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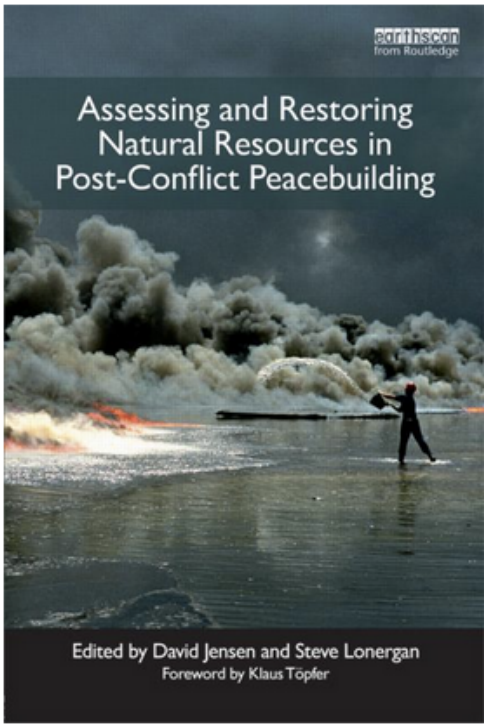

Restoration of damaged land in societies recovering from conflict: The case of Lebanon

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Restoration of damaged land in societies recovering from conflict: The case of Lebanon

Aïda Tamer-Chammas

Societies emerging from armed conflict face multiple social, political, and economic challenges. Natural resource management has been hailed as a tool for post-conflict peacebuilding because it can support economic recovery, development of sustainable livelihoods, dialogue, cooperation, and confidence building (UNEP 2009).

This chapter covers the process of restoration of natural resources, essentially the land and its products, and infrastructure services, such as water, wastewater, and energy, which were damaged in southern Lebanon during the conflict between Hezbollah and Israel in the summer of 2006. It assesses the impact on peacebuilding of measures taken following the conflict until 2009 by the United Nations (UN) and the government of Lebanon (GOL) and draws lessons for other areas of the world that are emerging from conflict.

Fieldwork took place in the South between August 2008 and August 2009.[1] Localities were selected based on their differences in size and location to lend some diversity to the analysis. All had high levels of poverty prior to the conflict and were severely damaged by it. Included were Bint Jbeil, a small village of four thousand inhabitants on the border with Israel, which was flattened during the conflict, and the relatively large towns of Tyre and Nabatiye, situated farther from the border.[2] Public officials and inhabitants were interviewed through semi-structured interviews rather than focus groups. The Mine Action Coordination Center South Lebanon (MACC SL) in Tyre was visited, and a demonstration of demining was attended.[3] The Lebanon Mine Action Center (LMAC); the

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[1] Lebanon is divided into six governorates, including North Lebanon, South Lebanon, Beqaa, Beirut, Nabatiye, and Mount Lebanon. In this chapter, "the South" includes the governorates of South Lebanon and Nabatiye.

[2] The towns of Nabatiye and Bint Jbeil are in the Nabatiye Governorate. Tyre is in the South Lebanon Governorate. Bint Jbeil, Tyre, and Nabatiye are among the poorest places in the South (CRI 2007).

[3] At the time of the first visit in August 2008, MACC SL was still the UN Mine Action Coordination Center, South Lebanon.

ministries of agriculture, environment, energy, and water; United Nations Development Programme (UNDP) officers in Beirut; and academics at the American University of Beirut were consulted.

The chapter is based on the meetings and pertinent literature but does not intend to provide a complete picture of the problems in the South or of post-conflict remediation of all environmental destruction from the conflict. Environmental damage included a fifteen-thousand-ton oil spill, which was caused by Israel bombing two fuel tanks of a power station located on the Mediterranean Sea coast, near Beirut. Air was polluted by demolition waste; roads and bridges were destroyed or damaged; cultural property, including Byblos, a site on the World Heritage List, was harmed; and the Palm Islands Nature Reserve, a protected area, was damaged.

The chapter first presents the background of the conflict and discusses relevant concepts. It then evaluates restoration projects by describing the pre-conflict state of the resource or infrastructure concerned, the impact of the conflict, and the measures taken. It also attempts to link the initiatives discussed to peacebuilding. Attention finally turns to the constraints that may undermine peacebuilding operations and to lessons on the potential effect of natural resource management on peace.

BACKGROUND OF THE CONFLICT

The conflict between Israel and Hezbollah during the summer of 2006 lasted thirty-four days and wrought extensive devastation and suffering on the land and people of Lebanon.[4] Although explanations for the conflict differ (Harel 2006; Külbel 2006), it primarily resulted from the state of enmity between Israel and Lebanon since the 1948 Arab-Israeli war in which Lebanon participated.[5] The March 23, 1949, General Armistice Agreement between Israel and Lebanon was never implemented, and subsequent peace processes failed.[6] The 1969 Cairo Agreement between Lebanon and the Palestine Liberation Organization (PLO) gave PLO fighters in Lebanon the right to bear arms, which they used to attack

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[4] This background section focuses on the conflict between Israel and Lebanon, including the role of Hezbollah. It does not cover the civil war or Syria's full role in Lebanon.

