

OCCASIONAL PAPER 6

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# CLIMATE CHANGE & CHINA: Technology, Market and Beyond

A Report for Focus on the Global South

by Dale Jiajun Wen



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**Focus on the Global South**

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## Preface

China plays an important role of representing the interests of developing countries in the current climate change negotiations through the mechanism of 77+China. As the most important emitter in developing countries it is facing an enormous challenge to fulfill its international obligations to reduce its CO<sub>2</sub> emissions, while at the same time address its domestic responsibilities to meet the human development needs of hundreds of millions of its people that are still living in poverty.

As the “world’s factory”, it has taken up and still taking the carbon emission of other countries. It is estimated that between seven to fourteen percent of carbon emission in China is actually from producing products for American consumers. Almost every cheap articles – clothes, shoes, appliances, computers, etc. that we, from the rest of the world, also buy are from China. The climate change negotiations and the current financial crisis pushed China to the center stage of world diplomacy.

This occasional paper contributes to the international debate on climate change and the global search for climate justice. The critical UN Conference on Climate Change in Copenhagen in December 2009 will bring back the focus on the need for a climate governance regime. The complexities of the issues and the requirements of genuine and sustainable solutions are vast. The current financial crisis that is now affecting both developed and developing countries alike is putting additional difficulties in mobilizing political will to come up and implement strategic climate and energy policies that will answer climate, economic, social, energy and security challenges.

This paper discusses the impacts of climate change to the environment of China and most especially to the livelihood of Chinese people there. It analyzed the Chinese government’s position and enumerates the measures that China has taken so far, as well as the commitments and concrete targets that it pledged to undertake. It explains China’s stance on the climate change negotiations; its arguments and considerations concerning its role to the international community; and its responsibilities to address its many domestic pressures in relation to geopolitics, the financial crisis, as well as global trade and technology issues.

Many people in China think that the increasing pressures brought by climate change to the environment offer an opportunity to tackle its own environmental problems. Some also view the need to seriously link climate issues with the problems connected with the development path that it has taken in the last few decades. The author also described and analyzed the current thinking of experts and the public alike, the various positions of civil society organizations inside China and the various initiatives that they are undertaking to inform people about climate change issues and mobilize their opinions.

Focus on the Global South will contribute to local and international discourse on the role of China in climate and energy issues through series of publications, teach-ins, conferences and

dialogues. We will bring together experts and various concerned individuals to explore the potential for climate and energy justice to address the many challenges of climate change and reverse this disastrous process.

Dorothy Grace Guerrero  
Coordinator, China Programme  
Focus on the Global South

# CLIMATE CHANGE & CHINA: Technology, Market and Beyond



Climate change looms as the biggest threat to human civilization. The concentration of carbon dioxide (CO<sub>2</sub>) in the atmosphere increased to 383 parts per million (ppm) in 2007, a 37 percent increase above the concentration level at the start of the industrial revolution (about 280 ppm) in 1750. The present concentration is the highest recorded in the last 650,000 years and probably in the last 20 million years. The annual mean growth rate of atmospheric CO<sub>2</sub> also increased and now at 2.2 ppm per year in 2007 (up from 1.8 ppm in 2006). The average for the period 2000-2007 is 2.0 ppm, while the average annual mean growth rate for the previous 20 years was about 1.5 ppm per year. This accelerated trend of CO<sub>2</sub> concentration increase shows that we are heading towards the worst case scenario outlined by the 2007 Intergovernmental Panel on Climate Change (IPCC) report. In order to prevent climate calamity, no one can continue business as usual: developed countries have to cut emissions drastically to prevent climate disaster and developing countries have to be engaged as well.

China has already overtaken the US as the world's largest CO<sub>2</sub> emitter. India is posed to overtake Russia as the third largest emitter in the near future. Given their huge population, which jointly covers almost two fifth of the world population, it is hardly surprising that the

International Energy Agency (IEA) estimates that China and India will account for 45 percent of global energy demand growth by 2030. The IEA also predicts that the two countries will account for 80 percent of the increase in coal demand — no surprise here either as these two biggest developing countries will first resort to coal, which is the cheapest and dirtiest of fossil fuel, for their rising energy demand. How do we combine the need and right to development with the right to a viable climate future? This paper will discuss energy and emission trends in China, the already-felt impact of climate change there, the ongoing government efforts to address the challenge, the diverse perspectives of various sectors on the topic, and some current analysis on controversial issues like border tax adjustment and technology transfer (these two issues are often discussed when people talk about China and climate change). It will also raise questions regarding the current proposals like the various market and techno-fix approaches.

## Section I. Energy and Emission Trends in China: China as the perpetrator and victim at the same time

China has enjoyed spectacular economic growth in the last quarter century—the average nine percent annual growth rate is unparalleled in modern history. Despite the improvement in energy efficiency, the energy demand of the country has grown considerably. Especially since 2000, the energy sector in China has been growing faster than the country's GDP. The leaps in the annual energy use are frequently exceeding the expectations of even the Chinese government and planning agencies. This results to rolling blackouts, which have become a normal condition in some parts of the country due to supply shortage.

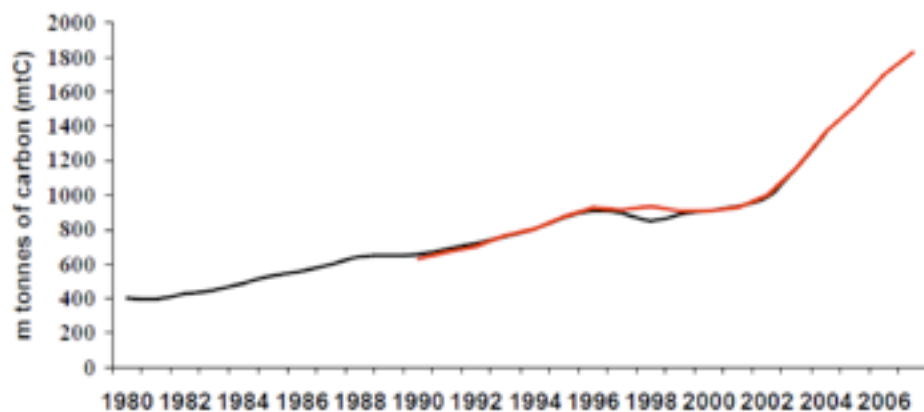


Figure 1: *China's emission growth since 1980*<sup>1</sup>

Black line: data from Carbon Dioxide Information Analysis Center

Red line: data from Dutch EPA

In 2007, China overtook the US as the world top CO<sub>2</sub> emitter, several years earlier than previously projected by IEA.

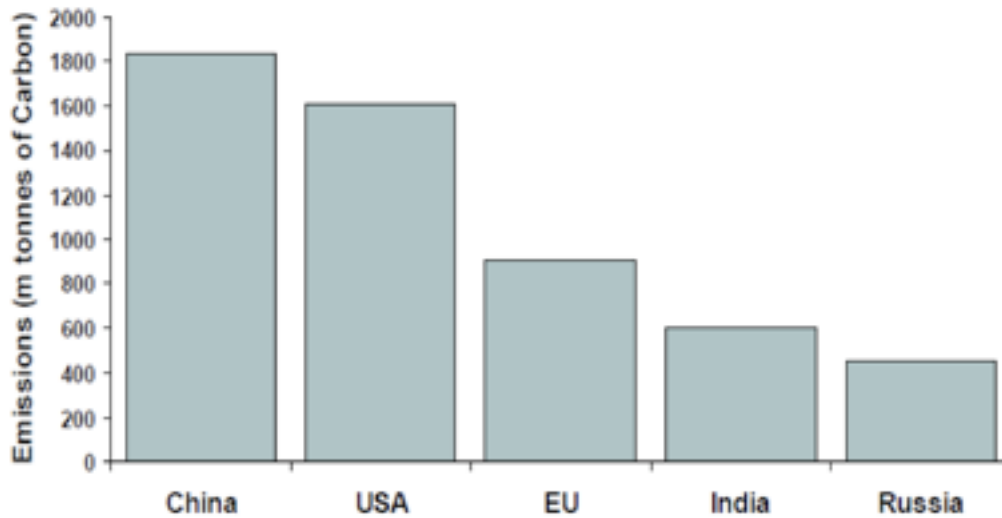


Figure 2: *National carbon emissions in 2007 (Estimates by Dutch EPA)<sup>2</sup>*

In terms of cumulative emissions, from 1904 to 2004, carbon dioxide emissions from fossil fuel burning in China made up only eight percent of the world's total over the same period, and its cumulative emissions per capita only ranked 92nd in the world. It must be pointed out that even with the huge increase of emissions of China, its per capita emission is just one quarter of the US, and 60 percent of the EU levels.

