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From Guidelines to Action: Strengthening Climate-Resilient Water Safety Planning for Inclusive Water, Sanitation and Hygiene Services in Cambodia

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KEY HIGHLIGHTS

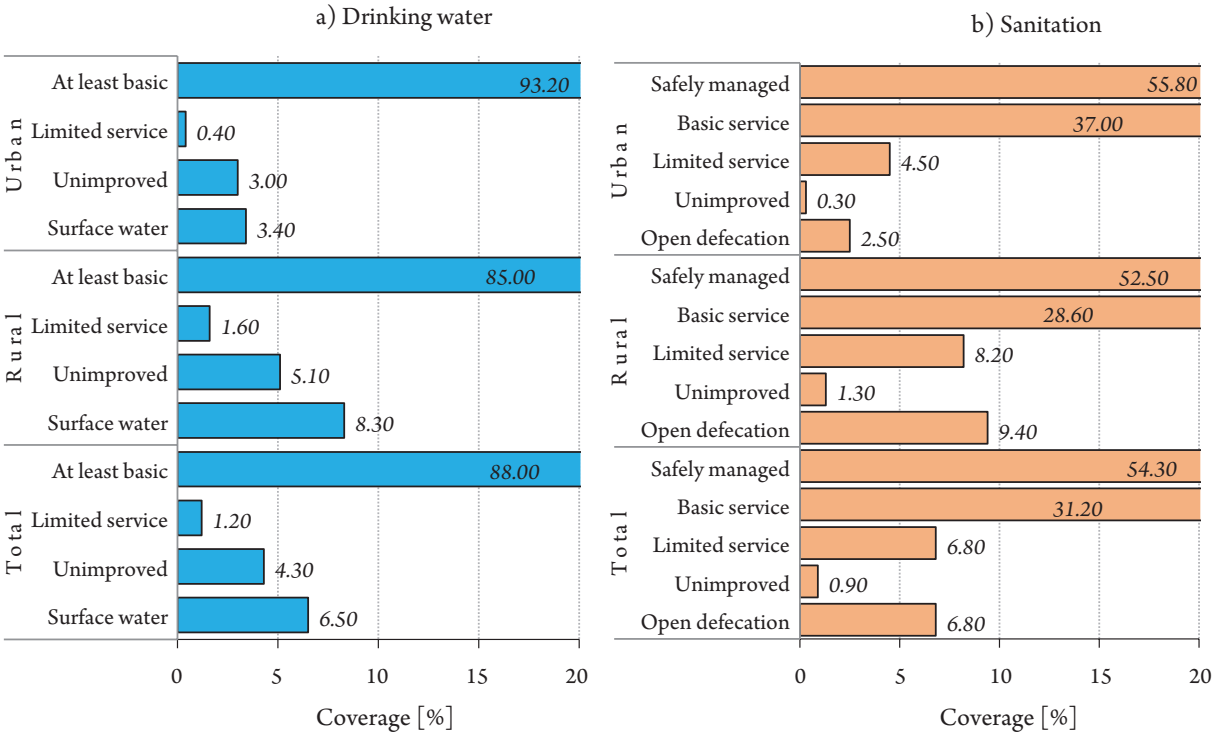
- In 2023, over 90 percent of Cambodia's urban population had access to at least basic drinking water services; however safely managed sanitation reaches only 56 percent of urban communities, and around 10 percent of rural ones still practice open defecation. Alarmingly, about 15 percent of rural residents still relied on untreated water.
- Climate change exacerbates inequities in Water, Sanitation and Hygiene (WASH) services, which disrupt infrastructure and disproportionately affect vulnerable groups such as women, children, low-income households, ethnic minorities, and people with disabilities (PWDs).
- Water safety planning (WSP) is a systematic risk management approach that identifies potential hazards in water supply systems and establishes preventive measures and monitoring procedures to ensure safe drinking water from source to consumer.
- The Cambodian government's introduction of guidelines for Climate-Resilient Water Safety Planning is a significant step towards mitigating the impacts of climate change on WASH services, though its full effectiveness remains to be realised.
- The effective implementation of WSP faces multifaceted challenges, including limited community and stakeholder engagement, gaps in technical and climate resilience knowledge, and insufficient local climate data. Addressing these challenges requires financial support, inclusive capacity-building activities, and gender-sensitive approaches to bridge accessibility and equity gaps.
- Systematically incorporating Gender Equality, Disability, and Social Inclusion (GEDSI) considerations into WSP guidelines and providing support for vulnerable groups will ensure more inclusive, equitable and effective WASH services.

