

**Report of the U.S.-China Climate Change Working Group to the
6th Round of the Strategic and Economic Dialogue
July 9, 2014**

The U.S.-China Climate Change Working Group (CCWG) submits this Report to the Special Representatives of the Leaders of the United States and China for the Strategic and Economic Dialogue (S&ED).

Given the latest scientific understanding of accelerating climate change and the urgent need to intensify global efforts to reduce greenhouse gas emissions, forceful, nationally appropriate action by the United States and China – including large-scale cooperative action – is more critical than ever.

To meet this need, the two countries established the CCWG on April 13, 2013. In July 2013, the CCWG launched an enhanced policy dialogue and five action initiatives, including: Emission Reductions from Heavy-Duty and Other Vehicles; Smart Grids; Carbon Capture, Utilization, and Storage; Energy Efficiency in Buildings and Industry; and Collecting and Managing Greenhouse Gas Emissions Data. These initiatives address some of the key drivers of greenhouse gas emissions in both countries and will produce significant co-benefits, including cleaner air and energy savings and water recovery. During Secretary Kerry's visit to Beijing in February 2014, the United States and China agreed on implementation plans for all five initiatives. They also agreed to work together, within the vehicle of the CCWG, to collaborate through enhanced policy dialogue, including the sharing of information regarding their respective post-2020 plans to limit greenhouse gas emissions.

This Report outlines progress made on the five initiatives and in the enhanced policy dialogue, as well as collaboration on hydrofluorocarbon (HFCs), and highlights new and possible areas of cooperation.

Progress on the Five Action Initiatives

A. Emission Reductions from Heavy-Duty and Other Vehicles

The United States and China agreed to cooperate in three areas: (1) enhanced heavy-duty and other vehicle fuel efficiency standards; (2) clean fuels and vehicle emissions control

technologies; and (3) promotion of efficient, clean freight. Progress achieved through intensive workshops and exchanges over the last year is outlined below.

1. *Enhanced heavy-duty and other vehicle fuel efficiency standards:*

Both countries are going to adopt more stringent heavy- and light-duty vehicle fuel efficiency and greenhouse gas emissions standards to significantly improve air quality and reduce climate impact. The United States intends to develop new greenhouse gas emissions and fuel economy standards for medium- and heavy-duty vehicles for post-2018 model years, to be finalized by the end of 2016. China intends to develop new fuel efficiency standards for heavy- and light-duty vehicles for 2020 model years, to be finalized by the end of 2016.

In March 2014, the U.S. National Highway Safety Administration (NHTSA), the U.S. Environmental Protection Agency (EPA), and the Chinese Ministry of Industry and Information Technology (MIIT) conducted in-depth technical and policy exchanges. They shared how their respective regulatory agencies set stringency standards and balance cost considerations related to technology and feasibility with the need to achieve climate, environmental, energy security, health, and other benefits. In December 2013, the U.S. Trade and Development Agency (USTDA) hosted a China Medium- and Heavy-Duty Vehicle Fuel Standards Study Tour. The tour brought Chinese officials from MIIT and Ministry of Environment Protection (MEP) and other relevant Chinese agencies to the United States to familiarize them with U.S. technologies and best practices. It included site visits with U.S. public and private sector experts on developing fuel economy standards and road maps. The next step is a workshop in fall 2014 to advance technical exchange on standards setting and testing and to identify potential joint demonstration projects.

2. *Clean fuels and vehicle emissions control technologies*

Cleaner fuels (especially ultra-low sulfur fuels) are the necessary foundation for implementing more stringent emissions standards and thus for improving air quality and reducing PM_{2.5} and black carbon. The United States intends to implement new ultra-low sulfur (10 ppm) gasoline standards by the end of 2016. China has agreed to fast-track the implementation of China V fuel quality standards (10 ppm) in three major regions, including Beijing, Tianjin, Hebei province and the Pearl River and Yangtze River Delta regions, by the end of 2015, and to implement China V fuel quality standards for gasoline and diesel nationwide by the end of 2017. Further, during Vice President Biden's trip to China in December 2013, China announced that it would work to

adopt China VI vehicle emissions standards as soon as practical, with U.S. technical assistance. China will develop the China VI emission standards for light- and heavy-duty vehicles, to be finalized approximately by the end of 2017.

