



Strengthening Water Security in Mexico (ID: P172159) SUMMARY REPORT



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I. INTRODUCTION

The purpose of this document is to summarize the main outputs and activities that were implemented as part of a technical assistance covering two fiscal years (FY19 and FY20) to support the Government of Mexico to improve the capacity of key Mexican institutions, in particular the water utility of Mexico City (SACMEX in Spanish) and the National Water Agency (CONAGUA in Spanish), for addressing water security through strengthening institutional frameworks and capacities, financial innovations and new planning and investment design approaches.

The ASA supported the Government of Mexico at two different levels: federal and city-level (emphasis on Mexico City). The activities reflect a fluid and constant strategic dialogue with CONAGUA, SACMEX and other key actors so they reflect the shifting priorities during the two fiscal years of implementation. These activities provided the analytical underpinnings and institutional support to increase and strengthen the Bank's portfolio in water supply and sanitation and water resources management.

Given that during these implementation period some activities were dropped whilst other add at the request of the Government, and that these changes were reflected in the progress review report of this ASA, the document has been organized to present activities and outputs in three major components: i) strengthening the financing system for water for economic recovery and rebuilding back better; ii) urban water resilience; and iii) strengthening the water allocation regime.

This document is organized as follows: Section II provides a description of activities and outputs undertaken and completed during FY20¹ and FY21. Section III proposes some activities that could be continued during FY22.

II. DESCRIPTION OF ACTIVITIES

A. STRENGTHENING THE FINANCING SYSTEM FOR WATER FOR ECONOMIC RECOVERY AND BUILDING BACK BETTER

The strengthening of the financing system for water has been a priority for the current administration for the last two years. The Bank continued to provide support throughout the implementation of this ASA. In addition, and related to the component, the Government requested assistance to support water utilities on the financial impact of COVID-19. Below is a description of all activities executed on each FY during the implementation of this ASA.

ACTIVITIES IMPLEMENTED DURING FY20

Workshop: *“Towards the implementation of a Financial System for Water” with key CONAGUA officials and with the objective of advancing the dialogue with government to explore potential*

¹ Descriptions for FY20 correspond to those included in the Progress Report that approved on November 3, 2020.



TA activities that could support the strengthening and modernization of the Financial System for Water. This event was jointly organized with the 2030WRG.

Participants: Representatives of CONAGUA, 2030 WRG, IFC and the World Bank

Main Workshop Findings: i) there is a lack of clarity in the sector regarding the definition, institutional organization and implementation of the Financial System for Water; ii) the World Bank published a report in 2014 with some preliminary findings -including some concrete ideas on specific institutional arrangements and instruments- and CONAGUA and other stakeholders wish to take these findings as a starting point to continue with an exercise of defining and implementation the financing system for the sector; iii) there are a series of limitations in CONAGUA's current institutional structure to coordinate the functions of such a system; and iv) there is an interest in supporting states in developing innovative financial mechanisms. It was agreed that a diagnostic would be carried out as a follow up activity. Following the workshop, the Bank (with the participation of IFC) organized a joint working session with CONAGUA aimed at developing a joint work program. Given a series of changes of personnel in CONAGUA, the joint work program was revised in several occasions. Two activities, listed below, were undertaken as part of the joint program: i) a technical session was organized with support from the FIT team of the Water GP, to present global experiences on Revolving Funds for water and ii) capacity building on unsolicited proposals for PPPs.

