


1.1 Al-Azraq Wastewater System (PFS: JO 02)

PROJECT INFORMATION		Last Update: 13.10.2009
Country	Jordan	PFS No JO.02
Project Name	Al-Azraq Wastewater System	
Region / Governorate	Al-Zarqa Governorate	
City / Town	AL-Azraq, Maan, Jerash Mafrq and Balqa	
Sector	Wastewater Project	
		Key Objectives <ul style="list-style-type: none"> • protecting the water table in the area known to be an oasis; • conserving natural resource;s • supplying water in conventional ways that are less expensive; and • providing better service to the local community and reducing health risks.
Project Components	<ul style="list-style-type: none"> ▪ Construction of WWTP (4000 m³/day). ▪ Construction of (80) km of sewer pipelines . ▪ Installing 4 pumping stations. 	
Project Value	Euro 70 Million	

IFIs	No interest Expressed
National Strategy and NAP relevance	<p>The project is listed in the executive plan of the national strategy and serves the objectives of the national water strategy of conserving water resources.</p> <p>This project is directly linked to the country water management master plan in terms of protecting available resources and increasing water re-use quantities.</p> <p>This project is in line with the objectives of the National Strategy for Water management and is part of the national execution plan. The project will provide sanitary drainage and wastewater treatment to the region's communities. It will further contribute to protecting the water resources which are very scarce in Jordan. It will also increase the re-use of wastewater for irrigation of green areas and other plantations.</p> <p>Jordan is not part of the UNEP NAP initiative hence does not have a NAP.</p>
Relevance to H2020	<p>The project falls directly under the wastewater sector of the H2020 initiative and of the sustainable management of water resources</p> <p><i>Although Jordan has no access to the Mediterranean, the project deals with two main sectors of the H2020 initiative, solid waste and Industrial emissions, in additions to its environmental impacts on natural resources.</i></p>
Key Parties	<ul style="list-style-type: none"> • Ministry of Water and Irrigation • Water Authority of Jordan • Ministry of Planning and International Cooperation

A. GENERAL INFORMATION		
A.1	Existing work / Current status	No works have been initiated as of yet. The area is directly affected by current operational practice in dealing with municipal wastewater. In the complete absence of sewer networks and treatment facilities, municipal Wastewater is drained to septic tanks that are not controlled, with a high probability of wastewater leaking to the water table.
A.2	Description of area	Residential area with no sewer networks available.
A.3	Number of inhabitants	70 thousand Azraq – 80 thousand Mafrq 30 thousand Maan 20 thousand Bab Amman (Jerash) 30 thousand Balqa
A.4	Socio-economic status / activities	In general Jordan is a country with inadequate supplies of water, limited natural resources and semi-arid climate. In addition to the rapid growth rate of Jordan, the successive waves of refugees that have come into the country as a result of a series of conflicts in the region compound the issue. The impact of these sudden increases of population, where people have always lived in conditions of limited natural resources, has put severe stresses on the social, economical, political and environmental sectors of the country.
A.5	Drinking Water Systems	All the areas covered with this project are well served with drinking water services (estimated coverage is around 90%)
A.6	Wastewater Collection	Currently there is a complete absence of sewer networks in the Azraq. The toher areas are served with wastewater networks only in the center but not the suberbs.
A.7	Wastewater Treatment	Currently there is no treatment facility for municipal Wastewater which is drained to septic tanks that are not regulated.
A.8	Institution(s)	Water and wastewater management in Jordan are managed by three public agencies. The Ministry of Water and Irrigation (MWI) is responsible of water resources policy and strategy development, water resources planning, research and development, information systems, procuring financial resources. The two agencies, namely the Water Authority of Jordan (WAJ) and the Jordan Valley Authority (JVA) are executing bodies; they are under the umbrella of MWI and the Minister of MWI heads their boards of Directors. WAJ is responsible for providing water and sewage services throughout Jordan and for water resources management while JVA responsibilities cover the development of Jordan Rift valley, including water resources, primarily for agriculture in the Jordan valley and southern Ghors.
A.9	Financial Situation	For this project operation and maintenance of the WWTP after its completion is foreseen neither in the cost estimate nor in the financing required. Jordan has introduced a good tariff structure for water uses (irrigation and domestic) but the tariff seems still to be insufficient to pay back capital investment. Wastewater is charged within the drinking water invpice as a percetenge (to get percentage from Zeid). All loans are so far being covered by central budgets since no sufficient funds are available to cover the capital investment.
B. PROBLEM ANALYSIS		
B.1	Qualitative description	The use of septic tanks introduces the high risk of contaminating the water table in the area affecting a major source of drinking water channelled to Amman and other regions. The pollutants from untreated effluent can potentially become incorporated into the food chain and adversely affect consumers. This

will definitely lead to compromised food and water security of the poor due to the current environmental degradation in the area which exacerbates the socio-economic situation

