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Before the U.S.-China Economic and Security Review Commission

Hearing on "U.S.-China Clean Energy Cooperation: Status, Challenges, and Opportunities"

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Senator Goodwin, Commissioner Cleveland and members of the Commission, thank you for the opportunity to testify about the U.S. Trade and Development Agency's cooperation on clean energy development with China. We welcome the Commission's interest in USTDA's work to foster public-private partnerships between the U.S. and Chinese energy sectors, and we look forward to describing the status, challenges and opportunities of those efforts.

USTDA's dual mandate positions our Agency to create jobs here at home, while promoting sustainable infrastructure in emerging markets around the world. USTDA was created to "promote United States private sector participation in development projects in developing and middle-income countries, with special emphasis on economic sectors with significant United States export potential."[1] USTDA is distinctive among federal agencies in that it is mandated by Congress to engage the U.S. private sector in development projects at the critical early stages when technology options and project requirements are being defined.[2] By highlighting opportunities for the use of U.S. expertise and technology when they can effectively be incorporated into project planning, the Agency increases opportunities for the use of U.S. exports in project implementation while helping to safeguard U.S. commercial interests.

USTDA is a streamlined, nimble agency that takes rapid and targeted action to create meaningful project-building partnerships when the need and opportunity for them are greatest. As explained by the Center for Strategic and International Studies in its 2011 report, *USTDA: Good Value for Development Dollars*, these partnerships – in addition to the Agency's other tools – give USTDA the "unique ability to leverage its assets in a multitude of ways: to strengthen the domestic economy, continue international development priorities, and serve diplomatic interests in emerging markets around the world."[3]

[1] 22 U.S.C. § 2421(a).
[2] 22 U.S.C. § 2421(b)(2).
[3] Daniel F. Runde and Lauren Bieniek, *USTDA: Good Value for Development Dollars*, Center for Strategic and International Studies, October 21, 2011, available at https://csis.org/publication/ustda-good-value-development-dollars, last accessed April 2014.

USTDA's Mission

USTDA's dual Congressional mandate requires that the Agency both (a) provide foreign assistance for trade and economic development and (b) help to put Americans to work in the jobs that result from exports. In the Agency's history of linking U.S. businesses to export opportunities, USTDA has generated over $45.8 billion in U.S. exports[4] and has become the leading U.S. government agency for early project development and planning activities in emerging economies. The Agency's effectiveness is demonstrated by the fact that its programs are now generating more U.S. exports per program dollar than at any other time in the Agency's history: $73 of exports for every dollar programmed, up from $41 just four years ago. In FY 2013 alone, the Agency identified $2.95 billion of new exports generated from USTDA-funded activities, which has helped support approximately 14,000 jobs in the United States.[5]

The Agency accomplishes its mission by providing grants to overseas sponsors for priority infrastructure development activities in their countries. The funding may be used to perform a feasibility study, provide technical assistance or launch a pilot project. USTDA also connects project developers with U.S. businesses through its reverse trade missions, which are specially tailored to bring foreign decision-makers to the United States to observe the design, manufacture and operation of U.S. products and services in order to inform their procurement decisions.

These activities have produced results for both U.S. industry and USTDA's partners in emerging markets: U.S. companies are provided access to the lead infrastructure project developers around the world, while foreign partners gain insight into the latest, most appropriate U.S. technologies to meet their development needs. USTDA focuses its program on sectors where U.S. firms are globally competitive, such as energy, transportation and telecommunications. As a result, the Agency is able to provide targeted foreign assistance, support U.S. trade and economic development priorities, and promote U.S. job creation.

USTDA's Collaborative Partnerships

USTDA is distinct among the U.S. government's foreign assistance agencies because, as required by its mandate, it partners with the U.S. private sector at the very early stages of project development to jointly craft solutions to developmental challenges around the world. In the course of providing these solutions, USTDA collaborates with a wide variety of U.S. government agencies and multilateral institutions in a manner that ensures success. USTDA has been

[4] This historic cumulative export total includes data collected by the Agency's predecessor organization, prior to USTDA's formation as an independent agency in 1992.

