China-US Workshop

"Bioenergy Consequences for Global Environmental Change"

(October 15-18, 2008, Beijing, China)

INTRODUCTION

On July 20, 2006, in Beijing, representatives of the University of Tennessee-Oak Ridge National Laboratory's (UT-ORNL) Joint Institute for Biological Sciences (JIBS) and UT's Institute for a Secure and Sustainable Environment (ISSE) signed a framework agreement for the establishment of a **China-US Joint Research Center for Ecosystem and Environmental Change** (http://isse.utk.edu/jrceec/). The focus of this agreement is to promote research collaboration, academic exchange, student education, and technology training and transfer in areas of environmental concern. This specific agreement was reached with two Institutes of the Chinese Academy of Science (CAS)—the Institute of Geographical Science and Natural Resources Research (IGSNRR) and the Research Center for Eco-Environmental Science (RCEES)—both in Beijing. The center's primary collaborative themes include: (1) ecosystem processes and management, (2) environmental sustainability of bioenergy production, (3) ecological foundations of water resources and quality, and (4) technologies for improvement of eco-environmental systems. Since establishment of the Joint Center, a bioenergy and environmental sustainability theme has arisen and been the topic of several reciprocal visits and joint workshops in Beijing and Knoxville, Tennessee. The Joint Center convened the first China-US workshop last September in Knoxville to address environmental aspects of bioenergy production and sustainability. About 40 scientists from the partnering institutions and six program officers from US National Science Foundation (NSF) and the Chinese government attended the workshop. As a follow-up activity, the second China-US workshop, sponsored by NSF funds, will be held on October 15-18, 2008, in Beijing, China, with focus on bioenergy consequences for global environmental change.

BACKGROUND

The China and US economies are the globally dominant drivers of fossil fuel consumption and release of greenhouse gases and are thus strategically linked to the sustainable development of alternative and renewable energy sources. Another driver is the desire for a modicum of energy independence and less reliance on petroleum imports for transportation fuel as prices continue to escalate based on demand or speculation. In the US this has given rise to a robust new rural economy of bioethanol production that is attempting to meet mandates by expanding and diversifying to non-food, cellulosic feedstocks to meet current and future demand. The US Department of Energy has completed the "Billion Ton Study," indicating the need for cellulosic biomass from forest products and cultivated feedstock biomass such as switchgrass, which are needed in order to achieve transportation biofuel goals over the next two decades. In China, the government and renewable energy industry are poised to capitalize on the marketing potential of biofuels. China reports that a comparable billion tons of cellulosic material may be available for biofuel production annually from agricultural wastes. China's 21st Century Agenda emphasizes renewable energy as a foundation for development and the *Medium and Long-term Development Plan for Renewable Energy* targets 30 GW of biomass power based on agricultural and forestry wastes and energy crops by 2030. However bioenergy creates impacts across all stocks of natural and human capital and its systems are more cross-sectional than those of other energy sources. It has been warned that the large-scale use of biomass as an energy source will have significant impacts on the sustainability of natural resources (e.g., land and water), ecosystem biodiversity, and environmental protection. It is therefore necessary to carefully assess the impacts of bioenergy production in the context of environmental sustainability and global climate change.

WORKSHOP GOALS AND OBJECTIVES

Through the workshop, participants will discuss the long-term impacts of bioenergy production on global environment change in the context of socio-economic and technology progresses. The workshop will seek to develop joint research/education programs between China and the US in the areas of bioenergy production, feedstock management, and technology transfer. Specifically, the 2008 workshop will:

- Evaluate the potential of carbon sequestration through bioenergy production;
- Address the role of biomass management in protection of eco-environmental systems;
- Explore bioenergy strategies for incorporating social and economic factors into natural resources management and restoration;
- Develop a framework for large-scale China-US joint research on the sustainability and security of bioenergy production.
- Establish a mechanism to engage students and junior researchers in collaborative, cross-cultural research that addresses bioenergy and global environmental change.

SPONSORS

U.S. National Science Foundation
Bureau of International Cooperation, Chinese Academy of Sciences
Bureau of Personnel and Education, Chinese Academy of Sciences
Natural Science Foundation of China

PARTICIPANTS

Workshop participants (approximately 70) will include faculty, staff, and students from the four founding and two new partners of the China-US Joint Research Center. Program leaders from US federal agencies (including the US Environmental Protection Agency [USEPA], the National Science Foundation [NSF], and the US Department of Energy [USDOE] and from research agencies within the Chinese government (including the Chinese Academy of Sciences, the Natural Science Foundation of China [NSFC], the Ministry of Science and Technology [MOST], and the National Development and Reform Commission of China [NDRC]) will advise and direct the international collaboration. Visitors will include research leaders from other US and Chinese universities who are interested in developing strong international research programs via the China-US Joint Research Center.

WORKSHOP ORGANIZERS AND COMMITTEES

This second China-US workshop, convened by the China-US Joint Research Center for Ecosystem and Environmental Change, will be held in Beijing, China, October 15-18, 2008, and hosted jointly by the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) and the Research Center for Eco-Environmental Science (RCEES). These organizations are institutes of the Chinese Academy of Sciences and partners in the China-US Joint Research Center.

Scientific Committee

Chair:	Wen-Hua Li (Member of CAS)
Vice-Chairs:	Gary S. Sayler (Director, UT-ORNL Joint Institute of Biological Science)
	Gui-Bin Jiang (Deputy Director, RCEES, CAS)
Members:	Randy Gentry (Director, Institute for a Secure and Sustainable Environment, UT)
	John Bickham (Director, Center for the Environment, Purdue University)
	Qing-Xiang Guo (Director, Anhui Key Laboratory of Biomass Clean Energy, University of Science and Technology of China, Hefei, Anhui)

Organizing Committee

Chair:	Bo-Jie Fu (Director, Bureau of Environment and Resources, CAS)
Vice-Chairs:	Ou-Yang Zhiyun (Deputy Director of RCEES, CAS)
	Cheng-Hu Zhou (Deputy Director of IGSNRR, CAS)
Members:	Jie Zhuang (Research Director, Institute for a Secure & Sustainable Environment, UT)
	Guo-Qiang Zhuang (Professor, RCEES, CAS)
	Yu-Guo Du (Director of the Environnemental Biotechnology Lab, RCEES, CAS)
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