Further information on the workshop can be found at:

Document Name: Financial System for Water- Workshop Participant List January 2020

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1295b>

Document Name: Financial System for Water- Workshop output 1

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d12040>

Document Name: Financial System for Water-Workshop output 2

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d12042>

Technical session on global experiences on Revolving Funds to discuss how they are structured and what is the enabling environment required for their proper implementation. This was organized at the request of CONAGUA in order to learn of different instruments that could be design and incorporated as part of the mechanisms available to the sector to increase financing opportunities in the provision of water services. The main conclusions of the session were: i) it is essential to have a corporate guarantee (insurance companies that can assess credit risk) as a pre-requisite to implement a revolving fund; ii) technical validation of projects (by CONAGUA) and financial validation (by the Ministry of Finance) is necessary, iii) municipal water utilities that are subject to credits may apply for this kind of financial instrument, but they must prove that the credit will be used to extend and improve water and sanitation services; iv) Mexico should look at other countries' best practices such as the integration of the National Urban Water Financing Framework in Indonesia; and v) there is a need to support water utilities on becoming more financially efficient. Presentation: Document Name: Financial System for Water- Global Experiences on Revolving Funds April 2020

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203f>



Capacity Building Training Event (on-line 3 session-course) on Unsolicited Proposals for Public-Private Partnerships (PPPs). This online training event covered the following topics: i) the Bank's experience with unsolicited proposals and a presentation of the existing guidelines; ii) the challenges and opportunities to implement water infrastructure projects through unsolicited proposals; iii) a review of the legal requirements to implement unsolicited proposals, iv) recommendations to CONAGUA on key aspects to consider when developing national guidelines on the topic; and v) key recommendations to better manage a pipeline of unsolicited proposals. This event was co-organized with 2030WRG. The presentations can be found in the links below:

Document Name: PPPs and Unsolicited Proposals- Session 1 (CONAGUA Workshop) June 2020

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1048b>

Document Name: PPPs and Unsolicited Proposals- Session 2 (CONAGUA Workshop) June 2020

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d103b5> Document Name:

PPPs and Unsolicited Proposals- Session 3 (CONAGUA Workshop) June 2020

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d103b4>

ACTIVITIES IMPLEMENTED DURING FY 21

During FY21, the Team (includes 2030WRG) continued its support to implement several activities that would strengthen CONAGUA's capacity to work with the private sector and States in the design and implementation of PPPs in the sector. To provide some concrete recommendations, the Bank provided support by documenting the current governance arrangements for a PPP project in the Valley of Guadalupe and an assessment of a State-level (Jalisco) legal framework to promote PPPs in the sector. At the request of CONAGUA and the National Association of Water Utilities (ANEAS in Spanish) the Team, in collaboration with staff from the Water GP, conducted an assessment of the financial impacts of COVID-19 and an evaluation of potential options to design an emergency liquidity facility for the sector.

Institutional Arrangements for a Wastewater Reuse PPP Project in the Valley of Guadalupe. This document presents and assesses the institutional arrangement implemented by the State of Baja California for a wastewater reuse investment that treats water from the metropolitan area of Tijuana and distributes it to the Valley of Guadalupe for its use to irrigate vineyards. The Valley of Guadalupe, one of the most important wine producing regions in the country, has been facing chronic water scarcity and requires a reliable additional supply of water for its production of wine. The project was structured as a service provision contract between the State Water Commission and a private service provider with a take-or-pay contract between the service provider and the wine producers. The document describes the main challenges faced by the selected institutional arrangement and the contracts design and provides a series of recommendations on the conditions required to scale up these types of models that attract the participation of the private sector. The document can be found in the following link: <https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e4673>

An Assessment of Jalisco's PPP Legal Framework. This document includes a detailed legal assessment of the PPP Law. The objective is to extract key recommendations on the existing challenges and constraints that the legal framework contains and how to improve these state-



level legal instruments in order to provide an enabling environment to scale up PPPs in the water sector in the country. The document can be found in the following link: <https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e4673>

Emergency Liquidity Facility for Water Utilities. COVID had a significant financial impact on water utilities in Mexico. Demand for water and sanitation increased considerably, tariff revenues decreased substantially due to a decrease in payments from users, and utilities have delayed much needed investments. Furthermore, financial resources were not allocated by the federal government given restrictions in operating rules that do not allow funds to be used for operating expenses. Hence, the Bank received a request for support in: i) identifying the main government responses in the water and sanitation sector to face impacts of COVID-19; ii) assessing the financial impact of COVID-19 in a selected sample of water utilities; iii) assessing the legal-institutional feasibility for the establishment of an emergency liquidity fund; and iv) providing recommendations on the necessary next steps for the design and implementation of the fund. The Team conducted this assessment by utilizing a financial model designed by the Water GP team for the specific purpose of assessing financial impacts due to the pandemic. A draft working paper has been developed and is currently being revised by ANEAS and CONAGUA. The draft note is available in the following link: <https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e4673>

The Table below summarizes the deliverables for the component (FY20 y FY21) and the respective links to the documents.

