The Hashemite Kingdom of Jordan

Ministry of Water and Irrigation

WATER SECTOR
CAPITAL INVESTMENT PLAN
2016 – 2025

2016

This document is an integral part of the National Water Strategy, and related policies and action plans.

1. National Water Strategy 2016-2025.
2. **Water Sector Capital Investment Program (2016-2025).**
3. Water Demand Management Policy.
4. Energy Efficiency and Renewable Energy in the water sector Policy.
5. Water Substitution and Re-Use Policy.
6. Water Reallocation Policy.
7. Surface Water Utilization Policy.
8. Groundwater Sustainability Policy.
9. Climate Change Policy for a Resilient Water Sector.
10. Decentralized Wastewater Management Policy.
11. Action Plan to Reduce Water Sector Losses (Structural Benchmark).

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FOREWORD

Jordan is known to be one of the most water scarce countries in the world, where water shortage has become of a permanent nature, meeting water demands a challenge and managing water resources imperative. Today, Jordan cannot rely solely on surface water and groundwater to satisfy the demands of the population. It also needs to look at alternative resources, including non-renewable groundwater, until desalinated sea and brackish water are made available. Reclaimed wastewater is another option and is already being used. These challenges for Jordan, and the Ministry of Water and Irrigation MWI as the planning body in the water sector, are the main focus of the development of the water sector Capital Investment Plan CIP.

Jordan is a nation burdened with extreme water scarcity that has always been one of the biggest barriers to our economic growth and development. This crisis situation has been aggravated by a population increase that has doubled in the last two decades alone because of refugees fleeing to Jordan from neighboring countries. We must then add to this the transboundary issues affecting Jordan's water supplies in addition to climate change where precipitation decreased by 20% over the last few decades.

In the face of these challenges, and to achieve our goal of successful integration of Jordan's water resources management, the Ministry of Water and Irrigation has been active in putting forward the Capital Investment Plan that set clearly defined the upcoming potential investments to manage the scarce water resources efficiently, effectively, and sustainably. This new Capital Investment Plan lays out the measures, actions, and programs required achieving our national goals for long-term water security. This Capital Investment Plan is built upon and updated from previously adopted strategies, policies, and plans.

This volume is the result of the efforts of many people to whom I am thankful. My team has been putting great efforts to develop the Capital Investment Plan.

Dr. Hazim El- Naser
Minister of Water and Irrigation

EXECUTIVE SUMMARY

1. Water is fundamental to life and sustaining the environment, and plays a central role in the social and economic development of Jordan. It touches all spheres of life including domestic, agriculture, livestock, wildlife, industry, energy, and other social and economic activities. Water plays a pivotal role in poverty alleviation through enhancing food security and domestic hygiene security, and the environment for sustenance of ecosystems. Availability of adequate water supply with good quality reduces time spent in fetching water and increases health standards. Use of contaminated water poses health risks to the population as evidenced by the prevalence of waterborne diseases such as diarrhea and cholera.
2. Since the armed conflict in Syria in 2011 the influx of Syrian refugees has further deteriorated the condition of water supply services in Jordan and particularly in the northern governorates which already suffers from limited water resources, small amount of per capita water supply, high NRW, etc. The total amount of pumped water all over the kingdom is about 429 MCM in 2014, given that the population increase will be around 20% over the coming ten years till 2025. The Capital Investment Plan report was designed based on 25% - 35% increase of the amount of water needed over the coming ten years (in total of 120 MCM), which will lead to have 557MCM total amount of water pumped.
3. The Water Sector has been included among priority sectors in the National Strategy for Jordan (Jordan 2025) as well as the National Agenda of Government of Jordan GOJ.
4. The main objectives of the Water Sector Capital Investment Plan 2016 – 2025, is to improve the inadequate distribution system (Rehabilitation & Improvement), to reduce the leakage through replacement of inferior pipes and adequate maintenance of pipes, to improve the distribution management equipment and technical capacity for equitable supply, also, to provide a comprehensive framework for sustainable development and management of the Nation's water resources, as well as to highlight the main areas that the investment will be directed, in which an effective legal and institutional framework for its implementation will be put in place. The Water Sector Capital Investment Plan 2016 – 2025 has the following overall objectives: Securing water supply, developing new water resources that will enhance the water allowances per capita, providing access to improved water supply, and expanding the wastewater services and coverage all over the kingdom. Also, the water sector investment plan will lead to water metered per capita by 105 (l/c/d) in 2025, reduction in NRW to 30%, enhancing the energy efficiency usage to 3.66 kwh/m^3 of water pumped in 2025, expanding the coverage of the wastewater services to become 80% in 2025.
5. The framework for Water Sector Capital Investment Plan 2016 – 2025, strategies and financial planning in Jordan stems from Jordan Vision 2025, which provide the overall guidance. These existing policy and strategy documents contain operational targets to be achieved in terms of level and timescale for improving water resources management, and water supply, sewerage and sanitation. Consideration of these targets was one of the starting points for developing the Water Sector Capital Investment Plan 2016 – 2025.
6. Water programs were divided into three categories; Water Resources, Bulk Supply, and Retail and Distribution. The Retail and Distribution includes two groups; Irrigation Water and Domestic, Commercial and Tourism, which was divided into two phases, phase one (covers the period from 2016 till 2020) considered as a rehabilitation phase that will focus on the rehabilitation of the water network based on the amount of water supply in 2014. Phase two (covers the period from 2021 till 2025) considered as an improvement phase that will focus on handling the amount of

water raised by 25% - 35% to cope with the population growth over the coming ten years, including the influx of the refugees. The investment plan includes development of new water resources in total of 120 MCM. Over ten years (CIP timeline), Amount of Additional Water Resources that will Supply the Drinking Water excluding the Red Sea Dead Sea is around 187.5 MCM, not including the Red Sea Dead Sea RSDS Projects amount of water, which is 235 MCM for the both phases, phase I & II. The RSDS will be on BOT basis with total investment of about JD 2 billion.

7. The wastewater projects were derived from the National Strategic Wastewater Master Plan 2014, which calls for all major cities and small towns in Jordan to be provided with adequate wastewater collection and treatment facilities by the year 2035. The wastewater projects were divided into three categories; Rehabilitation and Upgrade of Existing Systems, Expansion of Services to Unsewered Areas, and Wastewater Treatment Plants. According to the Master Plan, 85% of the nation's population will be covered in the year 2035, if the 173 localities with more than 5,000 people are served. This leaves only about 14% of the population residing in communities with less than 5,000 people who will be excluded from the wastewater collection systems. Over ten years (CIP timeline), the total amount of additional treated wastewater is around 94 MCM. The below table shows that that 86% of the nation's population will be covered if the 173 localities with more than 5,000 people are served. This leaves only about 14% of the population residing in communities with less than 5,000 people who will be excluded from the wastewater collection systems.
8. The CIP will require JOD 3,505.49 million for water projects and JOD 1,902.63 million for wastewater projects. The total investment will be around JD 6 billion including the energy projects.
9. In the CIP report, financial analyses have been done; Net Present Value (NPV)—financial and economic, Internal Rate of Return (IRR)—financial and economic, Unit costs (financial and economic) as a means for cost effectiveness analysis of projects of the same type.

1 INTRODUCTION

As populations have continued to grow the world over, resources have not. Arguably the most essential and endangered resource is fresh water and its increasing scarcity has become more terrible with each passing year. The Middle East, in particular, has been confronting a critical situation with regard to water resources for some time and yet the region still struggles with how to cope with its depressing lack of fresh water. Populations in the region have more than quadrupled during the last five decades and are expected to continue to grow at a fast pace. Whereas the per capita share of renewable water resources in the region was 1,857 m^3 per year in 1967, it is now less than 566 m^3 and falling. In a region already widespread with security concerns, destabilization, and the current and continuing revolutions originating from the Arab Spring, the maintenance and protection of water resources continues to compete for the attention of national leaders. Within this regional setting, Jordan is a prime country to examine due to its even more terrible lack of fresh water resources as compared with its regional neighbors that are more blessed with water or have the wealth to create it with desalination technology. Jordan is considered the fourth driest country in the world, which is not surprising due to the desert environment that encompasses 92% of its land area. Its per capita share of renewable water resources is less than 100 m^3 per year, which is expected to fall to 90 m^3 per year by the year 2025 (including the Non-Revenue Water NRW). This is significantly lower than the standard "water poverty line" of 500 m^3 per person per year and appears even graver when compared with average per capita water availability in other county like the United States of around 9,000 m^3 per year.

In order to better grasp and visualize how Jordan copes with such a poor water situation and manages to supply its citizens with a sufficient supply of freshwater, Geographic Information Systems (GIS) is used to map out the country's water needs, water resources, and how the needs are met by the resources. This is no small accomplishment in Jordan, where the current water requirements for agricultural, municipal, industrial and tourist needs amount to 972 million cubic meters (MCM) per year (year 2014 as a reference year) , whereas the supply of freshwater amounts to only around to 850 MCM per year. In addition, it should be noted that the water requirement amount is actually a simple minimum because water is already rationed and used in a cautious manner. Unfortunately, the demand on Jordan's precious water resources will only continue to rise as the population and its needs continue to grow and develop.

Jordan has low water supply – among the lowest renewable water resources per capita of any country and moderate water demand; Jordan's economy uses an average amount of water per capita

compared to other countries. Jordan's water deficit is made up primarily through the "virtual" water in imported agricultural goods. With low supply and moderate demand, the economic cost of water in Jordan is very high, even if the government maintains a low price. Only through significant improvements in efficiency and reduced demand (allowing supply to be limited to lower cost sources) could Jordan reduce the economic cost of water.

Jordan is already using essentially all its domestic renewable water resource. Groundwater is being withdrawn at approximately double the natural recharge rates. And, prospects are very limited for capturing more surface water through dams and water harvesting (small-scale water collection, which is expensive because of limited rainfall). Climate change is predicted to decrease annual precipitation by 4% to 27% of current levels, with other factors such as rainfall intensity, rainfall frequency, and soil moisture, further reducing naturally available and renewable water resource.

As groundwater resources decline, Jordan anticipates using more expensive sources of water, such as the Red Sea Dead Sea Project, treated wastewater, desalination, and the utilization of the treated dam surface water. Absent improvements in how Jordan uses its water, projected population and economic growth will significantly increase water demand, potentially doubling to 1,550 MCM/yr. by 2025, and push Jordan to access these costly water sources, creating a drag on the economy.

WATER MANAGEMENT SYSTEM REVIEW

WATER SUPPLY AND DEMAND

Water resources in Jordan are directed towards four different sectors: agriculture, municipal supplies, industry, and tourism. By far, the largest user of the country's water resources is the agriculture sector, which uses roughly 60% of the total water supply, while 36% goes to municipal uses, 4% for industry. Agriculture in Jordan is concentrated in two primary regions, the Jordan Valley and the Highlands. While the Jordan Valley is a much smaller area of land, this is where the bulk of the country's agricultural production occurs and thus, where most of Jordan's surface water resources are directed. In much of the Highlands, water is acquired from rainfall or wells.

Table (1): SOURCE OF WATER USE (MCM) IN JORDAN, 2014

Source	Municipal	Industrial	Irrigation	Livestock	Total
Surface Water	**103.8**	**4.8**	**143**	**7**	**258.6**
Jordan Rift Valley	91.4	4.8	83	0	179.4
Springs	12.5	0	20	0	32.5
Base and flood	0	0	40	7	47
Groundwater	**325**	**32.2**	**231.2**	**0.1**	**588.5**
Renewable	207.2	19.3	189.4	0.1	419.2
Non renewable	107.2	12.9	41.8	0	162.1
Abo Zeighan	10.2	0	0	0	10.2
Treated waste water	**0**	**2**	**123.3**	**0**	**125**
Total	**429**	**39**	**497.5**	**7.1**	**972**
Total including additional 225 MCM used for irrigation which were estimated using remote sensing techniques					**1197**

After accounting for the water users in Jordan, a look to the country's water supply is needed in order to see how the demand is met. Jordan's conventional, or natural, water resources originate in rainfall, ground waters, and surface waters. The country has developed various ways in which to capture, store and distribute these waters, and it has developed some unconventional water resources such as treated wastewater, as well as the utilization of the dam surface water. GIS can support in the visualization of the location of these resources, their breadth and the difficulties faced in making them reach end users.

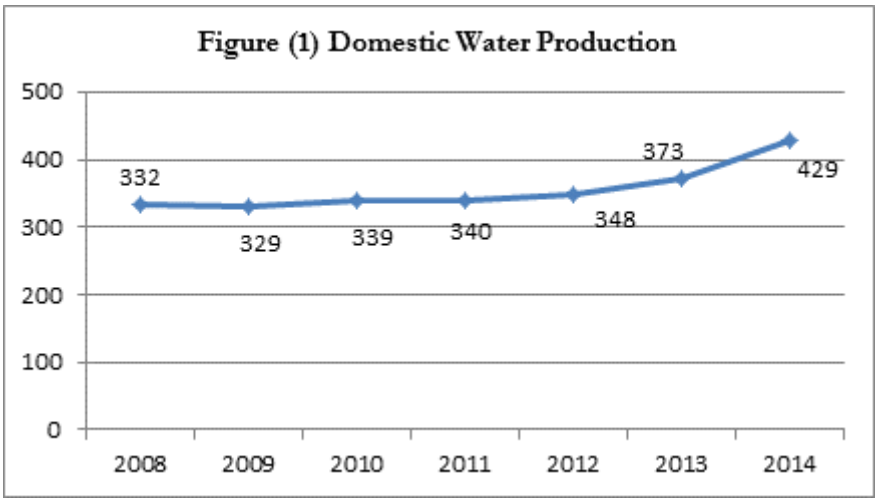
Table (2): ANNUAL SUPPLY, 2014

GOVERNORATE	Water Uses								
	Municipal	Non Domestic	Domestic	Refugees	Agriculture (High Land)	Agriculture (Jordan Valley)	All Agriculture	Industry	All Uses
Ajlun	4.9	0.5	4.4	0.35	4.6	0	4.6	0	9.5
Amman	180	22	158	21.5	43.8	0	43.8	1.72	225.52
Aqaba	16	11	5	0.7	87.4	0	87.4	4.31	107.7
Balqa	35.7	5.7	30	1.7	10.6	100	110.6	0.97	147.3
Irbed	45.2	3.1	42.1	8.6	7.3	57	64.3	0.11	109.6
Jerash	6.7	0.5	6.2	0.3	11.3	0	11.3	0	18.0
Karak	20.5	2.6	17.9	1	17.7	43	60.7	12	93.2
Maan	14.2	3.7	10.5	0.7	110.1	0	110.1	9.59	133.9
Madaba	8.9	0.7	8.2	0.6	6.6	0	6.6	0.97	16.47
Mafraq	24.7	3.4	21.3	8.6	140.2	0	140.2	2.48	167.38
Tafila	5.5	0.6	4.9	0.1	7.1	0	7.1	1.4	14.0
Zarqa	66.6	5.2	61.4	8.3	82.3	0	82.3	5.49	154.4
Jordan	428.9	59	369.9	52.45	529	200	729	39	1197
Percentage	36%						61%	3%	

DELIVERY OF WATER AND WASTEWATER SERVICES

DOMESTIC WATER SUPPLY AND SANITATION SERVICES

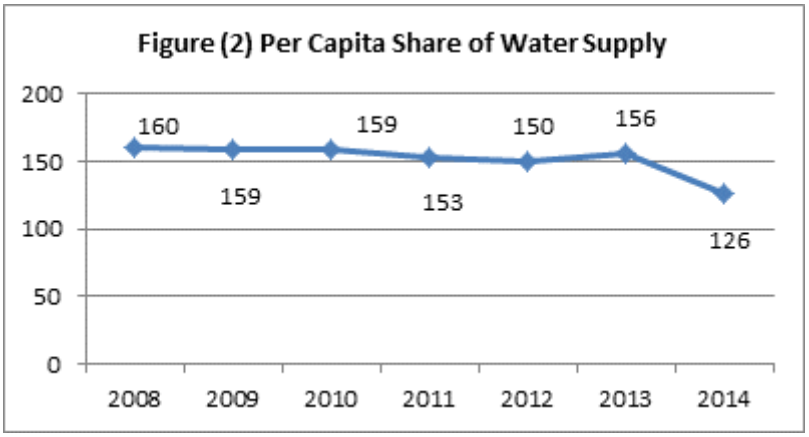
One of the critical national challenges that Jordan faces is the extreme scarcity of water supplies, which led to a clear imbalance between demand and supply. The Ministry of Water and Irrigation (MWI) focus was to secure additional water resources, which increased the national domestic water supply by 20% in the last 5 years including the Disi project which started in 2013. This was in parallel to reduce water losses through preventing the illegal connection and illegal use of the scarce resources. Figure below shows the domestic water production and supply between 2008 and 2013.



Over the past years, Jordan has achieved high levels of water and sanitation service where 95% of the populations have access to safe drinking water on intermittent basis; and about 63%[1] are connected to the public sewer system which collects, transfer and treat the wastewater loads. Current level of service delivered to the population is about 126 liters/capita/day (including 55 liters/capita/day of non-revenue water).

The increase in water production is not commensurate with the increase in demand; Figure (2) shows the decline in the per capita share of water supply, reaching its lowest level in 2012 and slightly increasing to 156 L/cap/d in 2013 due to Disi Water Conveyance Project.

[1] National Strategic Wastewater Master Plan Final Report, 2014



On the other hand, coverage of sanitation services is lower than the coverage of water while the wastewater treatment quality needing significant improvement as some wastewater treatment plants are either overloaded or are employing inefficient technologies. The wastewater generated is treated through 33 wastewater treatment plants and is being reused primarily for irrigation purposes in the Jordan Valley.

Whereas only 63% of the population is connected to public sewer systems, the proportion with safe sanitation exceeds 93%, with one third (1/3) of the population using septic tanks and cesspits. Assuming that infiltration from these is 70%, nearly 50 MCM/year are lost in the ground and threaten the quality of subsurface water. A National Strategic Wastewater Master Plan[2] was prepared in 2014 outlining the status of wastewater treatment in the country and prioritizing needed investments over the coming 20 years. The master plan shows that the investment priorities for MWI will be to increase the sanitation services to cover more than 86% of the population of Jordan by 2035. This will be through focusing future investments in rehabilitation and expansion of current wastewater systems and servicing new localities with population of more than 5000.

For water and sanitation services, the challenge is to sustain the quality services provided to different use at the lowest practicable cost consistent with sustainable operation. This can be achieved through securing additional water supplies to reduce the gap between supply and the increasing demand. This has to be done in parallel with increasing systems' operational efficiency. As for the sanitation

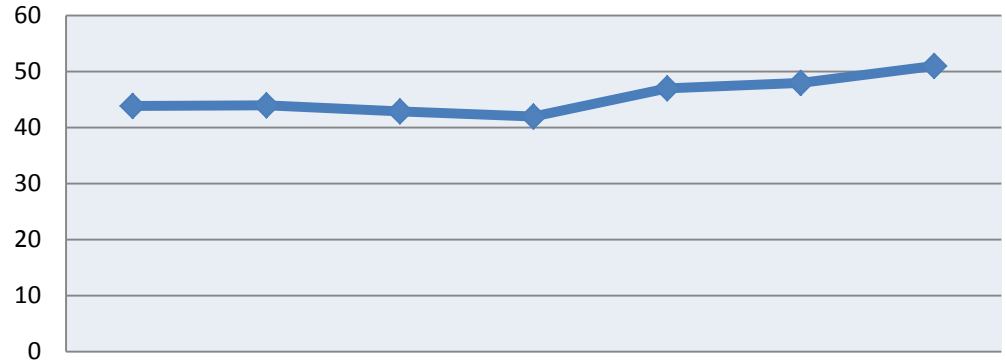
[2] USAID/ISSP 2014

services, focus shall be allocated to providing treatment facilities for as much of the wastewater produced in the country as practically possible while maintaining safe hygiene through decentralized systems in households without sewer connections. MWI national target is to increase the number of people connected to sewer networks to 80% by the year 2025 as indicated in the Jordan 2025.

Non-revenue Water (NRW)

The NRW is a major operational challenge for MWI. The last three years have seen a marked increase in NRW%. Availability of additional water from Disi was an important factor for this increase associated with deterioration of water systems and the increase in illegal uses despite MWI efforts to reduce them. Figure (3) indicates NRW% in Jordan during the past years.

Figure (3) Percentage of NRW in the Kingdom



As a national strategy, MWI will be targeting reduction of NRW to 30% by 2025 and technical losses to below 15%. The strategy also includes strengthening the criminalization of water theft and illegal wells. According to Water Authority of Jordan (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.

Water Quality

Safe drinking water coverage is nearly 100% across the Kingdom and wastewater coverage exceeds all other MENA countries. Microbiological compliance exceeds 99% for all sources in the Kingdom. This exceeds the WHO standard which is 95%. The consistent quality of water supplied to the population meets world standards, as does the percentage of treated wastewater that is reused.

WAJ Central Labs are equipped to perform a variety of water quality tests i.e. physical, chemical, microbiological and radiological for drinking water, residential and industrial wastewater. During the past five years, WAJ improved its central lab which can now perform 98.4% of the tests required by the national standards.

WATER FOR IRRIGATION AND OTHER USES

Agriculture comprises a relatively small share of GDP (around 3%), but is important in providing a supply of fresh fruits and vegetables and as a source of export earnings to allow the purchase of staple food grains on international markets. Irrigated agriculture consumes more than 60% (reduced from 75% over the last decade) of the water and has serious socio-economic impacts and high political significance. It provides most of the agricultural production in Jordan and offers the higher percentage of direct agricultural jobs and other jobs in support services. The production of food in semi-arid countries like Jordan is hardly possible without irrigation.

MWI is reinforcing the national priority to address the imbalance of water consumption across Jordan's economic sectors relative to their importance and their contribution towards the country's GDP. Despite the irrigated agriculture significant reduction in the consumption ratio (from 75% to 60%), MWI is aiming for substituting the use of fresh water by treated domestic wastewater and may be other non-conventional resources.

This reallocation approach is intended to serve as a vehicle to set action plans for redistributing the water flexibly between sectors and governorates. It intends to employ a conveyance system for water connecting the southern and northern regions and another conveyance system for treated wastewater in the Jordan Valley to maximize the use of treated wastewater for irrigation and free the expensive useable fresh water for domestic purposes.

A primary challenge in the Jordan Valley is to increase the productivity of water used in irrigated agriculture by both reducing losses and unproductive water use and shifting cropping patterns to include increased production of higher-value crops. A second challenge is to ensure the safety and exportability of produce grown with treated wastewater.

A corollary challenge is to reduce the use of groundwater from highland aquifers to sustainable levels–important both to preserve the resource for urban supply and to preserve the ability of the aquifer as a buffer against drought-induced surface water shortfalls. Enforcement of regulations to this effect is the core of the challenge.

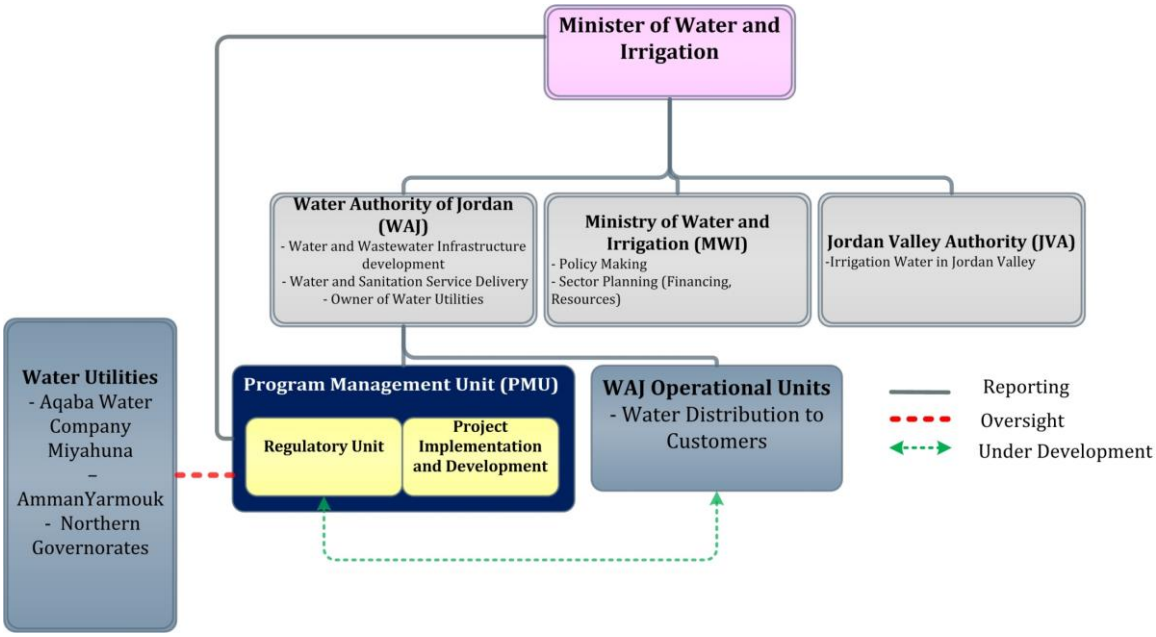
WATER FOR INDUSTRIAL USES

Jordan has a growing industrial base that is selectively growing and therefore would need increasingly reliable supply of water for their needs. Currently industry uses about 4% of the total water supply that is expected to increase to about 10% at a minimum by 2025. The industry currently uses both fresh water and treated wastewater to meet their needs. As wastewater treatment production increases with increase in domestic water supply, the availability of additional treated water would also increase. However, recycling of industry water/effluents is also to be addressed and monitored with these increases in water availability. Capabilities to undertake and to develop cost-effective and ecologically suitable technologies for waste disposal are also a key issue.

WATER SECTOR INSTITUTIONAL SETUP

The Ministry of Water and Irrigation (MWI) is responsible for overall strategic direction and planning, in coordination with the Water Authority of Jordan (WAJ) and the Jordan Valley Authority (JVA). WAJ manages bulk water supply and retail distribution in parts of the Kingdom where commercialization of distribution services has not occurred. WAJ is an independent government unit with some degree of autonomy compared to MWI and JVA. JVA is responsible for the socio-economic development of the Jordan Valley, primarily managing bulk water supply for irrigation, domestic, and industrial purposes, as well as promoting land development.

WAJ owns three water companies that manage water and sanitation services in eight governorates. Miyahuna and Aqaba Water Companies are operating as commercial entities to provide water and sanitation services in Amman and Aqaba governorates, respectively. The third one is Yarmouk Water Company, which is responsible to provide water and sanitation services in Irbid, Jerash, Ajloun and Mafraq Governorates. WAJ assigned its responsibilities to the water companies through assignment agreements which are monitored through the Project Management Unit (PMU). The overall sector institutional setup is shown in Figure 4.



The JVA supported the creation and development of water users associations (WUAs) in the Jordan Valley and has transferred some operational functions for secondary and tertiary irrigation water delivery to these WUAs.

Water Companies

In 2007, Miyahuna was established under the Companies Law, fully owned by WAJ and operating as commercial entity to provide water and wastewater services in the Greater Amman Area. A similar set up was done for Aqaba by creating Aqaba Water Company. The Yarmouk Water Company started operations in 2011 to service the Northern Region. WAJ manages the contracts with the water companies through its Project Management Unit (PMU).

The National Water Strategy 2016 2025 calls for promoting the role of water companies in the field of provision of water and wastewater services, bringing into the sector the rigor and resources of the private sector, both of which are needed for new and more efficient water supply systems. Water for Life also calls for splitting Jordan into at least three distribution segments (North, Middle, and South) each to be managed by a distribution utility (Water Company).

In 2014, Madaba Governorate Utility was added to Miyahuna's responsibilities under a management contract, and a similar contract was signed with Miyahuna for Zarqa Governorate Utility as of January 1st, 2015.

Balqa governorate and the southern governorates are expected to go through a similar setup over the next years.

ECONOMIC AND FINANCIAL ISSUES

Water and sanitation services are facing a substantial increase in financial deficit due to several reasons including the high capital and operational costs in comparison to the revenues generated from the low tariff of domestic and agricultural water. High costs include finding and providing new water resources such as Disi, operational costs of conveying water from sources to consumption centers, and electricity increased prices. It has been indicated in different reports that the financial return only covers two thirds of service delivery cost.

WATER AUTHORITY OF JORDAN

WAJ's total indebtedness (internal and external) has increased from 430 M JOD in 2008 to 1,000 M JOD in 2013. The reasons behind that are the water and wastewater tariffs do not cover the cost of service: In 2013 the average cost per m^3 of water was 1.844 JOD, while the average revenue per m^3 was only 1.058 JOD, hence generating a deficit of 0.786 JOD/m^3 per meter representing a total deficit of 154 million JOD; Also, WAJ incurs major investment costs as well as debt services both for WAJ itself and the water companies in addition to covering part of the operating expenditures of the Yarmouk Water Company (YWC) (i.e. 74 M JOD in 2012, and 18 M JOD in 2013.)

On the other hand, revenues of water and wastewater charges and service connection fees increased by 36% from 2008 to 2013 as a result of Disi water sales (11 M JOD) and tariff increase in 2011/2012.

In spite of the increase in WAJ's revenues, Operation and Maintenance (O&M) cost recovery dropped from 110% in 2008 to 91% in 2013, and total cost recovery dropped from 70% in 2008 to 57% in 2013. The main reasons behind this substantial drop were the increase in the electricity tariff (energy costs 40% of the total operating costs) and the payments required for the Disi water.

Figures (5/6/7) show increasing costs and decreasing cost recovery over the previous years.

Figure (5) Revenue vs. Operational Cost

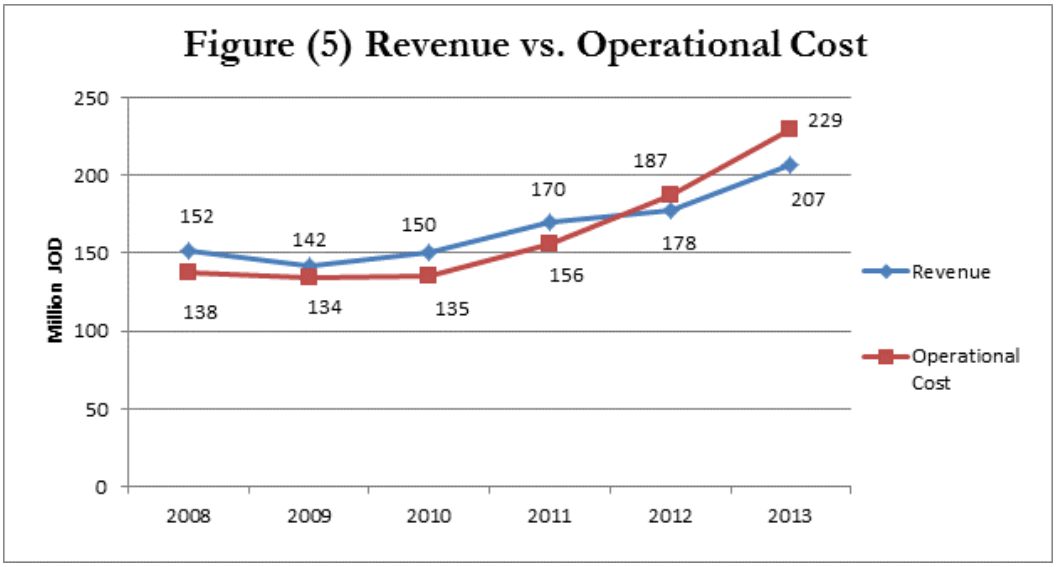


Figure (6) Operational and Total Cost

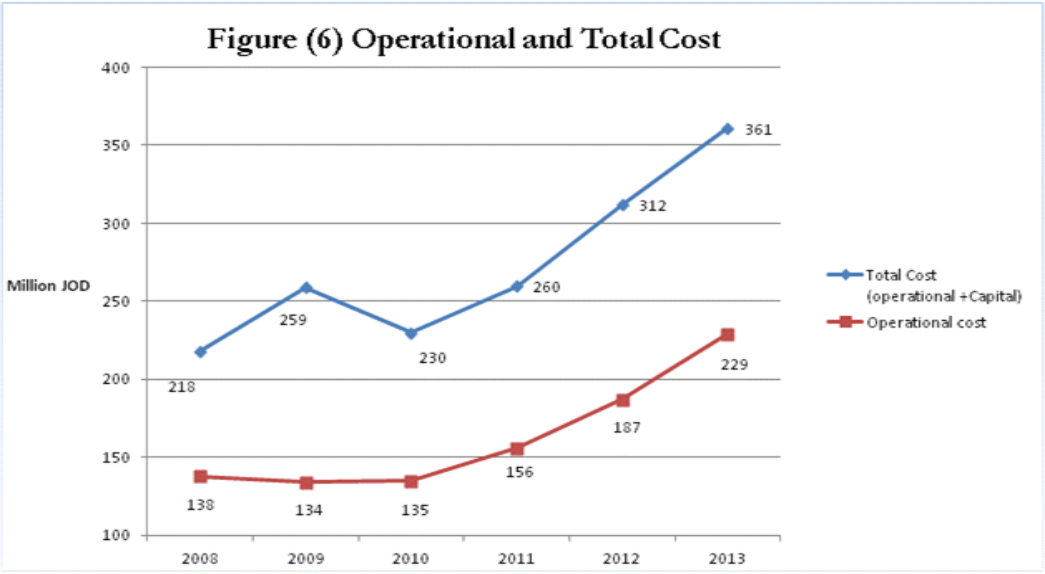
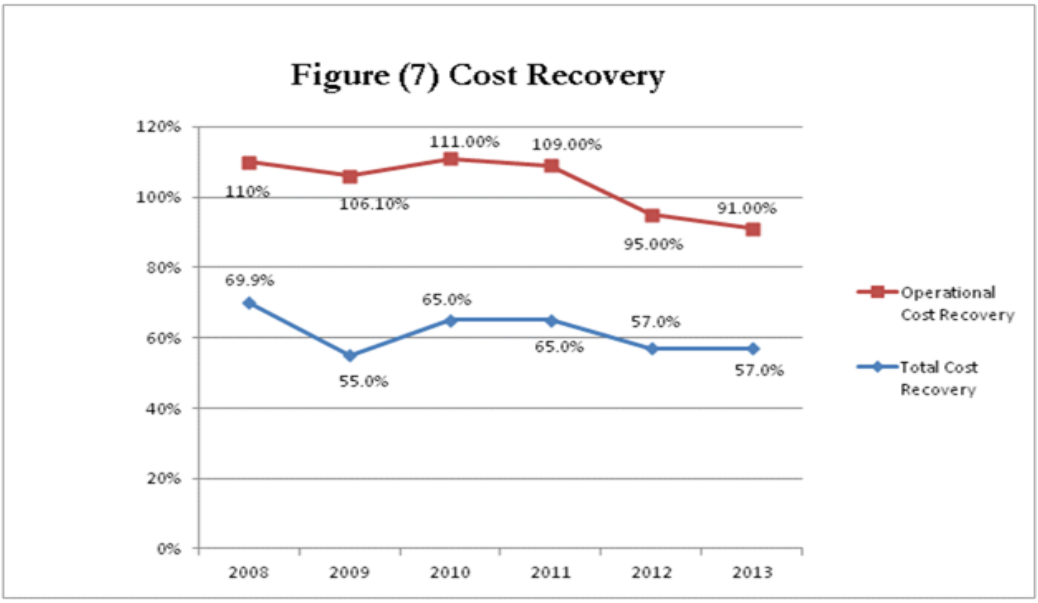


Figure (7) Cost Recovery



In spite of the increase in WAJ's indebtedness and a budget deficit driven primarily by factors beyond WAJ's control (such as energy prices, low tariffs, Arab Spring, refugees), the central Government's direct support to WAJ has decreased from 60 M JOD in 2009 to 13.5M JOD in 2013.

JORDAN VALLEY AUTHORITY

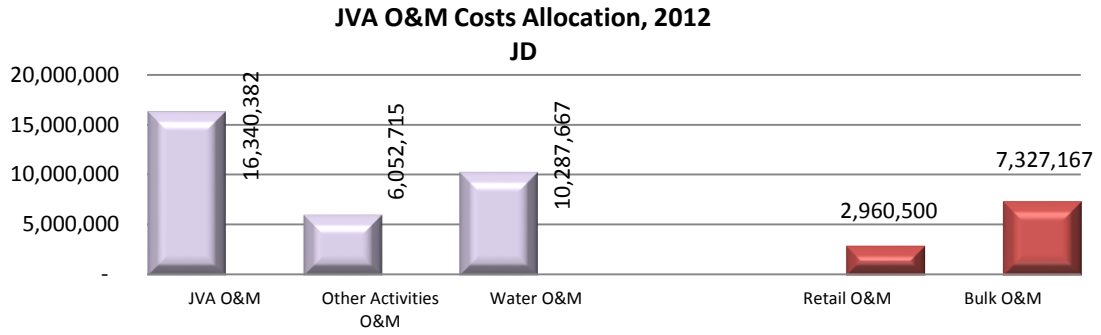
Over the past few years, major sources of JVA revenues were the industrial water sales, irrigation water charges, and electricity generation sales. In 2012, industrial water sales represent around 81% of the operational revenues which were JD 7.9 M JOD and about 64% of overall revenues which were JD 10 M JOD. Irrigation water charges were around 1.5 M JOD representing 19% of operational revenues and 15% of the overall revenues. Other operational revenues, which are mainly electricity generation sales amounted to JD 0.351 M JOD representing about 3.5% of total revenues.

The JVA's operating budget was approximately 7 M JOD in 2009 and approximately 9 M JOD in 2010. Revenue raised from the JVA's activities was about 5.5 M JOD in 2009 and about 7 M JOD in 2010. Most of the revenues come from water sales to industry. The revenues from irrigation water sales are very low, because the average price of irrigation water is heavily subsidized at 15 fils per cubic meter. Irrigation water tariffs are set by the Cabinet of Ministers, and have not changed in years.

The JVA's capital budget depends on allocations from the Ministry of Finance. In 2009 this was approximately 35 M JOD and the estimate for 2010 was 20 million JD. Typical capital allocations are 20–30 M JOD/year, which are spent on projects such as dam and irrigation infrastructure construction, the preparation of land for irrigation projects, and support for infrastructure, such as road construction.

