Global Cornell

Mario Einaudi
CENTER FOR
INTERNATIONAL STUDIES

Global Hubs Salon Series

Salon on Sustainable Infrastructure and Energy

Monday, May 16, 2022 | 8:15am – 9:30am EST

Facilitators

Wendy W. Wolford, Cornell University

Rachel Beatty Riedl, Cornell University

Hosts

Lynden Archer, Cornell University

Catalina Spataru, University College London

Erastus Mwanaumo, University of Zambia

John Dunn, Universidad San Francisco de Quito

Tao Ren, Shanghai Jiao Tong University

Abhiroop Chowdhury, O.P. Jindal Global University

Katherine McComas, Cornell University

Chye Kiang Heng, National University of Singapore

Christos Markides, Imperial College London

Davis Bookhart, The Hong Kong University of Science and Technology

Daniel Nukpezah, University of Ghana

Oliver Probst, Tecnológico de Monterrey

Guoqiang Shen, Zhejiang University

Pet Pakchotanon, Chulalongkorn University

Mildred Warner, Cornell University

Lynden Archer

Joseph Silbert Dean of Engineering and James A. Friend Family Distinguished Professor of Engineering, College of Engineering; co-Chair of the Sustainable Cornell Council (SCC), Cornell University

Lynden Archer is the Joseph Silbert Dean of Engineering, co-Chair of the Sustainable Cornell Council (SCC), and the James A. Friend Family Distinguished Professor of Engineering. His expertise is in polymer materials science and fluid dynamics at liquid-solid interfaces. His research has found application in energy storage systems that utilize earth-abundant materials for low-cost, but long-duration storage of electric power from renewable resources. He is a founder of Sionic Energy, a fellow of the American Physical Society, and a member of the National Academy of Engineering. As co-Chair of the SCC he focuses on technology innovation, education, policy, and informatics approaches that enable Cornell to meet its Climate Action Plan goals, while using the campus as a Living Laboratory for advancing scalable Climate solutions.

Abhiroop Chowdhury

Associate Professor and Joint Director, Environmental Law and Science Advocacy Forum, Jindal School of Environment and Sustainability (JSES), O.P. Jindal Global University

Dr. Chowdhury's primary research domains are climate change ecology, coastal conservation planning, mangrove restoration, traditional knowledge, and environmental geochemistry. In the last thirteen years, as a conservation enthusiast, he has explored different biodiversity-rich areas and mine sites across India. Chowdhury has published more than twenty articles in indexed, peer-reviewed journals. He was awarded with 'Inder Mohan Thapar best researcher award' in 2016 by the Indian Institute of Technology (IIT), for his research contributions in reputed journals.

Davis Bookhart

Director, Sustainability/ Net-Zero Office and Adjunct Associate Professor, Division of Environment and Sustainability, Hong Kong University of Science and Technology

Davis Bookhart is the founding director of HKUST's Sustainability / Net-Zero Office, which is responsible for implementing the university's comprehensive sustainability master plan across operations, research, and academics. The Office houses the Life-Cycle Lab, the Sustainable Smart Campus as a Living Lab initiative, and the Jockey Club Sustainable Campus Consumer Programme, which extends to all eight universities in the HK Sustainable campus Consortium. Bookhart also teaches classes on sustainability management and sustainability thinking, both of which develop skills and mental frameworks for solving complex 21st century problems.

Bookhart came to HKUST after eight years as the director of the Office of Sustainability at Johns Hopkins University. As founding director, Bookhart built the office to focus on integrating students and faculty into campus sustainability projects while embedding sustainability into campus operations, policies, and procedures. Before joining Johns Hopkins, Bookhart was senior project director of the public interest group Consumer Energy Council of America. In 2008, Bookhart was appointed by Baltimore Mayor Sheila

Dixon to the city's first Sustainability Commission. Bookhart holds a master's degree in International Affairs from the Fletcher School of Law and Diplomacy at Tufts University and a master's of American Literature from the University of North Carolina at Wilmington.

John Dunn Insua

Professor and Deputy Director of the CADI Editorial Project, College of Architecture and Interior Design (CADI), Universidad San Francisco de Quito (USFQ)

John Dunn is a full-time professor at the USFQ School of Architecture and Interior Design. He is the Former Director (2019) and Coordinator (2016-2018) of the USFQ International Workshop of Architecture in the Galapagos. He has a Masters in Community Planning from Auburn University (2015) and studied to be an architect at San Francisco de Quito University USFQ (2001).

