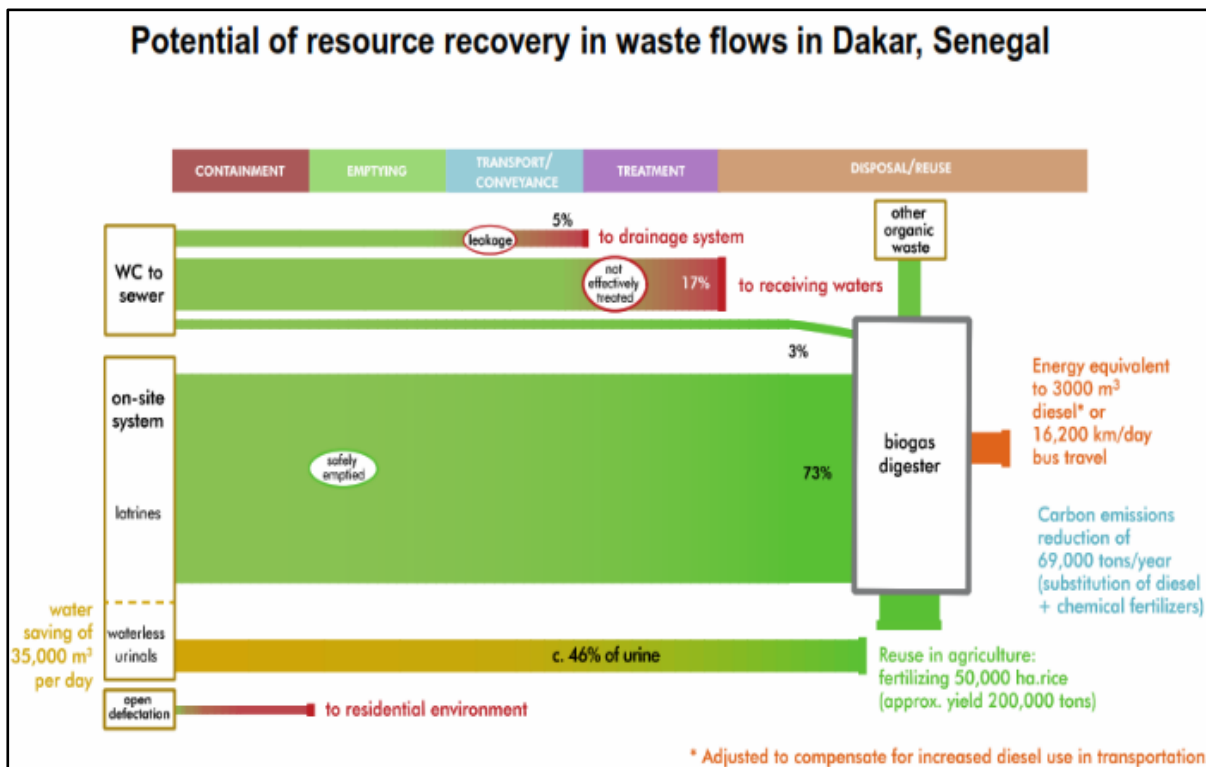


SFD Thinking

Resource Value Mapping based on SFDs



Inspired by the SFD, the Resource Value Mapping tool (REVAMP) is being developed at Stockholm Environment Initiative (SEI) for quickly estimating, visualizing and valuing the resources that could be recovered from a city's organic waste streams: sewage sludge, faecal sludge, and food and other organic solid waste.

There is increasing interest in the concept of the circular economy and "closing the loop" in water, energy and mineral resources. The focus here is not only to reducing social and environmental damage linked to resource extraction and waste disposal, but also in optimizing the use of resources.

Additionally the tool tries to integrate the potential of the water-food-energy nexus in an urban context.

SFD Thinking: Resource Value Mapping based on SFDs

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Date: 31.01.2017

Link to an FSM study in Dakar: <https://www.susana.org/resources/documents/default/3-2273-7-1435310427.pdf>

Link to SEI Homepage: <https://www.sei.org/projects-and-tools/tools/revamp/>

Introduction

The REVAMP tool is based on studying the potential for resource recovery if all the waste from the town was collected as per the existing sanitation technologies. The tool presents possible options and its benefits in the future, if certain changes to the existing sanitation systems were made. As an initial example, the SFD produced for Dakar, Senegal (see Figure 1) was used as input to show how the values from the SFD can be used to map resource value along the sanitation chain. These inputs were the number of inhabitants connected to the various sanitation systems from the SFD and coefficient values for bio-gas production from onsite sanitation systems (based on BORDA estimates) to develop a resource recovery flux diagram (see Figure 2).

