

# Sustainable Megacities: Food, Energy, Water, and the Built Environment

## 可持续性特大城市： 粮食、能源、水及建成环境

A U.S.-China EcoPartnership forum organized by  
New York Institute of Technology and Peking University

ECO PARTNERSHIPS

纽约理工学院-北京大学中美绿色合作伙伴论坛

## Speaker Biographies and Abstracts

演讲人简介和摘要



# SUSTAINABLE MEGACITIES

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## EDWARD GUILIANO, PH.D.

*President, NYIT*

Edward GUILIANO has led New York Institute of Technology (NYIT) to worldwide prestige, particularly in the fields of architecture, medicine, communications, engineering, business, and educational technology. An eloquent spokesman and advocate for the environment and sustainability, global higher education, and educational technology, Guiliano is a frequent keynote speaker at conferences around the globe. Since becoming the university's president in 2000, NYIT has significantly increased the size and quality of its diverse student body of more than 12,000 students from nearly 50 U.S. states and 100 nations; added more than 400 distinguished faculty members; and opened campuses in Canada, China, and the United Arab Emirates to complement NYIT's campuses in Manhattan and Long Island, New York. During this time, NYIT has undergone a major renovation of campus facilities while branding itself to raise its national and international profile. The administration also created a 2030 strategic plan to position NYIT as a model for a 21st-century global university. NYIT has been consistently ranked as one of America's best colleges by leading publications. In March 2012, in recognition of Guiliano's commitment, scholarship, philanthropy, and transformational long-standing leadership, NYIT named its flagship Manhattan campus building on Broadway the Edward Guiliano Global Center. Guiliano holds a bachelor's degree from Brown University and a doctorate from Stony Brook University. He has been awarded two honorary degrees and received the Ellis Island Medal of Honor for his personal accomplishments, social compassion, and outstanding contributions to American society. He is married to best-selling author Mireille Guiliano.

爱德华·朱利亚诺博士  
纽约理工学院校长

在爱德华·朱利亚诺校长领导之下，纽约理工学院（NYIT）在建筑，医药，工程，商业，教育技术领域获得了世界范围内的声望。朱利亚诺博士是一位雄辩的演说家，热忱倡导环保和可持续发展，全球高等教育和教育技术，他经常在世界各地的会议中做重要发言。纽约理工学院自朱利亚诺博士2000年担任校长以来，学校显著地提升了办学规模以及学生多样性和质量，这体现在其今天所拥有一万两千名学生来自美国近50个州和100个国家，新增加了三百多名杰出的教师成员，新发展的北美，中东，亚洲校区和网络教育，以作为NYIT在长岛和纽约主校园的补充。在这个过程中，纽约理工学院尚提升了其国内和国际品牌，并对校园设施进行了大规模的翻新。学校管理层还制定了一个雄心勃勃的2030年战略，把纽约理工学院定位为21世纪全球性大学的典范。从而，纽约理工学院一直被主流刊物评定为美国最好高校之一。

2012年三月，鉴于朱利亚诺博士对教育事业执著奉献，在学术、慈善和长期领导变革方面做出的卓越贡献，纽约理工学院把其在曼哈顿百老汇大道上的总校区主楼命名为爱德华·朱利亚诺全球中心。

朱利亚诺博士获得美国布朗大学的学士学位和纽约州立大学石溪分校博士学位。鉴于其个人成就，高度社会责任感，和对美国社会的杰出贡献，朱利安诺博士荣获过两个荣誉学位，并获得了著名的埃利斯岛荣誉奖章。他的太太是畅销书作家米雷耶·朱利亚诺。

**NADA MARIE ANID, PH.D.**

*Professor and Dean, School of Engineering and Computing Sciences, NYIT*

Nada ANID is the first female dean of NYIT's School of Engineering and Computing Sciences (SoECS). In this role, she oversees over 80 engineering and computing sciences faculty members and approximately 3,500 graduate and undergraduate students at campuses located in Manhattan and Old Westbury, N.Y., China, the Middle East, and Vancouver.

Anid embraces NYIT's forward-thinking and applications-oriented mission and is working on several strategic partnerships between the SoECS and the public and private sector, including the creation of NYIT's Entrepreneurship and Technology Innovation Center (ETIC) and its three labs in the critical areas of IT & Cybersecurity, bioengineering and health analytics, and Energy and Green Technologies. With support from the National Science Foundation, Anid has led the organization of several international conferences and workshops, and co-leads the US-China "EcoPartnership on Groundwater Monitoring, Protection, and Training" with Peking University under the U.S.-China Ten-Year Framework for Cooperation on Energy and the Environment. Anid is also NYIT's principal investigator on a "Pathway to Cleaner Production through Latin America" project, funded by the Higher Education for Development (HED) in collaboration with Illinois Institute of Technology and seven academic institutions across Latin America.

She has been named one of "100 Inspiring Women in STEM Award" Winners by *INSIGHT Into Diversity* and one of the Top 50 Most Influential Women in Business by *Long Island Business News* (LIBN). Anid is a program evaluator for the Engineering Accreditation Commission (EAC) of ABET, a board member of several organizations, a member of the Editorial Advisory Board of the *Journal of Environmental Progress and Sustainable Energy* and a technical reviewer for the federal government and several scientific journals. Anid earned her Ph.D. in environmental engineering from the University of Michigan (Ann Arbor), and her bachelor's and master's degrees in chemical engineering from the Royal Institute of Technology (KTH-Stockholm). Prior to joining NYIT, she was chair and graduate program director of the Chemical Engineering Department at Manhattan College.

娜达·阿尼特博士  
纽约理工学院工程与计算机科学学院院长

娜达·阿尼特博士是纽约理工学院工程与计算科学学院首位女院长。目前管理此学院曼哈顿校区及古西堡、加拿大温哥华、阿布达比以及中国共80名教员以及约3500名研究生和本科生。

阿尼特博士信奉纽约理工学院前瞻思维及应用导向的信条，致力于开展工程学院与上市及私营公司的战略合作。这其中包括创建学院首个创业与技术创新中心，包括信息技术与网络安全实验室、生物工程与健康分析实验室、和能源与绿色技术实验室。在美国国家科学基金委员会的资助下，阿尼特博士曾组织多个国际会议和研讨会，与北京大学共同领导美中十年能源和环境合作框架下的中美绿色合作伙伴项目：地下水监测、保护与培训。阿尼特博士还是“拉丁美洲清洁生产之路”项目的主要研究者，这个项目由高等教育发展资助，合作单位包括伊利诺伊理工学院以及拉丁美洲的七家研究机构。

阿尼特博士被INSIGHT Into Diversity评为100个STEM激励女性奖获奖者之一，同时她还被长岛商业新闻 (LIBN) 评为前50名最具影响力商界女性之一。阿尼特博士是ABET的工程认证委员会 (EAC) 的评估者，几个组织的董事会成员，Environmental Progress and Sustainable Energy杂志的编辑顾问委员会的成员，和联邦政府和一些科学期刊的技术评审。

阿尼特博士于密歇根大学安娜堡分校获得环境工程博士学位，于瑞典皇家理工学院 (KTH斯德哥尔摩) 获得化学工程学士及硕士学位。加入纽约理工学院之前，曾任曼哈顿学院化学工程系研究生教育主管。

**CHUNMIAO ZHENG, PH.D.**

*Director, Institute of Water Sciences, Peking University; Dean, School of Environment, South University of Science and Technology*

Chunmiao ZHENG currently holds the position of Chair Professor and Dean of the School of Environmental Science and Engineering at South University of Science and Technology of China. Prior to his current appointment, he was Chair Professor and Director of the Institute of Water Sciences at Peking University. He has also been the George Lindahl III Endowed Professor of Hydrogeology at the University of Alabama. His research interests include contaminant transport, eco-hydrologic processes, and water resources management. He is developer of the MT3D/MT3DMS series of contaminant transport models used in over 100 countries, and author or co-author of over 160 papers and 5 books, including *Applied Contaminant Transport Modeling* published by Wiley in 1995 and 2002 and translated into Chinese in 2009. Zheng is recipient of the 1998 John Hem Excellence in Science and Engineering Award from the National Ground Water Association (USA) and a fellow of the Geological Society of America. In 2009 he received the Birdsall-Dreiss Distinguished Lecturer award from the Geological Society of America that took him to 70 universities and research institutions worldwide. For his outstanding contributions to the fields of hydrogeology and groundwater science, he was awarded the O.E. Meinzer award by the Geological Society of America and the M. King Hubbert award by the National Ground Water Association, both in 2013. Zheng has served as associate editor for leading water resources journals, including Water Resources Research, Groundwater, Journal of Hydrology, and Hydrogeology Journal. He has also served as president of the International Groundwater Commission of the International Association of Hydrological Sciences (IAHS) and on the Committee on Hydrologic Sciences of the National Research Council (USA). Zheng received a B.S. in geology from Chengdu University of Technology and a Ph.D. in hydrogeology from the University of Wisconsin-Madison.

郑春苗博士  
北京大学水资源研究中心主任;南方科技大学领军教授及环境科学与工程学院院长

郑春苗毕业于原成都地质学院，随后赴美国威斯康星（麦迪逊）大学留学，获得水文地质博士学位。现任南方科技大学领军教授及环境科学与工程学院院长。曾任北京大学讲席教授、北京大学水资源研究中心主任（中组部“千人计划”国家特聘专家）、美国阿拉巴马大学地质科学系助理教授至Lindahl终身讲席教授。已主持50余项美国和中国政府资助的科研项目。发表了专著5部，包括Applied Contaminant Transport Modeling (1995初版; 2002再版; 2009中文版)，及论文160多篇，内容涉及水文过程模拟、地下水污染机理、以及水资源可持续利用。开发了地下水污染模拟标准软件MT3D和MT3DMS，在100多个国家得到广泛使用。现任或已经担任过国际水资源领域顶级刊物 (Water Resources Research, Journal of Hydrology, Ground Water & Hydrogeology Journal) 的副主编、美国国家研究理事会 (National Research Council) 水文科学核心小组成员、国际水文协会 (IAHS) 国际地下水委员会主席。荣誉包括美国地质学会会士、美国地下水协会1998年度John Hem杰出贡献奖、中国国家自然科学基金委2006年度海外杰出青年合作基金获得者。2009年作为首位华裔科学家，获得美国地质学会Birdsall-Dreiss杰出讲席奖，应邀到世界各地70所大学和科研机构讲演及学术交流。因为他对水文地质学和地下水科学的卓越贡献，郑春苗教授于2013年同时获得美国地质学会O.E. Meinzer奖（国际水文地质界最高荣誉）及美国地下水协会M. King Hubbert奖（该协会最高科学奖）。郑春苗教授于1983年获得成都理工大学（原成都地质学院）学士学位，1988年获得美国威斯康星（麦迪逊）大学博士学位。



**JIE WANG**

*Vice President, Peking University*

Jie WANG assists the president in charge of audit and information technology work while assisting the principal in charge of the audit office, the information technology and management office, the computing center, and the modern educational technology center. He earned his bachelor of science and master of science degrees from the Department of Mathematics, and his Ph.D. degree from Peking University. He served as the National Natural Science Foundation of fourth, fifth, sixth, deputy director, committee member from 2000 to 2013.