[5] The 2006 conflict is generally assumed to have started when Israel crossed into Lebanon in pursuit of Hezbollah who had abducted two Israeli soldiers (Harel 2006). Others consider the kidnapping the pretext for a conflict in planning (Külbel 2006). The 1948 and 1967 wars brought with them an influx of Palestinian refugees into Lebanon. Approximately 400,000 Palestinians have voluntarily registered as refugees with the United Nations Relief and Works Agency in Lebanon (UN 2007c).

[6] The 1989 Taif Agreement, which was signed by Lebanese factions gathered in Saudi Arabia after a period of instability and a war against Syria waged by Lebanese Army General Michel Aoun, mentioned the need to revive the 1949 General Armistice Agreement with Israel.

Note: United Nations Interim Force in Lebanon (UNIFIL) and United Nations Disengagement Observer Force (UNDOF) are UN peacekeeping missions.

Israel from Lebanese soil (Lacouture, Tueni, and Khoury 2002).[7] Thus Lebanon found itself embroiled in the intractable Israeli-Palestinian conflict.

Israel breached Lebanon's territorial sovereignty with frequent aerial raids and repeatedly attacked the country in retaliation for attacks on its territory, culminating in a full-scale Israeli invasion that reached Beirut in 1982. Arduous peace negotiations between Israel and Lebanon led nowhere, and in 1984 Lebanon

[7] The agreement was signed on November 3, 1969, by Yasser Arafat, head of the newly formed PLO, and Lebanese Army General Emile Boustani. The agreement was repudiated by a unanimous vote of the Lebanese Parliament in 1978, after adoption the same year of United Nations Security Council Resolution 425 (UNSC 1978a). Resolution 425 called for Israeli withdrawal from all Lebanese territories and was the only resolution on the subject to draw a unanimous vote.

repudiated the treaty signed a year earlier with Israel.[8] Beginning in 1978, Israel occupied the South for twenty-two years with an "iron fist" policy (Petran 1987), and from 1976 to April 2005, Syrian armed forces remained in Lebanon.[9] Hezbollah, a Shiite movement created with help from Iran and with Syria's blessing (Harik 2005), launched an armed resistance to the occupation in the South.[10] Under Syrian domination, the Lebanese government did not send its army to the South.[11] Israeli operations continued unabated, notably in two destructive military campaigns—Operation Accountability in 1993 and Operation Grapes of Wrath in 1996—that reinforced local support for Hezbollah (Harik 2005). In 2000, Israel finally withdrew from the South, except from Shebaa Farms and the village of Ghajar. United Nations Security Council (UNSC) Resolution 1559 called for "disbanding and disarmament of all Lebanese and non-Lebanese militias," but Hezbollah decided to keep its arsenal (UNSC 2004, 1).

By 2006, Lebanon was in political chaos. The 2005 assassination of Prime Minister Rafik Hariri in a car explosion in Beirut prompted huge manifestations of popular outrage and precipitated the withdrawal of Syrian troops from Lebanon. A two-year period of instability followed, and there was a wave of politically motivated murders of prominent personalities who had campaigned against Syria's role in Lebanon. Political institutions and processes proved ineffective in the face of strong internal divisions. Despite many rounds of negotiations among Lebanese politicians, there was no agreement over Lebanon's defense strategy, the issue of Hezbollah's arms, or the Special Tribunal for Lebanon (STL) (UNDP 2007c).[12]

In this context, Hezbollah kidnapped two Israeli soldiers in 2006, igniting the conflict of July 2006. UNSC Resolution 1701, adopted on August 11, 2006,

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[8] After Israel's invasion of Lebanon in 1982, a U.S.-brokered peace agreement was signed on May 17, 1983. It was rescinded by Lebanon in March 1984.

[9] In early April 1986, Israeli prime minister Yitzak Rabin declared in the Knesset—the Israeli legislature—that he would pursue a scorched-earth policy of all-out retaliation if the attacks continued (Petran 1987). Assessments of Syria's role in Lebanon differ: "In 1976 the Syrian Army invaded Lebanon, a move later construed as an Arab peacekeeping force, the Arab Deterrent Force (ADF), but in reality the beginning of a Syrian occupation" (Knudsen 2005, 2).

[10] Hezbollah transformed itself into a political party with a military wing before it participated in Lebanese parliamentary elections in 1992. The United States and Israel consider Hezbollah a terrorist organization. Others consider it a resistance movement.

[11] Under Syrian suzerainty, the "Syrian intelligence grew to become a dominant force in Lebanon with power to veto all important political decisions" (Knudsen 2005, 11). Syria established rules that were to govern relations between the GOL and Hezbollah and the role of the resistance in the South (Harik 2005).

