Asia Water Forum 2022
8–11 August 2022 • Online

Focus Area: Universal water supply and sanitation services
Session Title: Achieving universal sanitation
Schedule: 10 August 2022 (Wed), 3:00 p.m. - 4:30 p.m. (GMT+08)

Use of the SaniPath Tool to identify Key Pathways of Exposure to Fecal contamination, with a case study from Dhaka, Bangladesh

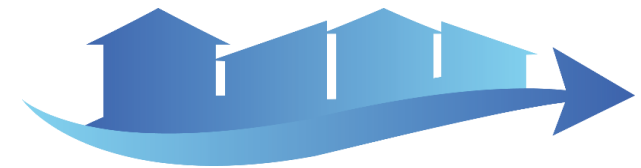Suraja Raj, MPH
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SaniPath

EMORY UNIVERSITY | Center for Global Safe Water, Sanitation, and Hygiene

WORLD BANK   icddr,b

DATA
data analysis and technical assistance limited

ADB

PROBLEM

Sanitation is a global problem, from open sewage and inadequate sanitation systems to developing local expertise on mitigating the spread of pathogens.

Capacity for collecting public health data and effective translation of existing data into action is limited.
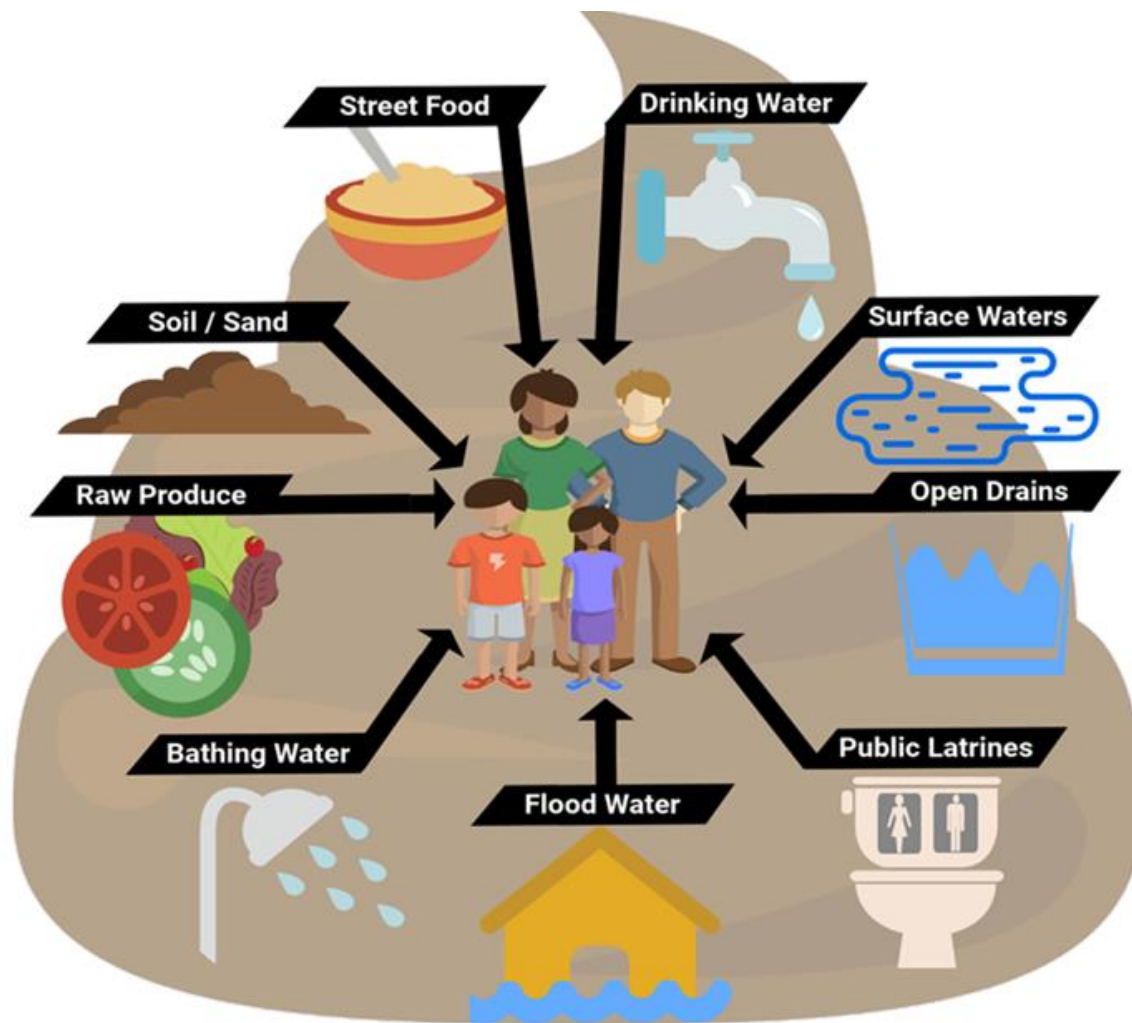
Importance of Exposure Assessment

