

PM – Minor Field Study i SPANS projekt - vår 2018

Undersökning av teknisk beredskap för kretsloppsanpassat avloppssystem i Uganda
(Investigating technical readiness of technologies for nutrient-recovery from wastewater in Uganda)

The SPANS project is looking for motivated and enthusiastic students to assist in field work regarding technical performance of innovative wastewater treatment methods in Uganda. SPANS is investigating innovations in **Sanitation Planning for Alternative Nutrient-recovery Systems**. The project is exploring how new technologies and ways of planning can improve the recovery and reuse of important fertilizing nutrients from wastewater.

Project Motivation

The SPANS project is premised on the facts that:

- i) Approximately 2.4 billion people worldwide lack access to basic sanitation facilities posing severe risks to public health and the environment,
- ii) Managing the global sanitation crisis is one of the major challenges facing our generation, with significant impacts on the Sustainable Development Goals (SDGs),
- iii) Flows of nitrogen (N) and phosphorous (P) are a critical planetary boundary that needs to be properly managed to assure a sustainable future and one way is to recycle them from sanitation systems. Urine and faeces contain lots of N and P.

While poor sanitation can have significant negative consequences for public health and the environment, and sanitation improvements can also have multiplier effects. The United Nations Environment Programme and Stockholm Environment Institute estimate that improvements in sanitation and wastewater services geared towards nutrient recovery can positively influence 14 of the 17 Sustainable Development Goals (SDGs). Consequently, there is pressing need for innovations in the sanitation sector which improve nutrient-recovery and provide sanitation services for all. There is a growing number of nutrient-recovery technologies available, but the majority are still in the formative phase of development and not widely applied. The MFS student will assist in investigating the technical readiness of some of these systems in the Uganda context

Country location

The project is focused on urban areas in Uganda. Uganda is one of many countries where sanitation is a major challenge. Only 29% of the urban population has access to a proper toilet. In addition, secure access to fertilizers for agricultural production is critical for the livelihoods of my urban farmers. Improved sanitation with nutrient recovery can have tremendous importance to a country like Uganda.

The MFS student(s) will be working with SPANS partner Makerere University and other local stakeholders in Kampala, the capital city of Uganda. The MFS students(s) will be working alongside Ugandan Master's students from Makerere University. The Swedish supervisor will be Dr. Jennifer McConville (SLU) and the Ugandan supervisor will be Dr. Charles Niwagaba (Makerere University).

Research task

The aim of the study is to better understand the potential for introducing and scaling-up the use of technologies which recover nutrients from wastewater into the Ugandan context. Specifically, the students will focus on the question: *How mature are nutrient-recovery systems with regard to technical performance in the Ugandan context?*

In order to answer this question, the MFS student(s) will assist project partners in operating and evaluating demonstration units of nutrient-recovery technologies for fecal sludge/wastewater management. Demonstration units will be built and operated for a pre-determined period of time (3-6 months). MFS students will collect and analysis samples to determine if the technologies are functioning properly with regard to reduction of public and environmental health risks. Interviews with workers at the wastewater treatment plant and other stakeholders will also be used to determine levels of acceptance and feasibility of implementing such technologies within the existing management structures. Several technologies will be investigated in parallel with MFS students and Ugandan Master's students working together.

Ethical risks

The project will not involve experiments on humans or animals, or handling of sensitive personal data, and will not present any risks to participants.

Timeframe for travel

Travel and project work in Uganda will be during the spring of 2018. Exact dates can be determined through discussion with partners.

Contact person

Dr. Jennifer McConville
Department of Energy and Technology, SLU
Tel: 018 672 168
Mobil: 076 783 7084
Epost: jennifer.mcconville@slu.se

The SPANS research project (2017-2020) for "Adaptation and innovation in Sanitation Planning: exploring technical and societal readiness of Alternative Nutrient recovery Systems" is implemented by the Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden; RISE (Research Institutes of Sweden); Chalmers University of Technology, Gothenburg, Sweden; and Makerere University, Kampala, Uganda.