

LITANI RIVER BASIN MANAGEMENT PLAN

VOLUME 2: ACTION PLAN

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EXECUTIVE SUMMARY

INTRODUCTION

The Litani River is the largest river in Lebanon and drains the central and south Bekaa Valley. Its water resources have been used for centuries but more intensively harnessed for human needs since the 1960s through the construction of the Qaraoun Dam.

The Litani River Basin is today experiencing extensive pollution. A walk along the river reveals:

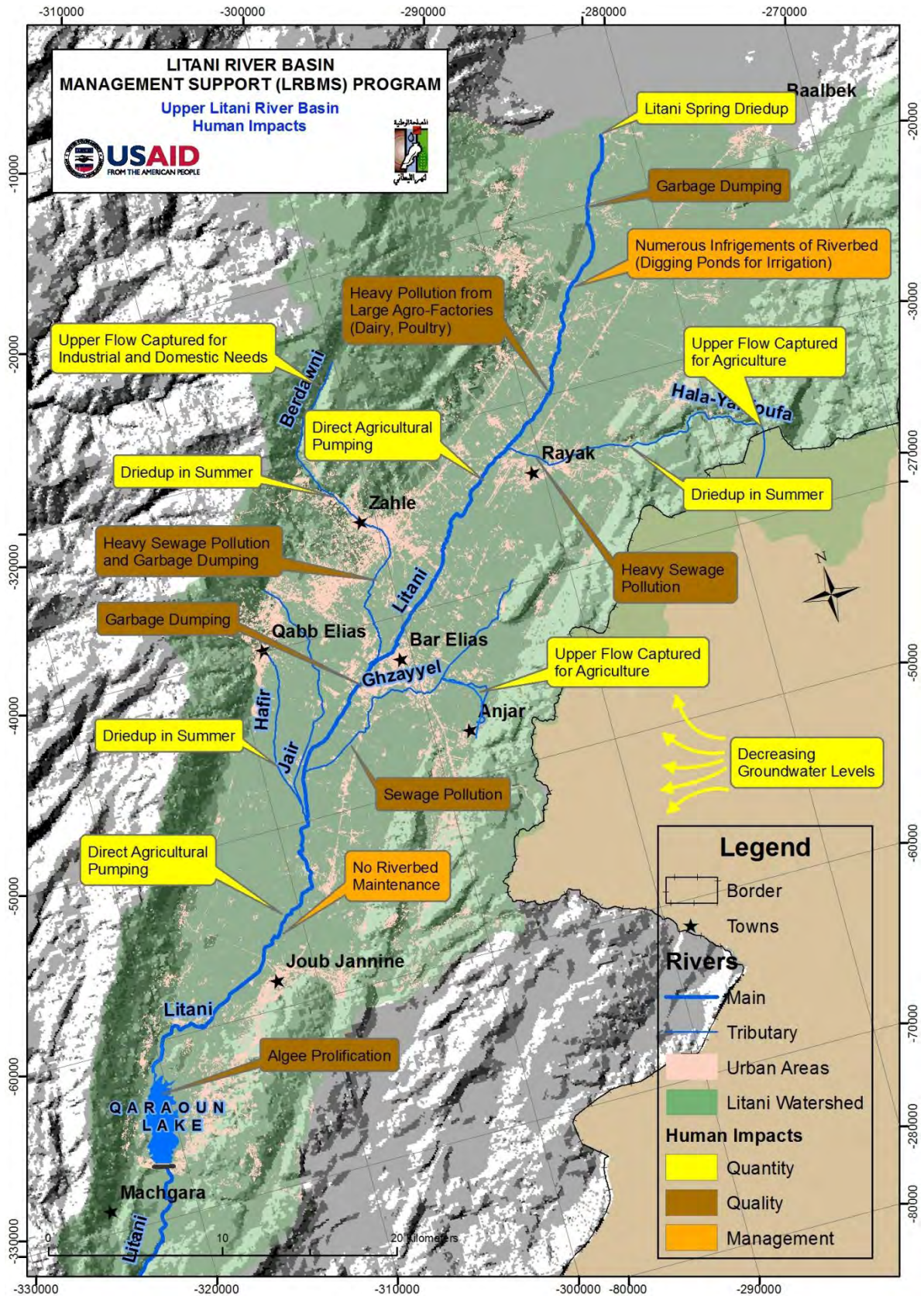
- Direct release of raw urban wastewater;
- Extensive and haphazard garbage dumping;
- Uncontrolled discharges of untreated industrial sewage; and
- Lack of riverbed maintenance, infringements and unauthorized diversions.

