Final Conclusions and Recommendations

6

This Regional NGO Master Plan for Sustainable Development of the Jordan Valley aims at identifying feasible interventions that will restore the valley's environmental and ecological values within a realistic financial and economic framework, in which a future State of Palestine will be recognized as one of the three riparians, side by side with Israel and Jordan with all three nations entitled to an equitable share of the valley's resources. The plan assumes furthermore free access to the valley for all people within appropriate and negotiated security arrangements. This plan addresses interventions on a regional and national scale in the areas of water management, pollution control, agriculture development, tourism and cultural heritage, land use, governance, sustainable energy, urban development and infrastructure. It will be used by WEDO/EcoPeace and partners as an advocacy tool towards Jordanian, Israeli and Palestinian decision makers and the international community for the implementation of the proposed interventions.

Based on the population projections made by the Jordanian, Palestinian and Israeli Departments of Statistics, an assessment has been made of the total population in the valley in the years 2025 and 2050. This includes natural growth of the autonomous population to 0.92 % in 2050. In addition, this Master Plan assumes that in Jordan the high number of foreign inhabitants in the valley will gradually decline as because improving economic conditions in their countries of origin, including Syria, Iraq and Egypt. It is assumed that all Israeli settlements in the Palestinian part of the Jordan Valley will be removed, and that the Independent Palestinian State created will see a growth towards an estimated 500,000 people living in the Palestinian section of the Jordan Valley by 2050. It assumes natural population growth under strong economic development conditions in Israel. These assumptions lead to a total projected population in 2050 of 1.048 Million people living in the Jordan Valley, from the southern tip of the Sea of Galilee to the northern edge of the Dead Sea.

The key challenge facing the NGO Master Plan is to strike the right developmental balance between a healthy economic developmental path for the valley and its people on the one hand, and a Jordan River with sufficient environmental flows to sustain a healthy eco-system on the other hand. To meet this objective there is a need to ensure that the river serves as a natural water conveyor and source for water supply for residents in and outside the Jordan Valley. Sustainable development is seen as a catalyst to peace building between Israel and Palestine and the deepening of cooperation between Jordan, Palestine and Israel as a means to achieve prosperity for their residents in the valley. A key condition for meeting this challenge is that Palestine is recognized as a full riparian to the Jordan River, entitled to have access to its fair share of water resources and sovereignty over its lands in the valley.

A total of 127 interventions have been identified, aiming at addressing all strategic objectives of the Master Plan, with a total investment value of 4.58 Billion USD. The full set of interventions is presented in Annex 1 and grouped around the various strategic planning objectives. Interventions have been distinguished in terms of Regional (REG), Israeli (ISR), Jordanian (JOR) and Palestinian (PAL) interventions. The interventions have been elaborated at pre-feasibility level. This implies that indeed more details are to be elaborated during the next stage following the completion of this study, such as detailed feasibility studies, financing plans and more. It is not unlikely that during this follow-up phase additional ideas and interventions will be proposed and developed to further fine tune the actions required.

The majority of investments foreseen in the Jordan Valley relate to urban and infrastructure development, about 3.4 Billion USD, or 80 % of the total investments. This package is crucial for reaching the economic growth assumed in this Master Plan, and to provide the Jordanian and Palestinian needs in terms of housing, roads, education, medical care and utilities. Moreover, these interventions will attract private investors necessary for creating the economic

J. Kool, *Sustainable Development in the Jordan Valley*, Hexagon Series on Human and Environmental Security and Peace 13, DOI 10.1007/978-3-319-30036-8_6

dynamics in the Jordan Valley, required for sustainable growth and prosperity.

By 2050, when these interventions have been implemented, the Jordan Valley will have turned into a co-operative, confident and peaceful region with a healthy economy and strong development perspectives for the people living here. They will experience a clean and healthy environment and sufficient flows in the Jordan River to sustain healthy eco-systems. At the same time the river will act as natural water conveyor and source for water supply in the Jordan Valley. Sufficient water will be equitably shared among the three riparian countries and the valley will be freely accessible for all nationalities within an appropriate security framework. Local, private and foreign investments will be encouraged due to the stability in the region. In short, there will be an investment climate resulting from the reforms in general, and a conductive regulatory business environment that promotes sustainable development.

This vision for 2050 is subject to a series of assumptions, including full realization of the three-state co-operation scenario. Palestine will become an independent state, and an equitable partner to both Israel and Jordan. It is also assumed that by 2020 all pollution sources will have been mitigated or removed from the Jordan Valley, including wastewater, saline water and solid waste related pollution sources. A sustainable and environmentally friendly water regime has been created in the Jordan Valley by 2050, including a clean, healthy and multi-functional river system and facilitates the interests all riparian states appropriately, including the future independent state of Palestine.

By 2050, all regionally generated wastewater will be treated and reused for agricultural purposes. It is also assumed that the three together will have established the Jordan River Basin Management Organization, responsible for river basin management, overseeing the agreed water supply and regional economic development frameworks and jointly managing the Jordan River as the major natural and multi-functional surface water body in the region. It is also assumed that the three parties have agreed on a joint security management framework that ensures maximized security against external threats against all Israeli, Palestinian and Jordanian people living in and around the Jordan Valley. This security framework will be based on unbiased, professional and joint assessment of security risks, and mitigation plans that effectively address these risks.

This Regional NGO Master Plan will be presented at an international conference scheduled for June 2015. It will be used as an advocacy tool by WEDO/EcoPeace and its partners towards national and international decision makers and the international community for the implementation of the proposed interventions.

Finding international and national partners for implementation of the most urgent interventions is the next challenge. We trust that the depth of the analysis presented here and the consistency in the applied planning approach will convince these future partners to embark on implementing this plan, including continued co-operation on valley level within the Lower part of the Jordan River among the Jordanian, Israeli and the Palestinian neighbors.

What can move forward now?

Within the total set of interventions, a series of *short term interventions* have been identified, which can be initiated immediately, pending the final peace accord between Israel and Palestine. In addition, preparation for the Jordan Valley Regional Coordination interventions on all strategic objectives can be advanced at this time. They represent a total investment value of 495 MUSD, including 165 MUSD of Israeli interventions and 330 MUSD of donor supported Jordanian and Palestinian interventions in the areas of pollution control, water management, tourism and cultural heritage development, agriculture and ecological restoration. These interventions aim at improving the baseline situation in the Jordan Valley substantially, particularly in Palestine and Jordan, resulting in a strong foundation for the establishment of the independent Palestinian State and for effective regional co-operation among the three riparian states as geopolitical conditions allow.

These short-term investments are the following:

2020 Target: Remove major pollution sources from the Jordan Valley

P01	ISR	Fish Ponds Short Term Pollution Control Improvement Project
P02	ISR	Mine Fields Removal Project
P03	ISR	Sustainable Fish Farming in the Jordan Valley
P04	ISR	Betanya Tertiary Wastewater Treatment
P05	ISR	Betanya Desalination Plant and Afikim Reservoir Project
P01	JOR	Solid Waste Management
P02	JOR	Environmental Management and Public Awareness Program
P03	JOR	Agricultural Pollution Control Project
P04	JOR	Separate waste collection and reuse pilots
P01	PAL	Solid and Hazardous Waste Management Plan
P02	PAL	Environmental Management Project
P03	PAL	Wastewater collection and treatment
P04	PAL	Fish farm Pollution control project
P05	PAL	Land and Water quality Protection Project

2020 Target: Prepare for sustainable water management and supply in the Jordan Valley, including ecological rehabilitation of the Jordan River

W01	ISR	Yarmouk River Dredging and Cliff Protection Project
W02	ISR	Western Drainage Basins Flood Management
W03	ISR	Northern Sewerage Expansion Project
W04	ISR	Springs Rehabilitation Project
W01	JOR	Improved Lower Jordan River Basin Management Project
W02	JOR	Wastewater collection, treatment and reuse project
W03	JOR	Emergency Wastewater Management Project
W04	JOR	Waste water reuse pilot projects
W02	PAL	Rehabilitation and Protection of springs
W03	PAL	Rehabilitation and construction of Domestic water networks
W04	PAL	Desalination of Brackish wells
W05	PAL	Rehabilitation of Al Auja Spring
W06	PAL	Development of Water Traffic structure
W07	PAL	Utilization off Al-Fashkha Spring
W10	PAL	Artificial Recharge Scheme
W11	PAL	Construction of Water networks
W12	PAL	Hydro-Geological Assessment of the study Areas

2020 Target: Development of a framework for sustainable development of the agricultural sector in the Jordan Valley with an efficient water use

A01	JOR	Jordan Valley Greenhouses Expansion Project
A02	JOR	Jordan Valley Extension Services Improvement Project
A03	JOR	Jordan Valley Drip Irrigation Improvement Project
A04	JOR	Jordan Valley Post Harvesting Support Project
A05	JOR	Jordan Valley Irrigation Efficiency Improvement Project
A06	JOR	Jordan Valley Authority Support Project
A03	PAL	Water Right Policies and Regulation (internal issues to Palestine)
A08	PAL	Support to Women organizations and Bedouin Communities
A10	PAL	Strengthening of Extension Services
A11	PAL	Promotions of Farmers Cooperative
A12	PAL	Jordan Valley Credit Program
A13	PAL	LEISA Research certification

2020 Target: Development of a sustainable ecological management and restoration framework in the Jordan Valley

E05	REG	International Accreditation of the Lower Jordan River Valley
E01	JOR	Ecological Corridors around Valleys and Dams
E02	JOR	Wetlands and Aquatic Fauna Restoration Project
E03	JOR	Ecological Monitoring and Management Project

2020 Target: Development of a sound foundation for protection of cultural heritage and tourism development in the Jordan Valley

C01	ISR	Tsemach to Naharaym Tourism Development Project
C02	ISR	Gesher to Bezeq Stream Tourism Development Project
C01	JOR	Pella Tabaqat Fahl Site Improvement Project
C02	JOR	Abu Ubaydah Tomb Improvement Project
C01	PAL	Cultural Heritage Protection and Management Plan
C02	PAL	Tourism Branding and Promotion
C04	PAL	Rehabilitation of the Catchment of Ancient Jericho
C05	PAL	Rehabilitation of salt industry sites, Rusheideyeh
C06	PAL	Rehabilitation of Ancient Jericho
C07	PAL	Rehabilitation of Hisham's Palace
C08	PAL	Rehabilitation of Tel Abu El Alayek
C09	PAL	Rehabilitation of Khirbet El biyadat or Tel Ouja
C10	PAL	Rehabilitation of Khirbet El Makhrouq
C11	PAL	Rehabilitation of Tel El Hamma
C12	PAL	Archaeological Landmark Features
C13	PAL	Spa, Thalasso therapy and Balneo therapy Center
C14	PAL	Jesus Village

Annexes to Regional NGO Master Plan for Sustainable Development in the Jordan Valley

Contents

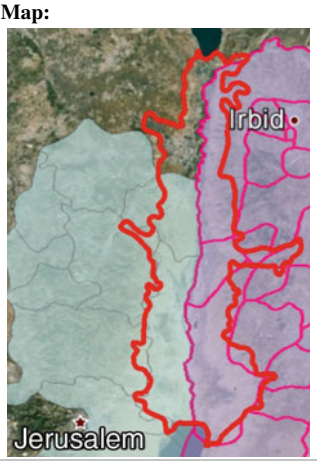
J. Kool, *Sustainable Development in the Jordan Valley*, Hexagon Series on Human and Environmental Security and Peace 13, DOI 10.1007/978-3-319-30036-8

1. Pollution Control and Sanitation Interventions

Name: P01 REG—Jordan Valley Regional Coordination on Pollution Control	**Location:** Jordan Valley	**Type of Intervention:** Pollution Control

Objectives:
Set up a regional coordination structure, or Steering Committee, among key Jordanian, Israeli and Palestinian governmental stakeholders for the implementation of the proposed national and regional interventions in the Jordan Valley with regards to pollution control. The objective is that this Steering Committee will eventually be embedded in the structures of the overall River Basin Organization for the Jordan Valley (ref. intervention IC01 REG Jordan River Basin Organization).
The regional coordination structure aims at optimized regional cooperation in preparation and implementation of the interventions, maximized exchange and joint development of know-how and experiences among the three core parties, monitoring the outputs of the interventions and steering the implementation in terms of their contribution toward reaching the pollution control objectives.

Map:



Intervention:
- Setup a kick-off meeting with the key governmental stakeholders from the three core parties with regard to the pollution control objectives
- Define objectives, procedures and operational, organizational and financial frameworks for setting up the joint Steering Committee under the pollution control objectives
- Prepare detailed implementation and financing plans for the proposed interventions
- Setup structures for regional exchange of related know-how and experiences
- Develop key performance indicators and monitoring procedures towards the implementation of the interventions
- Assist and steer the project implementing organizations accordingly

Results/Impacts: Low production risk
- Optimized regional cooperation during the preparation and implementation of the proposed interventions under the Pollution Control Objectives
- Maximized regional exchange know-how and experiences
- Optimized monitoring and steering of the interventions during detailed preparation and implementation
- Built up regional trust and the peace dividend

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainable development of the Jordan Valley through optimized co-ordination and exchange of relevant information

Organization/Responsibilities:
- Key governmental and sectoral stakeholders from Jordan, Israel and Palestine
- Support and dissemination by EcoPeace

Costs and Revenues:
- Preparation cost: 300,000 USD
- Implementation cost: 200,000 USD/year

Implementation Period
- Until 2050:

Name: P01 ISR—Fish Ponds Short Term Pollution Control Improved Project	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Water Management

Objectives:
- Improve pre-treatment and dilution of wastewater discharge with fresh water in the river
- Supply better water quality in the river
- Note: This is short term only. Other and more sustainable options are proposed for the long term

Intervention:
- Change operations of wastewater discharge
- Release wastewater discharge during winter season into the Jordan River when water is high, or there are floods
- Construct settling ponds before release into the river
- Expand two pilot projects that are currently being implemented

Results/Impacts:
- Improve pre-treatment of fishpond wastewater
- Improve Jordan River water quality

Organization/Responsibilities:
- Lower Jordan River Basin Drainage Authority, Israel

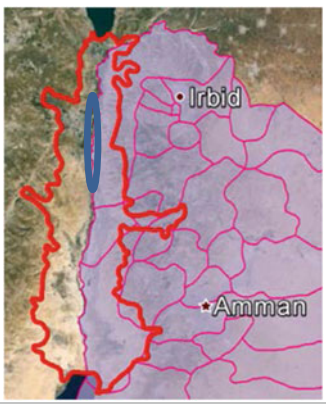
Costs and Revenues:
- Preparation cost: 1,000,000 USD
- Construction cost: 15,000,000–20,000,000 USD
- Operating cost: to be paid by fish farmers

Implementation Period
- Preparation time: 0.5 year
- Construction time: 2 years

Other remarks:

Name: P02 ISR—Mine Fields Removal Project	**Location:** Northern Israeli Jordan Valley Along Border Zone	**Type of Intervention:** Water Management

Objectives:
- Remove all minefields in the area by 2016/early 2017



Intervention:
- Planning for identification and removal of mines
- Removal and destruction of mines

Results/Impacts:
- Safe areas along the Jordan River that are accessible to the general public

Organization/Responsibilities:
- Israeli Military

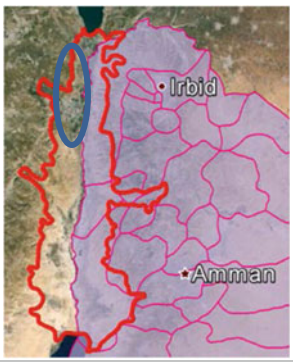
Costs and Revenues:
- Preparation cost: 100,000 USD?
- Construction cost: 1 M USD?

Implementation Period
- Preparation time: 0.5 year
- Construction time: 1 year?

Other remarks:

Name: P03 ISR—Sustainable Fish Farming in the Jordan Valley	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Water Management and Pollution Control

Objectives:
- Develop sustainable fish farm technologies, into closed systems eliminating negative environmental impacts and minimizing water use
- Change existing fish farms into these fully sustainable closed system concepts
- Remove fish farms from the region that cannot meet these criteria, either by changing them into bird reservoirs or other types of less-polluting agriculture
- This intervention shall be considered the long-term sustainable follow up on intervention W04 ISR



Intervention:
- Continue research on sustainable fish farming, including bio-pesticides; biological filtering; reusing of fish farm discharge water, including use of forced oxidation to maximize production and selecting higher revenue fish types like sea bass. Research has shown that this will result in use of only 10 % of today's water consumption and no discharge of polluted water at all
- Transfer this research and related pilot projects to real scale model fish farms
- Transfer existing cooperative fish farms based on these sustainable concepts
- Closure of all other fish farms

Results/Impacts:
- Better water quality and outflow in the Jordan River
- Increased fish farm-related economic outputs
- Full mitigation of negative environmental impacts of the fish farms

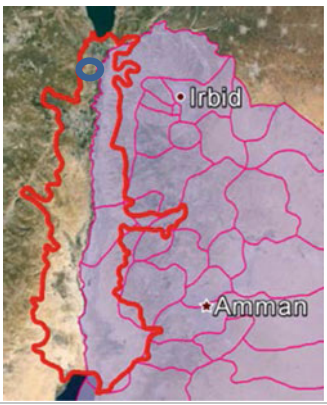
Organization/Responsibilities:
- Lower Jordan River Basin Drainage Authority
- Spring Valley Regional Council
- Fish Farms and their organizations
- Edan Farm

Costs and Revenues:	**Implementation Period**
• Preparation cost: 1 M USD • Construction cost: 25 MUSD	• Preparation time: 5 years • Construction time: 5 years

Other remarks:

Name: P04 ISR—Betanya Tertiary Wastewater Treatment	**Location:** Betanya WWTP, Israel	**Type of Intervention:** Pollution Control

Objectives:
- Expand the current secondary treatment of Betanya with a Tertiary Treatment Facility
- Bring the effluent to the new downstream Afikim reservoir (not part of this intervention), which will also receive desalinated water from the Salt Water Carrier
- Reuse this water for agricultural purposes



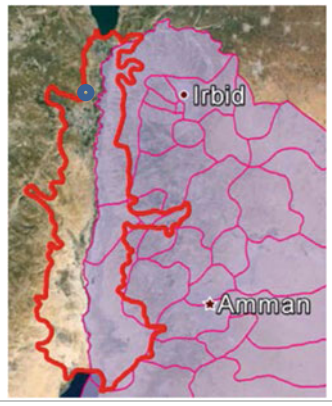
Intervention:
- Planning for tertiary treatment, conveyance and reservoir
- Construction of these interventions
- Operation of the new facilities

Results/Impacts:
- Better water quality
- Better reuse
- Better river water quality

Organization/Responsibilities:
- Jordan Valley Regional Council
- City of Tiberias

Costs and Revenues:	**Implementation Period**
• Preparation cost: 1 M USD • Construction cost: 25 M USD (75 M ILS has been secured; 25 M NIS still to be identified)	• Preparation time: 0.5 year • Construction time: 1 year (2016)

Other remarks:

Name: P05 ISR—Betanya Desalination Plant and Afikim Reservoir Development Project	**Location:** Betanya WWTP	**Type of Intervention:** Pollution Control
Objectives: • Construct a desalination plant for much of the water in the Salt Water Carrier • Mix this water with effluent from the Betanya WWTP into the Afikim Reservoir • Reuse this mixed water (3.5 MCM/year) for agricultural purposes • Use desalinated water for drinking water purposes • Using 6 MCM/year of brine (4000 ppm) for fish ponds near Bezeq • Or alternatively, discharge brine through a pipeline in Dead Sea (additional 100 M NIS investment)		
Intervention: • Planning for desalination and Afikim reservoir; and planning for reuse • Implementation of the all operations		
Results/Impacts: • Better water quality • Better reuse • Better river water quality		
Organization/Responsibilities: • Jordan Valley Regional Council • Private sector • Farmer associations		
Costs and Revenues: • Preparation cost: 1 M USD • Construction cost: 50 M USD		**Implementation Period** • Preparation time: 2 years • Construction time: 2 years
Other remarks:		

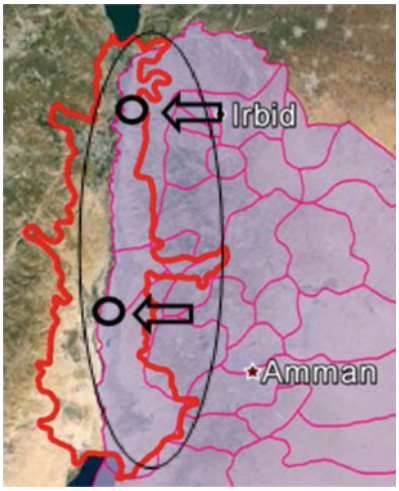
Name: P01 JOR—Solid Waste Management	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Pollution Control

Objectives:

Prepare an integrated solid waste management plan for the lower Jordan River Valley, including (separate) waste collection; transportation; transfer, including maximized reuse and recycling of solid waste streams; selection, planning, design and construction of a sanitary landfill; closing of existing non-sanitary dump sites; maximizing of composting of organic waste (including feedstock waste) for use in the agricultural sector; municipal organizational and financial frameworks (polluter pays principles); and international exchange of best practices. The proposed Jordanian Solid Waste Management intervention is in line with the current National Solid Waste Management Plan (2014) prepared by the Ministry of Environment and new legislation being prepared for the municipalities. The project includes an integrated planning section dedicated to the Lower Jordan River Valley; cross-border waste transfer and transfer of the landfill in North Shuneh into a transfer station, focusing on composting organic waste for composting, including household organic waste, agricultural waste and solid waste generated by olive mills and PPPs. However, the National SWM strategy will be elaborated on the levels of governorates, which overlaps parts of the area of the Lower Jordan River Valley.

In the long-term, this should lead to full collection and sanitary treatment of all solid waste streams and maximized reuse and recycling of waste streams, including waste-to-energy generation.

Map:



Intervention:

Set up and execute an integrated solid waste management plan for the entire area. This proposed intervention focuses explicitly on the Lower Jordan River Valley, without waste management plans for other regions, such as the Syrian refugee camps currently located close to the border. Additional elements to be addressed are ways of financing, increasing public and governmental awareness and participation, private sector involvement, source separation, and compliance with environmental and social procedures for the preparation of landfills.

Preparation:

- Analyse current state of solid waste management (collection, transfer, transport, recycling and disposal)
- Exchange of regional experiences (including experiences in Israel) and a regional knowledge transfer with regard to optimal solid waste management and the use of various reuse and recycling options
- Determine the basis for future solid waste management with Ministries, municipalities and the Joint Service Council responsible for waste management
- Information campaigns for inhabitants and industries
- Information campaign for farmers stimulating the reuse of compost
- Inventory of markets for reusables
- Analyse current situation with regard to closed landfills, closure/rehabilitation plans for closed landfills and post-closure plans
- Search for temporary landfilling options for waste from the area
- Determine required landfilling capacity
- Select sites for two sanitary landfills in the Jordan Valley
- Revisit/perform planning and design for the two sanitary landfills (based on national criteria described in the Solid Waste Management plan), including detailed design already prepared for Deir Alla Sanitary Landfill
- EIA's and licenses
- Include waste management originating from (abandoned) Israeli settlements, with notice taken of previous development in former settlements in Gaza

Construction/Realization:

- Set up national criteria for Solid Waste Management (of all waste streams, including domestic, agricultural, industrial, medical and hazardous waste)
- Set up the Solid Waste Management Plan, including maximized reuse and recycling of waste streams
- Set up a waste management organization and make arrangements with municipalities (including separate collection, composting and recycling)
- Tender for more waste containers and more frequent and separate collection
- Start composting and recycling pilots
- Tender for the closure and rehabilitation of the landfills, construct of the final cover and other rehabilitation measures
- Tender for post-closure activities
- Tender and construct the landfills

Operations:

- Waste collection
- Fee collection (new tariff system)
- Technical and financial management
- Start post-closure program for closed dumpsites
- Operation of recycling and composting pilot facilities
- Operation of two sanitary landfills
- Cost of operations to be recovered by "polluter pays" principle

Results/Impacts:

- Introduction of the "polluter pays" principle
- National criteria for solid waste management (including collection, reuse, recycling, composting, anaerobic digestion and other reuse options)
- Standards for the rehabilitation of old non-sanitary landfills and of uncontrolled landfills (illegal dumpsites) and for the realization of sanitary landfills
- Increased capacity for and frequency of waste collection
- Improvement of environmental and public health situation
- Introduction of separate collection of specific organic waste streams (market waste, plant tissue from agriculture)
- Improvement of separate collection of plastics, paper and metals
- Decreased amount of waste to be land-filled
- Limiting environmental pollution/risks for contamination of drinking water as a result of closure of old dumpsites

(continued)

Name: P01 JOR—Solid Waste Management	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Pollution Control

• Waste, which is not reused or recycled, will be fully treated in two landfills located in suitable locations in the Jordan Valley (An average of 200,000 tons/year will produce 6 million tons of waste over 30 years, so part of this will be recycled in the future)

Sustainability and Water Impacts:
• This project will have a direct impact on the sustainability of the Jordan River Valley due to more efficient pollution control and reuse and recycling of waste streams
• This project will have an impact on the ambient water quality in the valley, due to mitigation of pollution by unprotected waste dumping

Organization/Responsibilities:
• Joint Service Council
• Ministry of Environment
• Local municipalities

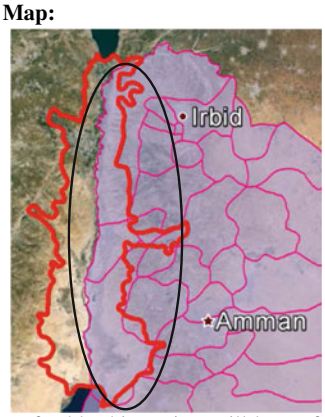
Costs and Revenues (based on similar SWM projects in the region):	**Implementation Period**
• Preparation cost: 1,300,000 JOD • Construction cost: 20,000,000 JOD (for 30 years of landfills and composting) • Operation cost: 5,000,000 JOD/year (including collection) • Annual revenue: 2,000,000 JOD in 2050	• Preparation time: 2 years • Construction time: 5 years

Other remarks:
• Short-term action
• Take into account both the inhabitants and small industries
• Start with the more inhabited areas (larger towns along the main road like Deir Alla)
• Start (mechanical) waste separation, reuse, recycling and composting (or maybe anaerobic digestion) pilots
• Start with the more inhabited areas, like Deir Alla (maybe combination with the current composting facility for agricultural waste and manure)
• The current landfill in Deir Alla and the closed Manshea dumpsite in North Shuneh are not designed and the sites are not selected according to appropriate criteria. These landfills have no lining system or leachate collection and treatment system. They pose a threat to nearby communities and ground water/drinking water reservoirs. Landfilling in these locations should be stopped (short-term), and the sites should be rehabilitated with at least a final water proof cover (middle-term)
• The waste should temporarily be brought to sanitary landfills outside the Jordan Valley
• Site selection and designs of the new sanitary landfills are middle-term, and realization is long-term

Name: P02 JOR—Environmental Management and Public Awareness Program	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Pollution Control

Objectives:
Develop an integrated environmental monitoring, enforcement and public awareness program for the Lower Jordan River Valley, that will include monitoring of wastewater and solid waste major pollution sources, including fish farms; ambient surface and groundwater quality; soil quality and air quality. The purpose of this program is to enable JVA and related authorities to establish the environmental baseline of the Lower Jordan River Valley; to increase public awareness on environmental protection and water demands; and to monitor the impacts of pollution control measures, such as solid waste management and wastewater management interventions. The project will also include development of dedicated impact assessment tools for JVA, such as Strategic Environmental Assessments to be used to test new policies and strategies related to the Lower Jordan River Valley.

Map:



Preferably this project will be performed in conjunction with P02 PAL Environmental Management Project and the key Israeli stakeholders to harmonize monitoring practices and strengthen collaboration thoughout the Jordan Valley.

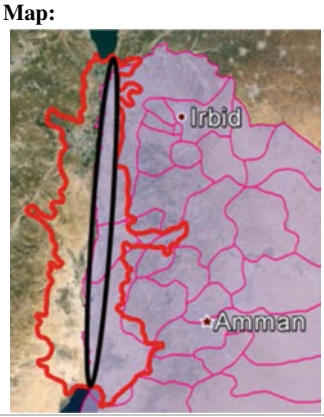
Intervention:
Protecting, preserving and improving the environment through monitoring and law enforcement
Raising inhabitants' and companies' awareness of the local environment and possible sources of pollution, Development of better community participation.

Preparation:
• Plan
• Assess environmental hot spots
• Elaborate on 2014 EcoPeace proposals for groundwater protection zoning

Construction/Realization:
• Establishment of an environmental baseline
• Highlighting of the key environmental elements
• Determination of the key threats to these key elements
• Identification of the most vulnerable environmental areas/locations
• Setup of relevant legislation along with a penalty system
• Strategic Environmental Assessments for the new policies and strategies
• Information campaign for inhabitants and companies
• Strengthening of JVA and other authorities
• Setup of an enforcement organization
• Setup and introduction of a monitoring system

(continued)

Name: P02 JOR—Environmental Management and Public Awareness Program	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Pollution Control
• Setup an implementation plan including all relevant aspects (technical, financial, logistical, etc.) • Develop dedicated impact EIA tools • Information material (flyers, brochures, leaflets, TV material, etc.) for public awareness • Prepare workshops		• Control of pollution originating from (abandoned) Israeli settlements, with notice taken of previous development in former settlements in Gaza **Operations:** • Environmental monitoring and rehabilitation • Pollution control • Law enforcement
Results/Impacts: • Improved awareness regarding the protection and preservation of the environment • Improved urban and environmental planning capacities Improved enforcement regarding wastewater, air quality, waste and water resources (penalties and incentives) • Enhanced environmental data collection • Strengthened capabilities of local governance • Better coordination between JVA, MoA and local municipalities • Empowered relevant authorities on monitoring, and enforcement (waste, wastewater, etc.) • Improved knowledge and increased public awareness of the inhabitants and companies in the Jordan Valley regarding the consequences of environmental pollution (littering, dumping, health issues) and the possibilities of waste collection and management, wastewater collection and environmental collection. Final result will be improvement of environmental and health quality • This project will have a direct impact on the Jordan River due to more efficient pollution control • This intervention can be part of the bigger project for WWTP for cost and time efficiency reasons		
Sustainability and Water Impacts: • This project will have a direct impact on the sustainability of the Jordan River Valley due to more efficient pollution prevention and control • This project will have an indirect impact on the ambient water quality in the valley due to mitigation of pollution by various pollution sources		
Organization/Responsibilities: • JVA • MoA • Local municipalities • Ministry of Environment • civil society organizations		
Costs and Revenues: • Preparation cost: 1,000,000 JD • Construction cost: 2,100,000 JD • Operation cost: 300,000 JD/year • Annual revenue: 0 JD/year		**Implementation Period** • Preparation time: 2 years • Construction time: 3 years
Other remarks:		

Name: P03 JOR—Agricultural Pollution Control Project	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Pollution Control
Objectives: Assist farmers and their organizations in applying sustainable agronomic practices, including minimized use of pesticides and fertilizers, regulation and distribution and types of pesticides on regional or national levels, promotion of environmentally sustainable substances, stimulation of the reuse of organic agricultural waste as compost, improvement of the management of agricultural waste and improvement of the environmental performance of fish farms.		**Map:** 
Intervention: Introduction of environmentally sustainable practices in agriculture (including fish farms) **Preparation:** • Inventory of the agricultural market situation and common agricultural practice including waste management		**Construction/Realization:** • Stimulation program for environmentally sustainable farming • Tendering for agricultural waste management and composting

(continued)

Name: P03 JOR—Agricultural Pollution Control Project	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Pollution Control
• Analysis of the possibilities of turning certain agricultural plant tissues remains into animal food • Awareness raising, an information campaign and training for farmers (stimulation of the reuse of organic agricultural waste as feedstock for animals or for compost, improved waste management, promotion of environmentally sustainable substances and limitation of use of pesticides and fertilizers • Inventory and assessment of the environmental performance of fish farms (location, capacity, technical state, manner of operations, potential pollution loads, e.g. Jordan Valley fish farm of Taloubi, The Arab fish farm in the North, Al-Natoor Fisheries, Al-Taba'a Fisheries) • Awareness raising, an information campaign and training for operators of the fish farms Preferably this project will be performed in conjunction with P01 PAL Waste Management Project and the key Israeli stakeholders to harmonize monitoring practices and strengthen collaboration throughout the Jordan Valley.		• Setting up of regulations for pesticide and artificial fertilizers • Rehabilitation plan for fish farms to prevent pollution of the ground water or uncontrolled/untreated spillage of the water to the river, including planning and costs • Tendering and rehabilitation/construction of fish farms **Operations:** • Adjust manure application to plant requirements • Limit the use of pesticides and fertilizers • Supervise/improve manure application (risks in areas with high runoff potential, high chances of rainfall, areas of high vulnerability to contamination) • Use organic agricultural remains as fodder or for compost production • Collect and treat waste • Reuse waste water in fish farms

Results/Impacts:
- Improvement of environmental situation
- Improvement of public health situation
- This project will have a direct impact on the Jordan River due to more efficient pollution control
- Improvement of the reuse of organic agricultural waste
- Reduction of the use of pesticides and artificial fertilizers, thus limiting pollution and costs for farmers
- Increase of the organic matter content of soils
- Minimization of potential contamination of spring water and shallow aquifers

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley due to more efficient pollution control and reuse and recycling of waste streams
- This project will have an impact on the ambient water quality in the valley due to mitigation of pollution by unprotected waste dumping
- This project will have a direct impact on the sustainability of the Jordan River Valley due to more efficient agricultural pollution control, and reuse and recycling of agricultural waste streams
- This project will have impact on the ambient water quality in the valley due to mitigation of agricultural pollution

Organization/Responsibilities:
- JVA
- MoA
- Farmers organizations
- Ministry of Environment (MoENV)

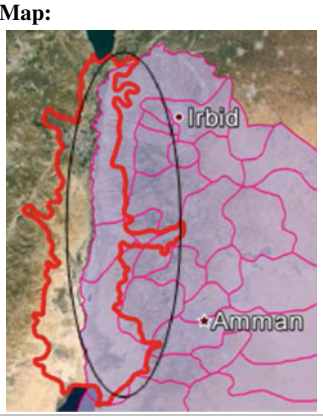
Costs and Revenues:	**Implementation Period**
• Preparation cost: 500,000 JD • Construction cost: 1,000,000 JD • Operation cost: 300,000 JD/year • Annual revenue: 0 JD/year	• Preparation time: 1 year • Construction time: 2 years

Other remarks:
- Agricultural waste includes but is not limited to plant tissue remains, manure, runoff from feedlots, wastewater from farm buildings, dead animals, plastics, chemicals, empty containers, old machinery, animal health care products, etc.
- Various plant tissue remains, considered agricultural waste, can be used as feeding material for animals
- Concentrations of animal manure and carcasses on farms may cause environmental pollution (risk for groundwater) and health risks (diseases) for both animals and humans. Therefore, collection and treatment (or use in the case of manure if possible) is required

Name: P04 JOR—Separate Waste Collection and Reuse Pilots	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Pollution Control

Objectives:
Stimulate the reuse of resources/waste streams, limit the amount of waste to be landfilled and investigate the possibilities and bottlenecks for separate collection and reuse of certain waste streams.
Preferably this project will be performed in conjunction with P01 JOR SWM project

Map:



Intervention:
Prepare and execute pilot projects

Preparation:
- Select communities to perform pilots
- Information campaign for inhabitants with regard to a pilot for separate collection
- Information campaign for farmers with regard to a pilot for the use of compost
- Plan the separate collection and composting pilots
- Design and develop operations manual for the composting pilot
- Test program

Construction/Realization:
- Tendering for the waste containers and collection contract for the separate collection pilot
- Tendering for and realization of the composting pilot facility

Operations:
- Separate collection of organic waste and recyclables
- Composting of organic waste
- Application of the compost by a selected group of farmers
- Analysis of results of the separate collection, composting and farming pilot and comparison with a reference group of farmers

Results/Impacts:
- Introduction of separate collection of specific organic waste streams (market waste, plant tissue from agriculture)
- Improved of separated collection of plastics, paper and metals
- Decrease of the amount of waste to be landfilled
- This project will have an indirect impact on the Jordan River due to more efficient pollution control

Sustainability and Water Impacts:
- This pilot project will have a direct impact on the sustainability of the Jordan River Valley due to more efficient waste management, reuse and recycling of waste streams
- This pilot project will have impact on the ambient water quality in the valley due to mitigation of pollution by unprotected waste dumping

Organization/Responsibilities:
- JVA
- MoA
- Selected communities
- Organization of farmers
- Ministry of Environment (MoENV)

Costs and Revenues:
- Preparation cost: 100,000 JD
- Construction cost: 200,000 JD
- Operation cost: 100,000 JD/year
- Annual revenue: 0 JD/year (pilot project)

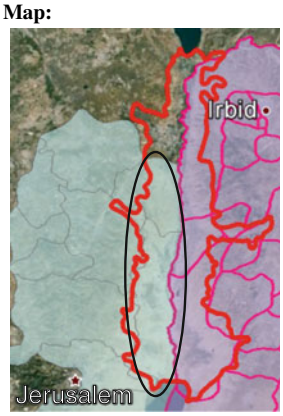
Implementation Period
- Preparation time: 0.5 years
- Construction time: 0.5 years

Other remarks:
- Short-term
- Start-up of (mechanical) waste separation, reuse, recycling and composting (or maybe anaerobic digestion) pilots
- Start with the more inhabited areas, like Deir Alla (maybe combination with the current composting facility for agricultural waste and manure)

Name: P01 PAL—Solid and Hazardous Waste Management Plan and Construction Activities for the Jordan Valley	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Planning and Construction

Objectives:
- Lay down a solid basis for a new waste management system in the Palestinian part of the Jordan Valley. In the long-term this should lead to the full collection and sanitary treatment of all solid waste streams and maximized reuse and recycling of waste streams, including waste to energy
- Enable adequate and safe collection of solid waste
- Stimulate the reuse of resources/waste streams and limit the amount of waste to be landfilled
- Prevent/limit environmental pollution and risks to drinking water (mainly shallow springs and shallow aquifers)
- Limit the amount of organic material that will be turned into waste (considering the waste to energy option) and limit the amount of food to be bought for animals
- Prevent environmental pollution and health risks
- Construct a central landfill

Map:



This project will preferably be performed in conjunction with the P01 JOR SWM project to improve waste management practices and strengthen collaboration throughout the Jordan Valley

Intervention:
- Carry out an integrated comprehensive solid waste management plan for the entire area
- Improve and develop existing solid waste collection methods. In addition, develop new methods and plans when needed and integrate them in the entire area
- Construct new landfills
- Deal with agricultural waste typically associated with animals, including, but not limited to, manure, wasted feed, runoff from feedlots, wastewater from farm buildings, waste from forage, dead animals, plastics, chemicals, empty containers, building materials, old machinery and animal health care products

Preparation:
- Analyse of the current state of solid waste management (collection, transfer, transport and disposal and recycling)
- Exchange experiences
- Discuss with Ministries, etc. to determine the basis for future solid waste management
- Investigate the number of waste containers and collection frequency required
- Information campaigns for inhabitants and industries
- Information campaign for farmers to stimulate the reuse of compost
- Inventory of markets for reusables
- Inventory of the locations and amounts of waste in all existing uncontrolled dumpsites
- Analyse the situation in the controlled landfill in Jericho
- Close/Rehabilitate plan
- Post-closure plan
- Search for temporary landfilling options for waste from the area
- Determine required landfilling capacity
- Select a site for a sanitary landfill in the Jordan Valley
- Plan & design the sanitary landfill (based on national criteria described in the Solid Waste Management Plan)
- EIAs and licenses
- Analyze possibilities of turning certain agricultural plant tissue remains into animal food
- Inventory of the market
- Information campaign for farmers

Construction/Realization:
- Setup national criteria for solid waste management (of all waste streams, including domestic, agricultural, industrial, medical and hazardous waste)
- Setup the Solid Waste Management Plan, including maximized reuse and recycling of waste streams
- Set up a waste management organization and make arrangements with municipalities (including separate collection, composting and recycling)
- Tender for more waste containers and more frequent collection
- Set up organization for separate collection
- Tender for more waste containers and separate collection
- Start pilots
- Tender for the closure and rehabilitation of the landfills, construction of the final cover and other rehabilitation measures
- Tender for the post closure activities
- Tender and construction of the landfills
- Train operators
- Set up operations structure
- Start a stimulation program for this application/recycling
- Develop awareness among farmers

Operations:

Operational costs to be recovered through the “Polluter Pays” Principle
- Study of current conditions
- Analysis
- Forecasts
- Management plans
- Conclusions
- Decisions to be recommended
- Waste collection
- Fee collection
- Technical and financial management
- Starting of post-closure program
- New tariff system
- Implementation of land rehabilitation plans
- Public awareness campaigns on sorting, recycling the need for new landfills and the closure of unsupervised dumpsites
- Closure of selected random dumpsites
- Cost sharing
- Post-closure actions
- Limiting of manure application to plant requirements
- Supervising manure use in areas of high runoff potential
- Prohibited application of manure when there are high chances of rainfall
- Avoidance of unmanaged manure use (or livestock grazing) in areas of high vulnerability to contamination (or sensitive areas)
- Manure storage
- Odor and fly control

(continued)

Name: P01 PAL—Solid and Hazardous Waste Management Plan and Construction Activities for the Jordan Valley	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Planning and Construction

Results/Impacts:
- Regional criteria for solid waste management (including collection, reuse, recycling, composting, anaerobic digestion and other reuse options)
- Standards for the rehabilitation of old non-sanitary landfills and uncontrolled landfills (illegal dumpsites) and for the realization of sanitary landfills
- Increased capacity for and frequency of waste collection
- Less littering
- Improved of environmental situation
- Improved of public health situation
- Potential financial benefits
- Introduction of separate collection of specific organic waste streams (market waste, plant tissue from agriculture)
- Improved separate collection of plastics (especially from agriculture), paper and metals
- Decreased amount of landfill waste
- Limited environmental pollution and risks for contamination of drinking water
- Full treatment of non-reusable or non-recyclable waste in landfills located in suitable locations in the Jordan Valley
- Improved economic situation if recycling and reusing schemes are introduced and practiced
- Maintained healthy environment for farm animals
- Reduced need for commercial fertilizers and thus limited feeding costs for farmers
- Increased organic matter content of soils
- Minimized potential of contamination of spring water and shallow aquifers

Organization/Responsibilities:
- Municipalities and local councils
- Ministry of Environmental Affairs (regulator)
- Ministry of Local Governance
- Ministry of Agriculture
- Palestinian Water Authority (regulator)
- Ministry of Health
- Ministry of Planning

Costs and Revenues:	**Implementation Period**
• Preparation cost: 200,000 USD • Construction cost: 30,000,000 USD • Operation cost: 150,000 USD/year • Annual revenue:	• Preparation time: 0.5 year • Construction time: 3 years

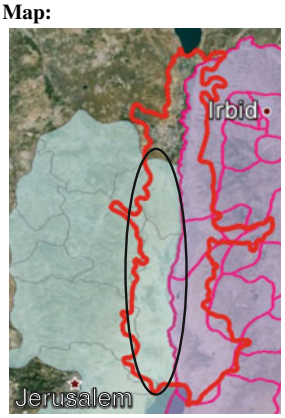
Other remarks:
- Short-term action

Name: P02 PAL—Environmental Management Project	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Policy and Legislative Improvement

Objectives:
- Develop an integrated environmental management plan
- Improve urban and environmental planning capacities
- Enhance environmental data collection
- Improve enforcement regarding (waste) water, air quality, waste (penalties and incentives) and water resources (groundwater aquifers and shallow groundwater that contribute to spring water)
- Make one organization responsible for environmental issues in the Jordan Valley, empower this organization to monitor and enforce (waste, wastewater, etc.)
- Improve public awareness in the valley in regards to waste collection and management, littering, wastewater collection, environmental protection and related health issues. In addition, focus will take into consideration additional environmental issues such as wastewater collection, treatment and the potential reuse and pollution of water resources, especially springs
- Strengthened institutions

This project will preferably be performed in conjunction with the P02 JOR Environmental Management Project and the key Israeli stakeholders in order to harmonize monitoring practices and strengthen collaboration throughout the Jordan Valley.

