

The Litani River: The Case Against Interbasin Transfer

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Water is a relatively scarce commodity in Lebanon, especially in the provinces of the Bekaa and the South, which are almost solely dependent on the Litani River and its tributaries. These rural provinces, constituting over 60 percent of Lebanon's area, share a number of critical attributes. They are the country's principal agricultural regions, but are also its least developed and most impoverished. They are also the provinces in which the largest concentration of Lebanon's Shi'ites reside. In many ways, the welfare of these rural areas was largely ignored—falling outside the political and economic mainstream—in the Lebanon of the First Republic (1943–1989).

THE SOCIOECONOMIC AND POLITICAL SETTING

The Lebanon that emerged after 1943 was based on a confessional society and economy underpinned by an extensive intersection of interests between Maronite bureaucrats and Sunni trading families. The bureaucrats were primarily interested in developing and securing a stable source of public finance that, given the conditions and structures of the Lebanese economy at the time, could only be based on custom duties and foreign imports. Much of this activity was primarily controlled by a handful of powerful Sunni trading families in the coastal cities of Beirut, Tripoli, and Sidon. These traders considered it to be in their best interest to have a government that restricted itself to building an efficient social infrastructure and maintaining a policy environment favorable to free trade.

This intersection of interests manifested itself politically in the 1943 National Pact. It also manifested itself, in a less obvious but still significant

Source

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manner, by way of an implicit economic social contract that provided the political accord with a strong economic base. Under the terms of this implicit contract, the public sector invested heavily in building an extensive infrastructure of trade routes, ports, airports, warehouses, and communication networks, while restricting any of its activities that might promote competing commodity producing sectors (in agriculture and manufacturing) or regions that could undermine the dominance and free flow of imports. The contract also fostered a probusiness policy environment with minimal government interference, including bank secrecy laws, a free foreign exchange market, and no income or profit taxes. Other sects and regions were virtually cut out of this "condominium" and the prosperity it engendered.

Lebanon's current economic predicament is rooted in the unmanaged, mercurial successes it experienced from the 1950s to the mid-1970s and, in a less obvious way, in the confessional structure of the society and economy. The civil war brought about a massive destruction of infrastructure and productive capital, profuse losses in human capital, and substantial displacement of the population. It also brought an end to the implicit social contract of 1943.

The Lebanese today face the challenge of not only reconstructing their economy but also reconstituting their society and polity. Although the task is daunting, it also provides an opportunity to correct some of the destabilizing flaws of Lebanon's First Republic. There is a need for a new social contract. This new contract must be based on a more balanced economy, in which commodity-producing sectors moderate the lopsided services-biased production structure of the First Republic, and in which the disenfranchised regions and communities in Lebanon are represented more equitably and integrated into the mainstream of the society and economy.

If Lebanon is to consolidate its unity and stability, it is essential, as this chapter argues, that the government invest in the development of South Lebanon, to uplift the socioeconomic status of the residents of this neglected area. This vitally required development demands the effective and comprehensive exploitation of the resources of the Litani River. However, this proposition is not as simple as one might think, for although the Litani flows entirely within Lebanon's territory, its resources are thought to be coveted by Lebanon's powerful neighbor to the south.

Israeli interest in augmenting its water supply has become, at the beginning of the 1990s, a compelling issue. Today, Israel is utilizing all of its renewable water resources, and the gap between its water supply and demand is widening. As Table 12.1 shows, Israel is expected to have an annual water deficit of approximately 550 million cubic meters (mcm) by the year 2000. Other forecasts place that shortfall as high as 800 mcm.¹ Because water is basically a nontradable resource, Israel's looming water crisis can only be solved through domestic readjustment (i.e., restructuring

its economy) or through an increased supply. The latter solution necessarily would involve Israel's neighbors. The fact that Israel has become dependent on the water resources of the West Bank raises questions concerning Israel's future designs on the water-rich Arab territories that it occupies, including the West Bank, Golan Heights, and southern Lebanon.

Table 12.1 Profiles of Water and Economic Conditions in Lebanon and Israel (water in mcm/year)

	Lebanon	Israel
Jordan River		
Flow generated	130	730 ^a
Withdrawn	0	600
Litani River		
Flow generated	920	0
Withdrawn	440	0
Water consumption ^b		
Domestic	151	446
Industrial	75	124
Agricultural	950	1179
Present water resources		
Water available	4980	1950
Water withdrawn/supplied	950	1930
Projected water demand (year 2000)		
Water demand	4451	2500
Surplus/shortfall of water	+529	-550
Economic sectors, as percent of GDP		
Service	71%	32%
Industry	21	58
Agriculture	8	10
Percent of labor force (1985-1990) in		
Service	58%	62%
Industry	27	32
Agriculture	14	6

Sources: U.S. Army Corps of Engineers, *Water in the Sand: A Survey of Middle East Water Issues* (Washington, D.C., June 1991); World Resources Institute, *World Resources 1992-93* (New York: Oxford University Press, 1992); Food and Agriculture Organization, *Production Year Book 46* (1992); Arab Centre for the Study of Arid Zones and Dry Lands (ACSAD), *The Condition of Water Resources in the Arab World* (in Arabic) (Damascus: ACSAD, 1991); J. Khuri and A. Droubi, *Water Resources in the Arab Region* (Damascus: ACSAD, 1990).

