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BUILDING CLIMATE RESILIENCE FOR WATER SECURITY

Improving the water security of individuals and communities hinges on managing weather and climate risk effectively. Short and long-term patterns of rainfall and temperature directly influence how much water is available for human consumption, irrigation, industrial operations, power generation, ecosystems and other uses. To manage supply and quality, water managers must consider various weather and climate scenarios over multiple timescales and geographies. Many existing water systems are based on assumptions of a predictable climate, but as weather and climate patterns shift, these systems are at risk of failure. A compromised water supply is particularly problematic for those who access water for domestic consumption and small-scale agriculture, primarily women and girls. Water security requires proactively and creatively designing robust approaches to the deep uncertainties of future operating environments.

Building Blocks of Climate Resilient Development

Improved use of climate and weather information

Mainstreaming adaptation into governance, planning and budgeting

Dissemination of risk-reducing management practices

Mobilization of finances for adaptation



To help people become more resilient to extreme or shifting weather, USAID supports activities in four key areas, known as building blocks.

When effectively implemented these building blocks create a foundation for climate resilient development.



Water Security: Building Block 1

Improving the availability, quality and use of weather and climate information

THE CHALLENGE

Sustainable water management depends on quality data on surface and groundwater supply, user demand, and current and future weather and climate conditions. Water managers require projections of how future precipitation and temperature patterns may affect water quantity and quality in order to respond appropriately to projected changes in water demand due to non-climate stressors, such as population growth, economic development and migration. The availability of information and the analytical capacity to turn raw data into decision-support tools are limited in many countries.

USAID APPROACH

USAID provides technical assistance and capacity building to improve the supply of high-quality information through training, provision of data from US Government sources, a limited amount of equipment (weather station instruments, stream flow meters), and network support for meteorology services and weather agencies. USAID connects users and providers of climate information to determine what data is needed, when, and how often, enabling decision-makers to update supply and demand scenarios based on projected changes in precipitation and temperature, surface flow, groundwater and the specific needs of women, men, youth and vulnerable groups. The information can be used to inform water-related assessments and sector planning.

ILLUSTRATIVE INTERVENTIONS

TECHNICAL ASSISTANCE	WEATHER AND CLIMATE DATA APPLICATIONS	OTHER SUPPORT
<ul style="list-style-type: none"> • Building capacity of meteorology services, ministries, water user associations, municipalities, and water utilities and service providers to integrate weather and climate information into decision-making • Integrating weather and climate information in sector plans, water assessments, building codes and local ordinances 	<ul style="list-style-type: none"> • Creating/ updating hazard maps based on historical and projected climate risks • Developing water supply and demand scenarios based on updated climate and demographic projections • Mapping populations in areas at risk of extreme weather and climate impacts and determining how risks may affect women, men, youth and vulnerable populations 	<ul style="list-style-type: none"> • Ensuring climate information reaches all populations • Supporting gender mainstreaming in climate and water policies and plans • Facilitating exchange of best practices for climate data and information collection and dissemination using existing platforms where possible • Strengthening existing early warning systems for extreme events

Climate Services in the Philippines

Through the Be Secure project, USAID supported the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) in developing climate information and vulnerability maps, and built government and water service provider capacity to integrate climate information into disaster risk and climate adaptation plans. Following Typhoon Haiyan, water infrastructure was rebuilt to withstand future climate impacts and the disaster risk and adaptation plans were incorporated into comprehensive land use plans.

Conditions for Success

In countries that use data effectively for water-related planning and risk management, scenario planning for water demand and land use change can factor in climate impacts, and spatial mapping of highly vulnerable populations and water infrastructure can integrate hazard risks. Climate and weather data by themselves are also not sufficient for success if basic datasets related to infrastructure, population, terrain and service delivery are lacking. Investments in data collection, water supply management and water infrastructure must be very carefully considered in light of their high operations and maintenance requirements.



