

GAMA Technical Group Webinar

10th September 2015
#GAMAResilience

Agenda

1. Welcome and introductions
2. Update to GAMA Technical Group - Rachael Kemp and Stephen Passmore
3. Local presentation??
4. Data and Model update and Use case development - Rembrandt Koppelaar
5. Discussion session
6. AOB
7. Next steps and Close

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Finding the pathway to a resilient future for the Greater Accra Metropolitan Area (GAMA)



Forum

[Join the discussion](#) in the forum.

Resources

[How resilience.io can build value into city regions](#) – Animated short film.

[resilience.io in Ghana](#) – a short booklet explaining the resilience.io platform and its benefits.



Forum - <http://ecosequestrust.org/GAMA>

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GAMA Resilience Discussion Forum

Online 1

Rachael Kemp 

Comment...



Rachael Kemp  8d

Datasets



Rachael Kemp  24d  1

Can you explain colour key and major components of the WASH model schematic?



Rachael Kemp  24d  1

How will sewage systems be described within the model?

Greater Accra Metropolitan Area WASH – TTG - Webinar

Use Case Development

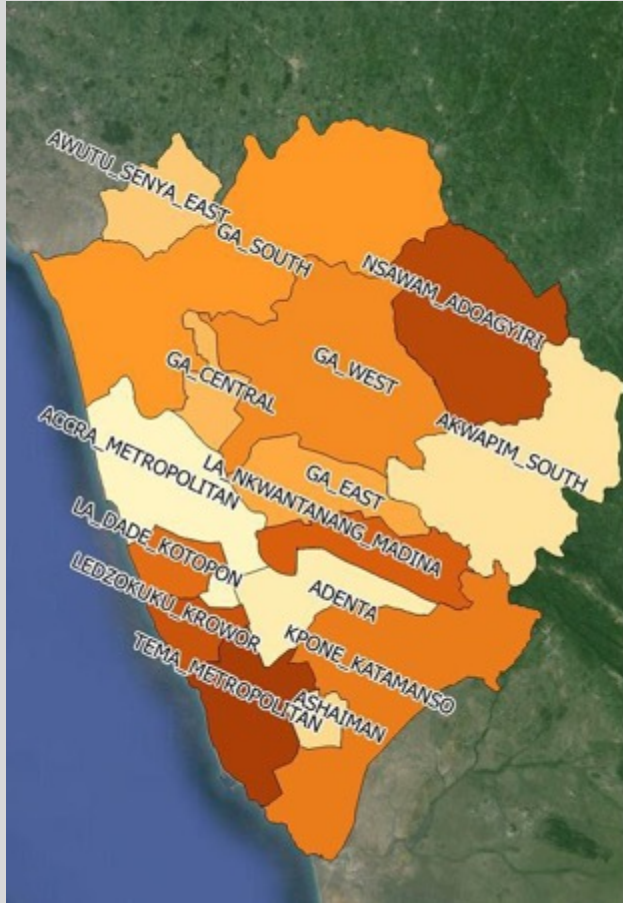
IIER

London, September 2015
Rembrandt Koppelaar

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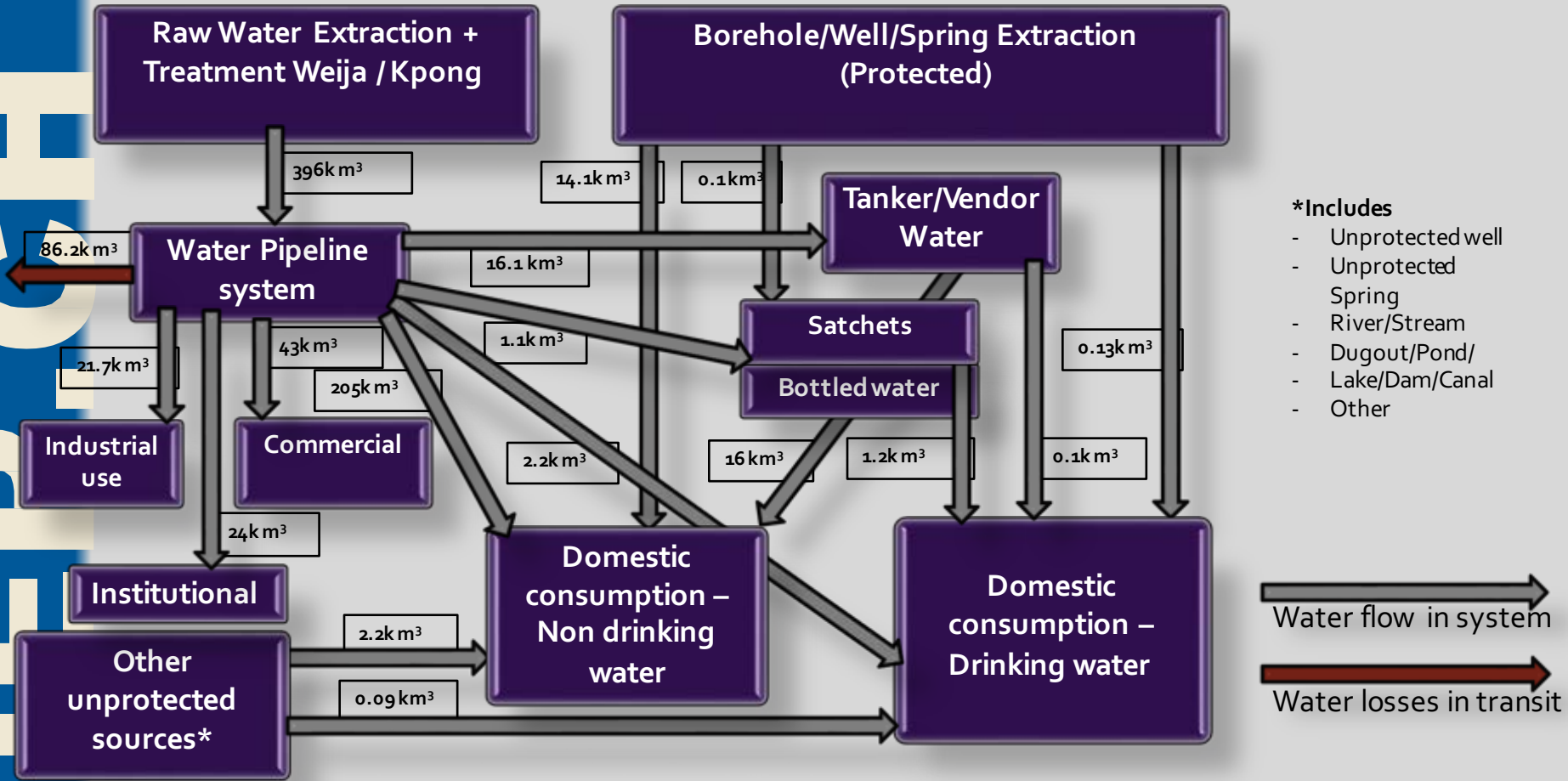
1. Data / Model update
2. Use Case Development Outline
3. Example use cases
4. Discussion

