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SWP
SUSTAINABLE WATER PARTNERSHIP

IMPROVING WATER SECURITY

Toolkit #1

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.

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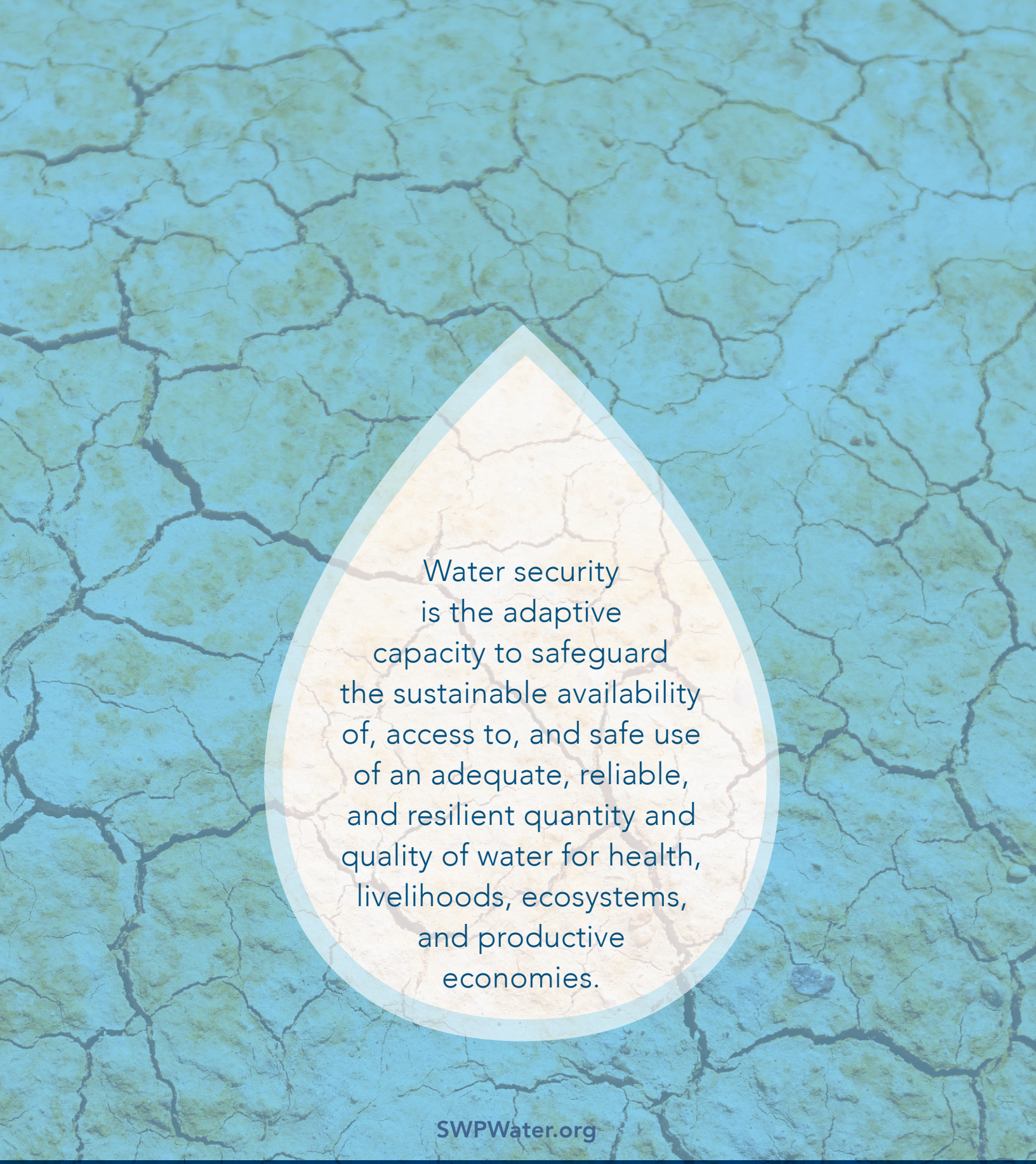

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This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of the Sustainable Water Partnership (SWP) Leader with Associates Cooperative Agreement No. AID-OAA-L-16-00006 to Winrock International. The Sustainable Water Partnership is a partnership of Winrock International, TetraTech, CEO Water Mandate, mWater, International Union for the Conservation of Nature, World Resources Institute, and Stockholm Environment Institute. The contents are the responsibility of the SWP consortium partners and do not necessarily reflect the view of USAID or the United States Government.

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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, causing extreme weather, sea level rise, and increased temperatures. As a result, the future availability of water resources is increasingly uncertain, and communities and ecosystems are vulnerable to water stress and natural disasters.

