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China and the US: The potential of a clean-tech partnership

Only a collaboration between the two countries will create an environment where clean-energy technologies can thrive.

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China and the United States, the world's dominant producers of carbon emissions, have adopted aggressive programs to reduce oil imports, create new clean-energy industries and jobs, and generally improve the environment. But the environment that will be most critical to making or breaking the two countries' efforts to curb the dangers of global warming could well be the market that they jointly create in pursuit of their aims. Unless the two work together to provide the scale, standards, and technology transfer necessary to make a handful of promising but expensive new clean-energy technologies successful, momentum to curb global warming could stall and neither country will maximize its gains in terms of green jobs, new companies, and energy security.

The risk is real. Electrified vehicles, carbon capture and storage (CCS), and concentrated solar power, among other emerging "green tech" sectors, will need massive investment, infrastructure, and research to get off the ground. While the Chinese and US governments, along with private investors, are pursuing all of these technologies, they cannot achieve separately what they could jointly.

Whether collaborating formally or informally, China and the United States working as a group of two (or G-2) dedicated to climate change would boost these technologies and deliver benefits that would accrue to all nations. Clean-energy solutions are critical for reducing the amount of harmful greenhouse gases produced not only by the two highest-emitting nations but also by countries worldwide. For instance, if the majority of vehicles on the world's roads by 2030 were hybrids and battery-powered vehicles, they would generate 42 percent fewer emissions than if all cars continued to run on today's gas and diesel engines.¹ But such reductions won't occur—won't even come close to happening—unless China and the United States lay the groundwork to make it so.

A global electric-car sector must start in China and the United States, and it must begin with the two countries jointly creating an environment for automotive investors to scale their bets across both nations. Private companies in China and the United States will most certainly compete to make the products, including electric-drive (or hybrid) vehicles, batteries, charging stations, and so on. But the two governments can no doubt create the conditions for both of them to succeed—for example, by setting coordinated product and safety standards across the two markets, funding the rollout of infrastructure, sponsoring joint R&D initiatives in select areas (such as new materials for car parts), ensuring that trade policies support rather than hinder the development of a global supply chain for the sector, and providing consumers with financial incentives to buy the new models. More immediately, the two governments could pick matching cities in China and the United States for electrified-vehicle pilots that could be used to collect standardized data on real electrified-vehicle consumer adoption, infrastructure costs, and driving conditions that could then be shared with companies in both nations.

¹For more information, see the full report, *Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve*, McKinsey & Company, January 2009. Emissions abatement could be even higher if the electricity used to recharge car batteries is clean.

This new sector will require scale to succeed—more scale than could be found any time soon in either country alone. Electrified vehicles may one day become a viable market within both nations, but that day will arrive much more quickly if the two countries collaborate to create a market that is bigger and more attractive. In building this market, China and the United States would also ensure that the companies and jobs associated with it would be created in both countries sooner. Oil consumption will fall more quickly as well: today, about 50 percent of China’s oil imports—and 80 percent of America’s—are used to fuel vehicles. In other words, one plus one would equal three. Such momentum would also likely spark Europe into competing in a global electrified-vehicle industry faster.

CCS is another technology whose success needs the scale that only China and the United States can create together. Adapting CCS technology to coal-fired plants to capture the emitted greenhouse gases is expensive. CCS technology also uses a lot of energy to capture the emissions, thereby making plants less efficient. And fundamental questions about how the captured emissions are to be stored still need addressing. Neither nation is pursuing this expensive, uncertain emissions reduction technology quickly, but they would improve their chances and their options if they pooled costs and knowledge.

Together, the two governments could fund demonstration plants in China and the United States, jointly evaluate technologies available from vendors, set standards, and drive down costs. By using the pilot plants as research labs to learn more about the challenges CCS faces and how to overcome them, the governments could share the information with companies entering the CCS business, advancing learning in this industry at a quicker pace. Assuming engineers find solutions to the technical and storage hurdles, we estimate that by 2030 this technology could “clean” 17 percent of coal power in the United States and 30 percent of China’s coal power, reducing total combined emissions by as much as 7 percent—a significant benefit to both nations and to the world.

Concentrated solar power (CSP) might not even have a future without joint action by China and the United States. As an emerging technology, CSP requires both technical progress and massive investments that only the largest economies can support. CSP technology uses sunlight to create and store steam power to drive turbines that transmit electricity on a larger scale more easily than they could using photovoltaic technology (which uses flat-screen receptors that turn sunlight into power). If clean concentrated solar power is scaled to generate 22 percent of total power in China and the United States by 2030, it could create over half a million jobs in each country. Setting common standards, coinvesting in pilot projects and R&D, and undertaking other joint initiatives are the way to get this started.

There are other benefits to joint action on clean energy besides reducing oil imports, cleaning up the air, and creating jobs. Cooperation on tangible actions that result in positive improvements for each country could help to foster trust between governments

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that have real differences on other political and economic issues. In addition, meaningful reductions in oil consumption by the world’s two largest importers of oil could ease pressure on future global supply and demand imbalances of the fossil fuel.

It won’t be easy for countries and companies to work in common to make these technologies real. The challenges to cooperation are numerous. Companies in both nations will be wary about what information they share with partners and competitors. Real cooperation between the two countries on technology initiatives is limited, so both sides will have to work hard to build relationships. In addition, they will need to create institutional frameworks for implementing and managing projects, as well as cofinancing mechanisms, partnership rules, and governance models. US companies will be concerned about protecting the intellectual property (IP) technologies that they use in pilot projects in China. The two governments will need to cleanly separate bilateral initiatives on clean-energy development from broader, multilateral agreements on emissions reductions. The list goes on.

But none of these challenges are showstoppers. Negotiations between the two countries could address nearly all these issues comprehensively. Even the thorniest—IP protection—is manageable. Because companies from many nations would contribute to making these three big technologies a success, IP agreements should be international. On that front, China will need to improve its ability to enforce global IP rules. Most critical, however, is the leadership that will be needed to surmount these obstacles. A commitment at the top levels of both governments to set a joint course for making these technologies real would be the signal of a real beginning. From there the impulse for collaboration may well filter down through the public and private sectors in the two countries to make research, investment, and policy a cooperative agenda. [○](#)