

Resource Recovery and Safe Reuse (RRR) Project AfricaSan5/FSM5-Side-Event



Resource Recovery and Safe Reuse (RRR) Side Event

On 20. February 2019 a side-event and lunch-meeting on Resource Recovery & Safe Reuse (RRR) and Public-Private Partnerships (PPP) for Faecal Sludge Management (FSM) took place during the 5th AfricaSan Regional Conference on Sanitation and Hygiene (AfricaSan5) and 5th International Faecal Sludge Management (FSM5) Conference in Cape Town, South Africa. The events were organised as part of the RRR-Project - Phase III (2017 - 2019), that is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH's programme called 'Enhancing Water Security and Sanitation' (ENWASS) in partnership with the Kampala Capital City Authority (KCCA), National Water and Sewerage Corporation (NWSC), National Environment Management Authority (NEMA), Water for People, cewas and Sanivation. The RRR-Side-Event and PPP-Lunch-Meeting aimed at:

- Bringing together key stakeholders in RRR with a special focus on FSM.
- Presenting and putting up for discussion RRR experiences and business models in Kampala, Uganda, and neighbouring countries.
- Exploring avenues and discussing necessary conditions for private sector engagement in the safe reuse of faecal sludge (e.g. faecal sludge-based fuel briquettes, etc.).



Picture taken during RRR-Side-Event at AfricaSan5/FSM5 on 20. February 2019 (photo: cewas)

Resource Recovery and Safe Reuse (RRR) Project AficaSan5/FSM5-Side-Event



Picture taken during PPP-Lunch-Meeting at AfricaSan5/FSM5 on 20. February 2019 (photo: cewas)

Presentations Overview

A Utility's Perspective on Resource Recovery and Reuse of Faecal Sludge (by Eng. Mary Oyuru, NWSC)

National Water and Sewerage Corporation is the utility responsible for provision of water and sewerage services in cities and urban centres in Uganda. Whereas NWSC's mandate only covers treatment of sewage, it also receives and treats faecal sludge in selected treatment plants. The limited mandate results in minimal investments into FSM infrastructure and operations.

Dried sludge is one of the bi-products of the treatment process which is recovered for use as soil amendment. The successful reuse of the sludge is dependent on a number of factors. This presentation highlights the Corporation's role in RRR and covers key interventions, challenges and future plans of NWSC, as well as strategic engagements with other actors in the sector.



Aerial view of Lubigi Waste Water and Faecal Sludge Treatment Plant (WW&FSTP) producing 300 tonnes per month of soil amendment, a marketable product sold to farmers (source: presentation by Eng. Oyuru)

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Resource Recovery and Safe Reuse (RRR) Project AficaSan5/FSM5-Side-Event

Kampala Briquette Project - Initial Experiences and Lessons Learned from Production of Faecal Sludge Briquettes in Kampala (by Ms. Yvonne Lugali, Water for People)

Water for People, an international NGO, is working on urban sanitation challenges with market-based solutions that can be replicated and scaled to create self-sustaining value chains across entire markets. As part of the efforts to ensure market driven approaches in sanitation, W4P plans to scale-up the production of Faecal Sludge briquettes as an alternative fuel source. This scale-up involves setting up of a briquette production plant and a carbonization unit in Kampala in partnership with National Water and Sewerage Corporation (NWSC). This presentation highlights the journey so far, experiences and lessons learnt plus future interventions.



Water for People's newly constructed carbonization unit at Lubigi. (source: presentation by Ms. Lugali)

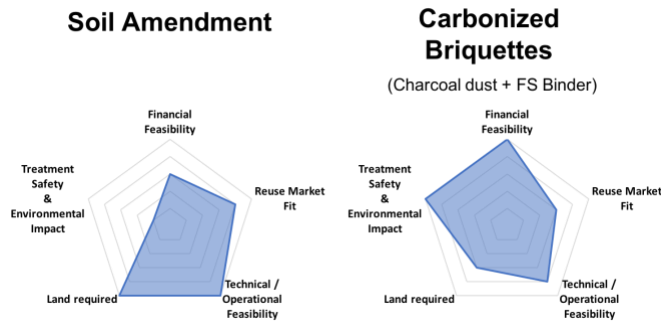
To download the presentation please click [here](#).

