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Brief Note: Climate rationale for water, sanitation and hygiene services in Cambodia



Published by UNICEF

Cambodia Country Office
5th Floor, Exchange Square
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Suggested citation. United Nations Children's Fund, Climate rationale for water, sanitation and hygiene services in Cambodia, UNICEF, Cambodia, 2024.

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This document was co-authored by UNICEF and the Stockholm International Water Institute (SIWI), with contributions from the governments working in WASH and climate, development partners, NGOs, academic institutions and young professionals.

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This publication is made possible by the support of the Government of Australia, which has provided financial support to Cambodia's climate risk-informed WASH programme.

ABOUT THIS BRIEF NOTE

This Brief Note is the summary edition of the full report 'Climate Rationale for water, sanitation, and hygiene services in Cambodia'.

Based on the best available data, and through a multi-stakeholder consultation with WASH and climate experts (government, development partners, NGOs, academic institutions, and young professionals), this Brief Note summarizes the impacts of climate change on the delivery of WASH services, which are then linked to a set of technical and non-technical climate adaptation and mitigation solutions that the sector should prioritize.

The document intends to assist policymakers, donors and practitioners in the WASH and related sectors to achieve climate-resilient WASH services.

Detailed description of the analysis, data and methodology can be found in the full report¹ 'Climate Rationale for water, sanitation, and hygiene services in Cambodia'.

¹<https://www.unicef.org/cambodia/reports/climate-rationale-wash-services>



Climate change and the impact on WASH services

Access to WASH services in Cambodia has improved in recent years, both in rural and urban areas, but several challenges still remain

Access to basic services has been growing steadily since 2000, with household access to WASH services improving in both rural and urban settings. In rural areas, access to at least basic² water and sanitation increased from 66 per cent in 2015 to 73 per cent in 2022 and from 46 per cent to 71 per cent, respectively. A similar trend can be seen in urban areas, where the proportion of households with at least basic services has improved. Over the same seven-year period, water-related services increased from 90 per cent to 94 per cent, and sanitation from 81 per cent to 93 per cent³. Although mainly through self-supply, the rate of toilet use by the poorest quintile in urban areas increased from 34 per cent in 2004 to 69 per cent in 2011.⁴ As for hygiene, data shows that over three-quarters (82 per cent and 88 per cent in rural and urban areas, respectively) of the population have access to a basic handwashing service.

However, by definition, basic services do not necessarily entail climate resilience, and most of these gains might be lost during emergencies and climatic shocks. In addition, inequities in WASH coverage persist between rural and urban settings, between the capital and the other municipalities, and among different socioeconomic strata. Cambodia has the highest level of open defecation in the region, with eight in ten of the poorest rural Cambodians defecating in fields, in open bodies of water, or other open spaces, rather than using a toilet⁵.

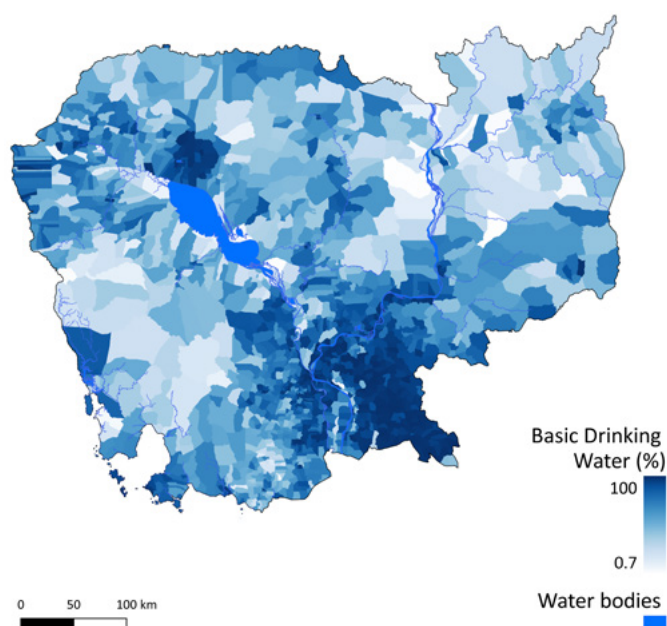


Figure 1: Proportion of population with access to at least basic drinking water (coverage) (Census 2019)

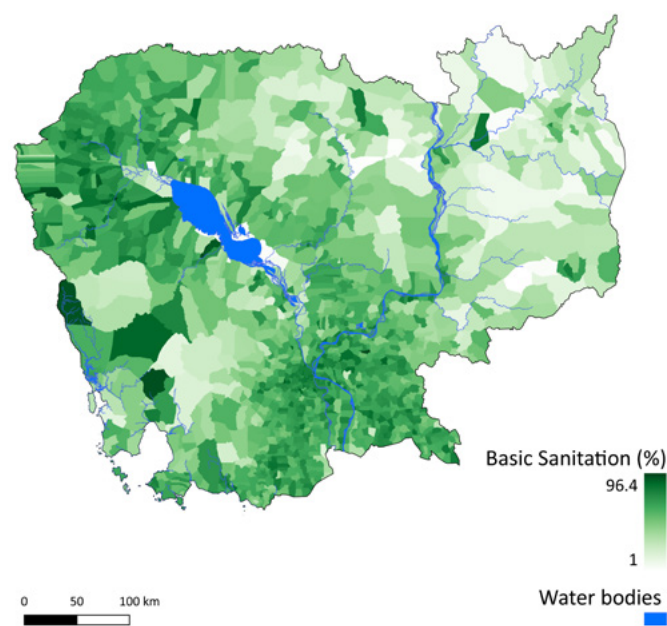


Figure 1: Proportion of population with access to at least basic drinking water (coverage) (Census 2019)

² At least basic service is the combination of basic and safely managed services.

³ WHO/UNICEF Joint Monitoring Programme, 'Achieving SDG WASH targets by 2030 will require a three- to sixfold increase in current rates of progress, JMP, New York, 2023, < <https://washdata.org/> >, accessed 7 September 2023.

⁴ WaterAid, Water, Sanitation and Hygiene (WASH) situation and issues for urban poor people and vulnerable groups, Cambodia, WaterAid, 2015.