- Health outcomes can be difficult to measure
- Exposure assessments can identify relevant and dominant pathways of exposure to fecal contamination to target for intervention
- Understand the drivers of exposure to fecal contamination (behavior vs environmental contamination)
- Prioritize programs or investments based on where you may be most likely to significantly reduce fecal exposure and have a public health impact
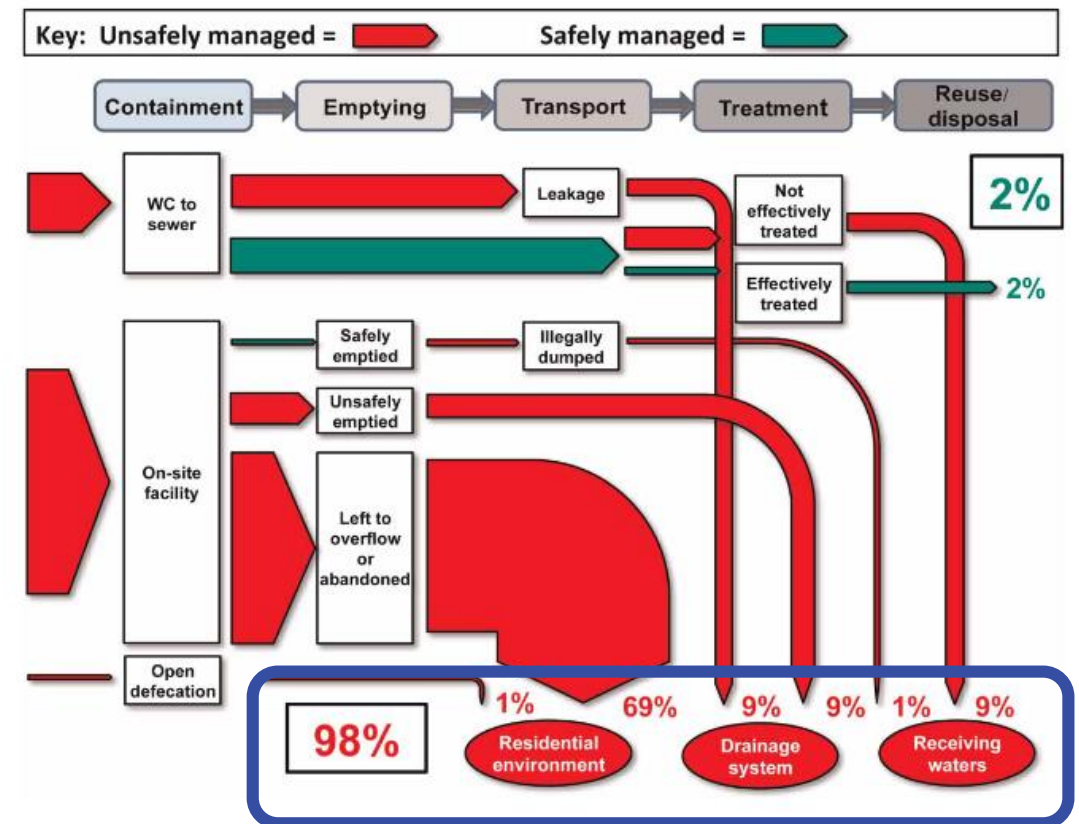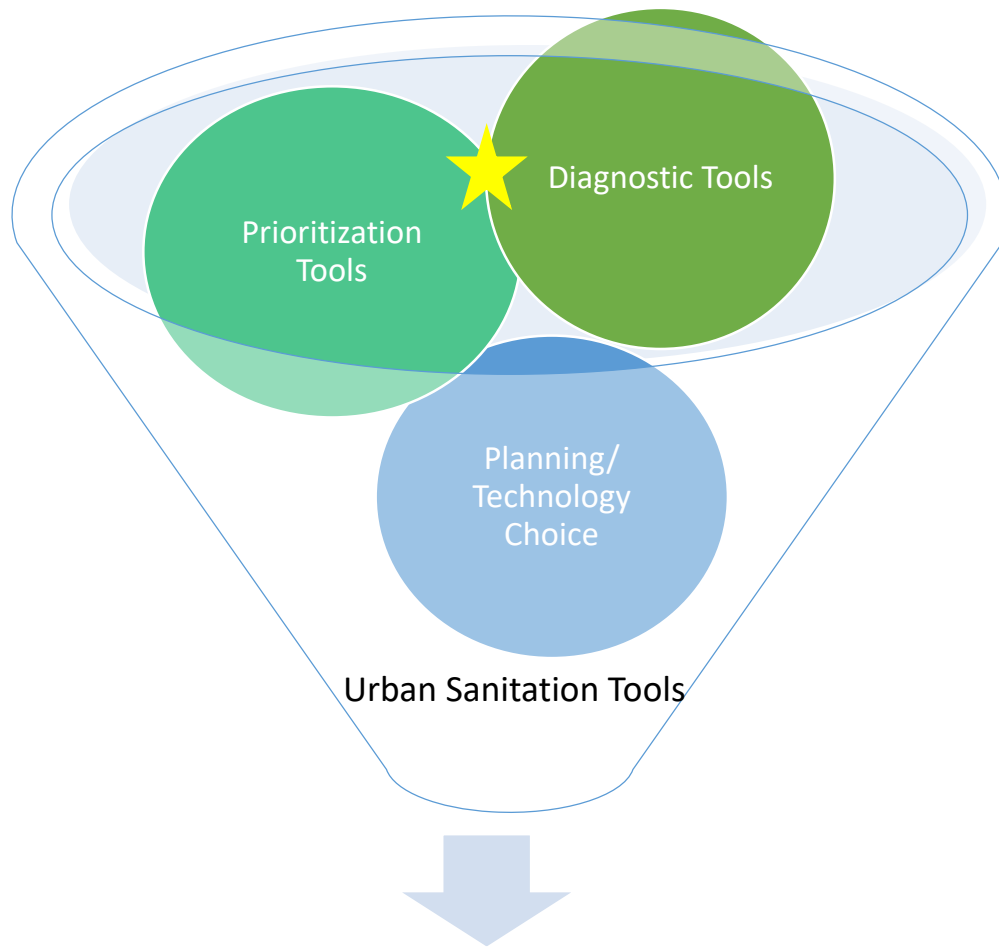
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Solution: The SaniPath Tool

