INNOVATION GOES MAINSTREAM
FISCAL YEAR 2017 AND FINAL PROGRAM REPORT

WATER PARTNERSHIP PROGRAM
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Acknowledgments:

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FOREWORD

Over the last eight years (2009-2017) the Water Partnership Program (WPP) has bolstered the World Bank and its partners’ ability to innovate in water. A $78 million global trust fund administered by the Water Global Practice (GP), the WPP helped client countries improve water resources management (WRM) and water supply and sanitation (WSS) services; and to enable climate-resilient green growth. The partnership added value to Bank operations by allowing space and time for critical innovations in each of these three channels, toward achieving national and global development goals.

The WPP’s three objectives were met primarily at the country level by responding to client requests for specialized technical assistance. During its second phase alone (2012-2017), the WPP brought improved designs, more accurate analysis, and more sustainable approaches to over 300 projects in 75 low and middle income countries in all regions. These projects, with a combined investment value of more than $26 billion, reached more than 62 million beneficiaries.

The program’s broader impact, however, was in global advocacy of best and better approaches to water management. The partnership brought together governments, academia, civil society, and the private sector to develop practical ways to address decision-making under uncertainty and to improve application of remote sensing tools, among others. It’s Water Expert Team catalyzed technical specialists at the right moment to shift a project’s trajectory.

And its influence went well beyond water. In anticipation of the endorsement of the Sustainable Development Goals (SDGs), the WPP strengthened client capacity to collaborate at the food-water-energy nexus. The partnership promoted the mainstreaming of water resources management in other sectors, helping energy, disaster risk management, urban and agriculture specialists to take water into account as part of their sector planning. By developing tools and guidance for non-water practitioners, such as through the Thirsty Energy initiative, the Water GP embraced the ambition and scope of the SDGs.

The WPP’s successes, summarized in this final program report, have helped the Water GP forge a path for the new Global Water Security and Sanitation Partnership (GWSP). Building on the work of the WPP, the GWSP will continue strengthening client capacity toward achieving the SDGs, most notably by prioritizing water’s role in inclusion, climate change, and fragility.

We would like to thank our partners for their commitment to building a more water secure world. The innovation and value added of the WPP would not exist without the steadfast commitment of its donors – the governments of Austria, Denmark, the Netherlands, Switzerland, and the United Kingdom. Their leadership has helped improve livelihoods and energize economies while safeguarding the environment on a global scale. We look forward to continuing this legacy under the GWSP.

Sincerely,

Maria Angelica Sotomayor
Practice Manager Global Programs
Water Global Practice
EXECUTIVE SUMMARY

Between 2009 and 2017, the Water Partnership Program (WPP) supported low-and middle-income countries around the globe in enhancing water security. Over eight years, the WPP invested in the lives of the poor by supporting the World Bank in its work with governments, civil society, the private sector, and academia across the entire water spectrum, including water supply and sanitation; water resources management (WRM); hydropower; irrigation; and water for the environment.

The $78 million invested by the WPP brought innovation, thought leadership, and just-in-time support to World Bank operational task teams (appendix A). WPP resources enabled task teams, otherwise constrained by static project budgets and timelines, to access global technical expertise at critical times during the project cycle. This dynamism helped clients achieve better and more sustained results through their investments in water and water-related sectors.

Because of these complementary inputs, more people in the developing world now enjoy better-quality water and sanitation services; their water resources are being managed more effectively and efficiently; and their governments have the tools to design and implement green growth strategies.

The Water Global Practice (GP) could leverage this partnership at a critical time in water’s history. First, the WPP spanned the world’s transition from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs). The WPP worked alongside countries as they planned to move from halving the number of people without access to improved water supply and sanitation (WSS) services (MDG 7) to providing universal and safely managed access to WSS services (SDG 6.1 and 6.2). Second, the WPP was ready and willing to support the Water GP’s water writ large approach, just as countries needed a new framework for reaching SDG 6 targets toward more sustainable WRM.

An independent evaluation of the program in 2016 concluded that the WPP not only occupied a niche in improving World Bank operational performance, but also enhanced its flexibility and managerial efficiency, yielding high value for money for its donors. Its higher efficiency can be attributed to the use of a comprehensive results framework that links activities to project outcomes. By the close of the program, WPP Phase II had met 64 percent of its initial targets. Its effectiveness, moreover, can be attributed to the willingness of the donors and the World Bank to modify and continually improve the program in line with changing client needs.

Between Phases I and II, the WPP evolved from a demand-driven fund to a proactive and strategic partnership that helped groups of countries facing the same WRM challenges, from climate change to disaster risk management (DRM). Thus, the WPP became a global knowledge platform, drawing lessons from across the world and feeding them back to different regions. By partnering with universities doing cutting-edge research, and agencies and private firms using and refining these tools, WPP activities have provided low- and middle-income countries access to the most advanced approaches for improving water security.

1. WPP Phase I ($23.8m) ran from 2009 to 2012, WPP Phase II ($54.5m) ran from 2012 to 2017.
The most critical contribution of the WPP was its influence on GPs other than water. Through the mainstreaming of WRM in other sectors, including urban, energy, and agriculture, the program had the reach and capacity to respond to clients’ demands for tangible ways to better integrate WRM considerations in their investments. Guidance notes on Integrated Urban Water Management, the Thirsty Energy Global Initiative, and a new Community of Practice on Drought Management are just a few of the ways in which the WPP provided systematic support to help other GPs “do water better.”

The value added of the WPP was in bringing innovation and forward thinking. From piloting new methods to replicating successes in other parts of the world, WPP helped clients approach complex problems in new ways, often from an integrated and multidisciplinary angle.

The WPP’s Water Expert Team (WET) was especially formative in identifying the future needs of clients and testing new approaches, while WPP investments in new global knowledge helped the GP consolidate its experiences and develop its thought leadership. For example, support for initial research on maximizing finance for development (a new approach endorsed by the G20) or the application of remote sensing tools in water has helped the GP remain relevant to client needs. Moreover, the interplay between these two—the experience gained and the knowledge generated (what the GP calls “knowledge in implementation”)—has culminated in best practices for WSS and WRM, including building institutions, selecting service modalities, and designing infrastructure under uncertainty.

Best of all, these contributions are lasting. The partnerships developed under the WPP have been institutionalized through the continuation of several major Global Initiatives. Similarly, the WPP’s seed funding for the Water GP’s Global Solutions Groups (GSGs) has generated five of the highest performing GSGs in the World Bank, which are each having a substantial impact on the quality of water operations and knowledge curation.

As its partners close the program, a new opportunity is on the horizon. Several of the WPP’s donors have already signed on to the Global Water Security and Sanitation Partnership (GWSP), the Water GP’s new multiblender trust fund that they, along with other government and philanthropic donors, cocreated. Key lessons from the WPP, such as those that surfaced during the 2016 WPP independent review, have helped determine the scope and structure of the GWSP. While certain characteristics of the WPP—such as its operational efficiency, varied modalities for task team support, and results monitoring—will be translated to the GWSP, the new trust fund will put more focus on areas like gender and inclusion, leveraging private finance, and sustainability of project outcomes.

WPP Contribution: Knowledge in Implementation

“WPP-supported knowledge products and processes are creating ripples of thought and use far beyond their intended impacts, influencing global discourse, national water practices and practitioner/expert work on the ground.”

– 2016 WPP Independent Review
MAP 1. WPP PHASE II ACTIVITIES WERE IMPLEMENTED IN 75 COUNTRIES

WPP PHASE II RESULTS (JULY 2012 – SEPTEMBER 2017)

- 313 activities approved, of which 188 by the WPP and 125 by the WET
- 246 Bank projects benefited from an improved design
- 5 Global Solutions Groups influencing global knowledge
- 75 countries across all six Bank regions supported (map 1)
- 62 million people benefited from improved water services or water resources management
- 323 Bank projects influenced, involving a combined loan amount of $26.6 billion
## LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AESIC</td>
<td>Spanish Agency for International Development Cooperation</td>
</tr>
<tr>
<td>AGWA</td>
<td>Alliance for Global Water Adaptation</td>
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<tr>
<td>ANA</td>
<td>National Water Agency (Brazil)</td>
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<tr>
<td>AralDIF</td>
<td>Aral Dynamic Information Framework Generation</td>
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<td>AWM</td>
<td>Agricultural Water Management</td>
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<tr>
<td>BIWSI</td>
<td>Blue Water Sustainability Index</td>
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<tr>
<td>BMD</td>
<td>Bangladesh Meteorological Department</td>
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<tr>
<td>CAB</td>
<td>Community Advisory Board</td>
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<tr>
<td>CAEWDP</td>
<td>Central Asia Energy Water Development Program</td>
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<tr>
<td>CILSS</td>
<td>Permanent Interstate Committee for Drought Control in the Sahel</td>
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<tr>
<td>COP</td>
<td>Community of Practice</td>
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<tr>
<td>COWS</td>
<td>Complex Water Systems</td>
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<tr>
<td>DBO</td>
<td>Design, Build and Operation</td>
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<tr>
<td>DRM</td>
<td>Disaster Risk Management</td>
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<tr>
<td>DTF</td>
<td>Decision Tree Framework</td>
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<tr>
<td>ESMAP</td>
<td>Energy Sector Management Assistance Program</td>
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<tr>
<td>ET</td>
<td>Evapotranspiration</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization (United Nations)</td>
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<tr>
<td>FCV</td>
<td>Fragility, Conflict, and Violence</td>
</tr>
<tr>
<td>GEE</td>
<td>Google Earth Engine</td>
</tr>
<tr>
<td>GIZ</td>
<td>Gesellschaft für Internationale Zusammenarbeit (German development agency)</td>
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<tr>
<td>GP</td>
<td>Global Practice</td>
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<tr>
<td>GSG</td>
<td>Global Solutions Group</td>
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<td>GWP</td>
<td>Global Water Partnership</td>
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<tr>
<td>GWSP</td>
<td>Global Water Security and Sanitation Partnership</td>
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<tr>
<td>HSAP</td>
<td>Hydropower Sustainability Assessment Protocol</td>
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<td>ICOLD</td>
<td>International Commission on Large Dams</td>
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<td>IDA</td>
<td>International Development Association (World Bank Group)</td>
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<td>IDB</td>
<td>Inter-American Development Bank</td>
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<tr>
<td>IDMP</td>
<td>Integrated Drought Management Programme</td>
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<tr>
<td>IEA</td>
<td>International Energy Agency</td>
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<tr>
<td>IFC</td>
<td>International Finance Corporation (World Bank Group)</td>
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<tr>
<td>IHA</td>
<td>International Hydropower Association</td>
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<tr>
<td>ISRBC</td>
<td>International Sava River Basin Commission</td>
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<tr>
<td>IWHR</td>
<td>Institute for Water and Hydropower Resources</td>
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<tr>
<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<tr>
<td>LIC</td>
<td>Low-Income Country</td>
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<tr>
<td>LRAP</td>
<td>Local Resilience Action Plan</td>
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<tr>
<td>m³</td>
<td>cubic meters</td>
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<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>MIC</td>
<td>Middle-Income Country</td>
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<td>MW</td>
<td>Megawatt</td>
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<td>NAPCC</td>
<td>National Action Plan for Climate Change (India)</td>
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<td>NRW</td>
<td>Non-Revenue Water</td>
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<td>NWRC</td>
<td>National Water Resources Committee (Myanmar)</td>
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<tr>
<td>O&amp;M</td>
<td>Operations and Maintenance</td>
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<td>PBC</td>
<td>Performance-Based Contract</td>
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<td>PPIAF</td>
<td>Public Private Infrastructure Advisory Facility</td>
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<tr>
<td>PPP</td>
<td>Public-Private Partnership</td>
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<tr>
<td>PSP</td>
<td>Private Sector Participation</td>
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<td>RS</td>
<td>Remote Sensing</td>
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<td>RWSS</td>
<td>Rural Water Supply and Sanitation</td>
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<td>SCAP</td>
<td>State Climate Change Action Plan (India)</td>
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<td>SDG</td>
<td>Sustainable Development Goal</td>
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<td>SE4ALL</td>
<td>Sustainable Energy for All (United Nations)</td>
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<td>SFLAC</td>
<td>Spanish Fund for Latin America and the Caribbean</td>
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<td>SIASAR</td>
<td>Rural Water and Sanitation Information System</td>
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<td>SIWI</td>
<td>Stockholm International Water Institute</td>
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<tr>
<td>SPI</td>
<td>Service Performance Indicator</td>
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<tr>
<td>TTL</td>
<td>Task Team Leader</td>
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<td>UFF</td>
<td>Unified Financing Framework</td>
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<td>UWSS</td>
<td>Urban Water Supply and Sanitation</td>
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<td>VGF</td>
<td>Viability Gap Financing</td>
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<td>WATCAP</td>
<td>Water and Climate Change Adaptation Plan</td>
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<td>WET</td>
<td>Water Expert Team</td>
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<td>WMO</td>
<td>World Meteorological Organization</td>
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<td>WPP</td>
<td>Water Partnership Program</td>
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<tr>
<td>WRM</td>
<td>Water Resources Management</td>
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<tr>
<td>WSC</td>
<td>Water Scarce Cities</td>
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<td>WSP</td>
<td>Water and Sanitation Program</td>
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<tr>
<td>WSS</td>
<td>Water Supply and Sanitation</td>
</tr>
<tr>
<td>WSWM</td>
<td>Water Strategy in the Western Mediterranean</td>
</tr>
<tr>
<td>WUA</td>
<td>Water Users Association</td>
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All dollar amounts are U.S. dollars unless otherwise indicated.
This chapter explains how the WPP has evolved to respond to the challenges of the 21st century, and its niche and value both within the World Bank and externally. The chapter also describes how the program functions and its main instruments, and provides a brief overview of the main outcomes of the program over its eight year history.

1.1 SDG 6: SAFEGUARDING WATER IN ALL ITS USES

Most countries have committed to eliminating poverty by 2030 through the achievement of 17 Sustainable Development Goals (SDGs). These goals redefine what it takes to end poverty at a time when new dynamics—such as climate change, urbanization, and globalization—continue to manifest themselves and compound in each country in a different way. Poverty is now seen as multidimensional sets of challenges, the causes of which are strongly interlinked. Now more than ever, the world is calling for bigger, more dynamic, and more integrated solutions.

As expected, the road to defining the SDGs was itself a challenge. Some countries at different levels of development had not achieved their 2015 Millennium Development Goal (MDG) targets. Others had reached their MDG targets at a national level, but still showed large disparities within their borders. The SDGs called for a new mindset for development practitioners and governments to set their sights on something bigger, more ambitious, and more cohesive.

For water, perhaps more than for any other sector, this amounted to a paradigm shift. The development community’s focus on water supply and sanitation (WSS) services during the MDG period was expanded to include water resources for multisector development. For the first time, water was recognized as a sector that both affects and is itself affected by the major drivers of and constraints to economic growth: food, energy, climate change, and disaster risk management (DRM), to name just a few.
The comprehensive nature of the Water SDG (SDG 6) maintains that management of water resources is critical for agricultural development (a huge driver of economic growth in low-income countries); water fuels energy generation; water and sanitation services are a necessity for growing cities; water is a priority for a healthy, productive life; and water is the foundation of a thriving ecosystem. This new definition brings both realism and optimism; it means that countries that prove to effectively manage their water resources will improve their chances of achieving many of the other 16 SDG targets as well.

1.2 THE WATER PARTNERSHIP PROGRAM: INVESTING IN THE POOR

From 2009–2017, World Bank client countries benefited from the $78 million Water Partnership Program (WPP), a multidonor trust fund supported by the governments of the Netherlands, the United Kingdom, Denmark, Austria, and Switzerland. The WPP, over its two phases, invested in the lives of the poor by supporting the World Bank in its work with governments, civil society, the private sector, and academia toward more robust solutions for water management.

WPP funding offered Bank task teams and clients a unique set of resources that shifted sector thinking, introduced new concepts, and piloted state-of-the-art methods that brought more water and sanitation to more people, ensured that water is sustainably managed, and helped countries develop and implement green growth strategies. Moreover, the program’s ability to evolve enabled the World Bank to respond quickly and effectively to the need for bolder solutions that could help clients meet SDG 6.

