study is a revised version of a paper entitled “China’s Environmental Crisis: Implications and Risks for a Globalized World”, presented at the EastAsiaNet Workshop “Framing Risk: Hazard Perceptions as a Crucial Factor in Imagining East Asia”, Lund University, June 1 – 2, 2007. It was made possible thanks to Professor Roger Greatrex of the Centre for East and South-East Asian Studies, Lund University, which endowed me with the time and resources needed to further develop and refine my ideas. I also received valuable inputs from discussions on environmental law with Professor Cavaleri and from Professor Samarani who is always willing to help me polish my works. Also, I have made extensive use of the library at Leiden University to confirm many of the data present in this article; the visit was made possible thanks to EACS and the Chiang Ching-Kuo Foundation Travel grant. No one has read the final draft of this paper, so I am the only one responsible for any of the mistakes that may occur.

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Introduction

China's environmental problems sadly loom over those of the world for a variety of reasons: China contains a fifth of the world's population, its economy is developing at such a quick pace and recent reports in the media and in academic discussions detailing the deterioration of the Chinese environment and its lethal effect on the rest of the planet, have created public interest and concern. Globalisation has a unique side effect when dealing with environmental problems: China is increasingly being affected by the rest of the world's disasters as much as it is affecting and worsening the ecological situation for faraway countries and neighbouring ones alike.

China's rapid economic growth has had tremendous side-effects in terms of environmental degradation. Global interdependency among nations has increased, particularly in the past 15 years and this pattern will probably continue in the next decade. No other nation has ever had to manage problems like poverty mitigation, job creation and building of urban and rural infrastructure on the scale of China nor under the same urgent conditions.²

China's environmental crisis is not a new phenomenon and its origins can be traced back to the imperial age. According to Mark Elvin and Liu Ts'ui-jung since ancient times, China has been mining out natural resources to pursue military power, placing a significant burden on the ecological environment.³ During the Mao era, the quest to overcome nature (*zhansheng ziran* 战胜自然) in order to achieve a socialist vision, had devastating environmental (and human) consequences: for example, the greatest recorded starvation in Chinese History (Great Leap Forward 1958-1961).⁴ According to Judith Shapiro, China's environmental problems cannot be attributed only, contrary to what many people think, to post-Mao economic reforms and industrial development.⁵ The author draws an interesting link between the authoritarian behaviour of the State towards both citizen and nature and claims that the destruction of the environment was happening while the majority of the people did nothing to hinder it and, sometimes, even deliberately supported the president's destructive plans. The conclusion one can derive from these concepts is that the system of economical planning implemented in the '50s represents the beginning of China's contemporary

² Howard French, "Visit to Chinese Anytown Shows a Dark Side of Progress", *The New York Times*, 19 January, 2006.

³ See Mark Elvin and Liu Ts'ui-jung, *Sediments of Time: Environment and Society in Chinese History*, Cambridge, Cambridge University Press, 1998, p. 253 and Katherine Morton, "Surviving an Environmental Crisis: Can China Adapt?", *Brown Journal of World Affairs*, Vol. XIII, Issue I, Fall/Winter 2006, p. 63.

⁴ Judith Shapiro, *Mao's War Against Nature: Politics and the Environment in Revolutionary China*, Cambridge, Cambridge University Press, 2001, p. 2.

⁵ *Ibidem*, p. xii.

environmental problems that still affect - at a much more serious level, since new problems have emerged - the country in our time.⁶

Today China influences the world's economy and its environment. A first example of this can be found in the evidence supported by a few Chinese scientists who claim that some glaciers (the ones on the Qinghai-Tibetan plateau) are disappearing at an astonishing rate: a reduction of more than seven percent a year.⁷ This could lead to further desertification of grasslands or worsen the already dramatic situation of water shortages. Why? Because the Chinese water system is not a unique and separated organism. It is closely connected to many of the major rivers of the Southeast Asia region like the Yangtze, the Mekong and many others, whose water levels are regulated none others than by the glaciers. If there is an increase in temperatures there will be more floodings in the rainy season and less water during the dry season, affecting fishing activities in countries downstream.⁸ Eventhough the authorities, confronted by daily episodes of civic unrest due to "pollution incidents", are trying to find a balance between the environment and economic development, the actual results are not as satisfying as China's leaders had hoped.⁹ Important environmental goals lie forgotten and while the highest levels of government do actually worry about pollution problems, these issues are not a concern at the local level where economic growth is what matters the most. In fact, every year the fixed targets for reduction of pollutants such as sulphur dioxide continue to be exceeded while economic goals are exceeded.¹⁰

Basic environmental policies

It has been common practice, for China's local authorities, to ignore violations of environmental laws, predominantly in poorer provinces lacking development and investment. The Chinese government considers international environmental protection efforts as a pretext, employed by richer nations, to control the economic development of rapidly industrializing states, thereby keeping them in a subdued position.

⁶ *Ibidem*, p. 2.

⁷ See Katherine Morton, *op. cit.*, p. 66.

⁸ Cynthia W. Cann, Michael C. Cann and Gao Shangquan, "China's Road to Sustainable Development: An Overview" in Kristen A. Day, (ed.) *China Environment and the Challenge of Sustainable Development*, Armonk, New York, M.E. Sharpe, 2005, p. 11.

⁹ *The River Runs Black* by Elizabeth Economy offers a detailed view on the main environmental challenges affecting Chinese contemporary society and analyses countermeasures enacted by the Chinese government to cope with this kind of problems.

¹⁰ Brandon Kirk, "Saving China's Environment: From Compliance to Best Practice", *China Law & Practice*, April 2007, www.chinalawandpractice.com

Safeguarding the environment became a *jiben guocce* 基本国策 (fundamental state policy) in 1993, pushing China on to the path of rapid enactment of a myriad of environmental laws and regulations.¹¹

The regulatory framework has greatly expanded over the past few decades and issues like ecological safeguarding and pollution-control have become omnipresent in authorities' discussions; environmental needs and priorities have been integrated into every state Five-Year Plan for economic development, and the sum invested in environmental protection as a percentage of GNP has risen from 0.69 percent during the seventh Five-Year Plan (1986–1990) to a pledged 1.5 percent for the tenth Five-Year Plan (2001–2005). In the past decade, it is possible to identify some significant, central policy changes. China's inclination towards economic development over environmental protection has for a long time been justified due to the collective needs for social development and poverty alleviation of the majority of the population. Unfortunately, the consequences of economic growth have not all been positive. Pollution and land seizures by local government to enable economic advancement are responsible for an increasing number of mass protests and civic unrest incidents.¹² In some cases, these conflicts have turned violent and resulted in equally severe government crack-downs.¹³ The Chinese government has taken notice of many of these issues, enacting more than two dozen major environmental laws and promulgating hundreds of additional regulations and legal mass-education campaigns (*pufa* 普法).¹⁴

The notion of *xietiao fazhan* 协调发展 (harmonious development) has been re-introduced in policy discourse in the past few years. This notion was employed over 30 years ago at the First National Conference on Environmental Protection in 1973 and back then it stand to signify the need to balance economic development with the ecosystem. The **Scientific Development Concept** (科学发展观, *Kexue Fazhan Guan*) is the current official socio-economic guiding of the Communist Party of China integrating

¹¹ Katherine Morton, *op. cit.*, p. 67.