INTRODUCTION

Climate hazards, including droughts, floods, storms and typhoons, damage agriculture and public infrastructure (e.g., schools and health centres). These impacts affect agricultural productivity, livelihoods, public health, education, and water, sanitation and hygiene (WASH) services (UNDP 2022). Despite Cambodia's 2025 goal of universal sustainable WASH coverage (RGC 2011), current access remains inadequate. National access to at least basic drinking water[1] is high (88.0 percent), though a rural-urban gap exists (85.0 vs. 93.2 percent, respectively; Figure 1). Consequently, approximately 15 percent of rural residents use untreated sources. In sanitation, just over half of households have safely managed services, and 31.2 percent use basic services.

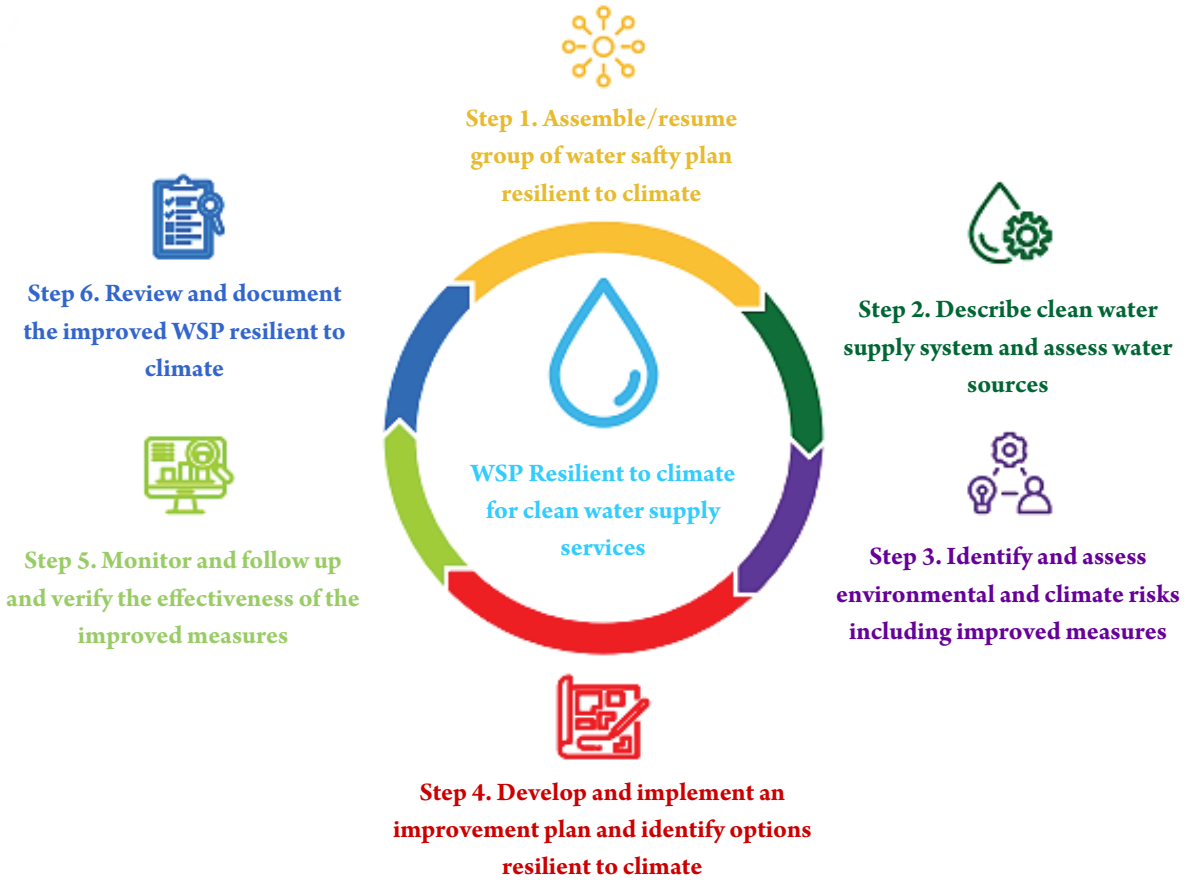
1 Because the Cambodia Socio-Economic Survey (CSES) 2023 lacks data on water quality, it cannot distinguish between safely managed and basic drinking water services. Consequently, both are grouped together as "at least basic service" in Figure 1.

