National Water Sector Strategy

"A right for every citizen, a resource for the whole country"





LEBANESE REPUBLIC
MINISTRY OF ENERGY AND WATER

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Baseline

Water Sector Infrastructure

Water Sector Management

Demand/Supply Forecasts

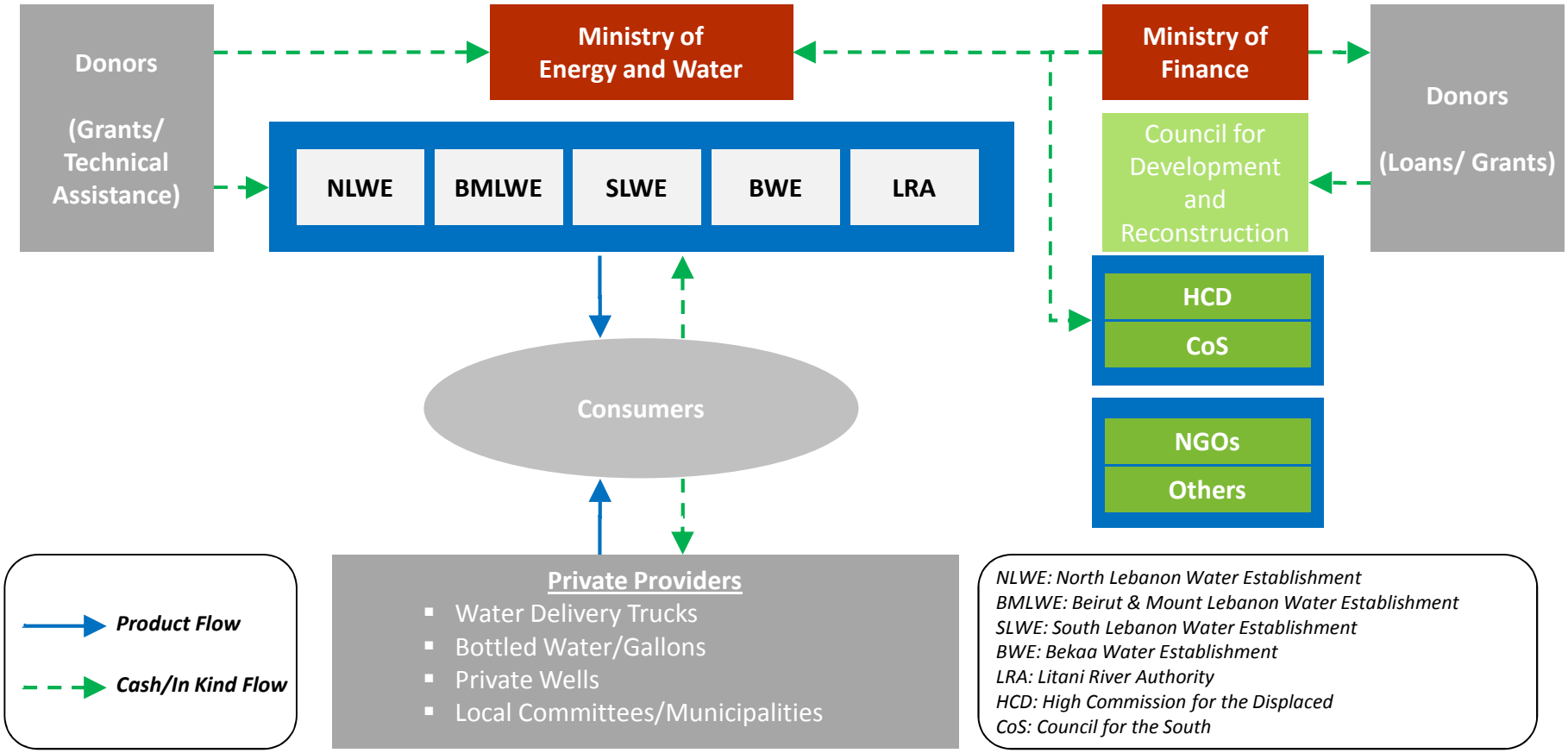
Sector Enabling Environment

Investment Plan

Strategic Roadmap

I Investment planning, capital spending and service provision responsibilities are scattered among various players with weak coordination