DELIVERABLE	LINK TO DELIVERABLE
COMPONENT 1. STRENGTHENING OF THE FINANCING SYSTEMS FOR WATER FOR ECONOMIC RECOVERY AND BUILDING BACK BETTER	
FY20	
Financial System for Water- Workshop Participant List January 2020	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1295b
Financial System for Water- Workshop output 1	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d12040
Financial System for Water- Workshop output 2	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d12042
Financial System for Water- Global Experiences on Revolving Funds	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203f
PPPs and Unsolicited Proposals- Session 1 (CONAGUA Workshop)	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1048b
PPPs and Unsolicited Proposals- Session 2 (CONAGUA Workshop)	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d103b5
PPPs and Unsolicited Proposals- Session 3 (CONAGUA Workshop)	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d103b4



FY21	
Recommendations for the Design of a Liquidity Fund for Water Utilities facing COVID-19 impacts in Mexico	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e4673
Investment Projects and Service Provision Law for the State of Jalisco. General Considerations to Create an Enabling Environment for PPPs	
Treated Wastewater Supply in Valle de Guadalupe	

B. URBAN WATER RESILIENCE

This component reflects an array of priorities that were identified by CONAGUA and SACMEX. The Water Team has been working with the clients for more than five years in the identification of actions to reduce the vulnerability of the water supply system for the metropolitan area of Mexico City. This has included extensive analytical work for the Cutzamala System which helped prioritized investments that would reduce the vulnerability of the existing system to different dry futures. The priority investments are part of the Water Security and Resilience project that was approved in February of 2020.

One of the main recommendations from the modeling work by the Bank was that it was critical to understand the vulnerabilities of the system in Mexico City, particularly in the South of the city as it is a region with high environmental and social vulnerabilities. Data gaps, particularly pertaining to water balance in the southern portion of the city have been identified by SACMEX as a major limitation of ongoing efforts to assess portfolios of options. This is due to the region's primary role in stormwater regulation, recharge for the city's aquifer, and widespread expansion of informal settlements. Though work has been done to characterize the general hydrology in the south of the city, it has been highly fragmented and does not address modeling from a decision centric perspective (i.e. what actions can be taken and what is their impact on management objectives/performance metrics). Furthermore, the quantification of potential of benefits of integrated management of storm water and wastewater water is currently limited by a lack of understanding of the water balance in the South and South Eastern regions of the city. SACMEX requested the Bank to provide support in the development of a bottom-up vulnerability assessment and option analysis (investments) for the South of the City (see below for a description).

Also, and as part of the PROSEGHIR investment project, there was significant interest from CONAGUA in developing energy audit of the system to identify possible savings in the energy use and prioritize a series of investments for the implementation of efficiency measures that could be financed by the project. During the 30 years of operation of the System, various actions have been carried out to maintain the energy efficiencies of the pumps and other infrastructure. However, operating costs remain extremely high, representing a considerable budgetary burden for CONAGUA, and it is necessary to look for various savings alternatives that could include optimization in the use of pumps, optimization of energy use in the potable water treatment facility, co-generation options, etc. So the Team implemented an assessment to identify different options with ASA resources.