⁵ UNICEF, 'Cambodia: Water, Sanitation and Hygiene: For every child, a healthy environment.', UNICEF, New York, < www.unicef.org/cambodia/water-sanitation-and-hygiene >, accessed 7 September 2023

Climate change is jeopardizing livelihoods and development in Cambodia, and climate shocks may become more intense and frequent in the future

In Cambodia, climate threats cause negative impacts on economies, livelihoods and the environment. In 2015, adverse climatic events cost the country US\$1.5 billion in losses and damages (10 per cent of the country's GDP).⁶ Another US\$365 million in damages was caused in 2013 by flash floods that affected almost 380,000 households. Climate hazards, such as storms and droughts, often cause crop damage, with devastating consequences for nutrition.⁷ Climate-related hazards, such as floods and typhoons, also damage public infrastructure such as schools and health centres, impacting health, education and WASH. Projections suggest that infrastructure damages will account for 26 per cent of future losses related to climate change, compromising the country's economic growth and development.⁸

Prevalent climate hazards include flooding, storms, drought, heatwaves and sea-level rise | The key drivers of climate change - temperature and precipitation - will negatively impact WASH services being delivered to households, through damage to critical infrastructure (including transport, electricity, housing); and the environment (contamination of water, soil erosion, land degradation). Other effects will impact crop production and livestock, particularly in rural areas. Urban dwellers will also watch their livelihoods degrade, especially the poor.

Flooding occurs frequently and affects a large area of Cambodia, especially in the central and southern plains, and around Tonle Sap Lake

Both river and flash floods happen yearly during the monsoons in Tonle Sap and the Mekong plains, related to increased water levels in the Mekong River and Tonle Sap Lake between July and October, rather than directly caused by heavy rainfall.⁹ Flooding affects several parts of the country, especially in low-land, rural areas, and the periphery of cities, where it generally takes longer for water to drain.¹⁰ The most affected provinces include Kandal, Kampong Cham, Kratie, Prey Veng, Stung Treng, Svay Rieng and Takeo. Around 25 per cent of the population is estimated to be affected when an extreme river flood strikes, making Cambodia one of the world's most flood-exposed countries in the world. Around 25 per cent of the population is estimated to be affected when an extreme river flood strikes.¹¹

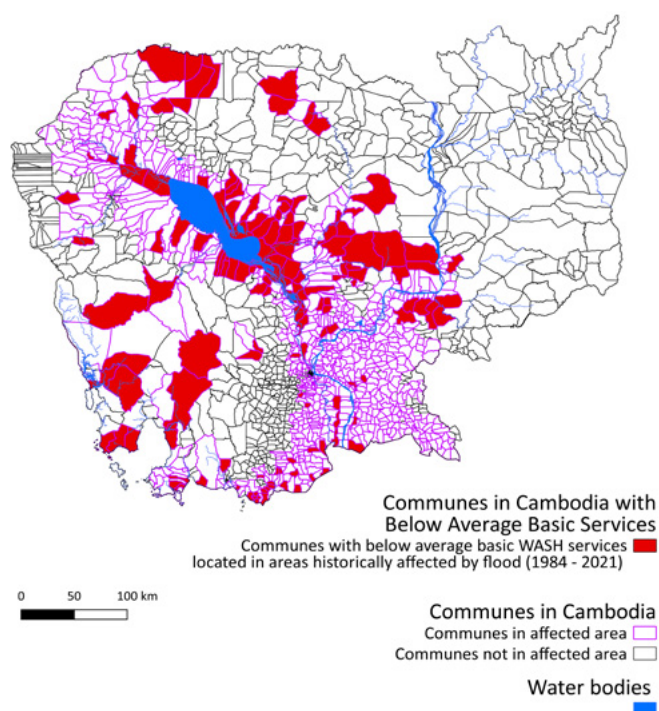


Figure 3 shows 151 communes (9 per cent of the total) located in flood-prone areas with inadequate access to water and sanitation. The effects of flooding tend to be more intense and affect roughly 1.2 million Cambodians (8 per cent of the population). Hotspots include the plains around Tonle Sap Lake, the north and the south-west. Critical WASH infrastructure (tube-wells, boreholes, treatment plants, networks, latrines, etc.) can be temporarily or permanently damaged during floods. Once infrastructure is submerged, services are often stopped, increasing health risks to the population. Higher maintenance costs can also compromise the financial sustainability of service provision. Another major concern relates to flooding in areas where open defecation prevails.

Figure 3: Communes particularly exposed to flooding (located in flood-prone areas and below national average access to basic WASH services)

⁶ United States Agency for International Development, Climate Risk Profile - Cambodia. Fact sheet, USAID, Washington, 2019.

⁷ United Nations Development Programme, National Adaptation Plans in focus: Lessons from Cambodia, UNDP, New York, 2022.

⁸ United Nations Development Programme, Addressing climate change impacts on economic growth in Cambodia, UNDP, New York, 2019.

⁹ Royal Government of Cambodia, Cambodia's Second National Communication, 2015.

¹⁰ WaterAid, Water, Sanitation and Hygiene (WASH) situation and issues for urban poor people and vulnerable groups, Cambodia, WaterAid, 2015.

¹¹ World Bank, Climate Risk Country Profile - Cambodia, World Bank, Washington, 2021.

Storms and cyclones strike most heavily in the east, but often affect more extensive areas, while sea-level rise is currently an issue only at the coast | Storms, cyclones and typhoons, such as Ketsana in 2009, combine the devastating effects of heavy rain with strong winds, thunder and lightning, often leading to flooding that can injure and kill people and animals, damage infrastructure, crops, and contaminate water sources, causing severe social and economic disruption. Similar consequences can come from sea-level rise affecting the coast, the difference being that this hazard is characterized by a slow onset with irreversible impacts.

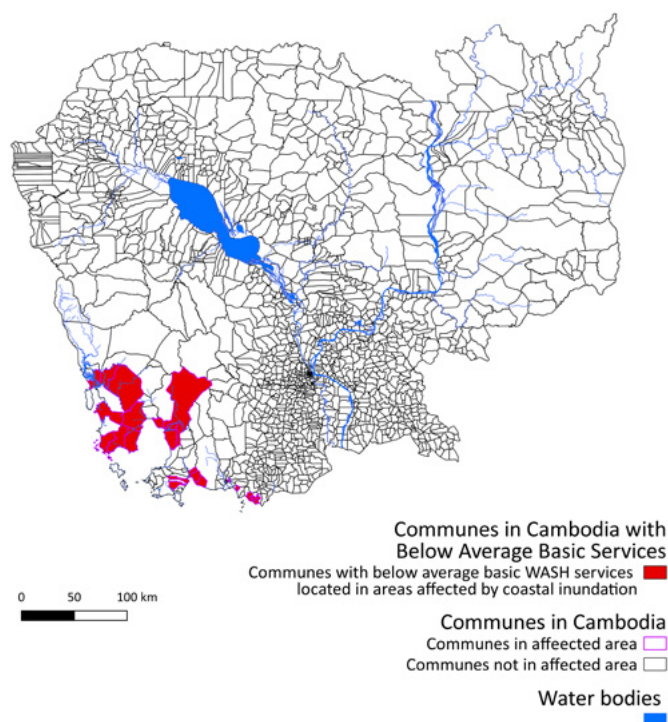


Figure 4. Communes particularly exposed to sea-level rise (located in areas that have experienced coastal inundation and are below national average access to basic WASH services)

Figure 4 shows 24 communes (1.5 per cent of the total) in which access to basic water and sanitation services is below the country's average and that are highly exposed to sea-level rise. In these communes, more than 130,000 Cambodians live (1 per cent of the total). The impacts of sea-level rise are, in part, similar to those of flooding (coastal flood leading to infrastructure damage). Moreover, this hazard is also associated with increased salinity in groundwater, which in turn compromises water quality, increases treatment costs and provokes faster infrastructure deterioration.