Current Institutional Setting and Commercial Relations in the Lebanon Water Sector



I The implementation of reform 221 is still incomplete with discrepancies between legal and *de facto* responsibilities

Assessment of the Implementation of reform Law 221

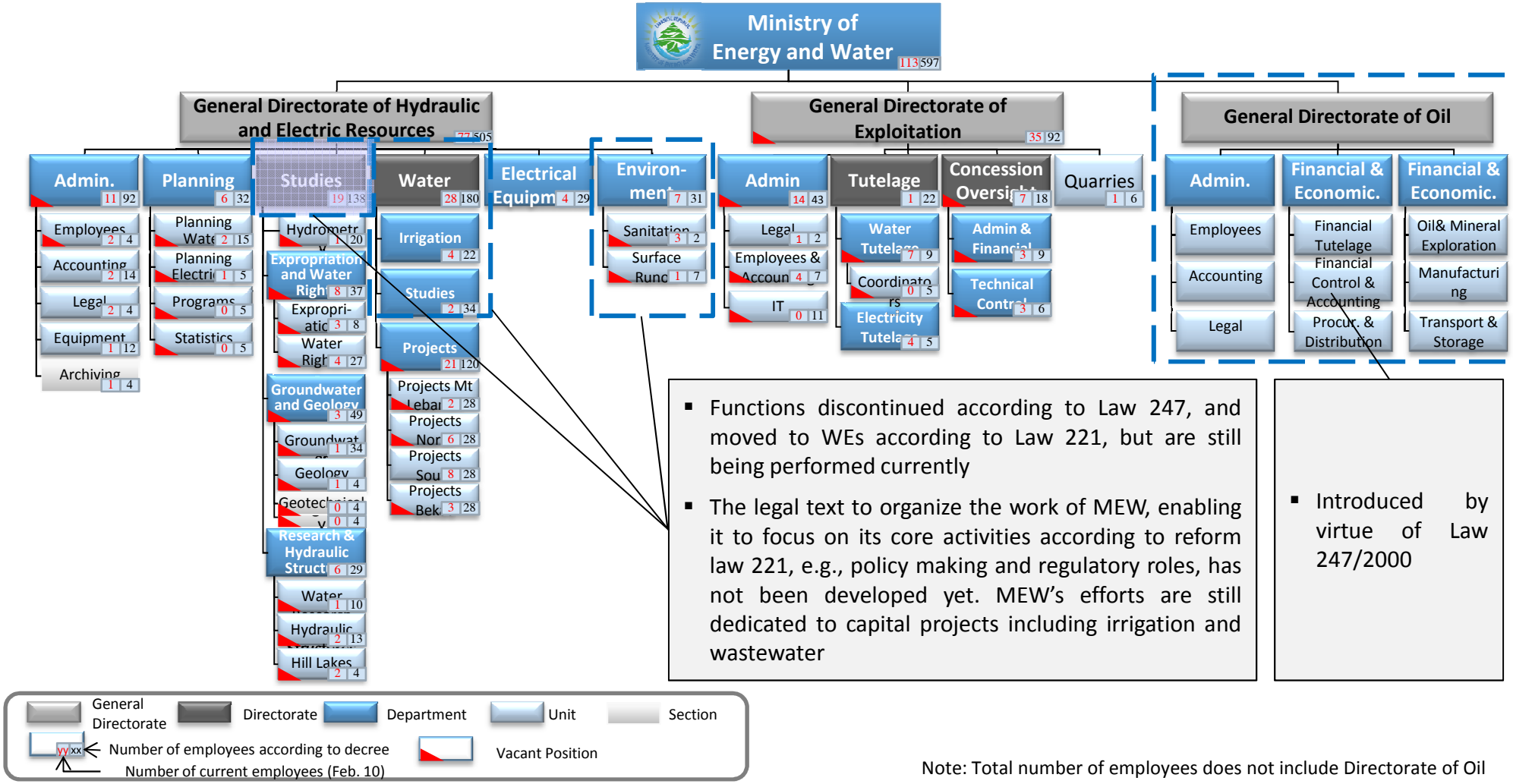
	Best-Practice Principles, 2000	Current Situation, 2010
Reform Law 221	▪ Separation between policy-making and service provision ▪ Consolidation of service provision in autonomous regional water establishments (WEs), and policy-making in MEW ▪ Financial and administrative autonomy of the new WEs	▪ The implementation of the reform law has been initiated but not fully concluded ▪ The transfer of functions to the four WEs has been subject to several delays ▪ The WEs are not yet empowered to act with full administrative and financial autonomy ▪ The legal text to organize the work of MEW, has not been developed yet. MEW's efforts are still dedicated to capital projects and O&M. ▪ WEs suffer from a shortage of funds (*) and technical staff

