

Youth Engagement in School-Based Water, Sanitation, Hygiene and Environmental Health Governance: The NWSC School Water and Sanitation Clubs Experience in Uganda

Advocate Brownie Ebal, Grad (CG), LLM(UK), LLB (Hons)^{1*}, & Collins Bukenya²

¹Manager- Litigation and Legal Advisory Services., NWSC, Legal Directorate, National Water and Sewerage Corporation, P.O. Box Kampala, Uganda.

²Senior Customer Relationship Officer, National Water and Sewerage Corporation, P.O. Box Kampala, Uganda.

Corresponding Author: Advocate Brownie Ebal, Grad (CG), LLM(UK), LLB (Hons), Manager- Litigation and Legal Advisory Services., NWSC, Legal Directorate, National Water and Sewerage Corporation, P.O. Box Kampala, Uganda. Tel: +256 701353592

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Abstract

Background: Schools are important settings for public health education, water conservation, sanitation practice, and environmental stewardship. In Uganda, children and youth remain a critical but often underutilized stakeholder group in water, sanitation, hygiene (WASH), and environmental governance. The National Water and Sewerage Corporation (NWSC) established School Water and Sanitation (SWAS) Clubs to promote safe water use, hygiene, sanitation, environmental responsibility, and youth participation through school-based engagement.

Objective: This paper documents the NWSC SWAS Clubs experience as a youth-centered, school-based model for inclusive and climate-resilient WASH and environmental health governance.

Methods: A qualitative institutional case study design was adopted. Data were drawn from NWSC annual reports, SWAS programme records, outreach reports, participation records from schools, media reports, and observational insights from programme implementation between 2022 and 2025. A descriptive thematic analysis was used to synthesize programme activities, participation patterns, reported outputs, and lessons for public institutions and water utilities.

Results: The SWAS model combines demonstrations, games, career guidance, mentorship, exhibitions, environmental campaigns, tree planting, community clean-ups, and water conservation messages. Available programme records indicate that SWAS outreach has reached over 2,000 students through direct structured engagement; the programme has expanded from 50 schools at launch in 2014 to more than 740 schools across NWSC operational regions; and environmental campaigns have engaged more than 20,000 students across over 400 schools. SWAS-related platforms have also involved over 120 schools in exhibitions and innovation showcases, while environmental action has contributed to wider institutional tree-planting and catchment protection efforts.

Conclusion: The NWSC SWAS Clubs demonstrate that children and youth can contribute meaningfully to WASH, environmental health education, and climate-resilient governance when participation is structured, experiential, and linked to institutional service delivery. The model offers a scalable approach for water utilities, schools, and public institutions seeking to integrate youth into sustainable water and environmental management.

Keywords

Youth Engagement, WASH in Schools, Environmental Health, Water Governance, Climate Resilience, School Health, Uganda, NWSC

Introduction

Water, sanitation and hygiene (WASH) in schools is a major public health and environmental governance concern. Schools shape everyday hygiene behaviour, influence household practices, and create opportunities for children and young people to develop lifelong habits around safe water use, sanitation, environmental protection and civic responsibility. The WHO/UNICEF Joint Monitoring Programme has continued to emphasize the importance of monitoring WASH services in schools as part of Sustainable Development Goal implementation, including drinking water, sanitation and hygiene services for learners. Persistent gaps in school WASH services globally show that education, infrastructure, behaviour change and institutional accountability must be addressed together rather than in isolation [1, 2].

The relationship between WASH and public health is particularly important in school settings because children spend substantial time in learning environments where safe water, sanitation facilities and hygiene education influence health, attendance, dignity, learning outcomes and wider community behaviour. School WASH interventions are therefore not only infrastructure interventions; they are also preventive health, behavioural change and social development interventions. In climate-vulnerable contexts, school-based WASH programmes also provide entry points for water conservation, environmental stewardship, catchment protection, climate awareness and responsible resource use [3, 4].

Despite the importance of children and youth to long-term water and environmental sustainability, youth engagement in water governance often remains limited to awareness campaigns, commemorative events or one-off school visits. Such approaches may raise knowledge in the short term but do not always create meaningful participation, leadership, mentorship or practical environmental action. There is therefore a need to document institutional models that move beyond passive sensitization and position children and youth as active stakeholders in WASH and environmental health governance.