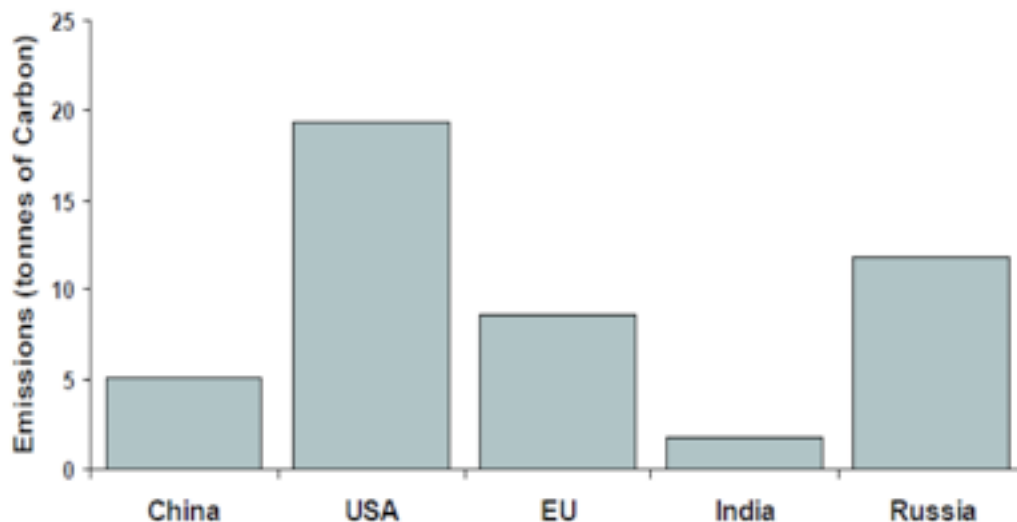


Figure 3: *Per capita carbon emissions in 2007 (Estimates by Dutch EPA)<sup>3</sup>*

One big reason for China's fast growth of carbon emissions is that it has become the "world's factory", or more precisely, the "factory owned by the world". Many companies, including some of the most environmentally toxic ones, are subcontractors or direct sub-



units of multi-national corporations from the US, Europe and Japan. They are churning out more and more cheap consumer goods for western consumers, while most of the profits are amassed by multinational corporations that control the brands and distribution channels. In essence, China is the kitchen, while the west is the dining-room.

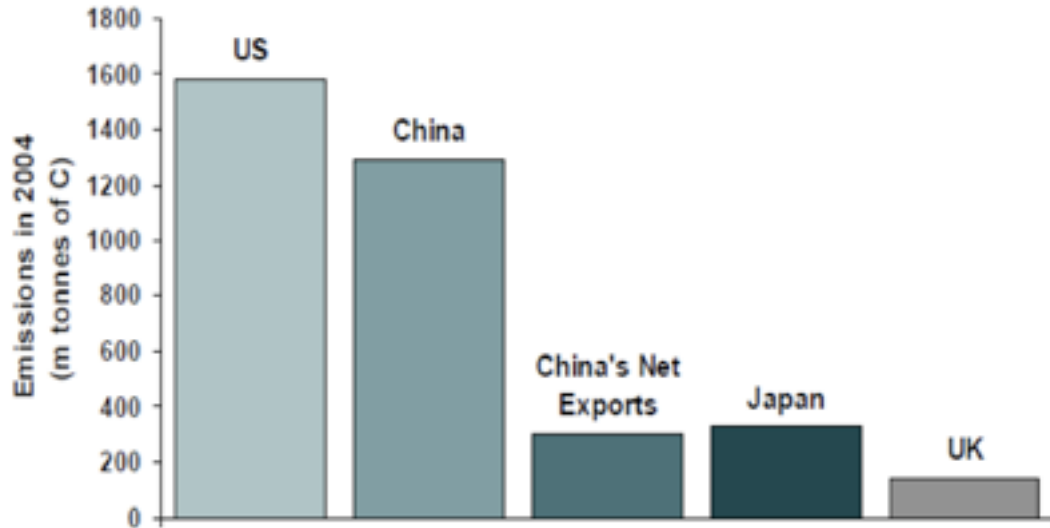


Figure 4: *China's emission due to export compared to other major emitters*<sup>4</sup>

According to estimates by Tao Wang of the Tyndall Center for Climate Change Research of the University of Sussex, the emissions from exports from China in 2004 accounted for 1,490 million tonnes of CO<sub>2</sub> while emissions avoided due to imports was 381 million tonnes of CO<sub>2</sub>. This shows that **23** percent of China's emissions were due to net exports. This estimate is lower than some estimates made by government officials and researchers, who claim that one third of China's emissions are due to exports<sup>5</sup>.

In June 2007, Chinese Foreign Ministry Spokesman Qin Gang made the following comment regarding the issue: “the developed countries moved a lot of manufacturing industry into China ... A lot of the things you wear, you use, you eat are produced in China. On the one hand, you shall increase the production in China, on the other hand you criticize China on the emission reduction issue”. The following figure shows how China's carbon emission has soared since 2000, together with its export. It not only raises the thorny issue concerning “who owns China's emissions”, but also shows the failure of the “not in my backyard” type of elite environmentalism. Indeed, developed countries have successfully exported their manufacturing activities to developing countries together with the carbon emission and other related pollution. As we are still all living in the same planet, this must be addressed soon as the greenhouse gases cannot be outsourced to the moon.

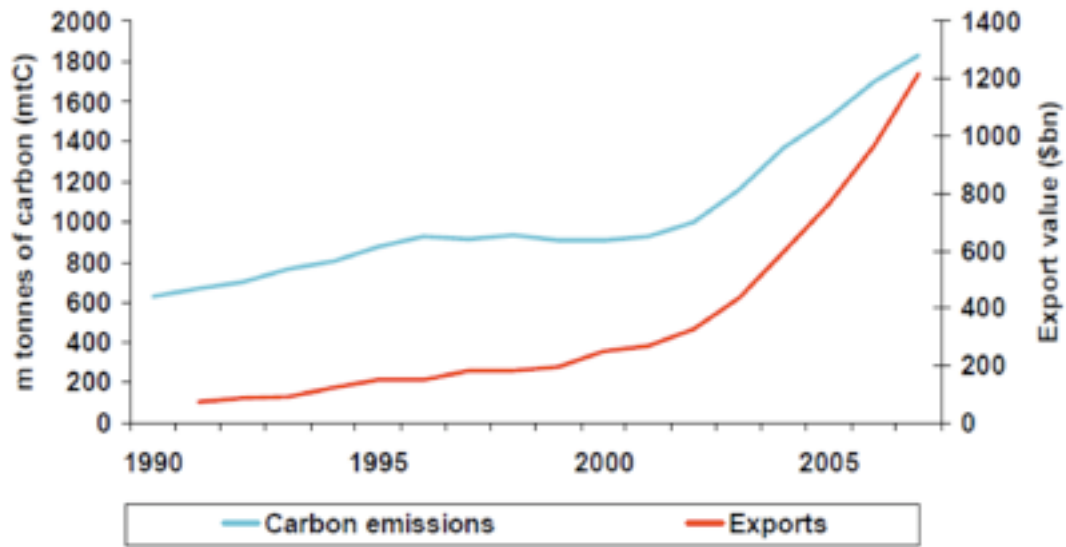


Figure 5: carbon emissions and exports grow hand in hand<sup>6</sup>.

## Section II. Impact of Climate Change on China and the World



There is great geographical disparity between carbon emitters and those impacted by climate change. Emissions of carbon dioxide greatly vary between places, due to differences in the level of development, technological capacity and affluence. In 2000, 28 percent of global carbon emissions came from North American territories; and only 0.09 percent came from Central African territories. Yet, Central Africa is where global warming will cause the biggest human suffering; in fact it has already started – as estimated by the World Health Organization, there are between 40 to 120 extra deaths per million population in 2000.

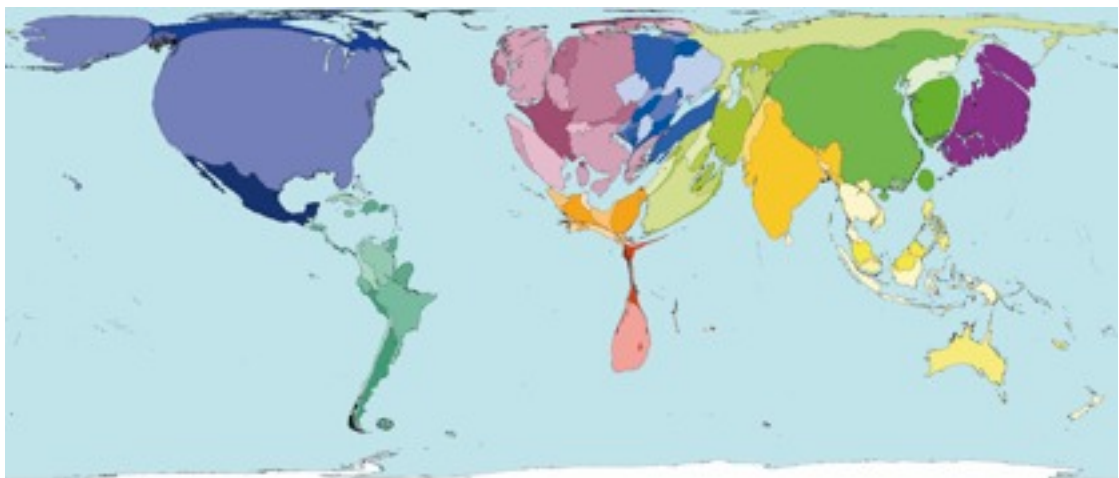


Figure 6: *World map where the territory size is in proportion of carbon dioxide emissions in 2007.*

In China, the impact of climate change is already obvious in certain areas. Take the Qinghai-Tibetan Plateau as an example, many locals notice that “glaciers are melting, the temperatures are rising and rainy seasons have become unpredictable.” While some urban dwellers there may welcome the warmer, more comfortable weather, the changing climate is foreshadowing doom for the local ecology and economy. Mado County in Qinghai Province (where the Yellow River originates) used to have more than 1,000 lakes; now there are less than 300. The top reason for the disappearance of lakes, according to a Tibetan environmentalist that I recently interviewed there, is climate change. According to him, “Many of these lakes are seasonal and shifting. They come and go depending on the local snowfall and rainfall. From season to season, year to year, some may disappear while others appear in new places. That is the normal process. So it takes us a while to realize that we are having much fewer lakes today compared to thirty years ago. It is warmer nowadays and there is much less snowfall.” The disappearance of high-land wetlands and the degradation of grassland have already cost the livelihood of many nomadic herders. In Mado County, it is estimated that around one fourth of the herders have become ecological refugees—they have been relocated and are totally dependent on government welfare now.