¹² Vivian Wu, "200 Angry Villagers Loot Leather Plants", *South China Morning Post*, April 12, 2006, p. 7.

¹³ Minnie Chan, "Dongzhou Woes Simmered for a Year Before Riot Villagers Say Complaints Over Lack of Compensation for Land Grabs Were Ignored", *South China Morning Post*, December 17, 2005, p. 9; *Xinhua* "1-9 yue nongmin canyu qunti shijian 38 wan ren ci ju gelei ren zhi shou 1-9月农民参与群体事件38万人次 居各类人之首 [From January to September, 380,000 Farmers Participated in Mass Incidents, Represent Largest Group]", November 6, 2006, <http://news.sohu.com/20061106/n246226211.shtml>

¹⁴ Mechthild Exner, "The Convergence of Ideology and the Law: The Functions of the Legal Education Campaign in Building a Chinese Legal System," *Issues and Studies*, vol. 31, n. 8, 1995, p. 80).

sustainable development, social welfare, a person-centred society, increased democracy, and, ultimately, the creation of a Harmonious Society.¹⁵

The central government is now very keen on promoting cleaner production techniques in Chinese factories and major cities have imposed strict vehicle emissions standards.¹⁶ In January 2007 alone, the State Environmental Protection Agency (SEPA) suspended applications for 82 construction projects over a third of the total projects suspended in 2006.¹⁷ It is foreseeable that 2008 will continue to be a rough year for those industries who wish to pollute and things will only become more difficult for businesses that lack a commitment to reduce their impact on the environment.¹⁸ Nowadays, almost every economic transaction that takes place in China - from acquisition to initial public offerings (IPOs) to sales of manufactured goods - involves certain forms of environmental liability.¹⁹ But in reality, not everything is as good as it seems on paper; in fact, since law in the books and law in action are two very different things, many projects do not complete the required environmental impact assessment prior to the construction process thereby quashing the reason behind requiring an environmental assessment: that is to build environmental considerations into the development of projects and plans before they are completed in order to reverse the old mentality of "Pollute first, control later" (*xian wuran, hou zhili* 先污染后治理).

¹⁵ It is lauded by the Chinese government as a successor ideology to Marxism-Leninism, Mao Zedong Thought, Deng Xiaoping Theory and the Three Represents and it refers, essentially, to the need for environmental protection policy in a time where, in contrast to its remarkable performance in moving towards a market economy, China's environmental protection efforts have been far less successful and the environment has been deteriorating at a steady pace (Cann, Cann and Gao, 2005: 11). The conclusion, after years of savage development, was the need for a new ideological campaign to shift the focus of the official agenda from "economic growth" to "social harmony".

The actual application of the Concept has received conflictual results. The central government faces opposition from local governments and also from within the Politburo Standing Committee (PSC); all of these people wish to place greater emphasis on the path of economic growth (as opposed to the Concept's gradual approach with a view to the social costs of development). This theory plays a crucial role in outlining the divergent philosophies and developmental visions for China that are at play within the highest echelons of the government.

¹⁶ China became the first country to pass a Cleaner Production Law in 2002. English and Chinese version of the law available at:

<http://www.lawinfochina.com/law/display.asp?db=1&id=2388&keyword=>

¹⁷ Brandon Kirk, *op. cit.*, 2007.

¹⁸ See for example Chen Jiyu, Wang Baocan and Yu Zhiyin, (eds.), *Zhongguo haian fayu guocheng he yanbian guilv* [The process of coastal development in China and the related laws governing coastal evolution], Shanghai, Shanghai kexue jishu CBS, 1989.

¹⁹ Brandon Kirk, *op. cit.*, 2007.

Chinese environmental problems = trouble for the rest of the world

Chinese environmental issues are often characterised by a dangerous international dimension that reflects regional environmental interdependencies (pollution of international rivers, regional sea pollution, desertification).

In recent times, precisely in November 2007, the Blacksmith Institute's published its annual review, which debuted in 2006, indicating the world's top 10 polluted towns and cities including sites in ex-Soviet republics, Russia, India and China. The report claimed that an estimated 12 million people were affected by severe pollution, mainly caused by chemical, metal and mining industries. Among the new sites listed in 2007 were Tianying in Anhui Province, where potentially 140,000 people were at risk from lead poisoning due to a massive lead production base situated there.²⁰

Until about a decade ago, not many people were interested in China and in the international implications of its energy usage for the rest of the planet. Discussion about sustainability as applied to the Chinese situation was virtually non-existent. At that time, the current thinking was that China was not going to be able to maintain high growth rates for a long time and that other countries did not have to worry about China influencing the world price of key natural resources like oil, cement, minerals and agricultural commodities. As the world has witnessed, this influence has dramatically accelerated after the country became a member of the World Trade Organization (WTO) in 2001, with a rapid increase in imports and exports, but also with more affordable cars for Chinese citizens, leading to higher demands for oil and electricity.²¹

Today, many people, citizen and rulers alike think about China with concern for the threats it poses: balance of payments issues with the U.S.; fear of losing jobs as industrial production moves to China; fear of losing hard-won environmental and social performances of the last decades and concerns that pollution and other environmental impacts from China's rise will directly, and dramatically, affect human health and ecosystems elsewhere.

This is only one side of the picture, though. China itself has many fears about its international (environmental and developmental) relationship, and the risks that could, in the future, affect it. Like other countries, China pays a huge price for supplies purchased on the international market. Many

²⁰ *BBC News*, "Ten 'most polluted places' named", 14 September 2007.

²¹ Lin Bo, "Electricity Demand in the PRC-Investment Requirement and Environmental Impact", *ERD Working Paper Series*, n. 37, 2003.

undesirable byproducts from export-driven industry like pollutants and their consequent health cost remain in China and the government has to deal with them even though it bears no direct responsibility in provoking them. Countries have promptly relocated to China some of their own worst polluting industries²²—coke production, for example (the total output of coke of China in 2007 was 3.36bn tons, accounting for 61% of that of the world, while the export quota is 15.3m tons, 45% of the world's share).²³ Sadly, the majority of these industries still uses cheap and obsolete technology highly damaging for the environment. As an example of the gravity of China's air pollution, what first comes to mind is the city of Benxi.²⁴ At one point this city, that produces around 7 million tons of coal per year and more steel per capita than any other Chinese city, was completely engulfed in a cloud of thick smoke that made it disappear from satellite images.²⁵

However, when talking about China's pollution problems, one question often comes to people's minds: why in the world should *we* care? The seriousness of China's environmental challenges has been known for at least a decade. Its population size and incredible economic growth have already made it the world's largest greenhouse gas emitter, surpassing the United States many years ahead of previous estimates.²⁶ Well, there are many answers to this question.