Map:



(continued)

Name: P02 PAL—Environmental Management Project	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Policy and Legislative Improvement

Intervention:
Protecting, preserving and improving the environment through monitoring and law enforcement
Raising residents' awareness of the study area regarding the local environment, its elements and possible sources of pollution
Organizing residents' participation in design of environmental management measures.

Preparation:
- Plan and assess environmental hot spots
- Setup the implementation plan, including all relevant aspects such as technical, financial, logistical, etc.
- Write information material
- Prepare workshops, etc.

Construction/Realization:
- Highlighting of the key elements of the environment in the study area
- Determination of the key threats to elements of the environment
- Identification of the most vulnerable environmental areas/locations
- Legislation of relevant law along with penalties
- Information campaign for inhabitants and companies
- Workshops
- Flyers, brochures, leaflets, TV material and publicity, etc.

Operations:
- Monitoring
- Law enforcement

Results/Impacts:
- Improved urban and environmental planning capacities
- Improved enforcement regarding (waste) water, air quality and waste (penalties and incentives)
- Clear understanding regarding which organization is responsible for environmental issues in the Jordan Valley
- A specific organization empowered to monitor, and enforce (waste, wastewater, etc.)
- Improved awareness regarding the protection and the preservation of the environment
- Acquired environmental data
- Improved knowledge and increased public awareness of inhabitants and companies in the Jordan Valley regarding the consequences of environmental pollution (littering, dumping, health issues) and the possibilities of waste collection and management, waste water collection and environmental collection. Final result will be improvement of environmental and health quality

Organization/Responsibilities:
- Ministry of Environmental Affairs
- Ministry of Agriculture
- Palestinian Water Authority
- Ministry of Planning
- Ministry of Local Governance
- Ministry of Health

Costs and Revenues:
- Implementation cost: 1,000,000 USD

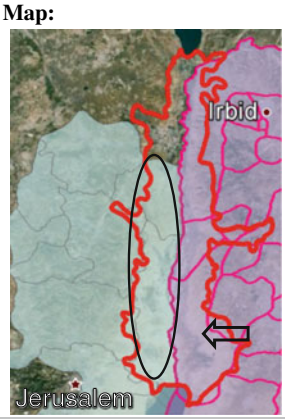
Implementation Period
- Preparation time: 0.5 year
- Construction time: 2 years

Other remarks:

Name: P03 PAL—Wastewater Collection and Treatment	**Location:** Jericho, Palestine	**Type of Intervention:** Wastewater Collection and Treatment

Objectives:
1. Improve adequate and safe collection of wastewater for all communities and small agro-industries in the study area by constructing wastewater collection networks
2. Treat generated wastewater from the different communities and lay the groundwork for safe reuse of wastewater for agricultural purposes from the constructed wastewater treatment plant
3. Introduce better functioning sanitation systems using substantially smaller amounts of water, such as vacuum removal of toilet effluent or electric incinerating toilets
4. Plan for pre-treatment of agro-industries and wastewater from fish farms

Map:



Intervention:
Connect all wastewater generation units (buildings) to wastewater collection networks.
This will be attained through the construction of five wastewater treatment plants in the five clusters of the study area, taking note of the completed WWTP design

Construction/Realization:
- Tender and construct/expand of the sewage system in the Jericho area
- Rehabilite/expand cesspits in more remote areas and tender for alternative sanitation systems
- Tender for feasibility/engineering and EIA studies for the conveyance of effluent along with WWTP location selection and design

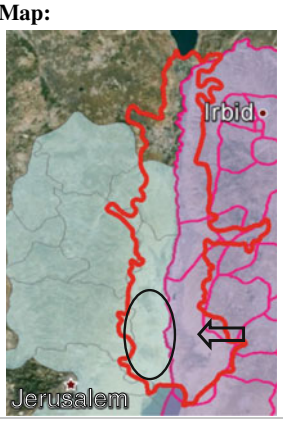
(continued)

Name: P03 PAL—Wastewater Collection and Treatment	**Location:** Jericho, Palestine	**Type of Intervention:** Wastewater Collection and Treatment
in Jericho (Japan) and related sewage network (USAID) in order to introduce better functioning sanitation systems using substantially smaller amounts of water, such as vacuum removal of toilet effluent, or electric incinerating toilets. **Preparation:** • Analyze the current status of the sewage • Plan and design improvement/expansion of the sewage system and the connection to the WWTP • Analyze the technical state and capacity of cesspits in remote places where sewage is not feasible • Plan and design improvement of the cesspits and increased tanker capacity • Plan and design alternative sanitation systems • Investigate the possibility of combining the effluent from the Nablus East WWTP and Tubas South WWTP • Plan and design wastewater collection networks and WWTPs, for small industrial wastewater and wastewater and from fish farms • EIAs and licenses • Setup organizational structure • Finance planning		• Tender for wastewater collection with trucks • Tender for and construct wastewater collection networks and WWTPs • Train operators **Operations:** • Data collection • Assessment of the existing sewage systems (baseline conditions) • Needed assessments • Preparation of the engineering designs (plans and profiles) • Preparation of bill of quantities • Financial analysis (costing) • Construction • Technical and financial management • Surveying • Excavations • Rehabilitation • Tendering • Fee collection
Results/Impacts: • Realize/expand/improve the current wastewater collection system to a system in which all wastewater producers are connected without leakage of wastewater • Improve environmental situation • Improve public health situation • Improve wastewater collection system by realizing a sewage system in combination with cesspits for remote areas, so wastewater producers are connected without leakage of wastewater • Fully treated produced wastewater		
Organization/Responsibilities: • Municipalities and village councils • Palestinian Water Authority (regulation) • Ministry of Agriculture (farmers support) • Farmer/Water User Association (beneficiary)		
Costs and Revenues: • Preparation cost: 1,500,000 EUR • Construction cost: 30,000,000 EUR • Operation cost: 1,750,000 EUR/year • Annual revenue: 3,000,000 EUR/year		**Implementation Period** • Preparation time: 1 year • Construction time: 3 years
Other remarks: • Short-term actions: analysis and improvement of cesspits and collection by tanker trucks • Short-term action: analysis of current state of sewage • Middle-term action: improvement/expansion of the sewerage system		

Name: P04 PAL—Fish Farm Pollution Control Project	**Location:** Jericho Area, Palestine	**Type of Intervention:** Inventory and Assessment

Objectives:
Limit environmental pollution from the current pilot fish farm and potential future fish farms in the study area.
The four current pilot fish farms in Jericho are not well lined against leakage. This project will assess the technical state of the fish farms and prepare for adequate lining and groundwater protection. The project will also focus on options for reusing the wastewater of the fish farms and on developing environmental standards for the management of current and future fish farms.

Map:



Intervention:
Assessment of the potential pollution loads, pollution pathways for disposal/usage, economic feasibility, marketing potential aspects, and spatial distribution of fish farms. There are four farms in Jericho (total of 4 ponds, each has 4000 fish, with water volume of 100 m^3 each)

Preparation:
- Evaluation of the technical state (closed bottom or leakage to the groundwater) and the manner of operation (what happens with wastewater → reuse in agriculture or spillage to the Jordan River) of the pilot fish farm in the Jericho area
- Make an improvement plan for the pilot fish farm and set standards for possible future fish farms

Construction/Realization:
- Improve the technical status of the pilot fish farm and its method of operation if required

Operations:
- Reuse of wastewater
- Source water for the pools (availability and quality)
- Technical and financial management
- M&O to be paid by fish farms

Results/Impacts:
- Knowledge of technical state (closed bottom, or leakage to the groundwater) and the manner of operation of the current pilot fish farm (what happens with the wastewater → reuse in agriculture or spillage to the Jordan River)
- Rehabilitation plan for the fish farm in order to prevent pollution of groundwater or uncontrolled/untreated spillage of water to the river, including planning and costs
- Standards for future fish farms
- Improvement of environmental situation

Organization/Responsibilities:
- Ministry of Environmental Affairs (regulator)
- Ministry of Economy and Trade
- Ministry of Agriculture
- Palestinian Water Authority (regulator)
- Ministry of Health (for safe use)
- Farmer associations
- Ministry of Planning

Costs and Revenues:
- Preparation cost: 50,000 USD
- Construction cost: 500,000 USD
- Operation cost:
- Annual revenue:

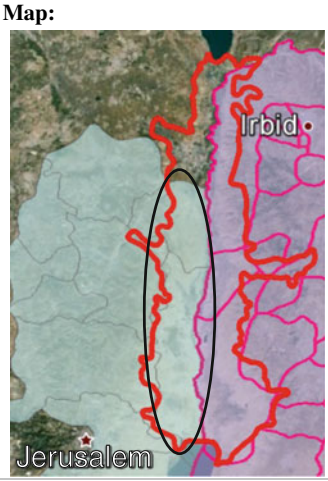
Implementation Period
- Preparation time: 0.5 year
- Construction time:

Other remarks:
- Short-term

Name: P05 PAL—Land and Water Quality Protection Project	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Assessment Projects

Objectives:
- Study the vulnerability of the study area to contamination (considering groundwater, surface water and soil)
- Construct vulnerability maps for the study area
- Rank land use according to a vulnerability assessment

Map:



Intervention:
Assess the vulnerability to contamination of the study area

Preparation:
- Data collection specifically for soil, groundwater, geologic formations, topography, etc.
- Digitization of all relevant data (preferably in GIS format)
- Selection of the proper vulnerability method

Construction/Realization:
Use the vulnerability assessment method to prepare maps that shows the spatial distribution of vulnerability levels within the study area

Operations:
- Prepare the vulnerability maps for the study area
- Rank the different land parcels and covers according to the level of vulnerability to contamination

Results/Impacts:
- Preservation of the environment
- Preservation of water resources (mainly springs and groundwater)
- Better planning for sustainable land use

Organization/Responsibilities:
- Ministry of Environmental Affairs
- Palestinian Water Authority
- Palestinian Energy Authority
- Ministry of Planning
- Ministry of Local Governance

Costs and Revenues:
- Preparation cost:
- Construction cost: 200,000 USD
- Operation cost:
- Annual revenue:

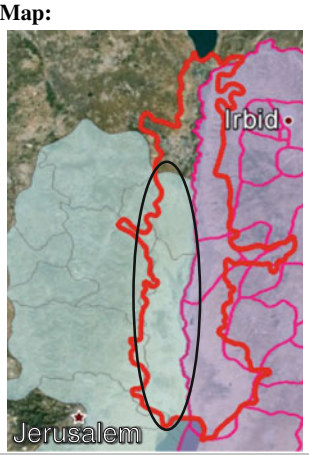
Implementation Period
- Preparation time: 3 months
- Construction time: 1 year

Other remarks:
- Short-term action

Name: P06 PAL—Remediation of Military Bases	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Preparation Projects

Objectives:
Clean mine fields and remediate former Israeli military bases within the Palestinian study area. This will include soil, waste and groundwater pollution assessment. Financing such a project will preferably be part of the final peace arrangements between Palestine and Israel.

Map:



Intervention:
Cleaning activities after Israeli withdrawal from the West Bank.
Preparation:
- Assess existing conditions of mine fields and relevant military sites
- Determine proper methods of clean-up and mine removal
- Secure necessary tools for clean-up and mine removal
- Plan activities and operations related to the clean-up and mine removal

Construction/Realization:
The environment in the area will be safe from accidental mine explosions
Operations:
- Handling
- Disposal
- Containment
- Testing
- Quality assessment
- Monitoring

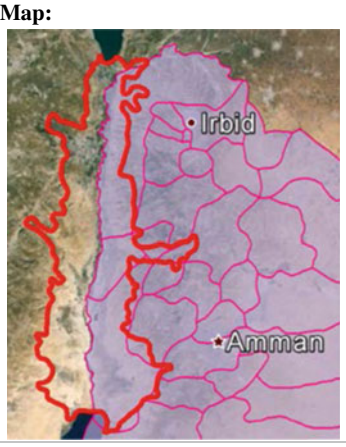
Results/Impacts:
- Preservation of the environment and public health
- Preservation of water resources (mainly springs and groundwater)
- Better planning for sustainable land use and safety

Organization/Responsibilities:
- Ministry of Environmental Affairs
- Palestinian Water Authority
- Ministry of Planning
- Ministry of Local Governance

Costs and Revenues:
- Preparation cost: 300,000 USD
- Construction cost: 10,000,000 USD
- Operation cost:
- Annual revenue:

Other remarks:

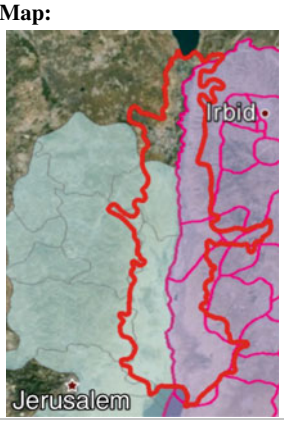
2. Sustainable Water Management and River Rehabilitation

<table>
<tr><td>Name: W01 REG—Jordan Valley Domestic and Tourism Water Demands Management Project</td><td>Location: Jordan Valley</td><td>Type of Intervention: Water Demands Management</td></tr>
<tr><td colspan="2">Objectives:
Develop a system for instituting, regulating and monitoring water demands and water use efficiencies for the domestic and tourism sectors in the lower Jordan River Valley.
This project is therefore linked to the other water-related interventions.</td><td>Map:
 
</td></tr>
<tr><td colspan="2">Intervention:
(1) This intervention is linked to strengthening water demand management including promotion of grey water and efficient water use
(2) Assessment of and linking to current domestic and tourism water supply infrastructure, practices and policies in the valley
(3) Provision of information for better and more efficient water use in domestic and tourism sectors</td><td>(4) Establishment of a training and information center in the Jordan Valley with a special focus on domestic and tourism water efficiency and water-related themes
(5) Provision of services to individuals and organizations related to water demand management
(6) Assisstance to municipalities in applying sustainable water demand management practices on regional or national levels</td></tr>
<tr><td colspan="3">Results/Impacts: Lower production risk
• Substantially higher water use efficiencies, and lower percentages of unaccounted-for water in the lower Jordan River Valley
• More options for the domestic and tourism sectors to embark on water demand management and water use efficiency
• Indirect positive impact on the Jordan River</td></tr>
<tr><td colspan="3">Sustainability and Water Impacts:
• This project will have a direct impact on the sustainability of the Jordan River Valley due higher water use efficiency</td></tr>
<tr><td colspan="3">Organization/Responsibilities:
• Support and dissemination by EcoPeace</td></tr>
<tr><td colspan="2">Costs and Revenues:
• Implementation Cost: 1,500,000 USD</td><td>Implementation Period
• Preparation time: 3 years</td></tr>
</table>

Name: W02 REG—Jordan Valley Regional Coordination on Water Management	**Location:** Jordan Valley	**Type of Intervention:** Water Management

Objectives:
Setup a regional coordination structure, or Steering Committee, among key Jordanian, Israeli and Palestinian governmental stakeholders for the implementation of the proposed national and regional interventions in the Jordan Valley concerning water management. The objective is that this Steering Committee will eventually be embedded in the overall structure of the River Basin Organization for the Jordan Valley (ref. intervention IC01 REG Jordan River Basin Organization).
The regional coordination structure aims at optimized regional cooperation in preparation and implementation of the interventions, maximized exchange and joint development of know-how and experiences among the three core parties, monitoring the outputs of the interventions and steering the implementation in terms of their contribution toward reaching the water management objectives.

Map:



Intervention:
(1) Setup a kick-off meeting with the key governmental stakeholders from the three core parties with regard to the water management objectives
(2) Define objectives, procedures and operational, organizational and financial frameworks for setting up the joint Steering Committee under the water management objectives
(3) Joint preparation of detailed implementation and financing plans for the proposed (groups of) interventions
(4) Setup structures for regional exchange of related know-how and experiences
(5) Develop key performance indicators and monitoring procedures towards the implementation of the interventions
(6) Assist and steer the project implementing organizations accordingly

Results/Impacts: Lower risk of production
- Optimized regional cooperation during the preparation and implementation of the proposed interventions under the water management objectives
- Maximized regional exchange of know-how and experiences
- Optimized monitoring and steering of the interventions during detailed preparation and implementation
- Building up of regional trust and the peace dividend

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainable development of the Jordan Valley through optimized coordination and exchange of relevant information

Organization/Responsibilities:
- Key governmental and sectoral stakeholders from Jordan, Israel and Palestine
- Support and dissemination by EcoPeace

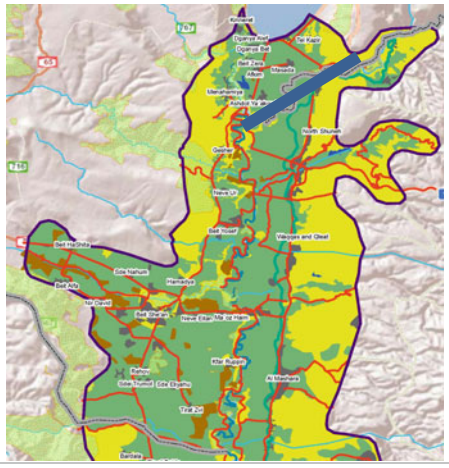
Costs and Revenues:
- Preparation cost: 300,000 USD
- Implementation cost: 200,000 USD/year

Implementation Period
- Until 2050

Name: W01 ISR—Yarmouk River Dredging and Cliff Protection Project	**Location:** Yarmouk River/Israel and Jordan	**Type of Intervention:** Water Management

Objectives:
- Improve drainage and flow of water through the Yarmouk River in Israel/Jordan section
- Prevent collapsing of banks and cliffs into the river
- Prevent flooding in the Yarmouk Flood Plain

in cooperation with Jordan



Intervention:
- Dredge the Yarmouk River segment along the border stretch between Israel and Jordan
- Reinforce banks and cliffs alongside the river

Results/Impacts:
- Improved drainage and flow of water through the Yarmouk River
- Prevented flooding in the Yarmouk Flood Plain
- Improved bank protection

Organization/Responsibilities:
- Kinneret Drainage Authority, Israel
- Jordan Valley Authority, Jordan

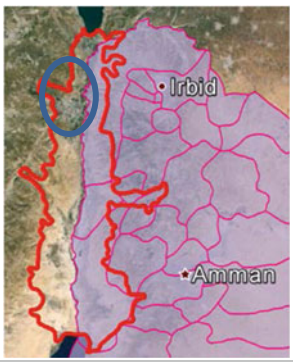
Costs and Revenues:
- Preparation cost: 1,000,000 USD
- Dredging cost: 20,000,000 USD
- Cliff protection cost: 300,000 USD

Implementation Period
- Preparation time: 0.5 year
- Construction time: 2 years

Other remarks:

Name: W02 ISR—Western Drainage Basins Flood Management	**Location:** Western Sub-Basins, Israel	**Type of Intervention:** Water Management

Objectives:
- Improve drainage of the four Israeli sub-basins of the lower Jordan River Valley
- Prevent soil erosion from these basins into the Jordan River



Intervention:
- Assess surface flow and drainage improvement measures
- Assess slopes, erosion risks and erosion prevention measures, including land levelling
- Design and implement drainage and soil stabilization measures

Results/Impacts:
- Better drainage and flow of water from the four western sub-basins
- More sustainable soil conservation

Organization/Responsibilities:
- Lower Jordan River Basin Drainage Authority, Israel

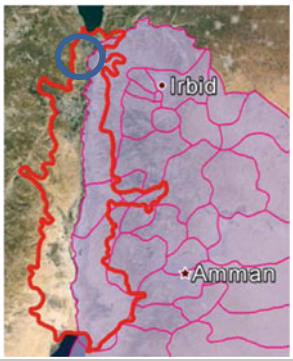
Costs and Revenues:
- Preparation cost: 1,000,000 USD
- Implementation cost: 2,000,000 USD

Implementation Period
- Preparation time: 0.5 year
- Construction time: 2 years

Other remarks:

Name: W03 ISR—Northern Sewerage Expansion Project	**Location:** Northern Communities, Israel	**Type of Intervention:** Water Management

Objectives:
- Connect all remaining Israeli communities from Moshav Menahamia to Harod Stream in the Israeli section of Jordan Valley to the Beit She'an waste water treatment plant (WWTP)
- Reuse treated water for olive tree irrigation



Intervention:
- Design and construct sewage lines
- Connect sewage lines to Beit She'an WWTP

Results/Impacts:
- Full collection and treatment of raw or partly treated wastewater from Spring Valley Regional Council communities
- Optimized reuse of Beit She'an WWTP

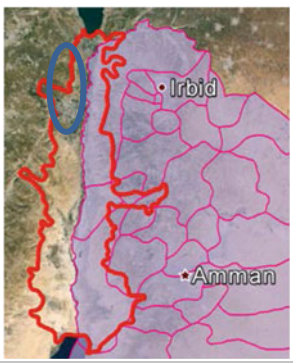
Organization/Responsibilities:
- Lower Jordan River Basin Drainage Authority, Israel

Costs and Revenues:	**Implementation Period**
• Preparation cost: 1,000,000 USD • Construction cost: 12,000,000 USD (50 % of finances already secured)	• Preparation time: 0.5 year • Construction time: 2 years

Other remarks:

Name: W04 ISR—Springs Rehabilitation Project	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Water Management

Objectives:
- Improve water flow and environmental quality of five springs in the Israeli lower Jordan Valley
- Increase eco-tourism at these springs
- Increase spring discharge into the Jordan River (3–4 MCM/year)



Intervention:
- Plan rehabilitation, spring protection and visitors facilities
- Plan runoff protection towards the Jordan River
- Construct these interventions
- Operate the five springs areas

Results/Impacts:
- Improve water quality of springs and outflow in the Jordan River
- Increase eco-tourism
- Improve Jordan River water quality

Organization/Responsibilities:
- Lower Jordan River Basin Drainage Authority, Israel

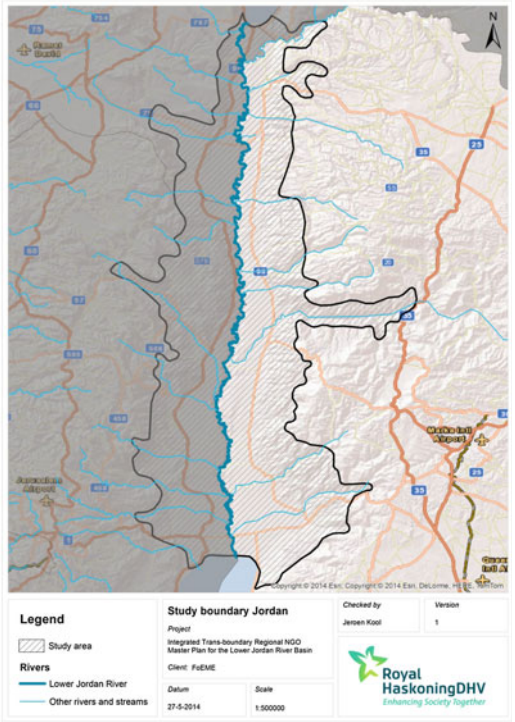
Costs and Revenues:	**Implementation Period**
• Preparation cost: 100,000 USD • Construction cost: 2,500,000 USD	• Preparation time: 0.5 year • Construction time: 2 years

Other remarks:

Name: W01 JOR—Improved Lower Jordan River Basin Management Project	**Location:** Lower Jordan River Basin, Jordan	**Type of Intervention:** Water Management

Objectives: Improve basin water management in terms of operational and information management in the Jordan Valley. Prepare for full collection, treatment and reuse of locally-generated wastewater in the basin. This includes investment planning and a pilot wastewater collection and reuse scheme to demonstrate to the inhabitants of the basin the advantages of reusing treated wastewater for agricultural purposes. Interventions W01–W04 will be considered as one package, starting with the emergency and pilot projects W03 and W04, followed by W01 and W02.
Wastewater reuse will be linked to existing infrastructure and national wastewater reuse policies and performed in an economically and ecologically sound manner under the proximity principle.

Map:



Intervention:
1. Updating of WEAP and IWRM systems
2. Sanitary assessment of municipality in the basin

1. Lower Jordan River Valley Management Investment Planning
3. Alternative sanitary and wastewater reuse strategies
4. Elaboration on the preferred strategy
n5. Outline of designs and tender packages
6. Promotion of tender packages

2.Pilot wastewater reuse in Muaz Bin Jabal
7. Pilot project design and tender documents
8. Construction of the pilot works
9. Technical assistance to the operations of the WWTP
10. Technical assistance to the pilot reuse scheme

3.Regional cooperation
11. Project information workshop
12. Consultation workshop investment interventions
13. Final workshop investment plan
14. Information workshop on pilot wastewater reuse
15. Consultation workshop on pilot wastewater reuse
16. Regional information and dissemination event

This project will be coordinated with Palestinian and Israeli counterparts in terms of strategic planning, data collection, methodologies, wastewater reuse applications and sustainable sanitation solutions.

Results/Impacts: Improved IWRM
- Full sanitation investment plan ready
- Pilot reuse project in operation
- Regional co-operation completed
- This project will have a direct impact on the Jordan River due to more efficient water use

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley due to mitigation of discharge of untreated wastewater into the environment and reuse of treated wastewater for agricultural purposes instead of using water resources from the King Abdullah Canal
- During the pilot project, about 200 households, or 300 m^3/day of wastewater will be treated and reused
- The project will prepare for a total of 24 MCM/year in 2025 and 33 MCM/year in 2050 to be treated and reused
- This project will have an impact on the ambient water quality in the valley due to mitigation of pollution by untreated wastewater

Organization/Responsibilities:
- JVA/WAJ/MoWI in Steering Committee
- Waternet, RHDHV, EcoPeace, operating partners
- Muath Bin Jabal Municipality
- Linking project to ISSP National Wastewater Master Plan

Costs and Revenues:
- Cost: 1,700,000 JOD
- 70 % subsidy already requested from Netherlands Sustainable Water Fund

Implementation Period
- Implementation period: 2 years

Other remarks:
- Follow-up project will be to implement the sanitary investment plan prepared under this project

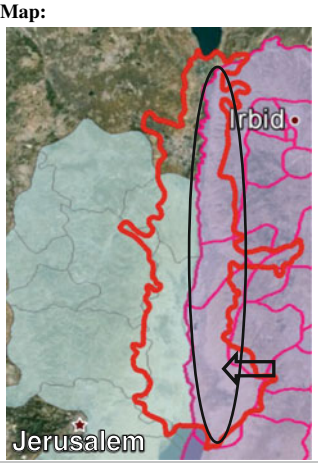
Name: W02 JOR—Wastewater Collection, Treatment and Reuse Project

Location: Lower Jordan River Valley, Jordan

Type of Intervention: Wastewater

Objectives:
Realize adequate and safe collection of wastewater from all the communities in the study area by constructing wastewater collection networks that will adequately accomodate 540,000 people in 2025 and 607,000 people in 2050
- Treat generated wastewater from the different communities
- Realize full-scale reuse of treated wastewater in the lower Jordan Valley (25 MCM/year in 2025 and 33 MCM in 2050)
- Wastewater reuse shall be linked to existing infrastructure and national wastewater reuse policies, and be performed in an economically and ecologically sound manner under the proximity principle
- Introduce better-functioning sanitation systems using substantially smaller amounts of water, such as vacuum removal of toilet effluent, or electric incinerating toilets
- Interventions W01–W04 shall be considered as one package, starting with the emergency and pilot projects W03 and W04 and followed by W01 and W02

Map:



Intervention:
In accordance with the investment plan prepared under intervention W01 JOR, connect all wastewater generation units (buildings) to wastewater collection networks.
This will be attained through the construction of wastewater treatment plants in accordance with the above investment plan in the study area and the potential expansion of existing wastewater treatment plants.
The feasibility of introduction of sanitation systems using substantially smaller amounts of water, such as vacuum removal of toilet effluent, or electric incinerating toilets shall be incorporated.

Preparation:
- Plan and design wastewater collection networks, WWTPs and alternative sanitation systems
- EIAs and licenses
- Setup organizational structure
- Finance planning

Construction/Realization:
- Tender for and construct/expand the sewerage systems
- Tender for and rehabilit/expand cesspits in more remote areas
- Tender for wastewater collection with trucks
- Tender for the feasibility/engineering and EIA studies for the conveyance of the effluent along with the WWTP location selection and design
- Tender for and construct wastewater collection networks and WWTPs
- Tende for pilot alternative sanitation systems
- Train operators

Operations:
- Data collection
- Assessment of the existing sewerage systems (baseline conditions)
- Needs assessment
- Preparation of the engineering designs (plans and profiles)
- Preparation of bill of quantities
- Financial analysis (costing)
- Construction
- Technical and financial management
- Surveying
- Excavations
- Rehabilitation
- Tendering
- Fee collection

Results/Impacts:
- Realized/expanded/improved current wastewater collection system in which all wastewater is connected without leakage and is treated and reused
- Improved environmental situation
- Improved public health situation
- Improved wastewater collection system in which a sewage system is combined with cesspits for remote areas, so wastewater producers can be connected without leakage of wastewater
- Fully treated and reused wastewater
- This project will have a direct impact on the Jordan River due to more efficient water use

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley due to the mitigation of discharge of untreated wastewater into the environment and the reuse of treated wastewater in agriculture that will replace using water resources from the King Abdullah Canal
- The project will treat and reuse a total of 24 MCM/year in 2025 and 33 MCM/year in 2050
- This project will have impact on the ambient water quality in the valley due to the mitigation of all wastewater pollution by untreated wastewater

Organization/Responsibilities:
- Municipalities and village councils
- JVA and WAJ (regulation)
- Ministry of Agriculture and WUAs (farmers support)
- Farmer/Water User Association (beneficiary)

Costs and Revenues:
- Preparation cost: 200,000 JOD
- Construction cost: 30,000,000 JOD
- Operation cost: 1,750,000/year JOD
- Annual revenue: 3,000,000/year JOD

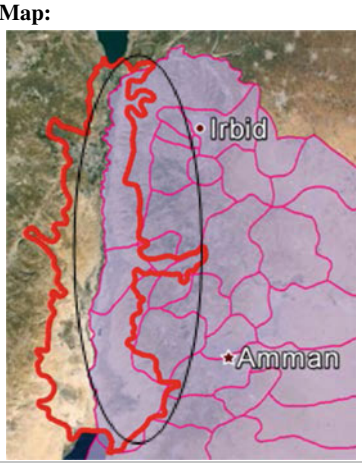
Implementation Period
- Preparation time: 1 year
- Construction time: 5 years

Other remarks:
- Short-term actions: analysis and improvement of cesspits and of collection by tanker trucks
- Short-term action: analysis of current state of sewerage
- Middle-term action: improvement/expansion of the sewerage system

Name: W03 JOR—Emergency Wastewater Management Project	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Water Management

Objectives:
Assess the scope of the current waste problem. Currently most wastewater in the Jordan Valley is collected in cesspits, which are either in bad condition or irregularly emptied. This poses immediate threats to public health and the environment. This project will assess the scope and extent of the current problems, plan for and implement a cesspit rehabilitation program in the Jordanian part of the Jordan Valley, increase capacities for emptying cesspit, purchase additional tanker trucks for wastewater collection, plan for related organization and operational aspects and implement these short-term emergency measures.

Map:



Intervention:
Wastewater reuse shall be linked to existing infrastructure and national wastewater (reuse) policies, and be performed in an economically and ecologically sound manner under the proximity principle.
Interventions W01–W04 shall be considered as one package, starting with the emergency and pilot projects W03 and W04 and followed by W01 and W02.
Introduction of short-term emergency measures for adequate and safe collection of wastewater that will limit environmental and health risks.

Preparation:
- Inventory and assessment of cesspits in the Jordan Valley (number, exact locations, capacity and technical status [maintenance and design])
- Improvement plan for the cesspits (capacity and technical status), including planning and costs, or alternative solutions such as the use of bio-digesters at the household level
- Discussions with municipalities and the organization which will be made responsible for wastewater collection
- Improvement plan for organization and capacity of wastewater collection

Construction/Realization:
- Tender and rehabilitate/construct cesspits
- Tender for additional tanker trucks to empty cesspits for increased capacity and frequency of wastewater collection
- Set up organization and make arrangements with municipalities

Operations:
- Wastewater collection
- Fee collection
- Technical and financial management

Results/Impacts:
- Better understanding of the scale of the cesspit problem in the Jordan Valley and a plan for improvement to deal with this problem
- Adequate and safe collection and treatment of wastewater
- Less leakage of wastewater out of cesspits and less overflow of cesspits
- Improvement of fee collection and lower fees for wastewater collection (now expensive due to long transportation distances)
- Improvement of environmental and public health situations
- This project will have a direct impact on the Jordan River due to more efficient water use

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley due mitigation of discharge of untreated wastewater from cesspits into the environment
- The project will rehabilitate cesspits collecting an estimated 8 MCM/year of wastewater
- This project will have an impact on the ambient water quality in the valley due to mitigation of wastewater pollution through the cesspits

Organization/Responsibilities:
- JVA
- Municipalities

Costs and Revenues:
- Preparation cost: 100,000 JOD
- Construction cost: 20.000.000 JOD
- Operation cost: 200.000 JOD/year
- Annual revenue: 200,000 JOD/year

Implementation Period
- Preparation time: 0.5 year
- Construction time: 5 years

Other remarks:
- Take into account both the cesspits of houses and of small industries
- Start with more inhabited areas (larger towns along the main road like Deir Alla)
- To lower fees, extra wastewater treatment capacity on lower-distance systems should be made available (see intervention sheet W02 PAL)

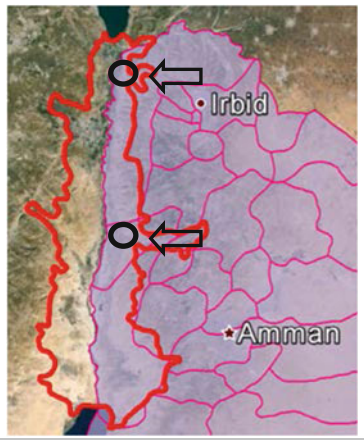
Name: W04 JOR—Wastewater Reuse Pilot Projects	**Location:** North Shouneh or Tal al Mantah WWTP, Jordan	**Type of Intervention:** Water Management

Objectives:
Prepare and implement a pilot wastewater reuse project in the lower Jordan River Valley to serve as an example for the wider water and agricultural sector and as a starting point for further expansion of local wastewater reuse throughout the valley. The pilot project shall be linked to collection and treatment of wastewater from existing cesspits in the Jordan Valley.

Wastewater reuse shall be linked to existing infrastructure and national wastewater reuse policies, and be performed in an economically and ecologically sound manner under the proximity principle.

This project requires coordination with Palestinian and Israeli counterparts to create shared solutions and exchange of best practices.

Map



Intervention:
Interventions W01–W04 shall be considered as one package, starting with the emergency and pilot projects W03 and W04 and followed by W01 and W02.

Preparation:
- Selection of farmers to perform pilots
- Information campaign for farmers with regard to a pilot for the use of the treated wastewater
- Planning and test program for the reuse pilot (current maximum capacity of WWTPs is 600,000 m^3/year)

Construction/Realization:
- Supply contracts with farmer organizations
- Train operators and farmers

Operations:
- Main and tertiary treatment and distribution of wastewater
- Analysis of wastewater reuse results and farming pilot results with a comparison to a reference group of farmers

Results/Impacts:
- Better understanding for authorities and farmers of the benefits and attention points of local wastewater reuse to serve as an example for the wider water and agricultural sectors and as a starting point for further expansion of local wastewater reuse throughout the valley
- This project will have a direct impact on the Jordan River due to more efficient water use

Sustainability and Water Impacts:
- This pilot project will have a direct impact on the sustainability of the Jordan River Valley due reuse of wastewater for agricultural purposes
- The project will treat and reuse a total of 600,000 m^3/year of wastewater, which will have a direct impact on the ambient water quality in the valley

Organization/Responsibilities:
- JVA
- MoA
- Selected communities
- Organization of farmers or WUA
- Ministry of Environment
- WAJ
- MWI

Costs and Revenues:
- Preparation cost: 100,000 JOD
- Construction cost: 1,000,000 JOD
- Operation cost: 100.000 JOD/year
- Annual revenue: 180,000 JOD/year

Implementation Period
- Preparation time: 1 year
- Construction time: 2 years

Name: W01 PAL—Well Rehabilitation and Drilling of a New Well in the Jordan Valley	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources

Objectives:
Increase water resource availability and enhance water efficiency from 30 wells in the Jordan Valley, and drill a new well in order to increase water supply for different purposes from these 30 wells.
This project shall be linked to an integrated groundwater assessment to ensure that groundwater abstractions remain sustainable in the long-term.