He formerly served as advisor to the Institute of Planning and Urbanism (IMPU) and the Public Company for Mobility and Public Works (EPMMOP), both attached to the City Government of the Metropolitan District of Quito. His professional practice as an architect includes projects such as the Samanes Park in Guayaquil, the Guayaquil Bus Terminal, and the Albert Paulsen Acting Studio. He writes for the editorial section of the newspaper "El Universo". He has collaborated with several national digital media in publications related to urban issues.

Chye Kiang Heng

Provost's Professor, Deputy Dean, and Director, Centre for Sustainable Asian Cities, College of Design and Engineering, National University of Singapore

Chye Kiang Heng, PhD (UC Berkeley) is the Provost's Professor and Deputy Dean at the College of Design and Engineering, National University of Singapore. He was the former Dean of the School of Design and Environment (2007 to 2016) and the Head of its Department of Architecture prior to his deanship. He teaches and researches urban history, sustainable urban design and planning, and publishes widely in these areas. Professor Heng has served on the boards of government agencies including the URA, HDB, CLC, JTC, BCA and advises academic institutions like Singapore Institute of Technology, Nanyang Academy of Fine Arts, Chinese University of Hong Kong and Hong Kong University. He is currently appointed Honorary Professor at CUHK and has been appointed Visiting Professor at Hanyang University (Korea), Keio University (Japan), Southeast University, Chang'an University, Xiamen University and Tongji University (China) and EAVT (France). He has served as a jury member in numerous international design competitions locally and overseas and on several editorial boards of international journals. He is also planning consultant to numerous award-winning urban planning and design projects in Asia. Some of the awards include Architecture MasterPrize 2020 (urban planning) and Cityscape Global Master Plan Project 2018. His books include *Singapore Chronicles: Urban Planning* (2017), *50 Years of Urban Planning in Singapore* (2016); *Re-Framing Urban Space: Urban Design for Emerging Hybrid and High-Density Conditions* (2015), *On Asian Streets and Public Space* (2010), *A Digital Reconstruction of Tang Chang'an* (2006) and *Cities of Aristocrats and Bureaucrats: The Development of Medieval Chinese Cityscapes* (1999).

Christos Markides

Professor of Clean Energy Technologies and Head of the Clean Energy Processes (CEP) Laboratory, Department of Chemical Engineering, Imperial College London

Christos Markides is Professor of Clean Energy Technologies in the Department of Chemical Engineering of Imperial College London, where he heads the Clean Energy Processes (CEP) Laboratory and leads the Energy and Environmental Engineering research theme. He is also the theme lead of the cross-faculty Energy Futures Lab's Energy Infrastructure research theme. He is, amongst other, the Editor-in-Chief of journal Applied Thermal Engineering, on the Editorial Board of the UK National Heat Transfer Committee, the Scientific Board of the UK Energy Storage SUPERGEN Hub and is a member of the Global Energy Association and the International Energy Storage Alliance.

He specializes in applied thermodynamics, fluid flow and heat transfer processes as applied to high-performance devices, technologies and systems for thermal-energy recovery, utilization, conversion or storage. His research interests include heating, cooling and power, with a particular focus on solar energy and waste heat applications.

To date, he has written close to 300 journal and more than 300 conference articles across this range of topics. Highlights include Applied Energy's "Most highly cited original paper" award, which he won twice (2017, 2018), IMechE's Donald Julius Groen outstanding paper prize (2016), IChemE's Global award for "Best Research Project" (2018), the Engineers without Borders 'Chill Challenge' award in 2020, and Imperial President Awards for Teaching in 2016 and Research Excellence in 2017.

Katherine McComas

Professor, Department of Communication, College of Agricultural and Life Sciences; Vice Provost for Engagement and Land-Grant Affairs, Cornell University

