Rapid Stakeholder Assessment of the Damour Area

Integrated Management Plan for the Damour River Basin - GEF MedProgramme, Child Project 2.1.

2.1
Mediterranean
Coastal Zones Climate
Resilience Water Security
and Habitat Protection"

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Glossary of Terms & Acronyms

ADB – Asian Development Bank

ARD – Arab Resources Development

AW – Acid Whey

BMLWE – Beirut and Mount Lebanon Water Establishment

CAMP – Coastal Area Management Programme

CDR – Council for Development and Reconstruction

CEPF – Critical Ecosystem Partnership Fund

CNRS / CNRS-L – National Council for Scientific Research – Lebanon

CP – Component (e.g., CP2.1, CP2.2)

CSO – Civil Society Organization

CZ – Coastal Zone

DGUP – Directorate General of Urban Planning

DRB – Damour River Basin

DPSIR – Drivers, Pressures, State, Impact, Response

EEZ – Exclusive Economic Zone

EIA – Environmental Impact Assessment

EU – European Union

FAO – Food and Agriculture Organization

GIZ – Deutsche Gesellschaft für Internationale Zusammenarbeit

GWP – Global Water Partnership

IBA – Important Bird Area

ICZM – Integrated Coastal Zone Management

INECO – Institutional and Economic Instruments for Sustainable Water Management

IRBM – Integrated River Basin Management

IUCN – International Union for Conservation of Nature

IWRM – Integrated Water Resources Management

JICA – Japan International Cooperation Agency

KBA – Key Biodiversity Area

LARI – Lebanese Agricultural Research Institute

LIBNOR – Lebanese Standards Institution

LMT – Lebanon Mountain Trail

LRA – Litani River Authority

Mirr – Traditional informal spring water rights in Lebanese villages

MoA – Ministry of Agriculture

MoE – Ministry of Environment

MoEW – Ministry of Energy and Water

MoI – Ministry of Industry

MoPH – Ministry of Public Health

MoPWT – Ministry of Public Works and Transport

NGO – Non-Governmental Organization

NWSS – National Water Sector Strategy

OECD – Organisation for Economic Co-operation and Development

PAP/RAC – Priority Actions Programme / Regional Activity Centre

PB – Plan Bleu / Regional Activity Centre

RACER – Relevant, Accepted, Credible, Easy, Robust (EU indicator criteria)

RBO – River Basin Organization

RSA – Rapid Stakeholder Analysis / Assessment

SDG – Sustainable Development Goal

SBR- Shouf Biosphere Reserve

SIWI – Stockholm International Water Institute

SLWE – South Lebanon Water Establishment

SOER – State of the Environment Report

SWM – Solid Waste Management

UNDP – United Nations Development Program

UNEP – United Nations Environment Program

UNESCO-IHP – United Nations Educational, Scientific and Cultural Organization – International Hydrological Program

USAID – United States Agency for International Development

WEAP – Water Evaluation and Planning System

WEFE – Water-Energy-Food-Ecosystems Nexus

WWTP – Wastewater Treatment Plant

Executive Summary

This Rapid Stakeholder Analysis (RSA) provides a comprehensive assessment of the key actors involved in water resource governance in the Damour River Basin (DRB), Lebanon. Conducted within the framework of the Integrated River Basin Management (IRBM) approach, the RSA draws upon previous stakeholder analyses under CP2.1 and CP2.2 (2021–2023), national baseline documents, and institutional consultations. It aims to inform the design of a participatory and adaptive IRBM roadmap by identifying the interests, influence, roles, and engagement potential of stakeholders across government, private sector, civil society, and international organizations.

The Damour River Basin is characterized by a fragmented yet highly relevant stakeholder landscape, where formal mandates and operational influence are often misaligned. While ministries and public institutions retain regulatory authority, decentralized actors—including municipalities, unions of municipalities, private water users, and civil society groups—play increasingly important roles in on-the-ground water and environmental management. The RSA categorizes these actors across two analytical matrices:

- A Typology Matrix, which evaluates stakeholder categories, legitimacy, and current roles.
- An Engagement Matrix, which assesses current influence, potential engagement, and strategic relevance.

Key findings underscore persistent gaps in coordination, uneven power dynamics, and the underutilization of strategic actors such as academia, green entrepreneurs, and local NGOs. Despite the presence of a legal framework for IRBM through the Water Code (Law 192/2020) and growing momentum for Integrated Coastal Zone Management (ICZM), many implementation mechanisms remain absent or ineffective.

To address these challenges, the RSA proposes several priority actions. These include the establishment of a River Basin Organization (RBO), supported by third-party facilitation and an engagement strategy tailored by stakeholder category. The report also recommends piloting enforcement and monitoring tools that improve accountability and build trust. In addition to these recommendations, the report encourages alignment between IRBM and ICZM policy frameworks, integration of research and academic actors in monitoring and planning, and the use of financial and policy incentives to support sustainable land and water use. A focus on decentralized participation and ecosystem services is emphasized throughout.

Annexes consolidate the stakeholder typology and agency matrices for reference during implementation phases. Taken together, the RSA seeks to serve as a useful milestone towards establishing a cohesive, transparent, and inclusive IRBM process for the Damour River Basin and the collaboration of its stakeholders in managing its shared valuable resources.

1. Introduction

The Damour River Basin, a vital water resource flowing into Lebanon's Mediterranean coast, is the focus of a pilot Integrated River Basin Management (IRBM) effort under the broader framework of Integrated Coastal Zone Management (ICZM). This report presents a rapid stakeholder analysis for the Damour Basin, identifying and evaluating the actors whose involvement is critical for effective IRBM. In line with Lebanon's water and environmental policies – including the National Water Sector Strategy and emerging ICZM guidelines – the analysis aims to inform a collaborative approach to managing the basin's resources. The following sections outline the methodology used to identify stakeholders, categorize them by their roles and influence, and assess their current engagement and potential to contribute to the IRBM process.

1.1. CONTEXT: THE DAMOUR RIVER BASIN

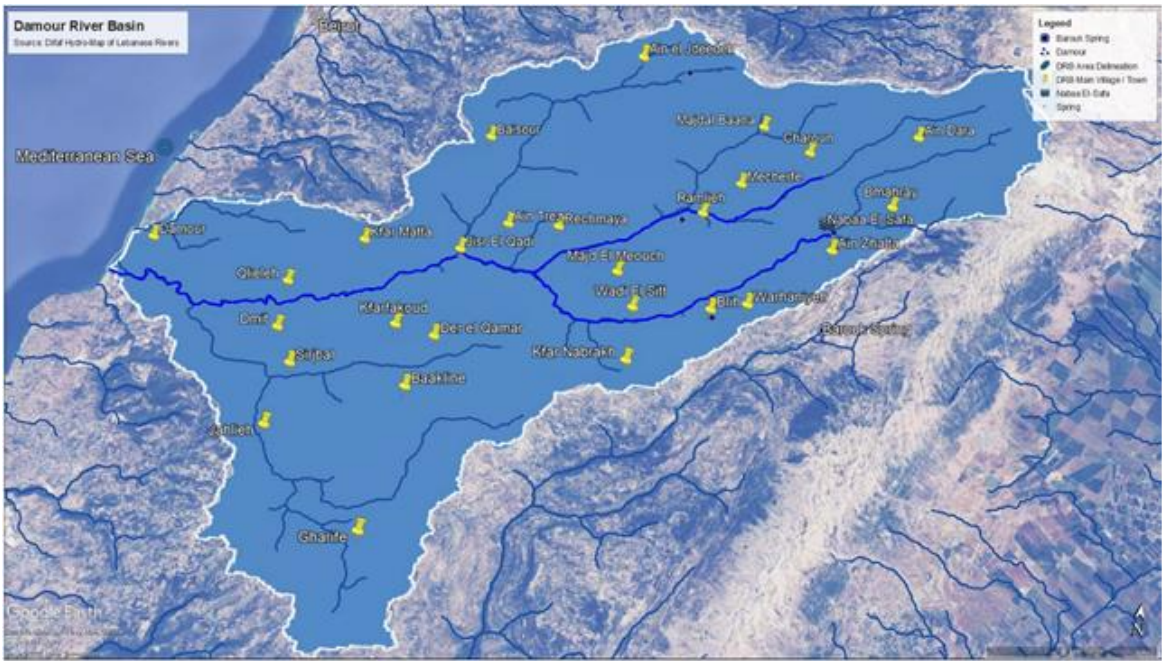
According to a hydrographic and topographic analysis of previous works carried out by Difaf, the Damour River Basin spans a little more than 330 km², capturing runoff from the Shouf and Barouk Mountains, part of Lebanon's Western Mountain range.

Figure 1. Delineation of the DRB River Basin and its Watersheds

Source: Difaf Hydro-map

The basin includes the famous towns and villages of Damour, Baakleen, Rechmaya, Ain Dara, Kfarmatta, Deir el-Qamar, and others, extending down to the coastal area to a narrow estuary approximately 5 km wide, before discharging/outflowing into the Mediterranean Sea (Naderet et al., 2023). The primary recharge area, comprising steep upland slopes and highlands, receives approximately 850 to 1,000 mm of precipitation each year, enabling substantial infiltration into the karst network (INECO Consortium, 2009).

Figure 2. Delineation of the DRB River Basin Area and Location of Main Villages

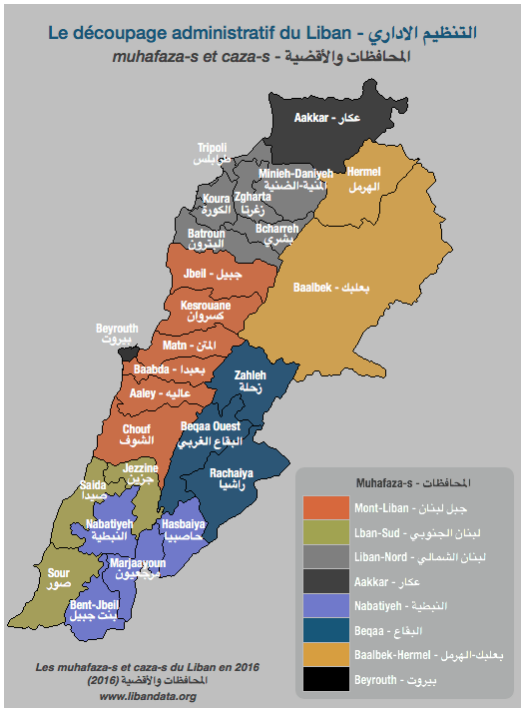


Source: Difaf Hydro-map

Socio-Demographic Profile

The DRB spans diverse ecological and administrative zones, ranging from coastal peri-urban areas to mountain villages. This heterogeneity is reflected in its population distribution, livelihoods, and social affiliations. (UNDP, 2020; Farajalla, 2018).

Figure 3. Governorates and Districts of Lebanon



Source: libandata.org

Population Distribution and Urbanization

The DRB encompasses more than 30 municipalities, covering major portions of the Shouf and Aley districts, as well as a small part of Baabda districts, or cazas. The total population within the DRB is estimated to exceed 200,000 inhabitants, with the highest population densities in coastal towns such as Damour and Jiyeh, and lower, more dispersed populations in upland areas like Baakkleen and Maasser El Shouf. (CAS, 2019; GIZ, 2022).

The Damour River Basin extends primarily across the Shouf and Aley cazas, which together exhibit diverse socio-economic and demographic profiles. Based on national census estimations and localized surveys, the total population within these two cazas is estimated at approximately 350,000–400,000 residents, with a mixture of urbanized centers (such as Aley and Deir el-Qamar), peri-urban areas, and mountainous villages (EGREJOB, 2015; Farajalla, 2022).