Business Model Comparison for Faecal Sludge Reuse Options at Lubigi (by Ms. Catherine Berner, Sanivation)

Kampala's WASH leaders are looking for sustainable sanitation solutions that can achieve SDG6 across the city. Sanivation evaluated resource recovery business models based on financial performance, implementation feasibility and market potential. Recommendations were based on the potential to incorporate resource recovery into the FSM value chain and integrate resource recovery into Kampala's plans for new treatment plants. The ranking model allows NWSC, other utilities and private sector players to make decisions on which RRR business model to choose depending on the weight for each parameter, however depending on the financial, market and economic data available. The study also recommended a method to evaluate working with a private partner to implement resource recovery ventures in a Public Private Partnership (PPP) model, which Sanivation is currently implementing with the water and sanitation utility in Naivasha, Kenya. The baseline is here to create a win-win situation for both partners.



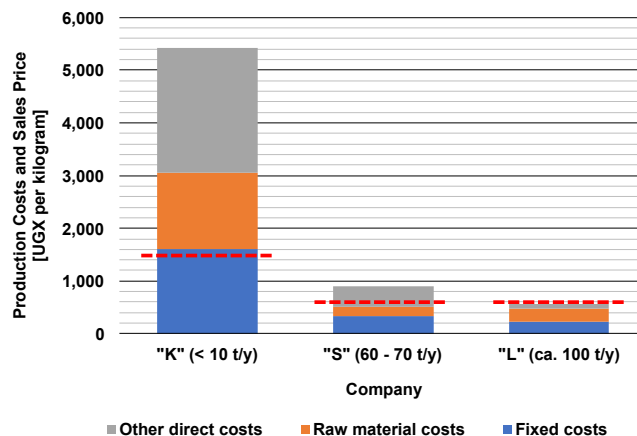
Resource Recovery and Safe Reuse (RRR) Project AficaSan5/FSM5-Side-Event



Performance visualisation for comparing business models “Soil Amendment” and “Carbonised Briquettes”. In the Lubigi WW&FSTP context, carbonized briquettes perform better financially, but require more land compared to “Soil Amendment”. The “Soil Amendment”, which is currently sold to farmers, performs better on land and technical/operational feasibility, but less on market fit and financial feasibility. (source: presentation by Ms. Berner)

To download the Business Model Comparison Tool please click [here](#).

Financial Analysis of Briquette Businesses in Kampala, Uganda (by Prof. Vincent Bagire, member of cewas-led team of consultants)



Comparison of cost breakdowns (fixed costs, raw material costs and other direct costs) and sales prices (red dashed lines) for selected small-scale briquette production businesses from Kampala, Uganda. According to figures provided by company „K“, production costs are UGX 5.400 per kilogram whereas sales price is UGX 1.500 per kilogram (production capacity of less than 10 tonnes per year). Company “S” production costs add up to UGX 900 per kilogram. They are selling at UGX 600 per kilogram (at a production of 60 - 70 tonnes per year). Company “L” makes a small profit while producing at UGX 560 per kilogram and selling at UGX 600 per kilogram (production capacity of ca. 100 tonnes per year). (source: presentation by Prof. Vincent Bagire)

Biomass is the predominant type of energy used in Uganda. Charcoal is mainly used in urban areas while firewood, agro-residues and wood wastes are widely used in rural areas.

This presentation outlines and puts up for discussion primary findings of a financial analysis of selected micro- and small-scale briquette businesses in Kampala, Uganda. The assessment provides an understanding of the profitability of the concerned briquette businesses and serves as the basis for understanding if the safe and profitable reuse and recovery of resources from faecal sludge waste streams is currently possible in the Uganda set-up. The assessment is challenged by both, the small number and scale of surveyed businesses, which do not keep systematic financial and production records. Obtained information suggests that the companies’



Resource Recovery and Safe Reuse (RRR) Project AficaSan5/FSM5-Side-Event

business segments “Briquette Production” are not purely profit-making but cover costs and are considered money-making by their owners.