[5] Martin Johnson and Chris Rasmussen, *Jobs Supported by Exports 2012: An Update*, Office of Competition and Economic Analysis, International Trade Administration, Department of Commerce, February 26, 2013, available at http://www.trade.gov/mas/ian/build/groups/public/@tg_ian/documents/webcontent/tg_ian_004021.pdf, last accessed April 2014.

recognized by its private and public sector partners for the flexibility of its program, the range of tools at its disposal and the speed with which it can deploy results-oriented assistance.

USTDA believes in the crucial importance of integrating government resources and industry innovations for win-win results. Ten years ago, this philosophy led USTDA to support the creation of a public-private partnership to promote commercial, policy and technical cooperation between the U.S. and Chinese aviation sectors. The U.S.-China Aviation Cooperation (ACP) was developed in response to requests from USTDA's partners in U.S. industry, who wanted to take advantage of opportunities in China's rapidly growing aviation market but needed the U.S. government's support in order to gain access to the key decision-makers from Chinese government and industry. The Agency also heard from its Chinese government counterparts, who were seeking technical expertise for their infrastructure development projects. USTDA successfully convened all parties to develop a framework for the ACP, which has grown to include over 40 U.S. industry members and five public sector partners since it was founded in 2004.

U.S.-China Energy Cooperation Program

After experiencing the benefits of working closely with their Chinese counterparts in a public-private aviation partnership, several U.S. industry leaders approached USTDA to propose a similar structure for energy cooperation. Government and industry representatives from both countries collaborated to develop a plan for the U.S.-China Energy Cooperation Program (ECP), which was launched during President Obama's first visit to Beijing in November 2009.

The ECP was created, in part, to connect U.S. businesses to the enormous opportunities that exist in China's $1 trillion clean technology market, as well as the significant energy investments planned by the Chinese government. For example, the Chinese government intends to invest $530 billion by 2020 on smart grid infrastructure.[6] As the world's technical leaders in dynamic subsectors like smart grid, U.S. industry can offer Chinese decision-makers goods and services that can help them achieve their ambitious goals.

The United States and Chinese governments have committed to helping facilitate this type of collaboration. During the same state visit that launched the ECP in 2009, President Obama and President Hu Jintao committed to improving energy security and combating climate change by reducing energy waste in the U.S. and China. They announced joint efforts to promote greener buildings and communities, improve industrial energy efficiency, harmonize consumer product

[6] China Greentech Initiative, *The China Greentech Report 2011: China's Emergence as a Global Greentech Market Leader*, pg. 16, available at http://cgtr.china-greentech.com/ChinaGreentechReport2011-final.pdf, last accessed April 2014.

standards and advance energy efficiency technologies.[7] Indeed, leaders in both the United States and China – which, as the world's two largest energy consumers, together account for more than 50% of global greenhouse gas emissions – recognize the importance of mitigating the effects of climate change. China is already facing significant environmental challenges, particularly in the area of air quality. As the U.S.-China Economic and Security Review Commission has noted, Beijing's reading of airborne particulates in February 2014 was 11 times the recommended exposure limit set by the World Health Organization. And in April 2013, a British medical journal published new data indicating that 1.2 million people died premature deaths in China in 2010 due to outdoor air pollution, roughly 40% of the global total.[8]

Clean energy cooperation has been a focus of USTDA's work in China since the Agency entered into a framework agreement with the Chinese Ministry of Commerce in 2001. Since that time, USTDA has partnered with China's Ministry of Environmental Protection (MEP) on over 40 environment and climate change projects. The ECP has provided a valuable forum for this collaboration by fostering creative solutions to reduce environmental impacts and increase energy efficiency. The ECP provides a platform for its 52 company members, as well as its 10 industry subsector working groups, to share information and experiences while working together to address important issues.