Information on the process of creating the Resource Value Map

Municipal data on urban waste flows such as faecal sludge and organic solid waste are collected. In the cases where SFDs have been developed for cities, the data already assembled can serve as an initial input to the tool. These waste flows are modelled using different technology options or resource recovery scenarios using MS Excel. The technologies included so far are: anaerobic digestion producing biogas and bio-solids; solid fuel production; composting; and protein-larvae production using Black Soldier Flies. The model generates graphs depicting the potential values of the different resource recovery scenarios, currently expressing potential nutrient and energy recovery value, and revenue for selling the recovered resource at market prices.

Partners involved in the process

The tool is still in the developmental phase and SEI is further developing the tool to include more waste streams. The tool has not yet been used in city planning processes, but has been piloted in Kampala (Uganda) using existing municipal data on faecal sludge, sewage sludge and solid organic waste. The results have been shared with the the Public Health and Environment Directorate of the Kampala Capital City Authority for further discussion and consideration.

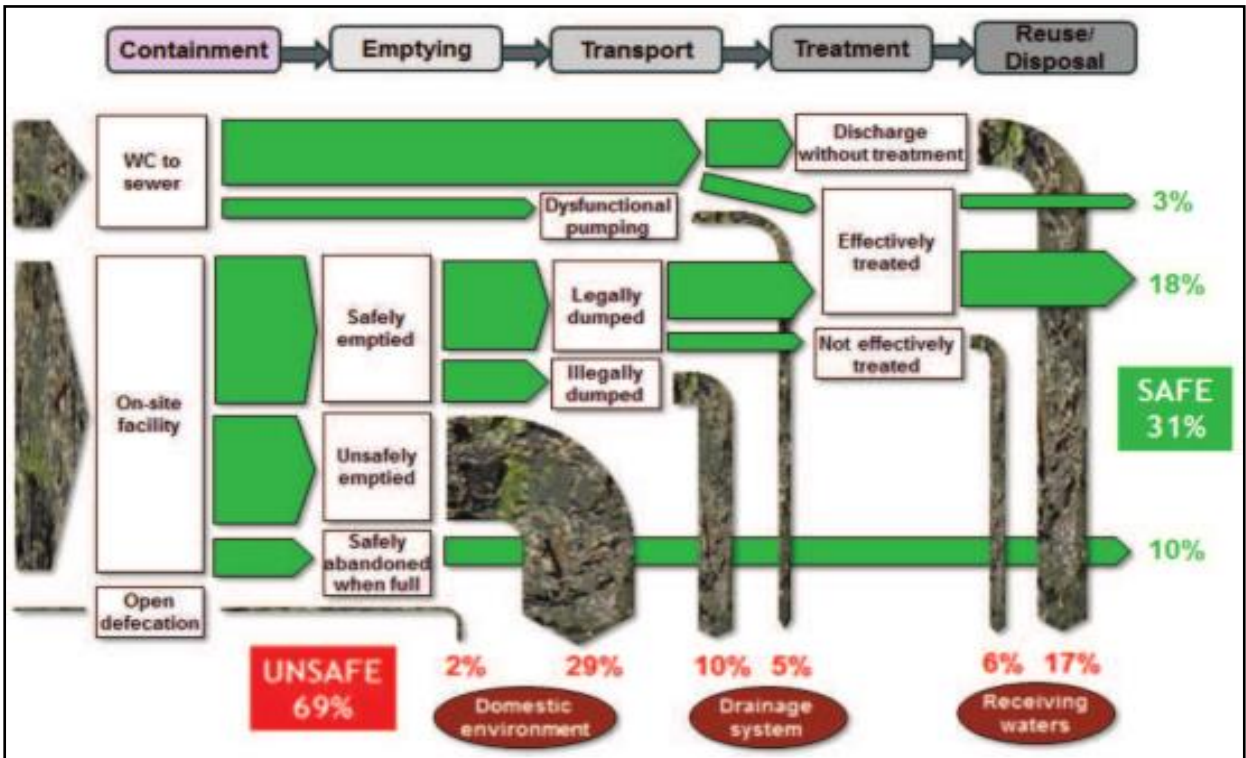


Figure 1: SFD Dakar, Senegal

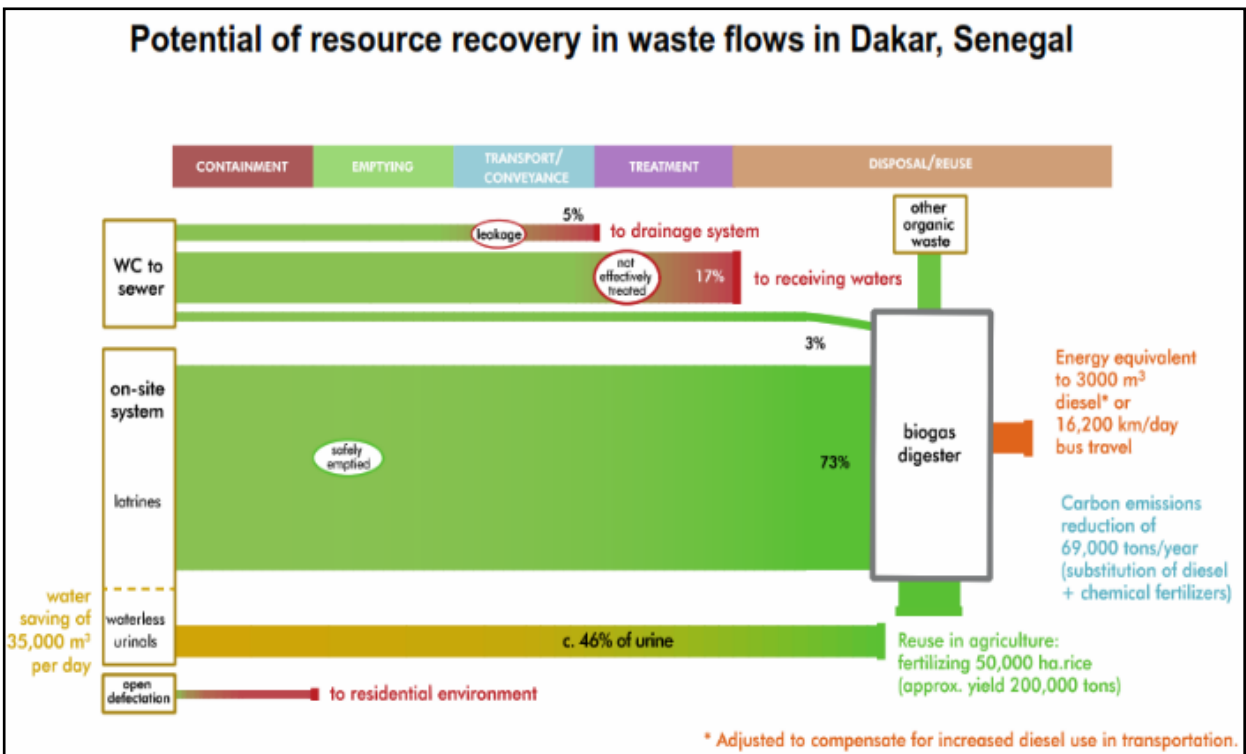


Figure 2: Resource Value Map, Dakar, Senegal

Outcome and results

A [discussion brief](#) was published to describe the REVAMP tool and to present the initial findings in the Kampala case. SEI has received good feedback and a diverse set of actors have expressed an interest to collaborate. The Kampala Capital City Authority is one of these, but also