C	THE PROJECT
C.1	PROJECT OVERVIEW
	<p>Environmental</p> <p>The project will reduce pollution of upper groundwater resources by eliminating discharges of raw sewage and septic tank effluents into the ground. Consequently pollution of the groundwater will be reduced, hence protecting and conserving natural resources.</p> <p>The project will increase the amount of treated wastewater which can be re-used for irrigation of tree plantations and green areas. The area of tree plantation or green areas can be increased.</p> <p>Social</p> <p>Socially, the improved sanitation coverage will encourage people to stay in the region and maintain current activities. It will help to reduce the incidence of water borne disease among permanent residents and potential visitors.</p> <p>Economic</p> <p>The construction of wastewater disposal and treatment facilities and networks will create job opportunities during the construction period and around 10 permanent jobs for operation.</p> <p>An indirect result will be further job creation through increased tourism business, and agro-industrial projects.</p> <p>Financial</p> <p>The project is estimated to cost around Euro 70 Million to cover both the WWTP and the network. Detailed financial analysis and return on capital are not well identified since no feasibility study has been prepared for the project.</p> <p>Institutional</p> <p>The main promoter for this project is the Water Authority of Jordan (WAJ). This project will directly help WAJ to improve service provision and efficiency and reduce burden on unnecessary costs for water provision.</p> <p>Technical</p> <p>The project consists of constructing a wastewater treatment plant and sewer networks in the region. The WWTP is planned for 4000 m³/day and the network extends over 80 km of sewer pipelines with 4 pumping stations at different locations to facilitate the flow.</p>
C.2	PROJECT BACKGROUND
	<p>The Azraq Area is known to be an oasis supplying drinking water to Amman and other regions. Accordingly protecting the water table and aquifers of Al-Azraq is a priority matter in order to maintain the quality of water supplied to other regions. This Oasis is subject to direct threat and serious impact on its water resources due to current operational practices in dealing with municipal wastewater.</p> <p>Accordingly the Water Authority of Jordan(WAJ) has planned several interventions nationwide as an attempt to protect water resources.. Al Azraq is one of those projects with high priority on the list of WAJ projects.</p>
C.3	PROJECT RATIONALE
	<p>Based on its sensitive nature the Al-Azraq oasis is directly affected by the current operational practice in dealing with municipal wastewater. In the absence of sewer networks and treatment facilities, municipal wastewater is drained to septic tanks that are not regulated with resultant high probability of wastewater leaking to the water table. Consequently, with this trend in place tendency to have a contamination is very probable and the risk of affecting the water supplied to other regions is definitely high, mainly Amman, Zarqa and Irbid since aquifers are all interconnected and contamination might have even a wider coverage.</p> <p>Given the known scarcity of water resources in Jordan and the priority that water management has gained in the past years as a top priority item on all government plans, all interventions to water management are dealt with in an integrated manner. This is why WAJ foresees this project as a definite need for Al-Azraq region in order to maintain the supply of potable water and ensuring that wastewater is properly collected and treated for reuse purposes.</p>

Challenges

- The current degradation of the environmental situation has undermined the quality of life for residential communities in the area.
- The pollutants from untreated discharged water can potentially get into the food chain and adversely affect consumers.
- The food and water security of the poor is compromised by the current environmental degradation in the area which exacerbates the current socio-economic situation.
- Poor management of water means that the allocation of water is not in line with the immediate and pressing needs of the economy and society.