The total water cost in 2012 was about JD 10.3 million, the major value of it belongs to irrigation water with amount of JD 7.2 million, this amount consists of two items, the retail water cost which amounted to JD 2.96 million, and the bulk water cost which amounted of JD 4.2 million, the municipal water and industrial water haven't a retail cost, so the rest amount from the total water cost other than irrigation water cost is the bulk water cost of the municipal water cost which amounted of JD 2.975 million, and for the bulk water cost of industrial water which amounted of JD 0.152 million. Figure (8) illustrates the JVA O&M costs, total water costs, irrigation water retail cost; all water types bulk water costs and other activities costs.

Figure 8: JVA Water O&M costs allocation JD, 2012

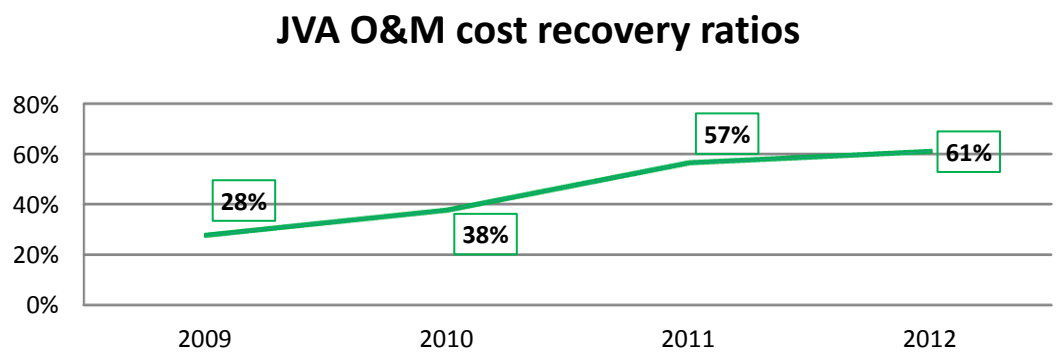


The irrigation water O&M cost recovery grew from 16% in 2009 to 21% in 2012 whereas the industrial water O&M cost recovery grew substantially from 658% in year 2009 to 4208% in 2012; the municipal O&M cost recovery ratio was 0% in 2009 and stayed as is in 2012, the other activities O&M cost recovery was 40% in 2009, dropped to 38% in 2012, while the total JVA O&M cost recovery was 28% in year 2009, grown to 61% in 2012 as shown in the below Table 4 and Figure 9:

Table 3: JVA activities O&M cost recovery ratios from 2009 to 2012

Activity	2009	2010	2011	2012
Irrigation Water	16%	19%	19%	21%
Industrial Water	658%	1765%	3617%	4208%
Municipal Water	0	0	0	0
Other JVA activities	40%	37%	43%	38%
Total JVA O&M cost recovery	**28%**	**38%**	**57%**	**61%**

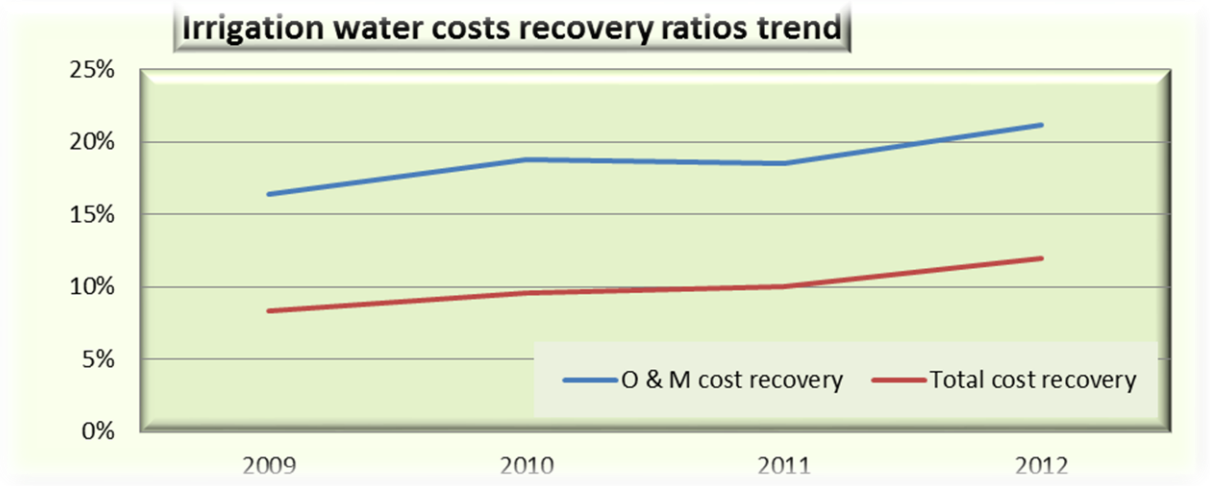
Figure 9: JVA O&M cost recover ratios for 2009 – 2012



The reason of the apparent increase in the costs recovery ratio between the years of 2009 and 2012 is mainly due to the industrial water quantity increase and tariffs rise.

As calculated in figure (9) above, figure (10) illustrates the growth of irrigation water total cost recovery and irrigation water O&M cost recovery ratios for the years 2009 to 2012.

Figure 10: Irrigation Water Costs Recovery Ratios Trend 2009 – 2012



STRATEGIC PLANNING AND MANAGEMENT, JORDAN 2025

The primary water sector strategy is the "Water for Life 2008-2022" that builds on the vision, which by 2022, Jordan will have an adequate safe and secure drinking water supply; greater understanding and more effective management of groundwater and surface water, healthy aquatic ecosystems; sustainable use of water resources; far, affordable and cost-reflective water charges in place; measures implemented mitigating effects of increased population growth and economic development across all sectors which impact the water resources and their users; prepared and adopted to challenges triggered by climate change; efficient uses of water and reuse of treated water in irrigation are optimized.

MWI is currently updating The Water for Life into "Jordan's National Water Strategy 2016-2025" aligning it to the Jordan 2025 National Vision and Strategy, taking into consideration that all the directions, goals, visions that are highlighted in the Jordan 2025.

In the last three years, several new conditions and pressures faced the water sector that has already been operating at crisis levels for some time. The Disi water supply was introduced in 2013, operating costs have risen significantly with the rise in electricity prices, and the large number of Syrian refugees in Jordan is placing tremendous pressure on water supply and systems across the country in particular in the north, where there are significant management challenges with the cancellation of the Yarmouk Water Company management contract. All of these factors pressured the sector to draft new strategies; hence WAJ issued their Strategic Plan (2015-2019). JVA and MWI are currently updating their organizations' strategies as well.

WAJ also issued a National Strategic Wastewater Master plan in 2014 providing the framework for sanitation development in Jordan as part of the Water Strategy implementation. WAJ is also now working on a National Infrastructure Water Master plan.

On policies level, MWI issued different policies to further detail the Water Strategy objectives and goals. These include: the Ground Water Policy which set out the Government's policy and intentions concerning groundwater management aiming at development of the resource, its protection, management and measures needed to bring the annual abstractions from the various renewable aquifers to the sustain-able rate of each. Other policies that are currently being prepared are: Water reallocation Policy, Surface Water policy. The Energy Efficiency and Renewable Energy Policy was approved by the Cabinet of Government of Jordan GOJ on June 14th, 2015.

DEVELOPING THE CAPITAL INVESTMENT PLAN CIP

Water is an indispensable input for any social or economic activity. Therefore, Water security is undoubtedly a key component of the national security of any country, especially in a country as water-scarce as Jordan. Water, in addition to its necessity for human life, enters into the core of agricultural production and economic activity in general. Therefore, its scarcity and the growing competition to access can become a source of economic and social disturbance affecting social peace and consequently national security. Its scarcity can impede development and evolution and make negative impact on standards of living of the people. Jordan lies in the Mediterranean Sea region, where the climate is arid and semi-arid with short rainy winter and long dry summer, with no permanent rivers. Annual precipitation varies between 50mm in the desert area and 600mm in the north-west high lands. The water resources scarcity leads to a large imbalance between supply and demand, leads to over pump the water from valuable aquifers, water supply is intermittent in summer, sometimes one day per week.

On the other hand, coverage of sanitation services is lower than the water coverage, while the wastewater treatment quality needing significant improvement as some wastewater treatment plants are either overloaded or are employing inefficient technologies. The wastewater generated is treated through 33 wastewater treatment plants and is being reused primarily for irrigation purposes in the Jordan Valley.

Whereas only 63% of the population is connected to public sewer systems, the proportion with safe sanitation exceeds 93%, with one third (1/3) of the population using septic tanks and cesspits. Assuming that infiltration from these is 70%, nearly 50 MCM/year are lost in the ground and threaten the quality of subsurface water. A National Strategic Wastewater Master Plan was prepared in 2014 outlining the status of wastewater treatment in the country and prioritizing needed investments over the coming 20 years. The master plan shows that the investment priorities for MWI will be to increase the sanitation services to cover more than 86% of the population of Jordan by 2035. This will be through focusing future investments in rehabilitation and expansion of current wastewater systems and servicing new localities with population of more than 5000.

Needs for investments in the water sector in Jordan have been substantial. So, Ministry of Water and Irrigation MWI developed a water sector investment plan including the potential programs and projects in the water and wastewater (sanitation), in addition to the energy projects, which has the total potential of investments and priorities around JOD 6 billion over the coming ten years (2016 - 2025). These priorities and potentials are the responses to cope with the accelerated deterioration of the water network and facilities, the high Non-revenue water NRW, the deficiency of wastewater networks and treatment plant, and the weak coverage of the wastewater services, as well as to cope with unexpected influx of the refugees, especially Syrian refugees. Despite the recent increase in the investment plan comparing to the previous plan, investment at these levels are high which will make real progress toward achieving full access to water and sanitation by 2025. Whatever is spent in the sector will go towards keeping up with population growth over the coming ten years.

To deliver its objectives, the CIP will require JOD 3,505.49 million for water projects and JOD 1,902.63 million for wastewater projects. The total amount of additional water supplied based on the Water Sources Projects is around 187.5 MCM, not including the Red Sea Dead Sea Project amount of water, which is 230 MCM for the both phases, I & II. The total amount of additional treated wastewater is around 94 MCM. The below tables 5, & 6 depict the amount of water produced from the water sources as well as produced from the treatment process.

Table 4-A, Amount of Additional Water Resources that will Supply the Drinking Water excluding the Red Sea Dead Sea Project

	Project Name	CAPEX (MJD)	Years of Implementation	Water Supplied MCM	Gov.	Notes
1.	Augmentation of Water Supply for Central and Northern Jordan from Deep Aquifer (Sheediyya – Al Hasa)	150	2017 – 2021	50	National	Supplying Amman governorate, then reallocation for other governorates
2.	Hisban Wells	25	2016 – 2018	10	National	Supplying Amman, or Dead Sea Beach, Aghwar, Balqa, Madaba
3.	Kofranjih DAM Water Treatment, Conveyance to Ajloun Governorate	10	2018 – 2019	3	Ajloun	
4.	Mojib Dam Water Treatment, Conveyance to Karak Governorate (Phase II)	6	2019 – 2020	3	Karak	Reducing the abstraction from the ground water (Al-Lajoun)
5.	Tannour Dam Water Treatment, Conveyance to Karak and Tafilah	10	2018 – 2019	3	Tafilah, Karak	The feasibility

	Project Name	CAPEX (MJD)	Years of Implementation	Water Supplied MCM	Gov.	Notes
	Governorate					studies will determine the amount of water and which governorate will be supplied with water
6.	Increasing Water Pumping in DISI from 100 MCM to 115 MCM Project	24	2017 – 2018	15	National	The feasibility studies will determine the amount of water and which governorate will be supplied with water
7.	South Aqeb Well Field Development	15	2016 – 2018	15	Mafraq	Water will be distributed first to Mafraq Governorate, then for the rest of governorates
8.	Development of Ground Water new wells (deep & Shallow) as a water resources including Buying the private wells	40	2016 – 2025	10	National	The location of wells will be determined/located based on shortage and ability
9.	Al Azraq - Sarhan Deep Aquifer	25	2018 – 2021	15	Zarqa	Nuclear Station necessity
10.	Al-Wala Dam Water Treatment, Conveyance to Madaba Governorate OR (Hidan Wells Development)	5	2023 – 2025	10	Madaba	Wala Dam Expansion includes two projects (Wala Dam expansion & water treatment conveyance to Madaba) OR Hidan Wells Development as another alternative
11.	Aqaba Desalination Plant	5	2016 – 2017	5	Aqaba	For Aqaba Governorate
12.	Desalination of Brackish water in Aghwar area and Badia	10	2016 – 2025	10	Aghwar & North Badia	Will be used for Aghwar
13.	Wadi Arab Water System II	70	2016 – 2018	30	Northern Governorates	Swap Project with Red Sea Dead Sea Project
14.	Wadi Meddain Dam	6	2020 – 2021	1.5	Karak	
15.	Household Water Harvesting	5	2016 – 2025	7	National	
TOTAL		**406**		**187.5**		

Table 4-B, Amount of Additional Water Sources that will Supply the Drinking Water from the Red Sea Dead Sea Project

	Project Name	CAPEX (MJD)	Years of Implementation	Water Supplied MCM	Gov.	Notes
16.	Red Sea Dead Sea Water Conveyance Project / Phase I	650	2017 – 2021	85	National	Swap Project with Wadi Arab Water System II (20 MCM will be for Irrigation Purposes)
17.	Red Sea Dead Sea Water Conveyance Project / Phase II	1,312	2020 – 2025	150	National	
TOTAL		**1,962**		**235**		
GRAND TOTAL		**2,368**		**422.5**		

Table 4-C, Margining Water Resources for Remote Areas

	Project Name	CAPEX (MJD)	Years of Implementation	Water Supplied MCM	Gov.	Notes
18.	Wadi Hisban Dam	15	2019 – 2023	2	Balqa	Water will supply Aghwar (area 14.5)
19.	Wadi Issal Dam	11	2018 – 2021	3	Karak	For Irrigation and Industry Purposes
20.	Wadi Rahma Dam	3.5	2021 – 2022	0.65	Aqaba	Wadi Araba Development, Multi use including irrigation
21.	Wadi Moussa Dam	8	2021 – 2022	2.5	Aqaba	
22.	Wadi Fidan Dam	20	2021 – 2024	4.4	Tafileh	
23.	Wadi Tlah Dam	3.5	2019 – 2021	0.4	Tafileh	
24.	Wadi Al Yutum Dam	100	2019 – 2021	-	Aqaba	Multi-Use including (Landscaping for Quirah , Irrigation, Flood Protection, Flood Regulation)
25.	Wadat Dam	5	2025	0.4	Tafileh	For Irrigation and Industry Purposes (Potash)
26.	Water Harvesting	20	2016 – 2025	15	National	Desert & Excavation Dams
27.	Increasing the Height of Wadi Shuieb Dam	1	2018 – 2021	0.8-1.2 (Avg. 1)	Balqa	
28.	Al-Wala Dam Expansion	4	2020 – 2022	7	Madaba	
29.	Malaqy (downstream of Mujib Dam) Dam Project	40	2022 – 2025	-	Madaba and Karak	Flood Regulation
TOTAL		**231**		**36.35**		

Table 5, Treated Wastewater

	Project Name	CAPEX (MJD)	Years of Implementation	Treated Wastewater MCM	Gov.	Notes
30.	Expansion of Fuhais and Mahes WWTP	1	2022 – 2025	0.4	Balqa	
31.	Expansion of As Salt WWTP: Phase 2	2.4	2022 – 2025	0.8	Balqa	
32.	Expansion of Ain Al Basha WWTP: Phase 2	5	2022 – 2025	1.8	Balqa	
33.	Expansion of East Jarash WWTP: Phase 1	1	2016 – 2017	1.6	Jarash	
34.	Expansion of Madaba WWTP & Establishment of Wastewater Network: Phase 1	10	2017 – 2020	0.4	Madaba	
35.	Expansion of Wadi Al Arab WWTP: Phase 1	4.8	2017 – 2020	1.6	Irbid	
36.	Expansion of Central Irbid WWTP: Phase 2	2.2	2022 – 2025	0.7	Irbid	
37.	Expansion of Ramtha WWTP: Phase 2	2.45	2022 – 2024	2.05	Irbid	
38.	Expansion of Wadi Hassan WWTP: Phase 2	1.1	2019 – 2022	1.9	Irbid	
39.	Expansion of Wadi Mousa WWTP	4.0	2022 – 2025	0.58	Ma'an	
40.	Expansion of Aqaba WWTP 2020	30.75	2017 – 2020	5.17	Aqaba	
41.	Expansion of Ramtha WWTP Phase I	14.7	2019 – 2020	2	Irbid	
42.	Expansion of Kharbit As Samra, Phase II	195.1	2013 – 2016	35	Zarqa	The expansion will be done in 2016
43.	Contribution in the Expansion of Kharbit As Samra for Handling Extra Amount of WW, Phase III	230	2020 – 2024	35	Zarqa	
44.	Establishment of Wastewater Treatment Plant Transported by Trunk to Ghor Safi Landfill	58	2023 – 2025	-	Karak	
45.	Jordan Valley Wastewater Project	42	2017 – 2019	5	Jordan Valley	
		604.5		**94**		

The water sector investment plan (over the coming 10 years, 2016 – 2025) aims at securing water supply, developing new water resources that will enhance the water allowances per capita, providing access to improved water supply, and expanding the wastewater services and coverage all over the kingdom. The water sector investment plan will lead to water metered per capita by 105 (l/c/d) in 2025, reduction in NRW to 30%, enhancing the energy efficiency usage to 3.66 kwh/m^3 in 2025, expanding the coverage of the wastewater services to become 80% in 2025.

The investment plan includes new water resources in total of 422.5 MCM, which will handle the population growth over the coming next years, including the influx of the refugees, as well as the other sectors growth.

The preparation of the investment plan was designed based on many studies, most recent study is the master plan prepared by Japan International Cooperation Agency JICA in 2015. The Study is undertaken to formulate a master plan for water supply in order to identify the required improvements and priority to mitigate the poor water supply services in the Study Area (Irbid and Ramtha and its suburbs), where the Syrian refugees are largely settled in the largest urban area in the northern governorates. The Master Plan presents a water supply development plan meeting the demand of 2035 Jordanian population, which is equivalent to 2028 demand combining Jordanian population and the current level of Syrian refugees.

APPLICABLE CIP POLICIES

- The CIP is a translation of relevant sectoral master plans such as the "Wastewater Master Plan", and the National Water Strategy 2016 2025 WAJ's Strategic Plan and JVA's Strategic Plan, all in line with national plans and strategies, the most recent of which is "Jordan 2025". It is in line with all applicable sector policies.

- The CIP ensures that development needs across all Governorates in the Kingdom are catered for within the local context and underlying factors impacting those needs in each Governorate.

- The CIP strategically identifies the needs across the upcoming 10 years as a planning horizon (2016 – 2025).

- The parties involved in developing the CIP are MWI, WAJ and JVA—each in line with its role and mandate:

    - JVA identifying infrastructure needs and specific projects within the Jordan Valley to improve and develop water resources there; improve access to irrigation water and rehabilitate existing networks. This includes developing a list of projects along with the pertinent environmental, technical and financial data/information that are used to carry out a preliminary cost-benefit analysis for each project.

    - WAJ identifying infrastructure needs and specific water and sanitation projects across all Governorates to improve and develop water resources; improve access to water and sanitation services; and rehabilitate existing infrastructure.

- This includes developing a list of projects along with the pertinent environmental, technical and financial data/information that are used to carry out a preliminary cost-benefit analysis for each project.

- MWI screening through the lists of proposed Capital Investment projects, facilitating the cost-benefit analysis for projects, compiling the input from each of WAJ and JVA to produce the CIP, and working to secure funds necessary for its implementation—all within an investment planning unit that was instituted for this specific purpose.

- The CIP is a living document that will be updated annually collaboratively by MWI, WAJ and JVA each according to its role in the CIP development process and in line with a Monitoring and Evaluation plan set specifically to guide the process of evaluating progress and challenges and updating the Plan accordingly.

APPROACH AND METHODOLOGY

The Capital Investment Plan is a physical translation of the Water Sector's strategic directions that are set in the "Water for Life" Strategy, which in its turn is in line with the national priorities set forth in Jordan 2025. Being one of the most important service sectors that impact the prosperity and economic growth and development in the Kingdom, it is essential that capital planning is carried out systematically and consistently across the time horizon in a manner that is parallel to the evolution of national and local development needs and requirements.

Understandably, Jordan has to cope with many constraints that push against this approach to capital planning in the water and sanitation sector. Examples of such constraints previously presented include the very scarce water resources and the fact that trans-boundary waters constitute a good portion of them; the abnormal growth in population due to the influx of refugees that are weighing heavily on an already burdened service sector in light of the unstable regional political climate; the difficult environmental and topographical conditions that need to be catered for when developing plans for water and sanitation infrastructure, rendering services very much energy intensive with a high value bill of costs in a country that is very poor in energy resources; and a slow moving tariff that does not cover the cost of services – let alone any future capital costs.

Navigating through all those constraints, MWI, as the designated line ministry in the GOJ, is mandated with developing and ensuring the implementation of sector policies, as well as planning for the sector and developing such plans into implemented projects on-the-ground.

MWI performs this task in coordination with its two executive arms the Water Authority of Jordan (WAJ) and the Jordan Valley Authority (JVA)—each in its own capacity and role.

This Capital Investment Plan explains the infrastructure investments strategically necessary to accommodate the projected development, taking into consideration sustainability of services and priorities as set within the local context, in addition to socio-economic factors, and with timelines that are coordinated with population projections and development needs. It reflects the capital expenditures that are identified in association with the Plan, and sets a framework for MWI and GOJ to work within to secure the necessary funds for its implementation, whether using GOJ funds or through loans or other means, as necessary.

The approach to identifying the infrastructure needs are based on two main streams of information related to:

1. Expansion of services to cover upcoming forecasted demand consistent with projections. Such services include developing new water resources to satisfy growing demand along with infrastructure supporting access to such resources; and expanding access to sanitation thereby safeguarding valuable water resources.

2. Rehabilitation and/or replacement of infrastructure that is already in place and that is in need of improvement. Such projects entail improving on drinking water and collection networks and irrigation water networks; rehabilitating deteriorated assets used in all parts of the water service cycle; and reducing Non-Revenue Water.

Accordingly, in each Governorate, the different sectors' needs were identified and translated into infrastructure projects. A list of those projects was prepared by each of WAJ and JVA along with the pertinent information in fully cooperation with MWI, and been provided to MWI which in its turn compiled all projects and categorized them according to type of service provided and nature of infrastructure development process as will be explained later. Furthermore, MWI carried out a preliminary cost-benefit analysis for each project to assess its feasibility and support prioritizing implementation plans and accessing funds.

The cost-benefit analysis focuses on quantitative analysis of factors that are already in monetary terms (e.g., construction costs) or can be converted into monetary terms (e.g., volume of water supplied or wastewater produced). The advantage of this approach is that it compares projects in the very clear and easily comparable terms of net monetized benefits. It also provides an initial estimate of the return on investment in the projects.

Also, and because there is such a large difference between the price of services and the value of those services to the economy, the process analyzes both the financial and economic perspectives separately. The financial evaluation is based on how much revenue a project will generate. It depends on tariffs and the amount of water supplied or saved, or wastewater treated. The economic evaluation is based on how much water is supplied or saved, or wastewater is treated and how that benefits the economy. It also monetizes the social benefit of targeting services to the poor—if applied.

In general, the model provides policy makers with four different ways to analyze the capital investment projects:

1. Net Present Value (NPV)—financial and economic
2. Internal Rate of Return (IRR)—financial and economic
3. Unit costs (financial and economic) as a means for cost effectiveness analysis of projects of the same type.

In order to compare current costs with future benefits, the process entails utilizing the time value of money by applying a discount rate, and calculates the IRR (the discount rate at which project benefits (largely in the future) are equivalent in value to project costs (largely in the first year or couple years of a project). Financial and economic values of IRR are calculated, where the financial IRR is calculated based on actual costs vs. revenues (monetized benefits) for each project. The economic IRR is a more useful criterion for project evaluation in this model, as it takes into consideration the economic benefits of providing services, even if the tariff does not reflect the full value of the services.

Each project is presented in the CIP through a specific project datasheet with pertinent data/information that includes:

- Project Information (location/governorate served; objectives; and description)
- Project Status (status of planning and/or implementation; financing; and expected construction year)

- Operational data (water supplied; water saved; wastewater treated; % allocation by type of use)
- Implementation schedule (CAPEX outlay and OPEX outlay for the first 10 years of the implementation schedule)
- Financial and economic indicators (capital cost; IRR; economic IRR; NPV; and economic NPV).

PROJECTS CATEGORIZATION

With the need to completely cover the whole water cycle and associated services, projects were listed under either of two main headings: Water Projects, and Wastewater Projects. Another category was added to accommodate Energy Projects, having been identified energy as one of the major factors that impact water and sanitation services.

1. **Water Projects:** categorized according to the type of service provided and where it lies in the water cycle. They are also listed to cover the local needs per Governorate:

    a. **Water Resources:** includes all projects that address the need to develop new water resources, or expand, improve and upgrade available ones. Such projects include constructing and/or expanding groundwater wells, desalination plants, dams, etc. It also covers the conveyance systems that are linked to those resources. Noteworthy is that Water Resources projects include those that cover the needs in all sectors (irrigation, drinking, tourism, industrial).

    b. **Bulk Supply:** includes all projects that are about developing new bulk water conveyance systems or expanding on already existing ones. Similarly those cover the needs in all sectors.

    c. **Retail and Distribution:** includes all projects that entail constructing new distribution networks or rehabilitating old ones. It also includes all projects that aim

at affecting NRW reductions being one of the main issues that water networks suffer from—whether drinking or irrigation:

i. ***Irrigation Water:*** projects that entail constructing new irrigation network and/or rehabilitating old ones. Those projects are mainly within the Jordan Valley area of work.

ii. ***Domestic, Commercial and Tourism:*** projects that entail introducing improvements on distribution networks in each Governorate. A phased approach was utilized to plan those projects by addressing as a first priority in each Governorate the need to rehabilitate old distribution network, and follow that with a second phase that entails expanding the network, after having improved its efficiency. Also, increasing the water supply by 25% to 35% all over the kingdom, as well as reducing the NRW by 5% over the two phases.

2. **Wastewater Projects:** in line with the Strategic Wastewater Master Plan and categorized based on the need to provide access to sanitation or to upgrade already available systems and/or facilities. Noteworthy is that treated wastewater is planned for use in irrigation. They are also listed to cover the local needs per Governorate:

   a. **Rehabilitation and Upgrade of Existing Systems:** projects that address the need to rehabilitate and upgrade collection systems that have been in used but are deteriorated.

   b. **Expansion of Services:** projects that address the needs to expand access to sanitation services through the construction of new treatment and/or collection system.

c. **Wastewater Treatment Plants:** projects that address the need to construct new facilities or upgrade, also, improve and/or expand on facilities that are already in operation.

3. **Energy Projects and Others:** projects that address any improvements to be introduced on water and sanitation systems that would lead to efficiency gains resulting from energy efficiency and/or renewable energy projects specific to the water and sanitation sector. Also, any other kind of projects that might come under the operation and management of the water utilities.
4. **Jordan Response Plan:** projects that address the Jordan responses to Syrian refugees' influx, which will cover the period of three years from 2016 till 2018.

As presented in this document, the CIP 2016 – 2025 outlines the targeted programs and projects that MWI, WAJ and JVA need to deliver over the next 10 years to facilitate the urgently required improvements in drinking water quality, leakage, wastewater compliance, customer satisfaction, and irrigation water.

2 TECHNICAL ASSISTANCE PROJECTS

No.	Project Name	Type	Governorate	Expected Cost
1.	Re-evaluation and rehabilitation of water and wastewater plants	water & wastewater	National	20,000,000
2.	Feasibility studies for water and wastewater projects	water & wastewater	National	20,000,000
3.	Preparation of designs and studies for water and wastewater projects	water & wastewater	National	10,000,000
4.	National water capacity development program & establishing a regional training center	water	National	5,000,000
5.	Rationalization of water use programs in the Kingdom regions	water	National	5,000,000
6.	Exploring the deep layers all over the kingdom	water	National	10,000,000
7.	Studying the automation of hydrological monitoring network	water	National	3,500,000
8.	Drilling wells for monitoring the groundwater basin	water	National	3,500,000
9.	Studying the operation of the Meghaba Canal (Open Canal)	water	National	1,000,000
10.	Preparation of studies for construction of wastewater network system and house connection in south governorates	wastewater	National	500,000
11.	Preparation of studies and designs for construction of wastewater network system all over the Kingdom	wastewater	National	10,000,000
12.	Preparation of studies for treated wastewater reuse projects	wastewater	National	5,000,000
13.	Consultancy Services for Nexus Program	wastewater	National	3,000,000
14.	Studying the connection of the WWTP outlet to the reuse conveyance pipeline	wastewater	National	5,000,000
15.	Capacity Development Program		National	50,000,000
16.	Preparation of design, review and tender documents for water supply system rehabilitation of Der A'lla District	water	Balqa	600,000

No.	Project Name	Type	Governorate	Expected Cost
17.	Preparation of design, review and tender documents for water supply system rehabilitation of Balqa Governorate	water	Balqa	1,000,000
18.	Engineering Services for the Expansion and Rehabilitation Ain Basha WWTP	wastewater	Balqa	700,000
19.	Preparation of studies for Miscellaneous Wastewater network construction in Balqa Governorate	wastewater	Balqa	350,000
20.	Preparation of studies and design for the construction of Ermemen wastewater treatment plant	wastewater	Balqa	650,000
21.	Design review and tender documents preparation for water supply system improvement of Tafilah	water	Tafilah	280,000
22.	Preparation of studies ,design and tender document for the construction of wastewater collection system and house connection in Tafilah	wastewater	Tafilah	100,000
23.	Preparation of design, review and tender documents for water supply system rehabilitation of Tafilah Governorate	water	Tafilah	1,000,000
24.	Design review and tender documents preparation for water supply system	water	Karak	100,000
25.	Design review and tender documents preparation for water network rehabilitation of Mazar Jnoubi district	water	Karak	160,000
26.	Design review and tender documents preparation for water network rehabilitation of Ai district	water	Karak	95,975
27.	Design review and tender documents preparation for water network rehabilitation of Rakeen and Rabbeh district/Karak	water	Karak	134,750
28.	Design review and tender documents preparation for water network rehabilitation of Mazar district	water	Karak	142,500
29.	Design review and tender documents preparation for water network rehabilitation of Abu hammor district	water	Karak	237,850
30.	Design review and tender documents preparation for Lajoon-algwair conveyance pipeline	water	Karak	90,000
31.	Design review and tender documents preparation for water network rehabilitation of Almarj and Thalajeh district	water	Karak	175,200
32.	Design review and tender documents preparation for water network rehabilitation of Fagou' district	water	Karak	156,000

No.	Project Name	Type	Governorate	Expected Cost
33.	Preparation of studies and design for construction of wastewater network system and house connection within Mu'ab area	wastewater	Karak	600,000
34.	Preparation of studies, design and tender document for the construction of wastewater collection system and house connection in Karak	wastewater	Karak	100,000
35.	Preparation of studies for wastewater treatment plant transported by tankers (landfill liquid) to Ghor Al-Safi	wastewater	Karak	5,800,000
36.	Design review and tender documents preparation for rehabilitation and improvement of Ma'an water supply system	water	Ma'an	320,000
37.	Re-feasibility study for the purpose of preparing studies and tender document for Shubak Area	wastewater	Ma'an	100,000
38.	Preparation of studies ,design and tender document for the construction of wastewater collection system and house connection in Shubak	wastewater	Ma'an	100,000
39.	Preparation of studies for expansion of Ma'an and Wadi Mousa wastewater treatment plant	wastewater	Ma'an	1,000,000
40.	Preparation of design, review and tender documents for water supply system rehabilitation of Amman Governorate	water	Amman	11,800,000
41.	Physical Field Survey of Existing Water Network To Enhance GIS Data Accuracy	water	Amman	3,000,000
42.	Preparation of studies for Miscellaneous Wastewater network construction in Greater Amman	wastewater	Amman	2,000,000
43.	Physical Field Survey of Existing Wastewater Network to Enhance GIS Data Accuracy	wastewater	Amman	3,000,000
44.	Enterprise Resource Planning Software Solution		Amman	3,000,000
45.	Asset Management Solution	Water & Wastewater	Amman	1,500,000
46.	Preparation of design, review and tender documents for water supply system rehabilitation of Irbid Governorate	water	Irbid	4,050,000
47.	Preparation of studies for sewer network and house connections in Mazar Shamali	wastewater	Irbid	1,000,000
48.	Preparation of studies and design for sewer network and house connections in Bani Kinanah District	wastewater	Irbid	1,000,000

No.	Project Name	Type	Governorate	Expected Cost
49.	Preparation of design for wastewater collection system in Kufr Yoba, Bait Yafa and Jumha within West Irbid area	wastewater	Irbid	1,500,000
50.	Preparation of design, review and tender documents for water supply system rehabilitation of Zarqa Governorate	water	Zarqa	2,000,000
51.	Preparation of studies for construction Wastewater collection system and house connection in Zarqa	wastewater	Zarqa	500,000
52.	Supervise the Implementation of the Transmission Line from East Zarqa to Kherbat Samra WWTP	wastewater	Zarqa	1,000,000
53.	Disaster Recovery Site Design and Implementation		Zarqa	1,000,000
54.	Preparation of studies for construction of wastewater network system and house connection in Thiban	wastewater	Madaba	500,000
55.	Studying the Expansion of the Mafraq WWTP	wastewater	Mafraq	1,000,000
56.	Feasibility Study, and Preparation of design, review and tender documents for water supply system rehabilitation of Mafraq Governorate	water	Mafraq	2,200,000
57.	Feasibility Study, and Preparation of design, review and tender documents for water supply system rehabilitation of Ajloun Governorate	water	Ajloun	1,250,000
58.	Feasibility Study, and Preparation of design, review and tender documents for water supply system rehabilitation of Jarash Governorate	water	Jarash	1,500,000
TOTAL				**208,292,275**

3 INVESTMENT PROJECTS

This chapter summarizes projects and programs that could be financed. Water supply is considered first, then sanitation.

Water Programs

The investment plan has been prepared for the water programs considering the key objectives of the following:

A. Improvement of inadequate distribution system (strengthening and restructuring),
B. Reduction of leakage through replacement of inferior pipes and adequate maintenance of pipes by assuming the Non-Revenue Water NRW reduction is 5%, and
C. Improvement of distribution management equipment and technical capacity for equitable supply.

The Water programs were divided into three categories; Water Resources, Bulk Supply, and Retail and Distribution. The Retail and Distribution includes two groups; Irrigation Water and Domestic, Commercial and Tourism, which was divided into two phases, phase one (covers the period from 2016 till 2020) considered as a rehabilitation phase that will focus on the rehabilitation of the water network based on the amount of water supply in 2014. Phase two (covers the period from 2021 till 2025) considered as an improvement phase that will focus on handling the amount of water raised by 25% - 35% to cope with the population growth over the coming ten years, including the influx of the refugees. The investment plan includes development of new water resources in total of 120 MCM.

The operating cost of the water network projects was calculated based on 0.3JD per m^3, taking into consideration that many master studies were developed lately mentioned the operating cost is between 0.27 JD/m^3 to 0.35 JD/m^3. The operating cost of the water resources projects was calculated based on 0.4 JD/m^3, meanwhile, the operating cost for the conveyance projects was calculated based on 0.06 JD/m^3.

Wastewater Program

The wastewater projects were derived from the National Strategic Wastewater Master Plan driven by the Jordan Water Strategy which calls for all major cities and small towns in Jordan to be provided with adequate wastewater collection and treatment facilities by the year 2022. (A small town is defined in the Wastewater Master Plan as a community of 5000 inhabitants as the lower population

limit for provision of wastewater service). Jordan has 33 wastewater facilities (27 existing plus 4 under construction) and a tremendous number of studies which have been done on wastewater treatment and reuse for different governorates, cities and communities of all sizes in Jordan. According to the Master Plan, 85% of the nation's population will be covered if the 173 localities with more than 5,000 people are served. This leaves only about 14% of the population residing in communities with less than 5,000 people who will be excluded from the wastewater collection systems. A breakdown of the population figures in relation to localities and their access to wastewater facilities is shown in the next table.

Table (7) Nationwide Existing Wastewater Collection & Treatment Status by Governorate

Governorate	Totals by Governorate		Localities larger than 5,000 people		Population Served with Wastewater Collection and Treatment Systems			
	No. of Localities	Total Govern. Population (2012)	No. of Localities larger than 5,000 people	Total Population in Localities larger than 5,000 people	No. of Localities Served	Total Population Number Served	% of Total Governorate Population Served (2012)	% of Total Population Residing in Localities larger than 5,000 people
Amman	157	2,473,400	32	2,345,764	25	2,080,112	84%	89%
Balqa	80	428,000	17	328,784	11	184,000	43%	56%
Madaba	73	159,700	6	119,780	1	51,900	32%	43%
Zarqa	57	951,800	7	911,158	4	685,296	72%	75%
Irbid	137	1,137,100	54	981,378	12	594,404	52%	61%
Mafraq	172	300,300	12	139,102	1	24,000	8%	17%
Jerash	55	191,700	10	131,808	16	113,031	69%	86%
Ajloun	55	146,900	10	117,172	4	61,700	42%	53%
Karak	115	249,100	12	120,825	7	51,000	20%	42%
Tafilah	41	89,400	6	68,452	3	27,720	31%	40%
Ma'an	71	121,400	5	72,703	6	46,820	39%	64%
Aqaba	29	139,200	2	119,210	1	100,418	72%	84%
Total	**1,042**	**6,388,000**	**173**	**5,456,136**	**91**	**4,020,401**	**63%**	**74%**

The table above shows that, nationwide, 4,020,401 people residing in 91 (out of 1,042) localities are currently connected to wastewater collection and treatment systems; representing 63% of total current national population. On the other hand, these 91 localities are out of 173 localities that should be connected to wastewater collection and treatment systems based on the above criteria; in total these 173 localities currently represent 74% of the population. Nationwide, the 91 serviced localities are connected to 33 wastewater treatment plants (27 existing plus 4 under construction). In general, it can be said that all major localities which include metropolitan areas, cities, urban and suburban localities are served or slated to be served in the next few years.

