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TECHNICAL PAPER

A Practical Framework for Engaging Water Champions in the One Health Approach: Lessons from the Akaki Catchment, Ethiopia

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Front cover photo: Stakeholders reviewing the water champions' activities. *photo*: Abel Zewengel/IWMI
Back cover photo: Water Champions after an awareness-raising event in Addis Ababa.*photo*: Yonas Tafesse/IWMI

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Acronyms and Abbreviations

AAEPA	Addis Ababa Environmental Protection Authority
AAHB	Addis Ababa Health Bureau
AAWSA	Addis Ababa Water and Sewerage Authority
AMR	Antimicrobial resistance
CGIAR	Consultative Group on International Agricultural Research
EPA	Environmental Protection Authority
EPHI	Ethiopian Public Health Institute
FAO	Food and Agriculture Organization of the United Nations
IWMI	International Water Management Institute
KII	Key Informant Interview
MoWE	Ministry of Water and Energy
NAMRAC	National AMR Advisory Committee
NIMC	National Inter-Ministerial Committee
NOHSC	National One Health Steering Committee
OH	One Health
ToR	Terms of Reference
WAAW	World Antimicrobial Awareness Week
WC/WCs	Water Champion(s)
WHO	World Health Organization
WOAH	World Organization for Animal Health

Summary

Water's role in the spread of antimicrobial resistance (AMR) has been underrepresented in Ethiopia's One Health (OH) approach. To address this gap, the International Water Management Institute (IWMI) co-developed, with Water Champions (WCs), an approach to include water in national and regional OH strategies and tested it in the Akaki watershed. The approach to identify and engage WCs in OH included defining their roles, analyzing the engagement process, identifying challenges and opportunities, and enhancing cross-sectoral collaboration. Instead of imposing a predesigned framework for the engagement of WCs, we developed a systematic framework by documenting and synthesizing the activities, achievements and experiences of WCs in the Akaki catchment. This report presents a framework for engaging WCs in Ethiopia's OH approach, drawing lessons from the Akaki watershed. The framework was co-developed by the IWMI and partners to integrate the water sector into national OH strategies, recognizing water's underrepresented role in the emergence and spread of AMR. The engagement process is designed to be flexible and evidence-based, aiming to identify and empower WCs across health, environmental and water sectors. Key components of the framework include stakeholder analysis, Terms of Reference (ToR) development, capacity building, advocacy and monitoring, all structured to enhance cross-sectoral cooperation and awareness. The process was carried out in three phases. The initial phase identified key water issues aligned with the OH approach. The subsequent two phases focused on securing stakeholder commitment and collaboratively developing and reviewing the adaptive framework for engaging WCs. Data for framework development was gathered through key informant interviews, observations during regular meetings, awareness-raising activities and reviews of relevant documents. The structured phases of the framework effectively enhanced cross-sectoral cooperation and awareness. However, challenges remain, including limited institutional support, lack of dedicated funding and the perception of WC roles as secondary duties. The report concludes that formalizing WC roles within OH governance and strengthening intersectoral collaboration, capacity building and performance monitoring are essential for sustainability. The Akaki experience demonstrates that integrating WCs into the OH approach can significantly advance AMR prevention and promote holistic water-health management. Overall, embedding WCs within Ethiopia's OH approach represents a major step toward recognizing water as a vital element in addressing interconnected human, animal and environmental health challenges.

Introduction

Background

Water is vital for the health of humans, animals and ecosystems, making it central to the One Health (OH) approach. However, its critical role in preventing public health threats, such as water pollution and antimicrobial resistance (AMR), is often underrepresented in national, regional and local OH strategies. This situation must be changed (Graham et al. 2025).

Several methods can be used to inform the integration of water management into OH governance. Common methods include conducting systematic literature reviews, stakeholder analyses and participatory consultations to identify key OH actors, define their roles and map intersectoral linkages. Moreover, adaptive and iterative frameworks guided by national AMR action plans and international standards from the World Health Organization (WHO), the Food and Agriculture Organization (FAO) and the World Organization for Animal Health (WOAH) offer structured yet flexible models that promote coordinated multisectoral collaboration and long-term sustainability. The WHO and FAO guidelines on drinking water quality, which consider the relationship between water use in agriculture, food security and environmental health, clearly demonstrate the profound impact that water has on people's lives (WHO 2021; FAO 2017).

Following the need for greater integration of water in OH, engaging Water Champions (WCs) was found to be essential. WCs are individuals or groups who lead or advocate for sustainable water management and related challenges. WCs have great potential in bringing water to the forefront of OH, enhancing the prevention of water pollution and containment of antimicrobial-resistant bacteria. However, recruiting and retaining these volunteer experts is challenging; they must draw on experience across the water, health and environmental sectors to clearly communicate water's potential roles in both the spread and control of public health threats and to enhance water issues.

Taylor (2012) and Pirkänen et al. (2023) identify three primary determinants of a WC's effectiveness: (1) personal attributes, such as values and expertise; (2) group-level influence, including relationships with decision-makers; and (3) contextual factors, such as institutional culture, political timing and available opportunity. Moreover, a structured process for the recruitment, meaningful engagement and sustained support of WCs within the OH committees is essential for maximizing their effectiveness.

