**Proposal for a master thesis**

**Master Programme Infrastructure and Environmental Engineering 2025/26**

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| **Title** |
| Proposal 2: Integrated Waste Management Strategy for Resource Recovery and Environmental Sustainability at Tumaini Open School |
| Description background and problem description, app. 150-500 words |
| **Background:**Despite the school’s commitment to sustainability, Tumaini currently lacks an organized waste management system. Most greywater is discharged directly into the environment, and animal and food waste is not sufficiently managed. As the school grows, so does the volume and complexity of its waste, posing environmental, health, and economic risks.**Research Aim:**To develop a sustainable, low-cost waste management strategy that reduces environmental contamination, reuses valuable resources, and supports school operations through integrated recovery systems.**Objectives:*** Assess current waste streams: food waste, plastic, greywater, animal waste, and paper/cardboard.
* Propose source separation strategies, including compost bins for organic waste and designated recycling points.
* Design a composting system using organic kitchen and animal waste to produce nutrient-rich fertilizer for the school farm.
* Recommend a greywater reuse system for irrigation purposes with proper filtration.
* Identify local recycling markets or NGOs to handle inorganic waste streams (plastics, glass, metals).
* Evaluate and design energy recovery options like biogas production from animal or food waste.
* Develop educational materials to involve students and staff in the implementation and maintenance of the system.

**Methodology:**Waste audits, stakeholder mapping, literature review of best practices in East African school environments, and life-cycle assessment of waste streams. System designs will be grounded in local material availability and maintenance capacity.**Expected Outcomes:** A full-scale waste management plan including schematic designs for composting and greywater systems, along with actionable waste reduction strategies. The plan will also highlight financial and environmental benefits, contributing to a circular economy approach on campus and laying groundwork for scale-up across similar institutions. |
| **Literature suggestions** |
| Suggestion:  |
| **Special prerequisites** e.g. courses |
| The master thesis will require that you visit Tanzania for three months in order to conduct field work. Funding for your field studies can be applied for via the link below:1. [Nils Rud Olson minnesfond (chalmers.se)](https://www.chalmers.se/utbildning/studera-hos-oss/studentliv/stipendier-for-studenter/nils-rud-olson-minnesfond/)
2. [The Global Mentorship Program (chalmers.se)](https://www.chalmers.se/en/education/study-at-chalmers/student-life/scholarships-for-enrolled-students/the-global-mentorship-program/)
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| **Specific timeframe** (start date-end date, if needed) |
| Starting from the beginning of 2026 until the end of the academic year. |
| **Supervisors** (name, email) |
| From Engineers without borders: Jamie Wilton & Stefan Forsberg |
| **Examiner** (name, email) |
| Unknown |
| **Other information** |
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