

China and the Barbarians: Part 1

I was in China when U.S. midterm elections caused some people to become more pessimistic about the fate of the planet and humanity. In contrast, I became more optimistic, for two reasons, both related to China. Here I explain the first reason for optimism.

In an [op-ed](#), "Chinese Leadership Needed to Save Humanity", published in the South China Morning Post on 3 November, I argue that China should impose a rising fee (tax) on carbon, for China's own sake and for the future of humanity.

First let's clarify that China is not largely responsible for climate change, even though its CO₂ emissions are now largest. Climate change is proportional to integrated (cumulative) emissions¹. The fact that most early historic emissions are no longer in the atmosphere – having been distributed among the ocean, atmosphere, soil, and vegetation reservoirs – is almost exactly compensated by the fact that the early emissions have operated longer on the climate system.

Figure 1 shows current emissions (a) and cumulative emissions (b). The United States bears 27 percent responsibility for cumulative emissions. China is second at 9.5 percent. On a per capita basis, the United States is more responsible than China by about a factor of ten.

Nevertheless, China's annual emissions have rocketed past those of the United States and other developed countries, and, if they continue on their current growth path, China will become the principal cause of climate change within the next few decades. Also, as shown by Figure 2, the task of getting global CO₂ emissions to stabilize can be accomplished only if the rapidly growing emissions of all developing countries can be stabilized and begin to decline over the next few decades. How can I possibly be optimistic about that?

I must start with a fundamental law: as long as fossil fuels are the cheapest energy, they will continue to be burned. This law is as certain as the law of gravity. No "caps", "goals" for future emissions, or other self-deceptions can alter this fact. Caps only alter who burns the fuel and the pace of burning – they will not leave fossil fuels in the ground, as science demands. Caps are also inherently disingenuous – a pretense that the price of fossil fuel energy does not need to steadily rise, an attempt to circumvent the "law of gravity"².

Fossil fuels are cheapest in part because they are subsidized, but mainly because they do not pay their costs to society. Enormous world-wide medical costs due to air and water pollution, primarily caused by fossil fuels, are borne by the public, not fossil fuel companies. Nor do they pay for environmental damage or the costs of climate change, which instead will be shouldered especially by our children and grandchildren.

These facts expose the crucial element for solution of the energy and climate problem. A steadily rising carbon fee must be collected from fossil fuel companies. All funds should go to the public on a per capita basis to allow lifestyle adjustments and spur clean energy innovations. As the fee rises, fossil fuels will become increasingly unprofitable and will be phased out, replaced by carbon-free energy and increased energy efficiency. This is the economically-efficient path to a clean energy future – the cure to fossil fuel addiction.

¹ Hansen, J. et al., Dangerous human-made interference with climate: A GISS modelE study. *Atmos. Chem. Phys.*, **7**, 2287-2312, doi:10.5194/acp-7-2287-2007.

² It is not feasible to have a global cap on CO₂ emissions, and a partial cap reduces demand, making the fuel cheaper for someone else to burn. In contrast, a carbon fee can readily have global effect, via border duties on products from nations that do not have an equivalent carbon fee. Even a national carbon cap is not a realistic approach. However, a cap can be used effectively for a sector (e.g., utilities), as a supplement to a carbon fee.

