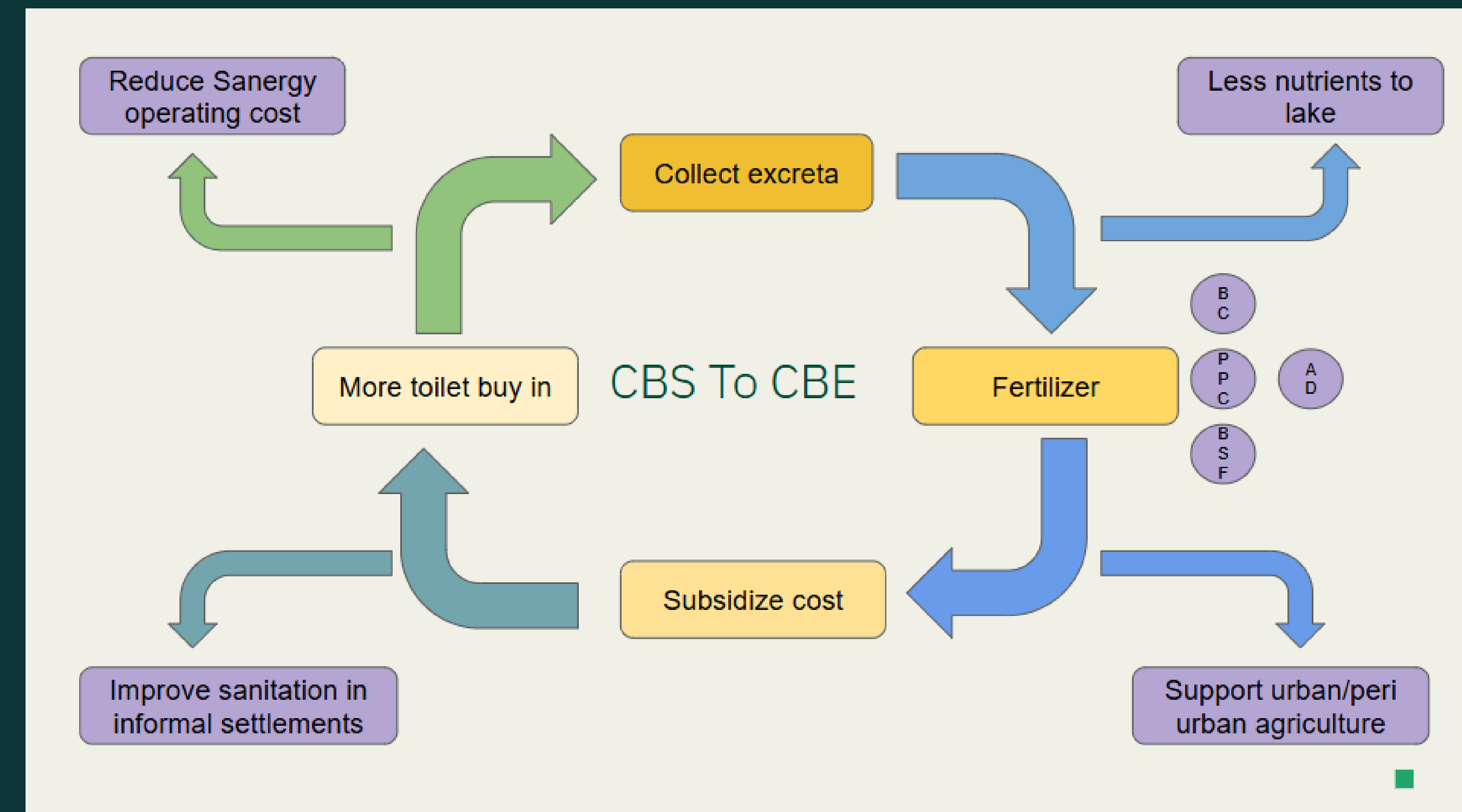


Circular Bionutrient Economy In Action

Elliot Scheuer

Advised by Rebecca Nelson and Charles Midega

The circular bionutrient economy is a way of rethinking outdated systems of sanitation and food security. Materials conventionally designated as wastes (such as human excreta) through simple processing can be redeployed as agricultural inputs providing carbon, nutrients, and pH adjustment to soil.



