WATER
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# Water Security for All: The Next Wave of Tools

## 2013/14 Annual Report

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This report is available on the WPP website (go to http://water.worldbank.org/wpp/AnnualReport2013-14.html).

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Cover Photo: The small West African country of Guinea-Bissau makes for an awe-inspiring image. Silt carried by the Geba and other rivers flow out to the Atlantic Ocean, creating complex and beautiful patterns in the shallow waters along the coastline. USGS National Center for EROS and NASA Landsat Project Science Office.
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# *Acronyms*

| | |
|---|---|
| AFR | Africa Region (World Bank) |
| AGWA | Alliance for Global Water Adaptation |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation (Australia) |
| DFID | Department for International Development (United Kingdom) |
| DGIS | Directorate-General for International Cooperation (the Netherlands) |
| DANIDA | Danish International Development Agency |
| DRM | Disaster Risk Management |
| EAP | East Asia and Pacific Region (World Bank) |
| ECA | Europe and Central Asia Region (World Bank) |
| EDF | Électricité de France |
| ESA | European Space Agency |
| ESMAP | Energy Sector Management Assistance Program |
| EST | Expert Support Team (WET) |
| EWS | Early Warning System |
| FAO | Food and Agriculture Organization of the United Nations |
| GCM | Global Circulation Model |
| GDP | Gross Domestic Product |
| GEO | Group on Earth Observations |
| GFDRR | Global Facility for Disaster Reduction and Recovery |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit (German Federal Enterprise for International Cooperation) |
| GPOBA | Global Partnership on Output-Based Aid |
| GWP | Global Water Partnership |
| I&D | Irrigation and Drainage |
| IBRD | International Bank for Reconstruction and Development |
| IDA | International Development Association |
| IEA | International Energy Agency |
| IGRAC | International Groundwater Resources Assessment Centre |
| IPCC | Intergovernmental Panel on Climate Change |
| ITC | Faculty of Geo-Information Science and Earth Observation of the University of Twente |
| IUWM | Integrated Urban Water Management |
| IWMI | International Water Management Institute |
| IWREC | International Water Resource Economics Consortium |
| IWS | International Water Summit |
| LCR | Latin America and Caribbean Region (World Bank) |
| MNA | Middle East and North Africa Region (World Bank) |
| MW | Megawatt |
| NASA | National Aeronautics and Space Administration |
| NEA | National Energy Administration (China) |
| ODA | Official Development Assistance |
| ONEE | Office National de l'Electricité et de l'Eau Potable (National Office of Electricity and Drinking Water; Morocco) |
| OPCSPQ | Operational Policy and Quality Department (World Bank) |
| PMA | Program Management and Administration |
| PPIAF | Public-Private Infrastructure Advisory Facility |
| PSRG | Private Sector Reference Group |
| QBS | Quality-Based Selection |
| RBF | Results-Based Financing |
| RS | Remote Sensing |
| SAR | South Asia Region (World Bank) |
| SEDP | Socio-Economic Development Plan (Vietnam) |
| SREX | Special Report on Managing the risks of Extreme Events and Disasters to Advance climate Change Adaptation (IPCC) |
| TU Delft | Delft University of Technology |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNESCO-IHE | Institute for Water Education |
| USD | United States Dollar |
| USUG | Ulaantbaatar Municipal Utility Company |
| WB | World Bank |
| WBADMIP | West Bengal Accelerated Development of Minor Irrigation Project (India) |
| WBG | World Bank Group |
| WET | Water Expert Team (WPP) |
| WFES | World Future Energy Summit |
| WIF | Weather Information for Farmers |
| WMO | World Meteorological Organization |
| WPP | Water Partnership Program |
| WRM | Water Resources Management |
| WSS | Water Supply and Sanitation |
| WUA(s) | Water User Association(s) |

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Water Partnership Program (WPP)
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# *FOREWORD*

Water is a part of everything we do. It nurtures and sustains our livelihoods; it irrigates our crops; it helps power our industries and cities; and it preserves the very ecosystems we depend upon. Its immeasurable benefits make it one of the most precious resources on the planet.

We are well aware that water insecurity can have devastating effects on economies and jeopardize the well-being of entire populations, especially the poorest and most vulnerable. That is why helping countries achieve water security lies at the core of the World Bank Group's twin goals: to eliminate extreme poverty by 2030 and boost shared prosperity.

As countries move up the development ladder, they will require more water to grow food, produce energy, and provide services to growing cities and more vulnerable rural populations. With too many straws drinking from the same glass, satisfying these needs is a complex task, which becomes even more challenging under the increasing uncertainty brought on by climate change. For some countries in the Middle East, rainfall is expected to decrease by up to 40 percent by the end of this century. Already dry regions such as Brazil's northeast will get even drier, making crops even harder to grow and electricity harder to produce. In the Sahel, the recent water shortages left a trail of demise. At the other end of the spectrum, many cities, especially those in low-lying and delta areas, face a high risk from increasingly costly flooding, as sea levels rise and ecosystems degrade.

In this multifaceted landscape, the World Bank Group's leadership and commitment to helping countries achieve water security have become even more crucial. Our clients, as prudent decision makers, demand the best knowledge available to shape their future investments in water. They want innovative and transformational solutions that integrate the needs of diverse economic sectors while delivering benefits that diminish poverty. They value longer-term, strategic engagements that can have a true impact on livelihoods and sustainable growth. And they expect strong support to develop the right governance mechanisms. These are some of the reasons why the World Bank Group launched a single, integrated Water Global Practice in July 2014.

Both in the past, and under our new structure, the World Bank's ability to help clients address these issues has been greatly enhanced by the Water Partnership Program (WPP). Over the past year, this program has enabled us to become an even stronger knowledge incubator and has solidified our contribution to dialogue and action around some of the toughest water challenges globally. By encouraging multi-sectoral work, the WPP helps us support water-related work across Global Practices. It allows us to leverage knowledge from client countries and development partners and strengthen the quality and impact of our operations and advisory services.

I am pleased to introduce this Annual Report "Water Security for All: The Next Wave of Tools," which outlines the program's progress and results under its second Phase. This year's report demonstrates how the WPP is helping us provide decision makers with the tools and knowledge they need to address complex water challenges and to thrive under uncertainty. It also illustrates why the Water Global Practice is building on the success of the WPP, absorbing it into its core vision, and continuously evolving its ability to support innovation and have an additional impact around key water issues facing our clients.

The World Bank Group remains grateful to the WPP donors—the governments of the Netherlands, the United Kingdom, Denmark and Austria—who have seen the success and tremendous potential of the program and have agreed to support an expanded second phase. We look forward to strengthening our collaboration with each one of our partners to deliver a water-secure world for all.

Junaid Kamal Ahmad
Senior Director, Water Global Practice
The World Bank Group

# *1. Introduction*

Water is fundamental to poverty reduction and economic growth. For centuries, it has allowed populations and countries to develop and thrive; it has sustained livelihoods and human well-being, propelled socio-economic development, and preserved ecosystems.

Water security, however, has been and still remains a major challenge for many countries today, especially in the context of a changing climate. Currently, 1.6 billion people live in countries and regions with absolute water scarcity[1] and the number is expected to rise to 2.8 billion people by 2025. Climate change will place additional stresses on water resources and make water security even more difficult and costly to achieve. It may also reintroduce water security challenges in countries that for many years have enjoyed reliable water supplies.

While all countries around the world are threatened by an imminent water crisis, the costs and consequences of water insecurity—an unacceptable quantity and quality of water, and water-related risks—are especially high in some of the poorest countries and disproportionately affect the most vulnerable populations. That is why helping countries achieve water security lies at the core of the World Bank's mandate to reduce poverty and promote sustainable development and growth. Water security is a fundamental pillar of the organization's twin goals: to eliminate extreme poverty by 2030 and boost shared prosperity.

Achieving water security encompasses several complex and interlinked challenges. It depends on an array of socio-economic, physical, political, institutional, and financial factors that are extremely difficult to align since they often lie outside of the water sector domain. To deal with the multifaceted nature of water, countries are demanding additional support in terms of innovative, cross-sectoral solutions to help them build climate resilience through better water resources management (WRM) and service delivery.

The Water Partnership Program (WPP) remains a strategic instrument for the World Bank to bring together the best knowledge, research, and proven approaches to enable countries to catapult towards water security. A longstanding partnership among the World Bank and the governments of the Netherlands, the United Kingdom, Denmark, and Austria, the WPP supports the Bank's poverty reduction efforts by mainstreaming climate-resilient growth and pragmatic approaches in Water Resources Management and Water Supply and Sanitation in World Bank projects and analytical work. As the Bank's only global and comprehensive water trust fund, the WPP is positioned to respond to demand in any country and in any water sub-sector. Projects and analytical work receiving WPP support are thus provided a holistic perspective on water challenges, which yields solutions that integrate the various aspects of water.

The second phase of the program commenced in July of 2012 (see Box 1). Designed with an expanded scope and duration, Phase II is more targeted to specific water challenges and more results-oriented, to help countries tackle poverty through climate-resilient green growth. Phase II reinforces the program's comparative advantages with new programmatic and global aspects that encompass longer-term engagements with a clear focus on poverty reduction. Moreover, positioned in the central unit of the World Bank's Water Global Practice, the WPP promotes water solutions across other practices, including urban development, food, energy, environment, and climate change.

1. Countries or regions are considered to be facing absolute water scarcity if renewable water resources are <500 $m^3$ per capita (FAO. *Coping with water scarcity - an action framework for agriculture and food.* FAO Water Reports, Rome, 2012).

### Box 1: Evolution of the WPP

**WPP Phase I (2009–12)**
- $23.3 million
- 225 activities
- 64 countries supported

**WPP Phase II (2012–16)**
- $45.1 million
- 94 activities*
- 44 countries supported* - See map 1

**as of June, 2014*

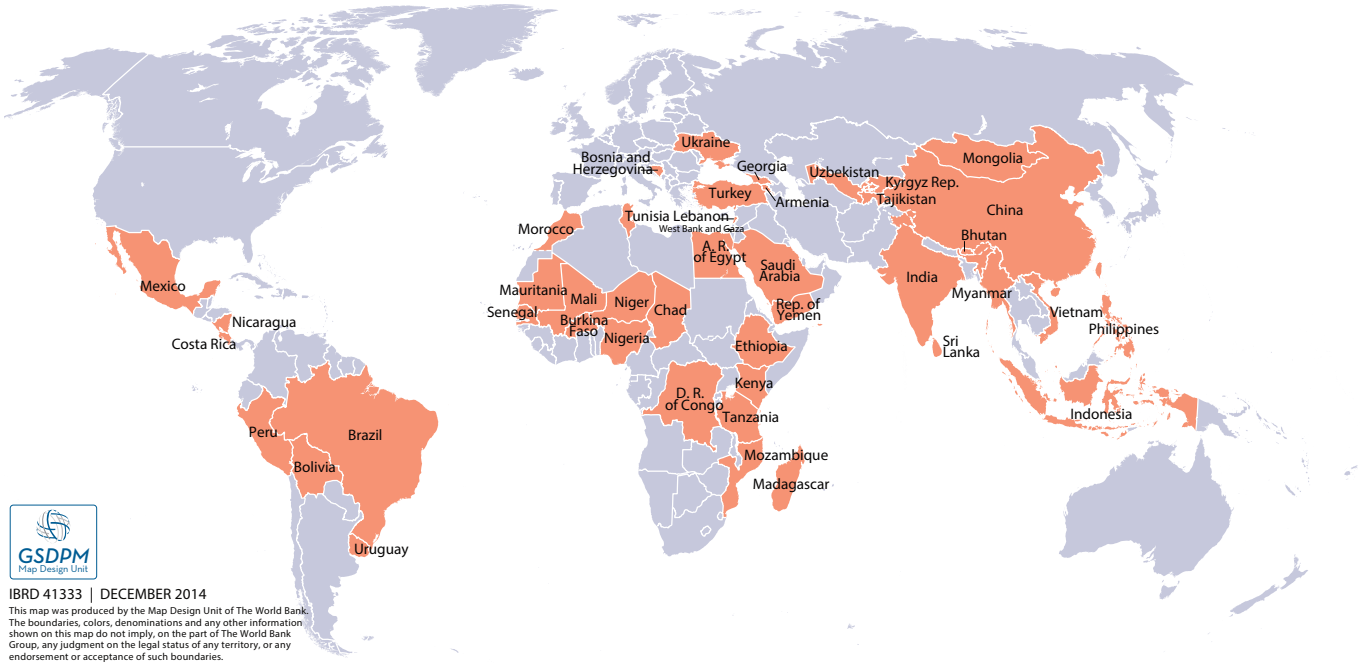
The WPP's vision for a water-secure future for all is one whereby people have the right information and tools to make informed decisions about water. To make this happen, governments, civil society and the private sector need the right data and information at a sufficient resolution to select the best options for meeting their development objectives. By supporting these stakeholders through World Bank-funded programs and analytical work, the WPP is empowering developing countries to transform their water future, to reduce vulnerabilities, to build resilience, and to protect the poor.

## Transformation through Targeted Interventions

Phase II is targeting interventions where resources can make the most impact. This includes aiming at countries that lack capacity and financial resources; sectors that have the most to lose if they don't take water seriously; and new technological areas to fill existing global knowledge gaps. Moreover, the WPP is strategic about who is engaged in this work—from developing partnerships with the strongest international expertise, including the private sector, to building tools with specific decision makers in mind.

Being strategic about where we work makes the WPP a more effective instrument for fighting poverty through water security. The WPP's core contribution in 2013 and 2014 is seen through its targeting non-water sectors and key geographies, broadening partnerships, and developing niche tools and approaches. Each of these contributions can be demonstrated at the activity level, as well as through the program's global initiatives, as detailed in the following section. Due to changes in the Program's reporting requirements, this Annual Report summarizes WPP's performance from the beginning of Phase II to June 2014, with new activity information covering January 2013 through June 2014.

## Map 1: WPP Phase II Activities Have Been Implemented In 44 Countries



## Water in Key Strategic Economic Sectors

The WPP is helping countries assess climate change impacts on water availability, as well as trade-offs from competing uses. By mainstreaming water in other sectors, the WPP is enabling water professionals to work within the non-water institutions responsible for planning infrastructure and policies that safeguard or promote economic growth. After all, water is used by major economic sectors, not necessarily by water managers.

New initiatives are transforming the way the Bank provides water services to its clients in energy and disaster risk. The WPP's Thirsty Energy initiative helps break disciplinary silos that have historically prevented cross-sectoral planning for energy utilities that rely heavily on water. Under the Disaster Risk Management Facility, developing countries will be better prepared to pinpoint the location and impacts of potential water-related hazards, and focus resources in high-risk areas (see Chapter 2).

## Strategic Locales

The WPP is supporting multi-year engagements in strategic deltas, basins, and countries, to advise clients on strategic planning and investments that will make dramatic economic improvements in the long term. In the Mekong, the WPP supports a large group of stakeholders in quantifying trade-offs of various development scenarios for the delta region. Currently, the delta stands at a critical crossroads between successful agricultural growth and production, and environmental sustainability and social equity. Meeting the demands of future generations that rely on the delta and its services will require going the extra mile in learning from global best practices and implementing innovative and integrated approaches (see Chapter 2).

In the Sahel, a vast arid stretch of land in West Africa, the WPP strengthens a regional approach to development while supporting six low-income countries. Toward improved food security and more food exports, the region aims to double the area under irrigation and expand private participation in agriculture. WPP funds are supporting the integration of water resources considerations in a regional economic development plan to dramatically improve the livelihoods of millions of farmers, herders, and communities, and help boost peace and shared prosperity (see Chapter 2).

Finally, the WPP is boosting expertise on cold climates. Building sanitation infrastructure to function in below-freezing temperatures is a niche discipline. The WPP is bringing experiences in sanitation service delivery from Alaska to Central Asia and Mongolia, targeting challenges faced by many poor countries in the Northern Hemisphere (see Chapter 2).

## Partnerships: Leveraging Finance and Expertise

To bolster the quality of its global initiatives and tools, the WPP not only leverages investments from other partners, but also garners their unique expertise. In 2013, joint analytical work was completed with the Global Partnership on Output-Based Aid (GPOBA) regarding results-based financing for water; with the Energy Sector Management Assistance Program (ESMAP) regarding the design and implementation of the Thirsty Energy initiative; and with Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) on remote sensing for water management.

*"This was an excellent study visit; there is a lot to learn from the Beijing experience. We should take more advantage of China's willingness to share its water management expertise with the rest of the world."*

Greg J. Browder, Task Team Leader, Lead Water Resources Management Specialist

The WPP also coordinated activities on disaster risk management with the Global Facility for Disaster Reduction and Recovery (GFDRR) and worked closely with members of the Alliance for Global Water Adaptation (AGWA) on developing climate change decision tools.

At the activity level, the WPP is also supporting public-private partnerships through joint work with the IFC in India. The activity is influencing a $22 million project to improve production of small and marginal farmers in West Bengal through private investment and market analysis for commodity pricing (see Chapter 3).

In 2013 and 2014, the WPP delivered on its role as a partnership facilitator. Using its global reach and multi-sectoral platform, the program has helped countries share knowledge through workshops and study tours. African decision makers were exposed to Dutch expertise in integrated urban flood management. Through a study tour to Beijing, China, Latin American governments learned about integrated water management techniques amidst extremely scarce water conditions and strong urban and agricultural demand.