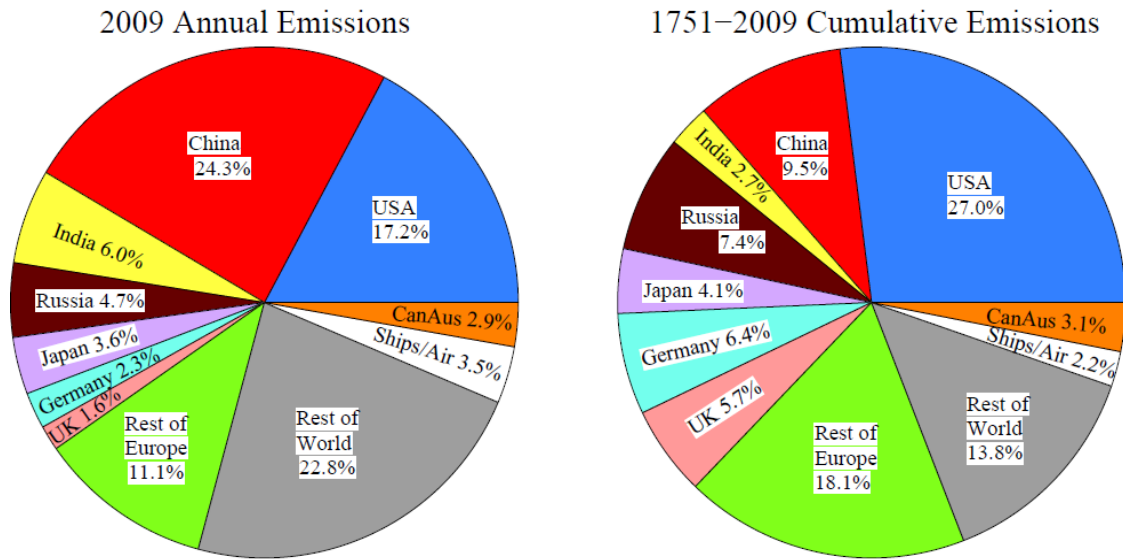


Figure 1. Fossil fuel CO₂ emissions in 2009 (left) and cumulative emissions (right).

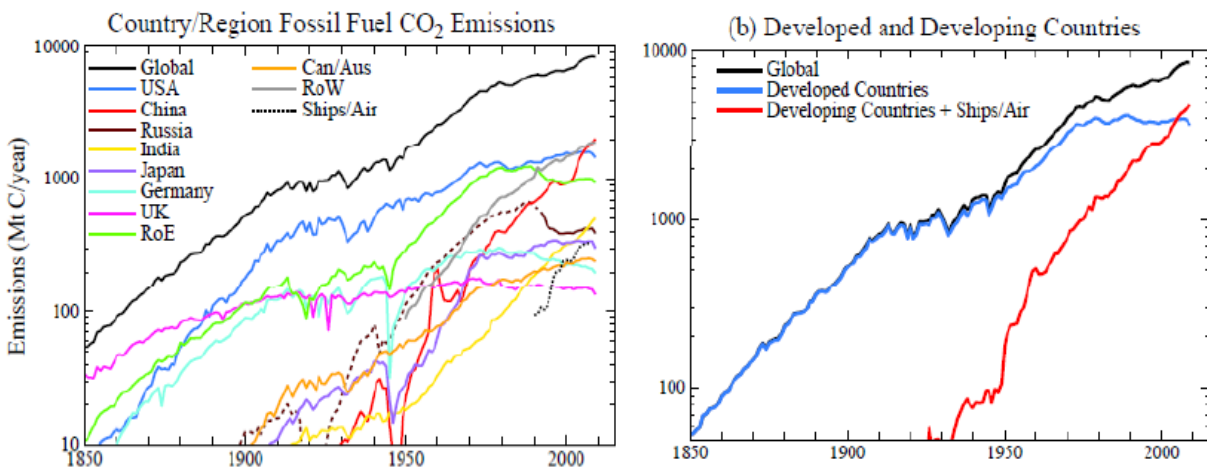


Figure 2. Fossil fuel CO₂ emissions by country (RoE, W = Rest of Europe, World).

Wait a minute! If a carbon fee makes economic sense and saves the planet, why is the United States, for example, not following that path? Fossil fuel interests reign in Washington and other capitals. Big money forces legislatures to hatch ineffectual schemes such as "cap-and-trade-with-offsets", a system designed by big banks and fossil fuel interests that assures continued fossil fuel addiction.

Is there any hope that China will take the game-changing first step by adopting a carbon tax? Why would they do so? Why would this be the harbinger of a global framework?

I believe that China has powerful reasons to place a rising fee on carbon: (1) China will suffer more than most nations from changing climate and rising sea level, (2) China has horrific air and water pollution from fossil fuels, (3) China wants to avoid the enormous costs and burdens that accompany fossil fuel addiction, (4) there is great economic advantage in having the leading low-carbon technologies.

All four reasons are old news. My optimism (Part 1) that China can, indeed must, lead the world toward a global solution is not based only on these reasons. It also is based on insight that emerged during the Beijing Forum, exposing a fundamental flaw in my prior reasoning about the framework needed to achieve an effective global agreement – as discussed below.

I attended conferences in Hong Kong and Beijing, losing track of the number of meetings and talks, expertly arranged by Christine Loh. [Christine, I was told by others, was a primary force in helping bring order to Hong Kong development, limiting expansion into the harbor.]

[An aside: I was able to escape meetings one afternoon. Two warmly hospitable graduate students (Figure 3) of Prof. Shao Min accompanied Anniek and me to the Great Wall. The three of them pooped out way before reaching the peak, but they graciously waited while I, heroically, not only ascended to the top, but near the summit vanquished three barbarian would-be invaders. Next week-end I can tell grandson Connor of my feat in resoundingly defeating the barbarians, at least half a dozen of them. As I was descending, an elderly Chinese man proffered a gold medal – conveniently he had a metal etching tool that he used to inscribe my name on the gold medal. Other words on the medal are in Chinese, but I can inform Connor that they are surely an expression of gratitude for how, after fierce hand-to-hand combat, I summarily did in more than a score of barbarians, saving the local population. Only shortcoming: I failed to take my official Indiana Jones hat to China, and no photos were taken of the great skirmish (Figure 4 shows Connor in my Indiana Jones hat, a Grandfather's Day gift from him – he had forgotten his own, one size smaller, Indiana Jones hat that day).]

