

# The private modes of water capture in Lebanon

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## Introduction

This article highlights how the appropriation of water in Lebanon mirrors the economic structures and the political confessional system of the country, in ways that have led to a situation of inadequate service delivery, thereby fuelling civic discontent. It offers a reading of the evolution of the means of production and modes of management of Lebanon's water resource, in the context of deeper tensions and conflict dynamics in Lebanese society. These are imposed by confessional political divides, geographic disparities, urban fragmentation and recent regional upheavals. Viewed through this prism, this article will argue that water management issues take on a wider significance for Lebanon's peace and security.

The proponents of neo-liberal theory informing privatisation anticipate that liberalisation processes will work in the public interest. In the case of water, this implies that its commodification and opening to competitive pricing, as well as overall valuing of the resource, will lead to improved service. This has been on the international agenda since the 1992 Dublin Statement on Water and Sustainable Development adopted in preparation for the United Nations Conference on Environment and Development in Rio de Janeiro in June of the same year. In its Principle No. 4, it states that: "Water has an economic value in all its competing uses and should be recognised as an economic good."<sup>88</sup> However, this article will demonstrate how, in Lebanon, private actors have instead exploited their appropriation of water assets to reap disproportionate profits, at the expense of the public.

Inadequate network supply has persisted throughout the post-war era, despite the US\$3 billion invested by the Lebanese government in the sector since the country entered its reconstruction phase. The rehabilitation of city networks, mainly in the capital Beirut, attracted the largest share of funds, while development of the infrastructure in peri-urban, rural and remote areas has been neglected. Public water infrastructure projects have been diverted through politically linked construction companies, in the absence of both a clear strategy and transparent bidding processes.<sup>89</sup> Privatisation came about in response to international pressure to privatise water, as an intended solution to state mismanagement of the service. These projects have absorbed international development loans granted to the Lebanese government following various assistance conferences (for example, Paris II in 2002 and Paris III in 2007).<sup>90</sup> Thus, external public debt has been accumulated by different government agencies commissioning works. International donors are directly implicated in a failed management process that has provided one among many venues for corruption and profiteering by the political elite.

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88 UN Documents, The Dublin Statement on Water and Sustainable Development, Paper adopted at the International Conference on Water and the Environment, Dublin, 31 January 1992, <http://www.un-documents.net/h2o-dub.htm>

89 R. Riachi and J. Chaaban, The distributive politics of water projects in Lebanon, Working Paper, American University of Beirut, 2013

90 R. Riachi, Institutions et régulation d'une ressource naturelle dans une société fragmentée : théorie et applications à une gestion durable de l'eau au Liban. [Institutions and regulation of a natural resource in a fragmented society: A case study for a sustainable management of water in Lebanon], PhD dissertation, University of Grenoble, 2013

This article is organised as follows. The first section discusses the state of production and usage of water in Lebanon, both for domestic and agricultural consumption (irrigation). It analyses patterns of water production both in terms of geographical characteristics and social costs. The second section discusses the legal and institutional aspects of Lebanon's water privatisation experience, as well as the evolution of the dominant discourse, which asserts large-scale projects blended with PPPs as the best solution to mismanagement. Both sections highlight Lebanese citizens' perspectives, including the resilience strategies of residents coping with poor supply, as well as instances of civic mobilisation and demand for better service.

## Water commodification and the public network

The first subsection covers domestic usage of water in Lebanon, drawing on recent surveys and censuses to show routine dependency and a reliance on private water provisioning. The discussion also touches on pollution and public health hazards, and the complete deprivation of the most vulnerable from access to adequate water. The second subsection presents on the uneven development in agricultural irrigation in the country. This essentially gives an overview of the ways in which dominant large landowners' private initiatives in the use of water for export-led production in the absence of public irrigation schemes have skewed development opportunities.