Map:

Intervention:
- Rehabilitation through deepening and/or change of equipment in 30 wells in the Jordan Valley
- Drilling of new groundwater well at a 700-meter depth in the Eastern Aquifer Basin

Preparation:
- Plan and design new equipment
- EIAs and licenses
- Market study of agricultural and domestic use up to 1.5 MCM/per year and 1.5 MCM/year for domestic use
- Set up utilization plan
- Finance planning

Construction/Realization:
- Identification of needs per well
- Tender for and construct structures
- Supply contracts to well owners and farmer organizations
- Train operators and farmers

Operations:
- Distribution of water
- Fee collection
- O&M
- Technical and financial management

Results/Impacts:
- Additional quantity of 1.5 MCM/year from the 30 wells, serving approximately 1000 dunums of agricultural land at about 2.0 NIS/m^3
- Increased income to well owners by some 3,000,000 NIS/year
- Increased food production by some 3,000 tons per year and income to farmers by 3,000,000 NIS/year
- Additional quantity of 1.5 MCM/year from the well, serving approximately 30,000 capita with 50 cubic meters of water or an additional 1500 dunums of agricultural land at about 3.0 NIS/m^3
- Increased income from additional water by some 4,500,000 NIS/year
- Increased food production by some 4,500 tons/year and income to farmers by 4,500,000 NIS/year

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Well owners/farmers/Water User Association (beneficiary)

Costs and Revenues:
- Preparation cost: 250,000 EUR
- Construction cost: 2,200,000 EUR
- Operation cost: 860,000 EUR/year
- Annual revenue: 1,500,000 EUR/year

Implementation Period
- Preparation time: 0.5 year
- Construction time: 2.5 years

Other remarks:

Name: W02 PAL—Rehabilitation and Protection of Springs	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources

Objectives:
Increase water resource efficiency and reduce losses through leakage and evaporation from springs and main channels

Map:

Intervention:
Rehabilitation of Al Auja Spring includes:
- Rehabilitation of the main source of the spring the Rehabilitation of the upper unlined stream 1 km in length from the source Rehabilitation of the main canal from the spring with a total length of 15 km.
- Construction of small pools for water collection in Al Malah area, especially Al Farisiya and Al Deir
- Rehabilitation of small springs in the area such as Qor'an, Blaybel, Al Shamsiya, Al Malih, Al Himma and Al Hilwah
- Development of protection zone criteria and procedures
- Identification and design of protection zones
- Implementation of the protection zones on the ground
- Rehabilitation of Fasayil Spring, including the creation of a buffer zone and the rehabilitation of the pipeline from the spring

Preparation:
- Plan and design the source structure and the pipeline
- Licenses
- Setup organizational structure
- Finance planning

Construction/Realization:
- Tender for and construct structures
- Supply contracts to farmer organizations
- Set up operations structure

Operations:
- Distribution of water
- Fee collection
- O&M
- Technical and financial management

Results/Impacts:
- Additional quantity of 1.5 MCM/year from the spring, serving approximately 1500 dunums of agricultural land at about 2.0 NIS/m^3
- Increased income from additional water by some 3,000,000 NIS/year
- Increased food production by some 1,500 tons per year and income to farmers by 3,000,000 NIS/year
- Additional quantities of water provided in marginalized communities through the enhancement of rainwater harvesting and the rehabilitation of small springs
- Increased food production
- Fully protected springs in the area
- Enhanced water quantity and quality from main springs
- Reduced health hazards from using spring water

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Al-Auja Village Council/farmers/Water User Association (beneficiary)

Costs and Revenues:
- Preparation cost: 215,000 EUR
- Construction cost: 2,575,000 EUR
- Operation cost: 125,000 EUR/year
- Annual revenue: 640,000 EUR/year

Implementation Period
- Preparation time: 1 year
- Construction time: 3 years

Other remarks:

Name: W03 PAL—Rehabilitation and Construction of Water Networks	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Supply

Objectives:
Improve water networks to reduce physical losses and improve water quality in the networks

Map:

Intervention:
- Rehabilitation and extension of 30 km of water networks of different diameters
- Installation of filling points
- Distribution of 1.5 m^3 plastic tanks and mobile water tankers with a variety of capacities
- Rehabilitation of rainwater harvesting cisterns in marginalized communities

Preparation:
- Plan and design the pipelines to be replaced and upgraded
- Setup organizational structure
- Finance planning

Construction/Realization:
- Tender for and construct structures

Operations:
- Distribution of water
- O&M
- Technical and financial management

Results/Impacts:
- Improved access to water in marginalized communities
- Reduced water prices for citizens in these communities
- Additional quantity of water through the rehabilitation and construction of rainwater harvesting cisterns
- A reduction of UFW by 10 % which will provide an additional quantity of 0.5 MCM/year from the rehabilitation, serving approximately 10,000 capita with 50 m^3/year at about 2.0 NIS/m^3
- Improved health conditions and reduced risk from waterborne diseases

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Municipalities and Village Council/Water User Association (beneficiary)

Costs and Revenues:
- Preparation cost: 320,000 EUR
- Construction cost: 3,380,000 EUR
- Operation cost: 120,000 EUR/year
- Annual revenue: 400,000 EUR/year

Implementation Period
- Preparation time: 0.5 year
- Construction time: 1.5 years

Name: W04 PAL—Desalination of Brackish Wells	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Supply

Objectives:
Increase water resource efficiency and enhance brackish water quality.
This project shall include an energy requirement assessment and focus on options for applying non-fossil energy sources such as solar energy.

Map:

Intervention:
- Installation of desalination units in 10 brackish water wells in the area
- Rehabilitation of the water network from these wells

Preparation:
- Plan and design the unit specifications
- Licenses
- Setup organizational structure
- Finance planning

Construction/Realization:
- Tender for and construct structures
- Supply brackish water units
- Set up operations structure

Operations:
- O&M
- Technical and financial management

Results/Impacts:
- Better quality of water from the wells
- Reduced physical losses from wells' main supply pipe
- Increase agricultural production per dunum due to increased water quality
- Safe access to good quality water for additional domestic use
- Enhanced hygiene conditions for citizens
- Protected groundwater aquifer and soil in the area

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Village Councils/well owners/farmers/Water User Association (beneficiary)

Costs and Revenues:
- Preparation cost: 50,000 EUR
- Construction cost: 700,000 EUR
- Operation cost: 40,000 EUR/year
- Annual revenue: 150,000 EUR/year

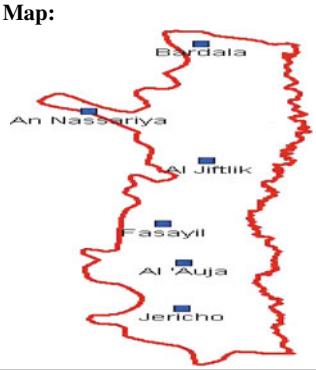
Implementation Period
- Preparation time: 0.5 year
- Construction time: 1 year

Name: W05 PAL—Rehabilitation of Al Auja Springs	**Location:** Palestine, Auja	**Type of Intervention:** Water Resources

Objectives:
Increase water resource efficiency and reduce losses through leakage and evaporation from the main channel.

This project shall include an assessment of the upper watershed water balance in order to ensure long-term and sustainable use of the Al Auja Springs.

Map:



(continued)

Name: W05 PAL—Rehabilitation of Al Auja Springs	**Location:** Palestine, Auja	**Type of Intervention:** Water Resources
Intervention: Rehabilitation of Al Auja Spring (PHASE I) includes rehabilitation of the main source of the spring and the rehabilitation of the upper unlined stream 1 km in length from the source. **Preparation:** • Plan and design the source structure and pipeline • Licenses • Setup organizational structure • Finance planning		**Construction/Realization:** • Tender for and construct structures • Supply contracts to farmer organizations • Set up operations structure **Operations:** • Distribution of water • Fee collection • O&M • Technical and financial management
Results/Impacts: • Additional quantity of 0.5 MCM/year from the spring, serving approximately 500 dunums of agricultural land at about 2.0 NIS/m^3 • Increased income from additional water by some 1,000,000 NIS/year • Increased food production by some 1,500 tons/year and income to farmers by 1,500,000 NIS/year		
Organization/Responsibilities: • Palestinian Water Authority (regulation) • Ministry of Agriculture (farmers support) • Al-Auja Village Council/farmers/Water User Association (beneficiary)		
Costs and Revenues: • Preparation cost: 50,000 EUR • Construction cost: 700,000 EUR • Operation cost: 50,000 EUR/year • Annual revenue: 200,000 EUR/year		**Implementation Period** • Preparation time: 0.5 year • Construction time: 1 year
Other remarks:		

Name: W06 PAL—Development of Water Tariff Structure	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources
Objectives: Unify the water tariff structure for both domestic and agricultural water use to achieve social equity in cooperation with the recently established Palestinian Water Regulatory Council. The development of a water tariff structure shall be robust and implementable, and is to be developed with participation from main stakeholders, making use of similar examples developed elsewhere. This project shall preferably be coordinated with Jordanian and Israeli counterparts to ensure that water tariff frameworks are aligned, thus providing consistent incentives to sustainable use of the scarce water resources throughout the Jordan Valley.		**Map:** 
Intervention: Develop a unified tariff structure for both domestic and agricultural water uses that will be used for water tariffs for the different water supply facilities. **Preparation:** • Plan and collect data • Finance planning		**Construction/Realization:** • Tender • Review data, laws and policies • Develop tariff structures **Operations:** • Apply proposed tariff structure • Conduct public awareness campaigns
Results/Impacts: • Unified tariff structure applied for different water uses • Improved fee collection rates, user satisfaction and willingness to pay		
Organization/Responsibilities: • Palestinian Water Authority (regulation) • Ministry of Agriculture (farmers support) • Village Council/farmers/Water User Association (beneficiary)		
Costs and Revenues: • Preparation cost: 100,000 EUR • Construction cost: 0 EUR • Operation cost: 0 EUR/year • Annual revenue: 0 EUR/year		**Implementation Period** • Preparation time: 0.5 year • Construction time: 0.5 year
Other remarks:		

Name: W07 PAL—Utilization of Al-Fashkha Spring	**Location:** Palestine, Jericho Area	**Type of Intervention:** Water Resources

Objectives:
Increase water resource availability to cover the growing gap between available water supply and increasing water demand.
This project shall include an assessment of the upper watershed water balance in order to ensure long-term and sustainable use of the Al Fashkha Spring.

Map:

Intervention:
- Conveyance of 10 MCM of water **from Al Fashkha** Spring by a 15 km long, 36" diameter pipe
- Construction of a 5000 m^3 reservoir to cultivate 10,000 dunums at the southern entrance of Jericho City

Preparation:
- Plan and design new equipment
- EIAs and licenses
- Market study of agricultural and domestic use up to 10 MCM/year
- Setup utilization plan
- Finance planning

Construction/Realization:
- Identify needs
- Tender for and construct structures
- Supply contracts to municipalities and farmer organizations
- Train operators and farmers

Operations:
- Distribution of water and management of pumping stations
- Fee collection
- O&M
- Technical and financial management

Results/Impacts:
- Additional quantity of 10 MCM/year from the spring, serving approximately 10,000 dunums of agricultural land about 2.0 NIS/m^3
- Increased food production by some 24,000 tons/year and income to farmers by 24,000,000 NIS/year

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Well owners/farmers/Water User Association (beneficiary)

Costs and Revenues:
- Preparation cost: 200,000 EUR
- Construction cost: 5,000,000 EUR
- Operation cost: 350,000 EUR/year
- Annual revenue: 500,000 EUR/year

Implementation Period
- Preparation time: 1 year
- Construction time: 2 years

Name: W08 PAL—Development of a Water Conveyance System (West Ghor Pipeline)	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Supply

Objectives:
Develop a temporary solution for conveying water from north to south through the West Bank area in the Jordan Valley for strategic water distribution. Under this Master Plan, this intervention will be required until the three countries have developed a regional and peaceful basin water management framework, in which eventually the Jordan River will be used as the main strategic water conveyor through the lower Jordan Valley, and will at that stage replace both this West Ghor water conveyor as well as the east Ghor/King Abdullah Canal. This temporary West Ghor water conveyor encompasses a 60 km water pipeline (20 inch diameter) that goes from north to south through the Palestinian Jordan Valley.

Map:

(continued)

Name: W08 PAL—Development of a Water Conveyance System (West Ghor Pipeline)	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Supply
Intervention: Develop a regional water pipeline, 60 km in length with a 20 inch diameter, that goes from north to south in the study area **Preparation:** • Plan and design the route • EIAs and licenses • Set up utilization plan • Finance planning		**Construction/Realization:** • Identify needs of each well • Tender for and construct structures • Supply contracts to well owners and farmer organizations • Train operators **Operations:** • Distribution of water and management of available resources wells • Fee collection • O&M • Technical and financial management
Results/Impacts: • Equitable distribution of water resources throughout the study area • Minimized supply cost through utilization of additional quantities of water from the Jordan River • Increased income and food production		
Organization/Responsibilities: • Palestinian Water Authority (regulation) • Ministry of Agriculture (farmers support) • Well owners/farmers/Water User Association (beneficiary)		
Costs and Revenues: • Preparation cost: 500,000 EUR • Construction cost: 12,000,000 EUR • Operation cost: 600,000 EUR/year • Annual revenue: 1,200,000 EUR/year		**Implementation Period** • Preparation time: 1 year • Construction time: 2 years

Name: W09 PAL—Utilization of Jordan River	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources
Objectives: Construction of the necessary pumping station along the river to facilitate Palestinian water use from the river. This Master Plan assumes that once full co-operation between Jordan, Israel and Palestine has been established, the Jordan River will become a multi-functional river, serving the needs of both nature and the economy, and will become the key water conveyor in the Jordan Valley from north to south One of the quality-related aspects is that the southern part of the Jordan River will always remain salty due to brackish groundwater inflow, and therefore cannot be used here as a fresh water conveyor. This implies that the southern sections of canals will remain crucial. However, this Master Plan sees a multi-functional river as the only feasible option for creating a long-term and sustainable solution in the Jordan Valley.		**Map:** 
Intervention: • Construction of pumping stations on the river • Development of the necessary conveyance system to link the river to main water demands. **Preparation:** • Plan and design new equipment • EIAs and licenses • Market study of agricultural and domestic use up to 35 MCM/year of fresh water and 35 MCM of brackish water • Setup utilization plan • Finance planning		**Construction/Realization:** • Identify needs • Tender for and construct structures • Supply contracts to municipalities and farmer organizations • Train operators and farmers **Operations:** • Distribution of water and management of pumping stations • Fee collection • O&M

(continued)

Name: W09 PAL—Utilization of Jordan River	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources
		• Technical and financial management

Results/Impacts:
- Additional quantity of **35** MCM/year from the river, serving approximately 40,000 dunums of agricultural land at about 2.0 NIS/m^3
- 35 MCM of brackish water from the river applied to existing date tree fields
- Increased food production by some 120,000 tons/year and income to farmers by 120,000,000 NIS/year

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Municipalities and village councils/farmers/Water User Association (beneficiary)

Costs and Revenues:	**Implementation Period**
• Preparation cost: 1,000,000 EUR • Construction cost: 25,000,000 EUR • Operation cost: 3,500,000 EUR/year • Annual revenue: 5,000,000 EUR/year	• Preparation time: 1 year • Construction time: 5 years

Other remarks:

Name: W10 PAL—Artificial Recharge Scheme	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources

Objectives:
Increase the amount of water recharged to groundwater aquifers with access water during the rainy season, which will enhance and increase the safe yield of the aquifer in addition to improving water quality, reducing desalinization rates and mitigating any future impact from climate change.
The project will assess the best locations for groundwater recharge in relation to the 2050 land use plans and soil conditions, and will use the outputs of intervention W12 PAL: Hydro-geological Assessment of the Study Area.

Map:

Intervention:	**Construction/Realization:**
Construct recharge areas and injection wells in the study area **Preparation:** • Plan and design new equipment • Optimize the recharge impact via groundwater modeling • Finance planning	• Identify potential recharge areas • Tender for and construct structures • Model groundwater of the aquifers in the basin **Operations:** • Conveying of TWW to recharge areas • Monitoring of water quality • O&M • Technical and financial management

Results/Impacts:
- Additional quantity of 10 MCM/year from groundwater resources due to rising of the water table and additional recharge quantities serving approximately 100,000 capita and 5,000 dunums of agricultural land at about 2.0 NIS/m^3
- Increased food production by some 15,000 tons/year and income to farmers by 15,000,000 NIS/year

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Municipalities and village councils/farmers/Water User Association (beneficiary)

Costs and Revenues:	**Implementation Period**
• Preparation cost: 1,000,000 EUR • Construction cost: 10,000,000 EUR • Operation cost: 1,500,000 EUR/year • Annual revenue: 5,000,000 EUR/year	• Preparation time: 1 year • Construction time: 5 years

Other remarks:

Name: W11 PAL—Construction of Water Networks	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Supply
Objectives: Expand and construct new water networks and related water treatment plants for the new population		**Map:** 
Intervention: Construction, rehabilitation and extension of water networks of different diameters for some 250,000 capita and related treatment plants **Preparation:** • Plan and design the pipelines and related treatment plants to be replaced and upgraded • Setup organizational structure • Finance planning		**Construction/Realization:** • Tender for and construct structures **Operations:** • Distribution of water • O&M • Technical and financial management
Results/Impacts: • Access to safe drinking water for an additional 250,000 capita • Additional quantity of 12.5 MCM/year provided by the network • Improved health conditions and reduced risk of waterborne diseases		
Organization/Responsibilities: • Palestinian Water Authority (regulation) • Municipalities and village council/Water User Association (beneficiary)		
Costs and Revenues: • Preparation cost: 1,250,000 EUR • Construction cost: 30,000,000 EUR • Operation cost: 1,000,000 EUR/year • Annual revenue: 3,000,000 EUR/year		**Implementation Period** • Preparation time: 2 years • Construction time: 8 years
Other remarks:		

Name: W12 PAL—Hydro-Geological Assessment of the Study Areas	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources
Objectives: Enable water managers and decision makers to better understand the hydro-geological conditions of the area. This project is a prerequisite for the earlier mentioned groundwater development, recharge and spring development projects. It shall be performed before and as basis for the project W10 PAL—Artificial Groundwater Recharge.		**Map:** 
Intervention: Develop a hydro-geological study of groundwater aquifers to better understand the behavior and development options of the aquifer system **Preparation:** • Identify the study components • Finance planning		**Construction/Realization:** • Development of criteria and procedures • Tendering
Results/Impacts: • Understanding of the hydro-geological conditions of the area • Enhanced water management of springs and wells in the area • Reduced health hazards from using water from springs and wadis		
Organization/Responsibilities: • Palestinian Water Authority (regulation) • Ministry of Agriculture (farmers support)		
Costs and Revenues: • Preparation cost: 1,000,000 EUR		**Implementation Period** • Preparation time: 0.5 year • Construction time: 1.5 years
Other remarks:		

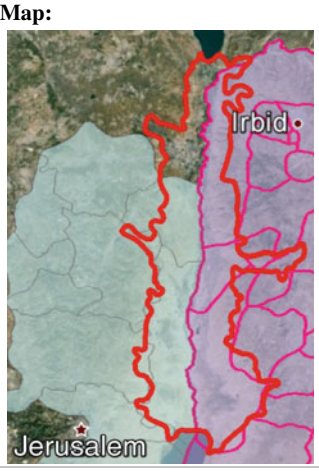
3. Sustainable Agriculture

<table>
<tr><td>Name: A01 REG—Jordan Valley Agricultural Water Efficiency Monitoring and Regulating</td><td>Location: Jordan Valley Agricultural Areas</td><td>Type of Intervention: Agriculture Improvement</td></tr>
<tr><td colspan="2">Objectives:
Setup a system for instituting, regulating and monitoring water efficiency in agriculture, based on EcoPeace Foot Print and Best Practices.</td><td>Map:
 
</td></tr>
<tr><td colspan="2">Intervention:
This intervention is to be linked to strengthening extension services in the Jordan Valley
• Assess and analyze current extension services and related flaws based on field visits and interviews
• Provide of improved extension services to better manage and monitor water use and distribution among farmers
• A training center in the Jordan Valley with a special focus on agricultural water efficiency and water-related themes</td><td>• Provide services to optimize water efficient crops
• Assist farmers and their organizations in applying sustainable agronomic practices, including minimized use of water, pesticides and fertilizers; regulation and distribution of types of pesticides on regional or national levels</td></tr>
<tr><td colspan="3">Results/Impacts: Lower risk of production
• Substantially higher production rates per m^3 of water used, or m^2 of land required
• Better quality crops
• More options for farmers to use efficient water resources
• Indirect positive impact on the Jordan River</td></tr>
<tr><td colspan="3">Sustainability and Water Impacts:
• This project will have a direct impact on the sustainability of the Jordan River Valley due to higher agricultural outputs per m^3 of water consumed</td></tr>
<tr><td colspan="3">Organization/Responsibilities:
• Support and dissemination by EcoPeace</td></tr>
<tr><td colspan="2">Costs and Revenues:
• Implementation cost: 1,500,000 USD</td><td>Implementation Period
• Preparation time: 3 years</td></tr>
</table>

Name: A02 REG—Jordan Valley Regional Coordination on Agriculture	**Location:** Jordan Valley	**Type of Intervention:** Agriculture

Objectives:
Setup a regional coordination structure, or Steering Committee, among key Jordanian, Israeli and Palestinian governmental stakeholders for the implementation of the proposed national and regional interventions in the Jordan Valley with regards to agriculture. The objective is that this Steering Committee will eventually be embedded in the structures of the overall River Basin Organization for the Jordan Valley (ref. intervention IC01 REG Jordan River Basin Organization).
The regional coordination structure aims at optimized regional cooperation in the preparation and implementation of the interventions, maximized exchange and joint development of know-how and experiences among the three core parties, monitoring the outputs of the interventions and steering the implementation in terms of their contribution toward reaching the agricultural objectives.

Map:



Intervention:
(1) Setup a kick-off meeting with the key governmental stakeholders from the three core parties with regard to agriculture objectives
(2) Define objectives, procedures and operational, organizational and financial frameworks for setting up the joint Steering Committee under the agriculture objectives
(3) Prepare detailed implementation and financing plans
(4) Setup structures for regional exchange of related know-how and experiences
(5) Develop key performance indicators and monitoring procedures towards the implementation of the interventions
(6) Assist and steer the project implementing organizations accordingly

Results/Impacts: Lower risk of production
- Optimized regional cooperation during the preparation and implementation of the proposed interventions under the agriculture objectives
- Maximized regional exchange of know-how and experiences
- Optimized monitoring and steering of the interventions during detailed preparation and implementation
- Building of regional trust and the peace dividend

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainable development of the Jordan Valley through optimized coordination and exchange of relevant information

Organization/Responsibilities:
- Key governmental and sectoral stakeholders from Jordan, Israel and Palestine
- Support and dissemination by EcoPeace

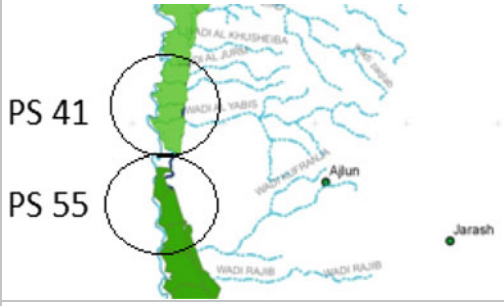
Costs and Revenues:
- Preparation cost: 300,000 USD
- Implementation cost: 200,000 USD/year

Implementation Period
- Until 2050

Name: A01 JOR—Jordan Valley Greenhouses Expansion Project	**Location:** Jordan Valley Agricultural Areas PS 41 and PS 55	**Type of Intervention:** Agriculture Improvement

Objectives:
Expand the number of greenhouses in the lower Jordan River Valley to increase agricultural production and revenue, particularly in areas PS 41 and PS 55, while keeping total agricultural water demands constant level. This intervention also relates to intervention A04—Post Harvesting Support.
This project shall be coordinated with Palestinian and Israeli counterparts in order to exchange best practices and maximize the project benefits.

Map:



Intervention:
- Establish micro-credit facilities for farmers to make investments (for instance through IFAD)
- Provide greenhouse management services to the farmers
- Provide advice on optimizing crop selection for the greenhouses, including options for organic products and applying (EU) Bio-label systems, fair trade products, and more
- Provide water management services aimed at reducing total water demands

Target:
- The project aims to establish about 1,000 new greenhouses in the defined areas
- Considering an average investment of 2,000 JOD per greenhouse including structures, plastic, water systems and monitoring, this would be a total investment of 2,000,000 JOD to be made by farmers through micro-financing
- Farmers will be reached through their Water User Association

Results/Impacts: Lower risk of production
- 1,000 additional greenhouses, consuming about 2500 m^3 of water/day in total
- Substantially higher production rates per m^3 of water used or m^2 of land required
- Better quality crops
- Promotion of organic farming where possible
- More options for farmers to diversify crops
- Better conservation of soil quality: greenhouses do not leach into the ground, cause no salinity of the soils and reduce carbon in the soil
- Lower evapotranspiration rates. Greenhouses have about 60 % less evapotranspiration rates than open field agriculture, but, on the other hand, enable a longer growing season which leads to extended water demands
- Indirect positive impact on the Jordan River

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley due to higher agricultural outputs per m^3 of water consumed and the promotion of bio-label production systems and fair trade products.

Organization/Responsibilities:
- Steering Committee: JVA, MoA, WUAs
- Implementation by WUA Support Unit, with external technical assistance (TA) support and micro-financier
- Financing through micro-credit organization, such as IFAD, with support from international financiers for TA services
- Support and dissemination by EcoPeace

Costs and Revenues:
- Preparation cost: 100,000 JOD
- Credit Program: 2,000,000 JOD
- TA cost: 200,000 JOD
- Annual revenue: 400,000 JOD/year (for farmers)

Implementation Period
- Preparation period: 1 year
- Micro-Financing/Technical Assistance Period: 4 years
- Follow-up Support Period: 1 year

Other remarks:

Name: A02 JOR—Jordan Valley Extension Services Improvement Project	**Location:** North, Middle and South Lower Jordan Valley	**Type of Intervention:** Agriculture Improvement

Objectives:
Increase the quality of extension services to the farmers in the Lower Jordan River Valley, and link these services to the existing 26 WUAs in the basin.

Intervention:
(1) Assess and analyze current extension services and related flaws based on field visits and interviews
(2) Provide improved extension services to better manage and monitor water use and distribution and reduce energy consumption (ref. to EU Agri Climate Change project)
(3) Establish a training center in the Jordan Valley—with a special focus on agricultural water and water-related themes
(4) Provide services to optimize agriculture field operations and production, including more climate change-resistant crops and more organic agricultural practices
(5) Assist farmers to better organize themselves and strengthen their organizations (WUAs) in applying sustainable agronomic practices, including minimized use of pesticides and fertilizers regulation and distribution of types of pesticides on the regional or national level, and promotion of environmentally sustainable substances
(6) Strengthen the expertise of WUAs to provide these services to their farmers

Map:

(7) Improve cooperation between the WUAs, the JVA and the MoA
(8) Establish mobile irrigation and soil lab to conduct soil and irrigation systems tests and maintenance

Results/Impacts:
About 30,000 farmers enabled to increase agricultural water efficiency and to generate higher yields and profits per m^3 used, leading to an overall economic strengthening of the agricultural sector in the lower Jordan River Valley with more efficient water use
Raised water awareness amongst members of WUAs
This project will have an indirect impact on the Jordan River.

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley due to more efficient agriculture and related energy consumption, and by introduction of more climate change-resistant crops and organic production practices.
- This project will also strengthen the institutional efficiencies of water management through the WUAs.

Organization/Responsibilities:
- Extension services to be provided by WUA Support Unit (three offices: North, Middle, Karamah)
- Supported by MoA, JVA, IRWA and NCARE
- Project office and TA provided by independent organization
- Dissemination and support provided by EcoPeace
- NCARE role must be emphasized

Costs and Revenues:
- Preparation cost: 100,000 JOD:
- Offices, hardware cost: 1,000,000 JOD
- Regional/International experts required for extension services related to irrigation, fertilization, pesticides, plant production, post- harvesting techniques for 2 seasons for 2 years: 6 years x 12 x 20,000 JOD = 1,440,000 JOD
- Operation cost: 200,000 JOD/year
- Annual revenue: indirect through better agricultural practices

Implementation Period
- Preparation time: 6 months
- Implementation period: 6 years

Other remarks:

Name: A03 JOR—Jordan Valley Drip Irrigation Improvement Project	**Location:** Lower Jordan River Valley	**Type of Intervention:** Agricultural Improvement

Objectives:
Expand the use of existing drip irrigation in the northern part of the Jordan Valley and increase the operations and efficiency of drip irrigation of the southern part of the Jordan Valley.
This project shall be coordinated with Palestinian and Israeli counterparts in order to exchange best practices and maximize project benefits.

Intervention:
- Develop pilot drip irrigation schemes in the north to show farmers advantages and best practices of drip irrigation
- Provide credit facilities and technical support to farmers to invest in and operate drip irrigation schemes in the north, particularly for citrus trees
- Improve operations and maintenance of drip irrigation schemes in the southern part of the lower Jordan River Valley
- Improve the lifespan of existing drip irrigation schemes and reduce annual investment costs
- This intervention will have a direct positive impact on the Jordan River due to more efficient water use

Targets/Results:
- Two pilot drip irrigation schemes for fruit trees in the north
- Finance credit facilities (50/50) and technology support for 30,000 dunums of new drip irrigation schemes for fruit trees in North Shouneh
- Improved drip irrigation operations in Deir al Alla and Southern Shouneh for 18,000 dunums
- Developed standards and certifications for drip irrigation design and equipment, irrigation efficiencies and monitoring applications
- Developed vocational training center on the use of drip irrigation and greenhouses

Sustainability and Water Impacts:
- This project will have a direct positive impact on the sustainability of the Jordan River Valley by making more efficient use of the agricultural water supply (about 10–20 MCM/year)

Organization/Responsibilities:
- MoA and JVA as governmental agencies
- NCARE of public entity as project partner
- MIRRA or other firms as drip irrigation design and implementing firms
- International Technical Assistance and Project Management
- Credit facilitator (like IFAD)
- EcoPeace for dissemination and stakeholder management

Costs and Revenues:
- Pilot drip irrigation projects including events: 200,000 JOD
- 30,000 dunums with new drip irrigation: 6,000,000 JOD (50 % grant, 50 % micro-credit)
- 18,000 dunums with improved irrigation operations: 1,800,000 JOD
- Technical assistance on standards, certificates, dissemination and farmer support: 1,000,000 JOD
- Total: 9,000,000 JOD

Implementation Period
- Preparation time: 1 year
- Construction time: 5 years

Other remarks:

Name: A04 JOR—Jordan Valley Post Harvesting Support Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Agriculture Improvement

Objectives:
Improve post-harvesting and marketing potentials for farmers in the Jordan Valley. This interventions also relates to A01—Greenhouse Extension Project.
This project shall be coordinated with projects A11 PAL and A14 PAL as well as with the Israeli counterparts in order to exchange best practices and maximize the project benefits.

Intervention:
- Organize farmers within the Jordan Valley in product organizations
- Provide them with relevant local and international market information, related product quality requirements, prices and logistic requirements
- Assist farmers with development of good business models (including fair trade markets, organic product markets, etc.),
- Provide information on product processing, agro-industry like production of fruit juice or almonds, marketing approaches and access to export markets
- Open up opportunities for niche markets, especially for high value, low water-intensive products that have been produced on the basis of environmental and social justice, like dates, medicinal herbs and olive oil.

Map:

(5) Assist farmers with implementing joint pilot export initiatives for certain products like strawberries, etc.

Results/Impacts:
(1) Constructed housing and staffing for Post-Harvesting Support Unit
(2) At least 5 organized product organizations, linked when needed to existing WUAs
(3) Information on post-harvesting provided to at least 10,000 farmers
(4) Raised income levels by approximately 5,000 JOD/year, or 50,000,000 JOD in total
(5) 10 implemented pilot projects on joint export initiatives
(6) This project does not have a direct impact on the Jordan River

Sustainability and Water Impacts:
- This project will have an indirect impact on the sustainability of the Jordan River Valley due to higher economic outputs that will be realized by the agricultural sector per m^3 of water used.

Organization/Responsibilities:
- Farmer organizations, such as water user associations
- MoA and JVA
- Dedicated implementation organization
- EcoPeace for dissemination and stakeholder information

Costs and Revenues:
- Preparation cost: 100,000 JOD
- Housing/accommodation: 300,000 JOD
- Operation cost: 150,000 JOD/year for 5 years
- 10 pilot projects: 500,000 JOD
- Total: 1,650,000 JOD

Implementation Period
- Preparation time: 1 year
- Implementation time: 5 years

Name: A05 JOR—Jordan Valley Irrigation Operation Efficiency Improvement Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Agriculture Improvement

Objectives:
Expand outsourcing of irrigation operations to specialized operating organizations. Currently some large farmers outsource their irrigation operations to specialized private operating organizations. These specialized firms employ computerized operating systems linked to weather stations and dedicated operating software. The aim is to expand these services to other farmers in the Jordan Valley.
This project shall be coordinated with Palestinian and Israeli counterparts in order to exchange best practices and maximize project benefits.

Intervention:
- Provide information to farmers about the economic benefits of outsourcing their irrigation operations
- Develop pilot projects to show farmers the practicalities of outsourcing irrigation operations
- Provide technical and contractual support services to farmers to prepare them for outsourcing their operations
- Monitor the extent of outsourcing over time

Map:

Results/Impacts:
This project focuses on creating a central irrigation operations support unit in the lower Jordan Valley and offers design, installation, monitoring and management of irrigation systems tied to local weather stations, enabling operation support to 90,000 connected farmers. Cooperating farmers need to be connected through the installation of a solenoid valve, flow sensors and a controller unit, which costs together about 3,000 JOD. The project may focus first on the middle area where relatively bigger farms operate (say 10 farm connections) as a pilot, and then expand to other areas. This project will have a direct positive impact on the Jordan River due to more efficient water use.

Sustainability and Water Impacts:
- This project will have a direct positive impact on the sustainability of the Jordan River Valley due more efficient irrigation operations for about 90,000 connected farmers.

Organization/Responsibilities:
- WUAs, MoA, JVA, private contracted firm
- EcoPeace for dissemination and stakeholder management

Costs and Revenues:
- Central control unit, including housing and weather station: 300,000 JOD
- 10 pilot projects: 50,000 JOD
- Expansion to 1,000 farm units: 3,000,000 JOD
- Technical assistance and operations: 100,000 JOD/year for 5 years

Total: 3,850,000 JOD

Implementation Period
- Preparation time: 6 months
- Construction time: 6 months
- Operation time: 5 years

Name: A06 JOR—Jordan Valley Authority Support Project	**Location:** Jordan Valley Authority	**Type of Intervention:** Agriculture Improvement

Objectives:
Strengthen the Jordan Valley Authority in its role as authority and regulator of agricultural water supply in the Jordan Valley.

Intervention:
- Strengthen water data collection and management;
- Strengthen water planning capacities (WEAP, GIS, CAM [computer aided maintenance … etc.]);
- Improve SCADA system and its operations of water storage and distribution networks in the Jordan Valley, including IT and wireless data transfer
- Strengthen role of JVA towards the WUAs in the Jordan Valley (less detailed control, more efficiencies)
- Purchase mobile technology equipped units for light or medium repairs of water distribution networks

Map:

Results/Impacts:
This project will lead to a more efficient JVA in terms of water data management, water allocation planning, water supply systems operations, management and coordination with existing WUAs and capacity for immediate and urgent repairs on water supply systems.
This project will have an indirect positive impact on the Jordan River due to better water management.

Sustainability and Water Impacts:
- This project will have an indirect impact on the sustainability of the Jordan River Valley by creating of the JVA in terms of basin water management.

Organization/Responsibilities:
- JVA
- WAJ/MoWI
- Contracted organizations
- EcoPeace for dissemination and WUA stakeholder management

Costs and Revenues:
- Preparation cost: 100,000 JOD
- Mobile repair unit: 100,000 JOD
- Implementation cost: 2,000,000 JOD

Implementation Period
- Preparation time: 6 months
- Construction time: 2 years

Name: A01 PAL—Shifting in Cropping Pattern	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources

Objectives:
Reduce agricultural water demands per dunum by shifting of cropping patterns towards less water-consumptive plants. This project shall be coordinated with Jordanian and Israeli counterparts in order to exchange best practices and maximize project benefits.

Map:

Intervention:
- Distribute and construction of palm farms to replace bananas and vegetables
- Create public awareness campaigns
- Rehabilitate the farms to match the new cropping patterns
- Open opportunities for niche markets, especially high value, low water-intensive products that have been produced on the basis of environmental and social justice campaigns, like dates, medicinal herbs and olive oil

Preparation:
- Plan and design the farms
- Market study of agricultural needs
- Set up utilization plan
- Finance planning

Construction/Realization:
- Identify needs of each farm
- Tender for and construct structures
- Supply contracts to farm owners and farmer organizations
- Train farmers on the importance of shifting to new crop patterns through public awareness campaigns and formal training

Operations:
- Distribution of trees
- O&M
- Technical and financial management

Results/Impacts:
- More cultivated dunums with less water consumption
- Increased income to farmers
- Increased food production and food security due to increased purchasing power

Organization/Responsibilities:
- Ministry of Agriculture (farmers support)
- Farm owners/farmers/Water User Association/agricultural unions (beneficiary)

Costs and Revenues:
- Preparation cost: 50,000 EUR
- Construction cost: 750,000 EUR
- Operation cost: 100,000 EUR/year
- Annual revenue: 600,000 EUR/year

Implementation Period
- Preparation time: 0.5 year
- Construction time: 1.5 years

Name: A02 PAL—Rehabilitation and Upgrading of Water Systems	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture Irrigation

Objectives:
Increase water resource availability and enhance the water efficiency of wells and ponds in the Jordan Valley in order to increase the water supply from these sources and minimize losses from the network.

Map:

Intervention:
- Rehabilitation of 10 agricultural ponds in Jericho Governorate
- Rehabilitation of 7 agricultural wells in Al-Jiftlik, Al-Auja, Marj Naja and Al-Zubaidat
- Construction of 10 km of main agricultural pipelines
- Rehabilitation of wells in Al-Jiftlik, Al-Auja, and Al-Zubaidat
- Rehabilitation of irrigation networks for 50,000 dunums of irrigated land
- Rehabilitation of 20 agricultural wells in Al-Jiftlik, Al-Auja, Marj Naja and Al-Zubaidat
- Construction of 20 km of conveyance agricultural pipelines wells in Al-Jiftlik, Al-Auja, and Al-Zubaidat
- Clarification of issues linked to ownership of equipment, water pricing and institutional responsibilities

Preparation:
- Plan and design new equipment
- EIAs and licenses
- Set up utilization plan
- Finance planning

Construction/Realization:
- Identify needs of each location
- Tender for and construct structures
- Supply contracts to well owners and farmer organizations
- Train operators and farmers

Operations:
- Distribution of water
- O&M
- Technical and financial management

Results/Impacts:
- Additional quantity of 2.65 MCM/year, serving approximately 250 dunums of agricultural land at about 2.0 NIS/m^3
- Increased income to source owners by some 5,300,000 NIS/year
- Increased food production by some 6,500 tons/year and income to farmers by 13,000,000 NIS/year
- Increased economic value of water
- More water available for irrigation due to the reduction of losses in irrigation networks

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Well owners/farmers/Water User Association/farmers associations (beneficiary)

Costs and Revenues:
- Preparation cost: 700,000 EUR
- Construction cost: 16,300,000 EUR
- Operation cost: 1,100,000 EUR/year
- Annual revenue: 3,300,000 EUR/year

Implementation Period
- Preparation time: 1 year
- Construction time: 2 years

Name: A03 PAL—Water Right Policies and Regulations	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Water Resources

Objectives:
Develop agreed upon policy and regulations to organize water rights to agricultural water resources in the area to better manage the resources available.
This project shall be coordinated with Jordanian and Israeli counterparts in order to exchange best practices and maximize project benefits.

