



State of Israel
Ministry of the
Environment

Restoring Rivers Restoring Life



"All rivers when they travel the earth are good and blessed and sweet and bring pleasure to the world"

(Pirkei de-Rabbi Eliezer, 9)



Restoring Rivers – Restoring Life

***T*HE RIVERS OF ISRAEL – A PRECIOUS NATURAL ASSET**

Israel's rivers, flowing from the hilly regions into the Mediterranean Sea, Lake Kinneret (Sea of Galilee) and Dead Sea, once supported rich aquatic and wetland ecosystems where fauna and flora thrived. With time, a rapidly expanding population, accelerated urbanization and industrialization, growing agricultural needs and low environmental awareness contributed to the depletion and deterioration of this once productive natural asset.



The Taninim River
Eyal Yaffe

In Israel, where water is an increasingly precious commodity, there is a consensus that its ailing rivers must be rescued, restored and revitalized. Without delay!



***R*IVER RESTORATION – A TOP PRIORITY**

Israel's Ministry of the Environment has long recognized the urgent need for action and placed river restoration high on its agenda. The establishment of the National River Administration (NRA) in 1993 signaled the first coordinated effort to transform the country's rivers from conduits of sewage into sources of life. It brought into play the full spectrum of government ministries and public institutions to formulate policy, prepare master plans, coordinate action, and oversee implementation.



The Taninim River
Itamar Grinberg



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A Blueprint for Recovery

COORDINATED ACTION MAKES A DIFFERENCE



Israel's river restoration project is founded on the belief that local involvement is vital for effective implementation. This has resulted in a network of regional river restoration administrations where integrated, interdisciplinary action is taken by local authorities, public and private agencies and pro-active communities. By addressing its own specific challenges with its own defined master plan, and with NRA funding and guidance, each regional river restoration administration is witnessing gratifying results.

Agenda for Action

The National River Administration is dedicated to the following goals:

- *Restoring rivers through clean up and prevention of pollution.*
- *Providing sufficient quantities of good quality water to river channels.*
- *Rehabilitating adjacent landscapes and ecosystems.*
- *Serving as flood control plains.*
- *Promoting the development of the river's surroundings for nature protection, recreation, tourism, education and research.*

The Kishon River

***R*EHABILITATING A RIVER PLAGUED BY INDUSTRIAL POLLUTION**

One of the greatest challenges facing river rehabilitation is the 70-kilometer Kishon River, long reputed to be Israel's most polluted river. Upstream, the river is largely clean and abounds with nature, landscape, historical and heritage assets. Downstream, the river has become a receptacle for some of the country's most polluting industrial plants including oil refineries, petrochemical and fertilizer plants, and Haifa's sewage treatment plant.

The Ministry of the Environment and the Kishon River Authority, established in 1994, has formulated a coordinated master plan aimed at ecological rehabilitation. Pretreatment facilities in polluting industrial plants, daily supervision and inspection in the field, monitoring of discharges to the river, and establishment of an online monitoring system led to significant improvements by 2001.



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***R*EDUCTION IN POLLUTION LOADS DISCHARGED INTO THE RIVER 1995-2001**

97% decrease in heavy metals

76% decrease in wastewater

80% decrease in organic load (BOD)

91% decrease in ammoniac nitrogen

91% decrease in suspended solids

91% decrease in mineral oils



*Reviving Israel's Rivers
of Present and Future Generations
for the Benefit*

TOWARD FUTURE ACTION

To accelerate the restoration process, the Ministry of the Environment has called for the construction of a collection pipeline for industrial brines, following pretreatment by best available technologies (BAT), which will lead to a marine outfall in the Mediterranean.

Illegal outfalls will be closed down, automatic sensors will be installed and a biannual monitoring system will be implemented. The goal: full cessation of discharges of industrial and municipal effluents.

THE KISHON – A PUBLIC ATTRACTION

Effective action and wise management generate new initiatives. Plans are now in place to transform the entire Kishon River into a green belt with a small harbor and fishing boats open to the public.