The National Water and Sewerage Corporation (NWSC) of Uganda has implemented School Water and Sanitation (SWAS) Clubs as a structured school-based outreach and capacity-building initiative. The programme seeks to instill lifelong values of safe water use, hygiene, sanitation, environmental stewardship, innovation and water-sector awareness among learners. Through practical demonstrations, games, mentorship, exhibitions, environmental campaigns and school club activities, SWAS translates institutional water and environment mandates into practical learning experiences for children and youth. The programme also aligns with Uganda's broader development ambition of nurturing human capital for inclusive growth and climate-resilient communities [5, 6].

This paper presents the NWSC SWAS Clubs as a qualitative institutional case study of youth engagement in WASH, environmental health and climate-resilient water governance. It builds on the conference paper and poster presented during Uganda Water and Environment Week 2026 and reframes the experience for journal publication as a public health and environmental governance manuscript.

Objectives

The study was guided by three objectives

1. To examine the SWAS Clubs as a youth-centered stakeholder engagement and capacity-building initiative within NWSC.

2. To assess the contribution of SWAS Clubs to water, sanitation, hygiene and environmental awareness among children and youth.
3. To document outcomes and lessons for integrating youth into inclusive and climate-resilient WASH and environmental health governance frameworks.

Materials and Methods

Study Design

The study adopted a qualitative institutional case study design. The case study approach was considered appropriate because the purpose of the paper was not to measure clinical outcomes or test an intervention under controlled conditions, but to document and interpret an institutional youth engagement model implemented by a national water utility in real-world school and community settings.

Study Setting and Programme Context

The study focused on the School Water and Sanitation (SWAS) Clubs implemented by the National Water and Sewerage Corporation in Uganda. NWSC is a public water utility responsible for water supply and sewerage services in its operational areas. The SWAS Clubs were established as a school-based platform for promoting safe water use, sanitation, hygiene, water conservation, environmental responsibility and career awareness among learners. The programme operates through school clubs, outreach activities, demonstrations, mentorship, exhibitions, and environmental action projects.

Data Sources

Data were obtained from institutional and documentary sources. These included NWSC annual reports, SWAS programme records, outreach activity reports, participation records from SWAS schools, institutional publications, media reports and observational insights from programme implementation. The period of review covered programme activities and records available to the authors, with emphasis on activities conducted between 2022 and 2025.

Data Analysis

A descriptive thematic analysis was used. Programme records and documentary materials were reviewed to identify recurring themes related to youth participation, WASH education, environmental stewardship, climate resilience, institutional outreach and lessons for governance. Quantitative programme outputs, such as the number of schools and students reached, were summarized descriptively. The analysis focused on institutional learning and programme contribution rather than causal attribution.

Ethical Considerations

The study relied on institutional programme records, published reports and observational insights. It did not involve clinical intervention, collection of identifiable health data or reporting of individual student responses. No identifiable information relating to minors is presented. The authors recommend that any future impact evaluation involving individual learners, households or schools should obtain the necessary institutional and ethical approvals, including consent and safeguarding arrangements where applicable.

Results

Programme Model and Activities

The SWAS Clubs operate as a practical school-based model for WASH and environmental learning. The programme combines education, mentorship and action by engaging learners through

demonstrations, games, school club activities, career guidance, environmental campaigns, tree planting, community clean-ups, innovation exhibitions and water conservation messages. This experiential approach enables learners to connect classroom knowledge with practical issues affecting water supply, sanitation, hygiene and environmental protection.

The programme also exposes learners to the water sector as a professional and public service field. Through career guidance and institutional interaction, learners gain awareness of the roles of engineers, scientists, customer relations officers, environmental officers, lawyers, communications teams and other professionals involved in water and sanitation service delivery. This contributes to human capital development and helps young people view water and environmental management as areas of future innovation and leadership.

Reach and Institutional Growth

Available programme records show significant growth in SWAS participation and outreach. The programme expanded from 50 schools at launch in 2014 to more than 740 participating schools across NWSC operational regions. Direct structured outreach has reached over 2,000 students through career awareness and water-sector exposure activities. Wider environmental campaigns have engaged more than 20,000 students across over 400 schools. In addition,

SWAS conventions, exhibitions and related national platforms have involved over 120 schools, enabling students to showcase innovations, environmental advocacy and practical WASH messages.