Map:

Intervention:
Develop unified policy and regulations that will be applied to all agricultural water resources in the area

Preparation:
- Plan and collect data
- Finance planning

Construction/Realization:
- Tendering
- Review data, laws and policies
- Develop the policy and regulations
- Conduct awareness campaigns and focus group meetings

Operations:
- Apply proposed regulations
- Conduct public awareness campaigns

Results/Impacts:
- A unified water rights policy and regulations that are applied to different water resources
- Improved fee collection rates, user satisfaction and willingness to pay

Organization/Responsibilities:
- Palestinian Water Authority (regulation)
- Ministry of Agriculture (farmers support)
- Village Council/farmers/Water User Association/owners (beneficiary)

Costs and Revenues:
- Preparation cost: 150,000 EUR
- Construction cost: 0 EUR
- Operation cost: 0 EUR/year
- Annual revenue: 0 EUR/year

Implementation Period
- Preparation time: 0.5 year
- Construction time: 1 year

Other remarks:

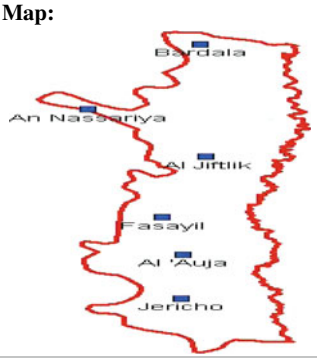
Name: A04 PAL—Operate and Expand the Agro-Industrial Park in the Southern Jordan Valley	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture
Objectives: Optimize benefits from the agro-industrial park near Jericho and expand it to consider other agro-industries.		**Map:** 
Preparation: • Plan and design the expansion • EIA's and licenses • Setup utilization plan • Finance planning		**Construction/Realization:** • Identify needs • Tender for and construct structures • Manage contracts with companies • Train operators • Increase public awareness for farmers and potential beneficiaries **Operations:** • Marketing • Fee collection • O&M • Technical and financial management
Results/Impacts: • A fully utilized industrial park • More efficiently marketed products • Increased income for beneficiaries		
Organization/Responsibilities: • Ministry of Agriculture (farmers support) • Ministry of National Economy • Farmers/farmers unions/industrial sector (beneficiary)		
Costs and Revenues: • Preparation cost: 200,000 EUR • Construction cost: 1,800,000 EUR • Operation cost: 300,000 EUR/year • Annual revenue: 250,000 EUR/year		**Implementation Period** • Preparation time: 1 year • Construction time: 1 year
Other remarks:		

Name: A05 PAL—Construction of Agricultural Roads	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture
Objectives: Construct agricultural roads to increase accessibility to different agricultural areas. This project is linked to the objectives for valley-wide economic development and cooperation and aims at mobilizing the Palestinian Agricultural Sector in particular.		**Map:** 
Intervention: Construct 45 km of agricultural roads in Al-Jiftlik, Al-Auja and Kardala area **Preparation:** • Plan and design • Setup utilization plan • Finance planning		**Construction/Realization:** • Identification of the roads • Tendering **Operations:** • Monitor the constructed roads • O&M
Results/Impacts: • Increased willingness to utilize available land due to increased in accessibility • More utilized land • Reduces transportation costs		
Organization/Responsibilities: • Ministry of Agriculture (farmers support) • Village Council/Farmers/agricultural unions (beneficiary)		
Costs and Revenues: • Preparation cost: 100,000 EUR • Construction cost: 900,000 EUR • Operation cost: 10,000 EUR/year • Annual revenue: 0 EUR/year		**Implementation Period** • Preparation time: 0.5 year • Construction time: 1.5 years
Other remarks:		

Name: A06 PAL—Enhancement of Palm Production	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture

Objectives:
Increase palm production through enhancement and reproduction of male palm trees and through support of marketing practices.
This intervention is likely to be financed by the private sector.

Map:



Intervention:
Construction of 100 dunums of male palm tree farms
Provision of reproductive seeds
Construction of 1,000 ton capacity packaging and storage center

Preparation:
- Plan and design the farms and the storage center
- Market study of agricultural needs
- Set up utilization plan
- Finance planning

Construction/Realization:
- Identify needs of each farm
- Tender for and construct structures
- Supply contracts to farm owners and farmer organizations
- Develop training and public awareness campaigns about the importance of male palms and the proper packaging and storage of them

Operations:
- Distribution of palms
- O&M
- Technical and financial management
- Marketing of dates

Results/Impacts:
- Additional 100 dunums of male palm trees constructed and utilized to produce the targeted number of palm trees
- A packaging center with the ability to produce 1,000 tons of dates, increasing income by an additional 10,000,000 NIS
- Increased income for farmers
- Increased food production and food security due to increased purchasing power

Organization/Responsibilities:
- Ministry of Agriculture (farmers support)
- Ministry of National Economy
- Farm owners/farmers/agricultural unions (beneficiary)

Costs and Revenues:
- Preparation cost: 100,000 EUR
- Construction cost: 1,500,000 EUR
- Operation cost: 100,000 EUR/year
- Annual revenue: 400,000 EUR/year

Implementation Period
- Preparation time: 0.5 year
- Construction time: 1.5 years

Name: A07 PAL—Development and Support Livestock Sector | **Location:** Palestine, Jericho | **Type of Intervention:** Agriculture

Objectives:
Increase the effectiveness of livestock and poultry agriculture to enhance the economic conditions of participating beneficiaries and to meet the growing demand for meat.
This project shall be coordinated with Jordanian and Israeli counterparts in order to exchange best practices and maximize the project benefits.

Map:

Intervention:
Support 30 beneficiaries in the Jericho area by providing them with:
- Production needs and equipment
- Enhanced marketing processes

Support the livestock sector through:
- Improved farm management through the provision of buildings, tools, scissors and milking machines to 100 beneficiaries from Al-Dyouk, Fasayil, Al-Auja and Al-Jiftlik.
- Improve health safety through the introduction of new yogurt processing units and insect control mechanisms for 100 beneficiaries
- Improved sheep flocks through artificial breeding for 50 beneficiaries
- Support the poultry sector through improving farm conditions with the construction of thermal-resistance roofs and the introduction of new poultry farming technology for 20 beneficiaries in the Jericho Governorate
- Support the livestock sector through developing and providing better breeds of sheep and cows

Preparation:
- Plan and design the intervention
- Market study
- Set up utilization plan
- Finance planning

Construction/Realization:
- Identify needs
- Tender for and construct structures
- Supply contracts to beneficiaries

Operations:
- Distribution and marketing of products
- O&M
- Technical and financial management

Results/Impacts:
- An additional 10 tons of honey production in the market
- Increased income for 30 beneficiaries by 1,000,000 NIS
- Increased food production and food security due to increased purchasing power
- Increased livestock production in the area including meat and dairy products
- Increase income to farmers
- Increase poultry production in the area including meat and egg products

Organization/Responsibilities:
- Ministry of Agriculture (farmers support)
- Farmer unions/farmers/agricultural unions (beneficiary)

Costs and Revenues:
- Preparation cost: 145,000 EUR
- Construction cost: 3,850,000 EUR
- Operation cost: 375,000 EUR/year
- Annual revenue: 1,300,000 EUR/year

Implementation Period
- Preparation time: 1 year
- Construction time: 2 years

Other remarks:

Name: A08 PAL—Support to Womens Organizations and Bedouin Communities	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture

Objectives:
Increase the effectiveness of womens organizations to enhance the economic conditions of women participating in the programs
Increase the amount of water available for Bedouin communities to enhance the economic conditions of participating communities.

Map:

Intervention:
- Support 6 womens organizations in Jericho, Al-Auja, Al-Jiftlik and Al-Zubaidat through the construction of date processing and freezing units and the securing of the necessary machinery needed to process the extra quantities of dates produced
- Support the Bedouin communities of Al-Jiftlik and Al-Auja with 20 water storage tanks of 50 m^3 to serve as storage tanks for the community and to distribute water

Preparation:
- Plan and design the processing units
- Market study of agricultural needs
- Set up utilization plan
- Finance planning

Construction/Realization:
- Identify needs
- Tender for and construct structures
- Supply contracts to women organizations

Operations:
- Distribution and marketing of products
- O&M
- Technical and financial management

Results/Impacts:
- 10 functioning date-processing units to support the working women with an additional income of 2,500,000 NIS/year
- A more feasible shift to dates from other more water-consumptive plants the shifting to dates from other more water consumption plants became more feasible
- More activity in society from women in the groups
- Processing and freezing centers capable of producing 1,000 tons of dates
- Increased income for farmers
- Increase food production and food security due to increased purchasing power
- Increased water availability to Beduin communities by 1,000 m^3 for different uses

Organization/Responsibilities:
- Ministry of Agriculture (farmers support)
- Ministry of National Economy
- Womens organizations/farmers/agricultural unions (beneficiary)

Costs and Revenues:
- Preparation cost: 60,000 EUR
- Construction cost: 590,000 EUR
- Operation cost: 45,000 EUR/year
- Annual revenue: 200,000 EUR/year

Implementation Period
- Preparation time: 0.5 year
- Construction time: 1.5 years

Other remarks:

Name: A09 PAL—Land Rehabilitation	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture	**Start Up Year: 2018**

Objectives:
Increase the irrigable land by 40,0000 dunums to enhance agricultural production and increase food security in Palestine using the most advanced methods available. This will not affect land set aside for nature reserve since the entire area classifies as Grade A irrigable land. In addition, the land use classification in the area will also not be affected.

Map:

Intervention:
Rehabilitate 40,000 dunums of irrigable land through levelling, terracing, cleaning of the land from any stones and supply the farms with state-of-the-art irrigation systems. These 40,000 dunums are those identified as irrigable land by the MoA at present and are not irrigated.
Most of this newly developed land will use drip irrigation or any other irrigation practices that prove to be more efficient in the future.
The anticipated crops are palms and any other plants that are profitable with reasonable water requirements

Preparation:
- Plan and design the farms and the irrigation systems
- Market study of agricultural needs
- Set up utilization plan
- Finance planning

Construction/Realization:
- Identify needs of each farm
- Tender for and construct structures
- Supply contracts to farm owners and farmer organizations
- Implementation of training and public awareness campaigns on the new irrigation practices

Operations:
- O&M
- Technical and financial management
- Marketing of dates

Results/Impacts:
- Additional 40,000 dunums of irrigable land reclaimed and supplied with irrigation networks
- New land irrigated by available treated wastewater and additional quantities from the Jordan River of about 40 MCM/year
- An additional 120,000 tons of agricultural products produced each year for national markets, increasing local income by an additional 120,000,000 NIS
- Increased income for farmers
- Increased food production and food security due to increased purchasing power

Sustainability:
The project will increase land availability for irrigation and will increase the sustainability of agricultural activities in the area. The project will be sustainable since it will increase farmers' incomes provide food security and jobs for people living in the study area in particular and Palestine in general. The additional quantities of 40 MCM/year from the river is less than the Palestinians' rightful claim to the river and thus it will not affect the river's environmental flows.

Organization/Responsibilities:
- Ministry of Agriculture (farmers support)
- Ministry of National Economy
- Palestinian Water Authority
- Farm owners/farmers/agricultural unions/(beneficiary)

Costs and Revenues:
- Preparation cost: 2,000,000 EUR
- Construction cost: 150,000,000 EUR
- Operation cost: 15,000,000 EUR/year
- Annual revenue: 30,000,000 EUR/year

Implementation Period
- Preparation time: 1 year
- Construction time: 5 years

Other remarks:

Name: A10 PAL—Strengthening of Extension Services Public Awareness Program	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture	**Start Up Year: 2021**

Objectives:
Raise the level of awareness of stakeholders in agricultural and water management practices and strengthen extension services.
This project shall be coordinated with project A02 JOR and Jordanian and Israeli counterparts in order to exchange best practices and maximize project benefits

Map:

Intervention:
Conduct a long-term extension services program within the MoA and NGOs that includes the following main subjects:
- State-of-the-art irrigation technologies
- Cropping patterns
- Building international partnerships, marketing and export procedures and conditions

Preparation:
- Identify needs
- Setup utilization plan
- Finance planning

Construction/Realization:
- Prepare the long-term programs
- Identify topics

Operations:
- Conduct workshops and public awareness programs
- Distribute awareness materials
- Develop the institutional capacity of the program
- Technical and financial management

Results/Impacts:
- Increased awareness of farmers regarding targeted subjects
- More signed export agreements
- More exported products
- Additional dunums cultivated with less water consumption
- Increased income to farmers
- Increased food production and food security

Sustainability:
The project will be sustainable and enrich the sustainability of agricultural activities in the study area through increased capacity of the agricultural community and advancement of knowledge.

Organization/Responsibilities:
- Ministry of Agriculture (farmers support)
- Palestinian Water Authority
- Farm owners/farmers/Water User Association/agricultural unions (beneficiary)

Costs and Revenues:
- Preparation cost: 100,000 EUR
- Construction cost: 0 EUR
- Operation cost: 100,000/ EURyear
- Annual revenue: 0 EUR/year

Operation Costs:
Shall be financed by project beneficiaries

Implementation Period
- Preparation time: 1 year
- Construction time: 10 years

Other remarks:

Name: A11 PAL—Promotions of Farmers Cooperatives	**Location:** West Bank Jordan Valley	**Type of Intervention:** Irrigation and Marketing Services	**Start Up Year: 2021**

Objectives:
Facilitate groups of family farms to jointly invest in user self-provision of irrigation, processing and/or marketing services for high-value export crops and responsible homestead recreational services.
This project shall be coordinated with Jordanian and Israeli counterparts in order to exchange best practices and maximize project benefits.

Map:

Intervention: Family farms need support to undertake communal initiatives that enable them to develop the economic potentials of resources they control in their communities and to benefit from economies of scale.

Preparation:
- Disseminate good experiences with cooperative associations for communal self-provision of services
- Plan high-priority communal services to family farms in rural communities to enhance the production potentials of controlled resources
- Explore possibilities to engage farmer groups in partnerships with private agribusinesses/industries (production/processing/marketing contracts)
- Explore possibilities to engage local farmer groups in responsible homestead recreational services
- Prepare investment plans using beneficiaries' contributions, loans from savings and credit institutions and a matching grant from a public sector organization

Construction/Realization:
- Pilot production and marketing contracts between CAs and private agri-businesses

Operations:
- Train CA members in technical and commercial aspects of the production/marketing contract

Results/Impacts:
- Family farms enabled to engage in a modernization process that increases labour productivity and resilience
- Dynamic rural economies through cooperation and diversification of family farms

Sustainability:
The project is considered sustainable because it will enhance the sustainability of family farming and will enable rural economies to become more dynamic.

Organization/Responsibilities:
- Ministry of Agriculture (enabling policy environment and M&E)
- NGOs working on community development in the Jordan Valley/West Bank (facilitation of communal initiatives)
- Private investors interested in processing/marketing products from family farms (processing and marketing services)

Costs and Revenues:
- Preparation cost: 100,000 EUR
- Construction cost: 400,000 EUR

Implementation Period
- Preparation time: 1 year
- Construction time: 2 years

Other remarks:

Name: A12 PAL—Jordan Valley Credit Program	**Location:** Jericho Governorate	**Type of Intervention:** Credit Program for LEISA and IWRM initiatives	**Start Up Year:** 2019

Objectives:
Create a credit program focusing on semi-subsistence family farms to overcome financial bottlenecks they face in adapting GAP and LEISA agricultural practices and efficiently using available water resources. In addition, the project will aim to enable farmers to invest in drip irrigation and green houses. This project shall be coordinated with Jordanian and Israeli counterparts in order to exchange best practices and maximize project benefits.

Map:

Intervention: Provide one private and one cooperative financial institution that will providing affordable loans to family farms that developed technical and commercially viable plans to enhance sustainable crop and livestock production systems and off-farm activities (B&B). The intervention will also support farmers in the adaptation of drip irrigation and greenhouses.

Preparation:
- Prepare a credit program for encouraging semi-subsistence families to invest in farm modernization and adaptation to the impacts of climate change
- Call for proposals of financial institutions to manage the credit program in all clusters in the West Bank of the lower Jordan Valley

Construction/Realization:

Operations:
- Promotion of savings and credit groups in rural farming communities farming in the lower Jordan Valley
- Development of standard credit packages for modernization of family farms (e.g. water harvesting, greenhouse development and precision irrigation)
- Piloting of modernization packages through cooperative and water users associations linked to the savings and credit groups
- Up-scaling of successful modernization packages
- Technical and financial management

Results/Impacts:
- Affordable credit services for developing production and service potentials of family farms through communal security and demand-led extension services
- More farmers using drip irrigation techniques and green houses

Sustainability:
The project is considered sustainable since it will enables more farmers to have more sustainable incomes

Organization/Responsibilities:
- Cooperative and private financial institutions that have networks of service units or savings and credit groups in the Jericho Governorate
- Ministry of Agriculture and Department of Agriculture in the Jericho Governorate
- Private agricultural support services providers

Costs and Revenues:
- Preparation cost: 150,000 EUR
- Construction cost: 950,000 EUR
- Operation cost: 400,000 EUR
- Annual revenue: 200,000 EUR

Funding:
Funding for the credit funds shall be searched for through dedicated banks or programs, such as IFAD

Implementation Period
- Preparation time: 1 year
- Piloting time: 2 years
- Up-scaling time: 4 years

Other remarks: Family farms have proven to be innovative and resilient when an appropriate environmental enabling policy and demand-oriented support service are established.

Name: A13 PAL—LEISA Research and Certification	**Location:** NAR Stations in Dair Al Alla and Jericho	**Type of Intervention:** Regional Cooperation in Demand-Led Research	**Start Up Year:** 2019

Objectives:
Create research capacities for the development and certification of Low External Inputs Sustainable Agricultural (LEISA) systems (integrated and organic agriculture) in the lower Jordan Valley.

Map:

Intervention: Meet the environmental quality standards imposed on export markets crucial for agricultural commodities for which the lower Jordan Valley has a comparative advantage. The research program includes a model project with certified Global GAP farms and farms hoping to obtain certification with a focus on water.

Preparation:
- Preparation of a proposal for a research program covering on-station and on-farm research and laboratories that include a model project with certified Global GAP farms and farms hoping to obtain certification with a focus on water.
- Establishment of a governing and management structure for this regional research institution that manages the research programs at the existing agricultural research stations in Dair Al Alla and Jericho
- Financial planning and development of a business plan for the research program

Construction/Realization:
- Tender for, construct and procure on-station research infrastructure and laboratories

Operations:
- Perennial and annual planning of research programs
- Managing on-station and on-farm research on good agricultural practices for integrated and organic agriculture
- Produce, soil and irrigation water testing for issuing of farm and product certificates
- Monitoring and evaluation
- Technical and financial management

Results/Impacts:
- Clusters of Global GAP and OFOAM certified farms in the lower Jordan Valley
- Demand-led research activities and knowledge sharing networks between farmers and researchers
- Internationally accredited research and certification institute that will provide demand-oriented services

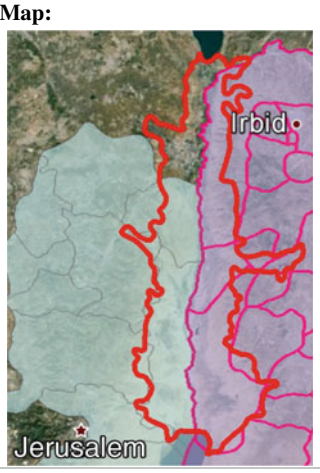
Sustainability:
The project is not only sustainable but will enhance the sustainability of agricultural activities and will increase awareness of environmental issues.

Organization/Responsibilities:
- Ministries of Agriculture in Jordan and Palestinian Territories
- PPP-managed research institute in partnership with Global GAP and OFOAM

Costs and Revenues:
- Preparation cost: 150,000 EUR
- Construction cost: 450,000 EUR
- Operation cost: 300,000 EUR
- Annual revenue: 200,000 EUR

Implementation Period
- Preparation time: 2 years
- Establishment time: 2 years

Other remarks: Basic services must charge cost-covering fees. Research funding will be obtained through competitive research proposals with beneficiaries' contributions and public matching grants.

Name: A14 PAL—Establish an Agro-Industrial Zone in the Northern Jordan Valley	**Location:** Northern Jordan Valley	**Type of Intervention:** Agriculture	**Start Up Year:** 2022
Objectives: Establish an agro-industrial zone in the northern Jordan Valley in order to meet the needs of agricultural development in the medium- to long-term		**Map:** 	
Intervention: Establish an agro-industrial zone in the northern Jordan Valley, that includes a packing and grading center, agro-conversion industries and a logistics center to facilitate the export of goods **Preparation:** • Identify land area • Prepare plans • Start implementation • Identify donors		**Construction/Realization:** • Prepare plans and implement an agro-industrial zone on up to 200 dunums of land, including infrastructure, such as electricity, water, sewage planning and roads	
Results/Impacts: Agro-industrial zone established to meet the needs of agricultural development in the Jordan Valley			
Sustainability: This project will enhance the sustainability of agro-businesses and will increase the income of farmers, advancing the sustainability of the agricultural sector.			
Organization/Responsibilities: • Ministry of Agriculture • Ministry of National Economy • Jordan Valley Authority • Ministry of Public Works • PIEFZA			
Costs and Revenues: **Construction based on needs and area** • Preparation cost: 500,000 USD • Construction cost: 11,500,000 USD		**Implementation Period** • Preparation time: 2 years • Construction time: 2 years	
Other remarks:			

Name: A15 Hand- Over of Settlements' Agricultural Land	**Location:** Palestine, Jordan Valley	**Type of Intervention:** Agriculture	**Start Up Year:** 2020

Objectives:
Hand over the irrigable land of some 60,000 dunums currently irrigated by Israeli settlers in the study area to enhance the agricultural production and increase food security in Palestine using the best available practices. This will not affect land for nature reserve since the entire irrigated area is classified as Grade A irrigable land.

Map:

Intervention:
- Hand over some 60,000 dunums of irrigable land to Palestinians
- Rehabilitate this irrigable land through supplying of state-of-the-art irrigation systems

Preparation:
- Plan & design the farms and irrigation systems
- Market study of agricultural needs
- Setup utilization plan
- Finance planning

Construction/Realization:
- Identify needs of each farm
- Supply contracts to farm owners and farmer organizations
- Implement training and public awareness campaigns on the new irrigation practices

Operations:
- O&M
- Technical and financial management
- Date marketing

Results/Impacts:
- Additional 60,000 dunums of irrigable land handed over and supplied with irrigation networks
- New land irrigated by available treated wastewater and present quantities from the Jordan River and area groundwater
- New irrigated land produces an additional 180,000 tons of agricultural products for national markets and export, increasing local income by an additional 180,000,000 NIS
- Increased income for farmers
- Increased food production and food security due to increased purchasing power

Sustainability:
The project will increase land availability and offer new jobs, thus increasing the sustainability of agricultural activities in the area. The project will be sustainable because it will increase farmers' incomes and provide food security and jobs for people living in the study area in particular and Palestine in general. No additional quantities from fresh water sources are needed. On the contrary, presently-used freshwater will be saved by replacing it with treated wastewater.

Organization/Responsibilities:
- Ministry of Agriculture (farmer support)
- Ministry of National Economy
- Palestinian Water Authority
- Farm owners/farmers/agricultural unions (beneficiary)

Costs and Revenues:
- Preparation cost: 1,000,000 EUR
- Construction cost: 15,000,000 EUR
- Operation cost: 2,000,000 EUR/year
- Annual revenue: 3,000,000 EUR/year

Implementation Period
- Preparation time: 1 year
- Construction time: 5 years

Other remarks:

4. Lower Jordan Basin Governance

Name: IC01 REG—Establishing a Jordan River Basin Organization (JORBO)	**Location:** Entire Basin	**Type of intervention:** Governance Intervention

Objectives:

Assess the feasibility and institutional set-up of a transboundary River Basin Organization (RBO) in line with the UN Watercourses Convention (scheduled to enter into force on 17 August 2014). The RBO's key objective is to ensure coordinated water resource and quality management between riparian countries Jordan, Israel and Palestine (in the long-term this may include Lebanon and Syria as well) on a shared Jordan River Basin, while addressing the legitimate social and economic needs of each of the riparian states and enabling joint development and management of the Jordan River and water resource infrastructure between the riparian states. The RBO may act as a coordinating body for the riparian countries of the lower Jordan River, fostering cooperation over the Jordan River and its water resources through a coordinated, transparent and democratic process, under the principle of "one river, one management." The objective is that the steering committees related to each individual strategic objective for the Jordan will eventually be embedded in the structures of this Jordan River Basin Organization.

A respective agreement should provide the legal framework and mandate for the functioning of the Jordan RBO (JORBO). In particular, existing legislation and transboundary agreements might require revision. National governments' water departments or ministries will engage with this legally mandated institution in terms of their national interests.

Intervention:

In order to promote coordinated and environmentally sustainable Jordan River and regional water resource development while addressing the legitimate social and economic needs of each of the riparian states, the set-up of a River Basin Organization for the Jordan Basin is being prepared in a strategic study that is also devoted to understanding the political barriers in front of implementing such an organization and the international incentives and pressure required to overcome these barriers.

Institutional responsibilities for the envisaged JORBO may include:

- Quantification and attainment of water rights of each riparian, especially as the demand for water for multiple purposes grows throughout the region as a whole. In line with the UN Convention on the Law of the Non-Navigational Uses of International Watercourses (scheduled to enter into force on 17 August 2014), key elements in such a process may include determination of annual safe yield per riparian (average volume of water which may be exploited per riparian state without causing hydrological/environmental damage) and/or the allocation of equal per capita volumes of freshwater to the various parties.
- Identification and development of 'strategic' regional water resources (e.g. desalination, water transfer schemes, shared benefits from ecosystem services or regional tourism, etc.), based on a mutual gains approach/positive-sum game, which would allow both the reallocation of existing water resources and the attainment of water rights for the parties
- Identification and development of provisions for addressing flow variability and availability of safe water
- Joint Jordan River flow management based on monthly and seasonal flow fluctuation (ref. GNF report on temporary flow management, and WEAP model developed under this project)
- Joint water quality monitoring and control, including hazard response management for major sites like the Peace Park and baptism site
- Monitoring and evaluation
- Joint information management, including joint knowledge production, information exchange (e.g. open and shared database), communication, etc.
- Capacity building on transboundary water management through training, workshops, pilots, etc.

Results/Impacts:

A detailed set-up of the institutional structure (i.e. mandate, organization, regulations, dispute settlement and operations) of the envisaged JORBO

Sustainability and Water Impacts:

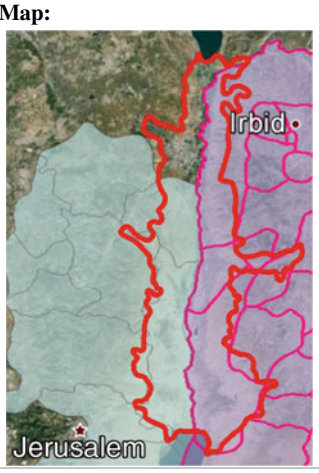
- This project will have a direct positive impact on the sustainability of the Jordan River Valley due to more efficient regional cooperation and management of the water sector

Responsibilities:

National governments' water departments or ministries

Investment Cost:

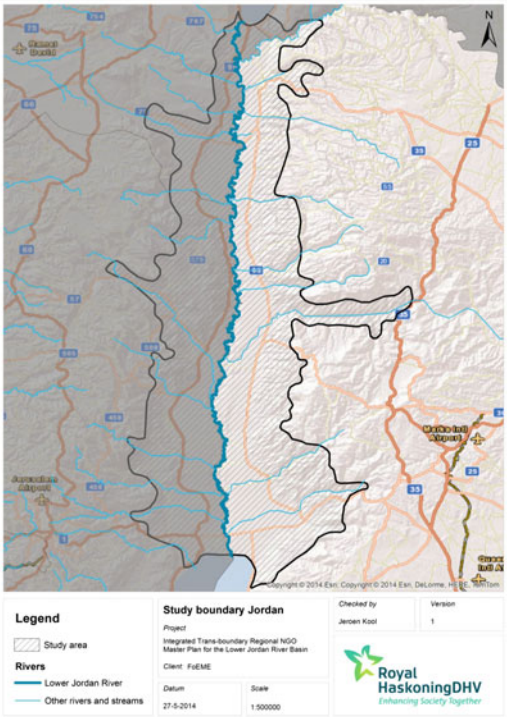
Phase 1 Strategic study: 150,000 JOD (1 year)
Implementation: 200,000 JOD/year (20 years)
Phase 2 Wide River Basin Studies: 150,000 JOD (1 year)
Implementation (After 2045): 300,000 JOD/year (20 years)

Name: IC01—PAL Jordan Valley Authority Development Program	**Location:** Jordan Valley	**Type of Intervention:** Planning
Objectives: Establish a single Palestinian entity that is responsible for development planning and regulation of the Jordan Valley. This authority shall also address political, economic and environmental sustainability management issues.		**Map:** 
Intervention: Establish the Jordan Valley Authority with the responsibility of coordinating development plans for the Jordan Valley, which consist of public–private and civil society management systems. This program shall include an institutional needs assessment to develop this organization as authority and regulator of the Palestinian Jordan Valley. This includes land, water and services management and economic development; monitoring; regulating; land use planning; export promotion and related capacity development. The JVA will be empowered to provide investment incentives for businesses and residents to be established or relocated. **Preparation:** • Obtain local consensus and coordinate with the Ministry of Local Government, as well as the President's Office and other relevant ministries and governmental authorities		**Construction/Realization:** • Prepare legal framework for the establishment, by-laws and a presidential decree for members of the governing body **Operations:** • Prepare an operational strategy and action plan, as well as SOPs for the authority
Results/Impacts: One authority responsible for coordinating the development of the Jordan Valley		
Organization/Responsibilities: • Ministry of Local Government • Other relevant ministries and governmental authorities		
Costs and Revenues: • Preparation cost: 2,000,000 USD		**Implementation Period** • Preparation time: 1.5 years

5. Ecological Rehabilitation

Name: E01 REG—Jordan River Environmental Flows Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Ecological Management

Objectives:
Rehabilitate the lower Jordan River by increasing water flow in the river to an environmentally efficient level that will support the river's riparian ecosystems and biodiversity, and the basin's biodiversity in general. Before degradation, the lower Jordan River flowed freely for thousands of years from the Sea of Galilee to the Dead Sea creating a lush wetland ecosystem rich in biodiversity.
This project depends on the gradual improvement of water quality, water supply and environmental flow into the river, and will include the design and implementation of dedicated ecological restoration projects.
The realization of this intervention is the cornerstone for the success of most of the interventions within this category.



Interventions:
- Designate specific environmental flow targets for dedicated sections along the Jordan River
- Manage water inflow and outflow of the Jordan River from its major sources within the framework of the proposed transboundary River Basin Organization (see also IC01 REG)
- Design river flow monitoring and metering devices
- Set up operational procedures for monitoring and management of river flows for different seasons and locations
- Implement operations of monitoring and management of river flows based on agreed environmental flow requirements

Results/Impacts:
This intervention will:
- Restore the environmental flow regime required for full ecological restoration of the river
- Require optimized cooperation among the three riparian countries to manage inflows and outflows
- Require monitoring of flows at different sections and times throughout the year
- Have a direct positive impact on the Jordan River

Sustainability and Water Impacts:
- This project will have a direct positive impact on the sustainability of the Jordan River Valley by restoring environmental flows in the river which will support redevelopment of ecosystems and biodiversity in the river as well as the biodiversity of the region in general.

Organization/Responsibilities:
- Ministries of Environmental Affairs
- JVA, PWA, IWA
- NCAR, farmer associations,
- Municipalities

Costs and Revenues:
- Preparation and planning: 500,000 USD
- Implementation and monitoring: 500,0000 USD
- Operations/maintenance: 500,000 USD/year

Implementation Period
- Preparation time: 1 year
- Operations: permanently

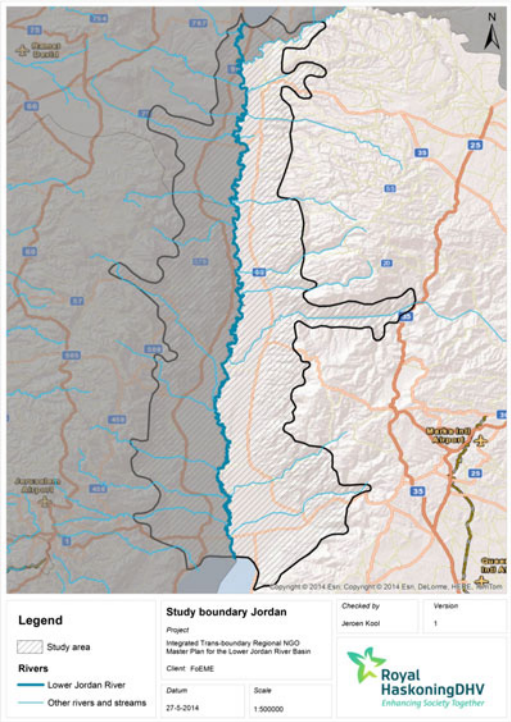
Other remarks:
This intervention requires strong coordination between Israel, Jordan and Palestine, and therefore depends on real cooperation among the three parties, preferably within the context of a Peace Treaty between Israel and Palestine. This intervention also depends on the agreement of the basin's water balance and related inflow and outflow of the river. This project is expected to be implemented therefore not before 2020.

Name: E02 REG—Jordan River Ecological Restoration Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Policy and Legislative Improvement

Objectives:

Restore the ecological quality of the Jordan River. Before degradation, the lower Jordan River flowed freely for thousands of years from the Sea of Galilee to the Dead Sea creating a lush wetland ecosystem, rich in biodiversity.

The aim of this intervention is to restore the ecological status of the river again—by supporting not only the riparian ecosystems and biodiversity, but also the biodiversity of the region in general. This project will depend on the gradual improvement of water quality, water supply and environmental flow into the river, and will include the design and implementation of dedicated ecological restoration projects and developing eco-services such as ecoparks along its borders, as well as detailed surface water quality and ecological protection and monitoring projects. One of these projects may relate to assigning nitrate vulnerability zones along the river to prevent nitrate emissions from farms into the river system.



Interventions:

- Designate specific sections with valuable habitats along the river as "no-touch" zones
- Performe ecological rehabilitation for several years while constantly monitoring changes based on experience with previous pilot projects
- Expand the river flood zone, including side wadis, rehabilitation of river banks, dredging of the flow channel where needed, and protection of buffer zones between cultivated agricultural lands and the habitat along the stream
- Enrich the diversity of natural vegetation with the expected improvement in water quality
- Treat and remove invasive species, such as eucalyptuses trees, along the stream
- Restore diverse original native habitats to increase biological diversity
- Restore natural vegetation species according to suitability and to the expected flow regime of the river, including clumped bank vegetation, wetlands, bank forests, xeric native plants and aquatic nitrate preparation of seedlings to be planted
- Preserve stream meanders, including river bank protection and vegetation management
- Landscaping and vegetation rehabilitation in river areas where fragmented, to enable continuous eco-zones
- Manage environmental flow regimes in accordance with water availability, including regulated floods for the encouragement of vegetation development in riparian buffer zones
- River maintenance in the first period after planting to prevent overrun by common reed. Maintenance will be reduced to a minimum after the vegetation is established, including water quality monitoring.
- Create a sequence of ecological corridors along the stream including the possibility for the migration of fish upstream to the Yarmouk
- Develop specific tourist and hiking routes along the river while minimizing potential damage to sensitive habitats
- Setup international river management structure for implementation and monitoring
- Include a pilot restoration project, such as in Wadi Ziglab

Results/Impacts:

Eventually, this intervention will lead to:

- Protected or restored natural structure of ecosystems to maintain ecosystem services
- Guaranteed right interaction between all ecosystem elements in the study area
- Involved stakeholders through participation
- A direct positive impact on the Jordan River

Sustainability and Water Impacts:

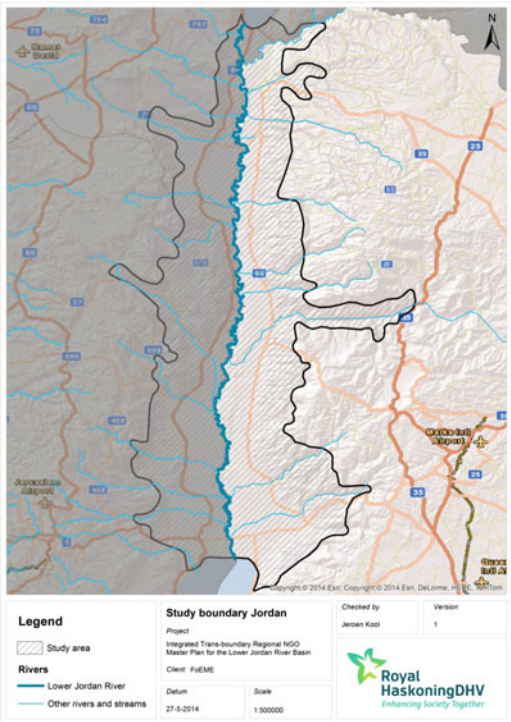
- This project will have a direct positive impact on the sustainability of the Jordan River Valley by restoring the green character of the river again—and supporting not only the riparian ecosystems and biodiversity, but also the biodiversity of the region in general

Organization/Responsibilities:

- International coordination with Israel and Palestine
- Ministry of Environmental Affairs
- JVA

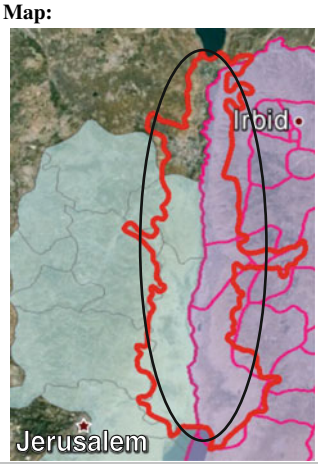
(continued)

Name: E02 REG—Jordan River Ecological Restoration Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Policy and Legislative Improvement
• Ministry of Agriculture • Municipalities		
Costs and Revenues: • Preparation and planning: 500,000 USD • Implementation and monitoring: 30,000,000 USD • Operations/maintenance: 500,000 USD/year		**Implementation Period** • Preparation time: 1 year • Construction time: 10 years
Other remarks: This intervention requires strong coordination between Israel, Jordan and Palestine and therefore depends on real cooperation among the three parties, preferably within the context of a Peace Treaty between Israel and Palestine. This intervention also depends on the completion of the pollution control-related interventions. It also depends on increasing the environmental base flow in the river. According to previous EcoPeace studies, Jordan would have to convey 90 MCM extra water through the river system to restore the environmental base flow of the river. Therefore this project is not expected to be implemented before 2020.		

Name: E03 REG—Jordan River Fish Stock Restoration Project	**Location:** Lower Jordan River	**Type of Intervention:** Ecological Management
Objectives: Recreate the aquatic structure of the Jordan River to the best level possible depending on the quantity and quality of the water flow in the river. The goal is the restoration and protection of the natural fish stock of the river. This intervention will have a direct positive impact on the Jordan River.		
Interventions: • The gradual restoration of the natural fish stock structure of river • The realization of the full potential of river ecosystem services		
Results/Impacts: This intervention will: • Restore the natural fish stock in the Jordan River • Restore environmental flow regime required for full ecological restoration of the river • Require optimized cooperation among the three riparian countries to manage inflows and outflows • Require monitoring of flows at different sections and times throughout the year • This project will have a direct positive impact on the Jordan River		
Sustainability and Water Impacts: • This project will have a direct positive impact on the sustainability of the Jordan River Valley by restoring the environmental flows in the river, which will support redevelopment of the ecosystem services and biodiversity, as well as the biodiversity of the region in general.		

(continued)

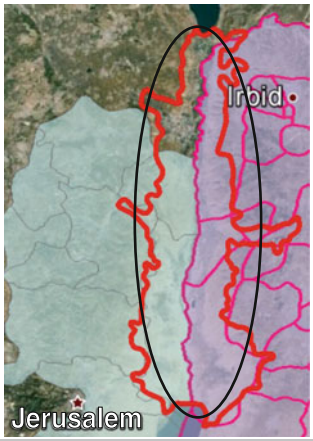
Name: E03 REG—Jordan River Fish Stock Restoration Project	**Location:** Lower Jordan River	**Type of Intervention:** Ecological Management
Organization/Responsibilities: • Ministries of Environmental Affairs • JVA, PWA, IWA • NCAR, farmer associations, • Municipalities		
Costs and Revenues: • Preparation and planning: 500,000 USD • Implementation and monitoring: 500,000 USD • Operations/maintenance: 500,000 USD/year		**Implementation Period** • Preparation time: 1 year • Operations: permanently
Other remarks: This intervention requires strong coordination between all relevant stakeholders. The pollution control-related interventions and the restoration of environmental flows into the lower Jordan River are a precondition for the implementation of this intervention and vital to the success of this intervention. This intervention is expected to be implemented after 2020.		