Update of GAMA boundaries & data

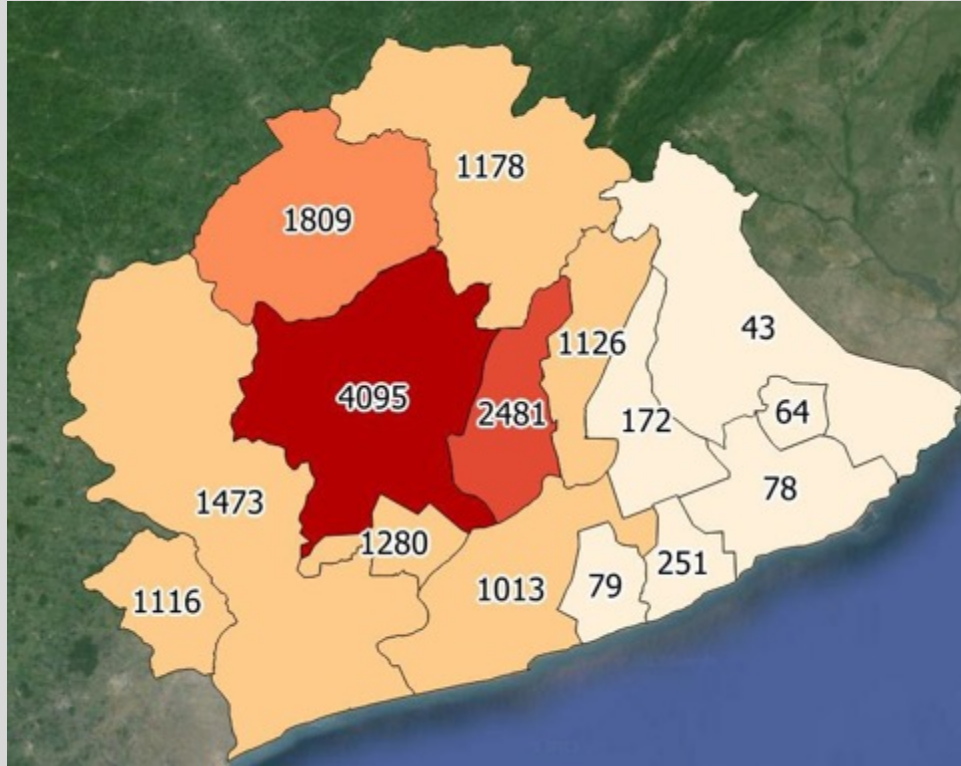


1. Accra Metropolitan Assembly (AMA)
2. Tema Metropolitan Assembly (TMA)
3. La Nkwantanang Madina Municipal Assembly (LANKA)
4. La Dade-Kotopon Municipal Assembly (LADMA)
5. Ledzorkuku Krowor Municipal Assembly (LEKMA)
6. Ga South Municipal Assembly
7. Ga East Municipal Assembly
8. Ga West Municipal Assembly
9. Ga Central Assembly
10. Adenta Municipal Assembly (ADMA)
11. Kpone Katamanso Municipal Assembly (KKMA)
12. Ashaiman Municipal Assembly (ASHMA)
13. Awutu-Senya-East (KASOA)
14. Nsawam- Adoagyiri Municipal Assembly - ER (NAMA)
15. Akwapim South Municipal Assembly – ER (ASMA)