王杰博士  
北京大学副校长

北京大学党委常委、副校长。协助校长负责审计和信息化建设工作；协助校长分管审计室，分管信息化建设与管理办公室、计算中心和现代教育技术中心。他于1982年获得北京大学 数学系学士学位，1985年获得北京大学数学系硕士学位，于1991年获得北京大学理学博士学位。他还曾于2000年至2013年担任中国国家自然科学基金委员会第四、五、六届副主任、党组成员。



**CHRISTOPHER R. KAVANAGH**

*Counselor for Environment, Science, Technology, and Health,  
U.S. Embassy in Beijing, China*

Christopher R. KAVANAGH is new to his role at the U.S. Embassy in Beijing, China. His most recent assignment was as political section external deputy at the U.S. Embassy in Moscow, Russia from 2013 to 2015. His previous experience in East Asia includes tours as spokesperson for the American Institute in Taiwan (2009-2012), political unit chief at the U.S. Embassy in Singapore (2004-2008), political officer at the American Institute in Taiwan (1999-2002), and the U.S. Consulate General in Shenyang, China (1997-1999). He studied Chinese (Mandarin) from 1995 to 1997 in Washington and Taipei and from 2008 to 2009 in Taipei. In the Department of State in Washington, D.C., Kavanagh was Cambodia desk officer in the Bureau of East Asian and Pacific Affairs and also a political-military affairs officer dealing with conventional arms exports in the Bureau of Political-Military Affairs. He holds a B.S.F.S. from the Georgetown University School of Foreign Service and an M.B.A. from the University of Notre Dame. He speaks Chinese (Mandarin), Russian, and Spanish. He is married to Julie Kavanagh, who is also a foreign service officer. They have three children.

CHRISTOPHER R. KAVANAGH

美国驻华大使馆环境、科技和卫生事务参赞

CHRISTOPHER R. KAVANAGH先生刚到位于中国北京的美驻华大使馆就履职新。在此之前，他于2013年至2015年曾任美国驻俄罗斯大使馆政治处对外副主任。此前他在东亚地区的经历包括美国在台协会发言人（2009至2012年），美国驻新加坡大使馆政治处主管（2004至2008年），美国在台协会政治官员（1999至2002年），美国驻沈阳总领事馆官员（1997至1999年）。他于1995年至1997年在华盛顿和台北学习汉语普通话，并于2008年至2009年在台北学习汉语普通话。在位于美国首都华盛顿特区的美国国务院内，KAVANGH先生曾任东亚和太平洋事务局柬埔寨事务官员以及政治军事局负责处理常规武器出口的政治军事事务官员。他毕业于美国乔治城大学外交学院并获学士学位，之后在美国圣母大学获得工商管理硕士学位。他能说汉语普通话、俄语以及西班牙语。他的妻子Julie Kavanagh也是一名外交官员。他们育有三个孩子。

**HAIHONG LI**

*Deputy Head, Division of American and Oceanian Affairs, Department of International Cooperation, National Development and Reform Commission*

李海红

中国国家发展改革委宏观经济研究院对外经济合作办公室美大部副主管

**BRUCE HAMILTON, PH.D.**

*Program Director, U.S. National Science Foundation*

Bruce HAMILTON is program director for environmental sustainability in the CBET Division of the National Science Foundation's (NSF) ENG directorate and a member of the cross-NSF working groups for INFEWS (Innovations at the Nexus of Food-Energy-Water Systems) and CRISP (Critical Resilient Interdependent Infrastructure Systems and Processes). He is also a program director for Cyber-Physical Systems (CPS) and the Engineering Research Center (ERC) program. In 2012, he received the NSF Director's Award for Meritorious Service in the area of sustainability. Before joining the NSF over 18 years ago,

Hamilton held R&D management positions in the chemical and biotechnology industries for 20 years. He has a B.S. in chemical engineering and a Ph.D. in biochemical engineering, both from MIT.

**NSF-NSFC JOINT ENVIRONMENTAL SUSTAINABILITY RESEARCH PROPOSAL  
COMPETITION: CURRENT ROUND AND RELATED MATTERS**

**ABSTRACT:** The NSF and NSFC currently are holding a joint research proposal competition for two topics in the environmental sustainability area. One topic relates to urban air pollution ("Combustion Related to Sustainable Energy") and the other is on urban water sustainability. The NSF has a number of additional related activities underway or emerging. It has just announced three new \$12 million Sustainability Research Network (SRN) awards on urban sustainability. These new SRN awards are in addition to the NSF's Engineering Research Center (ERC) on "Reinventing the Nation's Urban Water Infrastructure" (ReNUWIt), which is on track to receive more than \$35 million of NSF funding over 10 years. Related emerging areas at the NSF include "Smart Cities," Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP), and "Innovations at the Nexus of Food, Energy, and Water Systems" (INFEWS). More information on all of these activities will be provided.

BRUCE HAMILTON博士

美国国家科学基金会

BRUCE HAMILTON博士是美国国家科学基金会的项目主任。他具体负责领导美国国家自科学基金会CBET分部的环境可持续发展项目，他同时还是INFEWS（食物—能源—水系统中的创新关系）和CRISP（关键弹性相互依赖的基础设施系统与流程）工作小组的成员。他同时还担任网络物理系统（CPS）和工程研究中心（ERC）的项目总监。2012年，他获得美国国家科学基金授予的在可持续发展领域的杰出服务奖，在未加入美国国家科学基金会前，布鲁斯就已经从事了20年的化学和生物技术研发工作。他在麻省理工大学获得化学工程学士学位和生化工程博士学位。

中国国家自然科学基金委员会（NSFC）与美国国家科学基金会（NSF）达成协议，联合资助中美两国科学家在环境可持续性研究领域开展合作研究项目。其中第一个主题与城市空气污染（燃烧与可持续能源）相关，另一个是城市水资源可持续发展。美国国家自然科学基金会已经举办了并正在进行着与可持续发展相关的活动。美国国家自然科学基金刚刚宣布，将投入1200万美元在三个与城市可持续发展有关的可持续性研究网络（SRN）科研项目上。三个新的SRN研究项目包括NSF工程研究中心（ERC）的“重塑国家的城市供水基础实施”；NSF新型的领域——智能城市，“关键弹性相互依赖的基础设施系统和流程”和“食物、能源和水系统的创新关系”。其中“重塑国家的城市供水基础实施”已经获得3500万美金，十年期的资助。我们接下来将提供更多的相关信息。



**NANCY SUNG, PH.D.**

*Head of Beijing Office, U.S. National Science Foundation*

Nancy SUNG joined the National Science Foundation in 2011 as a program director covering China and Southeast Asia, focusing on activities that provide international research experiences for students, as well as working towards new, leveraged international partnerships. In 2013, she served as acting section head for International Science and Engineering at NSF headquarters. No stranger to China, Sung is proud to have been a visiting postdoctoral research fellow at the (then) Chinese Academy of Preventive Medicine's Institute of Virology in Beijing (1994-1996), with the support of the World Health Organization and the NIH-

National Cancer Institute. Her research area was tumor virology, studying the mechanisms of gene regulation and molecular epidemiology of Epstein-Barr virus, which is implicated in the pathogenesis of nasopharyngeal carcinoma, a malignancy endemic to southern China. Sung earned a B.A. from the University of Pennsylvania and a Ph.D. in microbiology from the University of North Carolina at Chapel Hill (UNC-CH), where she was named a Lineberger Fellow for Excellence in Research. She conducted postdoctoral research in tumor virology at the Lineberger Comprehensive Cancer Center at UNC-CH.)

宋南希博士  
美国国家科学基金委员会中国办公室主任

2014年8月上任至今

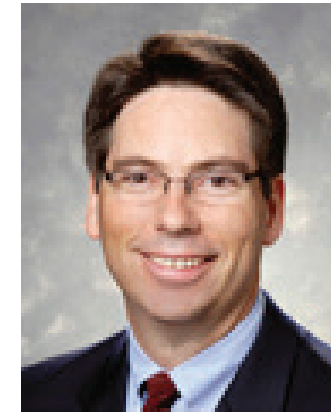
背景信息:

宋南希博士目前任美国国家科学基金委员会 (NSF) 中国办公室主任。她于2011年加入NSF, 任项目官员, 负责中国和东南亚事务, 致力于增进美国学生的国际研究合作经验, 加强新型对等的国际合作伙伴关系。2013年, 宋南希博士曾担任NSF国际科学工程局代理局长。

宋南希博士与中国颇有渊源。她尤其引以自豪的是, 曾于1994-1996年在北京的中国预防科学研究所的病毒所做过两年的访问博士后学者研究, 该研究是由世界卫生组织 (WHO) 和美国国立卫生研究院(NIH)的国家癌症研究所(National Cancer Institute)联合资助的。宋博士的专业是肿瘤病毒学, 研究EB病毒, 即人类疱疹病毒4型的基因调节机制及分子流行病学, 这对于中国南方发病率很高的恶性鼻咽癌的发病机理非常重要。宋南希博士本科毕业于宾夕法尼亚大学, 博士毕业于北卡罗来纳大学教堂山分校 (UNC-CH), 并被授予著名的莱恩伯格卓越研究学者奖 (Lineberger Fellow for Excellence in Research)。她之后在北卡罗来纳大学教堂山分校的莱恩伯格综合癌症中心 (Lineberger Comprehensive Cancer Center) 进行了博士后研究。

加入美国国家科学基金委员会之前, 1997-2011年, 宋南希博士任美国宝来惠康基金会(BWF)高级项目官员, 该基金是资助促进生物医学和教育的美国著名独立基金会, 它在基础科研和临床医学的具有巨大潜力和新兴的跨学科领域, 向年轻科学家的职业发展提供了大量资助。宋博士还代表BWF基金会致力于研究国家科学政策事务、建设未来科学工程人才储备。

宋南希博士曾任美国医学研究联盟组织 (Health Research Alliance) 的创始理事长, 该联盟组织是由五十多家美国私人基金会和医学志愿机构组成的成长型联盟机构。宋博士还担任美国医学研究院 (U.S. Institute of Medicine) 和国家研究委员会 (National Research Council) 的多个专家组成员。宋南希博士已婚, 并有两个孩子。



**CARL B. KRESS**

*Regional Director, East Asia, the Middle East, North Africa, Europe, and Eurasia; Energy Sector Worldwide Team Leader, U.S. Trade and Development Agency*

Carl B. KRESS is the regional director for East Asia, the Middle East, North Africa, Europe, and Eurasia region of the U.S. Trade and Development Agency (USTDA). He is responsible for developing and implementing the USTDA economic development program throughout these regions. He is also the agency's Energy Sector Worldwide Team Leader. Before joining the agency, he held legal and legislative positions in government and the private sector. His previous experience

includes serving as counsel at the U.S. International Trade Commission and as an attorney with the law firm McDermott, Will & Emery, where he focused on international trade matters. A graduate of the University of California, Berkeley, Kress received his law degree from the University of California, Los Angeles. He also holds a master's degree in German law from the University of Hamburg, Germany.

卡尔.克里斯  
美国贸易发展署区域主任

卡尔.克里斯是美国贸易发展署负责东亚,中亚,北非,和欧亚区的区域主任。克里斯的职责主要是负责美国贸易发展署在这些地区经济发展项目的开发和实施。同时, 克里斯也是署里负责全球能源组的组长。

加入美国贸易发展署之前, 克里斯在美国政府和企业都从事过法律部门的工作。他过去的工作经历还包括出任过美国国际贸易委员会的法律顾问, 和McDermott, Will & Emery律师事务所的律师, 主要从事于国际贸易事务。克里斯毕业于美国加州伯克利大学, 取得法律学位。同时, 他还持有德国汉堡大学的法律硕士学位。

**XIAOJUAN SHI**

*Director, Department of Pollution Prevention and Control, Ministry of Environmental Protection, China*

石效卷  
主任, 中国环境保护部污染控制司饮用水室



**CHANGQUING SONG, PH.D.**

*Deputy Director, Department of Earth Sciences, National Natural Science Foundation of China*

Changqing SONG received his Ph.D. in geography from Peking University. He is associate director of the Department of Earth Sciences, National Natural Science Foundation of China; vice president of the Geographic Society of China (GSC); and director of the academic committee of the GSC. His research interests are earth sciences research management and quaternary paleoecology.

宋长青 博士  
中国国家自然科学基金会地球科学部副主任

宋长青，博士、研究员，毕业于北京大学地理系并获得地理学博士学位。现任国家自然科学基金委员会地球科学部副主任，中国地理学会副理事长，学术工作委员会主任。主要从事地球科学基金项目管理及第四纪古生态学研究工作。



**DONGGUANG WEN, PH.D.**

*Director, Department of Hydrogeology and Environmental Geology, China Geological Survey*

Dongguan Wen is engaged in hydrogeological and environmental geological surveys and management. He has published more than 50 papers, books, and technical standards such as “Specification for Hydrogeological Survey and Standard for Groundwater Quality.”