Katherine McComas is a Professor of the Department of Communication at Cornell University, where she specializes in risk, science, and environmental communication. She is also Cornell University's Vice Provost for Engagement and Land-Grant Affairs. Dr. McComas' research and teaching focus on understanding motivations and barriers surrounding communication about scientific and environmental risk issues. Current research projects include understanding public acceptance of new and renewable energy technologies, including deep geothermal. She is the author or coauthor of 80+ refereed journal articles and two books, including co-editing the *SAGE Handbook of Risk Communication*. Her work has been supported by the National Science Foundation (NSF), National Parks Service, U.S. Environmental Protection Agency, U.S. Food and Drug Administration (FDA), and U.S. Department of Agriculture (USDA), among others. From 2008-2013, she was the Societal and Ethical Issues (SEI) Coordinator for the NSF-supported National Nanotechnology Infrastructure Network, for which she oversaw the coordination of SEI research and educational activities for the 14-member network. She served on the FDA's Transmissible Spongiform Encephelopathies Advisory Committee and its Blood Products Advisory Committee. From 2011-2019, she served as Area Editor for Risk Communication for the journal *Risk*

Analysis; she is a Fellow for the Society for Risk Analysis (SRA) and served as SRA's President 2018-2019. In Fall 2017, she was a Visiting Professor at King's College London, UK in the Department of Geography.

Erastus M Mwanaumo

Lecturer, Department of Civil and Environmental Engineering, School of Engineering, University of Zambia

Erastus Mwanaumo is a Rated Researcher with the National Research Foundation (NRF) and a post-doctoral fellowship recipient. A holder of a PhD in Engineering Management, with several certificates *inter alia* Mini Grid Solar; Solar Roof Tops; Occupation Health, Safety, and Environment. He is an internationally recognised expert with the World Bank, European Union, NTU Strategic Development Consultants of Denmark, the Foreign, Commonwealth and Development Office (Formerly DFID), AfDB, and AECOM with whom he consults. He is also one of the university's representatives to the African Regional Intellectual Property Organization (ARIPO).

Mwanaumo has drafted several international and national policy documents and codes of practice among them the technical documents for Rural Roads Climate Change Resilience and Mitigation Measures for the World Bank-funded rural roads project, National Transport Policy for Road Construction Health and Safety for Kenya, National Codes of practice and guidelines in Road Construction Occupational Health and Safety for Kenya and Zambia, and been a team member in developing the National Nuclear Policy and the revised Radiation and protection Act for Zambia. He is a recipient of project funding from the New Partnership for Africa's Development (NEPAD) for a total of US$ 2 million. He is Project Coordinator and PI for a SPREE Intra- Africa Academic Mobility funded by European Union /EACEA (2020 to 2025). Additionally, he is co-investigator on a recently awarded project (in March 2022) by the Knowledge Frontiers: International Interdisciplinary Research 2022 project funded by the British Academy amounting to a total of £200,000.00, and also on a currently running project on assessing water infrastructure in sub-Saharan African cities, funded by Royal British Academy). Further, Mwanaumo was the PI for two research projects funded by AfDB and several World Bank funded projects. He has supervised 10 PhD candidates and over 74 Masters students to completion over his career. He has published over 140 journal articles, book chapters, and in conference proceedings.

Daniel Nukpezah

Senior Research Fellow, Institute for Environment and Sanitation Studies (IESS), University of Ghana

Dan Nukpezah is a Senior Research Fellow with the Institute for Environment and Sanitation Studies (IESS), University of Ghana. His teaching and research interests are in freshwater protection at the catchment scale; environmental governance; ecosystem-based disaster risk assessment and management; large dams' impacts on ecosystems functioning and community livelihoods as well as industrial ecology. He supervises graduate students and also teaches several courses at the graduate level including *Water Resource Management, Environmental Law*, *Sustainability & Industrial Ecology* and *Water Governance for Sustainability*. In addition to his academic work, Dan has consulted for several

organizations including Grid-Arendal, an agency of the Norwegian Ministry of Environment on wastewater treatment and sanitation provisioning in Africa; Institute for Water Education (IHE, Delft, Netherlands), Centre for African Wetlands (CAW, Ghana), Water Resources Commission (WRC) of Ghana and the Ministry of Finance of Ghana. In 2018, he provided expert knowledge pro bono on Water Law and Policy to the World Bank Group's Enabling the Business of Agriculture (EBA) 2019 report.

His recent research interest with colleagues from the University of Liverpool, UK, seeks to investigate the climatic comfort of naturally and mechanically cooled buildings in Ghana. The wider objective of the project is to reduce cooling energy demands and to create buildings that use less energy. The findings of the study can be used to better inform future strategy for cooling tropical buildings. Nukpezah is a strong advocate for the circular economy in Ghana and a steering committee member of the circular economy club, Accra, Ghana.