The WPP peaked in strength and influence during the bridge from the MDGs to the SDGs because the program mirrored much the same trajectory. As low-income countries worked hard to meet the MDGs by 2015, and then began the race toward the SDGs, the WPP...
was evolving its strategy for how best to support them on their path to success. The WPP gradually expanded its scope, moving from a demand-driven model to a program that anticipated future challenges by offering more supply-driven, tested solutions. At the same time, it became increasingly focused on the link between water resources and the services they enable.

Similarly, the program’s ability to take on new challenges enabled World Bank operations to reflect what was most relevant for low- and middle-income countries. When the WPP’s first phase began in 2009, the world was witnessing unprecedented floods across southern Africa and severe droughts in Latin America. Today, as the WPP closes its second phase, several countries in these regions are better prepared to deal with increasingly menacing and unpredictable water hazards, in part thanks to the timely, long-term support offered by the WPP and its partners. Similarly, the risks presented by climate change have only grown since the beginning of this decade, and countries ranging from Peru to Papua New Guinea have benefited from WPP support to improve their capacity to plan strategically for changes in the resulting availability and variability of water.

### 1.2.1 A Brief History: From Partnership to Platform

In 2009, the governments of Denmark, the Netherlands, and the United Kingdom committed $23.8 million to the WPP, initiating their first joint investment in water with the World Bank. The partnership built on the foundation laid by the government of the Netherlands in the previous decade, which saw two sequenced bilateral partnerships with the World Bank. The success of the Bank-Netherlands Water Partnership Program and the Bank-Netherlands Water Partnership afforded the new WPP a platform for expanding on progress made in key client countries while also promoting greater aid effectiveness.

WPP Phase I (2009–12) had dual objectives: helping World Bank client countries improve their water resources management (WRM) and their water supply and sanitation (WSS) services. The program funded over 200 activities in more than 60 countries, and these activities influenced and strengthened almost $11.5 billion in water-related World Bank financing. The funding afforded under Phase I was responsive to the real-time needs of client countries.

While WPP Phase II was being rolled out in 2012, the World Economic Forum identified “failure of climate change adaptation” as a major global risk. And when the governments of Austria and Switzerland joined the WPP, the partners were keen to add Climate Resilient Green Growth as a third objective of the program. Together, the partners also envisioned a more strategic use of funds, based on the adoption of a WPP Phase II Results Framework to measure the impact of the additional $54.5 million committed for a second, 4-year phase, which was eventually extended for an additional two years. The program closed in October, 2017.

The emphasis on water as a pathway to green growth gave the WPP a new impetus for having a strategic impact in the countries it supported. As the World Bank water operations portfolio grew, especially the value of its commitments to WRM projects, clients asked for additional support for complex water issues. In response, the WPP’s discrete interventions gave way to more comprehensive and programmatic approaches that allowed for multiyear engagements. The technical knowledge derived from these engagements started to flow in from around the world, providing a base from which the WPP could develop Global Initiatives to systematize the way clients studied new challenges and developed approaches to address them.
This broader, second phase (July 2012 – October 2017) also leveraged external water, energy, and climate platforms, facilitated public-private collaboration, and curated and disseminated new knowledge through the new Water Global Practice (GP). This expanded reach enabled WPP Phase II to influence 323 Bank projects involving a combined loan amount of $26.6 billion.

1.2.2 The Value of a WPP Dollar

Under Phase II (2012–17), the WPP achieved 64 percent of its targets (appendix B), from improving WSS service delivery to more than 50 million people, to producing 8 of the Water GP’s 10 most downloaded knowledge pieces. These results were achieved through WPP and Water Expert Team (WET) support to discrete activities in a given country, as well as through more robust investments over several years in a given region, basin, delta, or at a global scale. The efficiency of the WPP—in other words, its value for money—was assessed in the 2016 WPP Independent Evaluation, which is summarized here.

The WPP increased the quality of World Bank projects by making available new research and analyses, whose costs are generally not budgeted for in core project funding. New information is often needed to deal with the unforeseen complexity of a project or of external factors (new policies, etc.) that require a shift in strategy or design during a project’s implementation. Key changes can be made with relatively small amounts of targeted funding. The 2016 WPP Independent Evaluation concluded that the value for money of the program was high because funding enhanced the quality, knowledge, and sustainability of the supported projects for a relatively modest investment amount.

The Global Initiatives could leverage even higher value for money. For example, by using local rather than U.S. expertise, Thirsty Energy produced complex and innovative research at a lower cost. Moreover, the small investment required to incorporate water considerations into an existing energy model in South Africa will have exponential returns if governments follow the recommendations and opt for using less water-intensive technologies in future energy investments. In addition, the Initiative’s Private Sector Reference Group provides input and validation on key models and products from a wide range of experts at little to no cost.

Cost savings from other Global Initiatives are yet to be realized. The climate change Decision Tree Framework (DTF), for example, is likely to lead to significant efficiency gains in the future in several countries as project robustness is more clearly integrated into planning processes.
1.2.3 Institutionalizing the Impacts

The WPP, through its Global Initiatives, pioneered knowledge in implementation, which would become the core agenda of the newly formed Water GP (created in 2014). As a final step to fomenting a new, dynamic knowledge network within the Bank, the WPP provided the seed funding to start up five new Global Solutions Groups (GSGs). Each GSG supported a group of members that worked on a specific topic: Water Supply and Sanitation; Water Resources Management; Water for Agriculture; Water, Poverty and Economy; and Hydropower and Dams. Today, the GSGs in water are some of the best performing in the Bank, and they will continue to manage the technical quality of Bank operations under the new Global Water Security and Sanitation Partnership (GWSP). By supporting the systemization of the Water GP’s technical branch, and by gaining consensus of GP support on critical themes like climate change and DRM, the WPP has grown from a partnership piloting new ideas in select countries to a platform for sharing best practices throughout the world.

1.3 REPORT STRUCTURE

As this is the final WPP annual report, it highlights the last set of activities—those that closed during 2017 – rather than on all 313 activities. However, in some cases the report provides examples of longer-term programs at a country or regional level that may have spanned multiple years. Chapter 2 documents WPP’s support for the mainstreaming of water in other sectors – focusing on agriculture, energy, and resilience as three key sectors for 2017. Chapter 3 provides a review of where and how WPP added value through innovation, focusing on technical and financial innovations concluded in 2017. Lastly, chapter 4 wraps up WPP Phase II by providing an overview of the program’s cumulative results for 2012-17. It also reflects on the main lessons learned and the transition to the new GWSP.
CHAPTER 2: **MAINSTREAMING WRM IN OTHER SECTORS**
A major objective of the WPP from the outset was to help Bank task teams “do water better.” Because water permeates so many other sectors, the donors asked the WPP to work with other practices to ensure they had the tools and knowledge needed to account for water resources in their projects—whether in urban development, environment, energy, or agriculture. Properly accounting for the use of water in the development of other sectors is a key element of the green growth agenda, and helps ensure sustainability. As the program comes to a close, it is clear that the WPP has had a major and lasting impact on the way other sectors incorporate water in investment planning and project implementation. The Water GP’s portfolio in water resources management (WRM) has grown from 19 percent in 2014 to 22 percent in 2016, demonstrating how clients are looking for more support on WRM issues within the water sphere (figure 1).
This chapter demonstrates how WPP “mainstreamed WRM in other sectors” over the course of Phase I and Phase II, with an emphasis on those activities closing in 2017. Mainstreaming has taken on various forms since 2009. This report highlights mainstreaming of WRM in agriculture (2.1), energy (2.2) and resilience (2.3). For example, WPP’s long-term regional engagements in the Sahel (agriculture) and the Sava River Basin (adaptation) have enabled countries to come together for planning, learning, and investment. The experience gained through the funding of country-level activities with task teams in other GPs, such as the Social, Urban, Rural, Resilience GP, or through WET support in hydropower has helped the program pinpoint where the needs are. Global Initiatives on Water Secure Cities and Thirsty Energy have helped jump-start more systematic ways of influencing non-water practitioners. The Water GP has thus dedicated critical resources to shifting mindsets in other sectors, and this work will continue under the Global Water Security and Sanitation Partnership (GWSP) through the improvement and expansion of these mainstreaming models.

2.1 DROPS FOR CROPS

Water hits agriculture in two ways: on the rainfed field and on the irrigated farm. Water variability is a major factor in both types of production, and many low- and middle-income countries are looking to expand their irrigation and storage capacities to not only improve on-farm productivity, but also to mitigate the increasingly severe impacts of climate change.

WPP resources have been critical to planning the expansion of irrigated agriculture in Africa, from boosting the Sahel countries’ regional commitment to double the irrigated area by 2020, to providing regional best practices to task teams on sound project design. At the technical level, the WPP provides added value in the way

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**FIGURE 1: WATER GP PORTFOLIO BY SUBSECTOR, 2014–16**

Note: UWSS = Urban Water Supply and Sanitation; RWSS = Rural Water Supply and Sanitation; AWM = Agricultural Water Management; WRM = Water Resources Management.
task teams assess and analyze their investment options. For the WPP, introducing innovation in agriculture meant helping clients make the link between groundwater and drainage in Kazakhstan, land and water rights in Malawi, and irrigation and disaster in Haiti (box 1). Whatever the challenge, WPP resources have been critical to helping agricultural professionals do water better in a way that enhances both food and water security.

2.1.1 Balancing Land and Water Rights in Malawi

Agriculture is the backbone of Malawi’s economy, with more than 90 percent of the rural population being smallholder farmers. With little to no irrigation infrastructure, smallholders have to rely on a highly variable rainfall, particularly in the southern part of the country. Past efforts to develop medium- and large-scale irrigation to lessen the reliance on rainfed agriculture have had mixed results.

In 2017, Malawi put irrigation back on the development agenda through the $166 million Shire Valley Transformation Project funded by the World Bank. The project will increase agricultural productivity and commercialization for targeted households by providing reliable, gravity-fed irrigation and drainage services. One of the first challenges is to consolidate small and fragmented pieces of land currently held under customary land tenure, to realign plots in a way that is conducive to large-scale irrigation. Land and water rights must be formalized to safeguard equitable development, and that includes a significant change in policy and regulation for both land and water.

The WPP supported the project team in its efforts to strike a balance between optimizing the return on investment and ensuring the rights of smallholder farmers. The WPP’s funding availed technical assistance to the government in developing a plan for implementing land rights and land consolidation aspects of the project, based on best practices from around the world. The WPP also funded a study that compared existing models for land consolidation in similar irrigation schemes, and assessed a new land law and customary land bill for Malawi. The study, which is innovative in its explanation of the land-water dimension of irrigation, is also useful for other countries in Africa, as many of them face the same constraints to developing irrigated land (box 2).
2.1.2 Sustaining Myanmar’s Growth Engine

The Ayeyarwady is Myanmar’s largest river basin. It accounts for 60 percent of the country’s landmass, accommodates 70 percent of its population, and provides transports enabling 40 percent of its commercial activity. Myanmar has been isolated politically for decades, and its reemergence in the global economy is expected to lead to significant development, with large impacts on its water resources.

The World Bank’s first WRM operation in Myanmar in the past 20 years will invest in building new institutions and infrastructure that will enhance green growth. Due to the unique and pioneering nature of this project, WPP support was used to enhance the design of the project in several key ways:

• Facilitating high-level expertise to strengthen the analytical underpinnings of investment selection, building on prior WPP support under its Complex Water Systems (COWS) program;
• Supporting the government in ensuring that investments were designed in a basin-wide context that allocates water resources for a range of water uses and environmental services;
• Providing technical expertise on designing an information architecture for the National Water Resources Committee (NWRC);
• Drafting a new Water Law and developing a sector institutional framework;
• Improving the design of navigation activities and the modernization of hydrometeorological systems; and
• Providing targeted support to key industries, including agriculture and hydropower.

2.1.3 An Integrated Approach to Irrigation and Drainage Services

Irrigated agriculture in Kazakhstan is provided on large farms through mostly old and inefficient infrastructure, and the country’s natural endowments further reduce agricultural productivity. Soil, for instance, has low permeability and poor drainage properties; the high groundwater table leads to soil salinization, with detrimental effects on plant growth; and the climate is arid. These factors combined lead to low crop yields, and can, over time, force land out of production.

BOX 2. DOING IRRIGATION BETTER

Large-scale irrigation is complex and multidimensional. Good irrigation projects take time to prepare and require sociological, agricultural, engineering, economic, financial, and related policy efforts to be duly addressed.

The WPP supported a study on developing large-scale irrigation infrastructure in Africa, based on the experiences of Nigeria, Cameroon, and Burkina Faso. The diverse experiences of these three West African countries, each using World Bank financing and expertise, provide a rich knowledge base for other countries in the region to draw on when designing their own irrigation schemes. In an effort to improve the design and quality at entry of new World Bank projects, the study was translated into user-friendly guidelines, which are now available to task teams and clients, as well as a position note with recommendations for cost-effective design. As a result of this work, the Bank is considering the creation of a fund to assist African countries in developing irrigation projects.
The government of Kazakhstan is keen to raise productivity, generate rural employment, and increase food security through better irrigation. What’s needed to achieve this is a combination of investments that address the obstacles presented by both dilapidated infrastructure and poor natural conditions. Yet the government first needed a better understanding of how groundwater was affecting—and being affected by—the status quo.

The WPP funded a technical study for a large irrigation scheme in southern Kazakhstan. The $100 million Kyzylkum Irrigation System will be partly rehabilitated and aims to provide irrigation and drainage services to an additional 120,000 farmers.

The study used a holistic and innovative approach by incorporating a model for groundwater, a major constituent element of the overall water balance, to help design the rehabilitation program. The water balance computations determined irrigation requirements and the expected impact of the infrastructure on the water balance. Rather than focusing on partial fixes, the approach enabled the government to understand the comprehensive system improvements that need to be made, including those related to drainage management for the optimal level of soil moisture and salinity for crop production.

2.1.4 Green Growth in the Sahel

The Sahel is home to more than 80 million people, and one out of eight is food insecure. The six countries of the region—Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal—all fall within the bottom 17 percent of countries on the Human Development Index. Located between the Sahara Desert and the Sudan Savanna, the Sahel is characterized by an uneven distribution of water resources and subject to erratic rainfall. Over the last 30 years, the region has experienced multiple incidences of drought, locust outbreaks, livestock epidemics, and flooding.

Agriculture is the largest and most important sector in the region, employing between 60 and 85 percent of the workforce. However, agricultural production depends almost entirely on rainfed systems, leaving the sector highly dependent on agroclimatic conditions and vulnerable to climate risk. Drought poses the highest risk to agricultural output.

Expanding irrigation in the Sahel and investing in infrastructure to bring agricultural outputs to market would improve the livelihood of millions of people. In response to these needs, the six Sahelian countries came together in 2013 to sign the Declaration of Dakar on Irrigation, which calls for the doubling of irrigated area in the Sahel by 2020. This major irrigation push is aimed at building a diverse, competitive, and expanding irrigation sector based on the sustainable use of natural resources.

“The WPP provides funding for global goods and regional activities, filling a gap in the World Bank’s country-driven funding model.”

– 2016 WPP Independent Evaluation
WPP support for this initiative and its subsequent implementation was critical because regional cooperation is not generally funded through Bank budgets. WPP support included the following:

- **2013:**
  - Planning and funding of the Dakar Forum
  - Creation of a regional task force, coordinated by the Permanent Interstate Committee for Drought Control in the Sahel (CILSS), to help coordinate and implement the main objectives of the initiative underlying the Declaration

- **2014:**
  - Development of a regional Sahel Irrigation Initiative in line with the post-Forum agenda, which garnered political commitment from all six countries for new investments
  - Coordination of the various national-level interventions within the initiative
  - Technical viability assessments of proposed investments and analytical work that looked at profitability and sustainability elements of interventions, including:
    - Studies addressing the integration of WRM considerations in the regional economic development plan for irrigation
    - A WET assessment of surface and groundwater resource availability and need for resource protection, which influenced 12 Bank projects
    - Study on information and communication systems that led to design specifications for the use of remote sensing (RS) to fill data gaps, and the development of a regional irrigation portal.