文冬光博士  
中国地质调查局水文地质环境地质部主任

文冬光博士，水文地质专业，研究员，中国地质调查局水文地质环境地质部主任，长期从事水文地质环境地质调查与管理工作，出版论文和专著50余篇/部，编制区域水文地质调查规范、地下水水质标准多项。



**FRANK MRUK, FAIA, LEED AP**

*Associate Dean, School of Architecture and Design, NYIT*

Frank MRUK is a licensed architect in the U.S., a Royal Institute of British Architects Chartered Architect, and is a LEED Accredited Professional. Prior to NYIT, he led strategy and development at Wall Street financial service companies Morgan Stanley and AIG, and design management efforts at Cendant Corp. In private practice, he was a senior architect for URS Corp., one of the largest global engineering design firms, and has held partner positions at Palinode Group PC and DMA Architects PLLC. Mruk has served as president of the Association for Strategic Planning, president of the Construction Specification

Institute, and on the Board of Directors of AIA’s New York Chapter. He currently serves as the executive director of the think tank: the New York Center for Strategic Innovation. Mruk’s academic history includes Oxford University’s Said Business School (post-graduate program in strategy and innovation), Pace University (M.B.A.) and Pratt Institute (bachelor of architecture). In addition to NYIT, he has taught at the Parsons School of Design, the BOMI Institute, and New York University.

Frank Mruk, FAIA, LEED AP  
纽约理工学院建筑和设计学院副院长

Frank Mruk是美国注册建筑师，英国皇家建筑师协会注册建筑师，同时他也是通过了美国绿色建筑协会领先能源与环境设计认证的专家。在加入纽约理工学院之前，他曾在华尔街金融服务公司摩根斯坦利和美国国际集团领导两公司的战略发展要务。在建筑方面，他曾是美国优斯公司（全球最大的建筑设计公司之一）的高级建筑师。他也曾担任战略发展协会的主席和建筑专业学院的院长。同时他还担任美国建筑师协会纽约分会董事会成员。目前，他担任纽约战略创新中心（智库）的执行主任。他本科就读普拉特学院建筑学专业，硕士就读于佩斯大学工商管理专业，牛津大学赛德商学院战略与创新专业。除了纽约理工学院之外，他也曾在帕森斯设计学院，波密学院以及纽约大学任教。





**JENNIFER TURNER, PH.D.**

*Director, China Environment Forum, Woodrow Wilson Center*

Jennifer TURNER has been the director of the China Environment Forum for 15 years, developing meetings, exchanges, and publications focused on a variety of energy and environmental challenges facing China, particularly on water, energy, and green civil society issues. She leads the Wilson Center's Global Choke Point Initiative, which together with Circle of Blue, has produced multimedia reports, films, and events on water-energy-food confrontations in China, India, Mexico, and the United States. Other major initiatives include: "Cooperative Competitors: Building U.S.-China Clean Energy Partnerships"

and "From Farm to Chopsticks: Food Safety Challenges in China." Turner also serves as editor of the Wilson Center's journal, the *China Environment Series*, and most recently co-authored *China's Water-Energy-Food Roadmap*, which highlights water-energy-food nexus challenges and priority areas for policy and research solutions. She has a Ph.D. in public policy and comparative politics.

**CHOKES POINT: CHINA—WATER-ENERGY CHOKESPOINTS IN THE WORLD'S FASTEST URBANIZING COUNTRY**

**ABSTRACT:** With China's rapid urbanization and industrialization, its water-energy-food choke points are tightening. The country's power and agricultural sectors are competing for an ever-decreasing water supply, and at the same time, more energy is needed to move and treat its increasingly polluted waters. After touching on the Choke Point trends in China, this presentation will highlight how Chinese policy, research, and civil society communities are beginning to work with U.S. counterparts to address these growing challenges.

珍妮弗·特纳博士  
伍德罗·威尔逊中心中国环境论坛主任

珍妮弗·特纳博士是中国环境论坛近15年的负责人，负责制定会议，沟通和发布中国面临的多种能源和环境问题，尤其是在水资源、能源和绿色公民社会方面。她领导了威尔逊中心的世界瓶颈期倡议与 circle of blue合作并提出了有关中国、印度、墨西哥和美国的水-能源-食物所面临困境的多媒体报告、影片和活动。其他主要倡议还包括“合作型竞争对手：建立中美清洁能源合作关系”以及“从农田到餐桌：改善中国的食品安全”。特纳还是威尔逊中心中国环境期刊的编辑，她近期还共同撰写了中国的水-能源-食物路线图，并关注水-能源-食物间联系的问题以及政策和研究解决方案的重点领域。她拥有公共政策和比较政治学的博士学位。

中国城市的瓶颈期：水源-能源瓶颈问题凸显在世界上城市化最快的国家

摘要：随着中国城市化和工业化进程的迅速推进，水源-能源-粮食的瓶颈问题日益突显。中国的电力和农业生产面临着前所未有的缺水危机。同时，处理愈发严重的水污染又要求更多的能源投入。在分析了中国瓶颈问题趋势后，Jennifer将继续关注可能的解决方案：中美如何在政策、研究以及民间社会层面开展合作，共同面对越发严峻的挑战。



**KEITH SCHNEIDER**

*Senior Editor, Chief Correspondent, Circle of Blue*

Since 2008, when he led a multimedia reporting team from *Circle of Blue* to the Murray-Darling basin, Australia's prime food-growing region, Keith SCHNEIDER has reported from the front lines of five continents on the intensifying global confrontation between water, energy, and food. His work as senior editor and chief correspondent for *Circle of Blue's* Global Choke Point project has taken him to the coal-producing deserts of China's Yellow River Valley, the oil and gas fields of the American West, India's wheat and rice basket in Punjab, Qatar's mammoth Persian Gulf desalination plants, Mongolia's mineral-rich and water-

scarce South Gobi desert, the Peruvian Andes, Panama's rainforests, and to United Nations climate conferences in New York, Copenhagen, Barcelona, and Tianjin. In documenting and assessing the consequences of rising demand for energy and food in an era of diminishing freshwater reserves, Schneider is playing an essential role in writing a new 21st-century narrative about the contest for scarce resources. As he and his *Circle of Blue* colleagues have shown in exclusive online multimedia reports, the place where the trend vectors collide is reshaping the Earth's environment, reordering national priorities, and deeply affecting national economies.

**GLOBAL CHOKES POINT**

**ABSTRACT:** Underlying so much of the economic and ecological turmoil unfolding across the planet is a slow collision between the operating practices of the resource-wasting, vertically managed 20th century and the much more crowded, polluted, and dangerous ecological and economic conditions of the 21st century. The old order, in short, is coming apart. Think of it as a big building resting on a slippery, unstable foundation of mud. The 20th-century economic construct was about consuming wasteful amounts of water, energy, soil, and land to build big centralized projects: big power plants, big oilfields and mines, big transmission systems, big highway networks, big farms, big suburbs, big houses, big malls. Managing enterprises of such scale called for spending enormous sums of money on supplies (energy, water, food) and on equipment (trucks, cars, factories, water pipes, power lines, air conditioners). Keeping order required hierarchical, vertically integrated, massive institutions: governments, banks, industrial corporations, universities. The enterprise worked for a short time (about the last half of the 20th century) because it fit market conditions. Energy and water were plentiful and cheap. Land was available and comparatively inexpensive for farms and for suburbs. Populations were smaller and more stable. Government treasuries built the roads, water systems, transmission networks, and supply lines that kept the enterprise running. How quickly all of that melted away to produce the disruptive, confusing, and dangerous years of frustration across much of the world. Energy got expensive. Water grew scarce. The world population soared. Land became dear. Pollution levels soared. Droughts and floods and earthquakes caused billions of dollars in damage. The energy-consuming, water-wasting, and inordinately expensive "get big or get out" 20th-century formula for economic success languishes on the hot sands of ecological and economic distress. The trend lines, though, do not necessarily point to doom. As people start to comprehend this time of depleted resources, growing populations, and climate disruptions, the new conditions are yielding different rules of conduct. Think of cities and nations as robust gardens now being fed better nutrients, especially the fertilizer of human recognition and intelligence. Fifteen years into the 21st century, the outlines of a different way of life are coming into clearer focus. The garden, in effect, is just starting to grow in new ways. The consequences of the ever-fiercer competition for resources are explored in this presentation, with reporting and photographs from five continents.

基思·施耐德  
纽约时报Circle of Blue高级编辑，首席记者

从2008年起，基思·施耐德带领着一个Circle of Blue的多媒体报道团队来到Murray-Darling basin——澳大利亚主要粮食产区，他在五大洲的前线报道了关于水、能源和食物之间愈演愈烈的全球对抗。作为Circle of Blue的高级编辑和首席记者，他来到中国的黄河峡谷地区、美国西部的石油和天然气田、印度旁遮普的小麦和大米产地，卡塔尔庞大的波斯湾海水淡化厂，蒙古国矿产丰富但严重缺水的南部戈壁沙漠，秘鲁的安第斯山脉，巴拿马的热带雨林，并参与了在纽约、哥本哈根，巴塞罗那，天津举办的联合国气候变化会议。他记录了资源紧缺、淡水贮量不断减少的21世纪里，能源和粮食需求不断增长所带来的后果。因为基思和他Circle of Blue的同事们发布的在线多媒体独家报道，这些多重因素碰撞之处正在重塑地球的环境，改变国家的优先发展战略，并深深的影响了国民经济。

全球面临的发展瓶颈

摘要：整个地球显露的许多经济动荡和生态危机正揭示出资源浪费，垂直管理的20世纪与人口膨胀，污染严重，生态和经济危机加剧的21世纪之间缓慢的实践碰撞。简言之，旧的秩序正分崩离析，正如建造在湿滑泥土之上的一栋大型建筑一样。20世纪的经济建设依赖于消耗和浪费大量的水，能源，土壤和土地资源，并建造大型的中央化项目，例如大型发电厂、大型油田和矿山、大型交通系统、大型高速网络、大农场、大郊区以及大型购物中心。管理如此巨大规模的企业需要消耗大量的财力物力在物资（能源、水、粮食）和设备（车辆、工厂、供水管网、供电网络及空调系统）上。层次化垂直管理的大型单位对此很有帮助，例如政府，银行，工业企业，以及高校。因为要适应市场变化，这些企业因为适应市场，在20世纪后半叶存活了短暂的时间。这期间，能源和水丰富而廉价；土地富足，并且相对于农场和郊区而言较为廉价；人口规模较小而且稳定。政府用财政拨款建造了维持企业运行所必需的道路，给排水系统，运输网络，以及供应链。这个状态很快就被打破了，能源变得昂贵，水变得稀少，世界人口剧增，土地变得可贵，污染水平飙升，干旱、洪水和地震造成了数十亿的损失。能源消耗、水浪费和过分昂贵的“变大或出局”这种20世纪的经济成功法则已经徘徊在生态和经济危机的窘境之上。这种趋势虽然不一定是世界末日。但人们终于开始理解资源消耗、人口剧增和气候破坏将会带来新的生存法则。建设城市和国家这个最大的花园需要人类的认知和智慧作为肥料。进入21世纪的第15年，一个不同生存模式的雏形已经渐渐成为焦点。事实上，地球花园需要使用新的方式发展。本次演讲将会使用五大洲的报道和照片演示资源激烈竞争的重要性。



## HASAN SYED

*Design Director, Principal, Gensler*

Hasan SYED provides design leadership to a wide range of architectural, urban design, and research-driven projects. He believes that design should combine aesthetics and elegance driven from performance and human emotional connection inspiring life, work, and innovation. He is focused on a holistic understanding of the built environment, with special interests in the synergy between environmental and historic conservation. In his role as Gensler Shanghai's Design Principal, Syed brings over 20 years of international experience, working on a variety of practice area typologies. He strongly

promotes a culture of design exploration and the open exchange of new ideas. His tenets of sustainable planning include creating pedestrian-friendly and transit-oriented developments, integrating elements of site features with development needs, and engendering a sense of identity rooted in the culture and aspirations of the place. He has assembled an extensive portfolio that includes the design and planning of large-scale office buildings, high-rise towers, urban design and mixed-use developments, hospitality facilities, and retail projects. A Green Star-accredited professional, Syed studied sustainability design at RMIT University, Australia. He earned an M. Arch. degree from Middle East Technical University, and a master's in research at the University of Florence.