These activities are often illegal but the lack of enforcement and alternatives leads water users to behave so. The river is now a threat to public health as water pollution propagates to soils, crops, and animals, **as well as an obstacle to the socio-economic development and well-being of riparian communities.**

A water balance of the upper Litani River Basin shows that **human pressure on water resources has increased drastically since the 1970s**, as confirmed by:

- **Significant decrease in river flows**, due to increased surface water withdrawals, through tapping of springs and direct pumping from the river, chiefly for irrigation purposes; and
- **Substantial groundwater depletion**, due to extensive pumping both for domestic and irrigation needs.

These are evident indicators of unsustainable water allocation practices in the Litani River Basin. **As population and water demands keep increasing, the question of fairly allocating decreasing water volumes is an increasingly difficult decision which calls for transparent discussions and planning, especially since the Litani waters are asked to supply other regions of Lebanon including Beirut and the South.**



WATER MANAGEMENT ISSUE

Beyond quality and quantity issues, the management of water resources in the Litani River Basin suffers from:

- **A technical and political focus on engineering projects/constructions** as tangible/visible outcomes, while management reforms are avoided, even if much cheaper and often more efficient;
- **A lack of leadership and political will** to address critical issues and take difficult decisions (e.g. water tariffs), especially if these would be unpopular and/or challenge special interests (e.g. private water suppliers);
- **An overall lack of staff and capacity in governmental agencies**, both at technical and managerial levels, compounded by **insufficient coordination and low accountability**, with multiple agencies implementing separately water projects and activities but none liable for shortcomings and deficiencies; and
- **The usual top-down management** which centralizes decision power and stifles initiative.

SOLUTIONS AND OPPORTUNITIES

Solutions do exist to reverse negative trends and establish sustainable water management practices so that all water users can equitably access and benefit from water resources:

- **Infrastructure development** (construction of networks and plants) is much needed, but is **far from enough**; because operation and maintenance is often deficient, while infrastructure cannot address issues such as diffuse agricultural pollution;
- **Monitoring and enforcement are also necessary** to control withdrawals and releases, and prevent harmful uses such as industrial discharges and groundwater over-extraction;
- **Improving water governance is critical in Lebanon** since incomplete laws, unclear institutional roles, staff and capacity shortages, and poor coordination combine to prevent effective water management; and
- Finally and essentially, the mitigation and eventual resolution of current and future water challenges require **awareness and stewardship**, i.e. changes in the behaviors of water users once they understand the consequences of their actions and feel responsible. **Water users are the issue since they pollute and waste water. How can one hope to solve the water issue without involving them?**

Only a combination of these four approaches can successfully address water issues in the Litani River Basin, mitigate their impacts and reverse their causes to ensure sustainable and equitable use of water resources. **This type of combined effort is called Integrated River Basin Management (IRBM).**

The **throughout adoption of participatory processes is essential**, in order to:

- Involve residents and water users, through their representatives, as key actors solving water issues by adapting their practices (in terms of water use efficiency and pollution control);
- Ensure better funding and cost recovery as water users would more easily accept paying higher water and wastewater fees if they understand their responsibilities and how funds are spent;
- Bring together central agencies, local authorities, and representatives from residents and water users, and teach them to coordinate and work collaboratively;
- Clarify roles and responsibilities and reduce overlaps and gaps;
- Ensure buy-in and commitment to the decisions; and
- Build capacity of all parties, improve performance and accountability.