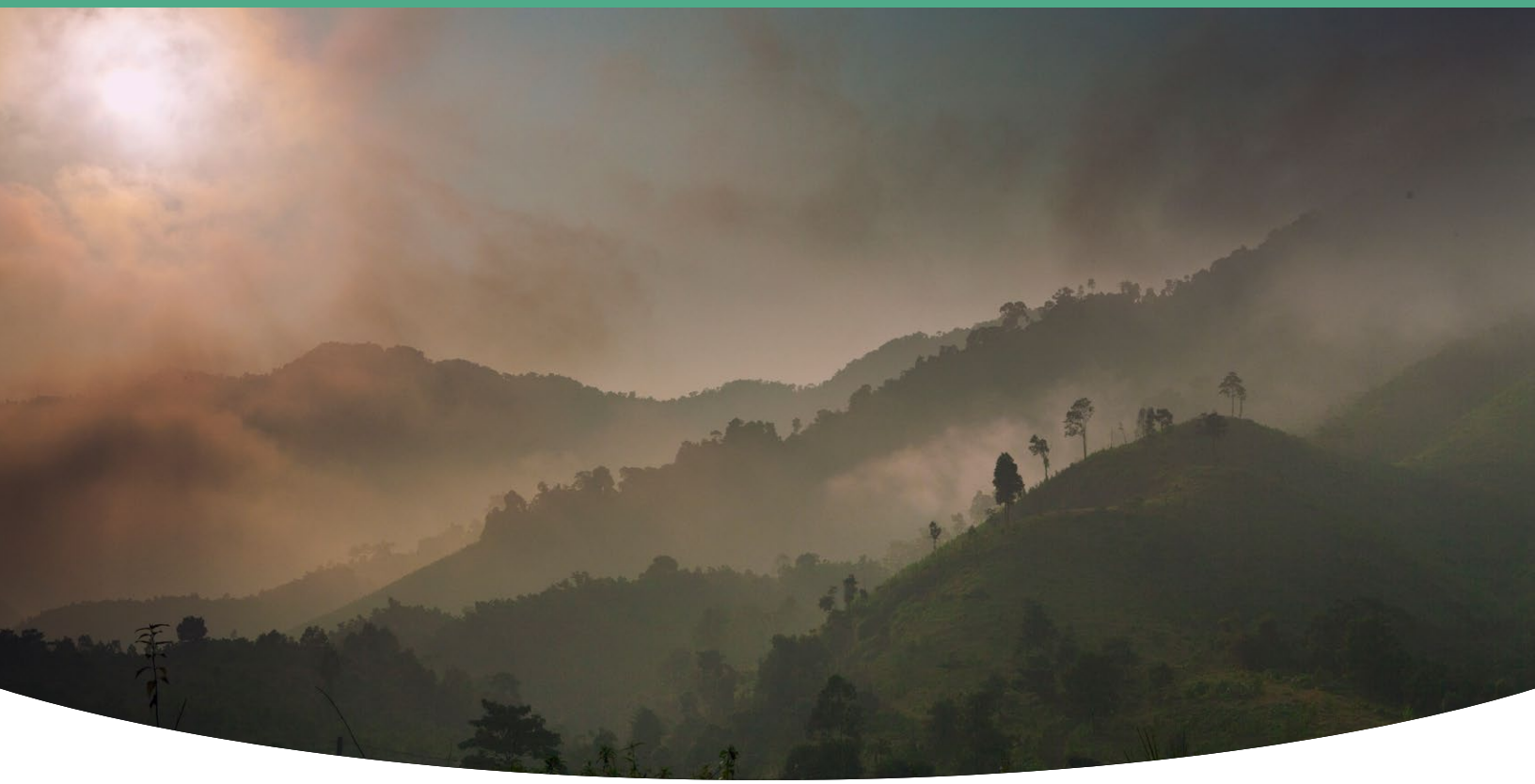
FIGURE 1: THE WATER SECURITY IMPROVEMENT (WSI) PROCESS

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 (Figure 1) to assess, plan, and implement water security interventions in a targeted geography. The WSI toolkits provide guidance, suggested activities, and examples from the USAID Sustainable Water Partnership's (SWP) pilot activities in the Stung Chinit Basin in Cambodia and the Mara River Basin in Kenya and Tanzania.

Between 2017-2021, SWP piloted a stakeholder-driven effort to identify and support the implementation of key actions to build resilience to water resources and water, sanitation, and hygiene in the Stung Chinit Basin, which feeds the Tonle Sap Lake. SWP brought key stakeholders together through the participatory WSI process to identify and priority key water security risks; analyze potential impacts, outcomes and trade-offs of key actions to improve water security; implement priority measures to build resilience in the watershed; and contribute to SWP's learning agenda to inform and enhance water security programming in Cambodia and around the world.

Between 2018-2020, SWP also piloted the WSI process in the Mara River Basin, which covers nearly 14,000 square kilometers in Kenya and Tanzania. This activity supported transboundary, national, and sub-national governmental and non-governmental stakeholders to address planning and management of water resources to safeguard reliable water supply for sustaining livelihoods, human well-being, and protection of ecosystem services. SWP leveraged scientific tools and capacity building to improve water decision-making and to develop a water allocation plan; improve water security in key sub-catchments in Kenya and Tanzania; and strengthen water resource management and governance capacities and skills.

This Toolkit describes key elements of water security, introduces the WSI process, and provides a synthesis of each water security toolkit. The toolkit also provides references to key reports, tools, and case studies prepared by SWP. The toolkit series is aimed at water managers, planners, practitioners, and decision-makers within national and local governments, international and local non-governmental organizations, and donors interested in water resource management.



WHAT IS WATER SECURITY AND WHY IS IT IMPORTANT?

Water security is defined as 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. Water security is not only a water sector issue—it is a broad socioeconomic, environmental, and political concern. Encouraging all sectors to jointly consider water and tradeoffs in water use in their policies and strategies is essential to sustainably manage access to drinking water, sanitation, and hygiene, food security, and energy and climate change adaptation and mitigation, in order to support sustainable socioeconomic growth and political stability.

In many places around the world, water resources are under great pressure and are being degraded at unprecedented rates. As many as four billion people live in regions where there is severe water stress and it is projected that global demand for water will increase by 30-50 percent by 2050.[1] Population growth, rising living standards, increasing demand and rising costs of food and energy, urbanization, and land use changes affect the availability of, access to, and safe use of water resources. Climate variability multiplies water risks. It can affect temperatures, alter the frequency and timing and intensity of precipitation, make extreme events more frequent and severe, and increase the uncertainty of weather variability. Climate change is projected to increase the number of water-stressed regions and increase water shortages in regions that are already stressed. Reduced freshwater availability along with increased demand could reduce water availability in cities by as much as two thirds by 2050.[2]

Many countries also suffer from deficient water governance due to lack of resources, weak institutional coordination, limited enforcement of water policies and plans, inadequate data, and conflicting water user interests.

[1]Damania, Richard, Sebastien Desbureaux, Marie Hyland, Asif Islam, Scott Moore, Aude-Sophie Rodella, Jason Russ, and Esha Zaveri (2017). Uncharted Waters: The New Economics of Water Scarcity and Variability. World Bank, Washington, DC.