The SaniPath Exposure Assessment Tool is designed to:

- Assess public health risks related to poor sanitation and FSM

- Raise awareness about these risks among stakeholders

- Help prioritize sanitation investments based on the exposures that have the greatest public health impact.
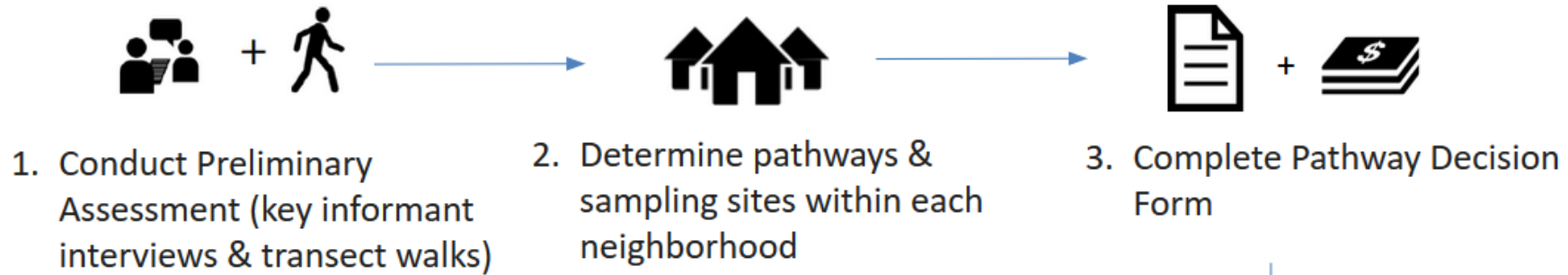