Name: E04 REG—Nature Protection Areas and Management Plan	**Location:** Jordan Valley, Regional	**Type of Intervention:** Planning
Objectives: Make a detailed assessment of the nature and ecological status of the lower Jordan River Valley, including the nature areas designated earlier by Israeli Military Authorities in the West Bank. The assessments will lead to defining plans and policies for nature preservation and protection areas, including grazing lands and parks, under Palestinian, Jordanian and Israeli law and ecological development and protection plans.		**Map:** 
Intervention: The intervention includes integrated comprehensive surveys on flora, fauna (including endangered species), topographic features (soil, geology, elevations, etc.), habitats, regional vegetation communities, locations of significant species and additional elements such as habitat trees. It encompasses related data management and collection, setting up of methodologies and plans, comprehensive field visits, public meeting and consultations with official authorities. **Preparation:** • Data management and collection • Set up of methodologies and plans • Comprehensive field visits and public meetings • Consultations with official authorities		**Construction/Realization:** • Planning for the project (consultation with official and relevant bodies) • Preparation of available data (site maps, roads, parcels, land use, land cover, topography, soil, geology, rainfall contours, temperature distribution, etc.) • Survey work (utilization of GPS and GIS, field work, meetings, etc.) • Data processing and classification **Operations:** • Production of maps for the distribution of flora and fauna with emphasis on endangered species • Preparation of vulnerability maps for the study area • Ranking of different land parcels and covers according to the vulnerability level to contamination • Highlighting areas of high sensitivity (vulnerability) and matching that with proposed sites for interventions
Results/Impacts: Better understanding and facilitation of/for the following: • Vegetation mapping • Assessment of aquatic ecology		• Threatened species survey and assessment • Threatened species management • Environmental impact assessment • Biodiversity planning • Wildlife assessment
Organization/Responsibilities: • Ministries of Environment • Ministries of Agriculture • Farmer associations • Ministry of Planning		
Costs and Revenues: • Preparation cost: 500,000 USD • Construction cost: 5,000,000 USD		**Implementation Period** • Preparation time: 6 months • Construction time: 2 years
Other remarks:		

Name: E05 REG—International Accreditation of the Lower Jordan River Valley	**Location:** Jordan Valley	**Type of Intervention:** Planning

Objectives:
Accreditation of the lower Jordan River Valley under UNESCO World Heritage, Ramsar and IUCN Protected Area categories.

Map:



Intervention:
The intervention includes preparation for the required baseline and related information to apply for accreditation with the UNESCO World Heritage, IUCN Protected Areas and RAMSAR certifications. A number of initiatives within EcoPeace and other organizations like the Jordan Heritage Company have highlighted the cultural and spiritual values that exist within the Jordan Valley. These initiatives are an important starting point in the accreditation process. This project will be linked to intervention IC01 REG- Establishing a Jordan River Basin Organization (JORBO) because governance is important to the accreditation process.

Preparation:
- Data management and collection of information
- Preparation of applications to UNESCO World Heritage, Ramsar and IUCN Protected Area
- Comprehensive field visits and public meetings with representatives of UNESCO World Heritage, Ramsar and IUCN Protected Area
- Consultations with official authorities
- Conclusion of accreditation

Results/Impacts:
Full accreditation with UNESCO World Heritage, Ramsar and IUCN Protected Area
Increased international attention for the lower Jordan River Valley
Increased international visits to the lower Jordan River Valley
Increased financial resources for sustainable management of the lower Jordan River Valley

Organization/Responsibilities:
- Ministries of Environment
- Ministries of Agriculture
- Ministries of Planning

Costs and Revenues:
- Preparation cost: 1,500,000 USD

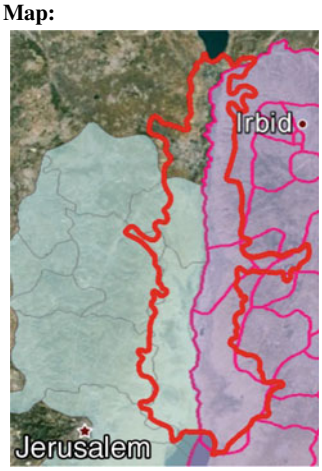
Implementation Period
- Preparation time: 3 years

Other remarks:

Name: E06 REG—Jordan Valley Regional Coordination on Ecology	**Location:** Jordan Valley	**Type of Intervention:** Ecology

Objectives:
Set up a regional coordination structure, or Steering Committee, among key Jordanian, Israeli and Palestinian governmental stakeholders for the implementation of the proposed national and regional interventions in the Jordan Valley concerning ecology. The objective is that this Steering Committee should eventually be embedded in the structures of the overall River Basin Organization for the Jordan Valley (ref. intervention IC01 REG Jordan River Basin Organization).
The regional coordination structure aims at optimized regional co-operation in preparation and implementation of the interventions, while maximizing exchange and joint development of know-how and experiences among the three core parties.

Map:



monitoring the outputs of the interventions and steering the implementation in terms of their contribution toward reaching the ecology objectives.

Intervention:
- Setup a kick-off meeting with key governmental stakeholders from the three core parties with regard to the ecology objectives
- Define objectives, procedures and operational, organizational and financial frameworks for setting up the joint Steering Committee under the ecology objectives
- Prepare detailed implementation and financing plans for the proposed interventions
- Set up structures for regional exchange of related know-how and experiences
- Develop key performance indicators and monitoring procedures towards the implementation of the interventions
- Assist and steer the project implementing organizations accordingly

Results/Impacts: Lower risk of production
- Optimized regional cooperation during the preparation and implementation of the proposed interventions under the ecology objectives
- Maximized regional exchange of know-how and experiences
- Optimized monitoring and steering of the interventions during detailed preparation and implementation
- Building up of regional trust and the peace dividend

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainable development of the Jordan Valley through optimized coordination and exchange of relevant information.

Organization/Responsibilities:
- Key governmental and sectoral stakeholders from Jordan, Israel and Palestine
- Support, dissemination by EcoPeace

Costs and Revenues:
- Preparation cost: 300,000 USD
- Implementation cost: 200,000 USD/year

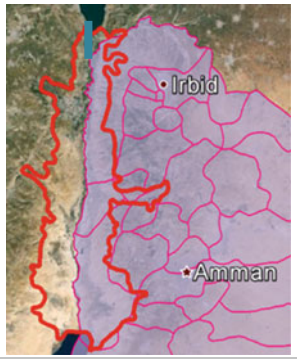
Implementation Period
- Until 2050

Name: E01 ISR—Jordan River Ecological Restoration Project—Israel	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Water Management

Objectives:

To enable:

- Ecological restoration of the section of the Jordan River between the Sea of Galilee to Naharayim and the Bezeq Stream.
- Section between Naharayim and Bezeq (where the river is the border between the Israel and Jordan) will be restored in cooperation with Jordan, and is described in the regional intervention E01 REG
- The aim of this intervention is to. restore the ecological status of the river again—by supporting not only the riparian ecosystem services and biodiversity, but also the biodiversity of the region in general.
- This project will depend on the gradual improvement of water quality, water supply and environmental flow into the river.



Interventions:

- Designating specific protected sections with valuable habitats along the river
- Performing the ecological rehabilitation for several years while constantly monitoring the changes, based on experience with previous pilot projects
- Expanding the river flood zone, including side wadis, rehabilitation of river banks, dredging the flow channel where needed and protecting buffer zones between the cultivated agricultural lands and the habitat along the stream
- Enriching the diversity of natural vegetation with expected improvement in water quality
- Treating and removing invasive species, such as eucalyptus trees, along the stream
- Restoring diverse native habitats to increase biological diversity
- Restoring natural vegetation species according to suitability and the expected flow regime of the river, including clumped bank vegetation, wetlands, bank forests, xeric native plants and aquatic plants. This includes preparation of seedlings to be planted.
- Preserving stream meanders, including river bank protection and vegetation management
- Landscaping and vegetation rehabilitation in river areas where fragmented, to enable continuous eco-zones
- Managing environmental flow regimes in accordance with water availability, including regulated floods for the encouragement of vegetation development in riparian buffer zones
- River maintenance in the first period after planting to prevent overrun by the common reed. Maintenance will be reduced to a minimum after the vegetation is established, including water quality monitoring
- Creating a sequence of ecological corridors along the stream including the possibility for the migration of fish upstream to the Sea of Galilee
- Developing specific tourist and hiking routes along the river while minimizing potential damage to sensitive habitats
- Setting up a river management structure for implementation and monitoring (see also intervention IC01 REG)

Results/Impacts:

- Increased river ecology
- Better environment for recreation and eco-tourism

Organization/Responsibilities:

- Jordan Valley Regional Council
- Springs Valley Regional Council
- Kinneret Drainage Authority
- Lower Jordan River Drainage Authority
- Ministry of Environment, Regional Cooperation, Agriculture and Tourism
- Private sector

Costs and Revenues:

- Preparation and planning: 100,000 USD
- Implementation and monitoring: 3,000,000 USD
- Operations/maintenance: 100,000 USD/year

Implementation Period

- Preparation time: 1 year
- Construction time: 3 years

Other remarks:

Name: E01 JOR—Ecological Corridors Around Valleys and Dams	**Location:** Lower Jordan Valley	**Type of Intervention:** Ecology

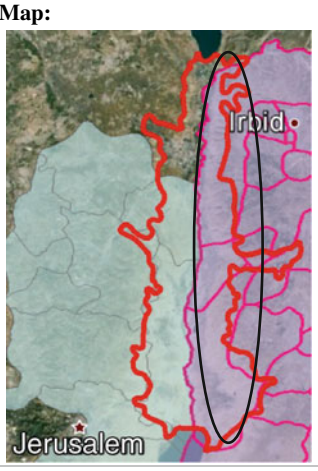
Objectives:

Restore the natural vegetation in areas surrounding dams in the eastern lower Jordan River Valley. This includes restoration activities in areas surrounding the valleys that flow into the lower Jordan River

This intervention is designed to support riparian area ecosystems and biodiversity, which will have far-reaching positive impacts on the biodiversity of the region in general.

In addition, work on this intervention will include the improvement of side valleys' channel systems and discharge channels and the reintroduction of natural plants and forest species to these areas as part of a systematical ecological restoration of the eastern lower Jordan River Valley.

Map:



Intervention:

- Improve and replant natural trees and plants in and around dams such as: Salix spp., Populus euphratica, Tamarix Spp, Juncus spp, Phragmytis australis, and Pistacia atlantica, but not Tamarix or Phragmitis. Of particular significance to the eastern part of the lower Jordan River Valley is the Ceratonia siliqua in the north and the Acacia raddiana and Salvadora in the south
- Improve channel systems and discharge channels before replanting with natural plant and forest species such as: Salix spp., PopulusEuphratica, Tamarix Spp, Juncus spp., Acacia spp., Ziziphus spp., and Phragmytis australis.
- Establish picnic areas close to each dam complete with recreational parks and information centers.

Results/Impacts:

Eventually, this intervention will lead to the following:

- Protection and restoration of the natural flora structure of ecosystems in the sub-watersheds within the eastern lower Jordan River watershed particularly around dams and side valleys
- Restoration of the ecosystem services of the eastern lower Jordan River watershed
- Direct positive impact on the lower Jordan River through enhancing biodiversity and ecological corridors in the basin

Organization/Responsibilities:	
• Ministry of Environment • Royal Botanical Garden • Royal Society for the Conservation of Nature • Jordan Valley Authority	• Ministry of Agriculture • The National Center for Agricultural Research and Extension (NCARE) • Municipalities
Costs and Revenues: • Preparation and planning: 500,000 JOD • Implementation and monitoring: 5,000,000 JOD • Operations/maintenance: 500,000 JOD/year	**Implementation Period** • Preparation time: 1 year • Implementation time: 5 years

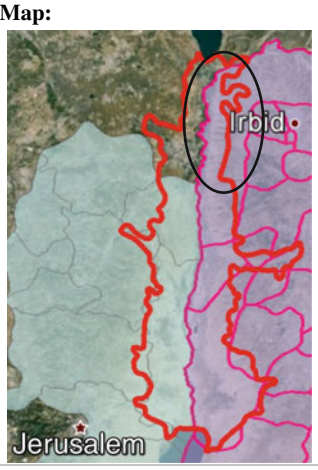
Other remarks:

This intervention requires strong coordination between the different ministries and NGOs and strong adaptation by the relevant municipalities.

Name: E02 JOR—Wetlands and Aquatic Fauna Restoration	**Location:** Lower Jordan Valley	**Type of Intervention:** Wild and Aquatic Life Management

Objectives:
Recreate the wetland and aquatic structure of the valleys flowing into the lower Jordan and Yarmouk rivers. This intervention is intended to create a balanced ecological system in which wildlife and aquatic fauna are reintroduced in all relevant elements of the lower Jordan River Valley.
In particular, this intervention targets a select number of endemic dragonflies, reptiles, endangered and rare species of relevance to the lower Jordan River Valley.
Indirectly, this intervention will have a positive impact on aquatic life and ecosystems services in the lower Jordan River.

Map:



Intervention:
Secure adequate water sources to:
- Protect the endemic dragonflies of the river such as the Calopteryx hyalina, C. syriaca, Ceriagrion georgifreyi, and Pseudagrion torridumhulae, Coenagrionvan brinckae, P. Sublacteum mortoni, Gomphus kinzelbachi, Onychogomphusmacrodon, Brachythemisfuscopalliata and Crocothemissanguinolenta species that are considered vulnerable, and the two extinct species Rhyothemissemihyalinasyriaca and the Urothemisedwardsihulae.
- Restore the population of endangered reptiles of the lower Jordan River such as Natrix tesselata and Amphibian Hylasavignyi
- Protect endangered and rare mammals such as the Common Otter Lutralutra and White Tooth Shrew Crociduramonacha by minimizing salinity, pesticide and agrochemical residues in the lower Jordan River and its tributaries

Results/Impacts:
This intervention will aid in the:
- Protection and restoration of the natural aquatic fauna structure
- Guarantee of the right interaction and balance between all the ecosystem elements in the study area
- Improvement of biodiversity and ecological corridors in the lower Jordan River Valley

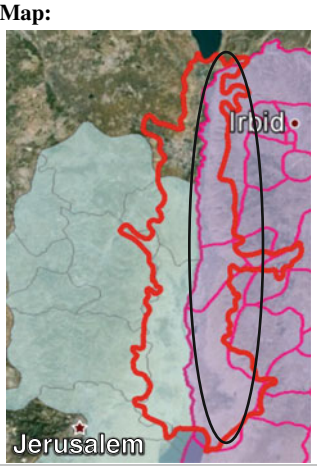
Organization/Responsibilities:	
• Ministry of Environment	• Water Authority and Municipalities
• JVA/Dams authority	• Farmers associations
• Ministry of Agriculture	• NGOs
	• Universities
Costs and Revenues:	**Implementation Period**
• Preparation and planning: 500,000 JOD	• Preparation time: 1 year
• Implementation and monitoring: 1,000,000 JOD	• Implementation time: 5 years
• Operations/maintenance: 500,000 JOD/year	

Other remarks:
Pollution control and salinity management in the lower Jordan Valley are vital for the success of this intervention.

Name: E03 JOR—Ecological Monitoring and Management Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Wildlife Advocacy

Objectives:
Support the implementation and monitoring of various ecological interventions. It is very well know that inadequate policy and lack of law enforcement can hamper any effort, particularly policy and law enforcement related to the protection of aquatic life, flora and fauna in designated areas within the Lower Jordan River Valley.
This intervention consists of dam reservoir management and protection and the introduction of a number of protected areas of river ecosystems

Map:



Interventions:
- Protect and regularly monitor the reservoirs of the Arab, Ziglab, Shueib and Kafrein dams from pollution
- Create a water management plan for the dams in order to stabilize the natural populations of fish, bats, fresh water turtles, common otters and Egyptian fruit bats
- Declare the following areas around the Yarmouk and Jordan River as protected national rangeland or forest reserves: Wadi Damiya, Wadi Al Kharar and King Hussein Bridge surrounding areas

Results/Impacts:
This set of interventions will lead to the:
- Protection and restoration of the natural populations of mammals and amphibian
- Insured maintenance of the right interaction between all ecosystem elements in the area

Organization/Responsibilities:
- Ministry of Environmental Affairs
- JVA/Dams authority
- Ministry of Agriculture
- Water Authority and Municipalities
- Farmers associations
- NGOs
- Universities

Costs and Revenues:
- Preparation and planning: 500,000 JOD
- Implementation and monitoring: 2,000,000 JOD
- Operations/maintenance: 100,000 JOD/year

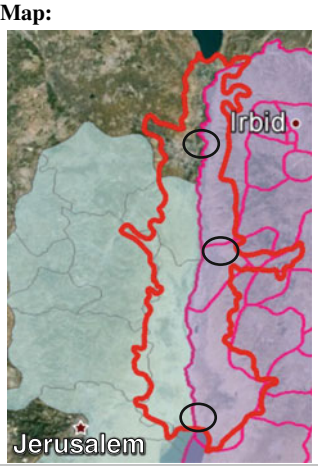
Implementation Period
- Preparation time: 1 year
- Implementation : 10 years

Other remarks:

Name: E04 JOR—Jordanian EcoParks and Protected Areas	**Location:** Lower Jordan Valley	**Type of Intervention:** Policy Regulations for Designated Protected Areas

Objectives:
Implementation of a number ecological parks and carefully selected special zones, including a number of bird observation sites. Part of this intervention is comprehensive planning and analysis for each of the proposed sites. The lower Jordan River Valley is rich in unique cultural and natural sites. The full potential of these can only be harnessed by well planned investments in environmental friendly projects.
Each site will serve and act as a center for spreading and showcasing knowledge and awareness about the value of the lower Jordan River
These interventions are expected to have a positive impact on tourist activities in the Jordan Valley and the overall restoration of the valley ecosystem

Map:



Interventions:
- Designate the Bakoura area, unique for its natural and cultural values, as a National Park
- Designate the area of the Al Hujaija Tree as a switch Monument
- Designate the Karama Dam area as a National Park
- Set bird monitoring centers at the Bakoura Park, Karama Dam area and the Jordan River/Dead Sea meeting point complete with cutting-edge monitoring technologies
- Expand the SHE ecological park in the westerly direction it reaches the Jordan River

Results/Impacts:
This set of interventions will lead to:
- The development of environmental friendly tourist activities in the lower Jordan River Valley
- The enhancement of economic diversification in the lower Jordan River Valley

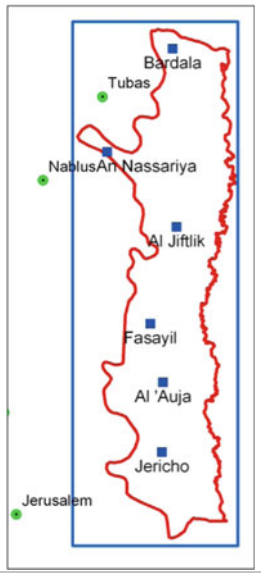
Organization/Responsibilities: • Ministry of Environmental Affairs • JVA/Dams Authority	• Water Authority and Municipalities, • NGOs
Costs and Revenues: • Preparation and planning: 500,000 JOD • Implementation and monitoring: 20,000,000 JOD • Operations/maintenance: 2,000,000 JOD/year	**Implementation Period** • Preparation time: 1 year • Implementation time: 10 years

Other remarks:

Name: E01 PAL—Nature Protection and Management Plan	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Nature Protection

Objectives:
Make a detailed assessment of the nature and ecological status of the Palestinian lower Jordan Valley, including the nature areas designated earlier by Israeli Military Authorities
Define plans and policies for nature preservation and protection areas, including grazing lands and parks, under Palestinian law and ecological development and protection plans

Map:



Intervention:
The intervention includes integrated comprehensive surveys on flora, fauna (including endangered species), topographic features (soil, geology, elevations, etc.), habitats, regional vegetation communities, locations of significant species and additional elements such as habitat trees. It encompasses related data management and collection, setup of methodologies and plans, comprehensive field visits, public meetings and consultations with official authorities

Preparation:
- Data management and collection
- Setting up of methodologies and plans
- Comprehensive field visits and public meetings
- Consultations with official authorities

Construction/Realization:
- Planning for the project (consultation with official and relevant bodies)
- Preparation of available data (site maps, roads, parcels, land use, land cover, topography, soil, geology, rainfall contours, temperature distribution, etc.)
- Survey work (utilization of GPS and GIS, fieldwork, meetings, etc.)
- Data processing and classification

Operations:
- Production maps for the distribution of flora and fauna with emphasis on the endangered ones
- Preparation of the vulnerability maps for the study area
- Ranking of the different land parcels and covers according to the vulnerability level to contamination
- Highlighting of areas of high sensitivity (vulnerability) and matching that with proposed sites for interventions

Results/Impacts:
Better understanding and facilitation of/for:
- Vegetation mapping
- Assessment of aquatic ecology
- Threatened species survey and assessment
- Threatened species management

- Environmental impact assessment
- Biodiversity planning
- Wildlife assessment

Organization/Responsibilities:
- Ministry of Environmental Affairs
- Ministry of Agriculture
- Farmer associations
- Ministry of Planning

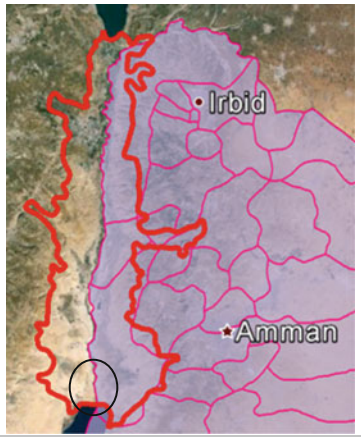
Costs and Revenues:
- Preparation cost: 500,000 USD
- Construction cost: 5,000,000 USD

Implementation Period
- Preparation time: 6 months
- Construction time: 2 years

6. Sustainable Tourism and Cultural Heritage Development

Name: C01 REG—Jordan River Mouth Tourism Information Center	**Location:** Meeting Point of the Jordan River and Dead Sea	**Type of Intervention:** Tourism and Cultural Heritage Development

General Objectives:
Develop a tourism center at the meeting point of the Jordan River and Dead Sea, aimied at providing information and guidance to tourists and visitors to the lower Jordan Valley. To organize tourist events, happenings and tours, such as theater performances and music events at key historic sites or rural traditional meals and events in cooperation with the local popluation in the Jordan Valley, particularly during the tourist season. The center shall be linked to the main tourism-related websites for Jordan and Palestine, and shall be linked to the main tourism support centers in Palestine, Jericho, Amman, Jerash, Petra, Wadi Rum and Aqaba.



Preparation:
- Planning with stakeholders (concept approach)
- Assessment of most appropriate site
- Develop information, materials, website
- Develop alternative events, happenings, tours in the region
- Define tourism support requirements (restaurants, souvenirs, signs, etc.)
- Use bio-climatic design practices and renewable building materials
- Get agreement on financial and organizational management structures
- Prepare for information campaigns, including website
- Prepare for designs and tender documents for the center

Construction/Realization:
- Constructing tourism center

Operations:
- Operation of tourism center and websites

Results/Impacts:
- In combination with all Jordan Valley portal interventions, the center is expected to attract tens of thousands additional visitors, both regionally as well as internationally

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials in the establishment of the Tourism Information Center

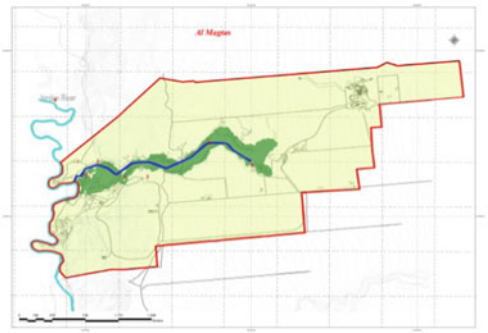
Organization/Responsibilities:
Ministries of Tourism and Antiquities
Involved municipalities
EcoPeace

Costs and Revenues:
- Preparation cost: 200,000 USD
- Construction cost: 2,000,000 USD
- Annual operation cost: 200,000 USD
- Annual revenue: 400,000 USD

Implementation Period
- Preparation time: 1 year
- Construction time: 2 years

Name: C02 REG—Faith-Based Tourism and Baptism Site Improvement Project	**Location:** Jordan River, Jordan, Palestine	**Type of Intervention:** Tourism and Cultural Heritage Development

Objectives:
Improving the tourism facilities at the Baptism site along the Jordan River particularly with regard to establishing a good restaurant, a rest house, a bookshop, a souvenir shop and a river walk, while integrating the Jordanian and Israeli/Palestinian sites into one concept. This project links the baptism site to other faith-based destinations in the valley, including Jericho, Kaser el Yehud, Bethany Beyond the Jordan, Mount Nebo, Yardenit and Gadara.
The baptism site, "Bethany Beyond the Jordan" (Al-Maghtas) is located in the southern Jordan Valley on the eastern and western sides of the Jordan River 9 km north of the Dead Sea and is part of the West Bank and the District of South Shounah in the Governorate of Al-Balqaa. The site is located a few kilometers to the east of the oasis and ancient site of Jericho and 50 km west of Amman, the capital of Jordan. The site covers an area of 533.7 hectares where five archaeological sites dating back to the Roman and Byzantine periods were discovered. The precise limits of the archaeological remains are undetermined, although all identifiable cultural traces are included in the protected area.



Intervention:
- Planning for requested improvements
- Development of commercial business model
- Design
- Tendering

Construction/Realization:
- Restaurant
- Rest house
- Book and souvenir shops

Operations:
Outsourcing according to commercial business model

Results/Impacts:
More attractive tourism destination, leading to higher number of visitors and more revenues
Better options for additional investments
Use of bio-climatic design practices and renewable building materials

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials for the improvement of the baptism site.

Organization/Responsibilities:
Ministries of Tourism and Antiquities
EcoPeace for dissemination and stakeholder management

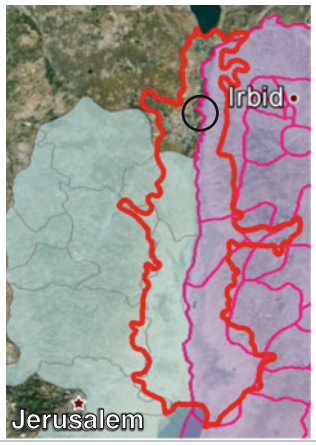
Costs and Revenues:
- Preparation cost: 100,000 USD
- Construction cost: 4,000,000 USD
- Operation cost: 100,000 JOD/year
- Annual revenue: 300,000 JOD/year

Implementation Period
- Preparation time: 1 year
- Construction time: 2 years

Name: C03 REG—Jordan River Peace Park Improvement Project	**Location:** Jordan River, Jordan, Israel	**Type of Intervention:** Tourism and Cultural Heritage Development

Objectives:
Improve nature facilities at the park along both sides of the Jordan River particularly with regard to establishing a good restaurant, a rest house, a bookshop, a souvenirs shop and nature and river walks. The Jordan River Peace Park is proposed to combine two adjacent areas: Al Bakoora/Naharayim, where a small island was created at the junction of the Jordan and Yarmouk Rivers, and the Jeser Al Majama/Gesher site, known as the historical crossing point of the Jordan River Valley.

Map:



Intervention:
- Feasibility studies and designs of lake restoration (240–380 dunums)
- Reconstructing worker's homes into eco-lodges
- Rehabilitation of the bridges, trails, railway station and entrance gate
- FS and designs of conversion of former power station into visitors/cultural center
- FS and design of cross border peace park, including security issues and fences, development of panoramas, convention center and hotel facilities, electricity and water utilities, treatment plant
- Tendering for and construction of different phases and operations

Construction/Realization:
- Flood plains, nature development, bird watching facilities,
- Restaurant
- Rest house
- Book and souvenir shops

Operations:
Outsourcing according to commercial business model

Results/Impacts:
The creation of a protected area on both sides of the river will provide greater opportunities for biodiversity protection, cooperative management, joint research programs, education and collaboration on nature-based tourism.
More attractive tourism destination, leading to higher number of visitors and more revenues
Better options for and attraction of additional investments
Use of bio-climatic design practices and renewable building materials

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials in the improvement of the peace park.

Organization/Responsibilities:
Ministries of Tourism and Antiquities
EcoPeace for dissemination and stakeholder management

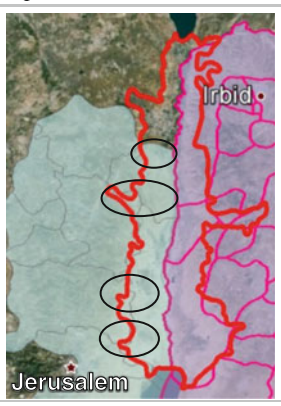
Costs and Revenues:
- Preparation cost: 100,000 USD
- Construction cost: 4,000,000 USD
- Operation cost: 100,000 JOD/year
- Annual revenue: 300,000 JOD/year

Implementation Period
- Preparation time: 1 year
- Construction time: 3 years

Name: C04 REG—Jordan River Regional Routes	**Location:** Jordan, Israel, Palestine	**Type of Intervention:** Tourism Attraction, Experiential Tourism

General Objectives:
- Provide authentic tourist attractions throughout the Jordan Valley within an appropriate security framework
- Upgrade visitor experiences, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase jobs and exports

Specific Objectives:
- Prepare and introduce the Jordan Valley with diverse attractions to tourism industry (internal and inbound)
- Develop attractive trans-boundary routes for tourists and locals, including planning, road and information signs; booklets and promotional activities



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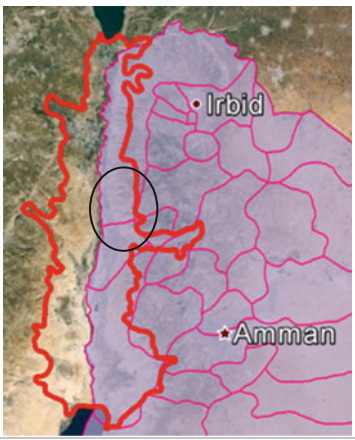
Name: C04 REG—Jordan River Regional Routes	**Location:** Jordan, Israel, Palestine	**Type of Intervention:** Tourism Attraction, Experiential Tourism
Intervention: Create new tourist attractions **Preparation:** • Feasibility studies • Concept development • Detailed plans and designs • Training **Construction/Realization:** • Community-based activities (awareness and training)		• Realization of safety measures • Construction **Operations:** • Management Plan • Site promotion and marketing • 2–5 years of operational support
Environmental Impact: Full mitigation will be necessary through design, construction and operational periods. Cultural and natural heritage conservation guidelines need to be provided to managers, guides and hikers.		
Results/Impacts: • Extended length of daily visits in the Jordan Valley • Partially used hospitality potentials and increased overnights stays in the Jordan Valley • Expanded market to target experiential tourism seekers • In combination with all Jordan Valley attraction sites, hiking trails will provide unique cultural and natural experiences in the Jordan Valley as well as in Palestine. Hiking Trails will expand the welfare from tourism to marginal and rural areas. • Developed hiking trails/touring options of diverse cultural and natural experiences		
Organization/Responsibilities: Ministries, and local authorities		
Costs and Revenues: • Preparation cost: 400,000 USD • Construction cost: 1,600,000 USD • Operation cost: (services needs to be provided by existing institution[s])		Annual revenue: Due to the newness of tourism in the area, bases for estimating revenues are still to be investigated (note that the dollar value in rural and marginal areas is very effective) **Implementation Period** • Preparation time: 1 year • Construction time: 4 years
Other remarks: Trail management is best assigned to sport centers or youth guest houses		

Name: C05 REG—Cultural and Historic Museums network for the Lower Jordan Valley	**Location:** Jordan Valley	**Type of Intervention:** Tourism and Cultural Heritage Development
General Objectives: • Coordinate authentic network of museums in the three countries on a regional level, each one complementing the other • Provide information on the natural, historic and cultural history of the valley from different perspectives • Support growth of the tourism sector in the valley • Include specific information on the pre-historic importance of sites throughout the valley • Include a presentation of key natural and cultural heritage objects and artifacts • The project shall be coordinated with the national projects C03 JOR and C03 PAL		
Intervention: Develop a regional museum concept, presentation and construction design **Preparation:** • Planning with stakeholders (concept approach) • Theme research and comparative studies • Feasibility and market review • Museum concept development (three countries)		**Construction/Realization:** • Museum thematic collections and presentations • Construction (concept and detailed designs) • Construction and mounting museum displays **Operations:** • Operations and management plans • 2–5 years of operational support
Results/Impacts: • Increased the number of tourists in the Jordan Valley • In combination with all Jordan Valley portal interventions, the museum is expected to attract about 1–2 million visitors per year throughout the basin. During operational period, the museum may provide 50 direct jobs and various indirect jobs. • Use of bio-climatic design practices and renewable building materials		

(continued)

Name: C05 REG—Cultural and Historic Museums network for the Lower Jordan Valley	**Location:** Jordan Valley	**Type of Intervention:** Tourism and Cultural Heritage Development

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials for the establishment of the museums.

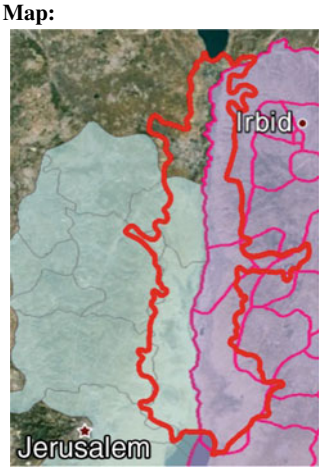
Organization/Responsibilities:
Ministries of Tourism and Antiquities
EcoPeace

Costs and Revenues:	**Implementation Period**
• Preparation cost: 500,000 USD • Construction cost: 2,500,000 USD • Annual Operation cost: 200,000 JOD • Annual revenue: 300,000 JOD	• Implementation time: 3 years

Name: C06 REG—Jordan Valley Regional Coordination on CH and Tourism	**Location:** Jordan Valley	**Type of Intervention:** CH and Tourism

Objectives:
Setup a regional coordination structure, or Steering Committee, among key Jordanian, Israeli and Palestinian governmental stakeholders for the implementation of the proposed national and regional interventions in the Jordan Valley with regards to the CH and tourism. The objective is that this Steering Committee will eventually be embedded in the structures of the overall River Basin Organization for the Jordan Valley (ref. intervention IC01 REG Jordan River Basin Organization).
The regional coordination structure aims at optimized regional cooperation in preparation and implementation of the interventions, while maximizing the exchange and joint development of know-how and experiences among the three core parties.

Map:



monitoring the outputs of the interventions and steering the implementation in terms of their contribution toward reaching the CH and tourism objectives

Intervention:	
• Setup a kick-off meeting with key governmental stakeholders from the three core parties with regard to the CH and tourism objectives • Define objectives, procedures and operational, organizational and financial frameworks for setting up the joint Steering Committee under the CH and tourism objectives • Joint preparation of detailed implementation and financing plans for the proposed interventions	• Set up structures for regional exchange of related know-how and experiences • Develop key performance indicators and monitoring procedures for the implementation of the interventions • Assist and steer the project implementing organizations accordingly

Results/Impacts: Lower risk of production
- Optimized regional cooperation during the preparation and implementation of the proposed interventions under the CH and tourism objectives
- Maximized regional exchange of know-how and experiences
- Optimized monitoring and steering of the interventions during detailed preparation and implementation
- Build up of regional trust and the peace dividend

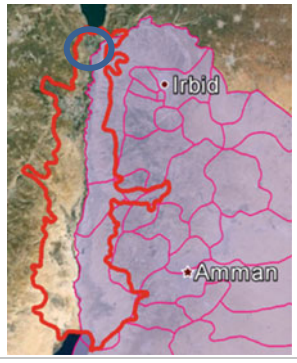
Sustainability and Water Impacts:
- This project will have a direct impact on the sustainable development of the Jordan Valley through optimized co-ordination and exchange of relevant information.

Organization/Responsibilities:
- Key governmental and sectoral stakeholders from Jordan, Israel and Palestine
- Support, dissemination by EcoPeace

Costs and Revenues:	**Implementation Period**
• Preparation cost: 300,000 USD • Implementation cost: 200,000 USD/year	• Until 2050

Name: C01 ISR—Tsemach to Naharaym Tourism Development Program	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Cultural Heritage Tourism Development

Objectives:
Enable substantially improved regional and local tourism facilities from Tsemach to Naharayim.
The project components may be implemented separately, but are listed here all together.
The hotel/motel-related project components are most likely to be financed through the private sector.



Interventions:
- Rehabilitation of Tsemach Old Police Station into visitor information center
- Restoration of the Zero Canal and its flow, to enable rafting and related water tourism
- Create combined agriculture/tourism facilities into specific rural tourism concepts
- Development of water sports facilities between Naharayim and Old Gesher
- Further development of existing museums, like the Gordon, Pre-historic and Agriculture museums
- Further development of hiking and bicycling tourism routes with various information themes along the river section between Tsemach and Naharayim
- Rehabilitation of various small-sized archaeological sites and tels and improvement of their tourism facilities

Results/Impacts:
- Increased tourism

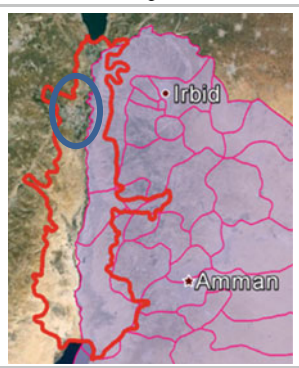
Organization/Responsibilities:
- Jordan Valley Regional Council
- Kinneret Drainage Authority, Israel
- Relevant tourism ministries and organizations
- Private sector

Costs and Revenues:	**Implementation Period**
• Preparation cost: 1,000,000 USD • Construction cost: 25,000,000 USD	• Preparation time: 2 years • Construction time: 5 years

Other remarks:

Name: C02 ISR—Gesher to Bezeq Stream Tourism Development Program	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Cultural Heritage Tourism Development

Objectives:
- Substantially improve regional and local tourism facilities from Gesher to Bezeq Stream.
- The project components may be implemented separately, but are listed here all together.



Interventions:
- Old Gesher: development of a third baptism site
- Old Gesher: restoration of the old British Tegart police station into a hotel and welcome facility
- Development of water sports facilities between Naharayim and Old Gesher
- Building of a promenade along the river near Yardena
- Further development of Beit She'an tourism center in the Ottoman Khan area
- Linking Beit She'an tourist facilities to the surrounding tels and future river tourism along the Harod and the Jordan Rivers
- Rehabilitation of the old flour mills

(continued)

Name: C02 ISR—Gesher to Bezeq Stream Tourism Development Program	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Cultural Heritage Tourism Development
• Construction of café and lookout over Jordan River near the Sheikh Hussein Bridge • Expansion of Gene Khulda camping site along the Harod (500 m from Jordan River) in addition to the current Mongolian tent facilities • Conversion of current Rupin Kibbutz fish pond near Bezeq Stream and Jordan River into a bird park (cost: 5,000,000 ILS) • Development of a tourism information center within the joint Jordanian–Israeli Gateway Economic Park (3 km north of Bezeq), and linking of this to existing facilities and museums • Development of hiking and bicycling tourism routes with various information themes along the river section between Gesher and Bezeq • Rehabilitation of various small-sized archaeological sites and tels and improvement of their tourism facilities		
Results/Impacts: • Increased tourism • Strengthened cooperation with Jordan		
Organization/Responsibilities: Lower Jordan River Basin Drainage Authority, Israel Springs Valley Regional Council Beit Shean Municipality Relevant tourism ministries and organization Private sector in cooperation with Jordanian Government		
Costs and Revenues: • Preparation cost: 1,000,000 USD • Construction cost: 25,000,000 USD		**Implementation Period** • Preparation time: 2 years • Construction time: 5 years

Name: C01 JOR—Pella Tabaqat Fahl Site Improvement Project	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Tourism and Cultural Heritage Development
Objectives: Improve tourism facilities at Pella. Ancient Pella at Tabaqat Fahl is one of the most important archaeological sites in the Jordan Valley. Its central location in the land of biblical 'Gilead' on the most strategic east-west trade route to the Mediterranean coast was the key to its prosperity. The city is referred to almost a hundred times in various historical texts including the Old Testament which names this city 'Penuel'. In the fourth century BC, Pella was established as a Hellenistic city and was later included in the Roman Decapolis league. This intervention aims at improving the tourism facilities in Pella.		 The hotel/motel-related project components are most likely to be financed through the private sector, including a motel, good restaurant, a rest house, a bookshop, a souvenir shop, and links from Pella to the 20 Decapolis cities
Intervention: • Planning for requested improvements • Development of commercial business model • Development of plan to link Pella to other Decapolis cities • Design • Tendering **Construction/Realization:** • Info-stand, public education • Tourism operations		Development of educational materials, including Decapolis cities Motel Restaurant Rest house Book and souvenir shops **Operations:** Outsourcing according to commercial business model
Results/Impacts: • More attractive tourism destination, leading to a higher number of visitors and more revenue • Better options for additional investments • Use of bio-climatic design practices and renewable building materials		
Sustainability and Water Impacts: • This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials in the improvement of the Pella Tabaqat Fahl Site.		