[2]World Bank (2016). High and Dry: Climate Change, Water, and the Economy. World Bank, Washington, DC.

According to the World Economic Forum's Global Risks 2015 report, "Global water crises—from drought in the world's most productive farmlands to the hundreds of millions of people without access to safe drinking water—are the biggest threat facing the planet over the next decade. Other global risks are inextricably tied to water management, access, extreme weather events, failure of national governance, state collapse or crisis; rapid and massive epidemics; and failure to adapt to climate change." Similarly, the U.S. Office of Director of National Intelligence Global Water Security 2012 paper notes that "Between now and 2040, freshwater availability will not keep up with demand [without] more effective management of water resources. Water problems will hinder the ability of key countries to produce food and generate energy, posing a risk to global food markets and hobbling economic growth."

To accommodate population growth, global food production will need to increase by 50 percent by 2050. Considering that agriculture accounts for around 70 percent of global water consumption, there will be dire consequences for water demand. This comes at a time when the world's most productive farm regions—California's Central Valley, the North China Plain, northern India, and America's Great Plains—are already overdrawing their water resources. Beyond water for food and drinking, manufacturing and consumer markets are escalating the demand for water in producing electricity, mining minerals, making products, and processing fuel. Water-related losses in agriculture, health, income, and property, however, could reduce growth rates by as much as 6 percent of GDP by 2050 in some regions.[3]

Water Security Goals and Outcomes

Improving water security is a cross-sectoral challenge and requires satisfying drinking water, sanitation, and hygiene requirements; supporting productive economies in agriculture, industry, and energy; ensuring healthy rivers and ecosystems; preventing or mitigating water-related disasters; and building resilient communities that can adapt to change.

Availability refers to sufficient quantities of water from surface and/or ground resources now and in the future, within the context of climate variability and change.

Access includes consideration of natural and man-made means to mobilize, store, convey, supply, regulate, and conserve water. It also involves issues ranging from water allocation, quality, rights, and pricing to infrastructure management and service delivery.

Safe use has three interrelated elements: adequacy (for the quality required for types of uses, including ecosystems); reliability (predictability/consistency over time); and resilience (ability of human and natural systems to withstand, recover from, and/or adapt to water risks, foreseeable stressors, and unpredictable shocks).

Framing WASH, IWRM, and Climate Change through Water Security

At its core, water security considers multi-sectoral goals and outcomes to achieve the main goals of enhanced water availability, access, and safe use of freshwater. It provides an overarching framework that allows water managers to balance competing sources of demand, managing risks, and protecting ecosystem service and biodiversity. Water security is also useful for enhancing water, sanitation, and hygiene (WASH) projects, integrated water resources management (IWRM), and addressing increasing impacts of climate change.

WASH projects aim to improve public health as a key step toward poverty alleviation and economic development by strengthening water and sanitation infrastructure and management systems and promoting healthier sanitation and hygiene practices. Water security tenets can help enhance WASH outcomes considering how different water uses, such as agriculture, manufacturing, and other water uses affect the availability and quality of water, their impacts on service delivery and treatment costs, household access and public health risks, and source water protection needs, as well as informing infrastructure investments, institutional improvements, and awareness raising that complement watershed improvements.

[3]World Bank 2016.

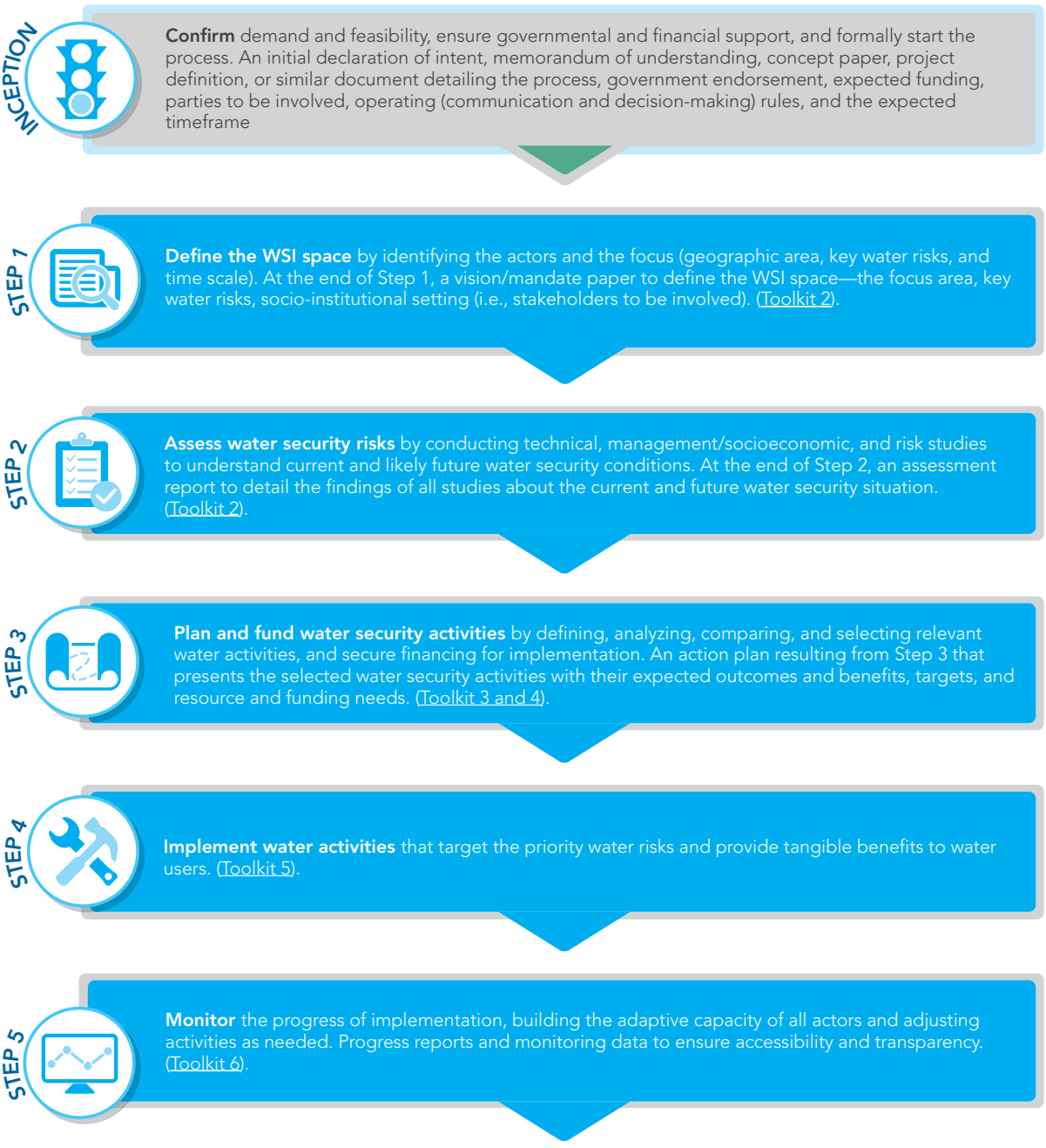
IWRM, which has been the dominant framework for water resources management since the late 1990s, is characterized by integrated, multi-sectoral approaches to water at the basin scale, attention to ecosystems and human uses of water, and emphasis on participatory governance to achieve long-term water sustainability. A water security framework complements IWRM by focusing on concrete outcomes and tangible improvements that fit within a comprehensive vision that considers multi-sectoral dimensions of water risks and externalities from water solutions and a focus on environmental, social, and economic sustainability. Framing water management around water security can make it easier to turn the principles of IWRM into practical interventions, customized and locally endorsed solutions, and more tangible benefits.