Planning of investments made at the regional level are enabling synergies and economies of scale that will boost economic growth. WPP funding has made regional cooperation across six countries a less challenging task. WPP support for analysis of public goods, for example, which include the Sahel’s five transboundary aquifers, and the program’s ability to quickly mobilize funding and logistics for the Dakar Forum, are ways in which the WPP fills critical gaps that individual countries or Bank operations alone cannot address.
2.2 ENERGY GOES MAINSTREAM

Water and energy are two key inputs to economic growth that happen to be interdependent. However, water and energy infrastructure and planning are often developed in silos, without one sector accounting for the role of the other. As climate change alters the face of energy generation and the quality and quantity of available water, the WPP and its donors have taken a lead role in mainstreaming water in energy.

Rather than bringing the energy sector to the water table, the WPP supported initiatives that brought water experts to the energy table. By speaking the same language, the water sector is making major headway into changing the way energy experts think about their work. Most notably, the WPP’s Global Initiative on Thirsty Energy has worked at the national level to ensure that energy models incorporate water resources as a key variable, and the Hydropower Sustainability Assessment Protocol has been replicated across the globe to systematically improve project implementation. With the support of the WPP, the Hydropower and Dams GSG has not only been able to influence the Water and Energy GPs with this new thinking, but has also taken that experience to global networks such as Better Hydro (box 3).

**BOX 3. BETTER HYDRO, BIGGER GROWTH**

Better Hydro is a global initiative coordinated by the International Hydropower Association (IHA), with supporters across the globe. Better Hydro showcases proven good practice in sustainable hydropower, and contributes to the development of research and policy frameworks to support hydropower’s contribution to global sustainable development.

One of the main outcomes of the Better Hydro Initiative is a compendium of case studies launched at the 2017 World Hydropower Congress in Addis Ababa. Topic case studies focus on specific aspects of development, such as indigenous people, cultural heritage, economic viability, and water quality. The WPP, through its support of the Water GP’s Global Solutions Group on Hydropower and Dams, contributed to the knowledge base of Better Hydro, including documentation of the WPP-funded Hydropower Sustainability Assessment Protocol (HSAP) applications.
2.2.1 Sustainable Hydro

The Hydropower Sustainability Assessment Protocol (HSAP) is a global tool used to assess the sustainability of hydropower projects. The HSAP follows a consistent, globally applicable methodology in all stages of a hydropower project cycle and covers environmental, social, technical, and economic/financial aspects of a project. The World Bank Group has partnered with global representatives from social and environmental NGOs, governments, commercial and development banks, and the hydropower sector, represented by the International Hydropower Association (IHA), to develop, refine, assess, and disseminate the protocol. The assessments have been used in 20 cases to identify gaps and encourage governments to continuously improve their hydropower development. As an objective and globally accepted methodology, HSAP can help build stakeholder buy-in and attract the support of financial institutions to develop a project.

The WPP supported this collaboration through capacity building and dissemination of HSAP by developing implementation guidelines targeted to clients, including lessons learned and recommendations, as well as training at the country level and internally through the World Bank's Hydropower and Dams GSG. WPP support at the country level has also led to improved sustainability of hydropower projects and dam operations in Bhutan, Vietnam, and the Zambezi Basin.

2.2.2 The Future is Renewable

In Bhutan, the government aims to take its installed capacity from 1,600 megawatts (MW) to 10,000 MW by 2020. Contributing to this will be the 720 MW Mangdechhu Hydroelectric Power Project (MHEP), currently under construction. The WPP supported the government’s efforts to complete the project in a sustainable manner by applying the HSAP tool. The application of the tool demonstrated the tradeoffs between anticipated social and environmental benefits and identified some areas in which good practices could be strengthened into “best practices,” based on global experience.

Broader support on these ambitious national objectives led to a new World Bank study, which revealed that despite due diligence and a good regulatory framework, challenges remain in the assessment and mitigation of the impacts of hydropower in Bhutan, and in institutional capacity to enforce good practices. Subsequent WET support, focusing on institutional analysis of key stakeholders in the hydropower sector, enhanced the study’s recommendations for capacity building and improved policy, which are now being implemented through a $1 million project to implement national guidelines for hydropower in Bhutan.

"The value added of WET to other Global Practices (GPs) was qualified as particularly high, as Project Teams occasionally encounter water-related specific problems for which they lack expertise. WET provides the required technical answer, allowing the Project Teams to achieve their full potential."

– 2016 WPP Independent Review
WPP and WET join other partners, including the Stockholm International Water Institute (SIWI), the Japan International Cooperation Agency (JICA), and the Energy Sector Management Assistance Program (ESMAP), in supporting sustainable hydropower development at a national level. Other initiatives include updating the 2004 Master Plan, the Hydropower Policy, and the methods to determine environmental flows and assess fish diversity. The application of the HSAP thus has broader influence on future hydropower development, including the preparation of a $4 million International Development Association (IDA) investment in the upcoming Chamkharchhu Hydropower Project.

2.2.3 Safety in Numbers

The World Bank Group provides support to a substantial portfolio of new dam construction and dam rehabilitation projects among its 188 member countries. This portfolio has grown in recent years in response to the need to help countries address their growing energy, water, and food security needs. While the demand for new dam infrastructure is on the rise, the legal, institutional, and regulatory frameworks in most countries have not evolved quickly enough to ensure the safety of this new infrastructure.

Through the support of the WPP, the World Bank conducted a Comparative Study of the Legal and Institutional Frameworks for Dam Safety to address the legal and institutional challenges arising from this rapidly changing portfolio. The study is based on a series of country-level case studies as an update to a 2002 World Bank study and to complement the technical bulletin on “Regulation of Dam Safety – An Overview of Current Practice Worldwide,” recently issued by the International Commission on Large Dams (ICOLD) Dam Safety Committee.

The study provides a review of the legal and institutional frameworks of 51 countries, and analyzes the advantages and disadvantages of various types of dam safety frameworks relevant to the portfolio size and sector management arrangements of the respective countries. The study includes legal, institutional, regulatory, financial, and transboundary dimensions, and integrates a decision facilitation tool to help client countries navigate options available according to their respective jurisdictional conditions, dam portfolio, risks, etc. The findings of the study were disseminated in August 2017 at the Institute of Water Policy, where practitioners from the National University of Singapore helped to further refine the scope of the global dam safety study for a second iteration.
2.2.4 Thirsty Energy

Hydropower has historically been the meeting point for water and energy practitioners, and yet there is a huge potential for collaboration at a higher level—across all forms of energy that use water as an input. Thirsty Energy, a Water GP Global Initiative launched in 2014, assists countries in conducting water and energy planning in an integrated manner. A primary aim of Thirsty Energy is to develop methodologies and evidence-based operational tools that can help analyze potential tradeoffs. The initiative brings together leading agencies to test ideas and provide technical feedback.\(^2\) To this end, two major case studies were completed in 2016:

- **South Africa:** Working with the Energy Research Center of the University of Cape Town, the study highlights spatial aspects of water variability and its impacts on the overall cost of energy technologies. The model that incorporates water reduces water use by three quarters compared with traditional models. This is achieved by using dry cooling for energy generation, which traditional models would not have considered, thereby promoting more water-intense modes of production (figure 2). The conclusions will affect the design of future investments for the delivery of water to the energy sector.

- **China:** Working with the Institute for Water and Hydropower Resources (IWHR) and the Institute of Energy, Environment and Economy of Tsinghua University (TU) to establish a new, multiregion, “water-smart” energy system planning model: TIMES-ChinaW (box 4).

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2. Partners include the International Energy Agency (IEA), U.N. Water, U.N. Sustainable Energy for All (SE4ALL), the Food and Agriculture Organization (FAO), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the Stockholm International Water Institute (SIWI).
These cases will feed into the overall framework of the initiative, helping Thirsty Energy provide diverse clients with different options for analyzing the energy-water nexus in their respective countries.

2.3 WATER FOR RESILIENT CITIES

Mainstreaming WRM for climate resilience is another way in which the WPP supported clients in addressing their water-linked challenges. Cities face high potential social and economic costs due to water-related disasters. Beyond the loss of human life, floods and droughts can be especially devastating for human health and cause economic stagnation. Coastal cities in Bangladesh and Argentina need more sophisticated methods for forecasting such disasters to manage the associated risks, while India and Eastern Europe have to invest in water infrastructure to enhance resilience. In addition to supporting these efforts at the country and regional levels, the WPP provided funding for a global Water Scarce Cities Initiative aimed at creating a network of dry cities that can share experiences and lessons in drought management.

2.3.1 Forecasting Natural Disasters in Bangladesh

Due to its low-lying delta and flat terrain, Bangladesh is one of the most disaster-prone and climate change–vulnerable countries in the world. It is regularly ravaged by tropical cyclones associated with storm surges, floods, and severe thunderstorms. Losses associated with a single extreme event such as the 2007 cyclone Sidr were estimated at $1.7 billion, or 2.6 percent of GDP.

High-quality elevation data, which comprise both bathymetric (seafloor depths) and topographic (land heights) data, are fundamental to the accurate and reliable modeling of storm surge–driven flooding. Bangladesh lacks a single, authoritative source for such data, relying instead on local data sets stored across various government departments, which are not sufficiently accurate for flood modeling. This limits the Bangladesh Meteorological Department (BMD) in its ability to issue reliable, advanced meteorological forecasts that could help mitigate the effects of natural disasters.

BOX 4. DRAWING A LINE IN THE WATER

A study completed in 2016 and funded by the Thirsty Energy Global Initiative integrates water needs and water cost curves into an energy planning model to identify the impacts of various development scenarios across regions in China. The analysis explores China’s future water-energy nexus challenges and analyzes specific water, energy, economic, and environmental impacts that would result from different energy and environmental policies. Moreover, the analysis looks at the potential of China’s energy sector to meet the country’s “3 Red Lines” water policies—which have targets for water consumption, efficiency, and quality for 2015, 2020, and 2030.

The most important finding of the study is that most of the policies being pursued by the government to mitigate climate change impacts reduce both CO$_2$ emissions and water needs by the energy sector—with only a modest increase in energy system cost. The study also concludes that including the cost of supplying water in the government’s current policies helps contribute to the energy sector’s compliance with aspects of the “3 Red Lines” water policies. The study projects a 30 percent lower water withdrawal and a 48 percent lower wastewater discharge by the energy sector by 2030, as well as a 70 percent reduction in water withdrawals per unit of GDP.
The government of Bangladesh asked the World Bank for support in determining how forecasting could be improved, given the BMD’s limited resources and data constraints. A WET consultant recommended the use of satellite technologies to capture a large area of the Bangladesh coastline to the required degree of accuracy in a timely and cost-effective manner. The consultant also created a data acquisition strategy, beginning with a feasibility assessment. The results of this activity informed the $113 million Bangladesh Weather and Climate Services Regional Project, which aims to improve public forecasting skills by 25 percent, and provide 70 percent more farmers with agromet information services.

2.3.2 Hydromet Observation in Buenos Aires

The province of Buenos Aires and its cities have repeatedly been affected by droughts and floods, events for which the area is poorly prepared, given the lack of hydrometeorological data. To address the need for a new, systematic and coordinated approach for the collection and management of such information, the WPP supported the improvement of the province’s disaster risk monitoring capacities.

A team of international and national consultants (with specialties in institutional set-up, hydrometeorological observation, and WRM) was dispatched to develop a conceptual model for a hydrometeorological observatory.

While the government decided not to build the observatory, the province of Buenos Aires is using the concept to create a Hydrometeorological Office as part of the province’s Water Authority. This solution was deemed to be more in line with the government’s priorities and capacities, while still making substantial use of the knowledge generated.

The World Bank is also investing in the establishment of a hydrometeorological network of stations in the Salado River Basin (which covers 50 percent of the province) to transmit the necessary data to the new central office. The project will also provide hardware and strengthen institutional capacity within the Water Authority for the collection, analysis, and management of the data. The Inter-American Development Bank (IDB) is making complementary and coordinated investments in other basins in Buenos Aires province, which helps to broaden the use and reach of the new data capture and monitoring systems.
2.3.3 First Indian State Accesses Green Climate Fund

Odisha is India’s eighth largest state and, with nearly 500 kilometers of coastline, at high risk for water-related disasters. In 2010, it was also one of the first states to formulate a State Climate Change Action Plan (SCAP), based on the National Action Plan for Climate Change (NAPCC).

The World Bank has been providing technical assistance to implement the SCAP’s mitigation activities, working with the departments of environment and forestry, steel and mining, fisheries, water management, and urban development, as well as the Odisha Pollution Control Board and the Odisha Disaster Risk Management Agency Key.

The WPP supported an updated SCAP for Odisha for the period 2015–20, along with an implementation strategy for the state. At the municipal level, WPP funding supported Bhubaneswar and Cuttack, two cities facing rapid urbanization rates and on the verge of outgrowing their respective development plans. WPP-funded Local Resilience Action Plans (LRAP) (box 5) included hazard risk assessments, which showed that both municipalities were highly vulnerable to cyclones, urban flooding, heat waves, and earthquakes. Several structural and nonstructural measures were recommended to improve urban resilience.

WPP’s impact, which complements other funding for SCAP implementation related to renewable energy investments, has been critical. Odisha became the first state to prepare a stocktaking report of the SCAP for the period of 2010–15 and to be granted access to the Green Climate Fund. Odisha also became the first state to rank its pollution-intensive industries under an Environmental Compliance Assessment, Monitoring, and Rating Program. WPP funding played a critical role in increasing awareness among the targeted industries of climate-friendly actions, and in improving capacity for data collection, monitoring, and reporting. Furthermore, Bhubaneshwar was ranked 1st among 20 cities selected under the Smart Cities Initiative (for piloting interventions) by the government of India.

**BOX 5. INNOVATING FOR LOCAL RESILIENCE**

Where the development of master plans and disaster management plans for urban areas used to be seen as two separate activities, a Local Resilience Action Plan (LRAP) merges them into a single planning tool aligned with a city’s vision and growth aspirations. The objective is to outline pilot programs for low-carbon, climate-resilient growth. The LRAP development process includes extensive consultations with stakeholders, an evaluation of ongoing projects, quantitative risk assessments, and downscaled climate change modeling to identify risks. In the two WPP-supported LRAPs, the tool yielded priority interventions for improving urban resilience to flood and cyclone risks in these cities—through integrated flood management and resilient urban planning and development.
2.3.4 Adaptation Transcends Boundaries

The Sava River Basin, home to over 8 million people, covers considerable areas of Bosnia and Herzegovina, Croatia, Montenegro, Serbia, and Slovenia, as well as a small part of Albania. Due to its transboundary nature, the Sava River holds great importance for the economic and social development of the region.

The International Sava River Basin Commission (ISRBC) is an intergovernmental agency for basin planning and strategy development. In recent years, as the basin has become more sensitive to climate change, with more intense spring floods and summer droughts, the ISRBC and member state institutions have had to improve regional coordination on adaptation planning.

Between 2009 and 2014, the WPP has continually supported ISRBC with key inputs into its Water and Climate Change Adaptation Plan (WATCAP), which is a tool to inform government policy and outline approaches to adapting WRM, planning, and operations to the forecasted impacts of climate change. The WATCAP bridges a knowledge gap between climate change forecasts for the basin and the information needed to make decisions on investment projects.

WPP support for the WATCAP was provided across the program’s two phases, as follows:

- **WPP Phase I: 2009–12**
  - Characterization of climate scenarios using global and regional circulation models
  - Creation of hydrological model and a simulation of the basin’s response to the scenarios
  - Recommended adaptation measures and guidance notes for various sectors and risks: navigation, floods, hydropower, and agriculture

- **WPP Phase II: 2012–15**
  - Inputs provided to WATCAP, based on the above work
  - Regional consultation workshop to develop recommendations for investments
  - Training on modeling tools to enhance riparian country capacity for using WATCAP
  - Production of a Water and Climate Adaptation Toolkit for mainstreaming adaptation and climate resilience in WRM and planning
  - Endorsement of WATCAP at ministerial meeting of the parties of the ISRBC

The long-term WPP support enabled continued stakeholder dialogue over this critical period of WATCAP development and culminated in a series of tools available to the ISRBC and its member states that will support broad decision making on adaptation measures. The World Bank is now providing follow-on technical assistance for a joint flood management project for the basin and joint action plans, which will enhance regional cooperation on flood risk management, sustainable tourism, and climate adaptation. The GWSP will continue with these efforts under a proposed Water Security in the Save River Basin in the Western Balkans Project.
2.3.5 Scarcity and the City

The World Bank’s Water Scarce Cities (WSC) Initiative, initially funded by the WPP, works to reinforce awareness of integrated approaches to managing water resources and service delivery in water scarce cities.

