

Pelletizing of faecal sludge.

Processing of faecal sludge into fuel pellets.

Faecal sludge management

Worldwide, sanitation needs of 2.7 billion people are met by onsite sanitation technologies such as septic tanks and pit latrines. These technologies can provide adequate sanitation if the produced faecal sludge is adequately managed. However, currently large amounts of faecal sludge are discharged untreated directly into the environment, with negative impacts on public and environmental health (see www.sandec.ch/fsm_book).

Faecal sludge resource recovery

Faecal sludge is a nutrient and energy resource. Faecal sludge treatment can produce marketable endproducts such as biogas, solid fuels, animal fodder or soil conditioner. Depending on the local market demand, these treatment endproducts can help to cover faecal treatment costs. For example, in Kampala faecal sludge as a solid fuel for industries can provide higher revenues compared to the conventional use as soil conditioner in agriculture.

Faecal sludge fuel pellets

Pellets were produced from dewatered faecal sludge from drying beds at the Lubigi Wastewater and Faecal Sludge Treatment Plant in Kampala, Uganda, operated by the National Water & Sewerage Corporation (NWSC). Pellets were produced without the addition of a binder at a moisture content of 40-55% at a rate of 20-35 kg per hour and pelletizing units.

Co-management of biowastes

Faecal sludge was also co-pelletized with other biowastes such as sawdust, coffee husks, banana peels and brewery waste. Co-processing with these biowastes increases the fuel quality (e.g. ash content, calorific value) and quantity. Such pellets produced from different wastes are of high and consistent quality and can be sold as fuel on the industrial market.

Drying of faecal sludge pellets

Advantageously, faecal sludge pellets have faster drying rates than sludge treated with drying beds. In Kampala, faecal sludge pellets dried from 50% to 90% in one week. Whereas on drying beds, this requires several weeks to months. Pellet drying can be enhanced by active ventilated greenhouses or silo dryer. This means that the footprint of treatment plants could be reduced, or the treatment capacity increased, which is very important in urban areas with limited space.

Energy recovery

The Bioburn pelletizer only consumes 1-5% of the energy that is contained in faecal sludge pellets as electricity. In Kampala, brick and cement companies are interested in using faecal sludge as a fuel. In addition, pellets could be a good feedstock for gasification technologies. Challenges with energy recovery of faecal sludge in Kampala include the high ash content (>35%).

Sludge to Energy Enterprise in Kampala (SEEK) Project

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Project partners

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