Despite the critical role of water in safeguarding public health, the Ministry of Water and Energy (MoWE) was not adequately represented in Ethiopia's existing OH coordination bodies. The country's National One Health Steering Committee (NOHSC), National Inter-Ministerial Committee (NIMC) and National AMR Advisory Committee (NAMRAC) focused primarily on the traditional sectors of human, animal and environmental health but overlooked the vital role water plays in these interconnected areas. Water is a foundational component of OH, influencing both public health and ecosystem health. Its impact stretches across agriculture, food security, sanitation and disease transmission. Whether the issue is water quality, availability or access, the presence or absence of safe water directly affects the health of humans, animals and the environment. Recognizing the relationship between water and these sectors is crucial for achieving a comprehensive and sustainable OH approach. In response to this gap, we developed a targeted approach to engage WCs, individuals who are key players in water governance within Ethiopia's OH policies and committees. By mapping stakeholders in the water sector and demonstrating how their roles intersect with OH priorities, we initiated dialogues that brought the MoWE, along with other water stakeholders, into the fold of existing committees. This ensured that water management was no longer an afterthought but rather a critical part of the OH strategy.

This report outlines the methods and steps we took to engage water stakeholders in Ethiopia's OH governance. It describes the process of identifying key water actors, the strategic steps to bring them into coordination mechanisms and the positive outcomes of integrating water management into OH frameworks. By embedding water into these multisectoral committees, we laid the groundwork for more coordinated, holistic approaches to health, water and environmental governance in Ethiopia.

We believe that incorporating water into OH would aid in more successfully reducing health risks, such as waterborne AMR. To this end, the following five questions have been addressed in this study: (1) How to identify and engage WCs within the OH committees in Addis Ababa, Ethiopia?; (2) What are the specific roles and responsibilities of WCs in the context of the OH committees?; (3) What processes and strategies are most effective for engaging WCs in cross-sectoral collaboration?; (4) What challenges and opportunities exist for the involvement of WCs in Addis Ababa?; and (5) How can engagement strategies for WCs be adapted based on

local evidence rather than relying on predetermined frameworks?

The Akaki Watershed

The Akaki watershed, encompassing Addis Ababa and its surrounding areas, represents a critical case study for understanding the intersection of environmental, human and animal health within the OH approach. Rapid urbanization, expanding industrial activity and inadequate wastewater management have contributed to severe water pollution across the watershed. The Akaki River and its tributaries have become heavily contaminated by continuous discharge of untreated domestic sewage, hospital waste, animal waste and industrial effluents.

Numerous studies have reported high concentrations of pathogenic microorganisms, heavy metals and antimicrobial-resistant bacteria in the Akaki River system (Kassegne et al. 2018; Hiruy et al. 2022). The detection of *Arcobacter butzleri*, a significant waterborne pathogen, further indicates fecal contamination from both cattle and human sources (Acharya et al. 2020). These conditions threaten aquatic ecosystem integrity and pose serious public health risks, as communities within the watershed continue to rely on contaminated water for domestic and agricultural purposes.

According to Hendriksen et al. (2019), the intersection of poor sanitation and agricultural food systems heightens the risk of waterborne AMR exposure. This risk is compounded by inadequate wastewater treatment and sanitation infrastructure, which allow animal and human waste containing pathogens and antibiotic-resistant bacteria to enter untreated rivers.

Communities living in and around the Akaki watershed depend on the river for essential daily activities such as drinking, bathing, irrigation and livestock watering. These practices increase both direct and indirect exposure to antibiotic-resistant pathogens, contributing to the persistence and spread of AMR. The resulting impacts include increased healthcare costs, higher mortality rates and reduced productivity (Yitayew et al. 2022; Hiruy et al. 2022).

Within the Akaki catchment, the lack of effective wastewater treatment and water quality monitoring combined with the overuse of antibiotics in both human health and livestock, accelerates the spread of antimicrobial-resistant pathogens through the water cycle. Hiruy et al. (2022) reported that up to 20% of the fecal coliforms in the river exhibited antibiotic resistance. This poses a growing threat to public health, food security and ecosystem integrity (Yitayew et al. 2022; Hiruy et al. 2022). Consequently, the OH approach must acknowledge the critical role of water in the transmission of AMR pathogens and prioritize water-focused interventions to reduce human and animal exposure through improved water quality and sanitation.

The AMR Advisory Committees under the OH approach operating within the Akaki watershed, covering both Addis Ababa and the Oromia region, are led by their respective regional health bureaus and include representatives from governmental, non-governmental and private sector organizations. However, the water sector was initially overlooked and excluded from these committees. Before the engagement of WCs, no coordinated efforts existed to involve water sector institutions in AMR prevention and control activities. The inclusion of WCs has since bridged this gap, ensuring that water quality and management are integral components of OH policies addressing AMR within the watershed.

Methods

In this study, we co-developed a practical framework to engage WCs within the OH approach. Qualitative data was primarily collected through stakeholder consultations, key informant interviews, document reviews and meetings with WCs. Additional sources included minutes from regular WC meetings and records of their awareness-raising activities. The process involved selection of stakeholders representing the water, environment and health sectors at both national and regional levels. We synthesized the processes, activities, knowledge, insights and experiences of the WCs and other stakeholders to inform framework development.