### Deaths from climate change

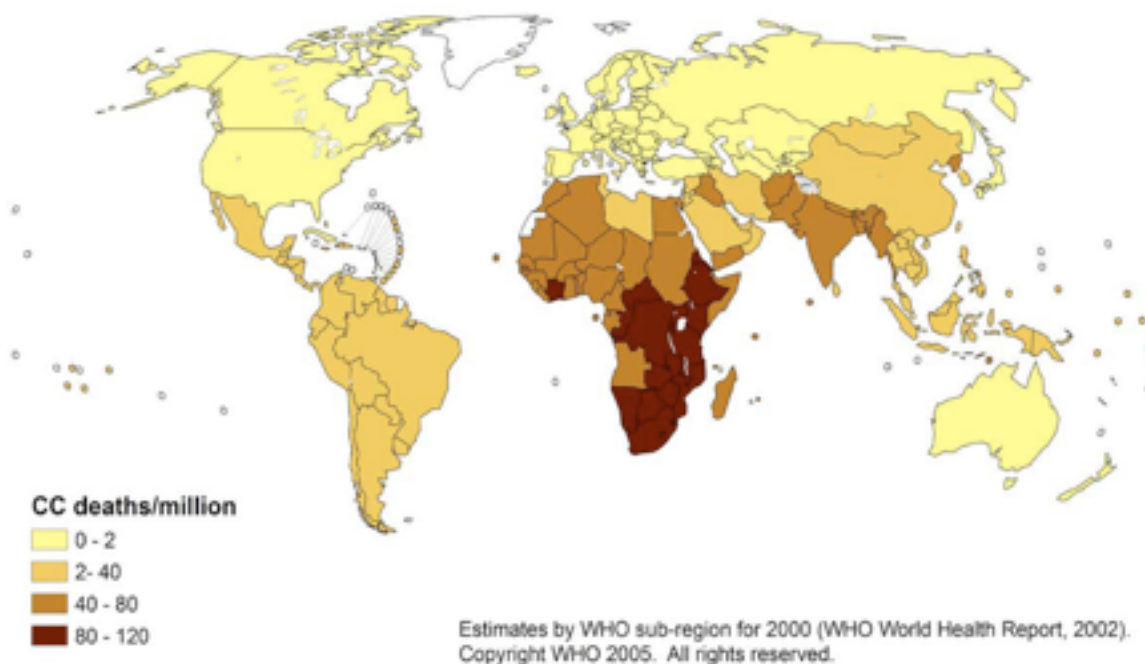


Figure 7: *deaths from climate change for year 2000, as estimated by WHO<sup>8</sup>.*

The Qinghai-Tibetan plateau has a small population itself, thus the government can afford welfare for the current ecological refugees. But this will no longer be the case if the current trend continues. The Himalayas have the largest concentration of glaciers outside the polar caps. They are literally the “ice-tower” or “water tower” of Asia. Seven of Asia’s great rivers – the Ganges, the Indus, the Brahmaputra, the Salween, the Mekong, the Yangtze and the

Yellow River -- are fed by Himalayan glacier melts. Combined, these rivers provide the water needs for irrigation, industry and daily use of about three billion people in Asia. The glaciers of the Himalayas are also the fastest receding glaciers in the world. Many glaciers are retreating rapidly at 15-25 meters per year. "Mount Everest is heating up at twice the speed of China's average and nearly triple the speed of the world" according to a Greenpeace spokesperson<sup>9</sup>. The recent IPCC report stated that within 30 years, 80 per cent of the Himalayan glaciers would disappear, if global warming continues at its current rate. The victims will be far beyond the people who are living there directly. When these glaciers melt and are gone, the decline of water resources and increased variability of water will negatively impact almost half the human population. For China, this would further exacerbate its already serious water deficiency.



Figure 8: A comparison of Halong Glacier between 1981 and 2005, with photos by Greenpeace China. According to the analysis done by the Cold and Arid Regions Environmental and Engineering Research Institute of the Chinese Academy of Sciences, the glacier retreated by over 400 meters between 1966 and 2000.

China is facing one of the world's worst water shortages. Per capita, it only has 35 percent of the world's average fresh water resources. The water distribution is also highly uneven. The country is divided into two regions: the "dry North," referring to all areas north of Yangtze basin, and the "humid South," which includes the Yangtze River basin and everything south of it. The north has two-thirds of the country's cropland, and one-fifth of the water. The South has one-third of the cropland and four-fifths of the water. Climate change may further this imbalance. Climate models predict that global warming would cause less rainfall in northern China and more rainfall in southern China. This is consistent with observations in recent years. The Huayuankou station of Yellow River has showed a decrease flow of 5.70 percent per decade. There has been a continuous drought in the North China Plain since the 1980s, while flooding disasters have happened more frequently in southern China. This trend has been especially enhanced since the 1990s.

Besides water crisis, climate change may threaten China's food security. Global warming could — if the worst predictions of scientists come true — lead to a drop of between 20 and 37 percent in China's yield of rice, wheat and maize over the next 20 to 80 years, according to a report published in September 2004 by the Chinese and British governments<sup>10</sup>. In a more recent report commissioned by Greenpeace<sup>11</sup>, scientists from the Chinese Academy of Agricultural Sciences have warned that temperature rise, water scarcity and loss of arable land could cut China's overall food production by 14 to 23 percent by 2050.

In 2008, a series of winter storm events affected large portions of southern and central China. Heavy snows, ice and cold temperatures caused extensive damage. It was China's worst winter in half a century. In early 2009, a severe drought in northern China — considered the country's breadbasket — has hit almost 43% of the country's winter wheat crop. The expectation of withered harvest has already driven up world wheat price. All these events are consistent with the trend of global warming: more extreme weather conditions, more droughts in the dry north. They foreshadow a turbulent climate future.



## Section III. Chinese Government Position and Actions on Climate Change



Fully realizing the ongoing impacts and the predicted vulnerability of China to climate change, the Chinese government is taking the issue very seriously. In June 2007, the National Development and Reform Commission (NDRC) issued “China's National Climate Change Program”, the country's first global warming policy initiative. In it, the government outlined measures ranging from laws, economy, administration and technology which aim to reduce greenhouse gas emissions and prepare the country for both mitigation and adaptation. In October 2008, the government released a white paper on climate change, which summarizes China's ongoing effort to combat climate change, as well as clarifies China's position in international climate negotiations.

As China and the US are the world's biggest producers of greenhouse gases, the US has often used China as an excuse for inaction. But contrary to common awareness, China is already implementing a comprehensive and aggressive energy policy that tackles greenhouse gas emissions. The following is an incomplete summary of China's current goals and actions in addressing climate change.

## **To reduce national energy intensity (unit energy per GDP) by 20 percent in 2010 compared to that of 2005**

As industry is the biggest energy consumer and greenhouse gas emitter so far, Chinese policies are now focused most strongly on improvement of industrial efficiency to reduce emissions. China's leaders view that energy conservation and efficiency should be addressed first before searching for new fossil fuel sources.

The "Thousand Enterprises Program" identified 1008 top energy consumption enterprises (33 percent of the country's energy consumption) and incentives have been applied in order to improve their energy efficiency. The program's goal is to reduce China's coal consumption by 100 million metric tons, approximately five percent of annual CO<sub>2</sub> emissions for China. The program is essentially a contract between the government and industry, or negotiated targets with commitments and time schedules on the part of all participating parties. A number of government departments and entities are involved in the top-1000 enterprise program, including the Department of Resource Conservation and Environmental Protection of NDRC (which promotes energy saving in China), the National Bureau of Statistics (which collects and manages statistical information of enterprises in China), the State-owned Assets Supervision and Administration Commission (which manages major state-owned enterprises in China), the Office of National Energy Leading Group, and the General Administration of Quality Supervision, Inspection and Quarantine<sup>12</sup>.

China is replacing old inefficient power plants and factories with state-of-the-art new units. In 2007, the government announced a timetable for 13 industries in different areas to close down backward production facilities as part of the latest Five-year Plan period. In 2007 small thermo-power generating units, which produces 14.38 million kilowatt of energy were stopped. At the same time there were reductions of about 46.59 million tons of iron-smelting capacity, 37.47 million tons of steel-making capacity and 52 million tons of cement production capacity. More than 2,000 heavily polluting paper-making plants, chemical plants, and printing and dyeing mills were ordered to close down, as were 11,200 small coal mines.