The program also continued to support the dissemination of an urban water utility reform course, developed under Phase I. The course was given in Spain for practitioners from Europe and Central Asia and Africa and results from the event are informing the Bank's Science of Delivery in Urban Water Supply and Sanitation initiative.

## Strategic Tools for Decision Making

Over the course of this reporting period, the WPP has made significant strides in developing new platforms to fill global knowledge gaps. The program has built expert networks on remote sensing, climate change, and disaster risk management. The WPP has gathered global experts from various fields to garner consensus on the need for knowledge in these niche technical areas and then draft relevant tools. These tools will help the Bank, its clients, and practitioners across the globe take advantage of advances in new thinking and knowledge to improve project design (see Chapter 2).

At the activity level, the WPP has supported the piloting of a new tool with plans for worldwide application. The Hydropower Sustainability Assessment Protocol was piloted in Vietnam as a means to convene government, industry, and civil society around the sustainability issues surrounding hydropower development. The Bank is now looking to modify the tool and spread its application to other developing countries (see Chapter 3).

## Report Summary

This Annual Report outlines Phase II of the WPP, which runs from July 2012 to June 2016,[2] and reviews its performance from January 2013 through June 2014.

Chapter 2 is dedicated to the WPP's new programmatic window, which

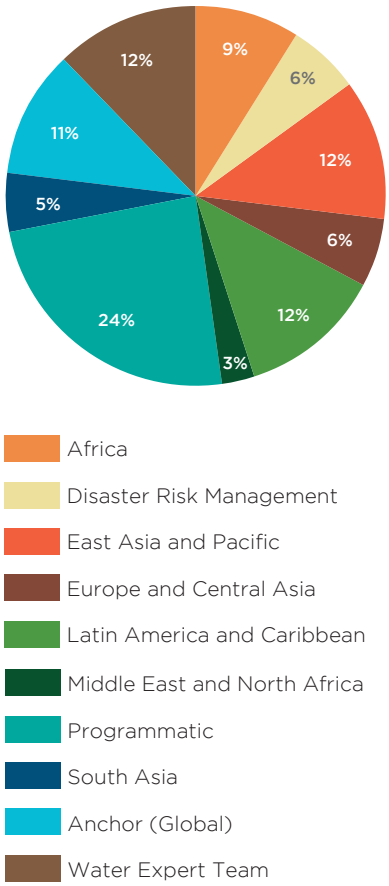
2. For a detailed description of WPP Phase II, please refer to the World Bank. 2013. *Water Partnership Program (WPP) Strategic Action Plan 2012-2016*, Washington, DC: World Bank.

represents the largest share (24%) of total activity approvals in Phase II as of June 2014 (see Figure 1). This chapter is divided into three components: (1) Water in Agriculture and Energy, which addresses water-related challenges that are related to the water-energy and water-food nexuses; (2) Cutting-Edge Tools and Knowledge, which promotes innovative solutions and tools related to disaster risk management, remote sensing, cold weather sanitation, and results-based financing; and (3) Strategic Support in Geographic Priority Areas, which addresses cross-cutting challenges within the water supply and sanitation (WSS) and water resources management (WRM) sub-sectors.

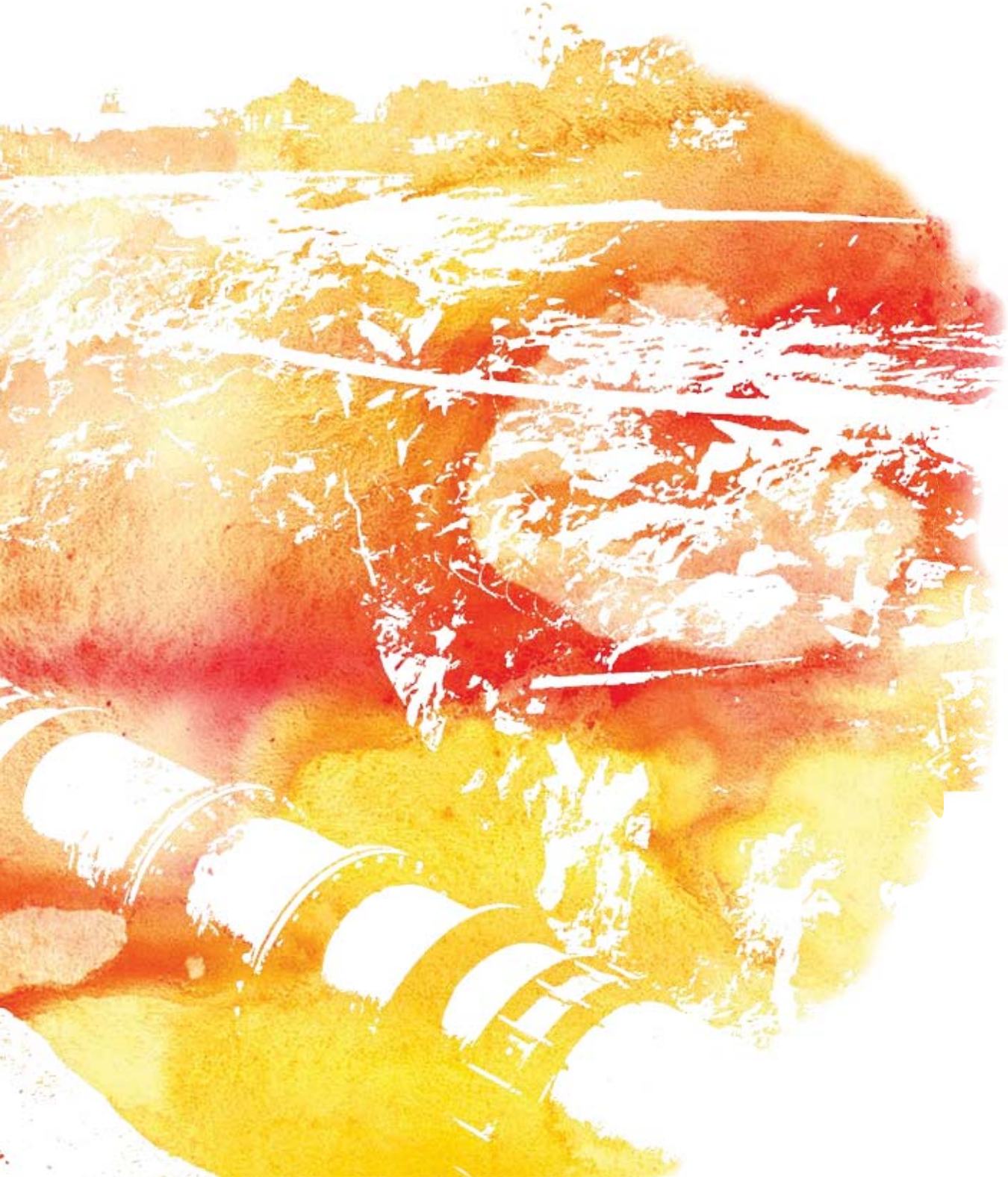
Chapter 3 describes the Phase II results framework and indicates progress toward the framework's 45 sub-indicator targets, providing qualitative examples of results for selected sub-indicators. This chapter includes a selection of activity highlights from across all of WPP's 10 windows (see Figure 1).

A financial update of the program can be found in the Annex, along with some background and details related to results reporting.

Figure 1: WPP Activity Approvals per Window (July 2012 – June 2014)



# 2. Global Initiatives



This chapter highlights several new Global Initiatives being implemented under the WPP Phase II Programmatic Window. Some of these initiatives aim to fill global knowledge gaps for new challenges, such as the water-food-energy nexus, climate change and disaster risk management, while others bring comprehensive development approaches to locations like the Sahel or the Mekong Delta. WPP Global Initiatives are founded through strong partnerships and networks that combine sector and geographic expertise to bring the latest in new global thinking to the development arena. The results of all WPP activities, including these Global Initiatives, are described in Chapter 3.

## 2.1. Water in Agriculture and Energy

### 2.1.1 WATER FOR FOOD

#### Improving Agricultural Water Productivity and Beyond: What Are the Options?

Global population and income growth predicates higher demand for more, better, and different food products. To meet this demand, the agricultural sector will have to expand irrigation water use. Yet, at the same time, competition for water resources is expected to intensify and climate change will further stress water availability. Within these constraints, the optimal solution will be to improve the productivity of water in agriculture. Small improvements would allow higher agricultural production with the same amount of water, or the same agricultural production with less water. The water savings from more efficient agricultural production could be reallocated to other, high-value uses.

*What is the initiative about?*
The Improving Agricultural Water Productivity Initiative is a World Bank flagship program that combines economic expertise from the water and agriculture practices. It aims to inform the policy and operational dialogue on options that enable the growth of agricultural production but at the same time address the rising demand for water and the impacts of climate change on water availability.

The initiative focuses on improving agricultural water productivity, especially in irrigated areas— where the competition for water is intensifying and/or water supplies are becoming less reliable. It will inform knowledge on two fronts, with the ultimate goal of making water allocation at the basin level more efficient. First, policy makers looking to boost agricultural production will be better positioned to account for changes in irrigation water availability. Second, water specialists will be prepared to look beyond water and take into account other production factors that can improve agricultural water productivity.

This flagship initiative is conducted in collaboration with the International Water Management Institute (IWMI), which since the mid-1990s has been a key player in both developing the conceptual framework for agricultural water productivity and carrying out the related field research. To achieve further advances at the conceptual level, partnerships have also been developed with researchers and academics who work on the explicit inclusion of water aspects in productivity and efficiency measurements, including single-factor productivity measures, total factor

9 billion people to feed by 2050, which requires a 60 percent increase in agricultural production and a 15 percent increase in water withdrawals; 70 percent of global water withdrawals today are for agriculture

19 percent higher agricultural water consumption (of both rainfed and irrigated areas) by 2050

Source: UN Water, *International Year of Water Cooperation*, 2013

A man sorts bean seeds in Comayagua, Honduras, some 130 kilometers from Tegucigalpa. Photo: Alfredo Srur/World Bank.

productivity indices, frontier models, and deductive methods.

*Why was the initiative created?*
Many influential development institutions promote higher agricultural water productivity as an explicit policy goal. By this, they generally mean "more crop per drop," as if water were the only agricultural factor responsible for changes in productivity. But is water efficiency the only available lever to improve productivity; and can single-factor productivity measures like water efficiency be used as indicators for monitoring progress?

The initiative is filling a major gap in the development literature by assessing the basic instruments available for improving water productivity, and discussing which interventions may be feasible and most suitable in a particular situation. It will also help teams measure the results of project interventions to identify sustainable ways to increase productivity.

*How will the initiative help address those challenges?*
The flagship initiative plans to contribute to advances on several fronts. At the conceptual level, it is initially expected to bring some of the insights of the (agricultural) production economics literature to the water literature, and vice versa. While the literature on production theory has developed a number of approaches to assess a single input's contribution to a particular output (and also to more than one output) in the presence of other inputs, so far it has not shown much interest in water as an important input requiring special consideration. The initiative will also develop a more systematic approach to the choice of interventions, and possibly a framework within which to assess the suitability of particular interventions in different contexts. Likewise, the initiative will analyze the suitability and feasibility of monitoring and measurement methods for results, and contribute to improved World Bank operations by helping to enhance project design, implementation, and results monitoring.

*Results*
Results achieved during the first phase of the flagship's implementation include a survey of the agricultural productivity and efficiency literature regarding the explicit inclusion of water aspects in productivity and efficiency measurements. The survey's ultimate aim is to facilitate the discussion on how best to assess and improve water productivity in the agricultural sector. Its findings were published as a World Bank Policy Research Working Paper entitled "*How to Assess Agricultural Water Productivity: Looking for Water in the Agricultural Productivity and Efficiency Literature.*" Moreover, close contacts have been established with the U.S. Department of Agriculture's Economic Research Service, which is also keen to enhance the incorporation of water into productivity measures.

*What's next?*
Agricultural Water Productivity and Efficiency was included as one of the topics in the call for papers for the 11th Annual Meeting of the International Water Resource Economics Consortium (IWREC) to be hosted at the World Bank in September, 2014. Two paper presentations during the meeting will deal with agricultural water productivity and efficiency of agricultural water use, one of which is based on this flagship initiative.

The initiative will continue its outreach to World Bank teams with ongoing

projects and studies aimed at raising agricultural water productivity. A workshop involving the flagship's collaborators is planned for December, 2014 and the initiative's final report is expected in 2015.

### 2.1.2 Water for Energy

THIRSTY ENERGY

Today, more than 780 million people lack access to potable water and over 1.3 billion people lack access to electricity (IEA, 2012). Moreover, estimates show that by 2035, global energy consumption will increase by 35 percent, while the energy sector's water consumption will be 85 percent higher than it is today. Climate change will further challenge water and energy management by causing more water variability and more extreme weather events, such as severe floods and droughts. Despite these disturbing trends, current energy planning and production often fail to take into account existing and future water constraints.

*What is the initiative about?*
To help countries integrate water constraints into the energy sector and better address water and energy challenges, the World Bank has launched the *Thirsty Energy* initiative. *Thirsty Energy* works to prepare countries for an uncertain future by:

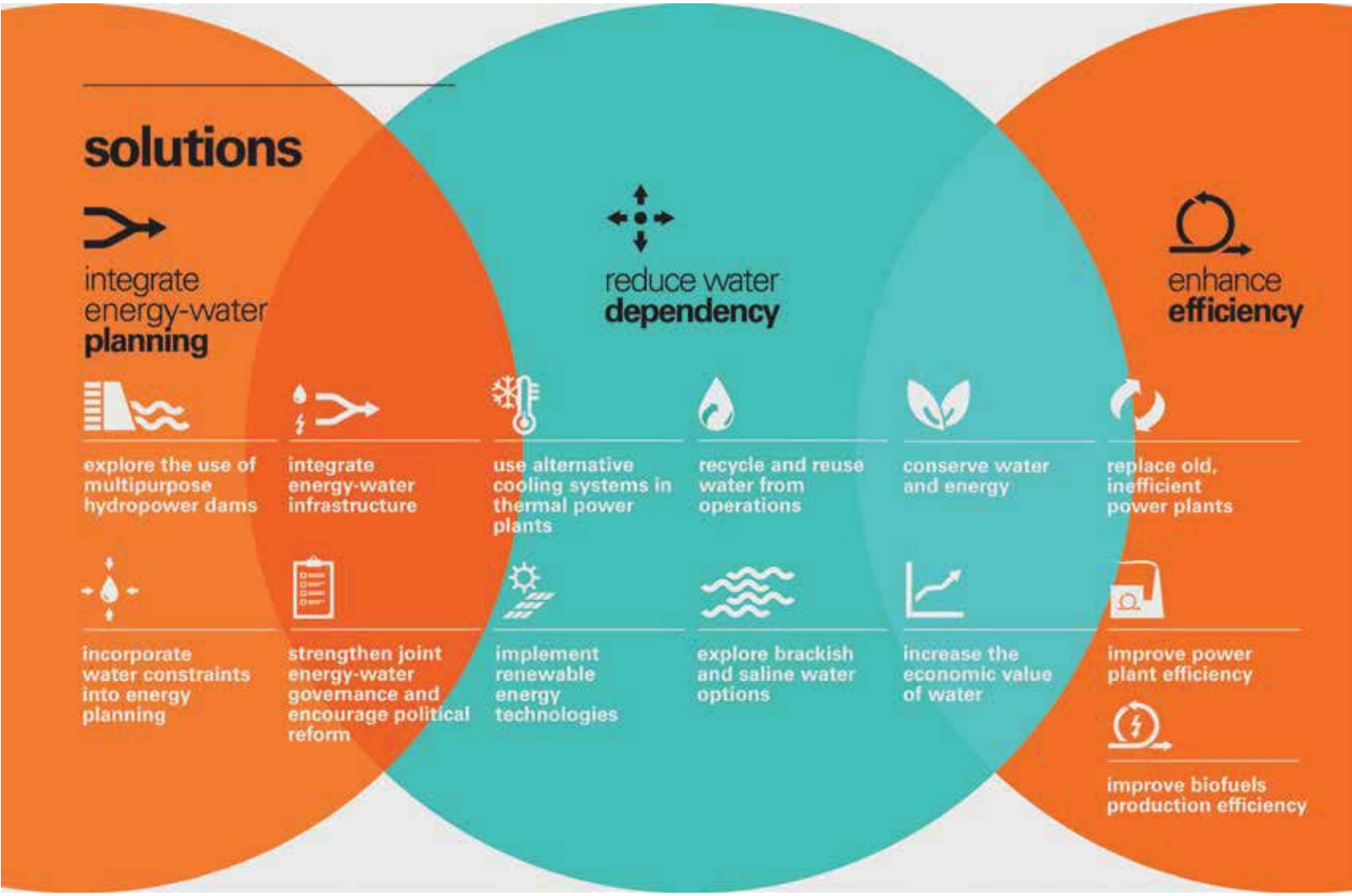
- Identifying synergies and quantifying trade-offs between energy development plans and water use;
- Piloting cross-sectoral planning to ensure sustainability of energy and water investments, and;
- Designing assessment tools and resource management frameworks to help governments coordinate decision making and enhance sustainable development.

*Why was the initiative created?*
Significant amounts of water are needed in almost all energy-generation processes—from producing hydropower and for cooling and other purposes in thermal power plants, to extracting and processing fuels. Conversely, the water sector needs energy to extract, treat, and transport water. Both energy and water are required to grow crops, including those used to generate energy through biofuels. While population growth and rapidly expanding economies are placing additional demands on the water and energy sectors, several regions around the world are already experiencing significant water and energy shortages.