Raw/Source Water Flow calculation Overview (2010) – ‘000 m³/day

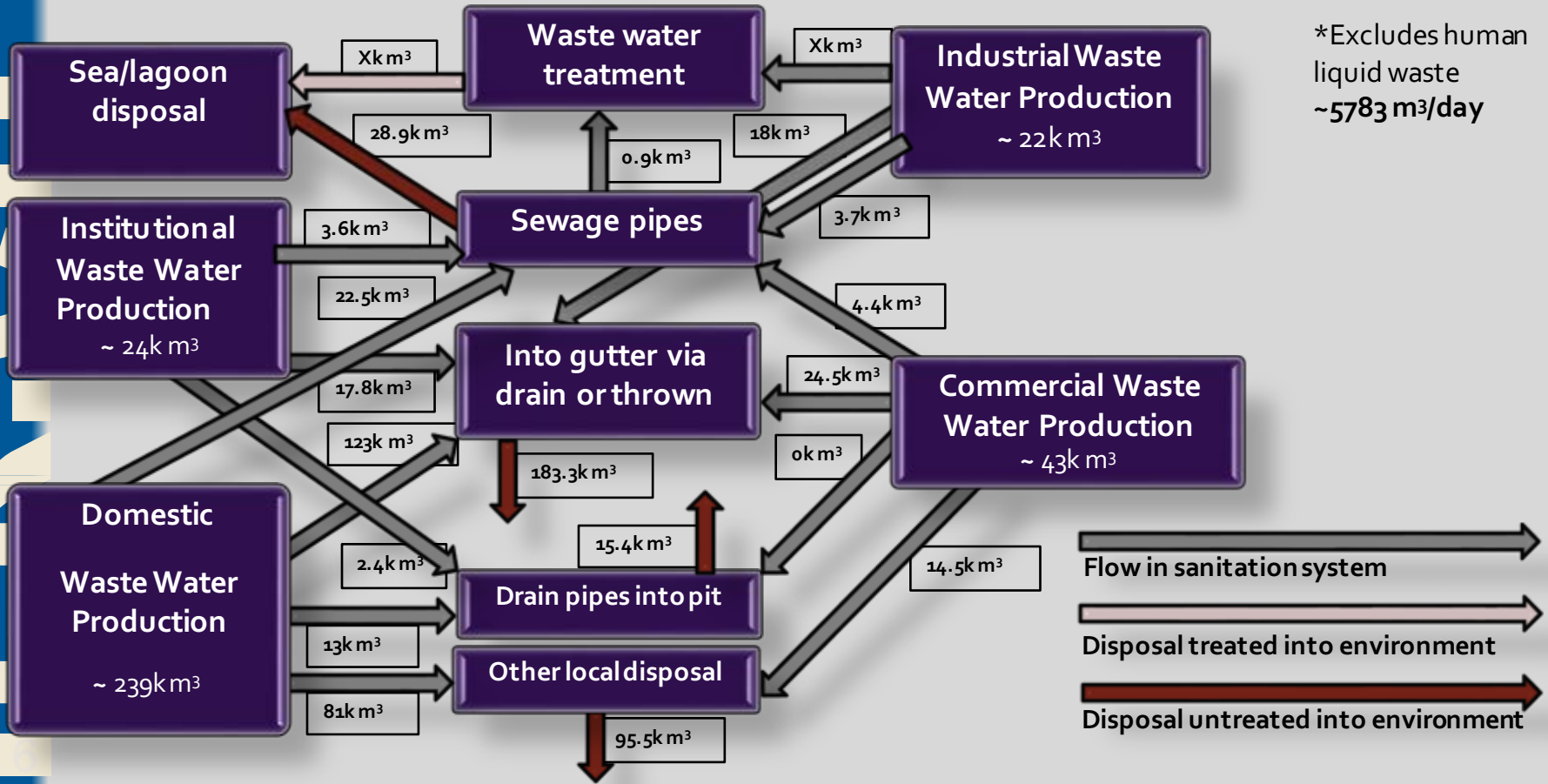


Example spatial distribution:

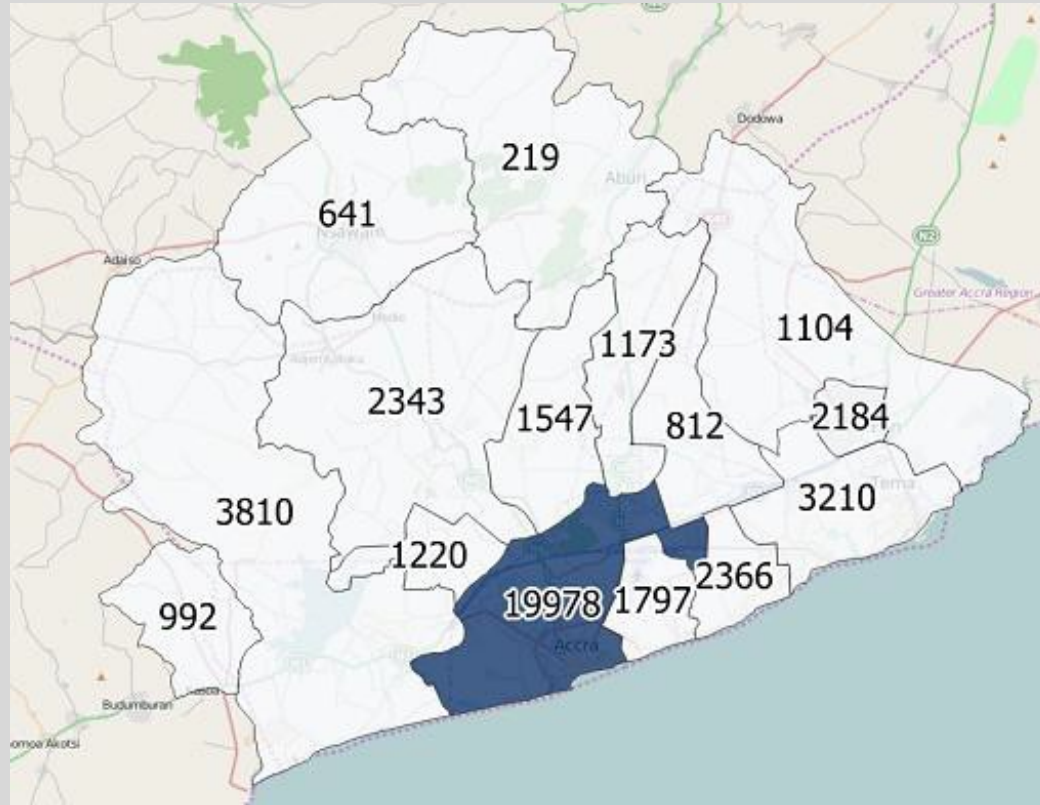


Domestic/Household
 Non-Drinking water
 consumption
 from
 non-GWCL sources
 (boreholes/wells/spring
 s/rivers/streams)
 in m³ per day

Waste Water* Flow calculation overview (2010) – '000 m³/day



Example spatial distribution:

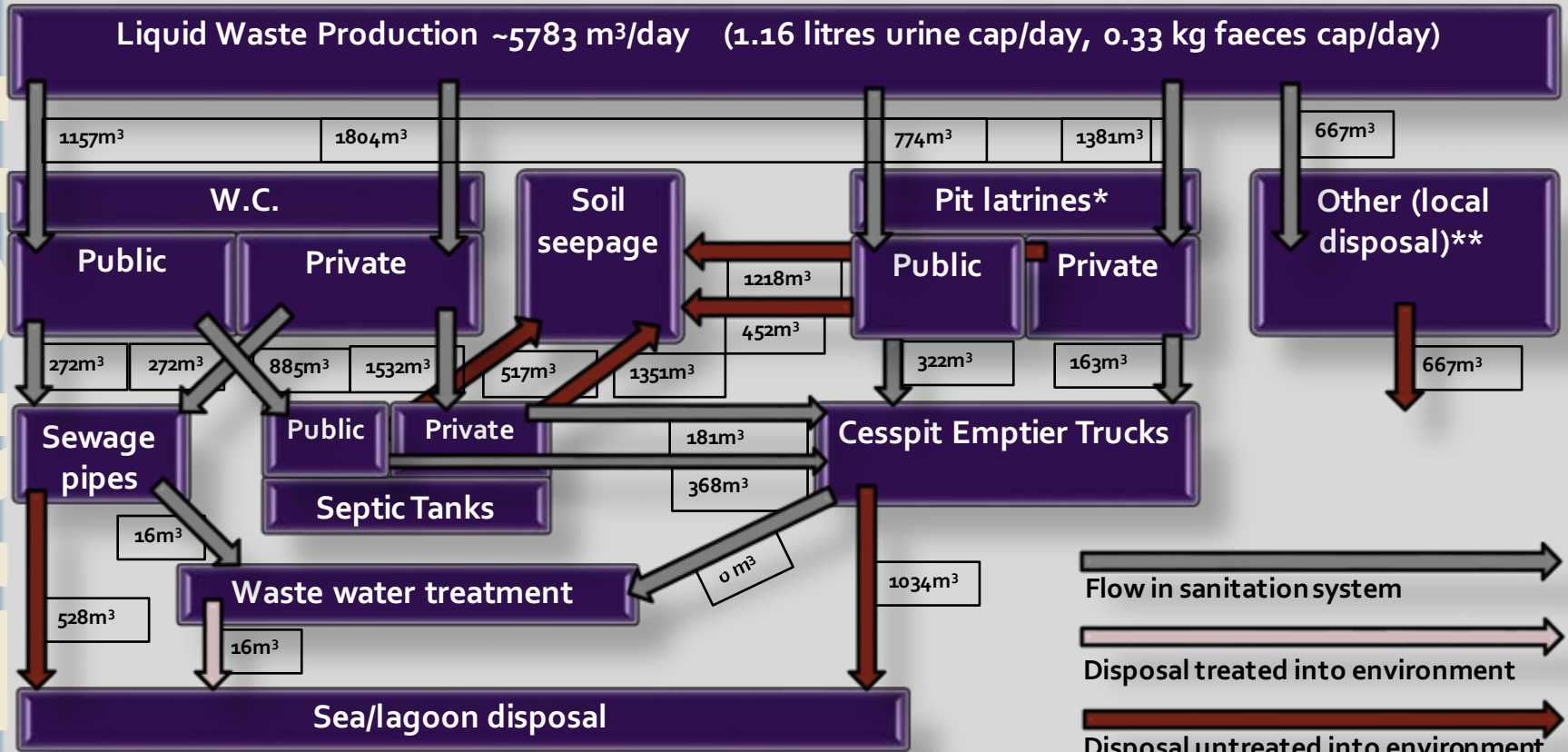


Waste water
from

Commercial
activities/sources
(services, retail, food
prep, finance, hotels
etc.)