A promising feedback loop: can redirecting nutrients from human excreta support periurban agriculture while subsidising the cost of sanitation services in informal settlements?

Bioassays

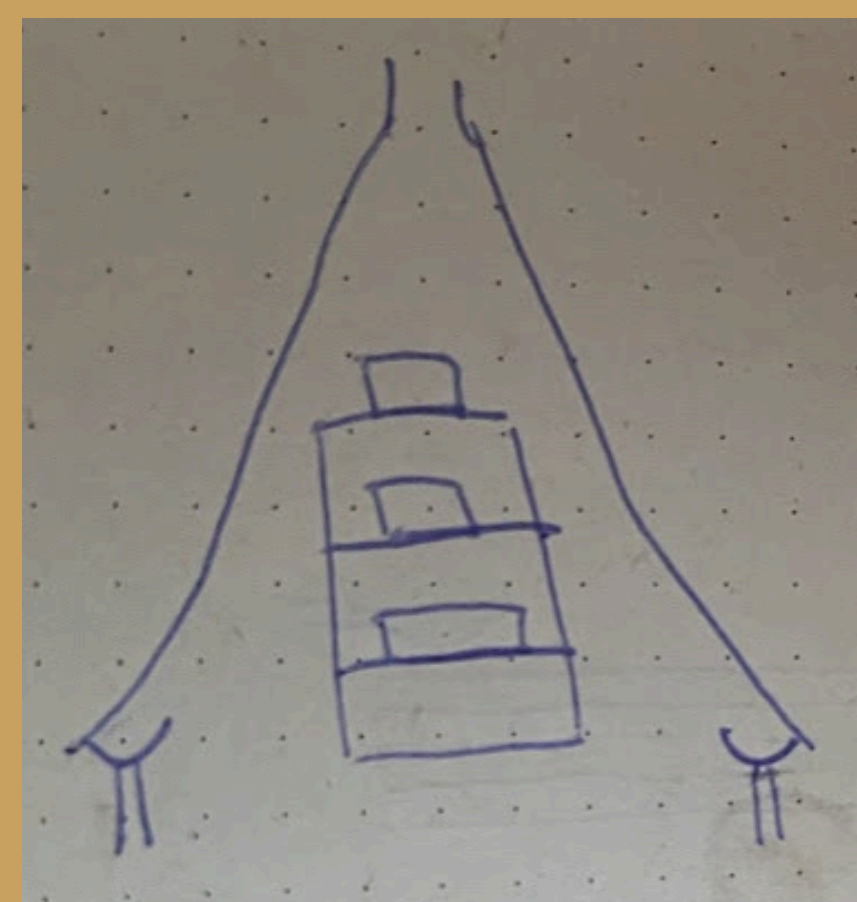
- Conducted simultaneously in Ithaca and Kisumu
- Low tech option for testing nutrient content in fertilizer
- Visually compelling
- Emphasizes plant response.



Farmers react to a presentation on the uses of human urine in agricultural settings and share their experiences.

Alkaline Urine Dehydration

- Urine is ~95% water which makes it costly to transport from urban to rural despite its fertilizer potential (nitrogen & phosphorus value)
- Addition of lime ($\text{Ca}(\text{OH})_2$), ash, and biochar raises the pH and stabilizes the nitrogen as urea
- Potential to produce a nitrogen rich, alkaline soil amendment to address western Kenya's acidic and nutrient depleted soils



Evolution of the SuPuDry: a novel method to dehydrate urine while recovering the evaporated water

Aknowledgments

A massive thank you to Eli Newell, Duncan, Herbert, KiYA, SOFDI, FIPS Africa, and Sharon all of whom made this summer both fun and full of learning