*How will the initiative help address those challenges?*
*Thirsty Energy* demonstrates the importance of combined energy and water management approaches (see infographic at the

bottom of this page) through demand-based work in several countries. It tailors approaches to individual countries, taking into account the country's available resources, modeling experience, and institutional and political realities. In order to ensure client ownership and successful integrated planning, Thirsty Energy focuses on building the capacity of relevant stakeholders and leveraging existing efforts and knowledge.

The energy-water challenge is too large for any organization to tackle alone. Thirsty Energy seeks to engage diverse partners and share knowledge as well as best practices. The team collaborates with several international organizations working on the topic such as the International Energy Agency (IEA), UN Water, UN Sustainable Energy for All, the *Deutsche Gesellschaft Für Internationale Zusammenarbeit* or German Federal Enterprise for International Cooperation (GIZ), and others. Moreover, due to the pivotal role of the private sector in the energy and water sectors, a Private Sector Reference Group (PSRG) has been established to share expertise and knowledge, to provide technical and policy advice, and to scale-up outreach efforts. Abengoa, Alstom, Veolia, and Électricité de France (EDF) have already joined. The initiative has not only received funding from the WPP, but also from the Energy Sector Management Assistance Program (ESMAP) and the Korea Green Growth Partnership Trust Fund.



*Results*
*Thirsty Energy* was launched in January 2014 at the joint closing session of the World Future Energy Summit (WFES) and the International Water Summit (IWS) in Abu Dhabi.

The initiative has published its first working paper: *Thirsty Energy*. The paper introduces the energy-water nexus, examines the water requirements of power generation, and outlines some potential technical and institutional solutions for managing this nexus.

*What's next?*
Thirsty Energy is an ongoing initiative. As long as countries demand tools to assess their water-energy challenges, it will try to provide these and help countries implement a more integrated approach to water and energy resource planning to ensure a sustainable future.

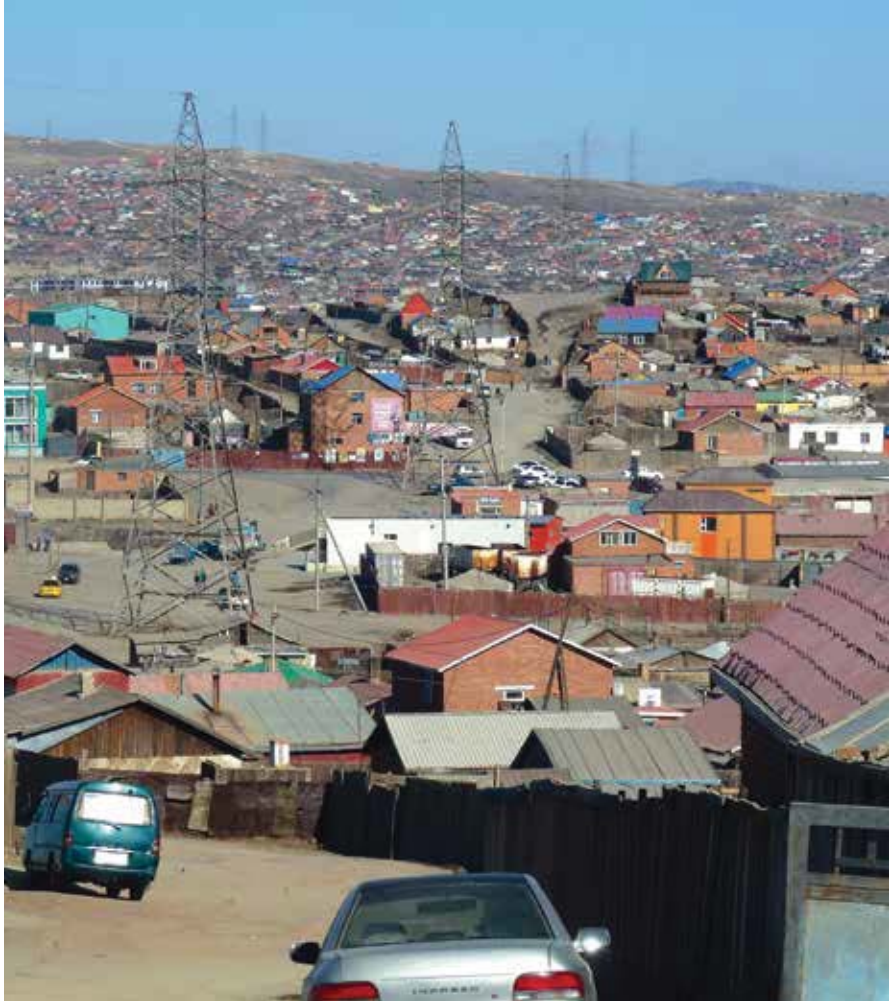
Case studies are ongoing in South Africa, where the team has partnered with the Energy Research Center of the University of Cape Town to properly incorporate water constraints into the Center's energy-planning tools; in Morocco, where the team is working with ONEE (the *Office National de l'Electricité et de l'Eau Potable*—the recently merged water and power government-owned utility) to identify synergies and evaluate trade-offs between energy and water resource planning; and in China, where the team is collaborating with the National Energy Administration (NEA) to incorporate potential water constraints into their upcoming 5-year (2016–20) energy plan. The case studies will be documented and shared, together with the tools developed, so that countries facing similar challenges can also duly address the water-energy issues, thereby ensuring a more sustainable development.

## 2.2 Cutting-Edge Tools and Knowledge

### 2.2.1 COLD SANITATION: UNIQUE CLIMATE, TAILORED SOLUTION

In countries where extremely low temperatures are the norm, providing water and sanitation services can be very challenging. This is particularly the case at higher elevations in many countries including the Kyrgyz Republic and Tajikistan in Central Asia, northern India and Pakistan in South Asia, Peru and other Andean countries in South America, and Mongolia in East Asia. Pipes, pumps, and other ancillary equipment exposed to such temperatures, be they above or below ground, are prone to freezing. Designing infrastructure to withstand variations in the cold environment, keeping it from freezing, and making provision for thawing it if necessary, requires careful and timely planning, design, construction, and maintenance, which is more expensive and complex than in milder climates.

*What is the initiative about?*
The *Improving Sanitation in Cold Regions* initiative aims to introduce stakeholders in Mongolia, Tajikistan, and the Kyrgyz Republic to concepts, technologies, approaches, and tools relating to wastewater collection and treatment, based on actual experiences with water supply and sanitation in very



In Ulaanbaatar, Mongolia's capital, the population has grown from some 600,000 in 1989 to more than 1 million in 2007 and is expected to reach 1.3 million by 2015. Despite Mongolia being the least densely populated nation, Ulaanbaatar faces one of the biggest housing shortages in the region, with 60 percent of the population living in gers, traditional Mongolian tents. Many residents of ger areas have little or no access to water, sanitation, and other basic infrastructure.
Source: World Bank, *Enhancing Policies and Practices for Ger Area Development in Ulaanbaatar*, 2010. Photo: Maryanne Leblanc/ World Bank

cold climates such as Alaska. Thus, this activity involves an innovative exchange among Alaska and Mongolia, Tajikistan, and the Kyrgyz Republic.

*Why was it created?*
In Mongolia, as in many countries that were part of the former Soviet Union, most citizens, engineers, utilities, and local authorities are familiar with only three options for the disposal of human excreta: (i) conventional, centralized sewerage and wastewater treatment; (ii) pit latrines; and (iii) open defecation. In these countries, the utility infrastructure has suffered from inadequate maintenance and investment, deteriorating steadily over decades. Demand for utility services has often increased, while the capacity to provide them has remained low.

Consequently, many people in Mongolia, Tajikistan, and the Kyrgyz Republic lack adequate water supply, and even fewer have access to adequate sanitation. Efforts to improve sanitation and introduce other technologies, such as *EcoSan* toilets, have had only limited success.

*How will it help address those challenges?*
The *Improving Sanitation in Cold Regions* initiative comprises case studies for at least three countries: the informal, periurban settlements, called ger areas, of Ulaanbaatar, Mongolia, and smaller towns in the Kyrgyz Republic and in Tajikistan. Through these case studies, the experiences, issues, and potential solutions for deficient sanitation services in cold regions will be analyzed and synthesized.

Tsanjid, owner of an improved latrine, Ulaanbaatar, Mongolia. Photo: Maryanne Leblanc/ World Bank

A comprehensive analysis will yield lessons and recommendations that should be broadly applicable to cold regions globally, and provide a basis for further work on water supply and sanitation (WSS) in cold regions. The analysis will integrate insights from stakeholder consultations and local institutions like the Ulaanbaatar municipal utility company (USUG).

*What's next?*

The initiative will produce a conceptual design of sanitation options based not only on technical solutions, but also on a socio-economic, institutional, regulatory, and financial analysis of the case studies in the Kyrgyz Republic, Tajikistan, and Mongolia. This initiative will also leverage the support from the WPP's Water Expert Team (WET) in cold regions by documenting the operational issues in providing water and sanitation services to target households.

The initiative will help World Bank teams, clients, and other stakeholders—such as municipal authorities or utilities' staff—efficiently identify, select, and apply technologies and approaches to improve sanitation in cold regions. It will also fund outreach activities to disseminate the newly gained knowledge, aiming to spur investments in water in these countries as well as in other cold regions.

### 2.2.2 A VIEW FROM SPACE – REMOTE SENSING TOOLS FOR WATER RESOURCES MANAGEMENT

Development institutions like the World Bank try to promote greater scientific understanding of hydrological processes and the models used for forecasting purposes as a basis for sound water resources management. From year to year these models and their applications are continually improved (more accurate, less costly) but countries often do not have the latest options readily available or know how to best use them.

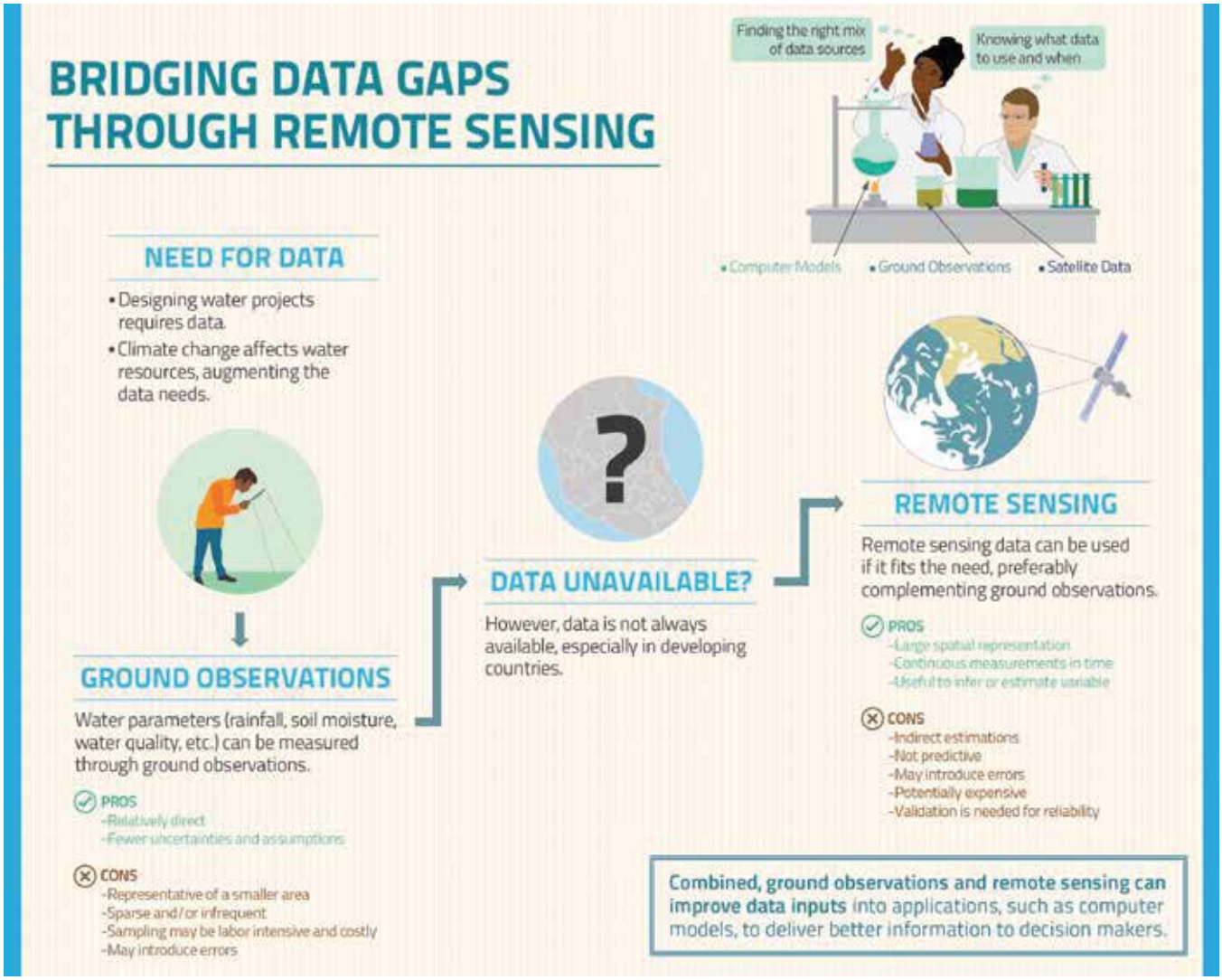
*In situ* observations have been the basis of applied hydrology for many years. However, as water resource situations have become increasingly complex, the need to extract more information in large quantities from river basins, over large spatial domains and time periods, has become apparent. This is not always possible and sometimes just too expensive. In developing countries, groundwater information, water quality data, and even basic hydrometeorological data may be hard to come by. Furthermore, developing countries are facing budgetary constraints, a factor that has negatively affected their existing hydrometeorological networks.

*What is the initiative about?*
The WPP *Global Initiative on Remote Sensing for Water Resources Management* was launched in October 2013 in

response to the demand from World Bank teams for a clearer picture of the trade-offs involved when using remotely sensed data in water operations. The overarching objective of this initiative is to improve the quality and effectiveness of water resources management (WRM) planning and project design by effectively using remote sensing (RS) technology when it is advantageous and where *in situ* data are limited. This initiative also aims to provide a guiding tool on the use of RS in World Bank operations to fill the data gap and complement in situ water-related, physical measurements to better inform national policy, programs, and projects in WRM (see infographic below).

*How will the initiative help address those challenges?*

Since the use of RS for hydrology and water resources for operational purposes is a new and vast field, this initiative will be executed in two phases. Phase I will pave the way for more systematic support to World Bank teams in using RS technology to inform water lending and



technical assistance. First, a brief internal assessment will provide a perspective of the existing use of RS technology in the Bank's water operations and map these to specific needs of Bank teams. It will also provide key hydrometeorological data needed to address those challenges and an overview of the existing "windows" of specialized assistance in the Bank for RS applications and products.

Under its first phase, the team is completing a scoping study of available operational RS products in hydrology and water resources. Once the study is done, it will provide a practical tool to assess the benefits and limitations of RS products, based on a factual comparison of conventional methods with new RS technologies. Both the brief assessment of World Bank demand for RS and the scoping study will focus on the data and information requirements for water policy making, strategy development, and planning. Jointly, they will also serve as a one-step source to assess the options available for designing and operationalizing hard and soft solutions to present and future water-related problems.

*Results*

The scoping study is based on the findings of an assessment of the Bank's water projects and analytical work, as well as water components in non-water operations, and conducted in partnership with Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO). It provides a guiding tool for assessing when, how, and where RS can be advantageously used.

The scoping study includes:

- A clear picture of the RS products available;
- The main water challenges, including scale, or situations at hand to which they can be applied;
- An explanation of how to obtain better results by using them jointly with in situ measurements, and;
- An explanation of how they can be validated and evaluated, to better inform the client and enhance Bank water-related operations.

The scoping study was validated at a workshop entitled Understanding Water through Space – How to Navigate through Remotely Sensed Data and Applications for Improved Water Resources Management, held in April 30 and May 1, 2014 at the Netherlands Space Office in The Hague. World-class RS experts from several countries (US, China, South Africa, Nigeria, Brazil, and the Netherlands, as well as organizations such as the National Aeronautics and Space Administration (NASA); European Space Agency (ESA); Group on Earth Observations (GEO); Faculty of Geo-Information Science and Earth Observation of the University of Twente (ITC); the Institute for Water Education (UNESCO-IHE); Delft University of Technology (TU Delft); University of Arizona; and consultants from the European Union) shared their knowledge and provided input to obtain a clear picture of the applicability, benefits, and limitations of RS tools for WRM. The workshop also facilitated the identification of key global players in the application of Earth Observations to water resources. This element is particularly relevant for the initiative's second phase—a period to consult and collaborate with external partners.

