



# CEE595AG Seminar

Department of Civil and Environmental Engineering

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## **Resource Recovery from Sanitation to Amplify Development: Navigating Global and Local Possibilities**

Thursday, November 29, 2018  
12 – 1 pm  
Newmark Civil Engineering Lab 2312

Over two billion people are without access to basic sanitation, and many of these people live in places where populations are growing rapidly, access to agricultural nutrients and other resources is limited, and the threats associated with climate change are particularly severe. Sanitation systems capable of safely recovering resources (e.g., nutrients, organic matter) from human waste may help to address multiple societal challenges simultaneously. However, developing, implementing, and managing appropriate sanitation and resource recovery systems depends heavily on local context. Approaches incorporating multiple perspectives across various scales are needed for successful design and decision-making. This presentation will span several projects contained within my dissertation, showing how different aspects of sanitation and resource recovery can interact to advance global possibilities and inform local decisions. We will examine the possibility of recovering resources from sanitation systems that may be installed in the future to achieve the Sustainable Development Goal (SDG) of universal sanitation coverage by 2030, estimating potential synergistic benefits for other SDGs related to agriculture and energy. Then, diving further into the relationship between sanitation and agriculture, we will consider spatial co-location of 56 large urban areas with cropland, characterizing general trends related to the transport requirements of completing the nutrient reuse loop. At a global scale, we will also examine the characteristics of various nutrient recovery products (e.g., wastewater, sludge, urine, struvite) to assess their suitability relative to soil context. Finally, we will discuss a conceptual framework being developed to envision sanitation as a social-ecological system, useful for integrating multiple perspectives, issues, and settings relevant to sanitation decision-making and communication. We are working to apply this framework to an informal settlement in Kampala, Uganda, a context I will introduce and return to throughout the presentation.

**THURSDAY  
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