in m³ per day

Human Liquid Waste: Flow calculation Overview (2010)



*Includes pit latrines and Kumasi ventilated improved pit latrines (KVIP)

**includes bucket/pan latrines, plastic bag defecation, open defecation, other forms of dumping in local environment

Next few steps:

- Refine water and sanitation datasets
- Build first water demand and waste-water produced scenarios 5-20 years
- Improve detail in water demand calculations based on activities during the day (toilet use/ cooking/washing etc.)
- Incorporate waste-water treatment technologies to facilitate model calculation of interventions

Webinar contents

1. Data / Model update
- 2. Use Case Development Outline**
3. Example use cases
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Use Case Outline - purpose

- A structured way to aid model development in a functional as close to application manner as possible.
- Thinking from the perspective of:
 - Local future users (for finalized version of tool)
 - Their needs/requirements
 - Model adaptation to needs/requirements

Use Case Outline – context/users

The use case context – challenge to address

- “Broad” → WASH sector in GAMA
- “Specific” → Technical pipe losses per MMA

Potential stakeholder/users

- WASH specialist/planners at MMAs
- Researchers at University of Ghana Legon
- Etc.

Use Case Outline - information

User information needs

- Example question of interest: How can technical water losses in pipelines be reduced?
- Example Indicator of interest: % delivery of potable water to households from treated water

Specific scenarios / model constraints

- Example scenario: District population, economy and water demand developments in 5-20 years
- Example constraint: Let model find best options, given certain criteria, for reduction in technical piped water losses → 30% reduction target over 20 years

Use Case Outline – use/usability

Model use

- Calculate potable water demands, raw water treatment needs, and delivery of water through current GWCL pipe network.
- Establish based on target reduction in technical losses based on current situation

Model outputs/representation/usability

- Produce a series of maps, charts, graphs displaying the quantitative/qualitative outcomes for the scenario period

Webinar contents

1. Data / Model update
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3. **Example use case**
4. Discussion

Example use case – context/users

The use case context – challenge to address

- Insufficient public toilets combined with lack of private toilet infrastructure, resulting at times in long public toilet queues
- Prevalence of unsanitary open defaecation

Potential stakeholder/users

- MMA water and sanitation unit specialists

Example use case - information

User information needs

- Example question of interest: What infrastructure is required to improve sanitation access?
- Example Indicator of interest: access to private toilet infrastructure, number of public toilets, time spent on queueing for public toilets

Specific scenarios / model constraints

- Example scenario: MMA population and sanitation infrastructure needs developments in 5-20 years
- Example constraint: Maximum time spent on queueing at public toilets $< X$ minutes, X % of population with access to private toilets.

Example use case– use/usability

Model use

- Calculate use of public and private toilet systems throughout the day in the MMA, and time spent on queuing in public systems, using the activity simulation.
- Calculate liquid waste generated in public and private toilet systems, and via open defaecation and where it ends up.
- Calculate number of private and public toilets required to meet the desired constraints, and the cost of investment and operational use of toilets to maintain the new infrastructure

Model outputs/representation/usability

- Produce line graphs with changes in open defaecation liquid waste flows over time, bar charts of infrastructure capacity development, and cost figures thereof.

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Discussion

- Questions from GAMA Technical group?

Discussion

- What type of users do you think could benefit from the use of the WASH prototype model?

Discussion

- What set of targets and indicators would be functional as outputs of the WASH prototype model for these users?

Discussion

- Are there existing scenarios or on-the-ground projects that you are aware of which could be meaningful to incorporate for the use cases?

Thank you for your inputs

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