### *Domestic infrastructure and private provider alternatives*

Because of rural–urban exodus and the different flows of migration and refugees that Lebanon witnessed during the 20th century, it is estimated that 53.1% of urban residents in Lebanon live in slums.<sup>91</sup> More than one-third of the population is concentrated in coastal cities.<sup>92</sup> The Central Administration of Statistics estimated in 2009 that, out of four million Lebanese, Beirut has 10.8%, the Mount Lebanon Beirut suburbs have 27.0%, the rest of Mount Lebanon has 15.8%, Akkar and Miniyeh-Danniyeh has 8.4%, rest of north Lebanon has 9.2%, Baalbek-Hermel has 6.33%, the rest of Beqaa has 5.4%, the South has 10.4% and Nabatieh has 6.7% of the population.<sup>93</sup>

The rationing of public network supply is particularly acute in Beirut and Mount Lebanon, where daily water supply drops from 13 hours during the wet season to only three hours during the dry season.<sup>94</sup> Despite lower population density, other regions face a summer rationing that reaches an average of six hours per day and eight hours in the winter season.<sup>95</sup> Latest figures were collected more than seven years ago; anecdotally, it is abundantly clear that the situation has actually worsened everywhere.

With an obsolete domestic water network, most of it dating back to the 1960s, leakage is estimated to be as high as 50% on average, reaching 80% in some areas. The deficit between demand and supply for potable water has manifested itself in frequent rationing of the domestic water service.

91 United Nations programme for human settlements (UN-Habitat), Global urban observatory data, 2005. The report defines a "slum household" as a group of individuals living under the same roof lacking one or more of the following conditions: access to improved water, access to improved sanitation, sufficient living area, durability of housing, security of tenure.

92 UN-Habitat, Global report on human settlements 2009: Planning sustainable cities, London: UN-Habitat, Earthscan, 2009

93 Ministry of Social Affairs, UNDP and the Central Administration for Statistics, Mapping of human poverty and living conditions in Lebanon (in Arabic), 2004

94 World Bank, Republic of Lebanon – Water sector: public expenditure review, Report No. 52024-LB, Social and Economic Development Group, Middle East and Africa Region, World Bank, 2009a

95 World Bank, Lebanon: Social impact analysis – electricity and water sectors, Report No. 48993-LB, Social and Economic Development Group, Middle East and Africa Region, World Bank, 2009b

According to various recent surveys, three-quarters of the Lebanese household budget allocated to water is paid off-network to private vendors, primarily bottled water companies and water truck providers.<sup>96</sup> Those private water suppliers form a myriad of formal and informal water providers who have tapped into a lucrative market, taking advantage of service shortages. While the former are mainly local water-bottling brands or transnational corporations like Nestlé, the latter operate unofficially and illegally under the auspices of politicians and local authorities. The expenditure to off-network private sources is a necessary coping strategy for citizens, compensating for domestic drinking water network shortages that are experienced across the country. Due to service rationing and unequal provisioning between regions and neighbourhoods, water provision is at the core of geographical disparities and urban fragmentation.<sup>97</sup> In different regions, citizens have begun mobilising for their right to decent water supply (e.g. Nabatieh<sup>98</sup> in 2010; Jounieh<sup>99</sup> in 2011; Jdita,<sup>100</sup> Hermel<sup>101</sup> and Naameh<sup>102</sup> in 2012; Chmestar,<sup>103</sup> Bint Jbeil, Saida and Baalbek during the dry summer 2014; Baabda-Mreijeh<sup>104</sup> in 2015, among many others).

Lebanon has no metering system in place and residents are required to pay a flat fee that is collected by the Regional Water Establishments. In spite of the absence of consumption metering, or a correct evaluation of physical leakage, it is assessed that the actual uniform fee is able to cover all operation and maintenance costs of the water network in the country and ensure large cash flows as is the case in the Beirut Mount Lebanon Water Establishment.<sup>105</sup> Despite the worsening service, the flat rate for domestic use keeps rising, usually without any prior information; it increased 22% in one year between 2013 and 2014. With a flat fee meant to deliver one cubic metre of water per subscription per day, it is unsurprising that some residents abstain from paying the bill for a service that does not deliver.