[12] The creation of an international criminal tribunal to investigate Hariri's death was, and is still, extremely divisive and led in November 2006 to the resignation of pro-Syrian, especially Hezbollah, ministers from the government one day before it approved the tribunal's statutes after eight months of UN-Lebanon negotiations. The political coalition opposed to the government organized a sit-in in central Beirut that lasted almost two years, destroying economic life in the heart of the city. Furthermore, the parliament was incapacitated because its speaker, a member of the antigovernment coalition, refused to open a session.

called for full cessation of hostilities on August 14; authorized an increase in UN Interim Force in Lebanon (UNIFIL) troops; extended their mandate until August 31, 2007; and expanded their duties, which were first outlined in 1978 in UNSC resolutions 425 and 426 (UNSC 1978a, 1978b, 2006).[13] There is nothing in Resolution 1701 concerning restoration of natural resources, and there remains no peace agreement between the two countries.

Post-conflict

Post-conflict means that "one form of high-profile political violence comes to a virtual end through negotiated settlement among the main protagonists or through military defeat" (Call 2008, 175). It is misleading, however, when a formal peace agreement is signed and violence continues or when there is a military defeat because a regime fell (Call 2008).

Even though Lebanon is recovering from armed conflict, it is not in a post-conflict situation. There was no negotiated settlement between the belligerents, and no side admitted military defeat. The country is in diplomatic limbo, neither at war nor at peace, which has implications for peacebuilding operations.

An uneasy quiet prevails in the South.[14] Israel and Hezbollah exchange threats of new conflict, and both sides have violated Resolution 1701. Israel regularly flies over Lebanon. In July 2009, a hidden arms depot, assumed to belong to Hezbollah, exploded, and allegations of arms transfers from Syria to Hezbollah have surfaced (Galey and Mroueh 2010).

Peacebuilding

There are many definitions of *peacebuilding*, reflecting the different mandates and interests of the participants (Chetail 2009). The "polymorphous concept" offers a framework for the measures needed to rebuild a country, its divided society, and national institutions following intrastate conflicts. A peacebuilding strategy is multipurpose but should essentially aim for transformation of governance structures and relationships to prevent further conflicts (UNEP 2009).

The UNDP Peace Building Strategy for Lebanon, designed to run from March 2006 to January 2008, was implemented between January 2007 and December 2010. It defined peacebuilding as "a process that facilitates the establishment of a durable peace and prevents the recurrence of violence by addressing the root causes and effects of conflict" (UNDP 2007a, 8). Natural resource management was not considered an element in peacebuilding but was part of socioeconomic programs. A crisis prevention and recovery program has operated in parallel since 2009.[15]

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[13] UNIFIL's mandate has been regularly renewed since then.

[14] UNIFIL intervened to build a fence when tensions increased at the border when an Israeli cow crossed it (*Daily Star* 2009).

[15] Tajia Kontinen-Sharp, UNDP Lebanon program officer, Crisis Prevention and Recovery, personal communication with the author, August 2009.

Although the 2006 conflict was not a civil war, Lebanon needs conflict prevention because it remains extremely divided over whether or not to be at the forefront of armed combat with Israel (Ghoraieb 2009), reflecting the conflicting goals of the government and Hezbollah (Harik 2005). The South would benefit most from recovery measures because, except for the southern suburbs of Beirut, it was hardest hit. It is also the most economically deprived region and Hezbollah's base.

Peacemaking

Peacemaking involves negotiations through diplomatic channels of an agreement to end a conflict (Peacebuilding Initiative 2008). *Environmental peacemaking* refers broadly to natural resource management measures taken in the wake of an interstate conflict (Conca and Dabelko 2002), but it is irrelevant to Lebanon because of the extremely tense situation with Israel. It will not be explored in the chapter.

THE CASE OF SOUTHERN LEBANON

The South is essentially a rural agricultural area of small villages and towns. Agriculture is the only source of income for half of the working population and provides approximately 70 percent of total household income (FAO 2006). The region is the poorest in Lebanon (CRI 2007) and suffers from high rates of extreme poverty that reach 11 percent (Lebanese Republic 2007).[16]

During the conflict of 2006, Lebanon withstood tremendous casualties, disruptions, and displacement of nearly 1 million people, one-quarter of its population.[17] Its environment, economy, social and physical infrastructure, agriculture, and food security were damaged.

Direct expenditures for early recovery and reconstruction were estimated to be US$2.8 billion, of which the GOL was to cover US$1.75 billion. The indirect costs of the conflict were approximately US$2.2 billion, and private sector losses—mainly in agriculture and tourism—were to be alleviated by up to US$950 million in government financial assistance (Lebanese Republic 2007). As of 2010, approximately US$909 million had been committed, of which US$674 million had been disbursed. Grants amounting to US$2.1 billion had been pledged, of which US$1.6 billion had been formally committed (Lebanese Republic 2010).

International organizations surveyed conflict-related environmental impacts through studies. For example, the United Nations Environment Programme (UNEP) as well as UNDP and Earth Link and Advanced Resources Development performed environmental assessments (UNEP 2007; UNDP 2007); the Food and Agriculture Organization of the United Nations (FAO) assessed

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[16] Rates of extreme poverty in Beirut and some regions of Mount Lebanon do not exceed 1 percent (Lebanese Republic 2007).

