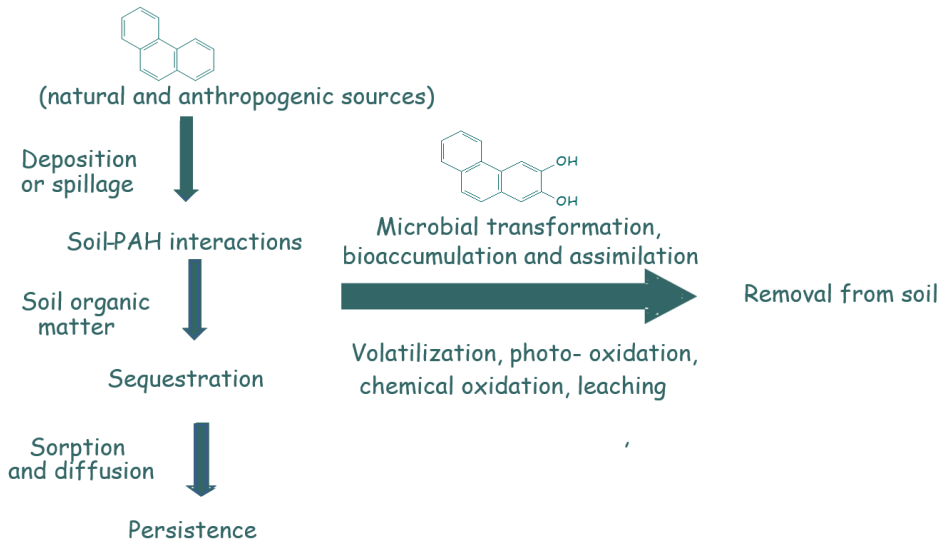




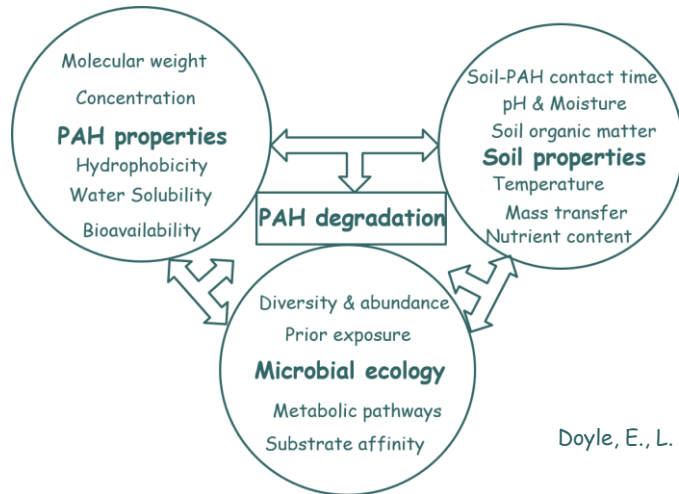
Developing Effective Wastewater Management Policies And Practices For Sub-Saharan African Cities

Dr Uche Okere

Research Background



Okere et al 2012



Doyle, E., L. Muckian, et al. (2008)

- PAH- Soil-microbial interactions
- Sources
 - Fertilisers
 - Pesticides
 - Petroleum products
- Fate of organic pollutants in soil
 - Potential for groundwater contamination
 - Removal processes
 - Sustainable resource use

Water in Sub Saharan Africa



- Population of approx. 1bn with an annual increase of around 2-4% per year
- Estimated to double by 2050
- 430m in urban areas; 50% increase by 2050
- Poor access to clean water
- 28% access to sanitation
- ~ 80% generated wastewater flows back into nature untreated (UN, 2017)
- Potential for waste water clean up technologies