A further significant consequence of poor network supply has been a boom in the practice of digging private wells. Official documents talk about 50,000–80,000 private boreholes in Lebanon, or an average five to eight wells per square kilometre, more than half of which are illegal.<sup>106</sup> Those are huge numbers when compared to the 650 public wells supplying most of the domestic public water network. In the 1970s, prior to the war, there were only 3,000 wells.<sup>107</sup> This exponential increase in the number of private wells is primarily the consequence of citizens seeking autonomy from a deficient public network, both during the civil war and in the later reconstruction phase.

Significantly, this informal practice has played an important role in consolidating political allegiances, as political parties have taken up the opportunity to drill wells, using water as a

96 Ibid; CORAIL, ICEA, IPSOS, Les Libanais et l'eau potable [The Lebanese and drinking water], Beirut: En-quêtes socio-économiques, 2004

97 É. Verdeil, C. Féré and F. Scherrer, De la rétroaction entre différenciation territoriale et modèle universel des services urbains en réseau: les enseignements du cas libanais [Feedback between territorial differentiation and universal model of urban services network: lessons from the Lebanese case], Flux, 75, 2009, pp.27–41

98 See <http://www.khiyam.com/news/article.php?articleID=10164> (in Arabic)

99 See <http://www.kesserwen.org/n/news.php?id=942> (in Arabic)

100 See <http://www.al-akhbar.com/node/98451> (in Arabic)

101 See <http://admin.alnour.com.lb/newsdetails.php?id=36253> (in Arabic)

102 See <http://www.alkalimaonline.com/article.php?id=88662> (in Arabic)

103 See <http://www.lbcgroup.tv/news/159453/%D8%A7%D9%87%D8%A7%D9%84%D9%8A-%D8%B4%D9%85%D8%B3%D8%B7%D8%A7%D8%B1-%D9%8A%D8%B9%D8%AA%D8%B5%D9%85%D9%88%D9%86-%D8%A7%D8%AD%D8%AA%D8%AC%D8%A7%D8%AC%D8%A7> (in Arabic)

104 See <http://www.lebanonfiles.com/news/850009> (in Arabic)

105 World Bank, 2009b, Op. cit.

106 See World Bank, Republic of Lebanon, Policy Note on Irrigation Sector Sustainability, World Bank, November 2003; World Bank, 2009a, Op. cit.; Ministry of Energy and Water (MoEW), National water sector strategy report, 2010; MoEW and UNDP, Groundwater assessment and database project, Final Output (unpublished), 2014; MoEW and the Lebanese Center for Water Management and Conservation, Lebanon environmental assessment of the Syrian conflict and priority interventions, cited in Ministry of Environment and UNDP, 2014, Op. cit.

107 Council for Development and Reconstruction, Development program horizon 2006–2009, Consortium with Dar al-Handasah, 2005

socio-communitarian service, especially in peri-urban and remote areas that lack complete state intervention.<sup>108</sup> Inadequate state performance in managing the water sector thus feeds into fragmentation in the wider socio-political space.

A study carried out by the World Bank in 2004 estimates the overall social costs of environmental degradation to Lebanon at 2.8–4% of the GDP, of which 1–1.2% is due to bad water quality.<sup>109</sup> A more recent World Bank report estimates that the total cost of water mismanagement in Lebanon is 2.8% of GDP per year.<sup>110</sup> The largest part of this is the private opportunity costs that amount to 1.3% of the GDP (US\$308 million). This equates to the domestic expenditure on off-network water supply, costing households 75% of their total budget allocated to water supply and inhibiting investment in other basic needs, health, education and household production. The most prominent sources of private water supply, in terms of expenditure share, are, by far, private bottled water with 51% (gallons, 35% and small water bottles, 16%), followed by delivery trucks (21%), artesian wells (2%) and private networks (1%).