A water security approach also attempts to address the uncertainties facing water resources, particularly from climate change. The weather—rainfall and temperature—directly influences how much water is available for use by communities, businesses, and ecosystems. In the past, water infrastructure and management practices were developed based on assumptions of predictable weather conditions which are now less valid. Water managers need to proactively prepare for and respond to a changing operating environment. A water security approach emphasizes using reliable and up-to-date weather and climate information, updating policies and management processes to anticipate and adjust to various futures, implementing activities to address changing conditions, and monitoring and learning from experience.

WATER SECURITY IMPROVEMENT PROCESS

The Water Security Improvement (WSI) process is a framework that involves five steps to address water-related risks in a specific geographic area, such as a basin, sub-basin, or catchment. The WSI process is intended to be led by stakeholders and engage water users, water managers and service providers, communities, and businesses in a participatory and collaborative manner. Iteration is critical to the WSI process to ensure learning as well as replication and scaling of water security interventions. These steps, detailed in Figure 2, are elaborated in five toolkits.

FIGURE 2: THE WSI PROCESS: INCEPTION AND FIVE MAIN STEPS



WSI Guiding Practices

Protecting and managing water resources to meet the needs of people, livelihoods, and the environment requires bringing together a variety of perspectives to assess, plan, and implement water security improvements. The WSI process provides a framework to achieve equitable and sustainable results. The following key features are fundamental to implementing an effective and sustainable WSI process:

Inclusive stakeholder engagement: Sustained participation from local stakeholder representatives helps legitimize the WSI process. Water security stakeholders include water users, water managers, community organizations, government agencies, and private sector actors. It is important to identify and include water users who may be under-represented in local governance and decision making.

Gender and social inclusion (GESI): Women and marginalized groups (e.g., due to religion, ethnicity, social status or caste, wealth, age, or culture) constitute a majority of water users and should be integrated into the WSI process. GESI strategies often include efforts such as holding meetings at times and in places that work for marginalized groups; assessing how water risks affect, and are affected by, marginalized groups; and evaluating the benefits and impacts of possible interventions on marginalized groups.

Transparent communication and decision-making procedures: Stakeholders participating in the WSI process will have diverse perspectives; some stakeholders may be responsible for water pollution while others may be suffering the consequences of poor water quality. There may be competition for water between stakeholder groups. Transparent sharing of information and equitable participation in decision-making about water security can build a foundation through which stakeholders can mutually engage and implement sustainable solutions. Regular reporting on progress and performance is important to keep the WSI process accountable to local stakeholders as well as higher-level authorities and supporting donors.

Focus on priority water security risks within a target geography: An effective WSI process depends on clearly identified water security risks or problem areas. In some cases, water security problem areas may be defined by a donor or government partners. Stakeholder input and validation is necessary for a focused and time-bound WSI process.

Evidence-based decision making: Water security improvements should be based on the best evidence available on water resources, water governance, demographics, and land use in the target geography. It may be necessary to commission studies to characterize current and future water security risks, and/or to provide baseline data that can be used to monitor the impacts of water security interventions.

Accounting for future uncertainty: Water security plans should account for uncertainty in future climate, economic, governance, social, and environmental conditions. Modeling uncertainty can help clarify whether water security interventions and infrastructure will deliver positive net benefits across a wide range of possible future scenarios.

Adaptive management and learning: The WSI process is meant to be iterative, as participating stakeholders increase their capacity and lessons are learned. Future iterations should seek to scale successful interventions and address new or evolving water risks.

Private sector engagement: Factories and businesses are often significant water users in terms of quantity and impacts. Like other users, they have expectations and concerns about water security. They also recognize that water risks are business risks that can occur across their entire supply and value chains. Engaging businesses and other water users operating in or sourcing from the targeted area is vital for a water security process.

Inception: Confirm and Initiate the WSI Process

Before initiating a WSI process, it is important to confirm the demand for water security improvements from key stakeholder groups. Understanding the level of interest or demand from stakeholders is important for fostering a stakeholder-driven WSI process. It may be helpful to work with key stakeholder representatives to create a declaration of intent or similar memorandum of understanding to engage in an endorsed, comprehensive, and participatory WSI process.