The workforce composition is heavily influenced by the rural-urban gradient of the basin. In Shouf, agriculture, particularly fruit tree cultivation and seasonal farming, remains present in upland areas (e.g., Barouk, Baaqline), although its contribution to household income is now secondary to public employment and informal trade (EGREJOB, 2015). In contrast, Aley's economy is more service-oriented, with strong representation in education, healthcare, real estate, and construction (Fanack, 2023).

Unemployment rates and underemployment are significant, particularly among youth (15–29), and are compounded by out-migration, which affects both cazas but is more pronounced in Shouf. Youth expressed interest in green and eco-tourism sectors, yet face a mismatch between available jobs and skillsets (EGREJOB, 2015). Informality dominates the labor market, and female labor force participation rates remain low, restricted by both cultural norms and limited access to formal employment opportunities (EGREJOB, 2015; UNDP, 2020). Women are disproportionately represented in low-wage, informal, and seasonal jobs, often balancing economic activities with family responsibilities and unpaid care work, which further constrains their economic participation.

Seasonal fluctuations in population occur due to summer tourism and internal migration, particularly from Beirut and Mount Lebanon suburbs (Fanack, 2024). Recent years have also seen a rise in seasonal migration, internal displacement, and Syrian refugee presence, particularly in lower elevation settlements and peri-urban zones (SOER, 2020). The middle catchment zones are increasingly peri-urban, facing pressures from urban sprawl, unregulated construction, and infrastructure deficits. Informal housing and seasonal residences contribute to fragmented land use and rising demand on water resources (Khadra, 2017).

Livelihoods & Economic Activities

The primary livelihoods across the basin include:

- Agriculture: Dominant in upland villages (e.g., fruit orchards, livestock, seasonal crops)
- Tourism and hospitality: Key in Deir El Qamar, Barouk, and coastal zones during summer
- Construction and trade: Prominent in mid-basin urbanizing zones
- Public sector employment and education: Concentrated in district centers

Many youth and working-age adults also commute to Beirut or rely on diaspora remittances. Informal economic activities such as small-scale quarrying and artisanal production persist but are largely undocumented (UNDP, 2020; CAMP, 2004). Youth (under 35) form the majority in many communities, but high emigration rates and urban pull factors have led to aging populations in upland areas (World Bank, 2022).

Religious & Political Affiliations

The DRB crosses multiple sectarian and political zones. The upper and middle catchments are predominantly Druze and Christian, while the coastal areas include Muslim and Christian communities. Political affiliations mirror this diversity, with strong representation from major Lebanese parties[1]. Inter-party dynamics influence municipal governance and often shape responses to water management interventions (Farajalla, 2018), and, as typical of rural areas, inter-familial dynamics as well as historical relations between villages can be as influential.

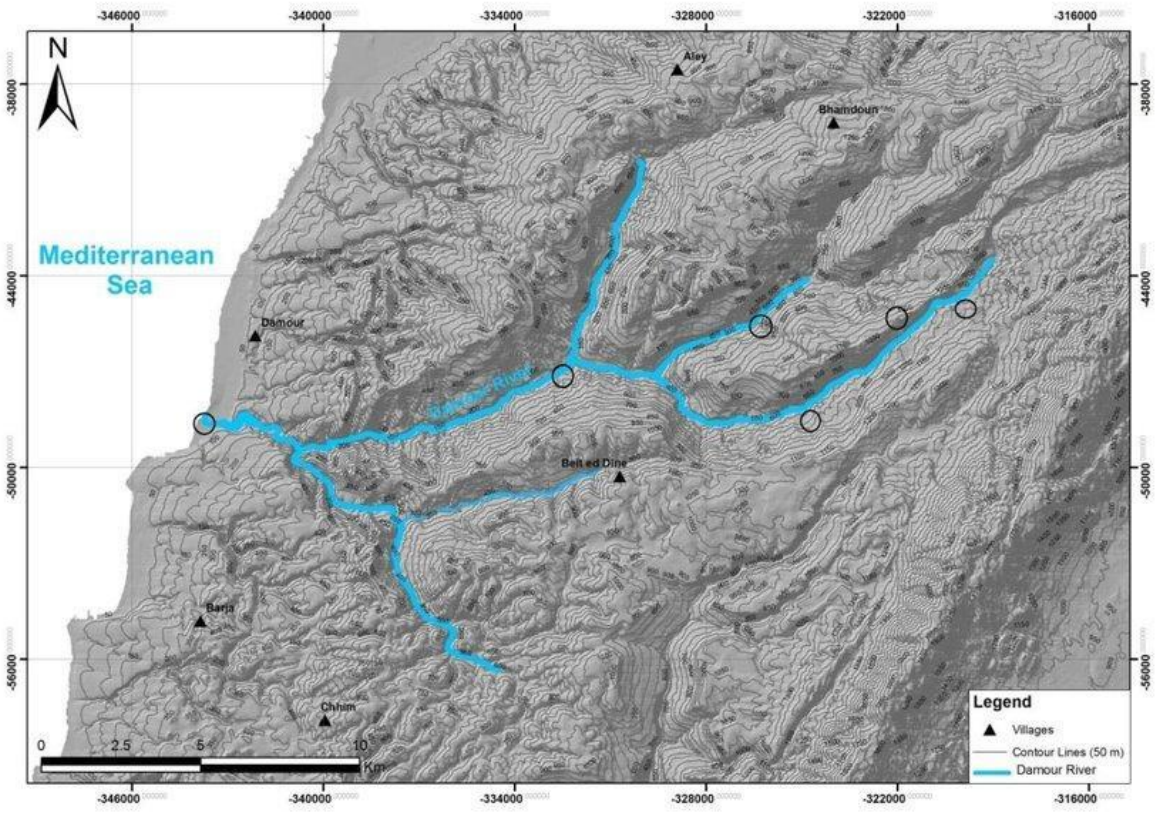
Damour River Hydro-Profile

The Damour River spans approximately 35 kilometers from the Barouk Mountains to the Mediterranean Sea, encompassing a variety of land uses, topographies, and ecological zones. It is considered one of Lebanon's key river

[1] Progressive Socialist Party (PSP), Free Patriotic Movement (FPM), Lebanese Forces (LF), and Future Movement (FM).

basins due to its relative perennial flow, biodiversity, and proximity to urban centers. Major springs (e.g., Nabaa Al Safa) emerge from Jurassic limestones in the uplands, feeding the river's baseflow (Saad et al., 2003) as can be shown in the hydro-maps in this report. Faulted geology creates hydraulic connections between the mountain aquifers and the coastal groundwater in the lower basin (Saad et al., 2003). A hallmark of the Mediterranean climate and the region's karst geology, peak flows typically occur from late winter through early spring (February to May). This period follows intense rainfall events, which contribute to snow accumulation, and is then followed by snowmelt. Together, these processes drive significant spring discharge into the Damour tributaries.

Figure 4. Topographic Map of the DRB Sub-Watersheds



Source: ResearchGate

In hydrological terms, long-term assessments estimate the Damour's natural mean annual runoff on the order of 100–220 million m³ (corresponding to roughly 3 to 7 m³/s of low and peak average discharge), though this cumulative has declined in recent decades due to extraction and increasing drought (INECO, 2009). Despite various historical estimates placing the Damour River's annual discharge done by the LRA, more recent assessments show large discrepancies. This can be attributed to the aggregation of spring discharge and runoff potential rather than real-time river mouth measurements, which fluctuate significantly seasonally and are often unmonitored due to outdated or absent gauging stations. Another key complicating factor is the inter-basin transfer from the Barouk Spring, which hydrologically belongs to the Awali River Basin but is partially diverted into the Reshmaya Hydropower Plant. This energy system utilizes flows that would not naturally feed into the Damour River mouth, leading to overestimations when flow totals are calculated without distinguishing between natural and diverted sources. Moreover, operational inconsistencies and seasonal reductions in Reshmaya's activity limit its actual contribution to downstream flows[2].

During the dry summer months, the low summer flows are sustained only by spring discharge rather than immediate surface runoff. However, the marked decline in river flow, with average discharge rates dropping to less than 0.5 m³/s,

[2] See Info-Box 1, from: Khadra, 2017; UNESCO-IHP, 2021; Cudennec et al., 2024; Fayad et al., 2017; Saadeh et al., 2023.

is not only a result of these extreme seasonal variations but also due to substantial groundwater abstraction and the potential effects of climate change.

Info Box 1. Spring Flow Contributions to Reshmaya Hydropower

The Reshmaya hydropower station in the upper Damour River Basin is primarily supplied by a combination of natural springs and engineered diversions:

Nabeh Safa Spring: A major perennial spring situated near Ain Zhalta, constitutes a significant natural source of the Damour River's upper flow

Nabeh el Barouk Spring: Although hydrologically part of the Awali River Basin, Barouk's water is partially diverted via inter-basin transfer tunnels into the Damour catchment to supply the Reshmaya turbines

Minor springs from snowmelt-runoff contributions arise from smaller springs (e.g. Ain el-Bayda) and seasonal snowmelt. Typical of such spring systems of similar rivers, these inputs vary interannually and seasonally but are non-negligible during spring months

At the Jisr el Qadi gauging station, which captures cumulative inflow upstream of Reshmaya, the mean annual flow between 2015–2020 was estimated at ~3.59 m^3/s, equivalent to approximately 113 million m^3/year.

Concurrently, precipitation records showed below-average rainfall in some years, and climate change projections for the region (hotter, drier summers and more erratic rain) suggest further stress on Damour's flows. The combination of possible effects of climate variability and upstream water withdrawals could permanently reduce the river's reliability. Indeed, local observations report that some tributary streams that once flowed year-round are now intermittent, and the overall trend is less surface water reaching the Mediterranean, which is alarming for downstream ecosystems and coastal users (SOER, 2023).

Water Management / Institutional Frameworks[3]

The only Water Establishment in Lebanon whose role is directly defined by its river basin management mandate is the Litani River Authority (LRA), overseeing the flow data of the Litani and all major rivers of Lebanon. On the Damour, flow stations were installed at Jisr el-Qadi (mid-basin) and near the river mouth, providing data between the 1960s–70s and again in the 1990s (INECO, 2009). However, many gauges fell into disrepair during and after the civil war, leaving significant data gaps and sporadic data gathering in the last decades. As a result, continuous long-term flow data are limited or often inconsistent. Establishing new continuous monitoring (capturing both peak floods and low flows) is a recognized need to fill these gaps in order to inform water management decisions.

The legal framework (Law 221/2000 and amendments) assigns management to regional Water Establishments, but enforcement on-the-ground is extremely limited. The result is a "free-for-all" exploitation of Damour's water resources (Khadra, 2017). Additionally, while the Ministry of Energy and Water must technically permit wells and monitor extractions, in practice many wells are unlicensed. Those with greater connections or privileges are able to install larger pumps and dig deeper wells, which can potentially dry up the sources of water for their less fortunate neighbors or limit their access.

Lebanon's new Water Law, originally enacted as Law No. 77/2018 and later amended by Law No. 192/2020, provides the legal foundation for integrated water resource management at the basin level. The revised law allows for the creation of River Basin Agencies, better defines the responsibilities of Water Establishments, and highlights stakeholder participation for coordination between centralized (ministry, water establishments) and decentralized levels (municipalities, industries, etc.). The law also formally recognizes environmental flows, groundwater protection zones, and the polluter-pays principle—provisions that, if enforced, could address many of the basin's current governance gaps and promote less centralized, more transparent, and more equitable water management mechanisms. This

[3] For a comprehensive overview of the various legal frameworks not discussed here, please refer to the detailed analysis provided in the following reference: INECO Consortium (2009). *Institutional Framework and Water Management in the Damour River Basin.*

stakeholder analysis is a step in that direction, reflecting the perspective of management agencies operating at the river basin scale.