Notes: a. Includes runoff from the West Bank and Golan Heights.

b. These data are from 1990 for Lebanon, and from 1987 for Israel.

The hydrostrategic significance of South Lebanon is rarely considered as a factor underlying Israel's continued occupation of the "security zone." This issue, however, is worthy of some attention.

In the hostile and uncooperative environment of the Middle East, the

issue of water takes on a whole new dimension, especially given the resource's scarcity and strong association with economic development. For example, it has been argued that Israel's initiation of the 1967 war was motivated in part by its lack of resources, especially water.² Indeed, approximately 35 percent of Israel's water consumption today originates in the various Arab territories it occupied as a result of that war. Israel did not commence its overt presence on Lebanese soil until 1978, when it proclaimed a "security zone" in South Lebanon for "security" reasons. Although hard evidence is lacking, there is growing speculation concerning the real motives behind Israel's continued presence in southern Lebanon up to the western bend of the Litani River (Map 12.1). These speculations are buttressed by knowledge of Israel's historical interest in the Litani, as well as its growing water crisis.

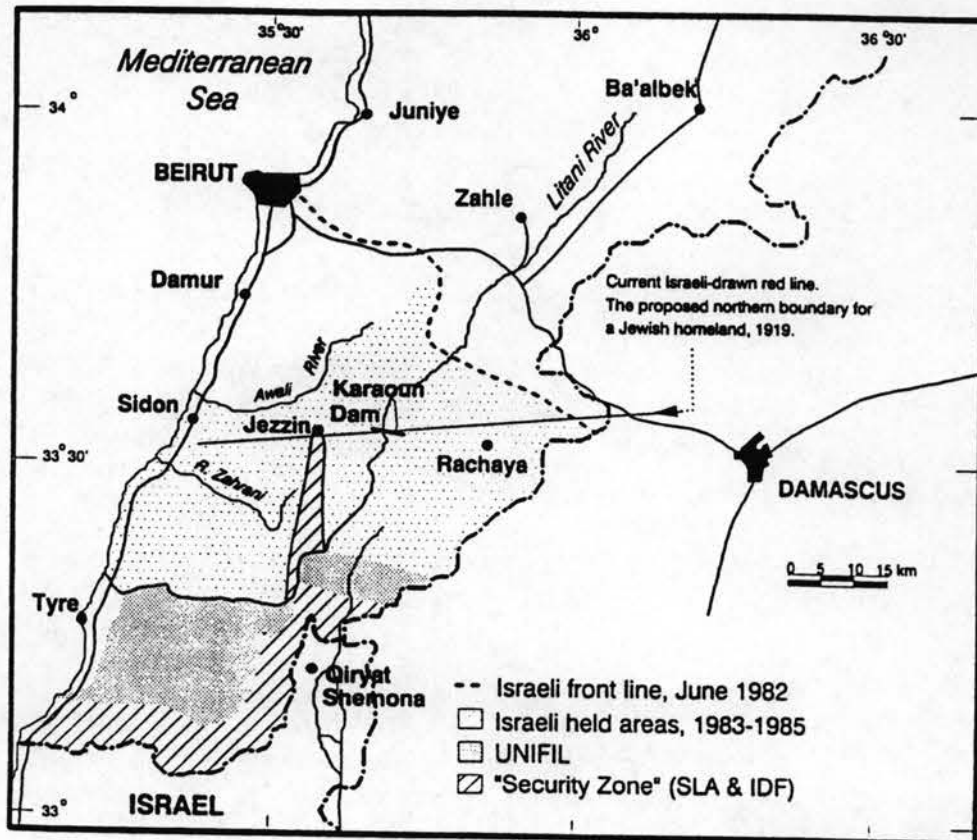
THE LITANI AND EARLY ZIONIST PLANS: A HISTORICAL REVIEW

A central objective of the early Zionists was the establishment of a Jewish "national home" in Palestine. Another important objective was to root the Jewish immigrants in the new land (hence the Zionists' ideological commitment to agricultural production). The focus on farming yielded further advantages, which included securing the territorial integrity of the country through rooted occupation of peripheral areas, guaranteeing the new country's self-sufficiency in food, and expanding the carrying capacity of the land to sustain additional immigrants.³ In hot, semiarid Palestine, however, farming required water, and lots of it.

Aware of water scarcity and its intrinsic threat to their future homeland, Zionist leaders in Europe actively lobbied the French and the British governments between 1916 and 1948 to adjust the northern and northeastern borders of Palestine to include the whole catchment of the Jordan River and a large part of that of the Litani River. Chaim Weizmann, head of the World Zionist Organization (WZO), articulated WZO's demands in letters he sent to various British government officials. In one such letter to British Prime Minister David Lloyd George, Weizmann argued that Lebanon being a "well watered" region, the water resources of the Litani River were "valueless to the territory north of the proposed frontiers [i.e., Lebanon]. They can be used beneficially in the country much further south." Weizmann affirmed WZO's conviction that "the [Bekaa] Valley of the Litani, for a distance of 25 miles above the bend" in the river was essential to the future of the Jewish "national home" (see Map 12.1).⁴

The WZO desired that Israel's eastern borders be drawn a few kilometers east of the Jordan River, and thus include its major tributary, the Yarmouk River. On 30 October 1920, Weizmann wrote to Britain's