Initial Broad Stakeholder Consultations

We conducted detailed stakeholder consultations. The initial consultation was focused on clarifying objectives aligned with the OH initiative, emphasizing water's role in pathogen transmission and the recognition of waste and

water management in national planning. The second consultation was to initiate framework development by getting buy-in from key stakeholders to work together for the development and implementation of the WC concept. The third consultation was focused on drafting and reviewing the framework for engaging WCs in OH.

Key Informant Interviews

We started by collecting data to identify and select key stakeholders through a detailed stakeholder analysis. This helped us pinpoint stakeholders with both high interest and high influence in strengthening the role of water in the OH approach in the Akaki Catchment.

Subsequently, a two-stage Key Informant Interview (KII) process was conducted. First, 25 key informants were interviewed in February 2022, representing a variety of government organizations, nongovernmental organizations and professionals specializing in environmental management, soil and water quality, wastewater treatment, aquatic ecology, climate change, health risk assessment, public health and water–health linkages.

The second stage involved KII with WCs representing the Addis Ababa Health Bureau (AAHB), Addis Ababa Environmental Protection Authority (AAEPA), Addis Ababa Water and Sewerage Authority (AAWSA) and Ministry of Water and Energy (MoWE). Among those interviewed were four WCs; two were women. The purpose of the interviews was to explore the activities undertaken by the WCs in fulfilling their roles and responsibilities, the challenges they faced, the opportunities they encountered and their overall experiences in serving as WCs.

Review of One Health Documents

A review of existing strategies, programs and reports related to the OH approach in Ethiopia was conducted to identify gaps in recognizing and integrating the vital role of water. This review also helped identify effective approaches for raising awareness of water's importance within the OH approach. The findings and identified engagement strategies were discussed with the WCs, who were nominated by key stakeholders.

The review further examined how the practical framework for engaging WCs could address these gaps by ensuring that their roles and responsibilities align with the National OH Policies and Strategies, particularly those focusing on antimicrobial resistance (AMR) prevention and containment in Ethiopia. Overall, insights from the document review were instrumental in defining the roles and responsibilities of WCs and in designing an effective framework to guide their engagement within Ethiopia's OH approach.

Further Consultations with Water Champions

WCs were identified through a stakeholder mapping exercise. Initial engagement provided valuable lessons that informed the refinement of a framework for future engagement and collaboration. Once the WCs were in place, a series of meetings were conducted to develop their Terms of Reference (ToR) while co-developing a practical framework for engaging them within the OH approach.

Over a six-month period, through quarterly meetings and collaborative actions, the WCs finalized their ToR and prepared action plans outlining their specific contributions to strengthening the water component within the OH approach. The ToR articulated the vision and mission of the WCs to promote the integration of water in the OH approach, with a particular focus on the containment and control of AMR.

Through these consultations, valuable insights were gained regarding the impact of the WCs' participation in the OH approach, particularly their roles in awareness-raising and community engagement activities. During these meetings, the WCs also shared the challenges they faced and identified opportunities to enhance their effectiveness in promoting water-related health actions within the OH approach. Ultimately, the WCs expressed their commitment to taking on a more active and meaningful role in advancing the integration of water within Ethiopia's OH approach.

Key Results

Recognizing the critical role of the water sector within the One Health (OH) approach, a group of volunteer professionals referred to as Water Champions (WCs) were identified to lead and support sectoral efforts in addressing water-related health challenges, particularly those linked to antimicrobial resistance (AMR). This section presents the key findings of the study derived from the methodologies described above.

Framework for Engaging Water Champions in the One Health Approach

A participatory, evidence-driven framework for engaging WCs within the OH approach was co-developed in the Akaki watershed. The process integrated practical experiences and qualitative data collected through meetings, documentation and interviews. The active involvement of representatives from the water, environment and health sectors, alongside researchers and WCs, ensured the inclusion of diverse expertise and perspectives.

The initial, unstructured engagement of WCs provided valuable insights that informed the development of a systematic framework. This framework enabled the effective identification, engagement and empowerment of WCs across multiple levels, ensuring their sustained participation in the OH approach. As a result, the process institutionalized water considerations within cross-sectoral collaborations, contributing to improved health outcomes for humans, animals and ecosystems.

The framework is organized around five key components, beginning with stakeholder analysis to guide the selection of WCs at national and regional levels. Each component defines specific actions and expected outcomes aimed at strengthening engagement and coordination. These components are further supported by ongoing capacity-building efforts (Figure 1), which help sustain the contributions of WCs to Ethiopia's OH and AMR strategies.

