Africa Use Case

At the 2018 Inception Workshop in Geneva, the WWQA decided to pilot and demonstrate current capabilities and future water quality information services through three use case studies in Africa. The Use Cases provide an initial testbed that puts the quality of surface water and groundwater into the context of the local 2030 Agenda and its multiple linkages across the Sustainable Development Goals. The UN Environment Programme is cooperating with relevant organisations including the UN-Water Expert Group on Water Quality and Wastewater in the World Water Quality Alliance to develop a World Water Quality Assessment for consideration by UNEA-5.

Africa Use Cases Aim:

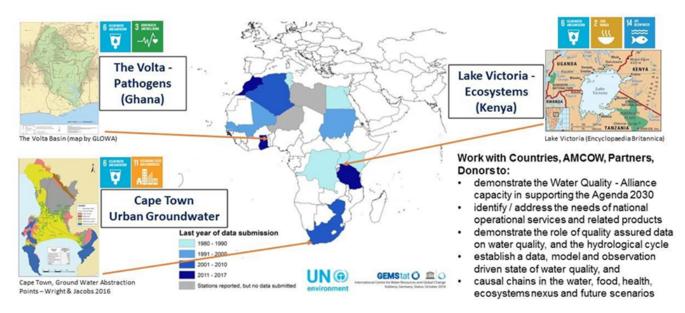
The African use case studies are the initial testbed putting water quality in surface and groundwater into focus of the local Agenda 2030 and its multiple linkages across goals. Central in this first test will be to combine an in-situ data, modelling and Earth Observation (EO) driven approach to derive the best possible current baseline state of water quality in those cases with a multi-stakeholder driven process defining demand for water quality services. Ultimately, the objective would be to arrive at evidence-based information linking water quality hotspots to solutions and investment priorities. The results produced by the use cases in this two-pronged approach are meant to be shared widely with the WWQA for further consideration

The selected African Use Cases comprise of:

Volta Basin: Transboundary river basin, shared between Burkina Faso, Togo, Mali, Cote D'Ivoire and Ghana. Main water quality issue are pathogens.

Lake Victoria: Transboundary lake, shared between Kenya, Tanzania, Uganda, Rwanda and Burundi. Main water quality issue is impact on ecosystem health.

Cape Town Main Aquifer Systems: Variety of aquifer systems in and around Cape Town; earmarked for water supply to Cape Town. Main water quality issues are pollution due to land use activities, geogenic elevated concentrations and impact on surface ecosystems.



Volta River Basin

The study area will focus on the basin contributing to Lake Volta within Ghana. However, where possible, this will be expanded to include the other contributing countries - in order of contributions: Burkina Faso (43%), Togo (6%), Benin (4%), Mali (4%), Côte d'Ivoire (3%) - with the remainder of the basin being within Ghana (40%).

Lake Victoria Basin

The study area will focus on riparian countries to the Lake (Uganda, Tanzania, Kenya). However, where information is available, this will include the portions of the lake catchment in Burundi and Rwanda.

Cape Town Main Aquifer Systems

The three aquifers targeted for supply to the City of Cape Town: Cape Flats Aquifer, Atlantis Aquifer, and Table Mountain Group (TMG) Aquifers. The TMG aquifers are more extensive than that specific model boundary and includes the greater TMG Target Zones, which include TMG aquifer explorations areas in the vicinity of the major dams of the Western Cape Water Supply System (WCWSS).

Africa Use Case Poster



The Africa Use Case

ABSTRACT

The African use case studies are the initial testbed putting water quality in surface and groundwater into focus of the local Agenda 2030 and its multiple linkages across goals. Central in this first test will be to combine an in-situ data, modelling and Earth Observation (EO) driven approach to derive the best possible current baseline state of water quality in those cases with a multistakeholder driven process defining demand for water quality services. Ultimately, the objective would be to arrive at evidence-based information linking water quality hotspots to solutions and investment priorities.