Waste Water Clean Up Technologies for SSA

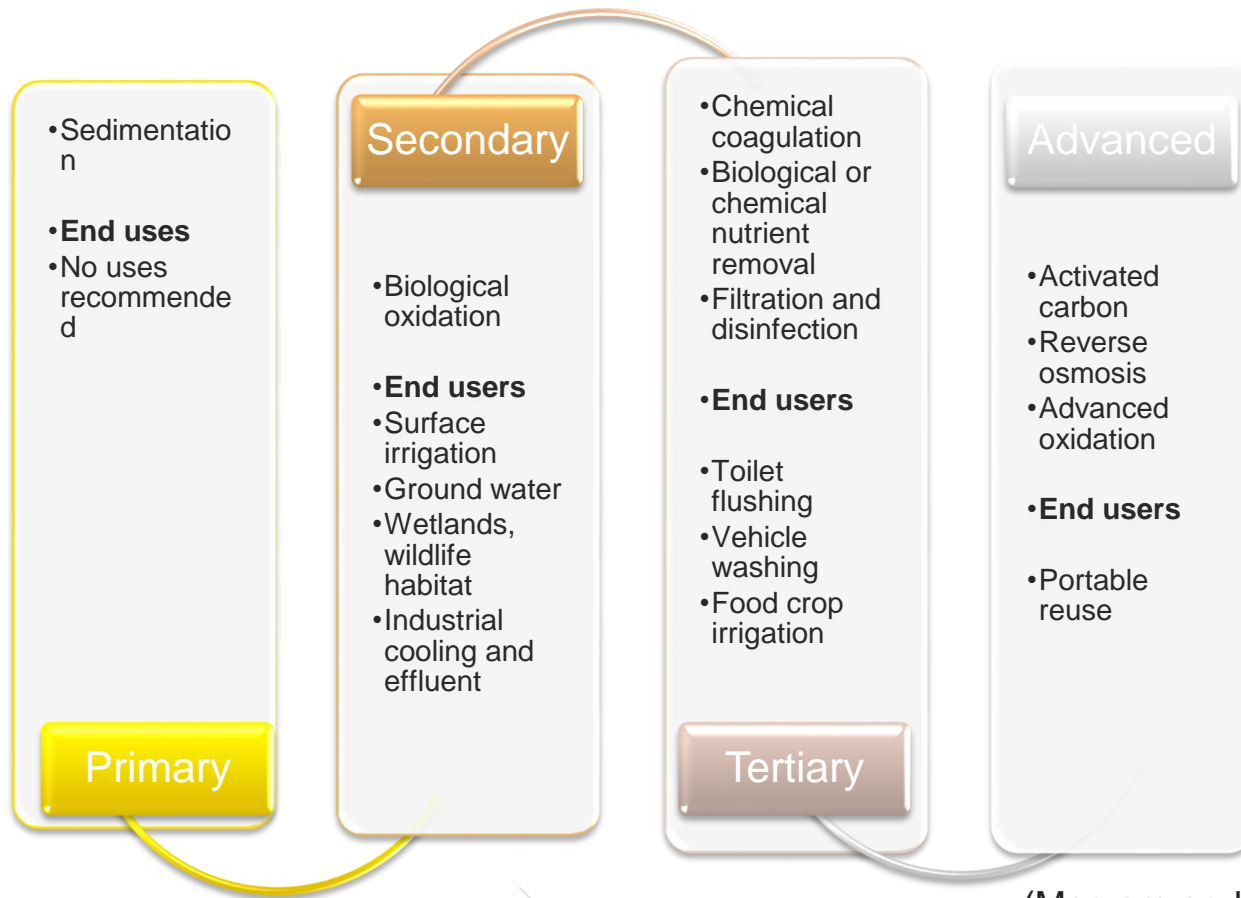
- Low wastewater volumes treated in SSA

| | Ghana | Burkina Faso | Senegal | Egypt | Algeria | Morocco | Tunisia |
|---|------------|--------------|-----------|--------------|------------|---|------------|
| Wastewater treated [1000 m ³ /day] | < 5 (2011) | < 5 (2011) | 38 (2011) | Not reported | 317 (2006) | 485 (i.e. 25% of the wastewater) (2011) | 658 (2010) |
| Ratio: treated wastewater/inhabitant (L/person/d) | <0.2 | <0.3 | 3.2 | - | 9.6 | 14.3 | 63.2 |

(Nikiema et. al. 2013)

Waste Water Clean Up Technologies for SSA

- Activated sludge and pond systems most widely used



(Maryam and Büyükgüngör 2017)