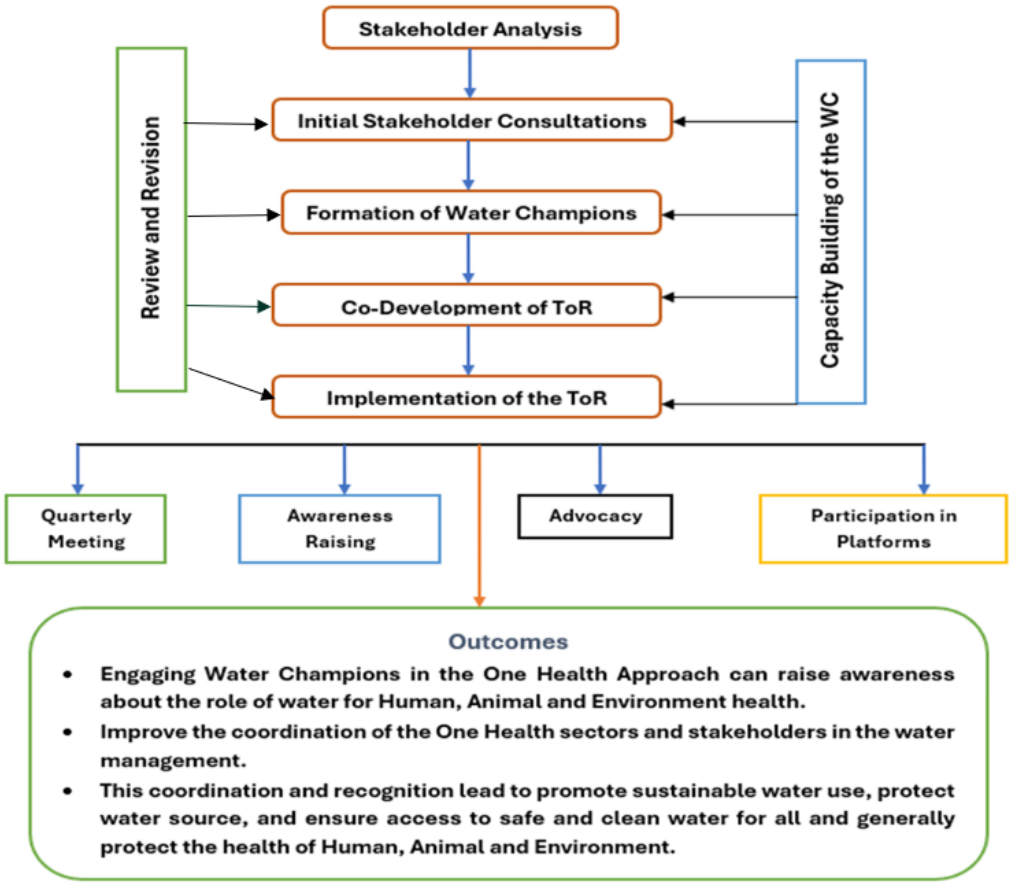

Figure 1. Framework for engaging the Water Champions in the One Health approach in Ethiopia.

Source: Authors

Stakeholder Analysis

The stakeholder analysis aimed to identify key stakeholders relevant to the water component of the OH approach, specifically, those who should be actively involved in OH planning and implementation at both national and local levels. Stakeholders were identified based on their potential to raise awareness of water's influence on public health, particularly in relation to pathogen transmission and AMR, thereby reinforcing the importance of water within the National OH approach.

Stakeholders were then prioritized according to their level of influence, strategic relevance and alignment with the objectives of integrating water into the OH approach. From an initial pool of 25 organizations, four were identified as primary stakeholders: the Addis Ababa Environmental Protection Authority (AAEPA), the Addis Ababa Health Bureau (AAHB), the Addis Ababa Water and Sewerage Authority (AAWSA) and the Ministry of Water and Energy (MoWE). These institutions were recognized as having the strongest mandates and capacities to drive water-related interventions within Ethiopia's OH approach.

Results of the Initial Stakeholder Consultations

During a co-design workshop held in December 2022, the International Water Management Institute (IWMI) consulted key stakeholders to identify effective strategies for ensuring that water is adequately recognized within the OH approach. Participants reached a consensus on the need to engage volunteers who would advocate for and promote water's role in OH. It was agreed that these volunteers would be designated as WCs within the OH approach.

Participants acknowledged the critical role that WCs could play in strengthening the water dimension of the OH approach. Following the workshop, experts from the AAWSA, MoWE and AAEPA convened a follow-up meeting to explore practical ways of operationalizing the WC concept.

It was agreed that WC could serve as representatives of key water-related stakeholders within the OH system at both regional and national levels. While AAEPA remains instrumental in advancing the environmental aspect of OH, WCs would help elevate the visibility and importance of the water sector within this integrated approach.

The Water Champions

Individuals from the four primary stakeholder institutions—the MoWE, AAWSA, AAEPA and AAHB—were approached and briefed on the WC framework and their potential roles. All institutions expressed strong support for the framework.

Each institution formally nominated a staff member through official letters to serve as a WC. Nominees were selected based on their willingness to volunteer, strong commitment, technical expertise in understanding the interconnections between water and health, capacity to influence OH decision-making and enthusiasm for promoting water within the OH approach. Priority was given to individuals with prior experience in the OH approach or AMR activities within their respective institutions, such as serving as AMR focal persons or as members of regional AMR advisory committees.

Among the original four WCs, two representing the AAHB and the AAEPA are women. The initial WCs also played a proactive role in expanding the team by recommending additional members from other sectors with strong links to water and the OH approach. Currently, the team includes seven WCs, including two journalists from FM 101.1 in the health sector, who provide valuable communication expertise. The Federal Environment Protection Authority (EPA) is also represented among the additional sectors.

Once selected, the WCs were integrated into various OH program platforms, ensuring active engagement of the water sector in decision-making processes. This institutional integration formalized their involvement, aligning their mandate with sustainable water management and the protection of public health and the environment. Table 1 summarizes the committees in which the WCs participate to support policy advocacy. The organizations of most of the WCs serve as members of the committees, while one of them serves as a leader of the Regional AMR Advisory Committee.