[17] In 2006, Lebanon's population was approximately 3.9 million (Lebanon Info Center n.d.).

recovery needs of agriculture, fisheries, and forestry sectors (FAO 2006); the European Commission and European Union Satellite Center conducted a preliminary damage assessment on public infrastructure (EC and EUSC 2006); and the World Bank reported on the costs of the environmental damage (World Bank 2007). The Association for Forests, Development and Conservation, a local nongovernmental organization (NGO), examined the South's forests and olive groves (AFDC 2007), and the Consultation and Research Institute conducted the *Post-Conflict Social and Livelihoods Assessment in Lebanon* to document the social and economic conditions of the most vulnerable (CRI 2007). The oil spill received additional attention through an international independent study (Steiner 2006) and a research project at the American University of Beirut (Sabra 2007). Human Rights Watch and Amnesty International filed their own reports (HRW 2008; Amnesty International 2006).

A difficulty common to all of the assessments was the lack of reliable baseline data on the environment, infrastructure services, and social conditions before the conflict. The UNDP and UNEP assessments were thorough, broad in their coverage, and complete with proposals for green recovery and reconstruction. Both were circulated to donors and government ministries in Lebanon.

Since the 1960s, the UN has been active in Lebanon through its many agencies and three regional offices, and it has cooperated with various government ministries since 1991.[18] UNDP started planning for post-conflict recovery on August 2, 2006, by appointing a UN resident coordinator and coordinating projects with the Lebanese government through its policy advisory units and with the Council for Development and Reconstruction, the key Lebanese agency in charge of infrastructure and service projects, as well as relevant ministries and local municipalities. But the efficiency of donor communication and program coordination is hard to ascertain. The infrastructure rehabilitation project, funded by the European Commission Humanitarian Aid Department (ECHO) and implemented by UNDP, showed cooperation among peacebuilding participants (ECHO and UNDP n.d.a).[19]

Recovery activities were divided into projects to be launched immediately after the end of the conflict and during early and sustained recovery phases.[20]

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[18] Following the 1989 Taif Agreement, Lebanon recovered some political stability under Syrian tutelage, enough to encourage UNDP and the GOL to launch an innovative strategic partnership in 1991.

[19] The implementation of the ECHO and UNDP Rapid Rehabilitation of Key Municipal Infrastructure for Local Service Delivery project started in October 2006 and ended in January 2007.

[20] There were five Quick Starting and High Impact Early Recovery priorities, including (1) support to municipalities for removal of rubble and debris; (2) reactivation of public administration services; (3) support for national coordination of recovery efforts with the establishment of (a) a reconstruction and recovery cell in the office of the prime minister, (b) a development assistance database, and (c) a multi-donor trust fund, the Lebanon Recovery Fund; (4) initial oil spill cleanup (from surface water); and (5) restoring fishermen's livelihoods. (UNDP 2007d).

The link between the livelihood recovery projects and the peacebuilding strategy is difficult to evaluate, although some findings from the assessments were used in the planning (Klap and Yassin 2008).

Recovery priorities

Assessments identified immediate needs and directed recovery priorities, which included removal of demolition waste, clearance of cluster bombs, and livelihood projects in the agricultural sector.

Rubble removal

After the conflict, removal of demolition waste scattered in villages that were reduced to rubble and along roads was prioritized (Fisk 2009). Waste estimates ranged from 2.5 to 3 million cubic meters (m^3) (UNDP 2007), although the actual volume of waste removed reached 5.75 million m^3, including 3.32 million m^3 from the South (World Bank 2007).[21]

UNDP financed approximately US$800,000 of rubble removal in 101 villages and towns in the South, each of which received up to US$25,000 (ECHO and UNDP n.d.b).[22] The implementation was left to municipalities that sometimes contracted private sector haulers with disastrous results. In Beirut, demolition waste was dumped in four sites.[23] In the South, municipalities with relatively little waste used it to fill depressions in roads or in construction. Where the amount of rubble was extensive, it was dumped, after removing most hazardous domestic material, on nearby land and in ecologically sensitive valleys, ponds, and riparian areas (World Bank 2007). Scattered all over the South were hundreds of piles of heterogeneous material, which were observed in 2007 and 2009 (UNDP 2007).

As an alternative to dumping, UNDP proposed recycling waste using fixed or mobile equipment (UNDP 2007), but only a limited rubble-recycling project was implemented in Kawnine and Shaqra, where approximately 65,000 tons of rubble were crushed (UNDP 2006). Mobile equipment was rented from a private company, and a service provider, monitored by the Bint Jbeil municipality, was hired to operate it (Seoud 2009). The experience was scaled up in Nahr El Bared Camp, where all the demolition material was recycled using

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[21] In 2006, approximately 130,000 housing units were destroyed or damaged in Lebanon. Ninety-three thousand were in the South Lebanon Governorate and the Baalbeck Hermel region in Beqaa, and 4,500 were in Beirut (World Bank 2007).

[22] The southern suburbs of Beirut received US$200,000 for rubble removal.

[23] Of the four sites, two were "in low-lying areas located by the sea and one on the other side of the road within the Choueifat cadastral area, and a temporary dumpsite along the airport road" (World Bank 2007, 45).

fixed recycling equipment.[24] Although the use of green-building equipment has expanded over the past two years, the Lebanese government has issued no laws enforcing green building–reconstruction standards.