Another notable feature found in the table is that nearly 60% of the total national population is located within only 25 communities with a population greater than 50,000 people each.

Several technical considerations and assumptions were used as the basis for this Strategic Wastewater Master Plan. In order to assess wastewater generation rates, the water allocation policy figures (Amman 120 l/cpd, other cities 100 l/cpd, suburbs and remote areas 80 l/cpd) were used. The wastewater generated was calculated assuming that 80% of the water supplied will become wastewater.

The operating cost of the wastewater networks was calculated based on 0.04JD per m^3 of treated wastewater, meanwhile, the cost for the wastewater treatment plant WWTP expansion was calculated based on 0.02JD per m^3 of the treated wastewater.

The investments for wastewater collection and wastewater treatment projects were determined on the basis of the following priority considerations:

Priority 1 (Immediate: 2013 – 2015) projects are proposed for immediate implementation. These are determined based on the following criteria:

Existing wastewater collection systems having sewer overflow problems, or the existing sewers are overloaded, or sewers lines are deteriorated, or there is an accessibility problem to maintain the sewer systems. Expansion of an existing overloaded wastewater treatment plant or is currently operated very near its design capacity.

Priority 2 (Short-term: 2016 – 2025) projects are proposed for near-term implementation as determined by the following criteria:

Localities within an existing sewer system still needing connection; expansion of wastewater treatment plants that will reach the maximum design capacity in the planning period 2016-2025 or close to it; eligible localities currently relying on septic tanks but which have not created any overflow problem; and/or localities exhibiting any other significant environmental or sanitation problems.

Localities that have the potential to contaminate groundwater or spring sources used for drinking water and do not have a wastewater collection and treatment system. In assessing the potential pollution of groundwater and spring water resources, the key risk factors considered were depth to the groundwater, geology and aquifer media, soil cover, proximity to Wadis and high permeability Wadi beds.

WATER PROJECTS

WATER RESOURCES

1. Red Sea Dead Sea Water Conveyance Project / Phase I

Project Information

Location	National
Objectives	The main objectives behind the development of the RSDS Project are 1. Establish a Secure and Affordable Water Supply for Jordan while Saving the Dead Sea from Extinction 2. Support Widespread Economic Growth in Jordan 3. Provide for Potential Regional Water Sharing 4. Facilitate Private and Public Partnership through a (BOT) project. Besides, the main reasons of the RSDS Project / initial phase (phase I) is to desalinate (80-100) MCM/yr. which will be partly swapped with Israel at Aqaba (about 50mcm/yr.), and to supply Aqaba Water Company AWC with the quantities in order to receive water from Israel for the swapped quantities in the Northern Jordan Valley to alleviate the water shortages in the Northern and other Governorates in Jordan through the Wadi Arab system II Project. Besides, 20 MCM will be reallocated for the irrigation purposes. Also this initial phase will be the base of the overall project which aims at increasing the desalinated water quantities to meet the water deficit all over the kingdom. The brine water in this initial phase will be discharged to the Dead Sea, the coming phases will be implemented in stages according to ministry of Water & Irrigation MWI plans for supply vs. demand time targets. It is anticipated for future expansion of the proposed initial phase, that the brine will also be discharged to the Dead Sea to save it from further decrease in its water level and area.
Description	In order to increase the water resources in Jordan to meet the increasing demand MWI is planning to start with an initial phase, which includes the desalination of about (80-100) MCM/yr. by extracting (177-222) MCM/yr. of sea water from the Red Sea at the Northern Intake location. The intake structure to be constructed to abstract one third of the ultimate capacity for future sea water extraction of (2.2 billion MCM/yr.) with the brine water to be discharged to the Dead Sea at this initial phase. The sea water will be treated and desalinated at Aqaba, at a location of about 5-11 km north of the Aqaba airport or any other suitable location; taking into consideration that flood protection shall be investigated and considered in the design and implementation of the treatment and desalination plant location. The Ownership of the desalination plant, the pipelines, and all other associated infrastructure will be implemented on the Jordanian territory and will be 100% owned by Jordan. The cost of transporting potable water from the desalination plant for local use shall be covered by each Beneficiary Party taking water delivery. The proposed Project is to be implemented on a Build, Operate and Transfer (BOT) basis. Jordan and Israel will both have to conclude agreements, so that Israel will buy an allocated share of the potable water on" a take or pay basis" from the desalinated plant in Aqaba at the BOT contractor's cost, and Jordan

	will buy the same amount from Lake Tiberius at agreed price of about 0.42USD/m^3. Based on previous studies under the Red Sea Dead Sea Water Conveyance Study Program, it appears that the proposed intake structure, reject brine pipeline and associated infrastructure are technically feasible; there are some environmental impacts, but these can be mitigated; and the expected social impacts are limited and can be mitigated.

Project Status

Status	Environmental Studies are already Done phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2021

Operational Data

Water Supplied	85 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	20%	20%	20%	20%					
OPEX Outlay (%)					50%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	650		
IRR (%)	18	**ERR (%)**	16
NPV (M JOD)	1,471	**ENPV (M JOD)**	1,272

2. Augmentation of Water Supply for Central and Northern Jordan from Deep Aquifer (Sheediyya – Al Hasa)

Project Information

Location	Al Hasa / Tafileh
Objectives	MWI has started drilling a number of deep wells reaching this aquifer in 1999 (Lajjun well field). Operation of the Lajjun well field showed that yield in the upper part (where Kurnub and Ram Group aquifers are combined) is less than in the deeper part, therefore drilling of the new proposed wells will target mainly the deeper part of the deep aquifer system. Drilling of exploration wells by MWI (one well in each proposed zone) along the Disi pipeline will start this year. Salinity (TDS) is expected to range between less than 1,000 and 2,500 mg/L. Water conveyance from Jurf ed Darawish to Damikhi requires only few pumping stations. A pipeline between Damikhi and Amman already exists so that only a small section of pipeline between Damikhi and Jurf ed Darawish is required (80 km). The elevated salinity may require treatment (desalination). Therefore a desalination plant has to be built near Damikhi. Two reservoirs, functioning as buffers, are required, each with a capacity of 100,000 m^3, one located before the treatment plant, one after.
Description	The proposed water supply infrastructure will require the following components: - 44 wells (37 production wells, 7 stand-by wells), - Five (5) pumping stations, - Pipeline (Jurf ed Darawish - Damikhi, 80 km) and connections to wells, - One (1) treatment plant, - Two (2) reservoirs,

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2021

Operational Data

Water Supplied	50 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	20%	20%	20%	20%	20%					
OPEX Outlay (%)					50%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	150		
IRR (%)	1	**ERR (%)**	-
NPV (M JOD)	-164	**ENPV (M JOD)**	-710

3. Red Sea Dead Sea Conveyance Project/ Phase II

Project Information

Location	National
Objectives	To enhance the water supply system through all over the Kingdom
Description	Establishing a treatment plant with a capacity of 150 Million Meter Cubic, including a transmission pipeline of 2000 mm diameter with a length of 350 KM from Aqaba through Karak on the Al Kharazeh road. The location of the desalination plant is at the north of Aqaba international airport, while the intake location is the northern part of the Red sea at Aqaba governorate

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 – 2025

Operational Data

Water Supplied	150 MCM
Water Saved	
% Allocation by Type of Use	100 % Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	15%	15%	20%	20%	20%				
OPEX Outlay (%)		25%	50%	75%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	1,312		
IRR (%)	26	**ERR (%)**	24
NPV (M JOD)	1,450	**ENPV (M JOD)**	1,227

4. Hisban Wells

Project Information

Location	Hisban / Madaba
Objectives	To increase the current supply for the city of Amman from Hisban wells
Description	Treat Hisban brakish water at wells location and convey it to the city of Amman

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Water Supplied	10 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	25		
IRR (%)	-3	**ERR (%)**	0
NPV (M JOD)	-20.9	**ENPV (M JOD)**	-16.7

5. Kofranjih DAM Water Treatment, Conveyance to Ajloun Governorate

Project Information

Location	Ajloun
Objectives	The project aims to enhance the water supply to the Governorate of Ajloun through the transfer amount of drinking water estimated at 300 m^3/h of dam (after treatment and purification) in total 3 MCM per year.
Description	The project consists of: 1. The implementation of tanker lines dam 2. Create a socket of the natural flow positive dam and installation of surface pumping station 3. Implementation of the tanks 4. Create raise three intermediate pump water to the level of stations 5. Establishment of a modern membrane technology-based processing with SCADA, which connects with the rest of the processing station components of the project as well as the establishment of water lab tests needed for water system station 6. Operation and management contract for the entire project and a full year under the supervision and operation of the contractor in conjunction with the Water Authority of Jordan for the transfer of expertise and training.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 – 2019

Operational Data

Water Supplied	3 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	10		
IRR (%)	4	**ERR (%)**	35
NPV (M JOD)	-3.5	**ENPV (M JOD)**	42.6

6. Mojib Dam Water Treatment, Conveyance to Karak Governorate (Phase II)

Project Information

Location	Karak
Objectives	The project aims to enhance the water supply to the Governorate of Karak through the transfer of amounts of drinking water is estimated at 300 m^3/h of dam positive (after treatment and purification)
Description	The project consists of: 1. The implementation of tanker lines dam and even Shihan-based tank and a length of 18.5 km 2. Create a socket of the natural flow dam and installation of surface pumping station 3. Implementation of the tanks 4. Create raise three intermediate pump water to the level of Shihan tank stations 5. Establishment of a modern membrane technology-based processing with SCADA, which connects with the rest of the processing station components of the project as well as the establishment of water lab tests needed water system station 6. Operation and management contract for the entire project and a full year under the supervision and operation of the contractor in conjunction with the Water Authority of Jordan for the transfer of expertise and training.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2019 – 2020

Operational Data

Water Supplied	3 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	6		
IRR (%)	8	**ERR (%)**	52
NPV (M JOD)	- 0.2	**ENPV (M JOD)**	44.7

7. Tannour Dam Water Treatment, Conveyance to Karak and Tafilah Governorates

Project Information

Location	Tafilah
Objectives	The project aims to enhance the water supply to the Governorate of Tafilah and Karak through the transfer of amounts of drinking water is estimated at 3 MCM of dam (after treatment and purification)
Description	The project consists of: 1. The implementation of tanker lines dam 2. Create a socket of the natural flow positive dam and installation of surface pumping station 3. Implementation of the tanks 4. Create raise three intermediate pump water to the level of stations 5. Establishment of a modern membrane technology-based processing with SCADA, which connects with the rest of the processing station components of the project as well as the establishment of water lab tests needed for water system station 6. Operation and management contract for the entire project and a full year under the supervision and operation of the contractor in conjunction with the Water Authority of Jordan for the transfer of expertise and training. The feasibility studies will determine the amount of water and which governorate will be supplied with water

Project Status

Status	Concept phase, prefeasibility study, unfunded
Financing	Not available
Expected Construction Date	2018 – 2019

Operational Data

Water Supplied	3 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	10		
IRR (%)	4	**ERR (%)**	35
NPV (M JOD)	- 3.5	**ENPV (M JOD)**	42.6

8. Malaqy Dam Project (downstream of Mujib Dam)

Project Information

Location	Madaba and Karak
Objectives	To construct a dam downstream of the existing Mujib dam to store about 10 Million m^3 the excess flood rainwater of Wadi Mujib to use for drinking, industry and irrigation purposes
Description	Construct rock fill or roller-compacted concrete dam with a spillway and all necessary mechanical and electrical works

Project Status

Status	Concept phase, unfunded, and in need of a comprehensive study
Financing	Not available
Expected Construction Date	2022 – 2025

Operational Data

Water Supplied	10 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	40%	40 %	10%						
OPEX Outlay (%)					100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	40		
IRR (%)	3	**ERR (%)**	25
NPV (M JOD)	-19.6	**ENPV (M JOD)**	120.2

9. Construction of Additional Outlet/Turnout for King Talal Dam

Project Information

Location	Jerash
Objectives	The project aims to create an additional outlet/turnout for King Talal Dam in order to avoid the blockage of current outlets/turnouts
Description	

Project Status

Status	Concept phase, unfunded. Studies, design and tender documents ready.
Financing	Not available
Expected Construction Date	2020

Operational Data

Water Supplied	-
Water Saved	-
% Allocation by Type of Use	100% Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	100%									
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	2		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

10. Wadi Hisban Dam

Project Information

Location	Balqa
Objectives	To utilize the flood water and regulate the flow with a total capacity of about 5 million cubic meter of water to irrigate 20,000 dunums in Alghwar area (area 14.5)
Description	Construct rock fill or roller-compacted concrete dam with a spillway and all necessary mechanical and electrical works

Project Status

Status	Concept phase, unfunded, and in need of a comprehensive study
Financing	Not available
Expected Construction Date	2019 – 2023

Operational Data

Water Supplied	5 MCM
Water Saved	-
% Allocation by Type of Use	100% Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	20%	30%	30%	10%					
OPEX Outlay (%)						100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15		
IRR (%)	-	**ERR (%)**	10
NPV (M JOD)	-20.2	**ENPV (M JOD)**	2.7

11. Wadi Issal Dam

Project Information

Location	Karak
Objectives	To utilize the flood water and regulate the flow with a total capacity of about 2 million cubic meter of water for irrigation and industry
Description	Construct rock fill or roller-compacted concrete dam with a spillway and all necessary mechanical and electrical works

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 – 2021

Operational Data

Water Supplied	2 MCM
Water Saved	-
% Allocation by Type of Use	50% Irrigation; 50% Industrial

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	40%	40%	10%						
OPEX Outlay (%)					100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	11		
IRR (%)	6	**ERR (%)**	45
NPV (M JOD)	-2.0	**ENPV (M JOD)**	83.8

12. Wadi Meddain Dam

Project Information

Location	Karak
Objectives	To utilize the flood water with a total capacity of about 1.5 million cubic meter of water for irrigation and groundwater recharge
Description	Construct rock fill or roller-compacted concrete dam with a spillway and all necessary mechanical and electrical works

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 – 2021

Operational Data

Water Supplied	1.5 MCM
Water Saved	-
% Allocation by Type of Use	100% Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	6		
IRR (%)	-	**ERR (%)**	18
NPV (M JOD)	-8.4	**ENPV (M JOD)**	7.8

13. Wadi Tlah Dam

Project Information

Location	Tafilah
Objectives	To utilize the flood water in recharging the Aquifer and for irrigation land in the area
Description	The catchment area is about 16 Km^2 and the annual flood is about 80,000 m^3. The expected dam height is about 10-15 meters and the capacity to be at 200,000 m^3

Project Status

Status	Concept phase, unfunded, and in need of comprehensive studies
Financing	Not available
Expected Construction Date	2019 – 2021

Operational Data

Water Supplied	200,000 m^3
Water Saved	-
% Allocation by Type of Use	100% Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	60%	20%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	3.5		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-3.4	**ENPV (M JOD)**	-2.4

14. Wadi Al Yutum Dam

Project Information

Location	Aqaba
Objectives	To store and utilize the flood water in drinking water and recharging the Aquifer and could be for irrigation land in the area. Also, to develop the landscape of the Quirah area. The objective of the project is considered as a multi purposes.
Description	Construct rock fill or roller-compacted concrete dam with a spillway and all necessary mechanical and electrical works

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2019 – 2021

Operational Data

Water Supplied	20 MCM
Water Saved	-
% Allocation by Type of Use	50% Irrigation; 50% Drinking water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	50%	30%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	100		
IRR (%)	-	**ERR (%)**	20
NPV (M JOD)	-125.7	**ENPV (M JOD)**	162.1

15. Wadat Dam

Project Information

Location	Tafilah
Objectives	The project aims at providing permanent irrigation water sources for irrigated agriculture in the area, as well as for industry purposes
Description	A rock fill with concrete face dam will be constructed with a preliminary capacity of 400,000 m^3. The dam is located at the crossroads of wadis that flow in the winter

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2025

Operational Data

Water Supplied	400,000 m^3
Water Saved	-
% Allocation by Type of Use	100 % for Irrigation and Industry

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	100%									
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	5		
IRR (%)	-1	**ERR (%)**	38
NPV (M JOD)	-3.2	**ENPV (M JOD)**	19.5

16. Improving the Performance of Sharhabeel Bin Hasnah Dam Outlets/Turnouts

Project Information

Location	Irbid
Objectives	Project aims to improve the performance of the current dam turnouts through implementing screens, pipes and valves of the turnouts to avoid the blockage of these turnouts due to the sediments and stones carried by floodwater
Description	Implement new screens, pipes and valves on the turnout of the dam.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 – 2019

Operational Data

Water Supplied	-
Water Saved	-
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	0.4		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

17. Wadi Rahma Dam

Project Information

Location	Aqaba
Objectives	The project aims to construct a dam with capacity of 0.65 MCM to irrigate agricultural land, recharge groundwater, as well as protect Rahma village from flooding. Also, another main objective is for Wadi Arab Development. The project objective considers for a multi purposes.
Description	A homogeneous earth dam 17.5 m high and 186 m long is expected to be erected. Storage capacity is 0.65 million m^3 at the end of Wadi Rahma right before it meets Wadi Araba, west of Rahma village at the coordinates (923100 North and 164500 East).

Project Status

Status	Concept phase, unfunded. Modification and review of existing studies, design and contract documents are required
Financing	Not available
Expected Construction Date	2021 – 2022

Operational Data

Water Supplied	0.65 MCM
Water Saved	-
% Allocation by Type of Use	100 % for Irrigation

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	3.5		
IRR (%)	-	**ERR (%)**	13
NPV (M JOD)	-4.5	**ENPV (M JOD)**	2.0

18. Wadi Moussa Dam

Project Information

Location	Aqaba
Objectives	Project aims to irrigate agricultural land in the area where the dam will be established, and to recharge groundwater. Also, another main objective is for Wadi Arab Development. The project objective considers for a multi purposes.
Description	The project objective is to create a homogeneous earth dam 25 m high and a storage capacity of 2.5 million m^3. The proposed project location is the end of Wadi Mousa, 3 km before it meets Wadi Araba, south west of Beer Mathkour in Om Matla. Coordinates are 975500 North and 184700 East.

Project Status

Status	Concept phase, unfunded. Modification and review of existing studies, design and contract documents are required
Financing	Not available
Expected Construction Date	2021 – 2022

Operational Data

Water Supplied	2.5 MCM
Water Saved	2.5 MCM
% Allocation by Type of Use	100% Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	8		
IRR (%)	-	**ERR (%)**	20
NPV (M JOD)	-12.3	**ENPV (M JOD)**	12.4

19. Wadi Fidan Dam

Project Information

Location	Tafilah
Objectives	The project aims to create a dam to store permanent water runoff and reduce the negative effects of droughts, as well as to ward off the risk of flooding. Also, another main objective is for Wadi Arab Development. The project objective considers for a multi purposes.
Description	The project aims to create a dam to store permanent water runoff by constructing an earth dam 37 m high, 381 m long and a storage capacity of 4.4 million m^3 water to reduce the negative effects of droughts, as well as to ward off the risk of flooding, the project is located on Wadi Fidan east of the main road (Dead Sea - Aqaba).

Project Status

Status	Concept phase, unfunded. Modification and review of existing studies, design and contract documents are required
Financing	Not available
Expected Construction Date	2021 – 2024

Operational Data

Water Supplied	4.4 m^3
Water Saved	-
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	45%	5%	30%						
OPEX Outlay (%)					100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	20		
IRR (%)	-	**ERR (%)**	15
NPV (M JOD)	-24.2	**ENPV (M JOD)**	16.4

20. Tal Dhahab Dam

Project Information

Location	Jerash
Objectives	Project aims to construct a dam on Zarqa River near Telal Al-Dhahab with a capacity of 5 MCM, in order to regulate the flow of King Talal Dam to be used for irrigation in the Jordan Valley
Description	A rock fill with concrete face dam will be constructed with a preliminary capacity 5,000,000 m^3. The dam is located at the crossroads of wadis that flow in the winter

Project Status

Status	Concept phase, unfunded. Terms of Reference are being developed.
Financing	Not available
Expected Construction Date	2016 – 2018

Operational Data

Water Supplied	5 MCM
Water Saved	-
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	30%	30%	20%						
OPEX Outlay (%)					100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	25		
IRR (%)	-	**ERR (%)**	14
NPV (M JOD)	-29.4	**ENPV (M JOD)**	16.8

21. Water Harvesting

Project Information

Location	National
Objectives	In light of the JVA water strategy, all tools and techniques for collecting the largest possible amount of rainwater and springs for use in various facilities shall be employed. JVA is to establish the largest possible number of dams, reservoirs, ponds, diversion barriers as well as maintenance of old ponds and dams in various regions of the Kingdom. The objective is to harvest rainwater and floods that go to waste, especially in upland, deserts and pastoral areas in the Kingdom.
Description	During the next 10 years; JVA will create 150 site of dams and desert excavations in different areas in the Kingdom at 20 site per year

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2025

Operational Data

Water Supplied	15 MCM
Water Saved	-
% Allocation by Type of Use	100% for livestock and irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
OPEX Outlay (%)		10%	20%	30%	40%	50%	60%	70%	80%	90%

Financial and Economic Indicators

Capital Cost (M JOD)	20		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

22. Increasing the Height of Wadi Shuieb Dam

Project Information

Location	Balqa
Objectives	The project objective is to increasing the storage of the dam by increasing height of the dam and removing the sediments
Description	Removing the sediments from the dam and by increasing height.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 – 2021

Operational Data

Water Supplied	0.8 to 1.2 MCM
Water Saved	0.8 to 1.2 MCM
% Allocation by Type of Use	100 % for irrigation and recharge

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	25%	25%	25%	25%						
OPEX Outlay (%)		25%	50%	75%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	1		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

23. Increasing Water Pumping in DISI from 100 MCM to 115 MCM Project

Project Information

Location	National
Objectives	To increase the amount of water pumping from the DISI project from 100 MCM to 115 MCM
Description	Installing new pumping station to handle the new capacity of water amount pumped (from 100 MCM as per the original agreement to be 115 MCM)

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2018

Operational Data

Water Supplied	15 MCM additional
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	100%									
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	24		
IRR (%)	22	**ERR (%)**	42
NPV (M JOD)	69	**ENPV (M JOD)**	152.1

24. Development of Ground Water new wells (deep & Shallow) as a water sources including the Buying the private wells Project

Project Information

Location	National
Objectives	To enhance the water sources by adding more wells (deep & shallow) into services that will lead for more amount of water supplied
Description	Drilling more new wells all over the Kingdom, also, buying more private wells that will enhance the ability of MWI in handling the abstraction

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2025

Operational Data

Water Supplied	10 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	40		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

25. Al Azraq - Sarhan Deep Aquifer Development

Project Information

Location	Zarqa
Objectives	Enhancing the supply system at Zarqa governorate by adding more amount of water that will be produced by the project
Description	Drilling 15 new wells that will provide amount of water up to 15 MCM. The project will be coordinated with other institutions; nuclear power commission, that will participate in the financing and the implementation of the project

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 - 2025

Operational Data

Water Supplied	15 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	20%	20%	20%	20%	10%				
OPEX Outlay (%)							100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	25		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-19.2	**ENPV (M JOD)**	-19.2

26. Al-Wala Dam Dam Expansion

Project Information

Location	Madaba
Objectives	The project aims to extend the capacity of the dam by increasing the height of the dam.
Description	The project consists of construction work that will lead to increase the capacity of the dam, which will affect the performance of the dam as well as its utilization positively. Wala Dam Expansion includes two projects (Wala Dam expansion & water treatment conveyance to Madaba) OR Hidan Wells Development as another alternative.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 - 2022

Operational Data

Water Supplied	7 MCM
Water Saved	-
% Allocation by Type of Use	100% Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	40%	30%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	4		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

27. Al-Wala Dam Water Treatment, Conveyance to Madaba Governorate

Project Information

Location	Madaba
Objectives	The project aims to enhance the water supply to the Governorate of Madaba through the transfer amount of drinking water estimated at 500 m^3/h of Dam (after treatment and purification) in total 2.6 MCM per year. The project objective is to increasing the storage of the dam by increasing height of the dam and removing the sediments.
Description	The project consists of: 1. The implementation of tanker lines dam 2. Create a socket of the natural flow positive dam and installation of surface pumping station 3. Implementation of the tanks 4. Create raise three intermediate pump water to the level of stations 5. Establishment of a modern membrane technology-based processing with SCADA, which connects with the rest of the processing station components of the project as well as the establishment of water lab tests needed for water system station 6. Operation and management contract for the entire project and a full year under the supervision and operation of the contractor in conjunction with the Water Authority of Jordan for the transfer of expertise and training. Also, removing the sediments from the dam and increasing height by having more civil work to the dam. Wala Dam Expansion includes two projects (Wala Dam expansion & water treatment conveyance to Madaba) OR Hidan Wells Development as another alternative.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2023 - 2025

Operational Data

Water Supplied	2.6 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	40%	30%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	8		
IRR (%)	26	**ERR (%)**	34
NPV (M JOD)	22.2	**ENPV (M JOD)**	35.3

28. Desalination of the Brackish in Al Aghawar Area and Badia

Project Information

Location	Alghwar & Badia Area
Objectives	
Description	

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2025

Operational Data

Water Supplied	10 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	10		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

29. Aqaba Desalination Plant

Project Information

Location	Aqaba
Objectives	The main objective is secure the supplying water system for Aqaba governorate, by securing 5 MCM per year
Description	Constructing a desalination plant with a capacity of 5 MCM

Project Status

Status	Concept phase, funded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Water Supplied	5 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	40%	30%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	5		
IRR (%)	23	**ERR (%)**	-
NPV (M JOD)	13.9	**ENPV (M JOD)**	-

30. South Aqeb Well Field Development

Project Information

Location	Mafraq
Objectives	Development the Aqeb Well field to enhance the water supply in Mafraq Governorate
Description	Drilling 23 wells in addition to the conveyance pipeline. The main governorate to be supplied Mafraq, and then the rest governorate will be supplied accordingly.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2019

Operational Data

Water Supplied	15 MCM
Water Saved	-
% Allocation by Type of Use	100% Bulk Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	50%	20%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15		
IRR (%)	10	**ERR (%)**	56
NPV (M JOD)	5.3	**ENPV (M JOD)**	200.6

31. Household Water Harvesting

Project Information

Location	National
Objectives	To increase the awareness of harvesting the rain water through collecting the rain water from the house surfaces. The project might include amending the regulations, bylaws that will legalize the harvesting of the water.
Description	The project includes financing support for the one who is willing to have a well of tank to collect the rain water.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2025

Operational Data

Water Supplied	7 MCM
Water Saved	-
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	5		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

32. Installation Ultra Violet Reactors in Zai , Russaifeh and Ras Alein Water Treatment Plant

Project Information

Location	Zai – ASalt
Objectives	To comply with the requirements of the Jordanian microbiological standards for the raw water category No. 3 by adding additional barrier to the existing process.
Description	The project is, design, built and operation for Ultra violot Reactors which shall be integrated with the existing process barriers , the UV barrier shall guarantee 3- log removal of cryptosporidium and guardian in Zai water Treatment plant (250,000 m^3/ day capacity) and another two small treatment plant Russaifeh (20640m3/ day) and Rasalein (24000 m^3/ day).

Project Status

Status	TOR is submitted , unfunded
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Water Supplied	
Water Saved	
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	2.5		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

33. Rehabilitation and Improvement of Facilities in Zai Water Treatment Plants and Zai Booster Pumping Stations

Project Information

Location	Zai – ASalt
Objectives	The project aims to sustain the maximum capacity of Zai water treatment plant (250,000m³/day) through rehabilitation of some critical facilities and equipment which are almost consumed due to age. i.e. some equipment are running for more than 30 years
Description	1. Evaluate the technical condition of maim supply raw water pipe line (Φ1200 mm,12km length) and decide the need for installation a new pipe line . 2. Supplying and installation mechanical and Electrical equipment such as travelling water screen, flocculates, 3500 kw/6.6 kv electric motors, chlorine electrically heated evaporator, ….etc 3. Replacement main header discharge pipes (1000 mm) in Zai Booster pumping stations. 4. Rehabilitation wash water tank (1420m3) in Zai water treatment plant. 5. Installation new powder activated carbon feed system. 6. Rehabilitation the telemetry system in Zai water T.P. 7. Installation new sludge removal system.

Project Status

Status	concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2019

Operational Data

Water Supplied	
Water Saved	
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	40%	20%	10%						
OPEX Outlay (%)					100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	5		
IRR (%)	-	**ERR (%)**	-
NPV (M JOD)	-	**ENPV (M JOD)**	-

34. Increasing Water Production from Abu Zeghan Desalination Plant

Project Information

Location	Abuzeghan – Jordan valley
Objectives	Increasing water production through utilize 3 treatment units in desalination plant to reach "9 MCM" instead of "6 MCM by increasing raw Brackish water supply to the desalination plant.
Description	The project consist of : 1. Drilling 4 new wells to compensate water production from stopped wells which are deteriorated due to (heavy corrosion) of the wells casing. The new wells shall be drilled in the same location of the deteriorated wells so that the wells infrastructure can be used. 2. Install new Brine conveyance pipe line (Φ1000 polyethylene)

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Water Supplied	9 MCM
Water Saved	
% Allocation by Type of Use	Drinking water to Deir Alla- Balaqa Governorate. Bulk water raw supplier to Zai water TP.

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	1		
IRR (%)	49	**ERR (%)**	193
NPV (M JOD)	20.4	**ENPV (M JOD)**	79.3

BULK SUPPLY

1. Extension 24 Km Pipeline Parallel to the King Abdullah Canal

Project Information

Location	Jordan Valley
Objectives	The objective is to save water, prevent illegal use, and to reduce evaporation
Description	The project aims to connect pipelines parallel to KAC for 24 km from pumping station No. 41 to pumping station No. 65 with a flow rate of 2.5 - 3 m^3/s, and to keep the canal as it is to be used during floods

Project Status

Status	Concept phase, unfunded, and in need of study, design, preparation of tender documents and implementation
Financing	Not available
Expected Construction Date	2021 – 2025

Operational Data

Water Supplied	-
Water Saved	About 4 MCM /year
% Allocation by Type of Use	100% for drinking

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	3%	10%	40%	40%	7%					
OPEX Outlay (%)						100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	50		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

2. Rehabilitation & Maintenance of King Abdullah Canal KAC

Project Information

Location	Irbid, Balqa
Objectives	The main objective of the project is to raise its performance and efficiency by decreasing the seepage losses by repairing fractures and cracks and performing the maintenance work necessary for the canal and its facilities, and to clean it from sediments, especially that about 65 km of the canal water is fresh water used for drinking purposes. The amount of water stored is expected to increase to the maximum amount possible
Description	Rehabilitation the 110 km of KAC and All siphons, check gates and hydraulic structures

Project Status

Status	Concept phase, unfunded, and in need of study, design, preparation of tender documents and implementation
Financing	Not available
Expected Construction Date	2019 – 2021

Operational Data

Water Supplied	-
Water Saved	5 MCM
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		30%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

3. King Abdullah Canal Protection Project

Project Information

Location	Irbid, Balqa
Objectives	To continue protection both sides the KAC
Description	Installation 50 km of fence and rehabilitation the box culverts and protection walls and gabions

Project Status

Status	Concept phase, unfunded, and in need of study, design, preparation of tender documents and implementation
Financing	Not available
Expected Construction Date	2016 – 2025

Operational Data

Water Supplied	-
Water Saved	-
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	15%	10%	10%	5%	5%	7.5%	7.5%	10%	10%	20%
OPEX Outlay (%)		15%	25%	35%	40%	45%	52.5%	60%	70%	80%

Financial and Economic Indicators

Capital Cost (M JOD)	2		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

4. Rehabilitation of Pumping Station (King Abdullah Canal to Wadi Arab Dam)

Project Information

Location	Irbid
Objectives	Water will be pumped from the KAC to Wadi Arab Dam during winter and when floods occur in order to be stored till needed. In addition, the project aims at installing another pipe parallel to the current one from the pumping station to the Wadi Arab Dam
Description	The project aims at maintaining the station components, replacing the pumps with new ones. The total station capacity to be increased from 1.2 to 1.8 m^3/s.

Project Status

Status	Concept phase, unfunded, and in need of study, design, preparation of tender documents and implementation
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Water Supplied	
Water Saved	
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	25%	50%	25%							
OPEX Outlay (%)			50%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	3		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

5. Transfer of Excess Water from Side Wadis in Southern Ghors to the Potash and Bromine Industry

Project Information

Location	Karak
Objectives	The project aims to transfer excess water in winter and in summer from the Fiefa and khnezera side wadis of the southern Ghors to the Potash and Bromine industries
Description	Implement pipes, storage facility and pump station.

