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LEBANESE REPUBLIC
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Outcomes of the 2nd Lebanon Water Forum

In support of Water Governance in Lebanon



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In Partnership with: Lebanese Republic Ministry of Energy and Water

Funded by: EU Trust Fund- MADAD

Organized by: H2All Consortium

In collaboration with: The Issam Fares institute for Public Policy and International Affairs – AUB

Consortium Partners: Oxfam, Norwegian Refugee Council, GVC, World Vision

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Overview

The chronic problem in the provision of water services in Lebanon has given rise to considerable financial, technical, administrative and social challenges. This has resulted in water consumers developing lack of trust in public water services leading many to refrain from paying their dues to the water establishments. Consequently, public water service providers currently operate at an annual financial deficit with low cost recovery for the services provided.

In 2016, the first Lebanon Water Forum (LWF) addressed the scope and diversity of challenges regarding water service provision in Lebanon. By tackling the major policy gaps and institutional voids, it aimed to provide contextualized recommendations pertaining to improved public services and increased cost recovery for the Regional Water Establishments (RWEs). In 2019, the LWF aimed to contribute to the support of water governance in Lebanon through discussions along three main themes: The operational aspects at the RWEs; strategic frameworks governing Lebanon's water sector and finally investment planning in Lebanon's water sector.

LWF 2019 was a result of the continued collaboration between Oxfam and the Issam Fares Institute for Public Policy and International Affairs (IFI) and was hosted by IFI at the American University of Beirut (AUB). LWF 2019 comes under the framework of the project "Improving Access to Safe and Affordable Water to Vulnerable communities" part of the European Union Regional Trust Fund in Response to the Syria Crisis - The Madad Fund "Water, Sanitation and Hygiene (WASH) Programme for Syrian refugees and Lebanese Host Communities". The program is implemented by a consortium that consists of the Norwegian Refugee Council (NRC), Oxfam, World Vision International (WVI) and Gruppo di Volontario Civile (GVC).

The context of LWF 2019 was set through a keynote speech and ensuing discussions through three thematic panels:

- Keynote speech: **Overview of Lebanon's water sector**
- Panel 1: **Operational Aspects at the Regional Water Establishments**
- Panel 2: **Strategic Frameworks Governing Lebanon's water sector**
- Panel 3: **Investment Planning in Lebanon's Water Sector**

LWF 2019 was attended by more than 150 water experts, academics and governmental authorities, representing more than 58 international and local organisations.

Forum Program

Time	Program
09:00 – 09:30	Registration
09:30 – 10:00	Welcome Note
10:00 – 10:30	Opening Speeches
10:30 – 11:00	Keynote: Overview of Lebanon’s Water Sector
11:00 – 11:30	Coffee Break
11:30 – 13:00	Operational Aspects at the Regional Water Establishments
13:00 – 14:00	Lunch Break
14:00 – 15:30	Strategic Frameworks Governing Lebanon’s Water Sector
15:30 – 17:00	Investment Planning in Lebanon’s Water Sector
17:00 – 17:30	Closing

Opening Ceremony and keynote Speech

Speakers	Position	Agenda
Tarek Mitri	Director, Issam Fares Institute for Public Policy and International Affairs at the American University of Beirut	Welcome Note
Sally Abi Khalil	Country Director, Oxfam in Lebanon	
Rein Nieland	Head of Section for Governance, Social Development and Civil Society, Delegation of the European Union to Lebanon	Opening Speeches
Suzy Hoayek	Lebanon Crisis Response Plan Coordinator, Ministry of Energy and Water	
Olivier Ray	Regional Director for the Middle-East, French Development Agency (AFD)	Keynote Speech

The Lebanon Water Forum’s opening ceremony included speeches by distinguished speakers from IFI and Oxfam, the European Union Delegation in Lebanon and the Ministry of Energy and Water (MoEW).

The keynote speech was given by “Agence Française de Développement”’s (AFD) Regional Director for the Middle East, Mr. Olivier Ray.

Keynote Speech Highlights and Takeaways

- Lebanon is facing a sad paradox: While it is one of the few countries of the region rich in water resources, up to **70% of natural water sources in Lebanon are now bacterially contaminated**. According to the government’s Capital Investment Program, **71% of the domestic wastewater is discharged in the natural environment without any form of treatment by proper wastewater treatment plants. That’s over 300M cubic meters** of contaminated wastewater that end up in the **aquifers** (Lebanon’s predominantly karstic surfaces) or in the **Mediterranean**. This brings to mind Jared Diamond’s book Collapse (subtitle “How societies choose to fail or succeed”) which describes how civilizations have in effect committed collective suicide by destroying their natural habitat. **This book shows the problem of non-reversibility**, meaning that you can reach a point of no-return. The increased salinity in [Lebanon’s] groundwater due to unauthorized pumping is one of them: There’s no coming back, or at least not in the next few centuries.
- The water crisis in Lebanon not only has a lasting environmental cost but also other costs:
 - o **Health cost:** According to an AUB study **“80% of Lebanese tap water samples contained fecal coliform bacteria”**, which signifies that Lebanon faces the risk of diseases such as cholera. Other recent research shows that the country’s rivers carry high quantities of **tuberculosis multi-resistant bacteria** predicting a major health crisis in the making.
 - o **Economic cost:** Quoting IFI **“three-quarters of a Lebanese household’s water budget is directed to private suppliers ”**. The dysfunctional water sector has a high economic impact on the Lebanese.

o **Other indirect costs:** For example, the Qadisha Valley, one of Lebanon's jewels in terms of nature and heritage, is at risk of **losing its UNESCO designation** for lack of proper wastewater treatment.

These figures are astonishing when put in perspective with the country's revenue and education level. Lebanon belongs to the **upper-middle-income group of countries**.

• **Lebanon can do better;** it has the human resources, the technical know-how, the funds, and the support of the international community. The solution lies in the **collective action** of the community of men and women assembled in the room: The Ministry and the water establishments, municipalities, parliamentarians, academic community, and international donors.

How can collective action be generated?

1. **Believe that we can do it, i.e. break the confidence crisis and generate trust.**
2. **Read from the same book,** make our reading of the problem converge.
3. **Learn from our mistakes,** together.

Lebanon Faces a Confidence Crisis from its Disillusioned Citizens

The absence of a transparent, reliable, sustainable management of the water sector, has translated into the inability to provide a proper water service to Lebanese citizens, leading to a confidence crisis. Thus generating two vicious circles:

• Because they no longer believe in the possibility of an efficient management of the water and wastewater sector, **Lebanese citizens are not willing to pay for its improvement**, which they deem illusionary. This prevents RWEs from generating the revenues needed to maintain infrastructure and quality human resources, leading to the poor service that we know. **International aid can be a solution and help break the vicious circle, by plugging that gap.** This implies quick improvement of service delivery, and quick progress on revenue collection. Time matters. Wastewater treatment plants in Batroun and Chekka are a telling example: The funds were provided in 1998, the stations were inaugurated in 2008 but it took another ten years to plug them to the networks. In total, 20 years were needed for the service to function. This delay has had a huge cost (environmental, economic and in terms of health).