First, we should care because considering this matter from a market perspective, helps us realize that China's lack of regulations and poor enforcement of environmental laws, allows Chinese manufacturers to produce at lower costs thereby gaining that "often discussed" unfair advantage over other countries. Along the same line of reasoning, since Chinese factories do not pay so much attention to the environment, they are able to attract many foreign industries with the enticing promise of a "pollution heaven", obtaining the competitive economic advantage responsible for putting hundreds of thousands of people out of work in other parts of the world.

²² Oguetue Mehmet, *Foreign Direct Investment and Importance of the "Go West" Strategy in China's Energy Sector*, Principal Administrator – Directorate for Financial, Fiscal and Enterprise Affairs, OECD, 2002.

²³ See the 2008 Report on China's Coke Industry to be consulted at: <http://www.pr-inside.com/report-on-china-s-coke-industry-r900438.htm>

²⁴ Benxi is located in the eastern region of Liaoning Province. It is an important industrial raw material base for iron and steel, coal, building materials and chemical products. About 1.5 million people live here.

²⁵ Peter Navarro, *The Coming China Wars*, New Jersey, Financial Times Press, 2006, p. 46.

²⁶ Jeffrey Logan, "Surging Chinese Carbon Dioxide Emissions", *EarthTrends*, World Resources Institute, November, 2006, [last accessed September 12, 2007], at:

<http://earthtrends.wri.org/updates/node/110>; Emma Graham-Harrison & Gerard Wynn, "China Seen Topping U.S. Greenhouse Gas Emissions in 2007", *Reuters*, March 27, 2007, [last accessed September 12, 2007], at: <http://www.alertnet.org/thenews/newsdesk/L22726612.htm>.

An even more serious and dangerous problem regarding China's pollution is that it affects every single human being on earth; pollution is never "sedentary" and in China it is expanding beyond its borders. Consequences and risks are both "regional": an increase in the percentage of acid rain in Japan and Korea and "international": increase in Chinese smog that reaches faraway places like the United States posing threats to its citizens' health!

It is interesting to examine environmental and developmental implications of China's rapid growth on the rest of the world and, likewise, environmental effects of the rest of the world on China. China bears the weight of environmental impacts associated with tourism, climate change and other actions resulting from economic activities started elsewhere.²⁷ For example, China's lands are increasingly affected by the phenomenon of desertification.²⁸ Amongst other previously mentioned problems like acid rain and bad air quality, one fourth of China's land, especially in the northwestern regions, has already turned into dust.²⁹ Historically this phenomenon is hardly new. Chinese philosopher Mengzi, around 300 B.C., already mentioned the problem in one of his works blaming for it overcultivation and overgrazing.³⁰ What has changed in recent times though, is the speed at which this process is advancing.³¹ The environmental consequences are the increasingly frequent dust storms that affect Beijing (more than 25 storms a year) and the area situated north of the Yangtze River. This too has become an "international" problem because these storms often reach as far as Korea, Japan and even the United States with lethal effects for human health when these particles are inhaled.³² Well then, who's to blame? Eventhough among scientists there is a consensus about the fact that nature itself is, partially, responsible, the major culprit certainly seems to be human behaviour: deforestation, overcultivation and overgrazing are all tightly bound to China's rapid and reckless economic development.

When Deng Xiaoping enacted the "Household Contract Responsibility System" (*Jiating lianchan chengbao zerenzhi* 家庭联产承包责任制) in 1979,

²⁷ Wang Alex, "The downside of Growth: Law, Policy and China's Environmental Crisis", in *OYCF Perspectives*, 2, 2002, pp. 1-25 At:

<http://www.oycf.org/Perspectives/8<uscore>103100/downside<uscore>of<uscore>growth.htm>

²⁸ ²⁸ Brown L. B., "Deserts Invading China: From Ecological Deficits to Dust Bowl", *The Earth Policy Reader*, New York: W.W. Norton & Co., 2002.

²⁹ Ron Gluckman, "Beijing's Desert Storm", *Asiaweek*, October 13, 2000. Accessible at: <http://www.gluckman.com/ChinaDesert.html>

³⁰ Mark Elvin and Liu Ts'ui-jung, *op. cit.*, 1998, p. 216.

³¹ According to Shi Yuanchun, ex president of China Agricultural University, between the 1950s and the 1970s China lost about 1,500 square kilometers to desert. For details see "Reflections on Twenty Year's Desertification-Control in China" at: <http://us.tom.com/english/2137.htm> quoted in Peter Navarro, *op. cit.*, p. 229, note n. 18, chapter 3.

³² U.S. Embassy in Beijing, "Beijing Environment, Science and Technology Update for March 29", 2002, at: <http://www.usembassy-china.org.cn/sandt/estnews032902.htm>

meat production was separated from central planning thereby leaving farmers, at the local level, able to multiply their stocks according to their own wishes. The devastating consequence was a sudden growth of grazing animals in many Chinese provinces in which millions of square kilometers of grassland were destroyed. In these regions the later enacted policy of *tui mu huan cao* 退牧还草 (returning pasture to grassland) has led to the devastation of the livelihoods for hundreds of people whose traditional way of living and farming offer a source of valuable indigenous knowledge to supporters of sustainable development.³³

Overcultivation is a phenomenon that contributes to the global dimension of the problem and that, contrary to what many people think, is not of recent origin and is not imputable to the economic reforms of the '80s but dates back to the ancient times and, at least in its most dangerous form, to the late 1950s with Mao's Great Leap Forward. In an effort to jumpstart the economy, millions of Han (汉) Chinese were sent to distant provinces, occupied mostly by non-Han minorities, to try and cultivate land by plowing up grassland thereby freeing sand.³⁴

Uncontrolled deforestation, after overcultivation and overgrazing is the third major contributor to desertification. The origin of this problem can also be found in human error. Population growth in forest regions and the increasing demand for forest products thanks to higher incomes have put a tremendous strain on those few remaining forests. Also, the legal system has completely failed in its mission to provide a regulation network for forest-ecosystem, in order to stop their misuse.

It is a well known fact that forests act as walls that prevent dust storms from gaining mass but they also help to anchor the topsoil; on the contrary, deforestation provokes biodiversity's loss and floods.³⁵ What drives Chinese deforestation? Yet again an economic motive is behind this phenomenon. As we are going to see further into this article, China is nowadays the largest manufacturer of furniture of the world and also the biggest consumer of legal (and illegal!) timber and lumber.

In addition to these already troublesome problems, China also has to deal with water shortages. With far too little water, the majority of which polluted

³³ Zhu Gesheng, "Kentian Shiyi" [Ten proposals for reclamation of farmland], quoted by Xu Guangqi in *Nongzheng quanshu*, cap. 8.

³⁴ Shapiro, *op. cit.*, chapter 2, p. 67. In this chapter the author illustrates how the Great Leap Forward mobilized the Chinese people in a concerted effort against nature that required extensive overcultivation, overgrazing and destruction of the climatic conditions of many areas of China.