Environmental Stewardship and Climate-Resilient Action

SWAS activities have extended beyond hygiene messages to include environmental responsibility and climate-related action. Learners have participated in tree planting, school environmental campaigns, clean-ups, water conservation education and advocacy for responsible resource use. These activities link school WASH education with broader concerns of catchment protection, urban environmental management and climate resilience. The programme also connects to wider NWSC environmental initiatives, including tree-planting and catchment protection efforts, thereby positioning students as participants in long-term environmental stewardship.

Youth Participation and Public Platforms

The programme has created opportunities for children and youth to participate in public water and sanitation discourse. Through conventions, exhibitions and conferences, students have showcased WASH innovations, shared environmental messages and contributed to broader conversations on sustainable water and environmental management. Such platforms help shift youth engagement from passive awareness to visible participation, voice and accountability.

Summary of Key Outputs

Table 1: Summary of documented SWAS Clubs programme outputs

Indicator	Documented output	Interpretation
Programme growth	Expanded from 50 schools at launch in 2014 to more than 740 participating schools across NWSC operational regions.	Shows institutional uptake and scalability of the school-club model.
Direct structured outreach	More than 2,000 students reached through career awareness and water-sector exposure activities.	Shows direct learner engagement beyond general public messaging.
Environmental campaigns	More than 20,000 students engaged across over 400 schools.	Shows potential for school-based peer learning and environmental action.
Public platforms	Over 120 schools involved in SWAS conventions, exhibitions and related showcases.	Shows opportunities for youth voice, innovation and accountability.
Environmental action	Activities include tree planting, clean-ups, conservation campaigns, water conservation messages and links to wider institutional catchment protection efforts.	Connects school WASH education with climate resilience and environmental health.

Table 2: Thematic contribution of SWAS Clubs to WASH and environmental health governance

Theme	Programme contribution	Governance relevance
WASH education	Promotes safe water use, hygiene and sanitation messages through school clubs and outreach.	Supports preventive public health education and responsible use of water services.
Youth participation	Provides structured roles for learners through clubs, exhibitions, campaigns and peer learning.	Moves youth engagement from passive awareness to active participation.
Environmental stewardship	Encourages tree planting, clean-ups, conservation and climate-awareness messages.	Links WASH to environmental protection and climate resilience.
Human capital development	Exposes learners to water-sector careers, mentorship and innovation.	Supports long-term sector capacity and inclusive growth.
Institutional accountability	Creates direct interaction between a public utility, schools and learners.	Strengthens public trust, citizen awareness and service-delivery understanding.

Discussion

The SWAS experience demonstrates the value of treating children and youth as active stakeholders rather than only as recipients of public health messages. In school WASH programming, children are often reached through hygiene talks, sanitation campaigns or infrastructure provision. While these remain important, the SWAS model shows that deeper engagement can occur when learners are organized through clubs, mentored by institutional actors and supported to participate in practical environmental activities.

A key contribution of the SWAS model is its integration of WASH education with environmental health governance. Safe water use, hygiene and sanitation are directly linked to preventive health, but the programme also connects these issues to climate resilience, conservation and responsible use of natural resources. This integrated approach is important because climate change increasingly affects water availability, water quality, sanitation systems, catchments and community resilience. School-based programmes can therefore help learners understand that hygiene and sanitation are not isolated behaviours, but part of broader environmental and public health systems.

The programme also strengthens the role of public institutions in community education. NWSC's involvement creates a bridge between service delivery and public awareness. By taking water utility knowledge into schools, SWAS helps demystify water production, distribution, conservation and sanitation service delivery. This may strengthen public trust and create future citizens who better understand the cost, value and responsibility associated with safe water and sanitation services.

Another important lesson is the use of experiential learning. Demonstrations, games, exhibitions, clean-ups and tree planting are more likely to engage learners than classroom lectures alone. These activities allow learners to practice leadership, teamwork, communication and problem solving. They also create peer-to-peer learning opportunities in which students can carry messages to classmates, families and communities. This is particularly important in WASH behaviour change, where household practices are shaped by social norms, repeated messages and practical reinforcement.

