USAID Water and Development Country Plan for Jordan

I. Executive Summary

Jordan is facing a growing water crisis. Jordan's water challenge begins with natural aridity that is forecasted to get worse in the coming decades. Its per capita share of renewable water resources is less than 100 cubic meters per year, which is expected to fall to 90 cubic meters per year by the year 2025. Population growth has further exacerbated an already stressed water sector, while the influx of Syrian refugees has placed an additional burden on the water supply services. This is particularly true in the northern governorates, which already suffer from water resources that are even more strained. Lastly, Jordan has limited renewable water resources, and groundwater for irrigation and drinking water is being over-abstracted at twice the rate of recharge for the aquifers, which furthers reduces the availability and quality of water.

U.S. Embassy Amman's water plan leverages an interagency approach that directly supports the USG Global Water Strategy and the USAID Agency-specific Plan to promote water security by increasing sustainable access to drinking water and wastewater services in an exceedingly water scarce environment. Supporting the Ministry of Water and Irrigation (MWI) and the priorities identified through their Water Sector Capital Investment Plan 2016–2025, USAID/Jordan is focused on: 1) expanding water and wastewater infrastructure; 2) strengthening water sector governance, including reducing non-revenue water (NRW); and 3) increasing water conservation.

II. Introduction

Jordan is in a critical situation due to the lack of fresh water. The influx of Syrian refugees has further stressed the water supply and services in Jordan, particularly true in the northern governorates where water resources are already strained. In 2015, estimated water demand for all sectors was 1,400 million cubic meter (MCM), while sustainable supply averages around 780 MCM, showing the huge deficit between demand and the available water resources. Agriculture comprises about 4.2 percent of Jordan's Gross Domestic Product and accounts for 51 percent of the kingdom's water demand.[1,2] To meet the needs of the increasing population, which is projected to increase by 20 percent over the coming 10 years, Jordan will have to make gains in increasing the water supply, reducing NRW, and improving water conservation, especially in the agriculture sector.

III. Government of Jordan (GOJ) Water Objectives

The MWI National Water Strategy and Water Sector Capital Investment Plan (CIP) 2016–2025 stem from Jordan's Vision 2025.[3] The CIP plan's overall objectives include: 1) securing a water supply; 2) developing new water resources that will enhance the water allowances per capita; 3) providing access to improved water supply; and 4) expanding the wastewater services and

[1] https://www.cia.gov/library/publications/the-world-factbook/fields/2012.html
[2] National Water Strategy of Jordan 2016-2025
[3] http://www.nationalplanningcycles.org/sites/default/files/planning_cycle_repository/jordan/jo2025part1.pdf

coverage all over the kingdom. By 2025, the plan is expected to lead to the provision of 105 liters per capita per day of metered water access, reduction in NRW from an average of 50 percent to 25 percent, improvement of energy efficiency of water pumping (reduction in energy use to 3.66 kwh/m^3), and the expansion of wastewater services coverage to 80 percent of the kingdom. The strategy also includes guidance toward strengthening the criminalization of water theft and illegal wells.

The Jordanian National Strategic Wastewater Master Plan of 2014 calls for all cities and small towns in Jordan have adequate wastewater collection and treatment facilities by 2035. According to MWI's master plan, that would mean 85 percent of Jordan's population will be served with wastewater services by 2035. This will leave about 15 percent of the population residing in communities with less than 5,000 people who will be excluded from the wastewater collection systems. The total amount of additional treated wastewater is estimated to be around 94 MCM. This additional treated wastewater is critical, as it serves as an additional source of water for irrigation.

IV. Government of Jordan's Current and Planned Strategies and Approaches to Water and Sanitation

The GOJ, in an effort to achieve its goals within the water sector, has focused on governance, decreasing NRW, as well as water and wastewater infrastructure, water efficiency, and conservation.

Historically, Jordan has managed its water supply services through vertically integrated bulk water supply and distribution utilities under MWI. The Water Authority of Jordan (WAJ) provides municipal water supply and sewerage services and the Jordan Valley Authority (JVA) provides water services to the Jordan Valley. Despite the intuitional and legislative framework reforms that have already taken place, there is much more that remains to be done in terms of both institutional restructuring and capacity building before Jordan's water sector institutions can effectively and efficiently ensure the country's water security. MWI has an aggressive goal of seeking to reduce NRW losses from 52 percent to 25 percent and technical losses to below 15 percent by 2025.

The MWI strategy also includes strengthening the criminalization of water theft and illegal wells. According to WAJ, hundreds of thousands of stolen and wasted cubic meters of water have been saved since a serious crackdown on water theft and violations that was initiated in August 2013. In fact, the effort to stop illegal connections and the water saved from this effort has resulted in a 20 percent increase in national domestic water supply in the last five years. The Minister of Water and Irrigation told us in April 2017 that the campaign had disconnected more than 31,000 illegal connections to date, and had addressed illegal well drilling at all levels of society, including among Jordan's business and political elite, sometimes at great personal risk to the Minister and his staff.

