No climate-resilient water without sanitation

Integrating water and sanitation for climate-resilient Cambodian communities

Without safe, climate-resilient sanitation, there is no safe, climate-resilient water. Despite this dependency, water resource management (WRM) and water, sanitation and hygiene (WASH) interventions operate in silos. Achieving a water-secure world and climate-resilient communities requires systems-level thinking and collaboration between and within sectors. While there is widespread agreement on the need for integrated programming, in practice, interventions are seldom integrated due to lack of implementers' capacity, narrow scopes from donors, overlapping or incomplete government mandates, and fragmented communication and coordination channels. Sanitation is a necessary component of WRM–failure to integrate sanitation in WRM programming will undermine progress towards climate-resilient Cambodian communities.

Cambodian Climate Context

Cambodia's human health is profoundly affected by climate change, which threatens to exacerbate health problems while undermining water and food supplies, infrastructure, and health and social protection systems[1]. Cambodia's low adaptive capacity results in extreme vulnerability compared to other countries in Southeast Asia, despite its relatively lower exposure to climate hazards[2]. Between 2000-2019, Cambodia was ranked as the 14th most vulnerable country on the Climate Risk Index[3]. Related to WRM and WASH, increases in rainfall, flooding, and droughts pose the most prominent risks[4]. Over 25% of the population lives in environments affected by seasonal floods and high groundwater[5]. Over 61% lives in rural floodplain regions and are primarily reliant on agriculture for food security and income, making them more climate vulnerable[6].

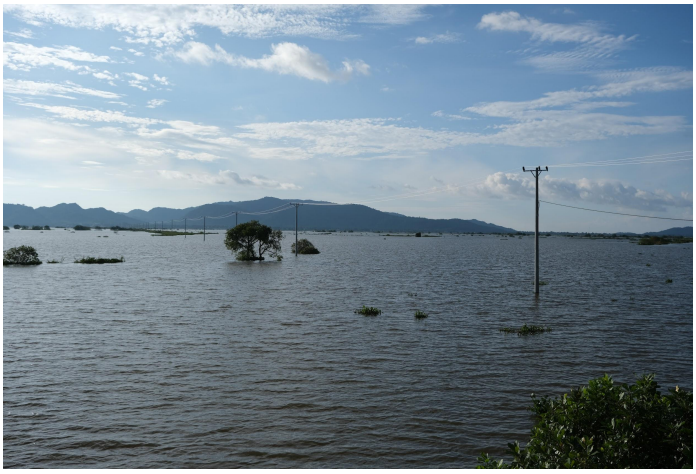

Figure 1: Dry and rainy season comparison in Kampong Chhnang province (same location). Seasonal flooding on the eastern Tonle Sap Lake. During the flood season, the Tonle Sap Lake expands to six times its dry season size[7].

[1] WHO, 2015. Climate and Health Country Profile Cambodia
[2] Yusuf and Francisco, 2009. Climate Change Vulnerability Mapping for Southeast Asia
[3] Eckstein et al, 2021. Global Climate Risk Index 2021
[4] USAID, 2019. Climate Risk Profile Cambodia
[5] Ministry of Rural Development, 2019. National Guiding Principles on Sanitation in Challenging Environments for Rural Households
[6] National Institute of Statistics Ministry of Planning, 2020. Report of Cambodia Socio-Economic Survey 2019/20
[7] Ji et al, 2019. Changes in the late area of Tonle Sap: Possible linkage to runoff alterations in the Lancang River?

Sanitation Challenges in the face of Climate Change

The UN has described sanitation as the "forgotten sister" of WASH saying the issue had been "severely neglected" by international organizations[8]. As the climate changes and people deal with water extremes, sanitation systems are likely to fail and expose people to pathogens and disease[9]. As we grapple with climate change, more than ever we need to protect our water resources and health with resilient and safely managed sanitation systems.

A. Floods and major rainfall events cause WASH infrastructure to become more vulnerable to disruption, destruction, or abandonment and exacerbate unsafe sanitation and hygiene practices in rural communities.