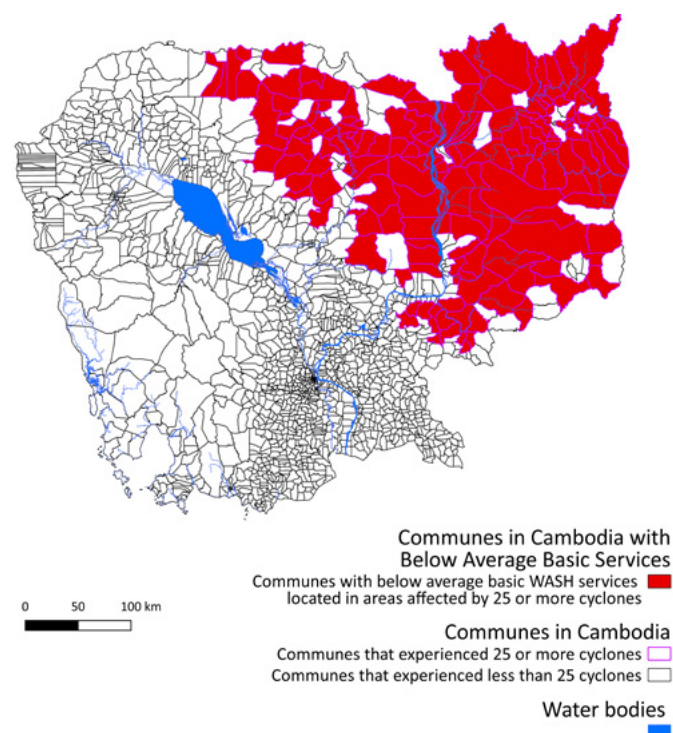


Figure 5. Communes particularly exposed to storms and cyclones (located in areas that have historically experienced these hazards and are below national average access to basic WASH services)

Figure 5 shows the 167 communes (10 per cent of the total) with poor access to basic water and sanitation services and which are located in storm-prone areas. The estimated population in these communes is around 1 million Cambodians (6.6 per cent of the country's population). The impacts of storms are very similar to flooding (injury and death, infrastructure damage, service discontinuities, etc.). With lower service levels being delivered during and after storms, there are higher health risks for the affected population. The financial sustainability of services is also affected. More concentrated rainfalls leading to more frequent storms in the future indicate the need to implement effective early-warning systems.

Seasonal drought has severe impacts in central and north-western provinces, which are aggravated by high temperatures

Two associated factors cause droughts: mini-dry spells in the rainy season (between July and August) become longer, and the dry season is drier, especially in the Tonle Sap plain. Currently, drought-prone areas coincide roughly with those in which mean temperatures are higher: the northwest, the zones surrounding Tonle Sap Lake and the southern Mekong plains. Prospects of even higher temperatures in the future and changes in precipitation during the dry season suggest that the risks related to drought (whether associated with heatwaves or not) might be aggravated. Water availability could be compromised in such conditions, especially during the dry season.

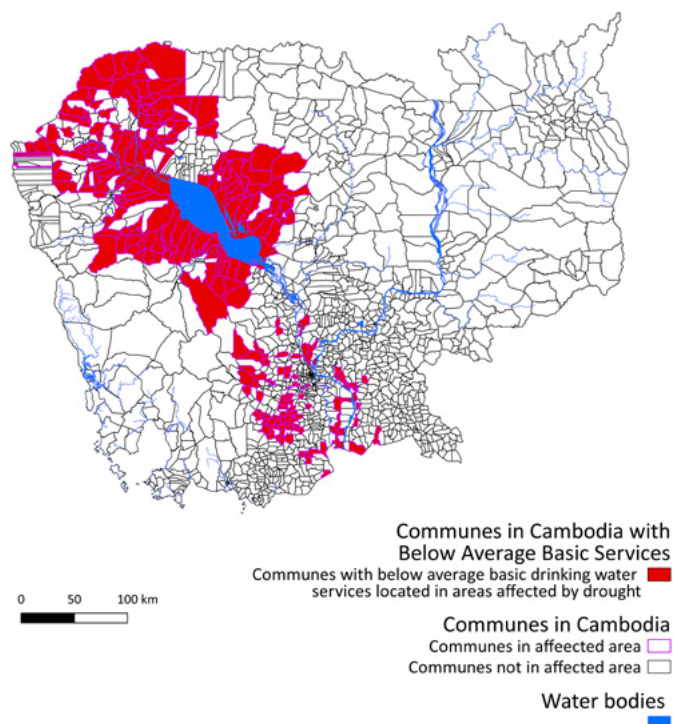


Figure 6. Communes are particularly exposed to drought (located in drought-prone areas and below national average access to basic drinking services of 70.8 per cent (Census 2019))

Figure 6 shows 282 communes (17.1 per cent of the total) located in drought-prone areas where access to basic drinking water services is below the national average. Approximately 2.7 people live in these, primarily rural areas (19 per cent of the national population).

Drought often leads to reduced water availability, with direct impacts on services. Drought also often coincides with higher temperatures that increase water demand for all uses, thus putting more pressure on water resources. Water shortages are a constant phenomenon, with 54 per cent of households suffering from water shortages for domestic use, and 17 per cent being compelled to reduce water consumption (e.g., limiting hygiene).¹²

This adversely affects people's well-being, especially in rural areas, with lower service levels (unsafe and more expensive water, discontinuities, longer walking distances to water sources, which increases the risk of violence for children and women, etc.).

