Lebanon

LANDMINE IMPACT SURVEY

Certified by the
United Nations Certification Committee

Implemented by
Mines Advisory Group and
Vietnam Veterans of America Foundation's
Information Management and Mine Action Programs

The Landmine Impact Survey in Lebanon summarizes the results of a nationwide socio-economic survey of the effects of landmines and UXO on communities in Lebanon. This survey was conducted over a 12 month period, ending in August 2003. This document is only one in a series of reports, which collectively constitute the Global Landmine Survey Initiative. This initiative aims to catalog the socio-economic impacts caused by landmines and UXO and to store this data in a manner that supports strategic national planning and resource allocation decisions.

Funding was provided by the European Union.

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Final Comments on the LIS by the National Demining Office

As a final query on the acceptability of the Landmine Impact Survey (LIS) report executed by the non-governmental organization the Mines Advisory Group (MAG) of the United Kingdom and the Vietnam Veterans of America Foundation (VVAF) of the United States, the Survey Certification Committee asked the National Demining Office (NDO) to provide an indication of its acceptance of the final report. The following synopsis outlines commentary received by the Certification Committee on 27 May 2004. Based on the inclusion of these comments in the report, the NDO accepts the report as complete. The comments centre on terminology, geographical references and detailed corrections of specific portions of the report text.

1. Terminology- The NDO notes inconsistency on the use of terminology. Based on the definitions contained in the International Mine Action Standards (IMAS), the concerns expressed include, but are not limited to, the use of the terms *accident* and *incident* for civilian, deminer or military casualties. The NDO also expresses concern about the use of local terms such as *rural* and *community* as the meaning of these terms in Lebanon varies significantly from the definition used by the LIS.
2. On geographical references, the NDO prefers maps use the name *Occupied Territories of Palestine* instead of *Israel*.
3. Points of clarification in the text as noted by the NDO response:
    - The reference to past mine action fails to enumerate the contributions of UN actors beyond UNICEF and UNIFIL. In fact, UNDP provided capacity building support in 2001-2002 and in June 2003 through the provision of a Chief Technical Advisor and a Programme Officer attached to the NDO. The UN Mine Action Service (UNMAS) working with UNIFIL established the Mine Action Co-ordination Centre- Southern Lebanon (MACC-SL) in 2001 to support the Operation Emirates Solidarity (OES) project funded by the United Arab Emirates (UAE).
    - On the OES project, the report names the project as if it were an organization unto itself, but does not identify the tripartite management of the project by the Government of Lebanon, the UAE and the UN.
    - The reference to the work of the non-governmental organization IMI is incomplete and should include the fact that IMI has cleared over 240,000 square meters of land in Lebanon.
    - There is a reference in the text to the timelines and that the “survey team was under pressure” from “many quarters”. This vague reference opens the door to suspicion and ill-repute for any actor involved in the process. For its part the NDO at no time attempted to apply pressure on any member of

the survey team. The NDO would have preferred this paragraph be rewritten to be more specific or dropped from the text all together.

- There is reference at the end of the report to clearance of mines by non-state actors. However, at no time have non-state actors conducted mine clearance in Lebanon.

Introduction

Growing out of the wide collaborative efforts of the International Treaty to Ban the Landmine, Landmine Impact Surveys are executed to meet the needs of all members of the international humanitarian mine action community including donors, national authorities and mine action implementers.

The overall vision for Landmine Impact Surveys is to "facilitate the prioritizing of human, material and financial resources supporting humanitarian mine action at the national, regional and global levels". To fulfill this vision, Landmine Impact Surveys are executed across the globe to the same uniform high standard. Landmine Impact Surveys provide the three major partners of mine action—national authorities, donors and implementing agencies—with a common dataset. This data, as collected during the impact survey, offers clear improvements on past efforts in that it:

- Defines the entire problem in terms of scale, type, location, hazard and social and economic impacts experienced by local communities;
- Improves national planning efforts by allowing for clear prioritization of resources;
- Fosters development of national plans with well-defined immediate, intermediate and end-state objectives;
- Establishes base-line data for measuring performance.

In sum, this implies nothing short of a major revision of how mine action programs are managed and how resources for such programs are allocated. Impact surveys are the first and most vital step in the overall transformation of humanitarian mine action. Impact Surveys dramatically improve the quality of information available to support management decision making at all levels.

The findings and information presented in this report are stored in the Information Management System for Mine Action (IMSMA) database and are intended to be descriptive in nature, providing the best and most comprehensive picture of the nature of the mine and UXO threat experienced by communities in Lebanon. While essential for national planning, this report is not a substitute for a national plan. It does not relieve national authorities or mine action professionals of their collective responsibility to gain a full understanding of the results of the survey and to use these results to set priorities, mobilize funding and allocate resources in the most effective and rational manner. The survey has transformed the unknown into information and knowledge. The challenge now is for others to use this knowledge to bring about positive, constructive action.

As a global initiative with a stated goal of standardizing information across countries, Landmine Impact Surveys make a concentrated effort to ensure conformity of methods, procedures and processes. These are based on best practice in the fields of social science research and mine action. To ensure confidence in the results, impact surveys are supported by both internal and external quality

assurance control mechanisms. All surveys executed according to widely accepted standards measure and score impacts in affected communities in a generally uniform manner. This being stated, the true value and nature of the impacts can not be ascertained by a quick tallying of colored dots on a map. Instead, readers should make a concentrated effort to understand all aspects of the problem.