### SUSTAINABILITY IN THE AGE OF URBANISM

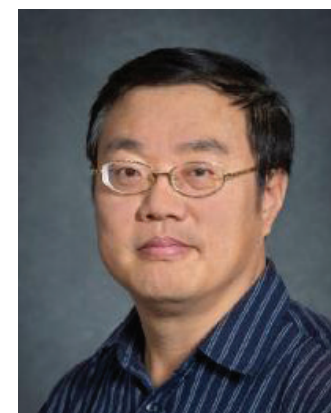
**ABSTRACT:** Cities are complex, dynamic places, shaped by many forces. With the global urban population rising rapidly, people are frequently disconnected from the natural environment. Especially in China, the preservation of cultural heritage is a challenge. This has led to a proliferation of buildings that lack the scale and character of their local context. We introduce a new cross-disciplinary urban design approach that retains traditional spaces and fosters new aspiration by taking history and culture strongly into consideration. Every successful urban space needs to connect the old with the new, with a diverse mix of activities to remain sustainable. This not only maintains the vibrancy, scale, and character of community spaces, but also represents a new paradigm for neighborhood planning in China. Another critical component is the incorporation of sufficient open spaces and natural landscape to create indoor-outdoor relationships. It is important to think about the concept of sustainable urbanism: a balance of infrastructure investment, natural systems, architectural and urban design that supports city development and preserves core site ecologies. Its success lies in the creation of public spaces that foster human experiences and sustainable economic revenue. In order to do this, these spaces must be flexible enough to adapt to their surroundings, and have a robust public transportation support network. The future of our cities requires the right mix of art and science, life, work, and entertainment, urban and natural ecosystems. Cities should harness the power of smart technologies to create more efficient systems. For many, in particular “Next-Gen” consumers, this is necessary for urban destinations to be intelligent, innovative, interconnected, and interactive. In conclusion, this cross-disciplinary approach considers all dimensions concerning new and redevelopment projects. This serves people, sustains the environment, spurs healthy economic growth, and builds the brand that cities need to position themselves as attractive business and living destinations, aligning with China's recent reforms and initiatives that push toward slower, more sustainable economic and urban growth.

赛义德·哈桑  
Gensler建筑设计公司设计总监

赛义德·哈桑在建筑，城市设计和研究主导的项目上均表现出设计方面的领导能力，他认为，设计应结合美学以及能够激励生活、工作和创新情绪的优雅。他专注于对建筑环境的全面认识，特别是环境与历史保护之间协同关系。作为Gensler 建筑设计公司上海设计总监，他拥有20多年的国际经验并致力于各种业务类型的设计。他大力提倡设计开发的新思路的开放式交流文化。他的可持续规划的原则包括建立方便行人和公共交通为导向的发展，将本地特点整合在发展需求中、产生来自于文化和地域的认同感。他拥有大量广泛的设计经验，其中包括大型办公楼、高层塔楼、城市设计以及多用途建筑，酒店设施和零售项目。哈森在澳大利亚RMIT大学学习可持续设计，并获得专业的绿色星级认证。他从METU大学获得建筑学硕士学位，并在佛罗伦萨大学进行硕士研究。

#### 城市化时代的可持续发展

摘要：城市是复杂的而又充满活力的地方，并由许多因素塑造。随着全球城市人口的快速增长，人们往往会与自然环境中脱节。特别是在中国，文化遗产的保护是一个巨大的挑战。这导致新建的建筑物缺乏本地特色。我们介绍一个新的跨学科城市设计方法，该方法可以保留传统的空间并在着重考虑历史和文化的同时，激发新的灵感。每一个成功的城市空间都需要将原有传统与新鲜事物结合起来，并具有多样性以保持可持续发展。这不仅仅是为了保持社区的活力、规模、和特点，也代表着中国社区规划的新方向。另一个重要组成部分是结合足够的开放空间和自然景观来创造室内一室外的关系。这需要重点考虑可持续发展城市化的概念：即如何维持基础设施投资，自然系统，支撑城市发展和保持核心区生态的建筑和城市设计这三者之间的平衡。达到这个平衡有赖于如何创造能改善人类体验并促进可持续经济利益的公共空间。为了做到这一点，这些空间必须足够灵活以便能够适应周围环境，并拥有一个强大的公共交通支撑网络。我们城市的未来需要正确的结合艺术与科学、生活、工作和娱乐，城市和自然生态系统。我们应该利用智能技术在城市中创造出更有效的系统。对于很多“下一代”的消费者，建设智能、创新、互联和互动的城市是非常有必要的。总之，这个跨学科研究覆盖了所有新的和重建项目的各个方面。这个研究可以服务人们，使环境可持续发展，促进健康的经济增长，并建立城市品牌，这种品牌将把城市定位为具有吸引力的商业和生活目的地，并朝着中国改革发展的方向，促进可持续经济的增长和城市的扩张。



#### YONG ZHOU

*Vice Director, Shandong Institute of Science & Technology  
Development Strategy*

In addition to his role as vice director, Yong ZHOU directs Shandong Academy of Sciences' Climate Change Research Center. His research focuses on low carbon economy, science and technology strategy, policy, and innovation. He is an expert with special allowances of State Council of China.

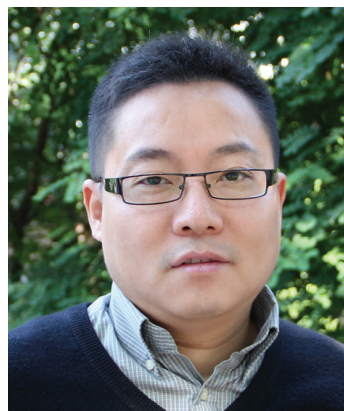
**ABSTRACT:** China has committed that it will peak its carbon dioxide emissions around 2030. As the largest energy consumer and carbon dioxide emitter in

China, will Shandong Province be able to peak its carbon dioxide emissions by 2030? Is there any relatively objective basis for Shandong Province to reach the goal? According to China's energy planning and projection for 2020 and 2030 and Shandong Province's energy share, what are the annual energy consumption and carbon dioxide emissions of Shandong Province in corresponding years? Will the energy consumption and carbon dioxide emissions be able to support a faster growth rate for Shandong Province than the average growth rate for China? This presentation will answer these questions.

周勇  
山东省科技发展战略研究所 副所长

除了担任山东省科技发展战略研究所副所长以外，他还担任山东科学院气候变化研究中心主任。他的研究主要集中在低碳经济，科技战略，政策和创新。他享受中国国务院特殊津贴。

摘要：中国承诺在2030年左右达到碳排放峰值，作为中国能源消耗和碳排放第一大省的山东省，能否在2030年前达到碳排放峰值？有什么相对客观的依据？根据山东省占中国能耗的份额，以及中国2020年和2030年能耗的规划和预测，山东省相应年份的能耗和碳排放是多少？这些能耗和碳排放能否支撑山东省的经济增速快于全国平均值？本演讲将回答这些问题。

**WILSON LU, PH.D.**

*Assistant Professor, Department of Real Estate and Construction University of Hong Kong*

Wilson LU holds a B.Sc. in computer science and an M.Sc. in construction economics and management and was awarded his Ph.D. by Hong Kong Polytechnic University. He is currently taking a sabbatical leave in the Department of Land Economy at Cambridge University, U.K. His research covers a wide range of interests, including international construction, construction waste management, and construction informatics. One interesting research topic that he is working on with Professors Lawrence Lai and Frank Lorne is how construction waste can be used for land reclamation, and its social, economic, technical, and policy implications.

**THE SOCIAL COSTS OF RECLAIMED LAND FOR MEGACITIES**

**ABSTRACT:** Megacities of the world emerged for various reasons. There are conceptual differences between state-enabled megacities and those that arose from spontaneous growth. This paper examines reclaimed land as a state-enabled means for expanding city size irrespective of the reasons for expansion. Earlier work done by the authors suggested city growth via marginal land expansion and reclaimed land had lower costs (and thus more elastic) than intramarginal city expansion via suburban integration or reconstruction of existing structures. Intramarginal city expansion also has political transaction costs highlighted in the earlier study. Considering social costs, the marginal costs of city expansion are likely to shift upward (i.e. higher for every scale of city size). However, marginal land expansion via reclaimed land maintains a lower cost (and more elastic supply) in comparison with intramarginal land expansion with social costs taken into account. Politics aside, reclaimed lands have remarkable low costs per square meter, as examples in numerous reclamation projects have shown. In addition, new technologies enabling the delivery of food, energy and water and probably recycling can be pre-designed to be installed underground before land above is to be built upon. The scale of operation that technologies can enable nevertheless does not mean that cities can be expanded without a limit. At certain city size scale, the marginal cost of expansion is likely to slope upward with or without social costs considerations.

WILSON LU博士

香港大学房地产和建设系助理教授

WILSON LU拥有计算机专业学士学位和建筑经济与管理专业硕士学位，并且由香港理工大学授予博士学位，他目前正在剑桥大学土地经济系进行学术休假，他的研究涵盖很多方面，包括国际建设，建筑垃圾处理，施工信息学。他正在与劳伦斯·赖和弗兰克·洛恩教授进行一个有趣的课题研究，该课题是关于怎样将建筑垃圾用于土地复垦，以及其对社会，经济，技术和政策的影响。

特大城市复垦土地的社会成本

摘要：世界特大城市出现是有很多原因的。国家支持的特大城市和自发形成的特大城市有概念性区别，本文探讨复垦土地作为国家支持的手段来扩大城市规模，而不讨论扩大的原因。作者早先已完成的工作表明，通过外缘土地扩张和复垦土地而发展的城市比通过郊区整合或改造现有城市的内缘结构扩张成本更低（同时也更加灵活）。此外，早先的研究也强调内缘城市扩张还有政治交易成本。考虑到社会成本，城市扩张的边际成本可能会上涨（越大规模的城市成本越高）。然而，和考虑到社会成本的内边缘城市扩张比，通过复垦土地而进行的外边缘土地扩张通常花销更低（供应也更灵活）。抛开政治不谈，众多复垦土地工程实例已经证明复垦土地每平方米的开销很低。此外，新科技使食品，能源和水的供应，甚至回收利用都能在土地在建设开发之前被事先安装在地下。科技支持的施工规模并不意味着城市能无限扩展。在某个特定的城市规模下，扩展的边际成本都很有可能上升，无论是否考虑社会成本。

**JEFFREY RAVEN, FAIA, LEED AP BD+C**

*Associate Professor and Director, Master of Architecture in Urban and Regional Design Program, NYIT*

In addition to his role at NYIT, Jeffrey RAVEN is an architect-urbanist and principal of Raven Architecture + Urban Design LLC (RAVEN A+U), with more than 20 years of experience and leadership in architecture, urban design, and planning. He has led or contributed to projects in the Arabian Gulf, Southeast Asia, Eastern Europe, and the United States, including Masdar carbon-neutral development in Abu Dhabi; sustainable urban design in Vietnam and India; smart growth town planning in the New York Metropolitan Region; LEED-accredited green

building design in New York City; community-based planning in the South Bronx; and the Downtown Brooklyn Plan with Regional Plan Association. He contributes to the development of U.S. and international strategies, guidelines and policy, including Steering Committee member for U.S. Environmental Protection Agency (EPA) Global Change Research Program for Urban Resilience; and Technical Advisor for STAR Community Index to develop sustainable standards for American communities. Professor Raven has taught at Columbia University Master of Science in Architecture + Urban Design program and lectures extensively. He is the author of *Cooling the Public Realm, Resilient Cities* and *Shaping Resilient Cities in China, India and the United States*, and is co-author of the urban design and cities section of the U.S. National Climate Assessment (2012).