³⁵ It is worth mentioning that deforestation, though on a much smaller scale, already plagued certain parts of China in the second half of the 19th century; see for example: Wang Xiliang, Jindai Dongbei Senlin Kaifa Shi Hua [Historical Words on the opening of the forest of the Northeast in modern times], *Heilongjiang Linye* 11, 1983.

and unusable, China is already facing a severe water crisis that is creating frictions among farmers, industrialists and government officials, aggravating the critical situation of rural instability. Here too, the international repercussions of this phenomenon are worth analysing and are a direct consequence of the abundant construction of a multitude of dams, on the Chinese side of the Mekong river, that cause diplomatic tension with countries located downstream: Cambodia, Thailand, Vietnam and Laos threatening the livelihoods of more than 50 millions of people living in that area.³⁶ Some but not all experts maintain that large dams destroy the water-ecosystem; by slowing down river flows they obliterate the capacity of rivers to cleanse themselves of toxic wastes naturally.³⁷ Some experts believe that large dams are neither economical nor sustainable in the long run as they destroy natural habitats for hundreds of fish and displace (as in the case of the Three Gorges Dam)³⁸ millions of unhappy farmers thereby also increasing the risks of population riots.³⁹ In this case, the international repercussions and the critical political dimension of the issue are obvious as are the potential frictions that might spark between China and its downstream neighbours in case the Mekong were to dry up (a possibility that many experts on the issue regard as entirely plausible).

Another problem is that, of the scarce quantity of water reserves to be found in China, the majority are heavily polluted. Chinese manufacturing industries are flooding the country's rivers with toxic pollutants.⁴⁰ Many small Chinese enterprises are not equipped with the latest pollution control technology and purposely dump toxic chemicals into rivers and lakes. Other, bigger enterprises, geared with the most recent pollution-control devices simply decide not to use them so as to avoid increasing production costs.

Also, China is famous for being the major producer and consumer of pesticides in the world, a high percentage of which are highly toxic and difficult to disperse.⁴¹ A different and even more damaging kind of water

³⁶ Peter Navarro, *op. cit.*, p. xvii; Katherine Morton, *op. cit.*, p. 66.

³⁷ *Changjiang sanjiaozhou xiandai chenji yanjiu*, [Studies on present-day sediment deposits in the Yangtze delta], Shanghai, Huadong Shifan-daxue, 1987.

³⁸ The purpose of the dam is flood control, electricity production and improvement of navigation facilities on the Yangtze River. Construction began officially in 1994. The dam stretches 1,983 metres across the river; upon completion it will be 185 metres long and it will be made of 26 turbines on the left and right side of the dam and of 6 underground turbines planned for 2010. For details see: Gorild Heggelund, "Resettlement Programmes and Environmental Capacity in the Three Gorges Dam Project", *Development and Change*, Volume 37, n. 1, p. 177. See also: CAS (Chinese Academy of Sciences) and YRVWRPB (Yangtze River Valley Water Resources Protection Bureau), *Changjiang Sanxia shuili shuniu huanjing yingxiang baogaoshu*, [Yangtze River Three Gorges Project Water Conservancy Project Environmental Impact Assessment Report], Beijing, Science Press (Kexue Chubanshe), 1996.

³⁹ BBC News, "Millions Forced out by China Dam", 12 October, 2007.

⁴⁰ Peter Navarro, *op. cit.*, p. 149.

⁴¹ Jianguo Liu and Jared Diamond, "China's Environment in a Globalizing World", *Nature*, June 30, 2005, 1179-1186. <http://www.nature.com/nature/journals/v435/n7046/pdf/4351179a.pdf>

pollution results from the dumping of animal and human wastes which also creates a lethally potential breeding ground for lethal viruses like SARS, posing a threat to the whole planet.⁴²

Ovegrazing, deforestation, overcultivation and poor water quality have led to an increase in the rate of recurrence of China's sand storms. To quote an interesting review on this: "The Asian Brown Cloud puts millions of people at risk not only for various respiratory diseases but also for severe natural disasters as weather patterns are radically altered and become unpredictable. The haze, 80 percent man-made is composed of a grimy cocktail of toxic ash, black carbon, sulfate, nitrates, acids and aerosols – tiny solid or liquid particles suspended in the atmosphere..."⁴³

Again, how does this affect the rest of the planet, we may ask ourselves. As previously mentioned, all of these problems are nowadays *not* contained inside China's borders, they spread and they become an international issue. When a storm is whipping across China, strong winds send masses of dust particles high up in the air. This whirlwind, when it passes over the Chinese industrial coastal regions, attracts many other polluting particles that gradually fall onto the ground; first on Chinese cities and then, yet again, makes its way towards Japan, Taiwan and Korea, causing damages for several billion dollars per year to the region's economy.⁴⁴ The twister, full of toxic dusts and fine particulate matter then proceeds towards North America. That is precisely the reason why we can not go on living according to the "each to his own" attitude; in this small world, what goes around comes around and, sooner or later, affects every single person.

Environmental problems caused by China's development

China's economic growth and global environmental influence will probably continue to grow towards 2020, a date by which Chinese authorities hope to have quadrupled the country's GDP relative to 2000 and to have achieved an "environmentally friendly, resource-efficient society,"⁴⁵ a phrase now repeated in major speeches by Chinese leaders as an expression of their commitment to

⁴² Ibidem.

⁴³ Margaret Hsu and Laura Yee, "The Asian Brown Cloud", *Global Environmental Issues*.
http://www.sfuhs.org/features/globalization/asian_cloud/

⁴⁴ "Choking Sandstorms Head for South Korea", *Planet Ark*, February 23, 2007 at
<http://www.planetark.com/dailynewsstory.cfm/newsid/40474/newsDate/23-Feb-2007/story.htm>; Peter Navarro, *op. cit.*, p. 58.

⁴⁵ For some general informations regarding the Law on Renewable Energy of the People Republic of China see: <http://www.nrel.gov/docs/fy04osti/35787.pdf>;

environmental safeguarding. With this “hoped for” growing prosperity will come additional levels of responsibility. Such responsibilities could open new economic and environmental opportunities and strengthen international perceptions about China’s role in the world.

A recent *White Paper on Environmental Protection in China*⁴⁶ (1996–2005), produced by the State Council, documents many of the major steps taken and also future needs to avoid environmental risks and save our ecosystem. For example, the paper remarks that, under the Montreal Protocol, China has adopted more than one hundred policies and measures to reduce ozone-depleting substances (ODS), accounting for half the total amount of ODS eliminated by developing nations.⁴⁷ In my opinion, after all the problems mentioned above, we have to keep in mind that China is first and foremost a developing nation with hundreds of millions of very poor people and a huge gap between richer people in cities and a desperate rural majority; it has limited per capita resources, with some, like water and land, below world averages and it has a high level of biodiversity whose loss would be devastating for the whole planet; it absorbs major environmental costs resulting from the pass-through of materials and energy used for traded goods. We also have to acknowledge that China is not choosing to be a polluter or, at least, not every aspect of the phenomenon is China’s fault. The Gobi Desert’s dust storms send pollution in a jet stream in the air that transports these particles to distant countries, located faraway from China, like Canada and the United States.⁴⁸

Trade and investments abroad

The rapid growth of the Chinese economy since the 1970s, but particularly in the past ten years, has caused reverberations in global markets. Even more so, after China’s WTO accession. The quest for resources to support China’s growth, increasing emissions and commodity prices, China’s overseas investments and rapidly increasing exports of manufactured goods have become topics regularly covered by the world’s top magazines and tracked by many environmental organizations. With prosperity, many more Chinese are travelling abroad, incrementing tourism in many countries. Investment by

⁴⁶ For better understanding see: *White Paper on Environmental Protection Published*, China. org. cn, <http://www.china.org.cn/english/2006/jun/170355.htm>

⁴⁷ Jimin Zhao and Leonard Ortolano, “The Chinese Government’s Role in Implementing Multilateral Environmental Agreements: The Case of the Montreal Protocol”, *The China Quarterly*, n. 175, 2003, p. 712.