The initiative aims to replace conventional silo approaches to addressing water scarcity impacts, which are insufficient for the increasing complexity seen today in urban centers across the globe. WSC promotes an integrated water paradigm that asks client countries to use vertical cooperation between agencies at the basin scale and horizontal cooperation between agencies involved in sanitation and drainage services, solid waste management, and urban development.

The WSC Initiative has three objectives, each capitalizing on the diversity of approaches taken to adapt to and mitigate water scarcity:

- Providing a toolbox and strategies for cities to support water resilience with knowledge products that highlight integrated water solutions;
- Creating stronger connections between water scarce cities and sharing solutions by providing a platform for practitioners and experts, as well as for global thought leaders and institutions; and
- Supporting water scarce cities through technical assistance for new water management approaches, technological advancements, and policy practices.

The WSC Initiative has already facilitated the sharing of lessons from Marakech to Malta to California on topics such as aquifer recharge, non-revenue water, wastewater reuse, and diversification of water resources. For example, in May of 2017, the WSC partnered with the 5 + 5 group for the Water Strategy in the Western Mediterranean (WSWM) to hold a Regional Water Scarce Cities Workshop in Casablanca, Morocco. The workshop inspired and motivated over 40 participants from the Western Mediterranean region and beyond to explore connections between their water security and urban resilience experiences.
The WPP’s primary added value has been bringing innovation to the right place at the right time. Innovation is piloting new methods and approaches that save time or resources. Innovation is translating a successful pilot to another region or country, and tailoring it to the local context. But innovation can also simply mean giving practitioners and teams the time and space they need to think ahead, and to plan well for an uncertain future. The value added of innovation is that it generates new ways of thinking, allowing for a better, more robust, and more integrated approach to a complex challenge.

At the beginning of the WPP, discrete interventions helped a single task team manage a specific project risk or challenge. The WPP’s Water Expert Team (WET) was especially formative in identifying the future needs of clients and testing new approaches at critical stages in the project cycle. By the end of WPP Phase II, the most critical interventions had been scaled to a regional level, replicated in another part of the world, or used as the foundation for one of several Global Initiatives. This chapter demonstrates how WPP catalyzed innovations (where and what types of innovation) and provides select examples of unique innovations, including narrow and broad interventions, across both Phase I and Phase II.

96% of task team leaders of WPP activities either “agree” or “strongly agree” that WPP’s innovative activities represented essential inputs to their projects, such that they could not have been pursued through standard World Bank work.
3.1 WHERE AND HOW WPP ADDED VALUE

WPP support allowed task teams to improve project quality by providing critical inputs at key junctures of four phases of the project cycle (figure 3). WPP funds were most notably used during identification, preparation, and implementation—briefly described here and in figure 3:

- **Identification**: The phase in which World Bank projects are aligned with a country partnership strategy or framework developed jointly by the Bank and the client. During identification, analytical work helps identify the project design with the highest impact, and basic project elements are outlined.

- **Preparation**: This phase includes feasibility studies, engineering and technical designs, and stakeholder consultations—all of which are conducted by the client under the Bank’s supervision.

- **Implementation**: In this phase the project is actually implemented—by the client, using project funds (from the World Bank and other sources). At this stage, the Bank’s task team provides technical assistance and support.

**Note**: GP = Global Practice; GSG = Global Solutions Group; WET = Water Expert Team.
3.2 TYPES OF INNOVATION SUPPORTED BY THE WPP

As a knowledge curator and incubator, the WPP’s main innovation, according to task team leaders (TTLs) of WPP activities, was piloting new approaches and methods, followed by: replicating proven approaches, adapting best practices to a lower-income country, and pursuing innovative partnerships (figure 4).

This chapter summarizes select activities that comprise one of two types of innovation—technical and financial—most of which closed in 2017.

- **Financial Innovation:** To help countries meet the SDGs related to water supply and sanitation (WSS) services, the WPP supported financial innovation at the country and global level by encouraging governments and service providers to mobilize domestic finance, a relatively large shift in the development mindset on global public goods.

- **Technical Innovation:** To build technical systems for better water resources management (WRM) and WSS, the WPP supported the piloting of new tools and methods that use larger and more reliable datasets, which allow more accurate forecasting, modeling, and mapping. Under WPP Phase II, this technical innovation was scaled up through three notable Global Initiatives—on a Climate Change Decision Tree Framework, Remote Sensing, and Disaster Risk Management (DRM).

![FIGURE 4. SURVEY RESULTS: TYPES OF INNOVATION SUPPORTED BY INDIVIDUAL WPP ACTIVITIES](source: 2016 WPP Independent Evaluation, based on the responses of 55 TTLs of WPP activities.)
3.3 FINANCIAL INNOVATION: TOWARD ACHIEVING THE SDGS

Public funds are estimated to cover just 15 percent of what countries need to reach the targets for SDGs 6.1 and 6.2, which aim for universal access to safely managed WSS services by 2030. These targets are unlikely to be met without tapping into different and more creative financing mechanisms. Bank client countries have to make more efficient use of existing public resources, and subsequently enable well performing service providers to access financing in commercial markets. The approach will allow for reallocation of scarce public funds to other priority sectors, such as rural development or sanitation, which cannot access finance on their own. The WPP supported the piloting and scaling up of financial innovation in the water sector to help service providers attract new sources of finance. At the regional level, the WPP has worked primarily with teams across Latin America to identify ways for service providers to save costs, with the long-term goal of mobilizing commercial finance.

At the global level, the WPP supported the World Bank-wide effort to advocate a “mobilizing domestic finance” principle to de-risk private investments and crowd in new sources of finance toward meeting the SDGs in 2030. As such, several of the WPP-funded activities covered in this chapter will be continued or scaled up under the Global Water Security and Sanitation Partnership (GWSP). The latter trust fund will support task teams working with clients in designing innovative transactions and further preparing municipalities and service providers to access domestic commercial finance on their own.

WPP support was critical for the Water GP to back the broader promotion of global research and tools to expand opportunities for private sector participation (PSP) in service delivery. In 2017, this included the curation of several advocacy and knowledge pieces promoting the use of commercial finance in WSS and a learning series for Bank staff on new methods promoting financial innovation in water (box 8). The WPP also supported the GP’s work with Bank procurement teams to standardize the process for Design-Build-Operate contracts in WSS, which will help clients and task teams better understand the requirements for private sector participation in the building of water treatment infrastructure.

3.3.1 Using Public Funds More Efficiently

Mega Savings for a Mega City

In Mexico City, 30 percent of the population is living below the poverty line, many in slums that lack formal access to adequate WSS services. Many others are served only intermittently, while 42 percent of the water entering the system of Mexico City’s Water Utility (SACMEX) leaks out, leading to losses in billable revenues, which only cover three quarters of the utility’s operating costs. As a result, Mexico Valley’s aquifer is being overexploited.

The proposed $120 million Mexico City Water Supply Improvement Project aims to improve the efficiency, quality, and financial performance of the water supply service in Mexico City. To enhance performance, Mexico City and SACMEX want to leverage private sector expertise and incentives through Performance-Based Contracts (PBCs), with which they have had limited success in the past. Fortunately, successful PBC contracts for non-revenue water (NRW) reduction and service quality improvement have been implemented in Colombia and Brazil.
The WPP supported a 5-day knowledge exchange between a delegation from Mexico City and water utility representatives from the cities of São Paulo and Bogotá. The delegation from Mexico was exposed to the details and processes followed while designing PBCs similar to the one they seek to implement. This allowed Mexican officials to learn from peers at the Bogotá Water Utility (EAB) and the São Paulo Water Utility (SABESP) how to define the concept and scope of PBC contracts as well as how to create a compensation scheme that translates into the right incentives and promotes the right risk-sharing arrangement between the public and private sector. Other topics for the knowledge exchange included the bidding process and supervision arrangements; special attention was given in this context to what worked and what failed when implementing PBCs.

Giving the delegation insight into the details and processes used by their peers strengthened their capacity to design and manage PBCs for better water services. Mexico’s PBC bidding documents have since been revised to incorporate some of the best practices and lessons learned. This work will help improve the water supply service in Mexico City so that a more efficient service can also reach the population living in poor areas of the city currently facing intermittent supply.

**Waste Stream or Revenue Stream?**

Estimates suggest that over 80 percent of the world’s wastewater is released into the environment without adequate treatment, degrading human and environmental health. Moreover, the lack of treatment means that the potential benefits of wastewater—a sustainable source of energy, water, nutrients, and other useful by-products—are not captured or used. Wastewater reuse offers a double value proposition in cases where, in addition to the environmental and health benefits of treating wastewater, financial returns are also possible when using wastewater by-products.

The WPP supported the creation of a new framework for wastewater planning and financing that aims to improve the assessment of tradeoffs between water quality, resource recovery, and wastewater treatment within a river basin. The program, which began in Latin America and has expanded to a global audience under the GWSP, promotes the prioritization and design of investments in the context of a circular economy in which wastewater is considered an asset and a resource rather than a liability. This work complements other WPP-funded activities in the region that focused on cutting energy costs, which are generally the largest operational cost for a given WSS service provider (box 6).

### BOX 6. WPP SUPPORT TO LATIN AMERICA ON IMPROVED ENERGY MANAGEMENT

- Introduced energy conservation measures and non-revenue water (NRW) reduction activities during the technical design review of the Colombia Pacífico Infrastructure Project;
- Advised the Espírito Santo State water company (CESAN) in Brazil on ways to improve energy efficiency and energy generation from wastewater treatment plants during the design and operational phases of an ongoing Bank project;
- Published “Energy Efficiency in Water and Wastewater Utilities”, jointly with the Energy Sector Management Assistance Program (ESMAP);
- Published a feasibility study for the installation of solar panels in rural water supply systems located in the semi-arid region of Brazil, which led to two pilot projects in two rural communities in Ceará; and
- Carried out a Regional Energy Management Workshop as part of the annual water engineering association (ACODAL) conference in Colombia, attended by 140 water utility staff from 9 countries.
The initial phase of the program offered a review of existing experiences within and outside the Bank. Case studies on South Africa, Mexico, the United States, and Chile provide valuable insights and will be part of a strategic communication campaign to be launched next year, along with infographics showing the potential benefits of resource recovery in wastewater treatment plants. The new business models identified through case studies use wastewater as a resource and demonstrate how both technical and economic efficiency gains can promote a more competitive, financially healthy sector. The initiative receives cofunding from the Public Private Infrastructure Advisory Facility (PPIAF), which will help strengthen private sector participation in the financing and operation of new investments using this business model.

3.3.2 Leveraging Private Finance and Expertise

Latin America Pioneers PPPs for Irrigation

Private-Public Partnerships (PPPs) are used in the irrigation sector to increase private capital investment in infrastructure and improve performance of operations through private sector know-how. Operating through contracts between the private and public sector, PPPs offer opportunities for the sharing of investment costs, risk, and execution of operations. In Latin America, some countries (Chile, Brazil, and Peru) have recently pioneered PPP mechanisms, while others (Mexico, Paraguay, and Uruguay) are looking to explore such opportunities.

To better understand the benefits and challenges of PPPs, the WPP supported a regional exchange platform dedicated to building knowledge and sharing experiences around PPPs in irrigation in Latin America. The platform is a space for dialogue on new projects between public institutions managing PPP projects, private companies, and PPP specialists from the World Bank and other partners.

Several communities of practice of the World Bank and other partners participate and share knowledge via this platform, including the Latin America and the Caribbean PPP Beam, PPIAF, the WBG Irrigation and Drainage Group, and the IFC Group for Sustainable Water Market Development. The platform allows Bank clients to design and organize south-south knowledge exchanges, study tours, and conferences to learn about others’ experiences, and has supported the publication of a series of knowledge products to document best practices. Some major outcomes are the following:

- Study tours to Spain, Morocco, and Peru covering legal, institutional, financial, and socioeconomic aspects of PPP transactions.
- New knowledge derived from these events has been incorporated into Uruguay’s national strategy for irrigated agriculture, which now includes PPPs and other private finance mechanisms to expand irrigation systems.
- In 2017, Argentina launched a new plan for irrigation expansion and requested Bank technical assistance to develop three pilot projects with PPP modalities.
Easing the transition to commercial finance

New knowledge pieces were completed through the Water Supply and Sanitation Global Solutions Group (GSG), with support from the WPP, in preparation for the Sanitation and Water for All Finance Ministers’ Meeting. The latter was held at World Bank headquarters in April of 2017 and brought together over 50 Ministers of Finance and Water from developing countries. The briefing notes and new flagship report entitled *Easing the Transition to Commercial Finance*, cofinanced by the WSP, demonstrate the relative benefits of using commercial finance alone (improved governance, stronger institutional performance, lower exchange rate risk) or blending it with concessional finance to start developing local markets for domestic finance. The paper suggests that countries can begin to tap into the high volumes of finance available through a slow and iterative process that targets 10–20 percent of sector investment from commercial sources. At the country level, WPP has supported national frameworks to help prepare for this shift (box 7).

BOX 7. A UNIFIED FINANCING FRAMEWORK FOR THE PHILIPPINES

While the government of the Philippines aims to achieve universal water supply by 2025 and universal sanitation by 2028, current public sector funding covers just 20 percent of what will be needed. The country is now looking to bridge the finance gap through its new Unified Financing Framework (UFF).

The WPP supported the development of a policy implementation plan for the UFF, which recommends viability gap financing (VGF) for service providers to ensure affordability; institutional and capacity development for government agencies; and output-based aid for last mile connections for the poor. The plan aims to substantially increase government support for sector reforms and expansion, while leveraging commercial finance through the use of grants. The implementation plan for UFF included:

• Delineation of institutional set-up, roles, and mandate required for UFF implementation;
• Development of a new financial analysis model to determine the VGF and estimate the borrowing capacity of service providers, as well as training of two agencies on using the model; and
• Investment program identification, including the use of blended finance to catalyze commercial finance in the sector.

These elements serve as input to the development of the National WSS Master Plan, funded by the government of the Philippines.
Helping Clients Select the Best Financing Model

The WPP supports clients in making informed decisions on models for developing new water infrastructure. Design, Build, and Operate (DBO) is a two-stage procurement process for bidders to be used in projects for developing water and wastewater treatment infrastructure. By procuring the design, building, and operation as a single contract, the Bank can reduce interface risks and improve the incentives for innovation, cost efficiency, and performance delivery.

A new standard procurement guidance package for DBO contracts, developed by the WSS GSG and the Bank’s procurement and legal teams, helps clients decide whether a DBO would be the right contract model for a new water or wastewater treatment plant or sewerage network. The package, comprising a guidance note and a two-stage proposal process, shows how to use, adapt, and further develop the procurement documents to fit the particularities of each project.

The package is the first of its kind for the Water GP. The two-stage approach gives the opportunity for the technical solutions provided by bidders to be examined, discussed, and modified as needed before a priced proposal is submitted. The package is designed for use in both greenfield and brownfield investments. Tailored to the technical needs of the WSS sector and including provisions for environmental, social, health, and safety performance, the documents enhance the value for money of the International Development Association (IDA) and the International Bank for Reconstruction and Development (IBRD) investments.

3.4 TECHNICAL INNOVATION: STRENGTHENING WATER SECURITY

One of the key challenges to improving water security is the ability to make decisions in the present that sufficiently anticipate the needs of the future. Today, while urbanization and climate change create ever greater uncertainties about the future, many tools are also being developed, tested, and scaled up that increase the quality and scale of data available for identifying current needs or assessing potential future scenarios.