**THE CAPACITY FOR CONSTANT CHANGE: SHAPING SUSTAINABLE AND RESILIENT MEGACITIES**

**ABSTRACT:** In their search for future urban models, emerging megacities around the world are becoming laboratories of visionary urban design ideas and solutions. A sustainable and resilient future for megacities demands that today's obsolete development patterns be reconfigured. Confronting global food, energy, and water (FEW) challenges in these megacities will require configuring efficient neighborhoods, protecting farmland and open space, building low-energy affordable housing, and providing efficient transportation choices. Regional cooperation between jurisdictions and cross-sector collaboration between local, regional, and national government agencies are necessary to break down barriers to achieving sustainable FEW resources within megacities. Forward-thinking megacities can meet carbon-reduction goals and sustain their rapidly-growing populations through compact development, resource conservation, spatial efficiencies, and pedestrian access to public transportation, open space, and habitat preservation.

JEFFREY RAVEN, FAIA, LEED AP BD+C

纽约理工学院建筑和设计学院城市和区域设计建筑学硕士项目主任及副教授

除了他在纽约理工学院的经历外，JEFFERY RAVEN在建筑，城市设计和规划领域有超过20年的经验，他还是一名建筑师，城市规划专家。他曾领导过在波斯湾，东南亚，东欧和美国等地的项目，包括在阿布扎比的马斯达尔的碳中和发展项目，在印度和越南的可持续城市设计项目，纽约大都会区的智能增长城市规划，纽约市LEED认证的绿色建筑，在南布朗克斯区基于社区的规划，以及与区域规划协会合作的布鲁克林城区规划。他对于美国和国际战略，方针和政策做出了重大贡献。包括参与了美国环境保护局指导委员会关于全球可适应性城市变化的研究项目，并作为为发展美国标准社区的可持续发展星社区指数项目的技术顾问。RAVEN教授在哥伦比亚大学教授建筑和城市设计，并开办了许多讲座。他也是“冷却公共领域—中国，印度和美国塑造可适应性城市”的作者并参与编写“美国国家气候评估”（2012）中有关城市设计与城市章节。

可持续变化的能力：塑造可持续发展有弹性的特大城市

摘要：在关于未来城市模型的调查研究中，世界各地正不断涌现的特大城市正在变成关于城市设计理念和解决方案的实验室。发展可持续有弹性的特大城市要求对当前过时的发展模式进行重新配置。面对着如今全球食物、能源、资源短缺的挑战，这些特大城市需要利用率高的社区，保护农田，需要建设低能耗且不昂贵的住房，并且提供高效的交通方式。为了消除各特大城市有效利用粮食，能源和水资源的障碍，各国、各区政府都应该通力合作。这些有远见的特大城市政府，通过可持续发展、避免对资源的浪费、对公共交通的改造、对空地以及生态区的保护，在未来一定能够达到降低碳排放的目标，在人口飞速增长的情况下也能够可持续发展。

**TERRY COOKE, PH.D.**

*Founder and Chairman  
China Partnership of Greater Philadelphia*

Terry COOKE founded the China Partnership of Greater Philadelphia in 2011 as a 501c3 public-private platform to accelerate commercial and research collaboration between the Greater Philadelphia region and China in clean energy and energy-efficient buildings. He was a 2010 Public Policy Scholar with the Woodrow Wilson International Center for Scholars in Washington D.C., researching the U.S.-China clean energy relationship, particularly the interface of technology, policy, and investment. His book, *Sustaining U.S.-China Cooperation in Clean Energy*, was published and launched by the Wilson Center's Kissinger Institute in 2012. Previously, from 2006 to 2008, Cooke served as director for Asian Corporate Partnership at the World Economic Forum, the host of the Davos Annual Meeting and the "Summer Davos" in China. In 2003, he retired with the rank of counselor as a career-member of the U.S. Senior Foreign Commercial Service. During his 15-year career, Cooke served as the U.S. government's senior commercial officer in Taipei and Berlin, as the deputy senior commercial officer in Tokyo, and as commercial officer in Shanghai. He received his Ph.D. in cultural anthropology from the University of California at Berkeley (UCB) in 1985, his M.A. from UCB in 1981, and his B.A. from Princeton University in 1976.

**MEGA-CITY CLEAN ENERGY INFRASTRUCTURE: A PROJECT-BASED CASE STUDY**

**ABSTRACT:** The Greater Philadelphia (PHL)-Tianjin Economic-Technological Development Area (TEDA) joined the U.S.-China EcoPartnerships program in July 2014 to jumpstart innovative "Urban Clean Energy Infrastructure" solutions in both regions. This unique combination of real-world technology demonstrations and product showcases will get viable new infrastructure breakthroughs quickly into Chinese and U.S. markets. The past year has been spent down-selecting priority technologies and demonstration sites, and the partnership is getting ready to initiate its first three pilot projects in the areas of clean water, low-carbon buildings, and smart electricity. Urban clean energy infrastructure is a sizable, yet largely untapped opportunity. The PHL-TEDA EcoPartnership can serve as an important sub-national resource to assist municipalities to integrate, at the practical level, their U.S.-China Sustainable City planning efforts with commercially relevant, on-the-ground urban infrastructure project experience.

古孟德博士  
大费城中国合作中心创始人和主席

古孟德博士于2011年成立了非盈利机构大费城中国合作中心，以促进大费城地区和中国在清洁能源和建筑节能领域的商业与研究合作。Terry博士于2010年在华盛顿的威尔逊国际研究中心任公共政策学者，重点研究中美清洁能源关系（特别在科技、政策和投资方面）。他写的《中美在清洁能源领域合作可持续发展》一书于2012年9月在美国威尔逊中心基辛格中美关系研究所发表。在此前的2006-2008年间，Terry先生担任世界经济论坛的“亚洲公司伙伴关系”总监，主持达沃斯年会和中国“夏季达沃斯”论坛。Terry先生曾在美国外交部工作15年，期间分别担任过美国驻上海总领事馆商务官、驻日本东京总领事馆副高级商务官、驻台北和德国柏林的高级商务官。2003年，Terry先生离开美国商务部时，级别为高级商务参赞。Terry先生在1985年毕业于加州伯克利大学并获得文化人类学博士学位。他于1981年获得伯克利大学的硕士学位、于1976年获得普林斯顿大学的学士学位。

特大城市中的清洁能源基础设施：一个基于项目的实例

大费城-天津经济技术开发区于2014年7月加入了中美经济合作项目，以在两个地区快速开展创新“城市清洁能源”解决方案。这个现实世界的技术示范和产品展示的独特组合将使公共设施的突破能够快速进入中美市场。过去一年一直在选择优先技术和示范点，该合作项目已经准备好启动首批在水净化，低碳建筑和智能电网三个方面的试点项目。城市清洁能源基础设施是一个潜力巨大但尚未开发的机会。PHL-TEDA经济合作伙伴关系可以作为一个重要的次级国家资源来协助直辖市在实践层面上整合他们在中美可持续城市规划中与商业和城市基础设施建设相关的经验。

**JING GAN**

*Lecturer, College of Architecture and Urban Planning,  
Tongji University*

Jing GAN is a member of China Green Building Council and column editor of the *Journal of Urban Planning Forum*. With her main research focus on ecological planning and design and green campuses in recent years, she was deeply involved in the sustainable planning and design of World Expo 2010 Shanghai and the establishment of China Green Campus Committee and International Green Campus Alliance. Her recent research includes urban ecological space optimization in high-density urbanized areas, based on the Urban Biodiversity Assessment (China National Natural Science Foundation Project, 2015-2017); "Collaborative Reduction of the Footprint in the Development, Study on the Effective Stakeholder Engagement Strategy for a Water-Sensitive City" (World Wide Fund for Nature Project, 2014-2015); "Urban Construction and Transportation Development of Shanghai Metropolitan in 2030" (Shanghai Municipal Government Consultancy Research Project, 2012-2014); and "Ecological Planning and Smart Design of Chongming Island" (Shanghai Science and Technology Commission, 2009-2013).

**SUSTAINABLE BLUE-GREEN INFRASTRUCTURE PLANNING FOR HIGH-DENSITY URBAN AREAS IN CHINA: CASE STUDY OF QINGDAO CENTRAL ACTIVITY ZONE**

**ABSTRACT:** China is currently at the turning point of its high-density, high-speed, and high-intensity urbanization development. Rapid urban development in the past three decades has led to economic growth but has caused resource depletion, environmental pollution, heat island effects, overcrowding, deterioration of living environments, and public health problems, which have become the biggest challenges and a bottleneck for future development. Due to climate change, increasing urbanization, and the deterioration of the environment, cities will need to undergo a more or less gradual transition from being primarily consumers of the ecosystem toward balancing themselves with nature. One efficient way to guide this necessary transformation is by developing green-blue urban grids that will mitigate the effects of climate change and establish human-nature interaction in urban areas. Taking the blue-green infrastructure planning for Qingdao Central Activity Zone as case study, this presentation will illustrate how high-density urban areas could become more resilient and able to tackle these challenges by measures such as multifunctional connected green space network, adaption planting, wetland and river system, water-sensitive technologies, integrated green surface, etc. Furthermore, blue-green urban planning will offer the citizens more room for a healthier, more viable living environment.

干靓  
同济大学建筑与城市规划学院讲师

中国绿色建筑与节能专业委员会委员、《城市规划学刊》专栏编辑，主要研究方向为城市生态规划与绿色校园。曾作为核心人员参与上海2010年世博会可持续规划设计以及中国绿色建筑与节能专业委员会绿色校园学组和国际绿色校园联盟组织的建立。近期研究课题包括《基于生物多样性绩效测评的高密度城镇化地区生态空间格局优化研究》（国家自然科学基金，2015-2017，项目负责人）、《协同减少长江发展足迹之“水敏性城市”利益相关方有效参与机制研究》（世界自然基金会专项课题，2014-2015，项目负责人）、《上海城乡建设和交通2030年发展研究》（上海市政府决策咨询研究课题，2012-2014，第二负责人）、《崇明岛生态规划及其智慧设计研究》（上海市科学技术委员会课题，2009-2013，核心参与者）等。

中国高密度城市地区的可持续发展绿色基础设施计划：青岛中心活动区实例

中国目前处在高密度、高速度、高强度的城市化发展转折点。高速的城市化发展在过去的30年里促使了经济发展但也导致了资源耗竭、环境污染、热岛效应、过度拥挤生活环境的恶化以及公众健康问题。这些已经成为未来发展的一个挑战和瓶颈。因为气候变化、都市化、环境恶化，城市需要经历从消费生态环境到人和自然环境取得平衡的平缓转变。一个去指导这个转变的有效方法是发展绿蓝的城市网格，它可以减缓气候变化的影响并在城市

地区建立人与自然的友好共存。拿青岛中心活动区的蓝绿基础设施计划为例，这个例子将会说明高密度城市地带将会如何变得更加有抵抗力和能够通过例如多功能互联的绿色空间网，增加绿化、湿地和河流系统、水敏性技术、整合的绿色表面等等应对这些挑战。从长远看，蓝绿城市计划可以提供给市民更多健康的生存空间和更加优良的生存环境。



**ZHEN ZHONG**

*Director of Environmental Design Office, School of Art, Xiamen University*

Zhen ZHONG is the director of the Environmental Design Office and a lecturer at the Xiamen University School of Art. A researcher on the application of vertical green systems in urban areas, she was awarded the Alexander von Humboldt Foundation international fellowship for climate change in Germany. Her “Green Cell” project has been certified by the Federal Environment Agency. Zhong is actively engaged in ecological research collaboration between Europe and China.