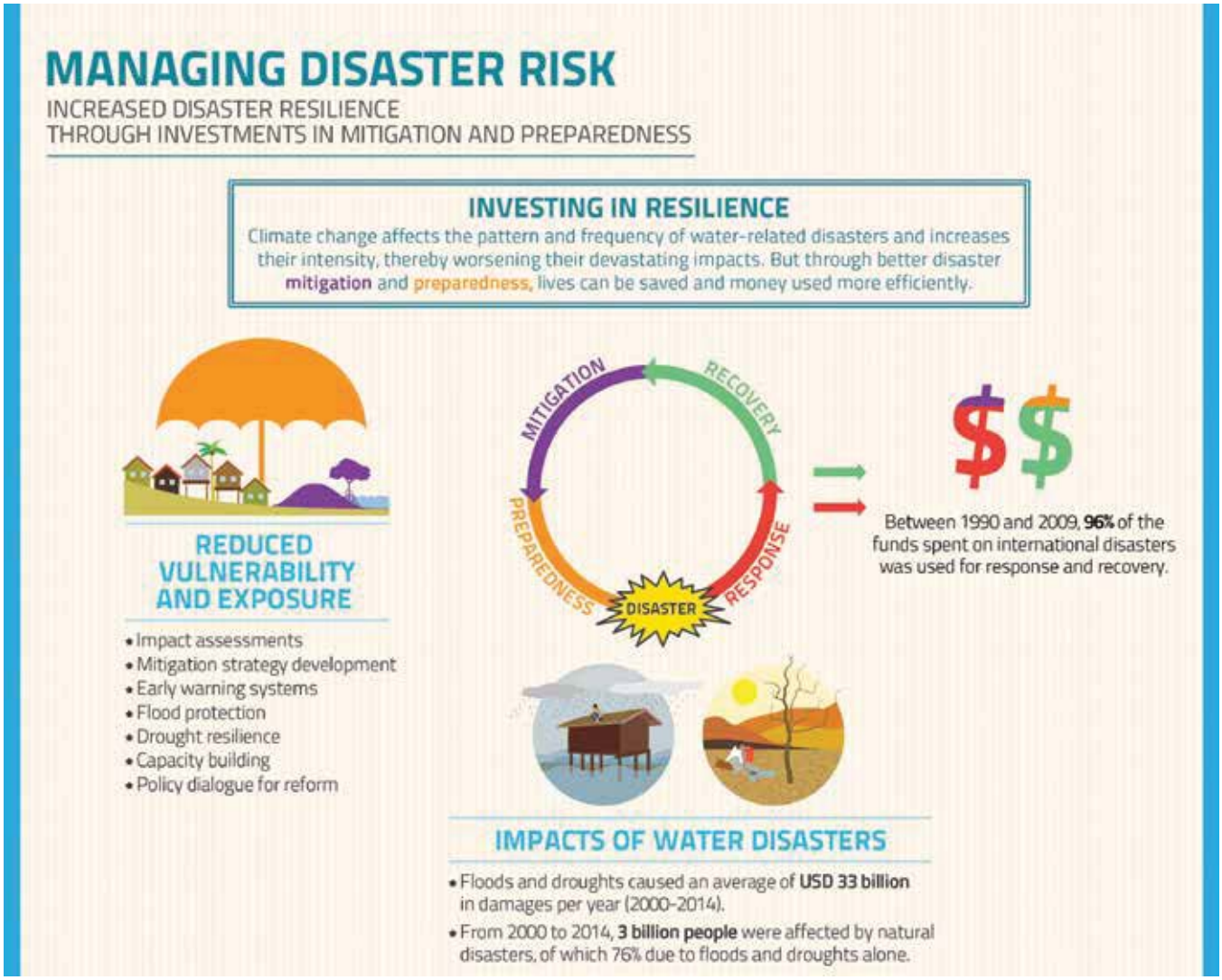
*What's next?*

Once the brief internal assessment and scoping study are concluded (by the end of 2014), the initiative's Phase II will be implemented through: (i) implementation in World Bank projects in selected countries, in order

to develop approaches and procedures that can be replicated in other countries facing similar challenges; (ii) specific, short-term interventions of world-class experts to advise on and provide orientation for specific problems related to Bank operations; and (iii) knowledge dissemination, advocacy, and capacity-building activities, in partnership with leading global and regional RS and capacity-building organizations.

### 2.2.3 WATER-RELATED DISASTER RISK MANAGEMENT: A JOINT GLOBAL INITIATIVE OF THE WPP AND THE GLOBAL FACILITY FOR DISASTER RISK REDUCTION (GFDRR)

Floods and droughts are part of the natural hydrological cycle but they are also the natural hazards that cause the highest economic losses on a global scale, accounting for 60 percent of losses between 2002 and 2011. In developing countries, ongoing population growth in flood-prone areas and increased agricultural development on marginal lands will further increase exposure and vulnerability to such risks. The Intergovernmental Panel on Climate Change (IPCC)'s Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation, known as IPCC SREX, advised that increasing



vulnerability and exposure to water-related hazards are critical issues that need to be addressed.

*What is the initiative about?*
The *Disaster Risk Management (DRM)* initiative is a joint partnership between the WPP and the Global Facility for Disaster Risk Reduction (GFDRR), operating worldwide. It is a high-level technical facility whose purpose is to improve the quality and effectiveness of drought- and flood-related DRM programs, projects, and analytical work, by helping governments, sectors, and institutions better manage disaster risk related to floods and droughts in their decision-making processes. The initiative focuses on reducing the vulnerability and exposure of people and communities to water-related hazards.

*How will this initiative address those challenges?*
The DRM initiative aims to help countries manage disaster risks by understanding where the risks are geographically and socio-economically within a given country, and understanding the likely impacts. The initiative will do this through: (i) developing and mainstreaming new knowledge as well as facilitating the mainstreaming of existing knowledge; and (ii) leveraging direct, innovative support for Bank operations through on-demand technical assistance to World Bank task teams working with client country national planning organizations, finance ministries, and disaster risk reduction organizations.

The DRM initiative draws on the expertise brought together in the WPP's Water Expert Team, combined with DRM-specific expertise from GFDRR and the DRM Global Expert Team. Externally, it draws on the expertise of qualified organizations such as the World Meteorological Organization (WMO); the United Nations Educational, Scientific and Cultural Organization (UNESCO); the International Groundwater Resources Assessment Centre (IGRAC); the Food and Agriculture Organization of the United Nations (FAO); the Global Water Partnership (GWP), and others.

*Results*
In order to make the best use of the synergy from other WPP activities, a two-phase approach has been initiated whereby the WPP's WET provides support for rapid assessment of potential pilot activities, setting the stage for broader support to be provided using the DRM facility.

First, the WET has provided support to a wide range of Bank lending operations working on DRM including reduction of flooding hazards in Sri Lanka, Mozambique, China, Niger, and Nigeria and on drought mitigation and resilience through Southern Africa and Sahel regional initiatives. Second, the DRM initiative has provided direct support to World Bank operations that aim to increase resilience to droughts and improve government capacity in drought management.

One of the most severe multi-year droughts in decades has plagued Northeast Brazil since 2010. The DRM initiative supports the dialogue for a policy framework at the federal level and a pilot program at the state level in the Northeastern region. Both tracks focus on enhancing the government's capacity to manage droughts, for example by building a drought monitor/early warning system. Other activities supported by the DRM window include a multi-sectoral impact assessment and a vulnerability analysis of the current drought. These activities will enable a more coordinated and systematic response to droughts and the development of a long-term mitigation strategy.

DRM support is also being provided to the *Sahel Disaster Resilience Project* to assess surface and groundwater resources in the region and the role they can play in strengthening disaster resilience. This activity will help identify priority investments for strengthening the national disaster risk management capacity in Mali, Burkina Faso, and Niger. In collaboration with GFDRR, the planning of an activity towards strengthening of hydrometeorological services has also been initiated.

The DRM initiative also catalyzes the expertise of middle- and upper-income countries to develop solutions for water-related hazards in other countries. This year, study tours to China (see Chapter 3) and the Netherlands (see Box 2) helped clients in Africa and Latin America see firsthand experiences of how cities are building more integrated solutions to mitigate impacts.

*What's next?*
The initiative will continue supporting Bank teams in the diagnosis and analysis of water-related hazards (floods and droughts) as well as the quantification of resulting losses. Moreover, the initiative will focus on improving WRM-related data acquisition and monitoring—including the modernization of hydrometeorological services and

Cruzeta, Northeastern Brazil. Photo: Mariana Ceratti/World Bank.

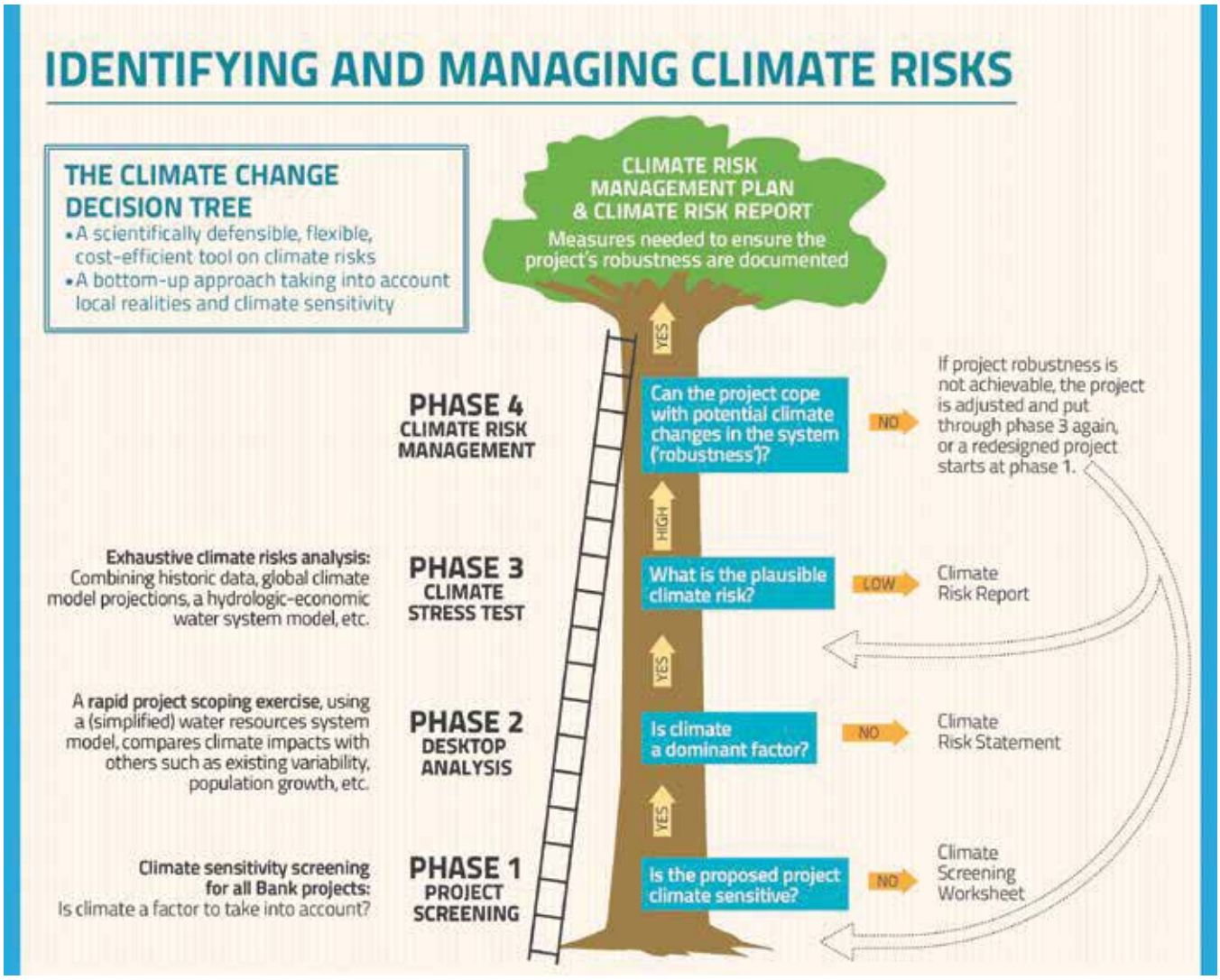
products in line with demand—in coordination with GFDRR and specialized international agencies (such as WMO, UNESCO, IGRAC, and others). The WPP will organize a workshop, in collaboration with GFDRR, on flood modeling tools and another one on building drought resilience. The main objective of the flood workshop is to inform Bank task team leaders of various flood modeling tools that can be used in decision-making processes. The objective of the drought workshop is to increase awareness of the importance of droughts, their socio-economic costs, and existing tools and methodologies used to forecast, monitor, and mitigate the impacts of these phenomena.

### Box 2: Resilience for Africa: Learning from the Experts

The WPP's DRM initiative supported a study tour to the Netherlands in September of 2013 for delegations from Southern and West Africa that included mayors, decision makers, and urban planning and flood control specialists. During the visit, the group discussed flood control and urban planning in the context of port development for Beira, Mozambique, and in the context of water supply and sanitation for Dar es Salaam, Tanzania. Urban water challenges in Dakar, Senegal, and Cotonou, Benin were also presented. Site visits to the cities of Rotterdam, Dordrecht, and Amsterdam provided relevant examples of integrated city development, port development, and flood control measures. The tour was hosted by the Dutch Ministry of Foreign Affairs and the Netherlands Water Partnership, with the support of the WPP and Deltares.

### 2.2.4 CLIMATE CHANGE DECISION TREE

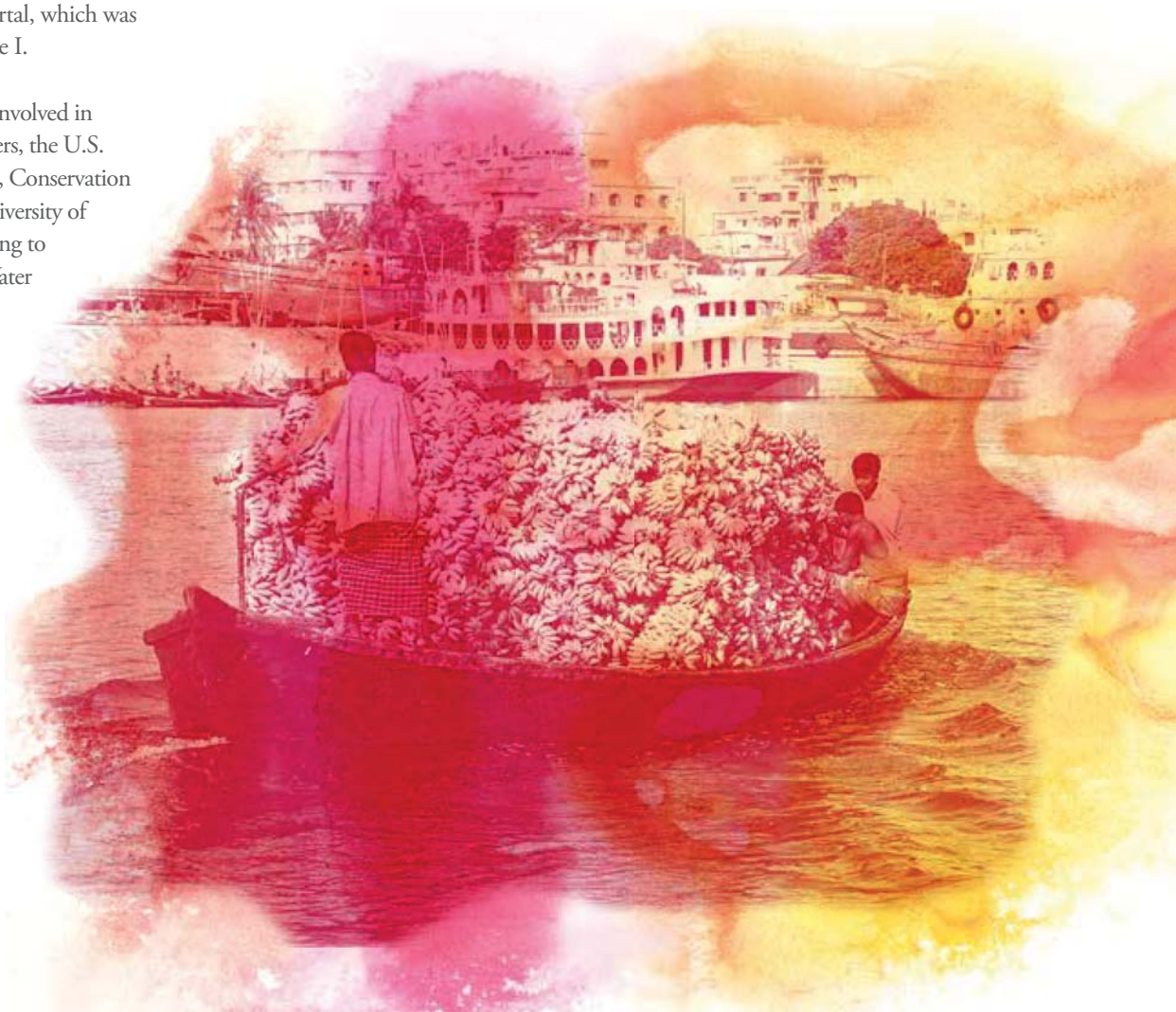
Investments in water-related infrastructure have always been fraught with uncertainties; climate change only adds to these. Although the Bank has developed methods to cope with these uncertainties, mostly based on the downscaling of global circulation model (GCM) outputs, the results have not been entirely satisfactory (according to a recent World Bank evaluation). The lack of success with the use of climate projections to inform decisions is not for lack of trying—many attempts have been made to translate model outputs into "data" that are relevant for decision makers. Often, the results of a climate change analysis present a wide range of possible future "mean" climates, no insight whatsoever into climate extremes, and the sense that only the tip of the iceberg of climate uncertainty has been revealed. As a result, the project planner faces a difficult path forward if investments must be designed and operated under these uncertainties.