Cluster-bomb clearance

The 2006 conflict left behind approximately 1 million unexploded submunitions from the 4 million cluster bombs launched over the South in the last seventy-two hours of the conflict (UNDP 2007d).

Clearance activities started immediately after the conflict and were prioritized by realities on the ground. First, roads were cleared for public safety, followed by clearance of paths to houses and schools. Activities then turned to clearance of agricultural fields, because "access to natural resources is key as it underlies all livelihoods" (Halle, Matthew, and Switzer 2002, 16). Farmers desperate to recover their land have attempted to explode bombs, burned fields after demarcating bombs, and paid US$6.50 per bomblet disposed using artisanal methods (FAO 2006). Despite many awareness campaigns, injuries and fatal accidents still occur.

Clearance operations, projected to end in 2007 (UNDP 2007), will now end in 2012, according to UNDP (UNDP 2008b). Reassessments revealed that previous estimates of unexploded ordnance (UXO) were too low. Israel refused to turn over the maps of their strikes to the UN or the Lebanese until 2009. As of September 2009, approximately 21.1 million of 36.7 million UXO-contaminated square meters (m^2) had been cleared (Fehmi 2008).[25] Still unclear are the extent of agricultural land involved and the method used to calculate the area of cultivated land contaminated by UXO.[26] Environmental damage may have been aggravated by technical choices, such as the refusal by some factions to use remote-sensing drones to establish the density of cluster bombs prior to clearance operations.[27]

A national institution, the Lebanon Mine Action Center (LMAC), was created, and a national mine-action policy and an end-state strategy for mine action were developed. Although international technical advisors still work with the LMAC, it has offered to train members of the Lebanese Armed Forces. The UN has provided institutional and capacity-building support to the National

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[24] Nahr El Bared, a Palestinian camp, was destroyed during a battle with the Lebanese army in 2007.

[25] Estimates of the total area contaminated in 2006 vary. According to UNDP, approximately 38 million m^2 were contaminated by UXO in 2006 (UNDP 2008b). In December 2008, the UN Mine Action Coordination Centre, South Lebanon, reported that the total area contaminated was forty-eight square kilometers (km^2), but in May 2009, the LMAC lowered the figure to 35.36 km^2 (E-MINE 2009a, 2009b).

[26] The FAO estimates that 26 percent of agricultural land is contaminated. (FAO 2006).

[27] One interviewee claimed that the techniques could reveal hidden caches of armaments and were, therefore, opposed by one party on the ground. The claim could not be verified.

Demining Office (Klap and Yassin 2008). The success of the project may be due to the involvement of the UN over a long period of time.[28]

Forests, olive groves, and agriculture recovery

Thirteen and a half percent of Lebanon's forests lie in the South, and 42 percent of the land in the South is used for agriculture. People graze animals; collect pine nuts and wood; produce charcoal and honey; and cultivate olives, citrus, other fruit, and medicinal and aromatic plants. Olive groves are essential to the economy of the South and account for approximately 39 percent of Lebanese olive groves (AFDC 2007). Forty-nine percent of crops are under irrigation, except in the Nabatiye Governorate where there is little irrigation infrastructure.[29]

During the conflict, raging fires caused most of the damage to land and forests. Civil defense personnel, including firefighters, were already stretched by helping a fleeing population (AFDC 2007). Farmers were unable to access their fields to harvest crops at their peak and, after the conflict, could not prepare their land for the following season because of cluster bombs (CRI 2007). The irrigation infrastructure was destroyed, and the loss of animals, crops, fisheries, and forests amounted to approximately US$280 million (FAO 2006).

Concern was raised about the "unknown effects of bomb-induced soil contamination on crop production and human health" (FAO 2006, 7). The declining fertility of the soil and trees—confirmed during fieldwork—might be attributed to the intensity of the bombardments, the size or type of bombs, and the extreme heat; it has not been factored into the recovery plan. The local population has noticed the disappearance or reduced production of fruit and vegetables. Since 2006, olive crops have decreased below the usual minimum yield in Tebnine, a village east of Tyre, and olive trees have not borne any fruit in Sarba, a village east of Saida (Farran 2009).[30]

UNDP recommended remediation measures for forested areas damaged by fire (UNDP 2007), but there was no follow-up. Small projects, such as installation of a laurel press and funding of beekeeping and agricultural cooperatives, were included in the ECHO and UNDP early-recovery initiatives (ECHO and UNDP n.d.b). In August 2007, the FAO launched a US$3.3 million program to help restart agriculture in the South. It provided fertilizer, seeds, animal

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[28] The UN has been involved in peacekeeping in the South since 1978, in capacity development and mine clearance since 1998, and in mine action–capacity building since 2001. In January 2002, the UN Mine Action Coordination Centre, South Lebanon, was established to coordinate mine action within the UNIFIL mission area south of the Litani River. It transferred primary responsibility on January 1, 2009, to the LMAC. Lebanon could be in full control by the end of 2012 (E-MINE 2009a). UNDP lends its support to the National Demining Office (renamed LMAC in 2007) through a policy advisory unit at the Ministry of Defense.

[29] See footnote 1 on the governorates. In Nabatiye, only 5 percent of crops are irrigated.