To download the presentation please click [here](#).

“DEWATS for Dar” - Faecal Sludge Management Business Approach, Tanzania (by Mrs. Jutta Camargo, BORDA)

The “DEWATS for Dar” project was original designed as a product innovation approach, to empower local entrepreneurs by providing start-up loans, technology transfer and infrastructure to solve community sanitation challenges in financially sustainable way in Dar es Salaam. DEWATS stands for decentralised waste water treatment systems which can treat waste water and faecal sludge.

The model uses locally manufactured latrine emptying tools and a decentralized sludge treatment (DEWATS) to provide accessible pro-poor latrine emptying services.

The vision is prove that this model is a safe investment to financiers and that these systems can be replicated throughout Tanzania. However, current challenges with the existing enabling environment in the sanitation sector needed adjustments during project implementation and new ideas to make the model interesting to private business owners and financiers.



The “DEWATS for Dar” product innovation approach. (source: presentation by Ms. Camargo)

To download the presentation please click [here](#).

Summary of Discussions

The presentations during the RRR-Side-Event were followed by brief question and answer (Q&A) sessions. Ms. Oyuru from NWSC explained that most wastewater treatment plants in Uganda are ponds, that almost all treated FS is sold and that a Chinese fertiliser company will take treated FS in bulk in future and misplaced solid waste is a big issue as NWSC is not allowed to dispose it of at a landfill, but must incinerate it on-site.

Ms. Berner stressed that FS treatment is a cost centre with NWSC and that reuse of treated sludge has the potential to reduce overall costs through revenue generation. She further explained that non-carbonised briquettes made from sawdust and sugarcane waste and using FS as a binder, have a more consistent moisture content compared to fire wood.



Resource Recovery and Safe Reuse (RRR) Project AficaSan5/FSM5-Side-Event

During the lunch meeting with a focus on PPP the guests from Senegal, Zambia, Kenya and Uganda exchanged about their experiences around PPP and their challenges and opportunities. Mr. Bassirou Sow from the National Sanitation Office of Senegal (ONAS; L'Office National de l'Assainissement du Sénégal) elaborated that in line with their new vision ONAS focuses on assets control and delegates operation of Faecal Sludge Treatment Plants (FSTP) to private sector organisations to reduce budget and subsidies to the sanitation sector. During a pilot phase (2012 - 2017) treatment of FS was delegated to a private company whereas transport was taken care by emptiers. Now, the whole value chain shall be in the hand of private company.

Further to a statement by Nairobi County Water, Sanitation and Energy Director Mario Kainga Kaigongi, Mr. Sow stressed the importance of clearly defining roles/duties and responsibilities of both, the public and private partners in PPPs which need to be stipulated in guidelines. He exemplified that in Senegal, guidelines task the private sector to develop 1) business plans, 2) implement an accounting system, and 3) commitment to acquire ISO 9100 certification within 2 years. Additionally, he noted that there are 4 big national companies that comply with the formal requirements of government tenders. These companies subcontract smaller emptying businesses.

Mr. Jean-Pierre Guéguen from Delvic Sanitation Initiatives, the first private company to operate government-owned FSTP in Senegal explained that PPPs in FSM can work if the following is met: 1) economy of scale (sufficient and long-term supply of FS), 2) exploitation of all possible revenue streams (emptiers paying tipping/gate fees, valorisation/reuse and sale of sludge products, etc.), 3) assurance of business continuity (contract terms of 5 - 7 years and preferably longer) and 4) government ensuring proper regulatory/legal environment (e.g. reduction or elimination of illegal dumping to increase FS volume delivered at FSTP). He further elaborated that there is a threshold of minimum trucks to empty for profitability and that their business model needs to be adapted for smaller cities to cover operating costs.