At the national level, the OH Secretariat, hosted by the Ethiopian Public Health Institute (EPHI), coordinates OH interventions in accordance with EPHI establishment regulation number 529/2023. The National O Interministerial Task Force provides strategic direction for the implementation of National OH and health security interventions, while regional OH Task Forces and technical working groups support operationalization at all levels.

Table 1. Water Champion organizations' membership of One Health Committees, July 2025.

Name of the Water Champions Organizations	Membership	Role in the Committee
Ministry of Water and Energy	National One Health Committee and National AMR Advisory Committee	Member
Addis Ababa Environmental Protection Authority	Regional AMR Advisory Committee	Member
Addis Ababa Waste and Sewerage Authority	Regional AMR Advisory Committee	Member
Addis Ababa Health Bureau	Regional AMR Advisory Committee	Leader

Source: Authors' survey.

Development and implementation of Terms of Reference (ToR)

The Terms of Reference (ToR) for the WCs were developed through their quarterly meetings and implemented accordingly by the WCs. The process began with defining a shared overarching vision and mission, aligned with both national and regional AMR advisory structures. This was followed by outlining a set of clear objectives and actionable tasks aimed at promoting sustainable water management and preventing contamination of water resources, particularly by AMR bacteria.

Through structured discussions and consensus during their quarterly meetings, the WCs defined their roles and responsibilities. These roles reflect their strategic contributions to implementing the OH approach, particularly in mitigating the spread of AMR through water systems. To ensure a coordinated and comprehensive response, the responsibilities were organized into four key thematic areas:

Advocacy and Awareness Creation – The WCs are responsible for disseminating information about the importance of water in OH, focusing on AMR spread and transmission. They are also responsible for synthesizing and communicating scientific knowledge about AMR transmission through water to key stakeholders, communities and policymakers.

Evidence Generation for Decision Making – The WCs are responsible for collaborating with researchers in collecting, analyzing and presenting water quality and AMR-related data to support informed policy and funding decisions.

Multisectoral Collaboration and Engagement – The WCs have an active role in facilitating joint actions and dialogue between water, health, livestock and environmental sectors.

Capacity Building and Mobilization of Colleagues – The WCs play a role in engaging their colleagues, mobilizing sector professionals and building institutional readiness to implement water-related OH interventions.

To enhance the capacity of WCs in implementing the activities outlined in their ToR, IWMI organized multiple capacity-building initiatives aimed at strengthening their skills and knowledge. Training workshops focused on water quality modelling and provided tools to effectively integrate water-related priorities into the National AMR Prevention and Containment Strategy. In addition, WCs participated in research workshops that shared scientific evidence on the abundance of AMR bacteria and potential pollution sources in the Akaki catchment.

To facilitate communication and knowledge exchange, the WCs established a Telegram group to share updates, highlight relevant research and circulate information about workshops on OH. They also contributed inputs to the water quality monitoring plan for the Akaki Rivers.

Over the past two years, the WCs have implemented their ToR through a series of activities, including advocacy, training, evidence generation and engagement:

Advocacy Activities – WCs actively participated in World Antimicrobial Awareness Week (WAAW) events organized by the Federal EPA in 2023, the MoWE in 2024 and the AAWSA, raising awareness about the connection between AMR and water among staff and communities. They conducted outreach sessions at two primary schools and one secondary school in the Akaki Catchment to highlight water's role in AMR transmission. Additionally, they participated in Antimicrobial Resistance Day (AMR Day) events at the AAWSA's Kality branch (June 2024) and the MoWE's Eco-Hydrology and Water Quality Desk (June 2023), see Figure 3. Beyond public events, the WCs advocated for a strong water component within OH during national and regional AMR advisory committee meetings.

Training and Capacity Building – With IWMI's support, the WCs developed educational content for a one-hour radio program aired on FM 101.1 during WAAW 2024. They also created awareness materials, including one-pagers and brochures and conducted awareness sessions for students at four schools in the Akaki Catchment.

Generation and Dissemination of Evidence-Based Research – WCs contributed to the generation and dissemination of evidence by publishing articles and study findings, organizing stakeholder workshops and delivering professional capacity-building sessions. They synthesized research findings into local languages and shared them with key stakeholders to support informed decision-making**.**

Meetings and Engagement – Between 2023 and 2025, WCs conducted six quarterly internal meetings to review progress, document key decisions and strengthen their role in integrating water into Ethiopia's OH approach. They also participated in three meetings with the AAHB's AMR Advisory Committees to emphasize water's critical role. Furthermore, WCs, represented by the MoWE, attended meetings of the National One Health Steering Committee (NOHSC), ensuring water considerations were formally included in strategic OH planning (Figure 2).

Figure 2. Quarterly Meeting of the Water Champions.

Source: Ayele Assefa.

Strategies for Implementing the Water Champion Approach

Several implementation strategies have been employed to implement the WCs approach and emphasize the central role of water in national OH initiatives. A key step was the launch of the project "Protecting Human Health through a One Health Approach," part of a CGIAR initiative focused on the Akaki watershed and led by the International Water Management Institute (IWMI). The project's launch and ongoing activities in the Akaki

watershed provided the foundation for introducing and institutionalizing the WCs approach by identifying and engaging key stakeholders from the water, health, environment and livestock sectors. Through this initiative, selected WCs were empowered to advocate for the integration of water management into OH actions, facilitate cross-sectoral collaboration and demonstrate how improved water governance can directly contribute to reducing health risks and supporting national OH objectives.