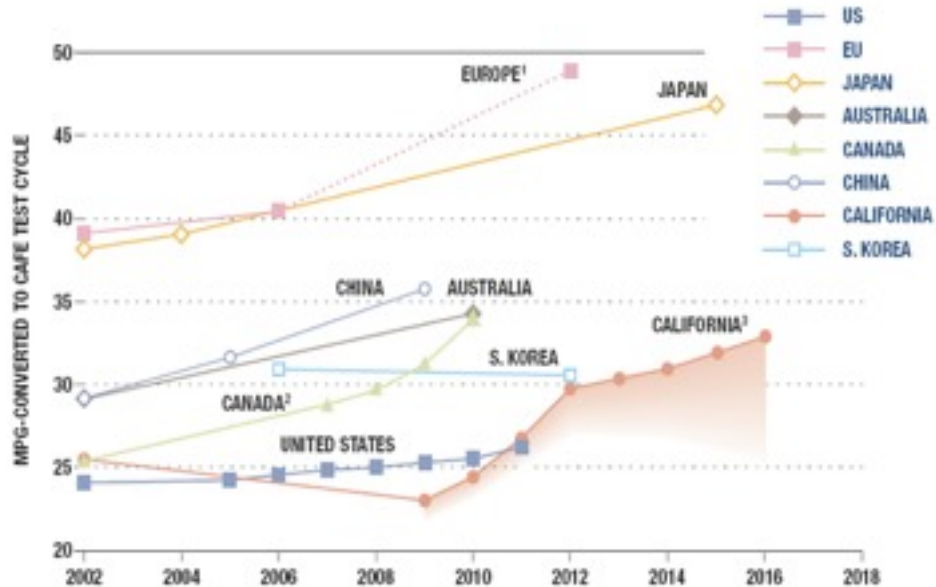


Figure 9: Comparing fuel efficiency standard regulations in different countries<sup>13</sup>(the fuel efficiency of bicycles or electronic bicycles are not included here, but we need to keep them in mind while considering transportation options).

The government has recently reformed the passenger vehicle excise tax to encourage the production and purchase of smaller-engine vehicles, and to eliminate the preferential tax rate that applied to sport utility vehicles (SUVs). The fuel efficiency standard for motor vehicles is increasingly stringent. As shown in Figure 9, while the Corporate Average Fuel Economy (CAFE) Standards in China is lagging behind that of Japan and Europe (who are world leaders in this aspect), it is far above that of US.

The government is setting goals and taking actions for energy efficient lighting. With subsidies from the government, 50 million energy-saving bulbs are now being distributed to households all over the country, and within the coming three years more than 150 million energy-saving bulbs will be distributed.

Green building initiatives are underway. By October 2007, 97 percent of all urban new-buildings across the country conform to energy saving standards for the design stage and 71 percent for the construction stage, a respective increase of 1 and 17 percentage points over 2006. Energy-saving renovations to existing buildings are also carried out--tasks have been assigned to different regions to install measured heating equipment and complete energy-saving renovation to a total of 150 million m<sup>2</sup> of floor space.

**To raise the proportion of renewable energy (including large-scale hydropower) in the primary energy supply by up to 10 percent by 2010, and 15 percent by 2020.**

In 2005, China set two wind power goals — 5 GW by 2010 and 30 GW by 2020 — but it has consistently outpaced them. 500 MW of new wind capacity was installed in 2005, The pace of installation accelerated considerably in 2006, with 1.3 GW installed—equal to the total over the previous two decades. By 2007, it had already reached 5 GW, and it raised its

2020 target to 100 GW. China is now the fifth largest wind energy producer in the world.

China's solar industry is also growing rapidly. China produced 35% of the global supply of solar photovoltaic in 2007, up from 20 percent in 2006, most of which are exported to other markets. China already accounts for 70 percent of global production and use of solar hot water heating systems.

China is already the world leader in renewable energy capacity (with 42 GW in 2005, excluding large hydro projects). In 2005, China tied with Germany for the largest national investment in renewable energy, excluding large hydro-power, which amounts to \$7 billion. This was primarily directed to small hydro and solar hot water projects.

Other policy goals include a 20 percent increase in forest coverage by 2010, and an increase of annual volume of carbon dioxide in carbon sinks by 50 million tons by 2010 compared to that of 2005.

China is not the only developing country which is taking concrete actions to combat climate change. Often unknown to western readers, the unilateral measures by developing countries including China, when implemented, are expected to significantly reduce emissions even if compared to the commitments by Annex 1 countries in the Kyoto Protocol.

The Center for Clean Air Policy's 2006 report titled "Greenhouse Gas Mitigation in China, Brazil and Mexico: Recent Efforts and Implications"<sup>14</sup> said:

"... unilateral policies and programs adopted by China and Brazil between 2000 and the end of 2005, if fully implemented, were projected to be greater in 2010 than those to be achieved by the United States' voluntary carbon intensity reduction goal and approximately 40% of the domestic reductions to be achieved in the 15 EU countries under their Kyoto Protocol target. As discussed above, a number of additional measures have been adopted since the end of 2005 in these countries which are expected to further reduce emissions. These reductions are significant when compared with the reductions in developed countries under various commitments or proposals."

The Report further states that:

With full implementation, combining the measures identified in our earlier report with these new measures yields total annual GHG emissions reductions in China, Brazil, and Mexico that are greater than the annual reductions under the Kyoto Protocol (without the US), EU's reduction commitments in 2020, and the reductions estimated in the early years of the main US legislative proposals (see figure below)—with a total reduction of 2,100 MMTCO<sub>2</sub>e (2,100 Million Metric Tons of CO<sub>2</sub> Equivalent).

## Section IV. Emission Reduction, Binding Commit or not?--Common but differentiated responsibilities and geopolitics



“Common but differentiated responsibilities” as outlined in UNFCCC is one of the guiding principles of the Chinese government’s position on international climate negotiations. To cite the October 2008 government white paper, China sticks to the following principles to address climate change:

.....To uphold the principle of "common but differentiated responsibilities," which is a core principle of the UNFCCC. Both developed and developing countries are obligated to adopt measures to decelerate and adapt to climate change. But the level of their historical responsibilities, level and stage of development, and capabilities and ways of contribution vary. Developed countries should be responsible for their accumulative emissions and current high per-capita emissions, and take the lead in reducing emissions, in addition to providing financial support and transferring technologies to developing countries. The developing countries, while developing their economies and fighting poverty, should actively adopt adaptation measures, reduce their emissions to the lowest degree and fulfill their duties in addressing climate change.

But how do we interpret “common but differentiated responsibility” on a practical level? At the December 2008 Poznan climate negotiations, Chinese representatives argued for a “per capita accumulative emission convergence” as representing the equity principle. The Group of G77 and China stressed that developed countries have continued to fail to fulfill their financial commitments as well as drag their feet in technology transfer, and that some significant progress must be made on these fronts. They pressed the developed countries to implement their finance and technology transfer commitments as already outlined in UNFCCC as a condition for serious discussion on some other issues that developed countries are pushing for.

However, given China's status as one of the biggest emitters and citing its impressive economic growth in the last two decades, there are growing pressures from countries in the west that China should unilaterally commit itself to binding emission reductions without pre-conditions. What do the Chinese think about the issue?

Hu Angang, a public policy professor at Tsinghua University in Beijing thinks that China should bind itself to international goals to slash greenhouse gas emission without conditionality. As reported by Reuters in September 2008, Hu's suggestions to China's leaders as well as a recent essay argues that China could emerge as an economic and diplomatic winner if it vows to cut gases from industry, farms and transport that are trapping increasingly dangerous levels of solar heat in the atmosphere. 'It's in China's own interest to accept greenhouse gas emissions goals, not just in the international interest” According to his recent paper published in *Contemporary Asia-Pacific Studies*, China's greenhouse gas pollution would continue rising until around 2020. The country would then "dramatically" curtail emissions, cutting them by 2030 to the level they were in 1990 and then half of that by 2050<sup>15</sup>.

Hu's position is a minority view in China, which he himself has acknowledged. Among Chinese scholars and NGO activists who are working on climate issue, I have yet to meet anyone who agree with his notion, even though most of them agree that China should try its best to cut emissions and explore a low carbon development pathway as soon as possible. The difference is mostly due to different understandings of international politics. In the same interview with Reuters, Hu revealed another reason for his advocacy "Like joining the WTO, this should be used as international pressure to spur our own transformation." While he undoubtedly thinks that China's WTO accession is a great success, not everyone agrees.

China has made huge concessions during the WTO accession in certain sectors. For example, once the stipulated tariff reductions were fully implemented, China's agricultural sector would be more open than that of Japan and South Korea. Between 2000 and 2002 (China joined WTO in 2001), the income of 42 percent of rural households decreased in absolute terms. Largely due to the rural exodus caused by social economic factors including WTO, it is estimated that China has to keep its economic growth rate at eight percent minimum to keep unemployment at bay.

Given these facts, there is no wonder that there are ongoing debates about China's WTO accession. Internal debates aside, the international impact of China's WTO accession cannot be ignored as well. According to a third world trade activist who preferred to remain

anonymous, Europe, the US and Japan have often used China's example in recent WTO talks to pressure other developing countries to give more concessions, the common argument is – if China has agreed to this and that, why cannot you?

Given such domestic and international background, many scholars and activists think that it is important for China to avoid the same mistakes similar to the WTO accession in international climate talks, instead of repeating the “success” as perceived by Prof. Hu. This is why the official position of the government has lots of traction among Chinese climate researchers and activists. Domestically, they agree with Hu that China would be one of the biggest victims of global warming if the crisis were not abated. Thus they ardently support the ongoing measures by the government to reduce emissions, and many are pushing for even more drastic actions. Internationally, they think that as a leader of developing countries, China should take a strong stand for the advocacy of development rights and equity principles to preserve the policy space for developing countries in general. Furthermore, it should also use its power to push developed countries for implementation of existing commitments and further commitments. After all, the developed countries have contributed to 75 percent of accumulative greenhouse gas (GHG) emissions with only 20 percent of the global population. As the biggest accumulative emitter and per-capita emitter, the US has withdrawn from any climate agreement so far. And the emissions by Europe and Japan have continued to climb despite of the binding commitments in Kyoto Protocol. If this trend is not reversed, the climate future would be doomed even if developing countries disappeared completely (thus reducing their share of GHG emissions to zero).



NGOs joined a survey, and dozens of NGOs participated in several rounds of consultations and workshops.

