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WATER SECURITY PLANNING

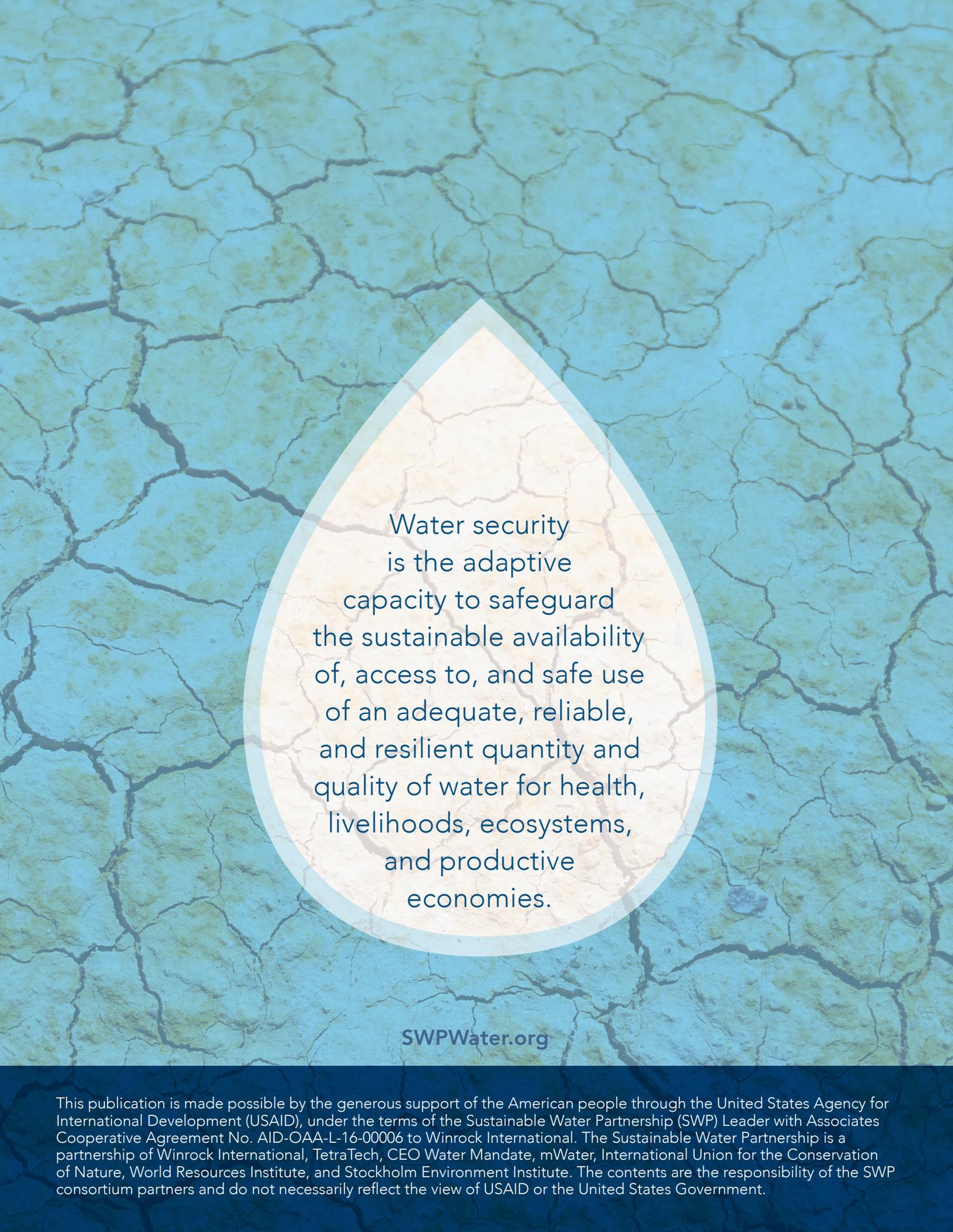
Toolkit #3



This series of toolkits presents an effective and efficient process to address risks to water security, both long-term water stresses that constrain socioeconomic development and threaten political stability, as well as sudden shocks that can endanger the health and livelihoods of vulnerable populations. These toolkits aim at disseminating the practice of water management. Local decision-makers as well as development specialists should use these toolkits as guidelines to engage water users in a collaborative process that results in improved water resources management.