Wastewater Management

Two central wastewater treatment plants (WWTPs) serve the basin:

- A coastal WWTP near Damour town
- An inland WWTP near Safa spring (non-functional)

Other planned treatment plants are to be located near Sharoun and Baisour, but little information is currently available about the status of these or the above implemented ones.

However, wastewater infrastructure remains limited and operates at very low efficiency, if at all, mainly due to inconsistent or inadequate operational capacity and funding, lack of monitoring and effective central oversight, and insufficient maintenance, among other reasons. These issues have been exacerbated over the past decade by a series of cascading national crises. Coverage is estimated at <30% of the basin population. Many areas still rely on septic tanks, while others discharge untreated wastewater directly into tributaries or the main river, such as near Maasriyteh.

Water Quality

Notwithstanding the widespread surface water pollution, groundwater quality in the upper basin is relatively fresh but degrades sharply near the coastal zone, where it shows elevated sodium/chloride content and higher conductivity (salts) due to mixing with seawater and contaminants. Intensive well drilling (both public and private) has led to over-exploitation of the aquifer, evidenced by declining water tables and increasing salinity (ARD, 2003). In the Damour coastal plain, dozens of wells (many unlicensed) pump for agriculture and urban supply, extracting more water than natural recharge can sustain. This overuse has caused seawater intrusion into the coastal aquifer: chloride levels in many coastal wells have roughly tripled since the 1980s, and total dissolved solids have roughly doubled, with some wells (e.g., in Saadiyat) now far exceeding safe limits (Khadra, 2017).

Mismanagement of solid waste (such as leachate from unregulated dumpsites) and agricultural runoff (containing pesticides and fertilizers) further degrade water quality and harm the health of the river. Additionally, the aforementioned issues with wastewater mismanagement clearly pose various, often undocumented, risks to public health.

Water Use, Rights, Over-Abstraction

The river's water (both surface and ground) is a vital resource for multiple purposes: local agriculture and agro-industry, domestic and industrial water supply (including coastal towns), tourism in Damour, and even bulk supply for Beirut's southern suburbs (with pipelines carrying Damour water). In theory, all water in Lebanon is publicly owned, but in practice, water rights are weakly enforced. Water use in the Damour Basin is characterized by competition and lack of formal regulation, leading to frequent conflicts between users. Traditional water rights (locally "mirr", informal spring allocations) still exist in some villages, but with population growth, these customary agreements have become strained. Within the basin, neighboring villages have quarreled when one diverts a spring that used to flow to another; during the dry season, coastal farmers rely on groundwater while residents turn to wells when the intermittent network fails. Upstream vs downstream tensions are acute: upstream users (or external utilities) extracting water reduce what is available downstream, leading to grievances (Khadra, 2017).

Another more regional and significant point of contention is inter-regional allocation. The Damour aquifer has been tapped to feed Greater Beirut: dozens of wells in the Damour/Saadiyat area are operated by the Beirut Water Establishment to supply the capital's southern suburbs (Arab Resources Development, 2003). For example, some 16 public wells (managed by the water utility) exist in Damour municipality alone, alongside at least 64 private wells (INECO Consortium, 2009). This export of groundwater to Beirut directly conflicts with local communities' needs, and downstream farmers have openly contested it, accusing Beirut's operations of over-drafting and demanding compensation or reduced pumping.

In summary, water use in the Damour Basin is intense and largely unregulated, undermining sustainability and equity: falling groundwater levels and periodic shortages for certain users are already evident. Conflicts involve both intra-basin sharing (upstream vs downstream) and inter-basin transfers to Beirut (INECO Consortium, 2009). Any future management plan will need to address these conflicts by clarifying water rights, improving monitoring of usage, and involving stakeholders in allocation decisions.

Ecological Importance & Conservation Status of the DRB

The Damour River Basin holds substantial ecological value at the national and Mediterranean scales. Its riparian corridor and adjoining uplands form part of Lebanon's officially recognized Key Biodiversity Areas (KBAs). It is also designated as an Important Bird Area (IBA) and an Important Plant Area (IPA) because of observed seasonal bird migrations and the presence of habitats for endemic species (BirdLife International, 2020; CNRS, 2021).

Info Box 2. Rapid Biodiversity Assessment for The Upper Damour

A implemented through the CEPF / BirdLife-International Small Grants Program, Difaf sampled water quantity/quality, mapped riparian habitats, identified terrestrial and aquatic species, and conducted eDNA and field sampling. The findings reported:

110 plant species including IUCN red-listed *Platanus orientalis* (VU) and *Arum hygrophilum* (NT), several endemic taxa

Critical aquatic fauna such as European eel *Anguilla anguilla (CR)* and Mediterranean spur-thighed tortoise *Testudo graeca (VU)*

332 macroinvertebrate taxa, several vertebrates (including 13 birds and 3 mammals).

The study confirmed the basin's status as a **Key Biodiversity Area**, and engaged municipalities, NGOs, and local communities through interviews and workshops to discuss the outline of a draft River Basin Charter; including collective goals such as biodiversity conservation, sustainable resource use, law enforcement, and pollution control.

These designations stem from the presence of high habitat diversity, endemic and threatened species, and its strategic position along migratory bird routes. Recent biodiversity surveys have recorded over 370 vascular plant species, including 14 endemics and 10 globally or regionally threatened taxa (see Info-Box 24). The Shouf Biosphere Reserve (SBR)5 is Lebanon's largest nature reserve, managing the Barouk Cedar Forest and a vast area that includes much of the upper watersheds of the Awali and part of the Damour river basins. Encompassing the cedar forests of Barouk, Maasser El Shouf, and Ain Zhalta–Bmohray, the SBR protects groundwater recharge areas, regulates land use, and conserves biodiversity. SBR contributes to sustainable water resource management, reforestation, and ecotourism, while actively engaging in community-based conservation and environmental education initiatives aligned with national and basin-level IRBM objectives.

In parallel, the Lebanon Mountain Trail (LMT)—which traverses the Damour Basin through villages such as Maaser el-Shouf, Ain Zhalta, and Deir el-Qamar—has fostered a growing network of eco-lodges, guided hiking routes, and agro-ecotourism initiatives. The trail has been recognized by the Ministry of Tourism and international donors as a driver of green job creation and low-impact tourism development (LMT Association, 2021). The presence of wellness retreats, nature-based education centers, and organic farms in the basin further signals a rising class of green entrepreneurs and civil society actors whose economic activity depends on the preservation of environmental flows, spring quality, and forest health.

However, given the lack of regulatory oversight or licensing mechanisms, the Damour River's aquatic life is effectively unmanaged, leaving key species vulnerable to long-term decline. Fishing often occurs during reproductive periods and without enforcement of seasonal or spatial restrictions. As pressures mount from other sectors (e.g., water abstraction, quarrying / mining, deforestation) the cumulative impact on aquatic systems becomes increasingly difficult to reverse. Combined with pollution, flow reduction, and habitat degradation, these practices pose a serious risk to aquatic biodiversity and ecosystem functionality (Difaf, 2022).

Anthropogenic Pressures

Despite its environmental richness, land-use pressure from agriculture, quarries, and informal construction continues to alter key habitats, particularly in the middle and lower reaches of the river. Human activities impose multiple pressures on Damour's water resources and ecosystems. Key anthropogenic pressures include:

[4] Difaf. 2022. *Technical Report for Biodiversity Rapid Assessment in Upper Damour Basin*. In: "Development of an Integrated Management Plan for Damour River Basin, Lebanon." Report for CEPF/BirdLife International, June 2021–May 2022.

[5] Designated by Lebanese Decree No. 13359 (1998) and recognized internationally by UNESCO (2005).

- **Agriculture:** a major land use in the basin, especially on the coastal plain and valley floors. Fertilizer-intensive crops (bananas, vegetables, fruit trees) dominate the irrigation water demand. Excess nitrates from fertilizers and untreated wastewater have elevated nitrogen levels in rivers and shallow aquifers, posing health and ecological risks (MoE/ELARD, 2003).
- **Industrial & commercial activities**: the basin hosts agro-processing and small factories. Although not heavily industrialized, there are scattered industrial discharges and oil stations. Poor management of wastewater and storm runoff from towns and industrial sites contributes pollutants to the river.
- **Urbanization:** the primary north-south highway (NH75) crosses the Damour valley, and road construction, urban sprawl, and tourism development encroach on riverine areas. Impervious surfaces and under-serviced neighborhoods increase runoff and pollution, degrading wetland areas along the river corridor.
- **Quarrying & mining:** the basin has extensive limestone deposits, and quarrying is widespread in the Mount Lebanon foothills. Although much quarrying is legal, old and abandoned quarries as well as ongoing blasting create dust and erosion, threatening water infiltration zones. Illegal quarrying in watershed areas can cause collapse features that channel pollutants into groundwater.
- **Fishing activities:** though the Damour River is not a site of large-scale commercial fishing, informal and small-scale fishing practices are common along its middle and lower courses, particularly near the river mouth where freshwater and marine ecosystems converge. These activities are largely unregulated and, in some cases, involve destructive or illegal techniques such as electric fishing and the use of fine-mesh nets. There is growing evidence of overexploitation of aquatic species, with local ecological stakeholders noting decreased sightings of native freshwater fish and amphibians.
- **Other unauthorized activities** with environmental and legal violations, such as encroachment on public lands as documented in recent studies[6] as well as the over-abstraction of groundwater downstream, leading to aquifer salinization at the estuary and the coastal zone. Addressing these pressures is critical to the integrated management plans for the DRB and the priority coastal aquifer system.

In summary, human pressures – from quarry pits in the mountains to intensive farming on the plains and expanding settlements – are significant. Effective land and water management (e.g., enforcing irrigation regulations, protecting recharge zones, and regulating wastewater) will be needed to mitigate these pressures.

Potential Dam Development

There have been longstanding proposals to construct a dam on the Damour River to secure water supply and provide flood control (CDR/JICA, 2003). Such a dam would profoundly alter the hydrological regime: its reservoir would fill during wet seasons and potentially trap much of the river's flow, leaving only releases for irrigation downstream. The dam would mostly impound the total flow, and the lower river could run nearly dry in summer (MoE/ELARD, 2003). A key concern is that environmental flows—which are now internationally recognized as essential for healthy riparian systems and are also emphasized in Lebanon's new water code (see Info-Box)—may be significantly reduced, endangering the maintenance of riverine habitats.

Another concern is social. Valley communities would lose land to the reservoir and might face displacement, while downstream farmers could suffer from reduced water access. There is also a perception issue: while the beneficiaries of Damour water, such as the suburbs of Beirut, are located far from the dam site, local communities fear that they will bear the costs—such as land loss and construction impacts—while the benefits mainly flow to Beirut.

Although not often highlighted, Lebanon's seismically active geology means dam safety would be a major issue. The Damour valley lies near fault lines, so a large dam would require extensive seismic assessment and safeguards (MoE/ELARD, 2003). Because of these various issues, many experts and NGOs have urged caution. They suggest that alternative strategies (such as smaller check dams, managed aquifer recharge, water conservation, or demand management) should be fully evaluated instead of proceeding directly with one big dam (INECO Consortium, 2009).

Info Box 3. Environmental Flows in Lebanon's Water Code

Lebanon's updated Water Code (Law No. 192/2020) introduces the concept of environmental flow (e-flow), which refers to the quantity and quality of water required to sustain freshwater ecosystems and the services they provide. Article 18 of the Code explicitly states that:

[6] NAHNOO. 2023. Violations at the Lebanese Coast from North to South.