The project produced two reports: the first report “The Feasibility Study on Chinese Civil Society’s Response to Climate Change” summarizes the perspectives and positions of various governments and civil society groups around the world in the international climate negotiation, and aims to help Chinese civil society form positions and strategies on climate change based on Chinese conditions and realities; the second report “Climate Change Impacts on China: Thoughts and Actions for Chinese Civil Society” attempts to establish a common perspective for Chinese civil society on the topic. In the latter report, the consensus positions on global warming of the participating NGOs are presented as follows<sup>16</sup>.

### POSITIONS OF CHINESE CIVIL SOCIETY

In order to avoid the worst impacts of climate change, countries around the world should take immediate actions. Chinese civil society hence calls for:

*Position One:* The governments of the world to set a common goal to tackle climate change under the auspices of the United Nations Framework Convention on Climate Change.

*Position Two:* To differentiate responsibilities between developed countries and developing countries in tackling climate change.

The developed countries to take the lead to drastically cut their GHG emissions and to provide assistance to the developing countries in areas such as technology transfer and funding through effective mechanisms.

Developed countries and developing countries should explore low carbon sustainable development together.

*Position Three:* The Chinese government should participate more proactively in international efforts to tackle climate change, taking responsibilities of global climate protection while securing the right to social and economic development.

The Chinese government should reform its economic development model and its energy structure to implement its energy efficiency target and to promote faster development of renewable energy, therefore controlling its GHG emissions.

*Position Four:* To apply the principle of social equity in drafting and implementing the adaptation and mitigation policies; to raise the capacities and conditions of the vulnerable groups and regions on adaptation; to prevent and reduce negative effects of policies,

technologies and market mechanisms on the local environment when mitigating climate change.

*Position Five:* The Chinese government to encourage and ensure the participation of civil society in the climate change policy-making process and implementation and monitoring processes.



While such actions by these environmental and development organizations should be praised and encouraged, one should also realize the ambiguous position they occupy in the public sphere. On the one hand, environmental conscience is increasing and green NGOs are growing rapidly; on the other hand, they are increasingly being accused of acting like foreign agents who are trying to stop China's development, especially when they are engaged in public debate. While such accusations bear little or no truth at all, the heavy dependence on international funding makes it difficult for many environmentalists to defend themselves. Such accusations, when coming from some sections of the public, also serves as a sober reminder that non-profits are only part of the civil society, instead of representative of the civil society.

Words like “NGOs” (non governmental organizations) and “civil society” are often used interchangeably in many circumstances and it is often assumed that non-profit organizations represent NGOs<sup>17</sup>. Another often-held assumption is that a growing middle class would foster more accountability and more open civil society, thus leading towards a liberal democracy. Unfortunately, these assumptions are not necessarily true. A Chinese professor once commented wittily, “Not all organizations from civil society are good or progressive. To give an extreme example, the mafia is also one form of civil society.”<sup>18</sup>

Instances of citizen's self organizing are indeed growing rapidly in China. While the above example of a joint statement on climate represents the better part of civil society and is encouraging, there are opposite examples of middle class organizing. One recent case involves the ongoing debate about gas price. With the recent crash of the oil price, there are talks to finally implement the long discussed fuel tax. This has caused lots of resentment and organized opposition among the rising middle class—many think that it is their given right to imitate the US lifestyle, just as the President George Bush Snr. declared at the Earth Summit in 1992, the “the American way of life is non-negotiable”. In November 2008, organized by a Beijing law firm, 1,773 private car owners submitted a letter to the government, complaining that the current gas price was not as low as that of America and lobbying against the planned fuel tax. They demanded that the oil price should also “get on track with the world”-- a catch phrase often used in the reform era, stipulating that China should copy the rules of the west. In most circumstances this phrase has been used, “the west equals the world”, a very problematic bias indeed. These car owners went one step further: the US equals the world. They did not compare the gas price to that of Japan or Europe, where the high population density and other resource constraints are more comparable. (As of December 30, 2008, gas price in Beijing was around 5.15 Yuan/litre [0.54 Euro/litre or 2.86 \$/gallon], while similar grade gas costs around 1.10 Euro/litre in Germany, or twice as expensive). They also did not complain in earlier -2008, when the gas price in China was much cheaper than that of the US. When raw oil price skyrocketed from 70 to 140 US dollars per barrel, the gas price at the pump only increased by 20 percent, which was made possible through a combination of direct government subsidies and the loss-making operations by the state-owned oil companies, because the government took these active measures to dampen the shock.

This group of 1,773 car owners is only the tip of the iceberg -- they are organized enough to lobby the government. While on the other side, as far as I know, only ten professors and a handful of energy experts have come out in support of the fuel tax and no environmental group has taken a position, probably for fear of offending the car driving middle class -- or more precisely, the elite class, which comprise less than five percent of the population.



Exactly because of this elite status, car owners are the most organized and vocal part of the “public”. With many media professionals part of the car driving elites or expect to join soon, they are the most dominant “public” voice in the ongoing fuel tax debate. In Chinese newspapers, these 1,773 car owners are often being portrayed as heroes in defense of “public” interest against the “evil” government and “evil” state-owned oil companies. There are lots of opinions on the internet criticizing automobile based growth -- for example, some Chinese bloggers went as far as proposing a 100 per cent car purchase tax and suggesting to use the money to subsidize public transportation, but one seldom read such ideas in the printed press.

Given all these, it is not surprising that in the later part of 2008, the best-selling book related to the subject of global warming is a book titled “Global Warming: Unreasonable Scare”. It is the Chinese translation of a book titled “Unstoppable Global Warming: Every 1500 Years” by two American authors Dennis T. Avery and S. Fred Singer. They claim that global temperatures have been rising mostly or entirely because of a natural cycle, it's not very dangerous, and humans can't stop it anyway. The middle class are happy to read what they would like to hear, instead of the reality they need to know. Similar to many urban elites in other parts of the world, China's middle class are largely sheltered from the negative impact of climate change: it is at most an inconvenience, if not outright conspiracy.

The ignorance of the consuming elites is especially depressing when one realizes how many Chinese are already negatively impacted by climate change. As mentioned above, a significant number of herders in Qinghai-Tibet plateau have had to abandon their previous livelihood and become welfare recipients. In Northwest China, hundreds of thousands of people are being driven from place to place because of droughts and the encroaching desert. Farmers in many places are reporting shifting weather patterns and more unpredictable rainfalls which are hurting agricultural production. Unfortunately, many of these people do not necessarily link their “local” problems with global issues like climate change (at least not yet), let alone articulate it. And they are largely voiceless -- during the last quarter century of market oriented reform, herders and farmers in China had been increasingly marginalized. In most cases they are not seen as a constituency of the environment movement either. So far, most environmental NGOs, especially those based in Beijing, have focused their efforts on educating and converting the more conscientious part of the urban elites. If they can reach areas away from the comfort zone of their middle-class enclave and reach the real grassroots who are suffering the consequences of environmental degradation, they will gain a much larger support base as well as improve their own understanding of environmental challenges including global warming.

## Section VI. Border Tax Adjustment



Influenced by the US green-labor alliance, one key demand of the American climate community is the right to unilaterally implement border tax adjustment (BTA) to protect jobs. The claim that American workers are losing manufacturing jobs to China is often used as an argument. Let us first examine this premise. Is China really stealing jobs from the US and other parts of the world? Yes, huge amount of manufacturing has been relocated to China. As explained earlier, one major reason for the rapid increase of China's GHG emissions is that it has become the industrial platform of the world. But, contrary to what many think, China's export-oriented growth has not created a net increase in China's manufacturing jobs. On the contrary, China experienced massive job losses. From 1995 to 2002, manufacturing jobs decreased by 15 percent from 98 million to 83 million<sup>19</sup>.

This seemingly paradoxical phenomena was caused by:

Machines replace labor. China used to have a machine tool industry built for a populous country. For example, compared to the western machines, Chinese textile machines employed 10 times more workers but required much less initial capital investment (and were likely to be less energy intensive as well). But in the relentless pursuit of efficiency and profit during the reform era, foreign machines (mostly imported from Germany and Japan) became increasingly favored. In 1997, former Prime Minister Zhu Rongji ordered the destruction of massive numbers of locally-made machines. As a result of such transformation, large numbers of textile workers have been laid off, even though textiles from China gained bigger market share around the world.

Intensification of exploitation. In former state-owned enterprises (SOEs), an eight hour

work day was the norm and workers got one day off every week. With the massive privatization of SOEs, sweatshops become more widespread: twelve hour work days became the norm in many coastal factories, and workers are lucky to get one day off per month.

During the period 1996-2002, manufacturing jobs decreased by 22 million globally. Thus China's job loss of 15 million in the same period accounted for two-thirds of the global shrinkage. Besides the massive net job loss, China's transformation into a global industrial platform has created more wealth for transnational corporations instead of its own citizens: although much manufacturing happens in China, it is the western companies that capture the lion's share of the profits. Again, take China's "highly competitive" textile industry as an example: Chinese producers receive less than 10 percent of the profit, while more than 90 percent of the profits go to western companies that control the brands and distribution channels. Rather than blaming China for stealing jobs from the world, we should instead understand global restructuring according to neoliberal rules and how it destroys jobs around the world. In this light, China may not be seen as the culprit but rather a participant of the current development model: a small minority of Chinese have joined the global elites in the process<sup>20</sup>, while the working class are being marginalized just as elsewhere.