Seasonal variation in water levels, heavy rainfall, and widespread flooding render many basic sanitation technologies ineffective and unsafe, with many toilets in the region already failing during the flood season. Toilets become inaccessible during flood periods and latrine pits overflow, discharging unsafe waste and polluting local water bodies, spreading risks downstream. In 2018, in Kampong Chhnang province, which is bordered by the Tonle Sap Lake and River, 21.4% of households who had a toilet were unable to access it in the wet season[10]. As climate change increases the prevalence and irregularity of heavy storms and floods, sanitation systems will be more likely to fail, forcing households to resort to unsafe coping behavior, including discharging waste openly and latrine abandonment[9]. There is limited availability of affordable, climate-resilient WASH solutions that are tested and scalable in rural Cambodia.

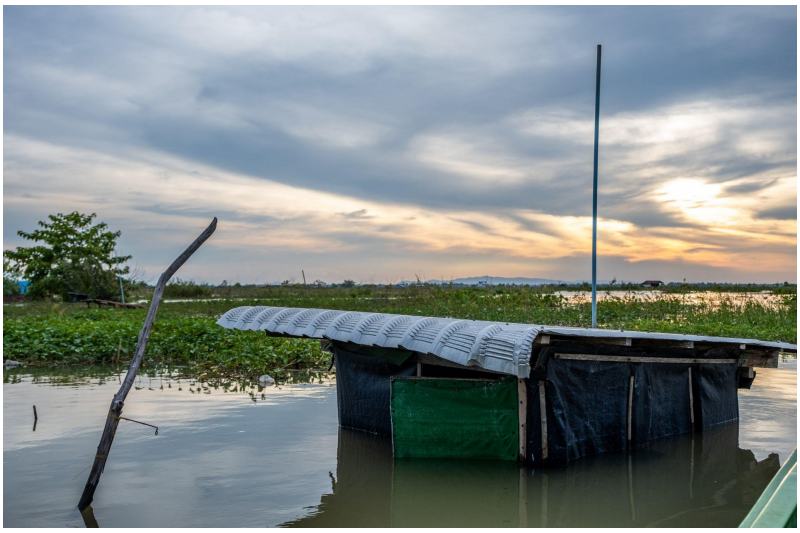

Figure 2: Flooding of the Tonle Sap Lake has rendered this latrine unusable and has exposed the surrounding environment to untreated fecal sludge.

B. Risks of unsafe fecal sludge management (FSM) practices are exacerbated in climate-vulnerable areas, and there is a lack of knowledge of and access to safely managed sanitation. A nearly universal lack of affordable, safe FSM services in rural areas poses a major risk to health, water resources and ecosystems[11], especially in seasonally flooded areas of rural Cambodia[12]. Without FSM services, when latrine pits fill up, households often opt for unsafe practices, including disposing waste in the surrounding environment[13]. In 2019, approximately one-third of rural Cambodian households in iDE operating areas reported preference for FSM practices that endanger public and environmental health[13]. This risk is exacerbated in flood-prone areas[9]. Most households do not demonstrate safely managed sanitation practices, awareness or knowledge[14]. Compared to other WASH data, there are limited monitoring tools to track access to safely managed sanitation. These risks are critical to mitigate as climate change and population pressures increase the value and scarcity of clean drinking water and healthy ecosystems.

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[8] UN. International Decade for Action 'Water for Life' 2005-2015. Custer-Lalanne & Crittle, 2023. Why is Sanitation Still the 'Forgotten Sister' in Debates & Strategies about Water?
[9] iDE, 2023. Effects of Climate Vulnerability on Household Sanitation Access, Functionality and Practices in Rural Cambodia (preprint)
[10] WaterAid, 2018. 2018 WASH Data Pilot Survey Report Kampong Chhnang Province
[11] Ministry of Rural Development, 2020. National Fecal Sludge Management Guidelines for Rural Households
[12] Based on iDE's experience operating in seasonally flooded areas along the Tonle Sap Lake.
[13] iDE, 2020. Mid-term Report: Cambodia Sanitation Marketing Scale-Up 3
[14] iDE, 2023. Household Practices with Alternating Dual-Pit Latrines in Rural Cambodia (preprint)

C. Limited private sector capacity hinders progress towards resilient sanitation and leaves WASH markets vulnerable to disruption from climate shocks, further limiting WASH access to systemically marginalized households living in challenging environments.