Impacts of the Water Champions

The cumulative efforts of the WCs over the past years have significantly elevated the recognition of water-related activities within Ethiopia's OH approach. Their contributions are evident in tangible outputs that highlight the integration of water management into OH, including enhanced policy engagement, evidence-based advocacy, capacity-building activities and increased cross-sectoral collaboration. These outcomes demonstrate the effectiveness of the WCs approach in mainstream water as a critical component of the national OH approach.

Through their advocacy, capacity-building and evidence-based engagement, the WCs have mobilized stakeholders from the water, health, environment and livestock sectors to integrate water considerations into cross-sectoral OH planning. Their efforts have led to strengthened collaboration across sectors and the institutionalization of water management priorities within national and regional OH platforms.

The WCs' awareness-raising activities have also produced tangible effects in local communities. By engaging schools and community members, they have fostered a sense of collective responsibility for water management and its connection to AMR. Many participants have since adopted improved water hygiene practices and actively advocate for cleaner water sources in their neighborhoods.

At the policy level, their work has influenced key organizations, including the MoWE, AAEPA, Ministry of Health and EPHI. Several policymakers have expressed interest in incorporating the insights and experiences of the WCs into the National AMR Strategy, thereby strengthening the integration of water stewardship into Ethiopia's AMR National Action Plan (NAP).

Overall, the WCs' contributions, grounded in local engagement, capacity building, advocacy and evidence generation, have not only raised awareness but also catalyzed a more comprehensive, cross-sectoral approach to addressing water-related health risks and the AMR crisis. Their work demonstrates the critical role of water in the OH approach and highlights the value of empowered champions in driving sustainable, sector-wide change.

Figure 3. Antimicrobial resistance (AMR) Day Celebration at the Ministry of Water and Energy, June 2023.

Source: Ayele Assefa.

As an existing member of the regional AMR advisory committee, AAEPA already had an AMR focal person in place. Building on this, the WCs incorporated water-related issues into the AMR framework and conducted a targeted awareness session for 400 staff of AAEPA. While many employees initially viewed water solely as an environmental concern, the WCs helped broaden this perspective, demonstrating how water plays a critical role in both the spread and prevention of AMR. This effort contributed to a deeper understanding and greater impact within the organization.

Following the targeted awareness session led by the WCs, AAEPA took several key follow-up actions to further integrate water-related issues into its ongoing work on AMR. First, AAEPA participated in different events by sending focal people to learn more about the intersection of water and AMR, therefore ensuring that these issues were consistently addressed within the broader framework of the AMR strategy.

Additionally, AAEPA began conducting routine water quality assessments in key areas to monitor potential links between contaminated water sources and the spread of AMR pathogens.

AAEPA also initiated partnerships with AAHB to better understand how environmental factors, like water contamination, contribute to resistance patterns. Recognizing the need for more cross-sector collaboration, AAEPA facilitated awareness programs for its staff, embedding water stewardship as a core component of their AMR education and response strategies. This helped foster a deeper, organization-wide commitment to integrating water management into public health efforts.

The awareness campaigns led by the WCs were featured in Ethiopia's national report for the WAAW Day celebration, which was submitted at the global level.

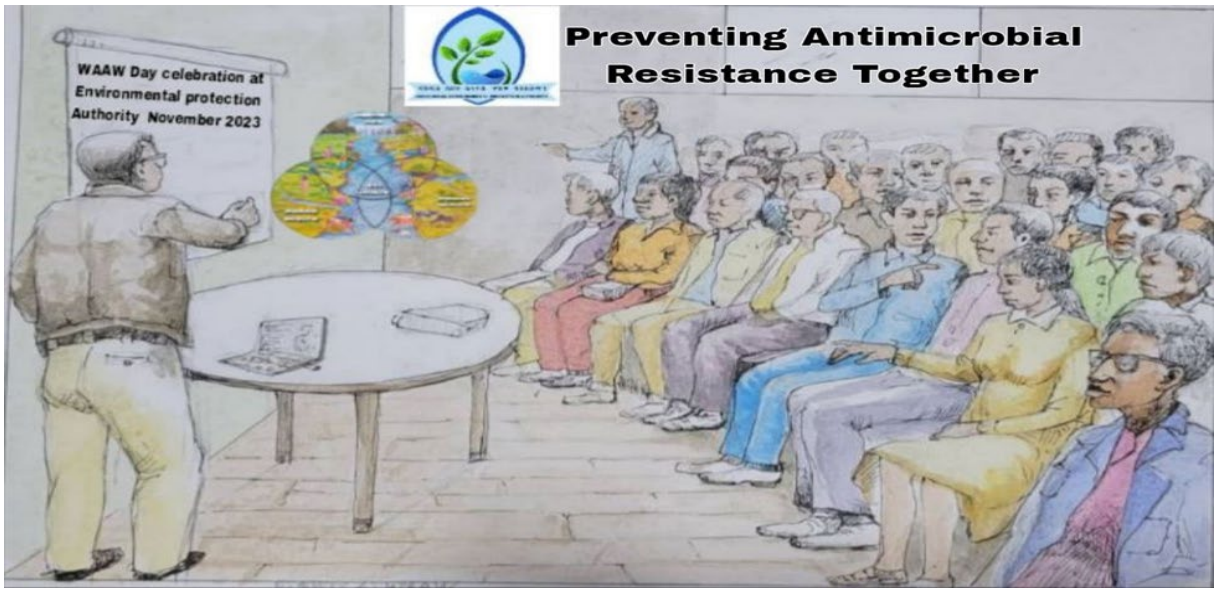

Figure 4. World AMR Awareness Week (WAAW) celebration at the Environmental Protection Authority (EPA), November 2023.