The WPP has been the Water GP’s main source of technical innovation on water resources since its founding in 2009. The WPP enabled teams to use state-of-the-art approaches like the application of remotely sensed data or groundwater balance tools to help clients make decisions on managing disasters, growing crops, or protecting the environment.
At the country level, by showing counterparts how these tools function and providing capacity building on their use, the WPP has helped the World Bank in its efforts to use science and technology to make data analysis easier, faster, and more reliable for better decision making. At the global level, WPP’s investments in Global Initiatives have improved the quality of the tools themselves. By partnering with universities doing cutting-edge research, and agencies and private firms using and refining these tools, WPP Global Initiatives have provided low- and middle-income countries access to the most advanced approaches in complex water management.

3.4.1 WPP Global Initiatives

The Decision Tree: A Framework for the Future

The WPP, from Phase I onward, supported countries in assessing climate change impacts on water infrastructure investments. Under Phase II, it formalized a new approach by developing the Climate Change Decision Tree Framework (DTF), an innovative, four-phase assessment tool that helps practitioners understand the risks to a potential investment (box 9). The framework adopts a “bottom-up” approach to risk assessment to identify a project’s vulnerabilities to climate change in the context of other non-climate uncertainties (for example, economic, environmental, demographic, or political). The overarching goal of the framework is to help identify projects that perform well across a wide range of potential future climate conditions.

In addition to allowing the development of the DTF, WPP funding has enabled DTF pilots across several countries and sectors:

- **Kenya**: Application for analysis of long-term water availability from the Mwache Dam under climatic and socioeconomic uncertainties. Water supply from the Mwache Dam is expected to reduce water deficits in the Coastal Province substantially. Deficits in the Coastal Province were nearly 60 percent of the 365,000 m$^3$ per day demanded in 2015. The pilot study assessed the risks to the current Mwache Dam design due to climatic and demographic change, and offered adaptation and risk management options from a water supply perspective.

- **Nepal**: Application to the Upper Arun Hydropower Project has helped identify robust investment portfolios that meet conditions in which performance is maximized over a range of plausible futures.

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**BOX 9. THE ORIGINS OF THE DECISION TREE FRAMEWORK**

Since 2014, the DTF has been helping Bank teams meet the requirements of the IDA 17 replenishment directive to account for the effects of climate variability and change 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 Knowledge Portal. DTF partners include the U.S. Army Corps of Engineers, Conservation International, and the University of Massachusetts, —members of the Alliance for Global Water Adaptation (AGWA), which the Bank cochairs with the Stockholm International Water Institute (SIWI).
• **Malawi**: Application to the World Bank’s Lilongwe Water Project to secure water supply to the city of Lilongwe, focused on the vulnerabilities of the Diamphwe multipurpose dam. The study reviewed the hydrological estimate and climate data sources to assess the uncertainties for safe yield from the Diamphwe Dam, assuming future demands for both water supply and irrigation. The study helped identify areas of concern in the proposed investment and recommended measures to make the project more climate-resilient.

• **Vietnam**: Application (up to Phase 2 of the DTF’s 4 phases) to irrigation and drainage investment planning in the development of Vietnam’s irrigation sector strategy. The analysis identified the nature of the client’s demand, elaborating the scope of the DTF approach in relation to the investment, and provided recommendations to identify priority areas for application.

• **Ongoing DTF pilots**: Application in Mexico to the multireservoir Cutzamala water supply and irrigation system and evaluation of urban water resilience in Mexico City; and in Indonesia to the Poko and Matenggeng hydropower projects.

**Remote Sensing**

Water insecurity is one of the greatest risks the world is facing today. Achieving water security requires a thorough understanding of hydrological processes and more reliable ways of forecasting changes in hydrology across space and time. Use of satellite- or aircraft-based sensor technologies can provide data and large-scale observations in otherwise inaccessible areas at relatively low cost. Moreover, complementary ground-based platforms for acquisition and processing of these data provide countries with the information they need to predict disasters, assess groundwater availability, and monitor water quantity and quality. Such data analysis allows countries to make informed decisions about water management and service delivery. The WPP has been at the forefront of identifying ways to get such data and knowledge to clients in a fast, user-friendly, and inexpensive format, most notably through the evolution of its Global Initiative on Remote Sensing (box 10).
Based on demand from World Bank task teams for innovative tools and approaches to improve long-term investment planning in water and other sectors, the WPP started a Global Initiative on Remote Sensing (RS). The platform has gone from documenting the current use of RS tools in the World Bank to working directly with client agencies on the application of various RS tools for enhanced analysis of the myriad development challenges related to water. Today, several client countries are able to use the cloud for RS data storage and analysis. The initiative has thus helped improve data quality and analytical accuracy, all while reducing the associated costs.

**Phase I: Who Uses RS Tools and Why?**

The WPP RS team took a deep dive into how RS products were being used to address various water challenges, from flood control to the management of natural disasters. The RS team published *Earth Observation for Water Resources Management: Current Use and Future Opportunities for the Water Sector*, a guidance tool for Bank staff that indicates where and how RS tools are being applied in Bank projects. A database of RS tool users within the Bank—in water and other sectors—was also used to inform the second phase of the Global Initiative.

The WPP RS team next began to operationalize RS tools in other countries and programs for the monitoring of water storage bodies, improved flood and drought mapping, and rainfall runoff modeling. The team also initiated partnerships with leading global RS institutions, like NASA and the European Space Agency, to develop synergies and ensure the continuity of efforts under Phase II on a broader scale.

**Phase 2: Cloud Computing Helps Bridge the Data Processing Gap**

The RS team then worked to help Bank client countries process RS data without significant resource requirements. Google Earth Engine (GEE) provides cloud services that offer access to imagery and computing power. Algorithms are set up in GEE by experts and run in the cloud. Bank clients can access the output data and results without doing complex data processing in house, which reduces the cost of hardware, storage, software, and human resources.

These applications will become a common good for practitioners and user communities. In the case of flood and drought monitoring in Lake Chad and Argentina, the applications will contribute to continent-wide coverage of Africa and Latin America. In the case of field-level evapotranspiration (ET) mapping for agricultural water use, a group of key partners is committed to continuing the pioneering efforts that the initiative has pushed forward to enable periodic and global field-scale ET monitoring capabilities. The WPP has complemented these efforts by dedicating resources to train clients in the application of RS tools and analysis. For example, during Water Week 2017, partners from the Lake Chad Basin Commission, the Comisión Nacional del Agua (CONAGUA, Mexico), and the Agencia del Agua (ADA, Argentina) received technical training on the use of RS tools for better water management.
Disaster Risk Management (DRM)
The WPP’s Disaster Risk Management Initiative supports low- and middle-income countries in analyzing and preparing for water-related disasters, including both floods and droughts. WPP support on drought resilience has been imperative for learning and knowledge exchange, and for building a more systematic way of addressing the drought challenge in World Bank programs and beyond.

The DRM Initiative has three major impacts, briefly discussed below.

Drought Community of Practice
First, since the start of this initiative, the WPP’s dedicated DRM team has spearheaded the creation of a large knowledge base that enabled the start of a new Community of Practice (COP) on Drought Resilience within the World Bank. The COP has its own internal World Bank website, providing task teams with a large toolkit that includes the following:

- Global best practices in drought resilience
- World Bank experience in supporting clients on drought resilience
- A glossary of drought-related terms
- Internal and external events and training programs available to staff
- A roster of drought experts available for consulting on Bank projects

Targeted Country Support
Second, lessons learned from WPP and WET project support feed back into the COP and the broader DRM Initiative. For example, WPP’s substantial support to Brazil over Phases I and II—including workshops, expert advice, and water resources assessments—has helped the country develop a systematic approach to drought risk management. In turn, these activities, including innovative technical support from WET (box 11), have had an impact on five different loans in that climate change considerations were incorporated in water sector plans. As a result, authorities went from managing drought as a crisis to acting more proactively by bolstering their technical, institutional, and financial preparedness—based on better data and cutting-edge knowledge under an integrated approach. The shift in mindset as a result of this continued support ended with the counterparts changing their definition of drought—from something to be combated, to something the country needs to adapt to and live with—and the client is already discussing the need for a National Drought Policy. The approach is being replicated in Vietnam through the DRM Initiative.

BOX 11. CLEANER WATER STORAGE IN BRAZIL

The state of Ceará in northeast Brazil is dry, with rainfall variability among the highest in the world. For more than 100 years, reservoirs have mitigated the constant risk of drought and provided a resource for water supply services and aquaculture. Today, many of the 153 large reservoirs in Ceará have become subject to more degraded water quality. Eutrophication stimulated algal blooms that clog hydroelectric turbines and deplete oxygen levels, resulting in increasing fish mortality.

To address these challenges, the National Water Agency (ANA) of Brazil requested technical assistance in designing a pilot project that uses an integrated approach to manage the pollution. Two WET consultants selected three priority pilot reservoirs and proposed interventions tailored to each, including the use of oxygenation systems to reduce internal nutrient loading, and wetlands to remove nutrients from water prior to it entering the reservoirs. The consultants then coordinated the conceptual design of these measures at the pilot reservoirs, which will form the technical basis for a wider application in the region as part of the World Bank’s engagement with ANA.
Global Partnerships on Resilience

Third, in an effort to get countries to collaborate on solutions and learn state-of-the-art practices, the WPP also supported global partnerships on drought resilience. For example, through the WPP, the World Bank collaborates with the Integrated Drought Management Programme (IDMP), which was created in 2013 by the World Meteorological Organization (WMO) and the Global Water Partnership (GWP). The IDMP and its partners have been working on building the evidence on resilience (i.e., the degrees of adaptation) and the lessons gained from proactive drought management in different sectors. The platform supports the transition from a crisis management approach to a risk management approach by considering both the benefits of action and the co-benefits and no-/low-regret options that make a compelling case for taking drought mitigation and preparedness measures. Moreover, the DRM Initiative’s support for Brazil (above) has informed the creation of the IDMP’s three pillars approach to drought management.

In April of 2017, the WPP funded an IDMP partner workshop entitled “Drought Mitigation and Preparedness: Benefits of Action and Costs of Inaction” in Washington, D.C., to develop a work plan to address knowledge gaps in assessing the benefits of action vs. the costs of inaction in drought mitigation and preparedness. Participants included representatives from the U.S. National Drought Mitigation Center, the Food and Agriculture Organization of the United Nations (FAO), Mexico’s National Water Commission, the U.N. Convention to Combat Desertification, the University of Colorado, Siena College, the University of South Australia, and the University of Adelaide. The exchange of experiences included those outside of IDMP and the World Bank, including successes and failures in fragile and conflict-affected countries.

3.4.2 Building a Regional Evidence Base

Innovations in Mapping Water Scarcity

The report Beyond Scarcity: Water Security in the Middle East and North Africa draws on regional and global examples to show how a combination of technology, policy, and management can convert scarcity into security. WPP funding enabled the inclusion of two innovative methods for collecting, analyzing, and presenting water resources data in this report:

- A regional water security assessment based on modeling of the water-food-energy nexus, in partnership with the University of Maryland. The model is unique in that it is the first to use fossil groundwater, demonstrating the limits of groundwater as a nonreplenishable resource.

- Establishment of a set of region-specific water security indicators based on the three areas developed by the 2011 Arab Strategy for Water Security (2010–30) and its associated action plan (2014). This approach combines WRM, water service delivery, and risk management with a set of indicators developed for each element, using the World Resources Institute’s Aqueduct database. Map 2 shows the so-called Blue Water Sustainability Index (BIWSI) for groundwater.
The report shows that achieving water security means much more than coping with water scarcity. It means managing water resources sustainably, efficiently, and equitably; delivering water services reliably and affordably; reinforcing relationships between service providers and water users; and contributing to a renewed social contract. It also calls for “a new water consciousness,” which advocates the shared responsibility of farmers, businesses, governments, and individuals in helping countries move beyond water scarcity.

The report also details key innovations already taking place in Morocco, Jordan, Egypt, and Saudi Arabia, and encourages their acceleration throughout the region. It was launched during a special session focused on the Middle East and North Africa at the 2017 World Water Week conference in Stockholm, Sweden. The report—published in English, Arabic, and French—has already been downloaded 4,500 times.

**Latin America Leapfrogs to Measure WSS Performance**

In Latin America and the Caribbean, over 60 percent of the population without access to improved water supply lives in rural areas. In 2011, the WPP helped create the Rural Water and Sanitation Information System (SIASAR), which allows monitoring of rural WSS service quality through performance indicators that show governments where the service gaps are and help them understand variations in service quality.
The first phase of the SIASAR Initiative, funded by the WPP, consisted of building technical capacity in Nicaragua and Panama for the development of a conceptual model and a basic platform. The SIASAR web interface was built next, drawing on the strengths of open source software and mobile technology. The system was designed by participating countries and donors, and the system’s user guide and interinstitutional agreements were developed to facilitate decision making in each country using the data.

When WPP support ended, the work was scaled up by the WSP and the government of Spain—through the Spanish Fund for Latin America and the Caribbean (SFLAC)—which jointly funded an additional $1.8 million for several additional countries (figure 5). Today, 11 countries and 11 million people participate in data collection and submission into the SIASAR system, and over 200 institutions have started using the information generated in their policy and planning processes.

The data gathered through SIASAR have helped improve project design and leveraged the mobilization of funds for WSS improvements from the World Bank, the Spanish Agency for International Development Cooperation (AECID), the Inter-American Development Bank (IDB), and KfW Development Bank. The Water GP plans to expand SIASAR to other regions and further consolidate the platform in Latin America and the Caribbean with additional funding from the GWSP.

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**FIGURE 5: SIASAR INITIATIVE TIMELINE**

<table>
<thead>
<tr>
<th>Phase I Conceptualization</th>
<th>Phase II Operationalization and Improvement</th>
<th>Phase III Consolidation and Expansion</th>
</tr>
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<tbody>
<tr>
<td>FY12</td>
<td>FY13</td>
<td>FY14</td>
</tr>
<tr>
<td>SIASAR 1.0 initial concept and first working prototype</td>
<td>SIASAR 1.0 operational and first 5,000 communities surveyed</td>
<td>SIASAR 1.0 expansion and consolidation, with 10,000 communities surveyed</td>
</tr>
</tbody>
</table>

Note: GWSP = Global Water Security and Sanitation Partnership; SFLAC = Spanish Fund for Latin America and the Caribbean; SIASAR = Rural Water and Sanitation Information System; WSP = Water and Sanitation Program.
Open Source Data Promotes Basin-Level Dialogue

The water resources of the Aral Sea Basin are key to regional stability and growth. However, there is contention related to the allocation of water resources for irrigation and hydropower generation between and within the six countries of the basin: Afghanistan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. The lack of coordination at the basin level is partly caused by fragmentation of information and data.

With support from the WPP, the Aral Dynamic Information Framework Generation (AralDIF) was developed as a demonstration and test concept illustrating the value of using open source data and modeling for more informed decision making. The activity was cofinanced by the Central Asia Energy Water Development Program (CAEWDP) of the World Bank, in cooperation with the University of Washington.

The AralDIF is an open data decision support tool that integrates a hydrologic model with climate data, and allows users to navigate and interpret large datasets to answer specific questions. It modernizes water management information systems and develops a better understanding of the energy and water resource linkages.

The initial AralDIF model was strongly endorsed by users for its innovative concept and ease of use. Following a regional pilot training in 2015, stakeholders expressed strong demand for application of the tool, and the model was subsequently updated and migrated to a cloud computing environment, along with a revision of the associated training curriculum. With continued WPP support, the first generation AralDIF tool demonstration version was updated and expanded to an innovative, cloud-based tool for WRM that enables an evidence-based regional dialogue on water and energy management.

Source: http://www.cawater-info.net.
THE WET SERVICE IN REVIEW

**Purpose:** Traditional project preparation and implementation are time-intensive for World Bank task teams. These teams often lack the time or resources needed to access specialized support to tackle highly complex or evolving water challenges. The Water Expert Team (WET)—funded by the WPP—was a technical support service providing logistical, administrative, and technical quality control in response to these needs.

**APPROACH:** WET OCCUPIES AN IMPORTANT NICHE AMONG WORLD BANK TRUST FUNDS BY PROVIDING NECESSARY SUPPORT AT THE PRECISE MOMENT IT IS NEEDED BY TASK TEAM LEADERS (TTLS).