For FY21, the team received requests for support from SACMEX on assessing the potential to increase wastewater reuse in the city from the two largest wastewater treatment plants that currently treat around 80% of the wastewater collected in the city. Given the increasing water scarcity facing the City (and the country), reuse is a good strategy to increase the reliability of additional supply sources while providing additional financial resources to the utility. The Bank also received an urgent request from the Federal Government to provide assistance to strengthen water utilities. Utilities have been severely impacted by the COVID-19 pandemic but also suffer from an array of governance issues that require immediate support. With the support of the Water GP, the team in Mexico is bringing resources from a global initiative on Utilities of the Future. An initial pilot is starting in the State of Mexico (Chalco) with the intention of scaling up the effort to other utilities (see below for a descriptions).

i. Bottom-Up Vulnerability Assessment and Option Analysis for Southern Mexico City (Support to SACMEX)

ACTIVITIES IMPLEMENTED DURING FY 20

This activity is providing direct support to SACMEX in planning for potential actions and investments that may be taken to reach their operational objectives. The activity is improving the understanding of the less populated mountainous regions of the basin of the Valley of Mexico and their role in flood/aquifer management in the more populated urban areas, as well as how investments and management practices in these areas can benefit the entire basin. All the mountainous areas of the valley are crucial for the recharge of the system of aquifers in the Valley of Mexico, and there has been significant investment in infrastructure to manage the flows of these mountainous rivers as they enter the urban zone but with limited impact due to a lack of understanding of the entire water system.

The activity began in FY20 with a thorough review of existing information and of the proposed interventions. It also included a review of existing data and the organization of the information (see below the deliverables)

A presentation with a summary of the preliminary modeling efforts can be found here:

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d12960>

Document Name: Presentation Modeling Valley of Mexico - Nov 2019

ACTIVITIES IMPLEMENTED DURING FY 21

Efforts during FY21 has consisted primarily of: i) advancing in the hydrological modeling of the sub basins; ii) formulation of an integrated climate diagnostic for the South of the city and the greater supply system area; iii) start discussions with SACMEX to prepare a diagnostic of the off-network sanitation aspects for the South of the City; and iv) discussions with stakeholders and collection of information on potential investments.

The existing studies which model surface processes and runoff/aquifer recharge in the region largely exclude urban areas and urban processes, resulting in their insufficiency for objectives of the current work and including human effects and groundwater interactions is a complex process. Given the limitations in data available to fully model human and surface-aquifer systems, an alternate approach is being implemented, including the use of statistical models



that can find basic concurrent relations between climatic variables and runoff at the most basic level, and at more advanced levels explore the correlation of current processes to those in the past. These relationships can be explored in terms of aquifer effects (finding the delay of a period of precipitation in the streamflow of a river during the proceeding dry season) or human effects (relationship of human population and income level to water usage). However, when trying to model these relationships alongside climatic variables in relation to streamflow, these relationships are often nonlinear and not immediately clear, and for this, machine learning is being used. Machine learning approaches are data-driven approaches which are meant to find hidden patterns in datasets which can be used to model different nonlinear relations between variables. For this activity, the team will be implementing the Long-Short-Term Memory (LSTM) model. An LSTM model can be thought of as an ARIMA model with highly nonlinear capabilities.

To date LSTM models have been satisfactorily trained for the San Buenaventura and Magdalena/Eslava basins (two of the sub basins in the area) in order to provide proof of concept. Of the remaining six basins to be modeled, only one is gauged. This has led to the decision to expand the scope of the basin modeling to include three additional training basins (Rio Chico, Rio Totolica, and Rio Hondo) to help infer about the basins of interest which do not have stream gauges. This set of 9 basins will be used to train a global LSTM (rather than just for individual basins). The training and validation of this global LSTM is currently underway.

An integrated climate diagnostic, which includes an analysis of observed and projected hydroclimatic data, was undertaken within the context of the broader published literature on climate in the region in order to: a) characterize the hydroclimatology of the region and b) identify hydroclimatic trends of concern for bottom-up vulnerability assessment of the system.