[30] The minimum yield (or alternate or biennial bearing) is the tendency of fruit trees to produce a heavy crop one year and a light crop the following year.

stock, and assistance in renovating greenhouses. To mitigate the impact of cluster bombs on people's livelihoods, two other projects, totaling US$421,934, aided cultivation of medicinal and aromatic plants (MAP projects) (UNDP 2007b, 2008a). To participate, communities had to have access to irrigation water, fertile soil, and a willingness to irrigate and bear the costs of irrigation. UNDP rented suitable land, provided seeds and plants, and helped install irrigation systems.

A three-pillared approach of assessment, monitoring, and evaluation could be used for natural resource management. In the South, there has been little evaluation, and it has concentrated on easily met objectives. Although the different initiatives of early recovery support by UNDP were judged exemplary (Klap and Yassin 2008), focus groups complained about the total lack of irrigation and facilities to process crops such as tobacco (CRI 2007). Data to evaluate the effect of FAO projects on livelihoods were insufficient, but a Ministry of Agriculture official suggested it was small (Nasrallah 2009). MAP projects were limited in their economic impact and had no effect on dialogue or confidence building because their beneficiaries belonged to a single community group.

Proposals for the agricultural sector made by UNDP (UNDP 2007) were not applied. Nothing was done to promote sustainable cropping patterns, possibly due to a lack of human and financial resources at the Ministry of Agriculture and conflicting political priorities resulting in a preference given to other projects such as those involving MAP. Through the poverty-reduction program, some assistance was provided to trout farmers to help revitalize freshwater aquaculture in the Assi River.

Natural resource issues require both a short- and a long-term approach (Whittemore 2008). But the extent to which a strategy for transition to sustainable recovery guides UNDP and its partners has been questioned (Klap and Yassin 2008). FAO recommended further studies before planning medium- to long-term recovery projects (FAO 2006).

Infrastructure services and recovery

Priority was also placed on the restoration and development of Lebanon's infrastructure services, including its water and wastewater sectors and energy sector, which were in poor condition due to neglect prior to the conflict.

Water and wastewater sectors

Lebanon has forty streams and rivers and 2,000 springs. It has one of the highest per capita water ratios in the Middle East (UNEP 2007). Freshwater is probably Lebanon's single most important resource. Unfortunately it is wasted.

While water services reached 90 percent of the population in 2008, one-quarter of the population did not have regular access to safe water at the household level (UN-HABITAT 2008). Untreated domestic sewage, agricultural runoff, industrial pollution, open dumping, and overpumping of underground water in coastal regions have long compromised the quality of surface and groundwater (UNEP 2007).

According to post-conflict assessments, the water and sanitation infrastructure were in a derelict state, and there was an acute deficiency in wastewater treatment capacity (UNEP 2007). In rural areas, such as in the South, only 20 percent of households were connected to the wastewater infrastructure (UN-HABITAT 2008). Most houses used cesspools and septic tanks, which can pollute underground water, and sewage sludge was typically disposed of on land or dumped in empty boreholes (UNEP 2007).

Water and sanitation infrastructure were affected considerably by the conflict; rivers were polluted by industrial facilities and with waste from bridge demolition. Water transmission lines, water tanks, pumping stations, artesian wells, and water treatment systems were heavily damaged or destroyed. Water and sanitation services were disrupted and effectively came to a halt.

Priority was given to restoration of infrastructure services (Chehab 2009).[31] UNDP implemented a US$2 million project to fund initiatives targeting quick repair of water and wastewater networks, cleanup and rehabilitation of the sewage system, and reinstalling street lights in 143 communities in the South.[32] Instead of scaling up existing infrastructure, UNDP favored including nearly all municipalities (including those not covered previously) to foster equity and prevent conflict (Klap and Yassin 2008).

Energy sector

The energy sector has long been in deep crisis and is heavily subsidized, draining public finances. Insufficient supply leads to daily power shortages, and consumers pay a heavy price for private backup electricity (World Bank 2008).

After the 2006 conflict, which negatively affected the electricity network, ECHO, UNDP, and foreign donors financed improvements at the municipal level.[33] A renewable energy initiative (CEDRO)[34] was launched in 2007 as an early recovery project—with a budget of approximately US$2.7 million (phase 1)—to introduce new technology, such as solar water heaters (SWHs), to public institutions such as schools and hospitals, in south Beqaa and Akkar (in the North Lebanon Governorate) (M. Khoury 2009; Seoud 2009). It grew into a successful national project: it was extended until 2012, and its budget was increased to US$9.7 million.

Three hundred interested municipalities submitted applications for sixty projects in CEDRO's first phase. While important in many municipalities, CEDRO's national impact will be negligible because it will only directly cover approximately

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[31] By September 2007, 1,465 units of water and wastewater networks, which were destroyed by the conflict, were repaired (Rebuild Lebanon 2007).

[32] The project was implemented by UNDP and funded by ECHO.

[33] For example, in Bint Jbeil Qada (a *qada* is a geographical division in Lebanon), Iran offered money for one or two generators per village, depending on the cost of repair of the electrical grid and fuel, among other things.