"Environmental flow levels must be ensured in all surface water bodies, taking into account ecological, social, and economic needs."

Mandatory Minimum Flows: Authorities must determine and guarantee minimum flow levels to preserve riverine ecosystems, especially during low-flow periods.

Integration in Water Use Planning: Any water abstraction, diversion, or damming must respect e-flow thresholds as a *non-negotiable baseline* in permit processes.

Rule-of-thumb method for estimations: 30–50% of mean annual flow during high-flow seasons / 10–20% during dry months for minimum ecological support. If Damour's **mean annual discharge** is estimated at ~70 million m³ (based on triangulation from flow data, springs, and historical estimates):

Recommended minimum e-flow for the Damour: **7–14 million m³/year** equivalent to: **0.22–0.45 m³/s** sustained minimum ecological flow.

1.2. THE PURPOSE & OBJECTIVE OF THE RSA

As seen from the introduction, the Damour River Basin is a complex socio-ecological system that supports a range of economic activities, from agriculture to tourism, and is home to diverse communities, industries, and environmental stakeholders. However, mismanagement of water resources, industrial pollution, and inefficient agricultural practices pose significant risks to the region's environmental health and the well-being of its inhabitants. As Lebanon faces increasing environmental pressures, including water scarcity, pollution, and ecosystem degradation, the need for an IRBM approach has become urgent. IRBM seeks to balance water use for human activities with the protection of natural resources and ecosystems, ensuring long-term sustainability and conservation of both terrestrial and marine ecological systems. As the necessary primary step to initiate these processes, the main purpose of stakeholder analytical studies is to guide the development of a coordinated, multi-stakeholder approach to managing the Damour River Basin. It provides actionable insights for processes such as a River Basin Organization (RBO) and drafting a River Basin Charter, both of which are essential for implementing sustainable water management practices across the entire river basin ecosystem. It lays the groundwork for collaboration between national ministries, local authorities, private sector actors, environmental organizations, and civil society groups. The RSA is thus a necessary tool for third-party facilitation and participatory processes to overcome existing challenges in stakeholder engagement and to ensure a holistic approach to river basin management that balances ecological, economic, and social considerations.

The purpose of this RSA is to provide a clear revision and understanding of the roles, interests, and influence of various stakeholders involved in water management in the DRB referring to the stakeholder analysis taken in CP2.1 and CP2.2 performed between 2021 and 2023. Similar parameters for selection were considered and slightly improved as the basis for the development of this current rapid assessment, while highlighting the role of the identified stakeholders in preventing pollution and any negative impacts on the coastal zone and associated marine waters and coastal aquifers. The RSA triangulated various sources of information for a comprehensive inclusion of needs of diverse stakeholders, considering water use, conservation, biodiversity protection, marine and estuarine ecosystems, fisheries, and other sustainable resource management policies. The RSA was completed over a short timeframe, relying on existing data and expert input (rather than extensive field engagement) to quickly generate actionable insights.

2. Methodology

The Rapid Stakeholder Analysis followed a structured, qualitative approach. First, an initial list of stakeholders was compiled through a review of project documents, government reports, and expert input related to the Damour River Basin. Stakeholders were then categorized by their nature and level of operation – including central government agencies, decentralized local authorities, private sector entities (e.g. farmers, businesses), civil society groups, and external partners/donors.

For each identified stakeholder, the team evaluated: (1) their current level of influence over water resource management in the Damour Basin, and (2) their potential level of engagement in a formal IRBM process for the basin. "Influence" refers to the stakeholder's existing power, authority, or impact on decision-making (with a rating of High, Medium, or Low), while "Potential Engagement" reflects their likely interest and capacity to actively participate in future IRBM collaboration (also rated High, Medium, or Low). These ratings were informed by stakeholders' mandates, past and present involvement in water or environmental initiatives, and their organizational priorities.

2.1. LITERATURE REVIEW

The first step in the analysis involved collecting and reviewing a range of baseline data sources and secondary information relevant to the Damour River Basin. This process ensured that the stakeholder analysis was grounded in the most recent and relevant data on water resources, ecological conditions, and existing governance frameworks. Key documents included:

- Shared baseline documents by the Global Water Partnership – Mediterranean (GWP-Med), Plan Bleu/RAC, PAP/RAC, UNESCO-IHP and the Institute of Environment of the University of Balamand (IOE-UOB);
- Secondary sources from international organizations, including the Global Water Partnership's IWRM Framework and UNESCO-IHP's IWRM in Action reports, provided global context and best practices for stakeholder engagement;
- Reports on water resources management and river basin assessments in Lebanon, including documents on ecological flows and water quality in the Damour River;
- Legal frameworks governing water use, such as Law No. 444/2002 (Environmental Protection Law), the new Water Law 192, and Decree No. 8471/2012 on wastewater discharge standards.

The information collected during this phase informed the revision and development of the stakeholder categories and the subsequent assessment of their roles, influence, and interests. This literature review ensured the RSA was informed by up-to-date knowledge of the basin's conditions and governance setting. Insights from these sources were used to identify relevant stakeholders and understand their potential roles. The information gathered at this stage also helped identify a few possible gaps, overlaps, and consolidate criteria for analysis (interest, influence, etc.) in a way that reflects both local realities and international best practices.

2.2. THE ANALYTICAL FRAMEWORK

Following the literature review, a simple analytical framework was developed to conduct the RSA. This framework relied on recognized methodologies in water management policy change to systematically identify, categorize, and evaluate stakeholders. This framework draws on widely recognized stakeholder analysis methods in water governance (e.g., OECD's principles for inclusive water governance and GWP guidelines) and is aligned with the criteria used in CP2.1 and CP2.2 analyses. The analytical framework consisted of the following main tasks, which were carried out systematically:

1. Comparative assessment and consolidation of stakeholder lists/typologies
2. Comparative assessment and consolidation of criteria
3. Integration into a comprehensively developed matrix

Consolidation of Stakeholder List & Typologies

The methodology followed a structured, rapid assessment logic tailored to the DRB context, while aligning with established stakeholder analysis frameworks. In particular, the approach was harmonized with the methodologies used

in the parallel ICZM (CP2.1) and WEFE Nexus (CP2.2) reports for stakeholder analyses, in order to ensure consistency in criteria and depth of analysis.

Stakeholders' selection and roles were reviewed, and the criteria related to their level of dependence on water resources and their involvement in related activities, such as agriculture, energy production, and environmental management.

Potential Roles & Influence Analysis

Next, an analytical framework was developed to systematically identify, categorize, and evaluate stakeholders. This framework draws on widely recognized stakeholder analysis methods in water governance (e.g., OECD's principles for inclusive water governance, GWP guidelines) while aligning with the consolidation of criteria used in CP2.1 and CP2.2 analyses. The framework focused mainly on the following criteria for each stakeholder group:

Table 1. Assessment Criteria of SA – Definitions

Criterion	Definition	Type
Current Influence (Power)	The stakeholder's existing ability to affect outcomes through authority, networks, or resources	Structural / Present
Current Interest (Engagement)	The stakeholder's current level of involvement, concern, or stake in the issue or process	Behavioral / Present
Potential Engagement Level	The stakeholder's desired or necessary role in future planning or implementation	Strategic / Future
Primary / Secondary	Whether the stakeholder is directly impacted or plays a central role (Primary), or indirectly involved (Secondary)	Classification
Internal / External	Whether the stakeholder is part of the project team/governance (Internal) or not (External)	Classification
Legitimacy	Whether the stakeholder has a socially or legally recognized mandate to represent interests	Normative
Role in Project	Functional role: e.g., Implementer, Funder, Regulator, Knowledge Provider, Community Advocate	Descriptive
Role in Pollution control or prevention CZ Protection	Whether the stakeholder contributes to or prevents pollution or has responsibilities in CZ protection	ICZM-specific

Synthesizing Findings into Analytical Matrices

Finally, the outcomes of the stakeholder assessment were synthesized into clear stakeholder categories and tables for the report. Based on previously well-developed SA reports (CP2.1 & CP2.2), a first level of synthesis involved the comparative consolidation of previous works with few additions. A second level of evaluation addressed a temporal comparison between current and potential (desired) influence and engagement.

This framework was able to circumvent ambiguities and overlap while remaining inclusive to the multi-dimensional roles of diverse stakeholders at different scales and temporal progression, with respect to policy change and developing dynamics. It also allowed for the emergence of additional suggestions which may provide strategic insights and tools for a more efficient and collaborative process in establishing new river basin management structure and policy.

To reach a format that is easy to communicate and useful for participatory planning, the RSA is presented in two main tables to reflect a methodological progression from list identification to engagement analysis.

3. Rapid Stakeholder Analysis

3.1. STAKEHOLDER TYPOLOGIES: REVIEWS & CONSOLIDATION

Central Government Bodies: Ministries

The engagement of central government institutions remains pivotal to the development and implementation of IRBM in Lebanon. The Ministry of Energy and Water (MoEW) acts as the lead authority in water allocation, sectoral coordination, and infrastructure regulation, including hydropower and wastewater systems. For the Damour Basin in particular, MoEW is also the designated authority which is to envision river basin agencies and decentralized governance structures under the new Water Code (Law 77/2018 – Updated Law 192/2020). MoEW's oversight of major water establishments and planned infrastructure makes it a high-influence actor with long-term responsibilities across the basin.

The Ministry of Environment (MoE) enforces environmental protection laws, biodiversity standards, and pollution control regulations. MoE's role is further emphasized through its obligation to integrate the Polluter Pays Principle and its participation in international commitments under the Barcelona Convention. While its current field presence may be limited in the DRB, its regulatory authority remains significant, especially if enforcement capacity is strengthened.

The Ministry of Agriculture (MoA) has a dual role in regulating agricultural practices and promoting sustainable water use in irrigation. Given agriculture's share of water consumption in the DRB, MoA's promotion of Good Agricultural Practices (GAP) and integrated pest management are directly linked to water quality outcomes. MoA also supports agricultural cooperatives, which may serve as intermediaries for implementing efficient irrigation systems.

The Ministry of Industry (MoI) is mandated to regulate industrial activity, particularly effluent discharge and pollution control under Decree 8471/2012. While its presence in the DRB may be more limited to inspection and licensing, improving coordination with MoE and MoEW could enhance oversight of highly polluting small-scale facilities like tanneries, olive mills, or gas stations.

The Ministry of Public Works and Transport (MoPWT) has indirect relevance to IRBM through its oversight of stormwater infrastructure, roads, and coastal licensing—affecting runoff, erosion, and sedimentation in downstream areas.

Finally, other ministries (e.g., Culture, Health, Justice, Interior, and the Council for Development and Reconstruction) play less direct but supportive roles in heritage preservation, pollution monitoring, public health, and regional planning, all of which intersect with IRBM priorities when effectively coordinated.

Regional Public Water Institutions

The Beirut and Mount Lebanon Water Establishment (BMLWE) is responsible for supplying potable water and operating wastewater treatment infrastructure in the Middle and Lower Damour regions. Given the dense population and industrial activity in its service area, BMLWE is a key operational stakeholder in pollution reduction and infrastructure performance.

The South Lebanon Water Establishment (SLWE) covers the more rural Damour and parts of the Middle basin. Though facing capacity limitations, SLWE's role in servicing small communities and supporting decentralized wastewater management is crucial to future IRBM success. However, it is important to note that not the entire Damour River Basin (DRB), including all administrative units within the basin, is located within the Mount Lebanon Governorate and therefore falls under the jurisdiction of the Beirut and Mount Lebanon Water Establishment (BMLWE). In contrast, the SLWE has jurisdiction over the southern portion of the priority coastal aquifer system and the administrative areas (towns and localities) located south of the Awali River. The Awali River Basin, located south of the DRB, constitutes a major recharge source for the priority coastal aquifer system[7].