Additionally, the ECP often paves the way for U.S. small and medium enterprises (SMEs) seeking entry into China's market by providing them with greater visibility and additional resources. While big companies have large overseas offices complete with government relations staff, smaller companies rarely have the resources to represent their interests as strongly. Cooperation programs like the ECP provide SMEs access to important decision-makers and resources; the American Chamber of Commerce in Shanghai, for example, which has a dedicated SME Center, has supported several ECP and USTDA activities in the region.

In addition, public-private partnerships frequently give SMEs a voice in policy decisions. For instance, USTDA has supported several of the ECP's small- and medium-sized firms in encouraging China to adopt U.S.-style standards so their products could compete in the Chinese market. One of the ECP's founding members was Solatube, a small California-based company with patented daylighting devices that use advanced optics to bring natural lighting into interior building spaces. When Solatube first arrived in China, the daylighting industry was non-existent. Because of the absence of a market and associated standards, it was clear to the company's

[7] The White House, "FACT SHEET: U.S.-China Energy Efficiency Action Plan," November 17, 2009, available at http://www.whitehouse.gov/files/documents/2009/november/US-China-Fact-Sheet-on-Efficiency-Action-Plan.pdf, last accessed April 2014.

[8] Iacob Koch-Weser, USCC Economic Issue Brief No. 3, "China's Hunger for U.S. Planes and Cars: Assessing the Risks," March 27, 2014, available at http://origin.www.uscc.gov/sites/default/files/Research/USCC%20Economic%20Issue%20Brief_ChinasHunger_03.27.14.pdf, last accessed April 2014.

leaders that establishing reasonable standards would help them generate acceptance of – and create demand for – their high-quality systems.

Through the ECP, Solatube participated in two USTDA reverse trade missions during which Chinese delegations visited Oregon and California, where they saw demonstrations of the company's daylighting technologies. Following the first visit, Solatube secured its first government project in Henan Province for the design and installation of daylighting units in two buildings. Solatube then won a 20,000-square meter project in Shanxi Province. They were also invited to participate in the drafting and revision of three building lighting standards that now include daylighting systems. In response, Solatube's General Manager remarked that the "ECP gives small and medium enterprises, especially those leading a new industry, the leverage needed to work with the government, and to reach out to the Chinese market and get results."

The following examples illustrate the ECP's value in helping to mitigate China's short- and long-term environmental issues, and in connecting U.S. companies to the opportunities that exist in China's rapidly expanding energy market.

Air Quality and Environmental Improvement Efforts

The ECP has undertaken a number of projects to improve China's environment since its inception – building on the last decade of work by USTDA, which has invested nearly 20% of its East Asia portfolio on activities supporting clean water and the environment in China. Both before and after the launch of the ECP, USTDA has sponsored activities designed to develop environmental early warning and emergency response command systems; improve energy efficiency across the construction supply chain; and reduce emissions of sulfur dioxide, nitrogen oxide and particulate matter, as well as mercury and other heavy metals.

For example, USTDA funded a reverse trade mission in 2012 designed to introduce Chinese regulators and power providers to U.S. mercury emissions control technologies and regulatory best practices. This activity has allowed USTDA and the ECP, along with the U.S. Environmental Protection Agency (EPA) and Department of Commerce, to enter into a dialogue with the Chinese government about the social, environmental and economic benefits of setting stringent mercury emission standards for Chinese power plants. Led by ECP members, this dialogue is highlighting U.S. technologies and best practices that can be applied in China's power-plant sector.