These discrepancies between legal and *de facto* responsibilities have created institutional uncertainty, and weakened the accountability line between the policy-maker and service providers

Note: (*) with the exception of BMLWE and LRA that do not have any shortage of funds

I MEW is not yet enabled to concentrate on policy making, and regulatory roles, as per Law 221. Efforts are still dedicated to capital projects and O&M

Organization Structure of the Ministry of Energy and Water (*de facto*)



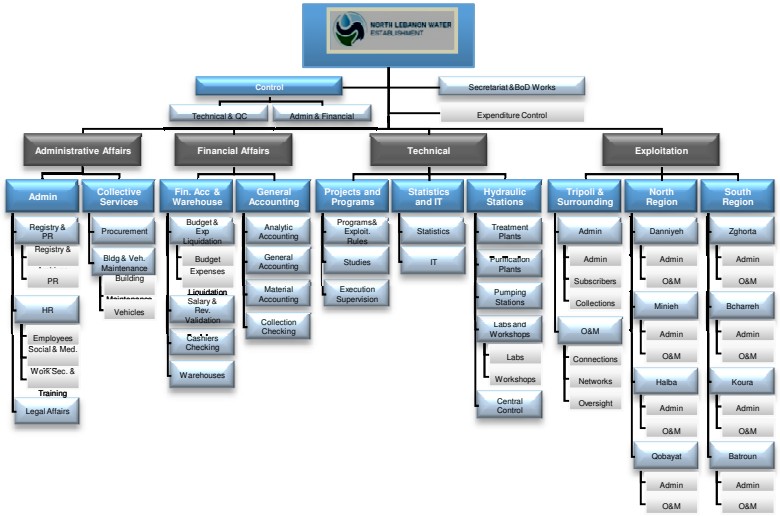
- Functions discontinued according to Law 247, and moved to WEs according to Law 221, but are still being performed currently
- The legal text to organize the work of MEW, enabling it to focus on its core activities according to reform law 221, e.g., policy making and regulatory roles, has not been developed yet. MEW's efforts are still dedicated to capital projects including irrigation and wastewater

- Introduced by virtue of Law 247/2000

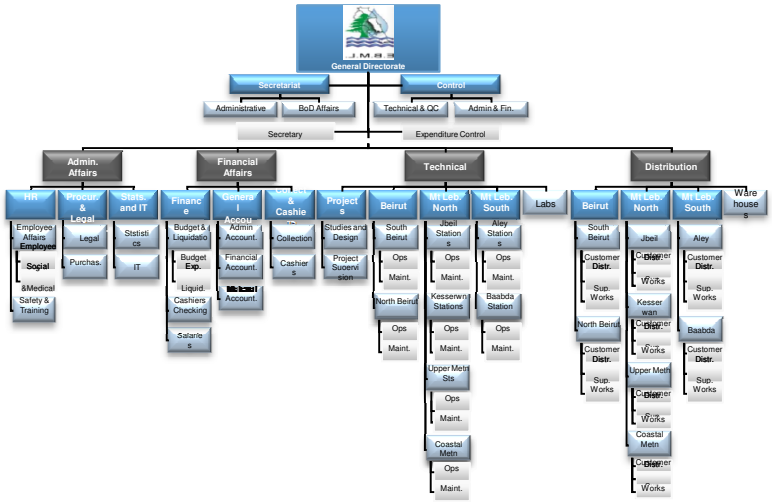
Note: Total number of employees does not include Directorate of Oil