The Litani River Authority (LRA), while outside the Damour's jurisdiction, offers national experience in river basin management and hydropower operation. LRA's technical capacities in data collection, flow measurement, and watershed planning could inform Damour's IRBM process if institutional linkages are developed.

[7] Dr. Abass Fayad, peer review.

Local Authorities

Municipalities are legally mandated to manage local-level services, including water distribution, agricultural irrigation, wastewater infrastructure, and solid waste. Across Upper, Middle, and Lower Damour, municipalities show varying degrees of involvement, often constrained by funding, technical expertise, and institutional fragmentation.

The Union of Municipalities of Iqlim El-Kharroub and the Union of Municipalities of the Shouf Region provide a platform for coordination among local authorities. They represent a potential driver for scaling decentralized solutions and enhancing participatory planning. These unions can play a formative role in enabling localized implementation of IRBM principles if appropriately supported and linked to basin-wide governance.

Private Sector Stakeholders

The private sector in the DRB is diverse, ranging from large agribusinesses and landowners to micro-enterprises and informal actors. Large farmers and agribusinesses have a substantial water footprint and may contribute to over-extraction or runoff contamination if not regulated or incentivized to adopt sustainable practices. However, they also have the resources to pilot good practices, such as precision irrigation and organic farming.

Smallholder farmers and fishers represent traditional livelihoods reliant on natural flows and ecological integrity. While their individual power is low, their collective engagement is essential for grassroots uptake of IRBM practices, particularly through cooperatives and resource user associations.

Small industries, including olive mills, tanneries, and gas stations, are widespread in the basin and often operate without adequate effluent control. Incentivizing pollution prevention and connecting these businesses to wastewater solutions will be necessary to protect water quality.

Civil Society & Cooperatives

Civil society actors—including local NGOs, youth clubs, community-based organizations (CBOs), and cooperatives—are often the first to engage with marginalized communities and build environmental awareness. Their experience with reforestation, water conservation, ecotourism, and waste management makes them valuable partners for long-term sustainability. Notably, the Shouf Biosphere Reserve has extensive experience in managing landscape conservation in Upper Damour, offering valuable synergies with IRBM efforts.

Agricultural, fishery, and food cooperatives have legal recognition and often function as intermediaries for rural communities. Their engagement is strategic for ensuring buy-in from dispersed water users and promoting equitable governance.

Educational & Research Institutions

National research institutions such as the National Council for Scientific Research (CNRS) and academic institutions such as several private universities[8] and the public Lebanese University provide critical data and technical input into water balance modeling, pollution assessment, and policy formulation. Vocational schools and secondary education institutions also play a long-term role in cultivating environmental citizenship and supporting technical capacity building.

International Partners & Donors

Development agencies such as the European Union, UNDP, UNEP, IUCN, and bilateral donors (e.g., SDC, GIZ) have supported water-related and ICZM efforts in Lebanon. Also other international organizations such as UNESCO and UNESCO-IHP, ESCWA and the BGR, are worthy of recognition given their significant roles in water sector development and research projects in Lebanon at various periods in the recent past. The potential to provide catalytic support—through technical expertise, financing, and facilitation— and given the weak government capacities, was and is always sought to be fully harnessed. These projects allow for cross-alignment with national priorities and regional frameworks (e.g., SDGs, Barcelona Convention, and EU Neighborhood Instruments) to enhance international coherence[9].

Project Stakeholders

The IRBM initiative for the Damour Basin is currently supported by GWP-Med, Plan Bleu, PAP/RAC, UNESCO, and the University of Balamand. Their role is foundational in structuring the roadmap, conducting baseline assessments, and

[8] For example: American University of Beirut, Saint Joseph University of Beirut, University of Baland and the Lebanese American University.

[9] The University of Balamand announced that it will be the co-host of the ECOMED Academy, affiliated with UNESCO, following a decision by the UNESCO Intergovernmental Hydrological Program (UNESCO-IHP).

facilitating a shared understanding of governance gaps and opportunities. While not decision-makers, they serve as process stewards and capacity providers, whose neutral positioning enables multi-stakeholder dialogue.

3.2. COMPARATIVE ANALYSIS OF CRITERIA

Below is a consolidated comparative analysis of the criteria and their definitions used from earlier baseline stakeholder analysis documents, CP2.1 (ICZM, 2024) and CP2.2 (WEFE, 2023), as well as proposed unified definitions that shall be further adopted in our RSA:

Table 2. ICZM SA Criteria - Previous Studies / Consolidation

Criterion	CP2.1 (ICZM)	CP2.2 (WEFE Nexus)	Proposed Unified Definition
Type	General categorization	Same as ICZM	Adopted as is
Centralization Level	Centralized / Semi / Decentralized	Same as ICZM	Adopted as is
Power	Resources, political influence, capacity to act or block policy	Same as ICZM	Ability to mobilize financial, political resources to influence project outcomes
Interest	Degree to which stakeholder is affected (social, economic, or environmental concerns)	Same as ICZM	Stakeholder's degree of concern or investment in the river/coastal zone or project objectives
Internal / External	-	Internal = part of project; External = outside but relevant	Same as CP2.2.
Legitimacy	Rights and responsibilities (legal or customary) and resolve to act	Correlated with Primary/Secondary)	Legal or social justification to represent affected communities or sectors (can include traditional authority or institutional mandate)
Primary / Secondary	-	Based on whether stakeholder is directly or indirectly affected	Primary: Directly affected or involved. Secondary: Indirectly related or supporting.
Influence	Implied in Power but not separate	Sometimes mentioned	Stakeholder's capacity to sway decisions, even informally. Separate from structural or institutional 'power'.
Capacity / Knowledge / Expertise	Mentioned under "capacity" (institutional knowledge, skills)	Not a separate category	Could be integrated with influence
Role in Project	Not specified explicitly	Part of engagement strategy (e.g., Implementer, Regulator)	Identifies whether stakeholder is a funder, implementer, regulator, advocate, etc.
Engagement Level	Used to define stage-specific roles	Same as ICZM	Useful for aligning with ICZM engagement process: Inform / Consult / Involve / Collaborate
Role in Pollution Prevention / CZ Protection	Not explicitly framed this way	Not included	Specific to ICZM/IRBM context—helps align to environmental goals

3.3. CONSOLIDATED ANALYSIS MATRICES

Consolidated Typology Criteria: Matrix 1

The first level of analysis provides a consolidated list of identified stakeholders, grouped by typologies, essentially answering, "who are the stakeholders, their function and relation, and what type are they?" and flows directly as a current positioning step with respect to the DRB. The definitions of these criteria were harmonized and summarized below in Table 3, with scope of geographical influence, which presents a more granular understanding of how interests and conflicts may interlink and vary by location. Given the river's natural division into Upper, Middle, and Lower Damour, and varying anthropogenic pressures characterizing each of these regions, stakeholders were also mapped geographically to account for their area of influence within the Damour River Basin. This is also valuable for planning targeted interventions and ensuring representation from all parts of the basin in the IRBM process. This matrix can be found in **Annex 1** of this report.

Table 3. Summary of Consolidated Typology Criteria

Criterion	Definition
Type	The general sector or affiliation of the stakeholder. Includes: National Government, Local Authority, Public Utility, Civil Society, Private Sector, Research Institution, International Organization (or External) etc.
Centralized / Decentralized	Indicates the scale of operation or jurisdiction: Centralized (national-level actors or ministries); Decentralized (municipalities, unions, cooperatives, community-based organizations).
Official Function / Role Type	Describes the stakeholder's institutional role in the system: e.g. Regulator, Implementer, Advocate, Knowledge Provider, Funder, Infrastructure Operator, Community Organizer.
Scale / Scope of Influence	Categorizing stakeholders into geographical influence (e.g., Upper/Middle/Lower Damour) groups, the analysis presents a more granular understanding of how interests and conflicts may interlink and vary by location.
Legitimacy	Refers to the stakeholder's recognized authority or appropriateness to participate through legal mandate, public trust, customary rights, or sectoral representation.
Primary / Secondary	Primary: Directly affected by or affects river basin / water resources management. Secondary: Indirectly involved, important for facilitation, funding, expertise, advocacy.

Stakeholder Agency & Process Engagement Criteria: Matrix 2

What was developed next is a stakeholder evaluation matrix assessing each stakeholder's current power/influence, or what we like to call Agency, and interest in Damour River Basin management, along with their potential engagement level, role in pollution prevention (direct or indirect), and scope of action (local, regional, or national). This matrix helps highlight which stakeholders are most influential or engaged and guides the development of appropriate engagement strategies.

Interest and influence levels are relative rankings (High/Medium/Low) based on the stakeholder's stake in water resource management and their power to affect project outcomes. This consolidated matrix, available in **Annex 2** of this report, can be used as an engagement tool to ensure all key stakeholders are appropriately involved in pollution prevention and coastal protection efforts in the Damour River Basin.

Table 4. Stakeholder Agency & Engagement Criteria

Criterion	Definition
Current Influence Level (Power)	The stakeholder's present ability to affect decisions, policies, or outcomes—based on their control over resources, networks, jurisdiction, or informal authority.
Current Engagement Level (Interest)	The extent to which the stakeholder is currently engaged, active, or invested in the river basin / ICZM process. It reflects practical behavior, not just institutional interest.
Role in Pollution Prevention / CZ Protection	Whether the stakeholder plays a role in contributing to or preventing pollution and/or protecting the coastal zone—via mandate, practices, or advocacy.
Anticipated Role in Processes	Suggested project-engagement level in IRBM build-up activities: Inform / Consult / Involve / Collaborate
Projected Engagement Level	The level of engagement the stakeholder should ideally have, based on IRBM process needs, environmental relevance, or policy objectives. A temporal level of engagement was also included (short term vs long term) to highlight strategic necessity rather than status quo.
Strategic Recommendation	A short qualitative recommendation based on the above (e.g., "Empower through training," "Ensure buy-in," "Maintain informed," "Establish formal coordination"). It is used to inform stakeholder engagement planning.

3.4. MAIN OBSERVATIONS

This section presents an analytical interpretation of stakeholder dynamics in the Damour River Basin (DRB) based on two core dimensions: current influence (power) and current and projected engagement (interest). These dimensions are examined in relation to each stakeholder's ability to shape or support Integrated River Basin Management (IRBM), as well as their roles in pollution control, ecosystem conservation, and participatory governance. The analysis draws

on the structured stakeholder matrices developed in this report (Annex 1 and Annex 2), cross-referenced with national legislation, strategies, and international development plans[10].

Current Influence /Power

Few stakeholders, such as the MoEW, BMLWE, and MoE, exhibit high levels of current influence due to their legal mandates, technical control over infrastructure, and regulatory authority. MoEW's role in overseeing water allocation and infrastructure projects positions it as the leading actor in shaping basin-level decision-making. Similarly, MoE holds enforcement power over pollution control and environmental flows, while BMLWE manages wastewater infrastructure and potable water distribution in the Middle and Lower DRB.

Private sector actors, particularly agribusinesses, quarries, and small-scale industries, have medium to high influence in practice, owing to their control over land, resource extraction, and economic investment, though they may lack formal recognition in water governance frameworks. Fishing activities have a direct impact on the biodiversity of the river and coastal areas. However, these activities must be carefully managed to prevent further harm to aquatic ecosystems. It is important to note that fishing in estuaries is strictly prohibited under Decision no. 1/385 issued by the Minister of Agriculture on January 26th, 1997. This regulation bans fishing in all estuaries throughout the year, extending up to 500 meters inside the river and 2 kilometers seawards.