• Citizens in Lebanon have lost trust in the state's capacity to deliver reliable services and have turned to the private sector to meet its most basic needs such as drinking water. This has paved the way for the entrenchment of private interests in the ill-performance of the public sector. When poor public service delivery becomes a source of private profit, you start to see resistance to change.

These vicious circles need to be broken today...

A Series of Opportunities Could Usher in a New Era for the Water Sector

1. CEDRE and Support of the International Community

First and foremost, the **CEDRE conference** has shown that the international community is ready to support Lebanon in its will to bring about major change. The CEDRE process has opened the way for a welcome debate on the conference and Lebanon's investment projects. It is not perfect, but it has had the advantage of creating a platform for discussion on public policy and public investment. This space for dialogue represents an opportunity.

2. Lucidity of the Government Declaration and the Roadmap for Reform

The long-awaited government seems to be **aware of the challenges ahead**. The strong governmental statement commits to “implementing shortly and efficiently a socio-economic program for reforms, investments and services”.

3. Not Only Words, but Also Acts.

The appointment of new directors for the RWEs whom have shown their determination to change the current paradigm, through their **acts** over the last year. Some projects are finally being finalized such as the Batroun and Chekka wastewater treatment plants and some reforms such as the issuance of the Water Code.

4. Civil Society is also Voicing its Concerns.

The new generation will not accept what the previous one has endured. **Parliamentarians**, too, have demonstrated their interest for this burning issue. The press is much more interested in environmental issues than in the past and can provide quality analysis. Lebanon has a strong academia which is increasingly part of the debate.

5. Donors are Determined to Build on Past Successes and Failures in the Sector.

On the donor side there is determination to make things change. The success of CEDRE is a matter of credibility for the government and for the donor community. There can therefore be **no complacency**. Donors have been working in the Lebanese water and wastewater sector for quite some time now. Today, we have lessons to draw from, and will continue to share these experiences.

However, the Conditions for Success Require a Change in Paradigm:

- **From defiance to trust and collective action:**

- o Between state and citizens;
- o Within the state, between the different parts of the ecosystem;
- o Between donors (we owe our partners greater coherence).

- **From a top-down, quantitative approach (i.e. number of infrastructures built) to a service-based approach.**

What matters is the quality of service delivered to citizens.

- **From infrastructure-heavy to durable investments:**

- o By durable, both sustainable environmentally and economically are included.

- From a situation where **all actors attempt to do everything** and thus fail to deliver on their mandate to a situation where the **responsibilities are clearly outlined**, and each actor is accountable for the performance of its link in the chain of collective action.

- o What has been started needs to be finished properly: The application decrees for the Water Code need to be adopted. Today, there is a shift towards a service-based approach, but it needs to be translated into a clarified institutional framework. This institutional framework needs to reflect the change of paradigm towards durable investments.

The conditions for success – engage a sustained, mature dialogue to read from the same book and ultimately speak with one voice

The key to improving the water and wastewater services is the **dialogue** at all levels and between all the actors. Spaces for dialogue need to be created as, too often, **actors do not deal with the same source and nature of information**. More initiatives such as Lebanon Water Forum need to be taken. Every actor must do their fair share of the work, including Lebanese citizens. By being **informed, challenging and responsible citizens** (i.e. paying the bill), by voicing their concerns, Lebanese can contribute to improving the sector.

Panel 1

Operational Aspects at the Regional Water Establishments



Moderator

Nadim Farajalla

Director, Climate Change and the Environment Program, Issam Fares Institute for Public Policy and International Affairs, American University of Beirut

Panelists



Khaled Obeid

Director, North Lebanon Water Establishment



Jean Gebran

Director, Beirut and Mount Lebanon Water Establishment



Wassim Daher

Director, South Lebanon Water Establishment



Rizk Rizk

Director, Bekaa Water Establishment

The management of the water sector, according to Law 221/2000 and its associated amendments, falls within the mandate of the four RWEs (South Lebanon, North Lebanon, Beirut and Mount Lebanon, and Bekaa). While the MoEW is responsible for developing and implementing water and sanitation policies, the establishments are primarily in charge of the development of water resources, the distribution of water and the monitoring of its quality. There is heightened concern over Lebanon's increasingly limited water resources which is attributed to mismanagement, failing infrastructure and lack of proper policy and investment planning. This situation has put the four RWEs under overwhelming pressure to meet the demands of the community while staying financially stable. In this panel the general directors of the four RWEs in Lebanon discuss and reflect on the operational challenges and opportunities in water service provision.

On Vision and Challenges:

Reflecting on their vision for the near future, all four RWEs seemed to share a common vision of providing clean, adequate and sustainable water services for all.

The identified challenges are plenty:

- Mismanagement of water resources such as unmonitored and/or illegal pumping of groundwater;
- Poor water quality largely due to discharge of untreated wastewater;
- Shortage in qualified technical staff;
- It is not essentially the lack of legal regulations in Lebanon that hinder the provision of adequate water resources to communities. The inadequate and/or lack of implementation of existing laws that govern the water sector is the main challenge. This is further worsened by the absence of some key decrees that aid in operationalizing the newly developed laws;
- The Syrian refugee crisis, especially in the Bekaa region, adding to the challenges of local water resource management;
- Increasing lack of public confidence in the public sector in general and the ability of RWEs to adequately provide water service contributing to higher percentage of non-revenue water. Most citizens are unaware and skeptical of the roles and responsibilities of the regional water establishments.



The role of Water Embellishments is (mainly) to provide water for the citizens. Securing waters sources is the responsibility of the Ministry.



Jean Gebran, Director of the Beirut and Mount Lebanon Water Establishment





Main Takeaways:

- On reforming citizens' attitudes towards public service water providers:
 - It is crucial to establish proper monitoring procedures (including equipment) in order to convince communities that the quality of the delivered water meets the standards;
 - It is essential to improve the image of the Regional Water Establishments by engaging with communities and exercising accountability;
 - Improving the director-employee and employee-citizen relationships and building trust within this system.
- There is a need to re-evaluate certain articles in the updated version of the Water Code;
- Water Establishments need to develop emergency plans to ensure continuity of water provision in extreme events of water scarcity;
- It is recommended to implement water metering system in order to understand the water demand and impose tariffs that are proportional to consumption;
- It is crucial to apply the polluter pays concept, as mentioned in the Water Code as a means to pay for the treatment of pollution;
- Operation of wastewater plants is within the mandate of the RWEs; however, a tariff system needs to be applied that would go towards financing the operation and maintenance of the wastewater treatment plants;
- Donors must play a role in exerting pressure on the government to speed the implementation of existing laws.



Donors play an important role in pressuring decision-makers, along with Water Establishments to implement, to implement the existing laws.