Figure 1: Access to a) drinking water and b) sanitation services in Cambodia (2023)



Source: Prepared by the authors based on CSES 2023

Figure 2: Six-step guidelines for WSP



Source: Derived from the MISTI's WSP guideline (2023)

A significant rural-urban disparity persists, as open defecation remains practised by 9.4 percent of rural households, compared to only 2.5 percent in urban areas. Climate change is expected to deepen existing inequalities by disproportionately increasing risks from water scarcity and contamination for children, the elderly, women, and residents of informal settlements (UNICEF 2024).

To better manage public health and climate risks in WASH, Cambodia's government developed Climate-Resilient Water Safety Planning (WSP) guidelines in 2023. The Ministry of Rural Development (MRD) and the Ministry of Industry, Science, Technology and Innovation (MISTI) each developed a WSP guideline to strengthen water supply systems. The MRD focuses on rural water supplies, integrating climate change adaptation and disaster resilience at the commune level while emphasising pollution prevention from sources to consumption, whereas the MISTI targets private water operators (PWOs) with risk management strategies to ensure safe water delivery for communities (MISTI 2023; MRD 2023). The guidelines outline a six-step process—forming a WSP team, assessing system risks, implementing the action plan, monitoring and evaluation, and periodic review—to improve the planning process and service delivery (Figure 2).

Although WSP is common in over 90 countries (String and Lantagne 2016), its recent introduction in Cambodia and the limited funding for implementation raise doubts about its effectiveness for promoting climate-resilient and inclusive WASH services. To better understand the application of the guidelines by civil society organisations (CSOs), CDRI with partners from Australia and Cambodia[2] developed a research project aimed to support CSOs, WASH associations, and government actors in adapting and implementing these guidelines.

The study employed Participatory Action Research to examine stakeholders' knowledge and implementation of the WSP guidelines and identify incentives for their adoption. Data was collected through desk reviews, field observations, key informant interviews (KIIs), and focus group discussions (FGDs) with a total of 55 WASH stakeholders, including government officials, NGOs, CSOs, commune councillors, PWOs, and community representatives. Participants were selected from both the national level and two provinces (Pursat and Kampong Chhnang) where the research took place. Drawing on the analysis of these data, this policy brief examines the current implementation of WSP guidelines and explores incentives to improve their uptake. Insights from a sub-national policy dialogue, held on 3 April 2025, with WASH stakeholders, have also been incorporated into the implications.

KEY FINDINGS

WASH key stakeholders: how WASH stakeholders drive WSP development and implementation

Government roles

MISTI and MRD lead Cambodia's WASH sector, each with distinct but complementary roles in WSP. MRD and MISTI have endorsed Cambodia's guidelines for climate-resilient WSP. MRD focuses on rural areas, managing both non-piped systems (e.g., wells and ponds) and piped water supply infrastructure, and sanitation facilities. Meanwhile, MISTI regulates and supports PWOs in urban and peri-urban areas, enforcing water quality standards and promoting technological innovation. Broader WASH efforts are supported by other key ministries: the Ministry of Public Works and Transport oversees wastewater and faecal sludge infrastructure; the Ministry of Environment enforces industrial wastewater standards; and the Ministry of Water Resources and Meteorology manages national water resources and climate policy. These national bodies are supported by sub-national governments, which collaborate with CSOs and NGOs to implement policies, conduct training, and raise public awareness on WASH and climate resilience.

Civil society roles

CSOs are vital to Cambodia's WSP, implementing grassroots initiatives and advocating for policy change. They work directly with communities, PWOs and local authorities to provide WASH training, build water and sanitation infrastructure, and promote inclusive planning processes for vulnerable groups. They also provide or subsidise resources such as toilets and water filters. At the policy level, CSOs collaborate with government ministries to integrate climate risk assessments into national WSP guidelines and support PWOs. They strengthen local capacity by training sub-national authorities and community members. Although WASH-focused CSOs vary in

2 The study involved partners from Cambodia and Australia: the Cambodia Development Resource Institute (CDRI) and the University of Technology Sydney's Institute for Sustainable Futures (UTS-ISF), who led the research, and the implementing partners East Meets West (EMW), WaterAid Cambodia, and the Cambodian Water Supply Association (CWA).

scope, their efforts collectively advance climate-resilient water resource management in Cambodia. By building local capacity, they ensure stakeholders have the skills and knowledge to implement WSP while balancing local needs, technical expertise and policy frameworks. Through these efforts, CSOs bridge the gap between policy and practice, fostering participatory and climate-resilient solutions to Cambodia's water security challenges.