⁴⁸ Peter Navarro, *op. cit.*, p. 47.

China's government and Chinese enterprises in other countries are both accelerating, under the scrutiny of the international community.

There seems to be a growing interest towards the conditions under which Chinese enterprises obtain resources abroad.⁴⁹ In fact, the “world's biggest timber smuggling” was found between Indonesia and China.⁵⁰ These are only a few examples of trade and environment related issues that China faces today.

One interesting yet less obvious fact connected to Chinese investments abroad and their effect on the environment is closely linked to Chinese presence in Africa and increasing global interdependencies amongst nations. One of China's most powerful weapons in Africa is its “construction program”.⁵¹

China and Africa's relationship started during the Cold War era when China tried to build some solidarity ties with the new anticolonial regimes in order to spread communism. Then, after a period of withdrawal during the 1980s, China returned to do business. Its goal was to obtain strategic and economic control of the continent resources, metals, raw materials etc.; and while trying to reach it, China looked no one in the eyes and had no remorse whatsoever in using its political power (for example through the exploitation of its veto power at the UN) to protect Africa's most ruthless dictators in order to gain their favors. China's aim is to build extraction and transportation infrastructures that will facilitate the exports of African raw materials and resources to China. The perverse side effect of this is that Africa's factories are being deprived of the possibility to manufacture their own finished goods. What is worth mentioning for the purpose of this article is that China's exploitation of African resources is conducted without paying the slightest attention to the ecosystem and without employing the latest technologies available (which they sometimes employ in China but do not even consider using in Africa) for extraction. It certainly is an unsustainable model of development that will not lead the African continent to prosperity but simply to environmental and social degradation.

China in the spotlight

China's has clearly signalled its intention to take an active part in many environmental treaties; one domestic concern though, is how it can contribute

⁴⁹ Global Witness report at: http://www.globalwitness.org/press_releases/display2.php?id=358.

⁵⁰ Environmental Investigation Agency, *World's Biggest Timber Smuggling Racket Exposed Between Indonesia and China*, press release, 17 February 2005; Katherine Morton, *op. cit.*, p. 66.

⁵¹ *BBC News*, “Darfur rebels spurn Chinese force”, 24 November, 2007.

to the strengthening of global environmental governance without, at the same time, hindering its economic development. China can actually do quite a few things to ensure that its interests are better served through a strengthened global environmental governance system.

If China tries for example to restrict activities such as the import of illegally cut timber and makes sure that its companies abroad also observe environmental standards, it will contribute to improve global environmental quality while, at the same time, building a positive reputation for its industries with regards to the environment and its economic development. China should invest more money in newer technologies and in research and development programmes. This is particularly needed in coal technology, where China's practices significantly affect and pose risks to the global environment and human health. In order to achieve efficacious environmental governance for China, and for the rest of the world, a re-examination of guidelines and principles in accordance with modern times is certainly a must. According to Jared Diamond, in modern society we find many states and communities still living accordingly to outdated principles and observing old values that no longer make sense in contemporary society.⁵² Since many experts on the issue do agree that industrialized nations are the most responsible ones for the current situation of the global environment, transferring know-how, money, and clean technologies to developing states will remain a crucial and mandatory step for many years to come. Even more, according to Katherine Morton, "in today's world the idea that certain states should be held fully accountable for the environmental "leak out" effects of their economic activities is actually outdated".⁵³

China cannot delay taking a larger role in world environmental affairs. It is now one of most important economic powers, a key player in energy consumption and production and greenhouse gases emissions. Other nations already fear the enormous influence this and other large countries are having on the world's environment and development. China also has an important leadership role to play in promoting an environmental dialogue with its neighbouring countries. In December 2005, an explosion of a petrochemical plant in Jilin province discharged immense quantities of toxic benzene into the Songhua River. As a consequence, water supplies in the Chinese city of Harbin as well as in the Russian city of Khabarovsk were contaminated. This environmental disaster, that once again reminds us how inter-connected and

⁵² Jared Diamond, *Collapse: How Societies Choose to Fail or Survive*, Australia: Allen Lane, 2006, p. 432, quoted in Katherine Morton, *op. cit.*, p. 72.

⁵³ Katherine Morton, *op. cit.*, p. 72.

vulnerable to other places' environmental problems we all are, has reinforced the necessity for a monitoring system across the Chinese borders.⁵⁴

China's impact on Earth's resources

China's role as an importer of natural resources is becoming more influential every day. As we have previously mentioned, the country is already the world's largest consumer of timber and the second largest consumer of oil.⁵⁵ Another major concern is China's food security issue. To feed its huge population, it has become a major importer of grain. Due to desertification, overgrazing, acid rain and other pressing problems that devastate farmland, between 1998 and 2004, grain production in China dropped by 50 million tons.⁵⁶ Since China and India constitute more than 40 percent of the world's population,⁵⁷ a key question regards the sustainability of per capita resource-consumption, at those same levels of industrialized states, on a global dimension and how long resources for everyone will be available.⁵⁸

It is obvious that China will have (and in part, it already has) a major impact on sustainable resource use. There are some possible measures that can be taken to make sure that this impact doesn't turn into a disaster. For example, some Chinese land could be turned to a more productive use thereby attaining huge benefits. The negative side of the coin is that the strain on natural resources (the tropical forests, ocean fisheries and some agricultural lands) is likely to be huge and biodiversity losses very high.

Many environmental air problems plaguing China today are mainly due to the country heavy reliance on low quality coal for many things: cooking, heating, industrial production, generation of energy, and so on. Most of the other countries in the world depend principally on oil as their main energy source and that helps to explain why China's air problems are different than those of the rest of the world. As we have discussed before in regards to water pollution, many industries do not deploy their sophisticated pollution-control systems; the consequence is that Chinese power plants, apart from sulphur dioxide, also emit in the atmosphere fine particulate matter, which just so

⁵⁴ Yu Jie, "The Environmental Yellow Peril", *China Rights Forum*, n. 1, 2006, p. 43.

⁵⁵ China increased its petroleum consumption by 5.5 percent in 2007, up from 7.3 million barrels per day in 2006 to 7.7 million barrels. It now accounts for nearly 9 percent of the world's total oil use. For details see: Joe Monfort, *Oil Consumption Continues Slow Growth*, 26th March, 2008 in <http://www.worldwatch.org/node/5666#notes>

⁵⁶ Lester R. Brown, *Outgrowing the Earth: The Food Security Challenge in the Age of Falling Water Tables and Rising Temperatures*, New York, W.W. Norton and Company, 2004, p. 15.