WET provided short, focused support to teams to integrate or apply existing tools, some developed with WPP support, to World Bank projects. Upon request from the task team, WET worked to identify and mobilize, in 2-3 weeks, the best expertise available globally to address the challenge at hand. WET invested nearly half of its resources in WRM challenges (figure 6) and enabled teams to dive deep into specific challenges such as climate change adaptation, freshwater ecosystem restoration, sludge management, groundwater governance, or disaster risk management (DRM). WET was most effectively used during the design phase of a project to introduce new ideas to clients, based on global expert opinion (box 13).

**FIGURE 6. WET ACTIVITIES BY SECTOR (WPP PHASE II)**

- Water Resource Management 43%
- Water Supply and Sanitation 29%
- Agricultural Water Management 10%
- Water for Environmental Services 4%
- Water for Energy 2%
- Other 8%

“WET provides just-in-time, transformative support … adding value to supported World Bank projects by bringing academic, scientific, and technical knowledge to operations.”

– 2016 WPP Independent Review

“We rate the overall quality of the WET support as 5 out of 5, based on the excellent technical expertise that the consultant provided that was specific to cyclone-prone areas. His work influenced a $7 million dam for irrigation. Construction was recently completed and the new dam was inaugurated by the President of the Republic of Madagascar.”

Francois Onimus and Ziva Razafintsalama, Task Team Leaders
EFFECTIVENESS: WET SUPPORT IS ALSO UNIQUE IN ITS COMBINATION OF ADMINISTRATIVE AND TECHNICAL SUPPORT, ASPECTS THAT ADD VALUE FOR TIME-CONSTRAINED TTLS.

While Phase II disbursements totaled $6 million, the average cost of a WET Phase II activity was just $30,000. Despite the small size of its interventions, WET received an “outstanding” overall rating from the WPP independent review team—partly thanks to the excellent management efficiency and high technical quality assurance of the expert mobilized, and the timely delivery of outputs. The high quality of WET is also evidenced by task teams repeatedly using the service. More than 60 percent of TTLs reported using the service between two and four times (box 12).

BROADER IMPACT: WET KNOWLEDGE IS NOT ONLY BROUGHT TO PROJECTS WHILE ASSISTANCE IS BEING PROVIDED, BUT KNOWLEDGE IS ALSO USED ONCE ACTIVITIES ARE COMPLETED. THE MOST SUCCESSFUL WET EXPERIENCES OFTEN LEAD TO THEIR REPLICATION.

Moreover, repeated requests for WET support on the same topic across various regions or countries formed the basis of WPP Global Initiatives on the Climate Change Decision Tree Framework, Remote Sensing (RS), and Disaster Risk Management (DRM). Housing the WET service within the WPP enabled synergies to develop between task teams and WPP program management for the development, piloting, and refinement of the tools being disseminated under the Global Initiatives.

At the country level, one of WET’s most substantive impacts has been the ability to work in fragile and conflict-affected areas where Bank operations are not yet in operation due to instability (box 14). TTLs have also cited WET’s capacity to turn around a failing project, either through technical reforms in the design or by providing expert observations that can strengthen a client’s commitment.

Building on the legacy of the highly successful WET service, a Water Expertise Facility (WEF) was launched on July 1, 2017, under the Global Water Security and Sanitation Partnership (GWSP).

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**BOX 12: WHY WET TTLS ARE REPEAT CUSTOMERS**

- 84% of TTLs say the activities are implemented in a cost-efficient manner
- 96% of TTLs say the service is flexible in adapting to time frames
- 84% of TTLs say the service is flexible in adapting to budgets
- The service allows for collective thinking with other experts, pulling in global best practices
- The WET team achieves economies of scale in administration and quality assurance

**WET’s Impact under WPP Phases I and II**

- Each $1 million invested through WET benefited 30 World Bank operations
- Each $1 of WET funding affected $4,000 in World Bank lending
- 32% of WET funds supported Africa
- WET supported 72 World Bank projects during Phase II, benefiting more than $12 billion in investments
- For each $100,000 invested, 3 activities that improve a WB project were implemented
- For each $1,000 invested, 7,600 beneficiaries were reportedly reached

Data as of June 2016 for Phase I and II
Successive episodes of drought in Somalia, which have led to consecutive failed harvests and significant livestock deaths, have been compounded by endemic conflict and insecurity. Over 5 million people are estimated to be in need of humanitarian assistance, including 1.1 million internally displaced persons.

In this tragic environment, the government has recently designated drought response as its first priority. The World Bank is supporting this effort through the preparation of both an urgent response to the crisis and development projects to strengthen the country’s resilience to future shocks.

Three WET consultants—a hydrologist and two hydrogeologists—worked in this data-scarce environment to estimate the volume of water resources and identify potential areas for the development of new wells, particularly in the areas most affected by the humanitarian crisis. They also conducted a groundwater vulnerability assessment and identified potential surface water harvesting options. The WET team then prepared recommendations on the most sustainable levels of abstraction needed to improve resilience to drought, and developed a catalog of options for borehole development, use, and maintenance, which will create local employment in the development of new water sources. From this initial work, further studies are expected, which may include a database of drilling activity, mapping of the shallow groundwater potential, and new investment plans.
CHAPTER 4: RESULTS AND IMPACT
This chapter reports on the cumulative results from WPP Phase II, beginning with a description of the framework, followed by an analysis of the results. It first provides a look at select key indicators and provides qualitative examples from activities that closed during 2017. It then discusses lessons learned from program implementation, and how the Water GP is already working to build on the successes of the WPP and to address its shortcomings through the design of the Global Water Security and Sanitation Partnership (GWSP). The chapter ends with a summary conclusion and way forward.

4.1 THE WPP PHASE II RESULTS FRAMEWORK

The Water Partnership Program (WPP) had two main objectives under its first phase:

- **Objective 1:** Sponsoring and mainstreaming pragmatic and principled approaches for water resources management (WRM) and development; and
- **Objective 2:** Enhancing the quality, effectiveness, and equity of water service delivery through the expansion and improvement of social and productive water services.

A third objective was added in 2012, during the design of the WPP Phase II Results Framework:

- **Objective 3:** Mainstreaming water services and management in climate-resilient, inclusive green growth.

The WPP Phase II Results Framework was designed with these three objectives in mind. The framework comprises five layers (objective, impact, outcome, indicator, and sub-indicator). The objectives cascade down into two impacts and six water-related outcomes. The outcomes are further disaggregated into 9 indicators and...
44 sub-indicators (appendix B). Progress on each sub-indicator was measured, on an annual basis, against predefined targets that had been set at the outset of WPP Phase II.

4.1.1 WPP’s Dual Impacts

The links between the five layers of the results framework are fluid and indirect, with some sub-indicators contributing to several outcomes, impacts, and objectives. However, the WPP’s activities can generally be categorized into two types of interventions: (i) those that reduced the vulnerability of people (Impact 1, Objectives 1 and 2) and (ii) those that enabled climate-resilient green growth (Impact 2, Objective 3).

Impact 1 demonstrates efforts to reduce poverty and improve the quality of life of vulnerable populations. As stated in the introduction to this report, reducing poverty requires a multifaceted approach. The WPP’s Results Framework aimed to address the water-related aspects of poverty reduction, from minimizing flood and drought risks (elements of WRM) to ensuring the poor have access to adequate sanitation facilities (water services). Most of these impacts can be seen at the World Bank project level, through discrete interventions that altered designs, expanded scopes, or saved costs to enable a project to reach more people or provide a higher-quality outcome. Indicators E and H are the most representative of this kind of impact.

Impact 2 demonstrates efforts to support green growth, a model of economic development that accounts for, and is often implemented through, sustainability measures that conserve natural resources and the environment. Most of these impacts can be seen through the WPP’s support for Global Initiatives that shifted thinking on the water for development agenda and helped to mainstream water resource considerations in planning for other sectors. These activities, as well as some discrete interventions, resulted in more robust multisector planning and investments that are redefining the future of water in several countries. Indicators D, F, G, and I are the most representative of this type of impact.

4.1.2 Cumulative Phase II Program Results (2012–17)

During the 4 years since Phase II inception, the WPP has achieved 64 percent of its 44 sub-indicator targets. Overall, 16 targets were not met. Given the demand-driven nature of the program, some targets were not met because funding was never requested by TTLs for projects supporting those sub-indicators.

First, while WPP Phase II had an impact on 62 million beneficiaries of Bank projects, most of these beneficiaries (50 million) were supported through WSS projects. The WPP influenced fewer WRM, agriculture and environment projects than planned, which can be seen through some lower than expected results for beneficiaries (Indicator H).

Second, various indicators used in Bank projects are related to but not the same units of measurement as the ones used in the results framework. The two examples below demonstrate how results were achieved toward topics related to Indicator G and Indicator E, but not specifically measured as such in the WPP results framework.
All but one sub-indicator under Indicator G, Physical and Natural Assets Protected, were not met. However, there were several other natural assets protected but not tracked by the WPP results framework, including:

- 5.4 million m$^3$/year in treated wastewater available for agriculture;
- 44,000 tons/year of BOD pollution loads removed; and
- 60,000 hectares benefiting from reduced flooding or erosion.

A second example can be seen for Indicator E.1.1. While only 6 of 8 early warning systems were implemented, 12 additional systems are under design. Moreover, the WPP also supported projects where:

- 8 water resource or weather monitoring systems were installed; and
- 30B metrological and hydrological stations were updated or installed.

A third example is seen in the dissemination of WPP publications. Although the targets for Indicator C were not all achieved, significant progress has been made over time. Downloads of WPP publications from developing countries have steadily increased from 35 percent in 2016 to 47 percent in 2017. Moreover, report launches have been much more successful after considerable effort was made by the GP to improve promotion. 2016 publications have seen six times the circulation of 2013 publications, looking at figures up to 18 months after release.

Thus, while the results framework aimed for specific types of interventions (supply-driven), those indicators could not be targeted given the demand-driven nature of the program. Moreover, the indicators selected were too narrow to encompass other similar and relevant results tracked by Bank results reporting systems.

The WPP’s donors have discussed the limitations of a supply-driven results framework, and used their experience to help codesign the new water GP results framework. For example, broader indicator definitions will be used to ensure that relevant impacts and outputs are quantified and counted toward the program’s achievements in a way that builds on Bank reporting systems. As a result, a more realistic picture of the broader impacts of the GWSP, through the diverse range of operational objectives and project designs, can be documented.

The full results outcome, including all 44 sub-indicator targets and results, is provided in appendix B. This chapter provides quantitative examples for each of the six outcomes, and quantitative highlights of a select group of sub-indicators (shown through the icons under each outcome).

### 4.2 SELECT RESULTS EXAMPLES BY OUTCOME INDICATOR

This section is organized by the 6 Outcome Indicators in the results framework (appendix B). A selection of the key results achieved are provided under each Outcome, along with a qualitative, illustrative example.
OUTCOME 1: WPP STRATEGIC FUNDING MOBILIZED

This outcome includes results for Indicator A: Strategic Use of WPP Activity Funds

52% of the value of approved WPP activities was realized in Africa

$4.3 million of Bank internal cofunding went to WPP activities.

A New Take on Transport in Tanganyika
Lake Tanganyika is the second largest lake in the world by volume and depth. It is also the second largest in Africa by surface area, and is a critical part of the transport and trade corridor between Central and Eastern Africa. The Lukuga River carries variable volumes of water from the lake through an outlet. The flows of the Lukuga outlet, subject to seasonal fluctuations, have caused decreasing water depths in the ports, as well as siltation, which prevents large cargo ships from docking at the main ports, thus interrupting transport.

In 2016, the Democratic Republic of Congo (DRC) and Tanzania requested World Bank support for the construction of a dam on the Lukuga River, as a way to stabilize the lake’s water levels, thereby securing ships’ access to the countries’ main ports. A Bank team undertook a study to determine the relevance of constructing a dam to alleviate the difficulties of port access on the lake and to identify mitigation measures. The study, supported by the Water Expert Team (WET), followed a mixed-methods approach by combining historical data records, remote sensing (RS) estimates, satellite images, on-site measurements and data collection, and oral narratives.

The study showed that the problem had been ill-defined and that the construction of a dam would be the wrong solution. Rather, the lack of proper maintenance, dredging, and sediment management was responsible for the reduced water depths. Sedimentation is a natural, continuous, and predictable process affecting all the ports of the lake and is due to poor land use management practices in the contributing basins, as well as lake circulation. While it can be managed, it cannot be stopped, with ports requiring constant removal of sediments to maintain water depth. The study also identified measures for sediment management, which include dredging and interception, as well as long-term solutions such as reforestation and erosion control in the watersheds to reduce sediment transport.
OUTCOME 2: KNOWLEDGE AND OPERATIONAL TOOLS CREATED, DISSEMINATED, AND USED

This outcome includes results for Indicator B: Events and Training Supported by WPP, and Indicator C: Web-Based Outreach and Use of WPP Publications.

8,320 events and training participants
75% will apply gained knowledge
65,000 total downloads of WPP documents; 4,700 downloads per flagship, on average
34% of downloads were from developing countries

Hands-on Training for the Decision Tree Framework
In April of 2017, the WPP supported a workshop on dissemination of and training on the Climate Change Decision Tree Framework (DTF) at the University of Massachusetts Amherst. The workshop was the first, 5-day event for the DTF and included a site visit to the U.S. Geological Survey’s Conte Anadromous Fish Research Center and the Cabot Station Hydropower Facility in Turners Falls, Massachusetts, which allowed participants to see the working hydroelectric generators and fish passage structures located at the facility.

Practitioners from Mexico, Ethiopia, Kenya, Nepal, and the Republic of Korea benefited from the hands-on, in-depth training in approaches for quantifying and managing risks associated with climate change and their potential impacts on water system investments. In regard to applying the 4-phase DTF to a specific project, participants learned the following: how to access the data, run the models, and anticipate the level of effort needed for each phase; how to follow a simple case step-by-step; and how to define what expert help would be needed to complement institutional core competencies to accomplish each phase of the DTF. Post-course evaluations averaged an overall rating of 4.8 out of 5, with minor suggestions for improvement, including providing more online training options for practitioners to do at their own pace. Many of the participants are now using the DTF in their home countries across a spectrum of large water investments.
OUTCOME 3: PLANS AND STRATEGIES DESIGNED AND CAPACITY ENHANCED FOR IMPROVED WRM AND SERVICE DELIVERY

This outcome includes results for Indicator D: New Plans and Strategies Promoted, and Indicator E: Capacity Enhancement.

- 19 non-water policies/strategies that incorporate water
- 32 policy or strategy investment plans endorsed by clients
- 5 new Early Water Systems installed
- 123 government agencies with strengthened capacity

**Lower-Cost Strategies: Just the Tip of the Iceberg**
The WPP supported World Bank teams working with Turkey toward compliance with European Union (EU) standards. A study on Water Supply and Sanitation (WSS) service levels found that national wastewater management standards are more stringent than those applied by the EU. Looking at operations and maintenance (O&M), as well as capital costs, under six different scenarios, application of the more stringent Turkish standards would require at least a 21 percent higher capital investment, including 13 percent higher O&M costs, than will meeting the EU standards.

The analysis further revealed the “iceberg effect,” which demonstrates that the investments budgeted for today (the rather small tip of the iceberg) will require significantly more O&M costs to be covered in the future, which will affect tariffs. The team identified best practices already adopted by Turkey to reduce costs, enhance service provider revenue streams (through resource recovery), and engage with the private sector for expertise and financing.

A workshop enabled service providers to explore to what extent these practices were replicable or could be scaled up in their municipalities. The team also used infographics and an animated film to share the results of the study with high-level officials at national and municipal levels. The full report was downloaded nearly 2,000 times in the first 10 days after publication. The work is informing the next Country Partnership Framework between the World Bank and Turkey, and is replicable for other EU members, especially new members that are in the process of reaching compliance with EU regulations.
OUTCOME 4: DOWNSTREAM LOANS SUPPORTED

This outcome includes results for Indicator F: Bank Lending Influenced/Leveraged, and Indicator G: Physical and Natural Assets Protected.

- **$26.6 billion** in Bank investments influenced
- **246** Bank project designs improved
- **43.7 million** m$^3$ per year reduction in aquifer pumping
- **1.3 million** hectares provided with irrigation/drainage services.