Rizk Rizk, Director of the Bekaa Water Establishment.

Panel 2

Strategic Frameworks Governing Lebanon's Water Sector



Moderator

Ralf Klingbeil

Senior Expert – Water, Environment, Sustainable Development, Federal Institute for Geosciences and Natural Resources (BGR), Germany

Panelists



Ziad Khayat

Economic Affairs Officer, United Nations Economic and Social Commission for Western Asia (UN-ESCWA)



Michele Pierpaoli

Attaché – Water and Wastewater Affairs – Economy and Local Development Section, Delegation of the European Union to Lebanon



Suzy Hoayek

Lebanon Crisis Response Plan Coordinator, Ministry of Energy and Water



Ramy Saliba

Project Officer, Agence Française de Développement (AFD)

The Lebanese government approved a National Water Sector Strategy (NWSS) in 2012 for the period 2011-2020 that outlined a strategic roadmap aimed at reforming the water sector. The strategy touched on various elements including water reclamation, surface water, artificial recharge and demand management. With a revision of the strategy underway, it is important to undertake some form of stocktaking of progress made. In addition to this, the panel also addresses the alignment of the NWSS with priorities of the RWEs, needs of the users, meeting international obligations and Sustainable Development Goals (SDGs).

Ministry of Energy and Water: Stocktaking and Strategic Priorities

- Regardless of the delay in implementation that the 2012 NWSS faced, progress was noted in some aspects, specifically in relation to the development of water networks and water resources.
- Progress in both wastewater and irrigation sectors is slow:
 - Wastewater strategy was independent of the NWSS and its drafting was delayed.
 - Chronic problems in the irrigation sector are exemplified by the old distribution networks and the unmonitored use of groundwater for irrigation.
- Administratively RWEs still suffer from many problems such as staffing and financial problems related to revenue and deficit.



We are currently behind regarding irrigation and wastewater. We need to speed up this process and aim for tertiary treatment for wastewater, to be able to reuse it in irrigation, which uses between 60 to 70% of our freshwaters.

Suzy Hoayek, Lebanon Crisis Response Plan Coordinator, Ministry of Energy and Water.



Strategic priorities

- Tariff Change
 - A tariff that is fair and socially acceptable.
 - Good communication will facilitate this process.
- Updating the Water Strategy
 - Check the roadmap, and identify the gaps, what can be done to improve them and integrate all the work done in one place;
 - Update will include indicators to make future assessments easier;
 - Setting feasible goals and integrating Lessons learnt.
- Improving Communication
 - Public/focus groups will be conducted to better understand the channels of communication for the various groups and audience.
- Introducing Smart Metering
 - It would require additional staff not only for technical assistance but for the optimization of the data collected.
- Enhancing Monitoring and Evaluation
 - Enhance real-time monitoring;
 - For Illegal wells, place meters as a corrective measure.

Reflections by Panelists on MoEW Strategic Priorities

Alignment with SDGs

Reflecting on the Agenda 2030, which adopted an integrated framework addressing the potential impact of the interlinkages of water across the SDGs, any national water strategy must be integrated and take into consideration existing linkages between sectors. Lessons learnt can be drawn from neighboring countries who have set effective policies on their limited water sources. The proper implementation of an amended Water Code will be a key element in the achievement of the SDGs.

Alignment with users' needs

“**The human rights vision was already there [in the National Water Sector Strategy], maybe it's not translated in each of [its] implementation policies.**”

Rami Saliba, Project Officer, Agence Française de Développement (AFD).

The strategy will further focus on assessing the needs of the community in terms of water resources. This will be effective by introducing the water metering systems. However, in order to guarantee the cost-efficiency of this process, it is essential to implement a fair water tariff that takes into consideration the socio-economic profiles of the citizens.



Alignment with RWEs priorities

The panelists stressed on the importance of developing a communication strategy with the different stakeholders, and encouraging a dialogue between the water establishments and the ministry regarding their achievements, shortcomings and future steps. Consequently, this initiative would help in building public trust in the system and encourage the mobilization of funds.



Alignment with Donor agenda



From a donor perspective, we do not set the NWWWS strategy - it is the sovereign mandate of the Lebanese Ministry of Energy and Water - rather our job is to align with the strategy and to support and create the enabling environment for any update of the strategy and that is what we are heading towards now.



Michele Pierpaoli, Attaché – Water and Wastewater Affairs – Economy and Local Development Section, Delegation of the European Union to Lebanon.

Donors interest:

- Building demand scenarios for proper water allocation and planning investments to organize RWE's service provision accordingly;
- Awareness raising;
- Investment in building resilience;
- Fair transition towards smart water metering.

Key messages:

- The revised strategy will need to:
 - Adopt useful indicators in an effort to measure its strategic objectives and promote the engagement of different stakeholders for better communication of the strategy's outcomes;
 - Empower water establishments to become financially autonomous, allowing it to exercise its duties set by law.
- Implementing a communications strategy for the MoEW to inform citizens on strategies, plans and implementation is key to building trust.
- An initiative to develop an observatory of water and energy that would engage discussion in public policy, challenges and progress in the sector is needed.

Panel 3

Investment Planning in Lebanon's Water Sector



Moderator Sami Atallah

Executive Director of the Lebanese Center for Policy Studies (LCPS)

Panelists



Wafa Charafeddine

Head of Funding Division at the Council for Development and Reconstruction (CDR)



Amal Talbi

Senior Water Resources Management at the World Bank



Rami Wehbeh

Lebanon Water Project (LWP) Program Manager, USAID/Lebanon



Hanan Fawaz

Senior Advisor Water, Wastewater, Solid Waste, KfW Development Bank

Panel 3 focused on the recent investment plans in Lebanon's water sector, namely the CEDRE conference, and alignment with national planning as well as how effectively proposed plans respond to the needs of local populations and tackle the core issues related to the mismanagement of water resources. Table 1 presents a summary of investment plans and projects discussed by the panelists.

Table 1 Summary of Investment areas and projects by represented stakeholders panelists

Organization	Main Focus Areas	Current Investments
Council for Development and Reconstruction (CDR)	<ol style="list-style-type: none"> 1. Propose programs for investment to the government. 2. Implement projects based on decisions by the council of ministers. 3. Search for funding, negotiate loans. 	<ul style="list-style-type: none"> · Water supply: Ongoing contract for \$687 million (involves the Lebanon-Water Supply Augmentation Project). 75% of this investment is financed from foreign loans. · Irrigation sector: \$430 million (most of which dedicated to Canal 800, in the South). The project is mainly financed by the Arab and the Kuwait funds. · Waste Water Sector: Around \$542 million on an ongoing contract by foreign funding.
World Bank	<ol style="list-style-type: none"> 1. Augment sources of water through financing projects such as the Bisri dam; 2. Work on reducing losses by supporting projects such as the Beirut Mount Lebanon performance-based contract, and implement smart meters (such as in Beirut Mount Lebanon) in relation to Demand of water; 3. Increase in revenues by empowering good governance, in order to operate and maintain the system. 	Lebanon-Water Supply Augmentation Project (Bisri dam): \$617 million.
USAID/Lebanon	<ol style="list-style-type: none"> 1. Optimize water supply by upgrading utilities, reduce losses, and the non-revenue water. 2. Work on demand management through isolation of meters and engagement of civic society, municipality and end-user. 3. Engage the private sector. 	"Lebanon Water Project": \$65 million-dollar project with the aim of increasing access to clean and sustainable drinking water and improve the management of water resources.
KfW Development Bank	Focus investments on vulnerable communities affected by the Syrian refugee crisis.	\$27 million loan from the German Agency KfW to implement a project estimated at \$38 million to protect the Jeita spring from pollution.