⁵⁷ <http://geography.about.com/od/populationonogeography/a/chinapopulation.htm>

⁵⁸ Peter Ho, "Trajectories for Greening in China", *Development and Change*, n. 37, Issue n.1, p. 11.

happens to be the most harmful pollutant for human health.⁵⁹ Also, according to Peter Navarro, in developed countries pollution is usually concentrated in industrial hubs; unfortunately, in China things are slightly different.⁶⁰ Since the worst part of pollution derives from coal, as previously mentioned, we have to keep in mind that smaller cities are as prone to use this type of fuel as bigger cities, for example for cooking or heating. This means that China's environmental problems are spread over the entire country, instead of concentrated only in industrial zones.

This helps us to realize that even if China will be able to better control its factories, in the future, it will still have to deal with the other type of pollution already affecting the rest of the industrialised world: an explosion in the vehicle market. These are important issues, all relating to China's dual role of meeting the material needs of its own people and, continuing to be "the workshop to the world", but under more severe environmental conditions than other parts of the world. This allows us to suspect that China is not alone in bearing the responsibility of damaging the environment; it shares its weight with the developed countries that, up until now, have profited from China's low wages and lax regulations.⁶¹

How to solve the question of weak enforcement

One question that experts and scholars alike are debating is: how did the Chinese situation become this serious, considering that, at least on paper, China has a set of environmental regulations as precise and effective as those of the United States or Europe? The main problem is constituted by a set of economic incentives that have destroyed the central government attempts at trying to enforce rules against pollution. Important environmental goals have not been met; a matter that worries the highest levels of the government, but is less of a concern for local officials for whom GDP growth is the matter of greatest preoccupation.

First of all, the enforcement of environmental laws and regulations is a big problem in China, as local authorities often tend to overlook violations in exchange for economic benefits. Chinese environmental laws and regulations are modern and sufficient, but they are not correctly enforced at the local

⁵⁹ Richard McGregor, "750.000 a year killed by Chinese pollution", *Financial Times*, 2nd July, 2007.

⁶⁰ Peter Navarro, *op. cit.*, 51.

⁶¹ He Qinglian, "Who is responsible for China's Environment?", *China Rights Forum*, n. 1, 2006, p. 37.

level. This deficiency remains due to many reasons: enforcement of regulations is superficial; between non-compliance and enforcement there is excessive time; available punishment for non-compliance is inadequate; injured parties are almost never properly compensated; and most environmental crimes receive administrative instead of criminal punishments like small fines to be paid.

Secondly, China's SEPA (State Environmental Protection Agency, recently changed its name to MEP, see note 60) is understaffed and the budget destined to these people is really low.⁶² In the United States, the same office EPA (Environmental Protection Agency), has 20.000 employees while the Chinese agency has 300 and has to monitor a billion people and more than 100 cities with a population of one million people or more!⁶³

Also, the central government is incapable of enforcing environmental protection at the local level because it lacks political support from local officials. The main responsibility for implementing environmental policies and regulations is attributed to local governments, but local authorities often lack incentives (professional or financial ones) to enforce national regulations because they have an economic interest in the enterprises they are supposed to be regulating and are, therefore, highly corrupted. Another major obstacle is that many of China's worst polluters are enterprises run by the State in which the government is a major investor thereby causing some serious conflicts of interest. Also, particularly at the local level and in poorer provinces, some of these "polluters" are often the largest employers and therefore, punishing them or closing them down could lead to unemployment problems and consequent riots and turmoil directed against the local government and the party. Yet another issue that contributes to the local authorities' reluctance at implementing laws! A related trouble that stems from corruption are the small fines that local governments impose on polluters and that are perceived by businessmen as a "small cost of doing business" rather than as an effective

⁶² Sitamaran Srini, "Regulating the Environment: Assessing China's Domestic Environmental Law and Participation in International Treaties", *The China Review*, Vol. 6, n. 1, 2006, p. 183.

⁶³ "Bureaucracy: A Controversial Necessity," *Democracy in America*, http://www.learner.org/channel/courses/democracyinamerica/dia_8/dia_8_video.html quoted in Peter Navarro, *op. cit.*, p. 61; Elizabeth Willmott, "Common cause: China's State-Society Response to Environmental Crisis", *China Rights Forum*, n. 1, 2006, p. 16. Actually, SEPA (State Environmental Protection Administration), previously the highest organ charged with the task of monitoring and enforcing environmental laws and regulations nationally has recently (in March 2008) changed its name to Ministry of Environmental Protection (MEP). Since 1998 SEPA itself had been promoted to a ministry status. The number of people working in the Ministry though, is roughly the same as the number of people previously working in SEPA.

restraint.⁶⁴ This is particularly true because local authorities, after having collected the fees, recycle the revenues back to the polluters as tax discounts!⁶⁵

In addition to all of the above-mentioned issues, the Chinese vague legal system makes it virtually impossible for pollution victims to seek assistance or fair compensation. On top of everything, the legal system is almost always on the polluters' side.

Chinese historical relationship with nature is also a bit controversial as I have briefly mentioned in the first paragraph of this article. In the imperial past, the country's leaders have dominated their surroundings to fulfill their needs rather than trying to live in harmony with them (*Tian Ren Heyi* 天人合一). This obvious disregard towards nature paired up with the utmost disdain for the rule of law and property rights (even though on the 16th of March 2007 the "Law on real rights" - *Wuquanfa* 物权法 - has finally been promulgated and enacted) including little respect for the rights of others to have clean water and air and basic human rights, are certainly at the core of the problem.

A widespread attitude of local factories consists in fooling environmental inspectors by turning on their "pollution control devices" only during government inspections. This is easily achieved because inspections are scheduled in advance by regulators who don't want to anger local firms but are compliant with their request in exchange for a fiscal advantage. As I have mentioned already, local authorities often do a very poor job in assessing the environmental impact of various companies. This is easily explained by remembering that the most pressing concern for local governments is maintaining jobs in town and keeping the local economy florid. By putting too much pressure on foreign as well as domestic companies in order to make them abide to environmental rules, the officials risk driving these firms away, in search of a less constraining place where to invest. In 2006, in a town in central China, environmental consultants found out that local monitoring authorities were taking regular and precise readings of the soot concentration in the air, just outside the gate of a factory, and writing that it was compliant. Too bad that the readings were supposed to be taken inside the chimney!⁶⁶

Even when the political will does exist, enforcement is often held back by a lack of competence. Many local agencies do not have sufficient funds, skills, or institutional support to carry out environmental reform. Generally

⁶⁴ Peter Wonacott, "Polluters in China Feel No Pain; But Watchdog Seeks Changes by Holding Officials Accountable", *Wall Street Journal*, March 24, 2004.

⁶⁵ Alex, Wang, "The Role of Law in Environmental Protection in China: Recent Developments", *Vermont Journal of Environmental Law*, Vol. 8, Issue 2, Spring 2007, p. 203.