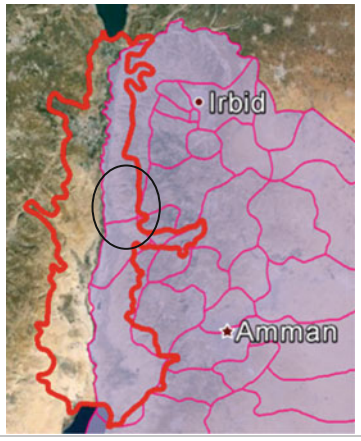
(continued)

Name: C01 JOR—Pella Tabaqat Fahl Site Improvement Project	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Tourism and Cultural Heritage Development
Organization/Responsibilities: Ministry of Tourism and Antiquities EcoPeace for dissemination and stakeholder management		
Costs and Revenues: • Preparation cost: 200,000 JOD • Construction cost: 2,000,000 JOD • Operation cost: 200,000 JOD/year • Annual revenue: 400,000 JOD/year		**Implementation Period** • Preparation time: 1 year • Construction time: 2 years

Name: C02 JOR—Abu Ubaydah Tomb Improvement Project	**Location:** Jordan Valley, Jordan	**Type of Intervention:** Tourism and Cultural Heritage Development
Objectives: Improve the facilities for Muslim visitors, particularly with regard to establishing a good restaurant, a resthouse, and souvenir shop. The Tomb of Abu Ubaydah is one of the most important Islamic sites in the Jordan Valley (Ref. EcoPeace FaithBased activities) Abu Ubaydah was a relative and one of the 'Blessed Ten' companions of the Prophet Mohammed. He died during a plague in the central Jordan Valley where he is buried. An impressive modern mosque complex has been built over Abu Ubaydah's tomb, which serves as the principle Islamic center in the Jordan Valley.		
Intervention: • Planning for requested improvements • Design and tendering		**Construction/Realization:** • Restaurant near the Tomb • Resthouse near the Tomb • Souvenir shops **Operations:** • In cooperation with the Mosque
Results/Impacts: More attractive tourism destination, leading to higher number of Muslim visitors and more revenues Better options for additional investments Use of bio-climatic design practices and renewable building materials		
Sustainability and Water Impacts: • This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials in the improvement of the Abu Ubaydah Tomb.		
Organization/Responsibilities: Ministry of Tourism & Antiquities, Ministry Of Awqaf & Islamic Affairs EcoPeace for dissemination and stakeholder management		
Costs and Revenues: • Preparation cost: 50,000 JOD • Construction cost: 500,000 JOD • Operation cost: 50,000 JOD/year • Annual revenue: 100,000 JOD/year		**Implementation Period** • Preparation time: 1 year • Construction time: 2 years

Name: C03 JOR—Cultural and Historic Museum for the Lower Jordan Valley	**Location:** Deir Alla	**Type of Intervention:** Tourism and Cultural Heritage Development

General Objectives:
- Provide an authentic tourism destination
- Provide information on the natural, historic and cultural history of the valley
- Support growth of the tourism sector in the valley
- Include specific information on the pre-historic importance of Deir Alla
- Include a presentation of key natural and cultural heritage objects and artifacts
- This museum is seen as part of a network of similar museums in the three countries on a regional level, each one complementing the other



Intervention: Develop the museum concept and presentations, including pilgrim routes and biblical maps, historical importance from an agricultural perspective, early migration of mankind out of Africa, presence of Neanderthals and more

Preparation:
- Planning with stakeholders (concept approach)
- Theme research and comparative studies
- Construction design concept
- Feasibility and market review
- Museum concept development

Construction/Realization:
- Museum thematic collections and presentations
- Construction (concept and detailed designs)
- Construction and mounting museum displays

Operations:
- Operations and management plans
- 2–5 years of operational support

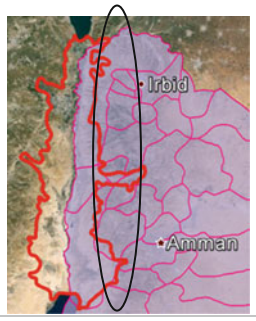
Results/Impacts:
- Increased number of tourists in the Jordan Valley
- In combination with all Jordan Valley portal interventions, the museum is expected to attract about 500,00–800,000 visitors per year. During the operational period, the museum may provide 50 direct jobs and various indirect jobs.
- Use of bio-climatic design practices and renewable building materials

Sustainability and Water Impacts:
- This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials in the establishment of the museum

Organization/Responsibilities:
- Ministry of Tourism and Antiquities, Deir Alla Municipality, EcoPeace

Costs and Revenues:
- Preparation cost: 500,000 JOD
- Construction cost: 2,000,000 JOD
- Annual operation cost: 200,000 JOD/year
- Annual revenue: 300,000 JOD/year

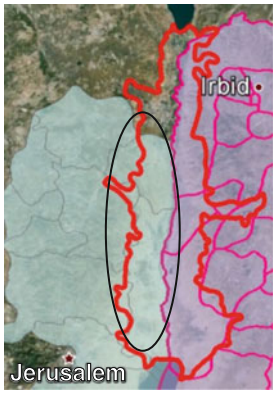
Implementation Period
- Preparation time: 3 years
- Construction time: 3 years

Name: C04 JOR—Archaeological Landmarks Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Tourism and Cultural Heritage Development
General Objectives: Develop and rehabilitate a series of important archaeological "Tell" landmarks in the lower Jordan Valley, including visiting facilities, provision of tourist and historic background information and linking of the various sites to touring tracks for pedestrians and bicyclers. The sites to be developed and linked by "tell tracks" include: Tell El Hammar, Tell Es Saidiyeh, Tell Es Sakhneh, Tell Kreinah, Tell North Shuna and Tell Umm Hammad.		
Preparation: • Planning with stakeholders (concept approach) • Assessment of sites for CH and tourism perspective • Define CH improvements and tourist information needs • Define tourism support requirements (restaurants, souvenirs, signs, etc.) • Define attractive linking tracks between the tells, and prepare information, signs and facilities along these tracks		• Get agreement on financial and organizational management structures • Prepare information campaigns, including website • Prepare design and tender documents **Construction/Realization:** • Rehabilitation of tells • Construction of visitor facilities • Preparation of tracks and signs **Operations:** • Operate tell sites and information facilities along the tracks
Results/Impacts: • Increased the number of tourists in the Jordan Valley • In combination with all Jordan Valley portal interventions, the project is expected to attract tens of thousands additional visitors, both regionally as well as internationally • Use of bio-climatic design practices and renewable building materials		
Sustainability and Water Impacts: • This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials in the improvement of the archeological landmarks		
Organization/Responsibilities: • Ministry of Tourism and Antiquities • Involved municipalities • EcoPeace		
Costs and Revenues: • Preparation cost: 500,000 JOD • Construction cost: 3,000,000 JOD • Annual Operation cost: 200,000 JOD • Annual revenue: 400,000 JOD		**Implementation Period** • Preparation time: 2 years • Construction time: 3 years
Other remarks:		

Name: C1 PAL—Cultural Heritage Protection and Management Plan.	**Location:** Palestine, Lower Jordan Valley	**Type of Intervention:** Management Planning

General Objectives:
- Develop an integrated Cultural Heritage Projection and Management Plan for the lower Jordan Valley,
- Upgrade visitor experiences understanding and enjoyment of the cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment to increase jobs and exports
- Prepare the Palestinian northern part of the Jordan Valley for tourism (internal and inbound)

Specific Objectives:
- Select potential authentic tourism attractions through a methodological approach that represents the value of the Jordan Valley (historic urban and industrial sites, valleys, panoramic locations and other key tourism sites and features)
- Provide detailed assessments and descriptions of potential sites based on literature and field investigations
- Develop an overall site-specific financial, technical, protection, development and management plans
- Provide provisional training to Cultural and Natural Heritage site-specific management staff and to create the Cultural and Natural Heritage Preservation Center (CNHPC).



Intervention: Create a regional conservation and management plan

Preparation:
- Planning with stakeholders (concept approach)
- Theme research and comparative studies
- Technical and legal protection plans
- Concept development

Construction/Realization:
- Data collection, surveys and mapping
- Data analysis and classification
- Protection, conservation and management plan

Operations:
- Management and protection plan
- 2–5 years of operational support

Environmental Impact: Provide better mitigation measures.

Results/Impacts:
- Prevent cultural heritage from being an obstacle for development plans in all sectors
- Provide comprehensive vision and action plans for cultural heritage and tourism development
- Provide guidance and strategic objectives for sustainable development in the Jordan Valley
- Provide the necessary data, tools and strategies for the protection, management and development of cultural heritage in the Jordan Valley (Center for Cultural Heritage Preservation)

Organization/Responsibilities: MOTA, MEA, MOC

Costs and Revenues:
- Preparation cost: 200,000 USD
- Construction cost: 1,800,000 USD
- Operation cost: Cultural Heritage Center costs
- Annual revenue: Indirect revenue

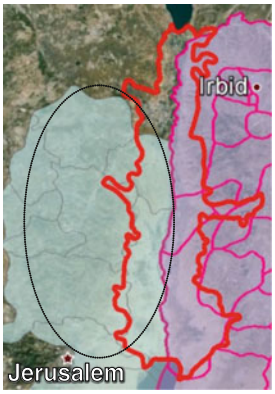
Implementation Period
- Preparation time: 6 months
- Construction time: 3 years

Other remarks: The coordination and integration between the cultural heritage management plan and natural heritage management is inevitable. Due to the nature of the Jordan Valley, it is recommended to take the two projects and their management measures under the same institutional structure that will establish the Natural and Cultural Heritage Preservation Center.

Name: C2 PAL—Tourism Branding and Promotion	**Location:** Palestine, Lower Jordan Valley	**Type of Intervention:** Tourism Promotion

General Objectives:
- Promote the authentic tourism attraction
- Promote and disseminate the available visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase jobs and exports

Specific Objectives:
- Integrate promotion of tourism attractions in the Jordan Valley into promotions of Palestinian tourism in general
- Promote cultural and natural heritage sites in local, regional and international markets
- Promote cultural activities and community-based tourism
- Develop promotion materials, international publications and websites as well as information centers
- Promote cultural and sport activities as well as events in the Jordan Valley in the context of the promotion of Palestinian tourism
- Develop tourism promotion activities like trade shows, familiarization tours as well as B2B conferences and meetings



Intervention: Create and conduct local, regional and international promotion activities

Preparation:
- Planning with stakeholders (concept approach)
- Theme research and comparative studies
- Market review
- Concept development

Construction/Realization:
- Data collection, surveys and mapping
- Data analysis and classification
- Branding and marketing strategy

Operations:
- Management and protection plan
- 2–5 years of operational support

Environmental Impact: No significant environmental impact

Results/Impacts: This project will provide access to the tourism product for local, regional and international markets.

Organization/Responsibilities: MOTA, HILTOA and AHA

Costs and Revenues:
- Preparation cost: 100,000 USD
- Promotion material cost: 400,000 USD
- Operation cost: 1,000,000 USD
- Annual revenue: Increase in tourism demand

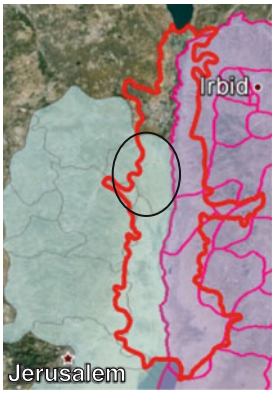
Implementation Period
- Preparation time: 1 year
- Construction time: 4 years

Other remarks: Branding the Jordan Valley as a destination is the main challenge to attract the attention of local and international markets.

Name: C3 PAL—Museum of Natural and Cultural History of the Rift Valley	**Location:** Palestine, Jiftlick or Toubas Area	**Type of Intervention:** Tourism Attraction: Interpretation of the Rift Valley

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase jobs and exports
- This museum is seen as part of a network of similar museums in the three countries on a regional level, each one complementing the other

Specific Objectives:
- Prepare the Palestinian northern part of the Jordan Valley for tourism (internal and inbound)
- Plan and realize the development of the Natural and Cultural History Museum in the Lower Jordan Valley in Jitlik or Toubas
- Include a presentation and an illustration of the unique geological, geomorphological and geographic history of the Rift Valley
- Include a presentation of key natural and cultural heritage objects and artifacts



Intervention: Develop the museum concept, museum presentations and museum construction

Preparation:
- Planning with stakeholders (concept approach)
- Theme research and comparative studies
- Feasibility and market review
- Museum concept development

Construction/Realization:
- Museum thematic collections and presentations
- Construction (concept and detailed designs)
- Construction and mounting museum displays

Operations:
- Management and curation plans
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.

Results/Impacts:
- Increased length of daily visits in the Jordan Valley as well as in Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal interventions, the museum is expected to attract about 500,000–800,000 million visitors per year. During the operational period, the museum will provide more than 250 direct jobs, 350 adjacent jobs as well as more than 1,500 indirect jobs.

Organization/Responsibilities: MOTA, MEA, MOC

Costs and Revenues:
- Preparation cost: 5,500,000 USD
- Construction cost: $40 million USD
- Annual operation cost: 6,000,000 USD
- Annual revenue: 8,000,000 USD

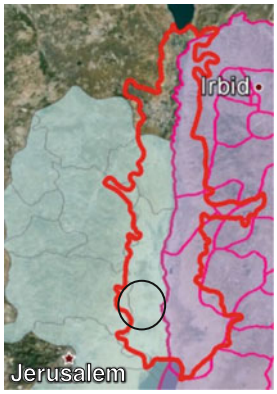
Implementation Period
- Preparation time: 10 years
- Construction time: 5 years

Other remarks: The scale of this project is important in order to have a strong impact on the tourism industry and programs. It is of a great value to have this distinguished destination to attract and upgrade the visitor experience in the Jordan Valley.

Name: C4 PAL—Rehabilitation of the Catchment of Ancient Jericho	**Location:** Palestine, Jericho	**Type of Intervention:** Tourism Attraction: Rehabilitation of the Portal Catchment

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Conduct a full study of the catchment area and provide a comprehensive conservation and development zone plan that will rearrange tourist mobility around the site and its services
- Construct the necessary pedestrian paths, roads, parking areas and information center
- Equip the area with necessary direction signs, interpretation panels and street furniture



Intervention: Rehabilitate the immediate area surrounding the archaeological site of Ancient Jericho

Preparation:
- Planning with stakeholders (concept approach)
- Feasibility study
- Archaeological surveys
- Concept development

Construction/Realization:
- Site urban concept and detailed designs
- Site rehabilitation

Operations:
- Management plan (responsibilities of MOTA and the municipality)

Environmental Impact: Full mitigation will be necessary from design to operation period.

Results/Impacts:
- Increase the number and length of daily visits in the Jordan Valley as well as in Palestine
- Partiall use of the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- Expanded distribution of benefits of Ancient Jericho among the immediate services available around the site for visitors
- In combination with all Jordan Valley portal interventions, the Ancient Jericho expanded area will be able to receive additional 800,000 visitors per year (in the last 5 years, Jericho was receiving about 1,000,000 daily visits per year). During the operational period, this area will be able to create more than 250 direct jobs, 350 adjacent jobs and more than 1,500 indirect jobs.

Organization/Responsibilities: MOTA, MOLG, Municipality of Jericho

Costs and Revenues:
- Preparation cost: 300,000 USD
- Construction cost: 600,000 USD
- Operation cost: 300,000 USD
- Annual revenue: 720,000 USD

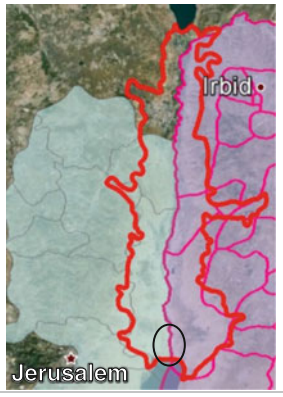
Implementation Period
- Preparation time: 1 year
- Construction time: 4 years

Other remarks: Revenue included above is estimated for the parking area and management. The archaeological site linked to the spring will create a better income potential as was calculated in intervention Pal-Tourism 16. The rehabilitation of the area will generate additional private investment based on the improved business environment.

Name: C5 PAL—Rehabilitation of Salt Industry Sites, Rusheideyeh	**Location:** Palestine, Mallahat Er Rusheidiyeh (North Edge of the Dead Sea)	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage Sites

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and exports

Specific Objectives:
- Prepare and introduce tourism attractions in the Palestinian southern part of the Jordan Valley for tourism (internal and inbound)
- Introduce the history of the salt industry from Bronze period until present in the north edge of the Dead Sea



Intervention: Create a new cultural heritage attraction **Preparation:** • Feasibility studies • Theme research and comparative studies • Archaeological surveys • Concept development • Site study: archaeological excavations	**Construction/Realization:** • Site presentation concept designs • Site museum concept design • Site rehabilitation **Operations:** • Management plan • Site promotion and marketing • 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use pf the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal sites, the salt industry site will provide an additional optional attraction in the Jordan Valley. The site is expected to attract about 100,000–200,000 visitors per year. During the operational period, the site will provide more than 10 direct jobs, 10 adjacent jobs and more than 150 indirect jobs.

Organization/Responsibilities: MOTA, MLG and MOPW

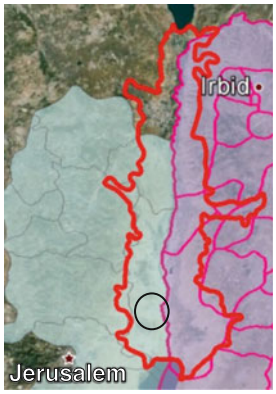
Costs and Revenues: • Preparation cost: 1,300,000 USD • Construction cost: 3,000,000 USD • Operation cost: 200,000 USD • Annual revenue: 500,000 USD	**Implementation Period** • Preparation time: 6 years • Construction time: 4 years

Other remarks: The site is composed of an archaeological mound, landscape, salt drying fields and other landscape features. It represents three main successive salt production traditions that most likely go back to the Bronze Period 5,000 years ago. The industrial site as well as the archaeological site will share important knowledge about salt production, salt trade as well as the socioeconomics around it.

Name: C6 PAL—Rehabilitation of Ancient Jericho	**Location:** Palestine, Jericho	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and exports

Specific Objectives:
- Prepare and introduce tourism attractions in the Palestinian southern part of the Jordan Valley to the tourism industry (internal and inbound)
- Widen the exposure of the archaeological remains of Ancient Jericho to make the site more attractive to and better understood by tourists



Intervention: Upgrade an existing cultural heritage attraction

Preparation:
- Feasibility studies
- Theme research and comparative studies
- Archaeological surveys
- Concept development
- Site study: archaeological excavations

Construction/Realization:
- Site presentation concept designs
- Site museum concept design
- Site rehabilitation

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partiall use of the hospitality potentials and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal sites, Ancient Jericho site will be linked to Ein Sultan Spring and will serve as a portal to access other optional attractions in the Jordan Valley.
- The site is expected to attract about 300,000–400,000 visitors per year. During the operational period, the site will provide an additional 20 direct jobs, 30 adjacent jobs and more than 300 indirect jobs.

Organization/Responsibilities: MOTA, MLG and MOPW

Costs and Revenues:
- Preparation cost: 1,300,000 USD
- Construction cost: 3,000,000 USD
- Operation cost: 400,000 USD
- Annual revenue: 800,000 USD

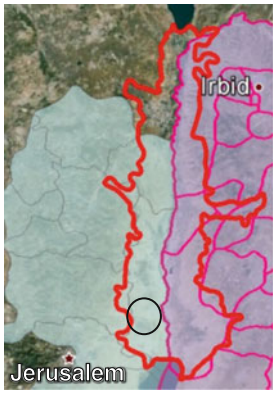
Implementation Period
- Preparation time: 8 years
- Construction time: 4 years

Other remarks: The archaeological site is disappointing to visitors as it has limited exposure in comparison to its important reputation. It is also a challenge to both archaeologists and rehabilitation/conservation architects as it is a very vulnerable site.

Name: C7 PAL—Rehabilitation of Hisham's Palace (Mosaic)	**Location:** Palestine, Jericho	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce tourism attractions in the Palestinian southern part of the Jordan Valley to the tourism industry (internal and inbound)
- Widen the exposure of the archaeological remains of Hisham's to expose the largest intact mosaic in the Middle East to make the site more attractive to and better understood by tourists



Intervention: Upgrade an existing cultural heritage attraction

Preparation:
- Feasibility studies
- Theme research and comparative studies
- Concept development
- Site study: archaeological excavations

Construction/Realization:
- Site presentation concept designs
- Site rehabilitation

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal sites, Hisham's Palace site will serve as an optional attraction in the Jordan Valley
- The site is expected to attract about 300,000–400,000 visitors per year. During the operational period, the site will provide an additional 20 direct jobs, 30 adjacent jobs and more than 300 indirect jobs.

Organization/Responsibilities: MOTA

Costs and Revenues:
- Preparation cost: 1,200,000 USD
- Construction cost: 2,500,000 USD
- Operation cost: 400,000 USD
- Annual revenue: 800,000 USD

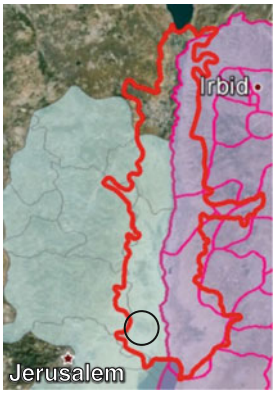
Implementation Period
- Preparation time: 3-4 years
- Construction time: 1 years

Other remarks: Several international experts evaluated the mosaic in order to make it accessible to visitors. Several concept designs were developed including ones supported by UNESCO. This is already an advanced stage in terms of concept design.

Name: C8 PAL—Rehabilitation of Tel Abu el 'Alayek	**Location:** Palestine, Jericho	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage Sites

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and exports opportunities

Specific Objectives:
- Prepare and introduce tourism attractions in the Palestinian southern part of the JV to the tourism industry (internal and inbound)
- Expand the exposure of the chronological history (Roman Period) of the city of Jericho to make the city more attractive to and better understood by tourists



Intervention: Create a new cultural heritage attraction

Preparation:
- Feasibility studies
- Theme research and comparative studies
- Archaeological surveys
- Concept development
- Site study: archaeological excavations

Construction/Realization:
- Site presentation concept designs
- Site museum concept design
- Site rehabilitation

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal sites, Tel Abu el 'Alayek will provide an additional optional attraction in the Jordan Valley. The site is expected to attract about 100,000–200,000 million visitors per year. During the operational period, the site will provide more than 10 direct jobs, 10 adjacent jobs and 150 indirect jobs

Organization/Responsibilities: MOTA, MLG and MOPW

Costs and Revenues:
- Preparation cost: 1,300,000 USD
- Construction cost: 3,000,000 USD
- Operation cost: 200,000 USD
- Annual revenue: 600,000 USD

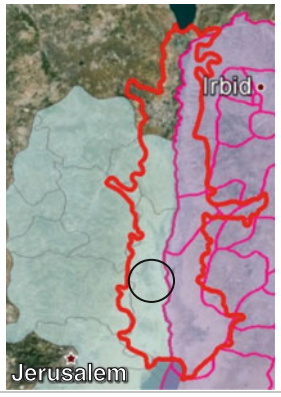
Implementation Period
- Preparation time: 3 years
- Construction time: 3 years

Other remarks: The site is well-located on the current tourist trails and the Wadi Quilt hiking trail, which is well-visited by pilgrimage and experiential tourists.

Name: C9 PAL—Rehabilitation of Khirbet el Biyadat or Tel Auja	**Location:** Palestine, Auja	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage Sites

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian middle part of the Jordan Valley to the tourism industry (internal and inbound)
- Expand the exposure of the chronological history (Chalcolithic to Islamic Periods) of Auja and the Jordan Valley to make them more attractive to and better understood by tourists



Intervention: Upgrade an existing cultural heritage attraction

Preparation:
- Feasibility studies
- Theme research and comparative studies
- Concept development
- Study site: archaeological excavations

Construction/Realization:
- Site presentation concept designs
- Site rehabilitation

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal sites, Khirbet Biyadat or Tel Auja will provide an additional optional attraction in the Jordan Valley. The site is expected to attract about 200,000–300,000 visitors per year. During the operational period, the site will provide more than 20 direct jobs, 40 adjacent jobs and 200 indirect jobs.

Organization/Responsibilities: MOTA, MLG and MOPW

Costs and Revenues:
- Preparation cost: 1,800,000 USD
- Construction cost: 4,000,000 USD
- Operation cost: 400,000 USD
- Annual revenue: 1,000,000–1,500,000 USD

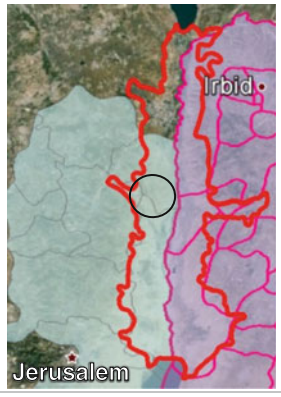
Implementation Period
- Preparation time: 8 years
- Construction time: 4 years

Other remarks:

Name: C10 PAL—Rehabilitation of Khirbet el Makhrouq	**Location:** Palestine, Jiftlick	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage Sites

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian middle part of the Jordan Valley to the tourism industry (internal and inbound)
- Expand the exposure of the chronological history (Chalcolithic to Islamic Periods) of Jiftlick and the Jordan Valley to make them more attractive to and better understood by tourists



Intervention: Upgrade an existing cultural heritage attraction

Preparation:
- Feasibility studies
- Theme research and comparative studies
- Concept development
- Site study: archaeological excavations

Construction/Realization:
- Site presentation concept designs
- Site rehabilitation

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal sites, Khirbet el Makhrouq will provide an additional optional attraction in Jiftlick and the Jordan Valley. The site is expected to attract about 100,000–200,000 visitors per year. During the operational period, the site will provide more than 10 direct jobs, 10 adjacent jobs and 150 indirect jobs.

Organization/Responsibilities: MOTA, MLG and MOPW

Costs and Revenues:
- Preparation cost: 1,800,000 USD
- Construction cost: 4,000,000 USD
- Operation cost: 200,000 USD
- Annual revenue: 500,000–1,000,000 USD

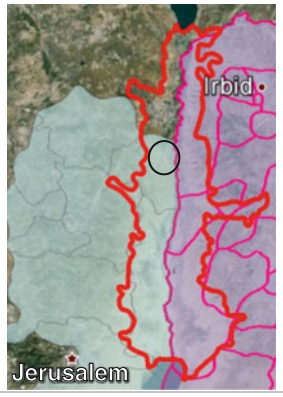
Implementation Period
- Preparation time: 8 years
- Construction time: 4 years

Other remarks:

Name: C11 PAL—Rehabilitation of Tel el Hamma	**Location:** Palestine, Ein el Beida	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage Sites

General Objectives:
- Provide an authentic tourist attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian northern part of the Jordan Valley to the tourism industry (internal and inbound)
- Expand the exposure of the chronological history (Chalcolithic to Islamic Periods) of Ein Beida as well as the Jordan Valley to make them more attractive to and better understood by tourists



Intervention: Create a new cultural heritage attraction

Preparation:
- Feasibility studies
- Theme research and comparative studies
- Archaeological surveys
- Concept development
- Site study: archaeological excavations

Construction/Realization:
- Site presentation concept designs
- Site museum concept design
- Site rehabilitation

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods

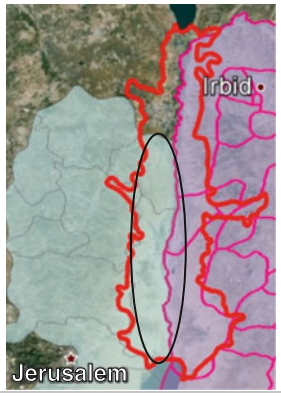
Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal sites, Tel el Hamma will provide an additional optional attraction in the Jordan Valley. The site is expected to attract about 200,000–300,000 visitors per year
- During the operational period, the site will provide more than 20 direct jobs, 40 adjacent jobs and 200 indirect jobs

Organization/Responsibilities: MOTA, MLG and MOPW

Costs and Revenues:
- Preparation cost: 2,300,000 USD
- Construction cost: 3,000,000 USD
- Operation cost: 400,000 USD
- Annual revenue: 1,000,000–1,500,000 USD

Implementation Period
- Preparation time: 11 years
- Construction time: 4 years

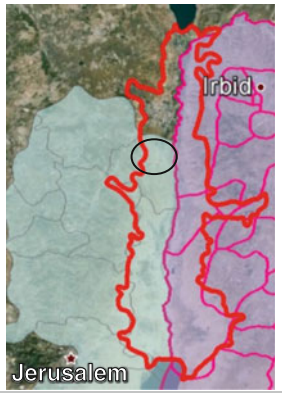
Other remarks:

Name: C12 PAL—Archaeological Landmark Features.	**Location:** Palestine: The Jordan Valley	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage Sites
General Objectives: • Provide an authentic tourist attraction • Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley • Facilitate the creation and growth of the tourism business environment • Stimulate private enterprise growth and investment • Increase employment and export opportunities **Specific Objectives:** • Prepare and introduce the Palestinian Jordan Valley to the tourism industry (internal and inbound) • Rehabilitate selected and distinctive archaeological features like water mills, water sugar mills, water aqueducts, water reservoirs, watch towers and others		
Intervention: Create a new cultural heritage attraction **Preparation:** • Site selection and assessment research • Archaeological surveys and documentation • Concept development		**Construction/Realization:** • Site presentation concept designs • Site rehabilitation • Site interpretation **Operations:** • Management plan
Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.		
Results/Impacts: • Upgraded visitor experience in the Jordan Valley and in Palestine in general • Protected degradation of cultural and natural heritage resources		
Organization/Responsibilities: MOTA, MLG and MOPW		
Costs and Revenues: • Preparation cost: 300,000 USD • Construction cost: 1,200,000 USD • Operation cost: Monitored and maintained by the CNHPC • Annual revenue: no direct revenue		**Implementation Period** • Preparation time: 1 year • Construction time: 3 years
Other remarks: In addition to the historic value of the selected features to be rehabilitated, the selection criteria are influenced by the visibility of the site from roads, walking tracks, hiking trails and panoramic locations. This is not to disregard the aesthetic importance, historic and protection intentions of the site.		

Name: C13 PAL—Spa, Thalasso Therapy and Balneo Therapy Center	**Location:** Palestine, Al-Maleh, Toubas	**Type of Intervention:** Tourism Attraction, Rehabilitation of Cultural and Natural Heritage Sites

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian northern part of the Jordan Valley to the tourism industry (internal and inbound)
- Develop the Spa ThalassoTherapy and BalneoTherapy Centers into an attractive tourism destination. This includes water source restoration, management and promotional activities.



Intervention: Create a new tourism attraction

Preparation:
- Feasibility studies (reexamine location)
- Concept development
- Detailed plans and designs
- Training

Construction/Realization:
- Water source rehabilitation
- Construction

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use of the hospitality potentials and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley portal attraction sites, the medical center will provide a unique service in the Jordan Valley as well as in Palestine. The site is expected to attract about 10,000 visitors per year. During the operational period, the site will provide more than 15 direct jobs, 10 adjacent jobs and 50 indirect jobs.

Organization/Responsibilities: MOTA and MOH

Costs and Revenues:
- Preparation cost: 300,000 USD
- Construction cost: 3,000,000 USD
- Operation cost: 200,000 USD
- Annual revenue: 300,000 USD residence capacity: over 30 persons

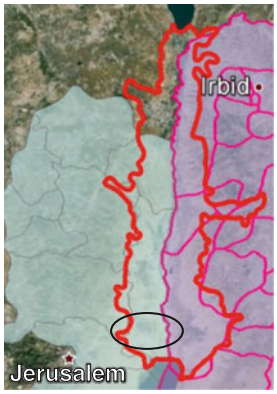
Implementation Period
- Preparation time: 1 year
- Construction time: 4 years

Other remarks: This will be the only center of its kind that provides this service in Palestine.

Name: C14 PAL—Jesus Village	**Location:** Jericho	**Type of Intervention:** Tourism Attraction, Faith Tourism

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian Jordan Valley's diverse attractions to the tourism industry (internal and inbound)
- Integrate faith tourism experiences with cultural experiences
- Develop the Jesus Village into an attractive tourism destination, including restoration, management and promotion activities



Intervention: Create a new tourism attraction

Preparation:
- Feasibility studies
- Concept development
- Detailed plans and designs
- Training

Construction/Realization:
- Construction

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley as well as in Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley as well as in Palestine
- In combination with all Jordan Valley attraction sites, the Jesus Village will provide a unique service and cultural experience in the Jordan Valley as well as in Palestine. The site is expected to attract about 20,000 overnight visitors and more than 20,0000 daily visits per year. During the operational period, the site will provide more than 30 direct jobs, 10,000 adjacent jobs and 5,000 indirect jobs.

Organization/Responsibilities: MOTA

Costs and Revenues:
- Preparation cost: 500,000 USD
- Construction cost: 3,000,000 USD
- Operation cost: 200,000 USD
- Annual revenue: 500,000 USD (residence capacity: over 100 persons)

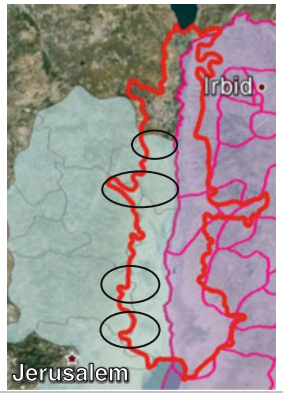
Implementation Period
- Preparation time: 1 year
- Construction time: 4 years

Other remarks: Having the location close (within walking distance) to the baptism site and the Mount of Temptation is an added value to the project.

Name: C15 PAL—Hiking Trail Development	**Location:** Hezma—Jericho Trails, Kofor-Malek Auja Trails, Nablus Jiftlick Trails, Toubas Ein Beida Trails	**Type of Intervention:** Tourism Attraction, Experiential Tourism

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian Jordan Valley's diverse attractions to the tourism industry (internal and inbound)
- Develop attractive hiking trails for tourists and locals, particularly between Hezme and Jericho, Kofor Malek and Auja, Nabuls and Jiftlik, Toubas Tayseer and Ein el Beida. This includes planning, road and information signs, booklets and promotional activities.



Intervention: Create a new tourism attraction

Preparation:
- Feasibility studies
- Concept development
- Detailed plans and designs
- Training

Construction/Realization:
- Community-based activities (awareness and training)
- Realization of safety measures
- Construction

Operations:
- Management plan
- Site promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods. Cultural and Natural Heritage Conservation Guidelines need to be provided to managers, guides and hikers.

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley and Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley and Palestine
- Expanded market that targets experiential tourism seekers
- In combination with all Jordan Valley attraction sites, hiking trails will provide unique cultural and natural experiences in the Jordan Valley and Palestine. Hiking trails will expand the welfare gained tourism to marginal and rural areas.
- Palestine has shown an increase in experiential tourism, especially hiking. Trail development will provide hiking options of diverse cultural and natural experiences to this new market.

Organization/Responsibilities: MOTA, MLG and local authorities

Costs and Revenues:
- Preparation cost: 400,000 USD
- Construction cost: 1,600,000 USD
- Operation cost: services need to be provided by existing institution(s)
- Annual revenue: Due to the newness of this type of tourism in the region, bases for estimating revenues are still to be investigated (note that the dollar value in rural and marginal areas is very effective)

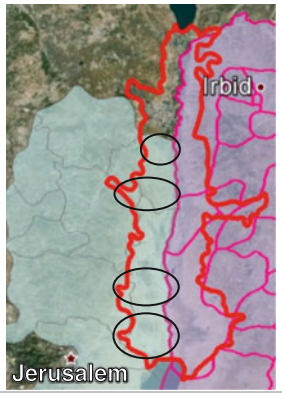
Implementation Period
- Preparation time: 1 year
- Construction time: 4 years

Other remarks: Trail management is best assigned to sport centers or youth guest houses

Name: C16 PAL—Sport and Adventure Center	**Location:** Palestine, Jericho, Auja, Jiftlick and Ein Beida Areas	**Type of Intervention:** Tourism Attraction, Experiential Tourism

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian Jordan Valley's diverse attractions to the tourism industry (internal and inbound)
- Develop sport and adventure facilities for local, regional and international tourists
- Develop and construct adjacent camping facilities
- Include camping and recreation facilities for family-based tourism



Intervention: Create a new tourism attraction

Preparation:
- Feasibility studies
- Concept development
- Detailed plans and designs
- Training

Construction/Realization:
- Construction

Operations:
- Management plan
- Center promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods. Safety measures are the most important mitigations under this project.

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley and Palestine
- Partial use of the hospitality potential and increased overnight stays in the Jordan Valley and Palestine
- Expanded market that targets seekers of experiential and adventure tourism
- In combination with all Jordan Valley attraction sites, these sport and adventure centers will provide a wide range of experiences in open spaces that are not available elsewhere in the Jordan Valley or Palestine. They should be water-based and nature friendly adventures.
- Expanded welfare gained from tourism to marginal and rural areas
- Palestine has shown an increased in experiential and adventure tourism activities, especially linked to water and nature. These centers will provide new options for diverse adventure tourism linked to cultural and natural experiences.

Organization/Responsibilities: MOTA, MOYS

Costs and Revenues: Calculated for four medium- scale centers
- Preparation cost: 2,000,000 USD
- Construction cost: 16,000,000
- Operation cost: not available
- Annual revenue: not available

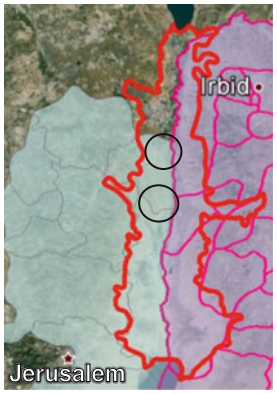
Implementation Period
- Preparation time: 2 years
- Construction time: 3–5 years

Other remarks: These centers should be developed next to youth and guest houses and provide camping services and facilities.

Name: C17 PAL—Travellers Centers	**Location:** Ein Beida and Jiftlick	**Type of Intervention:** Traveller Services

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian northern and middle parts of the Jordan Valley to the tourism industry (internal and inbound)
- Create two traveller centers that provide road services and selling points for local products (gas stations, restaurants and gift shops) on Road 90, the main road for local, regional and international tourists
- Create commercial centers for local products (in gross), including necessary refrigerators and freezing capacities for agricultural products



Intervention: Create a new tourism attraction

Preparation:
- Feasibility studies
- Concept development
- Detailed plans and designs
- Training

Construction/Realization:
- Construction

Operations:
- Management plan
- Center promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods. Safety measures are the most important mitigations under this project.

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley and Palestine
- Expanded market that targets travellers on Road 90 by providing competitive products and services
- In combination with all Jordan Valley attraction sites, traveller centers will provide a wide range of services and products in rest areas in the Jordan Valley
- Traveller centers will expand welfare from tourism to marginal and rural areas

Organization/Responsibilities: MOTA, MOYS

Costs and Revenues:
- Preparation cost: 700,000 USD
- Construction cost: 4,500,000 USD
- Operation cost: not available
- Annual revenue: not available

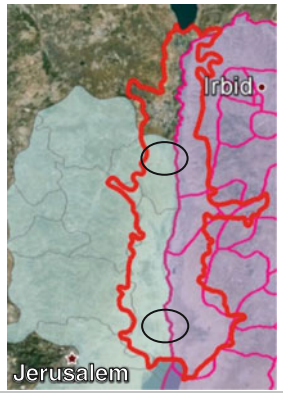
Implementation Period
- Preparation time: 1 year
- Construction time: 2–3 years

Other remarks: These services are not currently available in the northern part of the Jordan Valley.

Name: C18 PAL—4-Star Resort Hotel Rooms	**Location:** Jericho: 1200 rooms (200/3 years) Toubas: 350 rooms (50/5 years)	**Type of Intervention:** Tourism Services and Attractions

General Objectives:
- Upgrade the overnight capacity of the tourism industry in the Jordan Valley and Palestine
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian Jordan Valley's diverse services to the tourism industry (internal and inbound)
- Build 1,550 4-star hotel rooms 200/3 years in Jericho and 50/5 years in the Ein Beida area



Intervention: Construct additional 4-star hotels that have a capacity of 150–300 rooms each

Preparation:
- Feasibility studies
- Concept development
- Detailed plans and designs
- Training

Construction/Realization:
- Construction

Operations:
- Management plan
- Promotion and marketing
- One year of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.

Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley and Palestine
- Utilized hospitality and cultural experience potential and
- Increased overnight stays in the Jordan Valley and Palestine
- In combination with all Jordan Valley attractions new 4-star hotels will easily increase the occupancy rate by 50 % during their first 5 years of function.

Organization/Responsibilities: MOTA

Costs and Revenues:
- Preparation cost: 2,500,000 USD
- Construction cost: 77,500,000 USD
- Operation cost: not available
- Annual revenue: not available

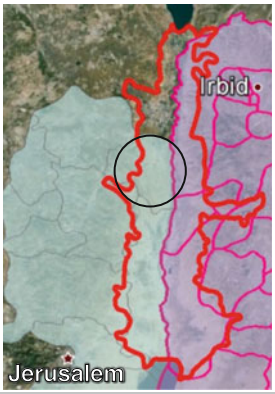
Implementation Period
- Preparation time: 1-2 years per hotel
- Construction time: 3 years per hotel

Other remarks: The introduction of hotels in the northern part of the Jordan Valley is dependent on the creation of the other interventions in the Ein Beida area. Therefore, the hotels are included in the long-term plans for the region.