C.4 EXPECTED RESULTS

Environmental

- Protecting water table and supply of drinking water
- Protecting water as a valuable resource in Jordan

Socio-economical

- Providing better service to the local community hence reducing health risks.
- The sanitation service establishment will create job opportunities during the installation period and permanent jobs for operation

C.5 SCOPE

Evidence of commitment at local and national level

The main evidence of government commitment is the inclusion of said project in the national execution plan. Furthermore the government has already initiated the first steps in the project by launching the tenders for the different areas for preparation of detailed technical designs.

Demonstration value or significance in relation to sector development (WW, SW and/or IE)

This project is in line with the objectives of the National Strategy for Water management and is part of the national execution plan. The project will provide sanitary drainage and wastewater treatment to the region's communities. It will further contribute to protecting water resources which are scarce in Jordan. It will also increase the re-use of wastewater for irrigation of green areas and other plantations.

Linkage to sectoral policies, strategies and action plans

This project is directly linked to the country water management master plan in terms of protecting available resources and increasing water re-use quantities.

Programme/ project approach

This project is part of an overall programme.

C.6 INSTITUTIONAL

Enforcement of environmental legislations

The primary legislation for the protection of water is a by-law issued under the Environment Protection law of 1995. This sets the water quality objectives; determines standards for wastewater treatment plants and waste disposal sites; and addresses water saving opportunities in the industrial, agricultural and construction sectors. Several other laws, by-laws, specifications and standards for water quality were developed based on WHO standards which should be used for various agricultural crops and for discharges into various water bodies. However, neither the monitoring nor the enforcement of these standards has been addressed by any by-law or Decree. Moreover all projects developed by WAJ has to undergo a fully fledged EIA.

Promoter:

Water Authority of Jordan.

Assessment of promoter's capacity

The promoter of this project, Water Authority of Jordan, is an executive body under the umbrella of MWI and the Minister of MWI heads their boards of Directors. WAJ is responsible for providing water and sewage services throughout Jordan and for water resources management. WAJ possesses good knowledge of the situation in Jordan and is experienced dealing with international funding. Technically speaking WAJ has qualified engineers but

		remains understaffed in terms of project development, follow up and monitoring. According to WAJ own assessment expertise in project related activities is very limited because lots of trained staff are leaving to the private sector due to salary gaps. Needed training topics in project related activities can be focused on Feasibility studies, preparation of TORs, verifying documents and evaluating them.
C.7 FINANCIAL		
	Financial analysis – overview: Institutional: The WAJ on the national level develops strategies, master plans and provides project management of new projects and oversight of the operations of water management and sanitation services at the governorate level. WAJ will be the main promoter of the project on behalf of the government, however all financing coming to the government has initially to be cleared by the Ministry of Planning and International Cooperation. Technical: WAJ provides technical inputs and oversees technical quality in the preparation and execution of projects through its own professional and technical staff and through consultants. Financial: WAJ provides budgets for construction and operation of wastewater systems at national level. WAJ determines and allocates construction and operation budgets to governorates and provides oversight and audit of spending. At Governorate level WAJ is also responsible for collection of fees for water supply and sanitation services. The actual tariff structure as planned can cover O&M at the first stage. What hinders reaching this target is low collection rate in some place, unaccounted water in other areas as well as water steeling.	
	Loan amount	Loan amount: 35 million euro understood to be 50% of estimated cost
	Availability of government funding	So far WAJ executives confirm this availability through central budget allocation. Further confirmation is ensured by the fact that this project is one of the projects that WAJ has included in the budget law for 2010, 2011 and 2012 that approved and accorded.
	Financial sustainability	Cost-effectiveness: to be determined
	IFI interest	None expressed so far
	Donor interest (availability of grants)	No local donors are involved in this project so far.
C.8 TECHNICAL		
	Status of studies and permits	Technical designs for AL- Azraq – Final stages of evaluation for awarding Technical Designs for Mafraq- Awarded technical designs Technical Designs for Maan – Awarded for technical design Technical Designs for Bab Amman (Jerash) – Awarded for detailed technical design Technical Designs for Balqa Awarded for detailed technical design
	Additional studies and TA requirements	The following studies/revisions are required to prepare the project,; <ol style="list-style-type: none"> 1. Preparation of a Feasibility Study with full analysis of technical and financial feasibility; 2. Preparation of an EIA for the project; 3. Review of Detailed Designs; and 4. Tender Documents for construction .
C.9 SOCIO-ECONOMIC IMPACT		

The current practice of discharging wastewater can generate high levels of pollution of the water table that will have negative impacts on the ecosystems it supports, in addition to the human population surrounding it. These impacts will include the loss of biodiversity and the spread of disease among humans.