⁶⁶ Brandon Kirk, *op. cit.*, 2007.

speaking, even in ancient times, the central government (or the emperor), was always perceived as being “distant and far away” and therefore local affairs were conducted in total disregard of central policies paying attention only to local necessities. One way to improve the situation would be to give more powers to the many Environmental Protection Bureaus throughout the country that have, in practice, no authority whatsoever being mere official representatives of the central Ministry for Environmental Protection (MEP). It is clear that these smaller officies, although (officially) under the direct supervision of the central agency, being often located in faraway provinces, are more likely to be influenced by the local authorities (those very same authorities that normally pay their salaries and assign their promotions!) than by MEP. Therefore, they often turn a blind eye to the fact that local officials fail to comply with the national regulation.⁶⁷ These local agencies are called EPBs (Environmental Protection Bureaus) and EMC (Environmental Monitoring Centres) and are situated at the provincial, municipal and local level.

The major role of these EPBs is to implement laws and regulations promulgated at the central level. The main problem, as we have briefly mentioned above, is that local EPBs have to report to two different superior levels: the local government and MEP. This dual management system of supervision that they have to undergo has created many administration problems because the local government controls their funds, their promotions and even the allocation of resources like cars, office spaces and housing facilities for the EPB’s staff. It is obvious that the local EPBs are in this way directly dependent from the provincial government because they assign their budgets and decide who gets a promotion and who doesn’t! So, promoting economic growth and increasing industrial production become automatically more important than the enforcement of national regulations and this, in turn, provokes an even greater increase in environmental pollution.⁶⁸

Again, according to the economist Peter Navarro, a very interesting and less discussed cause of China’s lack of environmental protection and enforcement (one that has a strong international connotation) is the role of foreign business in the country. A big part of the foreign direct investment (FDI) that enter China comes from Japanese, European and American multinationals seeking to escape strict environmental regulations in their own advantage and relocate some of their most polluted industries in China. So we have a country that has become one of the most polluted on earth with problems that are not just

⁶⁷ Sitamaran Srin, *op. cit.*, p. 187.

⁶⁸ Benjamin van Rooji, “Implementation of Chinese Environmental Law: Regular Enforcement and Political Campaigns, *Development and Change*, Volume 37, n. 1, Jan 2006, p. 55.

domestic but global and, ironically enough, it is exactly this dysfunctional system of environmental protection that has transformed China into such an attraction for foreign investment that pollutes the country even more.⁶⁹

New and old types of environmental problems to be solved

Each decade brings with it new environmental and sustainable development issues and surprises. We can be sure that new ones will emerge. Some will be associated with the push for new forms of resource extraction like oil sands, deep ocean drilling for oil and gas; various biosafety issues, including bioterrorism and alien invasive species etc..⁷⁰

Acid rain, for example, is one of the most dangerous problems currently affecting China.⁷¹ General opinion is split over whether acid rain is a serious problem or not; in any case, numerous experts have found out that acid rain is, in effect, a brutal killer.⁷² By falling into water courses⁷³ it brings death to aquatic life, if it falls on the ground it damages crops and the soil reducing the harvest; it also erodes building materials and car enamel causing millions of dollars of damages. A third of China's territory and half of its cities suffer from acid rain⁷⁴ and it is important to bear in mind that this is a problem that cannot be contained by national boundaries. A small but consistent portion of Japan and Korea's acid rain is, without any doubt, China's responsibility.⁷⁵

It is an important outcome of globalization that problems become shared. A fairly new major problem that affects China's lakes and seas is a rising outbreak of "red tides".⁷⁶ Eventhough sometimes this phenomenon has a natural origin, the majority of the Chinese red tides is nothing else than just

⁶⁹ Peter Navarro, *op. cit.*, p. 64.

⁷⁰ Vaclav Smil, "China's Past..." *op. cit.*, 2004, p. 179.

⁷¹ Acid rain occurs when sulfur dioxide and nitrogen dioxide emissions from power plants burning fossil fuels (like coal), react in the atmosphere with water, oxygen and other chemicals to form sulfuric and nitric acids.

⁷² *People's Daily*, "China's Acid Rain Pollution worsens in 2003", March 25, 2004.

http://english.people.com.cn/200403/25/eng2004325_138514.shtml

⁷³ Yu Jie, *op. cit.*, 2006, p. 41.

⁷⁴ *Ibidem*.

⁷⁵ Navarro, *op. cit.*, p. 52.

⁷⁶ Red tide is another name for the phenomenon known as "algal bloom", an event in which marine or fresh water algae accumulate rapidly in the water or, so to say "bloom". Certain species of these algae (or phytoplankton) contain photosynthetic pigments that vary in colour from green to brown to yellow to red and when the algae are present in high concentrations, the water appears to be discoloured or murky, varying in colour from purple to almost pink. Some red tides are associated with the production of natural toxins, depletion of dissolved oxygen or other harmful impacts, and are generally described as harmful algal blooms. The most conspicuous effects of red tides are the associated wildlife mortalities among marine and coastal species of fish, birds, marine mammals and other organisms. For details see Joseph Kahn, "In China, a Lake's Champion Imperils Himself", *New York Times*, October 14th, 2007.

another result of dumping sewage and agricultural pollution into oceans and rivers. Yet again, the worst aspect of this relatively new event, for China and also for its neighbours, is the rapidly increasing frequency⁷⁷ of the episodes and the monetary costs deriving from the destruction of wildlife.⁷⁸

Some of the strategies to deal with new concerns and their implications within China and in China's international relationships are anticipating or taking early corrective measures on emerging problems; incorporation of environmental assessment requirements into Research & Development (R&D) efforts and commercialization of new technologies, nationally and internationally, in cooperation with international organizations; and participation in major international agreements.

China's expertise in solving many domestic environmental and developmental problems, and in addressing international-level resource and environmental matters, including those associated with market supply chains and trade-related matters, will be highly requested by developing nations and neighbouring countries whose interests are closely tied to those of China.

At a global level, it is justified to expect that China will increase its efforts to reduce carbon emissions and control pollution. It is in China's best interests to insist that other nations do the same. Some Chinese experts on the matter believe that what is crucial to saving the country, besieged by resources shortages and environmental decline is, without any doubt, the participation of civil society and a step towards democratization.⁷⁹ This will help the transformation of the basic social strata "forcing" the government to appease the civil society by keeping people involved in the regulatory process of enforcing rules and regulation in a participatory way, thereby obtaining a double positive effect: keeping the people content and maintaining a steady grip on power.⁸⁰

⁷⁷ *Xinhua News Agency*, "Major Red Tides of Toxic Algae Found in China's Only Inland Sea", June 15, 2004. In 2003, China was hit by red tides 119 times, 40 times more than in 2002 quoted in Peter Navarro, *op. cit.*, p. 240.

⁷⁸ *Xinhua News Agency*, "China Reports Huge Losses Caused by Maritime Disasters in 2003", February 15, 2004.

⁷⁹ Tan Zuoren, "Our land is under siege", *China Rights Forum*, n. 1, 2006, p. 35.

⁸⁰ Elizabeth Willmott, "Common Cause: China's State-Society Response to Environmental Crisis", *China Rights Forum*, n. 1, 2006, p. 15.