The focus on mitigating the environmental impacts of the country's energy consumption has become increasingly important to the Chinese government, which has announced significant emissions reduction goals. China's Twelfth Five-Year Guideline, which was released in 2010, introduced for the first time an emissions target to reduce carbon intensity (CO_2 per unit of

GDP) to 17% below 2010 levels by 2015.[9] More recently, the Chinese government has added a new goal of reducing average levels of PM2.5 particulates in 47 cities by 5% based on 2010 levels before 2015.[10]

USTDA and the ECP are currently supporting efforts to help China meet these ambitious goals. The China Air Quality Management Program, developed in cooperation with the EPA, will assist China's MEP in meeting its efforts to reduce pollution across the country by developing an air quality management plan based on U.S. best practices. The project will include a series of workshops to educate the plan's developers on U.S. industry-leading clean air technologies. And this year, USTDA and the ECP will host a reverse trade mission to assist China's efforts to develop comprehensive regulatory frameworks, methodologies and solutions to provide clean, healthy air for its population.

Smart Solutions for Electricity Transmission and Distribution

The Smart Grid Working Group, which was the first Working Group to emerge under the ECP, quickly became the largest and remains so today. It was founded by information technologies (IT) companies that could offer solutions to improve electricity transmission and distribution within China's power grid – an important priority for the government of China, which surpassed the U.S. as the world's largest smart grid market in 2013.[11] Both the U.S. companies and the Chinese leadership understood that, compared to traditional electricity generation investments, smart grid investments can be realized much quicker and at much lower costs, resulting in savings that put less demand on utilities for the supply of new power generation. Equally important, smart grid investments also provide a larger pathway for utilities to receive power from renewable energy sources.

Driven by industry leadership, USTDA and the ECP have collaborated on nearly a dozen electricity transmission and distribution activities in China, including feasibility studies, pilot projects and technical workshops and trainings. For example, USTDA supported a pilot project with ECP members Honeywell (Morristown, NJ) and AECOM (Los Angeles, CA) to help the China State Grid Corporation's Electric Power Research Institute achieve its demand side management reduction goals. The recently-completed pilot demonstrated that U.S. technology could reduce energy loads of commercial buildings in China by 15% and that of industrial sites by as much as 50% – highly significant savings. China State Grid Corporation is planning to expand this pilot to other cities, presenting follow-on contract opportunities for Honeywell,

[9] China Greentech Initiative, *China Greentech Report 2013: China at a Crossroads*, pg. 32, available at http://report.china-greentech.com/en.html, last accessed April 2014.
[10] Ibid, pg. 21.
[11] Bloomberg New Energy Finance, "China Outspends the US for the First Time in $15BN Smart Grid Market," February 20, 2014, available at http://about.bnef.com/press-releases/china-out-spends-the-us-for-first-time-in-15bn-smart-grid-market/, last accessed April 2014.

which won the Chinese *Economic Observer*'s 2013 China Low Carbon Model Award for their contributions to the project.

Building on this effort, USTDA partnered with China's National Energy Administration (NEA) and the U.S. Federal Energy Regulatory Commission (FERC), as well as several ECP members, to host a successful smart grid technologies conference in Shenzhen in 2012. The conference attracted almost 300 U.S. and Chinese attendees interested in sharing best practices about grid interconnectivity and optimization.

To solidify the discussions undertaken by the participants at the event, USTDA supported follow-on projects that will advance the ECP's and China's efforts to deploy smart grid technologies, including pilot projects for fuel cell and communications applications. For example, USTDA funded a smart grid substation communication architecture pilot project. Led by Cisco (San Jose, CA) in cooperation with the China Electric Power Research Institute, the project is demonstrating U.S. technologies for smart grid communication at the substation level, which will greatly enhance the overall reliability of China's electrical grid. This project will pave the way for introduction of state-of-the-art integrated communications capability at the 8,100 Chinese substations being upgraded to smart substations over the next two years.