ACTION PLAN

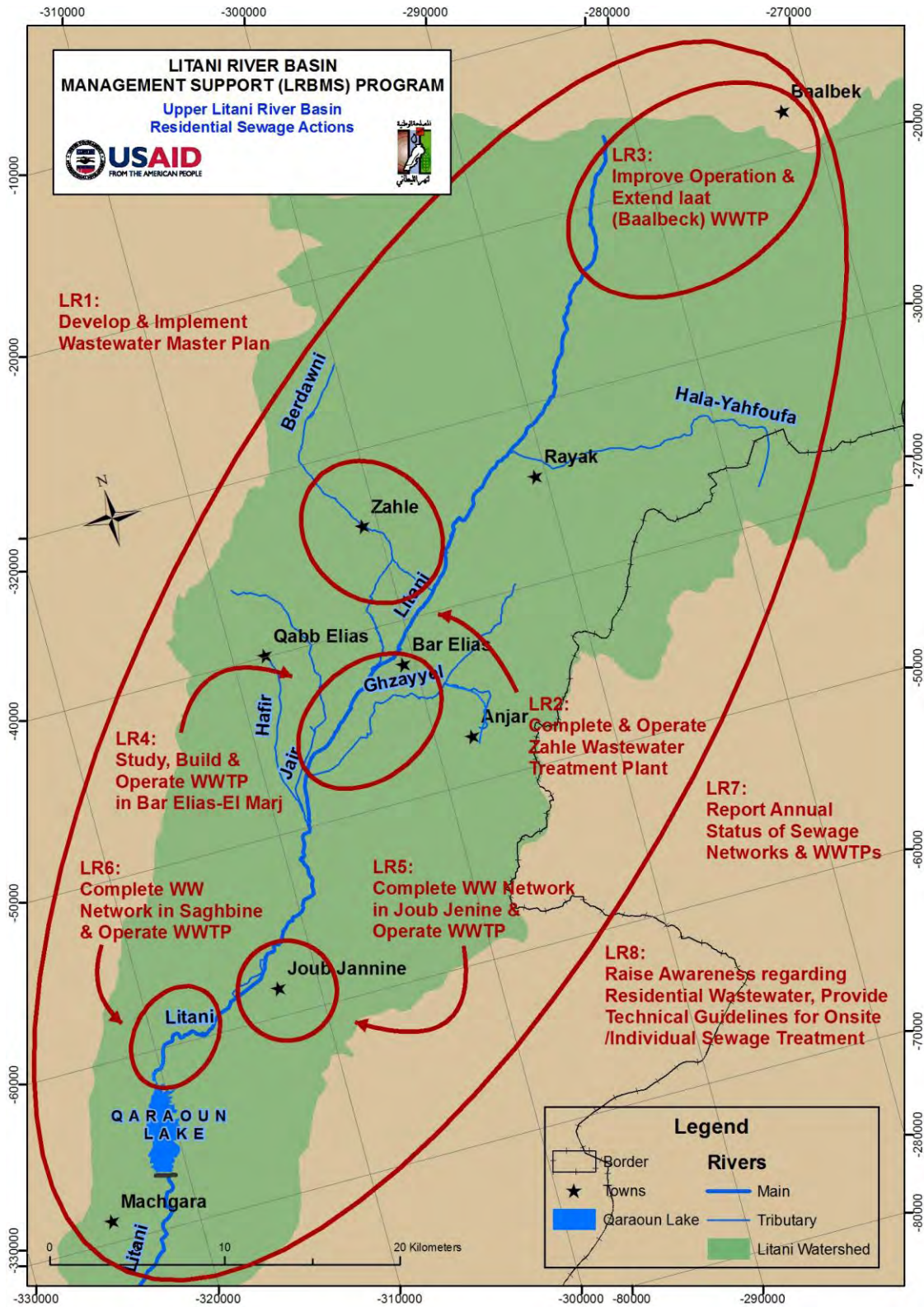
This Action Plan is definitely not an exhaustive list of all the activities that need to be carried out to tackle water challenges in the Litani River Basin. It is instead a first phase, a **significant but incremental step** in the resolution of water issues, which would be followed by other similar plans. This **realistic and focused five-year River Basin Management Plan**:

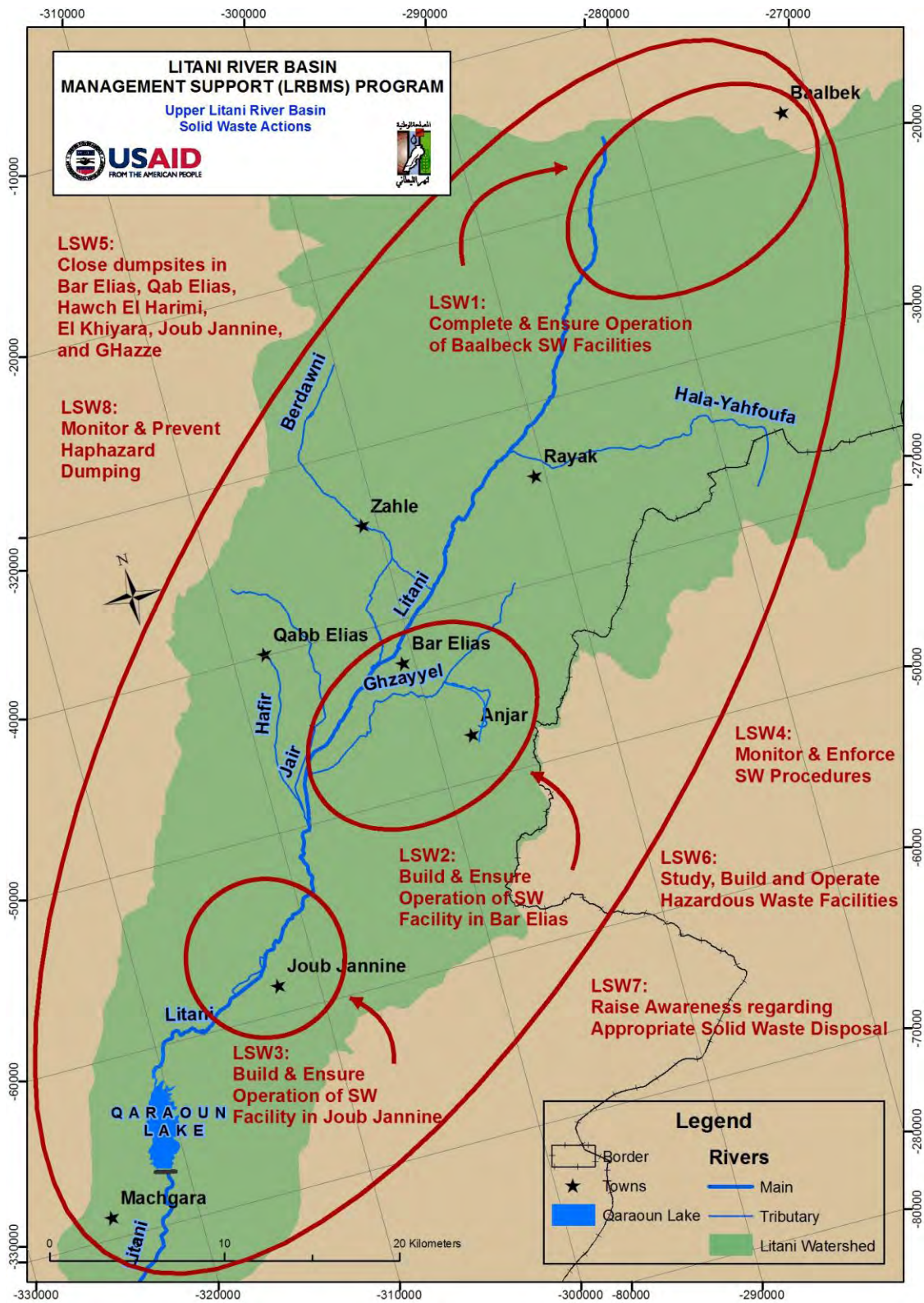
- Presents a **deliberate choice of priority activities meant to achieve progress**, with clear implementation roles, allocated staff and resources, quantified targets and timetables, and monitoring mechanisms;
- **Requires all parties**, starting with governmental agencies, **to commit to actions** they will implement and **be accountable** by regularly reporting progress; and
- Is **developed and will be implemented along with representatives of water users and residents**, i.e. Municipalities, business/industrial associations, farmer groups and other non-governmental entities, so that these **become actors** and no longer be passive beneficiaries.

Beyond building and operating infrastructure, managing water resources is about adequate water use practices and coordination/participation mechanisms to solve water issues and conflicts pro-actively, and in an equitable and sustainable manner.

The table next page summarizes the list of 36 actions (some of them already ongoing) that are suggested. The activities are cross-referenced under technical topics (quality, quantity, governance) as well as action themes (infrastructure, monitoring and enforcement, awareness/participation)