The **World Bank** at the request of the government has been supporting three pillars:

- The first one is providing the bulk water which means augmenting the sources of water, in our case one of the projects is the Bisri dam, because the story is securing water for the people.
- On demand side work includes implementing flow meters, smart meters in Beirut Mount Lebanon, and working on reducing leakages.
- On securing water means diversifying water sources, such as the surface water, the ground water, the non-conventional water. Redundancy in the system is key.

USAID and in line with the national Water Sector Strategy is assisting in the support of the Water Establishments and the Litani River Authority, to deliver a better water service. Investment included more than two hundred kilometers of networks, around forty thousand household meters and zone meters, dozens of management tools to the Water establishments, and a number also of wastewater treatment plans along the Litany. USAID investments focus on optimization on the supply side, which is upgrade existing facilities, reduce losses, and reduce the non-revenue water. On the demand management side focus is on isolation of the meters, because “you will not be able to do demand management if you cannot quantify”. The two softer components of the demand management are the engagement of the civic society, the municipality and the end user.

German Development Bank focuses on infrastructure with more investment on the supply side. Since the Syrian refugee crisis, the German government increased the cooperation and intensified cooperation with Lebanon for investment in water supply infrastructure, and wastewater infrastructure mainly in communities affected the most by the refugee crisis. Investment includes water network, reservoirs, rehabilitation of water treatment plans, and wastewater networks.



Main Takeaways:

On Investments in Water Supply

Key message discussed was that in relation to the shortage of water supply the real issue is not the lack of investment and funding, rather the time it takes to assess the feasibility of a particular project and take the necessary steps to start implementing. The cycle of a project is usually long and complex. With Lebanon's stretched human resources,

this cycle can delay the implementation phase furthermore. The construction of any large infrastructure project - from a wastewater treatment facilities, water and wastewater networks, to dams - will need to undergo an environmental impact assessment to determine its compliance with standard regulation which generally take time. Furthermore, site selection, expropriation concerns, making a contract and getting the approval of the concerned parties are all factors that can contribute to slowing down the cycle.

On Investment for Sound Governance and Proper Planning

Although the need for investments is a key aspect in providing proper services, good governance and the efficiency of Water Establishments in collecting fees are as important considerations for improvement in water supply.

“ It is not that things are not done properly it is simply that solutions are more complex and it takes more time. ”

Amal Talbi, Senior Water Resources Management at the World Bank..

It is essential to capitalize on the available resources for investments. That is, in order to tackle the mismanagement of available resources, it is crucial to quantify water demand. This has already been mentioned in previous panels, through the notion of introducing metering systems which will generate data around the trend of consumption, and consequently aid Water Establishments in shaping their action plan. The introduction of new management tools, such as “the Enterprise Resource Planning (ERP) software” is also useful in tackling this concern.

On Sustainability of Investment Projects

“ When we are providing capital assistance to the water establishments we want to make sure that for every dollar of capital investment they are going to receive they will be able to have return or a source of fee collection. ”

Rami Wehbi, Lebanon Water Project (LWP) Program Manager, USAID/Lebanon.

In order to maintain the sustainability of investment projects, donors play a role in assessing the adequate capacity of implementing such investments. For example USAID invests in projects that are of “humble scale”, which often do not exceed 5 or 6 million dollars per investment, and assures that they do not impose a burden on the beneficiary. It is essential to encourage Water Establishments to develop the technical skills to ensure proper operation and maintenance of a project.

“ KfW has one mechanism: Enhance the capacities of our partners during implementation of projects; we also finance the operation for 2 to 3 years and then comes the question: “What do you do then?” ”

Hanan Fawaz, Senior Advisor Water, Wastewater, Solid Waste, KfW Development Bank.

Press Release

In partnership with the Ministry of Energy and Water represented by Suzy Hoayek, adviser to the Minister of Energy and Water, and with the participation of Rein Nieland, Head of Section for Governance, Social Development and Civil Society at the European Union Delegation to Lebanon, Olivier Ray, regional director of the Agence Française de Développement (AFD), Jean Gebran, general director of the Beirut and Mount Lebanon Water Establishment, Rizk Rizk, general director of the Beqaa Water Establishment, Khaled Obeid, general director of the North Lebanon Water Establishment, Wassim Daher, general director of South Lebanon Water Establishment, Dr. Tarek Mitri, director of the Issam Fares Institute and Sally Abi Khalil, director of Oxfam Lebanon; Oxfam launched the second edition of the Lebanon Water Forum on Wednesday March 20 organised under the H2ALL project funded by the European Union Trust Fund in Response to the Syrian Crisis and in collaboration with the Issam Fares Institute for Public Policy and International Affairs at the American University of Beirut. The Forum was attended by more than 150 water experts, academics and governmental authorities, representing more than 58 international and local organisations.

Hoayek asserted in her opening speech that the Ministry has its doors open and is inviting and welcoming water actors to help the Ministry achieve its goals. She added, "we will soon be organising regular coordination meetings at the Ministry to continue the discussion with donors, academics and experts and explore the most effective approaches and solutions to ensure we deliver clean and continuous water to every home." According to Hoayek, the Ministry has already initiated collaborative dialogue with the four regional Water Establishments to build on the national strategy and they are working together to enhance the establishments' performance. Hoayek also announced that the Ministry is currently reviewing and revising the National Water Sector Strategy (NSWW) to meet the current situation and the latest state of art technology in the water sector. She then assured that the updated version will be published by next year at the Lebanon Water Forum 2020.

Furthermore, Nieland recognised the difficulties that the actors in the sector are facing to guarantee adequate levels of services, adding that the EU "believes that their burden could be eased by improving the dialogue of public actors with their citizens, tackling the shortage of qualified staff working in water establishments and strengthening capacity building." Nieland then acknowledged that the problems in the water sector are long preceding the Syrian crisis and that access to safe water and to a healthy environment have long been an issue in Lebanon. He also reiterated the EU's support, saying that it is "is committed to remain a reliable, long-term partner of Lebanon in the process of reform of the water and waste water sector that should accompany the implementation of the Lebanese Capital Investment Programme," hence confirming that a new project financed by the EU is under final preparation with AFD. "Trust, collaboration and dialogue are the keywords for solving the problems of the sector and we thank Oxfam, and to the whole H2ALL consortium, for promoting them today by organising this important forum with EU support," Nieland added.