There was also mentioning around providing a national guarantee fund for SMEs in order to invest into infrastructure and equipment.

Background and Context

The Enhancing Water Security and Sanitation Programme implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH supports KCCA, the Ministry of Water and Environment (MWE) and its Directorate of Water Development (DWD), NWSC and other key stakeholders in improving the sanitation sector of Kampala. One of the focus areas lies in FSM in the Capital City, while at the same time promoting private sector engagement in the sector through the support of RRR business models that deal with FS as well as complementary waste streams.

Contact and Info

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 Ms. [Catherine Berner](#) | Sanivation | Manager of Product
 Mr. [Martin Wafler](#) | cewas | Senior Project Manager and Trainer
 Mrs. [Jutta Camargo](#) | BORDA | BORDA Advisor

Resource Recovery and Safe Reuse (RRR) Project AficaSan5/FSM5-Side-Event

Attendance List

Combined participants list of both events (in alphabetical order of last names)

Name	Organisation	Country
Ms. Effie Akinga	Sanivation	Kenya
Ms. Faithful Atusinguza	GIZ Enhancing Water Security and Sanitation (ENWASS) Programme	Uganda
Mr. David Auerbach	Sanergy	Kenya
Prof. Vincent Bagire	Makerere University Business School (MUBS)	Uganda
Ms. Catherine Berner	Sanivation	Kenya
Ms. Jutta Camargo	Bremen Overseas Research & Development Association (BORDA)	Germany
Mr. Nigel Chikore	Pollution Research Group (UKZN)	South Africa
Mr. Mark Duey	Water for People (W4P)	United States of America
Mr. Andrew Foote	Sanivation	Kenya
Mr. Abdoulaye Gueye	National Sanitation Office of Senegal (ONAS)	Senegal
Mr. Mouhamadou Gueye	National Sanitation Office of Senegal (ONAS)	Senegal
Mr. Johannes Heeb	cewas	Switzerland
Eng. Damson Kachali	Luapula Water and Sewerage Co. (LpWSC) Ltd.	Zambia
Mr. Mario Kainga Kaigongi	Nairobi City County	Kenya
Mr. Loice Wairimu Kamau	Athi Water Services Board	Kenya
Mr. Tomaz G. Kipnis	SAO Consultancy	Brazil
Mr. Benjamin Kramer	Sanivation	Kenya
Ms. Yvonne Lugali	Water for People (W4P)	Uganda
Dr. Najib Lukooya	Kampala Capital City Authority (KCCA)	Uganda
Ms. Margaret Maina	Limuru Water and Sewerage Company	Kenya
Mr. Alex Manyasi	Sanergy	Kenya
Mr. Martin Nyanzi Mawejje	Pollution Research Group (UKZN)	South Africa
Dr. Jennifer McConville	Swedish University of Agricultural Sciences (SLU)	Sweden
Mr. Principal Mdolo	Pollution Research Group (UKZN)	South Africa
Ms. Anne Mumbi	National Environment Management Authority (NEMA)	Kenya
Eng. Festus K. Ng'eno	County Government of Nakuru	Kenya
Ms. Cate N. Nimanya	Water for People (W4P)	Uganda
Prof. Charles B. Niwagaba	Makerere University	Uganda
Ms. Patience Nsereko	National Environment Management Authority (NEMA)	Uganda
Mr. Thomas Odongo	Kisumu Water and Sewerage Company	Kenya
Ms. Mary Oyuru	National Water and Sewerage Corporation (NWSC)	Uganda
Mr. Christian Rieck	GIZ Enhancing Water Security and Sanitation (ENWASS) Programme	Uganda
Mr. Bassirou Sow	National Sanitation Office of Senegal (ONAS)	Senegal
Mr. Martin Wafler	cewas	Switzerland
Ms. Eva Waithera	Pan African Association of Actors for Non-sewered Sanitation (PASA)	South Africa