Popular media in the US often blames China for the manufacturing job losses. However, American ruling elites are perfectly aware of the facts. In a congressional testimony in May 2005, William H. Overholt, Chair in Asia Policy Research from the conservative think tank RAND Corporation, acknowledged that

“rapid Chinese globalization has required stressful adjustments. State enterprise employment has declined by 44 million. China has lost 25 million manufacturing jobs.”<sup>21</sup>

His numbers were even bigger than the Chinese government numbers cited above, as he was referring to a longer time frame.

It is really sad that instead of looking into these facts and analyzing what is wrong with the system, the US unions are often buying the misguided narrative that blames other workers who are supposedly “stealing” their jobs. A Chinese labor activist once commented on this tragic reality of global labor movements, “It seems to me that it is the big capitalists who have learned the most from Marx: they have unity through institutions like the WTO and IMF while the working class in different countries are often being pitched against each other.” Viewed from such angle, the border tax adjustment advocated by US unions is another knee-jerk response, instead of a well thought-out policy option resulting from careful examination.

If the purpose of border tax adjustment is to prevent employment leakage<sup>22</sup>, it is questionable how effective such protectionist measures can be without addressing the deeper structural problems outlined above. Also, there are better ways to protect jobs. For example, one possibility is for American workers to support Chinese proposals to reduce and eliminate preferential treatments of transnational corporations. In order to attract foreign direct investment, the Chinese government has implemented many favorable measures like the lower tax rate enjoyed by foreign corporations compared to domestic ones.

There are growing calls now to reduce and eliminate such super citizenship treatments of multinational corporations from many sectors in China. US unions can support such efforts, as it can be a truly win-win situation for workers on both sides of the Pacific. As there will be less tax incentive to relocate to China, US workers can better protect their jobs. For Chinese workers, a bigger percentage of the corporation's profit will stay within their community, instead of being siphoned off. The key is for the global working class to explore ways to work together to make capital more accountable and rooted, instead of being pitched against each other.

If the purpose of BTA is to prevent carbon leakage, there are also many problems on this front as well. First, how is leakage defined? Empirical data hint that almost all new energy-intensive installations in developing countries, such as those for steel, cement, chemicals, etc. are more efficient than existing ones in developed nations. So the baseline emissions can be lower in developing countries' new installations than in developed ones. Second, BTA undermines the principle of common but differentiated responsibility, and can be perceived by many developing countries as a back door maneuver to force them to take on similar level of mitigation. This is counterproductive to confidence-building. There are much more clever and sustainable ways to get carbon/energy-intensive industries from developing countries into a global deal.

In 2007, realizing the resource pressure created by the rapid export increase of energy intensive products including steel and cement, the Chinese government first reduced tax rebates, then further imposed an export duty on such products. The voluntary "border tax adjustment" measure was taken up by taxation authorities with advice from the State Environment Protection Agency, and it significantly lowered the exports of the targeted products (40 percent for certain categories of products). Now the State Environment Protection Agency is researching the feasibility for a full range of green taxes. Developing countries should be strongly encouraged to take such measures. On the one hand, it addresses the competitive concern of developed countries to a certain extent; on the other hand, it may serve developing countries in the long run. After all, most developing countries are poorer in resources than developed ones on a per capita basis<sup>23</sup>, so large volume export of resource and energy intensive products is probably not for the long term benefit of the country, even if the production is more efficient in a narrow economic sense.

However, these measures should remain voluntary instead of mandatory for a certain time frame, as developing countries need the policy space to decide for themselves instead of being forced to take similar level of mitigation responsibility prematurely. Border tax adjustment by the importing countries should only take place as the last measure of penalty, say, against US if it continues to refuse their responsibility as Annex 1 countries, or against certain sectors of a developing country if it refuses to take the voluntary measure after a certain agreed grace period. Instead of unilateral measures as currently proposed, it would be more efficient and more equitable if the system was implemented under UNFCCC. The border tax collected should go into a general fund, where the money can be used to mitigation and adaptation measures in developing countries.

## Section VII. Where is the Open Source Movement for the Climate?--The Issue of Intellectual Property and Technology Transfer



Advocates of intellectual property rights from the west often claim that it will provide a stimulus of innovation and catalyst for the deployment of environment-friendly technologies. But in reality, there are plenty of examples to the contrary. One such case can be found in the Montreal Protocol, allegedly one of the more successful international environmental agreements. Corporations have patented refrigerants that do not destroy the ozone. Instead of stipulating measures like compulsory licensing to facilitate the rapid adoption of such technology around the world, corporations are allowed to continue to charge high monopoly prices which many developing countries cannot afford, while compromises are being made to postpone the phase-out period. For example, in the case of hydrochlorofluorocarbons or HCFCs, Article 5 countries (developing countries) only have to freeze production on January 1, 2016, then eliminate it on January 1, 2040, in exchange for the unconditional protection of corporate patents. Usage of certain types of HCFCs like HCFC-141b, HCFC-142b, HCFC-22 has been in sharp increase in recent years, mostly due to increasing refrigeration in China and India. As a result, 2006 saw the worst depletion of the ozone layer in history (UNEP 2006, 2006 Antarctic ozone hole largest on record). These HCFCs are also powerful global warming gases, often tens of thousand times more potent than CO<sub>2</sub>. In a strict economic sense, this arrangement in the Montreal Protocol can even be argued as a win-win compromise: the western corporations continue to enjoy the benefits of monopoly patents, and the developing countries continue to enjoy the low cost of HCFCs until 2016. The loser is the environment and our shared planet.

It is not only the developing countries which suffer from the obstacles created by the current intellectual property system. One revealing example is the case of Enercon, one of the most innovative wind energy companies in the world. Enercon is the third-largest wind turbine manufacturer in the world and has been the market leader in Germany for several years. One of its key innovations is the gearless (direct drive) wind turbine in combination with an annular generator. As gearbox problems are responsible for most down time in conventional wind turbines, this new design significantly improves efficiency and reduces maintenance needs. However, Enercon has been prohibited from exporting its wind turbines to the US until 2010 according to a WTO ruling, allegedly due to infringement of US patent 5083039 held by Kenetech. Enercon claims their intellectual property was stolen by Kenetech and patented in the US before they could do so. Kenetech made similar claims against Enercon. During an investigation by the European Parliament, a US National Security Agency employee revealed that detailed information concerning Enercon was passed on to Kenetech via ECHELON<sup>24</sup>. In early 2008, Enercon reached a cross patent agreement with its competitor General Electric (which holds US Patent 7397143, a later patent partly based on US patent 5083039). During this long drama of international espionage and legal battles, neither Kenetech (which went bankrupt in 1997) nor General Electric have built or installed any direct-drive wind turbines based on the disputed technology. In short, in this particular case, all that the WTO rules and IP rules have achieved is to prevent the deployment of this climate friendly technology in the US until now. Once again, the environment loses.

One beauty of knowledge and ideas is that they are non-competitive and non-exclusive, unlike most material goods. If you have an apple, and I have a pear, and we make an exchange, then I only have an apple and you only have a pear. If you have an idea, and I have another idea, and we make an exchange, then both of us will end up with two ideas. My use of a certain technology does not prevent you from using the same technology. But the current intellectual property system treats knowledge as a rival and exclusive resource: If I patent an idea, nobody else can use it unless they can pay the monopoly price. There are better ways to stimulate innovations and deploy technologies than commodifying and monopolizing knowledge in such way. One successful example is the vibrant open source and free software movement in the IT industry. The "free software" and "open source" movement has millions of followers who contribute their time freely. It has produced impressive technologies including Linux and OpenOffice. These products are great low cost or even zero cost alternatives for consumers around the world, and viable substitutes to softwares from industrial monopolies like Microsoft. Instead of conventional copyright or intellectual property, free software often uses the following principles of "copyleft", which means:

1. the freedom to use and study the work,
2. the freedom to copy and share the work with others,
3. the freedom to modify the work,
4. the freedom to distribute modified and therefore derivative works,
5. all derived work should be distributed under the same or equivalent 'copyleft' license.

It promotes free sharing and further development of ideas and knowledge, instead of validating the monopoly of knowledge.



I have spent a fair amount of time trying to convince my Chinese friends that climate change is a real threat instead of another conspiracy by the rich countries to stop the economic growth of the developing countries. Oftentimes it is frustrating, but it has its reward as well. Sometimes one is being asked sharp and thought-provoking questions. One such question comes from a friend working in the IT industry. He gave me quite a powerful argument, as paraphrased below:

“If global warming is really a serious threat to human civilization as you are telling me, then where is the open source movement for the climate? I am an active participant of the free software movement. Every week I spend more than 10 hours of my free time on it, like millions of other tech guys around the world. We all understand that the free software we help to create and distribute probably hurts the profit margin of the whole IT industry. But there are more important things in life than making money at all costs. So this is what we do to make the world a bit better and fairer. Unless I see a comparable movement for the climate, I will always suspect that you guys are just another interest group, and the whole climate change thing might be some hype to sell certain kind of proprietary technology of the west.”

I was at a loss to argue against his suspicion: he and the movement he is in have walked the walk, while the climate community has only largely talked the talk. The technology transfer mechanism under UNFCCC has yet to transfer one single piece of equipment or technology to developing countries. Then there is the World Business Council for Sustainable Development (WBCSD), a CEO-led global association of some 200 companies dealing exclusively with business and sustainable development. WBCSD did establish an Eco-Patent Commons project in early 2008, where companies can pledge eco-friendly patents to the public domain. Companies can choose which patents they want to put into the "pool" - one patent is enough to get in and claim the badge of honor. So far seven companies (IBM, Nokia, Bosch, Xerox, Dupont, Pitney Bowes, Sony) have joined it, but what they have donated are hardly breakthrough or potentially big sales technologies. During the December 2008 Poznan talk, WBCSD representatives called it "completely unacceptable for industry" that a UN climate agreement would include compulsory licensing of patents. They want technology transfer only to take place through projects that require the participation of multinationals. All these make the earlier Eco-Patent Commons initiative look like greenwash exercise, or even worse -- a typical cynical attempt to head-off compulsory licensing.