For successful implementation, the WSI Process first requires meeting certain enabling conditions. These criteria include:

- **Relevance and potential**: Confirmation that priority water risks are important to a range of water users and stakeholders, and there is potential to achieve tangible outcomes through a WSI process.
- **Safe environment**: Water users can be engaged in a collaborative process in a stable setting with expectations of safety.
- **Governmental endorsement**: This helps secure the legitimacy of the WSI process and can help deliver key endorsements or approvals for water security interventions.
- **Strategic compatibility**: Compatibility with existing institutional frameworks and other relevant government policies, strategies, and plans.
- **Financial support**: Funding to bring the process to fruition and ensure tangible outcomes.

BOX 1: GOVERNMENT SUPPORT

Endorsement of the WSI process—and participation of water users—can be difficult to obtain, particularly in places where dialogue and collaboration between government, civil society, and private sector is not common. It takes time to develop new attitudes, to educate water managers about interacting with the public and local leaders about equitable representation. Starting at a local level is often easier, as field staff tend to have more accepting attitudes and experience engaging communities Taking the interaction to a higher level requires three enabling factors: policy and behavior change among officials; managers understanding that the status-quo is not sustainable; and leaders who are accountable to their constituencies. Champions from both sides should be identified and nurtured.

The output of this phase may include a declaration of intent, agreement, or similar memorandum of understanding to engage in an endorsed, comprehensive, and participatory WSI process.

Step 1: Define the WSI Space (Toolkit 2)

The WSI process is designed to be facilitated by a lead entity and driven and owned by local stakeholders. Step 1 outlines how to define the WSI space, including the target geography, facilitator, participants, key water problems to be addressed, and timeline for planning and implementing water actions. This step is further elaborated in Toolkit 2: Define the WSI Space and Assess Water Security Risks.

Defining the Target Geography

An important first step in the WSI process is to define the target geography, including political, administrative, and hydrological boundaries. The geography should be refined if needed as the scope of water security challenges and actions are clarified. Water resource management programs are typically organized around a basin or sub-basin, but some water security issues are best addressed within political or administrative boundaries, or within WASH districts or systems.

Identify a Convening Entity

Engaging and mobilizing a group of water user representatives and decision makers in a WSI process can lead to rich discussions, sound decisions and endorsed solutions, smoother implementation, increased capacities, and tangible benefits. The WSI process is most effective when a lead entity or group facilitates the process. Responsibilities of the convening entity may include organizing stakeholder meetings; compiling and disseminating meeting minutes, validation documents, and study results; supervising consultants and technical advisors; and liaising with government authorities and donors.

Conduct a Stakeholder Inventory

Engaging a wide range of stakeholders in the WSI process is essential to sound and robust decisions, smooth implementation, and more effective capacity building. A stakeholder inventory should be conducted to identify the individuals and organizations that influence and/or are affected by water use and decision-making in the target geography, with a particular focus on water users who may be under-represented in local governance and decision-making systems. The goal of the stakeholder inventory is to create a preliminary baseline of stakeholders who should be involved in the WSI process. The stakeholder inventory will serve as a starting point for the stakeholder analysis conducted during the water security assessment (Step 2).

Clarify Stakeholder Engagement, Decision-Making, and Communication Procedures

Sustained participation from local stakeholder representatives helps legitimize the WSI process. Each stakeholder group should appoint a representative who will be involved in the WSI process. Representatives may be leaders such as the mayor or a traditional village chief, or they may be selected through an ad-hoc or election process. Participating in the WSI process will strengthen their leadership capacities as they exercise their communication, negotiation, collaborative decision-making, facilitation, and conflict resolution skills. Other groups, such as donors, investors, and universities, will support and guide the WSI process, but should defer decision-making to local stakeholders. Setting a schedule and structures for stakeholder involvement will make it easier for stakeholders to commit to participating over a period of time. Stakeholders may want to create working groups around priority themes and hold community forums to raise awareness and gather broader feedback. The WSI facilitator should work with participating stakeholders to define equitable decision-making procedures and protocols for internal and external communications.

Define and Validate Key Water Security Problem Areas

The WSI process should address key water security problem areas in the target geography that are identified by the key stakeholders. Water security problem areas may already be defined by a donor or by government partners. If this is not the case, a desk review and key informant interviews with decision makers can inform the shortlist. Narrowing the focus will ensure tangible benefits that will legitimize the process.

Set a Timeline for the WSI Process

The WSI process is meant to influence future conditions, so one or several time horizons have to be set. A timeline for the remaining steps in the WSI process should be defined in consultation with participating stakeholders. The implementation of water security actions under Step 4 can align with various priorities:

- Quick wins (1-3 years) to gain buy-in and implement pilot water security actions
- Short-term (3-5 years) to address imminent water security risks
- Medium-term (5-10 years) to address more complex water security challenges
- Long-term (10-30 years) to assess trends and define strategic long-term objectives

OUTPUT OF STEP 1

The output of Step 1 is a summary of the key water problem areas, target geography, participating stakeholders, convening entity, and stakeholder engagement, communication, and decision-making procedures, as well as the expected timeline for assessing water risks (Step 2), planning interventions (Step 3), and implementing water security actions (Step 4).

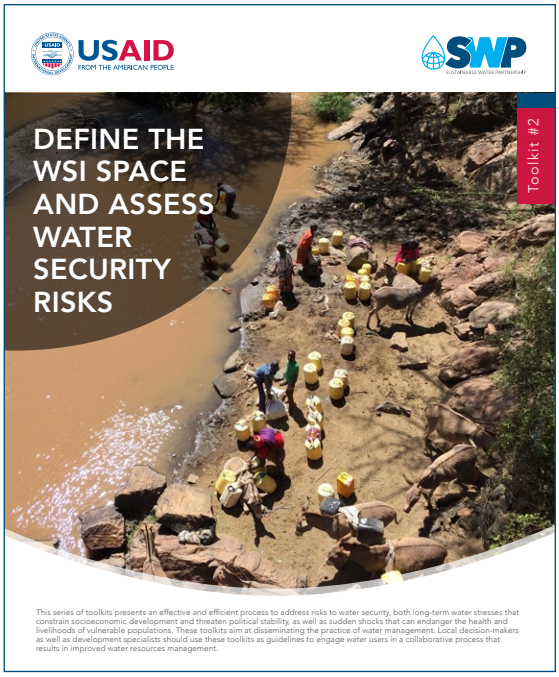
Step 2: Assess Water Security Risks (Toolkit 2)

A water security assessment is a compilation of information and studies that provide an understanding of water security issues in the target geography. The water security assessment will be used in Step 3 to prepare a water security action plan. Water security assessments typically include three technical areas: a profile of the target geography, a water resource assessment, and a water sector governance assessment.