- A three kilometer section in a scenic section upstream has been converted into a park featuring trails and playgrounds for recreation.
- A second park in the lower reaches, adjacent to the fishing harbor, is a haven for tourists and local residents.
- Additional sections, now in implementation, will complete the vision of a single public park running the entire length of the river.



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A FOCAL POINT FOR RECREATION

Parks at either end of the river have changed underutilized wasteland into the region's best loved and most visited recreational areas. Well-maintained sport fields, picnic grounds, fishing docks, boating facilities and public gardens are only some of the attractions.

SAFEGUARDING PUBLIC HEALTH

Public health and environmental institutions have intensified supervision and law enforcement along the Yarqon River.

Budgetary allocations for surveys and research studies have been substantially increased.

New treatment plants in heavily populated adjacent towns prevent the discharge of 25,000 cubic meters of sewage a day into the river



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A N EDUCATIONAL PILOT

The Yarqon River is a model for countrywide educational programs on river restoration, ecology and public health. The teaching center on the banks of the river is a hub of activity.



The Taninim River

The 25-kilometer Taninim (Crocodile) River is the last relatively unpolluted river in Israel. Famous for its diversified ecosystem, its water has provided a sustaining environment for aquatic and amphibious mollusks, fish, turtles, water birds and rich and varied vegetation. However, surveys reveal drastic reductions in habitats and species. The government has declared the Taninim River and the surrounding Kabara wetlands a nature reserve.

A DUAL FOCUS MASTER PLAN

The master plan for the Taninim River sets the following goals:

- Preserve the unique ecosystem of the river.
- Restore antiquities including water supply and transport systems, dams and flour mills.

Restoration strategies offer hope for reviving a unique ecosystem and reintroducing flora and fauna that have disappeared.



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and an archeological treasure

Restoring a natural ecosystem

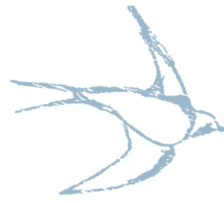
A WINDOW TO THE PAST - PRESERVING AN HISTORIC HERITAGE

Special efforts are concentrating on restoring the 193-meter Taninim River dam, which has operated continuously in the area from the Roman period until the 20th century. The project will link three water systems-natural, artificial and ancient-for the purpose of historic and ecological conservation and tourist development. Archeological excavations underway are uncovering fascinating evidence of the river's importance for successive civilizations.