The CEO Water Mandate



Water security
is the adaptive
capacity to safeguard
the sustainable availability
of, access to, and safe use
of an adequate, reliable,
and resilient quantity and
quality of water for health,
livelihoods, ecosystems,
and productive
economies.

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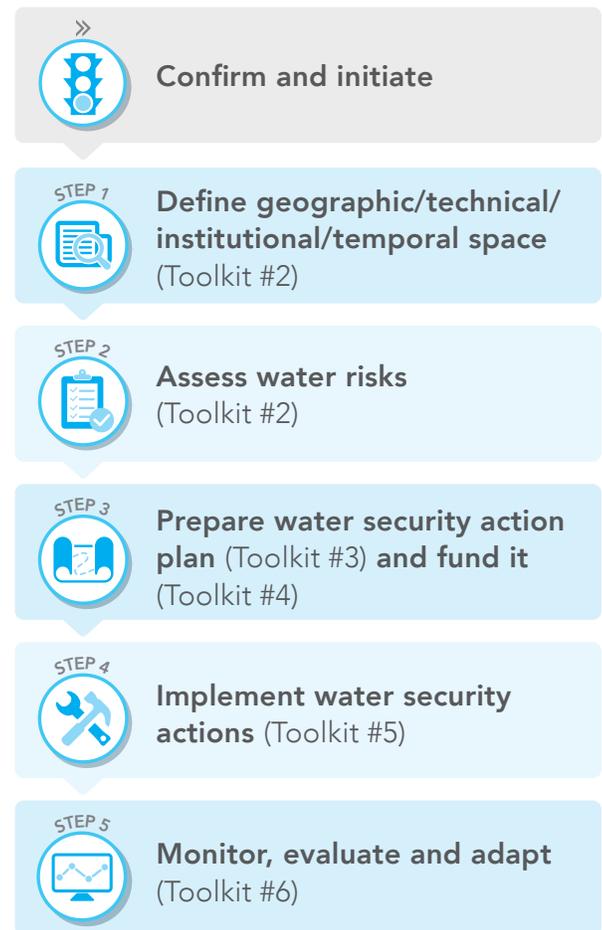
INTRODUCTION

Unsustainable water and land use practices and increasing demand for water are contributing to over-abstraction and degradation of surface and groundwater in many watersheds around the world. Climate change is impacting every part of the water cycle, including making weather more extreme, increasing temperatures, and raising sea levels. As a result, the future availability of water resources is increasingly uncertain, and communities and ecosystems are vulnerable to water stress and natural disasters.

Improving water security in a targeted geography requires a focused and collaborative effort to identify and prioritize water risks, and to plan and implement activities to mitigate the risks. This series of toolkits presents the Water Security Improvement (WSI) process, an iterative approach to addressing risks that cause water to be “too little, too much, too dirty, or too erratic” for use by people, animals, and ecosystems. The WSI process involves five steps to assess, plan, and implement water security interventions (Figure 1). This toolkit covers Step 3: Prepare A Water Security Action Plan. The approach outlined in this toolkit is intended to help create a transparent, participatory planning process, engage stakeholders, define an appropriate technical scope, and design and conduct water security assessments to understand and address the water security risks in your target geography.

This toolkit series is aimed at national and local governments, international and local non-governmental organizations, and donors interested in water resource management.

FIGURE 1: SWP'S WATER SECURITY IMPROVEMENT PROCESS



WHAT IS WATER SECURITY PLANNING?

Water security planning is a participatory process that aims to identify, evaluate, and select interventions that increase water security. The planning process will help stakeholders consider:

- › Mitigation of targeted water risks
- › Direct and indirect benefits and positive and negative impacts
- › Direct and indirect costs as well as capacity and resource needs
- › Robustness of actions and risk mitigation measures to future uncertainties related to climate and other changes
- › Adjusting course when necessary

A water security plan should be timely, pragmatic, and reflect a balance between possible water security actions and tangible activities to address water security risks in the short and long term.