From AFD's perspective, Ray stated that "as a donor community, we are very hopeful because we are experiencing new energy and dynamism not only with the nomination of new General Directors, who have already started implementing concrete changes from within, but also with H.E. Ms Nada Boustani's clear commitment toward reforming the water sector." Ray affirmed that this positive momentum is also founded on the active involvement of the donor community in the sector as well as the growing implication of academia, civil society and parliamentarians in policy making and their will to capitalise on the experience acquired over the past decades. He indicated the readiness of AFD to accompany the next steps of this policy dialogue, which he deemed essential for the convergence of views between all stakeholders of the water ecosystem.

The four general directors of the Water Establishments explored the challenges and opportunities of the operational aspects at the regional Water Establishments. Having inherited a luggage of challenges, the four directors reaffirmed their enduring commitment to work in solidarity towards ensuring potable water provision to every home across Lebanon. They also acknowledged the lack of trust between the establishment's under-staffed members and the citizens, which they believe can be overcome with a better performance in service provision, a better response to customers' queries and a reassessment of the establishments' human resources as well as structural organisation. They then stressed on the fact that illegal tapping into the water supply networks is leading to financial losses that are handicapping the regional Water Establishments and need to be addressed urgently.

Another panel of experts discussed the strategic frameworks governing Lebanon's water sector and its alignment with International regulations and obligations, which then led the discussion to the national investment planning of this sector. This is especially timely now that the CEDRE conference and the associated required sector reforms are taking front stage.

Despite an array of legal and regulatory frameworks governing the water sector in Lebanon; beginning with Laws 144 of 1925 and 320 of 1926 on the protection of water resources, the enactment of Law 221 of 2000 on the organisation of the water sector, the National Water Sector Strategy (NWSS) of 2010, leading up to latest Water Code of 2018, and against significant foreign and national investments, shortcomings to achieving good governance and water security remain evident nationwide. Public water users continue to be dissatisfied while the regional water establishments continue to operate at financial deficit and struggle against public distrust. The Lebanon Water Forum 2019 aimed to support water governance and service provision in Lebanon through a daylong series of reflections by experts on laws, policies and investments in the water sector.

Lebanon's Water Laws:

Bridging Policy Frameworks to Address New Challenges

Georges Gharios, Nadim Farajalla, Rana El Hajj

Climate Change and Environment
Program, Issam Fares Institute for
Public Policy and International Affairs,
American University of Beirut

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Summary

This policy brief is based on the research paper "Bridging Policy Frameworks to Address New Challenges to Lebanon's Water Management Structure" prepared by the Climate Change and Environment Program at the Issam Fares Institute for Public Policy and International Affairs (IFI) at the American University of Beirut (AUB) and commissioned by Oxfam (as part of the H2All Consortium) for the second edition of the Lebanon Water Forum (2019), with assistance of the European Union Regional Trust Fund in Response to the Syria Crisis - The Madad Fund, and with the partnership of the Ministry of Energy and Water. The paper is an analysis of the various policy frameworks and their effectiveness in meeting priorities of Regional Water Establishments (RWEs) and water uses needs. The water policy framework in Lebanon is reviewed in the light of the latest international donor conference.

French and Ottoman civil laws, as well as codified and customary sharia-based laws, constitute the foundation of the current Lebanese water laws.

Twenty years after the launching of the reforms, Lebanon does not seem to entirely meet the priorities of neither the water users' needs nor the managing agencies, and the various policy frameworks seems to have increased institutional duplication and responsibilities fragmentation on the sector.

KEY RECOMMENDATIONS

- The Government of Lebanon needs to reevaluate the Water Code in order to ensure that any new laws or concepts that are introduced are addressing, and potentially cancelling, old laws that are no longer applicable.
- The National Water Sector Strategy is important and relevant but has remained largely unimplemented. There are two key to its implementation: It becomes a binding document; and is broken down into 'bite-sized pieces' that would enable prioritization and phasing according to available funds.
- The Regional Water Establishments need to improve service levels while moving towards financial autonomy and accountability within the context of the local political economy.
- Tariffs need to be set in the context of progressive service improvement, in light of the local circumstances and with a view to long-term financial autonomy.

List of Acronyms

AWO: Autonomous Water Office

CEDRE: Conference Economique pour le Developpement par les Reformes et avec les Entreprises

MEW: Ministry of Energy and Water

MHER: Ministry of Hydraulic and Electric Resources

NSWS: National Strategy for the Wastewater Sector

NWSS: National Water Sector Strategy

PPP: Public-Private Partnerships

RWE: Regional Water Establishment

WMP: Water Master Plan

PROBLEM STATEMENT

Lebanon has built its water sector on historic foundations laid down by the successive civilizations that have governed Lebanon and the region and which have contributed much to water use and management. The country's water sector has experienced many reforms throughout its history, each of which has had a considerable impact on the country's overall management of the resources and on the behavior of water users. Since the adoption of the Ottoman Mecelle in 1877, and until the elaboration in 1999 of a ten-year Water Master Plan (WMP) by the Ministry of Hydraulic and Electric Resources, a series of codes and laws were adopted to organize and institutionalize the water sector. The current water management framework in Lebanon is the result of administrative reforms that were set in place in 2000. Today, the chief government authority responsible for water and sanitation in Lebanon is the MEW under which operate four RWEs, working alongside other actors and institutions. Twenty years after launching its water sector reform, Lebanon has still not been able to completely meet the priorities of either the water users or the managing authorities.

WATER SECTOR INSTITUTIONAL AND POLICY FRAMEWORK PRE-1999

Throughout Lebanon's history, new water regulations have been imported and superimposed over previous ones, creating a unique situation of legal pluralism covering water laws. Customs and practices were constituted by various rules relating more to common sense than anything else and were recognized over time and given approval by legislators (Catafago and Jaber, 2001). With the publication of the Mecelle code in 1877, a large part of the prevailing customs and habits was transformed into juridical texts. Agricultural water management was regulated by the adoption of the Ottoman Irrigation Code in 1913 and its addendum in 1918. The period of the French Mandate over Lebanon (1920 - 1943) witnessed the adoption of two fundamental texts related to the protection and utilization of public water: Orders 144-S/1925¹ and 320/1926². Several laws were passed since the French mandate; however, the most notable text of the pre-war period was Decree 14438/1970³, which coordinated the uses of groundwater. In 1990, after fifteen years of civil war, the management of water resources was confronted with a ruined infrastructure, a completely disorganized administration and a fragmented territory. In 1999, the General Directorate of Hydraulic and Electric Resources proposed a decennial Water Master Plan (2000-2009): The reform of Lebanon's water sector was officially launched.