WSP guidelines development, adoption and implementation

CSOs and associations have incorporated MRD's and MISTI's WSP guidelines into capacity-building materials and training for local governments, communities and PWOs to enhance climate resilience understanding. They also localised training materials using WHO's WSP framework and MISTI-endorsed flood and drought resilience guidelines to create training materials. These guidelines are key references, providing CSOs with a structured approach to assess local capacity to enhance water system resilience through mapping, risk assessment and action plan. WSP teams were formed, including village chiefs, commune council members, community volunteers, PWOs, sanitation suppliers, and provincial/district officials. These teams received training on the six-step WSP guidelines (Figure 2), focusing on assessing environmental and climate-related risks to water sources and developing actionable improvement plans. Although most CSOs were not directly involved in developing the guidelines, some provided inputs during consultation workshops organised by MRD or MISTI and supported by UNICEF.

Unlocking WSP success: what's driving adoption—and what's holding it back?

Positive outcomes from WSP implementation

WSP implementation improved clean water access, primarily through pipe and water filter installations, as well as technical upgrades that enabled PWOs to enforce water quality control. While direct evidence (e.g., water quality testing) is not yet available, these measures could enhance community health outcomes. The training and planning process increased climate risk awareness (e.g., droughts and floods), while teaching communities mitigation strategies, including water storage, conservation, and usage plan, strengthening community resilience. Expense decreased for poorer households as water filters (sand filters) were made available. This reduced the need to buy bottled water and improved sanitation through facilities such as new latrines. The training and planning process also demonstrated the capacity of community members to collaborate and prioritise action together.

Challenges and incentives to WSP development and implementation

WSP implementation faced challenges due to low community participation, knowledge gaps on climate change and WASH relationships, limited local climate data, logistical challenges and insufficient government financial support. Many locals missed meetings and trainings due to work commitments or lack of awareness about water management and project implications, requiring local leaders to personally encourage involvement. Misconceptions—such as distrust of piped water systems—further reduced engagement. Additionally, communities lacked climate resilience knowledge, partly because local data and information were limited. Training accessibility was another barrier: some women could not attend due to domestic duties, while the elderly and PWDs encountered mobility challenges reaching training sites. It was also reported that technical language in training materials hindered participants' understanding.

To enhance WSP development and implementation, long-term capacity-building activities and training for WSP teams and communities is necessary, not just as a one-off process. Co-developing accessible training materials using simplified language, visual aids, and shorter and frequent sessions will help communities inclusively conduct risk assessments and develop action plans for priority risks. Financial support for transportation and meals as well as funding actions identified to improve WASH facilities and make them more climate resilient will be needed to improve WSP processes. Additional support is needed for vulnerable groups, particularly those facing mobility challenges. Future meetings or trainings should incorporate gender-sensitive approaches, simplified training tools and inclusive collaborative approaches. Enhanced data and information sharing—particularly on climate risks—and collaborative planning process among governments and local communities are also essential.

Bridging the gap: how do WSP guidelines advance GEDSI?

Inclusive WSP development and implementation

To ensure equitable and effective WSP, greater inclusion of women, children, low-income

households, and PWDs in decision-making and project implementation is needed. This involves integrating their representatives into WSP teams, providing training and disseminating WASH-related knowledge, as well as building accessible infrastructure (e.g., wheelchair ramps) designed for vulnerable people, including pregnant women, PWDs, or elders. Meaningful participation of women is important, as their insights into household water management enhance project effectiveness, while engaging children—especially through school-based hygiene education—helps promote long-term behavioural change.

While WSP development and implementation partially address GEDSI, challenges remain—particularly for women leaders, including gender-based discrimination, difficulties in maintaining work-life balance, safety concerns, and limited skill development opportunities. Shifting social norms requires broader community understanding to foster social equality. There are many stages in the WSP process that can be designed inclusively—from WSP committee formation to risk assessment and developing and implementing action plans, requiring diverse inputs and voices. Widows and female-headed households face systemic barriers in accessing WASH services due to the dual burden of childcare and income generation. Targeted interventions are essential to ensure equitable access, including subsidies, improved healthcare access, and infrastructure support. Effective implementation requires strong collaboration among local authorities, PWOs, and CSOs, allowing for targeted support and improved access in underserved areas.