Dimensions of Water Security Planning

The planning process builds on the review of the water security risks defined in the water security assessment and should consider the costs and benefits of key actions against current and future conditions with respect to:

- › Water resources and ecosystems, and opportunities for green infrastructure
- › Water user practices and projected demand from different types of water users
- › Condition of gray infrastructure and options and future infrastructure needs
- › Management and governance systems
- › Future uncertainties

Questions to consider include:

- › What water security risks need to be addressed?
- › How will success be measured?
- › What are stakeholder expectations?
- › What future water security situation is desired?



There are many ways to approach the planning process. Water managers and engineers have traditionally used predictive methods to identify solutions and make water management decisions (see [Analytical Tools to Support Water Security Decision-Making: Supporting Paper for SWP Toolkit Series](#)). These methods are based on experience and scientific knowledge about water resources and rely on technical tools and models to predict outcomes based on initial and likely future conditions. However, climate change is complicating predictive approaches as seasonal conditions and water availability become more variable. Changing seasonality and inter-annual variability is leading to altered wet and dry seasons, less predictable precipitation, and rising temperatures and more frequent drought.

Participatory methods involve considering stakeholder perceptions and formulations of water risks and expectations. Stakeholders can help lead analysis of their natural and built assets and as well as lead negotiations around solutions to achieve water security goals. Stakeholders can also play an important role in characterizing uncertainties that may impact water management and water resources.

Decision support systems are tools that allow stakeholders to explore solutions and outputs across a range of uncertainties, including future climatic, demographic, economic, and political conditions. The USAID Sustainable Water Partnership (SWP) worked with local stakeholders in the [Stung Chinit Basin in Cambodia and the Mara River Basin](#) in Kenya and Tanzania to analyze future uncertainties using robust decision support approaches and [Water Evaluation and Planning \(WEAP\)](#) modeling tools. Through this process, stakeholders were able to consider different demographic, climate, and land and water use scenarios and future risks. Findings from the scenario analyses were used to inform a [Strategic Action Plan for the Stung Chinit Basin](#) and a [Water Allocation Plan for the Lower Mara River Basin in Tanzania](#).

Box 1: Decision Support Systems (DSS)

A DSS is a tool that can model linkages between possible solutions, desired outcomes, and key uncertainties by:

- Compiling available and relevant data (database)
- Running multiple simulations with varying parameters to analyze an array of scenarios (model)
- Visualizing and comparing these scenarios with informative displays (user interface)

Stakeholder involvement can be critical to enhancing the utility of a DSS. Stakeholders should lead analysis of solutions and potential scenarios as well as negotiation and decision-making processes. For example, WEAP from the Stockholm Environment Institute is a DSS that structures, supports, and accompanies a participatory planning effort through:

- An integrated water planning system with built-in models for rainfall runoff and infiltration, evapotranspiration, crop water requirements and yields, surface water/groundwater interaction, instream water quality, with user-adjustable supporting assumptions and equations
- An embedded allocation optimization program
- A linked GIS-based interface, reporting through graphs, tables, and maps

Preparing for Implementation of the Plan

A water security plan should define a manageable set of interventions that address priority risks in the target geography. The plan should reflect a defined planning horizon, scope and scale of activities, funding requirements, and monitoring needs. It is important that the plan be realistic about the scale and cost of water security actions. A water security plan should also include:

- › Indicators and targets to ensure monitoring of progress and performance and adaptive management
- › Communication mechanisms among implementers as well as between them and higher authorities, funders, constituents, and the public at large
- › Provisions for the sustainability, reiteration, and possible scaling-up of the WSI process



Box 2: Water Security Planning under SWP

The USAID Sustainable Water Partnership supported the Lake Victoria Basin Water Board in the Mara River Basin in Tanzania and the Stung Chinit River Basin Management Committee in Cambodia to develop planning resources to help guide water management and improve water security. In Tanzania, SWP worked with local stakeholders to develop a [Water Allocation Plan](#) for the Lower Mara Basin. This plan was informed by a series of field-based assessments related to water availability, demand, and abstractions and outlines water allocation scenarios under different conditions. The Stung Chinit River Basin [Strategic Action Plan](#) was prepared in consultation with the River Basin Management Committee and outlines priority governance improvements and interventions to improve monitoring and management of water availability and water quality.