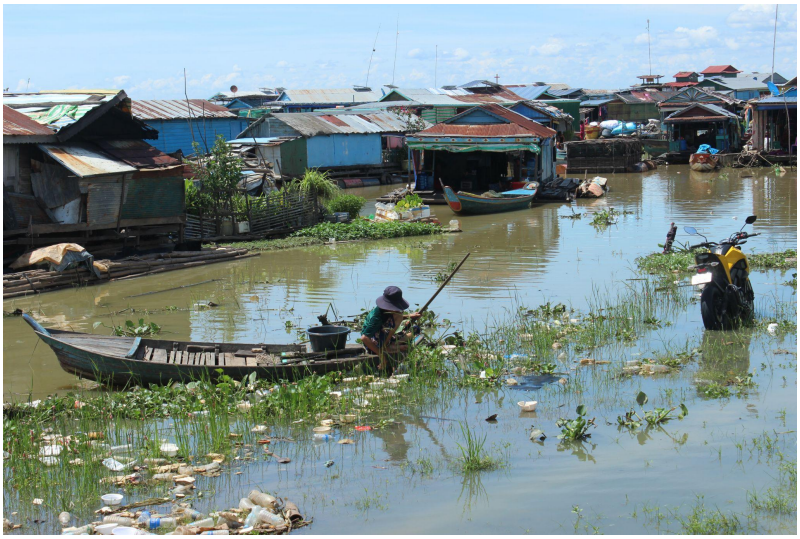

Figure 3: Resilient sanitation is particularly challenging in floating communities where households move and communities shift during flooding. Transportation by land becomes difficult if not impossible.

Private WASH enterprises rarely have the financial and technical capacity (or perceived profit incentive) to deliver safe sanitation in climate-vulnerable environments. Furthermore, extreme seasonal changes and adverse weather events can interrupt services by disrupting markets and increasing the cost of infrastructure installation and repair. Interruptions in service can lead to low customer satisfaction and trust, resulting in order cancellations. Especially when faced with increased prices, people often choose the cheapest options, which may be less appropriate or climate-resilient. Many households have limited financial resources during the flood season and thus do not prioritize purchase, construction of or repairs to WASH infrastructure.

D. There is limited climate adaptive capacity from the public sector to address safely managed sanitation, especially in climate-vulnerable, challenging environments. While the Cambodian Ministry of Rural Development has a national target of reaching 100% sanitation coverage by 2025, a lack of adequate resourcing, institutional arrangements, policies, regulations, and awareness of the links between WASH and climate change is hindering progress towards Open Defecation Free (ODF) status[15]. Public sector responsibilities for designing, coordinating and regulating sanitation services are often unclear and fragmented. Mandates for WASH and WRM are frequently incomplete or overlapping, creating gaps and redundancy. Ongoing decentralization reform has recently transferred sanitation promotion and coordination mandates to district administrations without the accompanying financial resources or technical training required to effectively execute these roles.

E. Climate change will increase WASH inequities for low income households, women and girls, and people with disabilities. Climate change disproportionately affects women, people living in poverty, people with disabilities and socially marginalized groups, who often have little influence over resources and decisions that affect their communities[16]. Existing guidelines do not include feasible means to identify climate vulnerable households and provide appropriate and practical sanitation solutions. Access to sanitation is unequal–while 100% of urban residents have access to basic or limited sanitation, 78% of the poorest rural Cambodians still practice open defecation[17]. Low-income and marginalized households, including ethnic minorities, often live near water bodies and flood-prone areas in Cambodia where sanitation coverage is low. Climate change will exacerbate water-related risks faced by these communities and increase the risk of failure (or non-adoption) of sanitation systems. The negative impacts of climate change are often experienced more severely by people with disabilities as they experience increased economic marginalization and challenges to mobility[18,19] –further limiting their access to WASH.