The major findings to date are those related to regional hydroclimatological trends and projections. In general, it is noted that average temperature and maximum temperatures are increasing in much of the study area, which agrees with climate projections for the region. As is typical, climate trends are more nuanced and spatially heterogeneous. Precipitation shows significant low frequency variability around 3-4 years and 15 years, indicating importance of ENSO and possibly PDO-ENSO interactions in regulating regional climate which are both supported within the published literature. Many stations exhibit increases in precipitation falling during rainy days (and increased extremes of daily precipitation) which is in many cases accompanied by an increasing trend in number of days with zero precipitation. In other words, dry days appear to be getting drier while wet days are getting wetter. The overall number of dry and wet days do not appear to be changing over time, but probability of 'very wet' days (i.e. those above 90% exceedance probability of daily rainfall) is increasing in some stations and decreasing in others. Additionally, there is an overall trend of a slight delay in onset of rainy season, though it should be noted that this trend is not uniform across the study area and there is no apparent trend in the offset of the rainy season. It is important to note, that for these reasons and the critical relevance to on the ground water management, measures to ensure that low frequency variability (e.g. ENSO related drought) and changes in rainfall intensity are fully incorporated into climate scenarios that will be used in next steps of the project (vulnerability assessment and investment portfolio evaluation).

The above findings are being incorporated into the generation stochastic timeseries of climate scenarios that will be used to stress test both the Southern Mexico City system as well as the integrated supply system for the Valley of Mexico (Mexico City, Cutzamala and Alto Lerma).



A collection of specific investment options to be modelled, has been compiled from multiple institutional partners in Mexico City. Additional to this, actions have been collected from CONAGUA, the Secretary of Risk (focus on flood mitigation) as well as Agua Capital (focus on green infrastructure). Modeling of portfolios of investments will commence when hydrologic modeling of the Southern Mexico City has been completed (summer 2021).

Four inception reports (University of Massachusetts and University of Cincinnati) can be found here:

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e3e56>

ii. Wastewater Reuse Options for Mexico City (only FY21)

Based on a series of visits made in FY20 to 6 wastewater treatment plants (WWTPs) operated by SACMEX, a brief operational diagnosis was made (Annex 1 in list of deliverables). The main conclusion of the diagnosis is that, at present, practically all of SACMEX WWTPs operate at a low utilization rate (defined as the treated wastewater flow divided by the nominal treatment capacity of the WWTPs). The causes of this low utilization vary from plant to plant. One of the main causes is the serious limitations of treatment capacity due to the lack of maintenance in the WWTPs. This leaves a large part of the treatment processes out of operation. In addition, since there is no redundant equipment, any equipment failure results in a suspension of the service. This lack of maintenance greatly increases the operation and maintenance (OpEx) costs of these WWTPs. For example, Cerro de la Estrella, which is the largest WWTP operated by SACMEX, has a design capacity, or nominal capacity, of 4000 L / s and operates at flow rates between 1300 L / s and 2400 L /s, due to serious operational limitations derived from lack of maintenance. In addition, the main interceptor that transports the sewage to Cerro de la Estrella has a blockage that reduces its transport capacity from approximately 4000 L / s to 2400 L / s (approximate values).

The Bank is providing support to SACMEX on the optimization of the existing infrastructure in two WWTPs (Cerro de la Estrella and San Juan de Aragon) which consists of identification of actions and investments to increase their treatment capacity, reduce capital and operational expenses, and improve the quality of the effluent in order to be reused.

Deliverables for this activity can be found here:

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e209d>

In addition to the optimization exercise, the Team is collaborating with the IFC on two related aspects: i) a legal review of the existing possibilities to engage a private operator in the reuse of wastewater and ii) a market assessment of the demand for reuse. These two activities are financed with IFC resources from their Upstream Unit.

iii. Utilities of the Future (New activity - FY21)