Standards Development for Vehicle Emissions

The ECP's Clean Transportation Working Group recently requested USTDA's assistance in its efforts to address another major source of China's emissions: mid-range and heavy duty commercial vehicles. Over the last decade, China's reliance on rail for goods transportation decreased by 30% in favor of road freight. And in 2012 alone, China sold almost 4 million commercial heavy duty vehicles (HDVs) – nearly seven times the size of U.S. sales. This upward trend in commercial HDVs is having a significant effect on both fuel consumption and air emissions in China; according to the Heavy Duty Manufacturers Association, "commercial vehicles account for only 20% of the total motor vehicles running in China but consume nearly half of the fuel needed by all vehicles in use in the country."[12]

In response to the Working Group's request, USTDA led an effort with the U.S. Department of State to align U.S. and Chinese regulations on fuel economy standards for HDVs. This will help China develop policies that reduce greenhouse gases and improve fuel consumption, and will also help level the playing field for trade.

[12] Heavy Duty Manufacturers Association, "China MIIT to Set Fuel-Consumption Limits for Heavy-Duty Commercial Vehicles," September 27, 2012, available at http://www.hdma.org/Main-Menu/HDMA-Publications/Diesel-Download-2013-Archive/Intl-Diesel-Download/September-27-2012/China-MIIT-to-Set-Fuel-Consumption-Limits-for-Heavy-Duty-Commercial-Vehicles.html, last accessed April 2014.

As part of this effort, USTDA brought delegates from China's MEP, Ministry of Industry and Information Technology, Automotive Technology and Research Center, and Internal Combustion Engine Industry Association to the United States in December 2013. The reverse trade mission was designed to introduce Chinese delegates to U.S. best practices in regulations for HDV fuel economy standards, as well as to showcase advanced U.S. technologies that can assist China in meeting fuel economy and emissions requirements. U.S. firms manufacture most of the world's high-end technology for HDVs, such as engines, advanced machining, powertrain controls and fuel emissions control equipment.

While it is too early to determine U.S. exports as a result of this activity, it has already made important strides toward harmonizing fuel economy standards in China. And it demonstrates the values of public-private partnerships like the ECP, which achieve results by convening the right players to address a common issue or challenge. The outcome is dynamic engagement, mutual benefit and long-term relationship-building.

USG Interagency Collaboration

Several U.S. government technical agencies have contributed to the success of the ECP since its launch. In fact, the Departments of Energy and Commerce joined USTDA in signing the Memorandum of Understanding that officially formed the ECP in 2009. Along with other USG stakeholders like the Department of State, FERC and the EPA, these agencies continue to support the ECP's efforts to connect Chinese decision-makers to U.S. technical expertise in clean energy. This exemplary interagency collaboration has been highlighted at the U.S.-China Strategic and Economic Dialogue, the U.S.-China Joint Commission on Commerce and Trade, and other events.

Conclusion

USTDA's unique and targeted focus on engaging the U.S. private sector in early project planning for development projects places it at the forefront of an innovative, sustainable foreign assistance model. The Agency moves quickly to build mutually beneficial partnerships between the U.S. private sector and overseas project sponsors at a critical point in project planning. The Agency's public-private partnerships, particularly the U.S.-China Energy Cooperation Program, are viewed as touchstone programs that allow government and industry partners to accomplish more together than they could separately. In fact, when he addressed the ECP for the first time last April, Secretary Kerry called the Program "the best of international and government-to-government cooperation."[13] The primary value of the ECP – and of USTDA's program in general, which has generated almost $300 million in U.S. exports for energy and environmental

[13] Secretary of State John Kerry, "Remarks at Energy Cooperation Event," Beijing, China, April 13, 2013, available at http://www.state.gov/secretary/remarks/2013/04/207474.htm, last accessed April 2014.

projects in China since 2001 – is its ability to identify tangible business opportunities for U.S. companies while contributing to China's clean energy development and emissions reduction efforts.

As an added benefit, the ECP's stakeholders have also observed that their work can positively impact the priorities, standards and policies of the Chinese government in the energy sector. Through their collaboration with the ECP, Chinese decision-makers have begun to look to U.S. companies for affordable technological solutions to their development challenges. And, as demonstrated by the examples of Solatube and the dialogue on the reduction of mercury emissions, the Chinese have begun to introduce the policies and standards that can enable the implementation of U.S. clean energy technologies.