GEDSI review of Cambodian WSP guidelines

The review of MISTI's and MRD's WSP guidelines revealed gaps in the systematic integration of GEDSI and opportunities for greater focus and guidance on inclusion within the WSP process. While MRD's guidelines promote gender balance and include the Commune Committee for Women and Children in WSP teams, they could further strengthen community input processes for better GEDSI integration. In contrast, MISTI's guidelines, focus on PWOs, lack explicit gender inclusion measures and community roles. To enhance WSP effectiveness, both guidelines should strengthen GEDSI integration through inclusive decision-making, targeted training for marginalised groups, and accessible infrastructure development. The two guidelines can be used complementary to address GEDSI integration, along with GEDSI guidance such as that issued by the WHO (WHO 2019).

Policy dialogue insights: strengthening climate-resilient and inclusive WASH Services in the local community

The sub-national policy dialogue identified critical measures to promote climate-resilient and inclusive WASH Services in the local community. Key actions include providing financial support for vulnerable groups, such as subsidising water filter installations for low-income households and offering free sanitation materials in remote and climate-affected communities. Integrating WASH into the commune development plan, emphasising that communes could lead budget allocation and implementation. Providing technical training for WSP teams, PWOs, and communities, particularly in climate risk assessment and the inclusive planning process, will help address priority challenges. Behaviour change communication campaigns will foster community participation, while strengthening multi-stakeholder collaboration is vital to bridge technical and funding gaps.

POLICY RECOMMENDATIONS

The introduction of WSP guidelines in Cambodia marks a significant step towards climate-resilient WASH services, though their full effectiveness remains to be realised, monitored, and evaluated. Understanding challenges and incentives in the WSP processes is necessary for improving uptake and ensuring long-term sustainability. This study proposes key recommendations to strengthen WSP implementation, requiring coordinated efforts among WASH stakeholders.

- **Promoting inclusive community engagement**: It is essential to adapt the WSP guidelines to local contexts, especially in rural communities, where challenges such as limited resources, low awareness of WASH risks, and competing livelihood priorities. To encourage active community participation, the WSP team should explicitly designate roles for representatives of marginalised groups, including PWDs and elders.
- **Capacity-building activities and training**: Provide WSP teams with regular capacity-building activities and training on guidelines, especially climate and environmental risk assessments. Support commune councils in adapting guidelines to local needs while maintaining alignment with national goals. To improve training accessibility,

consider house-to-house visits and visual aids. Decentralising sessions to village hubs would minimise travel burdens, particularly for women and participants with disabilities.

- **Financial support**: Financial constraints worsen WASH inequities, particularly for low-income households. Providing WASH facilities through subsidies could improve participation, especially among marginalised groups. Integrating WASH planning into Commune Development Plans could secure long-term funding. Governments could prioritise funding for communities that have developed WSPs and action plans. This coordinated financing approach has proven effective in countries like Vanuatu.
- **Multi-stakeholder collaboration**: Strengthen cooperation among government agencies, development partners, CSOs, local authorities, the private sector, and communities. By leveraging collective expertise and resources, these stakeholders can advance inclusive and climate-resilient WASH services.
- **Improving climate data and information access**: The lack of reliable climate data hinders communities from conducting robust climate risk assessments. Enhanced inter-ministerial coordination (e.g., between MRD and MOWRAM) could improve data-sharing mechanisms, providing communes with localised climate insights. Incremental strategies—such as integrating meteorological data with indigenous knowledge (e.g., elders' flood recollections)—could help bridge these gaps.
- **GEDSI integration**: To enhance WSP effectiveness, GEDSI considerations need to be systematically integrated across all planning processes. This includes mandating gender-balanced WSP teams, providing capacity-building activities for women and vulnerable groups, ensuring their representation in decision-making, and developing accessible infrastructure.
- **Showcasing successful WSPs**: The governments should promote proven WSP successes, highlighting their benefits like public health improvements, and infrastructure resilience. By fostering stakeholder collaboration and providing implementation support, the governments could encourage broader adoption.
- **Monitoring and evaluation (M&E)**: The lack of robust M&E systems weakens accountability and hinders evidence-based WASH policy decision making. To address this gap, develop an M&E framework connected to actions in the WSP developed by each community—incorporating GEDSI indicators. This system will help to track the effectiveness of WSP guidelines and their implementation, enabling adaptive management and equitable outcomes.

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