Map 12.1 The Hydrological Significance of Israel's Self-declared "Security Zone" in South Lebanon



foreign secretary, Lord Curzon, stating that "if Palestine were cut off from the Litany, Upper Jordan and Yarmouk (rivers), to say nothing of the western shore of the [sea of] Galilee, she could not be economically independent. And a poor and impoverished Palestine would be of no advantage to any power."⁵

Zionist demands, however, were not met when the British Mandate determined the boundaries of Palestine to include only those areas that, today, are called Israel, the West Bank, and Gaza Strip.⁶

Although WZO failed in its hydrological demands, the issue was shelved but not forgotten. The Zionists refocused their efforts on their main objective, namely the creation of their state. During the war that accompanied Israel's declaration of independence in 1948, Israel occupied a stretch of southern Lebanon up to the Litani River, but later withdrew, albeit incompletely.⁷

ISRAEL AND THE LITANI: 1948-1982

Having access to the Litani River was on Israeli government officials' minds early in the state's formative years. In 1953, when regional tensions erupted over the use of the Jordan River, the United States dispatched Eric Johnston to the region with a plan for water sharing. The Johnston Plan called for the establishment of a Jordan Water Authority composed of Israel, Jordan, and Syria, which would manage these countries' joint exploitation of the river. It was thought that such cooperation would facilitate the irrigation of larger tracts of land and thereby speed up the process of absorption and resettlement of Palestinian refugees. The Johnston Plan was based on the principle that water must be used within the river basin.⁸

This principle did not completely mesh with Israel's determination to develop its full agricultural potential. Israel's response to the Johnston Plan, therefore, was a plan of its own—the 1954 Cotton Plan—that suggested the diversion of one-half of the Litani River's annual flow (400 mcm) into the Jordan River (for Israel's benefit).⁹ It is worth noting that the Cotton Plan went further than any previous water-sharing proposal, in that it prepared the engineering schemes necessary to accomplish the diversion. Israel's demand to include the Litani River in the Johnston Plan of 1954 was, according to Berger, based on its contention that "there could not be a fully effective regional plan which did not use the Litani River."¹⁰ Johnston countered Israel's demands by stating that the United States had no grounds for requesting Lebanon to share the resources of the Litani—a wholly Lebanese river—with nonriparian states. Ultimately, the increasing political and military uncertainty throughout the region caused Israel to hesitate and then back down from any coercive acquisition of Lebanese territory near the Litani.

The diaries of Moshe Sharett, prime minister of Israel in the mid-1950s, reveal that David Ben Gurion (the first prime minister of Israel) and Moshe Dayan (Israel's chief of staff and later defense minister) were strong advocates of an Israeli occupation of southern Lebanon up to the Litani River. Sharett quotes Dayan as saying in 1954, "All that is needed is to find an [Lebanese] officer, even at the rank of captain, to win him over or buy his co-operation so as to declare himself the saviour of the [Christian] Maronite population. Then the IDF [Israeli Defense Forces] will enter Lebanon, occupy the relevant territory and form a Christian government in alliance with Israel. The territory south of the Litani will be annexed to Israel and everything will fall into place."¹¹

In the wake of the 1967 war and Israel's territorial gains at the expense of three of its four neighboring Arab states, Moshe Dayan reiterated his longstanding view that Israel had achieved "provisionally satisfying frontiers, with the exception of those with Lebanon."¹²

Dayan's blueprint for Lebanon was ultimately implemented in 1978, when Israel created its so-called "security zone" in southern Lebanon. This territory was officially placed under the control of Sa'd Haddad, a Christian and a major in the Lebanese Army who, in 1979, declared a Christian Maronite state in southern Lebanon.¹³ Haddad then headed an Israeli financed, trained, and equipped Lebanese militia (later renamed South Lebanese Army or SLA). Until today, the SLA, together with the Israeli Defense Forces (IDF), controls a strip of southern Lebanon up to the western bend of the Litani River (see Map 12.1).

Israel was not faced by an imminent crisis of water scarcity when it occupied the West Bank and the Golan Heights in 1967, or when it occupied southern Lebanon in 1978. The declared objective of all three actions was Israel's security and peace. Recall, however, that today more than 35 percent of Israel's water consumption originates from territories captured in 1967. One can infer that, past strategic considerations aside, a likely future-oriented objective of Israel's occupation of the West Bank is economic, water being the major attraction.¹⁴

With this West Bank precedent as a backdrop, Israel's historic interest in the Litani and its conduct in southern Lebanon during the 1970s and 1980s worries Lebanese officials who view Israel's presence in southern Lebanon as one intended to secure access to the Litani water. Israel's actions have hardly been reassuring in this regard. Shortly after it established the "security zone," the Israeli Army prohibited well drilling in that area of South Lebanon. After the invasion of 1982, Israeli army engineers carried out seismic soundings and surveys near the Litani's western bend; these were likely done to determine the optimum place for a diversion tunnel. Moreover, they "seized all the hydrographic charts and technical documents relating to the Litani and its installations."¹⁵ Through its occupation, Israel also controlled most or all of the waters from the Hasbani and

Wazzani rivers (tributaries of the Jordan), which rise in Lebanon; over the years, there have also been reports of water siphoning from the Litani into the Jordan River basin.¹⁶ The distance from the Litani's western bend to the nearest tributary of the Jordan River is less than 10 kilometers (see Map 12.1). The Litani's proximity makes its waters easily divertible into the Jordan River system through underground canals or pipelines. The Jordan River, which empties into Lake Tiberias, supplies Israel with about one-third of its water needs.