“Where is the open source movement for the climate?” This question from someone outside the environment movement could be a challenge for everyone who works on climate related issues, whether in the government, business or non-profit sector. Until we produce Linus Torvalds and Richard Stallman<sup>25</sup> of the climate related technology, until some significant eco-friendly technologies are put into the public domain, the suspicion that the climate community is just another interest group will always linger in many people's mind. We have to walk the walk to prove otherwise. Global warming is one huge crisis of the commons, and we need collective efforts and ingenuity to rebuild the commons. Ideas of reciprocity as embodied in the “copyleft” principles are better suited for this purpose, instead of further commodification as promoted by the current IP regime.

Besides the hurdles presented by the IP regime, another block to talking constructively about climate and technology is that so many people assume that the ideas to be shared in a “climate commons” will come mainly from TNCs, or high-tech professionals (people like Linus Torvalds or my IT industry friend) who are altruistic enough to devote time and energy to open source. In fact, the ideas and technologies that need to be shared are not necessarily “high-tech” and will also come from communities across the world: Indian river valley farmers refining their non-carbon customary irrigation systems, Brazilian farmers seeking to restore and promote mixed agriculture, Chinese peasants using biogas digesters to turn wastes into fuel and green fertilizer, British Transition Towns, and so forth. The problem now is that what is referred to as “technology transfer” at the international level (in the UN, etc.) means the elimination and erasure of such technologies in favor of the purchase or the negotiation of the transfer of technologies that the western TNCs would like to sell to the rest of the world. The Indian, Chinese or Brazilian villagers, of course, have no patents on their technologies and so they are freely available already – but they are being squashed (and often by the international climate apparatus itself, including the Clean Development Mechanism (CDM), foreign investment, etc.) instead of being exchanged with the rest of the world<sup>26</sup>. What is the best way to make such community-based knowledge and technology benefit more people? A parallel can be drawn with indigenous knowledge on medicinal plants. Attempts to co-opt such knowledge into the existing intellectual property regime often results in biopiracy and even deprivation of access. The monopoly of intellectual property has to be questioned if we want to prevent similar fate for community-based eco-technologies.



## **Section VIII. Beyond Techno Fix: Is the American Dream Still Possible or Desirable?-- Exploring the real possibility of low carbon economy**



In comparison to many other countries (especially the US), China is taking more concrete actions on the ground for fostering clean energies, efficiency, and so on. While such efforts are laudable and one can only hope that the US will follow suit, we still have to ask: will such techno-fixes be enough for the big challenge? Let's examine some facts.

Global warming is just one aspect of the global environmental crisis, thus it has to be addressed in the context of global governance and sustainable development. China's strong focus on energy efficiency and technology fixes has its ideological roots in ecological modernization theory<sup>27</sup>, an idea coming out of Scandinavia. It is an optimistic, reform-oriented environmental discourse. It puts its confidence in modernization and technological innovation -- by improving energy and resource efficiency technology advancement can solve the environmental crisis and promote economic growth at the same time, thus a “win-win” scenario.

Given this theory, one would expect that developed countries are better models of sustainable development. Unfortunately, this is far from the reality and the US obviously does not follow the Scandinavian model. According to data from the Living Planet Report

2006<sup>28</sup> by the World Wildlife Fund, one can calculate that if Chinese people will copy the American lifestyle with current US technology level, we would need more than one planet. We need five planets if everyone consumes at the US levels. Since the late 1980s, humanity's ecological footprint has already exceeded the earth's biocapacity, and as of 2003 by about 25 per cent. The technologically advanced countries like the US is a prime example of over assumption of resources.

Among the Scandinavian countries, Sweden, Finland and Norway are indeed living within their means: their ecological footprints are smaller than their biological capacity. But one big reason for this is their small population density and consequently large per capita biocapacity. The ecological footprints of these countries range between 5,8 and 7.6 global hectares per capita, far larger than 1.8 global hectares, which is the average biocapacity available per person on the planet. We still need three planets if we all consume at Swedish levels. Thus the Scandinavian model cannot be easily copied by the developing countries, which generally have high population density.

The following graph from the Living Planet Report 2006 illustrates the enormous challenge of sustainable development. Sustainable development is a commitment to “improving the quality of human life while living within the carrying capacity of supporting ecosystems” (UNEP *et al.*, 1991). One widely accepted measure of “well-being” is the UNDP's Human Development Index (HDI) and ecological footprint is a measure of demand on the biosphere. An HDI value of more than 0.8 is considered to represent decent well-being. Meanwhile, a footprint lower than 1.8 global hectares per person, which is the average biocapacity available per person on the planet, could denote sustainability at the global level (the assumption here is to ignore the needs of wild species). Successful sustainable development requires that the world, on average, meets at a minimum these two criteria, with countries moving into the blue quadrant at the lower right as shown in the figure. As we can see, while the EU and North America have crossed the threshold for high human development, it is achieved by using more resources than the world average per person biocapacity. The only country that meets the minimum criteria for sustainability is Cuba.



Human development and ecological footprints, figure from Living Planet Report 2006

At the Poznan climate talks in December 2008, China said that development itself is the great contribution to addressing climate change. Thus, the development space and rights of developing countries should be guaranteed. But one thing missing from the mainstream discussion of development – whether by China or any other country -- is the crucial question - what kind of development? Take the biofuel debate as an example. Even the language and options of the current biofuel discussion expose a distinctive northern bias. Regarding the possibilities of biofuel, all we hear about are industrial scale bioethanol or biomass generated electricity. Why? Because people in the north have taken it for granted that electricity is a necessity instead of an improvement after other more basic needs are fulfilled, and ethanol is needed to drive the automobiles. In contrast, there is hardly any mention of other modes of utilizing bioenergy, such as direct burning of biomass, or biogas digesters. More than 300 million families in the world (or about 20 percent of humanity) still depend on the direct burning of biomass (mostly wood) for cooking. Most of them use open fire or simple three-stone pits which are highly inefficient. The resulting smoke and toxic emissions cause 1.6 million deaths a year. In many places (for example Haiti), the quest for fuel wood is also a driving force of deforestation and the consequent emission increase. Yet the technology for rapid improvement already exists. Properly designed stoves built with local material and local labor can reduce fuel consumption up to 80 percent, as well as significantly cut down emissions of smoke and organic volatiles. When we talk about development of bioenergy, the first priority should be adapting the design of efficient stoves to conditions of each locality, and rolling out the technology using local resources so that the 20 percent of the poorest of humanity can take better care of their environment as well as fulfill their development needs at the same time. However, when people think about development and technological advances, few would ever think of fuel-efficient woodstoves or other appropriate technologies. Instead, the usual images include more electronic appliances, consumer goods, and cars.

On the issue of cars, it is especially sad that in blind worship of the US lifestyles, China has abandoned its previous focus on public transportation and bicycles, encouraging, instead,

an automobile-oriented lifestyle. In stark contrast, Cuba imported millions of bicycles and bicycle production lines from China in the 1990s (partly in response to the energy crisis generated by the collapse of the former Soviet Union); while China imported millions of cars and multiple automobile production lines from the west. In 2004, China became the world's fourth largest producer and third largest consumer of automobiles. The number of car ownership is growing at 19 percent annually.

Apart from increased dependency on imported oil and growing emissions, the massive explosion of private automobiles is harming the well-being of many Chinese, especially the poor. Public buses are getting slower and slower because of traffic jams. For example, the average bus speed in Beijing was 10 miles per hour in the 1980s; it decreased to 5 miles/hour in the 1990s. Nowadays, it is further reduced to a crawling 2.5 miles/hour. More and more roads are closed to bicycles to make room for cars, highways and urban sprawl are swallowing huge swathes of land, which is creating many landless peasants. The estimated number of landless peasants today ranges between 40 million and 70 million while there were none 30 years ago. Even if we suddenly had a magic technology to make all cars infinitely more efficient (zero fossil fuel demand, zero emissions), there is another resource constraint: the urban sprawl generated by an automobile centered infrastructure could eat up so much arable land, that it would threaten China's food security. If only 50 percent of the Chinese population drive a car, would the remaining 50 percent have places to walk and bike or even have enough land to grow food?

While technological fixes (for example, improving energy efficiency and reducing emissions per car) are important, one has to ask other more fundamental questions as well: How do we want to organize our lives? What kind of urban and rural landscape do we want to have? What kind of transportation system should we have? There is a limit to technology fixes without paradigm shifts. After all, the fuel efficiency of automobiles cannot compete with that of bicycles, no matter what is the level of technology.

The following photo was taken in summer 2006, near the city center of Amsterdam, the Netherlands. Since then I have used it in many talks in China, asking the audience to guess when and where it was. No one even came close. The two most frequent guesses are some Chinese city 20 years ago or some Southeast Asian city today. Even though I mostly talked to progressive audiences who care about social justice and sustainability, they were all deeply brainwashed in this respect: modern cities should be a land of automobiles, while a land of bicycles is a sign of backwardness. It is intriguing that so many Chinese audiences think that a photo of today's Amsterdam is of some Chinese city 20 years ago. In a sense, they are not wrong. Just like today's Amsterdam, back then, cities were designed for people and bicycles - in most city roads, bike lanes were as wide as or even wider than auto lanes. This was by no means achieved by chance. Some westerners may assume it was simply because China was too poor to afford automobiles, but low per capita GDP did not prevent Manila or Bangkok from becoming auto-traffic hell decades ago.