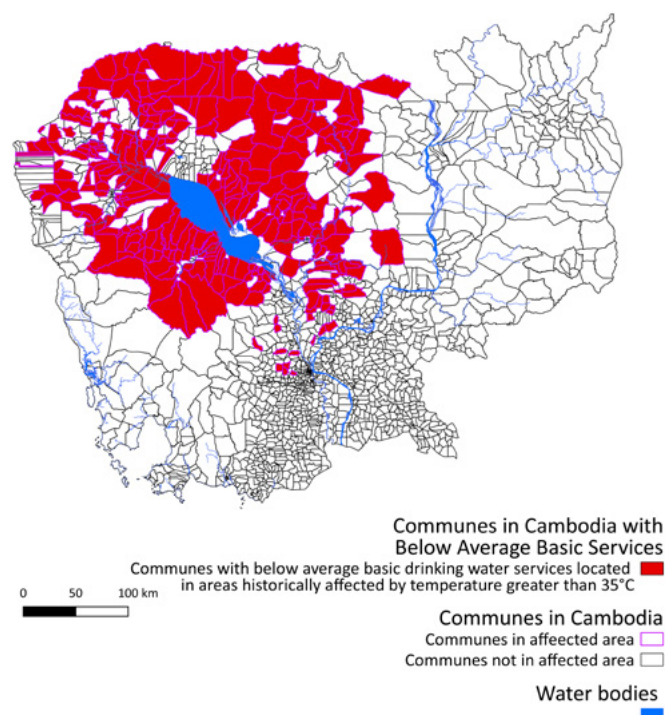


Figure 7. Communes particularly exposed to heatwave (located in areas with average temperatures higher than 35°C and are below the national average access to basic drinking water services of 71 per cent (Census 2019))

In Figure 7, 316 communes (19.2 per cent of the total) coloured in red show those high-risk areas with both higher average temperatures and lower levels of access to WASH services. Almost 2.9 million Cambodians (18.9 per cent of the population) live in these communes.

Higher temperatures lead to increased evaporation, thus contributing to reduced surface water availability. Higher temperatures also lead to higher water demand (irrigation, cattle, human consumption). Decreasing availability and increasing consumption lead to water stress, affecting some regions during the dry season. The lack of surface water compels people to use groundwater. With most rural communities consuming water from wells, quality is an issue of concern for at least 2 million Cambodians living in areas with high arsenic groundwater levels.¹³ Service discontinuities also arise from water depletion. Higher consumption can also lead to faster infrastructure deterioration, thus increasing maintenance costs. Extreme heat also threatens the health and safety of sanitation workers, who risk suffering from heat strokes. A one-degree temperature increase can lead to an 8.5 per cent increase in electricity demand,¹⁴ impacting water resources.

¹² Royal Government of Cambodia, National Adaptation Programme of Action to Climate Change (NAPA), 2016.

¹³ World Bank, Water Supply and Sanitation in Cambodia: Turning Finance into Services for the Future, World Bank, Washington, 2015.

¹⁴ World Bank, Climate Risk Country Profile – Cambodia, World Bank, Washington, 2021.

Climate impacts and extreme weather events can affect everyone, but some groups might suffer more than others | Making up more than one-third of Cambodians, children and the elderly are very vulnerable to climate change.¹⁵

Women and girls, usually responsible for fetching water when unavailable on-premises, must walk longer distances, miss school or work and expose themselves to violence. People living in informal settlements are also exposed to harm from consuming contaminated water, since they typically access water through unimproved sources. As of 2014, 18 per cent of the population lived below the national poverty line, and 90 per cent of the country's poor lived in rural areas.¹⁶ With nearly three-quarters of Cambodians living in rural areas, farmers who depend on natural resources for subsistence are also very vulnerable to hazards. The immediate impact of climate shocks and stresses on the WASH sector is that the affected population receives lower service levels (less safe or more expensive water sources, open defecation, etc.), incurring severe health-related risks. Lower service levels could be devastating for public health in areas of significant population and increase vulnerability and exposure to climate hazards.

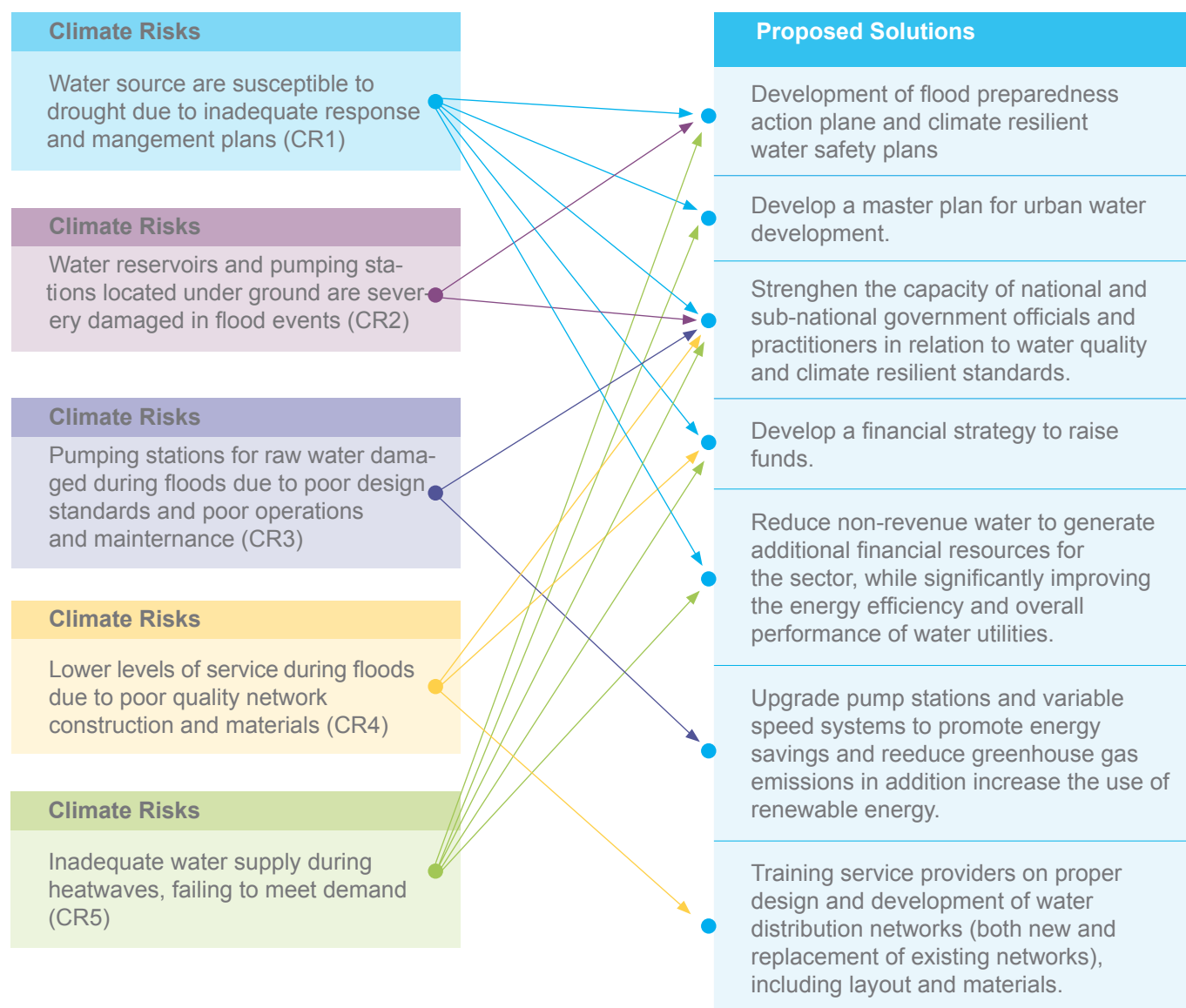
Local practices and knowledge are key drivers of vulnerability to climate-related hazards | In rural areas, people have limited understanding of the importance of proper sanitation and hygiene.¹⁷ Open defecation is still practiced by a quarter of the rural population, potentially impacting public health, especially during the wet season. Farmers have developed strategies to cope with drought events, although some have had unexpected consequences, such as water storage containers that induce the proliferation of dengue mosquitos. Nevertheless, rapid changes in precipitation patterns and higher temperatures negatively influence the population's preparedness and adaptive capacity. Women often have less access to information about climate change since they shoulder the burden of home-care responsibilities, which hampers their ability to increase preparedness or to participate in supporting and designing climate-resilient systems.