Conclusions

Growing income disparities, energy shortages and pollution are only a few of the many factors that pose a risk to development across Asia. China's inefficient use of energy is causing global environmental problems and placing additional pressure on supplies of oil and gas. The region's problems demand a collective response which, ironically, is the only positive outcome of problems becoming "shared" and global. Asia's remarkable economic growth is enabling the region to replace its long reliance on exports from the West with intraregional trade in goods and services for its own consumers. Again, to make sure that this growth continues unfazed, a common solution to shared problems, such as disparities of income, energy shortages and environmental pollution, will have to be found.

A double competition is taking place nowadays in the world, while richer and poorer countries' workers compete for jobs, nations compete among themselves for resources like water and oil. Oil is a particularly serious concern, especially since demands by China and India are increasing energy prices and reducing supplies. In addition to that, new reserves are getting harder to find and existing supplies are increasingly susceptible to disruptions like natural changes or political unrest. As we have seen with the numerous examples quoted throughout the article, pollution from China is already having a global impact. Experts worry that China hasn't yet been able to take advantage from the experience of its more advanced neighbours. Japan, for example, developed its energy-efficient capabilities in the mid-1970s in response to a similar combination of high oil prices and rising pollution levels.⁸¹ But to the general public's dismay, China's officials end up competing with Japan to secure more energy assets abroad instead of trying to collaborate with its leaders.⁸² The only possible solution to the region's problems is in fact collective response and cooperation between all of Asia's interested parties. Oil consuming nations should start working towards reducing volatility in energy prices and should also start sharing energy-efficient technologies.

Exactly because of these many economically driven conflicts, the world is certain to suffer many complicated and interrelated crisis with China on a plethora of issues. The combination of capitalism in the economic field and repressive socialist regime in the political arena, with no respect for the individual rights of its citizens, might, in the long run, prove to be a destructive model not just for China itself and its citizens but, considering the

⁸¹ *Ibidem*, p. 14.

⁸² Nankivell N., "China's Threatening Environment", *Japan Focus*, 2006.

increasingly related links between our globalised world, also for the rest of the planet.

China's environmental crisis deserves serious attention at both the domestic and international levels. Any appraisal of the likely threats to future economic development, as well as of China's relations with the outside world, depends mainly on the issue of adaptability. In reflecting back over the past decade it is clear that the Chinese government is able to take corrective measures. In general efforts to protect the environment have been impressive relative to China's stage and level of development. Indeed, it would seem that the Chinese government now realizes its long-term stake in environmental protection to a greater degree than many other developing countries.

China does not have the time to learn by trial and error like others have previously done. It needs to identify the main problems related to the environment and development and correct them rapidly; the results will be highly significant for China's future development and that of the world.

The Chinese environment would certainly benefit from stricter regulation and enforcement of already existing (and up to date) laws. Beijing needs to fight corruption among its officials, which the author believes to be one the greatest (if not THE greatest) obstacles between the Chinese people and the development of healthy environment which, ideally, would balance the need for economical growth with the safeguard of the environment.

It is no secret that laws promulgated at the central level are modern and efficient but then, once they have to be enforced, they get tangled up in a jungle of bureaucratic impediments enacted by local leaders whose economic interests are vested in those same enterprises they are supposed to be regulating and punishing in case of non compliance. Which of course rarely happens!

Once again, by separating Environmental Protection Bureaus' staff from the local governments and taking decisions regarding the allocation of their salaries at the central level, the government would gain some allies and ensure that laws are being implemented in a fair and efficient way. For those EPBs that are more successful in doing their job, financial rewards could be handed out thereby keeping these people "committed" to the cause. Certainly the government needs to start working towards prevention and elimination of major problems rather than seeking alternative soothing measures and this requires a political effort because, to do so effectively, many corrupt officials will have to be "purged".

Even though no other country in the world has experienced a growth rate as rapid as that of China (taking into consideration the size of its population)

there still are many opportunities for it to learn from the rest of the world's decades of environmental and developmental experience. China will have to be ready to deal with future potential environmental risks like biosafety, climate change, environmental fiscal reform and so on. Considering the growing importance of China on the international political arena, it is foreseeable that in the future, it will want to be considered a responsible, wealth-creating country, with more serious problems than those of any other developing country but with a positive attitude oriented towards trying to solve these problems without interrupting its development. Both of these needs will have to be respected, especially in relation to environment and development.

To paraphrase Kennet Boulding - the creator of the concept "Spaceship Earth" - to continue with the current life style, bearing in mind that developing countries are also going to want their share of economic prosperity, mankind will have to develop newer kinds of technology on which to base their high-level societies, presently based on the consumption of fossil fuels.⁸³ Nuclear energy, to which the Chinese - less tied to moral and ideological concerns than the people in the West in the aftermath of accidents like Chernobyl - are looking with increasing interest, could represent a possible solution.⁸⁴ We all share one planet; a complicated and living being where interdependencies among countries are important and in which, episodes taking place in one area have a huge impact on another, sometimes in good ways, sometimes in catastrophic ways. The concept mainly conveys the idea that every passenger on the spaceship has an impact on the others. Just like in the Gaia Hypothesis, where the physical components of the Earth (atmosphere, cryosphere, hydrosphere and lithosphere) are closely integrated to form a complex and interacting system that maintains the climatic conditions on earth, our planet is a unique organism whose components are closely interrelated and each one has influence on the others.⁸⁵ China, because of its size, will play a crucial role in keeping the balance of this complicated mechanism and it will find itself behind a difficult choice regarding its responsibilities in international environmental protection; it can decide to avoid requirements coming from abroad for its own egoistic interest, or it can

⁸³ Kenneth E. Boulding, *Earth as a Spaceship*, Washington State University Committee on Space Sciences, May 10, 1965.

⁸⁴ According to the World Nuclear Association: "Mainland China currently has eleven nuclear power reactors in commercial operation, six under construction, and several more about to start construction. Additional reactors are planned, including some of the world's most advanced, to give a sixfold increase in nuclear capacity to at least 50 GWe or possibly to 60 GWe by 2020 and then a further three to fourfold increase to 120-160 GWe by 2030".

⁸⁵ Lovelock, James, *Homage to Gaia: The Life of an Independent Scientist*, Oxford University Press, 2001.

do the honourable thing and accept these obligations (really accept them and not just pretend to accept the treaties without ratifying them, which is the behaviour that Chinese authorities sometimes adopt vis a vis certain international issues) pressuring other nations to do the same. The measure in which the Chinese authorities will follow international treaties and laws will depend, in the author's opinion, on how much these will represent an obstacle for China's economic development.

In any case, technological progress is what has made the world what it is today, a place where people grow old without dying of petty illnesses or during childbirth, a place where life, in many developing countries, offers increasingly better living conditions for everyone; illnesses that once seemed invincible have been defeated and all this has been made possible thanks to technological progress. If the western countries and China, whose research efforts are certainly comparable to those of the first-world countries, will continue to search for viable alternatives, if they continue to experiment (something that, in regards to certain delicate issues dealing with human life, is more easily done in China where religion is not deeply rooted in the moral background), if they continue spending money on research, putting aside the "blame mankind at all costs" attitude, so popular lately in the some European countries, a solution to our planet's environmental problems could be easier to find. The answer is immanent in our capacity of inventing and innovating.

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