No one can yet categorically conclude that the Litani waters are being diverted, because Israeli forces have cordoned off large tracts of land near the crucial western bend of the river, preventing researchers, journalists, and observers from approaching the area.¹⁷ However, in 1984, J. K. Cooley asserted that

A watchful American military observer claims to have seen Israelis burying pipes deep in a hillside near Marj'Uyn after the Israeli invasion of 1978, indicating that the Israelis might be secretly siphoning water underground from the Marj Plain in southern Lebanon into Israel, without affecting the measured flow of the Litani. Such a diversion would tap the extensive underground aquifer which is fed by seepage from both the Litani and the Hasbani rivers and by underground streams from the Mount Hermon region.¹⁸

More recently, an overt water diversion case was reported:

In the late 1970s and early 1980s, Lebanese officials reported that small tributaries of the Hasbani River were being diverted to Israel near the northern town of Metulla. Independent water analysts stated that after the 1982 invasion, Israel engaged in a much more serious diversion of Lebanese waters by attaching stopcocks at a pumping station on the Litani river. The stopcocks were designed to switch at least part of the flow—which is generated entirely within Lebanon—to Israel via a specially constructed pipeline.¹⁹

If Israel indeed harbors ambitions to "share" in Lebanon's Litani resources, these ambitions will be difficult for the Lebanese state to prevent. The post-civil war Lebanese government is weak, its control over the South is marginal, and Israel has a distinct advantage given its occupation by proxy of the strategically placed (for water diversion) "security zone." Israel could pursue its desire to tap the Litani either through a unilateral water diversion scheme (which appears to be the situation now), or through bilateral negotiations where Israel would use the "security zone" as a bargaining chip to reach a water "sharing" agreement with Lebanon.²⁰

Some analysts see the latter possibility—a water-sharing arrangement reached in the context of an overall settlement to the Arab-Israeli conflict—as a viable and promising path to peace. With respect to Lebanon, contem-

porary Israeli proponents of interbasin transfers acknowledge that a scheme proposing to export Lebanese water to Israel would encounter significant public outcry, especially in the South. They argue, however, that the potential benefits accruing to the Lebanese as a result of such a scheme would soon stifle public protest, since "payment for the water and the potential for greater supply of electricity than Lebanon could produce on its own [because the flow into Lake Tiberias generates greater electricity output than the flow into the Mediterranean] would be significant incentives for the Lebanese."²¹

Commenting on Israel's occupation of southern Lebanon, R. J. Rowley observed that for Israel the lure of the Litani is twofold: the river offers both water quantity and quality.²² Israel's surface and subsurface water sources have come under significant stress due both to scarcity and high demand; this stress has precipitated a deterioration of water quality. For example, the salinity level in Lake Tiberias (Sea of Galilee), a major source of water in Israel, is over 250 ppm. This level of salinity is too high for some of Israel's principal crops (e.g., citrus fruit trees). The water of the Litani River, with a salinity level of 20 ppm, has the potential to dilute the salinity of Lake Tiberias. Some observers are convinced that "it is purity that makes the Litani very attractive to the Israelis."²³

Another attractive feature of the Litani is the relative ease with which it could be diverted into the Israeli water system. The Litani River's annual flow is estimated at 920 mcm,²⁴ of which an estimated 480 mcm flow past the Khardali Bridge near the Israeli-occupied area by the western bend of the Litani. Before the river empties into the Mediterranean, approximately 125 mcm of its water is used in the Kasmieh irrigation project. One estimate of the volume that Israel could potentially divert—if it secured sustained access to the Litani—stands at approximately 800 mcm per year.²⁵ However, this volume would only be attainable if Israel were to reoccupy the Karaoun Dam (which it occupied between 1982 and 1985) and to tap southern Lebanon's subterranean springs as well as the Wazzani water potential (see Map 12.1).²⁶

Israel's growing water needs are creating a compelling atmosphere in which Lebanon may well be convinced or coerced in the name of cooperation and peace to accept the idea of an interbasin transfer of water. Israel's strategic occupation of the South maximizes its potential for securing access to the Litani—either covertly or overtly. The other side of the cooperation or transferring coin, however, is an unstable Lebanon that is deprived of the capacity to develop its own resources.

When Lebanon's domestic focus was on economic growth through trade and on regions populated by the dominant traditional groups of the National Pact, the issue of the Litani was not so pressing. Today, however, as Lebanon emerges from war its quest for stability and security is necessarily linked to development of its regions and to demarginalization of its

formerly neglected citizens (i.e., those based in rural areas, especially the South). As the remainder of this chapter will argue, these two requisites for Lebanon's future stability can only be achieved with complete and effective control and exploitation of the Litani River and the revitalization of the complete Litani River Project.

SOUTHERN DEVELOPMENT AND THE LITANI: IS THERE ANOTHER OPTION?

In 1959, 49 percent of the Lebanese labor force was engaged in agricultural activities, a proportion that contracted rapidly, reaching 19 percent in 1970 and 12 percent in the mid-1970s.²⁷ The contribution of agriculture to gross national product fell from 20 percent in 1950 to 9 percent in 1974. This dramatic transformation was due in part to labor-substituting technologies introduced at a considerable rate throughout the 1960s and at an even greater rate during the 1970s. By 1975, the result of this upheaval in human terms was that some 40 percent of Lebanon's rural population had left the land, many attracted by empty promises of economic opportunity in Beirut. Within fifteen years, tens of thousands of Lebanese families lost their rural livelihood. Most of these farmers were Shi'ite; as their livelihood waned, so did their national allegiance.