To support these efforts, the two sides held a Heavy-Duty Vehicle Compliance Workshop in June in Beijing hosted by China's Ministry of Environmental Protection (MEP). The Workshop focused on exchanging technical information on the design, implementation, and benefits of diesel emission reduction regulations and compliance programs. In addition, representatives from EPA and MEP began a heavy-duty engine round-robin testing program. The program next plans to test a single engine in both Xiamen and U.S. testing facilities to understand better how the two countries' testing regimes compare in practice.

3. Promotion of efficient, clean freight

In order to reduce or control greenhouse gas emissions and other air pollution, both sides intend to work to strengthen and expand their green freight initiatives.

The U.S. EPA, the U.S. Department of Transportation (DOT), and the Chinese Ministry of Transport (MOT) are working together to support the expansion of China's Green Freight Initiative (CGFI) – which is similar to the U.S. EPA SmartWay Program – to improve transport efficiency and capacity and to conserve energy and reduce emissions in freight transport. Working with other stakeholders as well, including the China Road Transport Association (CRTA), the two sides held a workshop in Washington, D.C., on March 18, 2014, to discuss the design of the two programs. In addition, the United States hosted MOT and CRTA at a multi-modal facility in Chicago, Illinois, to learn more about U.S. marine-rail-truck model freight operations. Both sides participated in the fourth annual CGFI Conference in Beijing, where they convened a broad group of key stakeholders to enhance and grow the CGFI. The United States hosted an additional full-day training for MOT and CRTA to build capacity, share best practices and lessons learned in design, development, and implementation of green freight initiatives. This year, both sides are considering technical exchanges to emphasize the use of big data in transportation across a range of applications, including automatic vehicle locators for transit systems, taxi system tracking, freight vehicle and container tracking, and applications of large scale data to traffic management and transportation planning.

B. Smart Grids

Demand optimization is a strategy to create operational and economic efficiencies across the energy value chain while leveraging demand response in multiple ways. The integration of smart grid technologies and clean, distributed generation sources into electricity delivery infrastructure offers a powerful means of reducing or controlling carbon emissions in both countries. To reduce the carbon footprint of a city, state, or region significantly, energy generation, delivery, and demand must be optimized as a whole system. Therefore, both countries are exploring ways to optimize electricity demand and integrate energy efficiency and renewable energies into power grid systems.

The two sides plan to undertake four cooperative demonstration projects and set a timeline to finalize a project plan (scope, schedule, milestones, deliverables, and team members and their roles) for each project. Intended projects include a smart distribution grid project at the Philadelphia Navy Yard; a smart grid project in Qianhai, Shenzhen; a demonstration project in Irvine, California; and an integrated smart grid demonstration project at the China-Singapore Tianjin Eco-City. The United States and China will carry out a series of six workshops and discussions to share technical progress, lessons learned, and best practices. Both sides will also develop and apply common evaluation methodologies to assess the costs and benefits of smart grid technologies and applications being demonstrated in the projects.

The U.S. Trade and Development Agency (USTDA) intends to provide funding for the workshops in China designated to support this work and increase private sector participation.

Additionally, USTDA plans to organize a separate study tour to the United States in 2014 to focus on smart grid policy, regulation, technology, and demonstration projects. Under all of these efforts, the United States and China are progressing toward the long-term goal of collaborating on a plan to deploy state-of-the-art smart grid technology to balance low-carbon energy consumption and supply through a regional grid.

C. Carbon Capture, Utilization, and Storage (CCUS)

There are a handful of CCUS demonstration large-scale plants now under way or under development in the two countries. If the technical, cost, and regulatory barriers to CCUS deployment are overcome, it could become an important strategy to mitigate CO₂ emissions from fossil fuel-based, mainly coal-fired, power plants and other energy facilities. The United States and China intend to accelerate development and deployment of CCUS technology through joint effort on projects of merit. These efforts will feature commercial CCUS projects and

industrial agreements, as well as bilateral government and academia-led efforts that are recognized by both governments. These and future efforts aim to assist Chinese government and industry on CCUS demonstration and capacity building with project and technical support from the U.S. side by exchanging information and sharing experience on CCUS technologies and demonstration projects, enhancing bilateral dialogues and collaborative activities among government agencies, academies and industries, identifying and implementing joint CCUS demonstration projects with business-to-business collaboration, as well as regular stocktaking, reflecting and reporting progress of this CCUS initiative.