Now back to the real world. The physical development of Hong Kong, Beijing, Shanghai and other populous areas in China is awesome, even though big challenges remain, pollution not the least of them. However, what impressed me most was the focused rational approach to dealing with the challenges, epitomized by Dr. Jiang Kejun, the lead speaker in the session "Global Environmental Policies and National Strategies" at the Beijing Forum.

Jiang Kejun laid out sector-by-sector projections of transitions to low-carbon and no-carbon energies and improved energy efficiency that would allow CO₂ emission growth to be slowed and then reversed over the next few decades. Technology development is supported, and, when lower carbon technology becomes available, efficiency standards are promptly ratcheted downward. Most encouragingly, there is recognition that this strategy requires a rising carbon price for most successful results. The Chinese authorities appear to grasp that rapid attainment of the tipping points at which clean energies quickly displace dirty energy requires an economic incentive.

One reason to believe this approach will work is the scale of manufacturing in China. The scale is so great that the unit price of new technologies can be brought down, putting China in a position to sell carbon-efficient technologies to the rest of the world. That is important, because, as Figure 2 reveals, emissions from other developing countries are increasing as fast as those of China. But those countries, too, have every reason to minimize fossil fuel addiction.

The Chinese approach stands in stark contrast to that in the United States. As described in "Storms"³, my "A-Team" (student-teacher-researcher team) showed years ago (as did others) that existing technology would allow a 30 percent vehicle efficiency improvement, saving \$100 billion per year in imported oil costs. Yet our automobile efficiency standards were stuck for decades. I testified in court on the side of states trying to force better standards, e.g., Vermont vs. Auto Manufacturers, while our federal government stood in court alongside the polluters.

³ [Storms of My Grandchildren: The Truth about the Coming Climate Catastrophe and Our Last Chance to Save Humanity, Bloomsbury, New York, 304 pages, 2009.](#)



Figure 3. Emma, Anniek and Clara during Great Wall trek.



Figure 4. Jim and Connor model official protest and Indiana Jones hats.

We "won" the court case, yet appeals stretched the time of action for years. I came away feeling that not only is it nearly impossible to get effective legislation through Congress, but that the special interests can prevent implementation almost interminably. Democracy of the sort intended in 1776 probably could have dealt with climate change, but not the fossil-money-'democracy' that now rules the roost in Washington.

There was a flaw in my prior thinking that became clear to me during my visit to China. I had argued previously that global action to stem climate change required agreement between China and the United States for a rising carbon fee. That would work, but it is not realistic – such a treaty requires approval by the dysfunctional U.S. Congress.

However, there is a way around that, which becomes obvious with the realization that an initially modest carbon fee is in China's own interest. After agreement with other nations, e.g., the European Union, China and these nations could impose rising internal carbon fees. Existing rules of the World Trade Organization would allow collection of a rising border duty on products from all nations that do not have an equivalent internal carbon fee or tax.

The United States then would be forced to make a choice. It could either address its fossil fuel addiction with a rising carbon fee and supportive national investment policies or it could accept continual descent into second-rate and third-rate economic well-being. The United States has great potential for innovation, but it will not be unleashed as long as fossil fuel interests have a stranglehold on U.S. energy policies.

Once in days of yore I went to dinner in New York's Chinatown with a group of colleagues including one of Chinese ancestry (probably Inez Fung or Wei-Chyung Wang, but conceivably Kuo-Nan Liou or Yuk Yung) who informed the restaurant proprietor that the others in the group were "good barbarians". This recommendation got us into a part of the restaurant reserved for local people, with food not spoiled by western predilections – it was excellent.

I have the impression that Chinese leadership takes a long view, perhaps because of the long history of their culture, in contrast to the West with its short election cycles. At the same time China has the capacity to implement policy decisions rapidly. The leaders seem to seek the best technical information and do not brand as a hoax that which is inconvenient. This is not to say that fossil fuel interests have no power within China, but they do not rule the roost.

China cannot stabilize Earth's climate alone. If, as I hope, they conclude that a rising carbon fee is in their interest, the question will become: can they find a sufficient number of "good barbarians" who will abandon greenwash and participate in effective policy?

I will discuss a second reason for optimism in Part 2.