In the introduction to this chapter we argue that Lebanon's confessional system of government created observable dichotomies in development. This argument is supported by the analysis of Samih Farsoun, who, after reviewing a number of socioeconomic studies and data sets from the 1970s, reached two conclusions:

The first is that considerable demographic, social and economic differentiation exists between the populations of the two religions and among the Islamic sects, but not among the Christians. The intra-Muslim variation is large, with the Shi'ite placing in the lowest socioeconomic status of the six major sects of Lebanon. The second clear cut conclusion is that Muslims in general are substantially more disadvantaged in socioeconomic terms than Christians.²⁸

The Shi'ite population, largely concentrated in South Lebanon, has suffered both neglect from the Lebanese government and frequent Israeli bombardments (beginning in the late 1960s). With neither their economic nor physical safety guaranteed, the residents of southern Lebanon became resentful and distrustful of the Lebanese government.

In the early 1970s, the Shi'ite community violently protested a plan to divert the Litani River to quench the thirst of the rapidly expanding city of Beirut. In 1973, Imam Musa al-Sadr, the leader of the Shi'ite community, demanded among other things a firm commitment from the government to

develop the South and Bekaa; he was "particularly emphatic about using the resources of the Litani River to greater advantage."²⁹ To back his demand, al-Sadr threatened the collective resignation of all Shi'ite ministers from the cabinet.

Fifteen years of war did not remedy Lebanon's regional development problems—especially those related to water. Of Lebanon's 1,810 villages and cities, 1,479 are supplied with water and 254 are not (seventy-seven settlements were abandoned or destroyed).³⁰ The most recent (1984) statistics reveal that 25 percent of Lebanon's population does not have adequate access to sanitary facilities. Six percent of the deprived live in urban areas, 82 percent in rural areas, the majority of these living in the most impoverished areas of the South and Bekaa.³¹ It is fair to argue that development and improvement of infrastructure in these neglected areas will augment the demand for water and access accordingly (see Figures 12.1 and 12.2).

Lebanon's water needs have been projected to exceed its supply by the year 2020 (Table 12.2). The projected increases are based on (1) population growth, and (2) the fact that today less than 30 percent of Lebanon's arable land is irrigated, thus consuming only 20 percent of the country's total renewable water resources. The share of this sector of water would certainly accelerate once the Litani Project is completed.

Table 12.2 Anticipated Demand for Water in Lebanon, 1985–2030 (mcm/year)

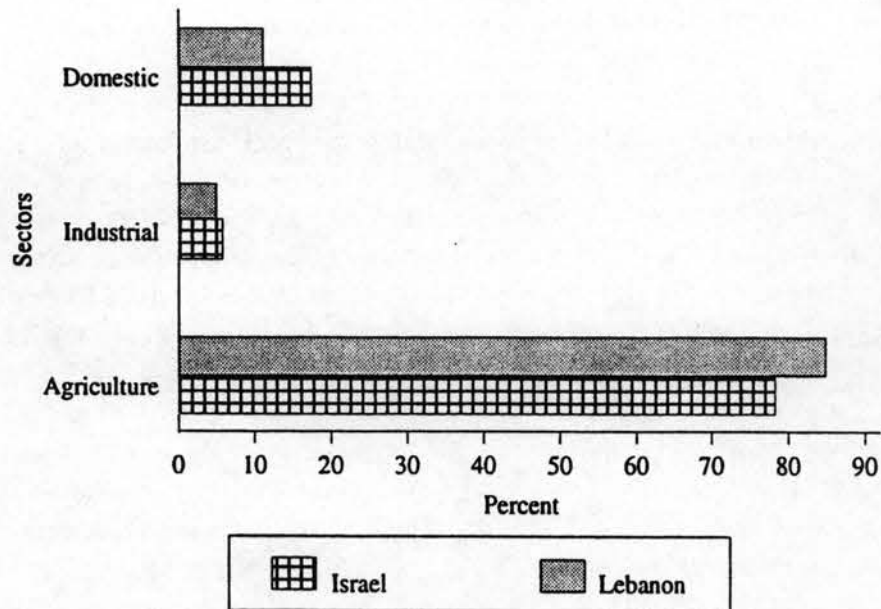
	1985	2000	2010	2020	2030
Domestic	151	280	419	585	755
Industrial	75	185	335	527	755
Agricultural	900	3986	4160	4513	4883
Total water demand	1126	4451	4914	5625	6393
Total available	4980	4980	4980	4980	4980

Sources: J. Khouri and A. Droubi, *Water Resources in the Arab Region* (Damascus: Arab Centre for the Study of Arid Zones and Dry Lands, 1990) and ACSAD, *The Condition of Water Resources in the Arab World* (in Arabic) (Damascus: ACSAD, 1991).

Note: Projections are based on current rates of population growth.