Institutional Innovation

The WSS sector in Uzbekistan faces dilapidated infrastructure, weak management, and an unclear institutional framework. As a result of long-term dialogue with the World Bank and other donors on needed sector reforms, the cabinet of ministers signed a resolution for an institutional reorganization to align the sector so that it can meet the country’s WSS needs, among others, achieving the SDGs.

A long history of World Bank engagement in Uzbekistan on WRM presented a unique opportunity to introduce changes in WSS through targeted investments and technical assistance. The ongoing reforms have a clear focus on improving sector governance, utility management, and efficiency and financial sustainability, while maintaining affordability, especially for low-income consumers.

The WPP supported a study to analyze and better understand the implications of the recent reforms. Support included a review of the new regulatory framework, and consultations with stakeholders to identify specific areas where further technical and financial assistance could be directed. These areas were outlined in a Sector Reform Diagnostic and Support Plan, which has been shared with the government. The recommendations will inform pilot activities as part of the preparation of a pipeline $190 million water sector programmatic loan, to which the Water Global Practice (GP) will continue providing critical support through the GWSP’s institutions pillar.
OUTCOME 5: VULNERABILITY REDUCED VIA PRO-POOR AND GENDER-SENSITIVE INTERVENTIONS

This outcome includes results for Indicator H: Beneficiaries.

62 million actual beneficiaries from the Bank-influenced projects, including:

- **50 million** WSS beneficiaries
- **2.4 million** agriculture beneficiaries
- **9.8 million** other WRM beneficiaries
- **34%** of all WPP beneficiaries are women

Ethiopia Looks at Integrated Sanitation Management

While sewerage has existed in parts of Addis Ababa, Ethiopia, it has been rather ineffective at safeguarding public health. The lack of proper solid waste disposal, combined with unpaved roads and the use of sewers for drainage have resulted in a blocked and overflowing network. Moreover, proper wastewater treatment facilities for meeting increasing amounts of wastewater are lacking.

Since 2007, the World Bank had been investing in improvements to WSS services through a $100 million Urban Water and Sanitation Program. Toward the end of this project, in 2016, WET helped the government of Ethiopia develop a Sanitation Master Plan for the Kality area of the city. While construction of treatment plants and the expansion of the network were already underway, a WET consultant developed an O&M strategy, plans for getting customers to connect to the new network, and ideas on how the city could make the necessary legal and regulatory changes to improve system performance. In addition to connecting 73,000 new customers, this work has improved the client’s capacity to address sanitation challenges in an integrated manner. In 2017, the government of Ethiopia and the World Bank invested an additional $505 million for a follow-on project, which will support 23 cities in preparing and implementing integrated urban sanitation management plans, and will reach nearly 3.4 million people with improved WSS services.
OUTCOME 6: WATER MAINSTREAMED IN OTHER SECTORS

This outcome includes results for Indicator I: Water Mainstreamed in Other Sectors. The initial targets for WRM mainstreaming, in accordance with the WPP Phase II Results Framework, were the urban, energy, agriculture, WSS and environment sectors. Guidance notes were to be developed and endorsed by the 5 respective sector boards. However, with the organizational shift of the World Bank from networks to Global Practices (GPs), the sector boards stopped functioning as of July, 2014. In alignment with the organizational changes, the WPP produced four guidance notes that can be used by Bank task teams across the same 5 GPs targeted from the start, in addition to those working to incorporate climate change, to “do water better”.

The Cutting Edge in WRM

The WPP’s Remote Sensing Initiative funded the development of a Guidance Note on Mainstreaming the Use of Remote Sensing Data and Applications in Operational Contexts, published in 2016. The note focuses on the functionalities of RS for WRM (applications in agriculture, urban development, and environment, among others) and targets a broad audience, including staff from client country government agencies, policy makers, RS data suppliers and practitioners—such as space agencies and other development partners—as well as World Bank task teams. The report analyzes the advantages and limitations of using RS in development projects, and summarizes the six main contributions of the Remote Sensing Initiative to date, as follows:

- Advancement of operational field-scale evapotranspiration monitoring capabilities over very large areas with the use of Google Earth Engine (GEE);
- Retrospective historical flood archive in ungauged basins, which will reveal spatial and temporal patterns of flood exposure over several past decades, and can be used to extract spatial statistics on flood frequency and duration per pixel;
- Near real-time flood extent monitoring application, which is key for rapid and immediate disaster assessment and response planning;
- Hydromet monitoring and prediction for more accurate weather forecasts (10-15 days ahead) and seasonal forecasts (6 to 9 months ahead);
- Linkage with international hydrologic knowledge networks;
- Adaptation of RS-derived products and tools to be usable within client country computing and storage capacity constraints; and
- Piloting of RS tools and approaches in World Bank project portfolio through WET activities upon request.
4.3 PROGRAM EVALUATION AND LESSONS LEARNED

As mentioned previously in this report, an independent review of the WPP was commissioned by the program’s donors in 2016. The review included an analysis of case studies in eight key countries that had received WPP support over several years; three country visits; a survey of task team leaders (TTLs) of WPP activities; and in-depth interviews. Interviews were conducted with WPP donors, TTLs of WPP activities, World Bank clients, Water GP management, and the core WPP management team. Three of the main conclusions of the evaluation are summarized here.

4.3.1 Strengths and Areas for Improvement

First, a survey of WPP activity TTLs, the main users of the funding, offered important feedback. Respondents rated various aspects of the program, including timeliness; ease of use; and cost. Figure 7 shows that all average ratings on the program’s proposal, implementation, and reporting processes were at least 70 percent positive. The survey results formed part of the final conclusions about program efficiency, effectiveness, and impact.

Second, the evaluation compared the WPP to other trust funds in the World Bank, where possible, to better understand its relative strengths and weaknesses. The strengths of the program will be continued under the GWSP (table 1) and were, among others, the continuation of a WET-like service; an efficient and flexible management structure; and more resources for the knowledge in implementation model, using the GSGs as knowledge brokers. Similarly, areas for improvement have been recognized by GP management and are being prioritized through the design of the GWSP (table 2). These include a modified results framework with three levels of results and types of impacts; better integration of country engagements into global partnerships, using the GWSP pillars as an organizing framework; and reprioritization of engagements on gender and in low-income countries (LICs).

**FIGURE 7. PROPORTION OF TTLS THAT AGREE WITH WPP EFFICIENCY INDICATORS**

- **Request for WPP support**
  - Criteria are clear (87.5%)
  - Proposal system is easy to use (71.4%)
  - Transaction costs are appropriate (80.3%)

- **Activity implementation**
  - Activities carried out in a timely way (87.5%)
  - Activities carried out in a cost-efficient manner (98.3%)

- **Reporting**
  - Reporting system is easy to use (73.2%)
  - Transaction costs are appropriate (76.8%)
### TABLE 1. WPP CORE STRENGTHS

<table>
<thead>
<tr>
<th>WPP identified strength</th>
<th>How GWSP will maintain the strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>World-class just-in-time services</td>
<td>A new Water Expertise Facility will offer three levels of service tailored to the needs of task teams, advancing the five GWSP themes.</td>
</tr>
<tr>
<td>Operational efficiency and flexibility</td>
<td>The GWSP management structure is based on the WPP's model, but was adapted to GWSP's larger size and donor base.</td>
</tr>
<tr>
<td>Supporting innovation</td>
<td>Decentralized allocation decisions supported activities with high needs, particularly within regions.</td>
</tr>
<tr>
<td>TTLs ranked “production of new and relevant knowledge” as first in the list of WPP strengths, and WPP publications were the top 9 out of 10 Water GP downloads in 2016.</td>
<td>Now that the GSGs are running at scale, the GWSP is able to dedicate resources to the most relevant and cutting-edge knowledge that can feed back into operations to make a difference in client countries.</td>
</tr>
</tbody>
</table>

Note: GP = Global Practice; GSGs = Global Solutions Groups; GWSP = Global Water Security and Sanitation Partnership; TTLs = Task Team Leaders; WET = Water Expert Team; WPP = Water Partnership Program.

### TABLE 2. AREAS FOR IMPROVEMENT UNDER GWSP

<table>
<thead>
<tr>
<th>WPP identified weakness</th>
<th>How GWSP will address the weakness</th>
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<tbody>
<tr>
<td>M&amp;E Theory of change missing causal links and assumptions.</td>
<td>Support to entire Water GP strengthens link between outputs and outcomes.</td>
</tr>
<tr>
<td>Attribution of impacts on beneficiaries is overstated.</td>
<td>New framework distinguishes between results at the trust fund, project, and country level.</td>
</tr>
<tr>
<td>Partnerships Global strategic partnerships were effective and long-lasting, but those at the country level were less consistent.</td>
<td>By managing activities at the GWSP pillar level, there will be opportunities for country-based activities as part of the larger global agenda, and any associated partnerships, on that topic. More WRM staff at country level is expected to improve this.</td>
</tr>
<tr>
<td>Gender More progress could have been made on gender targets if a more supply-driven approach had been taken.</td>
<td>The GWSP’s inclusion pillar names gender as one of several major themes. Stronger leadership and more dedicated funding will transform the way the Bank addresses gender.</td>
</tr>
<tr>
<td>Targeting the poor More funding could have gone to LICs; many WPP resources were used for innovative activities in MICs, with a direct link to the poor.</td>
<td>Partnership funds will be prioritized for LICs and countries on the FCV list, with support in MICs informing engagements with LICs; increases in Bank’s commitments to IDA countries will also enable this focus.</td>
</tr>
</tbody>
</table>

Note: FCV = Fragility, Conflict, and Violence; GWSP = Global Water Security and Sanitation Partnership; IDA = International Development Association; LICs = Low-Income Countries; M&E = Monitoring and Evaluation; MICs = Middle-Income Countries; WPP = Water Partnership Program; WRM = Water Resources Management.
The last two points in table 2 are perhaps the most critical for ensuring that GWSP resources are used in the most relevant way possible to guarantee a high development impact. The resources and staff dedicated to gender and Fragility, Conflict, and Violence (FCV) countries will thus be expanded under the new partnership. This will institutionalize equity and inclusion as foundational elements of the Water GP’s poverty reduction strategy. WPP support to gender and FCV countries, and the next steps for GWSP to take up bolder approaches, are detailed below.

**Gender Broadens to Inclusion**

The WPP achieved limited results on gender because of the lack of strategic leadership, low awareness among TTLs, and the absence of gender tools. While it did develop a set of tools to support gender mainstreaming in water projects, these are only now being disseminated to task teams for their use.

In 2017 the program also completed its support to the Global Partnership for Social Accountability (GPSA) in the water sector, which targeted operations in Benin, Tajikistan, and Niger (box 14). Through this partnership, the Water and Governance GPs supported civil society organizations in enhancing transparency and accountability in the water sector, thereby improving the channels for citizen feedback. With an emphasis on “fixing the institutions that fix the pipes,” the partnership strengthened Bank operations, where the institutions and their key constituencies are now seeing improvements not only in water service delivery, but also increased engagement with their governments. Beyond the selected countries, this collaboration resulted in 12 training- and knowledge-sharing events and the curation of 9 knowledge pieces to advance transparency and social accountability in the water sector on a global scale.

The Water GP will continue to address this knowledge gap through its new inclusion agenda, which forms one of five strategic pillars under the new GWSP. Significant resources have been dedicated to building a world-class team of inclusion experts.

**BOX 14. ENHANCED IMPACT THROUGH JOINT WPP AND GPSA ACTION**

- **Tajikistan:** Partnered with Oxfam Tajikistan to strengthen the capacity of water users associations (WUAs) to monitor the quality of Water Supply and Sanitation (WSS) services. The activity has formalized and strengthened the capacity of five Community Advisory Boards (CABs) from target districts. These CABs are the local communities’ main link to service providers and authorities to discuss service issues. The team also facilitated the launch of the new Service Performance Indicator (SPI) guidelines, in May 2016, which cover quality, safety, reliability, and access to WSS. Advocacy efforts are now underway to further formalize the SPIs within legal frameworks.

- **Benin:** The partnership supported municipalities in adopting better social accountability mechanisms, such as more transparent and competitive contracting systems for private WSS providers. These systems, along with capacity building for government officials on the oversight of WUAs, has helped bolster accountability, leading to an increase of 23 percent in collections of water bills. For the first time ever, four communes are conducting public water audits and informing users and the media on how the water systems and wells are managed.

- **Niger:** The partnership supported Search for Common Ground - Niger to develop a community engagement strategy for some of the 55,000 people to be resettled as part of the Kandadji hydropower project. The strategy focuses on better communication of the resettlement plan, and builds the capacity of local organizations and radio stations so they can carry out their responsibilities in accordance with the government’s communications strategy.
who will support task teams on their projects and provide guidance and training on key topics such as gender, citizen engagement, and persons with disabilities. Moreover, GWSP resources have already been dedicated to support projects to include the mainstreaming of women in WSS utilities in Iraq, Pakistan, and Egypt, and for other types of inclusion support in Ethiopia.

**Fragility and Insecurity: Breaking the Cycle**

Water insecurity can push already fragile societies further into conflict and instability. Efforts to improve water security in strategic ways can not only disrupt the vicious dynamics between fragility and water insecurity in times of crises but can also help countries leverage development opportunities. The WPP supported many of the world’s most fragile countries, but a more systematic approach is needed to ensure that resources are targeted for results. As a first step, the Water GP is looking closely at the dynamics between water and fragility to help inform its strategy for investing in FCV countries.

Published in 2017 with WPP support, *Turbulent Waters: Pursuing Water Security in Fragile Contexts* offers a fresh outlook on the links between WRM and fragility. The report looks at the three main mechanisms through which they interact unsuccessfully: (i) failure to provide citizens with basic water services; (ii) failure to protect citizens from water-related disasters; and (iii) failure to preserve surface, ground, and transboundary water resources. The report draws from evidence to explore the interplay and shows, for example, that access to WSS services falls when fragility increases, and provides frameworks for looking at the various dimensions of the interplay (box 16). It also provides a policy framework that helps identify and inform policy responses in situations of crisis and development opportunity aimed at promoting stability and preventing a country from sliding back into fragility.

**BOX 15. FRAMEWORKS FOR PURSUING WATER SECURITY IN FRAGILE CONTEXTS**

- **Failures to address water insecurity.** Examples are provided of water insecurity “failures” in fragile contexts, often surrounded by complex, multidimensional challenges involved in providing water services, protecting citizens from water-related disasters, and preserving surface, ground, and transboundary water.

- **Pursuing water security in fragile contexts.** Scenarios are described where water sector institutions have been at the cutting edge of promoting stability and helped prevent a country from sliding back into fragility. The role that water management can play as a *catalyst* for development and stability, water management institutions as *buffers* to shocks, and investments as a factor that can *reverse* the cycle of water insecurity-fragility is also discussed.

- **Policy and investments options to reverse the water insecurity-fragility cycle.** This framework sets out options for external development to support water sector institutions in situations of development opportunity, shock, and crisis. Activities proposed in this framework can be scaled or adapted to suit countries and help them plan strategically to distribute benefits to reduce fragility and promote equity over time.
**WPP Continuity: Reaching the South**

The WPP’s initiative on Integrated Urban Water Management (IUWM) was one of the key ways in which the program mainstreamed WRM in planning for the urban and WSS sectors. The WPP supported both country-led diagnostics and global tools that advocate for more integrated management at the city level. This support is now being picked up through other funding platforms. In 2017, a 5-day Technical Deep Dive on IUWM in Tokyo brought together 15 country delegations from all Bank regions, resulting in a request from Ethiopia and Indonesia for national workshops as part of their proposed action plans. In response, the multi-GP IUWM team secured $224,000 in funding from the South-South Facility and $325,000 from the Global Water Partnership. Ethiopia will also join the other two countries for a study tour to Brazil to learn about IUWM experiences toward defining their respective urban development strategies.

### 4.4 CONCLUSIONS AND WAY FORWARD

The WPP shows how a trust fund, by leveraging a global development portfolio, can help clients address social, economic, financial, and technical challenges in a way that translates into better projects, lower-cost designs, and more sustainable approaches.