Consequently providing better sanitation services to the local community will result in reducing health risks and protecting water as a valuable resource in Jordan.

Contribute to improving public health?

The project will reduce dependency on the use of polluted shallow wells for drinking water in the region. The incidence of water born diseases has been low so far. By introducing this project WAJ will contribute to public health improvement among infants and adults and avoid future complaints from water borne diseases.

Create new (long-term) jobs

The project will generate permanent employment opportunities for the operation and maintenance of the plant. It is expected that a large number of employment opportunities will be indirectly generated through the construction phase of both the WWTP and the network.

C.10 ENVIRONMENTAL IMPACT

- **Contribute to reducing negative impacts on natural resources**

By introducing the new sewer network and the WWTP to the region old practices of discharging municipal wastewater to the ground will be eliminated. By eliminating this common practice in the region better protection of ground water and aquifers fwill be provided. This will definitely reduce all potential for water contamination and consequently protect this resource from negative effects.

- **Enhance conservation of natural resources**

The Azraq Area is an oasis supplying drinking water to Amman and other regions. Accordingly protecting the water table and aquifers of Al-Azraq is a priority matter in order to maintain the quality of water supplied to other regions. This Oasis is subject to direct threat and serious impact on its water resources due to current operational practices in dealing with municipal sewer water.

- **EIA**

Despite the urgent need for the project to be implemented a fully fledged EIA will have to be undertaken, as required by EIB, and other donors, for the different components of the project. It is very important that the local community participates in the EIA process, not only as an EIB requirement, but also for them to understand the importance of this project and how it can contribute to improving their standard of living.

C.11 OPPORTUNITIES & RISKS

Opportunities

Institutional

The project will relieve WAJ from the burden of protecting the water table and will create credibility of the Authority through the sanitation service improvement provided to the community.

Technical

Technically speaking the project will resolve problems arising from the current practice of discharging wastewater to the ground and will provide the opportunity of making available new water resources for irrigation purposes.

Relevance to country's policies / strategies

The project is listed in the executive plan of the national strategy and serves the objectives of the national water strategy of conserving water resources

Risks

Financial

Although the government is ready to engage in financing arrangements to implement this project, it is still not clear on the pay back and return on capital. Feasibility is still to be undertaken in order to determine all the financial parameters of the project.

C.12 PROJECT READINESS

Budget:
Implementation plan

Implementation plan - Not ready yet.

Monitoring of implementation plan - Not ready yet.

Project Readiness - The project is not ready yet as not all the studies have been conducted. Only tender documents for technical designs were launched.

Summary of gap analysis

The following studies are required to prepare the project, including all activities involved in hiring and supervising consultants, such as prequalification, preparation of terms of reference and requests for proposals, tendering, proposal evaluation, contract negotiation, progress supervision and review of reports:

- Preparation of a Pre-Feasibility Study to identify project components and make preliminary cost-estimates;
- Preparation of a Feasibility Study with full analysis of technical and financial feasibility;
- Preparation of an EIA for the project;
- Review of awarded technical Detailed Designs; and
- Preparation of Tender Documents for construction.
-

FOR FURTHER DETAILS SEE GAP ANALYSIS IN ANNEX 1

ANNEX 1 - CONTACT PERSONS

Maha Al Zu'bi

Ministry of Planning & Internl. Cooperation
Deputy Director, Projects Dept.
Head of Water & Agriculture Division
P.O.Box: 555 Amman 11118 Jordan
Tel: 962 6 464 4381
Fax: 962 6 464 9341
E: maha.z@mop.gov.jo

Eng. Ahmad Qatarneh

Ministry of Environment
Director, Environmental Impact Assessment Department
M: +962 799875029)
E: aqatarneh@yahoo.com

Eng. Zaid El-Keilani

Water Authority of Jordan
Assistant Secretary General for Sewerage Affairs
P.O.Box: 2412
Amman-Jordan
Tel: 962 6 5665879
Fax: 962 6 5686449
M: 962 79 5507243
E: zaid_kilani@mwi.gov.jo