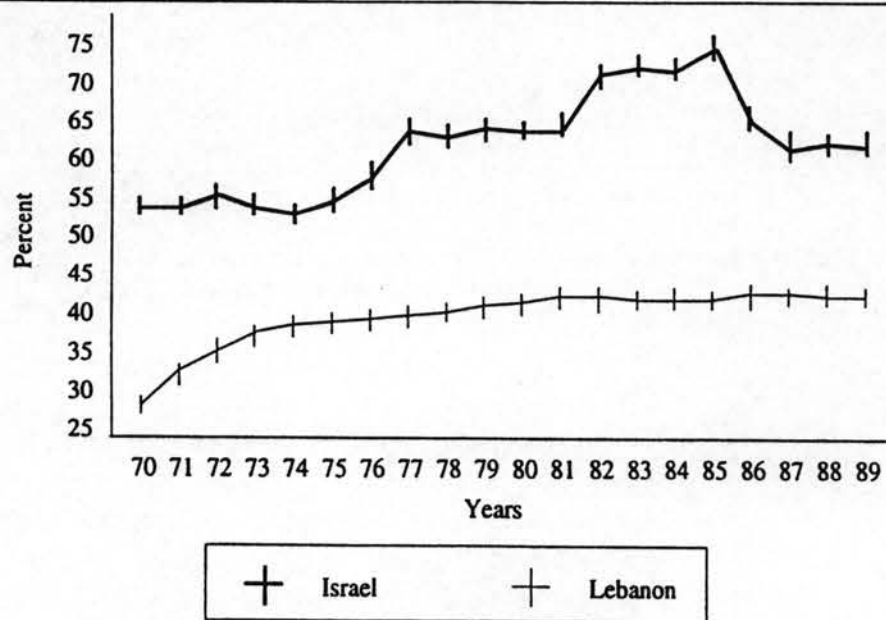
It is axiomatic that the development (and restabilization) of southern Lebanon will depend upon effective exploitation of the Litani River, the largest in the country. South Lebanon has 19.3 percent of the country's total land area and about 15 percent of its population; 99 percent of its settlements (411 out of a total of 415 villages and cities) have fewer than 5,000 residents, and 69 percent of all residents are classified as rural.³² Most of the socioeconomic demands of South Lebanon's residents can best

Figure 12.1 Sectoral Water Withdrawal, 1989



Source: Based on data from World Resources Institute, *World Resources 1992-93* (New York: Oxford University Press, 1992).

Figure 12.2 Irrigated Land as Percentage of Arable Land, 1970-1989



Sources: World Resources Institute, *World Resources 1992-93* (New York: Oxford University Press, 1992) and Food and Agriculture Organization, *FAO Production Year Book 44* (1990).

be addressed by using the Litani River's water to irrigate this fertile but arid area and to electrify the region. A mere 11 percent of the South's arable area is presently irrigated.

The Litani Project of the 1950s involved an irrigation and electrical generating scheme whose main purpose was to improve farmlands and villages and to raise the standard of living in the South and Bekaa. Most of the work for the Bekaa had been completed by the early 1970s. The scheme to irrigate the South, however, became stalled following the eruption of war; Israel's 1978 invasion and subsequent creation of a "security zone" ended any hope of progress.

The Litani River Project, or some version of it, must be completed if reborn Lebanon is to survive beyond infancy. Irrigation generally provides farmers with relative economic stability and increases their net incomes. It also helps to sustain domestic demand for locally produced goods, thereby saving the country valuable foreign exchange. While much of South Lebanon has electricity service, power supplies are too limited to meet the rapidly expanding population's growing demands. Electrification provides the opportunity to link irrigated agriculture to industrialization. Irrigation typically boosts agricultural output. Processing agricultural products locally creates (better) jobs and increases the income of the area as well as the country. Boosting the region's hydroelectrical output, therefore, is essential for increasing the standard of living of southern Lebanese residents, and is an integral part of the infrastructure necessary for the area's industrial development.

Industrial development of southern Lebanon is consistent with capturing the country's emerging comparative advantage in water-intensive agriculture. The industrialization of this output is quite opportune now that the exchange rate is undervalued, the confessional accord no longer favors an overvalued Lebanese pound, South Lebanon is teeming with cheap labor, and the domestic market is reviving.

CONCLUSION

If a Third Republic is to be born, Lebanon must redress the uneven regional development that occurred under the narrow social accord of 1943. The new social contract must be based on a broad alliance of sects, classes, and political orientations; benefits must accrue—and be perceived to accrue—to all members of the cooperative alliance. From this perspective, the development of southern Lebanon is a critical and vital priority. The Litani River is the cornerstone of this strategy.

Israel, however, appears to harbor a different agenda for the Litani waters. We have suggested that Israel's territorial occupations of Arab land—including Lebanon's—are affected (perhaps driven) by hydrological

imperatives. Israeli planning is influenced by water resources in the occupied territories; Israel's reliance on them will grow with the country's water deficit. We have also suggested that the situation in southern Lebanon is coming to resemble that of the West Bank and Golan after the 1967 war: an Israeli occupation, followed by an enforced status quo, followed by a move to tap the territory's resources.

Contrary to Israeli claims that Lebanon is "wasting" its water, the Lebanese government has been utilizing over 40 percent of the river's annual flow and is developing further irrigation and hydroelectrical generation plans for South Lebanon and the Bekaa. Given the government's socioeconomic obligation toward its long-neglected southern population, an interbasin transfer from the Litani into the Jordan River system would be detrimental to Lebanon's internal stability. As Lebanon struggles to rebuild its society and economy, full exploitation of the Litani River basin has become a strategic imperative—a developmental priority with the potential to balance and moderate the social and economic tensions likely to emerge in the new Lebanon.