other African, Asian and European partners have so far expressed interest. A more detailed plan for piloting the tool in and together with cities is being developed. Based on specific contexts and emerging needs in pilot cities, these will further support developing and improving the tool functions and user-interface.

REVAMP considers a wide range of products, from energy (biogas and solid combustion fuels), agricultural fertilizer and soil conditioner, to animal feed ingredients (through breeding protein-rich black soldier fly larvae on treated waste), reflecting the dynamics of the resource recovery and reuse field. This allows identification of the most viable reuse strategies for the specific municipality. The planned expansion of the tool will cover more waste flows (e.g. wastewater and animal excreta), more resource recovery schemes (e.g. safe wastewater irrigation in agriculture) and also add further evaluation parameters (e.g. costing, non-monetary benefits, and business generation). The ultimate aim is to create REVAMP into an open-source platform that will motivate and support policy-makers, planners, technicians, entrepreneurs, among others, to implement more integrated natural resource management in urban areas, hence contributing to more resilient and sustainable cities, which is of high priority considering increased demand for natural resources and their scarcity.



The SFD Promotion Initiative collects examples and feedback on ways in which SFDs are used. These experiences are documented as the ‘SFD Thinking’.

If you would like to tell us your story, send us a message: sfd@susana.org

SFD Thinking are available from: www.sfd.susana.org

SFD Thinking – Resource Value Mapping based on SFDs

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