Many claim that access of Lebanese to water has worsened since war erupted in Syria in 2011, with more than one million additional refugees fleeing to Lebanon. The issue of the Syrian refugee influx and related pressure on Lebanese resources has become politically polarised, with its actual impact exaggerated in xenophobic and nationalist discourses. According to a World Bank report, the additional estimated water demand is equivalent to 26.1 million square metres per year, or only 7% of the pre-crisis domestic water demand.<sup>111</sup> In addition to this apparently low figure, there is the acute need of refugees to get sufficient access to water. According to a recent United Nations Children’s Fund survey, “the rate of diarrhea during the last two weeks before the assessment found this year was lower than the diarrhea rate observed last year (24.9% in 2013 compared to 40.2% in 2012)”.<sup>112</sup> Not to mention their housing conditions with 40% of Syrian refugees living in inadequate substandard shelters; among these, 15% are in tented settlements.<sup>113</sup>

#### *Private irrigation initiatives in Lebanon’s agricultural economy*

Lebanon’s rural areas are home to about 13% of the country’s population. Based on a study by the UNDP,<sup>114</sup> about 28.5% of the Lebanese population lives below the upper poverty line of US\$4 per day; 8% are under the lower poverty line of US\$2 per day. Poverty is prevalent in the main rural mohafazats. In 2006, the incidence of rural poverty was highest in North Lebanon (52.5%), followed by South Lebanon (42%), Beqaa (29%), Mount Lebanon (19.5%) and Nabatieh (19%). Agricultural activity has the highest poverty rate among the economic activities of the country, with an average monthly income of US\$288 and a median income of US\$300, half the national averages. Under these conditions, 67.5% of farming households are poor, lacking medical coverage and have limited access to education and public infrastructure (electricity, drinking water and sanitation).

108 R. Riachi, 2013, *Op. cit.*

109 M. Sarraf, B. Larsen and M. Owaygen, *Cost of environmental degradation – The case of Lebanon and Tunisia*, Paper No. 97, Environmental economics series, Washington DC: World Bank, 2004

110 World Bank, 2009b, *Op. cit.*

111 World Bank, *Lebanon – Economic and social impact assessment of the Syrian conflict*, Report No. 81098-LB, World Bank, 2013

112 O. Hamza, 2013 *Joint nutrition assessment: Syrian refugees in Lebanon*, Beirut: United Nations Children’s Fund, 2014

113 United Nations High Commissioner for Refugees (UNHCR) and UN-Habitat, *Housing, land & property issues in Lebanon: Implications of the Syrian refugee crisis*, Beirut: UNHCR and UN-Habitat, 2014

114 H. Laithy, K. Abu-Ismaïl and K. Hamdan, *Poverty, growth, and income distribution in Lebanon*, Brasilia: IPC of the UNDP, 2008

One-third of Lebanese territory is arable land (3,300 square kilometres) and one-quarter of the country is cultivated (2,310 square kilometres). In 1950, it was estimated that agricultural production contributed 20% of the GDP: this has dropped to less than 5% in recent years. According to the most recent general agricultural census conducted in 2010–11, half of the cultivated lands are irrigated.<sup>115</sup> Irrigation in Lebanon uses 65–70% of total freshwater consumed annually. Permanent crops represent 54% of cultivated lands (fruit trees and olive trees), followed by seasonal crops with 44% (among them 20% for cereals) and greenhouses at 2%.

In the first general agricultural census conducted in 1961, cereals were predominant and represented 39% of the total cultivated lands; this has progressively decreased to 25% in 2007 and 20% in 2010. In the 1998 census, 53,000 hectares of previously cultivated wheat were reported as abandoned in addition to around 100,000 hectares of terraced lands. This transformation is mainly due to the shift towards high-value and water-intensive crops that shaped the agronomic landscape of the country during the last decades. The same sources estimate land area with fruit trees to have progressively gained the first rank, representing one-third of the total cultivated lands. This specialisation in high added-value crops has led to high rents per surface when compared to neighbouring countries. The productive value of Lebanese land averages at US\$280,000 per square kilometre, which is six times as high as in the Syrian Arab Republic and 11 times that in Jordan.<sup>116</sup>