WATER SECURITY PLANNING PROCESS AND OUTPUT

The WSI process outlines six tasks for effective water security planning:

1. Translate priority water risks into specific goals
2. Explore and define possible water security activities
3. Review, analyze, and compare options
4. Negotiate, decide, and select preferred options
5. Perform the funding "reality check"
6. Finalize and validate the action plan

Prior to commencing the planning process, stakeholders involved in the WSI process should confirm who should participate in the planning process, the planning and decision-making process to be followed, and the timeline and resources that will be allocated to the planning process. Key stakeholders may be derived from the stakeholder analysis conducted under Step 2 ([Toolkit 2](#)) of the WSI process. It is important to emphasize involvement of women and marginalized groups to broaden perspectives and ensure equitable inputs from the community. Involvement of local and national governments are also key to the planning process. Government representatives may stipulate requirements related to:

- › Procedures or processes and guiding practices
- › Technical requirements for plans, including potential assessments and approvals
- › Compatibility with national strategies and policies

Task 1. Translate Priority Water Risks into Specific Goals

The first phase of the planning process is to translate key water risks into priority goals. Stakeholders should revisit the specific risks defined for each problem area (see [Toolkit 2](#)) and discuss and decide upon relevant goals to pursue. The table below illustrates potential goals for water scarcity, pollution, and flooding:

TABLE 1: WATER RISKS AND GOALS

WATER RISK	ILLUSTRATIVE GOALS
Scarcity	<ul style="list-style-type: none"> • Increase drinking water delivery hours (by x%) in specified areas • Extend coverage of water supply network to specified areas • Decrease domestic/industrial water use (by x%) in specified areas • Decrease technical losses (leaks and seepages) in water network (by x%) • Decrease administrative losses (unauthorized, unmetered or unbilled connections) in water network (by x%) • Improve reliability of water delivery in specified areas (by x%) • Improve irrigation efficiency (by x%) in specified areas • Prepare and implement water allocation plans for specified areas • Prepare and implement drought mitigation plans for specified areas
Pollution	<ul style="list-style-type: none"> • Extend coverage of wastewater collection to specified areas (or by x%) • Develop or improve wastewater treatment in specified areas (by x%) • Improve water quality (by x%) in specified water bodies • Ensure protection of water sources in specified areas • Improve water monitoring in specified areas • Prepare and implement watershed/ecosystem management plans in specified areas
Flooding	<ul style="list-style-type: none"> • Prepare and implement flood management plans • For specific/design flood, prevent or mitigate flooding in specified areas • Improve flood monitoring/warning systems in specified areas

Task 2. Explore and Define Possible Water Security Activities

Stakeholders should develop a set of proposed actions for each set of risks and goals. This process should be collaborative and inclusive to ensure diverse perspectives are heard, including from water users, water producers, development or community organizations, government officials, and potentially funders. The option formulation process should consider what has worked well in the area, the potential for scaling activities, and opportunities to innovate. Actions may include behavior change campaigns, governance improvements, climate resilient measures, and nature-based solutions, such as using constructed wetlands to improve water quality.

Brainstorming sessions can be helpful for rapidly generating ideas from stakeholders and stimulating outside-the-box thinking. Brainstorming can be conducted in one or several sessions and involve a narrow or large set of stakeholder groups. Local stakeholder involvement is critical to ensure that actions are appropriate for the local context whereas technical experts can help to ensure that actions leverage the science and tools. Whatever the size, brainstorming sessions should be facilitated to ensure that stakeholders are able to contribute, including representatives from marginalized groups.