Challenges

Unplanned Developments

Poor policy implementation

Absence of Basic Systems

Poor Operation skills

Poor maintenance culture

Energy

Uncontrolled waste input

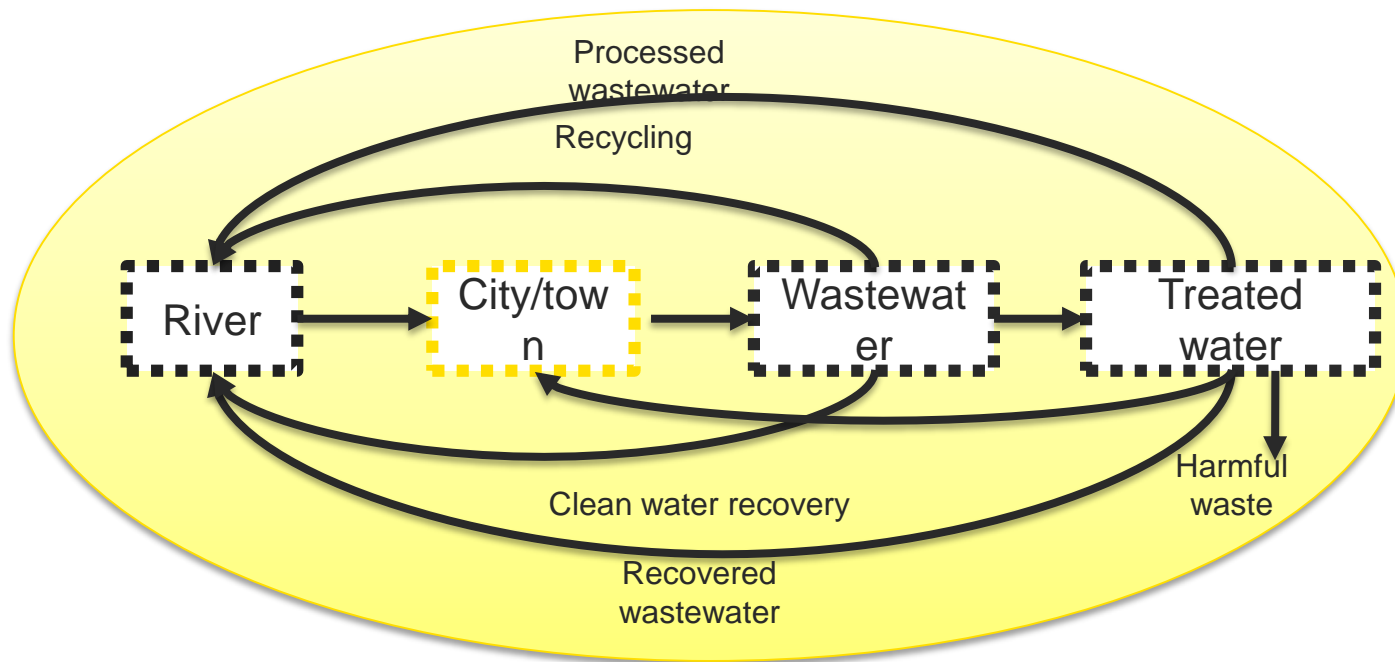
Cultural inhibitions

High organic loads

(Nikiema et. al. 2013)

Research Focus

1. Best approaches for ADAPTATION of available wastewater treatment processes for SSA cities



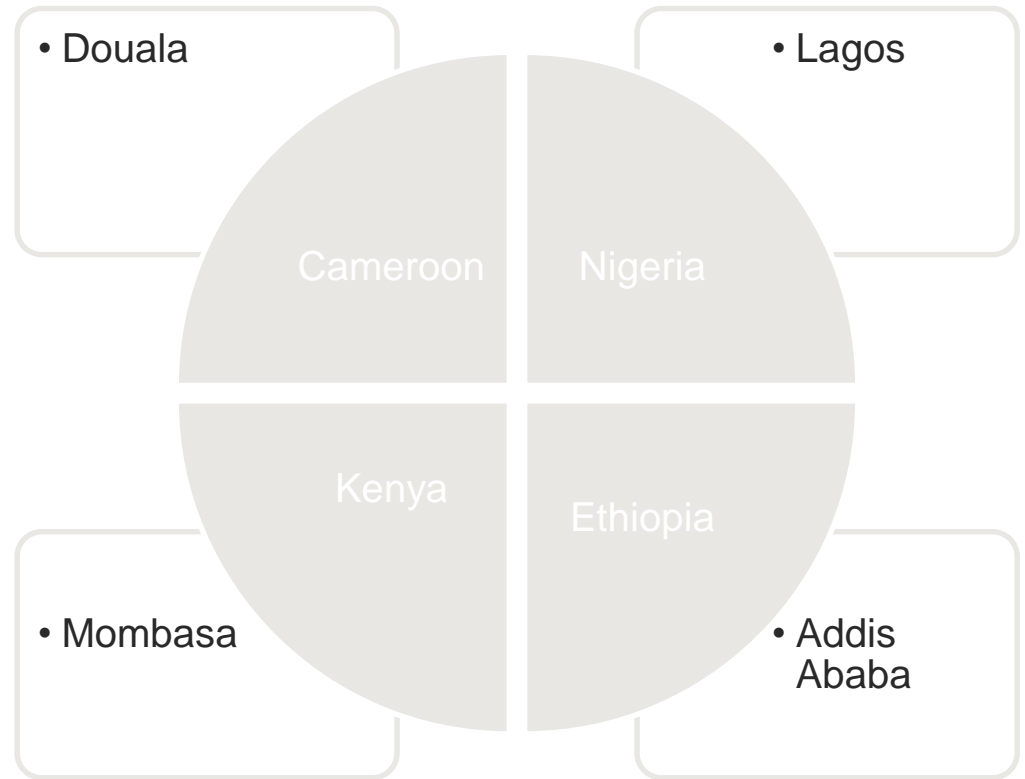
Proposed recyclability technique that helps generate clean water in Sub-Saharan Africa

Research Focus

2. Development of effective policy frameworks
3. Effective public awareness/engagement/education framework
 - Understanding the local context

Pilot studies

- Available treatment plants
- Types and processes applied
- Required treatment capacity
- Current challenges:
 - Performance
 - Use of treated wastewater



Conclusion

- Very early stages of development
- Open to advice, collaboration etc.

Thank You

Maryam, Bareera, and Hanife Büyükgüngör. "Wastewater reclamation and reuse trends in Turkey: opportunities and challenges." *Journal of Water Process Engineering* (2017).

Nikiema, Josiane, et al. "Wastewater treatment practices in Africa-Experiences from seven countries." *Ratio* 658.2010 (2011).