

Co-creating environmental water monitoring with citizen science in Malawi

Donald J C Robertson*(1)
Dr Tracy Morse (1) Dr Rowan Ellis (1, 2) Dr Chris White (1)
(1) Department of Civil & Environmental Engineering, University of Strathclyde, James Weir Building, 75 Montrose Street, Glasgow, G1 1XJ,
*email: donald.j.robertson@strath.ac.uk
(2) The James Hutton Institute, Craigiebuckler, Aberdeen, AB15 8QH

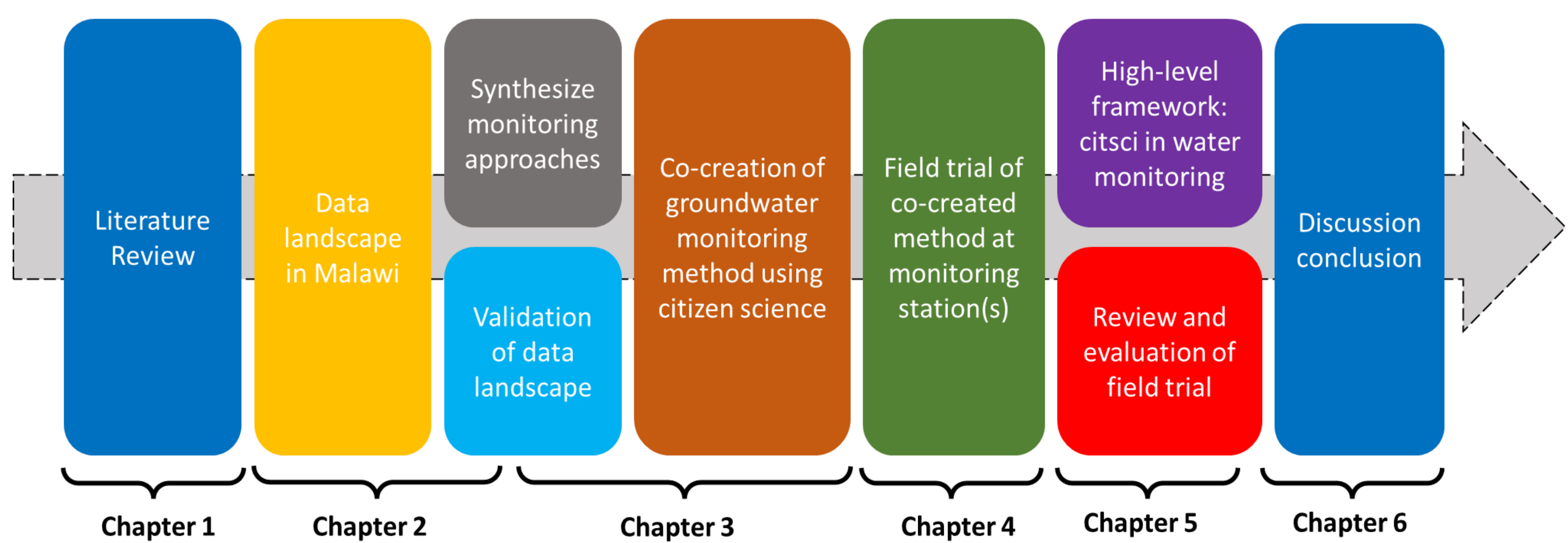
1. Why Environmental Water Monitoring?

- Core function of governments, yet **under resourced** regionally
- Provides **crucial data** which underpins water resource management, research, and climate change mitigation

2. Why Citizen Science?

- ‘Citizen science’ = non-specialist participation in science
- ‘**Citizen**’ participation in water management is **common practice** in Malawi
- Numerous **co-benefits** of citizen science approaches

3. PhD Thesis Overview



4. Co-creating an approach to environmental water monitoring: groundwater

Malawi's Groundwater Monitoring Network

Figure 1 (left). Image of a non-functional groundwater monitoring point in Machinga District. The monitoring point has been vandalised. (ND WASH Consultants, 2017)

Figure 2 (right). Image of a non-functional groundwater monitoring point. The monitoring point has been vandalised by local community. (Government of Malawi et. al, 2022)



- **106** groundwater monitoring sites in Malawi
- As of 2022, only **20 sites had gauge readers, only 6 had working data loggers** (Government of Malawi, 2022)
- Issues with training, community engagement, location, financial support

Co-creation Process

- Co-creation with stakeholders involved/interested in monitoring
 - Government (local/national)
 - Donors
 - NGO
 - Private Sector
 - Other e.g. academia, civil society
- Series of workshops, validating, defining underlying problems and exploring solutions
- Goal: create a ‘model’ or outline for groundwater monitoring with ‘citizen science’ (i.e. not just technologically driven)
- Expertise and experience already exists in Malawi.

1. Government of Malawi, Department of Water Resources, BASEflow Malawi, BAWI. (2022). Report on the assessment of groundwater monitoring wells in Malawi. Lilongwe.
2. ND WASH Consultants. (2017). Report: Situation Analysis Survey on Groundwater Resources Monitoring System for Central, Northern, and Southern Regions and National Consolidated Summaries, in Malawi. (unpublished).