¹⁵ World Bank, 'Open Data' <<https://data.worldbank.org/>>, accessed 8 September 2023.

¹⁶ Sigelmann L.E., 'Climate Change and Migration in Cambodia: An Analysis of Spatiotemporal Trends in Water Availability and Migration' Thesis for the degrees of Master of Global Policy Studies and Master of Science in Energy and Earth Resources. University of Texas, USA, 2022.

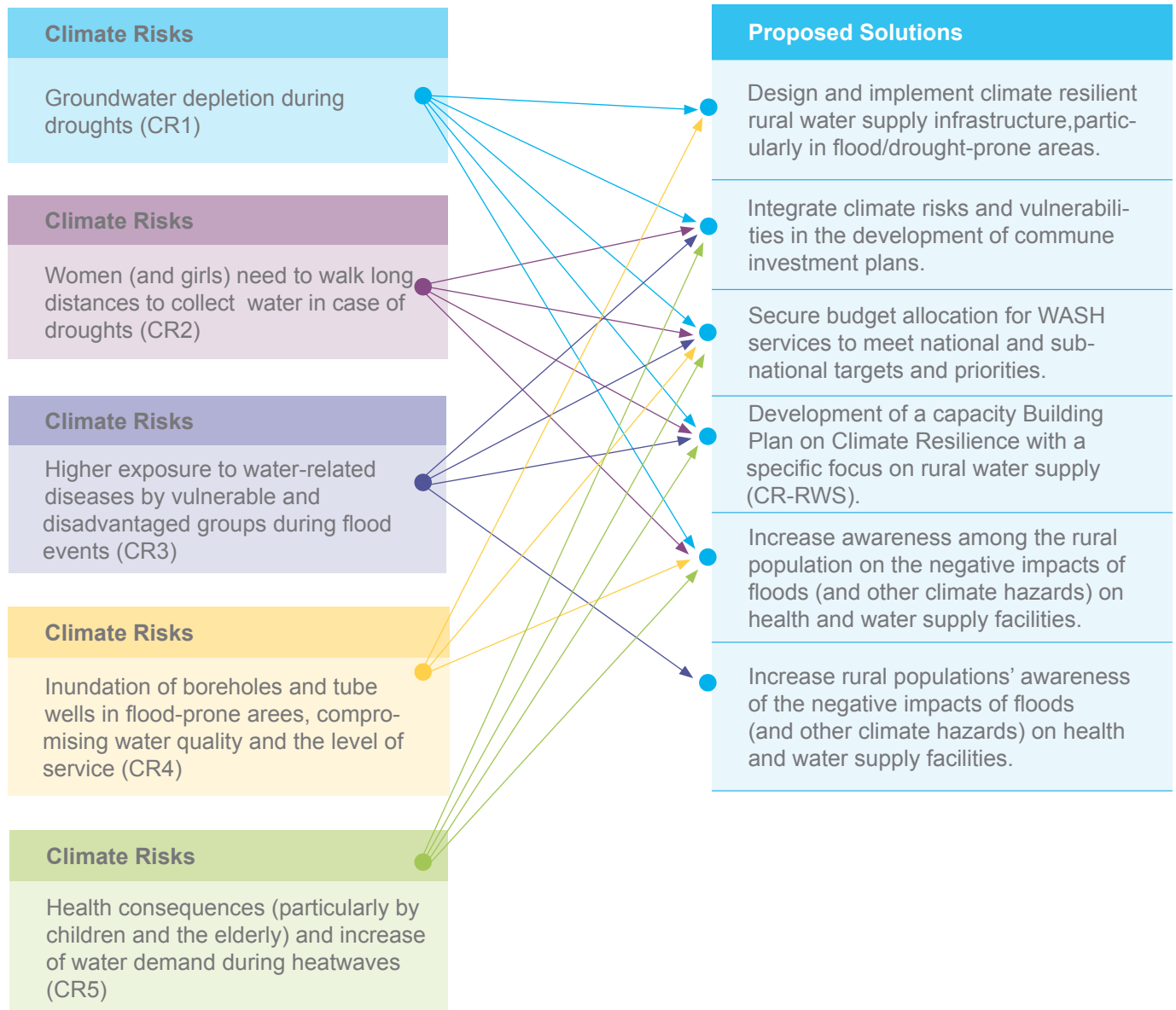
¹⁷ UNICEF, Cambodia: Water, Sanitation and Hygiene: For every child, a healthy environment, UNICEF, New York, <www.unicef.org/cambodia/water-sanitation-and-hygiene>, accessed 7 September 2023.