Project Status

Status	Concept phase, unfunded. Studies, design and tender documents ready.
Financing	Not available
Expected Construction Date	2020 – 2021

Operational Data

Water Supplied	1 MCM
Water Saved	1 MCM
% Allocation by Type of Use	100% Industrial

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	80%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	0.5		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

6. New Tabaria Conveyance pipeline

Project Information

Location	Irbid
Objectives	To enhance the supplying system of the water through the northern part of the kingdom, especially the northern governorates. Also, to facilitate the conveyance of the water.
Description	To establish a conveyance pipeline to transfer the water from the Tabaria lake to the northern governorates

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Water Supplied	-
Water Saved	-
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	50%	20%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

7. **Studying the establishment of the national conveyance pipeline from Dabouq to Jarash & Ajloun as well as the Construction of the conveyance pipeline**

Project Information

Location	National
Objectives	Enhancing the water system by having a conveyance pipeline that will lead to convey the water that will come through the Jordanian Red Sea Project
Description	Establishment of a conveyance pipeline with a 40 KM length

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2017 – 2018 (Studying Period), 2022 – 2025 (Construction Period)

Operational Data

Water Supplied	-
Water Saved	-
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	20%	20%						
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	21		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

RETAIL AND DISTRIBUTION: IRRIGATION WATER; DOMESTIC, COMMERCIAL & TOURISM

IRRIGATION WATER

1. Implementing the Wadi Araba Integrated Development Project / Phase II

Project Information

Location	Aqaba
Objectives	The project aims to implement the Phase II of the Wadi Araba Integrated Development Project in order to eradicate poverty and unemployment, to improve the economic and social situation of the residents, and to make the region attractive economically
Description	1. Finan Irrigation Project: establishing a network to irrigate 3,000 dunum, divided into 150 farm units, and drilling five wells for irrigation the lands, in addition to the permanent water runoff 2. Risha Irrigation Project: a network for irrigating 2,000 dunums divided into 100 farm units, as well as drilling two exploratory wells 3. Expansion of Rahma Irrigation Project: an area of 1,500 dunums divided into 75 farm units, as well as drilling 4 wells 4. Wadi Mousa Irrigation Project: an area of 1,500 dunums divided into 75 farm units, as well as drilling 5 wells

Project Status

Status	Concept phase, unfunded, and in need of studies
Financing	Not available
Expected Construction Date	2016 - 2025

Operational Data

Water Supplied	-
Water Saved	
% Allocation by Type of Use	100% Irrigation Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	3%	8%	8.5%	10%	13.5%	13.5%	17%	8.5%	8.5%	9.5%
OPEX Outlay (%)						25%	35%	50%	75%	85%

Financial and Economic Indicators

Capital Cost (M JOD)	60		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

2. Rehabilitation of the North-East Irrigation Project

Project Information

Location	Irbid
Objectives	The objective is to enhance the sustainability of infrastructure and to raise the efficiency of the project and to save water
Description	The project aims to rehabilitate the existing NE network with the exception of pumping stations, pipes, fittings and turnouts of farm units to cover 27,600 dunums. Project components include replacing some sections of the irrigation network; replacing air vents drains and low point flushes and other fittings; installing water meters on main and lateral pipelines and at farms; and constructing a new pumping station at the King Abdullah Canal with a capacity of 200 L/s

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 - 2020

Operational Data

Water Supplied	-
Water Saved	
% Allocation by Type of Use	100% Irrigation Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	8%	52%	40%							
OPEX Outlay (%)		8%	60%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	5.8		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

3. Rehabilitation of the Hisban/Kafrien Irrigation Project (Phases II)

Project Information

Location	Balqa
Objectives	Project aims to complete the rehabilitation of the Hisban/Kafrien irrigation project components. This is to raise irrigation efficiency, to make water available and improve its management.
Description	Rehabilitation and maintenance of the irrigation network and Farm Turnout Assemblies, and replacement of some irrigation pipelines, in addition to the rehabilitation of the Batous pumping station

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2019

Operational Data

Water Supplied	-
Water Saved	
% Allocation by Type of Use	100% Irrigation Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	35%	50%	5%						
OPEX Outlay (%)		10%	45%	95%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	5		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

4. Rehabilitation the WO2 Irrigation Project

Project Information

Location	
Objectives	The objective of the project is to increase the performance and irrigation efficiency of the WO2 irrigation networks which serve about 13,000 dunums
Description	

Project Status

Status	Concept phase, unfunded, and in need of studies and preparing tender documents
Financing	Not available
Expected Construction Date	2018 - 2023

Operational Data

Water Supplied	-
Water Saved	
% Allocation by Type of Use	100% Irrigation Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	3%	7.5%	7.5%	29%	43%	10%				
OPEX Outlay (%)		3%	10.5%	18%	47%	90%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	3.5		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

5. Rehabilitation Stage I of Southern Ghors Irrigation Project (phase II)

Project Information

Location	Karak and Tafilah
Objectives	The project aims at increase irrigation efficiency by 90 %, saving water and increase the return of m3 of water by rehabilitating the irrigation networks
Description	Rehabilitation of irrigation networks of 40, 41 and 42 Development Areas (DAs) which cover 24,000 dunums, in addition to rehabilitation the services roads and replacing the Farm Turnout Assemblies

Project Status

Status	Concept phase, unfunded, and in need of studies and preparing tender documents
Financing	Not available
Expected Construction Date	2017 - 2020

Operational Data

Water Supplied	-
Water Saved	
% Allocation by Type of Use	100% Irrigation Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	55%	15%	10%						
OPEX Outlay (%)		20%	75%	90%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	6		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

6. **Establishing a Reservoir & Pumping Station for King Talal Dam Delivery Pipeline to Irrigate the Northern Jordan Valley on Station 42/Abu Habeel.**

Project Information

Location	Irbid
Objectives	To store water during the night to be used for irrigation during the day, and as a complement to the King Talal Dam Delivery Pipeline Project (ZCIII) to the Northern Jordan Valley, a 30 thousand m^3 water reservoir will be established to store King Talal Dam (KTD) and to extent the irrigation to North Areas which is currently using fresh water
Description	A concrete tank with a capacity of 30 thousand m^3 and a pumping station with a capacity of 1 m^3/s

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 - 2021

Operational Data

Water Supplied	-
Water Saved	-
% Allocation by Type of Use	100% Irrigation Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	8%	42%	42%	8%						
OPEX Outlay (%)		8%	50%	92%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	6.8		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

7. Rehabilitation of the 14.5 km Extension Project

Project Information

Location	Irbid, Balqa and Karak
Objectives	
Description	

Project Status

Status	Concept phase, unfunded, and in need of a comprehensive study
Financing	Not available
Expected Construction Date	2020 – 2023

Operational Data

Water Supplied	-
Water Saved	-
% Allocation by Type of Use	100% Irrigation Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	15%	57%	21%	7%						
OPEX Outlay (%)		15%	72%	93%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	3.5		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

DOMESTIC, COMMERCIAL & TOURISM

1. Rehabilitation of Ajloun Governorate Water Network- Phase ONE

Project Information

Location	Ajloun
Objectives	The overall goal is to meet the long term needs of the community in Ajloun Governorate through dealing with new amount of Disi water and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by Ajloun cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of Ajloun. The improved and rehabilitated water network will be able to handle the raised amount of water from 2.5MCM 4.2MCM (after excluding the NRW). A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to reduce the Non-Revenue Water by 5%.
Description	The project components compose of 1) Installation, and Rehabilitation of the Distribution Pipes 2) Installation, and Rehabilitation of the Transmission Pipe 3) Rehabilitation of the Distribution Pumps The project/ phase one will include rehabilitation of the water network from 2017 – 2018 at cost of 13.0 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2018

Operational Data

Water Supplied	4.9 MCM
Water Saved	0.125 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	13		
IRR (%)	9	**ERR (%)**	36
NPV (M JOD)	1.7	**ENPV (M JOD)**	56

2. Improvement of Ajloun Governorate Water Network- Phase TWO

Project Information

Location	Ajloun
Objectives	The overall goal is to meet the long term needs of the community in Ajloun Governorate through dealing with new amount of Disi water and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by Ajloun cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of Ajloun. The improved and rehabilitated water network will be able to handle the raised amount of water from 2.5MCM 4.2MCM (after excluding the NRW). A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to reduce the Non-Revenue Water by 5%.
Description	The project components compose of 1) Installation, and Improvement of the Distribution Pipes 2) Installation, and Improvement of the Transmission Pipe 3) Improvement of the Distribution Pumps The project/ phase two will include improvement of the water network from 2021 – 2022 at cost of 12.0 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2021 – 2022

Operational Data

Water Supplied	1.5 MCM additional
Water Saved	0.115 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	12		
IRR (%)	3	**ERR (%)**	16
NPV (M JOD)	-5.6	**ENPV (M JOD)**	12.4

3. Amman Customers Meters Replacement

Project Information

Location	Amman
Objectives	Reduce administrative NRW caused by metering inaccuracies (under-registration) by 20%. With the new meters the billed volume will increase by 20%, in 2014 the total billed volume out of 500,000 customers was 93 MCM; replacing meters of half of the customers will result in an increase of 46 MCM. Considering an average selling price of 0.93 JD per m^3 (As an initial reading), the additional revenue will be 43 million JD.
Description	In 2013 Miyahuna conducted a pilot study to assess the losses caused by existing customers meters, the study revealed that existing customer meter are causing 20% loss of billed consumption, for two reasons; existing customer meters are old and exceeded their life time, the other reason is that the type of the meters used which are mechanical multi-jet meters known for their inaccuracy in registering low flows. The study also examined 5 meter types (multi jet, volumetric, ultrasonic, electro-magnetic, and fluidic oscillation) in order select the most suitable metering type for the operating conditions in Miyahuna, the study also showed that the most accurate and suitable type of meter is Ultrasonic meter. Therefore, Miyahuna decided to replace customers' existing water meters by Ultrasonic meters, for financial feasibility meters of customers whose billed at low tariff blocks, will be replaced by Mechanical Multi Jet meters. The project/ phase two comprise replacement of 245,000 customers' meters in Amman by ultrasonic meters for customers in high tariff blocks and mechanical meters for customers in low tariff blocks.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 - 2025

Operational Data

Water Supplied	80 MCM
Water Saved	8.325
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	10%	15%	15%	20%	20%	20%				
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	25		
IRR (%)	70	**ERR (%)**	422
NPV (M JOD)	189	**ENPV (M JOD)**	1017

4. Rehabilitation of Amman Governorate Water Network - Phase ONE

Project Information

Location	Amman
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues
Description	The project comprise of the following: 1) Proposed Transmission Line Rehabilitation (11,675 meter), 2) Proposed Distribution Line Improvement (43,408 meter), 3) Rehabilitation of Deteriorated Pipeline (41,367 meter), 4) Proposed Reservoir Improvement Projects (244,400 m3), 5) Pump Stations Projects, 6) Proposed Pressure Reducing Valve Improvements, 7) Proposed New Flow Control Valve, 8) Rehabilitation of the Pumping Stations 9) Rehabilitation of Water Network Including the HC 10) Water Network Rehabilitation & Extension over 200m & over 500m length The project/ Phase one that will include rehabilitation of the water network from 2017 – 2019 at cost of 136.0 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Water Supplied	180 MCM
Water Saved	4.5 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	136		
IRR (%)	20	**ERR (%)**	98
NPV (M JOD)	315.7	**ENPV (M JOD)**	2157.9

Improvement of Amman Governorate Water Network - Phase TWO

Project Information

Location	Amman
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues.
Description	The project comprise of the following: 1) Proposed Transmission Line Improvement (11,675 meter), 2) Proposed Distribution Line Improvement (43,408 meter), 3) Improvement of Deteriorated Pipeline (41,367 meter), 4) Proposed Reservoir Improvement Projects (244,400 m3), 5) Pump Stations Projects, 6) Proposed Pressure Reducing Valve Improvements, 7) Proposed New Flow Control Valve, 8) Improvement of the Pumping Stations 9) Water Network Improvement & Extension over 200m & over 500m length The project/ Phase two that will include improvement of the water network from 2020 – 2022 at cost of 100.0 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 – 2022

Operational Data

Water Supplied	45 MCM additional
Water Saved	4.5 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	100		
IRR (%)	11	**ERR (%)**	48
NPV (M JOD)	42.9	**ENPV (M JOD)**	618.6

Rehabilitation of Aqaba Governorate Water Network - Phase ONE

Project Information

Location	Aqaba
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The rehabilitated water network will be able to handle the amount of water 11.52 MCM
Description	The project comprises of the following: 1) Proposed Distribution Line Rehabilitation, 2) Proposed Reservoir Rehabilitation Projects, 3) Pump Stations Rehabilitation Projects, 4) Proposed Well Fields Rehabilitation Project, The project/ Phase one that will include rehabilitation of the water network from 2017 – 2018 at cost of 16.64 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2018

Operational Data

Water Supplied	24.2 MCM additional
Water Saved	0.7 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	16.64		
IRR (%)	33	**ERR (%)**	155
NPV (M JOD)	76	**ENPV (M JOD)**	396.3

5. Improvement of Aqaba Governorate Water Network - Phase TWO

Project Information

Location	Aqaba
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The rehabilitated water network will be able to handle the raised amount of water from 11.52 MCM by 30%
Description	The project comprises of the following: 1) Proposed Distribution Line Improvement, 2) Proposed Reservoir Improvement Projects, 3) Pump Stations Improvement Projects, 4) Proposed Well Fields Improvement Project, The project/ Phase two that will include improvement of the water network from 2021 – 2022 at cost of 12.0 Million JD

Project Status

Status	Concept phase, unfunded, and in need of a comprehensive study
Financing	Not available
Expected Construction Date	2021 – 2022

Operational Data

Water Supplied	7.26 MCM additional
Water Saved	0.51 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	12		
IRR (%)	19	**ERR (%)**	76
NPV (M JOD)	18.8	**ENPV (M JOD)**	126

6. Rehabilitation of Balqa Governorate Water Network - Phase ONE

Project Information

Location	Balqa
Objectives	Rehabilitating the water supply system in Balqa (a) Improvement of inadequate distribution system (strengthening and restructuring), b) Reduction of leakage by 5% through replacement of inferior pipes and adequate maintenance of pipes and c) Improvement of distribution management equipment and technical capacity for equitable supply.
Description	The major investment program to be undertaken is to rationalize the tertiary network and restructuring of the network within the distribution infrastructure of the Balqa Governorate water supply system. The project amounts to a combination of rehabilitation, rationalization, and new investment. The project includes engineering works as follows: - Rehabilitation of networks and pressure management for the following directorates (Salt, Ain AL-Basha, Mahiss, Shuna) - Rehabilitation of Safoot Reservoir. The project/ phase one will include rehabilitation of the water network from 2018 – 2019 at cost of 15.45 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2018 – 2019

Operational Data

Water Supplied	35.7 MCM
Water Saved	0.78 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15.45		
IRR (%)	15	**ERR (%)**	99
NPV (M JOD)	33.1	**ENPV (M JOD)**	325.2

7. Improvement of Balqa Governorate Water Network - Phase TWO

Project Information

Location	Balqa
Objectives	Improving the water supply system in Balqa (a) Improvement of inadequate distribution system (strengthening and restructuring), b) Reduction of leakage by 5% through replacement of inferior pipes and adequate maintenance of pipes and c) Improvement of distribution management equipment and technical capacity for equitable supply), d) Increase water supply from 12.5 to 17 mcm/yr
Description	The major investment program to be undertaken is to rationalize the tertiary network and restructuring of the network within the distribution infrastructure of the Balqa Governorate water supply system. The project amounts to a combination of rehabilitation, rationalization, and new investment. The project includes engineering works as follows: - Rehabilitation of networks and pressure management for the following directorates (Salt, Ain AL-Basha, Mahiss, Shuna) - Rehabilitation of Safoot Reservoir. The project/ phase two will include improvement of the water network from 2021 – 2022 at cost of 20.0 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2021 – 2022

Operational Data

Water Supplied	8.9 MCM additional
Water Saved	1.0 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	20		
IRR (%)	8	**ERR (%)**	38
NPV (M JOD)	-1	**ENPV (M JOD)**	102.7

8. Deir Alla Project

Project Information

Location	Balqa
Objectives	Installation of a water network in Der Ala that covers 12 districts
Description	Install a new water network in 12 districts in Der Ala. Each district will be considered as a separate project.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Water Supplied	14.2 MCM
Water Saved	0.71 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	11.5		
IRR (%)	13	**ERR (%)**	70
NPV (M JOD)	11.5	**ENPV (M JOD)**	140.3

9. Rehabilitation of Jerash Governorate Water Network - Phase ONE

Project Information

Location	Jerash
Objectives	The overall goal is to meet the long term needs of the community in Jerash Governorate through dealing with new amount of Disi water and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by Jerash cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of Jerash. The improved and rehabilitated water network will be able to handle the raised amount of water from 3.4MCM 4.8MCM. A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to reduce the Non-Revenue by 5%.
Description	The project components compose of 1) Installation, and rehabilitation of the Distribution Pipes 2) Installation, and rehabilitation of the Transmission Pipe 3) Rehabilitation of the Distribution Pumps The project/ phase one will include rehabilitation of the water network from 2017 – 2018 at cost of 15 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2018

Operational Data

Water Supplied	6.7 MCM
Water Saved	0.168 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15		
IRR (%)	10	**ERR (%)**	41
NPV (M JOD)	4.8	**ENPV (M JOD)**	79

10. Improvement of Jerash Governorate Water Network - Phase TWO

Project Information

Location	Jerash
Objectives	The overall goal is to meet the long term needs of the community in Jerash Governorate through dealing with new amount of Disi water and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by Jerash cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of Jerash. The improved and rehabilitated water network will be able to handle the raised amount of water from 3.4MCM 4.8MCM. A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to reduce the Non-Revenue by 5%.
Description	The project components compose of 1) Installation, and Improvement of the Distribution Pipes 2) Installation, and Improvement of the Transmission Pipe 3) Improvement of the Distribution Pumps The project/ phase two will include improvement of the water network from 2021 – 2022 at cost of 15 Million JD

Project Status

Status	Concept phase, unfunded, and in need of comprehensive studies
Financing	Not available
Expected Construction Date	2021 – 2022

Operational Data

Water Supplied	1.7 MCM additional
Water Saved	0.168 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15		
IRR (%)	2	**ERR (%)**	17
NPV (M JOD)	-7.9	**ENPV (M JOD)**	15.7

11. Rehabilitation of Karak Governorate Water Network - PHASE ONE

Project Information

Location	Karak
Objectives	The overall goal is to meet the long term needs of the community in Karak Governorate through sustainable exploitation of existing resources and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by the WAJ/Karak cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of WAJ/Karak. A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to provide water for disadvantaged and poor communities. A fifth goal is to reduce the Non-Revenue Water from 51.1% to 25% for the medium term, and to below 15% for the long term.
Description	The major investment program to be undertaken is to rationalize the pumping, storage and distribution infrastructure of the WAJ/Karak water supply, install centralized control capabilities, introduce the SCADA monitoring equipment and replace a number of components of the existing system. The project amounts to a combination of rehabilitation, rationalization, and new investment. The project includes 11 different localities (areas) to be targeted; (thalajah, Marj, Faquo'h, Rabah, Rakeen, Eraq Villages, Mazae Janobi, Mazar Villages, Abu Hamour, Sultani Villages, Um Hay Villages). The project includes engineering works as follows: - Installation of new primary transmission line - Rehabilitation of the exiting pumping stations and reservoirs - Installation of new pumping stations - Installation and rehabilitation of the secondary and tertiary distribution system and primary system of many towns and villages in Karak governorate The project /Phase one that will include rehabilitation of the water network from 2017 – 2019 at cost of 40 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Water Supplied	20.5 MCM
Water Saved	0.67 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	40		
IRR (%)	5	**ERR (%)**	28
NPV (M JOD)	-13.7	**ENPV (M JOD)**	134

12. Improvement of Karak Governorate Water Network - PHASE TWO

Project Information

Location	Karak
Objectives	The overall goal is to meet the long term needs of the community in Karak Governorate through sustainable exploitation of existing resources and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by the WAJ/Karak cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of WAJ/Karak. A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to provide water for disadvantaged and poor communities. A fifth goal is to reduce the Non-Revenue Water from 51.1% to 25% for the medium term, and to below 15% for the long term.
Description	The major investment program to be undertaken is to rationalize the pumping, storage and distribution infrastructure of the WAJ/Karak water supply, install centralized control capabilities, introduce the SCADA monitoring equipment and replace a number of components of the existing system. The project amounts to a combination of rehabilitation, rationalization, and new investment. The project includes 11 different localities (areas) to be targeted; (thalajah, Marj, Faquo'h, Rabah, Rakeen, Eraq Villages, Mazae Janobi, Mazar Villages, Abu Hamour, Sultani Villages, Um Hay Villages). The project includes engineering works as follows: - Installation of new primary transmission line - Improvement of the exiting pumping stations and reservoirs - Installation of new pumping stations - Installation and improvement of the secondary and tertiary distribution system and primary system of many towns and villages in Karak governorate The project /Phase two that will include improvement of the water network from 2020 – 2022 at cost of 21.06 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 – 2022

Operational Data

Water Supplied	6.15 MCM additional
Water Saved	0.35 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	23		
IRR (%)	2	**ERR (%)**	20
NPV (M JOD)	-12.7	**ENPV (M JOD)**	39.9

13. Rehabilitation of Ma'an Governorate Water Network- Phase ONE

Project Information

Location	Ma'an
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The rehabilitated water network will be able to handle the amount of water 2.4 MCM
Description	The project comprise of the following: 1) Proposed Distribution Line Rehabilitation, 2) Proposed Reservoir Rehabilitation, 3) Pump Stations Rehabilitation, 4) Proposed Well fields Rehabilitation, The project will include rehabilitation of the water network from 2017 – 2019 at cost of 10.5 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Water Supplied	14.2 MCM
Water Saved	0.33 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	10.5		
IRR (%)	5	**ERR (%)**	33
NPV (M JOD)	-6.9	**ENPV (M JOD)**	73.8

14. Improvement of Ma'an Governorate Water Network- Phase TWO

Project Information

Location	Ma'an
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The improved and rehabilitated water network will be able to handle the raised amount of water by 3.6MCM
Description	The project comprise of the following: 1) Proposed Distribution Line Improvement, 2) Proposed Reservoir Improvement Projects, 3) Pump Stations Improvement Projects, 4) Proposed Well fields Improvement Project, The project will include improvement of the water network from 2021 – 2022 at cost of 12.0 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2021 – 2023

Operational Data

Water Supplied	3.6 MCM additional
Water Saved	0.38 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	12		
IRR (%)	1	**ERR (%)**	21
NPV (M JOD)	-8.1	**ENPV (M JOD)**	23.5

15. Rehabilitation of Madaba Governorate Water Network- Phase ONE

Project Information

Location	Madaba
Objectives	Improving the water supply system in Madaba (a) Improvement of inadequate distribution system (strengthening and restructuring), b) Reduction of leakage by 5% through replacement of inferior pipes and adequate maintenance of pipes and c) Improvement of distribution management equipment and technical capacity for equitable supply)
Description	The major investment program to be undertaken is to rationalize the tertiary network and restructuring of the network within the distribution infrastructure of the Madaba Governorate water supply system. The project amounts to a combination of rehabilitation, rationalization, and new investment. The project includes replace the old water network camp, replace all old network (Theban, Muliah, Lib, and Madaba), Supply and apply of water trunk line from Nadeem squeer to Ma'in diameter 200mm, Supply and apply water trunk to jabal bani hamida diameter 200mm, Replace polyethylene pipe which executed above the ground surface length 50km, Replace of water pumps in Madaba main pump station, Replace of water pumps Alareed pump stations, SCADA project for wells and pump station, Protection water well & pump station, Prepare to operate the new wells in hiydan (17 + 18) (pump + control room + pipe + etc), Supply & apply of water trunk line from Madaba to Ghrnata & Alaresh diameter 200mm. The project/ phase one will include rehabilitation of the water network from 2017 – 2019 at cost of 13.65 Million JD.

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2016 – 2019

Operational Data

Water Supplied	8.9 MCM
Water Saved	0.25 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	30%	30%	20%						
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	13.65		
IRR (%)	18	**ERR (%)**	83
NPV (M JOD)	17.3	**ENPV (M JOD)**	123.3

16. Improvement of Madaba Governorate Water Network- Phase TWO

Project Information

Location	Madaba
Objectives	Improving the water supply system in Madaba (a) Improvement of inadequate distribution system (strengthening and restructuring), b) Reduction of leakage by 5% through replacement of inferior pipes and adequate maintenance of pipes and c) Improvement of distribution management equipment and technical capacity for equitable supply)
Description	The major investment program to be undertaken is to rationalize the tertiary network and restructuring of the network within the distribution infrastructure of the Madaba Governorate water supply system. The project amounts to a combination of rehabilitation, rationalization, and new investment. The project includes Replace the old water network in Theban, Supply and apply electricity system depend on green energy, Replace the old networks (Mulaih, Lib, & Madaba) not include in the phase one, and New services to new customer. Also, the project includes improvement of Yousra reservoir. The project/ phase two will include improvement of the water network from 2020 – 2023 at cost of 15.0 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2020 – 2022

Operational Data

Water Supplied	2.2 MCM additional
Water Saved	0.19 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	15		
IRR (%)	7	**ERR (%)**	30
NPV (M JOD)	-0.7	**ENPV (M JOD)**	30.2

17. Rehabilitation of Mafraq Governorate Water Network- Phase ONE

Project Information

Location	Mafraq
Objectives	The overall goal is to meet the long term needs of the community in Mafraq Governorate through dealing with new amount of Disi water and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by Mafraq cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of Mafraq. The improved and rehabilitated water network will be able to handle the amount of water 12.5MCM A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to reduce the Non-Revenue Water by 5%.
Description	The project components compose of 1) Installation, and Rehabilitation of the Distribution Pipes 2) Installation, and Rehabilitation of the Transmission Pipe 3) Rehabilitation of the Distribution Pumps The project phase one will include rehabilitation of the water network from 2016 – 2018 at cost of 33 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2016 – 2018

Operational Data

Water Supplied	24.7 MCM
Water Saved	0.93 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	27.5%	50%	22.5%							
OPEX Outlay (%)		27.5%	77.5%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	33		
IRR (%)	8	**ERR (%)**	40
NPV (M JOD)	0.7	**ENPV (M JOD)**	200.6

18. Improvement of Mafraq Governorate Water Network- Phase TWO

Project Information

Location	Mafraq
Objectives	The overall goal is to meet the long term needs of the community in Mafraq Governorate through dealing with new amount of Disi water and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by Mafraq cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of Mafraq. The improved and rehabilitated water network will be able to handle the raised amount of water from 12.5MCM by 9.88MCM A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to reduce the Non-Revenue Water by 5%.
Description	The project components compose of 1) Installation, and Improvement of the Distribution Pipes 2) Installation, and Improvement of the Transmission Pipe 3) Improvement of the Distribution Pumps The project/ phase two will include improvement of the water network from 2022 – 2023 at cost of 11.0 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2022 – 2023

Operational Data

Water Supplied	9.88 MCM additional
Water Saved	0.31 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	11		
IRR (%)	9	**ERR (%)**	43
NPV (M JOD)	1.1	**ENPV (M JOD)**	80.4

19. Rehabilitation of Ramtha City Water Network - Phase ONE

Project Information

Location	Ramtha / Irbid
Objectives	The goals of the Project are to assess the effects of migration of Syrian refugees on water supply management services in the northern governorates, and to identify the required improvements and priority to mitigate the poor water supply services in the Study Area (Ramtha and its suburbs, where the Syrian refugees are largely settled in the largest urban area in the northern governorates. The project goal presents a water supply development plan meeting the demand of 2035 Jordanian population, which is equivalent to 2028 demand combining Jordanian population and the current level of Syrian refugees. Even before the influx of Syrian refugees, MWI has implemented the construction of transmission facilities to convey the Disi fossil groundwater nationwide. MWI has accelerated construction of the transmission facilities to narrow the gap between the increasing demand and supply. These facilities are expected to be completed by 2017 and consequently the total amount of water available for the northern governorates is expected to increase to 91 Million Cubic Meters (MCM)/year from current level of 72 MCM/year. Even supplying 91 MCM of water/year in the northern governorates will not satisfy the demand in 2017. Therefore, MWI has already started development of the additional 30 MCM/year water source (Construction of Wadi Arab System II), totaling to 121 MCM/year water. This amount would be able to meet the 2028 demand of Jordanian and Syrian refugees combined provided that the latter's population remains at the same level as in 2013. The project design has been prepared considering the key objectives of a) Improvement of inadequate distribution system (strengthening and restructuring), b) Reduction of leakage through replacement of inferior pipes and adequate maintenance of pipes (NRW reduction by 5%) and c) Improvement of distribution management equipment and technical capacity for equitable supply. The amount of water to be handled is 3.83 MCM (after excluding the NRW).
Description	The project components compose of 1) Distribution Pipe (for strengthening) (20km + 27km), 2) SCADA and DMA (1 Set), 3) Transmission Pipe (Hodod to Mahasi) (300 mm diameter, 6 km), 4) Distribution Pump, 6) Pipe for Rehabilitation (80km for the whole period). The project/ phase one will include rehabilitation of the water network from 2017 – 2018 at cost of 17.4 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2018

Operational Data

Water Supplied	7.5 MCM
Water Saved	0.31 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	17.4		
IRR (%)	12	**ERR (%)**	45
NPV (M JOD)	8.3	**ENPV (M JOD)**	101.1

20. Improvement of Ramtha City Water Network - Phase TWO

Project Information

Location	Ramtha/Irbid
Objectives	The goals of the Project are to assess the effects of migration of Syrian refugees on water supply management services in the northern governorates, and to identify the required improvements and priority to mitigate the poor water supply services in the Study Area (Ramtha and its suburbs, where the Syrian refugees are largely settled in the largest urban area in the northern governorates. The project goal presents a water supply development plan meeting the demand of 2035 Jordanian population, which is equivalent to 2028 demand combining Jordanian population and the current level of Syrian refugees. Even before the influx of Syrian refugees, MWI has implemented the construction of transmission facilities to convey the Disi fossil groundwater nationwide. MWI has accelerated construction of the transmission facilities to narrow the gap between the increasing demand and supply. These facilities are expected to be completed by 2017 and consequently the total amount of water available for the northern governorates is expected to increase to 91 Million Cubic Meters (MCM)/year from current level of 72 MCM/year. Even supplying 91 MCM of water/year in the northern governorates will not satisfy the demand in 2017. Therefore, MWI has already started development of the additional 30 MCM/year water source (Construction of Wadi Arab System II), totaling to 121 MCM/year water. This amount would be able to meet the 2028 demand of Jordanian and Syrian refugees combined provided that the latter's population remains at the same level as in 2013. The project design has been prepared considering the key objectives of a) Improvement of inadequate distribution system (strengthening and restructuring), b) Reduction of leakage through replacement of inferior pipes and adequate maintenance of pipes (NRW reduction by 5%) and c) Improvement of distribution management equipment and technical capacity for equitable supply. The amount of water to be handled is 3.64MCM (3.64 MCM, (7.47 - 3.83))
Description	The project components compose of 1) Distribution Pipe (for strengthening) (20km + 27km), 2) SCADA and DMA (1 Set), 3) Transmission Pipe (Hodod to Mahasi) (300 mm diameter, 6 km), 4) Distribution Pump, 6) Pipe for Rehabilitation (80km for the whole period). The project/ phase two that will include improvement of the water network from 2021 – 2022 at cost of 4.0 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2021 – 2022

Operational Data

Water Supplied	3.64 MCM additional
Water Saved	0.07 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	4		
IRR (%)	19	**ERR (%)**	81
NPV (M JOD)	7.4	**ENPV (M JOD)**	49.4

21. Rehabilitation of Tafilah Governorate Water Network -PHASE ONE

Project Information

Location	Tafilah
Objectives	The overall goal is to rehabilitate the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The rehabilitated water network will be able to handle the amount of water 4.0MCM
Description	The project comprise of the following: 1) Proposed Distribution Line Rehabilitation, 2) Proposed Reservoir (Storage Tanks) Rehabilitation Projects, 3) Pump Stations Rehabilitation, 4) Proposed Well fields Rehabilitation, The project will include rehabilitation of the water network from 2017 – 2019 at cost of 10.85 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Water Supplied	5.5 MCM
Water Saved	0.14 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	10.85		
IRR (%)	16	**ERR (%)**	60
NPV (M JOD)	11	**ENPV (M JOD)**	81.6

22. Improvement of Tafilah Governorate Water Network -PHASE TWO

Project Information

Location	Tafilah
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The improved and rehabilitated water network will be able to handle the raised amount of water from 4.0MCM 5.5MCM.
Description	The project comprise of the following: 1) Proposed Distribution Line Improvement, 2) Proposed Reservoir (Storage Tanks) Improvement Projects, 3) Pump Stations Improvement Projects, 4) Proposed Well fields Improvement Project, The project will include improvement of the water network from 2021 – 2023 at cost of 10 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2021 – 2023

Operational Data

Water Supplied	1.5 MCM additional
Water Saved	0.13 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	35%	35%	30%							
OPEX Outlay (%)		35%	70%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	10		
IRR (%)	5	**ERR (%)**	24
NPV (M JOD)	-2.4	**ENPV (M JOD)**	20.2

23. Rehabilitation of Zarqa Governorate Water Network- Phase ONE

Project Information

Location	Zarqa
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The rehabilitated water network will be able to handle the amount of water 23.3 MCM
Description	The project comprise of the following: 1) Proposed Distribution Line Rehabilitation, 2) Proposed Reservoir Rehabilitation Projects, 3) Pump Stations Rehabilitation Projects, 4) Proposed Well Fields Rehabilitation Project, The project will include rehabilitation of the water network from 2017 – 2018 at cost of 25 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2017 – 2018

Operational Data

Water Supplied	66.5 MCM
Water Saved	1.28 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	25		
IRR (%)	16	**ERR (%)**	108
NPV (M JOD)	61.8	**ENPV (M JOD)**	595.3

24. Improvement of Zarqa Governorate Water Network- Phase TWO

Project Information

Location	Zarqa
Objectives	The overall goal is to improve the water infrastructure that will alleviate water supply shortages, and will have a positive impact on the public health issues as well as on the industry and the economy. Also, to reduce the Non-Revenue Water NRW (physical and administrative) by 5% and increase revenues. The improved and rehabilitated water network will be able to handle the raised amount of water from 23.3MCM 39.88MCM.
Description	The project comprise of the following: 1) Proposed Distribution Line Improvement, 2) Proposed Reservoir Improvement Projects, 3) Pump Stations Improvement Projects, 4) Proposed Well fields Improvement Project, The project will include improvement of the water network from 2022 – 2023 at cost of 40 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2022 – 2023

Operational Data

Water Supplied	16.6 MCM additional
Water Saved	2.05 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	40		
IRR (%)	7	**ERR (%)**	37
NPV (M JOD)	-3.7	**ENPV (M JOD)**	195.8

25. Rehabilitation of Irbid Governorate Water Network- Phase ONE

Project Information

Location	Irbid
Objectives	The overall goal is to meet the long term needs of the community in Jerash Governorate through dealing with new amount of Disi water and the reduction of the water losses, as well as to minimize the long term operating cost and to minimize system management and maintenance problems. Since water resources are limited, especially in the project area, furthermore, the continued supply by Jerash cannot be guaranteed unless the production and the delivery system are improved. Reducing losses will automatically increase effective supply as more water reach consumers, leading to more efficient resource utilization and improved financial performance of Jerash. The improved and rehabilitated water network will be able to handle the raised amount of water from 3.4MCM 4.8MCM. A second goal is to transform the supply functions from delivery to gravity feed. A third goal involves addressing the environmental aspects of water production and utilization in order to achieve a sustainable balance between extraction and recharge. A fourth goal is to reduce the Non-Revenue by 5%.
Description	The Project Comprise of the following: 1. Zebdat Distribution Pump (1,206 m3/h, H=80 m, 2 numbers (1 duty and 1 stand-by), 2. Distribution Pipe (for strengthening) (185 km), 3. SCADA and DMA (1 Set), 4. Transmission Pump and Pipe (Zebdat to Hofa) (Ductile Iron Pipe, Diameter 500 mm x 3,700 m, Q = 732 m3/h, H=180 m 2 numbers (1 duty and 1 stand-by)) The project/ phase one will include rehabilitation of the water network from 2017 – 2020 at cost of 61 Million JD

Project Status

Status	Concept phase, unfunded.
Financing	Not available
Expected Construction Date	2017 – 2020

Operational Data

Water Supplied	35 MCM
Water Saved	1.32 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	17%	32.5%	32.5%	18%						
OPEX Outlay (%)		17%	49.5%	82%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	61		
IRR (%)	15	**ERR (%)**	60
NPV (M JOD)	57.2	**ENPV (M JOD)**	462.6

26. Improvement of Irbid Governorate Water Network- Phase TWO

Project Information

Location	Irbid
Objectives	The goals of the Project are to assess the effects of migration of Syrian refugees on water supply management services in the northern governorates, and to identify the required improvements and priority to mitigate the poor water supply services in the Study Area (Irbid and its suburbs, where the Syrian refugees are largely settled in the largest urban area in the northern governorates. The project goal presents a water supply development plan meeting the demand of 2035 Jordanian population, which is equivalent to 2028 demand combining Jordanian population and the current level of Syrian refugees. Even before the influx of Syrian refugees, MWI has implemented the construction of transmission facilities to convey the Disi fossil groundwater nationwide. MWI has accelerated construction of the transmission facilities to narrow the gap between the increasing demand and supply. These facilities are expected to be completed by 2017 and consequently the total amount of water available for the northern governorates is expected to increase to 91 Million Cubic Meters (MCM)/year from current level of 72 MCM/year. Even supplying 91 MCM of water/year in the northern governorates will not satisfy the demand in 2017. Therefore, MWI has already started development of the additional 30 MCM/year water source (Construction of Wadi Arab System II), totaling to 121 MCM/year water. This amount would be able to meet the 2028 demand of Jordanian and Syrian refugees combined provided that the latter's population remains at the same level as in 2013. The project design has been prepared considering the key objectives of a) Improvement of inadequate distribution system (strengthening and restructuring), b) Reduction of leakage through replacement of inferior pipes and adequate maintenance of pipes (NRW reduction by 5%) and c) Improvement of distribution management equipment and technical capacity for equitable supply.
Description	The Project Comprise of the following: 1. Zebdat Distribution Pump (1,206 m3/h, H=80 m, 2 numbers (1 duty and 1 stand-by), 2. Distribution Pipe (for strengthening) (185 km), 3. SCADA and DMA (1 Set), 4. Transmission Pump and Pipe (Zebdat to Hofa) (Ductile Iron Pipe, Diameter 500 mm x 3,700 m, Q = 732 m3/h, H=180 m 2 numbers (1 duty and 1 stand-by)) The project/ phase two will include improvement of the water network from 2022 – 2023 at cost of 20.0 Million JD

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2022 – 2023

Operational Data

Water Supplied	14.13 MCM additional
Water Saved	0.43 MCM
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		50%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	20		
IRR (%)	16	**ERR (%)**	67
NPV (M JOD)	26	**ENPV (M JOD)**	195

27. Madaba Customers Meters Replacement

Project Information

Location	Madaba
Objectives	Reduce administrative NRW caused by metering inaccuracies (under-registration) by 20%. With the new meters the billed volume will increase by 20%, in 2014 the total billed volume out of 29,000 customers was 4.5 MCM
Description	In 2013 Miyahuna conducted a pilot study to assess the losses caused by existing customers meters, the study revealed that existing customer meter are causing 20% loss of billed consumption, for two reasons; existing customer meters are old and exceeded their life time, the other reason is that the type of the meters used which are mechanical multi-jet meters known for their inaccuracy in registering low flows. The projects have to replace the old meters accordance to the age and replace the defect meters. Also for new subscribers.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2025

Operational Data

Water Supplied	10 MCM
Water Saved	2
% Allocation by Type of Use	100% Domestic Water

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
OPEX Outlay (%)		10%	20%	30%	40%	50%	60%	70%	80%	90%

Financial and Economic Indicators

Capital Cost (M JOD)	2.5		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

SUMMARY LIST OF WATER PROJECTS

No.	Project Name	CAPEX (MJD)	Governorate	Years of Implementation
Water Resources				
1.	Red Sea Dead Sea Water Conveyance Project/Phase I	650	National	2017 – 2021
2.	Augmentation of Water Supply for Central and Northern Jordan from Deep Aquifer (Sheediyya – Al Hasa)	150	National	2017 – 2021
3.	Red Sea Dead Sea Water Conveyance Project/Phase II	1,312	National	2020 – 2025
4.	Hisban Wells	25	Madaba	2016 – 2017
5.	Kofranjih DAM Water Treatment, Conveyance to Ajloun Governorate	10	Ajloun	2018 – 2019
6.	Mojib Dam Water Treatment, Conveyance to Karak Governorate (Phase II)	6	Karak	2019 – 2020
7.	Tannour Dam Water Treatment, Conveyance to Karak and Tafilah Governorate	10	Tafilah, Karak	2018 – 2019
8.	Malaqy Dam Project (downstream of Mujib Dam)	40	Madaba and Karak	2022 – 2025
9.	Construction of Additional Outlet/Turnout for King Talal Dam	2	Jerash	2020
10.	Wadi Hisban Dam	15	Balqa	2019 – 2023
11.	Wadi Issal Dam	11	Karak	2018 – 2021
12.	Wadi Meddain Dam	6	Karak	2020 – 2021
13.	Wadi Tlah Dam	3.5	Tafileh	2019 – 2021
14.	Wadi Al Yutum Dam	100	Aqaba	2019 – 2021
15.	Wadat Dam	5	Tafileh	2025
16.	Improving the Performance of Sharhabeel Bin Hasnah Dam Outlets/Turnouts	0.4	Irbid	2018 – 2019
17.	Wadi Rahma Dam	3.5	Aqaba	2021 – 2022
18.	Wadi Moussa Dam	8	Aqaba	2021 – 2022
19.	Wadi Fidan Dam	20	Tafileh	2021 – 2024
20.	Tal Dhahab Dam	25	Jerash	2016 – 2018
21.	Water Harvesting	20	National	2016 – 2025
22.	Increasing the Height of Wadi Shuieb Dam	1	Balqa	2018 – 2021
23.	Increasing Water Pumping in DISI from 100 MCM to 115 MCM Project	24	National	2017 - 2018
24.	Development of Ground Water new wells (deep & Shallow) as a water sources including the Buying the private wells	40	National	2016 - 2025
25.	Al Azraq - Sarhan Deep Aquifer	25	Zarqa	2020 - 2025
26.	Al-Wala Dam Expansion	4	Madaba	2020 - 2022
27.	Alwala Dam Expansion (Water Treatment, Conveyance to Madaba Governorate)	8	Madaba	2023 – 2025
28.	Desalination of the Brackish in Al Aghawar Area and Badia	10	Alaghwar & Badia	2016 - 2025
29.	Aqaba Desalination Plant	5	Aqaba	2016 - 2018