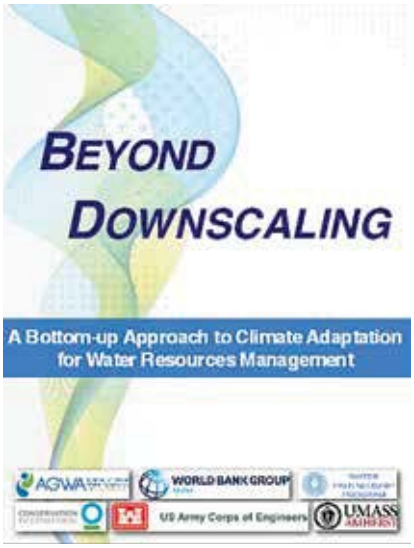


*What is the initiative about?*
The objective of this initiative is to develop a practical, risk-based, bottom-up, decision-making aid instrument—a decision tree—to help improve the quality and effectiveness of WRM planning and project design under climate variability and change uncertainty. Such a tool could be used operationally by practitioners and World Bank teams in projects at site-specific locations (see infographic on the previous page). More specifically, this initiative conforms to the requirements of the IDA 17 replenishment directive that the effects of climate variability and change be taken into account in all projects and investments. The decision tree links with the screening tool developed by the Bank and makes use of the information provided by the climate change portal, which was funded under WPP Phase I.

Several organizations are involved in this initiative: among others, the U.S. Army Corps of Engineers, Conservation International, and the University of Massachusetts, all belonging to the Alliance for Global Water Adaptation (AGWA), which the Bank co-chairs with the Stockholm International Water Institute (SIWI).

*Results*
A learning session was held during the World Bank Sustainable Development Forum in 2013—pointedly entitled *Including Climate Uncertainty in Water Resources Planning and Project Design*—to discuss the need for a climate change decision tree. A side event at the SIWI World Water Week 2013 discussed the conceptual basis of the initiative with external partners, and was followed by a workshop in June to present the initial version of the decision tree.






*A new approach to climate change adaptation*

The initiative has produced an eBook entitled "Beyond Downscaling – A Bottom up Approach to Climate Change Adaptation for Water Resources Management," launched at a seminar of the Stockholm World Water Week on September 4, 2014. The eBook brings together collaborations from 19 authors and, rather than design for an uncertain situation selected *a priori*, it explains the so-called "bottom-up" approach pioneered by several researchers to explore the sensitivity of a project's chosen metric (safe water yield, levelized cost, total net benefit, etc.) to the effects of uncertainties caused by climate change. The eBook thus provides a conceptual base for the decision tree.

Planning for applying the decision tree in World Bank operations is also under way. Initial discussions have been held between World Bank teams and the University of Massachusetts for pilot applications for hydropower in Nepal, investments for coastal adaptation in Kenya, the largest aqueduct system in Mexico (Cutzamala), and drought in Brazil.

*What's next?*

The follow-up of this initiative involves publishing and distributing the eBook and the decision tree report; organizing training events; developing a web-based decision tree; and implementing pilot applications in World Bank projects in Nepal, Kenya, Mexico, and Brazil.

### Box 3: The Science of Delivering Water Supply and Sanitation

In India, one in 10 deaths is due to poor sanitation, and the quality of life of millions of others is greatly affected. Universal access to water and sanitation is thus a critical element of the World Bank's mandate to reduce poverty. The World Bank has decades of experience in improving Urban Water Supply and Sanitation (WSS) service delivery in countries like India, but has failed to adequately capture and share—both internally and with its clients—the lessons learned in Urban WSS sector reform.

The *Science of Delivery in Urban WSS Initiative* seeks to remedy this knowledge gap by (i) conducting a review of the lessons learned from successes and failures in delivering sustainable Urban WSS services over recent decades, with a view to (ii) informing the elaboration of a Science of Delivery for the Urban WSS sector toolkit; and (iii) providing guidance on addressing environmental sustainability of Urban WSS services through Integrated Urban Water Management.

The *Science of Delivery in Urban WSS Initiative* is led by the Water Global Practice of the World Bank, in partnership with the Water Partnership Program (WPP) and the Public-Private Infrastructure Advisory Facility (PPIAF). Other partners include the Dartmouth Center for Health Delivery Science, the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), and the Water and Sanitation Program (WSP).

The initiative was launched in early 2014 with a series of internal and external workshops to gather feedback on the scope of the initiative, including *How to Turn Utilities Around and Provide Services for All* with Neil Macleod, the head of eThekwini Water and Sanitation in Durban, South Africa. The first database of Urban WSS projects implemented by the World Bank in the last 20 years has been created under this initiative. A review of the lessons learned in Urban WSS sector reform is now under way, and a toolkit addressing the most common Urban WSS sector challenges will be produced this coming year. The long-term objective of this initiative is to enable Bank staff and clients to readily access available information on what works and what doesn't in urban water reform—from how to get infrastructure to the urban poor, to how to build consensus for reforms.

## 2.3 Strategic Support in Priority Geographic Areas

### 2.3.1 CONTRIBUTIONS TO FOOD AND WATER SECURITY IN THE SAHEL

The Sahel is a semi-arid region between the Saharan desert and the humid Savanna and grasslands of West Africa, encompassing parts of Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal. Rainfall is highly variable and droughts and floods have a huge impact on local economies. Low rainfall in 2011 led to serious food shortages the following year; an estimated 14 million people are affected by such droughts. In November 2013, the World Bank Group (WBG) pledged $1.5 billion over 2 years to support major regional development priorities in the Sahel. These include the introduction of social safety nets to help families weather the worst effects of economic adversity and natural disasters, the improvement of basic infrastructure, and the creation of new opportunities in rural areas.

It was agreed in Dakar (see Box 5) that an international coalition would support the Sahelian countries in addressing irrigation challenges (policy, planning, and implementation capacity), galvanizing political commitment, and ensuring high value for money from investments through a sub-regional approach. For such a significant irrigation expansion, it will be essential to realize economies of scale in designing and installing locally adapted, low-cost irrigation equipment for the region.

### Box 4: Results-Based Financing: Bringing an Old Approach to New Frontiers

Results-based financing (RBF) is an innovative way to ensure that projects and contracts deliver on their intended results, be they implemented by donors, the private sector, or government. The Water Partnership Program (WPP) and the Global Partnership on Output-Based Aid (GPOBA) partnered to mainstream the development and use of results-based financing mechanisms across all water sub-sectors, such as climate change adaptation, irrigation, environmental and ecosystem services, water reuse, and hydropower. The Global Partnership on Output-Based Aid (GPOBA) is a World Bank-administered trust fund that has experience implementing OBA schemes in WSS, but little experience in other water sub-sectors.

RBF is any funding scheme that rewards the delivery of one or more outputs or outcomes by using one or more incentives, financial or otherwise, upon verification that the agreed-upon result has actually been delivered. This financing paradigm focuses on improving effectiveness by (i) creating and achieving tangible project results and long-term outcomes; and (ii) by shifting the investment risk from the financier to the implementer. RBF mechanisms can be used either as an alternative or a complement to more traditional, input-based official development assistance (ODA)—grants, loans, and guarantees—which is typically disbursed in advance of delivery.

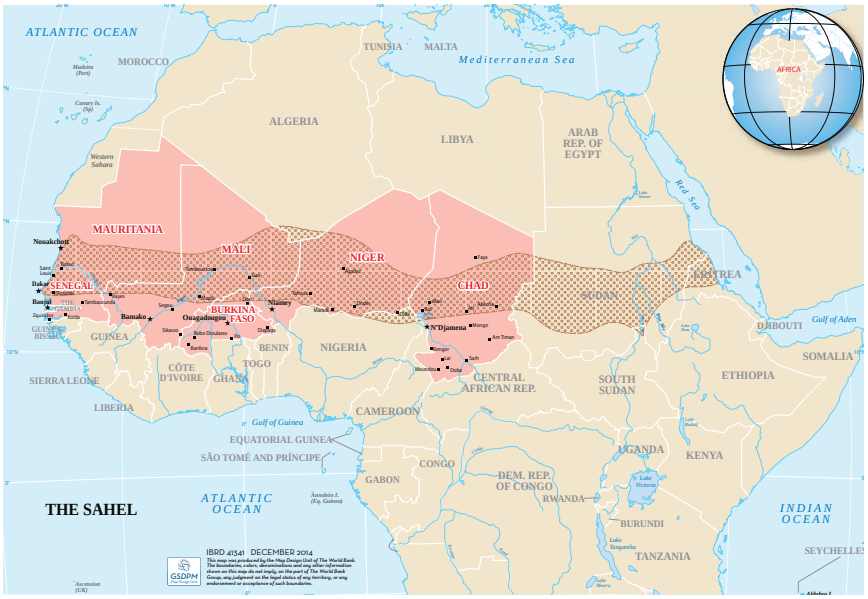
The introduction of RBF in the water sector seeks to redress the failure of water projects to deliver the quality and quantity of services promised due to poor planning, corruption, and lack of capacity or funds to maintain and operate infrastructure in the long run. Development programs are often limited by their capacity to hold implementers responsible for long-term outcomes.

In May of 2014, WPP and GPOBA published a joint study entitled *Applying Results-Based Financing in Water Investments*. The study clarifies the benefits and costs of RBF versus input-based financing arrangements, exposes water sector professionals in developing countries to RBF mechanisms, and explains how these mechanisms can contribute to project results and outcomes. The study mainly targets World Bank task team leaders and takes a closer look at some of the practical aspects of implementing various RBF schemes in water-related investments. The study also stimulates the debate on the suitability of the use of RBF instruments in water sub-sectors where the approach has scarcely been tested, such as irrigation, flood protection, water conservation, and hydropower.

### Box 5: Spurring Cooperation in the Sahel

A High-Level Forum on Irrigation entitled Beating the odds, building resilience in the Sahel was held in Dakar, Senegal, on October 31, 2013, and supported by the WPP. The forum consolidated a coalition among the six Sahelian countries to boost irrigation development in the Sahel while increasing the resilience of the agricultural sector to climate-induced shocks. The forum called for the doubling of the current irrigated area from 387,000 ha to 800,000 ha over the next 5 years (approximately a 10 percent increase per year), and up to 1,000,000 ha by 2020.

## Map 2: WPP Support to the Sahel




The WBG's funding in particular will create more hydropower and other sources of clean energy to greatly expand irrigation; protect and expand pastoralism for more than 80 million people living in the Sahel, who rely on it as a major source of food and livelihoods; expand health services for women and girls; and improve regional communications and connectivity between countries.

In support of the Bank's contribution to this agenda, the WPP is funding a new framework for irrigation development, and a comprehensive assessment of available water resources. First, a strategic framework is paving the way towards a major shift in the speed, soundness, and impact of irrigation investment in the Sahel. Second, the subsequent regional roadmap details how to achieve the quantitative and qualitative objectives set at the High-Level Forum in Dakar, including ways to raise agricultural productivity; value chains for food production and export; private sector participation in new irrigation development; and access to land and private finance for smallholders.

Finally, the WPP is providing upstream funding for national and regional assessments of surface and groundwater resources to determine a pipeline of bankable projects and develop a plan for transboundary management. Securing the water supply will help the region build on high-value niche markets thanks to its hot and dry climate, combined with few pests and disease risks. These three activities combined have enabled the Bank to respond quickly to the climate crisis by designing a multi-sector strategy underpinned by a sound analysis of water resources.

### 2.3.2 BUILDING RESILIENCE IN THE VIETNAM'S MEKONG DELTA

The Mekong Delta is the economic jewel of Vietnam, and critical for regional food security. The Delta produces 50 percent of Vietnam's total rice production (90 percent destined for export) and 70 percent of its aquaculture products. The wetlands and estuaries of the delta are important sources of biodiversity.

The region is experiencing rapid socio-economic changes accompanied by increases in agricultural and aquaculture production, and greater liberalization and diversification of rural markets. Those trends have improved opportunities for poor people. Yet, the new economic developments have highlighted many environmental, economic, and social problems facing vulnerable groups. Most of the

## Map 3: WPP Support to the Mekong Delta


The Delta produces 50 percent of Vietnam's total rice production (90 percent destined for export)

population in coastal areas live in rural communities and depend on rice or shrimp farming for their livelihoods. These households are "near poor" and still susceptible to external shocks pushing them back over the poverty line.

The Mekong Basin is at a critical point where decisions made now could have irreversible, long-term impacts on the delta. The government needs to make far-reaching decisions regarding development strategies in the basin. However, projections of many important climate parameters remain deeply uncertain and development is highly reliant upon upstream development, over which the government of Vietnam has little or no influence.

There is an enormous amount of data and analysis available and a large number of development partners are financing R&D projects in the Mekong Delta. At the same time, extensive scientific assessments and studies are being conducted on issues such as salinity monitoring, water quality, sedimentation, and erosion. However, the data are fragmented. Further compounding the situation, these studies are often localized and usually very narrowly scoped.

In parallel with Delta-level planning, sectoral plans are being supported at the provincial and regional levels. In many locations these plans are being supported to ensure that those areas will be resilient to climate change, but they are not integrated with other sectors or "proof tested" against the wide range of possible futures to ensure a robust analysis of investments and needs across users.

It is an opportune moment to support improved planning processes; the government of Vietnam, with the support of the Dutch, has developed an initial Mekong Delta Plan in which it evaluated a number of development strategies. It is the mid-point of the 5-year 2011–15 Socio-Economic Development Plan (SEDP), when new investment plans for the 2016–20 SEDP will start to be developed

The WPP is supporting the government of Vietnam in developing an investment program based on informed, adaptive planning at the provincial level by improving the use of existing knowledge, looking at inter-sectoral trade-offs and taking into account how uncertainty may impact choices. This work will build the research capacity and planning capabilities of key provincial authorities through the development of an integrated, user-friendly tool to enhance resilient and adaptive development. This integrated system will be used to analyze priority infrastructure and screen for "low-regrets" investments in selected provinces of the Mekong Delta. The findings from this analysis will potentially feed into the design of an investment operation focusing on key sectors (agriculture, water, transport) in selected provinces.

The planning tool consists of an interactive map with supporting database and data analysis tools, which allow users to overlay investment plans onto animations of future scenarios. Using this tool, and the approach of resilient and adaptive planning, existing priority infrastructure will be analyzed under a wide range of scenarios, including a spatial and temporal analysis, to determine whether they may be considered "low-regret" investments.

# *3. Mid-Program Results*

## The WPP is implementing 94 activities in 44 countries, accounting for about three quarters of the program's budget. All activities, including the Global Initiatives described in Chapter 2, contribute toward meeting the WPP's overarching objectives.

Building on WPP Phase I experience, the WPP has developed a comprehensive results framework for Phase II reflecting the development priorities of the program's donors as well as the World Bank's priorities (see Table 1).

The results framework translates the WPP's objectives into two main impacts: (i) vulnerable populations have been provided with an enhanced quality of life; and (ii) climate-resilient green growth has been made possible through water-smart development. The first impact represents the program's progress toward social and human development goals, while the second represents the program's goal toward economic growth coupled with sustainable development. These impacts signify the ultimate, long-term goals that the program promotes.

The results framework deconstructs these ambitious impacts into six measurable outcomes that the program aims to achieve during Phase II (see Table A3 and Table A4). In turn, each of those outcomes is systematically monitored over time through various indicators and sub-indicators. This Chapter synthesizes the results of each of the 6 outcomes by providing progress toward each sub-indicator target under each outcome. The tables throughout this section provide program targets (to be achieved by 2016) along with results (as of June, 2014) for each sub-indicator. Selected qualitative examples of activities and global initiatives are provided to further illustrate the results under each outcome.

As of June 2014—the mid-term of the program—the WPP has made significant progress on the majority of its sub-indicators. Moreover, the program has met or is on track to meet (has achieved at least half) of its targets for 60 percent of the sub-indicators.

### Table 1: WPP Phase II Results Framework (Abbreviated)

| Objective | Poverty Reduction through Improved WRM and Service Delivery, and Climate-Resilient Green Growth | | | | |
|---|---|---|---|---|---|
| **Impact** | **Climate-resilient green growth enabled through water-smart development** | | | **Vulnerable populations provided with an enhanced quality of life** | |
| | | | | | |
| Outcome | WPP strategic funding mobilization | Knowledge and operational tools created, disseminated and used | | Plans & strategies designed and capacity enhanced for improved WRM and service delivery | |
| Indicator | (A) Strategic use of WPP activity funds | (B) Events and training supported by WPP | (C) Web-based outreach and use of WPP publications | (D) New plans & strategies promoted by WPP activities in client countries | (E) Capacity enhancement |
| Outcome cont'd | Downstream loans supported through improved design and implementation | | | Vulnerability reduced via pro-poor and gender-sensitive interventions | Water mainstreamed into other sectors |
| Indicator cont'd | (F) Amount of Bank lending influenced & additional funding leveraged through WPP activities | (G) Physical and natural assets protected | | (H) People benefiting from projects supported by WPP activity | (I) Cross-sectoral mainstreaming of WRM |

Building boats. Bangladesh. Photo: Thomas Sennett/World Bank

## Outcome 1: WPP strategic funding mobilization

The WPP leverages funding from other sources and ensures that all resources are used effectively and efficiently to produce high-quality outputs that meet geographic demands. Strategic funding mobilization is measured through four sub-indicators, as listed in Table 2. Three of the four sub-indicators are on track.

More than half of the total value of approved activities is supporting Africa, greatly surpassing the donor target of 30 percent. Internal co-funding of WPP activities (sub-indicator 3), although currently off track, is expected to increase as more activities are approved.

More than half of the total value of approved activities is supporting Africa, greatly surpassing the donor target of 30%.