[15] Royal Government of Cambodia, 2019. National Action Plan: Rural Water Supply, Sanitation and Hygiene 2019-2023
[16] Kohlitz & Iyer, 2021. Rural Sanitation and Climate Change: Putting Ideas into Practice
[17] JMP, 2020. Cambodia household data (Urban coverage rate from 2020, poorest coverage rate from 2017, the most recently available data)
[18] UNHCR, 2020. Analytical study on the promotion and protection of the rights of persons with disabilities in the context of climate change
[19] EPA, 2022. Climate Change and the Health of People with Disabilities

Areas of Opportunity

Increase access to affordable, inclusive, climate-resilient sanitation solutions.

- Design, test, and scale affordable, climate-resilient sanitation solutions that are able to withstand increasingly common extreme weather events in Cambodia. Beyond basic sanitation coverage, focus on safely managed sanitation, including equitable access to FSM solutions. When designing safely managed, climate-resilient solutions, behavior change must also be considered to prevent unsafe sanitation practices resulting from flooding, droughts, and destructive storms.
- Develop practical tools to easily, accurately and affordably identify household and community-level climate vulnerability and monitor progress towards safely managed sanitation.
- Prioritize the sanitation needs of women and girls, low-income people, people with disabilities, and ethnic minorities, all of whom are disproportionately impacted by climate change.

Maintain, expand and protect inclusive and resilient WASH markets.

- Strengthen and protect local WASH market ecosystems and businesses to adapt to climate shocks. Markets drive sustainability, interventions need to be aware of and considerate of market dynamics.
- Expand WASH service provision to reach the most climate vulnerable areas by assessing market failure points, strengthening local demand, and building capacity of supply chain actors.
- Incorporate innovative financing into markets to ensure that lack of capital does not equate to inability to purchase a sanitation solution. Low-income and climate-vulnerable households should be recognized as market participants who exercise agency in their sanitation investments.

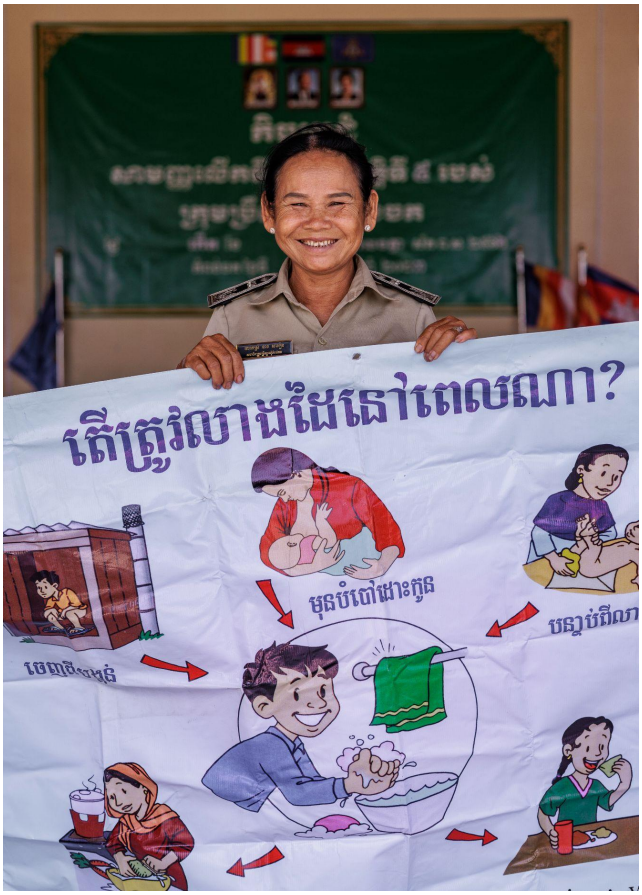

Figure 3: Ms. Neang Savoeurn, Commune Committee of Women and Children in Svay Rieng province, proudly teaches her community about safe sanitation.

Integrate climate resilience within public sector programming, at the national and subnational levels.

- Support capacity and relationship building within government to facilitate 1) understanding of climate change's links with, and implications for, sanitation, 2) integration of climate vulnerability and resilience into policy and guidelines and 3) actionable means for achieving targets.
- Strengthen investment in and resource/budget allocation for safely managed, climate-resilient sanitation.
- Clarify and document ministerial roles, responsibilities, and mandates for WASH and WRM services, and develop integrated WASH and WRM policy and guidelines that support safety, protection of natural resources, and climate resilience in Cambodian communities.