No.	Project Name	CAPEX (MJD)	Governorate	Years of Implementation
30.	South Aqeb Well Field Development	15	Mafraq	2017 - 2019
31.	Household Water Harvesting	5	National	2016 - 2025
32.	Installation of Ultra Violet Reactors in Zai, Russaifeh And Ras Alein Water Treatment Plant	2.5	Amman	2016 - 2017
33.	Rehabilitation and Improvement of Facilities in Zai Water Treatment Plants and Zai Booster Pumping Stations.	5	Amman	2016 - 2019
34.	Increasing Water Production From Abu Zeghan Desalination Plant	1	Amman	2016 - 2017
Bulk Supply				
35.	Extension 24 Km Pipeline Parallel to the King Abdullah Canal	50		2021 – 2025
36.	Rehabilitation & Maintenance of King Abdullah Canal KAC	15	Irbid, Balqa	2019 – 2021
37.	King Abdullah Canal Protection Project	2	Irbid, Balqa	2016 – 2025
38.	Rehabilitation of Pumping Station (King Abdullah Canal to Wadi Arab Dam)	3	Irbid	2017 – 2019
39.	Transfer of Excess Water from Side Wadis in Southern Ghors to the Potash and Bromine Industry	0.5	Karak	2020 – 2021
40.	New Tabaria Conveyance pipeline	15	Irbid	2017 - 2019
41.	Studying the establishment of the national conveyance pipeline from Dabouq to Jarash & Ajloun as well as the Construction of the conveyance pipeline	21	National	2017 - 2025
Retail and Distribution: Irrigation Water				
42.	Implementing the Wadi Araba Integrated Development Project / Phase II	60	Aqaba	2016 - 2025
43.	Rehabilitation of the North-East Irrigation Project	5.8	Irbid	2018 - 2020
44.	Rehabilitation of the Hisban/Kafrien Irrigation Project (Phases II)	5	Balqa	2016 - 2019
45.	Rehabilitation the WO2 Irrigation Project	3.5		2018 - 2023
46.	Rehabilitation Stage I of Southern Ghors Irrigation Project (phase II)	6	Karak and Tafilah	2017 - 2020
47.	Establishing a Reservoir & Pumping Station for King Talal Dam Delivery Pipeline to Irrigate the Northern Jordan Valley on Station 42/Abu Habeel	6.8	Irbid	2018 - 2021
48.	Rehabilitation of the 14.5 km Extension Project	3.5	Irbid, Balqa and Karak	2020 – 2023

Retail and Distribution: Domestic, Commercial and Tourism				
49.	Rehabilitation of Ajloun Governorate Water Network- Phase ONE	13	Ajloun	2017 - 2018
50.	Improvement of Ajloun Governorate Water Network- Phase TWO	12	Ajloun	2021 – 2022
51.	Amman Customers Meters Replacement	25	Amman	2020 - 2025
52.	Rehabilitation of Amman Governorate Water Network - Phase ONE	136	Amman	2017 - 2019
53.	Improvement of Amman Governorate Water Network - Phase TWO	100	Amman	2020 - 2022
54.	Rehabilitation of Aqaba Governorate Water Network/ Phase ONE	16.64	Aqaba	2017 - 2018
55.	Improvement of Aqaba Governorate Water Network/ Phase TWO	12	Aqaba	2021 – 2022
56.	Rehabilitation of Balqa Governorate Water Network- Phase ONE	15.45	Balqa	2018 - 2019
57.	Improvement of Balqa Governorate Water Network- Phase TWO	20	Balqa	2021 - 2022
58.	Deir Alla Project	11.5	Balqa	2017 - 2019
59.	Rehabilitation of Jerash Governorate Water Network- Phase ONE	15	Jerash	2017 – 2018
60.	Improvement of Jerash Governorate Water Network- Phase TWO	15	Jerash	2021 - 2022
61.	Rehabilitation of Karak Governorate Water Network- Phase ONE	40	Karak	2017 - 2019
62.	Improvement of Karak Governorate Water Network- Phase TWO	23	Karak	2020 - 2022
63.	Rehabilitation of Ma'an Governorate Water Network- Phase ONE	10.5	Ma’an	2017 – 2019
64.	Improvement of Ma'an Governorate Water Network- Phase TWO	12	Ma’an	2021 – 2023
65.	Rehabilitation of Madaba Governorate Water Network- Phase ONE	13.65	Madaba	2016 – 2019
66.	Improvement of Madaba Governorate Water Network- Phase TWO	15	Madaba	2020 – 2022
67.	Rehabilitation of Mafraq Governorate Water Network- Phase ONE	33	Mafraq	2016 – 2018
68.	Improvement of Mafraq Governorate Water Network- Phase TWO	11	Mafraq	2022 – 2023
69.	Rehabilitation of Ramtha City Water Network - Phase ONE	17.4	Ramtha/Irbid	2017 - 2018
70.	Improvement of Ramtha City Water Network - Phase TWO	4	Ramtha/Irbid	2021 - 2022
71.	Rehabilitation of Tafilah Governorate Water Network –Phase ONE	10.85	Tafileh	2017 – 2019
72.	Improvement of Tafilah Governorate Water Network –Phase TWO	10	Tafileh	2021 – 2023
73.	Rehabilitation of Zarqa Governorate Water Network- Phase ONE	25	Zarqa	2017 – 2018

	Improvement of Zarqa Governorate Water Network- Phase TWO	40	Zarqa	2022 – 2023
74.	Rehabilitation of Irbid Governorate Water Network- Phase ONE	61	Irbid	2017 – 2020
75.	Improvement of Irbid Governorate Water Network- Phase TWO	20	Irbid	2022 – 2023
76.	Madaba Customers Meters Replacement	2.5	Madaba	2016 - 2025
Total CAPEX		**3,505.49**		

WASTEWATER PROJECTS

REHABILITATION & UPGRADE OF EXISTING SYSTEMS

1. Improvement of Existing Sewer Network of Wadisseer Service Area

Project Information

Location	Amman
Objectives	Improve the wastewater service in the served area of Wadisseer Service Area/ Deteriorated Network that serves major areas/ improve the WW services provided in Wadisseer Area.
Description	The sewerage system serves an area of 12 km² having a population of 42,800. The collection network system consists of 26 km of sewers ranging in diameter from 200 mm to 500 mm. A total length of 1.8km of main sewers in WZPS service area requires improvement by 2020 (WIP) whereas an additional 8.4 km of main sewers need to be replaced.

Project Status

Status	Details are in the Water Master Plan by CDM/USAID WIP project
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	1.3 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)			30%	60%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**4.5 M JOD**		
IRR (%)	**16%**	**ERR (%)**	**41%**
NPV (M JOD)	**4**	**ENPV (M JOD)**	**21**

2. Improvement of the existing system of West Zarqa Pumping Station Service Area: Phase 2

Project Information

Location	Amman
Objectives	Improve the wastewater service in the served area of West Zarqa Pumping Station/ Deteriorated Network that serves major areas/ improve the WW services provided in West Zarqa Pumping Station.
Description	The WZPS serves north Amman as well as Russeifa and west Zarqa in the Zarqa governorate. A total length of 25 km of main sewers in WZPS service area requires immediate improvement, whereas an additional 22 km need to be replaced between 2015 and 2030.

Project Status

Status	Details are in the Water Master Plan by USAID WIP project
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	6.3 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**3 M JOD**		
IRR (%)	**50%**	**ERR (%)**	**112%**
NPV (M JOD)	**30.7**	**ENPV (M JOD)**	**110**

3. Improvement of Ain Ghazal existing Sewer Network: Phase 2

Project Information

Location	Amman
Objectives	Improve the wastewater service in the served area of Ain Ghazal/ Deteriorate Network that serves major areas/ improve the WW services provided in Ain Ghazal AREA
Description	The areas served by the system include the Districts of Basman, part of An-Nasir, Al-Madeena, Al-Yarmouk, parts of Al-Qweismah, Abu Alanda, and Al-Jwaydah, Al-Abdali, part of Al-Jubeihah, Ras al-Ein, Badir, Zahran, part of Marj Al Hamam, part of Wadi Es-Seer, Tlaa' Al-Ali, Um As-Summaq, Khalda, and part of Sweileh. Certain improvements were also identified giving an immediate priority to replacing about 11.5 km of trunk sewer lines currently reaching their capacities. Additional 54 km need to be replaced between 2015 and 2035.

Project Status

Status	Details are in the National Strategic Wastewater Master Plan by USAID ISSP project – Needs detailed design
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	46.4 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	40%	60%								
OPEX Outlay (%)		30%	60%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**14 M JOD**		
IRR (%)	**138%**	**ERR (%)**	**411%**
NPV (M JOD)	**280.8**	**ENPV (M JOD)**	**870.2**

4. Annual Expansion Program for wastewater collection and house connections expansion for the existing systems in Fuhais and Mahes: phase 2

Project Information

Location	Balqa
Objectives	Serve additional population of 6,000 within existing sewer network. The area is within a locality that is above 5,000 populations.
Description	The Project is under an annual expansion program for wastewater collection and house connections for the existing systems. The program is proposed to start immediately with yearly expansion of 1,200 person/yr. This phase of the program (phase 2), is preceded by Phase 1 which was proposed under priority 1 projects. Phase 2 will also be followed by a third phase of the program from years 2020-2030.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.2 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**7.5 M JOD**		
IRR (%)	**4%**	**ERR (%)**	**15%**
NPV (M JOD)	**-0.6**	**ENPV (M JOD)**	**1.4**

5. Annual Expansion Program for wastewater collection and house connections expansion for the existing systems in Fuhais and Mahes: phase 3

Project Information

Location	Balqa
Objectives	Serve additional population of 5,500 within the existing sewer network. The area is within a locality that is above 5,000 populations.
Description	The Project is under an annual expansion program for wastewater collection and house connections for the existing systems. The program is proposed to start immediately with yearly expansion of 1,200 person/yr. This phase of the program (phase 2), is preceded by Phase 2 which was proposed under priority 2 projects as well. Phase 3 will also be followed by fourth & fifth phase of the program from years 2025-2030 & 2030-2035.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2020 - 2021

Operational Data

Treated Wastewater	0.2 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	40%	60%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**7.5 M JOD**		
IRR (%)	**4%**	**ERR (%)**	**15%**
NPV (M JOD)	**-1**	**ENPV (M JOD)**	**1**

6. Madaba System Extension (Trunk, Collection sewer, House Connection): Phase 1

Project Information

Location	Madaba
Objectives	To serve the unserved population in Madaba City area, Madaba WWTP has additional capacity to be utilized. To serve the 34,500 population those are not served.
Description	The current service coverage within the city is 68% with approximately 34,500 not served within Madaba City service area. The wastewater extension to serve the targeted population is estimated with a length of 125 km including House connections.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2016 - 2019

Operational Data

Treated Wastewater	1.5 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	30%	40%	10%						
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**30.2 M JOD**		
IRR (%)	**1%**	**ERR (%)**	**9%**
NPV (M JOD)	**-16.6**	**ENPV (M JOD)**	**1.9**

7. Madaba Annual Expansion Program for collection sewers and house connections: Phase 2

Project Information

Location	Madaba
Objectives	Expand the WW service in Madaba city area To have additional population of 25,000 served by 2035
Description	The program includes an annual expansion program for sewer network 1,000 ca/year. Phase 1 of the program should start by now and end by 2015, followed by phase 2 with installing network and connecting additional population of 5,000 (2015-2020), this will be followed by phase 3 (2020-2025) this represents this project, and phase 4 & 5 (2025-2030) (2030-2035).consequently.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2020 - 2022

Operational Data

Treated Wastewater	0.02 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	30%	50%	20%							
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**3 M JOD**		
IRR (%)	**-9%**	**ERR (%)**	**-4%**
NPV (M JOD)	**-2.3**	**ENPV (M JOD)**	**-2.0**

8. Eastern Zarqa Pumping Station System-Replacement of force main of the EZPS by 700mm diameter pipeline

Project Information

Location	Zarqa
Objectives	Enhance the existing wastewater collection system through replacement of existing pressure mains (500mm each)by increasing the capacity throughout the replacement of one of them by 700mm.
Description	This includes the replacement of force main of the EZPS by 700 mm diameter pipeline, where the existing system collects WW from East Zarqa area and discharges loads to As Samra WWTP through one of two 500mm diameter, 7.2 km long pressure mains.

Project Status

Status	Detailed Design done
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.7 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	40%	60%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**15 M JOD**		
IRR (%)	**0%**	**ERR (%)**	**8%**
NPV (M JOD)	**-10**	**ENPV (M JOD)**	**-0.6**

9. Annual Expansion Program for wastewater collection and house connections expansion for the existing systems for Ajloun Qasabeh and Kufranja Districts

Project Information

Location	Ajloun
Objectives	To provide the unserved population in the sewered area with wastewater services. The aimed areas are within sewered localities that have populations above 5,000. To have additional served population of 8,500 by end of phase 3.
Description	The only existing sewer system in Ajloun governorate covers 4 localities within two districts: Ajloun Qasabeh & Kufranjah. The localities served are Anjarah, Ain Janna, Ajlun & Kufranjah. The population served by this system is 61,700 with 90% coverage within the served localities. The Projected population by 2025 is 81,583. Accordingly, the unserved population is 19,883 will be connected to the network annually, at a rate of 1,700ca/yr. After phase 3, the additional population that will be served by the wastewater system will be 8,500. This phase will be preceded by phases 1 & 2 of the same project, and followed by phases 4 & 5.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2020

Operational Data

Treated Wastewater	0.24 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	20%	20%	20%	20%					
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**10 M JD**		
IRR (%)	**-3%**	**ERR (%)**	**4%**
NPV (M JOD)	**-6.5**	**ENPV (M JOD)**	**-3.5**

10. Annual Expansion Program in Irbid for wastewater collection and house connections: Phase One

Project Information

Location	Irbid
Objectives	To increase the coverage of WW Services in Irbid Governorate, especially in Shallaleh Service Area. To provide communities with populations above 5000 people with WW Services.
Description	This phase of the project follows the first phase and precedes the third phase, where an annual expansion of the wastewater collection and house connections expansion for the existing systems will start in the first and second phases.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2020

Operational Data

Treated Wastewater	0.16 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	20%	20%	20%	20%					
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2.5 M JD**		
IRR (%)	**2%**	**ERR (%)**	**10%**
NPV (M JOD)	**-1.3**	**ENPV (M JOD)**	**0.7**

11. Annual Expansion Program in Irbid for wastewater collection and house connections: Phase 2

Project Information

Location	Irbid
Objectives	To increase the coverage of WW Services in Irbid Governorate, especially in Shallaleh Service Area. To provide communities with populations above 5000 with wastewater services.
Description	This phase of the project follows the first phase and second phase where an annual expansion of the wastewater collection and house connections expansion for the existing systems will start in the first phase (immediate).

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 - 2021

Operational Data

Treated Wastewater	0.2 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2.5 M JD**		
IRR (%)	**2%**	**ERR (%)**	**10%**
NPV (M JOD)	**-1.3**	**ENPV (M JOD)**	**0.7**

12. Annual Expansion Program for collection sewers and house connections in Ma'an Service System: Phase 1

Project Information

Location	Ma'an
Objectives	To expand the WW services in Ma'an City, this has a population above 5,000. To have by the end of this phase 2 an additional population served of 10,000.
Description	Ma'an City has a population of 34,074, 24,500 are served through the sewer system in the area which is connected to Ma'an WWTP. The system is divided into two major systems; This phase of the program includes installing sewer networks to additional population of 2,000ca/year. Accordingly 10,000 people will be connected to the network by the end of this phase. It has been assumed that 50% of the 10,000 will be connected to the pumping station and then to the WWTP, and the other 50% will be transferred by gravity.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.29 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**12.5 M JD**		
IRR (%)	**-2%**	**ERR (%)**	**3%**
NPV (M JOD)	**-9**	**ENPV (M JOD)**	**-5.3**

13. Annual Expansion Program for collection sewers and house connections in Ma'an Service System: Phase 2

Project Information

Location	Ma'an
Objectives	To expand the WW services in Ma'an City, this has a population above 5,000.
Description	Ma'an City has a population of 34,074. A total of 24,500 are served through the sewer system in the area which is connected to Ma'an WWTP. This phase of the program includes installing sewer networks to additional population of 2,000ca/year. Accordingly, 10,000 will be connected to the network by the end of this phase. It has been assumed that 50% of the 10,000 will be connected to the pumping station and then to the WWTP, and the other 50% will be transferred by gravity.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2022 - 2024

Operational Data

Treated Wastewater	0.29 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**12.5 M JD**		
IRR (%)	**-2%**	**ERR (%)**	**3%**
NPV (M JOD)	**-9**	**ENPV (M JOD)**	**-5.3**

14. Annual Expansion Program for collection Sewers and House Connections for Jafer Area

Project Information

Location	Ma'an
Objectives	To expand in the WW services in the area of Jafer.
Description	The annual expansion program includes three phases. Phase one includes an annual expansion for 400ca/yr, which makes a total of 2,000 for the five years phase. No pumping is required for the transfer.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2018

Operational Data

Treated Wastewater	0.06 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**0.60 M JD**		
IRR (%)	**6%**	**ERR (%)**	**17%**
NPV (M JOD)	**-0.1**	**ENPV (M JOD)**	**0.6**

15. Tafileh System Extension (Trunk, Collection Sewer, House Connection)

Project Information

Location	Tafileh
Objectives	To serve the unserved population within Tafila WW system. The population in the service area is above 5000 population. Additionally, to expand in the WW service coverage and serve an additional population of 21,000.
Description	The project recommends providing wastewater services for the unsewered areas located within Tafila system. Areas include Ain Al Baida, Eis, Sinfiha, Arafa, Abil, Ruwam, Tafila City Center and Residence Students. The total population that will be served is 21,000ca up to 2025. The flow will be transferred by gravity except for Eis Area, where the flow will be pumped. The number of population in that area is 3,990.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.61 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**20.5 M JD**		
IRR (%)	**-1%**	**ERR (%)**	**5%**
NPV (M JOD)	**-13.7**	**ENPV (M JOD)**	**-6**

16. Annual Expansion Program for collection sewers and house connection in Tafila, Ies and Ruwaym areas: Phase 1

Project Information

Location	Tafileh
Objectives	To serve the additional population within Tafila System including the areas of Tafila City, Ies and Ruwaym, within an already served areas that has a population above 5,000. To serve an additional population of 5,000.
Description	The project includes an annual expansion program that consists of 4 phases, each of five years. The total population served in each phase is 5000ca, having 1000ca/yr. The areas that will be served are Tafila City, Ies and Ruwaym. . This project represents the second phase of the project.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.15 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%	0%							
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2.5 M JD**		
IRR (%)	**2%**	**ERR (%)**	**10%**
NPV (M JOD)	**-1.3**	**ENPV (M JOD)**	**0.6**

17. Annual Expansion Program for collection sewers and house connection in Tafila, Ies and Ruwaym areas: Phase 2

Project Information

Location	Tafileh
Objectives	To serve the additional population within Tafila System including, the areas of Tafila City, Les and Ruwaym within an already served areas that have a population above 5,000. To serve an additional population of 5,000.
Description	The project includes an annual expansion program that consists of 4 phases, each of five years. The total population served in each phase is 5000, having 1000/yr. The areas that will be served are Tafila City, Ies and Ruwaym. This project represents the third phase of the project.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 - 2022

Operational Data

Treated Wastewater	0.15 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2.50 M JD**		
IRR (%)	**2%**	**ERR (%)**	**10%**
NPV (M JOD)	**-1.2**	**ENPV (M JOD)**	**0.6**

18. Annual Expansion Program for collection sewers and house connection expansion for Mouta'a City

Project Information

Location	Karak
Objectives	To Expand the sewer network of Mout'a system to cover the unserved population. The area has a population that is above 5000. To have 5,000 population served by the end of each phase.
Description	Mouta'a sewer system that serves 15% of the 2012 population, serving Mouta'a, Al Mazar Al Janoubi, Al Adnaneh, Merwed and Median. Projected population by 2025 is 55,200, having total unserved population of 19,200. This program recommends an annual expansion program on five phases. The annual expansion of the sewer network is 1000 people/yr. Accordingly, the total population will be served in each phase will be 5,000.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.15 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**3 M JD**		
IRR (%)	**1%**	**ERR (%)**	**9%**
NPV (M JOD)	**-1.6**	**ENPV (M JOD)**	**0.2**

19. Karak System (Trunk, PS, Collection sewer, House Connection)

Project Information

Location	Karak
Objectives	To meet the future needs, and expand in the wastewater services for the project area. The population in the service area is above 5000. To serve the 9,543 population those are not served.
Description	The existing sewerage system covers only the urban areas of Old Karak, Marj, Thallaja and Subeihat. The total length of the existing sewerage network is about 37km. Improvements were identified in the design report of Karak WW system completed by Dorsch/Engicon/GITEC. Generally, this includes the replacement of the sewer line that transfers the flow to the WWTP, installation of five pumps are also suggested this to collect the flow from different parts of the project areas. Expansions of the current WW collection system to meet future needs are also included in the study.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	2.7 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**19 M JD**		
IRR (%)	**7%**	**ERR (%)**	**19%**
NPV (M JOD)	**-1.7**	**ENPV (M JOD)**	**32.8**

20. Annual Expansion Program for collection sewers and house connection expansion for Karak City: Phase 1

Project Information

Location	Karak
Objectives	To Expand the sewer network of Mout'a system to cover the unserved population. The area has a population that is above 5000. To have 5,000 population served by the end of each phase.
Description	Mouta'a sewer system that serves 15% of the 2012 population (36,000), serving Mouta'a, Al Mazar Al Janoubi, Al Adnaneh, Merwed and Median. Projected population by 2025 is 55,200, having total unserved population of 19,200. This program recommends an annual expansion program on five phases. The annual expansion of the sewer network is 1000 people/yr. Accordingly, the total population will be served in each phase will be 5,000.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.22 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2.5 M JD**		
IRR (%)	**5%**	**ERR (%)**	**14%**
NPV (M JOD)	**-0.8**	**ENPV (M JOD)**	**2.0**

21. Annual Expansion Program for collection sewers and house connection expansion for Karak City: Phase 2

Project Information

Location	Karak
Objectives	To Expand the sewer network of Karak City to cover the un-served population.
Description	Karak City has a sewer system that serves 6% of the 2012 population (15,000).Total population in Karak City 24,741. Projected population by 2025 is 70,650, having total un-served population of 55,650. This program recommends an annual expansion program on five phases. The annual expansion of the sewer network is 1500 people/yr. Accordingly, the total population will be served in each phase will be 7,500.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 - 2022

Operational Data

Treated Wastewater	0.22 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2 M JD**		
IRR (%)	**6%**	**ERR (%)**	**17%**
NPV (M JOD)	**-0.3**	**ENPV (M JOD)**	**2.4**

22. Expansion of Collection Networks within the existing system of Aqaba City Phase 1

Project Information

Location	Aqaba
Objectives	To serve the unserved population in Aqaba City area. The population in the service area is above 5000. To serve the 52,674 population those are not served.
Description	The only existing sewer service area in the governorate serving Aqaba City is within the Aqaba Sub-district. The total served population in the service area is 100,420 (2012) representing service coverage of about 72% of the total governorate populations. The network will exceed its design capacity by 2015, the expansion should be planned to serve up to 2022. Additional population to serve is 52,674. It has been assumed that 50% of the wastewater will be pumped and 50% will flow by gravity

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	1.54 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**9.33 M JD**		
IRR (%)	**9%**	**ERR (%)**	**22%**
NPV (M JOD)	**0.9**	**ENPV (M JOD)**	**20.3**

23. Expansion of Collection Networks within the existing system of Aqaba City Phase 2

Project Information

Location	Aqaba
Objectives	To serve the unserved population in Aqaba City area. The main service area of the project will be the southern coast of the Aqaba (ASEZA). The population in the service area is above 5000 population. To build on phase one results and serves additional population of 80,145.
Description	The only existing sewer service area in the governorate serving Aqaba City is within the Aqaba Sub-district. The total served population in the service area is 100,420 (2012), representing service coverage of about 72% of the total governorate population. Phase 1 of the project should be implemented by 2015 as the current network will exceed its design capacity by 2015. The second phase of the expansion will be based on the 2015 expansion to serve up to 2030. Total population will be served after Phase One should be 153,094. Additional population to serve is 80,145. It has been assumed that 50% of the wastewater will be pumped and 50% will flow by gravity.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2019

Operational Data

Treated Wastewater	2.34 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**8 M JD**		
IRR (%)	**14%**	**ERR (%)**	**33%**
NPV (M JOD)	**6.7**	**ENPV (M JOD)**	**36.2**

24. Improvement of Wastewater Network in Hashimia District, Beren, Hiteen Camp

Project Information

Location	Zarqa
Objectives	To improve and expand the wastewater services in the Hashimia District, Beren, Hiteen Camp (Areas not served through MCC)
Description	The Project aims at improving and expanding the WW services in the Hashimia District, Beren, Hiteen Camp (Areas not served through MCC).

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2018

Operational Data

Treated Wastewater	
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**1.2 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

EXPANSION OF SERVICES

1. **Construction Sewer Network and House Connections in the un-sewered localities of Um Qsair and Moqabaleen**

Project Information

Location	Amman
Objectives	To expand the provision of wastewater services in the two localities of Um Qsair and Moqabaleen to serve additional population of 44,381.
Description	The Project aims at providing WW services in the unsewered localities of Um Qsair and Moqabaleen, the localities are in the Quaismeh District. The projected population by 2025 is 58,435. The current served population equals 14,054. The projected number of population that the project will serve is 44,381. No pumping will be required for those localities.

Project Status

Status	Detailed design done by WAJ (Part of South Amman Sewer Project)
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	1.3 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**22.6 M JOD**		
IRR (%)	**2%**	**ERR (%)**	**10%**
NPV (M JOD)	**-11.1**	**ENPV (M JOD)**	**5.2**

2. Construction of Wastewater Collection and House Connection of the Un-sewered Area of Abu Nseir

Project Information

Location	Amman
Objectives	expan in the WW services of Abu Nseir Area/ Locality with a population that is above 5,000/ have additional served population of 30,052.
Description	Abu Nseir wastewater system serves 49% of Abu Nseir area. The unsewered population within the system is 30,052. The project will fully serve Abu Nseir Areas.

Project Status

Status	Details are in the National Strategic Wastewater Master Plan by USAID ISSP project – Needs detailed design
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.9 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**12 M JOD**		
IRR (%)	**4%**	**ERR (%)**	**12%**
NPV (M JOD)	**-4.7**	**ENPV (M JOD)**	**6.3**

3. Construction of sewer network and house connections in the localities of Marka and Nasr in West Zarqa Pumping Station Service Area

Project Information

Location	Amman
Objectives	Expand in the provision of WW services/ unseweed localities with population above 5,000 within service area. To have additional served population of about 86,493.
Description	The project aims at expanding the WW servies in the localities of Marka and Nasr that follow that West Zarqa Pumping Station Service Area. The current served population in these two localities is 269,502. The projected population by 2025 is 355,995. The targeted population by this project is 86,493.

Project Status

Status	Detailed design done by WAJ (Part of South Amman Sewer Project)
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	2.5 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**20 M JOD**		
IRR (%)	**6%**	**ERR (%)**	**18%**
NPV (M JOD)	**-3.7**	**ENPV (M JOD)**	**28.1**

4. **Construction of sewer network and house connections for the un-sewered localities of Abu Alanda & Queisma in Ain Ghazal service area**

Project Information

Location	Amman
Objectives	To expand in the WW services in unsewered localities located in served areas. To have additional population 58,586 those are served with WW services.
Description	The project aims at expanding the Wastewater services in the localities of Abu Alanda and Queisma. The current served population is 156,666. The total population in the two localities by 2025 will be 215251. The targeted population by this project is 58,586. The WW flows will be transferred by gravity with no pumping.

Project Status

Status	Detailed design done by WAJ (Part of South Amman Sewer Project)
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	1.7 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**6.4 M JOD**		
IRR (%)	**14%**	**ERR (%)**	**31%**
NPV (M JOD)	**5.3**	**ENPV (M JOD)**	**26.8**

5. Annual Improvement Program of Amman existing sewer Network: Phase 1

Project Information

Location	Amman
Objectives	To expand in the WW services in Amman service areas
Description	The program includes annual improvement of the existing network with an estimated budget of 3.66 M JOD / year

Project Status

Status	Details are in the National Strategic Wastewater Master Plan by USAID ISSP project – Needs detailed design
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	4.9 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	40%	60%								
OPEX Outlay (%)		30%	30%	60%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**18.3 M JOD**		
IRR (%)	**14%**	**ERR (%)**	**31%**
NPV (M JOD)	**13.7**	**ENPV (M JOD)**	**73.9**

6. Annual Improvement Program of Amman existing sewer Network: Phase 2

Project Information

Location	Amman
Objectives	To expand in the WW services in Amman served areas
Description	The program includes annual improvement of the existing network with an estimated budget of 3.66 M JOD / year

Project Status

Status	Details are in the National Strategic Wastewater Master Plan by USAID ISSP project – Needs detailed design
Financing	Not available
Expected Construction Date	2020 - 2021

Operational Data

Treated Wastewater	4.9 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	40%	60%								
OPEX Outlay (%)		30%	30%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**18.3 M JOD**		
IRR (%)	**14%**	**ERR (%)**	**34%**
NPV (M JOD)	**14.7**	**ENPV (M JOD)**	**77.2**

7. Construction of Sewer Network and House Connections in the locality of Marj Al Hamam within Wadisseer District

Project Information

Location	Amman
Objectives	To expand the provision of wastewater services in the locality of Marj Hamam located within Wadisseer District. To have additional served population of 24,302.
Description	The Project aims at expanding the Wastwater Services in the locality of Marj Al Hamam located within Wadisseer District. The total served population is 25,630. The 2025 projected population is 49,932ca.

Project Status

Status	Details are in the National Strategic Wastewater Master Plan by USAID ISSP project – Needs detailed design
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.7 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**19 M JOD**		
IRR (%)	**0%**	**ERR (%)**	**7%**
NPV (M JOD)	**-11.7**	**ENPV (M JOD)**	**-2.8**

8. Construction of Wastewater Collection and House Connection for the locality of Wadisseer in Wadisseer District

Project Information

Location	Amman
Objectives	To expand the WW services in Wadisseer locality within Wadisseer District To serve population of 147,234ca.
Description	The project aims at expanding the wastewater services in the locality of wadisseer located within Wadisseer District. The current served population is 46,626. The 2025 projected population is 193,860.

Project Status

Status	Details are in the National Strategic Wastewater Master Plan by USAID ISSP project – Needs detailed design
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	4.3 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**76 M JOD**		
IRR (%)	**2%**	**ERR (%)**	**10%**
NPV (M JOD)	**-37.8**	**ENPV (M JOD)**	**16.3**

9. Construction of Sewer Network and House Connections in Khraibet Essooq, Jawa and Yadoodeh Localities within Quaismeh District

Project Information

Location	Amman
Objectives	Expand the provision of WW service in Ain Ghzal Area by Ain Ghazal in specific for Khraibet Essooq, Jawa and Yadoodeh localities. To serve additional population of 102,521 by 2025.
Description	The project aims at providing WW services in the unsewred localities of Khraibet Essooq, Jawa and Yadoodeh. The current served population equals to 32,467. The projected 2025 population is 134,988. No pumping is required for this project as its located within the Quisameh District which is served by Ain Ghaza service Area

Project Status

Status	Detailed design done by WAJ (Part of South Amman Sewer Project)
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	3 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**53 M JOD**		
IRR (%)	**2%**	**ERR (%)**	**10%**
NPV (M JOD)	**-26.4**	**ENPV (M JOD)**	**11.3**

10. Construction of Sewer Network and House Connections in the locality of Binayat within Na'oor District

Project Information

Location	Amman
Objectives	Expand the WW services in the locality of Binayat within Na'oor District To have additional served population of 30,888.
Description	The Project aims at providing WW services in the locality of Binayat within Na'oor District. The current served population is 11,730. The projected population by 2025 is 24,530. The targeted population by the project is 30,800ca. No Pumping is required for this System.

Project Status

Status	Detailed design done by WAJ (Part of Naour WW Project)
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.9 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**6 M JOD**		
IRR (%)	**9%**	**ERR (%)**	**21%**
NPV (M JOD)	**0.5**	**ENPV (M JOD)**	**11.8**

11. Construction of Sewer Network and House Connection for the un-sewered locality of Um El Summaq within Na'oor District

Project Information

Location	Amman
Objectives	Improve the wastewater services in Na'oor District To serve additional population of 8,594ca.
Description	The Project aims at providing WW services in the locality of Binayat within Na'oor District. The current served population is 11,730. The projected population by 2025 is 24,530.

Project Status

Status	Detailed design done by WAJ (Part of Naour WW Project)
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.25 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**4.8 M JOD**		
IRR (%)	**2%**	**ERR (%)**	**9%**
NPV (M JOD)	**-2.5**	**ENPV (M JOD)**	**0.6**

12. Construction of Sewer Network and House Connection for the un-sewered locality of Badr Jadeda within Wadisseer

Project Information

Location	Amman
Objectives	To Expand the Wastewater services in Badr jadeda locality in Wadisseer District
Description	The project aims at expanding the Wastewater Services in Badr Jadeda locality within Wadisseer District. The locality is totally unserved, the 2025 population is 15,963.

Project Status

Status	Needs Detailed Design
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.47 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**8.8 M JOD**		
IRR (%)	**2%**	**ERR (%)**	**9%**
NPV (M JOD)	**-4.6**	**ENPV (M JOD)**	**1.3**

13. Construction of wastewater collection system and house connections in Ira &Yargha area, Botna, Shona, and Treatment

Project Information

Location	Balqa
Objectives	To provide wastewater services in un-sewered area with population more than 5,000. Having additional served population of 6976.
Description	The project includes technical studies and installation of sewer network in the un-sewered area of Yargha, Botna, and Shona which has currently a population of 5,800.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2017 - 2019

Operational Data

Treated Wastewater	0.2 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**30 M JOD**		
IRR (%)	**-9%**	**ERR (%)**	**-1%**
NPV (M JOD)	**-25.2**	**ENPV (M JOD)**	**-20.5**

14. Ma'mounieh Collection System & WWTP

Project Information

Location	Madaba
Objectives	To serve the un-sewered area of Ma'mounieh up to 2025, population no. 8,062/ The area has a current population 6,380 by 2012 having the area served with sewer network and treatment facility.
Description	Ma'mounieh area is un-sewered area in Madaba that has a population of 6,380 (2012), which is 4% of the total population of the governorate. As the area has a population above 5,000, sewer connection in addition to treatment service should be provided, to serve the population up to 2025, the estimated population by 2025 are 8,062. This project recommends installing sewer network with a length of 29.7 km using 3m network/person. The projects recommend constructing a treatment facility for the wastewater collected.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.24 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**7.1 M JOD**		
IRR (%)	**0%**	**ERR (%)**	**8%**
NPV (M JOD)	**-5.8**	**ENPV (M JOD)**	**-0.2**

15. Maieen Collection System & WWTP

Project Information

Location	Madaba
Objectives	To serve the un-sewered area of Maieen by installing a sewer network and treatment facility. To have 8,277 populations in Maieen area that is served by WW facilities.
Description	Maieen has a population of 6,550 (2012), which 4.1% of the Governorate population. The whole area is un-sewered and requires a sewer network with a length of 29.7 km using 3 m network/ person, to serve 8,277 ca up to 2025.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.24 MCM/yr
% Allocation by Type of Use	100% irrigation Highlands

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**7.3 M JOD**		
IRR (%)	**0%**	**ERR (%)**	**8%**
NPV (M JOD)	**-5.7**	**ENPV (M JOD)**	**-0.1**

16. Faisalieh Collection System & WWTP

Project Information

Location	Madaba
Objectives	To provide wastewater services for the unsewered area of Faisalieh up to 2025/ The area is unsewered and have a population that is above 5,000 ca. To serve 8,709 ca in Faisalieh area up to 2025.
Description	Faisalieh area is unsewered area is Madaba governorate, with a population of 6,101 (2012) - 3.8% of total population of the governorate - and expected to grow to 8,709 by 2025. Estimated sewer network of 28 km, with a treatment facility (WWTP) to serve the population in this area up to 2025.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.23 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**6.7 M JOD**		
IRR (%)	**0%**	**ERR (%)**	**8%**
NPV (M JOD)	**-5.2**	**ENPV (M JOD)**	**0**

17. Construction of wastewater collection system and house connection in Sukhneh, and transmission system from Sukhneh PS to EZPS

Project Information

Location	Zarqa
Objectives	To increase the coverage of WW Services in Zarqa Governorate have additional 66,721 capita provided with WW Services
Description	MCC proposed a full design for Al Sukhneh PS Zone Sytem, for 5 communities with pop. above 5000 out of 15, the communities are Al Sukhneh, Hai Al Bustan, Hai Al Hashemi, Hai Al Ameera Haya and Hay Al Nasser

Project Status

Status	Detailed Design done MCC
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	1.95 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**15 M JOD**		
IRR (%)	**6%**	**ERR (%)**	**18%**
NPV (M JOD)	**-3.2**	**ENPV (M JOD)**	**22.1**

18. Construction of wastewater collection system and house connections in un-sewered areas in the East Zarqa System

Project Information

Location	Zarqa
Objectives	to expand in the coverage of WW service in east zarqa area, and increase the percentage of coverage
Description	The 2013 service coverage within the east zarqa PS system is 88% with a population of about 19,988 not served within the east zarqa PS service area. The projected wastewater amount for the unsewered area in east Zarqa by 2025 is 2,128m^3/day.