In a 1970 interview with American progressive William Hinton<sup>29</sup>, China's first Prime Minister mentioned the air pollution problem caused by automobiles in a certain Japanese city, and said that China would not imitate automobile oriented urban growth. He probably knew nothing about peak oil or climate change, but he had enough information to realize that given China's large population and resource constraints, private automobiles would be an unaffordable luxury for the majority of the people. So the government decided to focus

on bicycles and public transportation to serve the masses. In a related observation, William Hinton noted how little material difference there was between the capital city Beijing and Zhang Zhuang (a rural village he frequented), which is another manifestation of the “serving the people” instead of “serving the elites” policy orientation at the time. Unfortunately, the wisdom that the late Prime Minister already had 38 years ago is being forgotten by Chinese leadership and many of its people today. Today's China is marked by a rapidly growing gap between the rich and poor and cities are increasingly transformed for cars. So, is China's recent auto frenzy good development? Aren't we just blindly copying the worst mistakes of the west? The same question should be asked about China's rising middle class and their newly- found obsession with consumerism.

## Section IX. The Current Economic Crisis: Green Hopes or Black Fears?



The financial crisis that originated from the US has created huge job losses in China. Due to decreased demand in the US, there have been massive factory closures in the coastal export region, and there will be more. In many cases, factory owners simply disappeared in the middle of the night, leaving hundreds of workers without their due salary. It is estimated that 10 million migrant workers have returned to their rural villages, with another 20 million lingering in the cities searching for jobs. To combat the economic slowdown, China has announced a RMB 4 trillion (US\$ 586 billion) economic stimulus package with many new investment projects. Local governments have followed suit with their own plans, which in total may reach a gigantic RMB 10 trillion. Most of them are infrastructure projects.

The word crisis for the Chinese means danger and opportunity at the same time. The ongoing economic crisis, as bad as it is, could offer an opportunity for China to re-examine its export oriented and resource intensive growth model. So far, the signals from the Chinese government are mixed. For example, there is a lot of talk about using the opportunity of lower oil prices to implement a fuel tax, which will help to curb oil

consumption and encourage a move to clean energy in the long run. On the other hand, some government officials are encouraging consumers to buy more cars, in order to stimulate the economy. Such confusion is to be expected. After all, many advocates and practitioners of the market oriented reform in the last quarter century have held the unspoken conviction that the eventual purpose is to copy the US system. Now with the storm originating from the US, the center of *laissez faire* capitalism, many people are struggling to understand and cope.

Many of the infrastructure projects announced in the stimulus package will be energy and resource intensive, repeating the process by which China spent its way out of the 1997 Asia financial crisis. There is nothing wrong with infrastructure building itself. The global South needs development to pull itself out of poverty and environmental destruction, just as the poorest 20 percent of humanity (many of them are in China) who still cook with open fires desperately need more efficient stoves and biogas digesters. The question is: what kind of infrastructure? Solar panels, wind turbines, and improving the power grids, though require one-time intensive input, may lay the groundwork for a future low-carbon economy. On the other hand, more highways and cars will soon become a liability for the future.

For rural China, where the majority of Chinese people still live, there are many possible projects (not all of them resource intensive) which can bring long term environmental, economic and social benefits. Many irrigation canals and water works are in serious disrepair and deterioration. Restoration and new development of water works can greatly improve resilience of rural economy to droughts and floods, so they can be better prepared for the changing climate. The same thing can be said about re-planting of windbreaks, networks of trees to protect arable lands from soil erosion, etc.

The massive overuse of chemical fertilizers and pesticides has caused serious soil degradation as well as undermined food safety. Now, with millions of migrant workers going back to their home villages, it is a golden opportunity to promote the more labor-intensive but socially/environmentally friendly organic agriculture -- as pointed by many experts, organic agriculture is an effective mitigation and adaptation measure against global warming. The list can go on and on, if one can open up the imagination and think out of the existing development paradigm. The material benefits of many such projects will take some time to materialize, thus local governments and people may be reluctant to take on such projects, as we have all been so-entrenched in the culture of “instant rewards and short-term gain” in the last few decades. However, doesn't the ongoing economic crisis offer the perfect reason for us to question such a culture?

As pointed out by Lord Stern in the famous Stern report, “Climate change is the biggest market failure”. In fact, it is a bigger market failure compared to the more obvious financial market failure of the ongoing economic crisis. We are in both crises because there is something fundamentally wrong with our way of organizing our society. At this junction of global environmental crisis, social crisis and economic crisis, we urgently need to ask: What kind of world do we want to live in? What kind of development do we really need?



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- 1 Figure from “China’s Carbon Emissions: Theirs or ours?” by Jim Watson and Tao Wang at [http://www.wilsoncenter.org/events/docs/jim\\_watson\\_presentation.pdf](http://www.wilsoncenter.org/events/docs/jim_watson_presentation.pdf).
  - 2 Ibid.
  - 3 Ibid.
  - 4 Ibid.
  - 5 <http://www.chinadialogue.net/article/show/single/en/2535-Inequality-trust-and-opportunity-> “Inequality, trust and opportunity” by Olivia Bina and Viriato Soromenho-Marques
  - 6 Figure from “China’s Carbon Emissions: Theirs or ours?” by Jim Watson and Tao Wang at [http://www.wilsoncenter.org/events/docs/jim\\_watson\\_presentation.pdf](http://www.wilsoncenter.org/events/docs/jim_watson_presentation.pdf).
  - 7 [http://www.sasi.group.shef.ac.uk/worldmapper/posters/worldmapper\\_map295\\_ver5.pdf](http://www.sasi.group.shef.ac.uk/worldmapper/posters/worldmapper_map295_ver5.pdf)
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  - 10 Investigating the impacts of climate change on Chinese agriculture, <http://www.china-climate-adapt.org/>
  - 11 <http://act.greenpeace.org.cn/event/olympic/climate-agriculture.pdf>
  - 12 More detailed info about the program can be found at <http://ies.lbl.gov/iespubs/2007aceee.pdf>.
  - 13 “ICCT Releases New Report Comparing Global Fuel Economy and CO2 Standards.” Green Car Congress. July 31, 2007.
  - 14 [http://www.ccap.org/docs/resources/64/Developing\\_Country\\_Unilateral\\_Actions\\_2007\\_Update.pdf](http://www.ccap.org/docs/resources/64/Developing_Country_Unilateral_Actions_2007_Update.pdf)
  - 15 “China government adviser urges greenhouse gas cuts”, by Reuters News on 08 September 2008, By Chris Buckley, available at <http://www.reuters.com/article/reutersEdge/idUSPEK19898020080908>



- 16 See in “A Warming China: Thoughts and Actions for the Chinese Civil Society” at <http://www.greenpeace.org/raw/content/china/zh/reports2/social-action.pdf>
- 17 One such example is the above statement: a group of non-profit organizations came together and worked out a joint announcement, and called it “positions of Chinese civil society”.
- 18 Sadly, in certain areas of rural China, mafia is indeed the fastest growing type among all the NGOs. He Xuefeng, a leading expert on China's rural development, has documented such cases.
- 19 China Statistics Yearbook, 2002.
- 20 Such people are often called the “comprador class” in China, meaning Chinese representatives of foreign (often western) interests.
- 21 “China and Globalization”, William H. Overholt, Testimony presented to the U.S.-China Economic and Security Review Commission on May 19, 2005, available at [http://www.rand.org/pubs/testimonies/2005/RAND\\_CT244.pdf](http://www.rand.org/pubs/testimonies/2005/RAND_CT244.pdf).
- 22 In a November 2008 climate change conference at Washington DC, a labor leader from AFL-CIO gave a twenty minutes presentation about how jobs are being lost to China, and why BTA is needed to protect American jobs.
- 23 According to WWF 2008 Living Planet Report, the per capita biocapacity is 3.7 global hectare for high-income countries, 2.2 global hectare for middle-income countries, and 0.9 global hectare for low-income countries.
- 24 **ECHELON** is a name used in global media and in popular culture to describe a [signals intelligence](#) (SIGINT) collection and analysis network operated on behalf of the five signatory states to the [UK-USA Security Agreement](#) ([Australia](#), [Canada](#), [New Zealand](#), the [United Kingdom](#), and the [United States](#)). [The above case regarding ECHELON is documented in a EU Parliament investigation, and its report available at](#) <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A5-2001-0264+0+NOT+XML+V0//EN&language=EN>
- 25 Linus Torvalds is a Finnish software engineer who initiated the development of Linux Kernel. Richard Stallman is a US software engineer who pioneered the General Public License and started the free software movement.
- 26 Documented cases can be found in Larry Lohmann's “Carbon Trading: a critical conversation on climate change, privatisation and power”.
- 27 There are exceptions to this generalization. For example, China's Environmental Protection Agency has pioneered green GDP accounting, some scientists from Chinese Academy of Agricultural Sciences are advocating organic farming as both mitigation and adaptation measures of global warming. Both have deviated from the standard ecological modernization theory. One should realize that there are different school of thoughts in the Chinese government, just as in most western governments.
- 28 [http://assets.panda.org/downloads/living\\_planet\\_report.pdf](http://assets.panda.org/downloads/living_planet_report.pdf)
- 29 Appendix 1: interview with Prime Minister Zhou Enlai, in “Shen Fan”, William Hinton, 2008 Chinese edition.