Water Security: Building Block 2

Mainstreaming adaptation measures into governance, planning and budgeting

THE CHALLENGE

Given future climate uncertainty, sustainable water management depends on good water management and governance at all levels: from community and municipal to catchment, national and transboundary. The political and administrative bodies that manage water resources often struggle to cooperate on integrated management because of jurisdictional boundaries, institutional arrangements, political-economic considerations and cultural factors. The participation of multiple stakeholders in water governance is often hindered by a lack of incentives, high transaction costs and institutional fragmentation at national and regional levels.

USAID APPROACH

USAID supports the improvement of policy frameworks and water-related planning and management processes in order to strengthen water governance, reduce existing inequalities in access, and achieve other development objectives such as economic growth and public health. USAID provides technical assistance and capacity building to help decisionmakers integrate weather and climate information and supply and demand scenarios into basin management, land use and disaster management. Leveraging and strengthening existing regional platforms, USAID facilitates dialogue on transboundary water challenges and development of joint strategic action plans between national and regional water actors.

ILLUSTRATIVE INTERVENTIONS

TECHNICAL ASSISTANCE

- Supporting analysis of existing policies and laws, institutions and stakeholders related to water and climate
- Providing training to water management and water regulatory institutions to improve their effectiveness
- Supporting the National Adaptation Plan (NAP) process and associated planning for relevant sectors, e.g., water resources, agriculture, health, etc.
- Assisting the integration of weather and climate information into water resource management, river basin management and/or disaster risk management plans
- Building the capacity of both women and men in planning and decision-making roles for managing climate risks related to water resources.

Strengthening Decision-making in Water Management

Through the Para Agua project and small grants issued through an Annual Program Statement, USAID supported communities in Peru's Andean highlands with training for community members and municipal officials to help establish water conservation areas and improve watershed management. In Southern Africa, through the Resilience in the Limpopo Basin (RESILIM) program, USAID provided technical assistance to the Limpopo Watercourse Commission on water conservation and demand management. In Nepal, through the Program for Aquatic Natural Resources Improvement (PANI) project, USAID is supporting the development of watershed management plans that are linked to community adaptation plans and water users' master plans.

Conditions for Success

In countries where accountability and enforcement are reasonably high, improved planning and water resource management can lead to reduced risk for people and assets, and thus increased water security. In countries that lack accountability and enforcement for planning and regulation, investments in better planning are less likely to succeed. In addition, high-quality, decision-relevant technical information and data is important for informing and strengthening governance arrangements.



Water Security: Building Block 3

Piloting and disseminating risk-reducing management practices

THE CHALLENGE

Risk-reducing management practices for addressing weather and climate impacts on the water sector exist but are not always implemented widely or consistently. Traditional approaches for managing water for seasonal variability, such as annually occurring dry seasons, and events such as floods and droughts, may be insufficient as weather and climate become more unpredictable. The design, implementation and scaling of risk-reducing management practices depends on feasible replication, cost, technical expertise and awareness, as well as the availability of information, governance that enables adoption and enforcement, and access to finance.

USAID APPROACH

USAID supports continued testing of adaptation approaches while seeking to bring pilots to scale. USAID helps identify barriers to widespread adoption of effective strategies and identifies opportunities for partnerships, financing, and leveraging of investments in other sectors. Rather than investing in large scale infrastructure, USAID focuses on establishing effective and sustainable service providers and institutions to operate, maintain and renew the water facilities that serve as critical foundations of resilience, equitable water access and broader development goals. To increase effectiveness and ensure efforts reach the vulnerable, USAID encourages the participation of women and men in water management and includes gender considerations in water sector adaptation approaches.

