


Presented By:
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UCI Samueli
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Department of
Civil and Environmental
Engineering

Environmental Engineering *Seminar*

Wednesday, September 7th
Engineering Hall 2430 (Colloquia Room)
3:00PM - 4:00PM

***What Would Thomas Malthus Tell us In The 21st Century?
Experiences In The Water-Energy-Food Nexus From An
International Development Perspective***

Ongoing research focused on analyzing the synergies and tradeoffs posed by the water-energy-food nexus is presented. This covers the need for quantitative tools (e.g., data, models) to support the analysis of integrated water, energy and food systems, from three perspectives relevant to the work of international development organizations: dialog with countries and increasing awareness of “nexus” thinking and planning, building regional and in-country capacity toward integrated planning and identification/evaluation of trade-offs and synergies in developing such systems, and fostering interdisciplinary expertise in principles, algorithms, and model formulations for understanding and evaluating the potential of implementing nexus approaches within a systems perspective. This research stresses the necessity of integrating areas of disciplinary expertise, the ability to identify and address shared needs of water, energy and food stakeholders, and facilitating tailored analyses over different spatial and temporal scales. Outputs and products of recent nexus work will highlight further research and development needs focused on upstream sector planning in order to identify primary opportunities and constraints to water, energy, and food system development, and also result in an improved understanding of economic and social trade-offs among competing nexus priorities, and particularly prioritization of sector investments. Three recent studies in South Africa, China and Latin America are presented as examples of nexus tradeoffs offering a rationale for investment rationalization and priorities.



Dr. Fernando Miralles-Wilhelm is a hydrologist with research interests in modeling of surface and groundwater systems, climate-hydrology-vegetation interactions, water quality and modeling of the water-energy-food nexus. He has been a Principal Investigator in research sponsored by NASA, NOAA, NSF, USDA, USAID, the World Bank and other agencies, and has worked as a consultant in water resources projects in all five continents for over 20 years. He earned a Mechanical Engineering diploma from Universidad Simón Bolívar in Caracas, Venezuela (1987), a MS in Engineering from the University of California, Irvine (1989), and a PhD in Civil and Environmental Engineering from the Massachusetts Institute of Technology (1993).

Questions? - cee@uci.edu - (949) 824-7548