The scale of SWAS also offers lessons for replication. Expansion from 50 schools to more than 740 schools suggests that water utilities can use structured school partnerships as a platform for nationwide or regional youth engagement. However, scale alone is not sufficient. For stronger evidence, future programming should include systematic monitoring indicators such as changes in handwashing behaviour, water conservation practices, school sanitation conditions, household message transfer, student leadership outcomes and long-term environmental action.

The study also highlights the need for stronger measurement of health and behavioural outcomes. Current evidence is largely based on institutional outputs, such as number of schools reached, students engaged and activities conducted. These are important indicators of reach and participation, but they do not fully demonstrate changes in health outcomes, sanitation practices, disease reduction, school attendance or community behaviour. Future evaluations should combine institutional records

with surveys, school WASH assessments, interviews, focus group discussions and longitudinal tracking.

Policy and Practice Implications

The SWAS model has several implications for water utilities, schools and public institutions. First, youth engagement should be embedded into WASH and environmental governance frameworks rather than treated as an occasional corporate social responsibility activity. Second, school WASH programmes should combine infrastructure, education, behavioural change and environmental action. Third, public institutions should use mentorship and exhibitions to build youth voice and innovation. Fourth, partnerships between utilities, schools, local governments and environmental actors can improve programme sustainability and reach.

For Uganda and similar contexts, the SWAS Clubs provide a practical example of how public utilities can contribute to public health education, climate-resilient communities and inclusive governance. By engaging learners early, institutions can nurture a generation that values safe water, sanitation, hygiene, conservation and environmental accountability.

Limitations

This study has limitations. First, it is based on an institutional case study and therefore does not establish causal relationships between SWAS participation and specific health or behavioural outcomes. Second, the data are drawn mainly from institutional records, programme reports, media reports and observational insights, which may not capture all school-level experiences or independent learner perspectives. Third, the study reports programme outputs such as participation, school reach and environmental activities, but does not include pre- and post-intervention measures of hygiene behaviour, sanitation conditions, disease incidence or school attendance. Fourth, because the programme has expanded over time, some figures may represent cumulative engagement across different activities and should be interpreted as programme output indicators rather than individual-level impact measures.

Despite these limitations, the study provides useful institutional evidence and practical lessons on how school-based youth engagement can support WASH education, environmental stewardship and climate-resilient governance.

Conclusion

The NWSC School Water and Sanitation Clubs demonstrate that children and youth can be meaningful stakeholders in water, sanitation, hygiene and environmental health governance when they are engaged through structured, practical and participatory platforms. The programme has grown from a school outreach initiative into a wider model for youth engagement, environmental stewardship, career awareness and climate-resilient public education.

By combining demonstrations, mentorship, club activities, exhibitions, water conservation messages, tree planting and clean-ups, SWAS helps translate water and environmental policy into school and community-level action. The experience suggests that water utilities and public institutions can play an important role in shaping public health behaviour and environmental responsibility among young people.

Future research should move beyond programme output documentation and assess long-term behavioural, health, educational and community-level impacts. Stronger evidence on learner behaviour, household influence, school WASH improvements and environmental outcomes would further support the integration of youth-centered approaches into national WASH and climate resilience frameworks.

Declarations

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Competing Interests

The authors are employees of the National Water and Sewerage Corporation, the institution implementing the SWAS Clubs. This affiliation is disclosed. The authors declare no other competing interests.

Author Contributions

Brownie Ebal conceptualized the manuscript, contributed to programme interpretation, drafted and revised the manuscript. Collins Bukenya contributed programme information, implementation insights and review of the manuscript. Both authors approved the final version for submission.

Data Availability

The data summarized in this manuscript are drawn from institutional programme records, annual reports, outreach records and published materials. Detailed institutional records may be

available from NWSC subject to internal approval and applicable data governance requirements.

Ethics Statement

This manuscript reports an institutional programme case study and does not include identifiable personal data from learners, teachers or schools. Future studies involving individual-level learner data, interviews or health outcomes should obtain appropriate ethical clearance, institutional permissions and consent/assent where applicable.

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