Profile of the target geography: Describes short- and long-term trends of demographics, land use and land cover change, economy, environmental threats, natural disasters, climate vulnerability, and infrastructure and includes an analysis of stakeholders and gender, equality, and social inclusion.

Water resource assessment: An evidence-based understanding of the state of water resources for prioritizing risks, developing water security action plans, and implementing water security actions. A water resource assessment can clarify the seasonal availability and quality of surface and/or groundwater and whether water resources are sufficient to meet current and future water needs.

Water governance assessment: Focuses on policy frameworks, institutions, and processes to understand governance of water resources. Describes how power, politics, and political economy influence decision-making, resource allocations, information sharing, management systems and capacities, and stakeholder participation, among others.



Stakeholders should be engaged during each step of the water security assessment as they can help collect and interpret existing information and support field assessments. This step is further elaborated in Toolkit 2: Define the WSI Space and Assess Water Security Risks.

Collect and Review Existing Information on Water Security Risks

An important first step in the assessment process is to collect existing information on the three technical areas and to determine whether additional studies are needed to fill information gaps. It is important to set criteria for what information should be considered. Potential sources of information and data include news or academic articles, feasibility studies, environmental impact assessments, and global datasets such as FAO Aquastat, WRI Aqueduct, and the Sustainable Development Goals. Stakeholders can help secure access to information, identify information gaps, and give insights into social, cultural, and power dynamics that explain how water is accessed, used, and managed.

Conduct Studies to Fill Information Gaps

It is important to review the existing information with participating stakeholders to confirm information gaps and prioritize additional studies based on the budget available. Additional studies may be needed to characterize current and future water security risks, and/or to provide baseline data that can be used to monitor the impacts of water security activities.

Describe and Validate Water Security Risks Related to Problem Areas

The water security assessment findings should be used to describe the key risks within each problem area assessed. For each risk, identify the causes, stakeholders, impacts, and desired water security outcomes. Determine whether each risk relates to the availability of, access to, and/or safe use of water. Consider the root causes of each risk and potential interconnections between two or more risks. For example, upstream environmental degradation and midstream agrochemical pollution are risks in their own right, but together they can cause downstream risks to freshwater biodiversity. As the interconnections between water risks are identified, cross-cutting themes may emerge, such as a need for more GESI-related interventions or a need for strengthened water governance.

Stakeholders should be engaged to validate and refine the risks. Working with stakeholders to document the full range of risks associated with each problem area helps stakeholders to take ownership of the WSI process. This could be done in the form of a structured exercise to help stakeholders prioritize the risks they want to carry forward into Step 3 (Planning).

The scope of the priority risks should be narrow enough to ensure that actions can be taken to produce tangible benefits. Key considerations when prioritizing risks include the current and future social, economic, or ecological severity of impact; the degree to which basin planning can address the risk; and the degree of uncertainty surrounding the risk.

OUTPUT OF STEP 2

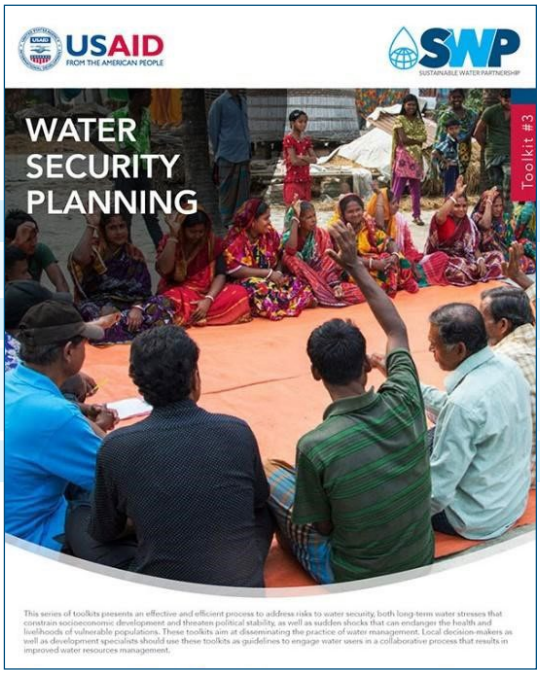
The goal of Step 2 is to produce a stakeholder-validated report on the current and future status of water resources and water governance, as well as priority water security risks related to the main water problems in the target geography. The report should be shared in different forms through a variety of media (e.g., print, television, radio, and blogs) so it reaches the widest possible audience of water users.

Step 3: Water Security Planning (Toolkit 3) and Funding (Toolkit 4)

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 longer 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

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. 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 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 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 Mara River Basin in Tanzania.