Linking Risks with Responses: Urban Water Supply



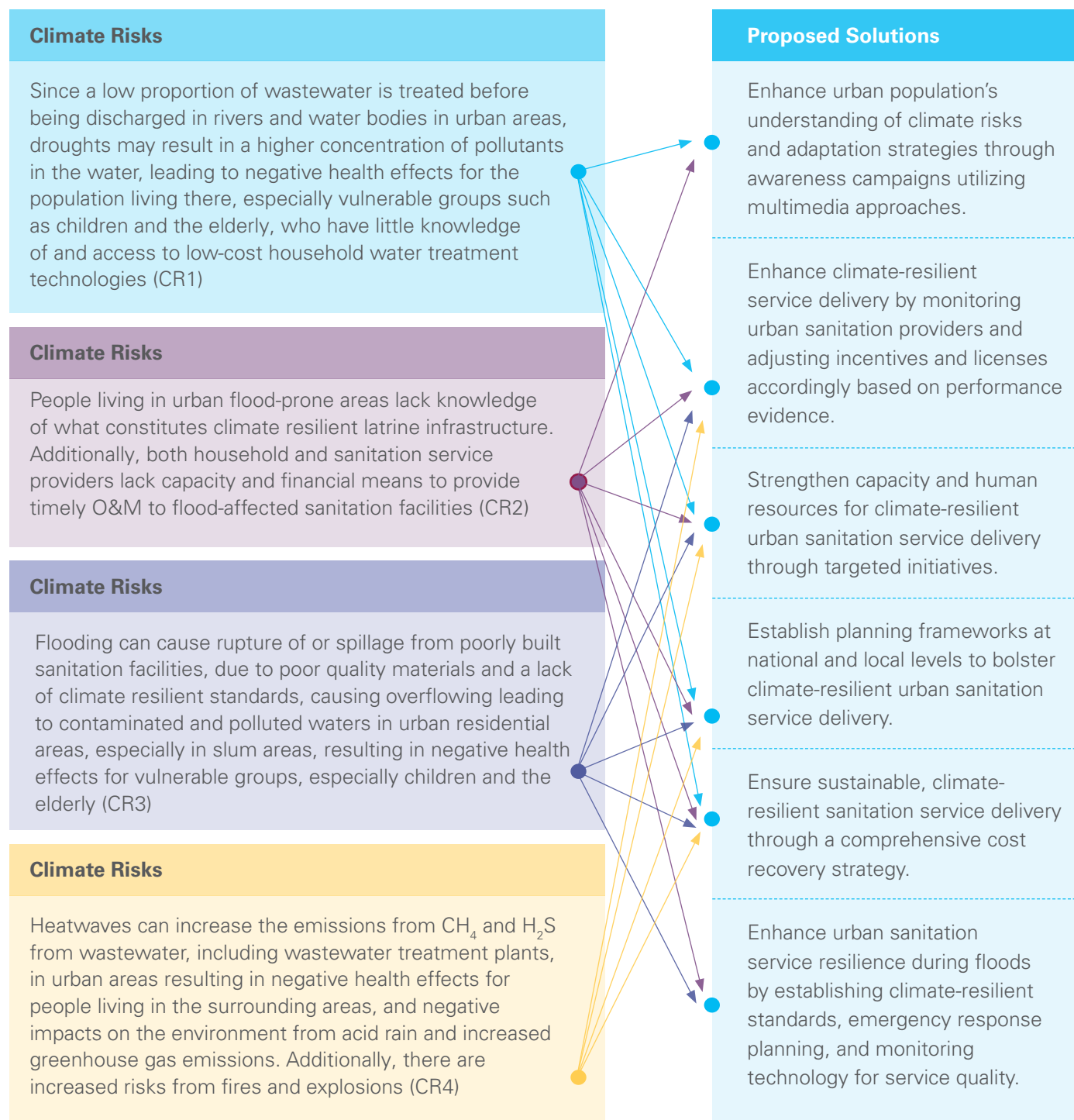
Potential solutions for urban water supply include enhanced design and planning, more and better finance, and increased capacity | One key priority is the development of minimum technical standards for climate-resilient design and management of water supply infrastructure, including their implementation and enforcement. In parallel, developing contingency plans and water safety plans for floods and droughts should help improve the response of (at least) leading water operators. From the management and institutional side, implementing previous solutions requires building up the capacity of local and national governments, service providers and the private sector on contingency planning and emergency preparedness. At the national level, other priorities include the development of a master plan for urban water supply, integrating climate risks and disaster preparedness. For sector financing, the priority should be the development of financial plans to secure a dedicated WASH budget with specific allocations to address climate impacts on WASH and foster financial planning for adaptation. The current funding for climate-related WASH activities in Cambodia falls far short.