"POLICY REFORMS" SINCE 1999

Since 1999, four main events have shaped water policy reform in Lebanon: The adoption of a 10-Year Water Plan in 1999, the promulgation of a series of water administrative laws in 2000, the elaboration of a National Water Sector Strategy in 2010, and the passing of the Water Code by the parliament in 2018. In 1999, the MHER announced projected water sector reforms and proposed a ten-year plan (2000-2009) with the objective of implementing and raising the necessary funds to study and execute works in order to satisfy the water needs of the population in various sectors (Comair, 2004). In April 2000, the Lebanese parliament approved Law 221, which was promulgated in May 2000 concerning the organization of the water sector, reducing 22 Autonomous Water Offices (AWOs) to five RWEs. Law 241 corrected it in August 2000 to further reduce the five RWEs to four RWEs, in addition to the Litani River Authority. Law 247/2000, which was also passed in August, concerned the

¹ Amended by Decree 11/1940

² Amended by Decree 680/1990

³ Amended by Decrees 547/1990 and 13034/1998, and by the order 118/2010

renaming of the ministry as the MEW. Finally, Law 377 brought amendments to Law 221/2000 in March 2002. On March 9, 2012, the Lebanese Government officially adopted its National Water Sector Strategy (NWSS), through Resolution 2. Moreover, the MEW launched its National Strategy for the Wastewater Sector (NSWS) in the whip of the launching of the National Water Sector Strategy (NWSS). The Lebanese government adopted the NSWS, six months after the adoption of the NWSS, through resolution n° 35, on 17 October 2012 (NSWS, 2012). Finally, on April 13, 2018, the Water Code was promulgated under Law 77. The NWSS and the Water Code are currently undergoing update workshops within the MEW and with the help of several consulting offices.

WATER POLICY FRAMEWORK IN LIGHT OF CEDRE

On April 13, 2018, the Water Code was promulgated under Law 77. This event coincided with the CEDRE Conference held in Paris on April 6, 2018. At this conference, Lebanon obtained more than \$11 billion in concessional loans and international donations to finance the first of three phases of an ambitious \$16 billion capital investment program over the next twelve years that included approximately 250 projects in the electricity, water and waste management sectors. Its adoption sent a positive signal to donors because a large part of the projects submitted covered financing concerns for the hydroelectric sector (al-Akhbar, 2018a). However, the fast promulgation of the Water Code happened haphazardly in order to accommodate the holding of CEDRE conference, and the parliament passed the draft water law as stated in the original version provided by the government, without any amendment. The implementation of donor-driven reform is not a new phenomenon in Lebanon. Since 2001, a series of four international donor conferences, known as Paris I, II, III and IV (CEDRE), took place to support the development and the strengthening of the Lebanese economy as part of a comprehensive plan of reform and infrastructure investment. In fact, they were foreign aid flows that came in the form of soft loans, many of which were contingent on a reform package that targeted several public services sectors (Oxfam, 2017).

Problematic areas hindering effective reform towards improved water sector management

INSTITUTIONAL DUPLICATION AND FRAGMENTATION OF RESPONSIBILITIES

Facing up to the high number of institutions, the fragmentation of decision-making, the lack of responsibility, and inconclusive political practices are at the heart of the problems related to water management in Lebanon (Riachi, 2013). Despite the extensive number of actors involved in the management of the country's water, no one is effectively managing the resource in any real sense. The existing legal framework for the Lebanese water sector is not well organized and structured as to avoid mismanagement and the overlap of responsibilities (CAMP, 2003). Although the MEW and the RWEs are the main governmental authorities responsible for management of the water sector other actors and stakeholders, with no clearly defined mandates are also involved. This has led to confusion and at times contradictory responsibilities. Table 1 lists some of the governmental entities involved in the water sector.

Table 1: Organizations involved in water management in Lebanon

Institution	Role in the management of water
Ministry of Public Health	Supervising the protection of the consumer by controlling potable water and monitoring pollution.
Ministry of Environment	Responsible for monitoring pollution, climate change, overuse and environmental impact assessment.
Ministry of Agriculture	Responsible for irrigation water quality, research, extension and training for use of irrigation water.
Ministry of Public Works	Manages meteorological stations in Lebanon and storm drainage networks.
Ministry of Industry	Regulates industrial water use.
Ministry of Interior and municipalities	Responsible for municipal affairs in terms of wastewater management.
Ministry of Information	Plays an important role in raising awareness.
Ministry of State for Administrative Reforms	Participates in elaborating new draft laws and legislation, and water sector reform.
Ministry of Foreign Affairs	Plays a role in negotiations over international transboundary waters.
Council for Development and Reconstruction	In charge of planning infrastructure development, mobilizing funds for major development projects and supervising project execution.
National Council for Scientific Research	Scientific research, remote sensing.
Lebanese Agricultural Research Institute	Meteorological forecasting.
Council for the South	Reconstruction projects for South Lebanon.
Central Fund for the Displaced	Reconstruction of networks and pipes in displaced areas of Mount Lebanon.
Interior Security Forces	Responsible for enforcing arrest warrants and for controlling offenses linked to the environment according to the decrees of public authorities.
Governors	Represent all centralized authorities in their respective governates.
Lebanese Government	Responsible for legislative processes through the Cabinet and the Prime Minister's office.
Lebanese Parliament	Responsible of the legislative processes including the government through parliamentary subcommittees.
UN agencies	Project implementation: FAO, UNDP, UNICEF, ESCWA, etc.
Non-Governmental Organizations	Project implementation.
Water Users	Farmers, irrigators, cooperatives, local committees, Water Users' Associations (WUAs), etc.
High Council for Privatization	Responsible for PPP contracts.

Institution	Role in the management of water
Public Recruitment council	Responsible for recruiting staff for different agencies.
Public Accounting Board	Accounting and monitoring.
Municipalities	Municipal domains. ⁴

WEAK IMPLEMENTATION AND ACCOUNTABILITY

The institutional and legal framework envisaged have not been effectively implemented, with key decrees (especially those in support of Law 221) still missing and major revisions needed for the recently passed Water Code. Lebanon's National Water Sector Strategy (NWSS), drafted between 2008 and 2010, and approved by the government in 2012, represented a necessary and important step in the development of the Lebanese water sector. However, it remained a non-binding executive order that did not impose any legal requirement on public or private entities to take actions to implement it (Oxfam, 2017). While the NWSS remains an important framework for reform, its implementation has been constrained by weak accountability and the continuous delays in the implementation of Law 221 that guarantees the institutional and legal autonomy of the RWEs (Oxfam, 2017). This draws back on RWEs need to move towards financial autonomy and accountability within the context of the local political economy. This is necessary so that they can build on their capacity to manage water service provision and improve service levels. Knowing that currently the RWEs are acting merely as businesses that are compelled by the government to provide services to the consumer in terms of irrigation, potable water and wastewater.