I Focus of WEs is on water supply only with virtually no wastewater and irrigation activities performed so far

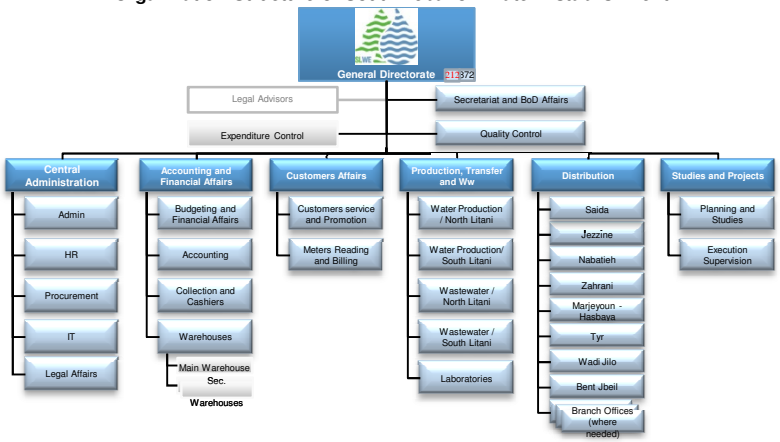
Organization Structure of North Lebanon Water Establishment



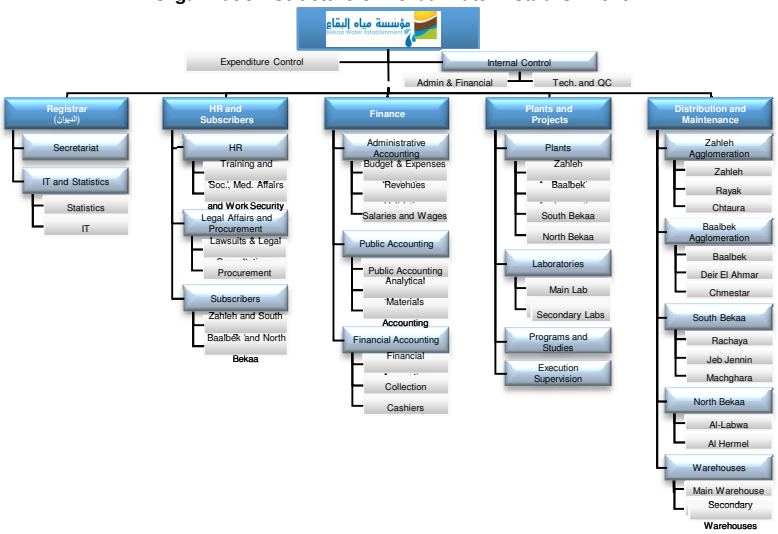
Organization Structure of Beirut & Mount Lebanon Water Establishment