**VERTICAL GREEN SYSTEM AND FOOD SUPPLY CHAIN**

**ABSTRACT:** As the population grows and the demand for a better quality of life increases, the food supply becomes a global problem. The EXPO topic “Feeding the Planet, Energy for Life” was among the first to bring attention to food, as public concerns and living core problem. After the process of development of Roof Greening, Balcony Greening, and Vertical Greening, we demonstrated the use of traditional and modern technologies to make vertical green systems a part of the food supply chain for cities. Dividing mega vertical farms into small units and integrating them as part of our living space, this process can improve the architecture efficiency while providing a healthy and eco-friendly food supply. In fact, this option matches traditional living habits around the world, and can be adapted to a variety of urban landscapes while allowing for more social influence to bear on the food supply.

钟贞  
厦门大学艺术学院设计系 环境艺术教研室主任

钟贞是厦门大学艺术学院讲师和环境艺术教研室主任,因为在城市地区的垂直绿化系统的应用的研究，她在德国被授予亚力山大·冯·洪堡特基金会的气候变化研究国际奖金。她的“绿色细胞”项目已经获得联邦环境局认证。钟贞还积极参与与欧洲和中国之间的生态研究合作。

垂直绿化系统与食物供应链

在世界人口不断增长的今天，食物供应已经成为全球热议的话题。今年的米兰世博会就以“给养地球：生命的能源”为题，这是首次以食物为主题的世博会，也意味着人类将生存的核心需求首次跨越国界提到了公众面前。在经历了“屋顶绿化”、“阳台绿化”“墙面绿化”等不同阶段后，我们将有机会开始尝试运用科技，将立体绿化变成食物供应链中愈发重要的一环。将大规模的垂直农场化整为零，变成每个居住单元的一部分，让立体绿化系统在提升环境改善建筑能效的同时，也能为居住者带来更新鲜健康的食物供应。这种构想及尝试既符合人们的生活习惯，又能让城市景观拥有更多的形式选择和更重要的社会影响。



**BABAK D. BEHESHTI, PH.D.**

*Professor and Associate Dean, School of Engineering and Computing Sciences, NYIT*

Babak D. BEHESHTI's areas of interest include wireless sensor networks, embedded real-time systems, wireless and cellular systems, and digital signal processing. He has more than 20 years of experience in R&D for embedded systems and in the wireless technology industry, where he successfully managed joint R&D programs with many Asian, European, and U.S. companies, including Siemens Mobile, Nokia, Samsung, KDDI, and LG. An active member of IEEE since 1991, Beheshti has held positions at section, region, and major board

levels. He has been a member of Publication Services & Products Board (PSPB) of the IEEE as well as the Northeastern U.S. Region Student Activities Chair. Beheshti is a recipient of the IEEE MGA Leadership Award, IEEE Millennium Medal, the IEEE Long Island Section Athanasios Papoulis Outstanding Educator Award (given for noteworthy contributions to engineering education), and three IEEE Region 1 Awards, including the 2008 IEEE Northeastern Region Technical Innovation Award For Providing Technical Leadership in the Development of State-of-the Art Reconfigurable Wireless Technologies. Beheshti received a Ph.D. in electrical engineering from the University of Massachusetts-Dartmouth, and master's and bachelor's degrees in electrical engineering from the State University of New York at Stony Brook.

**A FRAMEWORK FOR WIRELESS SENSOR NETWORK SECURITY**

**ABSTRACT:** Wireless Sensor Networks (WSNs) have become prolific in the past few years as a low-cost and easily deployable means to collect environmental data. With the increased scope of applications of WSNs, it is imperative to assure security of the network itself against attacks, as well as to assure privacy and integrity of the data that is being collected and transmitted through the network. The I-TRM (Integrated Technical Reference Model) of a WSN has been proposed to standardize these network models in a three-faced pyramid, where the three faces are: Control, Information, and Behavior protocol stacks. In this presentation, we expand the I-TRM into a four-faced pyramid, where the fourth face is the Security Centric face. This presentation introduces the proposed expansion at a high level, with system level requirements of the newly expanded I-TRM. Future papers will present more detailed specifications of the new I-TRM.

Babak D. BEHESHTI博士  
纽约理工学院工程与计算机科学学院院长

Beheshti博士 的研究领域包括无线传感器网络，嵌入式实时系统，无线和蜂窝系统，以及数字信号处理。他在嵌入式系统和无线技术行业中具有20多年的研发经验，期间他成功的参与了许多亚洲、欧洲和美国公司的研发项目，这些公司包括西门子手机、诺基亚、三星、KDDI和LG。

Beheshti博士从1991年开始活跃于IEEE的各部門、地区和董事会。他是IEEE出版服务和委员会 (PSPB) 的成员，也是IEEE美国东北地区学生活动的主席。Beheshti博士获得IEEE、MGA领导奖，IEEE千禧奖章，IEEE长岛分部杰出教育家奖（为工程教育作出的贡献），三个IEEE 1区奖项，其中包括2008年的东北地区技术创新奖——在可重构无线技术状态发展中提供的技术指导。

Beheshti博士还是国际和地区会议的组织和技术方案委员会成员。曾参与在Farmingdale州立学院召开的第四届能源与可持续发展会议。Beheshti博士在达特默斯麻州大学获得电气工程博士学位，在纽约州立大学石溪分校获得电气工程硕士学位和电子工程学士学位。

## 一种无线传感器网络安全框架

由于低成本及部署简单的优点，无线传感器网络（WSN）在近年来已经大量用于收集环境数据。随着WSN技术的广泛应用，保证网络安全，包括确保网络免受攻击及确保在收集和传输中数据的隐私性及完整性，势在必行。目前，一种无线传感器网络综合技术参考模型(I-TRM)已被提出。该模型将网络模型标准化为一个四面体。其中这三面分别为控制、信息、以及行为协议。本文将I-TRM扩展为一个四面体，第四面为安全中心面。本文将介绍扩展方法以及扩展后的I-TRM对系统层面的要求。该新I-TRM模型的详细参数将在论文中阐述。关键词：固定点;插值;无线传感器网络;安全性;框架。

**XIAOHUI CUI, PH.D.**

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In addition to his role at Wuhan University, Xiaohui Cui has served as a staff scientist in the U.S. Department of Energy's Oak Ridge National Laboratory since 2004. He was invited as the adjunct professor at the Computer Engineering & Computer Science Department at the University of Louisville in 2010. His research interests include swarm intelligence, agent-based modeling and simulation, big data, cloud computing, social computing, and information retrieval. He is a member of the North American Association for Computational

Social and Organizational Sciences, Transportation Research Board of the National Academies, IEEE Computer Society, and ACM. His current research focuses in developing new computational algorithms inspired from biological models to meet multiple national crucial challenges. His research works include social media text mining, multi-agent system, parallel and distributed knowledge discovering, climate change modeling, future transportation, CO2 emission, terrorist threat-vulnerability analysis, and cyber threat detection. His research programs have been supported by the Office of Navy Research, Department of Homeland Security, Defense Threat Reduction Agency, Department of Energy, and the Lockheed Martin Company. In 2008 and 2009, he received the Department of Energy Outstanding Mentor Award and the Significant Event Award.

**A COMPUTATIONAL SIMULATION MODEL FOR UNDERSTANDING THE CORRELATION OF CLIMATE CHANGE AND POPULATION MIGRATION**

**ABSTRACT:** Human migration has negative effects on to the environment as became evident during World War II, when approximately thirty million immigrants moved from one place to another. At the same time, environmental degradation is often a cause of human population shifts. Such shifts are often not anticipated and therefore governments cannot quickly adapt and develop solutions to accommodate the new populations. Reasons forcing people to immigrate include natural and human factors. Researchers are trying to predict the flow of immigrants by focusing on these factors and developing prediction models, thus giving governments' time to prepare, including preventing environmental impacts often associated to migration flows. We build a computational simulating platform based on Agent-based modeling, which presents simulation results by external tools. By using such approach, this research makes a key factor preparation for continual quantitative studies in the area of human migration influenced by climate change.

崔晓辉博士

武汉大学国际软件学院院长

崔博士曾任美国能源部橡树国家实验室研究员。研究领域包括集群智能、基于智能体的建模和仿真、大数据、云计算、社会化计算、信息检索。他是北美计算机社会和组织科学协会,IEEE计算机协会和ACM的成员。受应对国际多样性严峻挑战的生物模型的启发,崔博士最近的研究侧重于开发新的计算算法。他的研究工作包括社交媒体

文本挖掘、多样化的基于智能体的系统、并行与分布知识发掘、气候变化模型、未来交通、二氧化碳排放、恐怖威胁漏洞分析,和网络威胁监测。他的科研项目来自海军科研办公室,美国国土安全部,能源部,以及洛克希德·马丁公司。他曾在2008和2009年获得能源部杰出导师奖和显著事件奖等。

## 理解气候变化与人口迁移相适应的计算仿真模型

在第二次世界大战期间,有将近三千万人口迁移,对环境有明显的副作用。同时,环境退化也常常由人口变动引起。这样的变动经常无法预计所以不能快速适应并提出更好的方案来给新人口提供食宿。有多种自然和人为原因驱使人们迁移。研究者们着眼于这些因素并建立预测模型来试图预测人口迁徙的流向,来让政府有时间准备包括防止环境破坏等。我们建立了一个基于智能体的计算仿真平台用外部工具来显示模拟的结果。运用这种方法,这个研究会成为气候变化迫使人类迁移方面的持续定量研究的关键准备。

**JONATHAN VORIS, PH.D.**

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Sciences, NYIT*

Jonathan VORIS received his Ph.D. from the Polytechnic Institute of NYU in Brooklyn, N.Y. in 2012. He has bachelor and master's degrees in computer science from Stevens Institute of Technology. Prior to his academic career, Voris worked as a software engineer and network manager for companies in the New York City metropolitan area. Before joining the faculty as a member of NYIT's computer science department, Voris had appointments as an adjunct assistant professor in the Columbia University Computer Science Department and as

a postdoctoral research scientist in Columbia's Intrusion Detection Systems Lab. Voris conducts research into the security, privacy, and usability of systems, particularly emerging mobile and embedded platforms. He has developed novel techniques for addressing insider threats against both desktop and mobile platforms as part of the DARPA Active Authentication program. Most recently, Voris received funding from the University Transportation Research Center (UTRC) to support his work investigating techniques for improving the security and privacy of vehicular networks, sensors, and associated devices. His work has been published at a variety of venues, including TETC, FC, PerCom, WiSec, and SOUPS.

**DATA MODELING FOR ATTRIBUTION AND VERIFICATION IN SMART CITY NETWORKS**

**ABSTRACT:** Smart cities rely on an ever-increasing amount of data collected from sensors in order to provide improved services to their citizens. This data may originate from a variety of sources, including personal devices, vehicles, buildings, and other infrastructure. Although this data enables a wealth of new applications, it also provides new uncertainties. Sensors may be tampered with to provide unreliable data; adversarial sensors that report spurious data can be introduced into systems; and sensor data may be subject to spoofing or forgery. Furthermore, people may attempt to misrepresent themselves to systems that support smart cities, leading to fraud and authentication failures. It is therefore desirable to verify the source of data recorded by smart infrastructure and, where possible, attribute it to a particular user. This talk will present recent research into modelling user interactions with mobile platforms in order to verify the origin of the data it collects for use by smart city technologies. It will discuss potential future research directions for applying this approach to data gathered from vehicular systems, RFID tags, and other potential data sources in order to support intelligent infrastructure systems.