Task 3. Review, Analyze, and Compare

Once a list of actions has been generated, stakeholders should evaluate the options against key criteria, including direct and indirect socioeconomic and environmental costs and benefits, possible negative impacts or externalities, capacity of local stakeholders for implementation, needs for gender and social inclusion, overlap or synergy with other projects and plans, and resilience of proposed actions to future uncertainties, including climate change. It is important to use a clear methodology for evaluating the options to ensure transparency and that the best and most appropriate options are selected. Sometimes the most favored option may not be the best.

Illustrative questions to ask when evaluating potential options are:

- > How does the proposed action address climate resilience?
- > Does the action address more than one risk or problem area? Can the action be scaled?
- > How does the action link to or capitalize on other water-related investments or actions in the target geography?
- > How does the proposed action leverage technical resources and capacity in the target geography? Does the proposed action align with other strategic plans or activities in the target geography?
- > Does the proposed action align with the agreed-upon planning horizon?
- > Is the proposed action realistic and manageable? Can the proposed action be easily managed by local stakeholders? Is the proposed action fundable?
- > How does the proposed action affect social groups in the target geography?

Task 4. Negotiate, Decide, and Select Preferred Options

The process to select key actions will likely involve negotiation and compromise among stakeholders. It is important to define decision-making processes early in the planning process to ensure transparency and clear opportunities for stakeholders to participate. The political economy analysis conducted during the water security assessment may clarify potential power dynamics among stakeholder groups that need to be considered in the negotiation and selection process.

Negotiations can sometimes be contentious or challenging. Within the WSI process, it is helpful to focus on positive outcomes, avoid zero-sum thinking, take stakeholder expectations and interests seriously, and consider opportunities to blend or combine potential options. It is also worth considering the timeline of the planning horizon and opportunities to revisit and reprioritize water security actions later in the WSI process. While different decision-making methods are available, the desired outcome should be the broad acceptance of selected solutions by stakeholders. This is why solutions should:

- Target the priority water risks in a sustainable, efficient, and effective manner
- Be justified using solid information and knowledge
- Be robust to provide satisfactory outcomes across a range of uncertain futures
- Be acceptable to most stakeholders

Task 5. Perform a Funding “Reality Check”

Available funding can be a limiting factor. Preferred solutions must be properly costed to ensure successful implementation. Funding must be reviewed and discussed before the action plan is finalized, preferably in parallel with the review of strengths and weaknesses of individual water security options.

Developing additional funding resources can also be part of the water security activities (e.g., creating or increasing water user tariffs or fees to support better water security). Informed water users are generally willing to pay for improved water services. See [Toolkit 5](#) for additional information on funding in the WSI process.



Task 6. Finalize and Validate the Action Plan

In this final task, the selected actions are compiled into a water security action plan. The plan should present the intended goals and the actions that will be implemented and include the following:

- › Expected outcomes and targets, along with the indicators meant to monitor progress and performance
- › Roles and responsibilities in the implementation
- › Resources to be mobilized for implementation, along with supporting training and capacity-building activities
- › Funding needs and how these are addressed
- › Expected timeline for implementation of activities, when resources and inputs will be needed, and when outputs and benefits are expected to occur

Activity profiles that describe the intervention, the objectives, stakeholders involved, estimated budget and duration can be helpful for implementing the plan (see example from the [Cambodia Stung Chinit Basin Strategic Action Plan](#)). This information can be used as a starting point for discussions with funders and preparing more detailed designs.

Once finalized, the plan should be shared with stakeholders. The stakeholders responsible for implementing the plan should have the relevant authority and resources to proceed. Successful implementation also requires that relevant information be shared among implementers, reported to higher authorities, and disseminated to stakeholders and the public on a timely basis. A communication plan should be part of the action plan.

PREPARING FOR IMPLEMENTATION

Most countries and donor agencies have environmental and social safeguard provisions and policies. Projects must comply with these before implementing development activities outlined in the water security plan. It is also important to keep in mind that adaptive management, sustainability, and communication should be considered as part of the plan's implementation process.