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- Cape Town Major Aquifer Systems: Variety of aquifer systems in and around Cape Town; earmarked for water supply to Cape Town. Main water quality issues are pollution due to land use activities, geogenic elevated concentrations and impact on surface ecosystems.

CONTACT

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UPDATE ON PROGRESS

Volta River Basin

- Stakeholder Engagement Process
- In-country attendance at key water quality and data conferences in Accra in 2019,
- Stakeholder Engagement Workshop in Accra (2020) to introduce the concept and initiate further engagement.
- Water quality products and services co-designed:
- Some ideas were raised but none were developed due to lack of in-country support and coordination

Lake Victoria Basin

- · Stakeholder Engagement Process
- Use Case concept presented to local stakeholders in Kenya and Uganda (2019).
- Virtual workshops (due to the Covid-19) organized with riparian fisheries institutes in 2020.
- Water quality products and services co-designed:
- Potential for coastal eutrophication (with EOMAP & RUB)
- Simulation of Lake temperature dynamics (with UFZ)
- · Sediment release of nutrients (with UFZ)

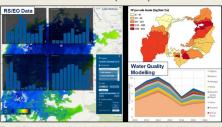


Figure 1. Demand-driven tool being developed to characterize potential of algal blooms to impact fisheries or identify potential links between aquaculture and coastal eutrophication (with permission of EOMAP and the 2f Engineering Hydrology and Water Resources Management at Ruhr University Bochum).

Cape Town Major Aquifer Systems

- Stakeholder Engagement Process
- Formal and regular engagement process with City of Cape Town officials, project engineers and environmental monitoring committee
- Ad-hoc engagement with affected landowners and farmers
- Community engagement during field work execution and outreach and stewardship initiatives
- Water quality products and services co-designed:
- Water quality hotspot identification and aquifer protection zone definition
- Water stewardship with education outreach, clean-up initiatives and transformative art in affected communities



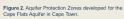




 Figure 3. Transformative Art in the Cape Flats area of Cape Town.

AIM & MFTHODOLOGY

Aims:

- Integration of Triangle to derive current state of water quality.
- Multi-stakeholder driven process defining demand for water quality services
- Provide evidence base that links water quality hotspots to solutions and investment



Figure 4. Magic Triangle of in-situ, earth

ACHIEVEMENTS

Based on an initial comparison of the three use cases, the success factors (and challenges) for this process comprises

- Integration of the triangle (in-situ data, earth observation and modelling) through system understanding and team interactions – achieved in Cape Town Aquifers and partly Lake Victoria
- Social engagement process; most successful, when using established formal platforms, wide range of stakeholders and community involvement – achieved in Cape Town Aquifers and partly Lake Victoria
- Availability of in-situ data (recent and historical) achieved for Cape Town Aquifers and Lake Victoria

CHALLENGES

As per the success factors and achievements, the challenges encountered and not yet or only partly solved relate to:

- In-situ data were not available for the relevant parameters and or the correct place
- The relevant institutions were reluctant to provide and share data due to real or perceived concerns regarding the data usage and accessibility to other parties
- Stakeholder engagement process requires a locally-based 'Champion', which was not always available or committed
- Fragmented institutional landscape or different institutional landscape and governance structures in neighbouring countries in case of transboundary water bodies

FUTURE OUTLOOK

It is envisaged to address the above challenges and build on the achievements so far through commencement of the following activities:

- Continuation and expansion of stakeholder engagement process for Lake Victoria and Cape Town Aquifers
- Developing new approach for stakeholder engagement in the Volta River Basin, including civil society and NGOs
- Continuation and expansion of the water stewardship and transformative art initiative for Cape Town
- Development of a rehabilitation plan for the Lotus Canal, which is a major source of pollution in Cape Town
- Preparing data sharing and data management agreements for Lake Victoria and Volta River Basin
- Evaluation of the different approaches to stakeholder engagement in different institutional landscapes