Linking Risks with Responses: Rural Water Supply



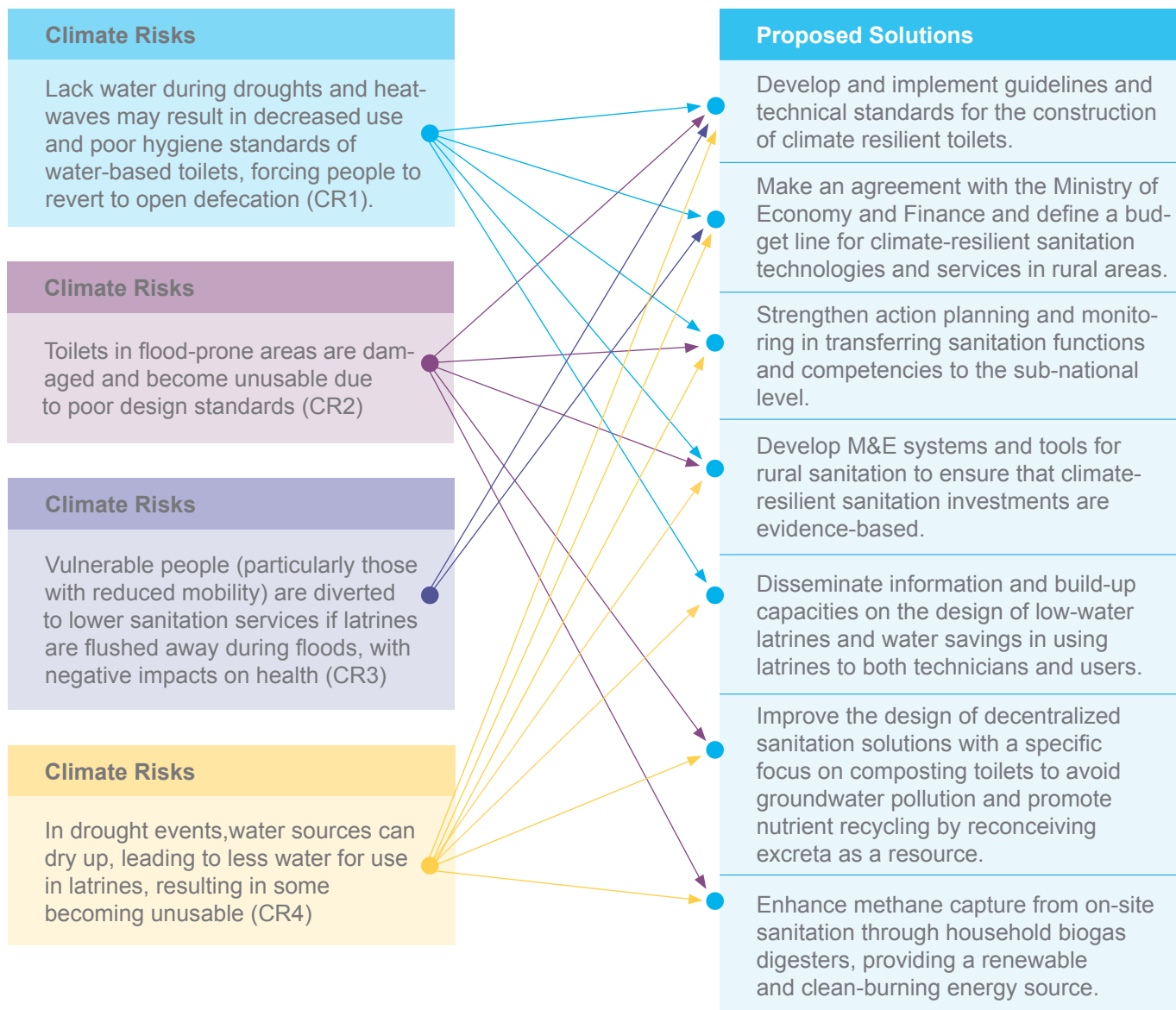
Potential solutions for rural water supply focus on the development of climate-resilient infrastructure and on creating the enabling environment for their proper implementation (i.e., planning, finance, and capacity building) | First, a set of activities are defined to promote the implementation of appropriate technologies in flood and drought-prone areas, also assessing how vulnerable groups access and use these technologies. In parallel, there is a need to build up capacities of national and local authorities, as well as the private sector, to identify, appraise, implement, and monitor climate-resilient solutions by assessing capacity gaps and needs and implementing a comprehensive capacity development plan for strengthening adaptation, mitigation and risk assessment knowledge and planning. In terms of finance, the need to advocate for increased funding for rural areas is highlighted, securing and allocating adequate budget to respond to climate risks impacting the rural water supply sector. The critical proposed solutions include advocacy with senior stakeholders to create a dedicated budget line for rural water supply, with a specific focus on infrastructure development and awareness raising, as a steppingstone to build consensus on agreed actions to enhance community adaptive capacity to climate change (e.g., how to protect water sources).

Linking Risks with Responses: Urban Sanitation



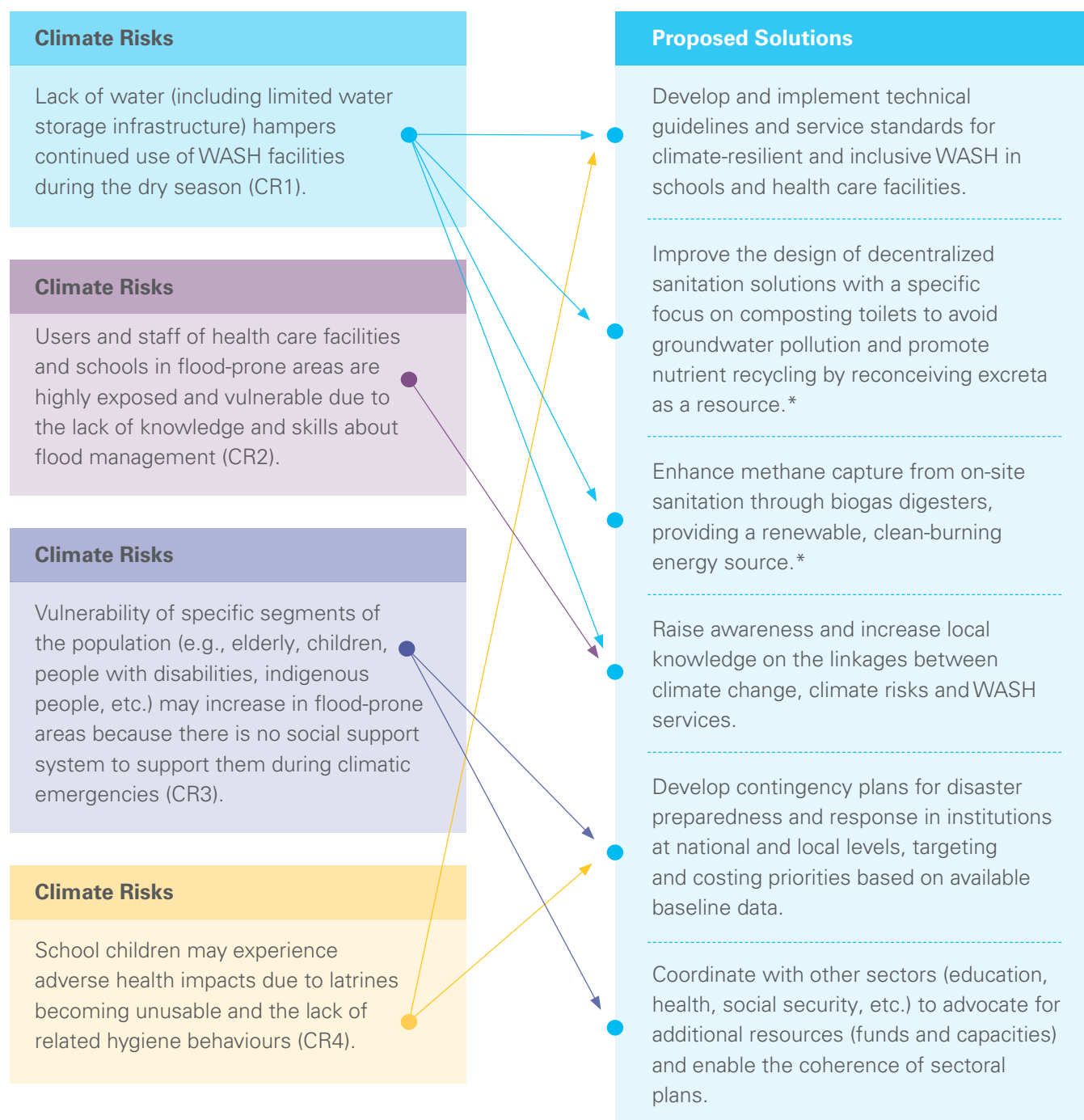
Potential solutions for urban sanitation include strengthening planning, establishing climate resilient standards, and the improvement of monitoring of providers and services | To enhance urban sanitation climate resilience during floods, the Action Plan highlights the need to establish climate-resilient standards, emergency response planning, and monitoring technology. This involves creating response plans for operation and maintenance during floods, providing training on resilient design standards, and implementing smart monitoring tools to track flooding impacts. Additionally, raising public awareness about climate risks and adaptation strategies through multimedia campaigns is prioritised, focusing on sanitation technologies, contamination protection, and proper toilet usage. A new Public Relations Agency or third-party organization could be disseminating service information and implement feedback mechanisms. Monitoring urban sanitation providers, adjusting incentives, and supporting households and public service providers with budget allocations are key for climate-resilient service delivery. Strengthening capacity through targeted training initiatives for government staff and service providers, establishing national and local planning frameworks, and developing a comprehensive cost recovery strategy to accommodate climate risk adaptation costs are also critical steps highlighted in the Action Plan.