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

Water Security Planning Process and Output

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

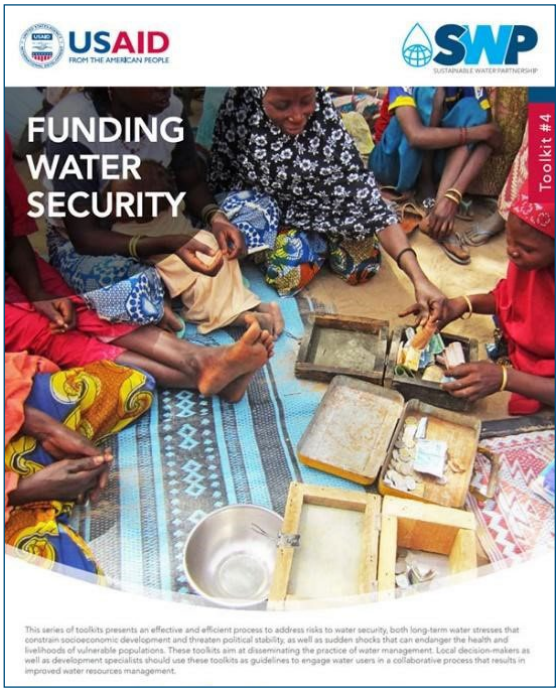
1. Translate priority water risks into specific goals
2. Explore and define possible water security activities
3. Review, analyze, and compare options
4. Negotiate, decide, and select preferred options
5. Perform the funding "reality check"
6. Finalize and validate the action plan

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

Funding Water Security

The WSI process depends on sustainable funding, including paying for stakeholder activities, water security assessments, and planning activities. It is also important to assess potential funding sources for implementing and the long-term management of water security improvements. Efforts to fund water security should be tailored to local contexts, including local capacity for public financial management and proposal preparation; scope and scale of the WSI process, water security risks, and interventions in the target geography; and need for one-time or recurring funding. Potential sources of funds can include government taxes, user tariffs and fees, community contributions, international or donor assistance, and/or the private sector. However, in many countries, the costs of providing reliable and adequate water to users significantly exceed the available funding. Efforts to secure funding from these sources should be complemented by considerations of improved public financial management, increased cost recovery, and public awareness about the costs of water management.



Early engagement of water users to pay tariffs and fees as well as potential funders can raise awareness about the WSI process, clarify willingness to pay for different types of actions (infrastructure, watershed management, social or institutional improvements), and confirm any prerequisite steps, such as specific analyses or impact assessments, that would need to be completed before funding can be secured. It is also important to consider the priorities of potential funders as well as local regulations, laws, and policies that stipulate how water is managed, developed, and allocated.

It is also important to consider how the water security improvements will be sustained or scaled. This may require charging for water services and allocating water costs to water users for water abstraction and effluent discharge permits, instituting cost-reflective tariffs, levying taxes, and mobilizing community or public resources to help subsidize the water security improvements.

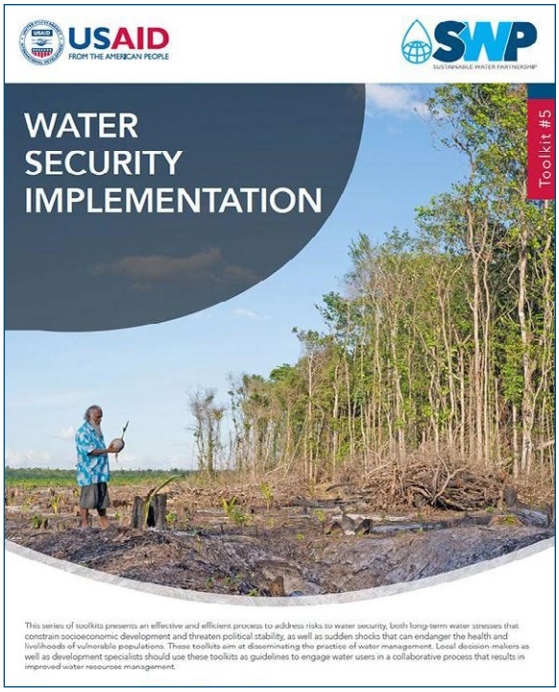
Funding Type	Description	Advantages	Disadvantages
Government spending (mostly from taxes) From citizens and companies (e.g., income, value-added tax, customs) paid to government	• Mostly fund construction/rehab. of water/irrigation networks/ structures (capital investments for utilities and other government agencies) • Also fund O&M costs (staff, maintenance, spare parts) as subsidies to public utilities/ agencies • Used for some management activities (water monitoring), rarely for other activities (watershed management, awareness raising)	• Main funding, enables availability of basic water/irrigation services and water management activities • Used as a form of social welfare	• Depends on fiscal health of country (can vary and be unreliable) • Subject to poor or corrupt water sector governance • May distort market value of water services
Tariffs/User Fees Paid to water/ irrigation utility by customers	• Covers part of all O&M costs of water utilities and irrigation agencies • Rarely contribute to capital investments or other activities	• Provides for a more straight-forward, economical valuation of water services • Reduces reliance on govt subsidies	• Depending on tariff and fee amounts and structures, can incentivize or disincentive better water use behaviors
Transfers—International Funds Loans, grants, donations from multilateral and bilateral donors and foundations	• Usually complements government spending, notably to fund capital investment projects • Often used for construction/ rehabilitation of water and irrigation structures and networks	• Available to countries with limited finances • Often integrated projects that cover activities other than infrastructure	• May create a culture of dependency and room for official corruption • Cannot cover recurrent O&M costs
Private Sector Investments (private infrastructure, concessions, water bonds) Often large investments, usually focused on water infrastructure	• Build-operate-transfer, concessions, service contracts, and other private sector outsourcing for construction/rehabilitation and O&M of water networks and structures	• Large source of water sector investment; decreases the tax-burden on traditional funding sources	• Expect returns on investment • May ignore poor areas/ neighborhoods • Requires solid regulation and credit-worthiness
Philanthropy or Corporate Social Responsibility Non-service funds, primarily expecting a non-monetary benefit	• Sometimes used to fund construction/ rehabilitation of small water infrastructure • Can improve water utilities' O&M through twinning and technology transfer solutions	• Makes new funds available for the water sector, can develop long-term partnerships	• Usually limited amounts • Expects returns on branding/image

OUTPUT OF STEP 3

An endorsed and funded water action plan designed to address/mitigate priority water issues/ risks with defined activities (who, what, when, where). The plan must also have specific outputs and outcomes; clear targets and indicators; a well-defined timeframe; clear roles and responsibilities; and identify the resources and capacities to be mobilized.