Other actors, such as municipalities, smallholder farmers, and CBOs, currently hold lower institutional power, though their decisions and practices at the local level can aggregate into substantial influence—particularly in areas related to water use efficiency, farming practices, and waste management.

Current Engagement / Interest

Some stakeholders exhibit high interest but limited capacity or formal roles. For example, civil society actors, national NGOs (e.g., the Shouf Biosphere Reserve), and research institutions (e.g., CNRS and BU) demonstrate consistent interest in environmental sustainability and public engagement. Their participation has been observed in reforestation, ecotourism, and local awareness campaigns. Despite low formal influence, these actors often maintain long-term community trust and provide valuable knowledge support.

On the other hand, ministries and public utilities show mixed levels of day-to-day engagement, often influenced by bureaucratic mandates, project alignment, and donor interest. For example, SLWE has less engagement than BMLWE, possibly due to resource constraints and varying infrastructure density across the DRB.

Role in Pollution Control & Coastal Zone Protection

Pollution control is a shared responsibility across multiple actors. MoE, MoEW, and MoI each hold statutory authority over industrial discharge standards and infrastructure compliance. However, the enforcement of Decree 8471/2012 (industrial wastewater discharge standards) remains weak. Industries, olive mills, and butcheries are known contributors to localized pollution, often due to inadequate treatment solutions and regulatory oversight. The Ministry of Public Works and Transport (MoPWT) regulates infrastructure and transport networks, including coastal works and shoreline constructions, which directly impact erosion, public domain use, and river-mouth dynamics, and is legally mandated to oversee:

- Maritime public domain management (including licensing and regulation of coastal structures)
- Construction permits for ports, jetties, breakwaters, and other shore-hardening works
- Enforcement of regulations related to shoreline occupation, especially in coordination with the Directorate General of Urban Planning (DGUP)

Municipalities, while not always directly responsible for pollution generation, are often the frontline implementers of solid waste and sewage management. Similarly, cooperatives, fishers, and community organizations play important advocacy and monitoring roles, often tied to livelihood preservation and environmental health.

Projected Engagement in IRBM Processes

Projected engagement levels reflect both the stakeholders' strategic relevance and the expected evolution of the IRBM process in the Damour Basin. Stakeholders like MoEW, MoA, MoE, and municipal unions are expected to be deeply involved in co-developing the River Basin Charter and overseeing eventual implementation.

[10] These include: the National Water Sector Strategy, the Water Code Law No. 192/2020 (which replaced Law No. 77/2018), project baselines, and regional ICZM frameworks.

Improved regulation and sustainable livelihood programs could support the conservation of fish populations and promote legal fishing practices, helping to protect the river's biodiversity. Additionally, identifying and engaging potential fisher cooperatives operating in the Damour Coastal Area could strengthen community-based conservation initiatives and ensure compliance with existing regulations.

At the same time, cooperatives, resource user associations, green entrepreneurs, and youth clubs are identified as valuable partners in awareness-raising, behavior change, and localized action. Their inclusion in IRBM working groups and feedback loops is recommended to foster bottom-up legitimacy and long-term sustainability.

International partners, including UNDP, EU, IUCN, and project-specific actors like GWP-Med, PAP/RAC, and Plan Bleu, will play facilitative and funding roles in the medium term, though their engagement is shaped by project lifecycles and donor strategies.

Engagement Strategy Recommendations

Based on the previous baseline CP2.1, stakeholders were grouped into one of four engagement modalities:

- Inform: Keep low-influence actors regularly updated (e.g., small green businesses, informal users).
- Consult: Include relevant voices in feedback loops (e.g., cooperatives, SMEs, CBOs).
- Involve: Actively engage during planning and implementation (e.g., municipalities, civil society).
- Collaborate: Co-develop governance mechanisms and technical plans (e.g., MoEW, BMLWE, NGOs, and project partners).

These recommendations would support participatory processes aligned with the Polluter Pays Principle, decentralized water management under the Water Code, and international best practices under the ICZM Draft Law framework.

3.5. CONCLUSION

The full classification of stakeholders, their functions, legitimacy, and scope of influence is presented in Annex 1 (Matrix 1), with further engagement analysis in Annex 2 (Matrix 2) [11].

The analysis reveals a diverse stakeholder landscape with varying degrees of influence and interest in the Damour IRBM process. At the highest level, the Ministry of Energy and Water (MoEW) stands out as a pivotal actor – it holds a High current influence over water management (given its policymaking authority) and a Very High potential engagement in IRBM. This means MoEW's active leadership and endorsement will be critical for the IRBM initiative's legitimacy and success. Other central agencies like MoE, MoA, and MoI currently exert Low to Medium influence in the basin's water governance; however, each with its own specific interests (namely, environmental protection, agricultural water use, and industrial effluent control, respectively) and therefore each has a meaningful stake in the IRBM outcomes.

Info Box 4. Hydrological Information System

Recent national planning documents stress the importance of reliable, real-time data to support Integrated River Basin Management (IRBM). The updated **National Water Sector Strategy (NWSS) 2020–2035** highlights that weak hydrological data systems have long hampered water governance and planning in Lebanon. As part of its reform agenda, the NWSS proposes the establishment of a centralized **Hydrological Information System (HIS)** within the Ministry of Energy and Water (MoEW), which would serve as the backbone for monitoring, analysis, and cross-agency coordination. By institutionalizing this system, the strategy aims to enhance basin-level planning, support Water Code implementation, and enable evidence-based policymaking for climate resilience and pollution control. It must be on the Ministries top priorities and urgencies until set in place and maintained as data gaps are the most critical and urgent constraint to water management in Lebanon, as well as validation and transparent sharing of this vital public information for instigating trust and accountability.

On the regional and local side, the Water Establishments (BMLWE and SLWE) and the municipalities collectively have substantial on-ground impact. Individually, a single municipality's influence is limited (Low), but through collective frameworks like the Unions of Municipalities, their influence can consolidate to Medium. Their potential engagement

[11] Note: In this report, "interest" refers to a stakeholder's thematic alignment and relevance to river basin challenges, while "engagement" reflects actual or potential participation in IRBM planning or implementation.

is rated High – reflecting strong interest in addressing water supply, irrigation, and waste challenges that they contend with daily. This suggests a need for establishing a basin-level platform that empowers local authorities to coordinate; currently, the lack of a formal coordination mechanism is a gap. Strengthening municipal capacity and inter-municipal collaboration will ensure that local voices contribute effectively alongside national bodies.

The private sector and local community stakeholders (farmers, agribusinesses, fishers, etc.) have direct stakes in the river's health. Individually, they wield low formal influence – for instance, a small farmer cannot change policy – but collectively their practices determine the basin's condition. Notably, large agribusinesses and influential landowners in the upper and middle Damour have a Medium to High potential influence if mobilized (for example, by adopting water-saving irrigation or supporting reforestation). Their willingness to engage is evident (many showed Medium-High interest in sustainable water use during consultations), but they will respond to incentives and a clear demonstration of benefits. Civil society groups and NGOs are highly engaged stakeholders, contributing through community awareness initiatives and conservation projects. Although their decision-making power is limited, they can foster grassroots support for IRBM measures such as river clean-ups, monitoring, and advocacy for policy enforcement.

Finally, external partners like international donors and INGOs currently operate in an advisory or funding capacity (direct influence on local decisions is variable). However, their potential engagement is high: they can introduce international best practices, provide technical expertise (for example, IUCN on habitat conservation, or UNDP on integrated planning), and assist in bridging any institutional gaps (such as by supporting the creation of a Damour Basin Committee).

Recognized "Key Local Water Actors" – such as Water User Associations (WUAs) if they exist, irrigation suppliers, and reserve staff – offer potential leverage points for strengthening local compliance and resource stewardship. The presence of these actors offers an opportunity to secure the resources and knowledge needed to implement IRBM effectively. Managing expectations and aligning donor initiatives with local priorities will be necessary to ensure sustainable outcomes.

In summary, key high-influence players such as the MoEW and the Water Establishments must lead the process, particularly by overseeing coordination efforts beginning with data collection and sharing (see info-box). At the same time, highly interested local groups should be engaged through inclusive planning and capacity-building initiatives, thereby transforming their latent enthusiasm into concrete action. This typology reveals key enabling or constraining factors for IRBM success. For instance, the strong presence of informal actors (e.g., local water committees) demands flexible engagement strategies that go beyond formalized governance. The analysis also highlights gaps, such as the current lack of a unifying basin governance framework and potential overlaps in mandates, which the IRBM process will need to address by clarifying roles and fostering cooperation among all stakeholders.

4. Main Takeaways

4.1. SUMMARY OF MAIN FINDINGS

The Rapid Stakeholder Analysis (RSA) for the Damour River Basin (DRB) reveals a fragmented but highly relevant network of stakeholders whose roles in water management, environmental protection, and land use governance are increasingly interconnected. While formal authority lies primarily with central government institutions, operational influence is often held by decentralized actors, such as municipalities, unions, private sector water users, and local initiatives.

The analysis found that many stakeholders exhibit asymmetrical levels of power and interest: ministries may possess strong regulatory power but lack localized engagement, whereas civil society groups or cooperatives hold community trust but lack institutional leverage. At the same time, strategic stakeholders such as research institutions, national NGOs, and green entrepreneurs remain underutilized despite their capacity to provide data, promote innovation, and bridge community-government gaps.

While a policy and legal framework for IRBM exists—most notably through Lebanon's Water Code (Law No. 192/2020 (which replaced Law No. 77/2018))—its implementation remains incomplete. Key mechanisms such as the River Basin Committee, Water Police, and pollution control enforcement are either absent or underdeveloped. Similarly, many stakeholders remain unaware of the Integrated Coastal Zone Management (ICZM) Draft Law and its connections to river basin planning[12].

Stakeholder matrices confirm that many groups show strong potential engagement if better informed, supported, and coordinated. For example, smallholder farmers, fishers, and local NGOs demonstrate consistent interest but face capacity and resource barriers. Conversely, international donors and technical agencies are ready to support policy reforms and local interventions but seek better coordination mechanisms. Summary of main observations include:

- MoEW is the most influential and potentially engaged actor, critical to formalizing and championing the IRBM process.
- MoE, MoA, MoPW, and MoI hold mid-tier influence but retain important thematic stakes for: pollution control, agro-ecology, coastal-zone and maritime management, and industrial discharge, respectively.
- BMLWE and SLWE, alongside municipalities, exert strong operational roles. While individual municipalities may be low in power, their unionized coordination can reach medium influence. This justifies the creation of a basin-level coordination platform, a current gap.
- The private sector - especially agribusinesses and landowners in Upper and Middle DRB - has significant leverage. If mobilized through incentives and capacity-building, they can shift towards more sustainable practices.
- Civil society, while lacking formal authority, offers high-interest allies in advocacy, education, and grassroots mobilization.
- External donors provide knowledge, finance, and visibility. Their influence on policy is indirect, but their potential engagement is high if aligned with local IRBM priorities.

Info Box 5. Ecosystem Services of the Damour River Basin

The Damour River and its tributaries provide critical ecosystem services to upland and coastal communities. These services include potable and irrigation water supply from key springs (Safa, Ain el Zarqa, and neighboring Barouk spring), sediment and nutrient cycling supporting agricultural productivity, biodiversity corridors, and climate regulation through the mixed forest ecosystems of the Barouk Reserve. Notably, the basin's role in groundwater recharge and in buffering flood risks downstream has gained policy attention under UNESCO-IHP's eco-hydrology frameworks. The region's intact forest patches and karst formations also offer spiritual and cultural services, particularly within sacred groves, monasteries, and traditional footpaths like the Lebanon Mountain Trail (LMT), has been recognized by the Ministry of Tourism and international donors as a vector for green job creation and low-impact tourism development, and such initiatives have cultivated a growing network of eco-lodges, guided hiking routes, and agro-ecotourism initiatives.