In 2010, 68% of farms were recorded as smaller than one hectare, representing 18% of the total agricultural lands.<sup>117</sup> Conversely, farms of more than 10 hectares represent 2% of holders, but 33% of the total agricultural lands. These figures reveal the polarisation of investment capabilities and explain developments in land irrigation, with investment in irrigation infrastructure clearly more favourable to large farms. This is due to the uneven coverage of public irrigation infrastructure and to the absence of small and medium farm cooperatives. The use of pumps for the capture of rivers or aquifers strongly depends on the size of farms. According to data from the census, motor pumps began to be used at farms of more than five hectares and above, and their use gradually increased with farm size. Only 10% of farms smaller than 50 *dunums* (five hectares) were equipped with pumps, as compared to over 60% for farms of more than 200 hectares. While small farms are more likely to be irrigated than medium farms, large farms constitute most of the irrigated lands.<sup>118</sup>

Lebanon produces double the quantity of its needs for fruits and vegetables.<sup>119</sup> A lucrative intensive export production destined for Gulf countries and subsidised by the government dominates the agricultural sector, while profiting only a couple of dozen regional landowners and wholesalers. These agri-businesses account for almost one-third of the country's hydric use. Thus, the size of irrigated land has expanded from 40,000 hectares in the 1950s to its present 120,000 hectares. A line can be traced from the days of Chehab's *Office des Fruits* to the recent Export Plus and Agri Plus programmes, respectively funding transport and packaging, whereby big landowners and dozens of merchants have been offered control of the local and export markets through those subsidy schemes. This is a good example of how economic planning in Lebanon responds to the privileged influence of politically affiliated businesses able to leverage favourable policies as, in this case, formal market subsidy schemes.

115 MoA and FAO, *Agricultural census in Lebanon report* (in Arabic), 2012

116 Calculated using the World Bank's World Development Indicators 2009; agricultural national production values divided by agricultural lands.

117 Ninety-one percent of farms are less than four hectares and represent half of the total agricultural land. MoA and FAO (2012) Op. cit.

118 Info analysed using the census.

119 R. Riachi, 2013, Op. cit.

If agriculture in Lebanon consumes two-thirds of the country's freshwater, it is worth noting that half of this then leaves the country to go to Gulf countries as fruits and vegetables. This represents 25–30% of the total national water consumption. In 2011, the Arab Fund for Economic and Social Development started funding the largest irrigation scheme, the Canal 800. This may even be described as a silent water-grabbing exercise, in contrast to the better-known land-grabbing situations in Africa and Latin America. This intensive production trend suggests that there is a crucial trade-off to make between a lucrative export market and domestic water needs. The reality appears to be by far in favour of the market.

In parallel to Canal 800, in 2011 and again using the Litani's water, the Greater Beirut Water Supply Project was launched, funded by a World Bank loan. Having those two projects implemented together places a great strain on a river system that is already facing severe depletion in the quantity and quality of its waters. With barely one-third of buildings connected to a sewage network and with existing wastewater treatment plants that have never been operational, aquifers and rivers became dumping sites. Are Beirut residents aware that they will be supplied by a river whose stream is essentially an open-air sewage conveyor?

There is a severe overestimation of the feasibility of dams in Lebanon. Chabrouh Dam is, for instance, leaking more than 200 litres per second because of the highly permeable karst that characterises the site, an extremely high rate of loss for a dam of its size.<sup>120</sup> The same applies for Janna Dam on Nahr Ibrahim where studies show that the infiltration rate, caused by the construction of the dam, will reach Jeita spring, supposedly on another basin.<sup>121</sup> Despite those studies, the project is fiercely defended by the former minister of energy and water, who pork-barrelled two other controversial dams (Balaa and Mseilha) to supply his constituency. Another surface reservoir completed after 12 years of works in Brissa in Akkar in 2013 has never successfully filled up because of karst. This type of calcareous and porous limestone characterises two-thirds of Lebanese geological formations – a fact that was not considered by the original mandate era and Point IV studies, due to limited hydrogeological science considerations being taken into account.<sup>122</sup> Five additional dams are under construction. Each has attracted both political interference, as well as opposition from local stakeholders (e.g. farmers working on Saints Sarkis and Bakhos monastery lands in Nahr Ibrahim), municipalities (e.g. Chatine, Hammana<sup>123</sup> and neighbouring municipalities) and ecological NGOs (e.g. Lebanon Eco Movement),<sup>124</sup> claiming to halt construction and to forego environmental and social impact studies by independent bodies.