ILLUSTRATIVE INTERVENTIONS

TECHNICAL ASSISTANCE

- Strengthening water capture and storage
- Identifying and addressing non-revenue water losses due to infrastructure leaks and illegal connections
- Identifying technologies to increase water use efficiency, such as efficient irrigation
- Promoting demand management in selected areas or sectors with the active participation of women, men, youth and vulnerable groups
- Supporting flood protection through structural approaches such as small-scale flood control dams, and nonstructural approaches, such as: mangrove restoration, urban green infrastructure, floodplain management, stream corridor protection, storm water management and early warning systems
- Implementing ecosystem-based approaches to adaptation that increase storage and improve water quality, such as protecting and/or restoring freshwater ecosystems and watersheds

Facilitating Water Connections

In Jordan, USAID is piloting hydroponic systems by developing model farms, supporting training and outreach to farming communities, and connecting farmers and households to financing. In Uganda, USAID supported a partnership between the National Water and Sewerage Corporation and NGOs that reduced non-revenue water losses from about 45% to 24% and saved USD650,000 in the first year. In Peru and Colombia, USAID supports restoration of degraded upstream watersheds to increase water storage and water quality and meet downstream demand.

Conditions for Success

A decision-support framework supported by good information helps guide interventions. Monitoring, evaluation and learning can help determine which interventions to replicate. Engagement with all affected populations provides context and enables adaptive learning. Sharing results and providing training creates valuable feedback loops.



Water Security: Building Block 4

Mobilizing finance for adaptation measures from multiple sources

THE CHALLENGE

When it comes to turning water management plans into action and making concrete improvements to water security, mobilizing financing is one of the key barriers faced by local communities and water management authorities alike. Even when financing is available, communities, water user groups and government officials often do not know how to access these resources or manage funds, once received.

USAID APPROACH

USAID programs consider multiple funding sources, including local and national budgets, international funds, and private sector finance. The context for development finance varies, with some local governments able to access large-scale national grants and transfers, and others facing greater constraints in collecting and managing local revenues. The private sector is a more important player in some countries than others. Through pilots and in coordination with other donors and partners, USAID focuses on identifying opportunities for replicating and/or scaling up successful approaches through innovative partnerships and by leveraging multiple sources of finance. USAID also focuses on optimizing the links between financing and strategic priorities as identified in regional, national, and transboundary watershed management plans, National Adaptation Plans and others.

ILLUSTRATIVE INTERVENTIONS

TECHNICAL ASSISTANCE

- Identifying ways to share or spread risk and losses, such as insurance products
- Devising financial incentives, such as graduated tariffs, and penalties to change behaviors, such as fining polluters
- Leveraging public, private, national and international funds to diversify sources of financing
- Encouraging blended finance models
- Supporting mobilization of national and subnational state budgets to support water security actions, such as through budget analysis, tagging and tracking systems, and building water goals into budgeting processes
- Designing and supporting innovative finance mechanisms, including payments for ecosystem services, revolving funds, green bonds, public-private partnerships and mitigation banking
- Supporting gender mainstreaming and women's participation in climate and water sector finance mechanisms and funding allocations to ensure inclusive and equitable resources Integrating climate risk into infrastructure investments

Making Waves with Private Sector Partnerships

Through the Vietnam Forests and Deltas (VFD) program, USAID is strengthening the national Payment for Forest Environmental Services (PFES). Through this mechanism, private companies raise and use revenue to incentivize sustainable forest management, watershed protection, and biodiversity conservation. In Colombia,

USAID supported the development of a monitoring system to verify ecosystem services quality and maintenance through a payment for ecosystem services scheme that linked Asocaña, the sugarcane farmers' association, with upper basin residents in 15 watersheds in southern Colombia.

Conditions for Success

Strong incentives and a well-structured enabling environment increase investor confidence encourages private sector financing for improved resilience in the water sector. Prioritization of initiatives is critical, ideally as part of a strategy or plan (e.g., watershed management or municipal water and sanitation plan). Transparent budgeting and financial planning encourage investment. Decisionmaker and public awareness of funds and capacity to access them are other success factors.