### Table 2: INDICATOR A: WPP strategic funding mobilization

| Sub-Indicators | Target | Progress as of June, 2014 |
|---|---|---|
| 1) Percentage of the value of approved WPP activities in Africa (%) | 30% | 51% |
| 2) Percentage of the value of firm contracts (in programmatic window) adopting Quality-Based Selection (QBS) procurement (%) | 50% | 94%[1] |
| 3) Bank internal co-funding for WPP activities ($) | $10 million | $1,279,531 |
| 4) External co-funding for WPP activities ($) | $1 million | $671,000 |

Note: Indicator 3 "Co-funding" refers to additional funds that were mobilized to implement the WPP activity itself (it does not include funding for World Bank projects supported/influenced by WPP activities).

[1] This number includes contracts procured through (a) a selection process whereby technical quality was given at least 90% weight; and (b) single-source selection.

*Case Study*

## STRATEGIC FUNDING IN AFRICA: EFFICIENCY AND EQUITY AS CRITERIA FOR PROJECT SELECTION

In 2013, the Bank approved a $180 million loan to improve long-term water availability in the coastal region of Kenya. With WPP funding, the project team is bridging existing climate models to quantify the expected economy-wide and equity impacts of the project under a wide range of climate scenarios. The methodology is unique in its ability to account for indirect costs and benefits for economic sectors as well as geographic areas, which traditional climate analysis tools cannot do. The results of the study will allow the government to select the water-storage solutions that generate the most cost-effective and equitable benefits.

The recent discovery of groundwater reserves in the Turkana Region offers one such adaptation option, as long as exploitation is done sustainably. WPP's WET service provided advice to the project team and the Ministry of Environment, Water and National Resources to design the scope of work for a Groundwater Master Plan based on international good practices and taking into account local constraints. In addition, the WET validated a study on deep groundwater mapping in Turkana and advised on institutional support and water management plans needed to ensure sustainable use of aquifers in the medium term.

*Case Study*

## CO-FUNDING LEVERAGED: IMPROVED FLOOD RESILIENCE IN URBANIZING SRI LANKA

Through the WET service, the WPP is providing hydrological expertise to the $200 million Sri Lanka Strategic Cities Development Project and helping to identify investment projects for the City of Galle. The WET support, worth $29,000, is leveraged through $270,000 in Bank internal co-funding and a $300,000 grant from AusAID.

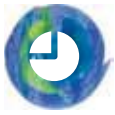
Regular flooding in recent years has resulted in social protest and high economic costs. The project aims to improve the living conditions of vulnerable households settled in flood-prone, low-lying areas. The city, parts of which lie below sea level, is in need of better stormwater discharge systems and improved drainage management. Key WET support in the selection of new projects will improve resilience and help the government accommodate the rapid pace of urbanization.

## Outcome 2: Knowledge and operational tools created, disseminated, and used

The WPP's publications and events introduce new research, findings and other knowledge from activities, and engage stakeholders on key topics and programs. The WPP measures results in this area by monitoring the likelihood that participants will apply new knowledge from an event to their work (see Table 3). Nine out of the eleven sub-indicators under this outcome have been met or are on track.

As of June 2014, 20 technical documents were published with WPP support. Web-based communications and dissemination efforts helped raise the visibility of WPP publications (see Table 4). Audiences from developing countries, an important stakeholder to the program's work, account for roughly a third of the overall WPP publication downloads. However, the program is not on track to reach the goal of 50 percent and will target dissemination efforts over the next year.

WPP publications are among the most downloaded publications in the World Bank water publications spectra. Over the past 16 months, out of the 81 top-downloaded publications, 27 (or 30%) were supported by the WPP. At any given time, half (51%) of the 10 top-downloaded publications in water were WPP publications. Moreover, WPP publications represented 2 out of the top 3 downloaded publications in water. These numbers show the popularity of WPP outputs, and indicate that the WPP products reach a large audience and are of good technical quality.



The WPP supported 26 events with over 1,000 participants

WPP publications represented 2 out of the top 3 World Bank water publications downloaded

### Table 3: INDICATOR B: Events and training supported by WPP

| Sub-Indicator | Target | Progress as of June 2014 |
|---|---|---|
| 1) Number of Participants (#) | 4,000 | 1,102 |
| 2) Percentage of Participants that indicate they are likely to apply knowledge in their work (%) | 70% | 51% |
| 3.1) Number of agencies/firms represented by Participants (#) | 200 | 205 |
| 3.2) Percentage of Govt. Agencies (%) | 60% | 49% |
| 3.3) Percentage of Private firms (%) | 40% | 51% |

*Case Study*

## APPLIED KNOWLEDGE – BEIJING ON GREEN WATER DEFENSE

Cities and towns across China face serious challenges in managing the effects of floods. Recent flood events have convinced the government to move away from traditional engineering approaches to more adaptive measures that integrate the qualities and strengths of nature. In 2013, the WPP and China's Ministry of Water supported a workshop on integrated flood risk management options for cities throughout China. Participants included decision makers and flood infrastructure planners and designers at the national, municipal, and basin levels. The international expertise shared during the workshop included a presentation on the Green Water Defense approach to flood screening and management, also funded through the WPP. The event has definitely had an impact on the way large cities think about and mitigate flood risk.

The 120 workshop participants rated the information and exchange platforms in the following way:

- 100 percent of participants indicated that they would recommend this type of forum to their colleagues;
- More than 90 percent of participants rated the quality of information presented as either 4 or 5 out of 5;
- 75 percent said the information was directly relevant to their work and their organization's needs, although most added measures would have to be adapted to local conditions;
- 77 percent of participants said they had learned about new flood risk management technologies during the workshop.

*Case Study*

## ENGAGING THE PRIVATE SECTOR – TRANSBOUNDARY WATERS

In commemoration of 2013 as the United Nations International Year of Water Cooperation, the WPP supported a High-Level International Conference on Water Cooperation in Dushanbe, Tajikistan, by convening a session entitled *Water Cooperation Creates Economic Benefits*. The World Bank assembled experts to present on the multiple benefits of transboundary cooperation, such as inter-sectoral cooperation at the basin level, use of geospatial technologies to assess water allocation, and cooperation among potable water users and agricultural water users. The information will help participants be better positioned to innovate in the way they design, implement, and monitor development programs.

Highlights of the event:

- 400 people attended the WPP-supported presentations at the high-level conference;
- Six government agencies and 30 private firms were represented;
- 80 percent of participants indicated they were likely to apply the knowledge learned in their work.

*Case Study*

## WORLD BANK FLAGSHIP - FOSTERING AN ACTIVE GLOBAL CONVERSATION ON THE WATER-ENERGY NEXUS

The WPP's **Thirsty Energy** initiative, as a flagship product, implemented a comprehensive communications strategy right from its inception. Its aim is to raise visibility of and build support for the initiative among an array of key stakeholders including country governments, global organizations, the private sector, NGOs, and civil society. The initiative was formally launched in January 2014. A large number of communication, advocacy and media engagement activities were conducted during and since the launch.

Thirsty Energy communications efforts were successful because they not only focused on increasing publication downloads but also on advocating for the importance of the topic through the right messaging. A communication and awareness package was created that includes a multi-section infographic that focused on explaining the relationship, challenge, impact and solutions to the water-energy nexus, a working paper as background on the topic, several blogs from World Bank experts and senior management, a brochure, and several tweets .

Communications efforts around Thirsty Energy moved beyond the web-presence to establish working groups of partners on key messages and leveraged partners' resources for communicating those messages. They also focused on capacity building in case-study countries and south-south knowledge exchanges.

In addition, very strong media outreach resulted in increasing visibility and in continuously reinforcing the initiative's brand identity and overall perception as a strong, necessary, and well-focused initiative.

Thirsty Energy data:

From January 17–31 (during and after the launch of the initiative), the online package received:

- Over 23,000 page views (an average of over 1,500 page views/day)
- More than 500 publication downloads
- Fareed Zacharia tweeted about Thirsty Energy, which reached over 500 million followers in Twitter


## Table 4: INDICATOR C: Web-based outreach and use of WPP Publications

| Sub-Indicators | Target | Progress as of June 2014 |
|---|---|---|
| 1.1) Downloads per document after announcement (#) | 300 | 692 |
| 1.2) Percentage of downloads from developing countries (%) | 50% | 31% |
| 2.1) Downloads per flagship document after announcement (#) | 2,000 | 1,721 |
| 2.2) Percentage of downloads from developing countries (%) | 50% | 21% |
| 3) Percentage of visitors of the WPP website that visit at least 2 pages (%) | 40% | 66% |
| 4) Average quality assessment scoring of WPP knowledge products by client country governments (and WET products scoring by Bank project teams) | 4 out of 5 | 4.6 |

*Case Study*

## CLIENT QUALITY ASSESSMENT – CONTINUITY FOR STRENGTHENING RESILIENCE

In August 2012, a flood in Niamey resulted in extensive damages and losses to Niger's infrastructure. The government of Niger requested assistance from the World Bank to strengthen the country's resilience through selected capacity development and flood risk management investments in targeted areas. The World Bank project aims at simultaneously addressing runoff responses from upstream catchments while reducing vulnerability to flood events downstream.

Risk reduction will require integrated flood management structures, sustainable land and water management practices, and land-use modifications in one (Sirba) or two (Sirba and Gouroubi) watersheds on the right bank of the Niger River, in order to reduce the potential damages from future flooding events in downstream urban municipalities and irrigated perimeters.

The government of Niger is proposing to reduce flood risks with the construction of two dams on the Sirba River and three on the Gouroubi River. WPP's WET service supported the World Bank team to devise a proposal that includes protection of each dam respectively by two upstream gabion thresholds. The efficiency and cost-benefit ratio of this proposed technical option will be scientifically evaluated and compared to other possible investments. As a result of the WET's groundwork, the government of Niger has decided to use IDA funds for a complete feasibility study to assess flood control options.

*"The WET consultant managed to establish a constructive dialog with the government of Niger, to demonstrate underlying factors related to the 2012 flood impacts, and to propose different scenarios for realistic solutions in light of limited capacity. The government was fully convinced by the WET approach, and has allocated IDA funding to undertake the recommended feasibility study for flood control."*

Richard James, Task Team Leader, Social, Urban, Rural and Resilience Specialist, World Bank

## Outcome 3: Plans and strategies designed and capacity-enhanced for improved WRM and service delivery

As of June, 2014, there were 28 WPP activities directly or indirectly (via supported WB projects) promoting the launch of a new plan or strategy for improved WRM and service delivery. Table 5 shows World Bank project teams' expectations regarding how these strategies and plans will be developed into long-term investments. Three of these five indicators are on track to be reached by the end of the program. However, the number of strategies accounting for competing water uses, and the number endorsed by clients are lower than expected. The WPP is looking to understand the low level of uptake in these areas to bolster demand during the last year of the program.

WPP activities also strengthen client institutional capacity to improve water security and manage climate uncertainties. Table 6 illustrates how local capacity has been enhanced (directly or indirectly) as measured through three sub-indicators. Due to the nature of the WPP—which influences projects with long life cycles—results for this indicator are mostly delivered in the long term. Therefore, table 6 also shows "planned" figures[3] (i.e. the target values expected to be reached at completion of the project) along with the latest available progress to give a sense of what is expected from influenced projects in the long run. When planned results are considered, three of the four sub-indicators are on track. The sub-indicator on early warning systems is off track but the program's global initiative on disaster risk management should yield more results for this sub-indicator in the coming year.

### Table 5: INDICATOR D: New plans and strategies promoted by WPP activities in client countries

| Sub-Indicator | Target | Progress as of June 2014 |
|---|---|---|
| 1.1) Number of non-water policies/strategies that incorporate water (#) | 10 | 9 |
| 1.2) Number of policies/strategies accounting for competing water uses (#) | 40 | 6 |
| 2.1) Number of policies/strategies endorsed by a client agency (#) | 30 | 6 |
| 2.2) Number of policy or strategy investment plans endorsed by clients (#) | 15 | 9 |
| 3) Budget Allocated for policy/strategy implementation ($) | 150 million | TBD |

3. The "planned" figures are the targets for agreed indicators that are set when a World Bank project is approved by the Board of Executive Directors. They are credible estimates of the expected results, provided by the team at appraisal stage. Project teams periodically report the progress (actual figures) for each indicator. Ideally, the final actual figure should match the planned one when a World Bank project reaches completion—unless a project has been restructured or cancelled.


Photo: Trung Son Hydropower Project site, Vietnam. Mai Ky/World Bank

*Case Study*
## HOW NON-WATER STRATEGIES INCORPORATE WATER

### *Hydropower: Getting NGOs and Industry on the Same Page*

Hydropower infrastructure can bring tremendous benefits to developing countries, but often entails significant environmental, social, and financial risks as well. In order for hydropower to be an acceptable, low-cost power source, projects need to be based on rigorous analysis and emphasize effective management of risks. They must also be implemented and operated responsibly.

The Hydropower Sustainability Assessment Protocol, developed through a consultative process with industry leaders, governments, and civil society, is a suite of tools designed to measure and guide performance in individual hydropower projects against globally applicable criteria.

The WPP funded the application of the Protocol for the Trung Son Hydropower Project in Vietnam. Conducted by a team of accredited assessors, it was the first application of the Protocol in a World Bank-financed project. Lessons from its application were subsequently compiled in a new publication to guide World Bank teams and clients on the use of the protocol to assess project preparation, implementation, or operation.

The Vietnamese government-owned utility has since requested further training on the tool and plans to conduct more assessments of its projects in the future. Globally, the World Bank hydropower

Pomegranate Farm. Tajikistan. Photo: © Gennadiy Ratushenko/World Bank

team is looking to broaden the applicability of the protocol from an auditing tool to being part of a larger approach to building capacity for country clients, helping governments improve the sustainability of their hydropower projects over time. The protocol has the potential to transform the way industry, government, and civil society convene around hydropower sustainability issues. Against this background, the Bank seeks to expand the reach of this innovative tool in developing countries by providing guidance to its clients.

## *Revamping Irrigation in Tajikistan*

A WPP grant-financed activity under the Tajikistan Irrigation Strategy Project assists the World Bank in prioritizing its irrigation and drainage (I&D) investment plans and strategies, and provide an analytical foundation for further dialogue between the government of Tajikistan, the World Bank, and development partners on potential assistance in the I&D sector. The grant supports the World Bank in preparing a strategy note on the I&D sector in Tajikistan (focusing on the newly established institutional framework for the sector), which includes the establishment of an I&D Agency and Water User Associations (WUAs); a review of the issues of low water productivity, to be tackled through a system of water charges and investments in technology; and a framework for the prioritization of irrigation infrastructure rehabilitation based on their economic and financial viability. The study is also expected to increase awareness of the importance of efficient and sustainable use of water.

## Table 6: INDICATOR E: Capacity enhancement

| Sub-Indicator | Target | Reached as of June 2014 | |
|---|---|---|---|
| | | Actual[1] | Planned[1] |
| 1.1) Early Warning Systems (EWS) installed (#) | 8 | 1 | 3 |
| 1.2) (Upon installation of EWS), relevant threat information is disseminated to stakeholders on a timely basis (Yes/No) | 90% (Yes) | 100% (Yes) | NA |
| 2) Operational water users associations created/strengthened (#) | 20 | 1,448* | 2,344 |
| 3) Government Agencies (#) with strengthened capacity to address: | 33 | 15 | 73 |
| 3.1) Climate change | 5 | | 45 |
| 3.2) Water Security | 8 | 0 | 16 |
| 3.3) River Basin issues | 20 | 15 | 12 |

Note: Sub-indicator 2 "Water Users Associations strengthened" includes small and large WUAs. A project in Indonesia where numerous small WUAs were strengthened resulted in outperformance of this sub-indicator.
[1] Results under "planned" are the targets established at the project's appraisal stage and expected to be reached upon completion; whereas results under "actual" are those results reached and reported in project documents as of June 2014.

*Case Study*

## STRENGTHENED CLIENT CAPACITY – A KYRGYZ FARMER'S ALMANAC

In the Kyrgyz Republic, the agricultural sector employs 50 percent of the workforce and contributes 30–40 percent of GDP. In 2009, crop production fell by more than 7 percent as a result of adverse weather events, demonstrating the importance of the farmers' ability to adapt to changing weather patterns. In 2012, the Bank approved a $6.85 million loan to eliminate continued food security vulnerabilities. Through the WET service, the WPP supports the Weather Information for Farmers (WIF) component of the project, which aims to strengthen the Kyrgyz Agency on Hydrometeorology by upgrading its outdated equipment and improving staff skills.

WET support is expanding the agency's current, publicly available, 1-day weather forecast span to 3-day forecasts; implementing an SMS-based weather forecast dissemination system for farmers; and installing a few small-scale meteorological stations for data collection on agricultural microclimates. Moreover, the WET is helping the agency to use the systems and data by training staff to better measure weather variables and to pinpoint developing weather patterns. As a result, once vulnerable farmers will soon be empowered to take the measures needed to protect animals and crops, thereby improving food security for the entire country.