NOTES

1. T. Naff and R. C. Matson, *Water in The Middle East: Conflict or Cooperation* (Boulder, Colo.: Westview Press, 1984).

2. Atif Kubursi, *The Economic Consequences of The Camp David Agreement* (Beirut: Institute of Palestine Studies, 1981); J. Stauffer "Arab Water in Israeli Calculations: The Benefits of War and the Costs of Peace," in A. M. Farid and H. Sirriyeh (eds.), *Israel and The Arab Water* (London: Ithaca Press, 1985) pp. 75-83; H. A. Amery, *Scarcity-Induced Conflict: The Lebanese-Israeli Conflict Over Water* (Masters thesis, Wilfrid Laurier University, 1987).

3. All of the early Zionist agricultural goals have largely been achieved, but at a substantial cost to the economy and to neighboring riparian states. Farming in Israel is heavily subsidized, as is the cost of water for irrigation, yet government agronomists estimate that less than one-half of Israel's irrigated agriculture is economically productive and a fraction of its agricultural production is economically viable (after all the subsidies have been accounted for). In spite of severe pressure on the country's water capacity, agricultural interests still prevail. Attempts to reallocate water permanently from agriculture to domestic or industrial use have been mostly unsuccessful. For details, see J.R. Stauffer, "Arab Water in Israeli Calculations," pp. 75-83; H. Kamm, "Israel Farming Success Drains It of Water," *New York Times*, 21 April 1991; and J. R. Stauffer, "The Lure of the Litani," *Middle East International*, 30 July 1982, pp. 13-14.

4. M. W. Weisgal (ed.), *The Letters and Papers of Chaim Weizmann*, vol. 9 (Jerusalem: Israel University Press, 1977), p. 267.

5. F. C. Hof, *Galilee Divided: The Israel-Lebanon Frontier, 1916-1984* (Boulder, Colo.: Westview Press, 1985), pp. 11-13.

6. Many plans for sharing and managing water were advanced to deal with the meager resources. Unlike numerous others, the 1944 Lowdermilk Plan and the 1948 Hays Plan (based on regional cooperation) regarded the Litani River as part of

the Jordan River system and suggested that one-half of its flow be used by Israel.

7. In fact, from 1948 to 1975, Israel slowly expanded to annex, de facto, pieces of Lebanon's territory. These totaled 169,763 dunums by the end of 1975. See E. Hagopian, "Lebanon and the Arab Question," in E. Hagopian and E. Farsoun (eds.), *South Lebanon*, Special Report no. 2 (Association of Arab-American University Graduates, 1978); and E. Berger, *The Covenant and the Sword: Arab-Israeli Relations 1948-56* (London and Toronto: Routledge and Kegan Paul, 1965).

8. E. Berger, *The Covenant and The Sword*, pp. 139-140; J. K. Cooley, "The War Over Water," *Foreign Policy* vol. 54 (Spring 1984), pp. 3-26.

9. T. Naff and R. C. Matson, *Water in the Middle East*, and E. Hagopian, "Lebanon and the Arab Question."

10. E. Berger, *The Covenant and the Sword*, pp. 139-140.

11. Itmar Rabinovich, *The War for Lebanon, 1970-1983* (London: Cornell University Press, 1984), p. 163.

12. F. C. Hof, *Galilee Divided*, p. 36.

13. Liva Rokach, *Israel's Sacred Terrorism: A Study Based On Moshe Sharett's Personal Diary* (Belmont, Mass.: Association of Arab-American University Graduates, 1985); F. C. Hof, *Galilee Divided*.

14. A. Kubursi, *The Economic Consequences of the Camp David Agreements*.

15. J. K. Cooley, "The War Over Water," p. 22.

16. J. K. Cooley, "The War Over Water," p. 22; M. Abu Fadil and D. Harrison, "Arab-Israeli Negotiations: That Was Not the Idea," *The Middle East* (March 1992), pp. 21-27; A. P. Gemayel, "A Peace Based on Justice Not Weaponry" (in Arabic), *Al-Hayat* (30 October 1992), p. 17.

17. *Al-Nahar*, 3 March 1990.

18. J. K. Cooley, "The War Over Water," pp. 22-23.

19. T. Collelo, *Lebanon: A Country Study*, 3d ed. (Washington: Library of Congress, 1989), p. 117.

20. H. A. Amery and A. A. Kubursi, "Le Litani clé de la renaissance économique et de la stabilité politique du Liban," *Ecodecision* (September, 1992), pp. 55-57; H. A. Amery, *Scarcity-Induced Conflict*.

21. Elisha Kally, *Options for Solving the Palestinian Water Problem in the Context of Regional Peace*, Working Paper no. 19, The Harry Truman Research Institute for the Advancement of Peace (Jerusalem: Israel-Palestinian Peace Research Project, Winter 1991-1992); see also J. Schwarz, *Israel Water Sector Study: Past Achievements, Current Problems and Future Options* (World Bank, October 1990).

22. R. J. Rowley, *Israel into Palestine* (London: Mansell Publishers, 1984), pp. 145-146.

23. T. Naff and R. C. Matson, *Water in the Middle East*, p. 65.

24. It should be acknowledged that estimates for the Litani's annual flow range from 650 mcm to 980 mcm. The figure adopted here is based on recent research by the U.S. Army Corps of Engineers (1991).