		Infrastructure	Monitoring/ Enforcement	Aw
Governance		G2 – Develop, Implement, and Monitor RBMP-Action Plan	G3 - Empower LRA with Enforcement Role	G1 - Establish G4 - Raise A G5 - Implem G6 – Establi
Quality	URban sewage	LR1 - Develop & Implement Wastewater Master Plan LR2 - Complete & Operate Zahle Wastewater Treatment Plant LR3 - Improve Operation & Extend Iaat (Baalbeck) WWTP LR4 - Study, Build & Operate WWTP in Bar Elias-El Marj LR5 - Complete WW Network in Joub Jenine & Operate WWTP LR6 - Complete WW Network in Saghbine & Operate WWTP	LR7 - Report Annual Status of Sewage Networks & WWTPs	LR8 - Raise A Wastewater Onsite/Ind
	Industrial sewage	LI2 - Incentivize Industries to Apply Pre-treatment LI3 - Study, Build & Operate a Pre-treatment Facility for the Zahle Industrial Area	LI1 - Enforce water release standards	
	Solid Waste	LSW1 - Complete & Ensure Operation of Baalbeck SW Facilities LSW2 - Build & Ensure Operation of SW Facility in Bar Elias LSW3 - Build & Ensure Operation of SW Facility in Joub Jenine LSW5 - Close dumpsites in Bar Elias, Qab Elias, Hawch El Harimi, El Khiyara, Joub Jannine, and Ghazze LSW6 - Study, Build & Operate Hazardous Waste Facility	LSW4 – Monitor & Enforce SW Procedures LSW8 - Monitor & Prevent Haphazard Dumping	LSW7 - Raise Solid Waste
	Agriculture			LA1 - Condu Prevention
QuanTity				
T1 - Reassess National Allocation of Water Resources from the Litani River Basin		T5 - Develop & Implement Water Supply Master Plan T7 - Study Extension of Canal 900	T3 - Inventory & Revalidate Water Rights T4 - Enforce Water Rights T6 - Develop & Implement Conservation for Water Supply	T2 - Allocate Basin T8 - Conduct Farmers T9 - Conduct Residents T10 - Conduc Industries/1





ACTIVITIES AND JUSTIFICATION

The identification of activities has been based on the “Business plan for Combating Pollution of Lake Qaraoun” prepared by the Ministry of Environment. The selection of activities, notably for the management of residential wastewater and solid waste, has focused on the three main urban areas (Baalbeck, Bar Elias-Al Marj, Zahle) because they generate the largest negative impacts.

This list of activities is compatible with the Roadmap request that was prepared by the Ministry of Environment and sent recently to the Council of Ministers. It is a prioritized extract of this Roadmap (whose total cost is over \$200M) so as to be **realistically achievable within five years**.

NEXT STEPS & IMPLEMENTATION

There are **six preliminary or essential governance actions for implementing a planned, participative, coherent and effective approach to solve water issues in the Litani River Basin:**

- **Establishment of a River Basin Committee** (action G1) to bring together central agencies, local authorities, and representatives from residents and water users;
- Implementation and monitoring of this **River Basin Management Plan** (action G2);
- **Establishment and empowerment of a River Basin Agency** (action G3) to lead and coordinate water management, notably monitoring and enforcement; and
- **Awareness raising** (actions G4 and G6) as well as definition and implementation of **priority and short-term participatory activities** (action G5) to involve Municipalities and local actors, demonstrate quick results, and ensure credibility.

The goal of this Action Plan is also to have a **realistic chance of actions being actually implemented** and successful by having all relevant governmental agencies and LRB Municipalities endorse the Plan and **commit to the actions**, with a lead agency responsible for each action: the Litani River Authority will be the lead on several activities, while others will be led by the Bekaa Water Establishment and the Municipalities themselves. All implementers will have to periodically report their progress through quarterly reports and meetings with the Litani River Basin Committee.

At the end of the five-year period, significant progress will have been achieved, even if not all actions are successfully implemented. Lessons will have been learned, and involved parties, starting with water users and their representatives, will have improved their practices, both individually and collectively to protect and preserve water resources.

Now is the time to start. Rewards are significant while the cost of inaction is already high.

FUNDING

Funding for the implementation of the 36 actions is needed **both in terms of capital/initial investments and recurring O&M/annual costs.**

Initial capital investments are mostly needed for the construction of key infrastructure and for starting other actions with initial studies and/or training/capacity-building programs. These funds could come from the central government. International donors should also be invited to support the implementation of the Litani River Action Plan as a pilot, focused, and decentralized development program.

Considering already or probably secured funding (notably actions LR2 to LR6 construction of large wastewater treatment plants and extensive sewage networks), **the total cost of the Action Plan is around \$15M**, in order to **achieve significant and sustainable progress towards better water resources management:**

		Infrastructure	Monitoring/ Enforcement	Awareness/ Participation	Total needs
Governance		-		~ 1-2 M	~ 1-2 M
Quality	URban sewage	\$ 50M secured \$ 50M being secured		-	
	Industrial sewage	\$ 5-10M being secured		-	
	Solid Waste	\$ 4M secured \$10M needed		~ \$ 10 M	
	Agriculture	-		-	
QuanTity		-	~ \$ 1M	~ \$ 3 M	
Total needs		~ \$ 10M	\$ 2-3 M	\$ 2-3 M	~ \$ 15 M

Recurring and operating costs are not included here, as these will have to be generated from residents/water users themselves, through Municipal taxes, water and wastewater fees, based on the principles of “user-payer” and “polluter-payer”.