Organization Structure of South Lebanon Water Establishment



Organization Structure of Bekaa Water Establishment

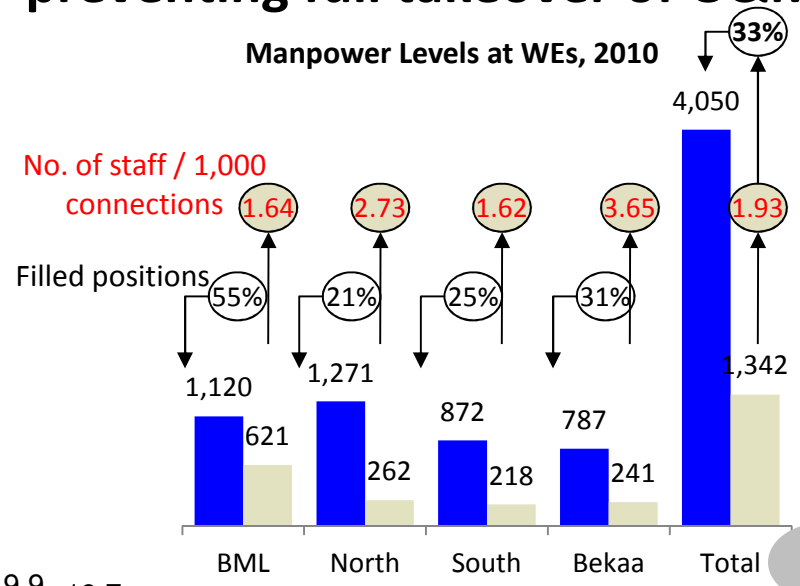


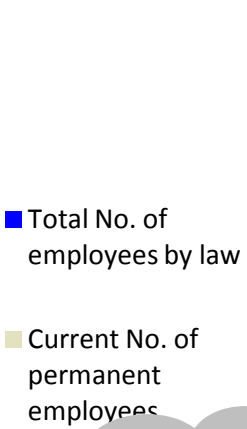
Directorate | Department | Unit | Section