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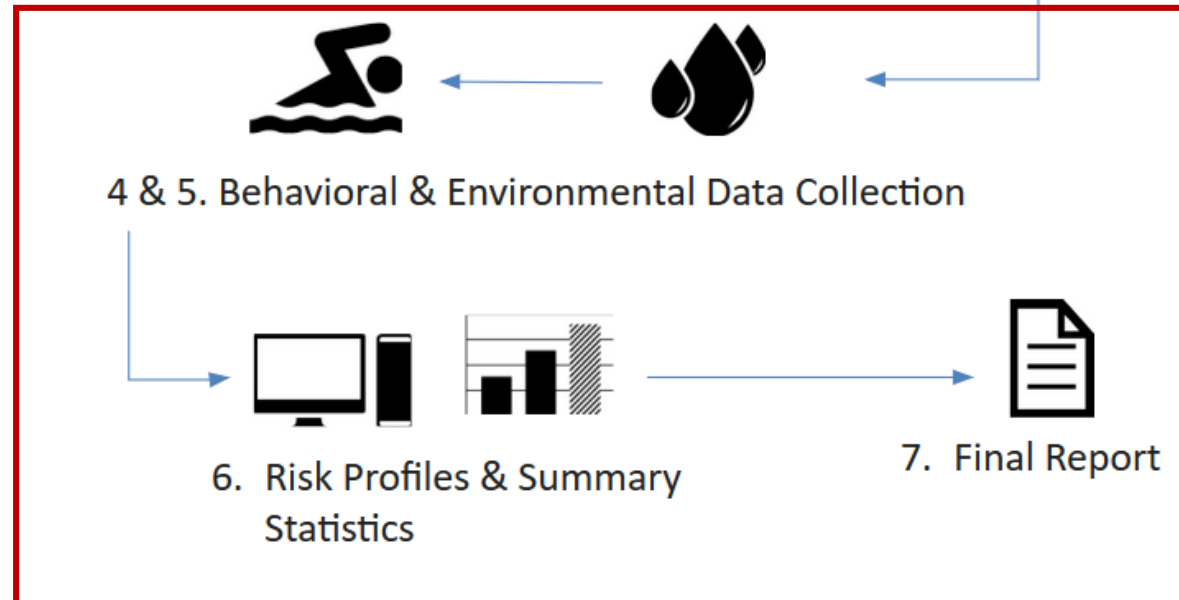# How does SaniPath fit in with other tools?

A Simplified and Standardized Method for Data Collection

1. Conduct Preliminary Assessment (key informant interviews & transect walks)

2. Determine pathways & sampling sites within each neighborhood

3. Complete Pathway Decision Form

The SaniPath Tool is used to manage all aspects of data collection, analysis, and reporting.

4 & 5. Behavioral & Environmental Data Collection

6. Risk Profiles & Summary Statistics

7. Final Report

Data Collection Methods

Primary Data Collection

- **Exposure Behavior**
  - Reported frequency of behavior of adults and children that may lead to exposure to fecal contamination
  - Household, School, and Community surveys

- **Fecal Contamination**
  - Collect environmental samples from relevant exposure pathways
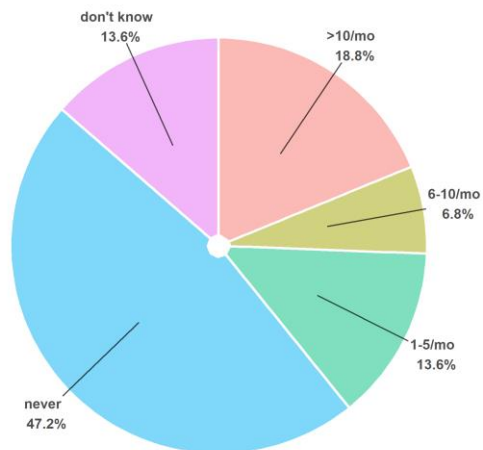 - Analyze for *E. coli* as an indicator of fecal contamination