Jonathan Voris 博士  
纽约理工学院工程与计算机科学学院助理教授

Voris博士于2012年在纽约布鲁克林纽约大学理工学院获得博士学位。他拥有史蒂文斯理工学院计算机科学的学士和硕士学位。在开始学术生涯之前，Jonathan曾经作为软件工程师和网络管理员在纽约市地区的一些公司工作。他也曾是哥伦比亚大学计算机系的兼职助理教授和入侵监测系统实验室的博士后的。Voriss博士的研究领域包括安全、隐私和系统的可用性，特别是新兴的移动和嵌入式平台。他设计的新技术作为DARPA主动认证计划的一部分，用以解决台式计算机和移动平台的内部威胁。最近Voriss博士从大学交通研究中心（UTRC）得到资助，用以协助其关于提高安全性的技术调查和车载网络、传感器及相关设备的隐私性研究。他的研究成果发表在TETC, FC, PerCom, WiSec, 和SOUPS上。

用于智能城市网络的归属和验证的数据模型

智能城市依赖于不断增加的数据收集，以便为他们的公民提供更好的服务。这些数据可能具有各种来源，比如个人设备、车辆、建筑物和其他基础设施。虽然这些数据可以产生一些有价值的应用，但同时也带来了隐患。传感器可能被篡改而提供不可靠的数据，对抗性传感器可能会将错误的的数据引入到系统中，传感器的数据也可能受到欺骗或伪造。此外，人们也有意伪装自己进入智能城市系统，导致错误和身份验证失败。因此，应该使用智能的设施来验证数据来源，并在可能的情况下将其归属为特定的用户。本次报告将会介绍最近的研究，用户与移动平台交互建模，从而验证收集到的智能城市技术将要用的数据并。本次报告还将讨论未来的研究方向：用这种方法收集车载系统，RFID标记数据，和其他潜在数据，这些数据将为智能设施的建设提供支持。



**JAMES WEN**  
*Executive Technology Adviser, Chief Solution Architect, IBM*

In his role at IBM's Great China Group, James WEN is the chief architect of the Smarter City solution and the executive technology adviser for the public sector. Wen possesses considerable industry experiences in private and government sectors. Since 1998 he has been traveling frequently between the U.S. and China, working with IBM clients on various complex projects. He is widely recognized as a subject matter expert on China's public sector, industry, and government. In addition, Wen is a guest professor at the China Business Executive Academy in Dalian and at the China Executive Leadership Academy in Shanghai. He is also a visiting professor at the Beijing Institute of Technology.

JAMES WEN  
IBM执行技术顾问，首席设计师

James Wen来自于IBM中国组，他是智慧城市解决方案的首席架构师和公共部门的执行技术顾问。Wen先生在私营部门和政府工业中具有丰富的行业经验。1998年以来，他在美国IBM工作，经常往返于中国和美国，与IBM的客户共同解决各种复杂的项目。他是公共部门和政府行业中公认的专家。此外，Wen先生是大连中共企业管理学院和上海中国行政领导学院的客座教授，还是北京理工大学的访问学者。



**EMILE YIN**  
*Vice President, Alcatel-Lucent Shanghai Bell Co. Ltd.*

Emile YIN has deep roots in Shanghai Bell, a flagship company of Alcatel-Lucent in China, holding various positions in the technology domain since 1985. In addition to his role as vice president, he is the head of the strategy development department, responsible for corporate strategy; technology and network strategy; standardization; and venture capital. In addition, he is currently the member of the Science & Technology Committee of Telecommunications in MIIT of P.R. China, director member of the second CCSA Council, and a member of CCSA Technology Management Committee; and director member of the 8th, 9th and 10th councils of SCIA. Yin, a native of Jiangsu Province of P.R. China, graduated from Nanjing Institute of Posts and Telecommunications (now Nanjing University of Posts and Telecommunications) with a bachelor's degree in telecommunication engineering, and worked there as a tutor.

EMILE YIN  
上海贝尔 Alcatel-Lucent有限公司 副总裁

Yin先生与上海贝尔公司具有很深的渊源，从1985年起就在公司的技术领域中就公司的技术领域拥有不同的职位，贝尔公司是Alcatel-Lucent在中国的旗舰分公司。现在，他是上海贝尔公司的副总裁，战略发展部的负责人，负责公司战略、技术和网络战略、标准化和风险投资。此外，他现在是中国工信部电信科学技术委员会成员，第二届CCSA理事会CCSA技术管理委员会主要成员，第八届、第九届和第十届SCIA委员会主要成员。Yin先生出生于1962年4月16日，中国江苏省，具有高级工程师职称，于1982年7月毕业于南京邮电学院（现南京邮电大学），获得通信工程学士学位，并在那里担任助教。





### JIMMY H. TRAN, PH.D.

*Program Manager II, China Energy Group, Lawrence Berkeley National Laboratory*

Jimmy H. TRAN is a Program Manager II for the China Energy Group at the Lawrence Berkeley National Laboratory. He oversees operations for the U.S. Department of Energy (DOE) U.S.-China Clean Energy Research Center—Building Energy Efficiency (CERC-BEE) program, and supports market and energy policy analysis and energy end-use modeling. Prior to joining LBNL, Tran was the director of project development for a consulting nonprofit that originated and developed carbon assets for international compliance and voluntary carbon markets. He

led a team that pioneered new methodologies and approaches for greenhouse gas accounting from residential demand-side energy efficiency projects. He has held consulting and research positions at the World Bank, US EPA, Harvard University, and Marine Biological Laboratory. Tran received a Bachelor of Science and triple major in Finance, Biology, and Environmental Resource Management from Pennsylvania State University, and a Ph.D. in Environmental Science, Policy and Management from the University of California, Berkeley. He studied Mandarin at the Cornell-Peking University full-immersion FALCON program.

陈吉庆博士  
伯克利劳伦斯国家实验室中国能源项目组, 项目经理 II

陈吉庆博士是中国能源协会的Lawrence Berkeley国际实验室的程序二级项目经理。他负责监管美国和中国项目的运作：美国能源部门（DOE）--中国清洁能源研究中心（建立能源效率项目（CERC-BEE））。他还支持了市场与能源政策分析以及能源最终使用的模型。在加入LBNL之前，Tran博士曾是一个非盈利组织项目发展的负责人，该部门是一个致力于碳资产的国际指导和志愿能源市场。他曾领导一个团队，该团队倡导新方法和新途径来解决温室气体的考虑到居住地需求方面的能源效率项目。他也在美国World Bank, US EPA, 哈佛大学以及Marine Biologica实验室等地担任咨询顾问和研究职位。Tran在美国宾夕法尼亚州大学获得理学学士学位和经济、生物和环境资源管理学士学位。他在美国加利福尼亚大学伯克利学院获得了环境科学、政策与管理博士学位。他在康奈尔大学和北京大学全面渗透FALCON项目中学习了普通话。



### JUNGUO LIU, PH.D.

*Professor, Beijing Forestry University*

Junguo LIU's main research interests include hydrology and water resources, ecosystem services and management, coupled ecological and social systems, and water-food-energy nexus. Liu is the author of over 70 peer-reviewed papers, including articles in *Science*, *Nature*, and *PNAS*. His articles have been cited for over 1,200 times. He serves as an editor-in-chief of the *Journal of Water and Climate Change*. He is one of seven target leaders of the Decade Program 2013-2022 of the International Association of Hydrologic Sciences (IAHS). He is also the president of the Society for Ecological Restoration in Beijing. He has research experience in China, Austria, the Netherlands, Switzerland, Germany, the U.K., and

the U.S., among others. He is an expert consultant for many international organizations and NGOs, including UN-Water, UNEP, and the Water Footprint Network. He is a senior visiting research fellow at the University of Leeds in Leeds, U.K.; a visiting scientist at the International Institute for Applied Systems Analysis (IIASA, Laxenburg, Austria); and the Potsdam Institute for Climate Impact Research in Potsdam, Germany. He has research experience in China, Austria, the Netherlands, Switzerland, Germany, the U.K., the U.S., and Canada, among others.

### CHINA'S RISING HYDROPOWER DEMAND CHALLENGES WATER SECTOR

**ABSTRACT:** Demand for hydropower is increasing, yet the water footprints (WFs) of reservoirs and hydropower, and their contributions to water scarcity, are poorly understood. Here, we calculate reservoir WFs (freshwater that evaporates from reservoirs) and hydropower WFs (the WF of hydroelectricity) in China based on data from 875 representative reservoirs (209 with power plants). In 2010, the reservoir WF totaled 27.9  $\text{Å} - 109 \text{ m}^3$  (Gm3), or 22% of China's total water consumption. Ignoring the reservoir WF seriously underestimates human water appropriation. The reservoir WF associated with industrial, domestic, and agricultural WFs caused water scarcity in six of the 10 major Chinese river basins from 2 to 12 months annually. The hydropower WF was 6.6  $\text{Gm}^3 \text{ yr}^{-1}$  or 3.6  $\text{m}^3$  of water to produce a GJ (109 J) of electricity. Hydropower is a water-intensive energy carrier. As a response to global climate change, the Chinese government has promoted a further increase in hydropower energy by 70% by 2020 compared to 2012. This energy policy imposes pressure on available freshwater resources and increases water scarcity. The water-energy nexus requires strategic and coordinated implementations of hydropower development among geographical regions, as well as trade-off analysis between rising energy demand and water use sustainability.

刘俊国博士  
北京林业大学水文学和水资源教授

刘博士现为北京林业大学教授，国际应用系统分析研究所客座研究员，国际期刊“Hydrology and Earth System Sciences”编辑。他的主要研究兴趣包括水文学和水资源、生态系统服务管理，湿地研究、水资源-食物之间的关系，以及气候变化对于生态系统的影响。刘博士发表了20多篇同行评议论文，其中部分发表在国际顶级期刊上。刘博士有关中国水足迹的研究引起了全球同领域科学家的广泛关注，联合国环境署(UNEP)、国际水足迹研究网络(WFN)、斯德哥尔摩国际水资源研究所(SIWI)、世界自然基金会(WWF)等机构多次邀请刘教授前往瑞典、荷兰、比利时等国作特邀报告。他曾获欧洲地理协会杰出青年科学家奖，并在2011年获得ProSPER.Net-Scopus青年科学家奖。

刘博士1999年毕业于华北水利水电学院;2002年获联合国教科文组织国际水利环境工程学院(UNESCO-IHE, 荷兰)水与环境资源管理硕士学位;2007年获瑞士联邦理工学院(ETHZ)环境科学博士学位。他还在荷兰、瑞士、奥地利、美国、德国和埃及有过工作及教学经历。

中国不断增长的水利需求挑战中国水利部门

水利需求在增加，但是对水库、水电站的水足迹（WFs）和其对水资源短缺的影响了解甚少。在这里，基于中国875个代表性水库（209个发电站）的数据，我们计算出水库的水足迹（即水库的淡水蒸发）和水电站水足迹（即水电的足迹）。在2010年，水库水足迹的总额为27.9  $\text{Å} - 109 \text{ m}^3$  (Gm3)，或者说是中国总用水量的22%。忽略水库水足迹这种行为严重低估了人类对水资源的需求。与工业、民用、农业相关的水库水足迹引起了中国十大流域中的六个在每年2-12个月的水资源短缺。产生一个GJ（109 J）水力的水利足迹为6.6  $\text{Gm}^3 \text{ yr}^{-1}$  或者3.6  $\text{m}^3$ 。水电是一个密集能量载体，作为对全球气候变化的响应，相比于2012年，2020年中国政府将进一步推动水电能源增加到70%。该能源政策对可利用的淡水资源施加了压力，加剧了水资源的紧缺。水能源需要水电开发地理区域之间的战略协调，以及能源需求不断上升和水资源利用可持续发展之间的权衡分析。



### DEVINDER MAHAJAN, PH.D.

*Professor and Co-Director, Chemical and Molecular Engineering, Stony Brook University, New York*

Devinder MAHAJAN received his Ph.D. from the University of British Columbia, Canada and completed his post-doctoral training at Brookhaven (N.Y.) National Laboratory. In addition to his roles at Stony Brook University, he is a Jefferson Science Fellow with the United States Department of State. His vision is to monitor energy policies and develop and implement energy-efficient technologies for human welfare by addressing energy, sustainability, and climate change issues. His research interests are aligned with the vision to develop low-carbon

technologies that operate in skid-mounted units for production of fuels for cooking to minimize atmospheric emission of black carbon, transportation, and power production. His Low-Carbon Energy Management (L-CEM) research laboratories are located in the Advanced Energy Research & Technology Center, a New York State-funded \$45 million facility at the Stony Brook University R&D Park. Some key ongoing projects in the group include control and utilization of fugitive gases under the U.S.-China EcoPartnership program administered jointly by the U.S. Department of State and the National Development Reform Commission, China. He has published over 230 papers and conference abstracts, delivered over 90 lectures, edited eight special journal volumes, and holds 15 patents on energy topics.