In summary, the success of integrated river basin management (IRBM) relies on aligning national oversight with local action, based on a solid understanding of shared challenges within the river basin and the potential environmental, social,

[12] Official Gazette of Lebanon. 2020. Issue No. 41, 22 November 2020.

and economic outcomes this alignment can generate. National institutions should offer supportive frameworks and enforcement mechanisms, while local actors need to be empowered through inclusive planning, proper recognition, and clear articulation of both current and potential co-benefits, such as ecosystem services (see Info-Box 3).

The process should also resolve institutional overlaps and formalize underrepresented roles (e.g., key local water actors), ensuring a coherent, participatory, and adaptive governance framework.

4.2. KEY INSIGHTS

Several strategic insights have emerged to inform the development of IRBM in the DRB are briefly suggested below.

- Data gaps are a major issue—put simply, it is impossible to manage what you cannot measure. Decentralized and centralized coordination needs balancing: MoEW, MoE, and MoA hold critical mandates, but the success of IRBM depends on reinforcing the roles of municipalities and unions in implementation. Vertical coordination mechanisms are urgently needed.
- Private sector engagement is necessary and feasible: Large-scale water users (industries, agribusinesses) should be engaged more systematically through regulatory enforcement and incentive structures—especially via the Polluter Pays Principle and public-private partnerships, as well as green entrepreneurial projects that can contribute to ecosystem services protection.
- Civil society and academia as strategic multipliers/partners: Civil society organizations, youth clubs, and research institutions offer untapped support for awareness-raising, knowledge transfer, and pilot projects. Their community legitimacy and technical contributions should be further integrated into IRBM frameworks through mentioned Local Water Actors/Environmental Stewards.
- Enforcement gaps undermine credibility: Weak enforcement of water pollution regulations and overlapping mandates between ministries have slowed progress. Strengthening accountability through municipal guards, reserve guards, water police, and regional coordination is recommended.
- ICZM and National Water Sector Strategy and Water Code alignment is a priority: The IRBM process should explicitly align with the ICZM draft law under development. The River Basin Committee could act as an IRBM-ICZM convergence platform, promoting cross-sector dialogue, environmental safeguarding, and climate resilience.
- Time-bound engagement strategy required: Stakeholders must be engaged according to short, medium, and long-term roles. For example, political actors may be key for legal adoption in the short term, while community-based organizations are vital for long-term behavior change.

4.3. FURTHER RECOMMENDATIONS / FOR DRB-IRBM ROADMAP

To put these insights into action, a series of priority steps are proposed. This analysis can support these efforts, with the developed matrices serving as useful tools:

- Systemize data gathering and validation: Perhaps the most urgent need for all water management endeavors and serious water sector strategies and proper master planning. Simply put, one cannot manage what one cannot measure. The IHIS is therefore a pivotal investment that must be implemented soonest, including promoting parallel endeavors being carried out that would populate national and public water databases and information referencing[13].
- Establish a Multi-Stakeholder River Basin Committee: Formalize coordination by establishing a representative, participatory body to oversee IRBM development, ensure transparency, and support implementation of a River Basin Charter.
- Engage a Third-Party technical and facilitation services: For accountability and validity, objective technical assessments, audits etc., require professional firms to monitor, model[14] (See Info-box), or provide neutral facilitation to manage power asymmetries, foster dialogue among stakeholders, and support consensus-building during the IRBM design and structuring phases.

[13] The initiative by pS-Eau (Programme Solidarité Eau), a French NGO, to create the Lebanese Water Actors Platform (LEWAP)—an open-access national database and reference for water information—is a significant and highly welcomed step along this path.

[14] A service provider (MORES) was commissioned to conduct an initial pilot of these modeling services in the Damour River Basin, resulting in significant achievements.

- Pilot legislative reforms through implementation projects: Use the Damour IRBM as a testing stage to apply the Water Code and develop highly needed implementation decrees, particularly regarding pollution control, permitting, and the operationalization of decentralized water governance.
- Support capacity-building initiatives and stakeholder consultations to develop basin-specific e-flow assessments and integrate them into IRBM and permitting systems.
- Leverage Public-Public partnerships: Whether vertically (e.g., Water Establishments and municipalities) or horizontally (between unions, municipalities, and civil society / citizen science), for service collaboration or procurement of private external service providers, and under well defined programs and agreements. This could include water quality and quality monitoring, promote partnerships that contribute to water quality monitoring, pollution tracking, and enhancing transparency in public reporting.
- Design engagement modalities according to stakeholder category: Use tailored approaches (inform, consult, involve, collaborate), as per Annex 2, to ensure equitable and productive stakeholder participation over time.
- Develop incentives for Ecosystem Services: Establish financial and policy incentives for actors contributing to sustainable land and water use, particularly through organic farming, eco-tourism, and pollution mitigation.
- Support knowledge institutions: Facilitate closer integration of CNRS, BU, and universities in policy co-development and field-level monitoring, especially in hydrology, pollution load estimates, and groundwater assessment. Some environmental service providers in the private sector have also, at times, produced valuable studies that can help populate databases or provide useful knowledge and insightful indicators. These resources can be leveraged for knowledge sharing, informed decision-making, and project development.
- Mobilize political leverage: Work closely with local stewards and national leaders, showing credibility and earnest concern in carrying such sustainable visions or supporting similar endeavors for water management (such as this one), to further secure public awareness raising, commitment, funding, and legal backing for IRBM frameworks, while promoting inclusive and depoliticized governance mechanisms.
- A final recommendation is to divide the DRB into three zones—upper, middle, and lower—to reflect the diverse (and sometimes overlapping) interests of the stakeholders (see table below). Some stakeholders, such as governmental or private entities, naturally have cross-cutting concerns. A preliminary and arbitrary zoning has been overlaid on the basin map; please refer to **Annex 3** for an initial illustration.

Info Box 6. Integrating Water Allocation Models The Role of WEAP (or similar)

The Water Evaluation and Planning (WEAP) System is a decision-support tool developed by the Stockholm Environment Institute to simulate water balance scenarios, allocate resources, and support planning in watersheds under competing demands. It helps evaluate policy options such as water rights, environmental flow requirements, climate change resilience, and infrastructure investment.

In the context of the Damour River Basin (DRB), the WEAP model could be used to:

Simulate seasonal flow variability and priority allocations.

Evaluate trade-offs between irrigation, domestic, industrial, and ecological needs.

Support decision-making under uncertainty, including drought or urban expansion.

Integrate groundwater and surface water interactions, vital in the DRB context.

Estimate environmental flow scenarios based on Tennant or modified habitat-based methods.

As Lebanon gradually adopts Integrated River Basin Management (IRBM), tools like WEAP offer a robust framework to harmonize environmental sustainability with socioeconomic planning.

Figure 5. Difaf Tam water sampling at Jisr el Qadi on the Damour River

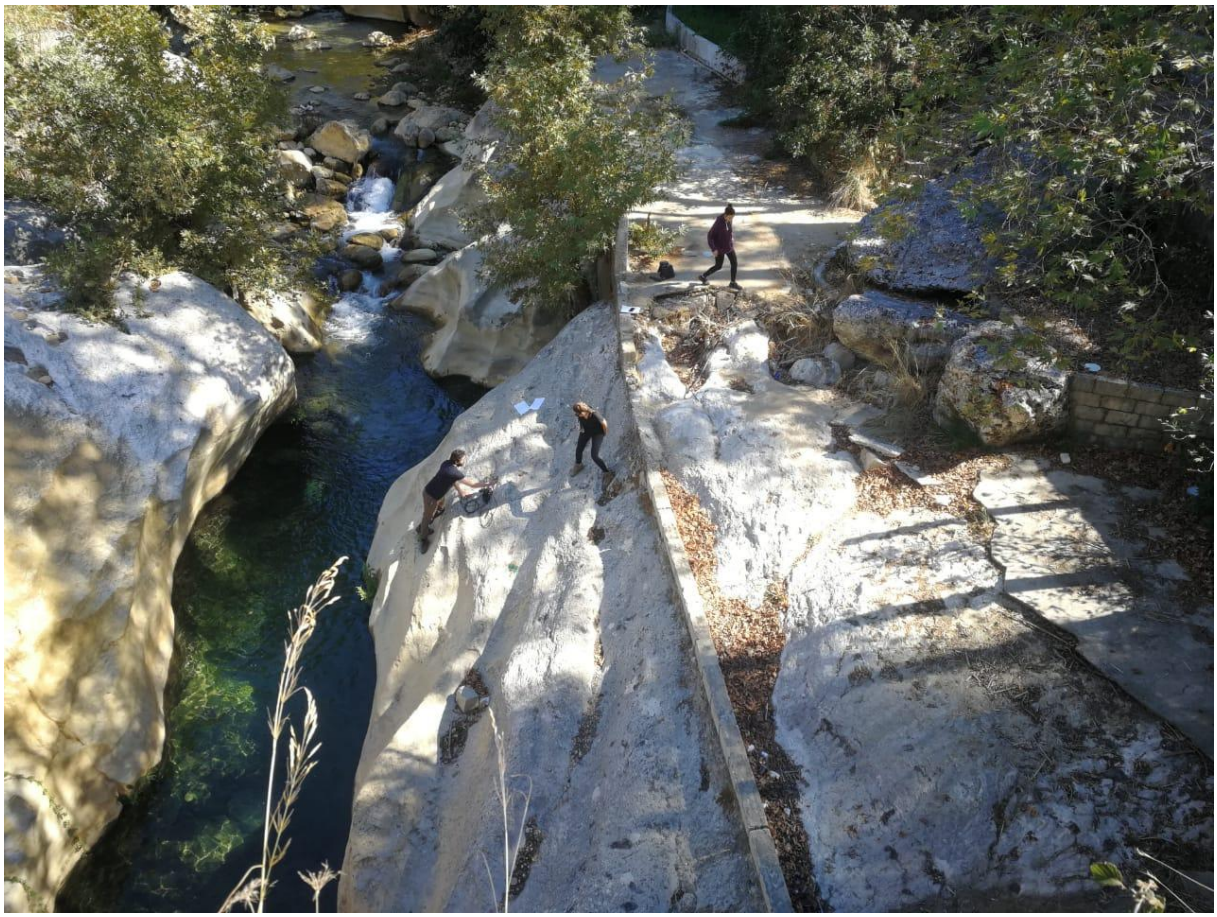


Figure 6. SH Interests Per DRB Zone (see Annex 3 for rough delineation)

Basin Zone	Key Actors	Functions	Key Issues
Upper Basin Shouf Biosphere Reserve)	SBR management, upstream municipalities, rural communities	Forest and spring water protection; conservation; traditional water-sharing (e.g., mirr)	Source water quality; informal governance; ecosystem services
Middle Basin (Foothills / Aley / Shouf)	Farmers, agricultural coops, small industries (olive mills, factories), town municipalities	Irrigation, wastewater management, mixed economy	Agricultural runoff; decentralized sewage; industrial discharges
Lower Basin (Coastal / Damour Town & Estuary)	Urban municipalities (Damour, Jiyeh), fishers, tourism operators, national agencies	Recreation, fishing, coastal land use, infrastructure	Estuary pollution; development pressure; wastewater discharge