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Estimating Exposure to Fecal Contamination

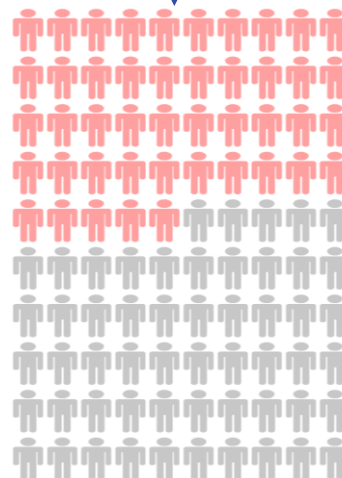**Behavior Frequency**

Environmental Contamination

Other parameters: intake volumes, duration of exposure, etc.

Drain Water
Kanyama
250 (N=Adults)

- don't know 13.6%
- >10/mo 18.8%
- 6-10/mo 6.8%
- 1-5/mo 13.6%
- never 47.2%

Drain Water
Kanyama
Adults
44.9% exposed
3.66 MPN/Month *E. coli*

Drain Water

log10 *E. coli* concentration (CFU/100mL)

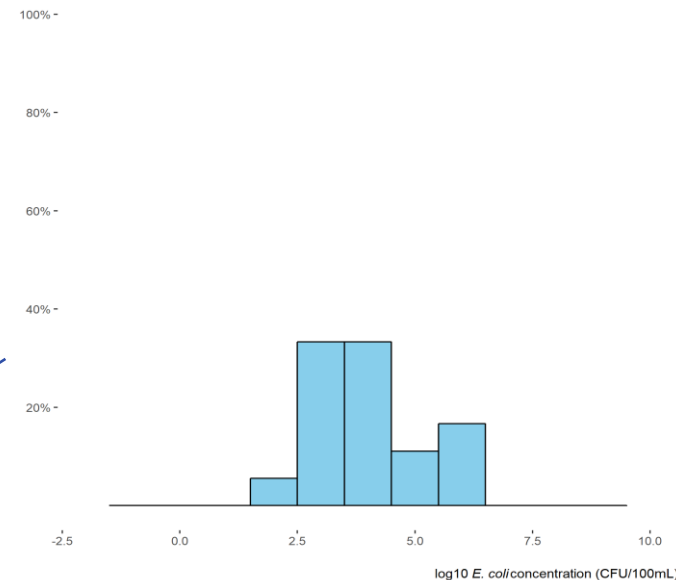Tool uses Bayesian analysis to estimate the distribution of environmental contamination and frequency of exposure.
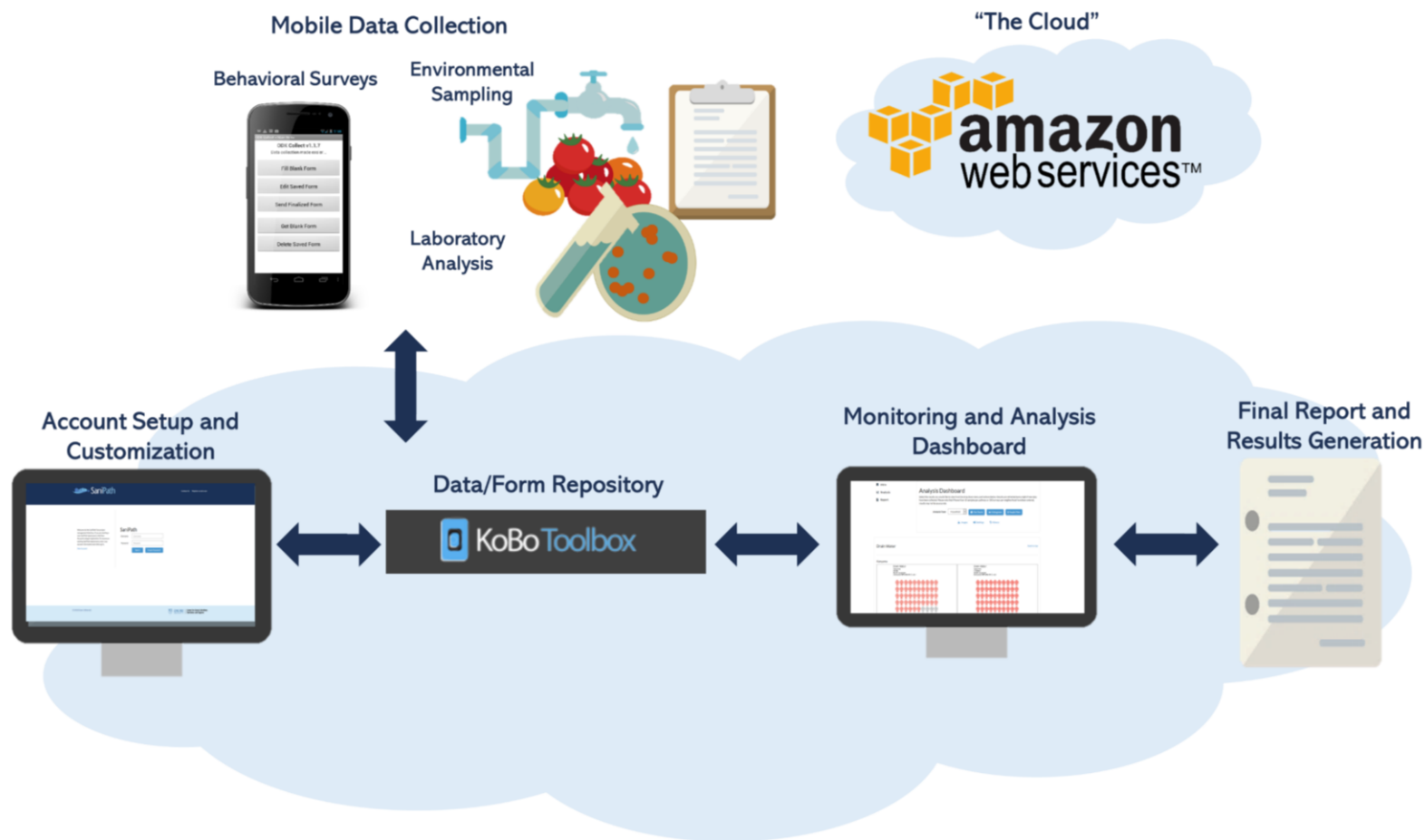
Results are presented in a normalized and comparable unit – Dose as MPN *E. coli* **ingested** per month

