



U.S.-CHINA CLEAN
ENERGY RESEARCH CENTER
中美清洁能源研究中心

U.S. - China CERC, 7th Steering Committee Meeting

Overview by U.S. & China CERC Directors

Dr. Robert C. Marlay
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International Affairs
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Washington, D.C.

June 1, 2015



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U.S.-China Clean Energy Cooperation



President Barack Obama and President Hu Jintao

November 2009

In November 2009, President Obama and China's former President Hu Jintao launched the Clean Energy Research Center.



In November 2014, Presidents Obama and Xi Jinping jointly announced significant National commitments to curb GHG emissions. CERC was heralded as an exemplar of cooperation between the two countries.

Broad Mandates of CERC

- 1) Spur Innovation on Clean Energy Technologies
- 2) Diversify Energy Supply
- 3) Improve Energy Efficiency
- 4) Accelerate Transition to a Low-Carbon Economy
- 5) Avoid the Worse Consequences of Climate Change



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CERC Protocol and IP Annex

- CERC Protocol Signed in Nov. 2009
- Calls for Joint U.S.-China Clean Energy Research Center (Virtual, not Physical)
- Principles of Cooperation:
 - Equality, Mutual Benefit, Reciprocity
 - Timely Exchange of Information
 - Effective Protection of Intellectual Property
 - Peaceful Uses of Results
 - Respect for Applicable Laws of Each Country
- Protocol's IP Annex Requires:
 - Mutually Agreed IP Framework;
 - Endorsed by both Governments;
 - Before Joint Work Can Begin.



Two governments sign endorsement letters supporting the jointly agreed upon & signed Technology Management Plans *

Observers:

Secretary of Energy Steven Chu
Minister of Science & Technology WAN Gang
Vice Minister QIU Baoxing , MOHURD

Signatories:

Assistant Secretary David B. Sandalow, DOE
Deputy Director General MA Linying, MOST

Country Directors of CERC:

Dr. Robert C. Marlay (for U.S.)
Counselor LIU Zhiming (for China, Not Shown)

* TMP, regarding the exploitation of intellectual property rights pursuant to paragraph ILB,2,(d) of Annex I- Intellectual Property (hereinafter "IP Annex") of the CERC Protocol, Beijing, September 23, 2011



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Technical Tracks

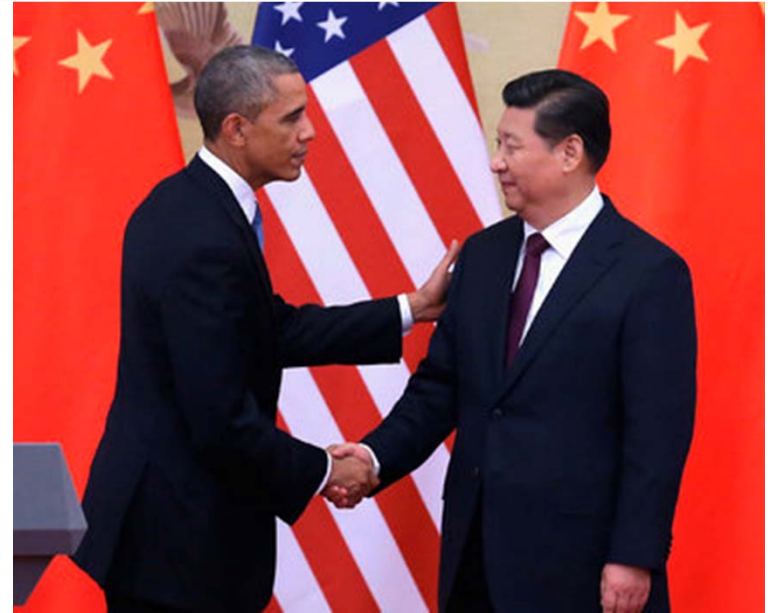
Phase I (2011 - 2015)

- Advanced Coal Technologies W/CCUS
- Building Energy Efficiency
- Clean Vehicles

Phase II (2016 – 2020)

- Continue 3 Tracks
- Add Energy & Water

Joint Announcement Nov. 2014



Presidents Obama and Xi Jinping announce extension of CERC from 2016 to 2020 and expand scope of CERC research to include water-related aspects of energy production and use, November 2014.



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CERC's New Model for Enhanced S&T Collaboration

Cooperation (Traditional)

- Work Plans Coordinated, but Separate
- Independent Work on Similar Projects
- Interactions Characterized by Research Visits, Personnel and Student Exchanges
- R&D Focuses on Institutional Strengths
- Relationships Collegial
- R&D Results Shared Externally
- Benefits are Mainly Academic; Transfer of Knowledge via Technical Papers & Reports
- No guaranteed IP Rights in Other's Territory; IP Provisions Not Flexible
- Few IP Advantages for R&D Partners

Collaboration (CERC) *

- Work Plans Developed Jointly
- Work Together on Same Projects
- Research Characterized by Division of Labor Among Participants on Joint Tasks
- Joint R&D Exploits Complementarities
- Relationships Interdependent
- R&D Results Can Arise Jointly
- Benefits are Embedded among Partners and Extended by Interests in Commercialization
- Guaranteed Right to IP in Other's Territory; IP Terms & Conditions May be Negotiated
- Potentially More Attractive IP Platform

