FOOD, ENERGY, AND WATER (FEW) NEXUS IN SUSTAINABLE CITIES WORKSHOP

October 20-21, 2015

BEIJING, CHINA

DAY 1: Hotel Regent Beijing, 99 Jinbao St., Dongcheng District, Beijing, China
DAY 2: Peking University Zhongguan Xinyuan Global Village, 126 Zhongguancun N St, Haidian, Beijing, China, 100871

Workshop Goals and Format

The goals of the workshop are to build a research platform that supports active engagement and joint approaches to global FEW challenges, with attention to urban centers, and to form a global FEW research and education community and provide initial groundwork for the formulation of some U.S.-China FEW partnerships.

The format consists of a series of 90-minute sessions that include platform presentations and discussions along a final wrap up session to summarize FEW Sustainability Challenges, Solutions and Potential Research Collaborations, building from the different sessions. Each session leader will moderate the dialogue after short presentations on the topics outlined below.

Research Questions/Discussion Topics will include:

3:45 pm- 4:00 pm **Introductory Remarks: Workshop Goals**

Nada ANID, Ph.D., *Professor and Dean, School of Engineering and Computing Sciences, NYIT*
and
Chunmiao ZHENG, Ph.D., *National Research Chair, Peking University; Dean, School of Environmental Science and Engineering; South University of Science and Technology, Shenzhen, China*

SESSION 1: October 20, 2015 4:00 pm – 5:45 pm

FEW Nexus: Sustainability Challenges

This session will advance the understanding of the interactions among FEW resources recognizing their inter-related nature and feedback mechanisms. Participants will also consider sustainability challenges, responses to stressors and coupling affecting FEW resources as part of a dynamic and interrelated structural system.

4:00 pm – 5:45 pm Session 1: FEW Nexus: Sustainability Challenges

Chair:
Jimmy TRAN, Ph.D., *Program Manager, China Energy Group, Energy Analysis and Environmental Impacts Division, Energy Technologies Area, Lawrence Berkeley National Laboratory*

Presenters:

Junguo LIU, Ph.D., *Professor of Hydrology and Water Resources, Beijing Forestry University, and Visiting Scholar at the Institute for Applied Systems Analysis (IIASA) in Austria*

Lijin ZHONG, *Senior Associate, China Water Lead, Water Program, World Resources Institute*

Devinder MAHAJAN, Ph.D., *SBU/BNL Joint Appointment, Professor and Co-Director, Chemical & Molecular Engineering, Stony Brook University, SUNY*

Paul ANID, Ph.D. Vice President, Water Quality Management Services, HDR

DAY 2: Global Village, Peking University, Beijing, China

October 21, **2015**

9:00am- 9:15am **Introductory Remarks: Workshop Goals**

Nada ANID, Ph.D., *Professor and Dean, School of Engineering and Computing Sciences, NYIT*
and
Chunmiao ZHENG, Ph.D., *National Research Chair, Peking University; Dean, School of Environmental Science and Engineering; South University of Science and Technology, Shenzhen, China*

SESSION 2: October 21, 9:15am- 11:00am

Impacts of Urbanization and Anthropogenic Disruptions on Vital FEW Resources

Increased disruptions to, and competition for, resources that sustain life have a significant impact on the livelihoods of large populations and the environment. Advancing the understanding of the interactions among FEW resources requires a systems-based approach that recognizes their inter-related nature and feedback mechanisms. For example, 71% of global freshwater resources and 30% of total energy consumed globally are used for agriculture and food production. This session will highlight technological breakthroughs and ecological deterioration of water bodies that are vital for fisheries and other activities, as a result of growing urbanization and agricultural development. Restoration approaches to sustainable FEW resources and environments will be proposed.

Session Leader and Presenter:

Sarah MEYLAND, JD, *Associate Professor, Environmental Technology & Sustainability, School of Engineering & Computing Sciences, NYIT*

Other Presenters:

Joshua B. SPERLING, Ph.D., *Research Fellow, Urban Futures Program at the National Center for Atmospheric Research, and Adjunct Professor, University of Colorado*

Josh WEINBERG, *Program Manager, Water, Energy and Food, Stockholm International Water Institute.*

Zhao XIA, Ph.D., *Associate Professor, Department of Geographic Science, Qinghai Normal University.*

Shenglong ZHANG, Ph.D., *Assistant Professor, Life Science, College of Arts & Sciences, NYIT*

Guangwei ZHU, *Deputy Director, CAS Lake Tai Eco-Research Station and Dept. of Hydrology and Hydrodynamics, Nanjing Institute of Geography and Limnology, CAS*

11:00am to 11:15am BREAK

SESSION 3: October 21, 11:15am-1:00pm

Research Advances on Systems-Based Analysis for Complex FEW Systems

This session will explore research advances for FEW systems protection, in particular the integration of heterogeneous data and uncertainties for systems-based modeling and analysis of FEW systems. Researchers will also address challenges in the analysis and protection of FEW resources utilizing mathematical modeling and GIS techniques.

Session Leader and Presenter:

Xiaohui (Sean) CUI, Ph.D., *Dean and Professor, International School of Software, Wuhan University*

Presenters:

Bernie ENGEL, Ph.D., *Professor and Head, Agricultural and Biological Engineering, Purdue University*

Linghao HE, *Sustainable Energy Technologies, Brookhaven National Laboratory*

Zhongming LU, Ph.D., *Brook Byers Institute for Sustainable Systems, School of Civil and Environmental Engineering, Georgia Institute of Technology*

Yi ZHENG, Ph.D., *Associate Professor, Department of Energy & Resources Engineering College of Engineering, Peking University**

1:00 – 2:15pm LUNCH

Session 4: October 21, 2:15pm- 4:00pm

Sensors and information systems for real-time monitoring and analyses of FEW systems

This session will focus on advances in the integration of IT and cyber-physical systems for real-time water quality monitoring and analysis. The effective management of FEW resources implies increased coordination among public agencies, city officials, farmers, and consumers as well as synergistic activities to optimize resource use. Advances in sensors and other information systems for real-time monitoring can enhance FEW resources management by supporting analyses of FEW system interactions.

Session Leader

Jie LIU, Ph.D., Associate Professor, College of Engineering, and Center for Water Research, Peking University

Presenters:

Babak D. BEHESHTI, Ph.D., *Associate Dean & Professor, School of Engineering & Computing Sciences, NYIT*

Fang LI, Ph.D, *Asst. Professor, School of Engineering and Computing Sciences, NYIT,*

Ziqian DONG Ph.D., *Asst. Professor, School of Engineering and Computing Sciences, NYIT,*

Xiaoliang MENG, Ph.D., *Associate Professor, Director, Joint International Center for Resource, Environment Management and Digital Technologies (JIC-REDT), International School of Software, Wuhan University*

Alan MICKELSON, Ph.D., *Associate Professor of Electrical Engineering, Department of Electrical and Computer and Energy Engineering, University of Colorado at Boulder*

Jonathan VORIS, Ph.D., *Assistant Professor, School of Engineering and Computing Sciences, NYIT*

3:00pm to 3:15am BREAK

3:15pm-5:00pm Session 5: "Closing Session to Explore Future Research Directions"

Session Leaders:

Nada ANID, Ph.D., *Professor and Dean, School of Engineering and Computing Sciences, NYIT* and

Chunmiao ZHENG, Ph.D., *National Research Chair, Peking University; Dean, School of Environmental Science and Engineering; South University of Science and Technology, Shenzhen, China*

Presenters:

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Jie LIU, Ph.D., *Associate Professor, College of Engineering, and Center for Water Research, Peking University.*