The donor landscape in Jordan is heavily populated, making consultation and coordination at the project and activity level important. USAID/Jordan's water programs build on 60 years of the USG's past accomplishments. Activity designs are developed in close collaboration with the

GOJ, and integrate coordination with numerous USG and external stakeholders to include the State Department, Millennium Challenge Corporation, development partners (the European Union, the World Bank, the French, and the United Nations Development Program), private sector, and civil society.

V. Challenges and Opportunities in the Sector

Jordan is one of the driest countries in the world. Natural aridity and a growing population places Jordan's per capita share of renewable water resources below 100 cubic meters per year. Models indicate that by 2030 to 2040, the temperature in Jordan will increase by one to two Celsius degrees, and precipitation will decrease by 15 to 20 mm per year on average across the country.[4]

Population growth, coupled with a history of political instability in the region and an influx of over one million Syrian refugees, has further stressed the water sector in Jordan, particularly in the northern governorates. The refugee situation has strained water supply and infrastructure across the country, and resulted in significant demand and supply management challenges. Following the abandonment of irrigated agriculture in southern Syria as a result of the conflict, there has been an unanticipated increase in transboundary flow downstream to Jordan. However, this increase does not offset the spike in freshwater demand created by Syrian refugees in Jordan, nor does it fulfill the volume of water anticipated by bilateral water sharing agreements with Syria.[5]

U.S. Geological Survey (USGS) estimates that groundwater levels are declining by about 1 meter per year in groundwater basins with large withdrawals, and if these rates of decline continue, average saturated aquifer thicknesses were forecast to decline by 30 to 40 percent by 2030.[6] As groundwater resources decline, Jordan is forced to turn to more expensive sources of water, such as the Red Sea-Dead Sea Project, reuse of treated wastewater, installation of desalination facilities, and the utilization of the treated dam surface water.

The MWI has several efforts to secure additional water resources including: abstraction from the non-renewable Disi aquifers, and the reduction of water losses through the prevention of illegal connections. These two efforts have resulted in a 20 percent increase in national domestic water supply in the last five years, and overall 95 percent of the population has access to an improved drinking water supply on at least an intermittent basis, and approximately 63 percent are connected to a public sewer system.[7]

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[4] Ministry of the Environment - Jordan. 2014. Jordan's Third National Communication on Climate Change. http://www.undp.org/content/dam/jordan/docs/Publications/Enviro/TNCpercent20jordanpercent20pdf.pdf

[5] Jim Yoon, Marc F. Muller, and Steven Gorelick. February 13, 2017. How the Syrian refugee crisis affected land use and shared transboundary freshwater resources. The Brookings Institution. https://www.brookings.edu/blog/planetpolicy/2017/02/13/how-the-syrian-refugee-crisis-affected-land-use-and-shared-transboundary-freshwater-resources/

[6] USGS. Executive Summary for Open-File Report 2013–1061. Groundwater-Level Trends and Forecasts, and Salinity Trends, in the Azraq, Dead Sea, Hammad, Jordan Side Valleys, Yarmouk, and Zarqa Groundwater Basins, Jordan. https://pubs.usgs.gov/of/2013/1061/support/ofr2013-1061_ES.pdf

[7] National Strategic Wastewater Master Plan Final Report, 2014.

Jordan has received significant freshwater supplies from Israel via the USAID-constructed King Abdullah Canal since the Jordan-Israel Peace Treaty was concluded in 1994, and is slated to receive additional supplies via water swaps scheduled to begin circa 2021 when the Red Sea-Dead Sea Water Project comes online. These supplies currently amount to 55 MCM per year, and will increase to 105 MCM per year when the Red-Dead water swaps begin. Jordan and Israel may negotiate for further bulk water supplies to be provided in the future, which could eventually reach 200 MCM per year, though Jordanian officials are cautious about obtaining too much of their freshwater supplies from sources outside of Jordan's sovereign control.

Sanitation coverage is lower than that of water. Many wastewater treatment plants are either overloaded or in poor operating conditions. Collected wastewater is treated by 33 wastewater treatment plants across the country and largely reused indirectly for irrigation in the Jordan Valley. While only 63 percent of the population is connected to public sewer systems, the proportion with safe sanitation exceeds 93 percent, with one-third of the population using septic tanks and cesspits. Assuming that infiltration from these facilities is 70 percent, nearly 50 MCM/year of wastewater is lost and serves as a threat to groundwater quality.[8]

VI. U.S. Embassy Amman Country Team Coordination on Water

Among the agencies resident at the U.S. Embassy in Amman, USAID and Department of State are the main USG actors in Jordan's water sector, though significant support has been provided in the recent past by the Millennium Challenge Corporation via its just-concluded project to expand the As-Samra Wastewater Treatment Plant and improve water networks in Zarqa.