[34] CEDRO stands for Community Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon.

3 to 4 percent of the general energy needs of the South and, indirectly, approximately 10 percent. Still, it is in line with the government's policy and complements other SWH projects funded by Sweden and Greece (P. Khoury 2009).

The benefits of CEDRO will continue once donor support ends. The participating public institution and ultimately the relevant ministry own the SWHs.[35] UNDP provided training to the recipients of the appliance and to those responsible for its installation and maintenance. The contractor that installed the heaters also conducted initial monitoring, and UNDP will ensure monitoring of CEDRO until the Lebanese Centre for Energy Conservation takes over.

Factors affecting outcomes

A number of limiting factors and constraints may undermine the effectiveness of peacebuilding measures in Lebanon.

Land tenure

Land tenure in rural Lebanon is affected by the monopoly of landlords and corrupt administrative practices, unclear or overlapping land rights due to legal ambiguity and de facto practices, land encroachment and illegal settlers, and zoning difficulties caused by land left unsurveyed (UN-HABITAT 2008).

Infrastructure prior to the 2006 conflict

Considering their poor state before 2006—the result of decades of neglect by the government—infrastructure services in the South require major development, not simply restoration, which could lead to only marginally sustainable economic recovery and growth.

Important projects include comprehensive reform of the energy sector (Lebanese Republic 2007), construction of seventeen dams to remedy the problem of groundwater quality deterioration due to extraction from wells built haphazardly in areas where water is unavailable (UN-HABITAT 2008), and better management of water resources under a national institution.[36] But implementation will take time, and needs in the South are immediate.

Environmental awareness

Although most Lebanese were shocked by the 2006 oil spill, they remain generally unaware of the importance of protecting natural resources. Their main concerns

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[35] The public sector in Lebanon is centralized. Every ministry supervises public institutions under its scope and ultimately owns the buildings used by the institutions. For example, the Ministry of Education owns public school buildings.

[36] An agreement was signed on May 14, 2010, between the GOL, UNDP, and Italy. A grant of €1.8 million was provided to conduct a hydrological study and launch the Lebanese Centre for Water Management and Preservation (*Daily Star* 2010).

are security and the economy, as in most post-conflict societies. "Security is a priority whereas conservation of natural spaces is perceived as a luxury" (Halle, Matthew, and Switzer 2002, 23). Natural resources are valued in the South because they contribute to livelihoods and among foreign interventionists for preservation (Makhzoumi 2009).

Limited Enforcement of environmental regulations

The Ministry of Environment lacks human resources, technical capacity, and financial means.[37] Political divisions, infighting between it and other ministries, and corruption can hamper application and enforcement of environmental laws (Malek 2009).

Communities' interests

Every project in Lebanon must handle sectarian and regional interests equitably. To balance an FAO project of US$3.3 million in the South, US$2.5 million, originally designated for agricultural development in the South, was dedicated to relieving poverty in the North Lebanon Governorate.

Disarmament, demobilization, and reintegration

Because Hezbollah remained armed, livelihood and economic development projects could not address disarmament, demobilization, and reintegration of combatants.

Private sector engagement

The private sector, which substantially helped refugees during the conflict, has not participated significantly in financing reconstruction or natural resource restoration.[38] Lebanese civil society organizations tend to focus on the needs of different categories of people (such as orphans, people disabled by the war, children in need of school scholarships, and so forth), as opposed to the environment itself. "Involvement of the private sector in Lebanon takes place on an ad hoc basis, and their capacity to influence decision-making is somewhat hampered by a lack of structure, limited resources, sectarianism and political differences" (ETF 2010, 2). Recognizing its lack of involvement, UNDP is strengthening its

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[37] The Ministry of Environment was created in 1993—quite recently compared with other ministries. It has only approximately fifty employees. Monitoring the twenty-five officially authorized quarries rests on the shoulders of only two agents, each of whom earns approximately US$800 a month.

[38] The private sector is changing: in 2010, a Lebanese bank, the Banque du Liban et d'Outre-Mer, launched a credit card arrangement under which the commissions due the bank on every transaction would be donated to a fund for the Lebanese armed forces involved in mine clearance in the South.

cooperation with the business community at the local level and in the Lebanese diaspora (UNDP and UNPF 2009).

Scope of peacebuilding

The UNDP Peacebuilding Strategy has focused on internal political reconciliation (UNDP 2007c) because sectarianism has historically been among the root causes of conflict in Lebanon (UNDP 2006). But there is danger in ignoring the international aspect of a conflict (Beydoun 2009; CPHS and CERI 2006) and "addressing past problems rather than those that shape the immediate post-conflict condition" (Peacebuilding Initiative 2008). Current internal divisions revolve around the defense strategy of Lebanon and the Special Tribunal for Lebanon (STL), are closely intertwined with opposing regional influences (UNDP 2007c).