Environmental documentation: Water security activities may require a preliminary environmental impact assessment to ensure that the proposed activity will mitigate or not generate negative environmental impacts. The assessment may need to demonstrate that the proposed activity is the best among available options. The types of interventions that may need to be assessed are those that include major infrastructure, extensive land use change, or alterations to the water cycle. The rules governing these environmental documents vary by country and funding agency, but most usually require a definition of baseline conditions and an assessment of the impacts associated with a range of alternatives.

Social documentation: The activities should also ensure that there are limited social impacts. A social impact assessment may be necessary to demonstrate that the proposed project fairly distributes benefits across social groups and will mitigate or not generate negative social impacts. It should also demonstrate that the proposed project is the best among available options.

FIGURE 2: PROJECT PROFILE FROM THE CAMBODIA STUNG CHINIT BASIN STRATEGIC ACTION PLAN

Action 4.1	Strengthen local capacity for disaster risk management (DRM)	
Sub 4.1.1	Strengthen district/commune capacity to develop DRM plans	
Cost	US\$409,000	
Project Duration	60 months	
Potential Funding sources	CIF, DIF, NCDM, PCDM, and ADB.	
Action 4.1	Strengthen local capacity for disaster risk management (DRM)	
Sub 4.1.2	Identify and conduct mitigation actions to reduce disaster risks	
Description	This activity will focus on the identification of actions to be taken by districts and communes to reduce disaster risks.	
Objectives	General	Specific objectives
	District and communes implement priority actions to reduce vulnerability to disaster risks.	<ul style="list-style-type: none"> • Improve understanding of communities on related disaster risks and local coping mechanisms. • Local governments and communities engage and participate in implementing priority intervention.
Implementation Institutions	NCDM, PCDM, DCDM, CCDM, and ADB.	
Illustrative Activities	<ol style="list-style-type: none"> 1. Identify priority interventions to reduce disaster risks. 2. Create awareness of vulnerabilities and need to implement interventions to reduce disaster risks. 3. Implement interventions to reduce risks based on DRM plans. 	
Expected Results	Outputs	Outcomes/Impact
	<ul style="list-style-type: none"> • Number of interventions identified to reduce risks. • Number of interventions taken by district/communes to reduce disaster risks. • Number of people participating in the DRM awareness raising. • Number of local people/volunteers mobilized and participated in DRM intervention activities. 	<ul style="list-style-type: none"> • Reduced disaster risks in the local communities. • Prevented any disaster risks that may be happening in the villages. • Provided on time information to the communities.
Implementation Risks	Implementation of small-scale infrastructure does not comply with environmental compliance and construction or retrofits does not meet engineering standards.	
Cost	US\$261,000	

Adaptive management: Uncertainties about information, science, climate variability and change, and human behaviors mean that in many cases, water security activities will not perform exactly as planned, and actual outcomes will not exactly match expected outputs. As part of the plan, stakeholders should agree on a review process to revisit priority actions on a regular basis and support mechanisms to adapt or adjust approaches to implementation and selected activities.

Communication: Successful implementation and the legitimacy of the WSI process require that information be shared regularly with stakeholders, reported to higher authorities, and disseminated to water users and the public. Stakeholders should define or agree upon a communication process as part of the plan for sharing updates to the plan, progress or changes prioritized or selected interventions, and progress towards water security goals.

Sustainability, reiteration, scaling up: The WSI process is meant to be an iterative process in order to be collaborative and sustainable. Provisions should be made, as part of the action plan, to sustain and further strengthen, throughout implementation, the decision makers and water users groups that went through the assessment and planning stages, and the supporting lead entity or convening platform.

RESOURCES

Uncertainty in Water Security Planning

Committee on Adaptation to a Changing Climate of the American Society of Civil Engineers (2018). [Climate-Resilient Infrastructure: Adaptive Design and Risk Management](#).

This book provides guidance for infrastructure analysis and design in response to changing risks and uncertainties.

Rand Corporation (n.d.). [Robust Decision Making Methodology](#).

Presents a series of articles, guidance documents, and applied studies on robust decision making, scenario planning, and stakeholder engagement.