Washington-based agencies including USDA, USGS, and the U.S. Forest Service also make regular contributions in support of the overall USG effort to support Jordan's water sector. The Department of State and USAID share responsibility for coordinating the activities of non-resident agencies working Jordan's water sector.

USAID/Jordan has the lead role in developing and implementing development activities for Jordan's water sector, providing water policy advice to the GOJ, and coordinating water interventions among other international donors.

The Department of State focuses on political and policy aspects of Jordan's water sector. This includes, for example, high-level political support for regional projects like Red-Dead, as well as facilitating negotiations between Jordan, Israel, and Palestinians regarding water issues. We envision a future role for the Department of State in supporting future water negotiations between Syria and Jordan, and we expect that the Department of State will continue to provide ongoing support for political and cross-border aspects of the Red-Dead project.

[8] Ministry of Water and Irrigation WATER SECTOR CAPITAL INVESTMENT PLAN 2016 – 2025

VII. USAID/Jordan Country Plan for Water

The purpose of the USAID/Jordan water program is to improve the quality of the social sector through more accountable and sustainable management of water and natural resources. The overall objectives are:

Improve water and wastewater infrastructure: Improving the infrastructure of the water sector, including wastewater infrastructure, is desperately needed. The GOJ estimates the capital expenditures alone required for the water sector at JD 3.2 billion from 2016 to 2025, approximately $4.5 billion. USAID provides support to MWI to plan infrastructure improvements, as well as funding the construction of water and wastewater infrastructure projects. Current infrastructure projects include the rehabilitation of the Zara Ma'in Water Treatment Plant, construction of the Mafraq, Jerash, Tafileh Wastewater Treatment Plants, and improvements to the Amman water supply network. USAID also supports the critical Red Sea-Dead Sea Water Project.

Strengthen water management: Water sector reforms are required to ensure the highest level of sector performance, including an enhanced capacity to plan, design, procure, and manage infrastructure upgrades. USAID/Jordan programs directly respond to GOJ's National Water Strategy that aims at reducing NRW by 3 to 6 percent per year with a targeted reduction to 25 percent nationally, which will result in additional water made available to approximately two million people by 2025, as well as helping the GOJ improve cost recovery more broadly.

Increase water conservation: The intent is to maximize water savings and conservation at the end user level. The expectation: a significant decrease in the unsustainable abstraction of aquifers; augment water available in households; increase capture of water runoff; and transform marginal water through brackish water desalination or treatment into water of a higher quality. USAID's Water Innovations Technologies will provide access to technologies, demonstrations, and financing to utilize proven, improved, and cutting-edge technologies to reduce water consumption in the agriculture sector. Hydroponics farming, for example, has the potentials to save 50–80 percent of the water used in traditional cultivation with drip irrigation.

These objectives will lead to a reduction in water losses, and increase the reliability, sustainability, and access to water and sanitation services. Additionally, the percentage of wastewater treated will be increased, as well as the volume of treated wastewater available for productive (economic) use. Water and sanitation sector institutions will be strengthened (from national level authorities to community-level services), focusing on loss reduction and use of more efficient water innovations and management approaches. These objectives will be achieved by the construction of new infrastructure, improvement of existing infrastructure, demonstration of new technologies, and the provision of training and technical assistance. As a result, the water sector will receive an improved drinking water and sanitation services.

USAID/Jordan collaborated with other USG agencies: USGS and the U.S. Department of Agriculture to leverage their expertise through technical assistance and may engage them under the new program. Those mechanisms will be designed in the future as needed.

Expected results: Overall, these activities are expected to provide over two million Jordanians with sustainable access to safely managed water or with water quality improvements, and help over 180,000 people gain access to safely managed sanitation by 2020. The results reported reflect targets at the time of this document's production, however, targets may be updated on an annual basis.

Figure 1: Current Activities

Task /Activity	Effective Dates
Water Sector Infrastructure Project. A contract for Construction Management Services.	2015 – 2019
Management Engineering Services. A contract to reduce NRW.	2015 – 2020
Water Innovations Technologies. A cooperative agreement to increase water conservation in the agriculture sector.	2015 – 2022
Water Management Initiative. A contract to improve governance and management of the water sector.	2016 – 2021
Jerash Wastewater Treatment Plant. A contract to construct a wastewater treatment plant.	2015 – 2019

The Jordan Country Plan is costed based on prior year resources still available for programming, the FY 2017 estimated allocation of $58.0 million, and the FY 2018 President's Budget Request of $60.0 million.