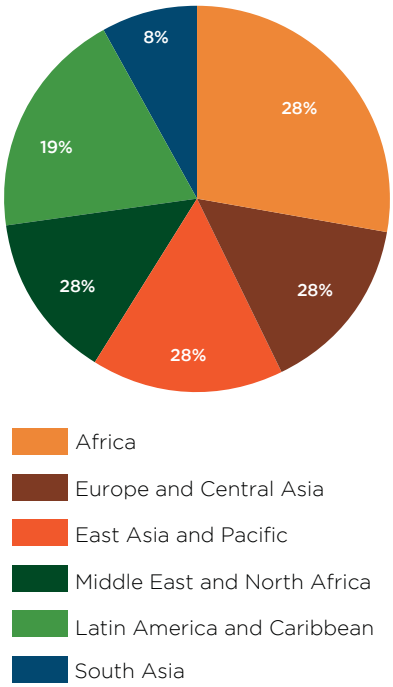
## Outcome 4: Downstream loans supported through improved design and implementation

WPP activities support improvements to projects in the World Bank's existing and future portfolio. As of June 2014, WPP, including WET activities, supported $10.2 billion in World Bank lending, of which 28 percent was for projects in Sub-Saharan Africa, the region with the largest share of WPP funds, followed by 19 percent in Latin America and the Caribbean, and 16 percent in East Asia and the Pacific (see Figure 2).

The leverage of WPP funding is measured through four sub-indicators (see Table 7). Three of them are on track, and information on the fourth is to be retrieved from final reports once activities have closed.

WPP activities also work to protect global public goods. Similar to indicator E, results for indicator G come from World Bank projects, and WPP support to these projects depends on demand from clients and task teams. Table 8 shows the seven sub-indicators monitored by the WPP, only two of which are on track to meet the planned figures.

Figure 2: WPP-supported World Bank lending across regions




The WPP leveraged $10 billion in WB investments

The WPP helped improve 70+ project designs

Table 7: INDICATOR F: Amount of Bank lending influenced & additional funding leveraged through WPP activities

| Sub-Indicator | Target | Progress as of June 2014 |
|---|---|---|
| 1) Value of (WB) investments supported ($) | 15 billion | 10.2 billion |
| 2) Total project value of influenced investments in which the Bank is involved ($) | 25 billion | 15.3 billion |
| 3) Value of additional investments (in which WB is not involved) ($) | 500 million | TBD |
| 4) Number of project designs improved through a WPP activity (#) | 100 | 71 |

*Case Study*

## INFLUENCING WORLD BANK PROJECTS – INVESTING IN CROP-WATER COMPETITIVENESS IN WEST BENGAL, INDIA

WPP funds were leveraged through a joint IFC-World Bank initiative to address the Water-Food nexus in India as part of the *West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP)*. The objective of the *WBADMIP* is to enhance agricultural production of small and marginal farmers in the project area, where average productivity levels are low compared with those of advanced agricultural states in India. The agricultural support services subcomponent influenced by the grant-financed activities is valued at $22 million. With the involvement of the IFC, the grant-financed activities aim to strengthen the impact of investment in agricultural support services by providing private sector knowledge and advice on developing value chains, improving market links, introducing market innovations, and improving community water management. The partnership is investing in a rapid assessment of opportunities for private sector intervention; crop-water economic studies to understand price trends and market potential for each commodity; and promotion of private sector investments in West Bengal. The interventions may also enhance the design of the next generation of World Bank-supported I&D programs, and may be replicated in other agricultural competitiveness projects.

*Case Study*
## IMPROVING PROJECT DESIGNS

### *Irrigation and Poverty in Madagascar*

WPP's WET service supported the technical review of a large-scale irrigation scheme that supplies water to a hurricane-prone area of Madagascar that primarily produces rice, vanilla, coffee, and cloves. The review was conducted as part of the Irrigation and Watershed Management Project, influencing lending in the amount of $6 million. The project aims to help reduce rural poverty through investments that increase productivity and agricultural income in three regions with high potential for agricultural development. At the same time, it seeks to promote the sustainable use of infrastructure, and soil and water resources. Agriculture remains the foundation of Madagascar's domestic economy, contributing approximately one third of the country's total GDP. As part of the project, a new diversion weir for the water system was designed. The WET reviewed this design, focusing on the hydrology and hydraulic design features of the structure. This resulted in detailed recommendations and a clear description of proposed design improvements.

### *Better Drainage Reduces Vulnerability in Beira*

The WPP contributed to the $120 million Cities and Climate Change Project through a WET activity supporting the preparation of a feasibility study on the rehabilitation of the drainage system in the City of Beira in Mozambique. Beira, a delta city located in a low-lying area, is considered the city most vulnerable to current and future climate risks in Mozambique, frequent floods being caused by the rising groundwater table and storm surges. The World Bank and several donors, including the government of the Netherlands, are undertaking a significant joint effort aimed at increasing Beira's resilience. The preparation of the drainage feasibility study for Beira will inform the implementation of measures to control floods and erosion, and help mitigate the effects of climate change.

Vegetable market. Madagascar. Photo: © Yosef Hadar/World Bank

## Table 8: INDICATOR G: Physical and natural assets protected

| Sub-Indicator | Target | Reached as of June 2014 | |
|---|---|---|---|
| | | Actual[1] | Planned[1] |
| 1) Coastline and freshwater under biodiversity protection (km) | 1,200 | 0 | 0 |
| 2.1) Area brought under enhanced biodiversity protection (ha) | 1 million | 0 | 0 |
| 2.2) Number of studies incorporating ecosystem valuation (#) | 7 | 0 | 0 |
| 3) Water Storage capacity increase ($m^3$) | 12 billion | 0 | 0 |
| 4) Aquifer pumping reduction ($m^3$/yr) | 20 million | 14.3 million | 20.6 million |
| 5) Areas provided with irrigation/drainage services (ha) | 2 million | 93,492 | 0.7 million |
| 6) Hydropower generated (MW) | 3,000 | 16 | 285 |

[1] Results under "planned" are the targets established at the project's appraisal stage and expected to be reached upon completion; whereas results under "actual" are those results reached and reported in project documents as of June 2014.

The fact that no results were achieved on several sub-indicators does not mean that the WPP did not support any World Bank projects related to natural asset protection. For example, WPP activities are supporting projects that plan to: generate 58 million cubic meters of treated wastewater for agriculture; reduce flooding and erosion on 7,600 hectares; and help countries adopt sustainable land management practices to benefit 1,850 hectares of land. However, while projects use a variety of indicators (including those listed above) to measure impacts on natural resources, the WPP results framework includes only a discrete number of indicators. Due to the demand-driven nature of the program, work in areas on biodiversity protection, ecosystem services and water storage capacity have not yet been approved under Phase II. There is a high likelihood that some, although not all, of these indicators will see progress by the end of the program. These results also indicate a need to reassess the results framework as a tool to capture a more comprehensive picture of the WPP's contribution to natural asset protection, and to keep rigorous targets while also ensuring that indicators are relevant for achieving the program's overarching objectives.

*Case Study*

## WATER SAVINGS – EFFECTIVELY MANAGING PRECIOUS GROUNDWATER IN SANA'A, YEMEN

Through its WET service, the WPP conducted a groundwater availability study for the city of Sana'a water supply, as part of the *Yemen Water Sector Support Project*. One of the development objectives of the project is to stabilize and reduce groundwater abstraction for agricultural use in critical water basins. The over-use and inadequate planning of groundwater resources is exacerbated throughout the Middle East, where the reliance on groundwater is higher than the global average. With limited data analysis of groundwater in the larger cities of Yemen, a practical approach was needed to understand the current situation and take the necessary steps in groundwater management. The WET conducted two deep aquifer water-availability studies and produced a technical note summarizing the approaches as well as the findings of the two studies. The findings touch on policy, institutional, and social implications of groundwater management in Yemen, among other areas. The WET's work may also provide valuable lessons and potential for replication by other cities in the region.

*Case Study*

## EXPANDING IRRIGATION–ACCELERATING SUSTAINABLE AGRICULTURE IN GEORGIA

Between 2006 and 2010, irrigation services collapsed in Georgia, as reflected in the widening agricultural trade deficit. By leveraging $50 million of IDA investment in the *Irrigation and Land Market Development Project*, the WPP grant-financed activity supports the development of a National Irrigation and Drainage Improvement Strategy, in cooperation with the Ministry of Agriculture of Georgia. The target area to be provided with improved irrigation under this project is set at 26,000 hectares.

The strategy will define the regulation and monitoring of I&D services; the development of I&D institutions for the management of infrastructure; water pricing and cost recovery; prioritization of investments in I&D infrastructure improvement and modernization; and increasing resilience to climate change through improved irrigation management. The National Irrigation and Drainage Improvement Strategy will be key to fostering sustainable growth in Georgia.

A report consolidating key findings and recommendations of the grant-financed activities will also inform the management of investments in institutional development and infrastructure under the IDA-financed project.

By supporting a $50 million IDA investment, the WPP activity is promoting a new National Irrigation and Drainage Improvement Strategy for Georgia

## Outcome 5: Vulnerability reduced via pro-poor and gender-sensitive interventions

The WPP monitors the number of people that benefited from WPP-supported Bank projects in two ways:

1) **Target Population:** people living in areas targeted by Bank projects through WRM-related interventions. The people in those areas can be seen as indirect beneficiaries of Bank projects.
2) **Direct beneficiaries:** people that directly benefit from Bank projects supported/influenced by the WPP.

Table 9 shows the number of direct beneficiaries and the number of people that are estimated to be reached upon completion of Bank projects. Two out of five indicators are met or on track. While the indirect beneficiary target has already surpassed, the program has reached only 30 percent of its intended direct beneficiaries. While the program will likely achieve its intended water supply and sanitation results, beneficiaries of WRM and irrigation and drainage programs are lacking. This is mainly due to the diversity of WRM project objectives, which range from increasing crop yields or farmer incomes, to extending irrigation networks or building flood protection structures. While such investments undoubtedly benefit large numbers of people, World Bank projects measure impacts on land and water resources - which are more easily quantified, and not included in the WPP results framework.

### Table 9: INDICATOR H: People benefiting from projects supported by WPP activities

| | | Progress As Of June 2014 | | |
|---|---|---|---|---|
| | Target | Actual (Number) | Women (%) | Planned (Number) |
| 1) Target Population in project area (#) | 0.5 billion | 1.2 billion | NA* | NA* |
| 2.1) Direct beneficiaries from the project (#) | 100 million | 12.9 million | 47.8% | 27.1 million |
| 2.2) WSS beneficiaries (#) | 35 million | 12 million | 52.6% | 17.4 million |
| 2.3) Water users with new/improved irrigation & drainage services (#) | 30 million | 0.7 million | 35.5% | 0.8 million |
| 2.4) Other WRM beneficiaries (#) | 35 million | 100,000 | 51% | 8.9 million |

Note: Direct irrigation and WRM beneficiaries (Sub-indicators 2.3 and 2.4) are almost never tracked in Bank projects. Often project teams use non-standard indicator definitions that cannot be aggregated. For instance, in lieu of sub-indicator 2.3, project teams are more likely to use percentages of farmers reached, crop yield or income increases.
* Results for sub-indicator 1 cannot be determined for planned beneficiaries given that these depend on population growth rate projections that cannot be captured in the results framework monitoring system.

*Case Study*

## MORE RELIABLE WATER SUPPLY – LISTENING TO BENEFICIARIES: WOMEN, MEN, AND THE POOR

WPP support was critical to the design of the $474 million *Lebanon Water Supply Augmentation Project,* which aims to improve water supply services for 1.6 million people through construction of the Bisri Dam. The completed assessments not only ensured a sustainable social and technical project design, but also generated new data that will be used in poverty-mapping exercises as well as future climate change assessments.

With regard to the project's social and economic aspects, a WPP-funded socioeconomic survey and study analyzed the project area's potential water users' willingness to pay for water, empowering the team to recommend the best volumetric tariff pricing policy. Extensive poverty and gender analyses were also included, and are summarized below.

**Poverty Analysis:** Through 1,200 household surveys and 12 focus group discussions, the team captured critical information on poverty statistics, which indicate that low-income households spend up to 15 percent of their income on water services. Poor households asked that they be allowed to pay the existing flat tariff in monthly installments rather than once a year, a billing system adjustment that the participating utility is now rolling out. Many participants also supported volumetric charges that require the installation of meters. The project will enable households to switch from poor-quality, private wells, to piped, public services that use renewable surface water.

The decrease in the total cost of water will yield immediate, positive benefits for the poor. Of the 506,000 people across the Greater Beirut and Mount Lebanon area living below the $4 per day national poverty rate, 460,000 reside in the project area. (Project Appraisal Document)

**Gender Analysis:** The focus groups assessed the differentiated needs of men and women throughout the process of resettlement and construction, as well as differences in demand for better quality and quantity of water. For example, women stressed the impact of low-quality water on children's health and hygiene, and damage to electrical appliances, which entail large coping costs ($400–$600 per year) during intermittent supply. Men, on the other hand, often reported having to miss work to fill the family water tank or purchase mineral water, and sometimes get involved in neighborhood disputes over water. This analysis of the water provision and allocation tasks of men and women has substantially informed the project's economic analysis and will be used in the design of future reforms.

**Climate Change Analysis:** WET designed a site-specific, hydrological model to study potential climate change impacts on the project area. Data gathered through remote sensing technology was used to determine a 4 percent reduction in inflow to the dam over the life of the project, compared with historical inflows of the last three decades. The model created for this project will also be used by national agencies to analyze climate change impacts on other catchment areas of the country.

## Outcome 6: Water mainstreamed in other sectors.

One of the WPP's main objectives is to ensure that WRM is mainstreamed into planning for other sectors, including WSS, urban, energy, agriculture, and environment. To ensure implementation across the World Bank, the WPP has proposed to formulate sectoral guidance notes for teams designing projects, detailing which characteristics should be taken into account to address resource constraints and impacts on water quality, and providing concrete suggestions on how to incorporate these into project designs.

As of June 2014, two new guidance notes are under development concerning the urban sector and the water-energy nexus (see Table 10). For several other sectors, initial discussions on guidance notes have started or are planned. Progress on two of the sub-indicators under Outcome 6 have been affected by the re-organization of the World Bank which has been ongoing for the most part of 2014. For instance, Sector Boards (sub-indicator 2) no longer exist as they did when the results framework was approved. The WPP will propose new sub-indicators once the new structure of the Water Global Practice is fully in place and new roles and responsibilities have been defined.

### Table 10: INDICATOR I: Cross-Sectoral mainstreaming of WRM

| Sub-Indicator | Target | Progress as of June 2014 |
|---|---|---|
| 1) Guidance Notes created including an assessment on improvements required in Operational Policies for specific sectors (#) | 5 | 2 |
| 2) Guidance Notes for specific sectors endorsed by respective Sector Board (#) | 4 | NA |
| 3) Agreement by Operational Policy and Quality Department (OPCSPQ) to move forward on modernization of Operational Policies for mainstreaming of WRM (# of sectors) | 2 | NA |

*Case Study*

## IUWM: WHERE RESOURCE MANAGEMENT MEETS SERVICE DELIVERY

The WPP is using knowledge generated in the *Science of Delivery in WSS* (see Box 3) to inform a new Guidance Note on mainstreaming WRM in WSS. The note is being prepared by World Bank and non-Bank utility reform specialists to harvest knowledge on integration, based on the experiences of the best urban water reform cases in the world. The team will use an Integrated Urban Water Management (IUWM) framework as a tool for integrating water resources planning into WSS projects, and is in the process of developing complementary documents and tools—checklists, diagnostic and analytical tools, and the like—to guide World Bank specialists during program design. By standardizing the World Bank's approach to mainstreaming WRM, the WPP will effectively improve the way practitioners think about water—future project designs will be more holistic and more sustainable.

By standardizing the World Bank's approach to mainstreaming WRM, the WPP will effectively improve the way practitioners think about water

New household connection, Morrocco. Photo: Arne Hoel/World Bank

# *Annex I: Financial Summary*

## Financial Summary WPP Phase II (July 2012 – June 2014)

This annex provides financial information concerning the second phase of the WPP on donor contributions, approvals, disbursements and commitments of activities, and program management and administration costs. This financial report covers a 24-month period, from July 2012 to June 2014.[4] Subsequent annual reports will follow the World Bank's Fiscal Year from July 1 to June 30. From Phase II inception until June 2014, a total of 94 activities (including 44 for WET) were approved under Phase II for a total amount of $14.4 million. This represents 67 percent of the total allocation approved under the different windows. When proposed activities and program management are included, the total amount increases to $20.7 million, representing 51.3 percent of the total available contribution to the Program. Most approved activities are currently under implemenatation—only four WPP and 18 WET activities had been closed by June 2014.

### DONOR CONTRIBUTIONS TO THE WPP

Total donor contributions to the second phase of the WPP amount to $36.4 million. In November 2013, the WPP welcomed the government of Austria as its fourth donor, joining its three existing donors: the Netherlands' Directorate-General for International Cooperation (DGIS), the United Kingdom's Department for International Development (DFID), and the Danish International Development Agency (DANIDA). As detailed in Table A1,

Table A1: Overview of Donor Contributions to the WPP Phase II

| Contributions to WPP | Donor Currency | Amt pledged (donor curr.) | Amt pledged (US$) | Amt received (US$) |
|---|---|---|---|---|
| Austria | EUR | 4,000,000 | 5,515,200 | 5,515,200 |
| Denmark (DANIDA) | DKK | 20,000,000 | 3,613,220 | 2,683,220 |
| Netherlands (DGIS) | USD | 12,500,000 | 12,500,000 | 12,500,000 |
| United Kingdom (DFID) | GBP | 12,000,000 | 19,001,850 | 15,800,250 |
| Balance Phase I Contribution | | | 4,558,165 | 4,558,165 |
| **WPP Total** | | | **45,188,435** | **41,056,835** |
| | Administration fee (2%) | | | (821,137) |
| | Investment Income | | | 139,029 |
| | **WPP Total Funds** | | | **40,374,727** |

4. To provide clear and accurate data, all WPP Phase II financials are included in this report. The second phase of the program officially started in July 2012, so this financial report includes figures from that day onward.. However, since donor funds were received in the beginning of 2013, most activities only started after the first quarter of 2013—only the WET services were continued from July 2012 due to the specific nature and high demand from the Regions, using remaining WPP Phase I funds.

the WPP donors pledged $45.2 million (including the $4.6 million remaining balance from WPP Phase I), of which $41.1 million had been received as of June 2014. After deducting the 2% administration fee and adding the earned investment income, this leaves an available balance of $40.4 million.