Role of international actors

In some specific cases, reconstruction should be implemented by impartial international institutions rather than by specific belligerent groups (Gheciu and Welsh 2009). For example, mistrust of central authority by inhabitants of southern Lebanon was reinforced in the aftermath of the conflict. The population often feels more indebted to Hezbollah than to the government because, with Iran's financial backing, Hezbollah has built new roads and provided electricity generators. Furthermore, to build a sustainable peace, the complex politics of post-conflict reconstruction requires that combatants be engaged in dialogue (Gheciu and Welsh 2009). As of June 2011, the two main political coalitions have not resolved their differences, and UN agencies—neutral politically—may not intervene in internal political discussions.[39]

Visibility of UNDP

Few Lebanese outside the UNDP circle know the extent of UNDP involvement in peacebuilding (Klap and Yassin 2008). Unbeknownst to most citizens, the small amounts of money UNDP donated to municipalities were helpful in making urgent repairs of the infrastructure and removing rubble. Publicizing more widely these facts would demonstrate that the GOL was both determined to respond to the needs of its citizens in the South and able to mobilize the support of the international community in an efficient manner, countering Hezbollah's status as provider of resources for citizens in the South.

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[39] A new government was formed on June 13, 2011, dominated by the Hezbollah coalition despite its minority status in parliament, after its resignation from the government in January 2011 over the STL's procedure. On June 30, 2011, the STL handed to Lebanon's state prosecutor its indictment, naming four Hezbollah members as suspects, a decision dismissed by Hezbollah leaders.

CONCLUSION AND LESSONS LEARNED

The first step toward recovery from conflict is evaluation of the damage and its impact on the population. Assessments were made relatively quickly and provided a clear picture of the needs on the ground. Coordination among the different programs seems to have succeeded to a certain extent.

Most important, from the perspective of natural resource management, is reinstating access to land essential to livelihoods and eliminating the security risk from cluster bombs. Several companies have participated in mine-clearance operations under the umbrella of the Lebanese Mine Action Centre (previously the UNMAC). Demining progresses steadily but will not be complete for at least another two years. Foreign funds have dried up, yet the project is absolutely imperative to full recovery of the South.

Removal of demolition waste was an enormous project. Dumping rubble in ecologically sensitive sites may have damaged the environment. Although infrastructure services were restored only to their dismal pre-conflict levels, their return did give daily life the semblance of normalcy. A renewable energy initiative has been introduced successfully, even though its impact has been small. The task is far from over, and construction of new infrastructure services is essential. The agricultural sector was seriously affected by the conflict, though limited recovery and livelihood projects (such as MAP projects) provided a small amount of income to a few communities, which also benefited from the FAO projects.

It would be premature to conclude that natural resource management has had a substantial impact on economic recovery and sustainability of livelihoods in the South. Dialogue, cooperation, and confidence building have not been positively influenced. The divisions between factions have not diminished since the end of the conflict, and relations with Israel are still tense. But sound, inclusive natural resource management remains essential to rebuilding Lebanon, restoring the environment, reconstituting the social fabric of the country, and supporting economic growth. Consequently, it may still play a role in promoting peace and preventing conflict in Lebanon.

The following six lessons learned from Lebanon highlight the role natural resource management may have on peace:

1. *Natural resource management may have only a minor effect on political divisions.* According to Robert Ricigliano, three types of post-conflict initiatives are necessary for successful peacebuilding: the political (focused on reaching agreement among the parties), the social (transformation of underlying relations and perceptions), and the structural (institutions, good governance, rule of law, development, and economic justice) (Ricigliano 2003). Ideally, natural resource management should underpin the three dimensions. In Lebanon, it can affect social and structural issues, with little influence on entrenched political divisions.
2. *Programs must engage opposing communities.* For management of natural resources to play a successful role in confidence building and dialogue at the national level, there must be a project that requires involvement of all citizens.

In Lebanon, opposing communities have not participated together to a conflict-prevention measure. There could be a national campaign to raise money from Lebanese to fund clearance of UXO as part of a land restoration project.

3. *Peacebuilding strategies must be regional*. Natural resource management, on its own, will not prevent a relapse of conflict. When a society emerging from conflict is mired in internal fragmentation that is worsened by regional politics and substate tensions, diplomacy on a regional level must accompany natural resource management as part of a peacebuilding strategy (Gheciu and Welsh 2009).
4. *Recovery cannot wait for full peace*. Although most Lebanese agree on the necessity of regional diplomacy for sustainable peace, internal recovery cannot wait for this distant goal.
5. *Projects should address the needs of those most affected by conflict*. Lebanon is due to enter a phase of sustained recovery. Projects should be adapted to the real needs and aspirations of the population. Construction of new infrastructure services, neglected for decades in the South, is essential for development, poverty reduction, and economic growth. It may also help build confidence in the central authority and reinforce a feeling of national belonging—if not identity.

   The agricultural sector would benefit from modernization of irrigation, a reassessment of production yields, and restoration of soil fertility. Large-scale initiatives must be envisaged, and attention must be given to sustainable medium- to long-term recovery projects.
6. *Environmental assessments or capacities are often ignored*. There should be monitoring of implementation of recommendations. In Lebanon, interventions proposed for mitigating the environmental impacts of the conflict (such as sustainable management of demolition waste) and green recovery (such as promotion of sustainable cropping patterns) were ignored (UNDP 2007). Although the agricultural sector is essential to the economy, declining soil fertility has not been factored into recovery plans.

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