Pet Techarat Pakchotanon

University Professor, Mining and Petroleum Engineering, Faculty of Engineering, Chulalongkorn University, Thailand

Pet Pakchotanon graduated with a PhD in Environmental Systems Engineering from the University of Regina in Canada with a research grant from the Province of Saskatchewan, Canada. She worked on projects with Environment Canada to predict fine particle emission using remote sensed data. Her publication received an award from the Canadian Society of Remote Sensing. She had been teaching at the Faculty of Environment and Resources Studies at Mahidol University since 2013. She transferred to the Faculty of Engineering at Chulalongklorn University in January 2021 and has been teaching there since then.

Her research is related to the environment and energy. The environmental research includes carbon capture and storage, impacts caused by floating solar panels on fish, reducing carbon and methane emissions through business, and carbon farming. The energy research includes alternative energy development and biogas.

Oliver Probst

Full professor, Energy & Climate Change Group and Science Department; National Director, M.Sc. Program in Engineering Sciences; Coordinator, Concentration on Decarbonization and Clean Energies, School for Engineering and Sciences, Tecnológico de Monterrey, Mexico

Oliver Probst is a full professor of physics and renewable energy at Tecnológico de Monterrey (Mexico) and a wind energy consultant. He also serves as the national director of the M.Sc. program in Engineering Sciences, an umbrella program with activities in Renewable Energy & Sustainable Water Use, Mechatronics & Bioengineering, Telecommunications, and Industrial Engineering. Moreover, he leads the concentration on Decarbonization and Clean Energies, an advanced undergraduate full-semester immersion course designed to work with industry and government to advance a swift decarbonization of the economy. He has been an advisor to over 1,800 MW of operating commercial

wind farms. His consulting expertise includes regulatory analysis, grid connection, offtake analysis, permitting, wind resource assessment and modeling, and energy policy assessment. His research interests also include small wind turbine technology, structural dynamics of wind turbine blades, and aerodynamics, some of which have contributed to the Mexican Center for Innovation in Wind Energy (CEMIE Eólico). Currently, Oliver is mostly focused on the grid integration of renewable energy and the transition to clean energy in general, in support of large-scale climate change mitigation. Oliver Probst is part of Mexico´s National Researchers System (level II), actively collaborates with non-governmental organizations dedicated to the promotion of wind and solar energy, as well as with research and environmental advocacy groups in Mexico and abroad.

Tao Ren

Assistant Dean and Associate Professor, China-UK Low Carbon College, Shanghai Jiao Tong University

Tao Ren's research focuses on thermal radiation, spectroscopy, greenhouse gas remote sensing, and the application of machine learning and big data in the field of radiative transfer. Very recently, he devoted himself to developing high-fidelity combustion diagnostic tools based on spectral thermal imagining with the machine learning approach, and efficient detection of atmospheric greenhouse gases from satellite spectral measurements. He received his Bachelor's degree from Xi'an Jiaotong University in 2008 and a Master's degree from Huazhong University of Science and Technology in 2011. He got his Ph.D. from the University of California, Merced in 2015, and joined Shanghai Jiao Tong University as an Associate professor in 2018.

Rachel Beatty Riedl

Director and John S. Knight Professor of International Studies, Mario Einaudi Center for International Studies; Professor, Department of Government, College of Arts and Sciences, Cornell University

Rachel Beatty Riedl's research interests include institutional development in new democracies, local governance and decentralization, and authoritarian regime legacies in Africa. Her latest book, coauthored with Gwyneth McClendon, is *From Pews to Politics: Religious Sermons and Political Participation in Africa* (Cambridge University Press, 2019). Her previous book, *Authoritarian Origins of Democratic Party Systems in Africa* (Cambridge University Press, 2014), won the African Politics Best Book award. Riedl also cohosts the Ufahamu Africa podcast about life and politics on the African continent. Most recently, she was a fellow at the Nantes Institute for Advanced Study and a Fulbright scholar. Previously, she was director of the Program of African Studies and an associate professor in the Department of Political Science at Northwestern University.

Guoqiang Shen

Endowed Professor and Chair, Department of Regional and City Planning, College of Civil Engineering and Architecture, Zhejiang University

Guoqiang Shen is an educator, scholar, and practitioner in Architecture, Urban Planning, and Transportation. His teaching and research interests focus on urban design and physical planning, urban transportation planning, urban economics and regional science, risk and resiliency analysis, eco-system services and landscape planning, real estate development, spatial analysis and urban science, and comparative international issues in these areas.