LOOKING FORWARD - KEYS TO BRIDGING POLICY FRAMEWORKS TO ADDRESS SECTOR MANAGEMENT CHALLENGES

Having a strategic policy umbrella such as the 2012 NWSS is an important and relevant framework to ensure a holistic approach to proper management of the sector. However, to avoid remaining in the deadlock of "non - implementation" as is the current state, it is important for the revised NWSS (revision currently under way -2019) becomes a binding document. Further, it should be broken down into 'bite-sized pieces' to allow for phasing its implementation according to priority and available funds.

The current reevaluation of the water code should ensure that any new policies that are introduced incorporate modern water management approaches, and that it cancels old laws that are no longer applicable.

Improving coordination through binding institutional mechanisms for investment planning and execution, is one way to overcome the fragmentation of responsibilities among different entities.

The RWEs need to improve service levels and move towards financial autonomy and accountability within the context of the local political economy. At the same time tariffs need to be set in the context of progressive service improvement, considering local circumstances and with a view to long-term financial autonomy.

⁴ A number of laws and decrees have successively entrusted municipal domains with responsibilities in irrigation management, protection of water infrastructure, planning and implementation of wastewater infrastructure and control of water pollution (Nassif, 2016)

KEY RECOMMENDATIONS

- The Government of Lebanon needs to reevaluate the Water Code in order to ensure that any new laws or concepts that are introduced are addressing, and potentially cancelling, old laws that are no longer applicable.
- The National Water Sector Strategy is important and relevant but has remained largely unimplemented. There are two key steps to its implementation: It becomes a binding document; and is broken down into 'bite-sized pieces' that would enable prioritization and phasing according to available funds.
- The Regional Water Establishments need to improve service levels while moving towards financial autonomy and accountability within the context of the local political economy.
- Tariffs need to be set in the context of progressive service improvement, in light of the local circumstances and with a view to long-term financial autonomy.

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Investment Plans in the Water Management Structure of a Post-War Country:

The Case of Lebanon Challenges

Georges Gharios, Nadim Farajalla

Climate Change and Environment Program, Issam Fares Institute for Public Policy and International Affairs, American University of Beirut

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Summary

This policy brief is based on the research paper "Connecting Various Investment Plans to Address New Challenges in the Current Water Management Structure of Lebanon" prepared by the Climate Change and Environment Program at the Issam Fares Institute for Public Policy and International Affairs (IFI) at the American University of Beirut (AUB) and commissioned by Oxfam (as part of the H2All Consortium) for the second edition of the Lebanon Water Forum (2019), with assistance of the European Union Regional Trust Fund in Response to the Syria Crisis - The Madad Fund, and with the partnership of the Ministry of Energy and Water. The paper is an analysis of the various investment plans in the water sector and their effectiveness in meeting priorities of Regional Water Establishments (RWEs) and water uses needs. This paper will review the various investment plans that were implemented since 1990 and assess by region and by sub sector.

“ **Investment in Lebanon’s water supply infrastructure has averaged around \$100 million annually since 1990.** ”

“ **Gaps in the public sector have allowed the rapid growth of private water providers: 75% of water expenditures by citizens, or \$300 million, goes towards feeding the private sector.** ”

KEY RECOMMENDATIONS

- Greater investment needs to be made in the water supply and sanitation sectors in Lebanon which will support the country in enhancing economic development.
- Water investment projects in Lebanon need to include accountability mechanisms and be developed in consultation with local communities to ensure ownership.
- The Minister of Water and Energy as well as the regional water establishments need to implement projects that enhance water service provision in a manner that meets international standards.
- The Government of Lebanon, and specifically the Ministry of Energy and Water, must prioritize investment and planning in wastewater as well as irrigation projects to ensure similar progress to potable water distribution.

List of Acronyms

BWE: Beqaa Water Establishment

BMLWE: Beirut and Mount Lebanon Water Establishment

CDR: Council for Development and Reconstruction

CEDRE: Conference Economique pour le Developpement par les Reformes et avec les Entreprises

GDP: Gross Domestic Product

MEW: Ministry of Energy and Water

NLWE: North Lebanon Water Establishment

NWSS: National Water Sector Strategy

PPP: Public-Private Partnerships

RWE: Regional Water Establishment

SLWE: South Lebanon Water Establishment

WWTP: Waste Water Treatment Plant

PROBLEM STATEMENT

Despite having abundant rainfall, Lebanon's resources are only partly developed and its national demand for water is currently not met. Throughout the country, water resources are limited in terms of both quantity and quality in part due to climate change but mainly as a result of mismanagement, ageing infrastructure and inadequate investment crippled by a confessional power-sharing system (Oxfam & Triangle, 2017). The country was plagued by fifteen years of civil war during which its water sector (in terms of institutions, administration and equipment) was barely operational. It was not until the war ended in 1990 that fresh investment began in the sector. Since that year, Lebanon has invested an average of 0.5% of its annual GDP into the water sector. The total amount spent to the present day has exceeded \$4 billion. The reconstruction of physical and financial infrastructures that took place after the end of the civil war was made possible by borrowing heavily, mostly from domestic banks and external donors at interest rates that peaked at around 35% (Oxfam & Triangle, 2017). Since 1994, public capital expenditure has been primarily directed to water supply, which absorbed 68% of total investment. Wastewater and irrigation received respectively 23% and 9% of total capital expenditure (WB, 2010). With its liberal economic regime that ensures private initiative and guarantees entrepreneurship, and its location at a strategic geopolitical crossroads on the eastern Mediterranean, Lebanon has accumulated grants and loans and now has a reputation as a heavy borrower, dating back to the early days of the Lebanese state. A series of international donor support conferences has taken place since 2001, several of which¹ were held in Paris, raising more than \$24 billion in pledges to finance development projects in exchange for stimulating the economy and modernizing its financial system. Thirty years and several billion dollars later (all of which have been invested in the water sector for potable, irrigation and wastewater), large regional disparities still appear in the performance of the RWEs and among the different components/sub sectors.

DISPARITIES IN REGIONAL INVESTMENT RELATIVE TO PERFORMANCE OF RWES

Beirut and Mount Lebanon Water Establishment

Beirut and Mount Lebanon region benefited between 1992 and 2006 from 36% of the country's total water investments, a figure of over \$720 million, which enabled it to become the most successful region in terms of water management. With a tariff collection rate of 80%, a revenue-to-maintenance ratio of 226%, and connection rate of households to public drinking water networks of 93%, BMLWE is the only RWE that can support all its cost. Nevertheless, the region suffers from a very ineffective distribution network with only an average daily amount of 13 hours of water available during the year, and an extremely high number of independently working local committees (BMLWE, 2018). The connection rate of households to sewer systems is highest in the agglomeration of Beirut (98%), and drops to less than 35% in the region of Mount Lebanon, with the Jbeil region showing lowest connection rate (BMLWE, 2018). At the time of writing this brief, the BMLWE has one functioning WWTP in Ghadir, funded by KfW (a German state-owned development bank) and the Lebanese government.