Recently CONAGUA and the government of the State of Mexico, requested technical assistance from the Bank to strengthen water utilities and help them overcome the challenges that they are facing in the recovery phase post-COVID-19. The Water GP's global team



coordinating the Utilities of the Future framework will be providing support to implement a pilot project in the municipality of Chalco. The implementation of the framework will result in a rapid assessment of the utility's internal operations and will provide recommendation on certain actions that can be implemented in the short term to improve its performance and service provision. Depending on the results of this phase, the possibility of scaling up the exercise to other utilities will be discussed with the client.

iv. *Energy Efficiency of the Cutzamala System*

As part of this ASA, an assessment was made of the existing operation of the system to determine whether some energy measures could be optimized to reduce the large operating expenses for energy. The inception report concluded that the pumps are running efficiently, and the operation is adequate. However, there are recommendations to study an option to install floating solar panels in a few of the reservoirs.

The inception report can be found here:

<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e4677>

DELIVERABLE	LINK TO DELIVERABLE
COMPONENT 2. URBAN WATER RESILIENCE	
FY20	
Bottom-Up Vulnerability Assessment and Option Analysis for Southern Mexico City	
Presentation Modeling Valley of Mexico - Nov 2019	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d12960
FY21	
Interim Report. Towards A Water Security and Resilient Strategy for the South and Eastern Region of Mexico City. Component 2. January 2020	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e3e56
Interim Report. Towards A Water Security and Resilient Strategy for the South and Eastern Region of Mexico City. Component 2. Dec 2020	
Interim Report. A Water Security and Resilient Strategy for the South and Eastern Region of Mexico City. Component 1.	
Wastewater Reuse in CDMX	
Wastewater Reuse Work Program	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e209d
Annex 1. Reuse	
Annex 2. Water and Energy	
Annex 3. Initial Assessment and Optimization of two Wastewater Treatment Plants	
Annex 4. Information needs for the two Wastewater Treatment Plants (Cerro de la Estrella and San Juan de Aragón)	
Energy Efficiency of the Cutzamala System	
	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b0884e4677



Assessment of Energy Efficiency, Load Management and Renewable Energy options for Cutzamala Water Supply and Treatment System	
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C. STRENGTHENING THE WATER ALLOCATION REGIME

ACTIVITIES IMPLEMENTED DURING FY 20

The main objectives of this activity are: i) enable a multi-stakeholder dialogue to support the identification of the main drawbacks and opportunities to support the strengthening of the water allocation regime to provide for greater adaptive flexibility and legal certainty, ii) provide high-level technical assistance to CONAGUA in analysing the policy response to provide the water allocation regime with greater resilience during the COVID-19 emergency response, and iii) engage in a high-level dialogue with CONAGUAs Deputy Director for Water Management to identify a series of challenges and entry points to continue to support the strengthening of key policy instruments of the water allocation regime, including the formalisation of informal water markets (black markets) and a comparative study of water registries.

A Technical Document was prepared. This document provided a diagnosis of key elements of the water allocation regime, with policy recommendations on how to strengthen them to provide for greater resilience, adaptive flexibility and legal certainty.

Related documents can be found in the following links:

Document Name: Strengthening the Water Allocation Regime- Additional Comments (2030WRG-BM)
<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203b>

Document Name: Strengthening the Water Allocation Regime - Efficient Water Use
<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203c>

Document Name: Strengthening the Water Allocation Regime- Initiative for Water Security and Legal Certainty in Mexico (Phase 1)
<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203e>

Document Name: Strengthening Water Allocation Regime-Temporary Transmissions
<https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203d>

ACTIVITIES IMPLEMENTED DURING FY 21

During FY21 activities continued to focus on providing TA to support the strengthening of the Mexican water allocation regime and to provide for greater resilience and water use efficiency. Accordingly, a document is being drafted focusing on normative principles, organizational guidelines and policy instruments- and highlighting some recommendations for further improvements to the existing regime.