#### SMART CITIES: CHALLENGES AND SOLUTIONS TO DEVELOPMENT OF LOW-CARBON TECHNOLOGIES

**ABSTRACT:** The global population is projected to increase from over 7 billion now to 9 billion in 2040. This projected increase will further strain the planet's boundaries. Though advanced technologies such as 3-D seismic continue to help locate resources such as oil and gas and increase food yield per hectare, their increased use must be weighed against the continued rise of atmospheric CO<sub>2</sub> and the negative impact of increased use of fertilizers. This session, devoted to smart cities, is timely to address challenges and potential solutions. Our Low-Carbon Energy Management (L-CEM) laboratories at the Advanced Energy Research & Technology Center (AERTC) are set up to develop advanced energy technologies. We are working on the "Farm-to-Plate" concept that we will introduce in this talk as an example of the Food, Energy, Water (FEW) nexus. One issue that binds FEW topics is the waste that is generated and amounts to more than one-third in all three cases: 1) wasted food that could be recycled to renewable fuels; 2) low-temperature (below 100°C) waste heat from industrial processes that could be used for residential buildings; and 3) wastewater recycling that is ripe for harnessing energy (CH<sub>4</sub>) in the process. By addressing all three topics, we envision that the harnessed energy by recycling is more than sufficient to accommodate the projected population increase while maintaining the much-talked-about 2-degree (2-D) scenario to stabilize atmospheric CO<sub>2</sub>.

Devinder MAHAJAN 博士

SBU/BNL 联合研究人员, 石溪大学化学与分子工程学院教授和联合院长

Mahajan 博士同时就职于石溪大学和布鲁克海文国家实验室, 并任美国国家科学基金会生物能源研发中心负责人等职位。Mahajan 博士在加拿大英属哥伦比亚大学获得博士学位, 研究方向主要为能源问题。Mahajan 博士现为 Journal of Renewable and Sustainable Energy 副主编, Board of International Journal of Oil, Gas and Coal Technology 和 The Open Petroleum Journal 的编委会成员。他发表了超过 230 篇包括专著、专利和摘要在内的出版物, 并在国内外做了 90 余次有关清洁能源问题的学术报告。他最近获得的荣誉包括俄罗斯自然科学院成员, RANS 冠鹰荣誉奖章获得者, 美国能源部杰出导师奖, 意大利罗马第一大学访问教授、意大利政府奖, 北京上海低碳宣传大学代表团成员, 日本神奈川全球环境战略研究院访问学者, 泰国亚洲理工研究院富布赖特专家奖。他的愿景是为人类福祉开发可以商业化的技术, 以及向学生培训下一代可再生能源的技术。Mahajan 博士始终关注能源相关的问题——油气以及可再生能源。他的第一项任务是回顾国内外天然气市场 (传统的和新型的, 包括页岩气), 研究它对于未来能源结构的影响, 了解去耦油气价格。他还与印度能源集团一起工作, 来开拓美国和印度之间的合作。他还在作为美国国务院的代表加入国际能源机构能源研究技术部门。

智能城市: 发展低碳技术面临的挑战和解决方案

到 2040 年全球人口将从 70 亿增加到 90 亿。这一增长预测将挑战地球极限。虽然先进的技术如三维地震模型持续着帮助人们寻找油气资源、增加粮食产量, 但是这些技术的使用必须平衡二氧化碳的增长和化肥带来的负面影响。此次会议的主题致力于智能城市应对挑战和可能的解决方案。我们的低碳能源管理实验室设立在先进能源研究与技术中心。本研究得到纽约州 4500 万的经费投入, 用以建立并发展先进的能源技术。我们正致力于“农场板块”的概念研究, 并将这个报告作为“粮食、能源、水关系”项目的案例。“粮食、能源、水”关系中的浪费问题是主要的, 而且在所有的数量中超过三分之一: 1) 粮食浪费——循环使用成为可再生燃料, 2) 工业中的低温浪费 (低于 100°C) ——用于住宅余热, 3) 废水循环利用——生产能源 (CH<sub>4</sub>)。在解决以上三个问题的过程中, 我们设想能源的回收利用足以容纳人口增长, 并稳定大气中二氧化碳的含量。



**VINCENT TIDWELL, PH.D.**

*Distinguished Member of the Technical Staff, Sandia National Laboratories*

Vincent TIDWELL has more than 20 years of experience conducting and managing research on basic and applied projects in water resource management, nuclear and hazardous waste storage/remediation, and collaborative modeling. Currently, he is leading several studies that address issues concerning the energy-water nexus, including support for long-term transmission planning in the Western, Texas, and Eastern Interconnections; climate impacts on energy-water relations; and international energy-water pinch points. Tidwell was a lead author for the

Land-Water-Energy cross-sectorial chapter for the 2014 National Climate Assessment.

**THE ENERGY-WATER NEXUS AND ITS IMPLICATIONS FOR MEGACITIES IN THE ASIA PACIFIC REGION**

**ABSTRACT:** Rapid growth of the world's urban population and the emergence of a growing number of megacities bring into question the sustainable provisioning of basic resources. Planning for this growth is complicated by the complex interaction between resources; specifically, the nexus between energy and water. Energy production represents one of the fastest-growing demands on limited water supplies, including water for electric power generation, fuel extraction, and fuels processing. Alternatively, cities are finding it difficult to meet growing water demands often having to rely on distant water supplies and/or alternative water sources (e.g., seawater, wastewater) that increasingly require more energy to deliver and treat. A first step toward understanding this nexus and its potential vulnerabilities is to quantify water use for energy and the energy use for water. Efforts are currently being made to map such measures of the energy-water nexus at a regional watershed basis for members of the Asia-Pacific Economic Cooperation (22 nations circling the Pacific Ocean). These measures are put into context by linking existing energy and water use to known areas of water stress as well as areas of projected rapid population/economic growth. A particular focus of this presentation will be the intersection of energy, water, and megacities.

Vincent Tidwell博士  
桑迪亚国家实验室杰出研究员

Vincent博士在水资源管理、核废物及危险废物存储修复、协作模型领域开展及管理基本及应用项目上拥有20多年的丰富经验。目前他主持着几项关于能源与水资源之间关系的研究，包括对西部与德克萨斯州之间长期输电规划的支持、碳捕获和封存对水资源利用的影响、大湖流域的区域研究、以及美国能源部政策和太阳能计划的支持。Tidwell博士还是2014年国家气候评估一书中陆地-水-能源章节的主要作者。

亚太地区的特大城市的能源和水之间的关系  
世界城市人口的快速增长，越来越多特大城市出现了基本资源可持续供应的问题。规划这种增长是复杂的——资源之间的相互作用是复杂的，特别是能源和水之间的关系。能源生产依赖于水供应，比如，发电、燃料提取和燃料供应。另外，城市的发展中水的供应很难满足需求，必须依赖于远水供应和替代水资源（如海水、废水），远水和废水需要更多的能量来分离和处理。理解这种关系并发现其潜在漏洞的第一步是定量用于能源的水和用于水中的能源。目前正努力应用于亚太经济合作区域的水能关系研究上。这些措施是将现有的水、能应用于已知的区域，特别是经济和人口快速增长的区域。本次报告将重点介绍能源、水和特大城市之间的关系。



**LIJIN ZHONG, PH.D.**

*Senior Associate and China Water Lead, World Resources Institute*

Lijin ZHONG is heading the water team in WRI's China Office to carry out the Aqueduct-China water risk mapping, water-energy nexus (in urban water sector and energy sector) and water quality management projects in China. Prior to joining WRI, Zhong served as a post-doc in Tsinghua University as well as deputy director of the Water Policy Research Center of the Tsinghua University School of Environment. She has more than 10 years working experience in the fields of environmental engineering, environmental planning and management,

environmental impact assessment, and environmental policy. She has been focused on water sectors and familiar with China's water policies and institutional system since she started her Ph.D. study in 2003. She has undertaken many environmental policy consulting services for various ministries of China (such as the Ministry of Construction, the Ministry of Environmental Protection, the National Development and Reform Commission and etc.) and the international organizations (such as the World Bank and the Asian Development Bank). Zhong has a cross-disciplinary education background with B.S. and M.S. of environmental engineering at Tsinghua University and Ph.D. of environmental policy at Wageningen University (the Netherlands).

钟丽锦博士  
世界资源研究所（WRI）北京办公室高级研究员和中国水项目负责人

钟丽锦博士负责领导中国水项目组开展实施中国水能关系、水质管理等水项目。在加入世界资源研究之前，是清华大学博士后，同时担任清华大学环境系水业政策研究中心副主任。她在环境工程、环境规划与管理、环境影响评价、以及环境政策和体制改革方面已经有十余年工作经验。自2003年开始博士研究以来，她主要从事中国水业政策和改革的相关研究，为中国有关部门（包括住宅与城乡建设部、环保部、国家发展和改革委员会等）和国际组织（如世界银行和亚洲开发银行）提供环境政策研究支持。钟丽锦博士拥有交叉学科的教育背景，她在清华大学获得了环境工程学士学位和硕士学位，在荷兰瓦赫宁根大学获得环境政策博士学位。



## **PAUL ANID, PH.D.**

*Vice President, Water Quality Management Services, HDR*

Paul ANID has 30 years of experience managing U.S.-based and World Bank-funded projects in environmental engineering and management, including modeling the fate and transport of point and non-point source pollutants in natural water systems, the assessment of water quality criteria, the application of conventional and emerging approaches for assessing contaminated sediments, and the development of “expert systems” and environmental decision support models. His work extended from the New York-New Jersey area to Africa (Lake Victoria), South America, Central America, the Middle East, and Eastern Europe. Prior to joining the consulting world in 1994, Anid held the position of Environment Officer at the United Nations. This was following a visiting professor position at the University of Michigan, Ann Arbor, where he conducted research programs and authored technical papers on pollution abatement of toxics in surface and subsurface waters and sediments focusing mainly on the bioremediation of chlorinated xenobiotic compounds. More recently, Anid has pioneered the development and implementation of near-shore and off-shore forecasting systems linked to marine real-time environmental monitoring data acquisition buoys in the waters of the Arabian Gulf serving the public, local governments, developers, the gas and oil industry, and utilities. Anid is a recipient of a Fulbright award and holds undergraduate and graduate degrees in agriculture and environmental engineering from McGill University, Canada; Institute Pasteur, Paris; and FSA of Gembloux in Belgium.

保罗·阿尼特博士

HDR INC. 公司水质管理系统副总裁

PAUL ANID 在环境工程和管理领域拥有三十年管理美国和世界银行资助的项目的经验，包含在模拟自然水系统中点源以及非点污染源的迁移转化过程，制定水质质量标准，应用传统以及新兴的评估污染沉积物，以及研究“专家系统”和环境决策支持模型。他的研究区域包括纽约-新泽西，非洲（维多利亚湖），南美洲，中美洲，中东及东欧地区。ANID 博士在密歇根大学安娜堡分校担任客座教授，期间进行研究项目并发表了关于位于表面和地下水及沉积物有毒污染物的学术论文，论文主要方向为氯化生物质混合物的生物治理。之后 ANID 博士在联合国担任环境官员，1994 年转入咨询界。近些年，ANID 开辟了近岸和远岸预报系统的发展和调用。该系统连接于海洋实时环境监测数据获得航标位于阿拉伯湾，并服务于公众、当地政府、开发者、天然气石油工业以及公用事业。Anid 博士曾获得福布莱特奖学金，获加拿大麦吉尔大学、巴黎巴斯德研究院和比利时让布鲁农业大学学士及硕士学位。



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Beijing, China

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