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The Alexander River

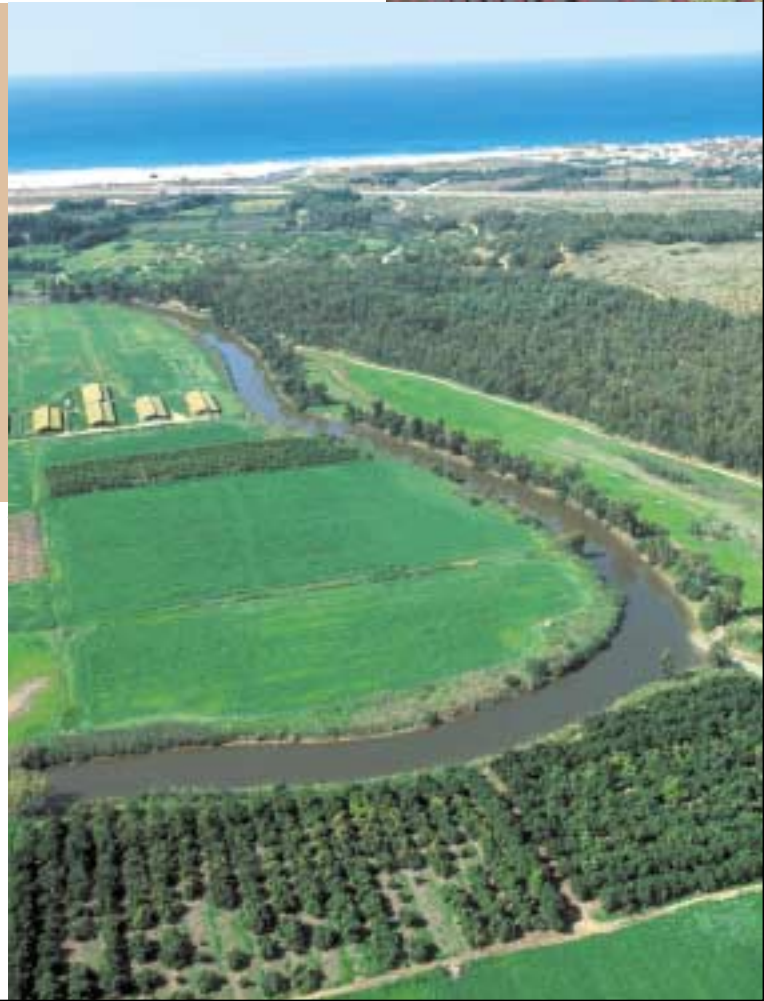


Catalyzing Restoration through Community Involvement



Flowing from the Samarian hills in western Israel to the northern part of the Tel Aviv region and its estuary on the Mediterranean, the Alexander River is yet another river impacted by fast growing populations.

Highly valued for its diverse ecosystem and riverine plant and animal species, as well as its scenic open areas, the river has suffered the ravages of domestic, agricultural and industrial pollution.



FROM VISION TO IMPLEMENTATION

The restoration plan formulated by the Alexander River Administration focuses on the following:

- Removal of pollutants and waste.
- Restoration of the landscape and ecosystem.
- Development of leisure and recreation infrastructures.
- Restoration of the Nile soft-shell turtle and its breeding sites along the river.

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The consensus-building approach which characterized the project led to the formulation and implementation of a master plan for restoration and development. Strong public interest prompted ecological restoration projects involving local residents and school children. In 2001, the project won international acclaim when it reached finalist status in an international competition on river management, held in Brisbane, Australia.

Developing Grassroots Involvement




Students from nearby schools have taken an active part in ecological restoration projects:

- *Documenting the restoration work*
- *Reintroducing fish to the river*
- *Returning native vegetation*
- *Observing egg-laying turtles*
- *Monitoring the Nile soft-shell turtle, a species that has almost disappeared from Israel's coastline.*



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Israel's River Restoration Project

-  Rivers designated for conservation
-  Rivers under restoration project
-  Untreated or partially treated rivers



Ending Pollution – Promoting Life

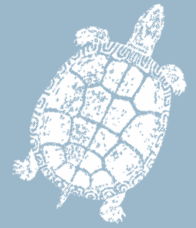
*Achieving a Harmonious Balance
between Conservation and Development*

The master plans for Israel's rivers recognize the essential function that the country's rivers play in preserving natural values, protecting aquatic habitats, providing green lungs, parklands and recreational facilities and serving as buffer zones between densely populated areas.



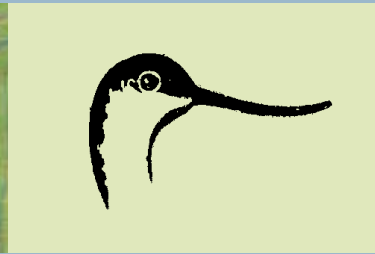
The success of Israel's river restoration program depends on the active involvement and commitment of all stakeholders in the implementation of solutions that would remove points of pollution and allocate freshwater and high quality effluents to sustain biodiversity. The investment, formidable as it may be, will provide the public with the greatest possible return – preservation of a precious natural asset, conservation of vital ecological systems, and, not least of all, creation of sources of pleasure and recreation for residents and tourists alike.





"For the Lord, your Lord, brings you a bountiful land, a land of streams of water, springs and wells, flowing forth in dale and hillside"

(Deut. 8:7)



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