The mean dose and proportion of the population exposed are summarized from simulated distributions and displayed in risk profiles.
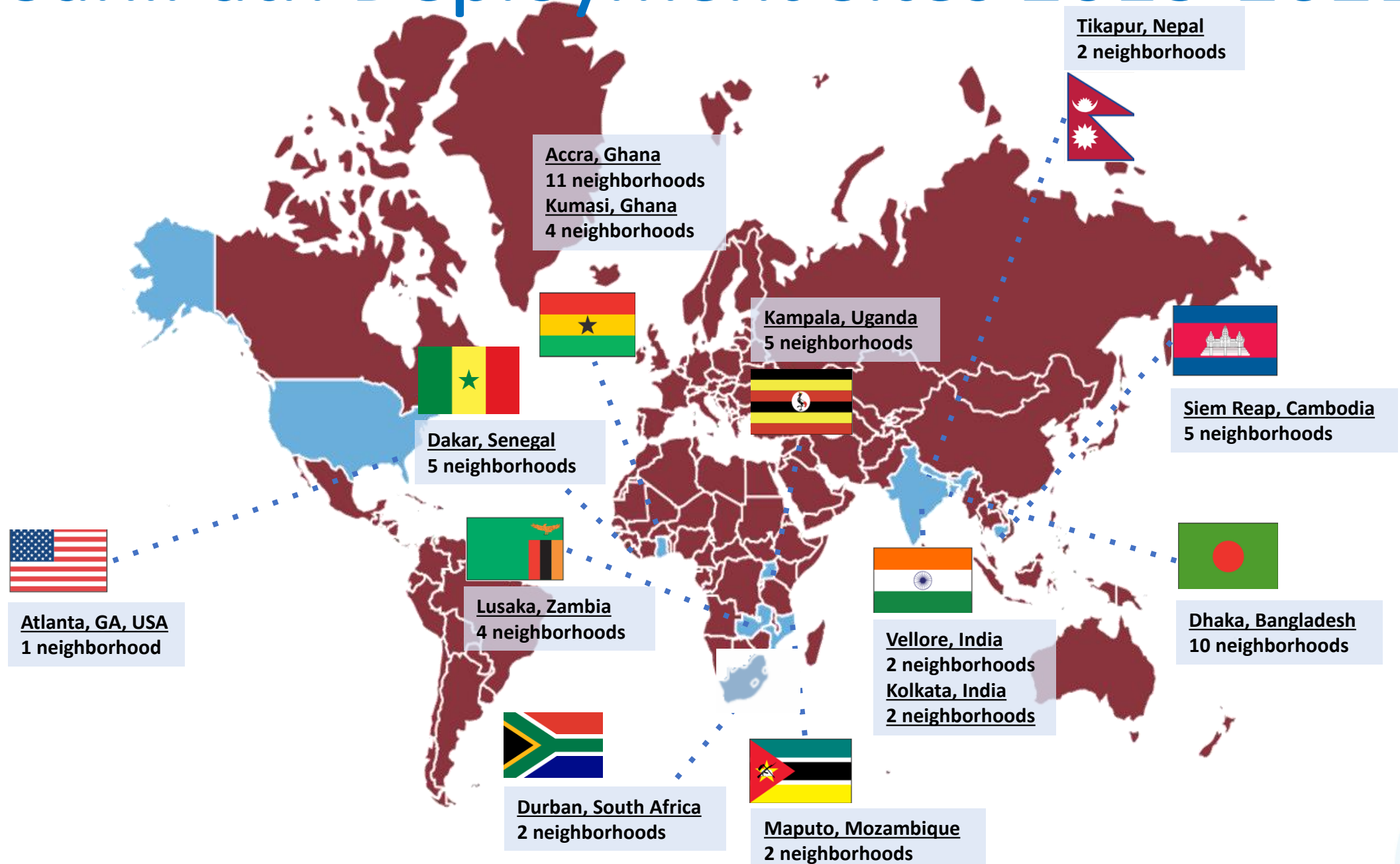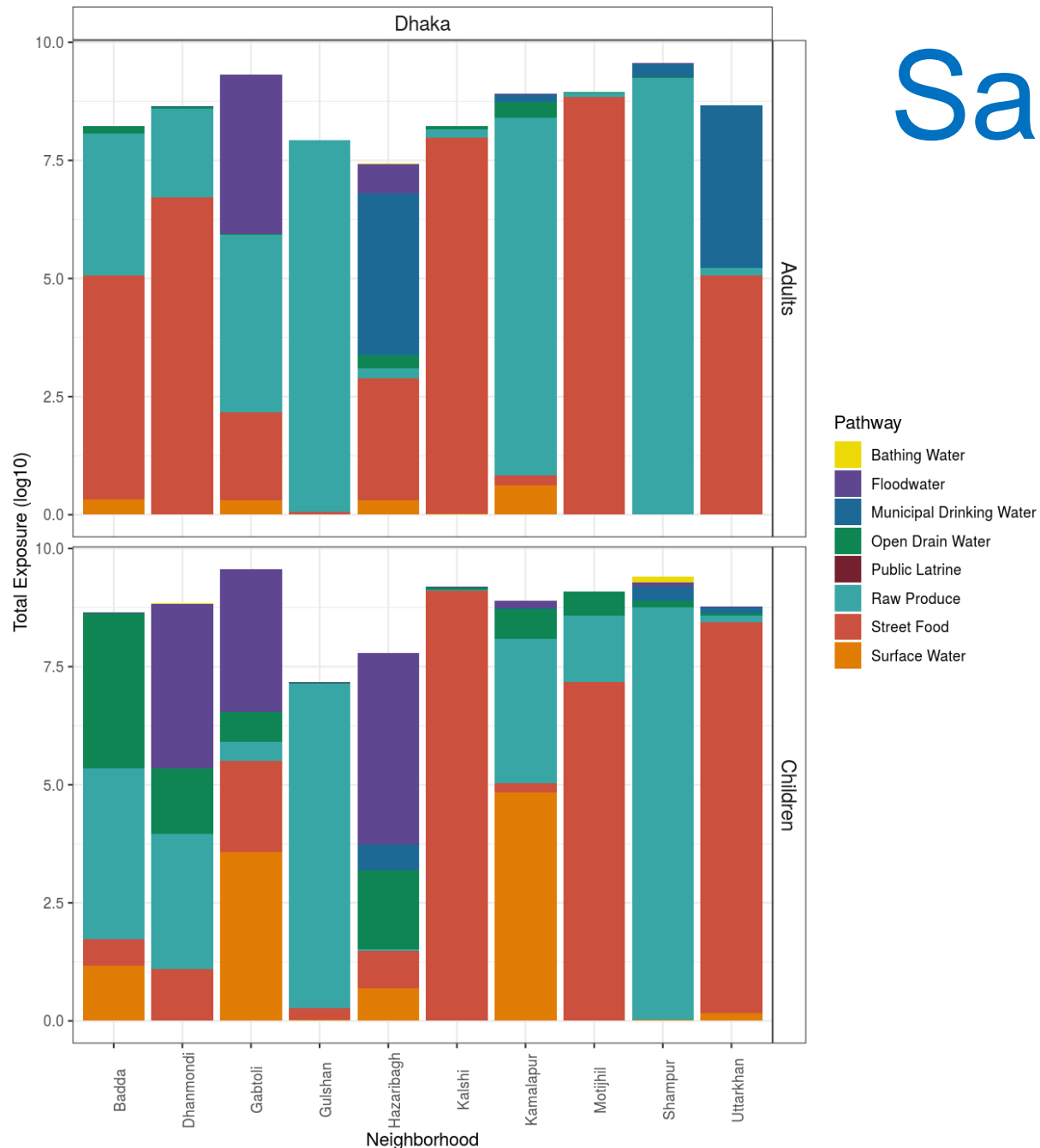
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A Cloud-Based Platform To Do It All