Project Status

Status	Detailed Design done MCC
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	0.8 MCM/yr
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**14 M JOD**		
IRR (%)	**1%**	**ERR (%)**	**9%**
NPV (M JOD)	**-8.3**	**ENPV (M JOD)**	**1.8**

19. Construction of the wastewater collection and house connection and treatment cost for the un-sewered localities of Ajloun: Phase 1

Project Information

Location	Ajloun
Objectives	To accommodate the wastewater loads until 2025, caused by population growth and expansion of sewer network coverage. The plant operates at 96% of the hydraulic design capacity, whereas it serves approximate population of about 18,000 people and designed for 36,000. To serve a projected population of 23,216 by 2025.
Description	The eastern and western parts of Ajloun Governorate contain un-sewered localities with populations of more than 5,000. Those are; Sakhrah, Ebbien, Hashmiyyeh, Wahadneh, Halawah,Orjan. WAJ undertook a design project to serve part of the eastern un-sewered localities in Ajloun governorate through a proposed sewer system which also includes localities in Jerash governorate. The proposed system will be connected to Wadi Hassan WWTP which is in Irbid Governorate. Localities to be served within Ajloun governorate -as mentioned before-are Sakhrah, Ebbien, Ebellien and Ras Al Moneef with 2012 population 24,700.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 - 2022

Operational Data

Treated Wastewater	0.97 MCM/yr
% Allocation by Type of Use	100% Irrigation Highlands

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%	0%	0%	0%	0%	0%	0%	0%
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**30 M JD**		
IRR (%)	**0%**	**ERR (%)**	**7%**
NPV (M JOD)	**-24.6**	**ENPV (M JOD)**	**-2.3**

20. Construction of Wastewater Collection System and House Connections for Kofor Khal & Baliela areas in Jerash District

Project Information

Location	Jarash
Objectives	Construction of Wastewater Collection System and house Connections for Kofor Khal & Baliela areas in Jerash District
Description	Kofor Khal & Baliela are the two areas in Jerash District that are not served with wastewater collection systems. The 2012 population of the two areas are 7,007 and 6195 respectively. The projected populations by 2025 are 9,607 and 8,502 respectively. The project aims at providing wastewater services for those areas up to 2025.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	0.5 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	30%	60%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**14 M JD**		
IRR (%)	**0%**	**ERR (%)**	**7%**
NPV (M JOD)	**-8.6**	**ENPV (M JOD)**	**-2**

21. Construction of Wastewater Collection System and House Connections for Bal'ama

Project Information

Location	Mafraq
Objectives	To provide wastewater service to the locality of Bal'ama up to 2025. To provide the locality of Bal'ama with a population of 17,502 (2035) provided with wastewater services up to 2025.
Description	The Project includes providing wastewater services to the locality of Bal'ama. The projected population to be served by 2025 is 14,178. The estimated length of the network is 32 km.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2018

Operational Data

Treated Wastewater	0.4 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**20 M JD**		
IRR (%)	**-3%**	**ERR (%)**	**3%**
NPV (M JOD)	**-14.5**	**ENPV (M JOD)**	**-9.2**

22. Construction of Wastewater Collection System and House Connections for Badiah Shamaliyyeh Al Gharbiyyeh

Project Information

Location	Mafraq
Objectives	To provide wastewater services for the localities of Khalidayyeh & Mabrookah to serve the population up to 2025. To provide wastewater services for two localities that has a population above 5000. To provide wastewater services for a total population 17,157 up to 2025.
Description	The Project is part of a two phase program that aims at providing wastewater services for Al Badiah Shamaliyyeh Al Gharbiyyeh District. The first phase aims at constructing a collection system for the two localitie: Khaldiyah & Mabrookah. The projected population to be served by 2025 is 17,807 in Khaldiyah and 7,350 in Mabrookah. The estimated of population to serve by 2025 in total is 25,157 ca.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	0.74 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**14.20 M JD**		
IRR (%)	**2%**	**ERR (%)**	**9%**
NPV (M JOD)	**-7.9**	**ENPV (M JOD)**	**1.7**

23. Construction of Wastewater Collection System and House Connections including Pumping Station for Manshiyyet Bani Hasan

Project Information

Location	Mafraq
Objectives	Provide wastewater services for the locality Manshiyyet Bani Hasan up to 2025.
Description	WAJ undertook a design study for proposed systems in Manshiyyet Bani Hasan. The total population to be served is about 8,350 (2012), which is 3% of the total governorate population. The wastewater will be collected and pumped to Al Mafraq WWTP. Installing a lifting station is part of the project. The system is planned to serve up to 2025, having a population of 11,092.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	0.3 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**5.20 M JD**		
IRR (%)	**3%**	**ERR (%)**	**11%**
NPV (M JOD)	**-2.5**	**ENPV (M JOD)**	**1.7**

24. Construction of wastewater collection system and house connections for the rest of Mafraq City

Project Information

Location	Mafraq
Objectives	Expand the wastewater service at Mafraq City area for the unserved population.
Description	The current Mafraq wastewater system in the area covers 25% of Mafraq City's population with a total sewer network of 91.82km in length. Mafraq City has a population of 58,736, 44,052 that are not served. This project aims at expanding the existing sewer network to serve the unserved population.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	1.0 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**16.6 M JD**		
IRR (%)	**3%**	**ERR (%)**	**10%**
NPV (M JOD)	**-8**	**ENPV (M JOD)**	**5**

25. Construction of Wastewater Collection System in addition to WWTP for the un-sewered localities in Koorah District- Birgish Project

Project Information

Location	Irbid
Objectives	To provide 5 localities of Koorah District with WW services. The served localities have population of more than 5,000/ providing WW Service to the served areas up to 2035.
Description	The project includes the expansion of Wadi Al Arab WWTP by additional capacity of 9,000 m^3/day. This is proposed to be implemented on two different phases; phase one, includes expansion with an additional capacity of 4,400 m^3/day.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2020

Operational Data

Treated Wastewater	1.25 MCM/yr
% Allocation by Type of Use	100% Irrigation JVA Reclaimed

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	20%	20%						
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**41.5 M JD**		
IRR (%)	**-**	**ERR (%)**	**7%**
NPV (M JOD)	**-32.7**	**ENPV (M JOD)**	**-4.8**

26. Construction of wastewater collection system and house connections in the un-sewered localities in Ramtha District- Sahel Horan

Project Information

Location	Irbid
Objectives	To serve additional population of about 62,593 up to 2035 in unsewered areas with population more than 5,000.
Description	The Project includes the remaining localities that are more than 5,000 populations and are not served with the existing system. Those areas were included in a design project (Sahel Hordan Design Project).

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2019

Operational Data

Treated Wastewater	1.2 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**37 M JD**		
IRR (%)	**-1%**	**ERR (%)**	**5%**
NPV (M JOD)	**-25.4**	**ENPV (M JOD)**	**-10.9**

27. Construction of Wastewater Collection and house connections and the Treatment Cost needed in Qasabah Irbid District

Project Information

Location	Irbid
Objectives	To provide the service area with wastewater for additional 66,208 population in Qasabeh Irbid District. The area served is unsewered and without treatment facilities.
Description	The project includes expansion of wastewater collection and house connection in Qasabah Irbid District. The areas included: Bait Ras, Maghyyer and Hakama. A second phase is proposed to follow this project, in 2030

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2019

Operational Data

Treated Wastewater	1.93 MCM/yr
% Allocation by Type of Use	Irrigation JVA Reclaimed

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**40 M JD**		
IRR (%)	**-1%**	**ERR (%)**	**12%**
NPV (M JOD)	**-27.4**	**ENPV (M JOD)**	**17.5**

28. Construction of sewer network system for Jafer Locality in addition to the wastewater treatment cost

Project Information

Location	Ma'an
Objectives	Expand in the provision of WW services for an area that is above 5,000ca. Jafer locality has a population that is above 5,000. To have additional served population of 8,287 by 2020.
Description	Jafer locality has a population of 6,743 (2012). The projected population by 2035 will be 11,185. The system will be needed by 2020 based on the projected population. The system should be designed based on 2020 population (8,287).

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 - 2019

Operational Data

Treated Wastewater	0.24 MCM/yr
% Allocation by Type of Use	100% Irrigation Highlands

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**5.3 M JD**		
IRR (%)	**1%**	**ERR (%)**	**10%**
NPV (M JOD)	**-3.2**	**ENPV (M JOD)**	**1.1**

29. Mouta'a System (Trunk, Collection Sewer, House Connection)

Project Information

Location	Karak
Objectives	To serve the un-served population in addition to the additional projected population. An area with a population above 5,000. Having additional population of 19,000 served with WW.
Description	Mewerd-Mouta'a service area is the second area that is served with WW services with a 2012 population of 36,000. The service area encompasses the localities of Muta'a, Mazar, Merwed, Adnaneyeh and Median. The services include WW collection system and WWTP. The projected population by 2025 is 55,200 having 19,200 unserved and needed to be connected. The project aims at providing WW for the 2025 projected and unserved population.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	0.56 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**16.6 M JD**		
IRR (%)	**0%**	**ERR (%)**	**6%**
NPV (M JOD)	**-10.6**	**ENPV (M JOD)**	**-3.6**

30. Construction of a new sewer network system for Western Villages of Irbid (Kufr Yoba, Bait Yafa, Jumha)

Project Information

Location	Irbid
Objectives	Provide wastewater services for the locality Taiba (Kufr Yoba, Bait Yafa, Jumha) up to 2025. Also, removing undesirable environmental issues and improving society health
Description	The project includes expansion of wastewater collection and house connection in locality Taiba (Kufr Yoba, Bait Yafa, Jumha). The project comprises of the following; (Hakama 50km & Transmission line 5km + lifting station, Maro 15 km & Transmission line 3km + lifting station, E,laal & Abo Alloqas 40 km & Transmission line 5km, Zahar & Kofor Rahta 18 km Transmission lines 8km, Kofur Youba 65 km & Transmission line 3km + lifting station, Jamha 17 km & Transmission line 3km + lifting station, Jajjeen 30km & Transmission line 5km + lifting station). A second phase is proposed to follow this project, in 2030

Project Status

Status	Concept phase & Study is Done, unfunded
Financing	Not available
Expected Construction Date	2018 – 2020

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**60 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

31. Studying & Construction of a New Sewer Network System for Mekhaba Area

Project Information

Location	Irbid
Objectives	Supply and installation of sewage network in many areas in Mekhaba
Description	Construction of main lines & house connections, in addition to many lifting stations. Also, removing undesirable environmental issues & improving society health.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2023 – 2025

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**50 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

32. Construction of a New Sewer Network System for North Salt, Ein AL Basha, and Baq'a (North & North East)

Project Information

Location	Balqa
Objectives	
Description	Establishment of a sewer network of 300Km, including the house connections. Also, establishment a wastewater treatment plant to service the Salt villages. Besides, to reallocate the Ain Basha WWTP including establishment of a new WWTP at the Wadi intersection.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 – 2020

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**90 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

33. Construction of a New Sewer Network System for Salt including WWTP

Project Information

Location	Balqa
Objectives	
Description	The project comprises of establishment of an 8 km sewer line that will expand the sewer network in Salt city.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2017

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**10 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

34. Construction of a New Sewer Network System for Dair Alla, Almashareh, Shona North & South

Project Information

Location	Balqa, Karak, Irbid, Aghware Area
Objectives	To serve new citizens residences by sewage house connections
Description	Construct a concrete and ductile pipes with 150, 200, 300, and 400 mm diameters, also, different sizes of manholes

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 – 2020

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**200 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

35. Construction of a New Sewer Network System for Jarash

Project Information

Location	Jarash
Objectives	To serve new citizens residences by sewage house connections
Description	Construction sewer networks with different lengths & different diameters, house connections

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016

Operational Data

Treated Wastewater	
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	100%									
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**5 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

36. Construction of a New Sewer Network System for Delal, Halabat, and AL Khaldieh

Project Information

Location	Zarqa
Objectives	To serve the Delal, Halabat, and AL Khaldieh areas in Zarqa governorate with the sanitation services. The total house connections are about 8,500 House Connections. The total wastewater expected to be produced through the wastewater network is about 7,700 MCM, taking into consideration that most the houses are two-floor house; 10 persons per each house connection.
Description	The total length of the wastewater is about 300KM, including a conveyance line of 25KM length, which located between Delal and AL Khaldieh. A lift station will be established on at the end of the conveyance line to lift the wastewater to AL Samra WWTP. The diameters of the wastewater pipes is ranged between 200 to 700 mm. the expected areas to be served as follows: Delal includes (Wadi Delal, AL Nwasef AL Gharbi, AL Nwasef AL Sharqi, AL Fagerah AL Sharqi), Halabat includes (Daier AL Qaser, AL Rokban AL Shamali, AL Rokban AL Janobi), and AL Khaldieh includes (Manshiet Al Za'tari, AL Balad, AL Jueya AL Sharquia, AL Mashrafah, Abu Ghara).

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2023 – 2024

Operational Data

Treated Wastewater	7.7 MCM/yr
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	40%	60%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**38 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

37. Construction of a New Sewer Network System for Shava Badran (Three Packages)

Project Information

Location	Amman
Objectives	
Description	The project comprises of three packages; package one consists of the establishment of networks of 53km plus one lifting station & force line of 1 km, package two consists of the establishment of networks of 39km, and package three consists of the establishment of 39 km sewer line, Package four consists of the establishment of 4 - 57 km sewer line, plus 3 lifting stations & force line of 3.7 km.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2018

Operational Data

Treated Wastewater	
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**24 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

38. Construction of a New Sewer Network System for Qaser District, part of Qasaba District, Alrawda, Samakieh, Alrabah including WWTP

Project Information

Location	Karak
Objectives	
Description	

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2023 – 2025

Operational Data

Treated Wastewater	
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**50 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

39. Construction of a New Sewer Network System for Prince Hashim Rouda, Petra District, Eil District including lifting stations

Project Information

Location	Ma'an
Objectives	
Description	

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 - 2018

Operational Data

Treated Wastewater	
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**9 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

40. Construction of a New Sewer Network System for Athroh, Prince Haya, and Hay Alzera'a

Project Information

Location	Ma'an
Objectives	
Description	

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	70%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**5.7 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

41. Jordan Valley Wastewater Project

Project Information

Location	Jordan Valley
Objectives	The main objective is to participate in the development of the Jordan Valley through the establishment of a wastewater system including wastewater network and treatment plant. The project includes two scenarios depending on the prefeasibility studies that will determine the location of the treatment plant as well as the location of the networks.
Description	Establishment of wastewater network in addition to treatment wastewater. The prefeasibility studies will determine the final design and structure including the location of the project. There are two scenarios to implement the project; the first scenario is

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Treated Wastewater	5 MCM
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**42 M JD**		
IRR (%)	**7%**	**ERR (%)**	**17%**
NPV (M JOD)	**-5.3**	**ENPV (M JOD)**	**57.6**

42. Grinatha, Alaresh and German Jordan University Collection System & WWTP

Project Information

Location	Madaba
Objectives	To provide wastewater services for the un-sewered area of Grinatha, Alaresh and Jermaine university up to 2025. The area is uns-ewered and have a population that is above 1200 ca.
Description	Grinatha, Alaresh area is un-sewered area is Madaba governorate, with a population of 1200 (2012) -3.8% of total population of the governorate-

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	
Expected Construction Date	2022 – 2025

Operational Data

Treated Wastewater	0.066 MCM/yr
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	25%	25%	25%	25%						
OPEX Outlay (%)					100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**7 M JOD**		
IRR (%)	**-6%**	**ERR (%)**	**-**
NPV (M JOD)	**-5.4**	**ENPV (M JOD)**	**-4.6**

43. Construction Sewer Network and House Connections in the un-sewered Areas – Phase 1

Project Information

Location	Amman
Objectives	To expand the provision of wastewater services in several areas phase 1
Description	The Project aims at providing WW services in the un-sewered locations that considered as Miyahuna service area. The total studied distance estimated is 200km.

Project Status

Status	Detailed design done by Miyahuna
Financing	
Expected Construction Date	2016 – 2018

Operational Data

Treated Wastewater	
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**20 M JOD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

44. Construction Sewer Network and House Connections in the un-sewered Areas – Phase 2

Project Information

Location	Amman
Objectives	To expand the provision of wastewater services in several areas phase 2
Description	1. The Project aims at providing WW services in the answered locations that considered as Miyahuna service area.(new applications and studies) 2. The total length is estimated 200km. Providing (2) MJD for each year

Project Status

Status	Detailed design done by Miyahuna
Financing	
Expected Construction Date	2019 – 2025

Operational Data

Treated Wastewater	
% Allocation by Type of Use	

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	10%	10%	20%	20%	20%	10%	10%			
OPEX Outlay (%)								100%	100%	100%

Financial and Economic Indicators

Capital Cost	**14 M JOD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

WASTEWATER TREATMENT PLANTS

1. **Expansion of Fuhais and Mahes WWTP**

Project Information

Location	Balqa
Objectives	To accommodate the wastewater loads until 2025, caused by population growth and expansion of sewer network coverage. The plant operates at 96% of the hydraulic design capacity, whereas it serves approximate population of about 18,000 people and designed for 36,000/ To serve a projected population of 23,216 by 2025.
Description	The Project include the expansion of Fuhais and Mahes WWTP to provide an additional capacity of 1,200m^3/day, to have a total capacity of 3,500 m^3/day.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2022 – 2023

Operational Data

Treated Wastewater	0.44 MCM per year
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**1.4 M JOD**		
IRR (%)	**10%**	**ERR (%)**	**46%**
NPV (M JOD)	**0.8**	**ENPV (M JOD)**	**14.3**

2. **Expansion of As Salt WWTP**

Project Information

Location	Balqa
Objectives	The Project aims at upgrade the WWTP for receive additional capacity for the additional forecasted population up to 2025. The WWTP currently receives 85% of the hydraulic capacity and 83% of the biological capacity. To accommodate additional loads from of 100,000 population served.
Description	Provide addition capacity for As Salt WWTP of 2,200m^3/day to have a total capacity of 12,200m^3/day. This follows (Phase 1), which came as an immediate need to be implemented as priority one. The recommended additional capacity for phase 1 is 2100 m^3/day to have a total of 9,900 m^3/day. Projected hydraulic load for 2015 assuming an increase in coverage area is 8,129m^3/day and a corresponding increase in the projected BOD 6,600kg/day; these loads will result from an additional population of 100,000 to be connected within the service system.

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	
Expected Construction Date	2022 – 2024

Operational Data

Treated Wastewater	0.8 MCM per year
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**3 M JOD**		
IRR (%)	**10%**	**ERR (%)**	**38%**
NPV (M JOD)	**1.2**	**ENPV (M JOD)**	**24.9**

3. **Expansion of East Jarash WWTP**

Project Information

Location	Jarash
Objectives	Expansion of the East WWTP to have additional capacity of 4,250m^3/day for a total capacity of 8,000m^3/day serving the connected area by 2025.
Description	This Phase (Phase 1) of the project is one of two phases, where an expansion is recommended for East WWTP. Phase 1 aims at increasing capacity by 4,250m^3/day for a total capacity of 8,000m^3/day serving the area by 2025. Phase 2 of project includes an expansion for an additional capacity of 2,800 m^3/day for a total capacity of 10,800m^3/day to serve the area by 2035. The current capacity of the WWTP is 3,750 m^3/day. The plant is already overloaded both hydraulically and biologically, serving 34% of the Jerash District area and receiving a load of 5,399m^3/day. Two areas are currently not served with a sewer system (Kufr Khall and Baliela).

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	1.55 MCM per year
% Allocation by Type of Use	100% Irrigation JVA Reclaimed

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**1 M JD**		
IRR (%)	**22%**	**ERR (%)**	**148%**
NPV (M JOD)	**6.3**	**ENPV (M JOD)**	**53.6**

4. **Expansion of Madaba WWTP & Establishment of Wastewater Network**

Project Information

Location	Madaba
Objectives	To serve the additional population by 2016 up to 2025. The amount of WW that needs treatment and will be produced by the projected population in addition to the current unserved population will exceed the current capacity by 1,140 m^3/day by 2025. Also, serve the unserved population in addition to the projected population.
Description	The Plant has an average design capacity of 7,600 m^3/day and currently receives an average flow of 5,400 m3/day, which is 72% of the design hydraulic loads. The Plant still has capacity to cover 95% of Madaba current population of 86,435. The unserved population of Madaba city is about 34,500 persons which will require approximately 103.5 km of new sewer networks. At this stage and to serve the population up to 2025, it is required to expand the WWTP by 1,140 m^3/day. Also, implementation of wall and fence around Madaba wastewater treatment plant

Project Status

Status	Needs Prefeasibility and Detailed Design
Financing	Not available
Expected Construction Date	2016 – 2018

Operational Data

Treated Wastewater	0.41 MCM per year
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**10 M JOD**		
IRR (%)	**3%**	**ERR (%)**	**10%**
NPV (M JOD)	**-6.6**	**ENPV (M JOD)**	**2.9**

5. **Expansion of Wadi Al Arab WWTP**

Project Information

Location	Irbid
Objectives	Increase the capacity of Wadi Al Arab WWTP with an additional capacity of 4,400m^3/day in 2020. To have it be able to meet the projected flows by 2030. To have a total capacity of 25,400 m^3/day to serve the loads up to 2030.
Description	The project includes the expansion of Wadi Al Arab WWTP by additional capacity of 9,000 m^3/day. This is proposed to be implemented on two different phases. Phase one includes expansion with an additional capacity of 4,400 m^3/day.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2019

Operational Data

Treated Wastewater	1.6 MCM per year
% Allocation by Type of Use	100% Irrigation JVA Reclaimed

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**4.80 M JD**		
IRR (%)	**11%**	**ERR (%)**	**44%**
NPV (M JOD)	**3.4**	**ENPV (M JOD)**	**50.7**

6. **Expansion of Central Irbid WWTP**

Project Information

Location	Irbid
Objectives	This includes the second phase of the expansion of Central Irbid WWTP, where the treatment plant will reach its design capacity by 2018. The second phase (2025) will add additional capacity of 2,000 m^3/day (total needed capacity is 14,700 m^3/day) to serve loads up to 2035.
Description	This includes the second phase of the expansion of Central Irbid WWTP, where the treatment plant will reach its design capacity by 2018. To meet the projected flow for the service area (14,800 m^3/d) by 2035. This means that additional capacity requirements will be 4,800 m^3/day. This has been suggested on two separate phases; first phase (immediate, 2015): additional capacity 2,000 m3/d (total needed capacity is 12,700 m^3/day) to serve loads up to 2025. The second phase (2025) will add additional capacity of 2,000 m^3/day (total needed capacity is 14,700 m^3/day) to serve loads up to 2035.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2022 – 2024

Operational Data

Treated Wastewater	0.73 MCM per year
% Allocation by Type of Use	100% Irrigation JVA Reclaimed

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2.20 M JD**		
IRR (%)	**11%**	**ERR (%)**	**44%**
NPV (M JOD)	**1.5**	**ENPV (M JOD)**	**23.0**

7. **Expansion of Ramtha WWTP –Phase 2**

Project Information

Location	Irbid
Objectives	Increase the capacity of Ramtha WWTP with additional capacity of 5,613m^3/day. To have it able to meet the projected flows up to 2035. Have a total capacity of 19,313 m^3/d to serve the loads up to 2035.
Description	This second phase of the project follows that first one, whereas the second phase aims at having a total capacity of 19,313 m^3/day to meet the projected flows up to 2035. The first aims at having a total capacity of 13,700 m^3/day.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2022 – 2024

Operational Data

Treated Wastewater	2.05 MCM per year
% Allocation by Type of Use	100% Irrigation Highlands

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2.45 M JD**		
IRR (%)	**25%**	**ERR (%)**	**75%**
NPV (M JOD)	**11.5**	**ENPV (M JOD)**	**58.5**

8. **Expansion of Wadi Hassan WWTP**

Project Information

Location	Irbid
Objectives	To increase the capacity of Wadi Hassan WWTP with total capacity of 5,400 m3/day. The plant currently receives higher BOD loads that its design capacity and will reach the hydraulic design capacity in year 2015. A total Capacity of 5,400 m^3/day.
Description	The second phase of the expansion of this WWTP includes providing additional capacity of 5,400 m^3/day to meet 2025 wastewater loads. This will follow phase one, which entails providing total capacity of 4,400 m^3/day.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2019 – 2021

Operational Data

Treated Wastewater	1.9 MCM per year
% Allocation by Type of Use	100% Irrigation Highlands

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**1.10 M JD**		
IRR (%)	**41%**	**ERR (%)**	**117%**
NPV (M JOD)	**12.1**	**ENPV (M JOD)**	**57.4**

9. **Expansion of Wadi Mousa WWTP**

Project Information

Location	Ma'an
Objectives	To increase the capacity of Wadi Mousa WWTP. The flow will exceed the current capacity by 2025. To have additional capacity of 1,600 m^3/day.
Description	The current capacity of Wadi Mousa WWTP is 3,400m^3/day. This capacity will be exceeded by the year 2025. WIP study recommends to expand the WWTP with additional capacity of 1,600m^3/day, by this we will have a total capacity of 5,100 m^3/day.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2022 – 2024

Operational Data

Treated Wastewater	0.58 MCM per year
% Allocation by Type of Use	100% Irrigation Highlands

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**4 M JD**		
IRR (%)	**9%**	**ERR (%)**	**24%**
NPV (M JOD)	**1**	**ENPV (M JOD)**	**14.4**

10. **Expansion of Aqaba WWTP**

Project Information

Location	Aqaba
Objectives	To increase the capacity of the WWTP. The projected flow will exceed the current capacity. To have additional capacity of 14,165m^3/day, and a total capacity of 26,165 m^3/day
Description	This phase of the project includes expansion in the WWTP with additional capacity of 14,165 m^3/day. A total capacity of 26,165 m^3/day

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2020

Operational Data

Treated Wastewater	5.17 MCM per year
% Allocation by Type of Use	100% Irrigation Highlands

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	30%	30%	20%						
OPEX Outlay (%)					100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**30.75 M JD**		
IRR (%)	**10%**	**ERR (%)**	**25%**
NPV (M JOD)	**12.8**	**ENPV (M JOD)**	**127.4**

11. **Disposal of the Dry Sludge in the Northern Governorates**

Project Information

Location	Irbid, Jarash, Ajloun, Mafraq
Objectives	Removing undesirable environmental issues and improving society health
Description	

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**40 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

12. **Expansion of Ramtha WWTP Phase 1**

Project Information

Location	Irbid
Objectives	Increase the capacity of Ramtha WWTP with additional capacity of 5,613m^3/day. To have it able to meet the projected flows up to 2025. Have a total capacity of 13,700 m^3/day to serve the loads up to 2025.
Description	This expansion aims at having a total capacity of 13,700 m^3/day to meet the projected flows up to 2025.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2019 – 2021

Operational Data

Treated Wastewater	2 MCM per year
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**14.7 M JD**		
IRR (%)	**8%**	**ERR (%)**	**23%**
NPV (M JOD)	**1.1**	**ENPV (M JOD)**	**48.1**

13. **Establishment of Parallel Conveyance Line for the Treated Wastewater from Ain Ghazal WWTP**

Project Information

Location	Balqa
Objectives	
Description	

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016

Operational Data

Treated Wastewater	
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	100%									
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

14. **Contribution in the Expansion of Kharbit As Samra for Handling Extra Amount of Wastewater**

Project Information

Location	Zarqa
Objectives	Expanding the As Samra Treatment Plant to handle the extra amount of wastewater. The expected expansion is about 35 MCM.
Description	This expansion is the third expansion of the As Samra Treatment Plant. The expansion will increase the capacity of the As Samra Treatment Plant with 35 MCM

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 – 2024

Operational Data

Treated Wastewater	35 MCM per year
% Allocation by Type of Use	100% for Irrigation

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	30%	30%	20%	10%					
OPEX Outlay (%)						100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**230 M JD**		
IRR (%)	**10%**	**ERR (%)**	**25%**
NPV (M JOD)	**95.3**	**ENPV (M JOD)**	**1059.4**

15. **Establishment of Parallel Conveyance Line for the Treated Wastewater from Madaba WWTP to South Amman WWTP**

Project Information

Location	Amman
Objectives	The main objective is alleviate the burden on the wastewater treatment plant instead of the expansion of the WWTP as an option suggested in the first place
Description	Establishment a conveyance line from the Mahaba circle to the south Amman WWTP

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**20 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

16. **Establishment of Wastewater Treatment Plant to handle the Transported by Trunk to Ghor Safi Landfill**

Project Information

Location	Karak
Objectives	Construction of a wastewater plant that will be targeted to the waste transferred to the Ghor Safi Landfill
Description	Establishment of the wastewater treatment plant. The required studies are done.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2023 – 2025

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**58 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

17. Establishment of Conveyance Reuse Line for the Treated Wastewater from Wadisseer to Kafreen

Project Information

Location	Amman
Objectives	To convey the treated wastewater from the Wadi Sir to the Kafrin Dam, this will enhance the irrigation at that area.
Description	10 km effluent reuse pipeline with a diameter of 600 mm to transfer the treated wastewater from Wadi Sir WWTP site to Al Kafrin Dam, where is will be used for irrigation purposes, The effluent quality will be in compliance with the Jordanian Standers no. JS 893/2006 for restricted Irrigation.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017 – 2018

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**7 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

18. **Establishment of Parallel Conveyance Line Trunk A**

Project Information

Location	Madaba
Objectives	Replace the old one which implanted in 1981 because it is small size and have many damages & full flow
Description	Transmission line implementation of the sewage runs from Alntafh Alnaser Aleadat rotor almahba to Madaba plant

Project Status

Status	Under Study
Financing	Not available
Expected Construction Date	2016 – 2017

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

19. **Establishment of Parallel Conveyance Line Trunk B**

Project Information

Location	Madaba
Objectives	Replace the old one because the Madaba network established in 1981 the status of network now is full flow and have many damages
Description	Transmission line implementation of the sewage runs from Nadafa area, engineers housing Khalidiya Alazaadh Madaba camp east areas to Madaba plant.

Project Status

Status	Under study
Financing	Not available
Expected Construction Date	2018 – 2019

Operational Data

Treated Wastewater	-
% Allocation by Type of Use	-

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	50%	50%								
OPEX Outlay (%)			100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**2 M JD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

20. **Construction of New Sewer Tanker Station (Replacement of the Existing on AIN Ghazal)**

Project Information

Location	Amman
Objectives	To new station away from the residential areas and solve the environmental impact on inhabits and provide additional capacity and
Description	

Project Status

Status	Needs Detailed Design
Financing	
Expected Construction Date	2016 – 2018

Operational Data

Treated Wastewater	
% Allocation by Type of Use	

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	30%	30%	40%							
OPEX Outlay (%)				100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost	**60 M JOD**		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

SUMMARY LIST OF WASTEWATER PROJECTS

No.	Project Name	CAPEX (MJD)	Governorate	Years of Implementation
Rehabilitation and Upgrade of Existing Systems				
1.	Improvement of existing Sewer Network of Wadisseer Service Area	4.5	Amman	2016 - 2018
2.	Improvement of the existing system of West Zarqa Pumping Station Service Area: Phase 2	3	Amman	2016 - 2018
3.	Improvement of Ain Ghazal existing Sewer Network: Phase 2	14	Amman	2016 - 2017
4.	Annual Expansion Program for wastewater collection and house connections expansion for the existing systems in Fuhais and Mahes: phase 2	7.5	Balqa	2016 - 2017
5.	Annual Expansion Program for wastewater collection and house connections expansion for the existing systems in Fuhais and Mahes: phase 3	7.5	Balqa	2020 - 2021
6.	Madaba System Extension (Trunk, Collection sewer, House Connection): Phase 1	30.2	Madaba	2016 - 2019
7.	Madaba Annual Expansion Program for collection sewers and house connections: Phase 2	3	Madaba	2020 - 2022
8.	Eastern Zarqa Pumping Station System-Replacement of forcemain of the EZPS by 700mm diameter pipeline	15	Zarqa	2016 - 2017
9.	Annual Expansion Program for wastewater collection and house connections expansion for the existing systems for Ajloun Qasabeh and Kufranja Districts	10	Ajloun	2016 - 2020
10.	Annual Expansion Program in Irbid for wastewater collection and house connections: Phase 1	2.5	Irbid	2016 - 2020
11.	Annual Expansion Program in Irbid for wastewater collection and house connections: Phase 2	2.5	Irbid	2020 - 2021
12.	Annual Expansion Program for collection sewers and house connections in Ma'an Service System: Phase 1	12.5	Ma'an	2016 - 2018
13.	Annual Expansion Program for collection sewers and house connections in Ma'an Service System: Phase 2	12.5	Ma'an	2022 - 2024
14.	Annual Expansion Program for collection Sewers and House Connections for Jafer Area	0.6	Ma'an	2017 - 2018
15.	Tafila System Extension (Trunk, Collection Sewer, House Connection)	20.5	Tafila	2016 - 2017
16.	Annual Expansion Program for collection sewers and house connection in Tafila, Ies and Ruwaym areas: Phase 1	2.5	Tafila	2016 - 2017
17.	Annual Expansion Program for collection sewers and house connection in Tafila, Ies and Ruwaym areas: Phase 2	2.5	Tafila	2020 - 2022
18.	Annual Expansion Program for collection sewers and house connection expansion for Mouta'a City	3	Karak	2016 - 2018
19.	Karak System (Trunk, PS, Collection sewer, House Connection)	19	Karak	2016 - 2018
20.	Annual Expansion Program for collection sewers and house connection expansion for Karak City: Phase 1	2.5	Karak	2016 - 2018
21.	Annual Expansion Program for collection sewers and	2	Karak	2020 - 2022

No.	Project Name	CAPEX (MJD)	Governorate	Years of Implementation
	house connection expansion for Karak City: Phase 2			
22.	Expansion of Collection Networks within the existing system of Aqaba City Phase 1	9.33	Aqaba	2016 - 2018
23.	Expansion of Collection Networks within the existing system of Aqaba City Phase 2	8.0	Aqaba	2017 - 2019
24.	Improvement of Wastewater Network in Hashimia District, Beren, Hiteen Camp	1.2	Zarqa	2017 - 2018
Expansion of Services to Unsewered Areas				
25.	Construction Sewer Network and House Connections in the unsewered localities of Um Qsair and Moqabaleen	22.6	Amman	2016 - 2018
26.	Construction of Wastewater Collection and House Connection of the Unsewered Area of Abu Nseir	12	Amman	2016 - 2018
27.	Construction of sewer network and house connections in the localities of Marka and Nasr in West Zarqa Pumping Station Service Area	20	Amman	2016 - 2018
28.	Construction of sewer network and house connections for the unsewered localities of Abu Alanda & Queisma in Ain Ghazal service area: Phase2	6.4	Amman	2016 - 2018
29.	Annual Improvement Program of Amman existing sewer Network: Phase 1	18.3	Amman	2016 - 2017
30.	Annual Improvement Program of Amman existing sewer Network: Phase 2	18.3	Amman	2020 - 2021
31.	Construction of Sewer Network and House Connections in the locality of Marj Al Hamam within Wadisseer District	19	Amman	2016 - 2018
32.	Construction of Wastewater Collection and House Connection for the locality of Wadisseer in Wadisseer District	76	Amman	2016 - 2018
33.	Construction of Sewer Network and House Connections in Khraibet Essooq, Jawa and Yadoodeh Localities within Quaismeh District	53	Amman	2016 - 2018
34.	Construction of Sewer Network and House Connections in the locality of Binayat within Na'oor District	6	Amman	2016 - 2018
35.	Construction of Sewer Network and House Connection for the unsewered locality of Um El Summaq within Na'oor District	4.8	Amman	2016 - 2018
36.	Construction of Sewer Network and House Connection for the unsewered locality of Badr Jadeda within Wadisseer	8.8	Amman	2016 - 2018
37.	Construction of wastewater collection system and house connections in Ira &Yargha area, Botna, Shona, and Treatment	30	Balqa	2017 - 2019
38.	Ma'mounieh Collection System & WWTP	7.1	Madaba	2016 - 2017
39.	Maieen Collection System & WWTP	7.3	Madaba	2016 - 2017
40.	Faisalieh Collection System & WWTP	6.7	Madaba	2016 - 2017

No.	Project Name	CAPEX (MJD)	Governorate	Years of Implementation
41.	Construction of wastewater collection system and house connection in Sukhneh, and transmission system from Sukhneh PS to EZPS	15	Zarqa	2016 - 2017
42.	Construction of wastewater collection system and house connections in unsewered areas in the East Zarqa System	14	Zarqa	2016 - 2017
43.	Construction of the wastewater collection and house connection and treatment cost for the un-sewered localities of Ajloun- Phase 1	30	Ajloun	2020 - 2022
44.	Construction of Wastewater Collection System and House Connections for Kofor Khal & Baliela areas in Jerash District	14	Jarash	2016 - 2017
45.	Construction of Wastewater Collection System and House Connections for Bal'ama	20	Mafraq	2016 - 2018
46.	Construction of Wastewater Collection System and House Connections for Badiah Shamaliyyeh Al Gharbiyyeh	14.2	Mafraq	2016 - 2017
47.	Construction of Wastewater Collection System and House Connections including Pumping Station for Manshiyyet Bani Hasan	5.2	Mafraq	2016 – 2017
48.	Construction of wastewater collection system and house connections for the rest of Mafraq City	16.6	Mafraq	2016 - 2017
49.	Construction of Wastewater Collection System in addition to WWTP for the unsewered localities in Koorah District- Birgish Project	41.5	Irbid	2017 - 2020
50.	Construction of wastewater collection system and house connections in the unsewered localities in Ramtha District- Sahel Horan	37	Irbid	2017 - 2019
51.	Construction of Wastewater Collection and house connections and the Treatment Cost needed in Qasabah Irbid District	40	Irbid	2017 - 2019
52.	Construction of sewer network system for Jafer Locality in addition to the wastewater treatment cost	5.3	Ma'an	2017 - 2019
53.	Mouta'a System (Trunk, Collection Sewer, House Connection)	16.6	Karak	2016 - 2018
54.	Construction of a new sewer network system for Western Villages of Irbid (Kufr Yoba, Bait Yafa, Jumha)	60	Irbid	2018 - 2020
55.	Studying & Construction of a new sewer network system for Mekhaba Area	50	Irbid	2023 - 2025
56.	Construction of a new sewer network system for North Salt, Ein AL Basha, and Baq'a (North & North East)	90	Balqa	2018 - 2020
57.	Construction of a new sewer network system for Salt including WWTP	10	Balqa	2016 - 2017
58.	Construction of a new sewer network system for Dair Alla, Almashareh, Shona North & South	200	Balqa	2018 - 2020
59.	Construction of a new sewer network system for Jarash	5	Jarash	2016
60.	Construction of a new sewer network system for Delal, Halabat, and AL Khaldieh	38	Zarqa	2023 – 2024

No.	Project Name	CAPEX (MJD)	Governorate	Years of Implementation
61.	Construction of a new sewer network system for Shava Badran (Three Packages)	24	Amman	2016 - 2018
62.	Construction of a new sewer network system for Qaser District, part of Qasaba District, Alrawda, Samakieh, Alrabah including WWTP	50	Karak	2023 - 2025
63.	Construction of a new sewer network system for Prince Hashim Rouda, Petra District, Eil District including lifting stations	9	Ma'an	2016 - 2018
64.	Construction of a new sewer network system for Athroh, Prince Haya, and Hay Alzera'a	5.7	Ma'an	2016 - 2017
65.	Jordan Valley Wastewater Project	42	Jordan Valley	2017 - 2019
66.	Grinatha, Alaresh and German Jordan University Collection System & WWTP	7	Madaba	2022 - 2025
67.	Construction Sewer Network and house connections in the unsewered Areas Phase 1	20	Amman	2016 - 2018
68.	Construction Sewer Network and house connections in the unsewered Areas Phase 2	14	Amman	2019 - 2025
Wastewater Treatment Plants				
69.	Expansion of Fuhais and Mahes WWTP	1.4	Balqa	2022 - 2023
70.	Expansion of As Salt WWTP	3	Balqa	2022 - 2024
71.	Expansion of East Jarash WWTP	1	Jarash	2016 - 2017
72.	Expansion of Madaba WWTP & Establishment of Wastewater Network	10	Madaba	2016 - 2018
73.	Expansion of Wadi Al Arab WWTP	4.8	Irbid	2017 - 2019
74.	Expansion of Central Irbid WWTP	2.2	Irbid	2022 - 2024
75.	Expansion of Ramtha WWTP: Phase 2	2.45	Irbid	2022 - 2024
76.	Expansion of Wadi Hassan WWTP	1.1	Irbid	2019 - 2021
77.	Expansion of Wadi Mousa WWTP	4.0	Ma'an	2022 - 2024
78.	Expansion of Aqaba WWTP	30.75	Aqaba	2017 - 2020
79.	Disposal of the Dry Sludge in the Northern Governorates	40	Northern Governorates	2016 - 2017
80.	Expansion of Ramtha WWTP Phase 1	14.7	Ramtha	2019 - 2021
81.	Establishment of Parallel conveyance line for the Treated Wastewater from Ain Ghazal WWTP	2	Balqa	2016
82.	Contribution in the Expansion of Kharbit As Samra for Handling Extra Amount of WW	230	Zarqa	2020 - 2024
83.	Establishment of Parallel conveyance line for the Treated Wastewater from Madaba WWTP to South Amman WWTP	20	Amman	2016 - 2017
84.	Establishment of Wastewater Treatment Plant Transported by Trunk to Ghor Safi Landfill	58	Karak	2023 - 2025
85.	Establishment of conveyance reuse line for the Treated Wastewater from Wadisseer to Kafreen	7	Amman	2017 - 2018
86.	Establishment of Parallel conveyance line trunk A	2	Madaba	2016 - 2017

No.	Project Name	CAPEX (MJD)	Governorate	Years of Implementation
87.	Establishment of Parallel conveyance line trunk B	2	Madaba	2018 - 2019
88.	Construction of New Tanker station (Sewage dumping) replacement of the existing Ain Ghazal	60	Amman	2016 -2018
Total CAPEX		**1,902.63**		

ENERGY PROJECTS AND OTHERS

The following projects comprise of the Energy Efficiency Projects, Renewable Energy Projects, Operation and Management Contracts. The total capital cost is 379.4 MJOD.