Linking Risks with Responses: Rural Sanitation



Potential solutions for rural sanitation range from elaborating technical standards to creating a dedicated budget line for rural sanitation | The Action Plan for Climate-resilient WASH prioritizes the development of technical standards for climate-resilient sanitation and to ensure these are followed in the construction and up-grade of new and existing facilities. For instance, specific standards are needed to promote the efficient use of water in water-based toilets. Disseminating these guidelines at the provincial level would be the first step, ensuring that the most exposed and vulnerable areas are targeted with trainings for service providers and communities. Within the enabling environment, increased funding for shifting to more climate-resilient services is also highlighted, creating a dedicated budget line for rural sanitation and monitoring actual budget implementation. In parallel, developing disaster and climate change preparedness plans for all provinces in Cambodia emerges as another priority. This would involve transferring some competencies, resources and capacities to the sub-national level, and training local stakeholders on the design, development, planning and monitoring of rural sanitation services.

Linking Risks with Responses: WASH in Institutions



Potential solutions for WASH in Institutions include the implementation of technical guidelines and servicestandards, awareness-raising, and contingency planning There is a need to review existing guidelines and develop clear service standards for climate-resilient WASH in schools and health care facilities, which requires the active participation of all sector-related stakeholders, including users and staff (teachers, doctors, nurses, etc.). The implementation of standards would allow evidence-based targeting and prioritization of highly exposed areas, supporting the elaboration of contingency plans for disaster preparedness and response at national and local levels. In turn, these plans should aim to facilitate the coordination of actions within WASH and with other sectors (e.g., education, health, social security, etc.), and enable the coherence of sectoral plans. At the local level, awareness-raising and capacity-building initiatives would allow more and better knowledge of the climate change impacts on WASH services and, in turn, promote behavioural change (e.g. efficient use of water, hygiene practices during emergencies, etc.).

The Way Forward: Conclusions and Recommendations

Capitalize on the momentum by enhancing coordination and creating a national WASH and climate taskforce |

The mapping of stakeholders revealed that critical tasks along the chain of WASH services are split among different line ministries, making coherence in implementation more difficult. On top of that, the Ministry of Environment provides climate directives that must be integrated into WASH sector policy. Improving coordination by, for example, creating a WASH and climate taskforce could lead to more efficiency and effectiveness. This would mean establishing a dedicated, experienced working group that could provide advice to the formulation of climate and WASH policies, and monitor the implementation of related plans and strategies. In addition, it could help coordinate sector efforts going forward, including assisting the development and, subsequently, uptake, integration and institutionalization of response measures and actions. Moreover, this committee could create space for coordination among critical ministries dealing with water, sanitation and hygiene and push for a clear prioritization of the WASH sector in climate policy.

Further influence the elaboration of WASH and climate national policies |

The policy assessment suggests that WASH is already well represented in national climate policies and strategies, and climate is well addressed in WASH policies. Building on the example of the updated version of the Nationally Determined Contribution, submitted in 2020, which integrates WASH services as a priority element for improving human health, efforts should be directed to ensure that national climate and WASH policies and strategies are well aligned, describing linkages to other general sector processes (e.g., Joint Sector Reviews, etc.). An update of the National Action Plan or the development of strategies and plans for the next policy cycle (e.g., the Climate Change Strategic Plan, or the National Action Plan for Rural Water Supply and Hygiene NAPRWSH) would provide an opportunity for the WASH and climate sectors to join forces and coordinate efforts to develop a more resilient WASH sector. The aim would be to integrate the narrative that describes the impacts of climate change on water supply, sanitation and hygiene services, as well as the inclusion of appropriate response measures. This process should ensure that the contents of the climate-related and WASH-related policies and strategies align as much as possible. In parallel, assessing the actual implementation of policies, plans and strategies should also be prioritized, identifying bottlenecks that constrain progress.

Better leverage climate finance by developing a dedicated policy and strategy |

There are opportunities to leverage regional and international climate finance through new and additional financial flows above official development assistance for supporting climate actions. Capacity needs to be increased, especially around formulating and writing climate proposals for international funds, and cooperation with international and national NGOs operating in the country should be facilitated to ensure collaboration and coherence in project development. Funding could be channelled through bilateral and multi-lateral implementing agencies or local NGOs that play a crucial role in project implementation, training, monitoring and evaluation of project indicators. Beyond external financing, domestic funds should also be raised through e.g., strengthening the interface between public and private sectors, pooled financing models, water user committee mobilising fees, and local financing products. Information on the communities' own 'ability to pay' and 'willingness to pay' would be needed to promote their commitment to financially sustain climate-resilient WASH.

Monitor the implementation of the proposed action plans while further understanding bottlenecks and gaps in water and climate governance |

Following the development of the action plans, it is important to create effective monitoring mechanisms to follow up the implementation of all actions and prioritized climate solutions. More specifically, the follow-up and monitoring should include the who (lead organization), the what (which activities need to be monitored) and the how (accountability mechanisms in place, set of indicators to measure progress, etc.). In addition, it is also important to analyse broader governance elements that positively and negatively affect the sector's development. The key drivers of successful WASH interventions are rules, practices, and processes as the defining elements of water governance. This must be built on a thorough understanding of the constraints affecting its performance. For instance, a discussion about the financing mechanisms to implement the action plan could be promoted, identifying opportunities for resource mobilization. The WASH and climate taskforce could conduct such an activity.





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