Step 4: Implement Water Security Activities (Toolkit 5)

The success of a WSI process ultimately depends on the actual implementation of stakeholder-defined water security activities or measures to mitigate water risks and if they increase the resilience of communities, assets, institutions, and ecosystems over the short and long terms.



The WSI process is legitimized by the delivery of tangible results that build confidence, trust, and experience among stakeholders by anchoring water security planning and decision-making in knowledge and evidence of what works.

Planning and developing a water security action plan is socially, institutionally, and technically complex. However, implementation is often a bigger challenge. Implementation can achieve tangible results—but commitments in resources and funding must be fulfilled, shortcomings in assessment and planning must be corrected, and initial stakeholder collaboration must be consolidated. Implementation is what turns a new exercise into a sustainable platform for improving water security over the long run.

Water security activities can range from construction, including gray and green infrastructure, to policy, legal, and institutional improvements and social behavior change campaigns.

How to Implement?

Key considerations for water security implementation embrace and reinforce the guiding practices of the WSI process:

"Quick wins" and early results: Local leaders and stakeholders, especially when it is their first experience with a WSI process, may desire early actions that are visible, have an immediate benefit, and can be quickly delivered. Demonstration projects that produce early results incentivize stakeholders and improve collective learning, trust, and future iterations or expansions of the process.

Communication and adaptive management: Successful implementation and the legitimacy of the WSI process require that information be shared among implementers. Information must also be reported to higher authorities and disseminated among stakeholders and the public on a timely basis.

- Coordination mechanisms must be defined and used among implementers, with regular meetings to reflect on progress and possibly make decisions about adjusting actions to respond to changing conditions.
- Reporting mechanisms must ensure that higher authorities continue to trust and support the agreed-upon WSI process (technical aspects, administrative structures, and/or financing arrangements).
- Performance information must be disseminated to raise awareness among water users and the public. This will help ensure support and promote the necessary water-use behavior changes.

Accountability: The WSI process depends on timely mobilization of resources and successful implementation of key tasks and interventions. Stakeholders should agree on how to ensure accountability within the WSI process to ensure the action plan is implemented and that improvements are made as lessons are learned.

Compliance: All activities should be implemented in compliance with existing standards and regulations.

- **Gray and green infrastructure**: engineering design codes and guidelines, quality control and safety regulations, environmental regulations
- **Legal, institutional, and policy improvements**: consultations and enforcement by relevant authorities
- **Social behavior change campaigns**: proper analysis of current practices and social and customary/traditional norms

OUTPUT OF STEP 4

Completed water security actions with tangible benefits that convincingly reduce the "too little, too much, too dirty, too erratic" experienced by water users and residents, and the improved capacity of all implementing parties to identify and allocate staff, equipment, and funding to define and implement water activities, address water issues and risks, and improve water security

Step 5: Monitor Water Security Improvements (Toolkit 6)

Monitoring water security is a continuous process of tracking and assessing information with the intent of improving decision-making and performance to achieve better results. The goal is to monitor the status of water resources, track the capacity of stakeholders to understand water risks and make informed decisions, validate the results of implemented actions, detect changing conditions or contexts, and document successes and failures.

Measuring progress towards water security is complex because:

- Perceptions of water security can vary between water users and decision-makers;
- Measuring, qualifying, and quantifying water security can be resource intensive, highly technical and may involve complex interpretation of large datasets;
- Water security can vary significantly across geographies and over time and aggregations to larger spatial or temporal scales can be misleading; and
- There are many uncertainties that can confound assessments and predictions.

Because water security is inherently broad, it is important to consider what needs to be monitored and why. Three key areas to consider monitoring are:

- **Water Resources**: The availability and quality of water resources across space and time and the magnitude and likelihood of key risks to water resources.
- **Water Security Actions**: Achievements of key interventions against targets and expected outputs/outcomes.
- **Performance Improvements:** The performance of water management entities, service providers, and stakeholder groups with respect to key responsibilities, such as water distribution, service delivery, permitting and regulation, financial performance, and risk mitigation.

Each of these are interrelated and important to the WSI process. Together, they provide insight into improvements or changes in the environmental conditions of water resources; management and governance of water resources; and the effectiveness of implemented actions. They will also help track or monitor the impacts of risk factors such as climate change, natural disasters, land use practices, and changes to political, economic, or social conditions that may impact water resources and water security.

OUTPUT OF STEP 5

Regular monitoring showing the status of water resources, activities, and services, with regular reviews to acknowledge successes and shortcomings, adjust implementation as necessary, and learn for the next assessment, planning, or design of water activities.

SWP RESOURCES

SWP Technical Resources

Private Sector Engagement in the Water Security Improvement Process

Analytical Tools to Support Water Security Decision-Making: Supporting Paper for SWP Toolkit Series

Environmental Flows Technical Guidance Manual

Data for Water Security: Improving Water Data Access and Use

SWP Technical Reports

2018 Water Abstraction Survey Report, Lower Mara River Basin, Tanzania

Mara River Basin WEAP Model

Lower Mara River Basin Water Availability Assessment

Lower Mara River Basin Water Demand Assessment

Lower Mara River Basin: Future Scenarios

Mara Water Allocation Plan

Stung Chinit River Basin Strategic Action Plan

Water Balance for the Stung Chinit Watershed, Cambodia

SWP Case Studies

Nepal Integrated Water Management Activity Case Study

Water Allocation Planning for the Lower Mara River Basin in Tanzania

Using Scenario Analysis to Assess Water Security in an Uncertain Future

Engaging Farmers to Improve Management of Irrigation Infrastructure

Promoting Self-Reliance Among Water Resources and Users Associations to Improve Water Security

Engaging Stakeholders to Improve Water Security in Cambodia's Stung Chinit Basin

Using the WSI Process to Assess and Plan for Source Water Protection in the Mara River Basin

Collaborating on Big Data Analytics for Transboundary Aquifer Management in South Africa

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