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6. Annexes

6.1. ANNEX 1- STAKEHOLDER TYPOLOGY MATRIX

Stakeholder	Type	Centralization Level	Official Function / Mandate	Scope / Scale of Influence	Legitimacy	Primary/ Secondary
Ministry of Energy & Water	Public Sector	Centralized (National)	Water and energy policymaking; oversight of water supply, wastewater, and hydropower management	National / River Basin / Coastal Zone	High – legal mandate under Water Code	Primary
Beirut & Mount Lebanon Water Est.	Public Sector	Semi-centralized (Regional)	Manages domestic and irrigation water supply and wastewater management	Middle and Lower Damour	Medium – delegated authority from MoEW	Primary
South Lebanon Water Est.	Public Sector	Semi-centralized (Regional)	Manages domestic and irrigation water supply and wastewater management	Upper and Middle Damour	Medium – delegated authority from MoEW	Primary
Litani River Authority	Public Sector	Semi-centralized (Regional)	River basin management for the Litani, flow monitoring, and hydropower oversight over all major rivers	National / Inter-basin	Medium – legal but limited direct authority in Damour	Secondary
Ministry of Environment	Public Sector	Centralized (National)	Environmental policy, biodiversity protection, and pollution enforcement	National / River Basin / Coastal Zone	High – national environmental authority	Primary
Ministry of Agriculture	Public Sector	Centralized (National)	Agricultural policy, irrigation management, and land stewardship	National / River Basin	High – sectoral policy authority	Primary
Ministry of Industry	Public Sector	Centralized (National)	Regulates industrial licensing and pollution discharge compliance	National / River Basin / Coastal Zone	High – legal regulatory mandate	Primary
Ministry of Public Works & Transport	Public Sector	Centralized (National)	Infrastructure development, roads, drainage, coastal licensing	National / Coastal Zone	Medium – indirect influence on water system	Secondary
Other Ministries / Gov't **(Justice, Culture, Health, CDR)**	Public Sector	Centralized (National)	Cross-cutting support roles (health, justice, heritage, planning)	National	Medium – indirect sectoral relevance	Secondary
Municipalities **(Upper/Middle/Lower)**	Public Sector	Decentralized (Local)	Service delivery, waste management, irrigation schemes	Upper, Middle, Lower Damour	High – elected local governance	Primary
Union of Municipalities - **Iqlim / Shouf**	Public Sector	Decentralized (Regional)	Inter-municipal coordination on services and planning	Regional / Basin-wide	Medium – indirect legal recognition	Primary
Industries / Agribusinesses / Large Landowners	Private Sector	Decentralized (Local/Regional)	Major consumers and polluters; investment and innovation actors	Upper, Middle, Lower Damour	Medium – economic clout, no legal mandate	Primary

Small Producers / Green Businesses / SMEs	Private Sector	Decentralized (Local)	Eco-tourism, food processing, clean tech services, salt-production	Basin-wide	Medium – local recognition and entrepreneurial role	Secondary
Smallholder Farmers / Fishers	Private Sector	Decentralized (Local)	Irrigation and subsistence resource use	Upper, Middle, Lower Damour	Medium – social legitimacy, weak formal role	Primary
Research Institutions	Academic / Research	Cross-sectoral (National)	Knowledge production, research, data, monitoring	National / Basin-wide	High – scientific authority and recognized expertise	Secondary
Cooperatives **(Agricultural, Fishery, Food)**	Civil Society	Decentralized (Local/Regional)	Organized local production and management of farming/fishing	Basin-wide	High – member legitimacy and local integration	Primary
CBOs **(Local NGOs, Youth Clubs, Schools, municipal members / committees)**	Civil Society	Decentralized (Local)	Community engagement, education, and awareness	Basin-wide	Medium – informal legitimacy and outreach	Secondary
Key Actors: **Water Users Associations (WUAs), irrigation suppliers, the hydropower sector, entities responsible for water reserves, and the water police**	Cross-sectoral Enforcement	Decentralized (Local)	User representation and irrigation system management Law enforcement and monitoring in riverine/coastal zones	Basin-wide/Coastal	Low – pending formalization under Water Code - practical and traditional legitimacy via users	Primary
National NGOs	Civil Society	Cross-sectoral (National)	Conservation, eco-tourism, national advocacy	Basin-wide / National	High – recognized by state and donors	Secondary
International NGOs & Donors	External Actors	Cross-sectoral (Project-specific)	Funding, technical assistance, international best practices	Basin-wide	High – high external legitimacy and influence	Secondary
Project Stakeholders **(GWP, PB, PAP/RAC, BU, UNESCO)**	External Project-specific	Cross-sectoral (Temporary)	Project leadership, IRBM facilitation, technical coordination	Basin-wide	High – temporary but key facilitation mandate	Secondary

6.2. ANNEX 2 - STAKEHOLDER AGENCY MATRIX

Stakeholder	Power / Influence	Potential Agency	Role in Pollution Prevention	Anticipated Role in Processes	Project Engagement **(short-term)**	Project Engagement **(Mature)**	Strategic Recommendation
Ministry of Energy & Water	High	High	Mandated oversight of water use, pollution control, wastewater systems	Co-lead coordination, regulatory enforcement	Collaborate	Involve	Formalize leadership role in IRBM coordination and regulation- Phase out central role eventually
Beirut & Mount Lebanon Water Est.	Medium	Medium	Direct operator of wastewater infrastructure	Operational partner in water services and pollution mitigation	Involve	Collaborate	Improve coordination with municipalities and expand role in decentralized systems
South Lebanon Water Est.	Low	Medium	Limited direct pollution prevention; service gaps in some areas	Technical operator for service delivery	Involve	Collaborate	Support capacity-building and decentralized system upgrades
Litani River Authority	Medium	High	Advisory potential through hydrological monitoring and basin experience	Technical advisory and data-sharing partner	Inform	Consult	Engage through national coordination for knowledge exchange
Ministry of Environment	Medium	High	Mandated for EIA, biodiversity protection, and monitoring	Regulatory and policy coordination	Consult	Collaborate	Strengthen enforcement mechanisms and link to monitoring systems
Ministry of Agriculture	Low	Medium	Indirectly through promotion of sustainable agriculture and control of agrochemicals	Policy support for sustainable water use in agriculture	Consult	Involve	Promote water-efficient agriculture and coordinate on land use
Ministry of Industry	Low	Medium	Regulates industrial discharges (pollution prevention via Decree 8471/2012)	Policy and enforcement support	Inform	Consult	Improve compliance and oversight mechanisms for pollution control
Ministry of Public Works & Transport	Low	Medium	Limited direct role; influence via infrastructure planning and drainage	Potential alignment on runoff management and permitting	Inform	Inform	Raise awareness on water-sensitive infrastructure planning
Other Ministries / Gov't **(Justice,**	Low	Variable	Limited direct role	Supportive and peripheral	Inform	Inform	Periodically brief and include

Culture, Health, CDR)							where cross-cutting issues arise
Municipalities **(Upper/Middle/Lower)**	Low	Medium	Local enforcement of waste and water management; coordination with households and farmers	Direct implementers of IRBM activities and facilitators of citizen engagement	Involve	Collaborate	Strengthen technical capacity and legal clarity in decentralized management
Union of Municipalities Iqlim **/ Shouf**	Low	Medium	Coordination of local government pollution control and planning	Link between rural communities and basin planning - Facilitator of municipal-scale integration	Consult	Involve	Enhance capacity for inter-municipal coordination and data sharing - Support with shared data and multi-municipal IRBM planning
Industries / Agribusinesses / Large Landowners	Variable	High	Pollution contributor; some potential for private innovation in green practices	Key actors in land and water use transformation	Consult	Involve	Establish incentive mechanisms and pollution accountability systems
Small Producers / Green Businesses / SMEs	Low	Medium	Low direct impact; potential innovation partners for eco-tech	Demonstration partners for local innovation and citizen-led monitoring	Inform	Involve	Provide technical support and visibility for green entrepreneurship
Smallholder Farmers / Fishers	Low	High	Affected by but not in control of pollution dynamics	Resource users, stewards, and data contributors	Involve	Involve	Embed in participatory planning and promote irrigation best practices
Research Institutions	Low	Medium	Scientific support for pollution monitoring and policy design	Evidence providers and evaluators	Collaborate	Collaborate	Ensure knowledge-policy linkages and fund applied research projects
Cooperatives **(Agricultural, Fishery, Food)**	Low	Medium	Intermediaries with potential for awareness-raising and adoption of better practices	Collective mobilizers and trainers	Involve	Collaborate	Support through training and partnership mechanisms
CBOs **(Local NGOs, Youth Clubs, Schools, municipal member / committees.)**	Low	Medium	Limited direct prevention role: high potential in awareness	Mobilization and outreach actors	Involve	Collaborate	Invest in sustained engagement and community science

			and behavior change				
Key Actors: **WUAs irrigation suppliers' hydropower, Reserves Water Police,**	Variable	Medium	Stewards of local irrigation and hydropower flows - Law enforcement in pollution control and resource protection,	Compliance and monitoring backstopping – Implementation and local planning	Consult	Involve	Enhance institutional roles and clarify mandates - Activate through training and IRBM integration
National NGOs	Variable	Medium	Advocates and field actors in conservation	Watchdogs and partners in pilot implementation	Involve	Collaborate	Maintain continuous dialogue and support role in ecosystem monitoring
International NGOs & Donors	High	High	Not directly responsible but funders of prevention efforts	Financing and technical backstopping	Collaborate	Involve	Secure alignment and programmatic continuity
Project Stakeholders **(GWP, PB, PAP/RAC, BU, UNESCO)**	High	High	Designers of the framework and pilots	Project coordination and scaling partners	Collaborate	Involve	Embed in governance framework and long-term support

6.3. ANNEX 3 - OTHER GOVERNMENTAL ENTITIES FOR CONSIDERATION

In addition to the lead public institutions directly managing water and environment, several other ministries hold sectoral mandates that indirectly impact the Damour River Basin's resources and governance:

- **Ministry of Interior and Municipalities (MoIM):** Supervises local authorities and municipal unions, indirectly shaping water management practices and enforcement capacity.
- **Ministry of Tourism (MoT):** Promotes tourism investments in riverine and coastal areas, influencing land use and potential environmental pressures.
- **Ministry of Culture (MoC):** Responsible for heritage site protection, particularly relevant in the Shouf region where historic mills and riverine assets exist.
- **Ministry of Education and Higher Education (MEHE):** Supports environmental education and university engagement, especially through local schools and institutions conducting river-related research or awareness activities.
- **Ministry of Social Affairs (MoSA):** Engaged in community development and livelihood programs that intersect with vulnerable populations affected by water scarcity or pollution.
- **Ministry of Finance (MoF):** Plays a role in budget allocation and enabling public-private financing schemes, including for water infrastructure.
- **Ministry of Economy and Trade (MoET):** Regulates agro-industrial activity and trade sectors that depend on water and contribute to pollutant loads.
- **Lebanese Armed Forces (LAF):** Support enforcement of environmental protection and anti-illegal activities (e.g., quarrying, dumping), secure strategic infrastructure, and assist in disaster response and civil coordination during floods, wildfires, or pollution events. Their role is especially relevant where:
  - Weak local enforcement requires backup for environmental law (e.g., quarry closures, encroachments)
  - Flood events or dam emergencies require coordination
  - Riverine areas have restricted zones or security sensitivities
- **Council for Development and Reconstruction (CDR)** as it covers large water supply projects (e.g., dams, conveyors, and development of irrigation schemes).
- **Other Political and Key Personal at Local / National Levels.**

6.4. SUGGESTION BY DIFAF: DRB DELINEATION TOWARDS STRATEGIC ZONING FOR IRBM PROCESS