Source: Ayele Assefa.

Creating Collaboration Efforts Among Sectors

The WC approach has encouraged collaboration among sectors with shared responsibilities, fostering coordinated action. A notable example is the joint involvement of the EPA, a regulatory body and AAWSA, a service provider. Their collaboration on common water-related issues highlights the potential of the approach to bring diverse stakeholders together under a shared vision.

The WCs approach has also created meaningful opportunities for the health sector. For instance, AAHB effectively utilized this platform to raise awareness during quarterly meetings of the regional advisory committees, while also contributing to greater engagement between the water and health sectors.

Furthermore, the MoWE also acknowledged the Ecohydrology and Water Quality Desk's role in bridging knowledge gaps, resulting in a heightened sense of urgency and accountability within the water sector itself. This collective momentum, catalyzed by the event, has paved the way for long-term partnerships and policy shifts aimed at improving the sustainability and resilience of water systems for human and environmental health.

These WCs also played a key role in fostering dialogue between water and health sectors, helping to bridge the gap between technical water management and public health concerns. This resulted in a shift in how water management is viewed, not merely as an environmental issue, but as a crucial component of health security. Looking ahead, the water sector stands to benefit even further from the WC approach by actively participating in the development and implementation of revised strategies planned for 2026.

Generally, the engagement of various sectors, including health professionals, policymakers and water experts, led to more cross-sectoral collaboration and a renewed commitment to integrating water management into broader health and environmental strategies.

Challenges and Opportunities

WCs face different challenges that hinder full participation in the process of integrating or engaging in the role of water in the OH approach. Making an impact on water's place within the OH approach was a new concept to the organizations including the MoH, Ministry of Agriculture and EPA, which are currently involved and implementing the approach. From the interview results, we found that not only are there challenges to bringing the water sector to the forefront, but also to the use of the WC approach to facilitate the task of involving the concept in OH.

WCs encountered both internal and external challenges in promoting the OH approach within the water sector. The internal challenges were primarily related to their organizational structures and work environments. WCs' capacity to completely understand and address the function of water in their institutions was hampered by these obstacles. In contrast, external challenges emerged at the national level, particularly in efforts to engage with the wider water sector and gain recognition. Such external hurdles often constrained WCs' capacity to implement activities effectively.

Organizational (internal) challenges

WCs are selected through stakeholder analysis from various regional and federal government organizations. They are regarded as a strategic tool to help integrate water-related issues into Ethiopia's National OH approach. Their role is to actively support the inclusion of water in this multisectoral initiative. However, organizational challenges limit their effectiveness. One major issue is that their involvement in the OH approach is seen as a secondary responsibility by their immediate supervisors.

The WCs' involvement in the OH initiative is often perceived as an additional responsibility, as they already manage regular work plans and duties within their respective sectors. This dual role can create conflicts between their primary responsibilities and their WC tasks. Consequently, supervisors tend to prioritize sector-specific work, providing limited support or flexibility for participation in OH activities.

Compounding this, the WCs themselves sometimes view their role as extra work, which can hinder engagement. Heavy workloads make it challenging to complete the tasks outlined in their Terms of Reference (ToR), while frequent transfers or departmental shifts disrupt continuity and limit sustained participation. Effective involvement as a WC requires dedicated time and institutional support for joint planning, awareness-raising and regular quarterly meetings to monitor and evaluate progress.

National and regional (external) challenges

At the outset, the WCs faced challenges because the water sector was positioned within the broader environmental sector, which limited its capacity to independently address water-related issues. This organizational

arrangement constrained the direct participation and influence of water sector professionals. Additionally, the water sector was not formally included in national or regional OH coordination platforms, resulting in limited awareness among key decision-makers about the critical role of water in disease prevention and ecosystem health (Table 2).

Another significant challenge was the absence of clear leadership or a designated authority to coordinate and support the WCs' efforts. This lack of structured support hindered the establishment of a strong and integrated water component within the national OH framework.

As a result, the WCs faced several external challenges at the national and regional levels while promoting the integration of water into the OH approach:

- Introducing water as a key element within the OH framework is a relatively new concept, making it difficult to establish a strong and recognized water component in the approach.
- Many professionals within the water sector are unfamiliar with the overall goals of the OH initiative and are unaware of how their work contributes to preventing health risks.
- The involvement of WCs in OH activities is typically on a part-time basis, which limits their capacity to fully engage in and drive the integration of water into the program.
- The OH program has primarily concentrated on areas beyond zoonotic diseases and food safety, which has made it harder to prioritize water-related issues within the initiative.
- WCs were challenged by a lack of dedicated funding to implement activities outlined in their ToR. Securing separate financial resources for these efforts has proven difficult.