South Lebanon Water Establishment

The south of the country has benefited from 14% of the total investment (\$280 million) in water between 1992 and 2006 and has a household connection rate to public drinking water of 86%. The SLWE has an invoice collection rate of 61% which allows it to cover 69% of its operating and maintenance costs (SLWE, 2018). South-Lebanon is experiencing significant water shortages all year round (SLWE, 2018), mainly due to electricity cuts². In terms of sanitation, the South has a connection rate of homes to sewer networks in the order of 42%. One WWTP, funded by the Japanese Bank for International Cooperation, is currently operating in Saida, while the Nabatiyeh WWTP, funded by French and Arab money, is awaiting connection (at the time of writing this brief).

¹ Known as Paris I (2001), Paris II (2002), Paris III (2007) and Paris IV/CEDRE (2018)

² Because of electricity supply shortage, water could not be pumped continuously and shortage could reach 50% in several regions.

North Lebanon Water Establishment

Between 1992 and 2006, the North Lebanon benefited from 35% of the country's investments in water, more than \$ 700 million, and the area has a household connection rate to public drinking water networks of 65%. With an invoice collection rate of 52%, NLWE is able to support more than half of its operating and maintenance costs (NLWE, 2018). With 24 hours of potable water supply per day, the city of Tripoli is exemplary as far as Lebanon is concerned. The municipality is the only one to have tested a PPP experience for the management of drinking water (NLWE, 2018), when in 2003 a contract was signed with ONDEO Liban. In terms of sanitation, 53% of households in the Northern region are connected to sewer systems. The WWTPs in Tripoli (\$100 million funded by the European Bank for Investment), Chekka (\$12 million funded by the AFD and the Lebanese Government) and Batroun (AFD and LG as well) have been completed.

Beqaa Water Establishment

Between 1992 and 2006, the Beqaa received only 2% (\$40 million) of Lebanon's total investments in the water sector, with the lowest in the country and ultimately leading to the worst record in water management. This situation has transformed Northern Beqaa into one of the most underdeveloped regions in the country. With a connection rate of households to public drinking water networks of 68% and an invoice collection rate of only 35.1%, BWE can only support 13% of its operating and maintenance costs. In terms of sanitation, only 41% of households in Beqaa are connected to sewer systems. The Beqaa has several active WWTPs: Baalbeck (funded by the International Bank for Reconstruction and Development), Yammouneh (funded by the Lebanese Government), Jeb Jennine (funded by the Inter-American Development Bank) and Zahle (funded by Italian governmental institutions).

INVESTMENT LANDSCAPE AND DISPARITIES IN PERFORMANCE BY SUB-SECTOR

Potable Water

The public drinking water sector in Lebanon is unanimously described as being poorly managed, since, in the majority of cases, the water is rarely drinkable. This is mainly due to the broken-down water supply networks, leaky wastewater networks, and personal storage of water in rooftop reservoirs, which is intended to compensate for discontinuities in service. Despite more than \$2.5 billion invested since 1990 in the potable water supply sector alone by the MEW, other governmental agencies and the donors, their efforts remain largely insufficient.

Irrigation

The agricultural sector accounts for 4% of the national income and 6% of the national labor and may reach 25% in some rural areas, where it contributes up to 80% of the GDP (CDR, 2018). Irrigation water needs are estimated at 810 million m³/year (CDR, 2018) and consumes around 61% of Lebanon's water annually (NWSS, 2012), still only 9% of the investments target this sub sector. In fact, only \$200 million has been invested in irrigation projects since 1990, and the irrigation policies are poorly coordinated with the MEW as is the national agricultural policy, despite the fact that this sector is the main source of water consumption and high inefficiency rate in the country.

Wastewater

Lebanon suffers from a very high rate of untreated or insufficiently treated wastewater and leaky septic tanks with high impact on water quality. Even though more than \$500 million have been injected into the sector, connectivity, especially in the collection of wastewater is still low. More than half of the sanitation budget has been allocated to the construction of WWTPs, but only 15% of the budget was spent on the construction and overhaul of sewage networks. Since 1990, only 5 million m³/year of wastewater are treated and reused.

ROLE OF TARRIFFS IN SUSTAINING INVESTMENTS IN WATER AND WASTEWATER

Tariffs for water services are set independently by the four RWEs and are standardized within each establishment. Despite the fact that costs may differ significantly between areas within the same establishment due to pumping and networking costs, the price remains the same although the costs of each establishment are based on many different socio-economical and financial factors. Domestic water is sold at a nominal daily flow. Flat rates applied are lower for smaller towns and increase proportionally. The level of consumption is limited according to the size of the house by a gauge installed on all residential connections, although actual consumption is typically lower because of intermittent supply and low water pressure. For irrigation practices, water is generally priced at a flat rate too. The key observation regarding tariffs is that they do not cover the RWEs costs for operating, maintaining and eventually reinvesting in the sector. The lack of cost recovery in most RWEs is not only related to poor collection rate, it is mainly linked to the unrealistic tariff scheme that is being implemented. One of the main reasons why the investments did not realize their main objectives is the poor tariff scheme in place. Hence, any investment that is not associated with a rational tariff scheme is not sustainable.

HOW TO OPTIMIZE INVESTMENT PLANNING GOING FORWARD?

Observing the investment and performance landscape in the water sector since 2012 it becomes clear that the wastewater and irrigation subsectors did not witness similar progress on par to that made in the development of water supply distribution networks and in large scale water supply infrastructure such as dams. Furthermore, the rehabilitation activities implemented to date have not been able to secure holistic water resources management (CIP, 2018). The state of the water supply and sanitation sector in Lebanon is still poorly developed despite all the investments made and is not in line with the level of economic development aspired for by the country. Lebanon's vague and complex legal and strategic framework could be a main contributor to the ineffective investment landscape in the water sector. Roles and responsibilities often overlap between various actors and between central and local authorities which leads to fragmentation in various aspects. Furthermore, this leads to poor accountability as it would be easy for one entity to disavow responsibility and lay the blame at the door of others. This further raises the question of effective coordination between all stakeholders involved in the development of the water sector in Lebanon to ensure that priorities are synched, and investment matches actual needs and respects existing regional and sub sectoral disparities.

The Ministry of Energy and Water must effectuate investment and planning in wastewater as well as irrigation projects in order to ensure similar progress to that of potable water. These combined investments will support Lebanon in enhancing its economic development; however, these will only succeed if accountability mechanisms are implemented and a participatory approach to project development that involves all stakeholders is adopted.

KEY RECOMMENDATIONS

- Greater investment needs to be made in the water supply and sanitation sectors in Lebanon which will support the country in enhancing economic development.
- Water investment projects in Lebanon need to include accountability mechanisms and be developed in consultation with local communities to ensure ownership.
- The Minister of Water and Energy as well as the regional water establishments need to implement projects that enhance water service provision in a manner that meets international standards.
- The Government of Lebanon, and specifically the Ministry of Energy and Water, must prioritize investment and planning in wastewater as well as irrigation projects in order to ensure similar progress to potable water distribution.

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