Name: C19 PAL—The Mud Brick Youth Village	**Location:** Palestine, Jiftlick or Toubas	**Type of Intervention:** Tourism Attraction

General Objectives:
- Provide an authentic tourism attraction
- Upgrade visitor experience, understanding and enjoyment of the natural and cultural history of the rift valley
- Facilitate the creation and growth of the tourism business environment
- Stimulate private enterprise growth and investment
- Increase employment and export opportunities

Specific Objectives:
- Prepare and introduce the Palestinian northern part of the Jordan Valley to the tourism industry (internal and inbound)
- Upgrade the overnight capacity in the Jordan valley and Palestine
- Provide an authentic stay or day visit in a traditional mud brick compound in a traditional Jordan Valley village
- Create a destination for cultural and adventure youth tourism activities



Intervention: Create a new tourism attraction

Preparation:
- Feasibility studies
- Concept development
- Detailed plans and designs
- Training

Construction/Realization:
- Construction

Operations:
- Management plan
- Center promotion and marketing
- 2–5 years of operational support

Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.

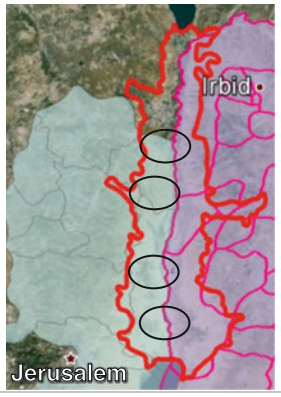
Results/Impacts:
- Increased number and length of daily visits in the Jordan Valley and Palestine
- Utilized hospitality and cultural experience potential
- Increased overnight stays in the Jordan Valley and Palestine
- In combination with all Jordan Valley portal interventions, the Mud Brick Village is expected to attract about 100,000–200,000 visits and 45,000 overnight stays per year. During the operational period, the center will provide more than 120 direct, 30 adjacent jobs and 200 indirect jobs.

Organization/Responsibilities: MOTA, MOYS, MOC, MOLG

Costs and Revenues:
- Preparation cost: 800,000 USD
- Construction cost: 4,300,000 USD
- Operation cost: 1,800,000 USD
- Annual revenue: 2,350,000 USD

Implementation Period
- Preparation time: 3 years
- Construction time: 3 years

Other remarks: 50 residential mud brick units and 25 exhibition units can be designed by young architects from around the world in an architectural design competition as a youth center activitiy world. The center should be able to generate income from subsidized activities related to local and international youth themes.

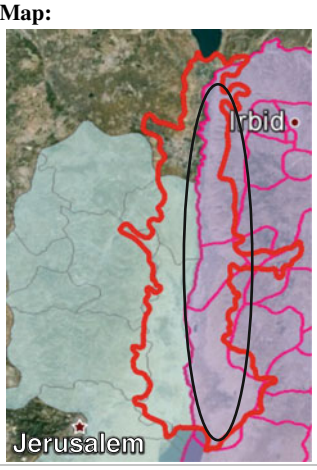
Name: C20 PAL—Youth and Guest Houses	**Location:** Aqbet Jaber (100 beds), Auja (100 beds), Jiftlick (150 beds), Kardala Bardala and Ein el Beida (150 beds)	**Type of Intervention:** Tourism Services and Attraction
General Objectives: • Upgrade the overnight capacity of the tourism industry in the Jordan Valley and Palestine • Facilitate the creation and growth of the tourism business environment • Stimulate private enterprise growth and investment • Increase employment and export opportunities **Specific Objectives:** • Prepare and introduce the Palestinian northern part of the Jordan Valley's diverse services to the tourism industry (internal and inbound) • Build guest houses with a total 500-bed capacity distributed throughout the above mentioned locations		
Intervention: Construct additional 4-star hotels that have a capacity of 150–300 rooms each **Preparation:** • Feasibility studies • Concept development • Detailed plans and designs • Training.		**Construction/Realization:** • Construction **Operations:** • Management plan • Promotion and marketing • 1-2 years of operational support
Environmental Impact: Full mitigation will be necessary through design, construction and operational periods.		
Results/Impacts: • Increased number and length of daily visits in the Jordan Valley and Palestine • Utilized hospitality and cultural experience potential and • Increased overnight stays in the Jordan Valley and Palestine • In combination with all Jordan Valley attractions and youth and sport center activities, the guesthouses will easily increase the occupancy rate of the area by 50 % in their first 5 years of function.		
Organization/Responsibilities: MOTA		
Costs and Revenues: • Preparation cost: 500,000 USD • Construction cost: 3,700,000 USD • Operation cost: not available • Annual revenue: not available		
Other remarks: The creation of guesthouses should mainly be linked to the development of hiking trails, sports centers and other youth activities in the Jordan Valley. They can be built in a ratio of 25-50 beds per 5 years depending on the location		

7. Sustainable Urban, Energy and Infrastructure Development

Name: U01 REG—Non-Fossil Renewable Energy Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Development Projects

Objectives:
- Regional coordination on renewable energy generation schemes in the lower Jordan River Valley
- Aim at 50 % renewable energy throughout the valley by 2050
- Promote the use of renewable energy sources, such as biogas, waste-to-energy, small-scale solar energy and wind energy in the valley
- Promote sustainable energy co-operation in the region
- Promote vocational education and research facilities in the Jordan Valley in the area of sustainable energy development

Map:



Intervention:
Regional cooperation for the realization of renewable energy schemes such as solar and waste-to-energy systems

Coordination includes:
- Select optimal sites for construction of the renewable energy schemes with consideration of land ownership
- Integrate such schemes with the power transmission lines of the served communities
- Develop scope for regional operation and maintenance
- Develop scope for regional research
- Develop legal framework
- Attract investors

Construction/Realization:
- Create a common vision among the residents of the study area that such a project is vital for the area and its future development
- Measure the economic and environmental gains of such schemes

Operations:
- Distribution of electricity
- Fee collection
- O&M
- Technical and financial management
- Provide investment incentives to investors
- Provide land and infrastructure for implementation

Results/Impacts:
- Preserved environment
- Improved financial status of the residents
- Improved social conditions
- Promoted regional cooperation and research

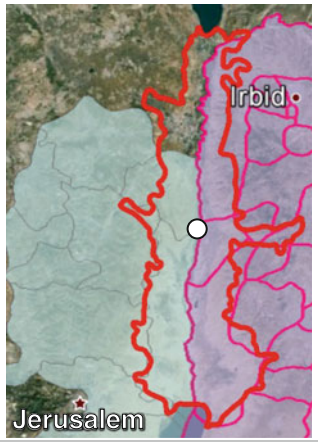
Sustainability and Water Impacts:
- This project will have a direct impact on mitigation of climate impacts in the Jordan River Valley by applying renewable energy, bio-climatic design practices, renewable building materials and efficient water use systems.

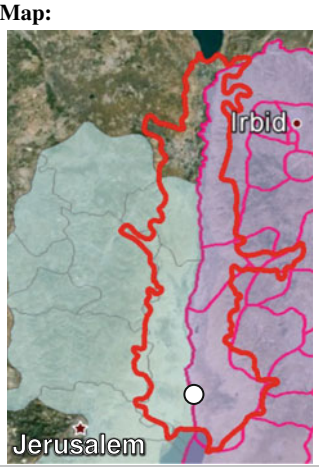
Organization/Responsibilities:
- Ministries of Energy and Mineral Resources
- Natural Resources Authorities
- Ministries of Environment
- Ministries of Planning

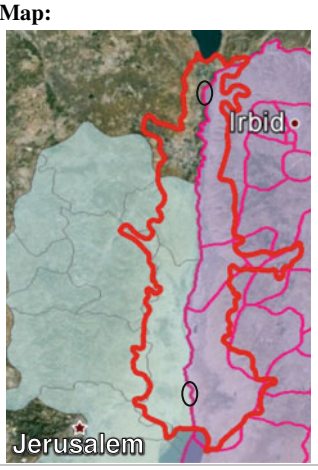
Costs and Revenues:
- Implementation: 3,000,000 USD

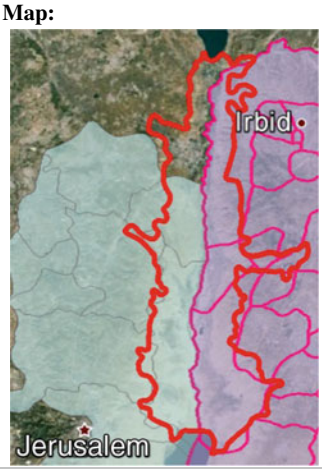
Implementation Period
- Preparation time: 2 years

Other remarks:
- Long-term action

Name: U02 REG—Adam/Damia Bridge Rehabilitation Project	**Location:** Adam/Damia Bridge, King Abdallah I Bridge	**Type of Intervention:** Planning and Construction
Objectives: Rehabilitate and operate the Adam/Damia Bridge for commercial traffic .		**Map:** 
Intervention Rehabilitate and open the Adam Bridge for agricultural goods and commercial traffic as an additional outlet for imports and exports to or through Jordan **Preparation:** • Conduct a study • Prepare a construction plan		**Construction/Realization:** • Rehabilitate bridge • Create a customs clearance area • Create a logistics consolidation center
Results/Impacts: Facilitated export and import route from the northern Jordan Valley into Jordan		
Organization/Responsibilities: • Ministries of Finance • Ministries of Public Works and Housing • Ministries of Planning • Ministry of National Economy • JVA, PNA		
Costs and Revenues: Estimates derived from actual cost of rehabilitation of Allenby Bridge by JICA • Preparation cost: 300,000 USD • Implementation cost: 90,000,000 USD		**Implementation Period** • Preparation time: 1 year • Construction time: 4 years
Investment Priorities (SIWI Criteria) Social: 45 Regional Political: 68 National Political: 79 Environmental: 17 Economic: 82 Overall: 58		

Name: U03 REG—King Abdullah I Bridge Rehabilitation Project	**Location:** King Abdullah I Bridge	**Type of Intervention:** Planning and Construction
Objectives: Rehabilitate and operate the King Abdullah I Bridge, which follows the shortest distance between Amman and Jerusalem across the Jordan River for tourists		**Map:** 
Intervention Rehabilitate and open the Kind Abdullah I bridge for easy movement of tourists between Jordan and Palestine Preparation: • Conduct a study • Prepare a construction plan		**Construction/Realization:** • Rehabilitate bridge • Create a customs clearance area
Results/Impacts: • Facilitated movement of tourists between Jordan and Palestine		
Organization/Responsibilities: • Ministries of Finance • Ministries of Public Works and Housing • Ministries of Planning • JVA, PNA		
Costs and Revenues: Estimations derived from actual cost of rehabilitating the Allenby Bridge by JICA • Preparation cost: 200,000 USD • Implementation cost: 30,000,000 USD		**Implementation Period** • Preparation time: 1 year • Construction time: 2 years
Investment Priorities (SIWI Criteria) Social: 35 Regional Political: 77 National Political: 78 Environmental: 20 Economic: 70 Overall: 56		

Name: U04 REG—Efficient Border Crossing at Allenby/King Hussein and Sheikh Hussein Bridges	**Location:** Allenby/King Hussein and Sheikh Hussein Bridges	**Type of Intervention:** Planning and Construction
Objectives: Create more efficient border crossing regulations and procedures for all nationalities at the Allenby/King Hussein and Sheikh Hussein Bridges		**Map:** 
Intervention Based on a joint security assessment, prepare and plan for more efficient border crossing procedures for all nationalities **Preparation:** • Coordinate and joint assessment • Prepare and implement procedures		**Construction/Realization:** • Security checking • Customs clearance area • Logistics
Results/Impacts: More efficient cross border procedures		
Organization/Responsibilities: • Security and military specialists from three countries		
Costs and Revenues: • Preparation cost: 300,000 USD • Implementation cost: 10,000,000 USD		**Implementation Period** • Preparation time: 1 year • Realization: 2 years
Other remarks:		

Name: U05 REG—Jordan Valley Regional Coordination on Urban and Infrastructure Development	**Location:** Jordan Valley	**Type of Intervention:**Urban and Infra Dev
Objectives: Develop a regional coordination structure, or Steering Committee, among key Jordanian, Israeli and Palestinian governmental stakeholders for the implementation of the proposed national and regional interventions in the Jordan Valley with regards to urban and infrastructure development. The committee will eventually be embedded in the structures of the overall River Basin Organization for the Jordan Valley (ref. intervention IC01 REG Jordan River Basin Organization). The regional coordination structure aims at optimized regional cooperation in preparation and implementation of the interventions, maximization of exchange and joint development of know-how and experiences among the three core parties, monitoring of outputs of the interventions and steering implementation in terms of their contribution toward reaching the urban and infrastructure development objectives.		**Map:** 
Intervention: • Set up kick-off meeting with the key governmental stakeholders from the three core parties with regard to the urban and infrastructure development objectives • Define objectives, procedures and operational, organizational and financial frameworks for setting up the joint Steering Committee under the urban and infrastructure development objectives		• Joint preparation of detailed implementation and finance plans for the proposed interventions. Setup structures for regional exchange of related know-how and experiences • Develop key performance indicators and monitoring procedures for the implementation of the interventions • Assist and steer the project implementing organizations accordingly

(continued)

Name: U05 REG—Jordan Valley Regional Coordination on Urban and Infrastructure Development	**Location:** Jordan Valley	**Type of Intervention:** Urban and Infra Dev

Results/Impacts: Lower risk of production

- Optimized regional cooperation during the preparation and implementation of the proposed interventions under the urban and infrastructure development objectives
- Maximized regional exchange of know-how and experiences
- Optimized monitoring and steering of the interventions during detailed preparation and implementation
- Buildup of regional trust and the peace dividend

Sustainability and Water Impacts:

- This project will have a direct impact on the sustainable development of the Jordan Valley through optimized coordination and exchange of relevant information

Organization/Responsibilities:

- Key governmental and sectoral stakeholders from Jordan, Israel and Palestine
- Support, dissemination by EcoPeace

Costs and Revenues:	**Implementation Period**
• Preparation cost: 300,000 USD • Implementation cost: 200,000 USD/year	• Until 2050

Name: U01 ISR—Center of Excellence at Kinneret College	**Location:** Northern Israel, at Kinneret College	**Type of Intervention:** Research

Objectives:

- Develop Center of Excellence at the Kinneret College, located at the college's southern campus, focused on water and environment innovation and technology and open to Israeli, Jordanian, Palestinian and international researchers and students
- Develop related research facilities, laboratories and study programs

Interventions:

- Plan and design for 1,200 students devoted to water and environmental research and training facilities
- Design a WWTP and sewage laboratory, a desalination laboratory and land and water research facility
- Design a 200 m^2 robotics laboratory
- Design a 600 m^2 area devoted to social sciences and the humanities, including class rooms, computer rooms and auditorium
- Include computerized telescope on the roof
- Tender for construct different phases
- Operations

Results/Impacts:

- Major research center in the Jordan Valley
- Strengthened cooperation between Jordan and Palestine

Organization/Responsibilities:

- Kinneret College on the Sea of Galilee
- Jordan Valley Regional Council
- Private sector
- Ministries of Science and Education

Costs and Revenues:	**Implementation Period**
• Preparation cost: 500,000 USD • Construction cost: 10,000,000 USD • Annual operations: 500,000 USD	• Preparation time: 2 years • Construction time: 5 years

Other remarks:

Name: U02 ISR—Eden Regional Agricultural Research and Training Center	**Location:** Northern Israeli Jordan Valley	**Type of Intervention:** Sustainable Agriculture

Objectives:
- Develop a regional agricultural research and training center focused on crop management, improved water management and increased production quantities and qualities
- This center is currently based on know-how developed in Israel and serves the Israeli farmers in the Jordan Valley. Its activities are also attended by Jordanian and Palestinian farmers.
- Expand this center for the benefit of all farmers in the lower Jordan River Valley, including Israeli, Jordanian and Palestinian farmers

Intervention:
- Continue research and piloting in the areas of crop management, sustainable fish pond development, bird management, natural insect combating techniques, biological water filtering and recycling, optimized crop and fish selection, agricultural and fish farm operational practices and more
- Link this research with the Kinneret College's Research Center for Water and Environment
- Provide training to farmers in the region on all of these subjects when requested
- Provide programs for school students from around the Valley
- Provide on-farm follow-up support to farmers

Results/Impacts:
- Optimize agricultural practices and higher economic outputs throughout the Jordan River Valley
- Increase rural income levels

Organization/Responsibilities:
- Eden Farm
- Springs Valley Regional Council
- Ministries of Agriculture in Jordan, Israel and Palestine
- Farmer Production Organizations

Costs and Revenues:
- Preparation cost: 100,000 USD
- Annual operation cost: 1,500,000 USD

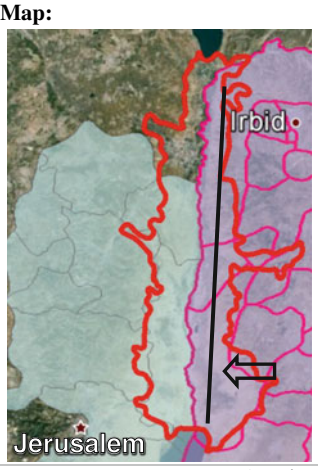
Implementation Period
- Preparation time: 0.5 year
- Operation time: >10 years

Other remarks:
The Center seeks to support Jordanian and Palestinian farmers with research and training.

Name: U01 JOR—Infrastructure Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Infrastructure

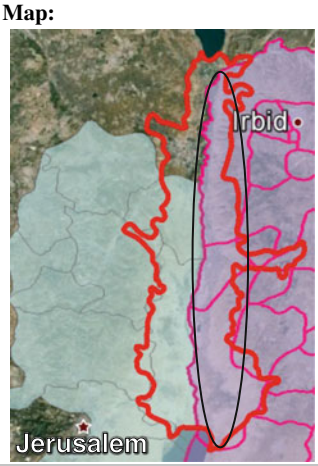
Objectives:
Support the Ministry of Transportation's rehabilitation of Route 65. Currently, Route 65 is the main north-south road through the Jordan Valley and crosses all major villages in the valley. However, traffic along the road is dense, relatively dangerous, intersected by many minor roads and used by pedestrians, slow traffic and heavy traffic alike. This intervention supports the plans of the Ministry of Transportation, which is responsible for infrastructure, to rehabilitate this road for local traffic purposes only, including safe pedestrian sideways, signs and lighting, safe crossings, bypasses, green corridors and related parks, while constructing a new parallel north-south highway for heavy traffic that bypasses urban centers.

Map:



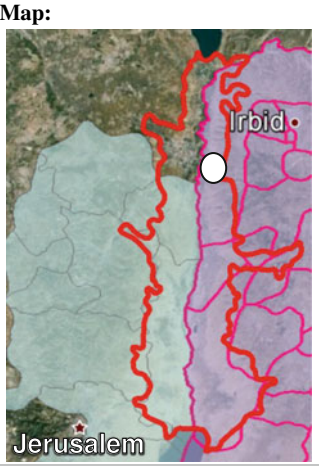
(continued)

Name: U01 JOR—Infrastructure Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Infrastructure
Preparation: • Plan and design infrastructure works, taking into account future urban expansion areas • EIAs and licenses • Setup organizational structure • Finance planning **Construction/Realization:** • Tender for and construct/expand the existing Route 65 infrastructure works • Tender for rehabilitate/expand the new parallel highway • Tender for and rehabilitate crossings, crossovers and additional infrastructure facilities		**Operations:** • Operations • Maintenance
Results/Impacts: • Realized/expanded/improved traffic and traffic safety • Preparation for urban expansion of the lower Jordan River Valley • Use of bio-climatic design practices and renewable building materials		
Sustainability and Water Impacts: • This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices and renewable building materials in urban and infrastructure development projects.		
Organization/Responsibilities: • Municipalities and county councils • Ministry of Transportation • Jordan Valley Authority • Ministry of Environment		
Costs and Revenues: • Preparation cost: 10,000,000 JOD • Construction cost: 180,000,000 JOD • Maintenance: 1,000,000 JOD/year • Annual economic revenue: 3,000,000–6,000,000 JOD/year		**Implementation Period** • Preparation time: 3 years • Rolling construction time: 18 years
Other remarks: • Infrastructure planning should be done in integrated combination with land use and urban expansion planning.		

Name: U02 JOR—Urban and Spatial Master Plan	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction
Objectives: Develop detailed urban, infrastructure and physical land use plans for the lower Jordan Valley, taking into account foreseen population and economic projections of the lower Jordan River Valley, of population growth to over 600,000 people in 2050. This will require a total of about 130,000 housing or apartment units in 2050. This will require including related infrastructure, transport, water (100 MCM/year), sanitation, electricity and IT-related utilities, public services, schools and recreational areas and facilities.		**Map:** 
Intervention: Develop the projected requirements for housing and urban facilities, including planning of new urban areas, expansion of secondary and primary roads, linkage to the national highway system and public transport requirements. This includes planning, management and training aspects. This interventions includes enforcement of land use plans and halting unplanned expansion of urban areas towards dedicated agricultural lands. **Preparation:** Conduct physical master plans for localities in cooperation with the Jordan Valley Authority and Ministry of Housing and Public Works		**Construction/Realization:** • Conduct physical planning for existing towns and villages, including roads, residential areas, land development • Plan for infrastructure, transport, water, sanitation, electricity and IT-related utilities • Plan for public services, schools and recreational areas and facilities • Elaborate investment plans • Elaborate financing and management structures

(continued)

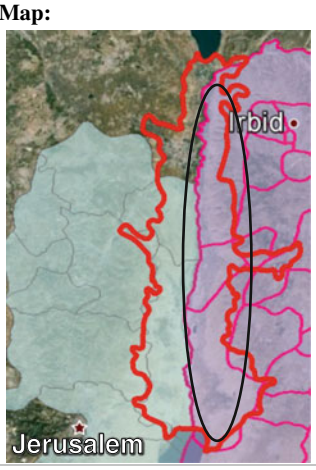
Name: U02 JOR—Urban and Spatial Master Plan	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction
Results/Impacts: Met urban development and housing needs Use of bio-climatic design practices and renewable building materials		
Sustainability and Water Impacts: • This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices, renewable building materials and efficient water use systems for new housing projects		
Organization/Responsibilities: • Jordan Valley Authority • Ministry of Housing and Public Works • Ministry of Planning • Ministry of Transportation • All other relevant governmental authorities		
Costs and Revenues: • Planning cost: 10,000,000 USD • Construction cost ~1,000,000,000 USD		**Implementation Period** • Preparation time: 3 years starting in 2015 • Implementation time: ongoing up to 2050

Name: U03 JOR—Higher Education and Vocational Development Project	**Location:** Northern Jordan Valley	**Type of Intervention:** Planning and Construction
Objectives: Establish a university in the lower Jordan Valley to accommodate (future) 600,000 residents and to utilize hands-on education of training to meet developmental needs of the growing population, including agricultural and environmental research. A Vocational Training Center to ensure access to professional trainers and experts who will offer training and information and be utilized to develop residents' skills and identify career choices and development objectives.		**Map:** 
Intervention: • Establish a university in the northern Jordan Valley • Establish a modern and advanced vocational training center in the lower Jordan Valley		**Preparation:** Dependent on the education needs assessment conducted **Construction/Realization:** • Build a modern university in the northern Jordan Valley • Build an advanced and highly-specialized vocational training center
Results/Impacts: Higher education and vocational training opportunities provided to Jordan Valley residents		
Sustainability and Water Impacts: • This project will have a direct impact on the sustainability of the Jordan River Valley by applying bio-climatic design practices, renewable building materials and efficient water use systems.		
Organization/Responsibilities: • Ministry of Higher Education • Ministry of Education • JVA • Other relevant authorities		
Costs and Revenues: TBD • Planning cost: 1,000,000 JOD • Construction cost: 20,000,000 JOD		**Implementation Period** • Preparation time: 2 years • Construction time: 3 years

Name: U04 JOR—Non-Fossil, Renewable Energy Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Development Projects

Objectives:
Plan for and realize renewable energy generation schemes in the lower Jordan River Valley, taking into account foreseen economic growth to 13,000,000,000 JD/year and related population growth to 600,000 people in 2050
- Link this to Water-Energy Nexus objectives of EcoPeace
- Assuming an advanced economy by 2050, this would require about 1.8 billion kWh of energy in 2050
- Assuming 50 % renewable energy, this requires renewable energy capacity of 0.9 billion kWh/year by 2050 or 750 ha.of solar panels (120 kWh/m^2)

Map:



Intervention:
Construction of renewable energy schemes such as solar and waste-to-energy systems

Preparation:
- Select optimal sites for construction of the renewable energy schemes with consideration of land ownership
- Integrate schemes with the power transmission lines of the served communities
- Develop scope for operation and maintenance
- Develop legal framework
- Attract investment

Construction/Realization:
- Create a common vision among the residents of the study area that such a project is vital for the area and its future development
- Measure the economic and environmental gains of such schemes

Operations:
- Distribution of electricity
- Fee collection
- O&M
- Technical and financial management
- Provide investment incentives to investors
- Provide land and infrastructure for implementation

Results/Impacts:
- Preserved environment
- Improved financial status of the residents
- Improved social conditions

Sustainability and Water Impacts:
- This project will have a direct impact on mitigation of climate impacts in the Jordan River Valley by applying renewable energy, bio-climatic design practices, renewable building materials, and by using efficient water use systems.

Organization/Responsibilities:
- Ministry of Energy and Mineral Resources
- Natural Resources Authority
- JVA
- Ministry of Environment
- Ministry of Planning and International Cooperation (MoPIC)

Costs and Revenues:
- Preparation cost: 2,000,000 JOD
- Construction cost: 200 000,000 JOD

Implementation Period
- Preparation time: 2 years
- Construction time: ongoing up to 2050

Other remarks:
- Short-term action

Name: U01 PAL—Urban and Infrastructure Development Master Plan	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction

Objectives:
Develop detailed urban, infrastructure and physical land use plans for the lower Jordan Valley, taking into account the foreseen population and economic projections of an independent Palestinian State.

Map:

Intervention:
Develop a comprehensive and detailed urban, infrastructure and physical land use plan to meet the projected requirements for housing and urban facilities for both existing towns and villages as well as projected needs for population and economic growth.
The plan would also address the need for expansion of secondary and primary roads, linkage to national highway system and public transport requirements. This includes planning, management and training aspects.
The project also includes the planning of two new towns (see projected location in map indicated in pink), one in the northern Jordan Valley around the area of Kardala and Bardala, and the other in the central Jordan Valley, around the area of Kirbet ar Ras al Ahmar. These towns would have a population of around 150,000 each and would be built on the basis of environmentally-friendly infrastructure.

Preparation:
- Conduct physical master plans for localities in cooperation with the Jordan Valley Authority and Ministry of Local Government to ensure meeting of growth needs of the region in an environmentally friendly way that minimizes the negative impact of development

Construction/Realization:
- Conduct physical planning for existing towns and villages, including roads, residential areas and land development
- Identify how these can become more environmentally friendly
- Start rehabilitation and construction of secondary roads in the region
- Rehabilitate, construct and connect lower Jordan Valley highway system with the national highway system within the West Bank
- Construct two towns in the central and northern Jordan Valley of up to 50,000 housing units each with all relevant infrastructure

Results/Impacts:
Urban development and housing needs met.

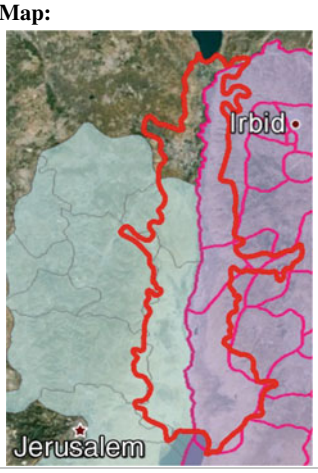
Sustainability:
Such types of projects depend on population growth and needs, thus its sustainability cannot be calculated or in other words guaranteed

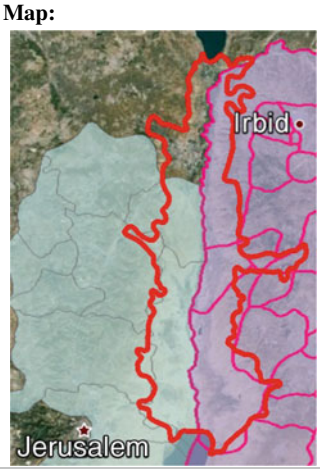
Organization/Responsibilities:
- Jordan Valley Authority
- Ministry of Housing and Public Works
- Ministry of Planning
- Ministry of Transportation
- All other relevant governmental authorities

Costs and Revenues: cost estimates derived from interviews with urban planners, Rawabi management and PIF investment management
- Planning cost: 9,900,000 Million USD
- Implementation: 1,000,000,000 USD

Implementation Period
- Preparation time: 3 years starting in 2015
- Implementation time: ongoing up to 2050

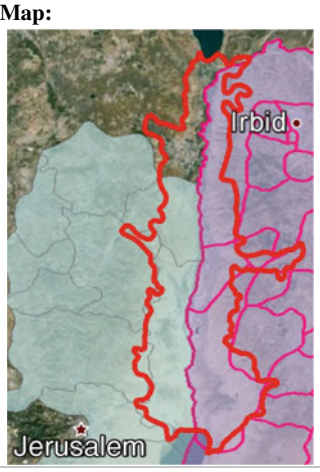
Investment Priorities (SIWI Criteria)
Social: 45
Regional Political: 78
National Political: 89
Environmental: 50
Economic: 71
Overall: 67

Name: U2 PAL—Educational and Vocational Needs Assessment	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning
Objectives: Identify educational and vocational training needs based on current data and future population growth projections		**Map:** 
Intervention: Conduct an assessment of the Lower Jordan Valley area to identify the number and quality of schools and vocational training centers, where they need to be located, any necessary rehabilitation to existing schools to ensure their utility and an assessment of specialization needs for vocational and higher education in the short- and long-term population and development projections		**Construction/Realization:** • Conduct a needs assessment of educational facilities in the lower Jordan River • Prepare an education strategy and master plan for the lower Jordan River
Results/Impacts: Improve education opportunities		
Organization/Responsibilities: • Ministry of Education • Ministry of Higher Education • Public–Private Academic Partnership		
Costs and Revenues: • Preparation cost: 250,000 USD		**Implementation Period** • Preparation time: 1 year starting in 2015
Other remarks:		

Name: U3 PAL -School Building Program	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction
Objectives: Based on the educational needs assessment, construct and rehabilitate schools where needed		**Map:** 
Intervention: Build modern and efficient elementary and secondary schools to accommodate the needs of the population (1,000 to 1,500 students per school), including a transportation system for students to get to their schools		**Construction/Realization:** • Build schools based on the concept of 12 grades with 5 sections per grade, an of average 25 students per section and class rooms of around 80 m^2

(continued)

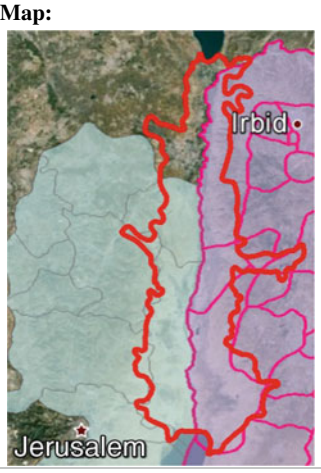
Name: U3 PAL -School Building Program	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction
Results/Impacts: Improved access to world class education in the lower Jordan Valley		
Organization/Responsibilities: • Ministry of Education • Ministry of Public Works • Ministry of Planning		
Costs and Revenues: per school of 6,000 m^2 ($800/$m^2$) including equipment, buses, etc. • Preparation cost: 100,000 USD • Construction cost: 4,800,000 USD		**Implementation Period** • Preparation time: 6 months after assessment • Construction time: 8 months
Other remarks:		

Name: U4 PAL—Higher Education and Vocational Training Program	**Location:** Northern Jordan Valley	**Type of Intervention:** Planning and Construction
Objectives: Establish a university in the northern Jordan Valley to accommodate residents and utilize hands-on education and training to meet the developmental needs of the growing population, including agricultural and environmental research. A Vocational Training Center to ensure access to professional trainers and experts who will offer training and information and be utilized to develop residents' skills and identify career choices and development objectives.		**Map:** 
Intervention: • Establish a university in the northern Jordan Valley • Establish a modern and advanced vocational training center in the lower Jordan Valley **Preparation:** • Dependent on the education needs assessment conducted		**Construction/Realization:** • Build a modern university in the northern JV • Build an advanced and highly specialized vocational training center
Results/Impacts: Provide higher education and vocational training opportunities to Jordan Valley residents		
Organization/Responsibilities: • Ministry of Higher Education • Ministry of Education • JVA • Other relevant authorities		
Costs and Revenues: • Preparation cost: 300,000 USD • Construction cost: 10,000,000 USD		**Implementation Period** • Preparation time: 2 years • Construction time: 2 years
Other remarks:		

Name: U5 PAL—Health Care Services Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction

Objectives:
Assess needs for healthcare services in the lower Jordan Valley, plan for the establishment of healthcare centers and identify existing infrastructure, current and projected needs, including primary healthcare centers and clinics, secondary healthcare centers and tertiary or specialized care to ensure timely access to health services for lower Jordan Valley residents
Provide mobile veterinary clinics for livestock farms

Map:



Intervention: Identify healthcare needs in the lower Jordan Valley and, in the short-term, provide the human resources necessary for the operation of existing healthcare centers and ensure access to required healthcare equipment, including emergency vehicles to transport patients to secondary and tertiary care centers in a timely manner
In the long-term, aim at establishing a specialized secondary and tertiary hospital in the northern Jordan Valley to serve the growing population in the area. This may be connected to the university to be established in the region with a specialized training hospital
Aim at establishing mobile veterinary clinics that would provide veterinary services to livestock farms

Preparation:
• Conduct assessment to identify short- and long-term healthcare needs

Construction/Realization:
• Rehabilitate, equip and staff existing primary health care centers
• Establish mobile veterinary clinics
• Establish a hospital in the lower Jordan Valley

Results/Impacts:
Healthcare needs of the population are met

Organization/Responsibilities:
• Ministry of Health
• Ministry of Planning
• Jordan Valley Authority

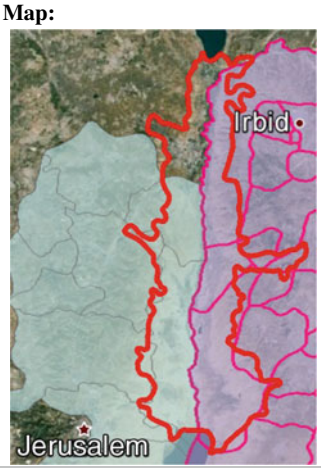
Costs and Revenues: ¼ cost of university
• Preparation cost: 1,000,000 USD
• Construction cost: 10,000,000 USD

Implementation Period
• Preparation time: 2 years
• Construction time: ongoing

Name: U6 PAL—Electricity and Telecommunications Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction

Objectives:
Expand the electricity grid to cover all residential areas in the Jordan Valley to ensure universal access to electricity
Develop telecommunications networks to ensure access to both voice and data telecommunications for residents

Map:



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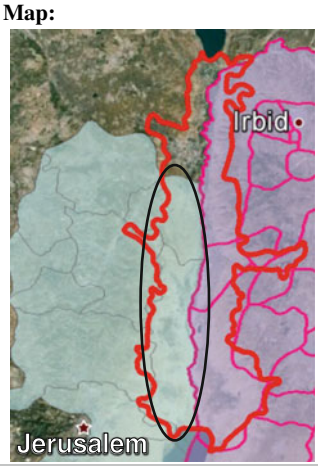
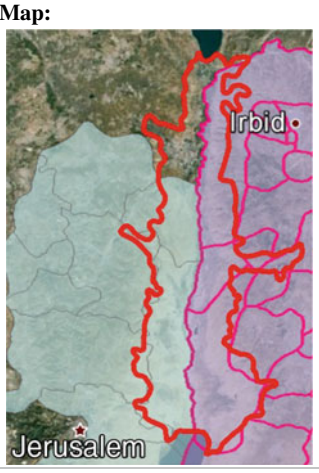
Name: U6 PAL—Electricity and Telecommunications Development Project	**Location:** Lower Jordan Valley	**Type of Intervention:** Planning and Construction
Intervention: Expand the electricity grid to cover all residential areas to ensure universal access to electricity Construct and expand telecommunications network to ensure access to voice and data telecommunications for residents **Preparation:** Map electricity and telecommunications needs to meet current and future population growth projections		**Construction/Realization:** • Expand the grid to reach all residential areas • Expand the telecommunications network to cover the entire region
Results/Impacts: Residents in the short- and long-term have access to electricity and telecommunications		
Organization/Responsibilities: • Palestinian Energy Authority • Ministry of Telecommunications • PalTel • Jerusalem Electricity Undertaking • Ministry of Planning • Ministry of Public Works • Jordan Valley Authority		
Costs and Revenues: • Preparation cost: 2,000,000 USD • Construction cost: 200,000,000 USD		**Implementation Period** • Preparation time: 1 year • Implementation time: ongoing up to 5 years

Name: U7 PAL—Develop Renewable Energy Resources	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Development Projects
Objectives: Construct renewable energy generation schemes		**Map:** 
Intervention: Construct renewable energy schemes such as solar systems **Preparation:** • Select optimal sites for construction of the renewable energy schemes with consideration of land ownership • Integrate such schemes with the power transmission lines of the served communities • Develop scope for operation and maintenance • Develop legal framework • Attract investment		**Construction/Realization:** • Create a common vision among the residents of the study area that such a project is vital for the area and its future development • Measure the economic and environmental gains of such schemes **Operations:** • Distribute electricity • Collect fees • O&M • Technical and financial management • Provide investment incentives to investors • Provide land and infrastructure for implementation

(continued)

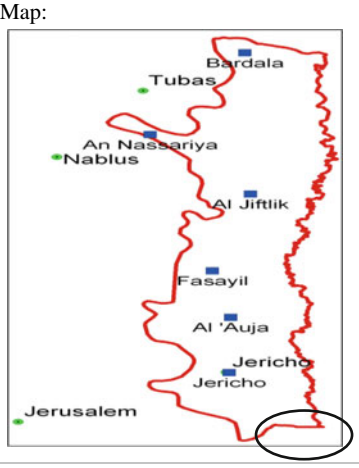
Name: U7 PAL—Develop Renewable Energy Resources	**Location:** Jordan Valley, Palestine	**Type of Intervention:** Development Projects
Results/Impacts: • Preserved environment • Improved financial status of the residents • Improved social conditions		
Organization/Responsibilities: • Palestinian Energy Authority • Ministry of Environmental Affairs • Ministry of Planning • Ministry of Local Government		
Costs and Revenues: • Preparation cost: 2,000,000 USD • Construction cost: 20,000,000 USD		**Implementation Period** • Preparation time: 1 year • Construction time: ongoing up to 2020
Other remarks: • Short-term action		

Name: U8 PAL—Import and Export Logistics Center	**Location:** Near Karama Bridge	**Type of Intervention:** Planning and Construction
Objectives: Create a logistics consolidation center in the Jordan Valley to facilitate export and import of goods to, from and through Jordan		**Map:** 
Intervention Establish a logistics consolidation center near the Karama Bridge to facilitate the movement of goods and reduce the cost of transportation. The center will include refrigeration facilities and trucks that can continue the cooling chain for fresh produce and cooled products. **Preparation:** • Prepare implementation study • Provide land and infrastructure		**Construction/Realization:** • Private sector investment, with land and infrastructure provided by the government **Operations:** • Operated by private sector company (ies) under supervision of Palestinian customs
Results/Impacts: Reduced transaction costs for exports and imports		
Organization/Responsibilities: • Ministry of National Economy • Ministry of Finance (customs) • Jordan Valley Authority		
Costs and Revenues: • Preparation cost: 200,000 USD • Implementation cost: 1.800,000 USD		**Implementation Period** • Preparation time: 6 months • Construction time: 1 year
Other remarks:		

Name: U09 PAL—Utilization of Dead Sea Minerals for Economic Production	**Location:** Jordan Valley	**Type of Intervention:** Research and Manufacturing

Objectives:
Extract salts and minerals from the Dead Sea for utilization by Palestine as production inputs for cosmetics, other production and export of raw or processed materials

Map:



Intervention
Create a research and development center for the extraction of Dead Sea minerals and salts, which would be utilized for production of cosmetics, and other products, as well as for export as raw materials for production by other countries.