Mitigation measures for the challenges

Despite these challenges at both national and regional levels, several mitigation measures have been identified to address the issues. The WCs proposed the following solutions:

- Enhance internal awareness by conducting regular briefings and targeted advocacy to help supervisors and colleagues better understand the importance of integrating water into the OH approach.
- Raise external awareness among decision-makers and senior officials in the water sector to encourage their involvement in strengthening the water component within OH programs.
- Demonstrate the impact of water-related actions by ensuring that each activity carried out by WCs is supported by evidence showing how water plays a role in preventing health risks. To achieve this, there is a need for capacity building and research outputs that link water and health.
- Allocate time and space for the WCs to fully engage in implementing their plans as outlined in their ToR.
- Address funding challenges by exploring joint funding mechanisms and partnerships to support the implementation of WCs' activities.
- Align the activities with OH priorities by ensuring that WC also contribute to evidence generation in key focus areas such as food safety, zoonotic diseases and AMR.
- Ensure the immediate supervisors of WCs within the selected sectors understand the critical role of water in the OH approach, by targeting awareness-raising initiatives at supervisors in the designated sectors.
- Prioritize the active engagement and strong commitment of the WCs themselves, as this is essential to effectively strengthen the water component within OH programs and strategies.

The challenges faced by the WCs in the process of recognizing the water sector's role in the general OH programs and their mitigation measures, obtained from the key informant interviews (KIIs), are described in Table 2.

Table 2. Summary of Water Champions' Key Challenges and their Mitigation Measures.

Key Challenges	Mitigation Measures
Water is not well-integrated into the OH framework (new concept)	Raise awareness among decision-makers about water's role in OH
Lack of awareness within the water sector about OH and its relevance	Conduct internal awareness campaigns and briefings for water sector staff
WCs have a limited time (part-time role)	Allocate dedicated time and create space for WCs to implement their ToR
No dedicated funding for WCs activities	Seek joint funding mechanisms and partnerships to support implementation
Actions lack evidence to show the impact of water on health	Conduct capacity-building and research to generate data linking water and health
OH program prioritizes other areas (e.g., zoonoses, food safety, AMR)	Align water-related actions with existing OH priorities and support evidence generation
Lack of clear leadership/support for water in OH coordination	Advocate for clear leadership or designate a focal point for water within OH frameworks

Source: Key Informant Interviews.

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

Drawing on in-depth insights from key informant interviews (KIIs) and a comprehensive review of relevant literature, we have developed the following SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis to assess the role of WCs within the OH approach in the Akaki catchment. The results are displayed in Table 3.

Table 3. Summary of key findings of a SWOT Analysis.

Strengths	Weaknesses
☑ Integration of water into the National and regional OH agenda, particularly around AMR ☑ Multisectoral collaboration established (MoWE, AAWSA, AAEPA, AAHB) ☑ Strong support and coordination by IWMI with clear ToR ☑ Consistent participation in national events ☑ Effective public engagement via schools, media (FM 101.1) and community awareness programs ☑ Recognition of contribution in strategic documents (e.g., One Health Action Plan)	⚠ WCs' roles are often seen as secondary to their main duties by both supervisors and the WCs themselves ⚠ Limited dedicated time and no dedicated budget for WC's OH-related tasks ⚠ Lack of consistent institutional support or leadership within water agencies ⚠ Knowledge gaps exist within the water sector on OH relevance ⚠ Activities often lack direct performance monitoring indicators

Opportunities	Threats
Institutionalize the WC approach in formal governance structures	Limited awareness of the OH–water connection at higher decision-making levels
Expand IWMI-led capacity building (GIS, AMR awareness, tools for data-driven planning)	Competing priorities (zoonoses, food safety) overshadow water–AMR concerns
Leverage school-based programs and media to expand outreach	Absence of a designated national water focal point in the OH coordination structure
Use evidence-based advocacy to strengthen funding and policy inclusion	High staff turnover or departmental transfers disrupt continuity
Link with other OH priority areas like zoonoses and food safety	Sustainability risks due to reliance on project-based funding and external support

Source: Key Informant Interviews and literature review.

Conclusion and Recommendations

The integration of Water Champions (WCs) into Ethiopia's One Health (OH) approach is a significant advancement, recognizing water as vital for addressing human, animal and environmental health challenges. Key institutions, including the Ministry of Water and Energy (MoWE) and Addis Ababa Water and Sewerage Authority (AAWSA), have taken active roles in ensuring sustainable water quality through stakeholder analysis, capacity building and defined responsibilities. Over the past two years, WCs have engaged in antimicrobial resistance (AMR)-related events and public awareness programs, enhancing collaboration and elevating the importance of water in health discussions, ultimately influencing national planning and institutionalizing water within Ethiopia's OH narrative.

To enhance the sustainability and impact of the WCs initiative, several key recommendations are proposed: 1) Formalize the WC role within National OH governance by clearly defining roles and creating supportive structures; 2) Strengthen intersectoral collaboration through regular joint planning among water, health, livestock and environment sectors; 3) Scale up capacity building for WCs, addressing challenges such as AMR and climate resilience; 4) Deepen public engagement with initiatives in high-risk areas, including school and media campaigns; and 5) Establish performance monitoring to assess the initiative's impact on integration into governance, public awareness of AMR, cross-sectoral collaboration and institutional capacity concerning water-related risks.

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