DELIVERABLE	LINK TO DELIVERABLE
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COMPONENT 3. STRENGTHENING THE WATER ALLOCATION REGIME	
FY20	
Strengthening the Water Allocation Regime- Additional Comments	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203b
Strengthening the Water Allocation Regime - Efficient Water Use	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203c
Strengthening the Water Allocation Regime- Initiative for Water Security and Legal Certainty in Mexico (Phase 1)	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203e
Strengthening Water Allocation Regime-Temporary Transmission	https://wbdocs.worldbank.org/wbdocs/drl/objectId/090224b087d1203d



III. FUTURE ENGAGEMENT

Based on existing demands from the Government and the level of implementation of the activities described in this summary document, it is proposed to prioritize those activities that are ongoing and that can derive some additional business for the Bank. In addition to this and based on a dialogue to discuss with the client new demands for FY22, new activities could be envisioned but these will need to be defined in early FY22.

A. STRENGTHENING THE FINANCING SYSTEM FOR WATER FOR ECONOMIC RECOVERY AND BUILDING BACK BETTER

CONAGUA has continued to express great interest to get additional support from the Bank in their efforts to implement the financing system for water and in developing innovative financial mechanisms that would improve the efficiency of the public spending, attract private sector finance, and improve service delivery. Hence, future ASA work could focus on the assessment of potential innovative financing mechanisms to support economic recovery and rebuilding back better. Accordingly, a political economy and institutional-legal diagnostic could be carried out to explore the viability of joint ventures, state-level water funds, project preparation facility, take or pay contracts for water treatment and re-use, and unsolicited proposals.

Interest on exploring potential opportunities to implement a financial liquidity facility for water utilities continues to grow. Further efforts could be geared towards detailing the potential opportunities to design such an instrument and the role that the Bank could play.

B. URBAN WATER RESILIENCE

i. *Bottom-Up Vulnerability Assessment and Option Analysis for Southern Mexico City (Support to SACMEX)*

As this work nears finalization, there is a need for increased effort, particularly post-COVID, for ramping up the engagement with local counterparts to ensure the uptake of products and recommendations. Work would also consist of: a) in depth exploration of portfolios of options and exploration of project financing options with strategic partners; b) open sourcing of key technical outputs, including data products and models; and c) training and uptake of tools and methods with institutional counterparts.

ii. *Wastewater Reuse for CDMX*

Numerous simulations remain to be carried out under different operating conditions. If conditions allow, it would be important to carry out longer visits to the two WWTPs to be able to observe the status of the equipment, better understand how to operate the processes, and define with a better approximation the needs for equipment (CapEx), instrumentation and control. Part of this work could be carried out remotely with the support of video cameras that allow the equipment and processes to be seen. This combined with interviews with the operators could provide information to keep moving forward until the WWTPs can be revisited. With all this information, projections of CapEx and OpEx involved with each potential



alternative could be made. In this way, the optimal alternative for reuse and optimization of WWTPs could be selected.

iii. City-wide inclusive sanitation

As part of the work that the Bank is supporting SACMEX, an assessment and recommendations will be made for off-network sanitation solutions for the south of the city. The area has no access to the sewerage network and there is a limited understanding of the systems being used by the inhabitants of the area nor of the disposal and transport of sludge and other products.

iv. Utilities of the Future

Depending on the results of the pilot project that will be implemented in the municipality of Chalco in the State of Mexico, the government has manifested its interest in scaling up the World Bank's assistance by bringing the Utilities of the Future methodology to other utilities in the country.

v. Energy Efficiency of the Cutzamala System

The assessment determined that the system is being operated efficiently and that further gains in energy efficiency would be marginal and not cost-effective. But there is a possibility that significant operating costs can be reduced by the installation of floating solar panels in a couple of reservoirs of the system. The team has been in discussions with the Energy GP to collaborate on a pre-feasibility study that would analyze the options that could be implemented and the potential savings. It is recommended to continue with this activity as there is strong interest from the Government on reducing energy costs and emissions.

C. STRENGTHENING THE WATER ALLOCATION REGIME

It is recommended that a broad stakeholder dialogue could be organized to disseminate the preliminary results of the work and discuss implementation options of the recommendations provided.