1. Solar Projects in the Water Sector of Jordan

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The initial phase of the project will result in reducing the electricity consumption cost (electricity bill) for the water sector by around 4 Million JD per year
Description	The Ministry of Water and Irrigation (MWI) is considering the implementation of renewable energy generation to reduce the cost of electricity in the water sector. In the attempt to set up a plan for the implementation of renewable energy projects feeding the existing water pumping stations, MWI has proposed 5 water pumping stations belonging to three different water companies in the central and northern part of Jordan - Zai Water Station - Zara Ma'en Water Station - Wadi Al Arab Water Station - Al Za'atari Water Station - Al Azraq Water Station Besides, MWI is looking to develop a centralized solar station based on the wheeling mechanism by 50MWpower capacity. This centralized station will provide electricity for the water sector around 99GWH.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2020

Operational Data

Water Supplied	NA
Water Saved	NA
% Allocation by Type of Use	NA

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	20%	20%	20%	20%	20%					
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	30		
IRR (%)	11	**ERR (%)**	9
NPV (M JOD)		**ENPV (M JOD)**	

2. Operation and Management Contracts/ Management, Operating & Maintenance of Shallala Wastewater Treatment Plant

Project Information

Location	Irbid
Objectives	To enhance the efficiency and the effectiveness of the wastewater treatment plant through participating the private sector
Description	Participating the private sector in the operation and management of the wastewater treatment plant. That will provide more efficiency and effectiveness on the operation and management of the wastewater treatment plant. Also, transferring the experience from the private sector to the WAJ, including the reduction of the financial burden on WAJ.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017

Operational Data

Water Supplied	NA
Water Saved	NA
% Allocation by Type of Use	NA

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	100%									
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	2		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

3. Operation and Management Contracts/ Management, Operating & Maintenance of Mafraq Wastewater Treatment Plant

Project Information

Location	Mafraq
Objectives	To enhance the efficiency and the effectiveness of the wastewater treatment plant through participating the private sector
Description	Participating the private sector in the operation and management of the wastewater treatment plant. That will provide more efficiency and effectiveness on the operation and management of the wastewater treatment plant. Also, transferring the experience from the private sector to the WAJ, including the reduction of the financial burden on WAJ.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2017

Operational Data

Water Supplied	NA
Water Saved	NA
% Allocation by Type of Use	NA

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	100%									
OPEX Outlay (%)		100%	100%	100%	100%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	0.4		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

4. Enhancing the Energy Efficiency in the Pumping Stations Project

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The project will result in reducing the electricity consumption cost (electricity bill). The saving in the energy will be around 30 GWH per a year, in addition to a reduction in the CO_2 emission.
Description	The EEP project is split into two phases: ✓ Phase 1 - Consultancy Services for Energy Assessments in the Jordanian Water Supply System and ✓ Phase 2 – Consulting Services for Implementation of Investment Measures for improving the Efficiency of Energetic Components of Jordanian Water Supply Systems, with respective the implementation of the concepts.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2020

Operational Data

Water Supplied	N/A
Water Saved	N/A
% Allocation by Type of Use	N/A

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	20%	20%	20%	20%					
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	32		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

5. Enhancing the Energy Efficiency in the Well Fields and the WWTP Project

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The project will result in reducing the electricity consumption cost (electricity bill). The saving in the energy will be around 30 GWH per a year, in addition to a reduction in the CO_2 emission.
Description	The EEP project is split into two phases: ✓ Phase 1 - Consultancy Services for Energy Assessments in the Jordanian Water Supply System and ✓ Phase 2 – Consulting Services for Implementation of Investment Measures for improving the Efficiency of Energetic Components of Jordanian Water Supply Systems, with respective the implementation of the concepts.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2020

Operational Data

Water Supplied	N/A
Water Saved	N/A
% Allocation by Type of Use	N/A

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	20%	20%	20%	20%					
OPEX Outlay (%)			40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	40		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

6. Generating the Hydropower from King Talal Dam through the Participation of the Private Sector

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The project will result in reducing the electricity consumption cost (electricity bill)
Description	Establishment a turbine to generate electricity from the falling of the water in the dam.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2019

Operational Data

Water Supplied	N/A
Water Saved	N/A
% Allocation by Type of Use	N/A

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	20%	20%	40%	20%						
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	20		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

7. Generating the Electricity Power from the Hydropower Utilizing the Difference of Altitudes (Different Locations)

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The project will result in reducing the electricity consumption cost (electricity bill)
Description	Establishment a turbine to generate electricity from the difference in the altitude in the water pipelines as well as the wastewater lines wherever possible.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2022

Operational Data

Water Supplied	N/A
Water Saved	N/A
% Allocation by Type of Use	N/A

Implementation Schedule

Year	1	2	3	4	5	6	7	8	9	10
CAPEX Outlay (%)	10%	10%	10%	20%	20%	20%	10%			
OPEX Outlay (%)			40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	30		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

8. Utilizing the Biogas Produced out of Wastewater Treated as well as the Sludge in WWTPs

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The project will result in reducing the electricity consumption cost (electricity bill)
Description	

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2020 – 2025

Operational Data

Water Supplied	N/A
Water Saved	N/A
% Allocation by Type of Use	N/A

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	20%	20%	20%	20%				
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	25		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

9. Establishing a Centralized Solar Power Station & Wind Power Station

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The project will result in reducing the electricity consumption cost (electricity bill)
Description	Establishment of a centralized renewable station with total capacity of 50MWpower. This centralized station will provide electricity for the water sector around 99GWH. The project will be developed based on direct proposal received by ministry of energy (BOO).

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2016 – 2022

Operational Data

Water Supplied	N/A
Water Saved	N/A
% Allocation by Type of Use	N/A

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	10%	20%	20%	20%	10%			
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	50		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

10. Establishing a centralized Solar Power Station & Wind Power Station

Project Information

Location	National
Objectives	Reducing the cost of electricity in the water sector. The project will result in reducing the electricity consumption cost (electricity bill)
Description	Solar Power Plant that will be operated on the Wheeling bases with total capacity of 150 MW_{power} for the DISI project.

Project Status

Status	Concept phase, unfunded
Financing	Not available
Expected Construction Date	2018 – 2020

Operational Data

Water Supplied	N/A
Water Saved	N/A
% Allocation by Type of Use	N/A

Implementation Schedule

Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
CAPEX Outlay (%)	10%	10%	20%	20%	20%	20%				
OPEX Outlay (%)		20%	40%	60%	80%	100%	100%	100%	100%	100%

Financial and Economic Indicators

Capital Cost (M JOD)	150		
IRR (%)		**ERR (%)**	
NPV (M JOD)		**ENPV (M JOD)**	

JORDAN RESPONSE PLAN JRP

Jordan is hosting an estimated 1.4 million Syrian nationals dispersed across the country. It is expected that by the end of year 2015, around 700,000 Syrian refugees, will still be living in the northern governorates (Amman, Irbid, Mafraq, Zarqa, Jerash), the other 700,000 Syrians came to Jordan before the conflict started in year 2011.

The influx of Syrian refugees[3] has overburdened water and sanitation systems and impacted on the consumption rates and operations especially in the Northern Areas of Jordan. To cope with this situation, host communities are giving up part of their share of available Water, Sanitation, and Hygiene WASH services and facilities in favor of the Syrians residing within their neighborhoods. Minimum standards of water supply, sanitation and hygiene services are provided to all refugees, either in camp or non-camp settings, nevertheless, the frequency of water delivery to households in the northern governorates, which host around half of the refugees has worsened with the exponential increase of their population. Consequently, per capita daily consumption has dropped in those areas from over (88 to 64.5) liters per capita per day since Syrian refugees began to arrive in Jordan, this quantity can even be significantly lower.

Hosting Syrian refugees has impacted heavily Jordan´s public finances, increasing Government expenditure on subsidies including water. The crisis has also impacted negatively WASH services in public places, including schools.

The emergency funds provided by the international donors over the past three years went mostly into reinforcement of the water supply infrastructure. Energy consumption went up by more than 30% due to tariff increases and additional water pumping. The subsidized water tariff and low payment morale in the refugee affected host communities resulted in lower revenues. The water companies did not receive any support in re-covering their losses and are in a precarious financial situation endangering the provision of services.

[3] http://data.unhcr.org/syrianrefugees

Major infrastructure interventions funded, either captures through Jordan Response Information System for Syrian Crisis JORISS or not yet reported to the system, included rehabilitation of water sources, pumping systems, water conveyers and distribution networks; new and rehabilitated wastewater treatment plants, improvements in wastewater collection networks and area specific rehabilitation of sewer lines; improvements and rehabilitation of WASH facilities in schools and other public places, and water quality monitoring.

Some of the other interventions included energy improvements of existing water and sanitation systems, creating awareness on solid waste disposal and key household hygiene practices amongst communities and refugees; building capacity of implementers at all levels and host communities in particular, in management and use of facilities and services provided.

There are about 25 major WASH implementation partners including the Government (all levels) that has intervened in all 12 Governorates and especially those with the highest concentration of Syrian refugees and residents. The JRP partners have assisted with WASH services and other support to about 4.5 million affected populations (Syrians and Jordanians) in 2015. The JRP WASH interventions have followed the national standards and protocols as applied to water, sanitation and hygiene service provision. In the refugee camps, minimum standards have been developed and are being implemented to ensure a basic service level by partners.

The vulnerability of the Jordanian population is relatively high especially for areas categorized as severely vulnerable[4] even in the areas with low concentrations of Syrian refugees. Jordan is also experiencing a natural population growth (of around 2.2 percent annually), nevertheless, two major factors are expanding the gap between water demand and supply: the number of Syrian nationals present in the country and the need to satisfy the demand for the domestic and economic sectors.

The increase in demand from the Syrian refugees is further reducing the amount and frequency of water available for Jordanians. There is a specific risk associated to the WASH needs of both Syrian

[4] refer CVA conducted by MoPIC 2015

refugees and Jordanians living in host communities in terms of cost and efforts[5] and a persistent risk of 'failure to deliver'.

Water scarcity and the state of the water supply and sewage networks in Jordan highlight the magnitude of the investment that Jordan needs as it attempts to meet the additional water and sanitation requirements of the refugees and host communities.

The JRP WASH 2016-2018 will focus on the following interventions for both refugee and resilience responses:

1) Rehabilitate and enhance water and sanitation infrastructure in the host community/refugee settlement (outside camps) locations to restore adequacy & efficiency of safe water distribution and sewerage collection networks.
2) Contributing to the operation & maintenance costs of the service providers.
3) Install new/upgrade existing sewerage treatment facilities to meet the additional & expanded demand for collection and treatment of waste and wastewater and to prevent epidemics.
4) Rehabilitate and improve water distribution networks (NRW reduction), WASH in schools, system efficiency and water quality monitoring.
5) Develop sector capacity through national and sub national institutional improvements.
6) Foster partnerships for funding and technical support; private sector investment and NGO contribution for accelerating and improving implementation
7) Improved sector coordination, project management and performance monitoring/reporting
8) Improve implementer skills and technical capacities to manage and implement improvements.
9) Support water reuse where possible

In order to understand some linkages between some proposed interventions with the Syria crisis, it is important to state that water projects, may need to be implemented in Zarqa or Mafraq, for instance, in order to increase water availability for people in Jarash, Irbid or Ajloun, as water and wastewater systems are interlinked.

The WASH sector proposes to implement the JRP 2016-2018 for refugees and resilience interventions in 3 years. 2016 will include unfunded interventions of JRP 2015 and also interventions identified by the Comprehensive Vulnerability Assessment and Sector Vulnerability Assessment (CVA & SVA), as the most urgent priority for the vulnerable communities, locations and systems. Budgets for 2017 as well as for 2018 embedded separately. JRP 2016-2018, will essentially be those

[5] Vulnerability Assessment Framework (VAF),*WASH sector model (WASH expenditure indicator)*, 2015

major project interventions targeting a longer time-frame (3 years) to implement and will impact a larger number of communities, districts and Governorates.

PROPOSED WASH BUDGET FOR JRP 2016-2018 in millions USD				
	2016	**2017**	**2018**	
1. Specific Objectives for Refugee Response				
Provided safe and equitable access to water services as per agreed standards in camps and standards in host community	33.52	18.97	12.17	
Provided safe and equitable access to gender appropriate sanitation services	32.97	25.02	22.28	
Improved environmental health as a result of the practice of key hygiene activities	5.81	5.81	5.81	
	72.30	**49.80**	**40.26**	**162.36**
2. Specific Objectives for Resilience Strengthening				
Quantity and quality and efficiency of safe drinking water delivery improved and system optimization	78.1	82.2	91	
Sanitation services expanded and improved.	65.85	107.97	93.75	
WASH services in schools and other public institutions improved	1.35	1.35	1.35	
Enhanced Planning, implementation and monitoring capacity of water and sanitation institutions and agencies	21.2	21.2	21.2	
	166.5	**212.72**	**207.30**	**586.52**
Total	**238.8**	**262.52**	**247.56**	**748.88**

4 INVESTMENT OPPORTUNITIES

Public Private Participations PPPs have the potential to deliver infrastructure services more rapidly, with higher quality, and at a lower cost than traditional government projects. However, PPPs also involve significant risks, and they are not right for all projects. Governments therefore needs to know how PPPs can deliver Value for Money VFM; how to structure projects so they deliver these benefits; how to avoid common risks; and in what kind of projects are PPPs most likely to add value.

PPPs benefit infrastructure service delivery by addressing many of the challenges inherent to traditional government procurement practices.

Sector	**Water Sector**
Project Name	Read Sea Dead Sea Water Conveyance Project - (RSDS) Project
Background Brief	The economic development of the past two decades has created enormous pressures on the quality of groundwater and surface water resources. Besides, Jordan faces water demand that exceeds water availability. In fact, all of the Kingdom's groundwater basins are currently over-exploited, where over 50% of water resources stem from groundwater basins. Surface water resources are vulnerable due to varying rainfall patterns and distribution and the limited efforts to harness these resources. In addition to that, the capacity of wastewater collection and treatment is still below its potential. Further structural and non-structural factors (such as population growth, climate change, NRW) aggravate this situation. To ensure Jordan needs of fresh water up to year 2040, and to maintain the environment of the Dead Sea from degradation, reduce dependence on over abstracted existing underground resources in order to save from further depletion, and to have a reliable and sustainable new source (desalination of sea water), and to plan for future generations of Jordan, it was agreed to proceed with the implementation of Phase I of the Red Sea- Dead Sea water conveyance project
Concept-Beneficiaries	Hashemite Kingdom of Jordan, Palestinian Authority, Israel

Project Description	In order to increase the water resources in Jordan to meet the increasing demand ✓ MWI is planning to start with an initial phase (phase I), which includes the desalination of about (80-100) MCM/yr. by extracting (177-222) MCM/yr. of sea water from the Red Sea at the Northern Intake location. The intake structure to be constructed to abstract one third of the ultimate capacity for future sea water extraction of (2.2 billion MCM/yr.) with the brine water to be discharged to the Dead Sea at this initial phase. ✓ The sea water will be treated and desalinated at Aqaba, at a location of about 5-11 km north of the Aqaba airport or any other suitable location; taking into consideration that flood protection shall be investigated and considered in the design and implementation of the treatment and desalination plant location. ✓ The Ownership of the desalination plant, the pipelines, and all other associated infrastructure will be implemented on the Jordanian territory and will be 100% owned by Jordan. The cost of transporting potable water from the desalination plant for local use shall be covered by each Beneficiary Party taking water delivery. ✓ The proposed Project is to be implemented on a Build, Operate and Transfer (BOT) basis. Jordan and Israel will both have to conclude agreements, so that Israel will buy an allocated share of the potable water on" a take or pay basis" from the desalinated plant in Aqaba at the BOT contractor's cost, and Jordan will buy the same amount from Lake Tiberius at agreed price of about 0.42USD/m^3. ✓ Based on previous studies under the Red Sea Dead Sea Water Conveyance Study Program, it appears that: ➢ the proposed intake structure, reject brine pipeline and associated infrastructure are technically feasible; ➢ there are some environmental impacts, but these can be mitigated; ➢ The expected social impacts are limited and can be mitigated.
Project Components:	1. Construction of the intake facility with a capacity to abstract about (700) mcm/year of the Red Sea water at the Northern site of Aqaba Gulf. 2. Construction of an intake pumping station, one 3.7 meter diameter 2 km in length through Ayla, and two (1400) mm or one (2.2) mm, (15-20) km in length pipelines to transfer the Red Sea water to the desalination plant. 3. Construction of a treatment and a desalination plant with a capacity of (80-100) mcm/year north of Aqaba international airport. 4. Construction of about 17 km of 900mm freshwater pipeline from desalination plant to Aqaba terminal reservoir, and 4 km of 1000mm pipeline to deliver the freshwater to Israel. 5. Construction of two pumping stations to pump the resulting brine to a reservoir at the highest point in Wadi Araba near Risheh area. 6. Construction of (1.4 -1.8) mm diameter, (65) km length pipe line to convey the brine from the desalination plant to the storage reservoir in Risheh, and a (1400) mm diameter, (140) km length pipe line to convey the brine from the reservoir to the Dead Sea, and the construction of the facility to discharge the brine in the Dead Sea. 7. Electrical Instruments, Chlorination, Connection from the National Electrical Grid to the project facilities, and a SCADA System
Project Objectives and Expected	The main objectives behind the development of the RSDS Project are 1. Establish a Secure and Affordable Water Supply for Jordan while Saving the Dead Sea from Extinction 2. Support Widespread Economic Growth in Jordan

<table>
<tr><td colspan="2">Results:</td><td colspan="3">3. Provide for Potential Regional Water Sharing
4. Facilitate Private and Public Partnership through a (BOT) project.
Besides, the main reasons of the RSDS Project / initial phase (phase I) is to desalinate (80-100) MCM/yr. which will be partly swapped with Israel at Aqaba (about 50mcm/yr.), and to supply Aqaba Water Company AWC with the quantities in order to receive water from Israel for the swapped quantities in the Northern Jordan Valley to alleviate the water shortages in the Northern and other Governorates in Jordan through the Wadi Arab system II Project. Besides, 20 MCM will be reallocated for the irrigation purposes. Also this initial phase will be the base of the overall project which aims at increasing the desalinated water quantities to meet the water deficit all over the kingdom. The brine water in this initial phase will be discharged to the Dead Sea, the coming phases will be implemented in stages according to ministry of Water & Irrigation MWI plans for supply vs. demand time targets. It is anticipated for future expansion of the proposed initial phase, that the brine will also be discharged to the Dead Sea to save it from further decrease in its water level and area.
Phase II (2020 – 2025) comprises of the establishment of a treatment plant with a capacity of 150 Million Meter Cubic, including a transmission pipeline of 2000 mm diameter with a length of 350 KM from Aqaba through Karak on the Al Kharazeh road. The location of the desalination plant is at the north of Aqaba international airport, while the intake location is the northern part of the Red sea at Aqaba governorate.</td></tr>
<tr><td colspan="2">Project Status</td><td colspan="3">phase I (On-going), phase II (Concept)</td></tr>
<tr><td colspan="2">Responsible institution</td><td colspan="3">- Ministry of Water & Irrigation, MWI
- Jordan Valley Authority, JVA</td></tr>
<tr><td colspan="2">Implementation modality</td><td colspan="3">Engineering, Procurement & Construction EPC</td></tr>
<tr><td rowspan="2">Partners</td><td>Private Sector:</td><td colspan="2"></td><td>Type of Partnership: … BOT</td></tr>
<tr><td>Public Sector:</td><td colspan="3">Ministry of Water & Irrigation</td></tr>
<tr><td colspan="2">Location</td><td colspan="2">Area: Wadi Araba</td><td>Governorate: Aqaba</td></tr>
<tr><td colspan="2">Execution Timeline</td><td>(9) Years</td><td>Start Date:2017</td><td>End Date: 2025</td></tr>
</table>

Project Cost (Investment Amount (USD Million)	1,962 for the both phases (phase I 650 MJD and phase II 1,312 MJD)
Responsible Agents/ Contact Person	Ministry of Water & Irrigation, MWI Jordan Valley Authority, JVA

Sector	**Water Sector**
Project Name	Augmentation of Water Supply for Central and Northern Jordan from Deep Aquifer (Sheediyya – Al Hasa)
Background Brief	This project proposal describes water supply infrastructures urgently needed to cope with the increased water demand and scarcity in Jordan. The influx of around 1.4 million Syrian refugees (inhabitants) and the low amounts of rainfall in recent years have exerted tremendous pressure on the government of Jordan to respond to the water supply challenges. Due to the presence of Syrian refugees mainly in the northern and central parts of Jordan, water supply in the entire country had to be rearranged. Although water supply from the Disi wellfield (100 MCM/a) became operational in 07/2013, part of this amount will now be diverted to the middle and northern governorates. Well fields previously supplying Amman, like Qatrana, Siwaqa, Lajjun, Hidan and Corridor, have now been modified in order to provide water to other cities not able to meet their demand, like Irbid, Zarqa, Kerak and Madaba. The implementation of the Red Sea - Dead Sea project is still uncertain and may take many years. A quick solution is needed to cover water supply deficits for the northern and central parts of Jordan in the near future. The northern and central parts of Jordan urgently need an additional 50 MCM/a (58,000 m^3/d) in 2018. Such a high amount can only be provided from the Deep Aquifer (Ram Group) as the main aquifer (A7/B2) is highly overused; showing high groundwater level declines and consequently has already fallen dry in some parts of the country. Therefore there is no alternative to this proposed solution.
Concept-Beneficiaries	Hashemite Kingdom of Jordan

Project Description	Ministry of Water and Irrigation MWI intends to engage an Engineering Consultant for the "Consulting Services for Preparation of Final Design and Tender Documents. MWI intends to engage an Engineering Consultant for the "Consulting Services for Preparation of Final Design and Tender Documents, Assistance to MWI,WAJ in Tendering and Contracting of the Project and Site Supervision". The detailed design and the tender documents have to be prepared in such a detail that there will be no additional detailed engineering necessary on the part of the respective suppliers and contractors. Based on the documents prepared by the Consultant the suppliers and contractors shall be in the position to offer and supply the required goods and construction services. The consultancy services will comprise 1. Identification of Measures and Preliminary Design (Phase 1) 2. Preparation of Final Design and Tender Documents (Phase 2) 3. Assistance to MWI, WAJ in Tendering and Contracting (Phase 3) 4. Site Supervision of Works (Phase 4) 5. Assistance to the MWI, WAJ during Liability Period (Phase 5).
Project Components:	✓ 44 wells (37 production wells, 7 stand-by wells) ✓ 5 pumping stations ✓ pipeline (Jurf ed Darawish - Damikhi, 80 km) and connections to wells ✓ 1 treatment plant ✓ 2 reservoirs
Project Objectives and Expected Results:	MWI has started drilling a number of deep wells reaching this aquifer in 1999 (Lajjun well field). Operation of the Lajjun well field showed that yield in the upper part (where Kurnub and Ram Group aquifers are combined) is less than in the deeper part, therefore drilling of the new proposed wells will target mainly the deeper part of the deep aquifer system. Drilling of exploration wells by MWI (one well in each proposed zone) along the Disi pipeline will start this year. Salinity (TDS) is expected to range between less than 1,000 and 2,500 mg/L. Water conveyance from Jurf ed Darawish to Damikhi requires only few pumping stations. A pipeline between Damikhi and Amman already exists so that only a small section of pipeline between Damikhi and Jurf ed Darawish is required (80 km). The elevated salinity may require treatment (desalination). Therefore a desalination plant has to be built near Damikhi. Two reservoirs, functioning as

		buffers, are required, each with a capacity of 100,000 m³, one located before the treatment plant, one after.		
Project Status		Under Studying		
Responsible institution		- Ministry of Water & Irrigation, MWI - Ministry of Environment - Water Authority of Jordan, WAJ		
Implementation modality		Engineering, Procurement & Construction, EPC		
Partners	**Private Sector:**	Private Sector		**Type of Partnership:** BOT
	Public Sector:	Ministry of Water & Irrigation		
Location		**Area:** Amman, Karak		**Governorate:** Amman, Karak
Execution Timeline		(5) Years	**Start Date:** 2017	**End Date:** 2021
Project Cost (Investment Amount (JD Million)		150		
Responsible Agents/Contact Person		Ministry of Water & Irrigation, MWI Water Authority of Jordan, WAJ		

Sector		**Water Sector**	
Project Name		Performance Based Non Revenue Water NRW reduction Project	
Background Brief		One of the biggest problems in the water sector is non-revenue water (NRW); the water is sent into the system but is not billed. One reason for revenue loss is because the water leaks out of the system due to the poor quality of equipment and pipes. Another reason is that the water is delivered to homes and businesses, but not billed due to malfunctioning meters or illegal connections. Jordan's NRW rates are extremely high compared to other countries with low water supply. In part, this may be due to the non-continuous supply, i.e. the starting and stopping of water supply, which damages the system. In places where continuous supply has been achieved, like Aqaba, non-revenue water is significantly reduced. However, even with non-continuous supply, Jordan's performance could be improved.	
Concept-Beneficiaries		Hashemite Kingdom of Jordan	
Project Description		NRW reduction is one of the core strategies of MWI, besides the work under implementation by the water institution; MWI is willing to outsource specific areas on a performance based contracting strategy. The work usually starts with identifying the baseline levels of NRW, the targets are then set with sharing the gains. The average NRW percentage all over the Kingdom is the range of 41-44%.	
Project Components:		1. Determining the service areas to be outsourced 2. Outsourcing the determined areas on a performance based contracting	
Project Objectives and Expected Results:		1. Better data collection regarding the amount of non-revenue water due to technical losses (leaking pipes, etc.) and administrative losses (illegal connections, etc.) to enable better targeting of NRW reduction resources. 2. Development of an asset management plan that identifies the condition of assets and plans for the operation, management and repairs needed to maintain the infrastructure annually and over the longer term. 3. Expansion of current efforts to collect information on water assets and analyze their maintenance needs as well as the impact of asset failures (i.e. a pipe burst) on customers. 4. Accounting for the full cost of water in billing for water sold in bulk to the water companies and the Water Authority of Jordan. Accounting for the full cost of water, rather than just the subsidized price, would provide more incentive to reduce non-revenue water. It would give further incentive to managers with bonuses tied to profit to address NRW. 5. Provision of subsides to water companies per connection, per population or per meter of pipe basis with an agreement to decrease the subsidy gradually each year. This would provide incentive to water companies to address NRW while potentially providing gains to its customers in the form of reduced costs and improved service.	
Project Status		Under Studying	
Responsible institution		- Ministry of Water & Irrigation, MWI - Water Authority of Jordan, WAJ	
Implementation modality		Engineering, Procurement & Construction, EPC	
Partners	**Private Sector:**		**Type of Partnership:** BOT
	Public	Ministry of Water & Irrigation	

	Sector:		
Location	**Area:**		**Governorate:**
Execution Timeline	(10) Years	**Start Date:**2016	**End Date:** 2025
Project Cost (Investment Amount (USD Million)	20		
Responsible Agents/ Contact Person	Ministry of Water & Irrigation, MWI Water Authority of Jordan, WAJ		

Sector		**Water Sector**	
Project Name		Mixed industrial WWTP Project	
Background Brief		Jordan is considered as one of the four most water scarce countries in the World. The limited water resources are exposed to pollution. Population growth as well as the industry growth is expected to increase the pressure on available water resources. Conventional water resources in Jordan consist of groundwater and surface water. Twelve groundwater basins have been identified in Jordan. Some of them are exploited to their maximum capacity, and others are overexploited, threatening their future use. Jordan's first wastewater treatment plant was established in 1970. The total number of treatment plants is currently 22, treating about 107 MCM/year, or about 98% of the collected wastewater. The Jordanian standards restrict the re-use of treated wastewater. Water is reused mainly for irrigation in the Jordan Valley, though a small share is allocated to industry. The Jordanian Ministry of Water and Irrigation plans to increase the amount of reused wastewater to 232 million cubic meters/year by 2020. The site of about 500 Dunums outside Zarqa city on the highway near Dhuleil, Hallabat and Khalidia in a location known Wadi Al-Ghudran	
Concept-Beneficiaries		Hashemite Kingdom of Jordan	
Project Description		Amman Zarqa Area industries dump the produced industrial wastewater at Al Akaider facility which is located at the northern Jordan boarders with Syria (100 km away). Studies has been conducted to construct an industrial WWTP in Halabat area as the most suitable option, the implementation strategy explored different options including a BOT scheme. The main governmental stakeholder is Ministry of Environment and the Jordan chamber of industry (Design flow will be 2500 m^3/day which addresses the current minimum anticipated flow need, the plant will be designed with provisions to add parallel treatment modules each with capability to an anticipated 2500 m^3/day, implementation of phase 2 will provide an anticipated total plant capacity of 5000 m^3/day and phase 3 will provide 7500 m^3/day to address future maximum flow rate.	
Project Components:		Construction of an industrial Wastewater Treatment Plant in Halabat area, to handle the produced industrial wastewater	
Project Objectives and Expected Results:		1. Protecting the groundwater basin from the pollution 2. Mitigate the environmental impact due to the dump of the industrial WW 3. To develop a cost-effective treatment and disposal alternative that needs the needs of beneficiary partners such as Zarqa chamber of industry (ZCI) and their constituencies, including providing opportunities for water conversation via reuse and optimal cost of operations	
Project Status		Under Studying	
Responsible institution		- Ministry of Water & Irrigation, MWI - Ministry of Environment - Water Authority of Jordan, WAJ - Chamber of Industry, Jordan	
Implementation modality		Engineering, Procurement & Construction, EPC	
Partners	**Private Sector:**		**Type of Partnership:** BOT

	Public Sector:	Ministry of Water & Irrigation		
Location		**Area:** Amman Zarqa		**Governorate:** Amman, Zarqa
Execution Timeline		(1) Years	**Start Date:** 2016	**End Date:**
Project Cost (Investment Amount (USD Million)		(75 – 100)		
Responsible Agents/Contact Person		Ministry of Water & Irrigation, MWI Water Authority of Jordan, WAJ		

Sector	Water Sector
Project Name	Reuse of treated Waste Water TWW (Conveyance of Treated WW from Amman to Jordan Valley) Project
Background Brief	The Hashemite Kingdom of Jordan is an arid to semi-arid country, with a land area of approximately 90,000 km^2. The population is more than 6 million with a recent average growth rate of about 3.5% due to natural and non-voluntary migration. About 73% of the population lives in urban areas concentrated in the northern and middle parts of Jordan. Water resources in Jordan depend on variable rainfall and therefore are characterized by scarcity, variability, and uncertainty. The per capita share of renewable water resources is 145 m^3/capita/year and Jordan is therefore ranked as the fourth poorest country with regard to water resources worldwide. The utilization of recycled water within Jordan has been made possible by the development and evolution of a sound legislative and legal foundation. There are several sets of standards that have paved the way. These include the first law regarding the operation of municipal sewer systems, which was first established in 1955, and the original public health standards first enacted in 1971. Today there are several sets of standards and guidelines for wastewater, sludge, soil and crops that were derived from the work of the Water Authority of Jordan and the Ministry of Water and Irrigation.
Concept-Beneficiaries	Hashemite Kingdom of Jordan
Project Description	South Amman WWTP is designed to produce a treated wastewater effluent of 20 MCM/year; the water produced is within the Jordanian standards. Ministry of water and Irrigation strategy is focusing on utilizing TWW; the reuse of this treated wastewater for irrigation purpose after blending it with surface water will allow freeing fresh water used there to be allocated to drinking water (substituting Fresh water with treated wastewater). The areas that can be planted on the TWW are mainly in the Jordan Valley, small areas around the treatment plan can also be utilized. MWI, as part of it plans, conceptualize a conveyance system consists of receiving treated effluent at the outlet from South Amman treatment plant , then pumping it until Madaba city where after that the water will flow by gravity due to the steep slope towards the Jordan. The water can be mixed with Kafreen Dam water then fed to the irrigation system in the Jordan valley.
Project Components:	1. Establishing the needed pipelines 2. Establishing the needed pumping stations
Project Objectives and Expected Results:	1. Renewable freshwater resources have to be protected and saved for drinking water. Therefore, the agricultural sector must be prepared to depend more and more on marginal water resources such as treated wastewater 2. Encourage the private sector involvement in sanitation and wastewater reuse, since the private sector is still limited in Jordan and needs to be further extended for sanitation and wastewater reuse.
Project Status	The initiative is ready for implementation through Jordan Valley Authority of one of the Water Users Associations with potential off take of the water
Responsible institution	- Ministry of Water & Irrigation, MWI - Jordan Valley Authority, JVA - Water Authority of Jordan, WAJ
Implementation	Engineering, Procurement & Construction, EPC

modality				
Partners	**Private Sector:**			**Type of Partnership:** BOT
	Public Sector:	Ministry of Water & Irrigation		
Location		**Area:** Jordan Valley		**Governorate:**
Execution Timeline		(25) Years	**Start Date:**2016	**End Date:**
Project Cost (Investment Amount (USD Million)		(50 – 150), Given that operating the treatment plant also may be part of the deal (pipeline and pumping station) which increase the overall volume of the project for 25 years to be in the range of 150 USD Million		
Responsible Agents/ Contact Person		Ministry of Water & Irrigation, MWI Jordan Valley Authority, JVA Water Authority of Jordan, WAJ		

5 MONITORING & EVALUATION

Monitoring and evaluating M&E program performance enables the improved management of the outputs and outcomes while encouraging the allocation of effort and resources in the direction where it will have the greatest impact. M&E can play a crucial role in keeping plans on track, create the basis for reassessing priorities and create an evidence base for current and future programs and projects through the systematic collection and analysis of information on the implementation and/or execution of a project. Until recently, M&E has primarily met the needs for proving or legitimizing the purpose of the strategic plan by demonstrating the effective use of resources. The Legitimization function demonstrates whether reforms are having the desired effect in order to be accountable to clients, beneficiaries, development partners and taxpayers for the use of resources.

M&E as a legitimization function, which prove whether, are we achieving the desired benefits for the right targets? Are we achieving these benefits as efficiently and effectively as we can?

The inadequate monitoring procedures, as well as weak management information systems, and the lack of involvement of the stakeholders in carrying out performance monitoring and evaluation, have led to failure to conduct effective management audits of Water Authorities, to weak and unreliable storage of information, to weak evaluation and dissemination of information to stakeholders, including consumers, to inadequate monitoring of scheme performance, and neglect in the evaluation of schemes so as to control performance.

The strategy for performance monitoring will be to develop a comprehensive reporting, evaluation, and feedback mechanism to the organization responsible for monitoring and regulation, to introduce computerization of performance monitoring records and evaluation, to involve all key stakeholders in the monitoring and evaluation process.