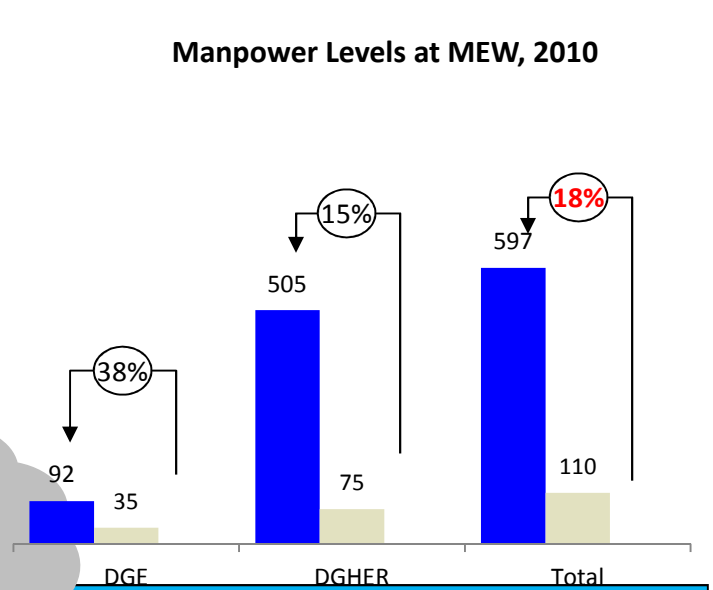
General Comments

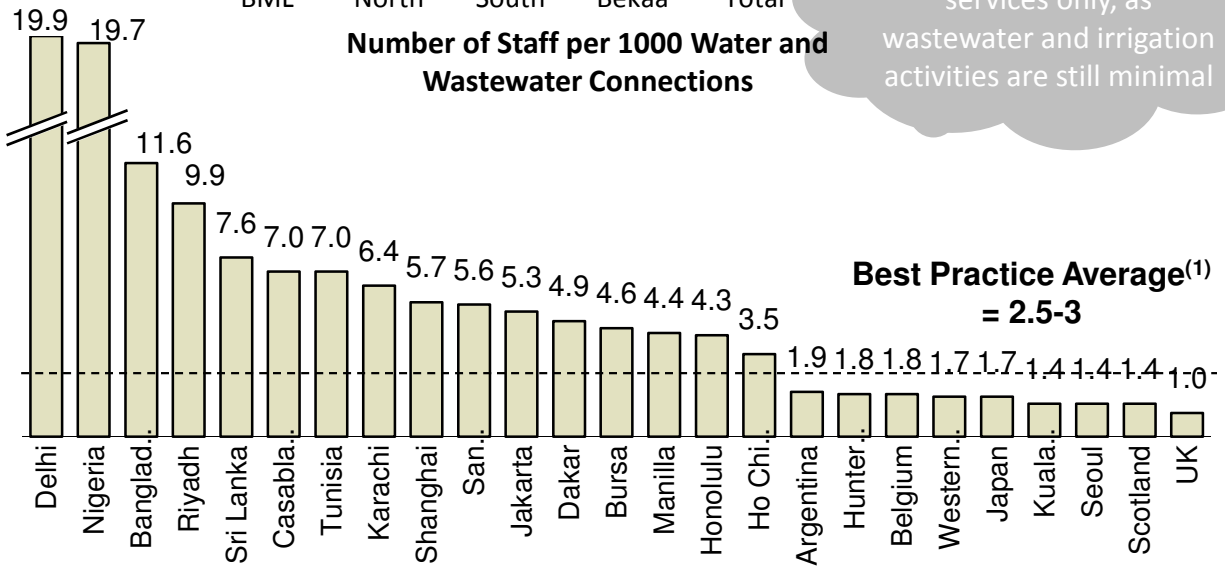
- No irrigation or wastewater responsibilities yet
- Most suitable organization for technical functions to be studied
- Limited focus on Strategic Planning and Business Planning
- No stress on water demand management
- No focus on performance management
- Limited focus on IT, placed at a low level in the org.
- Fixed Asset Management not included in the org.
- Procurement, Purchasing and Warehouses would be better grouped under Supply Chain Management
- Customer Service is decentralized and fragmented across regional units
- Control and Audit functions are grouped under one function

I The lack of technical capacity, financial autonomy and accountability are preventing full takeover of O&M responsibilities









Staff efficiency ratio of WEs calculated for water supply services only, as wastewater and irrigation activities are still minimal

Comments

- MEW and WEs are largely understaffed
- WEs rely on contractor-provided staff, mainly workers performing O&M, to partially fill the gaps. Almost 50% of total staff working in WEs are provided by contractors
- Gaps are mainly in managerial positions (Heads of Department or Unit)
- The high efficiency ratio in Bekaa reflects a low number of connections rather than a high number of employees

Note: (1) Best practice is indicative and is an average of top 15 operators. Average depends on scale, level of outsourcing as well as productivity

Source: IBNET Report and Water and wastewater utilities of the World

II Absence of volumetric charges is limiting incentives for conservation at the consumer, and production at the WE. No wastewater tariff introduced so far

	Current Tariff Structures	Comments
Water Supply	▪ Same tariff structure is applied in all four WEs, with slightly different rates; BWE: 118 $/yr (0.32 $/m3), NLWE: 140 $/yr (0.38 $/m3), SLWE: 147 $/yr (0.40 $/m3), BMLWE: 157 $/yr (0.43 $/m3) ▪ Lump-sum flat tariff based on contracted volumes of water, disconnected from real consumption ▪ Although around 10% of the connections in Lebanon are metered, volumetric tariffs based on real consumption are still not applied ▪ Customers' registers are not regularly updated ▪ Low collection rates, variable between WEs	▪ Volumetric charges prevented by the lack of meters ▪ Lebanon is one of the very few countries in the world still adopting this tariff structure ▪ Lack of volumetric charges limiting conservation incentives at the consumer level, and production incentive at the WE level ▪ Lack of incentive for WEs to reduce losses or increase availability ▪ Increased reliance on expensive private providers
Irrigation	▪ Two tariffs are generally used: • Area Charges: lump sums periodic charges based on area irrigated (from 140 to 650 $/ha/yr) • Volumetric Charges: used in case of pressurized networks, where hydrants are equipped with water meters (from 0.10 to 0.15 $/m3) ▪ Very low collection rates	▪ Irrigation is the largest water consumer, with very limited metering, preventing volumetric charges ▪ Lack of awareness on water consumption and conservation ▪ High reliance on undeclared groundwater ▪ Collection not performed effectively b WEs
Wastewater	▪ No wastewater tariff applied so far	▪ Does not provide incentive for limiting pollution