## OVERVIEW OF THE WPP ALLOCATIONS AND ACTIVITY PORTFOLIO

Since the inception of its second phase, the Program has disbursed $5.0 million through 94 activities. This amount increases to $7.7 million when commitments are included and to $9.1 million when program management and administration expenditures are taken into account. Table A2 and Figure A1 show the current allocations of the six regional windows and five global windows, the pipeline and approval status, and what has been spent to date under each window. The number of activities per window is also indicated.

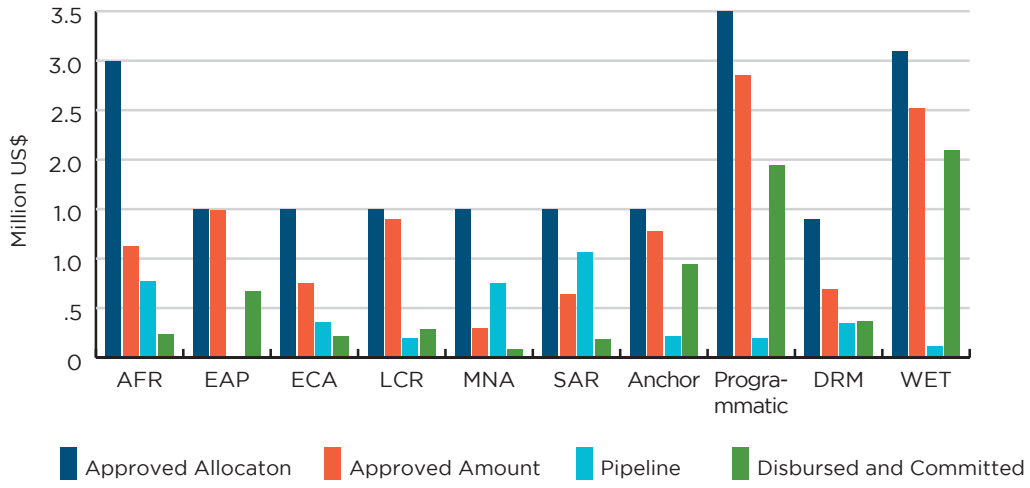
As can be seen in these figures, the global and East Asia and Pacific Region (EAP) windows show the highest level of progress in terms of percentage of the allocation approved for activities combined with the level of disbursements and/or commitments. The average activity size is approximately $200,000[5]–$173,000 for the regional windows, and $241,000 for the global windows (excluding the WET window, for which the average activity budget is about $32,000[6]). Compared to WPP Phase I, which saw an average activity size of less than $140,000,[7] the Phase II activities are significantly larger.

### Table A2: WPP Phase II Financial Overview (as of June 30, 2014)

| | Window | Approved Allocation | Pipeline Activities | | Approved Activities | | | | | % of Allocation Approved | % of Approved Disb/ Comm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Draft | Under revision | Approved Amount | Disbursed | Committed | Disbursed+ Committed | No. of Act. | | |
| REGIONAL | AFR | 3,000,000 | 180,000 | 592,545 | 1,124,975 | 112,911 | 126,000 | 238,911 | 3 | 37.5% | 21.2% |
| REGIONAL | EAP | 1,500,000 | - | - | 1,493,535 | 311,364 | 363,926 | 675,290 | 9 | 99.6% | 45.2% |
| REGIONAL | ECA | 1,500,000 | - | 362,272 | 756,000 | 100,770 | 120,497 | 221,267 | 5 | 50.4% | 29.3% |
| REGIONAL | LCR | 1,500,000 | - | 200,000 | 1,396,100 | 100,851 | 182,687 | 283,538 | 9 | 93.1% | 20.3% |
| REGIONAL | MNA | 1,500,000 | 615,000 | 135,000 | 300,000 | 79,597 | 4,607 | 84,204 | 1 | 20.0% | 28.1% |
| REGIONAL | SAR | 1,500,000 | 645,000 | 422,200 | 644,120 | 50,266 | 137,790 | 188,056 | 3 | 42.9% | 29.2% |
| GLOBAL | Anchor | 1,500,000 | - | 214,000 | 1,282,289 | 624,300 | 322,626 | 946,926 | 9 | 85.5% | 73.8% |
| GLOBAL | Programmatic | 3,500,000 | 150,000 | 49,500 | 2,852,151 | 1,164,631 | 778,294 | 1,942,925 | 8 | 81.5% | 68.1% |
| GLOBAL | DRM | 1,400,000 | 350,000 | - | 694,936 | 260,654 | 110,348 | 371,002 | 3 | 49.6% | 53.4% |
| GLOBAL | WET | 3,100,000 | 117,500 | - | 2,516,229 | 1,660,213 | 438,834 | 2,099,047 | 44 | 81.2% | 83.4% |
| GLOBAL | Dissemination | 1,300,000 | - | - | 1,300,000 | 556,395 | 87,148 | 643,542 | n/a | 100.0% | 49.5% |
| | **TOTALS** | **21,300,000** | **2,057,500** | **1,975,517** | **14,360,336** | **5,021,953** | **2,672,757** | **7,694,710** | **94** | **67.4%** | **53.6%** |

5. This figure includes only supervision budget related to the approved activities, not the entire window supervision budget.
6. This figure does not include WET management and administration costs.
7. This figure does not include activities under the WET/EST window.

Figure A1: WPP Phase II Financial Overview (as of June 30, 2014)



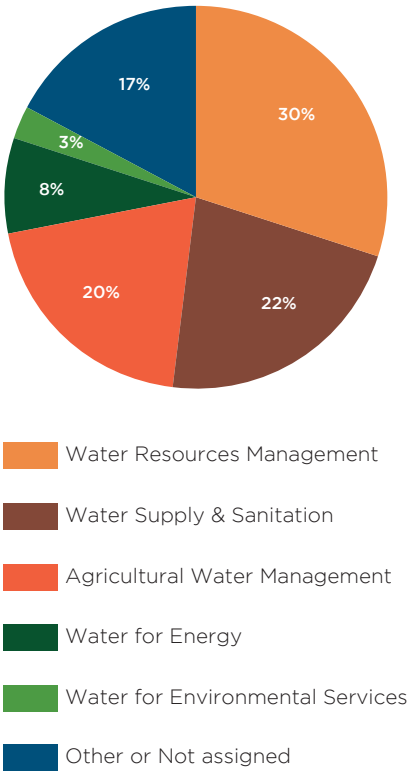

## OVERVIEW OF WPP FUNDING BY SUB-SECTOR

Seventy-two percent of the WPP Phase II funds are focusing on the three major water sub-sectors: WRM, WSS, and AWM (see Figure A2).

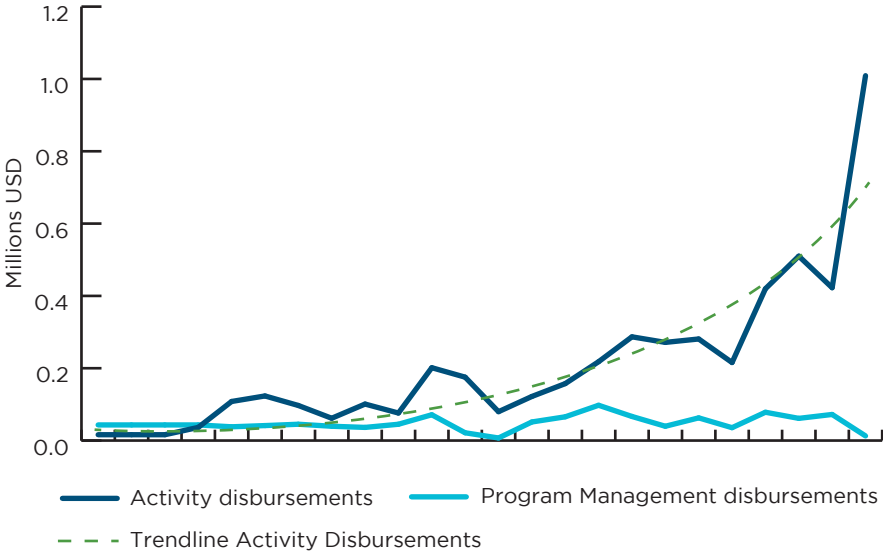
## PROGRAM MANAGEMENT AND ADMINISTRATION COSTS

Program Management and Administration (PMA) costs are costs incurred by the WPP Team and the World Bank's Technical experts who provide strategic advice and support. These include expenditures on general program management, monitoring and evaluation, and donor coordination, among others. Total PMA disbursements and commitments under Phase II from inception to June 30, 2014 are about 15 percent of total disbursements and commitments. While significantly higher than the WPP cap on PMA costs of 9 percent, the costs to date are justified by the program's front-end needs. As common in trust-funded programs, many initial expenses are primarily geared to program management and administration, related to the design and setup of the program structure and procedures. Also, although the official start date of the second phase of the WPP was July 2012, the main donor contributions arrived in the beginning of 2013. Only then could teams start preparing their window work plans, which are required before activities can be proposed. This is illustrated in Figure A3, which shows relatively low activity disbursements in the first year of the program, but exponential growth of this figure since July 2013. As this trend is expected to continue, PMA costs will decrease further relative to activity costs over the coming years. The program has set limitations in the financial systems to ensure that PMA spending cannot go over 9 percent of the total Phase II contributions.

## Figure A2: WPP Funding Across Sub-sectors




## Figure A3: WPP Activity vs. PMA Disbursements (July 2012 – 2014)



# *Annex II: Results Framework*

The key underlying assumption of the WPP results monitoring system is that WPP activities, offering strategic support to the design and implementation of much larger World Bank lending and knowledge projects, can indirectly contribute to (or "influence") their achievements towards the above described impacts and outcomes. Hence, the results framework is designed to capture and link results at two different levels:

1. *WPP activity level* (short-term output that stem directly from a WPP-funded activity such as funding, training, and knowledge dissemination)
2. *World Bank project level* (indirect, long-term results and impacts of the World Bank projects receiving WPP's support).

Results by indicator and sub-indicator are monitored through a database that captures progress at level 1 (WPP activities) and level 2 (Bank projects influenced by WPP activities) in a standardized and systematic way. The WPP Phase II database is the first of its kind for tracking the progress of global water programs in the World Bank. Therefore, while the database will enable results tracking for the program, it will also provide insight into the feasibility of tracking various indicators using Bank systems. The WPP agreed with its donors to treat this as a pilot database to be continuously improved as the program is implemented.

## Table A3: WPP Phase II Results Framework (Part 1 of 2)

| Objective | Poverty Reduction through Improved WRM and Service Delivery, and Climate-Resilient Green Growth | | | | |
|---|---|---|---|---|---|
| Impact | Climate-resilient green growth enabled through water-smart development | | | Vulnerable populations provided with an enhanced quality of life | |
| Outcome | WPP strategic funding mobilization | Knowledge and operational tools created, disseminated and used | | Plans & strategies designed and capacity enhanced for improved WRM and service delivery | |
| Indicator | (A) Strategic use of WPP activity funds | (B) Events and training supported by WPP | (C) Web-based outreach and use of WPP publications | (D) New plans & strategies promoted by WPP activities in client countries | (E) Capacity enhancement |
| Sub-Indicators & Targets | Target:<br>1) Percentage of the value of approved WPP activities in Africa (%) — 30<br>2) Percentage of the value of firm contracts (in programmatic window) adopting QBS procurement (%) — 50<br>3) Bank internal co-funding for WPP activities ($) — 10 million<br>4) External co-funding for WPP activities ($) — 1 million | Target:<br>1) Number of Participants (#) — 4000<br>2) Percentage of Participants that indicate they are likely to apply knowledge in their work (%) — 70<br>3.1) Number of agencies/firms represented by Participants (#) — 200<br>3.2) Percentage of Govt. Agencies (%) — 60<br>3.3) Percentage of Private firms (%)" — 40 | Target:<br>1.1) Downloads per document after announcement (#) — 300<br>1.2) Percentage of downloads from developing countries (%) — 50<br>2.1) Downloads per flagship document after announcement (#) — 2000<br>2.2) Percentage of downloads from developing countries (%) — 50<br>3) Percentage of visitors of the WPP website that visit at least 2 pages (%) — 40<br>4) Average quality assessment scoring of WPP knowledge products by client country governments (and WET products scoring by Bank project teams) — 4 out of 5 | Target:<br>1.1) Number of non-water Policies/ Strategies that incorporate water (#) — 10<br>1.2) Number of policies/strategies accounting for competing water uses (#) — 40<br>2.1) Number of Policies/ Strategies endorsed by a client agency (#) — 30<br>2.2) Number of policy or strategy investment plans endorsed by clients (#) — 15<br>3) Budget Allocated for policy/strategy implementation ($) — 150 million | Target:<br>1.1) Early Warning Systems (EWS) installed (#) — 8<br>1.2) (Upon installation of EWS), relevant threat information is disseminated to stakeholders on a timely basis (Yes/No) — 90% Yes<br>2) Operational water users associations created / strengthened (#) — 20<br>3) Government Agencies (#) with strenghtened capacity to address:<br>3.1) Climate change — 5<br>3.2) Water Security — 8<br>3.3) River Basin issues — 20 |

## Table A4: WPP Phase II Results Framework (Part 2 of 2)

| Objective | Poverty Reduction through Improved WRM and Service Delivery,and Climate-Resilient Green Growth | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Impact | Climate-resilient green growth enabled through water-smart development | | | | Vulnerable populations provided with an enhanced quality of life | | | |
| Outcome | Downstream loans supported through improved design and implementation | | | | Vulnerability reduced via pro-poor and gender-sensitive interventions | | Water mainstreamed into other sectors | |
| Indicator | (F) Amount of Bank lending influenced & additional funding leveraged through WPP activities | | (G) Physical and natural assets protected * | | (H) People benefiting from projects supported by WPP activity | | (I) Cross-sectoral mainstreaming of WRM | |
| Sub-Indicators & Targets | | Target: | | Target: | | Target: | | Target: |
| | 1) Value of (WB) investments supported ($) | 15 billion | 1) Coastline and freshwater under biodiversity protection (km) | 1200 | 1) Target Population in project area (#) | 0.5 billion | 1) Guidance Notes created including an assessment on improvements required in Operational Policies for specific sectors (#) | 5 |
| | 2) Total project value of influenced investments in which the Bank is involved ($) | 25 billion | 2.1) Area brought under enhanced biodiversity protection (ha) | 1 million | 2.1) Actual beneficiaries from the project (#): | 100 million | 2) Guidance Notes for specific sectors endorsed by respective Sector Board (#) | 4 |
| | 3) Value of additional investments (in which WB is not involved) ($) | 500 million | 2.2) Number of studies incorporating ecosystem valuation (#) | 7 | 2.2) WSS beneficiaries (#) | 35 million | 3) Agreement by Operational Policy and Quality Department (OPCSPQ) to move forward on modernization of Operational Policies for mainstreaming of WRM (# of sectors) | 2 |
| | 4) Number of projects designs improved through a WPP activity (#) | 100 | 3) Water Storage capacity increase (m3) | 12 billion | 2.3) Water users provided with new/improved irrigation & drainage services (#) | 30 million | | |
| | | | 4) Aquifer pumping reduction (m3 /yr) | 20 million | 2.4) Other WRM beneficiaries (#) | 35 million | | |
| | | | 5) Areas provided with irrigation / drainage services (ha) | 2 million | 2.5) For 2.1 to 2.4: Women (%) | 50 (*) | | |
| | | | 6) Hydropower generated (MW) | 3000" | 2.6) For 2.1 to 2.4: Vulnerable (%) | 35 | | |

* Note on targets for output (G) in figure 2: Some sub-indicators are new World Bank core indicators which will be tracked in 2012 and beyond. For some indicators, it is quite likely that only a couple of Bank projects will be tracking them, and the WPP cannot guarantee that it will be requested to support these projects. Due to these uncertainties, the WPP proposes to evaluate these indicators and targets after two years. The following assumptions were made to determine the targets:

1) Estimate based on assumption of 4 Bank projects with 300km each
2) 2.1) WPP Phase I: 1 project, 0.5 million ha; estimate for WPP Phase II: 2 projects
3) Estimate of TWIWA hydro team: 2 large storage projects per year, average 3 billion m3 storage per project. 50% support by WPP Phase II.
4) WPP Phase I: 1 project, 10 MCM; estimate for Phase II: 2 projects
5) WPP Phase I: 2 projects, 0.43 million ha; estimate for Phase II: 8 projects.
6) 2002-2012: 800 MW/yr in WB projects, FY11-12 1,600 MW/yr. FY13-16 estimate: 1,500 MW/yr, of which 50% supported by WPP.

(*) % female of total direct beneficiaries is a core sector indicator for Bank projects, which allows for detailed specification

WATER
PARTNERSHIP
PROGRAM

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Water