Stockholm Environment Institute (2016). [Lesotho: Tackling water insecurity in a changing climate](#).

The policy brief summarizes the findings of an assessment that evaluated the performance of Lesotho's water management system and explored adaptation strategies across a range of potential future climate conditions.

UNESCO and ICIWaRM (2018). [Climate Risk Informed Decision Analysis: Collaborative Water Resources Planning for an Uncertain Future](#).

This guidebook focuses mainly on the early feasibility stages of project planning when vulnerabilities and future water demands are assessed, and options are devised and formulated by both practitioners and stakeholders in a collaborative setting for project investment decisions. The approach outlined in this guidebook applies standard engineering design criteria to feasible options recommended through a multi-stage and typically iterative planning process.

World Bank (2015). [Confronting Climate Uncertainty in Water Resources Planning and Project Design: The Decision Tree Framework](#).

The goal of this book is to outline a pragmatic process for risk assessment of water resources projects that can serve as a decision support framework—a “decision tree”—to assist project planning under uncertainty.

World Bank (2016). [Lesotho Water Security and Climate Change Assessment](#).

This analysis examines the development of water resources within Lesotho and aims to empower stakeholders to act with more confidence by demonstrating that the implementation strategies can provide benefits to water resources management over a broad range of possible future scenarios. The analysis quantifies a range of possible future conditions to demonstrate the benefits that can be realized over a broad range of possible future outcomes.

Climate Resilient Water Security Planning

USAID (2017). [Climate Risk Screening and Management Tools-Water Supply and Sanitation](#).

Screening tool to evaluate climate risks in water supply and sanitation.

USAID-ATLAS (2019). [Building Climate Resilience for Water Security](#).

Guidance document that addresses improved use of climate and weather information, mainstreaming adaptation into governance, planning and budgeting, dissemination of risk-reducing management practices, and mobilization of finances for adaptation.

USAID (2017). [Green Infrastructure Resource Guide](#).

Resource guide that provides practitioners involved in the planning and development of sustainable infrastructure projects with a better understanding of green infrastructure and identifying green infrastructure interventions that can be integrated into projects.

EU-SWIM (2014). [Guidelines for Mainstreaming Adaptation Options in IWRM Plans](#).

This report provides a summary of a desk-top survey of recent literature on climate change adaptation plans and water resources management and guidelines on how to mainstream no-regret adaptation measures into IWRM plans.

ECE-UN (2009). [Guidance on Water and Adaptation to Climate Change](#).

Guidance aims to support decision makers from the local to the transboundary and international level by offering step-by-step advice to address the challenges caused by climate change to water management and water-related activities.

Planning Resources

CapNet & UNDP (2005). [Integrated Water Resources Management Plans: Training manual and operational guide](#).

Presents a process, considerations and techniques for integrated water resources management (IWRM) planning.

GWP & INBO (2009). [A Handbook for Integrated Water Resources Management in Basins](#).

A practical review of river basin management. Provides basics for establishing and sustaining river basin organizations, involving stakeholders, conducting strategic planning, ensuring communications, and supports these through numerous concrete examples.

IUCN-WANI (2010). [Negotiate: Reaching agreements over water](#).

This manual emphasizes constructive engagement and consensus building. It provides the 4R framework (Rewards, Risks, Rights and Responsibilities) to facilitate negotiations, discusses the characteristics of Multi-Stakeholder Platforms and of final agreements as intended products of water negotiations.

Regional Environmental Center (REC) (2016). [Local Water Security Action Planning Manual](#).

Presents a detailed and thorough process which tends to be focused on urban water planning. Suggested process is quite detailed and involves 20 steps.

Sheldon, T. (2005). [River Basin Management: A negotiated approach](#).

A solid and convincing advocacy for participation and negotiation in river basin management, with practical advice and several case studies.

UNESCO (2009). [IWRM Guidelines at River Basin Level: Part 1](#).

These guidelines provide necessary information to implement IWRM, notably the fundamental concepts of IWRM as well as perspectives of various stakeholders, key for success for overcoming problems, and good examples where such keys for success were applied.





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