III Gaps in legal/regulatory framework are mainly leading to delays in water sector reform and Private Sector Participation in O&M and in capital projects

Gaps in the Current Legal/Regulatory Setup

- Incomplete implementation of Law 221 of 29 May 2000 and its amendments, and the lack of required bylaws to finalize the implementation of the water sector reform
- The need to develop required legislation to avoid delays in private sector participation in the water sector, mainly to allow for BOTs in large capital projects
- The need to modernize irrigation laws, thus abolishing the Ottoman law of 1913 in a view to facilitate and organize the use of irrigation water, mainly through the creation of Water Users Associations (WUAs)
- The need to develop the legal requirements to support strategic priorities in the water sector
- The need to achieve the ratification of the Water Code
- The need to undertake an in-depth gap analysis of all laws and regulations governing the water sector

IV Environmental issues are affecting water resources with a direct impact on quality

Water Quality and Pollution

State of water quality in Lebanon

- The level of bacteriological contamination differs from a public water source to another, ranging from 0% in certain rural areas to reach 90% around more populated urban areas.
- The chemical contamination varies widely among WEs:
  - Sea water intrusion being a common problem for all the coastal wells raising the issue of high salinity and conductivity problems
  - Elevated nitrate levels in Bekaa valley
  - Olive oil residue in the areas of North and South Lebanon
  - Accidental pollution due to industrial waste and oil intrusion from gasoline stations

Pollution sources

- Inadequate domestic sewage disposal, predominantly discharged in the environment without treatment; 70% of all natural sources with bacterial contamination
- Overexploitation of water resources due to excessive drilling and pumping (mainly concentrated in coastal area and Bekaa)
- Excessive use of fertilizers and unregulated application of pesticides
- Direct discharge of industrial effluent into the environment (concentrated along the coast, in Mount Lebanon, in the Bekaa valley and Litani water shed)
- Open dumping

Source: MEW, UNICEF

Strategic objectives for the Lebanese water sector

Vision — *"Water: A right for every citizen, a resource for the whole country"*

Mission — *"Ensure water supply, irrigation and sanitation services over all the Lebanese territory on continuous basis and at optimal service levels, with a commitment to environmental, economic and social sustainability"*

Objectives

Infrastructure

1 Production

- **Maximize the potential and improve the quality of surface water resources**
- **Improve management and protection of groundwater resources**, moderate extractions, promote artificial recharge, and consider this resource as a strategic reserve
- **Fulfill deficits through groundwater and/or surface storage according to potential and availability per region**; priority to be given to surface storage in case of availability of both resources

2 Transmission and Distribution

- ***Water Supply*: Ensure proper and continuous access to high-quality water supply** through increased coverage, reduced unaccounted for water and optimized network management
- ***Irrigation*: Provide adequate quantities and quality of irrigation water** and incentivize modern, water-saving irrigation techniques

3 Wastewater

- **Increase coverage of wastewater collection networks and treatment capacities**
- **Optimize current wastewater treatment processes** and sludge disposal, and ensure adequate reuse of treated effluents where applicable

Management

I Institutional and Organizational

- **Support a full implementation of the water sector reform** and improve on the management model between WEs and MEW
- **Improve on capital spending responsibilities**, inter-agency coordination and spending efficiency
- **Improve the management of the irrigation sector**

II Financial and Commercial

- **Introduce and implement new tariff strategies**
- **Promote private sector participation** in O&M and capital projects
- **Gradually achieve O&M and then full cost-recovery**

III Legal and Regulatory

- **Enhance and modernize the legal setup** to support the implementation of the NWSS and future requirements
- **Enforce a regulatory regime** which would align WEs with leading utilities in the region and worldwide

IV Environmental Concerns

- **Achieve advanced climate change knowledge**
- **Improve water quality, flood mitigation and protection of recharge zones**

V Awareness and Conservation

- **Implement awareness and conservation campaigns** consisting of gradual enforcement of consumer metering, awareness raising, and promote higher efficiency plumbing devices