



KeNAWRUA Report.

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| Project Title. | Enhancing Water Quality Monitoring Through Citizen Science in Kenya |
| Project Activity | Citizen Science Data Integration for SDG indicator 6.3.2 |
| Project Aim | Integration of WRUA data gathering and citizen science water quality monitoring for basin management and SDG6.3.2 reporting in Kenya |
| Amount | 1,578,000.00 |
| Date of agreement | 1st May 2024 |
| Term of Agreement | 30 th January 2025 |



Integrating citizen science-generated data on water quality for monitoring and achieving Sustainable Development Goal 6.3.2 (Photo Courtesy KeNAWRUA).

Introduction

The Kenya National Association of Water Resources Users Associations (KeNAWRUA) is the premier national umbrella body representing 756 Water Resources Users Associations (WRUAs) across Kenya's six basin areas. Our mission is to promote the sustainable management of water resources through collaborative and participatory approaches. KeNAWRUA serves as a unifying platform, empowering WRUAs to advocate for equitable and sustainable water governance.



KeNAWRUA's participation in the pilot study funded by the World Water Quality Alliance (WWQA) through EarthWatch Europe marked a significant milestone in advancing basin management and Sustainable Development Goal (SDG) 6.3.2



reporting in Kenya. By integrating WRUA data collection with citizen science water quality monitoring, this initiative enhanced local engagement, improved data accuracy, and strengthened evidence-based decision-making for water resource management.

The Problem.

Historically, Water Resources Users Associations (WRUAs) depended on paper-based methods for water quality data collection a system fraught with significant challenges. Records were highly vulnerable to damage from moisture, flooding, and natural deterioration, while manual processes created delays in accessing critical information, hindering timely interventions. The absence of a centralized storage system further fragmented data, resulting in loss of valuable insights and inefficiencies in analysis. These limitations not only weakened the effectiveness of water resource monitoring but also impaired policy development and compromised public health safeguards. Recognizing these gaps, the need for a transformative shift to robust, digital data management systems became imperative laying the foundation for smarter, faster, and more reliable water governance.

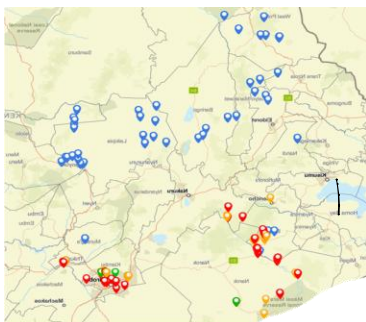
Project Implementation & Achievements

1. Digital Transformation & Data Centralization.

KeNAWRUA, with support from WWQA through Earth Watch Europe, developed a comprehensive Excel database that consolidates water quality data from 45 WRUAs dating back to 2012, along with a mobile application (Survey123) that enables real-time data collection and seamless upload to a centralized platform.

Key Outcomes:

To date, 3,098 datasets have been uploaded, covering critical water quality parameters including pH, turbidity, dissolved oxygen, temperature, E. coli, coliforms, and macroinvertebrates, resulting in enhanced data accuracy, accessibility, and usability for informed decision-making.



2. Capacity Building & Citizen Science Engagement.

A total of 49 WRUAs across the 6 basin areas in Kenya were equipped with water quality testing kits, and 56 citizen scientists including 23 women, 33 men, and 45 youth were trained in ethics and safety, proper use of monitoring equipment, data



collection protocols, and digital data submission using the Survey123 application. This inclusive approach ensured meaningful participation across gender and age groups, promoting equity and empowering diverse voices in water quality monitoring.

3. Policy & Conservation Impact.

The project has directly influenced the review of the Water Resources Regulations (2025), including Regulation 81 which provides for a 10% conservation levy to be channeled through WRUAs, initiated the development of a Citizen Science fact sheet and policy, and the gazettement of four wetlands in the Tana and Athi Basin areas.



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Impact of the Project

1. Improved Water Resource Governance.

The project significantly strengthened collaboration between Water Resources Users Associations (WRUAs), the Water Resources Authority (WRA), and Earth Watch, fostering a more coordinated and inclusive approach to water quality monitoring and governance. This enhanced partnership improved knowledge exchange and technical capacity across institutions, enabling the integration of citizen-generated data into formal water resource management systems. As a result, Kenya's reporting on Sustainable Development Goal (SDG) 6, particularly target 6.3.2 focused on improving water quality has been greatly enhanced through the use of comprehensive, real-time datasets that reflect grassroots-level realities. Importantly, KeNAWRUA has been officially identified as a key focal point for SDG 6.3.2 reporting, recognizing its pivotal role in mobilizing community-led data collection and linking it to national and global water governance frameworks. This model demonstrates how local action, when aligned with institutional support, can meaningfully influence environmental policy and sustainable development.

2. Community Empowerment.



The project led to a remarkable increase in local participation, with 56 trained citizen scientists 41% of whom were women and over 80% youth actively engaging in water quality monitoring across 49 WRUAs. This inclusive grassroots involvement not only strengthened data collection efforts but also sparked greater public awareness and accountability in water resource management, fostering a culture of environmental stewardship and community-led action for sustainable water governance.



3. Technological Advancements.



The transition from outdated paper-based systems to cutting-edge digital data platforms marked a game changing advancement in water quality monitoring. By leveraging real-time data collection through mobile applications, about 76 WRUAs and 6 Local Water Forums in Nairobi and 15 independent individuals can now instantly upload and access critical water quality information dramatically improving efficiency, accuracy, and response time. This technological leap has empowered WRUAs and decision-makers to detect and address water quality threats proactively, turning data into immediate action for healthier ecosystems and safer water sources.

Challenges & Risks

| Challenge | Risk | Adaptive Measure |
|--|--|---|
| Limited digital literacy among some WRUA members | Inconsistent data entry & errors | Ongoing training & mentorship programs |
| Connectivity issues in remote areas | Delayed data uploads | Offline data collection features in Survey123 |
| Sustainability of monitoring efforts | Potential decline in long-term participation | Incentivizing citizen scientists & securing funding |
| Data validation & quality control | Risk of inaccurate reporting | Automated validation checks & peer reviews |

Lessons Learned.

- **Community Engagement is Key** – Involving WRUAs fosters ownership and long-term sustainability.
- **Technology Enhances Efficiency** – Digital tools streamline data collection and improve accuracy.
- **Policy Influence is Possible** – Grassroots data can drive national water governance reforms.
- **Capacity Building is Continuous** – Regular training ensures data reliability and sustained adoption of digital systems.



Next Steps.

| Action Area | Description |
|------------------------------|--|
| Scale Up Digital Monitoring | Expand the app's use to another 203 WRUAs. |
| Strengthen WRA Collaboration | Enhance data-sharing mechanisms for basin-wide management. |
| Advocate for Policy Adoption | Push for formal recognition of citizen science data in national reporting. |
| Secure Sustainable Funding | Explore partnerships for long-term project viability. |
| SDG 6 (Target 6.3.2) | Develop a popular template that local communities can understand and fill. |