The same types of large-scale projects have also been proposed in the so-called BlueGold Lebanon plan<sup>125</sup> that was initiated by the Civic Influence Hub. A large media campaign accompanied the launching of the project, which was endorsed by politicians, bureaucrats, industrialists and businessmen (particularly bankers, advertising companies, bottled water companies and fuel providers). Controversy has surrounded the project, related to a rivalry between the resigning director general of the electric and hydraulic resources directorate at the ministry, acting with BlueGold, and the former minister of energy and water who is behind the National Water Sector Strategy. The BlueGold plan was countered by a citizens' campaign, Water Not for Sale,<sup>126</sup> which interrupted its advancement.

120 B. Jaoude et al., *Understanding the leaks in Chabrouh Dam through detailed hydrogeological analysis of the Qana Plateau (Lebanon)*, in F. Carrasco et al. (eds.), *Advances in Research in Karst Media*, Springer Berlin Heidelberg, 2010, pp.407–413

121 A. Margane, *Quantification of infiltration into the lower aquifer (J4) in the upper Nahr Ibrahim Valley*, Document de Travail, German-Lebanese Technical Cooperation Project Protection of Jeita Spring, Hannover: German Federal Ministry for Economic Cooperation and Development, Federal Institute for Geosciences and Natural Resources, 2012

122 H. S. Edgell, *Karst and hydrogeology of Lebanon, Carbonates and Evaporites*, 12(2), 1997, pp.220–235

123 See <https://www.facebook.com/SaveHammana>

124 See [https://www.facebook.com/LebanonEcoMovement?ref=br\\_tf](https://www.facebook.com/LebanonEcoMovement?ref=br_tf)

125 See <http://bluegoldlebanon.com/>

126 See <https://www.facebook.com/waternoteforsale>

While there are abundant examples of competing private interests linked to political actors steering outcomes related to damming projects, the private sector model is still advocated as the mainstream solution to water management problems. The capacity of state water management authorities is vastly depleted following retrenchment during the period of structural adjustment programmes, which saw staffing reduced by up to 80%.<sup>127</sup> Law 221/2000 merged 21 local water offices that were historically managing the water service over the last century into four Regional Water Establishments. Following the introduction of new public management principles, this new composition by recentralisation enables transnational water companies to operate geographically under PPPs.

Responsibilities in the water-related public authorities in Lebanon are highly fragmented and overlapping. Both the 221/2000 reform and the recent National Water Sector Strategy adopted in 2012 seem to have added confusion in the responsibilities and management of the sector. Despite institutional and legal confusion, neo-liberal policy messaging in favour of Integrated Water Resources Management and PPPs belies the reality that the public water management was systematically impoverished by the different modes of water privatisation in Lebanon.

## Conclusion

Instead of focusing on building a functioning national administration and resolving key legal, technical and personnel issues, politicians, high-ranking engineering bureaucrats and international development banks continue to prioritise expensive large-scale white elephant projects to address water deficits in Lebanon. This bias towards technical engineering solutions that advocates for damming all Lebanese rivers overshadows legal pluralism and its relation to private property, as well as, crucially, distributive politics that impose the uneven allocation of water resources in the country. Universal access to water for Lebanese citizens and residents has so far been held hostage to the confessional patronage networks in Lebanon, which directly shape powerful interests in attaining control of the water supply. This is not without impact on conflict dynamics, where water is used in nationalist sovereignty narratives; when large dam projects generate opposition because of their feasibility controversies, their high risk posed to the environment and their financial burden on the country's public budget; and while small farmers start showing discontent because of uneven access to means of irrigation. Citizens' anger is becoming ever more marked in response to worsening water service conditions. The exclusionist aspect of decision-making in Lebanon makes it very difficult to generate a dialogue between officials and citizens outside of the political spectrum. Ultimately, the solution lies in a necessary radical reform of the country's democratic system, as confessionalism has proved itself incapable of accommodating the most basic subsistence need of the Lebanese citizens: water.

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127 MoEW, 2010, Op. cit.