Working with DOE, the Chinese National Development and Reform Commission (NDRC) hosted a workshop with CCUS industry and academic leaders on April 22, 2014, to strengthen information exchange between two sides and identify opportunities for specific CCUS cooperation. As a result, the two countries will follow two approaches to accelerate CCUS deployment:

- Counter-facing demonstration projects between Chinese and U.S. companies and research institutes to accelerate CCUS project deployment in both countries Under the CCWG framework, four joint demonstration projects were announced on July 8, 2014, which are conducted by Huaneng Clean Energy Research Institute paired with Summit Power Group to exchange information on their coal-based integrated gasification combined cycle (IGCC) plants with CCUS and CO₂-enhanced oil recovery (CO₂-EOR); Yanchang Petroleum working with a group of U.S. research organizations and companies including Air Products and Chemicals on CCUS, West Virginia University and University of Wyoming; Shanxi International Energy Group with U.S. partners including Air Products and Chemicals on coal-fired oxy-combustion to separate CO₂ for CCUS; and Shengli Oilfield Company of Sinopec Corporation with Schlumberger Carbon Services Co. and University of Kentucky and on post-combustion CO₂ capture and CO₂-EOR. Companies and other stakeholders in two countries are encouraged to explore further collaboration projects.
- CCUS-related project development activities: Conduct capacity building, training, information exchanges, site visits, technology evaluations, and feasibility studies.

The counter-facing demonstration projects between Chinese and U.S. companies and research institutes will focus on enhanced data transfer and exchange, acceleration of CCUS technology deployment, and exploration of additional trade opportunities through business-to-business partnerships. Both sides also recognized a clean energy workshop led by the state of Wyoming

and Shanxi province in 2014 as sub-state level CCUS activity. The two sides will explore other actions including a study tour to the United States according to the CCUS implementation plan agreed earlier.

D. Energy Efficiency in Buildings and Industry

To improve energy efficiency in the building and industry sectors, the United States and China intend to intensify cooperation on energy efficiency in three initial areas: further development of energy savings performance contracting in China; energy efficiency standards and testing for commercial, residential, and manufacturing buildings; and identifying the top ten energy efficient technologies and best practices for industry.

In-depth policy exchanges on each of these subjects were held at the annual U.S.-China Energy Efficiency Forum in June 2014 in Beijing:

1. Enhancing Cooperation on Energy Savings Performance Contracting (ESPC)

This program aims to accelerate the maturation of the ESPC market in both countries. Since establishing the CCWG Energy Efficiency Initiative, the two sides have worked in four distinct but overlapping areas: 1) gathering information and scoping to understand prevailing ESPC practices in each country and to identify opportunities to collaborate; 2) launching working groups focused on the technical, financial, and contractual elements of ESPC program design; 3) developing a policy options report and tool kit of ESPC key resources and identifying opportunities for new policy uptake; and 4) partnering with U.S. and Chinese industry to conduct pilot projects in underserved markets.

As a result of these efforts, the Initiative developed a white paper that includes a needs assessment and opportunities analysis for promoting ESPCs in both countries. The next steps are for both countries to adopt the recommendations in the white paper and to identify and scope out high-impact areas of potential collaboration, followed by a series of technical, financial, and policy-related exchanges. After adapting and developing a suite of resources (including a policy recommendations report and a tool kit of best practices), in 2015 the two countries intend to identify high-profile, innovative pilot projects that make use of improved and expanded ESPC practices. Further, DOE and NDRC intend to facilitate site visits by working group members to model ESCO project sites in both countries and identify training and other needs of the working

groups.

2. Energy Efficient Buildings

The U.S. Department of Energy (DOE), China's Ministry of Housing and Urban-Rural Development (MOHURD), and key stakeholders are working together to support the implementation of China's *Design Standard for Energy Efficiency of Rural Residential Buildings*. Specifically, both sides are working to integrate the Design Standard with existing rural efficiency programs, identifying demonstration opportunities for code-compliant technologies and design solutions, and disseminating actionable information on building materials standards and test procedures to industry stakeholders. The U.S. Environmental Protection Agency (EPA) and NDRC are promoting the application of energy efficiency measurement tools for energy-saving refurbishment of existing buildings. Also, the United States and China will cooperate to harmonize test methods and share best practices between U.S. ENERGY STAR and China's Energy Saving Product Certification.

3. Top Ten Energy Efficiency Best Practices and Best Available Technologies Task Group

The United States has joined the China-led Task Group to identify cost-effective and practical measures that end users can implement in the near term to achieve significant energy savings in IPEEC (International Partnership for Energy Efficiency Cooperation) member economies. Participants intend to contribute to the development of a screening methodology and technical handbook, then use these resources to create by consensus several Top Ten lists based on sector or specific industry. Results may be promoted through case studies, demonstrations, and through other means.