Preparation:
- Identify areas of research and prepare a business plan
- Identify needed technical and technological assistance to be achieved through international consultations with similar research centers in Europe and the other countries
- Establish the research center
- Identify private sector investors to finance research and establish production facilities for equipment and machinery
- Establish extraction facilities and packing and packaging production lines

Construction/Realization:
- Build research center
- Build production facilities

Operations:
- Produce equipment and machinery required for implementation

Results/Impacts:
Potential economic benefits from the Dead Sea salts and minerals for both research and development as well as job creation

Organization/Responsibilities:
- Palestinian Natural Resources Authority
- Ministry of Planning
- Ministry of National Economy
- JVA

Costs and Revenues: Estimates from ECOPEACE—Palestine
- Preparation cost: 1.500,000 USD
- Implementation cost: 22,000,000 USD

Implementation Period
Preparation time: 1 years
Construction time: 4 years

Investment Priorities (SIWI Criteria)
Social: 44
Regional Political: 48
National Political: 61
Environmental: 39
Economic: 70
Overall: 52

8. List of Literature

1. EcoPeace, 2002: Take Me Over the Jordan: Concept Document to Rehabilitate, Promote Prosperity, and Help Bring Peace to the Lower Jordan River Valley, September 2012.
2. EcoPeace (Michal, Sagive; Mohammed, Obidallah; Hana, Al-Asad'd et al.), 2012: Cross-Border "Priority Initiatives" of the Good Water Neighbors Project, September 2012.
3. EcoPeace (David, Brooks; Julie, Trottier), 2012: An Agreement to Share Water Between Israelis and Palestinians: The EcoPeace Proposal (Revised Version), March 2012.
4. Arie, Arnon; Saeb, Bamya, 2012: Economic Dimensions of a Two-States Agreement between Israel and Palestine, Series 2007, 2010 and 2012.
5. EcoPeace (Gilad, Safier), 2011: Roadmap for the Rehabilitation of the Lower Jordan River, November 2011.
6. EcoPeace (Yedidya, Sinclair; Efrath, Silver; Guidon, Bromberg; Youval, Arbel), 2011: Promoting Green Jobs and Experts in a Green Water Economy in Israel, August 2011.
7. EcoPeace (Anja, Bursche), 2011: Agricultural Water Demand Management in the Palestinian Territories, April 2011.
8. Allan, J.A., 2011: *Virtual Water: Tackling the Threat to Our Planet's Most Precious Resource* (London: I.B. Tauris).
9. EcoPeace, 2010: Lower Jordan River Rehabilitation Project: Advocacy Strategic Action Plan for Jordan, 2010.
10. EcoPeace, 2010: Lower Jordan River Rehabilitation: Strategic Action Plan (Israel) for the Rehabilitation of the Lower Jordan River, December 2010.
11. EcoPeace, 2010: Lower Jordan River Rehabilitation Project: Assessment of Barriers to Water Reform in Israel and the Rehabilitation of the Lower Jordan River; December 2010.
12. Khaled, Hardan; Diana, Partridge, 2010: Water Reform in Palestine: Oasis or Mirage? Updated Report December 2010.
13. EcoPeace (Tatyana, Gorskaya), 2010: Lower Jordan River Rehabilitation Project: Trans-Boundary Diagnostic Analysis (TDA), Jordan, December 2010.
14. EcoPeace (Dr. Taleb AL, Harithi), 2010: Lower Jordan River Rehabilitation Project: Trans-Boundary Diagnostic Analysis (TDA), Palestine, December 2010.
15. Khaled, Hardan, 2010: Lower Jordan River Rehabilitation Project: Strategic Action Plan (Palestine) for the Rehabilitation of the Lower Jordan River, December 2010.
16. EcoPeace (Yana Abu, Taleb; Michael, Lexander; Catherine-Emeline, Robillard), 2010: Why Cooperate Over Water? Cross-Border Crises and the Need for Trans-National Solutions, September 2010.
17. EcoPeace (Gadi, Rosenthal; Dr. David, Katz), 2010: An Economic Analysis of Policy Options for Water Conservation in Israel, July 2010.
18. EcoPeace (Rachel, Bergstein), 2010: Best Practices in Agricultural Water Demand Management and Comparative Analysis for Israel, June 2010.
19. EcoPeace (Dr. Sarig, Gafny; Dr. Samer, Talozi; Mr. Banan, Al Sheikh; Mrs. Elizabeth, Ya'ari), 2010: Towards a Living Jordan River: An Environmental Flows Report on the Rehabilitation of the Lower Jordan River, May 2010.
20. World Bank (ERM, BRL, EcoConsult), 2010: Red Sea—Dead Sea Water Conveyance Study Environmental and Social Assessment—Initial Assessment Report, March 2010.
21. EcoPeace (Baha, Afana), 2009: Lower Jordan River Rehabilitation Project: Assessment of Barriers to the Rehabilitation of the Lower Jordan River as Regards Water Reform in the Hashemite Kingdom of Jordan, March 2009.
22. EcoPeace (Danya, Bryx; Gidon, Bromberg), 2009: Best Practices in Domestic Water Demand Management, March 2009.
23. EcoPeace (Nicole, Harari; Jesse, Roseman), 2008: Environmental Peace Building Theory and Practice: A Case Study of the Good Water Neighbours Project in Wadi Fukin and Tzur Hadassah, January 2008.
24. Tala, Qtaishat, 2008: Workbook Assignment for Rangeland Resources Watershed Management Course, 2008.
25. Zeitoun, M., 2008: P*ower and Water in the Middle East: The Hidden Politics of the Palestinian—Israeli Water Conflict* (London: I.B. Tauris).
26. EcoPeace (Alon, Tal; Mohammad, Said Al Hmaidi), 2007: Draft Agreement on Environmental Cooperation

Between Israel and Palestinian National Authority, November 2007.
27. Chatham House (Zecharya, Tagar), 2007: Municipal Cooperation Across Conflict Divides: A Preliminary Study, September 2007.
28. International Water Management Institute (Rémy, Courcier, et al.), 2005: Historic Transformations of the Lower Jordan River Basin: Changes in Water Use and Projections (1950–2025), 2005.
29. Department of Statistics in Jordan, Khamis Raddad, 2005: Water Use and Supply Statistics of Jordan, June 2005.
30. Water Policy 8, (2006), Nir, Becker; David, Katz, 2005: Economic Valuation of Resuscitating the Dead Sea, August 2005.
31. World Bank—Assessment of Restrictions on Palestinian Water Sector Development April 2009 05.
32. World Watch—Water and Peace (Gidon, Bromberg), 2004: For Clues to Resolving the Middle East Conflict consider the case of the Embattled Dead Sea, August 2004.
33. Ministry of Water and Irrigation (Sandra, Chesrown), 2004: Final Land Use Report—Jordan Valley Preliminary Land Use Master Plan Project (USAID), August 2004.
34. Jägerskog, Anders, 2003: Why States Cooperate over Shared Water: The Water Negotiations in the Jordan River Basin (Ph.D. Dissertation), Linköping Studies in Arts and Science, 2003.
35. Shadda, Attilli et al., 2003: Historic Development Plans of the Jordan River Basin, 2003.
36. Allan, Tony, (J.A.), 2001: The Middle East Water Question: Hydro-Politics and the Global Economy (London and New York: I.B. Tauris).
37. Chas T., Main, 1953: The Unified Development of the Water Resources of the Jordan Valley Region, 1953.
38. PWA—Draft Palestinian Water Strategy 2013–2032.
39. PWA—Palestinian Water Policy 2013–2032.
40. Permaculture Research Institute of Australia (Geoff, Lawton; Andrew, Jones), 2008: Jordan Valley Permaculture Project for the Report: "The Role of Environmental Management and Eco-Engeneering in Disaster Risk Reduction and Climate Change Adaptation" (ProAct Network), 2008.
41. EcoPeace (Elizabeth, Ya'ari), 2010: Jordan River Rehabilitation Project, December 2010.
42. EcoPeace, 2010: Desalination: How Much and What is the Alternative?, 2010.
43. Aharoni, I., 1943: Memories of a Hebrew zoologist. Ariel Publishers, Jerusalem, Israel [In Hebrew].
44. Amichai, E.; Dolev, A.; Atar, A.; Levin, E., 2011: *Project Summary: Conversion of Abandoned IDF Bunkers in the Jordan Valley into Bat Roosts* (The Society for the Protection of Nature in Israel) [In Hebrew].
45. Ben Yosef, S.; Markus, M., 2001: *The New Israel Guide—Samaria and the Jordan Valley* (Jerusalem, Israel: Keter Publishing House and the MOD Publishing House) [In Hebrew].
46. Bouskila. A., 2002: "Reptiles", in: Dolev, A.; Perevolotsky, A. (Eds.), *Red Data Book of Vertebrates in Israel, Yefeh Nof, Jerusalem, Israel* [in Hebrew].
47. Chapagain, B.P., 2006: Characterization of Desert Dates (*Balanites aegyptica*) Saponins and Their Biological Activities. Thesis Submitted for the Degree "Doctor of Philosophy". Ben-Gurion University of the Negev.
48. Danin, A., 1992: "Flora and Vegetation of Israel and Adjacent Areas", in: *Bocconea*, 3: 18–42.
49. Dolev, A., 2000: Otter Survey in Israel. Report for the Society for the Protection of Nature in Israel, Tel-Aviv. 12 pp. [in Hebrew].
50. Dufour-Dror, J.M.; Yaakobi, T., 2013: *Ambrosia confertiflora* Information Booklet. The Israeli Ministry of Environmental Protection, the Ministry of Agriculture and Israel Nature and Parks Authority.
51. Eig, A., 1926: *A Contribution to the Knowledge of the Flora of Palestine* (Institute of Agriculture and Natural History, Bull-4. Tel-Aviv.): 72 pp.
52. Hötzl, H.; Möller, P.; Rosenthal, E., 2009: *The Water of the Jordan Valley: Scarcity and Deterioration of Groundwater and its Impact on the Regional Development* (Springer Publishers): 531 pp.
53. Faiman, D.; Levy, S.; Zipori, A., 2010: Monitoring Survey in Prat Stream (Wadi Al-Qelt). Estimation of Water Quality Based on Monitoring Results for the years 2008/9. Nature and Parks Authority. 48 pp. [in Hebrew].
54. Farber, E.; Vengosh, A.; Gavrieli, I.; Marie, A.; Bullen, T.D.; Mayer, B.; Holtzman, R.; Segal, M.; Shavit, U., 2005: "Management Scenarios for the Jordan River salinity Crisis", in: *Applied Geochemistry*, 20: 2138–2153.
55. Fisher, S.G.; Grimm, N.B.; Marti, E.; Holmes, R.M.; Jones, J.B., Jr., 1998: "Material Spiralling in Stream Corridors: A Telescoping Ecosystem Model", in: *Ecosystems*, 1: 19–34.

56. Gaash, E., 2013: Lower Jordan River—Tourism and Ecological Rehabilitation Plan. Prepared for the *Kinneret Drainage and streams Authority* [in Hebrew].
57. Gal, A.; Shizer, D.; Dolev, A.; Maze, E.; Ron, M.; Almog, R.; Levinger, Z.; Shacham, B.; Hershkovitz, Y.; Milstein D.; Ramon, U.; Perelberg, A., 2012: *Ecological Survey for the Southern Jordan River and Drainage Authority. Jordan River and Surroundings—from Naharayim to Bezeq Stream* (The Open Landscape Institute (Deshe Institute)): 249 pp. [In Hebrew].
58. Gafny, S., 1997: Adasiya Storage Dam: Analysis of its Expected Effect on Habitats at the Yarmouk River. Pages: 22–61 and 90–98, In: Adasiya Storage Dam, Plan No. C/9482, Environmental Impact Assessment. Tahal Engineering and Consulting Co. Report Submitted to the Israel Water Commission. September 1997. 107 pp. [in Hebrew].
59. Gafny, S.; Gasith, A., 1999: "Temporal and Spatial Appearances of Submersed Macrophytes in the Littoral Zone of Lake Kinneret, Israel: The Effect of Substrate Type and Water Level Fluctuations", in: *Aquatic Botany*, 62: 249–267.
60. Gafny, S., 2002: "Amphibians", in: Dolev, A.; Perevolotsky, A. (Eds.), *Red Data Book of Vertebrates in Israel, Yefeh Nof, Jerusalem, Israel* [in Hebrew].
61. Gafny, S., 2008: A Survey of the Hula Valley Streams. Final Report Submitted to Sever Ecological and Environmental Consulting. 82 pp. [in Hebrew].
62. Gafny, S.; Talozi, S.; Al Sheikh, B.; Ya'ari, E., 2010: Towards a Living Jordan River: An Environmental Flows Report on the Rehabilitation of the Lower Jordan River. Friends of the Earth Middle East. 83 pp.
63. Glas-Alon, L., 2008: The Influence of An Anthropogenic Habitat on the Ecology and Genetics of Jungle Cat (*Felis chaus*). Thesis Submitted for the Degree "Doctor of Philosophy". Tel Aviv University.
64. Gophen, M., 1982: "Unusually Dense Watermilfoil (Myriophyllum Spicatum L.) Vegetation in the Southern Basin of Lake Kinneret (Israel) in 1979", in: *Aquatic Botany*, 13: 307–315.
65. Goren, M.; Ortal, R., 1999: "Biogeography, Diversity and Conservation of the Inland Water Fish Communities in Israel", in: *Biological Conservation*, 89: 1–9.
66. Goren, M., 2011: Fish Survey in Prat stream (Wadi Al-Qelt). Prepared for Nature and Parks Authority. Tel Aviv University.
67. Guter, A.; Dolev A.; Saltz D.; Kronfeld-Schor, N., 2005: "Temporal and Spatial Influences on Road Mortality in Otters: Conservation Implications", in: *Israel Journal of Zoology*, 51: 199–207.
68. Hershkovitz, Y.; Gasith, A., 2006: Ecological Survey in the Lower Jordan. Prepared for *Kinneret Drainage Authority*. Tel Aviv University.
69. Horowitz, A., 1992: *Palynology of Arid Lands* (Amsterdam: Elsevier Publishers): 568 pp.
70. Horowitz, A., 2001: *The Jordan Rift Valley* (Taylor & Francis Publishers): 730 pp.
71. Kaplan, M.; Salmon, A.; Dvish Ben-Moshe, M., 2000: The Jordan Valley—Landscape Sensitivity Evaluation and Recommendations for Regional Development. Prepared for the Municipal Associations for Environmental Quality of Samaria [in Hebrew].
72. Krutman, Y.; Kastin, D.; Goren, M., 2010: Fish Survey in the Jordan Valley Springs. Prepared for the Nature and Parks Authority [in Hebrew].
73. Lynch, W.F., 1849: *Narrative of the United States Expedition to the Jordan River and the Dead Sea. Blanchard and Lea* (Philadelphia: Lea & Blanchard): 332 pp.
74. Main, C.T., 1953: *The Unified Development of the Water Resources of the Jordan Valley Region* (Boston, Massachusetts. Charlotte, North Carolina: United Nations Under Direction of the Tennessee Valley Authority.
75. Mendelssohn, H.; Yom-Tov, Y., 1999: *Fauna Palaestina: Mammalia of Israel* (Jerusalem: The Israel Academy of Sciences and Humanities): 439 pp.
76. Muller, G.C.; Kravchenko, V.D.; Revay, E.E.; Speidel, W.; Mooser, J.; Beredin, S.; Witt, T., 2010: "The Nolidae of Jordan: Distribution, Phenology and Ecology", in: *Zeitschrift für Entomologie*, 31: 69–84.
77. Ortal, R., 1976: The Effect of Environmental Features on the Aquatic Communities in the Lower Jordan River. M.Sc. thesis. The Hebrew University Jerusalem.
78. Ortal, R.; Por, F.D., 1978: "Effect of Hydrological Changes on Aquatic Communities in the Lower Jordan River", in: *Verhandlungen des Internationalen Verein Limnologie*, 20: 1543–1551.
79. Por, F.D.; Ortal, R., 1985: "River Jordan-The Survival and the Future of Very Special River", in: *Environmental Conservation*, 12: 264–268.
80. Reuther, C., Dolev, A., 2000: "New Findings of Otters (*Lutra lutra*) in Israel", in: *IUCN Otter Specialist Group Bulletin*, 17: 80–82.
81. Roll, U.; Dayan, T.; Simberloff, D.; Goren, M., 2007: "Characteristics of the Introduce Fish Fauna of Israel", in: *Biological Invasions*, 9: 813–824.
82. Sabach, A., 2005: The Lower Jordan: Summary Report for the Ecology Camp. Israel Nature and Parks Authority. 42 pp. [in Hebrew].

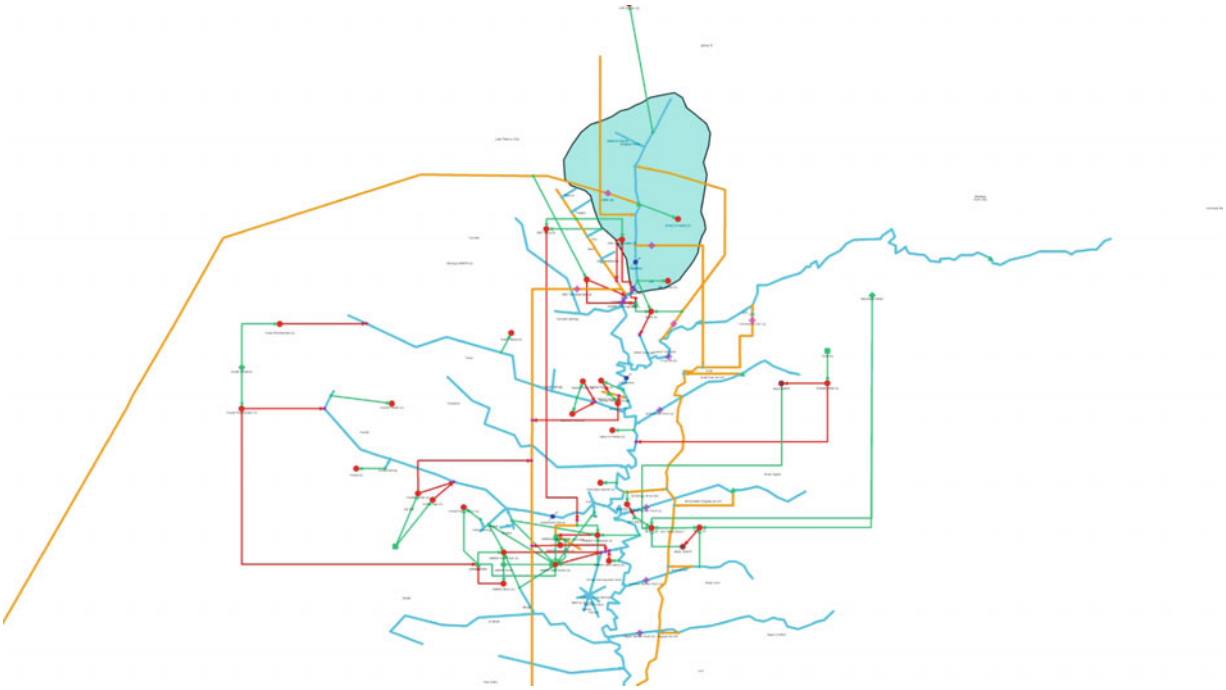
83. Shachal, R.; Saltz D.; Levin, E.; Dolev, A., 2012: Otter survey in Israel 2012. Report for the Society for the Protection of Nature in Israel and Nature and Parks Authority, Tel-Aviv. 11 pp. [in Hebrew].
84. Shacham, B., 2003: Summary of Reptile Survey: Jordan River reserves (10–11 April 2002). Prepared for Nature and Parks Authority, *Lower Galilee* and the *valleys* District [in Hebrew].
85. Shacham, B., 2009: Summary of Reptile and Amphibian Survey in Hagal Stream (30 March 2009). Submitted to Nature and Parks Authority, *Lower Galilee* and the *valleys* District [in Hebrew].
86. Sever, N., 2011: Lower Jordan—Ecology Report. Submitted to *Kinneret Drainage Authority*. Sever Ecological and Environmental Consulting. 58 pp. [in Hebrew].
87. Shalmon, B., 2002: "Mammals", in: Dolev, A.; Perevolotsky, A. (Eds.), *Red Data Book of Vertebrates in Israel, Yefeh Nof, Jerusalem, Israel* [in Hebrew].
88. Shkedy, Y.; Sadot, E., 2000: Ecological Corridors—A Practical Conservation Tool. Nature and Parks Authority, Jerusalem. 42 pp. [in Hebrew].
89. Stevens, S.S.; Organ, J.F.; Serfass, T.L., 2011: *Otters as Flagships: Social and Cultural Considerations.* Proceedings of Xth International Otter Colloquium, IUCN Otter Spec. in: *Group Bulletin*, 28A: 150–161.
90. Tristram, H.B., 1865: The land of Israel. A Journal of Travels in Palestine. Society for Promoting Christian Knowledge, London. 490 pp.
91. Turner, M.; Nassar, K.; Khateeb, N., 2005: "Crossing the Jordan: Concept Document to Rehabilitate, Promote Prosperity and Help Bring Peace to the Lower Jordan River Valley", in: Bromberg, G. (Ed.), *Tel Aviv, Amman, Bethlehem, EcoPeace/EcoPeace*.
92. Vicente, M.J.; Conesa, E.; Alvarez-Rogel, J.; Franco, J. A.; Martinez-Sanchez, J.J., 2007: "Effects of Various Salts on the Germination of Three Perennial Salt Marsh Species", in: *Aquatic Botany*, 87: 167–170.
93. Waisel, Y., 1967: "A Contribution to the Knowledge of Phanerogamus Vegetation of Lake Tiberias", in: *Bulletin Sea Research Station Haifa* 44: 3–16.
94. Weinberger, G.; Livshitz, Y.; Givati, A.; Zilberbrand, M.; Tal, A.; Weiss, M.; Zurieli, A., 2012: *The Natural Water Resources Between the Mediterranean Sea and the Jordan River* (Jerusalem: Israel Hydrological Service): 71 pp.
95. Zohary, M., 1959: *Geobotany*, 2nd edn. (Sifriat Poalim Merhavia) [in Hebrew].
96. Zohary, M., 1962: *Plant Life of Palestine: Israel and Jordan* (New York: Ronald Press).
97. Zohary, M., 1966: Flora Palaestina—Part 1, Israel Academy of Sciences and Humanities Jerusalem.
98. Zohary, M., 1973: *Geobotanical Foundation of the Middle East (Geobotanica Selecta, 3)* (Stutgart: Fisher): 739 pp.
99. Zohary, M., 1982: "The Plant World: Morphology, Taxonomy, Evolution, Biology", in: *Am Oved, Tel Aviv* [in Hebrew].
100. Minutes of Meeting with Mr. Majed Joudeh (WAJ), dd June 24th 2013.
101. Minutes of Meeting with EcoPeace community coordinators (Mrs. Ghada Ateyat, Mr. Yousef Shammari, Mr. Mohammad tariff and Mr. Mohammad Nawsrah), dd June 25th 2013.
102. Minutes of Meeting with Mr. Haidar Malhas (MIRRA), dd June 23rd 2013.
103. Minuted of Meeting with Mr. Fuad Eijlat (JVA), dd June 23rd 2013.
104. Minutes of Meeting with Mrs. Amal Hwarat (Municipality of Deir Alla), dd June 26th 2013.
105. Minutes of Meeting with Mr. Nabeel Bani Hani (NCARE), dd June 23rd 2013.
106. Minutes of Skype meeting with Mr. Nir Froyman (Israeli Ministry of Agriculture, Department of Fishery and aquaculture), dd July 12th 2013.
107. EcoPeace Report op January, 2006: "A Seeping Time Bomb: Pollution of the Mountain Aquifer by Solid Waste".
108. EcoPeace, Pollution to Groundwater Project, 2013.
109. Annual Report of the Department of Fish Breeding, 2012: Ministry of Agriculture, Amman, Jordan. (Translated from Arabic).
110. Palestinian National Authority (PCBS, MoA), Agricultural Census—2010: Final Results—Tubas Governorate, March 2012.
111. Palestinian National Authority (PCBS, MoA), Agricultural Census—2010: Final Results—Jericho & Al-Aghwar Governorate, February 2012.
112. Baseline Report of the Southern Jordan Drainage Authority, Landscape and Surrounding—Present Status Survey (July 2012, Aliza Rapoport-Rotman).
113. Minutes of Telephone Conference with Mr. Ron Yitzhaki (Jordan Valley Regional Council, Agricultural Local Research Centre), dd July 4th 2013.
114. Minutes of Telephone Conference with Mr. Oren Derei (Beit She'an, Environmental Unit), dd July 4th 2013.
115. Explosive Litter, Status Report on Minefields in Israel and the Palestinian Authority, Israel Democracy Institute, March 2010.
116. Tavor Drainage Basin Draft Master Plan, (2009).

117. Orthofer, Rudolf, ARC, 2001: *A Harmonized Water Data Base for the Lower Jordan Valley*.
118. Loibl, Wolfgang and Elena Wendl, Austrian Research Centres Seibersdorf Research, November 2001.
119. Loibl Wolfgang and Rudolf Orthofer ARC, 2002: *Spatial Risk Modelling for Water Shortage and Nitrate Pollution in the Lower Jordan Valley*, Austrian Research Centres, Seibersdorf Research, Risk ARC–S-0162 February 2002.
120. Lewy, E., 2011: Joining Forces on Agriculture in *Israel News*. Published on 02 July 2011.
121. Madanat, H.J., 2010: "Land Tenure in Jordan", in: *Land Tenure Journal*, No.1, 2010, FAO.
122. Petitguyot, 2003: "Irrigation Water Pricing: The Gap Between Theory and Practice", in: Francois, Molle; Jeremy, Berkoff, (Eds.), *Comprehensive Assessment of Water Management in Agriculture Research Report*.
123. Venot, J.P., 2003: Farming Systems in the Jordan River Basin in Jordan: Agronomical and Economic Description. International Water Management Institute, November 2003.
124. Venot, J.P.; Molle, F.; Hassan, Y., 2007: *Irrigated Agriculture, Water Pricing and Water Savings in the Lower Jordan River Basin (in Jordan)* (Colombo, Sri Lanka: International Water Management Institute): 61 pp. (Comprehensive Assessment of Water Management in Agriculture Research Report 18).
125. World Bank, 2008: The Economic Effects of Restricted Access to Land in the West Bank.
126. AL-Eisawi, D.M., 1996: *Vegetation of Jordan* (Cairo: Book Published By UNESCO (ROSTAS)).
127. Al-Eisawi, D.M.; Oran, S., 1995: Plant Diversity in Jordan. 3rd Scientific Week, HCST, Vol. V. Amman, Jordan.
128. Alouf, N.J., 1998: "Répartition de *Theodoxus jordani* (Mollusca Gastropoda) au Liban", in: *Essai de Biogéographie–Vie et Milieu* 48: 133–138.
129. Bar, Z.; Mienis, H.K., 1979: "The Malacofauna of Mount Hermon", in: *Malacologia*, 18: 73–77.
130. Bott, R., 1967: Potamidae (Crustacea, Decapoda) aus Afghanistan, Westasien und dem Mittelmeerranum (Eine Revision der Untergattung Potamon s str.)., Vidensk. Medd. Dansk. *Vidensk. Medd. dansk, nat. Foren*, 7–43.
131. Brandis, D.; Storch, V.; Türkay, M., 2000: "Taxonomy and Zoogeography of the Freshwater Crabs of Europe, North Africa and the Middle East", in: *Senckenbergiana biologica*, 1,2: 5–56.
132. CBD, 2001: "Mainstreaming Biological Diversity: The Role of Communication, Education and Public Awareness", CBD, UNESCO.
133. CBD, 2003: "Interlinkages Between Biological Diversity and Climate Change", CBD Technical Series No. 10, Secretariat of the Convention on Biological Diversity.
134. Forcart, L., 1972: "Systematische Stellung und Unterteilung der Gattung *Sphincterochila*", in: *Archiv für Molluskenkunde*, 102: 147–164.
135. GCEP, 1998: "Jordan Country Study on Biological Diversity", General Corporation for Environmental protection & UNDP".
136. GCEP, 2000: "National Agenda 21: National Strategy for Sustainable Development", General Corporation for Environmental.
137. GCEP, 2001: "Conservation and Sustainable Use of Biodiversity in Jordan: 1st National Report to the CBD, General Corporation for Environmental Protection".
138. GCEP, 2002: "Jordan Country Report on the Implementation of the UNCCD", General Corporation for Environmental Protection.
139. GCEP, 2002: "National Country Report for the World Summit on Sustainable Development", General Corporation for Environmental Protection.
140. GEF SGP, 2004: "101 Local Initiatives to Protect the Global Environment", Jordan GEF Small Grants Programme.
141. GEF SGP, 2005: "GEF Small Grants Programme Guide".
142. Germain, L., 1921–1922: Mollusques Terrestres et Fluviatilis de Syrie.–Paris, Vol. 1 (1921): 523 pp.; Vol. 2 (1922): 243 pp.
143. Gherardi, F.; Micheli, 1989: "Relative Growth and Population Structure of the Freshwater Crab, Potamon Potamios Palestinensis, in the Dead Sea area (Israel)", in: *Israel Journal of Zoology*, 3,4: 133–145.
144. Giavarini, I., 1934: "Ricerche sui Potamon edule di alcune isole dell'Egeo", in: *Archives Zoology Torino*, 20: 67–92.

145. GLÖER, P.; U. BÖßNECK, 2007a: *Pseudobithynia kathrini* n. sp., *P. levantica* n. sp. und *P. amiqensis* n. sp.—drei neue Arten aus dem Libanon (Mollusca: Gastropoda: Bithyniidae).–*Mollusca* 25: 113– 120.
146. GLÖER, P.; U. BÖßNECK, 2007b: Zur Identität von *Gyraulus piscinarum* (Bourguignat, 1852) mit der Beschreibung von *G. bekaensis* n. sp. (Gastropoda: Planorbidae).–*Mollusca* 25: 139–146.
147. Hausdorf, B., 1996: "Die Orculidae Asiens (Gastropoda: Stylommatophora)", in: *Archiv für Molluskenkunde*, 125: 1–86.
148. Hausdorf, B., 2000: "The Genus Monacha in Turkey (Gastropoda: Pulmonata: Hygromiidae)", in: *Archiv für Molluskenkunde*, 128: 61–151.
149. Heller, J., 1984: "Landsnails from Southern Lebanon", in: *Journal of Conchology*, 31: 331–336.
150. Heller, J., 2009: "Land Snails of the Land of Israel. Natural History and a Field Guide", in: *Sofia*, 360 pp.
151. HCY, 2004: "National Youth Strategy", Higher Council for Youth & UNDP.
152. IUCN, 2000: "2000 IUCN Red List of Threatened Species", The World Conservation Union.
153. IUCN.DoS, 2004: "Jordan Environmental Statistics Book 2003", National Department of Statistics.
154. JEWP, 2001: "State of the Environment in Jordan 2000/2001", Jordanian Environmental Watch Programme.
155. Kinzelbach, R., 1980: "Hydrobiologie am Orontes", in: *Natur und Museum*, 110: 9–18.
156. Kinzelbach, R., 1986: "Additional Records of the River Limpet", in: Ancylus fluviatilis, from Krupp, F., Schneider, W., 1989: "The fishes of the Jordan River Drainage Basin and Azraq Oasis", *Fauna of Saudi Arabia*, 10: 347–416.
157. Long, G., 1957: The Bioclimatolgoy and Vegetation of East Jordan. Rome, UNESCO/FAO.
158. MoA, 2003: "National Strategy for Agricultural Development", Ministry of Agriculture.
159. MoEMR, 2005: "National Energy Strategy", Ministry of Energy and Mineral Resources.
160. MoEnv, 2003: "National Biodiversity Strategy and Action Plan", Ministry of Environment.
161. MoEnv, 2005: "National Strategy and Action Plan to Combat Desertification", Ministry of Environment.
162. MoMRAE, 1991: "National Environmental Strategy", Ministry of Municipal, Rural Affairs and the Environment.
163. MoP, 1995: "National Environmental Action Plan", Ministry of Planning.
164. MoPIC & UNDP, 2004: "Jordan National MDGs Report", Ministry of Planning and UNDP.
165. MoPIC, 2002: "National Socio-Economic Development Plan 2004–2006", Ministry of Planning and International Cooperation.
166. MoSD, 2003: "Poverty Alleviation Strategy", Ministry of Social Development.
167. MoTA, 2004: "National Tourism Strategy", Ministry of Tourism and Antiquities.
168. MoWI, 1998: "National Water Strategy", Ministry of Water and Irrigation.
169. NCARTT, 2005: Conservation and Sustainable Use of Dryland Agro-biodiversity in Jordan: Highlights of the Project Achievements".
170. Kinnereth Drainage Authority, 2013: "Tourism and Ecological Rehabilitation Plan—Lower Jordan River".
171. Alfarra, A. et al., 2012: "Modeling Water Supply and Demand for Effective Water Management Allocation in the Jordan Valley", in: *Journal of Agriculture and Applications JASA*.
172. GLOWA, 2008: "An Integrated Approach to Sustainable Management of the Jordanian Water Resources under Global Change".
173. Farber, E., 2005: "The Lower Jordan River: River Salination, Relationship with Adjacent Groundwater and Future Management", Beer Sheva.
174. Amer, M. et al., 2001: "Sources of Salinity in Groundwater from Jericho Area, Jordan Valley, Groundwater" Vol. 39, No. 2.
175. Toll, M. et al., 2008: "Groundwater Resources in the Jordan Valley: An Integrated Approach to the Hydrogeological Investigations of Unconsolidated Aquifers", IWRA Congress 2008.

9. WEAP Model Scheme

North



South

About the Author

Mr. Jeroen Kool, graduated as Geophysicist at the University of Utrecht, built up a broad professional experience as projects director and strategic advisor in the water management and environmental sectors in the Netherlands, Middle East, Africa, Europe and Asia. Mr. Kool is strategic advisor with Royal HaskoningDHV and board member of the HaskoningDHV Foundation (http://www.royalhaskoningdhv.com). He is furthermore chairman of the Water Partner Foundation and ambassador of the Netherlands Water Museum. During the last 30 years, Mr. Kool has been responsible for major programs within the EU, as well as in Jordan, Israel, Palestine, Macedonia, Croatia, Hungary, the Czech and Slovak Republics, Egypt, Tunisia, Mozambique, Swaziland, South Africa, Liberia, Serbia, Yemen, Indonesia, China, Tunisia and Syria. Many assignments were performed for international financiers like EuropeAid, the European Investment Bank and the World Bank related to sector and investment planning, organizational and institutional development, human and financial needs assessments and conflict/problem resolution. Mr. Kool published and presented various papers on international conferences in Geneva, Amman, Jerusalem, Kyoto, Damascus, Montreal, Amsterdam and The Hague.

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About Ecopeace

EcoPeace Middle East—Overview and Current Projects

EcoPeace Middle East, established in 1994, is a Palestinian-Israeli-Jordanian organization dedicated to environmental peacebuilding. EcoPeace seeks to advance the creation of necessary conditions for lasting peace and sustainable regional development, mostly through mutual concern over the region's shared water resources. As such, EcoPeace works to improve the quality of life for all individuals alike through advocating for the rights of communities affected by unsustainable environmental management.

Our offices are located in Tel Aviv, Bethlehem and Amman and we are registered as tax-exempt nonprofit (as a U.S. 501 (c)(3)). EcoPeace, a project oriented NGO, uses both a "top-down" (advocacy) approach coupled with a "bottom-up" (grassroots / community) strategy by engaging community members and leaders in cross-border cooperation efforts.

EcoPeace supports a two state solution, with Israel, Palestine, and Jordan managing the shared natural resources in a manner that promotes equity between our peoples and ecological sustainability with nature. EcoPeace believes that a fairer sharing of water resources and a coordinated regional response to water scarcity is necessary for economic stability and improved livelihoods for all in the region. Developing the political will for such cooperation requires a widespread understanding that all people interdependently rely on our shared environment. Awareness from all sides of these shared water resources' constraints and sensitivities is a prerequisite for understanding and addressing the threats to the viability for all peoples in the region.

EcoPeace Middle East is currently implementing the following initiatives:

A) *REGIONAL ECOLOGICAL PEACEMAKING*

1. **Water Cannot Wait**

This campaign, launched in November 2012, raises awareness targeting the public and decision makers in Israel and Palestine as to the urgency to solve shared water issues —mainly the lack of fresh water and sanitation solutions, and the negative effect of continued reliance on outdated water arrangements on the shared water resources. Our main objective is to advocate the advancement of a final Water Accord between Israelis and Palestinians—a mechanism that can help to rebuild the trust necessary in order to put the political process back on track. EcoPeace has created a Model Water Accord for a final status water agreement, which meets the needs of both peoples and advances a two-state solution. Though the peace talks have ended abruptly, the Water Cannot Wait Campaign remains active,

promoting tangible infrastructure projects around which to establish cooperative cross-border task forces.

2. **Sanitation solutions**
To promote sanitation solutions, EcoPeace empowers local leadership and adult residents to advocate for cross-border cooperation by developing a watershed identity and helping facilitate the implementation of water, sanitation, and other solutions to solve existing environmental problems. This is part of the Good Water Neighbors (GWN) program, in which EcoPeace staff in 11 cross-border watersheds coordinate efforts to provide solutions for their communities' local needs.

3. **Cross border youth education**
On the youth educational level, the GWN program utilizes the transboundary water problems as a meeting platform to create positive interaction among neighboring "Youth Water Trustees" within the program's partnering communities. EcoPeace has written a Resource Guide for Environmental Educators with a wealth of hands-on environmental activities that promotes our environmental peacebuilding messages.

4. **Stream Rehabilitation/Cross border parks/open spaces**
EcoPeace's work empowers local leadership and residents to advocate for cross-border cooperation by developing a watershed identity and helping facilitate the implementation of water, sanitation, and other solutions to solve existing environmental problems implemented through the GWN program.

B) *SUSTAINABLE DEVELOPMENT*
1. **Water-Energy Nexus**
EcoPeace Middle East has launched a research and advocacy program, aimed at exploring possible interdependencies over water and renewable energy in the region. The first phase of the program is conducting a prefeasibility assessment of the economic, technical and geo-political viability of linking Jordan's comparative advantage of vast desert areas to produce solar energy with Israel and Gaza's comparative advantage on the Mediterranean coast to desalinate seawater. The development of a water-energy nexus would contribute to climate change mitigation and adaptation and would create the basis for interdependency as a measure to achieve political stabilization.

2. **EcoTourism**
EcoPeace has invested in preserving ecologically important areas throughout the region and has established three community-based EcoParks: Sharhabil Bin Hassneh in Jordan, Ein Gedi Eco-center in Israel, and the Auja Environmental Education Center in Palestine. These parks serve as models for preserving biodiversity and ecologically important habitats, as well as provide space for environmental education and nature appreciation. Our programs train tour guides throughout the region and seek to attract tour operators to focus on cross border community based ecotourism opportunities in the region.

3. **Global Initiative**
EcoPeace has initiated a global center of excellence to advance the application of the EcoPeace practical experience in Environmental Peacemaking in other conflict areas. Experiences to date have been shared with communities and actors in the Balkans and South Asia.

C) *JORDAN RIVER REHABILIATION*
1. **Faith Based initiatives**
EcoPeace's Faith Based Community Campaign is a critical aspect of our efforts to rehabilitate the Lower Jordan River. Through engaging Muslim, Christian and Jewish communities, EcoPeace aims to advance the creation of larger stakeholder circles that support cooperation and shared resource management. These activities seek to incentivize faith based community engagement first within a national setting through educational tours and seminars, and later as an interfaith program.

2. **Regional Master Plan for Sustainable Development in the Jordan Valley**
EcoPeace, together with the Stockholm International Water Institute and Global Nature Fund, with funding from the EU, released an Integrated Master Plan for the Jordan Valley from the Sea of Galilee to the Dead Sea. The Master Plan is the focus of this publication.

3. **Advocacy**
EcoPeace raises awareness about and seeks to improve the plight of the Lower Jordan River and leverages municipalities in Israel, Palestine, and Jordan, to address this demise. Through this advocacy effort, EcoPeace has helped leverage the construction of wastewater treatment systems and the return of water flow to the Jordan River.

4. **Jordan River Peace Park**
This initiative combines two adjacent areas: Al Bakoora in Jordan and Naharayim in Israel, where a small island was created at the junction of the Jordan and Yarmouk Rivers, and the Jeser Al Majama/Gesher site, known as the historic crossing point of the Jordan River Valley. A Pre-Feasibility Study proposed a two-phased development of a Peace Park. In Phase I, the project advances parallel but coordinated development on the Jordanian and Israeli sides, improving infrastructure and site attractiveness. Phase II, more dependent on the political climate, integrates the whole are into a single tourism site creating a cross-border peace park.

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