Visit sanipath.org to try out the tool!

SaniPath Deployment Sites 2013-2021

Tikapur, Nepal
2 neighborhoods

Accra, Ghana
11 neighborhoods
Kumasi, Ghana
4 neighborhoods

Kampala, Uganda
5 neighborhoods

Siem Reap, Cambodia
5 neighborhoods

Dakar, Senegal
5 neighborhoods

Atlanta, GA, USA
1 neighborhood

Lusaka, Zambia
4 neighborhoods

Vellore, India
2 neighborhoods
Kolkata, India
2 neighborhoods

Dhaka, Bangladesh
10 neighborhoods

Durban, South Africa
2 neighborhoods

Maputo, Mozambique
2 neighborhoods

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SaniPath in Dhaka

- Conducted in 10 neighborhoods across Dhaka North City Corporation (DNCC) and Dhaka South City Corpoaraton (DSCC) in 2017
- Produce and street food were highly contaminated and frequently consumed across the city in all neighborhoods
- All dominant pathways were driven by both high contamination and high frequency of exposure
- Important differences between risks for adults and children
- Unfortunately results never translated to action

Other SaniPath Use Cases

Using Exposure Assessments to Understand Cholera Outbreaks in Lusaka, Zambia
Provided technical support and training for conducting exposure assessment of various environmental pathways to understand risk factors for seasonal cholera outbreaks in Lusaka, Zambia.

Virtual Training Program on SaniPath Methodologies
Conducted a 2-week training program in collaboration with the Center for Science and Environment (CSE) in India. The training included 59 participants from 8 countries. Participants included engineers, urban planners, environmental health and sanitation practitioners from government, etc.

Food Safety Guidelines in Ghana
Supported the translation of exposure assessment result and advised the development of food safety guidelines released by Ministry of Local Government and Rural Development (MLGRD) in Ghana.

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Acknowledgements

SaniPath

Thank You!

For more information on the SaniPath Tool visit **SaniPath.org**

View Tool tutorials on YouTube!

YouTube SaniPath Exposure Assessment Tool

Connect with us on Twitter!

@SaniPath

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