BILL & MELINDA GATES *foundation*

Urban Sanitation and Climate linkages

Progress, Challenges & Opportunities

Brian Arbogast

Director – Water, Sanitation, and Hygiene

Global Growth & Opportunity Division

Bill & Melinda Gates Foundation

Introduction

- Global South Academic Conclave on WASH & Climate Linkages – this is a milestone event!

- Conclave Themes I will speak to today:
  - Sanitation policies in countries of Global South
  - Measuring Sanitation outcomes, and their climate impacts
  - Innovative financing for Sanitation from a climate lens
  - Mitigation and Adaptation in Sanitation services for climate resilience

Keynote Address 3 (this afternoon): Barbara Evans, Leeds

Improved on-site sanitation is contributing more GHS

communications earth & environment

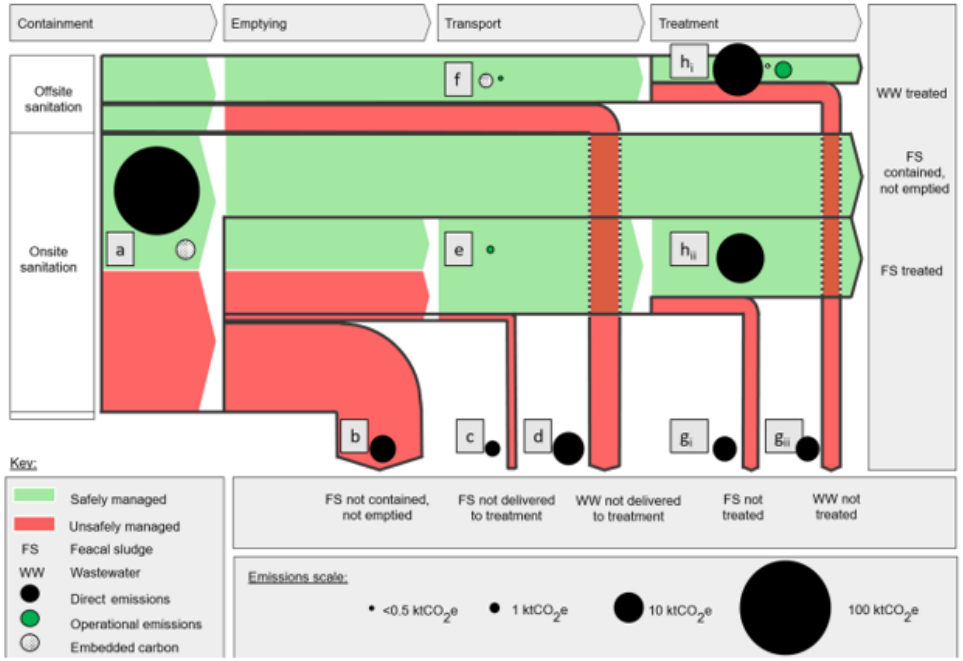
ARTICLE

https://doi.org/10.1038/s43247-022-00413-w OPEN

Whole-system analysis reveals high greenhouse-gas emissions from citywide sanitation in Kampala, Uganda

Jake Johnson[1,3], Fiona Zakaria[1,3], Allan G. Nkurunziza[2,3], Celia Way[1], Miller A. Camargo-Valero[1,3] & Barbara Evans[1,3]✉

Global estimates of emissions of greenhouse gasses do not take into account the complex service chain in rapidly growing cities in low- and middle-income countries. This paper presents an end-to-end analysis to estimate emissions from all stages of the sanitation-service chain, using Kampala in Uganda as an example. We show that emissions associated with long periods of storage of faecal waste in sealed anaerobic tanks (49%), discharge from tanks and pits direct to open drains (4%), illegal dumping of faecal waste (2%), leakage from sewers (6%), wastewater bypassing treatment (7%) and uncollected methane emissions at treatment plants (31%), are contributing to high levels of greenhouse-gas emissions. Sanitation in Kampala produces 189 kt CO_2 e per year, which may represent more than half of the total city-level emissions. Significant further empirical and modelling work is required to update estimates of greenhouse-gas emissions from sanitation systems globally.



Keynote Address 6 (tomorrow afternoon): Juliet Willets, UTS

Climate Resilient Sanitation Coalition Vision

CLIMATE RESILIENT SANITATION: COALITION FOR ACTION

Integrating sanitation into global and national climate policy & practice; and integrating climate into global and national sanitation policy & practice.

Sanitation policies in countries of Global South

- African Sanitation Policy Guidelines (ASPG)
- India
- Bangladesh
- Nepal
- Zambia

City-Wide Inclusive Sanitation is Climate-Resilient Sanitation

CWIS OUTCOMES

EQUITY

Services reflect fairness in distribution and prioritization of service quality, prices, deployment of public finance/ subsidies

SAFETY

Services safeguard customers, workers and communities from safety and health risks by reaching *everyone* with safe sanitation

SUSTAINABILITY

Services are reliably and continually delivered based on effective management of human, financial and natural resources

CWIS FUNCTIONS

RESPONSIBILITY

Authority(s) have a clear public mandate to ensure safe, equitable and sustainable, sanitation services for all

Service authorities are delivering safe, equitable, sustainable sanitation services per their mandate

ACCOUNTABILITY

Authority's(ies') performance against mandate is monitored and managed with data, transparency, and incentives

Service authorities regularly collect and report data for performance monitoring

RESOURCE PLANNING & MANAGEMENT

Resources–human, financial, natural, assets–are effectively managed at state/national level to support execution of mandate across time/space

Resources are effectively managed at the city level to deliver safe, equitable, sustainable sanitation for all

Measuring Sanitation outcomes, and their climate impacts

- Measurement of progress towards SDG 6 remains a challenge
- Local data systems are key, but primary goal should be local service improvement, decision support
- Measuring GHG emissions of sanitation systems is improving
  - SCARE Project: Consortium including University of Bristol, Kathmandu University, Bangladesh University of Engineering and Technology, Haramaya University, Kyambogo University, Leeds University, University of Technology Sydney, Global Green Growth Institute
- Measuring adaptation is more qualitative, but tools are available
  - ClimateFIRST: Climate Framework to Improve the Resilience of Sanitation Technologies (UTS)

Innovative financing for Sanitation from a climate lens

- Green Climate Fund and many other climate funders aim for portfolios that are 50% mitigation, 50% adaptation
- They've historically received far more requests for mitigation projects than adaptation projects
- => There is an opportunity for Sanitation projects that deliver climate adaptation co-benefits!
  - Local leadership, ownership and analytical support is key

Mitigation and Adaptation in Sanitation services for climate resilience

- So much discussion is too high-level – how to best address decision makers' questions
  - What investments in urban resilience should I consider?
  - How can I compare them, what should I prioritize?
  - Who are the local experts who can help?
- Growing availability of publicly available tools, many that leverage geo-spatial information to better understand local conditions, risks, and opportunities
- Value in diving deep into specific hazards
  - Droughts
  - Floods
  - Addressing floods of displaced people!

Community Reinvented Toilet

Enviro Loo Clear Sanitation Treatment Plant, Johannesburg

Household Reinvented Toilet

Cranfield Circular Toilet prototype

BILL & MELINDA GATES foundation

gatesfoundation.org