25. The 800 mcm figure is contested. The former director general of the Litani Water Authority in Lebanon asserts that 400 mcm per year can be diverted to Israel from the Litani at the river's western bend. Others put this figure at 100 mcm per year. The figures vary according to the area from which the diversion will take place.

26. A. Baalbaki and F. A. Mahfouth, *The Agricultural Sector in Lebanon: The Significant Changes During the Civil War* (in Arabic) (Beirut: Dar al-Farabi, 1985). See also *Al-Nahar*, 24 March 1986.

27. See two chapters in H. Barakat (ed.), *Toward a Viable Lebanon*: Albert H. Hourani, "Visions of Lebanon," pp. 3-14, and Samih K. Farsoun, "E Pluribus Plura or E Pluribus Unum? Cultural Pluralism and Social Class in Lebanon," pp. 99-132.
28. Samih K. Farsoun, "E Pluribus Plura or E Pluribus Unum?" pp. 123-124.
29. M. Gorla, *Sovereignty and Leadership in Lebanon 1943-1976* (London: Ithaca Press, 1985), p. 163.
30. *Al-Nahar*, 5 August 1985.
31. Vander Leeden et al., *The Water Encyclopedia* (Chelsea, Mich.: Lewis Publishers, 1990).
32. *Statistical Abstracts of the Ministry of General Planning* (Beirut: Department of Central Statistics, 1972).

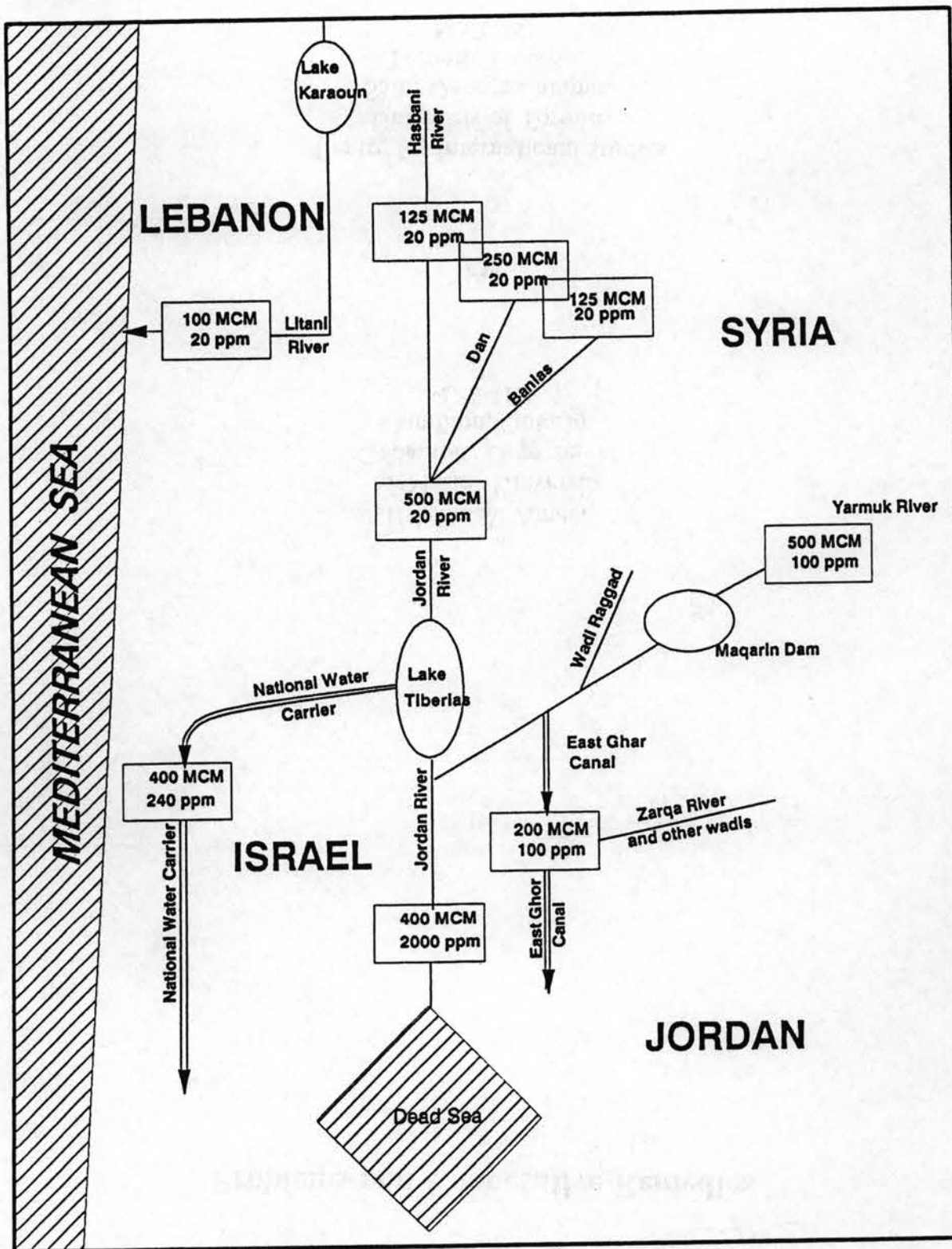


Figure 6 Water quality in the Jordan and Litani river systems