The WPP complemented the Bank’s country-focused investment portfolio by focusing on additionality and upstream work that adds significant value to Bank programs. These funds are not otherwise available to task teams as part of a traditional project budget.

Independent evaluators have confirmed that WPP resources have been effectively and efficiently used for the past eight years. The WPP’s global impact, however, goes much further than these data and the targets, presented in section 4.1 and 4.2, suggest.

By learning from pilot experiences and allowing space and time for innovation, the WPP influenced the global water agenda and its implementation in numerous ways. By helping energy, environment, and urban practitioners think about water differently, the WPP supported the Water GP in strengthening other sectors’ opportunities to contribute toward sustainable development and green growth. The Water GP, strengthened with WPP resources, could respond to the call from SDG 6 for more integrated solutions.

Similarly, through its Global Initiatives, the program contributed to global thinking in key areas such as climate change and clean energy development, pioneering and investing in new solutions to complex challenges. While the full impact of the partnerships and networks built around these key topics is yet to be realized, progress to date shows that global leaders and client governments are taking heed of the advice provided, and changing direction as a result.

Most importantly, these results and impacts will be sustained into the foreseeable future. The Water GP has taken the lessons learned from eight years of WPP implementation and incorporated them into the design of the new GWSP. Two of the major areas for improvement in trust fund targeting—gender and support for FCV countries—will receive significant, coordinated resources at the start of the GWSP.

"The WPP has made important contributions to increased water sector dialogue within the Water Global Practice. It has led the charge on expanding WRM considerations within the practice, also playing a key role in promoting a culture of critical thinking in water governance, both within the WGP and with partners."

WPP Independent Review 2016
APPENDIX A: **WPP PHASE II FINANCIAL SUMMARY**
(JULY 2012 – OCTOBER 2017)

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 64-month period, from July 2012 through October 2017. From Phase II inception until October 2017, a total of 313 activities (including 125 for WET) were approved for a total amount of $47.6 million. From July 2016 through June 2017 (the Bank’s Fiscal Year), 92 new activities were approved, amounting to $10.8 million.

Total approvals represented 87 percent of the $51.2 million allocated for activities under the WPP’s different regional, global, and programmatic windows. When dissemination and program management are included, the total allocation increases to $59.6 million.

**DONOR CONTRIBUTIONS TO THE WPP**

Total donor contributions to the second phase of the WPP amount to $54.5 million. WPP Phase II donors are: Switzerland’s State Secretariat for Economic Affairs (SECO); the Netherlands’ Directorate-General for International Cooperation (DGIS), the United Kingdom’s Department for International Development (DFID), the Danish International Development Agency (DANIDA), and the Federal Ministry of Finance of the Government of Austria.

As detailed in Table A1, the WPP Phase II contributions equal $55.3 million when including the $4.6 million remaining balance from WPP Phase I, all of which was received as of June 2016. After deducting the 2 percent administration fee and adding the earned investment income, this left an available balance of $55 million.

### TABLE A1: OVERVIEW OF DONOR CONTRIBUTIONS TO THE WPP - PHASE II

<table>
<thead>
<tr>
<th>Contributions to WPP</th>
<th>Donor Currency</th>
<th>Amt pledged (donor curr.)</th>
<th>Amt pledged (USD)</th>
<th>Amt received (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>EUR</td>
<td>4,000,000</td>
<td>5,515,200</td>
<td>5,515,200</td>
</tr>
<tr>
<td>Denmark (DANIDA)</td>
<td>DKK</td>
<td>20,000,000</td>
<td>3,522,245</td>
<td>3,522,245</td>
</tr>
<tr>
<td>Netherlands (DGIS)</td>
<td>USD</td>
<td>12,500,000</td>
<td>12,500,000</td>
<td>12,500,000</td>
</tr>
<tr>
<td><strong>Supplemental (Jun 2015)</strong></td>
<td>USD</td>
<td>6,250,000</td>
<td>6,250,000</td>
<td>6,250,000</td>
</tr>
<tr>
<td>United Kingdom (DFID)</td>
<td>GBP</td>
<td>12,000,000</td>
<td>19,001,850</td>
<td>19,001,850</td>
</tr>
<tr>
<td><strong>Supplemental (Aug 2015)</strong></td>
<td>GBP</td>
<td>2,500,000</td>
<td>3,765,250</td>
<td>3,765,250</td>
</tr>
<tr>
<td>Switzerland (SECO)</td>
<td>USD</td>
<td>4,000,000</td>
<td>4,000,000</td>
<td>4,000,000</td>
</tr>
<tr>
<td><strong>Total Phase II Contributions</strong></td>
<td></td>
<td></td>
<td>54,554,545</td>
<td>54,554,545</td>
</tr>
<tr>
<td><strong>Balance WPP Phase I Contributions</strong></td>
<td></td>
<td></td>
<td></td>
<td>4,558,165</td>
</tr>
<tr>
<td><strong>WPP Total Contributions</strong></td>
<td></td>
<td></td>
<td>54,554,545</td>
<td>59,112,710</td>
</tr>
<tr>
<td>Administration fee (2%)</td>
<td></td>
<td></td>
<td>(1,529,391)</td>
<td></td>
</tr>
<tr>
<td>Investment Income</td>
<td></td>
<td></td>
<td>1,205,005</td>
<td></td>
</tr>
<tr>
<td><strong>WPP Total Funds</strong></td>
<td></td>
<td></td>
<td>58,788,324</td>
<td></td>
</tr>
</tbody>
</table>

---

3. 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 as of that date. 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.
Since the inception of its second phase, the Program has disbursed $42.6 million through 313 activities. During FY17 through October FY18 only, $24.8 million was expended, which increases to $25.7 million when program management and administration expenditures are taken into account. Table A2 and Figure A show the current allocations and expenditures of the six regional windows and five global windows – including the new Global Solutions Groups (GSG) window set up in FY16. The number of activities per window is also indicated.

### Table A2. WPP Phase II Financial Overview (As of October 31, 2017)

<table>
<thead>
<tr>
<th>Window</th>
<th>Approved Allocation FY13&amp;14</th>
<th>Draft</th>
<th>Under revision</th>
<th>Approved Amount</th>
<th>Disbursed</th>
<th>Committed</th>
<th>Disbursed+Committed</th>
<th>No. of Act.</th>
<th>% of Allocation Approved</th>
<th>% of Approved Disb/Comm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFR</td>
<td>5,000,000</td>
<td>-</td>
<td>-</td>
<td>3,092,270</td>
<td>2,781,086</td>
<td>-</td>
<td>2,781,086</td>
<td>17</td>
<td>61.8%</td>
<td>89.9%</td>
</tr>
<tr>
<td>EAP</td>
<td>3,800,000</td>
<td>-</td>
<td>-</td>
<td>3,146,114</td>
<td>3,386,388</td>
<td>-</td>
<td>3,386,388</td>
<td>23</td>
<td>82.8%</td>
<td>107.6%</td>
</tr>
<tr>
<td>ECA</td>
<td>3,300,000</td>
<td>-</td>
<td>-</td>
<td>2,790,812</td>
<td>2,770,963</td>
<td>-</td>
<td>2,770,963</td>
<td>34</td>
<td>84.6%</td>
<td>99.3%</td>
</tr>
<tr>
<td>LCR</td>
<td>3,400,000</td>
<td>-</td>
<td>-</td>
<td>3,374,600</td>
<td>3,010,076</td>
<td>-</td>
<td>3,010,076</td>
<td>25</td>
<td>99.3%</td>
<td>89.2%</td>
</tr>
<tr>
<td>MNA</td>
<td>2,400,000</td>
<td>-</td>
<td>-</td>
<td>2,070,000</td>
<td>2,229,950</td>
<td>-</td>
<td>2,229,950</td>
<td>9</td>
<td>86.3%</td>
<td>107.7%</td>
</tr>
<tr>
<td>SAR</td>
<td>2,800,000</td>
<td>-</td>
<td>-</td>
<td>2,687,305</td>
<td>2,205,214</td>
<td>-</td>
<td>2,205,214</td>
<td>18</td>
<td>96.0%</td>
<td>82.1%</td>
</tr>
<tr>
<td>Anchor</td>
<td>1,500,000</td>
<td>-</td>
<td>-</td>
<td>1,319,582</td>
<td>1,139,072</td>
<td>-</td>
<td>1,139,072</td>
<td>10</td>
<td>88.0%</td>
<td>86.3%</td>
</tr>
<tr>
<td>Programmatic</td>
<td>6,850,000</td>
<td>-</td>
<td>-</td>
<td>3,937,220</td>
<td>5,115,069</td>
<td>-</td>
<td>5,115,069</td>
<td>12</td>
<td>57.5%</td>
<td>129.9%</td>
</tr>
<tr>
<td>DRM</td>
<td>2,900,000</td>
<td>-</td>
<td>-</td>
<td>2,429,995</td>
<td>2,347,186</td>
<td>-</td>
<td>2,347,186</td>
<td>9</td>
<td>83.8%</td>
<td>96.6%</td>
</tr>
<tr>
<td>WET</td>
<td>6,250,000</td>
<td>-</td>
<td>-</td>
<td>5,545,000</td>
<td>5,201,340</td>
<td>-</td>
<td>5,201,340</td>
<td>125</td>
<td>88.7%</td>
<td>93.8%</td>
</tr>
<tr>
<td>GSG</td>
<td>13,050,000</td>
<td>-</td>
<td>-</td>
<td>14,278,000</td>
<td>12,044,084</td>
<td>-</td>
<td>12,044,084</td>
<td>31</td>
<td>109.4%</td>
<td>84.4%</td>
</tr>
<tr>
<td>Dissemination</td>
<td>3,800,000</td>
<td>-</td>
<td>-</td>
<td>3,840,000</td>
<td>3,600,589</td>
<td>-</td>
<td>3,600,589</td>
<td>n/a</td>
<td>101.1%</td>
<td>93.8%</td>
</tr>
<tr>
<td>PMA</td>
<td>4,580,000</td>
<td>-</td>
<td>-</td>
<td>4,174,938</td>
<td>4,005,058</td>
<td>-</td>
<td>4,005,058</td>
<td>n/a</td>
<td>91.2%</td>
<td>95.9%</td>
</tr>
<tr>
<td>TOTALS</td>
<td>59,630,000</td>
<td>-</td>
<td>-</td>
<td>52,685,836</td>
<td>49,836,075</td>
<td>-</td>
<td>49,836,075</td>
<td>313</td>
<td>88.4%</td>
<td>94.6%</td>
</tr>
</tbody>
</table>
As can be seen in these figures, 83 percent of regional allocations was approved for activities. The global windows show an approval rate of 90 percent.

The average activity size is about $136,000 for the regional windows, and $354,000 for the global windows (excluding the WET window, for which the average activity budget is about $31,000). Compared to WPP Phase I, which saw an average activity size of less than $140,000, the Phase II regional activities were similar and the global activities, often spanning several years, were significantly larger.

PROGRAM MANAGEMENT AND ADMINISTRATION COSTS

Program Management and Administration (PMA) costs are costs incurred by the WPP Team and the 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 October 31, 2017 are 8 percent of total disbursements and commitments – down from 9.1 percent as of June 2016. The decrease of PMA percentage has brought these costs below the WPP cap on PMA costs (9% according to the Administrative Agreement). This is illustrated in Figure B, relatively low activity disbursements occurred the first year of the program, followed by exponential growth of this figure since July 2013. As expected, PMA costs decreased further relative to activity costs by closure of the program.

4. This figure does not include WET management and administration costs.
5. This figure does not include activities under the Expert Support Teams window.
6. The program has set limitations in the financial systems to ensure that PMA spending cannot go over 9% of the total Phase II contributions.
FIGURE B. WPP ACTIVITY VS. PMA DISBURSEMENTS (JULY 2012 – OCTOBER 2018)

Million USD

0 1,000,000 2,000,000 3,000,000 4,000,000


Program Management Disbursements Activity Disbursements
# APPENDIX B: WPP PHASE II RESULTS FRAMEWORK: TARGETS AND FINAL RESULTS

## TABLE A3. WPP PHASE II RESULTS FRAMEWORK (PART I OF 2)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Poverty Reduction through Improved WRM and Service Delivery, and Climate-Resilient Green Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>WPP strategic funding mobilization</td>
</tr>
<tr>
<td>Outcome</td>
<td>Knowledge and operational tools created, disseminated and used</td>
</tr>
<tr>
<td>Indicator</td>
<td>Plans &amp; strategies designed and capacity enhanced for improved WRM and service delivery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-Indicators &amp; Targets</th>
<th>(A) Strategic use of WPP activity funds</th>
<th>(B) Events and training supported by WPP</th>
<th>(C) Web-based outreach and use of WPP publications</th>
<th>(D) New plans &amp; strategies promoted by WPP activities in client countries</th>
<th>(E) Capacity enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Percentage of the value of approved WPP activities in Africa (%)</td>
<td>30</td>
<td>52</td>
<td>1) Number of Participants (#)</td>
<td>4000</td>
<td>8320</td>
</tr>
<tr>
<td>2) Percent of the value of firm contracts (in programmatic window) adopting QBS procurement (%)</td>
<td>50</td>
<td>87</td>
<td>2) Percent of Participants that indicate they are likely to apply knowledge in their work (%)</td>
<td>70</td>
<td>76</td>
</tr>
<tr>
<td>3) Bank internal co-funding for WPP activities (million $)</td>
<td>10</td>
<td>4.3</td>
<td>3.1) Number of agencies/firms represented by Participants (#)</td>
<td>200</td>
<td>1092</td>
</tr>
<tr>
<td>4) External co-funding for WPP activities (million $)</td>
<td>1</td>
<td>1.7</td>
<td>3.2) Percent of Govt. Agencies (%)</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>3.3) Percent of Private firms (%)</td>
<td>40</td>
<td>30</td>
<td>3) Percent of visitors of the WPP website that visit at least 2 pages (%)</td>
<td>40</td>
<td>84</td>
</tr>
<tr>
<td>4) Average quality assessment scoring of WPP knowledge products by client country governments (and WET products scoring by Bank project teams)</td>
<td>4 out of 5</td>
<td>4.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3) River Basin issues</td>
<td>20</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table A4. WPP Phase II Results Framework (Part 2 of 2)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Poverty Reduction through Improved WRM and Service Delivery, and Climate-Resilient Green Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>Climate-resilient green growth enabled through water-smart development</td>
</tr>
<tr>
<td>Outcome</td>
<td>Downstream loans supported through improved design and implementation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator</th>
<th>(F) Amount of Bank lending influenced &amp; additional funding leveraged through WPP activities</th>
<th>(G) Physical and natural assets protected</th>
<th>(H) People benefiting from projects supported by WPP activity</th>
<th>(I) Cross-sectoral mainstreaming of WRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Indicators &amp; Targets</td>
<td>(billion $)</td>
<td>(million)</td>
<td>(billion people)</td>
<td></td>
</tr>
<tr>
<td>1) Value of (WB) investments supported</td>
<td>15</td>
<td>2,6</td>
<td>1,8</td>
<td>0.5</td>
</tr>
<tr>
<td>2) Total project value of influenced investments in which the Bank is involved</td>
<td>25</td>
<td>43</td>
<td>4,208</td>
<td>100</td>
</tr>
<tr>
<td>3) Value of additional investments in which WB is not involved (billion $)</td>
<td>500</td>
<td>&gt;1000</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>4) Number of projects designs improved through a WPP activity (#)</td>
<td>100</td>
<td>246</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>5) Aquifer pumping reduction (million m³/yr)</td>
<td>20</td>
<td>43.7</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>6) Areas provided with irrigation / drainage services (million ha)</td>
<td>2</td>
<td>1.3</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>7) Irrigation / drainage services provided with new/improved irrigation &amp; drainage services (billion people)</td>
<td>30</td>
<td>2.6</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

Note on F.3). A sub-set of activities showed more than $1 billion investment by non-Bank sources, and thus the indicator has been met.

* Sub-indicators H 2.5 and H 2.6, and Sub-indicators I 2 and I 3 are no longer counted as part of the results framework’s 44 sub-indicators.

Note on I.1). 4 of the 5 planned guidance notes were created. However, these notes target 5 different Global Practices (sectors) and thus this target is considered achieved.