From an impact perspective, it is often necessary to 'prove impact' in order to make resource allocation decisions and to ensure the most effective use of limited resources towards the goal of increasing prosperity in the developing world. Consequently, there is a need for rigor in the means of assessing results that have they increased economic growth and reduced poverty? Answering these questions is extremely challenging. However efforts are being made to adopt more rigorous practices including the use of systematic, quantitative approaches and analysis.

During the last decades or so, GOJ has made important progress toward increasing its citizens' access to water supply and sanitation. However, current access is well below the Government's objectives for the current year. Achieving those objectives will require substantial capital investments and considerable development of the relevant institutions and systems in the sector.

The Water Sector Capital Investment Plan (CIP) that has been developed provides GOJ with a valuable tool for identifying and planning those investments and institutional developments. Having agreed upon the objectives and the means it will pursue to achieve the objectives, MWI needs an effective way to track its progress. Monitoring progress is a way to align plans with what is actually happening in the sector, by evaluating actual performance against targeted performance and feeding the information from the comparison back into the planning process. This sort of dynamic planning is done with M&E system. In general, M&E system allows for coordinated and comprehensive gathering, storage, communication, and analysis of relevant information. It ensures that stakeholders are provided with early indications of progress or obstacles towards achieving stated goals, and identifies achievements and areas of weakness that may need special attention. M&E is widely applied throughout the world, from monitoring governance to conflict prevention, to investment planning. M&E system specific for water supply and sanitation must cover the activities and performance of a wide range of individuals and entities. GOJ has made great progress toward developing such an M&E system for water supply and sanitation. This document proposes specific indicators for monitoring performance in water supply, sanitation, and irrigation. It begins with an overview of the reasons for and ways to monitor and evaluate in Section 2 & Section 3 then provides the justification and target values for recommended performance indicators for water supply, sanitation, and irrigation. Section 4 describes the process for monitoring those performance indicators, and Section 5 discusses how evaluating and learning are key aspects of the planning and implementation process. This document serves as a primer and an introduction to the development and use of an M&E system for MWI responsible for Water Supply and Sanitation.

Monitoring and Evaluation, (What and Why)

An assessment of the effectiveness of investments in water supply and sanitation requires a way to monitor the changes that result from those investments. If investments are effective, they will lead to improvements in performance that contribute to reaching the goals that were set during investment planning. In order to know if the sector is improving, measurements of performance need to be taken periodically and compared to the investment goals. For example, if the Government wants 100 percent of the population to have access to improved water by 2025, it should determine what percentage of the population has such access today, then measure access periodically (for example every three years) to see if it is increasing at a rate that will achieve the goal for 2025. The results of periodic measurements will inform the GOJ of the effectiveness of

the chosen investments. If performance is not progressing at a rate that will reach the targeted level by the specified date, the GOJ can respond in the short term by taking corrective action. In the long term, analysis of the data on performance can inform the GOJ of what may have gone wrong; investment planning can then be adjusted based on the lessons learned in the process. M&E is an on-going process that should occur in parallel with investment planning. As performance targets for investment are updated (routinely, every three to five years), the evaluation yardstick for performance measurements should also be updated. In this way, investment planning and monitoring and evaluation inform and supplement each other, resulting in better information exchange and coordination in the sector.

Ideally, planned investments in water supply and sanitation will improve the level of access, efficiency, and quality sufficiently to reach the level of performance targeted during the investment planning phase. However, during the three to five years that elapse between planning phases, the situation and needs of the sector may change. These changes have implications for investments that need to be accounted for when new plans are made. M&E system is a way to track and respond to these changes on a continuous basis, in order to maintain the level of progress that is desired for the sector. A well-developed M&E system provides a steady flow of information that can be used to track performance in the areas targeted during investment planning. In order to track the effectiveness of investments, future goals for performance must be set using quantitative targets. For instance, progress in providing the population with potable water can be quantified in percentage terms (for example, the proportion of the population that has access to improved water). By taking periodic measurements on this and other indicators of performance in the sector, the GOJ can learn what sorts of investments are effective, and which are not. The information generated by the M&E system should be evaluated before the next investment planning process so that the GOJ can analyze the appropriateness of past investments and performance targets. Lessons learned through this analysis should be applied to the next round of planning in order to adjust performance targets and achieve greater effectiveness of investments.

Choosing Indicators and Setting Targets

The creation of an M&E system for the water sector starts with the selection of indicators for tracking performance within each of the sub-sectors: water supply; sanitation and hygiene; and irrigation. For each indicator, short, medium, and long-term targets for performance should be set. This will enable the GOJ to track actual progress against targets; such monitoring can then guide adjustments to planning in the sector. This sort of iterative process can achieve more efficient investment over time. Tracking actual performance against planned targets requires a standard set of indicators that are applied to the entire the Kingdom over many planning periods. It also requires that the data collected on each of the indicators be reliable, consistently reported, routinely aggregated, and easily accessible as public information. The Government must establish and strengthen mechanisms for ensuring data quality, and the upkeep and accessibility of data.

The Water Sector Capital Investment Plan 2016 – 2025 contemplates some of these indicators—specifically, those that relate to access to improved water and improved sanitation, and the operational and financial efficiency. In order to build upon existing knowledge and progress in the sector, this previous work is the basis for the set of M&E indicators described below.

Performance Indicators and Targets for Monitoring and Evaluation below summarizes the short, medium, and long-term targets for each of the performance indicators that should serve as the basis for an M&E system for the water sector.

Indicator	Base Year 2014	Expected Value 2015	Years			Executing Agency	Implementing Agency
			2016	2017	2018		
The Sectoral Target No. 1: Improvement the current water sources and finding new water sources							
The Interim Target No.1 : Improvement the current water sources and finding new water sources							
Per capita share of water metered (drinking water) (ltr/capita/day)	61	65	70	75	80	MWI	WAJ
The Interim Target No. 2 : Increasing the Storage Capacity of Dams							
Storage Capacity of Dams (MCM)	326.4	326.4	336.4	342.8	346.5	MWI	WAJ
The Interim Target No.3: Exploitation of treated water in high benefits social, environmental and economic activities							
Percentage of reusable treated wastewater	94%	95%	95%	95%	96%	MWI	WAJ
The Sectoral Target No. 2 : Securing water for all domestic, agricultural, industrial and tourism sectors suitable quantities and affordable prices							
The Interim Target No. 1: Raising the efficiency of water distribution system for domestic, industrial, commercial and agricultural sectors							
Percentage of water Provided for Irrigation Purpose	56%	55%	54%	54%	53.5%	MWI	WAJ
Percentage of water Provided for Industrial Purpose	6%	7%	8%	8%	8%	MWI	WAJ
Non-Revenue Water NRW	52%	52%	47%	45%	42%	MWI	WAJ
The Interim Target No. 2: Raising the efficiency of operating and water supply system and improving the energy efficiency in water sector							
Energy Consumption /m^3 (Kilowatt hr/m^3)	4.31	4.23	4.15	4.08	4.03	MWI	WAJ
The Sectoral Target No. 3 : Sanitation Services Improvement							
Percentage of population connected to public sewer systems	63%	63%	65%	66%	68%	MWI	WAJ

How to Monitor

Coordination of all relevant stakeholders may be the biggest challenge in developing and maintaining a sector-wide M&E system. Monitoring process addresses how to organize and mobilize the stakeholders. It also gives guidelines for how to systematically manage the data and information that result from monitoring, in order to ensure effective evaluation. M&E system for an entire sector can be thought of as a means of information flow among sector participants.

Information is collected at the grassroots level throughout the Kingdom, and reported upwards to inform GOJ of the effectiveness of investment decisions. In developing an M&E system, it is useful to structure and map out the way that information will be expected to flow.

Evaluate and Learn

Whereas monitoring focuses on inputs and activities, evaluation focuses on the impact of a project, program, strategy, or investment to assess whether the original goals were achieved. The evaluation will help identify activities that could have been done better, techniques for dealing with unexpected obstacles, and a more appropriate level of resources for achieving expected targets. It leads to learning how to achieve targets more efficiently and effectively and can also contribute to taking corrective actions more quickly. In practice, evaluation involves comparing the values from periodic measurements with the baseline values that were established for each indicator at the beginning of the planning phase. The evaluation process can be carried out directly by staff of MWI or it can be outsourced to specialized individuals or firms. Outsourcing is a good option since evaluations are not conducted continuously and it may require a larger number of more specialized staff than what MWI needs on a full-time basis. Once MWI has put in place a plan or strategy for achieving certain objectives, it should review any gaps between actual performance levels and those targeted for each output indicator. This evaluation should correspond with investment planning, and should therefore happen on a three or five year rolling basis. When actual performance does not meet the expected targets, the M&E system can help identify the reasons for this underperformance. An effective and sustainable M&E system requires solid institutional capacity to handle data and information generation, collection, storage and analysis to support decision making in planning. Any M&E system should have a component for capacity building in M&E so that all stakeholders have the capacity to use and maintain the M&E system. A comprehensive and robust M&E system with a wide spectrum of contributors and users can make the difference between setting and achieving meaningful targets and failing to make progress.

6 ANNEXES

ANNEX I - WATER PRODUCED OVER THE PLAN PERIOD FOR ALL USES

	Project Name	CAPEX (MJD)	Years of Implementation	Water Supplied MCM	Gov.	Notes
1.	Augmentation of Water Supply for Central and Northern Jordan from Deep Aquifer (Sheediyya – Al Hasa)	150	2017 – 2021	50	National	Supplying Amman governorate, then reallocation for other governorates
2.	Hisban Wells	25	2016 – 2018	10	National	Supplying Amman, or Dead Sea Beach, Aghwar, Balqa, Madaba
3.	Kofranjih DAM Water Treatment, Conveyance to Ajloun Governorate	10	2018 – 2019	3	Ajloun	
4.	Mojib Dam Water Treatment, Conveyance to Karak Governorate (Phase II)	6	2019 – 2020	3	Karak	Reducing the abstraction from the ground water (Al-Lajoun)
5.	Tannour Dam Water Treatment, Conveyance to Karak and Tafilah Governorate	10	2018 – 2019	3	Tafilah, Karak	The feasibility studies will determine the amount of water and which governorate will be supplied with water
6.	Increasing Water Pumping in DISI from 100 MCM to 115 MCM Project	24	2017 – 2018	15	National	The feasibility studies will determine the amount of water and which governorate will be supplied with water
7.	South Aqeb Well Field Development	15	2016 – 2018	15	Mafraq	Water will be distributed first to Mafraq Governorate, then for the rest of governorates
8.	Development of Ground Water new wells (deep & Shallow) as a water sources including the Buying the private wells	40	2016 - 2025	10	National	The location of wells will be determined/located based on shortage and ability
9.	Al Azraq - Sarhan Deep Aquifer	25	2018 - 2021	15	Zarqa	Nuclear Station necessity
10.	Al-Wala Dam Water Treatment, Conveyance to	5	2023 - 2025	10	Madaba	Wala Dam Expansion includes

	Project Name	CAPEX (MJD)	Years of Implementation	Water Supplied MCM	Gov.	Notes
	Madaba Governorate OR (Hidan Wells Development)					two projects (Wala Dam expansion & water treatment conveyance to Madaba) OR Hidan Wells Development as another alternative
11.	Aqaba Desalination Plant	5	2016 - 2017	5	Aqaba	For Aqaba Governorate
12.	Desalination of Brackish water in Aghwar area and Badia	10	2016 - 2025	10	Aghwar & North Badia	Will be used for Aghwar
13.	Wadi Arab Water System II	70	2016 – 2018	30	Northern Governorate	Swap Project with Red Sea Dead Sea Project
14.	Wadi Meddain Dam	6	2020 - 2021	1.5	Karak	
15.	Household Water Harvesting	5	2016 - 2025	7	National	
16.	Red Sea Dead Sea Water Conveyance Project / Phase I	650	2017 – 2021	85	National	Swap Project with Wadi Arab Water System II (20 MCM will be for Irrigation Purposes)
17.	Red Sea Dead Sea Water Conveyance Project / Phase II	1,312	2020 – 2025	150	National	
18.	Wadi Hisban Dam	15	2019 – 2023	2	Balqa	Water will supply Aghwar (area 14.5)
19.	Wadi Issal Dam	11	2018 – 2021	3	Karak	For Irrigation and Industry Purposes
20.	Wadi Rahma Dam	3.5	2021 – 2022	0.65	Aqaba	Wadi Araba Development, Multi use including irrigation
21.	Wadi Moussa Dam	8	2021 – 2022	2.5	Aqaba	
22.	Wadi Fidan Dam	20	2021 – 2024	4.4	Tafileh	
23.	Wadi Tlah Dam	3.5	2019 – 2021	0.4	Tafileh	
24.	Wadi Al Yutum Dam	100	2019 – 2021	-	Aqaba	Multi-Use including (Landscaping for Quirah , Irrigation, Flood Protection, Flood Regulation)
25.	Wadat Dam	5	2025	0.4	Tafileh	For Irrigation and Industry Purposes (Potash)
26.	Water Harvesting	20	2016 – 2025	15	National	Desert & Excavation Dams

	Project Name	CAPEX (MJD)	Years of Implementation	Water Supplied MCM	Gov.	Notes
27.	Increasing the Height of Wadi Shuieb Dam	1	2018 – 2021	0.8-1.2	Balqa	
28.	Al-Wala Dam Expansion	4	2020 - 2022	7	Madaba	
29.	Malaqy (downstream of Mujib Dam) Dam Project	40	2022 – 2025	-	Madaba and Karak	Flood Regulation
30.	Expansion of Fuhais and Mahes WWTP	1	2022 - 2025	0.4	Balqa	
31.	Expansion of As Salt WWTP: Phase 2	2.4	2022 - 2025	0.8	Balqa	
32.	Expansion of Ain Al Basha WWTP: Phase 2 (2025)	5	2022 - 2025	1.8	Balqa	
33.	Expansion of East Jarash WWTP: Phase 1	1	2016 - 2017	1.6	Jarash	
34.	Expansion of Madaba WWTP & Establishment of Wastewater Network: Phase 1	10	2017 - 2020	0.4	Madaba	
35.	Expansion of Wadi Al Arab WWTP: Phase 1	4.8	2017 - 2020	1.6	Irbid	
36.	Expansion of Central Irbid WWTP: Phase 2 (2025)	2.2	2022 - 2025	0.7	Irbid	
37.	Expansion of Ramtha WWTP: Phase 2	2.45	2022 - 2024	2.05	Irbid	
38.	Expansion of Wadi Hassan WWTP: Phase 2	1.1	2019 - 2022	1.9	Irbid	
39.	Expansion of Wadi Mousa WWTP	4.0	2022 - 2025	0.58	Ma'an	
40.	Expansion of Aqaba WWTP 2020	30.75	2017 - 2020	5.17	Aqaba	
41.	Expansion of Ramtha WWTP Phase I	14.7	2019 - 2020	2	Irbid	
42.	Expansion of Kharbit As Samra, Phase II	195.1	2013 - 2016	35	Zarqa	The expansion will be done in 2016
43.	Contribution in the Expansion of Kharbit As Samra for Handling Extra Amount of WW, Phase III	230	2020 – 2024	35	Zarqa	
44.	Establishment of Wastewater Treatment Plant Transported by Trunk to Ghor Safi Landfill	58	2023 - 2025	-	Karak	
45.	Jordan Valley Wastewater Project	42	2017 - 2019	5	Jordan Valley	
		3,203.5		**552.85**		

ANNEX II - LIST OF FUNDED PROJECTS UNDER IMPLEMENTATION

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
1.	Rehabilitation WLN in Sakhra / Ajloun	80,000	Ajloun	KF-Kuwait Fund For Arab Economic Development
2.	Water supply for Ajloun Governorate-supply and installation - Ajloun Water Networks	62,856	Ajloun	SF-Saudi Development Fund
3.	Conveyor Lines in Ajloun - Batch 2 (Hofa Ajloun) - Ajloun Water Networks	14,009,382	Ajloun	SF-Saudi Development Fund
4.	Rehabilitation & Improvement of Ballas / Ajloun Water networks	192,830	Ajloun	SF-Saudi Development Fund
5.	Rehabilitation & Improvement of / kofranja hai nemer/Ajloun Water networks	113,437	Ajloun	SF-Saudi Development Fund
6.	Rehabilitation water networks - Ajloun [YARMOUK]	1,288,888	Ajloun	SF-Saudi Development Fund
7.	Rehabilitation water networks in Hashmiyeh – Ajloun	1,123,650	Ajloun	SF-Saudi Development Fund
8.	Supply & Install water lines to Hai Roomi/Halaweh/Ajloon	43,450	Ajloun	SF-Saudi Development Fund
9.	Supply & installation water lines in Hai Romi/Halawa/Ajloun	43,450	Ajloun	SF-Saudi Development Fund
10.	Contract 2 of Adabtation of water networks Amman after Disi [MIYAHUNA]	33,218,722	Amman	FT-French Treasury
11.	National Water Transport Abu Alanda System	5,337,334	Amman	KFW- German Development Bank
12.	Batch 2 Water Loss Reduction Amman IV - DZ19-Lot 2 (Tla al Ali, Dahyet al Rasheed, Gardens) [MIYAHUNA]	3,445,768	Amman	KFW- German Development Bank
13.	Batch 3 Water Loss Reduction Amman IV - DZ 21 (Shmeisani, Tabarbor, Jabal al Hussen, Sport City) [MIYAHUNA]	4,741,151	Amman	KFW- German Development Bank

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
14.	Batch 4 Water Loss Reduction Amman IV - DZ 13 (Khilda) [MIYAHUNA]	3,911,870	Amman	KFW- German Development Bank
15.	Batch 1,2,3 Consulting Services Water Loss Reduction Amman IV [MIYAHUNA]	2,045,350	Amman	KFW- German Development Bank
16.	Water Supply Amman III - Consulting costs [MIYAHUNA]	2,248,172	Amman	KFW- German Development Bank
17.	Supervision services for Adaptation of primary distribution of Disi - Amman Conveyor [MIYAHUNA]	683,787	Amman	Miyahuna
18.	Rehabilitation water networks in Marka [MIYAHUNA]	1,088,900	Amman	SF-Saudi Development Fund
19.	Supply, installation, and operation of pumps and gate valves in Zara Main PS - Mujib	897,008	Amman	SF-Saudi Development Fund
20.	Supply and installation on Balqa connections supplied from Zai Dabouq Line [MIYAHUNA]	494,000	Amman	SF-Saudi Development Fund
21.	Supplies and installation of water pipelines with house connections in all areas of Amman 2 - West and North Amman [MIYAHUNA]	978,935	Amman	SF-Saudi Development Fund
22.	Re-Restructuring and Rehabilitation Network Waters Madaba & Reduce waste in Madaba	3,880,158	Amman	SF-Saudi Development Fund
23.	Amman Water network rehabilitation	4,629,053	Amman	USAID-United States Agency for International Development
24.	WLR Middle Governorates - consulting services	1,688,310	Balqa	KFW- German Development Bank
25.	Ain Al Basha & Safout Reservoir rehabilitation - WLR Middle Gov. Construction	2,903,073	Balqa	KFW- German Development Bank
26.	Mahis network rehabilitation and hydraulic restructuring - WLR Middle Gov. Construction C3	1,334,083	Balqa	KFW- German Development Bank

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
27.	Salt Downtown rehabilitation - WLR Middle Gov. Construction C4	4,638,410	Balqa	KFW- German Development Bank
28.	Water line for BAQA'A CAMP/Balqa'a	229,250	Balqa	Local
29.	Supply, installation, and replacement of pumps and gate valves in Zai PS [MIYAHUNA]	3,306,668	Balqa	SF-Saudi Development Fund
30.	Water conveyor pipeline from hufa reservoir to biet_ras	17,000,000	Irbid	Japan International Cooperation Agency
31.	Rehabilitation of Sareeh	7,500,000	Irbid	Japan International Cooperation Agency
32.	Consulting Services for design and supervision	924,276	Irbid	Japan International Cooperation Agency
33.	Procurement supplies for wells rehabilitation and sustainability	509,085	Irbid	KF-Kuwait Fund For Arab Economic Development
34.	Water Networks Rehabilitation Ramtha - third stage [YARMOUK]	1,093,012	Irbid	KF-Kuwait Fund For Arab Economic Development
35.	Water Networks Rehabilitation Bani Obeid - first stage [YARMOUK]	1,149,785	Irbid	KF-Kuwait Fund For Arab Economic Development
36.	Water Networks Rehabilitation Bani Obeid - second stage [YARMOUK]	609,800	Irbid	KF-Kuwait Fund For Arab Economic Development
37.	Supplies and installation of water pipelines in Bani Kenana	686,115	Irbid	KF-Kuwait Fund For Arab Economic Development
38.	Supplies and installation of water pipelines from Shouneh Reservoir to Manshiyet Northern Ghors - Irbid [YARMOUK]	600,000	Irbid	KF-Kuwait Fund For Arab Economic Development
39.	Rehabilitation water networks - Northern Ghors/Irbid [YARMOUK]	969,816	Irbid	KF-Kuwait Fund For Arab Economic Development
40.	Water Networks rehabilitation in different areas in Irbid - First stage [YARMOUK]	1,429,175	Irbid	KF-Kuwait Fund For Arab Economic Development

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
41.	Rehabilitation of water networks in different areas in Koura - Irbid [YARMOUK]	182,150	Irbid	KF-Kuwait Fund For Arab Economic Development
42.	Rehabilitation of water networks in Khraja at Bani Hani & El'al at Qasabet Irbid - Irbid [YARMOUK]	1,032,250	Irbid	KF-Kuwait Fund For Arab Economic Development
43.	Water networks in Ajhara - North Irbid [YARMOUK]	46,800	Irbid	KF-Kuwait Fund For Arab Economic Development
44.	Rehabilitation WLN in Burma /Jerash	239,490	Jerash	KF-Kuwait Fund For Arab Economic Development
45.	Rehabilitation PS and Reservoirs in Ajloun and Jerash Package 1 (Pipelines North Gov).	6,893,866	Jerash	KFW- German Development Bank
46.	Distribution lines in Jerash and Ajloun Package 4 (Pipelines North Gov.)	5,852,530	Jerash	KFW- German Development Bank
47.	Supply and installation of water pipeline from PS Mashatel Faisal to Poster Jabbah and PS Jabbah - Jerash [YARMOUK]	386,100	Jerash	SF-Saudi Development Fund
48.	Rehabilitation of PS Shawahed, Saken, Riyashi, Ein Deek - Jerash [YARMOUK]	89,000	Jerash	SF-Saudi Development Fund
49.	Rehabilitation of Jerash water networks - stage 1 [YARMOUK]	1,283,782	Jerash	SF-Saudi Development Fund
50.	Supplies Jerash	263,423	Jerash	SF-Saudi Development Fund
51.	Supervision on Um Lulu Jerash and Hofa Ajloun	348,154	Jerash	SF-Saudi Development Fund
52.	Supervision on Jerash and Ajloun water networks [YARMOUK]	303,123	Jerash	SF-Saudi Development Fund
53.	WLR Karak Lot 6 D (Alqasr & Shihan, Rabbah)	5,572,880	Karak	KFW- German Development Bank
54.	Rehabilitation of Mazar Water Network - WLR Karak	4,417,225	Karak	KFW- German Development Bank
55.	WLR Karak - consulting services (Studies and supervision)	2,108,475	Karak	KFW- German Development Bank

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
56.	Taybeh Water Network - WLR Karak	2,461,257	Karak	KFW- German Development Bank
57.	Water lines in several areas/madaba	250,000	Madaba	Local
58.	Madaba Governorate Water and Wastewater management Contract / MCC Cost Recovery Plan	16,000,000	Madaba	Local
59.	Rehabilitation of Balama Water Networks stage II	1,470,000	Mafraq	German Development Bank
60.	Improve Aqeb conveyor system to Za'atary pumping station inc. well connection	1,400,000	Mafraq	German Development Bank
61.	Consulting Services & Contingencies water conveyor pipeline Aqeb system	1,000,000	Mafraq	German Development Bank
62.	Rehabilitation water networks - Mafraq [YARMOUK]	986,880	Mafraq	KF-Kuwait Fund For Arab Economic Development
63.	Supplies and installation of water pipelines to collect and transfer water for Aqeb well - North Badia/Mafraq [YARMOUK]	1,494,914	Mafraq	KF-Kuwait Fund For Arab Economic Development
64.	Water Networks rehabilitation in Northern Badia/Mafraq - stage 1 [YARMOUK]	959,693	Mafraq	KF-Kuwait Fund For Arab Economic Development
65.	Supplies and installation of water pipelines in Mafraq Governorate - stage 1 [YARMOUK]	803,418	Mafraq	KF-Kuwait Fund For Arab Economic Development
66.	Design, tendering & site supervision and variation order	784,190	Multiple	German Development Bank
67.	Consulting services of Rehabilitation water distribution network including house connections and water meters in Gwaireyeh area	5,220,000	Multiple	German Development Bank
68.	Consulting services (Khaw Zatary Water Transmission Pipeline)	458,825	Multiple	German Development Bank
69.	Abu Alanda Khaw consulting services	1,989,255	Multiple	Agence Française de Development

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
70.	Reliable quality water for Jordan - Benchmarking Component	70,800	Multiple	European Bank for Reconstruction and Development
71.	Rehabilitation water networks in Amman and Balqa C1 (of C 1+5 Batch)	3,880,157	Multiple	SF-Saudi Development Fund
72.	Installation of SCADA System in Northern Gov.	12,000,000	Multiple	Instituto de Credito Oficial-ICO
73.	Engineering and implementation Consultant (Energy Efficiency Project in the Jordanian Water Sector)	2,165,770	Multiple	Local
74.	Rehabilitation water networks in Amman and Balqa C5 (of C 1+5 Batch)	1,609,673	Multiple	SF-Saudi Development Fund
75.	Energy Conservation through Upgrading Water Supply Network in Jordan - Lot 3: Azraq Khaw	3,575,000	Zarqa	JICA-Japan International Cooperation Agency
76.	Rehabilitation & preparation Rusaifa water well 11	98,000	Zarqa	KF-Kuwait Fund For Arab Economic Development
77.	Rehabilitation & preparation of Azraq well	87,400	Zarqa	KF-Kuwait Fund For Arab Economic Development
78.	Zarqa Governorate Water and Wastewater Management Contract / MCC Cost Recovery Plan	3,000,000	Zarqa	Local
79.	Primary & Secondary Water Networks Restructuring in Zarqa (C1)	11,135,641	Zarqa	Millennium Challenge Corporation
80.	South Betrawi Water Networks Restructuring & Rehabilitation (C5)	12,124,870	Zarqa	Millennium Challenge Corporation
81.	Russaifeh Low Water of Zarqa Networks Restructuring & Rehabilitation	6,732,435	Zarqa	Millennium Challenge Corporation
82.	Russeifeh High Water Networks Restructuring and Rehabilitation (C4)	10,352,242	Zarqa	Millennium Challenge Corporation
83.	East Betrawi Water Networks Restructuring & Rehabilitation	7,715,831	Zarqa	Millennium Challenge Corporation
84.	Pump Station Construction of Basateen Pump Station & Reservoir (C6)	1,830,693	Zarqa	Millennium Challenge Corporation

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
85.	Water Smart Homes - Social Outreach & Engineering Services	1,894,564	Zarqa	Millennium Challenge Corporation
86.	Water Smart Homes -Infrastructure Works - Russaifeh	705,169	Zarqa	Millennium Challenge Corporation
87.	Water Smart Homes - Infrastructure Works - Russeifeh and Zarqa	823,039	Zarqa	Millennium Challenge Corporation
88.	Water Smart Homes - Infrastructure Works - Zarqa	821,805	Zarqa	Millennium Challenge Corporation
89.	Expansion of East and West Zarqa Pumping Stations - Supervision	699,858	Zarqa	SF-Saudi Development Fund
90.	Expansion of East and West Zarqa Pumping Stations - Execution	13,331,222	Zarqa	SF-Saudi Development Fund
91.	Implementation Beer Mathkour irrigation project (Wadi Araba)	1,763,352	Aqaba	Arab Fund for Economic and Social Development
92.	Supervision of the Implementation of Beer Mathkour irrigation project (Wadi Araba)	170,308	Aqaba	Arab Fund for Economic and Social Development
93.	Implementation of Qa'a Saeediean irrigation project (Wadi Araba)	3,341,052	Aqaba	Arab Fund for Economic and Social Development
94.	Supervision for implementation Qa'a Saeedian irrigation project (Wadi Araba)	238,565	Aqaba	Arab Fund for Economic and Social Development
95.	Implementation of Sail Zarqa irrigation networks (stage II) - rehabilitation of middle Jordan Valley irrigation project	3,456,308	Balqa	Abu Dhabi Fund for Development
96.	Supervision of Sail Zarqa irrigation networks (stage II) - rehabilitation of middle Jordan Valley irrigation project	155,700	Balqa	Abu Dhabi Fund for Development
97.	Implementation the rehabilitation of (stage I) of Southern Ghors irrigation project	6,318,906	Karak	Abu Dhabi Fund for Development
98.	Supervision for the rehabilitation (stage I) of Southern Ghors irrigation project	253,850	Karak	Abu Dhabi Fund for Development
99.	Construction of Kufranjeh Dam	19,752,038	Ajloun	Abu Dhabi Fund for Development
100.	Supervision on Construction of Kufranjeh Dam	2,201,781	Ajloun	Abu Dhabi Fund for Development

Water Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
101.	Studies, Designs and Tender Documents Preparation for Rehabilitation of the Diversion Dam in Tlal Dahab Area	34,800	Balqa	Arab Fund for Economic and Social Development
102.	Construction of Karak Dam	10,995,873	Karak	US Ministry of Agriculture
103.	Supervision of Karak Dam	202,539	Karak	US Ministry of Agriculture
104.	Construction of Ibn Hammad Dam	24,856,436	Karak	Potash Company
105.	Supervision on Construction of Ibn Hammad Dam	2,525,742	Karak	Potash Company
106.	Construction of Lajjoun Dam	4,737,052	Karak	Local
107.	Supervision of lajjoun Dam	490,250	Karak	Local
108.	Construction of Zarqa' Ma'en Dam	8,882,772	Madaba	Abu Dhabi Fund for Development
109.	Supervision on Construction of Zarqa Ma'en Dam	1,077,300	Madaba	Abu Dhabi Fund for Development
110.	Consultancy Services for Raising of Wala Dam	1,016,892	Madaba	UN - through Badia Restoration Program
111.	Construction of Areteen Dam	486,700	Mafraq	UN - through Badia Restoration Program
112.	Meter replacement [MIYAHUNA]	12,000,000	Amman	FT-French Treasury
113.	Umbrella FARA	21,000,000	Amman	USAID-United States Agency for International Development
114.	Wadi Arab System II	70,000,000	Multiple	KFW

Total Value of Water Project 486,039,074

Wastewater Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
115.	Consultancy services for design & supervision of Karak & Kofranja wastewater Facilities	2,908,466	Ajloun	German Development Bank
116.	Rehabilitation of kofranja WWTP	10,520,120	Ajloun	German Development Bank
117.	South Amman Wastewater Collection System - Al Jwiedeeh	8,733,896	Amman	Local
118.	South Amman wastewater collection system(supervision)	2,813,867	Amman	Republic of Korea/Export-Import Bank Of Korea
119.	Stp-a construction of wastewater treatment plant and effluent reuse for south Amman STP-A , variation order No.3	86,168,875	Amman	Republic of Korea/Export-Import Bank Of Korea
120.	Wastewater Networks - South Amman - second stage - Studies and Design	2,089,666	Amman	Republic of Korea/Export-Import Bank Of Korea
121.	Wastewater Networks - South Amman - second stage - Execution	65,667,968	Amman	Republic of Korea/Export-Import Bank Of Korea
122.	WWTP and WW Networks - Naur, Wadi Seir - Supervision	1,722,366	Amman	Republic of Korea/Export-Import Bank Of Korea
123.	South Amman Wastewater Collection System - Qweismeh	5,308,583	Amman	Local
124.	Supplies and Installation Miscellaneous Wastewater Amman [MIYAHUNA]	339,310	Amman	Saudi Development Fund
125.	Supply & installation of sewage networks in Na'our Middle Marj Al-Hamam for the expansion of Wadi Alsir waste water treatment plant	991,350	Amman	Saudi Development Fund
126.	sewer networks in South Amman - third stage	364,500	Amman	Local
127.	sewer lines in Al-Naser	424,930	Amman	Kuwait Fund For Arab Economic Development

Wastewater Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
128.	Rehabilitation of sanitary utilities in WAJ (fifth & ground floor)	23,555	Amman	Local
129.	Supply & installation of different sewer lines in Amman	339,310	Amman	Saudi Development Fund
130.	Re-use Construction package 1- part 1: Central Irbid WWTP + Wadi Arab WWTP	8,765,972	Irbid	German Development Bank
131.	Optional Items - construction of transmission pipelines of 13km from Central Irbid WWTP to Wadi Arab WWTP + Filtration and UV disinfection system at Shallala WWTP	8,287,311	Irbid	German Development Bank
132.	Re-use for irrigation of Northern Ghors Batch 3 - Studies and Supervision	1,132,575	Irbid	German Development Bank
133.	Re-use for irrigation of Northern Ghors Batch 3 - Execution	10,363,560	Irbid	German Development Bank
134.	Wadi Al-Shallala WWTP & effluent reuse facilities - Execution	7,081,141	Irbid	German Development Bank
135.	Sareeh Wastewater	3,583,746	Irbid	German Development Bank
136.	Study & design of Taybeh wastewater/Irbid	390,600	Irbid	Saudi Development Fund
137.	Consulting services in different places in Irbid(Hakama, Moghayyer, Wasateyya)/water & wastewater	332,597	Irbid	Saudi Development Fund
138.	East Jerash WWTP	26,241,222	Jerash	United States Agency for International Development
139.	Wastewater Dump Tanks for Ghor Alsafi - Studies and Design	58,670	Karak	Potash Company
140.	Implementation of Additional Line for the Transfer of Treated Water (Reuse) emerging from Krak Purification Station	1,184,100	Karak	Kuwait Fund For Arab Economic Development

Wastewater Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
141.	Operation contract of WWTP for(Mazar, Mou'ta, Adnanyeh & Neighboring areas) / Karak	800,000	Karak	Local
142.	sewer lines in Ma'an governorate	1,780,910	Ma'an	Saudi Development Fund
143.	Study & design & tender documents for sewer networks & lines & house connections /Petra/Ma'an	59,750	Ma'an	Local
144.	Madaba sewer networks - Execution	764,193	Madaba	Saudi Development Fund
145.	Madaba sewer networks - Studies and Design	152,600	Madaba	Saudi Development Fund
146.	Mafraq Wastewater Treatment Plant	17,729,609	Mafraq	United States Agency for International Development
147.	Raise efficiency of Mafraq WWTP- re-use of treated water	2,107,051	Mafraq	Local
148.	Reuse of treated water for irrigation/Zaatari camp purification station	242,318	Mafraq	The United Nations Children's Fund
149.	Consultancy Services - Concept Study (Climate Protection in the WW sector)	732,600	Multiple	German Development Bank
150.	Studies, design, and tender preparation for wastewater networks (primary and secondary) and house connections in Balqa Governorate and surroundings	102,155	Salt	Saudi Development Fund
151.	Distilling Basin and stabilization bonds in and unariobic basin in Salt wastewater Treatment Plant	78,580	Salt	Saudi Development Fund
152.	Distilling basin & stabilization bonds in Tal Mantah WWTP/Balqa	248,190	Salt	Saudi Development Fund

Wastewater Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
153.	installation of sewage pipelines and removal of health nuisances in Wadat and Haddada - tafileh	687,475	Tafileh	Saudi Development Fund
154.	Tafileh WWTP establishment	24,140,000	Tafileh	Jordan Ice and Aerated Water Co. Ltd - Pepsico
155.	Design & study of WW trunk lines & sewer networks & lifting station in dhulil , hallabat,khaldyeh	213,500	Zarqa	Kuwait Fund For Arab Economic Development
156.	Study & design & tender preparation to establish line from Sukhneh to East Zarqa WW lift station	140,845	Zarqa	Saudi Development Fund
157.	Operation & Maintenance of WWTP/Zarqa	139,465	Zarqa	Kuwait Fund For Arab Economic Development
158.	Study & design & tender preparation for establishment of force main line from East Zarqa lift station to As-Samra WWTP	118,148	Zarqa	Saudi Development Fund
159.	As Samra Wastewater Treatment Plant BOT project	195,100,000	Zarqa	Millennium Challenge Corporation
160.	Supervision of Works at East and West Zarqa Wastewater Pump Stations.	70,183,500	Zarqa	Saudi Development Fund
161.	Wastewater Pump Stations East & West Zarqa Pump Stations	13,368,590	Zarqa	Saudi Development Fund
162.	Design and tender document preparation of the force main from east sukhneh PS to East Zarqa PS.	73,535	Zarqa	Saudi Development Fund
163.	Design and tender document preparation of the force main from east zarqa PS to As-samra TP.	118,315	Zarqa	Saudi Development Fund
164.	Khirbet Assamra treatment plant expansion-Execution	130,819,246	Zarqa	Millennium Challenge Corporation

Wastewater Projects				
No.	**Title**	**Value (JD)**	**Location**	**Donor**
165.	Khirbet Assamra treatment plant expansion-Execution	2,652,133	Zarqa	Millennium Challenge Corporation
166.	Supervision on wastewater & water projects in East Zarqa & Hashimyeh	9,207,089	Zarqa	Millennium Challenge Corporation
167.	Rehabilitation & expansion of wastewater networks in East Zarqa	15,666,314	Zarqa	Millennium Challenge Corporation
168.	Rehabilitation & expansion of wastewater networks in West Zarqa	16,225,695	Zarqa	Millennium Challenge Corporation
169.	Rehabilitation & expansion of wastewater networks in Russeifeh	12,324,546	Zarqa	Millennium Challenge Corporation
170.	Supportive studies & services water & wastewater (Environmental)	428,624	Zarqa	Millennium Challenge Corporation
171.	Expansion of wastewater networks in Princess Haya area	2,470,895	Zarqa	Millennium Challenge Corporation

Total Value of Wastewater Projects **774,714,127**

TOTAL WATER SECTOR **1,257,753,201**