* Jointly Funded Research Projects, as Defined by Mutually Agreed-Upon Technology Management Plans



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CERC's Five-Year Funding Plan

Planned CERC Awards (Over 5 Years)

Technology Area	U.S.		China		Total Project Funding
	DOE	Partners	MOST	Partners	
CERC-ACTC	\$12.5M	≥ \$12.5M	\$12.5M	≥ \$12.5M	\$50.0M
CERC-BEE	\$12.5M	≥ \$12.5M	\$12.5M	≥ \$12.5M	\$50.0M
CERC-CVC	\$12.5M	≥ \$12.5M	\$12.5M	≥ \$12.5M	\$50.0M
CERC-EWC	\$12.5M	≥ \$12.5M	\$12.5M	≥ \$12.5M	\$50.0M
Planned					\$200.0M


Note: \$ = U.S. Dollars
M = Millions

Key: ACTC – Advanced Coal Technology Consortium
BEE – Building Energy Efficiency Consortium
CVC -- Clean Vehicles Consortium
EWC – Energy & Water Consortium



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Criteria for CERC Project Selection

-  Joint Research Projects Will Meet the Following Criteria:
1. Strong scientific and technical merit
 2. High relevance to CERC goals and technical objectives
 3. Quality of the research team, including leadership, key personnel, and expertise, and supporting resources, equipment, and facilities
 4. Beneficial outcomes for both countries (not one country alone)
 5. Evidence of joint US/China research collaboration (e.g., foreign partner, joint R&D plan, division of labor, and interdependencies)
 6. Emphasis on innovation and/or novel approaches, with potential for intellectual property (IP)
 7. Potential path to commercialization and/or Implementation of resulting knowledge or technology



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Summary of Research Activities

CERC Technical Track	Joint Work Plan Research Areas	Number of Research Activities	Number of Joint Research Activities	Present Extent of Joint Work	Goal for Joint Work
Advanced Coal Technology Consortium	9	43	42	98%	100%
Clean Vehicles Consortium	6	24	18	75%	100%
Building Energy Efficiency	5	12	12	100%	100%
Energy – Water Consortium	TBD	TBD	TBD	TBD	TBD
Summary	20	79	72	~ 90%	100%



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Researchers Supported by CERC

	US	China	Total
Advanced Coal Technology Consortium	78	200	278
Clean Vehicles Consortium	127	320	447
Building Energy Efficiency	79	320	399
Energy – Water Consortium	TBD	TBD	TBD
Total	284	840	1,124



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CERC Partners

Technology Area	U.S.		China		Total Participants
	Lead	Partners	Lead	Partners	
Advanced Coal Technology Consortium	WVU	12	HUST	16	30
Clean Vehicles Consortium	UM	13	THU	21	36
Building Energy Efficiency	LBNL	15	CSTC, MOHURD	49	66
Energy – Water Consortium	TBD	TBD	TBD	TBD	TBD
Totals	3	40	3	86 10	132



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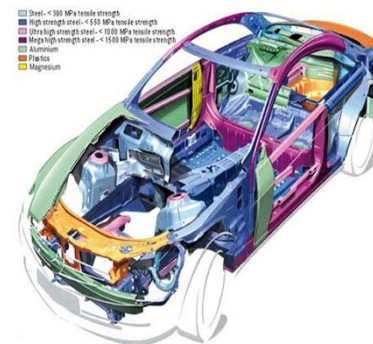
Early Signs of Success

- Tangible outcomes and impacts;
- Relationships continue to expand and deepen;
- Researchers have access to unique experimental platforms;
- Industrial partners gain market knowledge and build relationships;
- Large-scale business ventures explore ways to collaborate with CERC
- Shared data accelerate new technology deployment;
- Additional private partners seek to join;
- Other countries are taking notice.



ACTC
Post Combustion Capture
Simulation of Huaneng's
Process Applied to Duke's
Gibson-3 Plant

BEE
Test and Evaluation of
Advanced Technologies
In Remodeled CABR,
Beijing



CVC
Simulated Crash-Tests of
Light-Weight Multi-Material
Car Bodies
Tsinghua and Michigan



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CERC Steering Committee Guidance of July 11, 2014

- Be Ambitious, Creative and Bold;
- Broaden Participation Among Research Performers;
- Strengthen Engagement with Existing Industrial Partners and Recruit New Partners;
- Concentrate on Selective Areas with High Payoff;
- Enhance Research Quality and Impact Selected Projects;
- Leverage Platforms and Resources of Others;
- Propose New Track for Energy & Water; and
- Develop and Show Roadmaps that Will Achieve Public Benefits in Both Countries with Milestones to 2020.



Head Table: Ambassador Baucus, Secretary Moniz, MOST Minister Wan & Vice Minister Cao, and Chief Planner Tang Kai, MOHURD. Director Zak of U.S. Trade and Development Agency is not shown.



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CERC LOGO



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China: <http://www.cerc.org.cn/>