Dr. Shen's notable scholarly contributions in research and creative activities include: (1) an algebraic method to linearizing the NP-hard 0-1 quadratic term in mixed integer optimization; (2) a cutting edge global-local multi-commodity, multi-mode, and spatial-temporal scalable freight flow model, which is implemented to study local business, global trade, and international relations; (3) a smart logistic platform for small goods delivery any-where any-time by any-one based on the sharing economy; (4) a good urban risk index considering single or multi-hazards for any-place in the world; (5) a sky-villa new housing system combining features of single-family villas with high-rise apartments in prefabrication for quicker construction, lower housing cost, higher land-use efficiency, slower urban sprawl, and better livability. Dr. Shen's professional practice is largely realized through his creative activities in over 50 international, national, and local urban design and planning projects, many of which won design competitions and recognitions at various levels.

Catalina Spataru

Professor in Global Energy and Resources, Director, UCL Energy Institute, and Founder and Head of UCL Islands Laboratory, The Bartlett School of Environment, Energy and Resources, Faculty of the Built Environment, University College London, UK.

Catalina Spataru's expertise is in the field of the global energy and resource nexus, from theoretical investigations to implementation of research and practice, to support of policymakers and the sustainability agenda. She has been the principal or co-investigator of more than 24 research or industry funded projects; developed several models; published over 150 papers, technical reports, and policy documents; written two books and edited three; delivered several talks and interviewed for media; and built up collaboration with academic and industrial partners across 4 continents and 27 countries.

Her research focuses on solving complex problems at the intersection of blue and green economies. She leads the development of several integrated toolboxes – using research instruments, big data, modelling techniques, foresight, and stakeholder engagement – which is processed based on a nexus-informed approach resulting in actionable insights. One such example is the DR3 integrated toolbox part of the Re-Energize DR3 research funded by Belmont, which she is currently leading. She contends building robust solutions based on interdisciplinary science is how jobs of the future will be created.

She is the Founder and Head of UCL Islands Research Lab since 2018 focusing on innovative sustainable solutions for island nations, coastal areas and surroundings, and how green and blue economy models could help improve human wellbeing and social equity, while reducing environmental risks. She was appointed as Director of UCL Energy Institute in January 2022.

Mildred Warner

Professor, Departments of City and Regional Planning and Global Development, Cornell University

Mildred Warner is a Professor in the Department of City and Regional Planning and the Department of Global Development at Cornell University where her work focuses primarily on local government service delivery, economic development, environmental sustainability, age-friendly planning and public health. Dr. Warner's Local Government Restructuring Lab explores the impact of privatization and devolution on local government and the role of human services as part of the social infrastructure for economic development. Her research explores the challenges of privatization, preemption and fiscal decentralization on local governments. Her work on age-friendly planning explores new community development models for addressing human services which link the needs of children and seniors to promote public health. Her work on local government economic development policy focuses also on the potential linkages to environmental sustainability action.

Warner has a strong extension orientation and consults widely with local governments, policy makers and union leaders on local government reform. She has conducted collaborative work in Canada, Italy, Spain, the UK, The Netherlands, Israel, New Zealand, Australia, Ecuador, Honduras, Chile, Bulgaria, Slovakia, China and Singapore. Prior to her professorship at Cornell, she served as a program officer with the Ford Foundation in NYC and as Associate Director of Cornell's Community and Rural Development Institute.

DWarner has a Ph.D. in Development Sociology, a Masters in Agricultural Economics from Cornell University and a BA in History from Oberlin College. Copies of recent articles and research can be found at her website (www.mildredwarner.org) and at the Local Government Restructuring Lab.

Wendy W. Wolford

Vice Provost for International Affairs; Robert A. and Ruth E. Polson Professor, Department of Global Development, College of Agriculture and Life Sciences, Cornell University

As vice provost, Wendy Wolford is responsible for strengthening the university's global connections and worldwide interdisciplinary initiatives. Her research focuses on international development, land use and distribution, social mobilization, and agrarian societies with a regional concentration in Latin America—particularly Brazil. For 20 years, she has worked with one of the most important grassroots social movements in Latin American history: the *Movimento dos Trabalhadores Rurais Sem Terra* (MST), or the Movement of Rural Landless Workers. Part of Cornell's faculty since 2010, Wolford served as the faculty director of economic development at the Cornell Atkinson Center for Sustainability, where she co-led CARE-Cornell and Oxfam-Cornell collaborations.