

## **How China Can Sustain Growth Cleaner and Greener**

China recently became the number one energy consumer in the world, surpassing the U.S.'s dominance on that score for nearly a century. With China's greater electricity demand from power-hungry cities and industry, its carbon emissions will rise to chokingly high levels. It surpassed the U.S. as the largest emitter in 2006, and by just 2015, emissions are forecast to be 35% greater than the U.S's.

Focusing attention and policies toward greener infrastructure in energy and water will be important for China as it continues on its growth trajectory. New research by finance professor Andrew Chen of SMU Cox and sustainability researcher-writer Jennifer Warren offers evidence that China's sustainable growth can be met by investing in greener infrastructure through capital markets—bringing with it a climate change dividend.

### **Economy & Ecosystem**

The world's economic system and ecosystem have everything to gain by teasing apart the infrastructure and climate change-related issues for China. But the challenges ahead are complex and expensive. Particularly, China wants financing and technology transfer from the U.S., considered a key player in helping promote further environmental clean up. China's continuing demand for power generation and its water resource challenges indicate that large financial resources will be needed to complement green policies already in existence.

But how can China achieve its desired level of modernization without overwhelming the globe's atmosphere, oceans, and natural resource supplies? In power generation, China is forecast to consume 24% of world demand (in investment) between 2005-2030. And don't forget, a ton of CO<sub>2</sub> emitted today is worse than a ton emitted a decade ago with the earth's lessened capacity to absorb the emissions, according to a 2009 reporting by Union of Concerned Scientists.

China's energy infrastructure choices can impact global warming, and it must also simultaneously address its water challenges, which run in concert with its energy choices. China's choices in clean, green and efficient now can serve as an insurance policy against climate change effects both seen and unknowable. Recent government crackdowns on industry for inefficient energy use say that China understands the full implications of the health and wealth effects of its energy consumption. Over 2,000 factories are to be shut to increase energy efficiency and enhance international competitiveness.

Other challenges are revealed on the water infrastructure front for China. Water infrastructure tends to attract less private capital owing to policy risk in developing countries. And climate change is expected to worsen water problems— increasing the frequency of floods and droughts. Water issues intersect important policy areas such as energy, health, food, and environment.

### **Bring in the Markets**

China needs to bring the private sector into infrastructure projects to accomplish its economic growth and development goals. China especially needs more clean energy and efficient water infrastructure to combat air and water pollution, alongside the impacts of climate change as China becomes more water-stressed in the coming years.

While various combinations of company-to-company and country-to-country trade and agreements emerge, another facet in the climate change challenge remains – paying for the infrastructure projects which will absorb and incorporate many of the desirable green technologies and products. Entire programs of infrastructure related to cleaner power generation and sustainable water supply and sanitation will need to be built and financed in the decades ahead. While we need to encourage cooperative approaches between government and the private sector, a bigger partner capable of vetting numerous infrastructure projects and technologies exists – global capital markets and the investors that support them.

Infrastructure projects are inherently risky with large capital outlays, long completion times and regulatory and political risk. The common “contract finance” approaches of BOT (Build-Operate-Transfer) and PPP (Public-Private Partnerships) in infrastructure development have led to substantial losses worldwide and reveal flaws. The same story of flaws repeats itself in BOT and PPP projects in China. Many wastewater treatment plants with private participation are BOT, but investors in China are reported to have grown weary. Many times the bidding process suffers the “plums” problem. The bidding firm (buyer) may have more knowledge about the projects costs and its economic value to the disadvantage of the seller, the government. This plums problem gives rise to corruption, game playing and waste.

Using a “market finance” approach over contract finance approaches can create diversification, increase liquidity, and eliminate the plums problem existing in BOT and PPP. This approach can help level the competitive playing field; deter political and policy risk; and develop more transparent market mechanisms.

The use of project securitizations or initial public offerings via capital markets for large-scale projects can ensure ample funding and bring awareness of a project globally. Greater community interest can be generated using domestic capital markets to avoid “mood swings” of public opinion, which often occur when foreign firms are brought into public works projects. With water a delicate public issue, citizens can participate as shareholders and stakeholders with governance and oversight roles under a capital market approach for true private-public partnerships.

Government needs to pave the way however with consistent policies. Across the globe, innovative approaches in delivering services that raise standard of living and reduce environmental impact have emerged, but need to be scaled up. The goal of sustainability in financing and natural resources should guide analyses of policies that promote cleaner energy and greener water infrastructure development.

“Sustainable Growth for China: When Capital Markets and Greener Infrastructure Combine” by distinguished finance professor Andrew Chen of SMU Cox and Jennifer Warren, principal Concept Elemental, is forthcoming in *The Chinese Economy*.

*Summarized by J. Warren.*