E. Collecting and Managing Greenhouse Gas Emissions Data

To build robust national greenhouse gas emissions reporting systems in both countries, the United States intends to share expertise and experience from implementing a successful national greenhouse gas reporting program to support similar efforts in China across key industrial source categories.

The United States is supporting NDRC efforts to develop reporting systems in the following sectors: power generation, iron & steel, cement & glass, nonferrous metals, chemicals, aviation, ceramics, oil & gas, mining, and coking. The United States and China plan to hold two capacity-

building workshops and one study tour to the United States in 2014-2015 to enhance China's capacity on greenhouse gas (GHG) measurement, reporting and verification methodologies, greenhouse gas thresholds, and integrated data management systems in specific sectors.

Enhanced Policy Dialogue

In addition to making important progress on the five initiatives, the United States and China also established an enhanced policy dialogue. Recognizing the imperative of negotiating a robust and effective post-2020 climate agreement, as well as the importance of constructive contributions from both sides to the success of the negotiations, on February 14, 2014, the U.S. and China reaffirmed their commitment to contribute significantly to successful 2015 global efforts to meet the challenge of climate change. The two countries also agreed to collaborate through enhanced policy dialogue, including the sharing of information regarding their respective post-2020 plans to limit greenhouse gas emissions. To support this goal, the two sides met bilaterally four times since the last S&ED to enhance and deepen policy dialogue on all aspects of the post-2020 agreement through intensified bilateral consultations.

The CCWG is also strengthening dialogue related to domestic climate policy. To advance this objective, the United States and China held a number of bilateral meetings, including an enhanced policy exchange on July 8, 2014, to discuss domestic climate change policies.

Hydrofluorocarbons (HFCs)

The United States and China recall and reaffirm the agreement reached by President Xi Jinping and President Barack Obama in 2013 regarding the hydrofluorocarbons (HFCs). The two sides will also take national actions and promote bilateral cooperation to achieve meaningful progress in phasing down HFCs. The two sides support a pilot project regarding reducing HFCs from refrigerators.

New Action Initiatives

A. Climate Change and Forest Initiative

The two sides recognize the importance of forests around the world in mitigating climate change and building resilience, among other benefits. Both sides have undertaken proactive actions to address the emissions from deforestation and forest degradation, and promote conservation and

sustainable management of forests. The two sides share the view that cooperation on forest issues will benefit both sides, while contributing to the global effort to address climate change. Therefore, the two sides agree to include a new initiative of forests in the CCWG. They will work together to further develop the work plan for this initiative.

B. Study on Boiler Efficiency and Fuel Switching

About half of all coal consumed by China in 2012 was for non-power industrial uses, and about 17% of all coal consumed by China in 2012 was fired in boilers to raise steam for industrial applications. Substituting gas for coal in industrial boilers is one way to dramatically reduce China's use of coal and associated emissions. U.S. and Chinese officials intend to analyze the costs, benefits, and technical feasibility of fuel switching in industrial steam and process heating systems. The two countries intend to define terms of reference for the study, with each country designating a qualified research institution to lead the joint analysis, whose experts will visit the cities targeted for analysis.

Possible Areas of Future Cooperation

The CCWG reiterated the intention to explore the possibility of bilateral cooperation on specific mechanisms for China and the United States to work together in assisting least developed countries, small island developing states, and African countries to build their capacity to address climate change. The CCWG also agreed to explore other possible areas for bilateral cooperation, including: (a) a coordinated effort regarding “green” ports; (b) appropriate cooperative efforts sub-nationally among our states, provinces, and cities on climate-related policies and programs; and (c) the design and implementation of clean action plans for non-road motor vehicles and supporting diesel engines.

Institutional Framework

The CCWG is chaired by NDRC Vice Chairman Xie Zhenhua and U.S. Special Envoy for Climate Change Todd Stern, who meet throughout the year for in-depth discussions with the active participation of relevant government ministries on both sides. The CCWG reports annually to the S&ED and also holds an intersessional meeting. The CCWG has already played an important role in advancing concrete collaboration and mutual trust between the two countries on climate change. The CCWG is intended to continue to serve as a high-level forum to coordinate the action initiatives outlined in this Report, develop recommendations for new action

initiatives and enhance the policy dialogue on the multilateral climate negotiations process as well as on domestic climate policy in the two countries. Both sides intend to continue to involve other stakeholders, where appropriate, in the work of the CCWG. The two sides plan to hold the next CCWG meeting in early 2015.