ACRONYMS USED IN THIS REPORT

AP	Anti-personnel
AT	Anti-tank
CAS	Central Administration of Statistics (Administration Centrale de la Statistique)
CA	Cleared Area
CBO	Community Based Organization
CM	Community Meeting
DA	Dangerous Area
DC	Data Collector
EC	European Commission
EOC	Expert Opinion Collection
EOD	Explosive Ordnance Disposal
EU	European Union
FAO	Food and Agriculture Organization
FE	Field Editor
FN	False negative
FNS	False negative sampling
FP	False positive
FS	Field Supervisor
GICHD	Geneva International Centre for Humanitarian Demining
GIS	Geographic Information System
GLS	Global Landmine Survey
GPS	Global Positioning System
ICRC	International Committee of Red Cross
IF	Israeli Forces
iMMAP	Information Management and Mine Action Program (VVAF)
IMSMA	Information Management System for Mine Action
ISG	International Support Group
LAF	Lebanon Army Forces
LIS	Landmine Impact Survey
LMRC	Landmine Resource Centre
LRC	Lebanese Red Cross
LQAS	Lot Quality Assurance Sampling
MACCSL	Mine Action Coordinating Centre for South Lebanon
MAG	Mines Advisory Group
MOD	Ministry of Defense
NCRS	National Centre for Remote Sensing
NDO	National Demining Office
NGO	Non-government organization
OES	Operations Emirates Solidarity
QAM	Quality Assurance Monitor
SWG	Survey Working Group
TN	True negative
TP	True positive
UAE	United Arab Emirates
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
UNIFIL	United Nations Interim Force in Lebanon
UNMAS	United Nations Mine Action Service
UNOPS	United Nations Office of Project Services
USAID	United States Agency for International Development
UXO	Unexploded Ordnance
VVAF	Vietnam Veterans of America Foundation
WRF	World Rehabilitation Fund

Executive Summary

SUMMARY OF CONCLUSIONS

The Landmine Impact Survey conducted in the Republic of Lebanon from March 2002 until August 2003 identified 306 mine-impacted communities that contain 933 distinct mine and UXO contaminated sites.

Lebanon has an estimated 137 square kilometres of contaminated land, which directly affects the livelihoods and safety of more than one million persons. A thorough verification exercise suggests that the survey was successful in reaching at least 96.9 percent of the affected communities in Lebanon. The data collected afford extensive opportunities for research, analysis, and project planning, and lead to several key conclusions:

- For historical reasons, Lebanon's two southern provinces of Nabatiyah and South Lebanon form a homogenous area and, together, contain some of the most affected areas in the country.
- However, as a province, Nabatiyah is the most affected, containing one quarter of the contaminated land and the majority of highly impacted communities. Nearly half of the recent mine incidents in Lebanon have occurred in this province. Mount Lebanon is also highly affected with one third of the contaminated land and 22 recent victims. The Bekaa Valley contains more than 15 percent of the contaminated land nationwide and 21 recent victims.
- Picnic walking and herding are the most frequently reported activities at the time of a mine incident. Playing and tampering with mines is also a significant contributor to mine incidents.
- Surveyed communities reported that rain-fed cropland and pastureland are contaminated by mines and UXO. The loss of access to this land has the greatest adverse impact on rural communities dependent on agriculture and herding.
- The profile of the average mine incident victim in Lebanon is a working-age male engaged in income-generating or leisure-time activities. The data indicate that 28 recent victims are children under the age of 15.
- Less than one percent of the mined areas in Lebanon are reported to be made up of flat land without any significant vegetation cover. Most of the contaminated land is made up of terrain of high relief and is covered with bushes and trees, presenting particular challenges to clearance teams.
- Communities that have emerged most recently from conflict, notably those communities in the south and in the Bekaa Valley, have the largest number of victims. The magnitude of the contaminated area also influences the victim rate. Interestingly, the size of the population in affected communities does not influence victim rates.

BACKGROUND AND PROJECT OVERVIEW

Lebanon has not yet signed or ratified the Convention on the Prohibition of the Use, Stockpiling, Production, and Transfer of Anti-Personnel Mines and On Their Destruction. The Lebanese authorities, although making it clear that they will not sign the treaty until Israel does so, publicly support its underlying principles and implements all relevant international standards and protocols. In 1998, the Lebanese government established the National Demining Office as the national mine action coordination agency in Lebanon.

The Landmine Impact Survey in Lebanon began in March 2002 when the Mines Advisory Group (MAG), an international mine action NGO based in the UK, signed a grant contract with the European Commission in Brussels. MAG was then able to send an international team made up of the survey manager and deputy to initiate operations to start the survey in-country. MAG implemented the survey in accordance with the principles and operating protocols established by the Survey Working Group (SWG) and the UNMAS Certification Guidelines. The data collection phase started in September 2002 and was completed in May 2003, the office closing in August of that year.

The survey was fully funded by the European Commission with an in-kind donation of survey office space and utilities for the entire period of the survey by the National Demining Office.

MAG executed the survey with two international staff members, one international consultant and technical support from the Vietnam Veterans of America Foundation (VVAF). Field supervisors, field editors, data collectors and all support staff were Lebanese nationals, totaling more than 50 people. The field staff was organized into four teams that traveled throughout the country. The survey coordination office and database was located in Beirut. Data collected was coded and entered into the Information Management System for Mine Action (IMSMA). In addition to office space and utilities, the NDO provided the MAG team with extensive support during the survey, including consultation, coordination and liaison with military intelligence for security issues and with other stakeholders.

SCOPE OF THE PROBLEM

The survey conclusively identified five mine-affected provinces out of the total of six provinces in Lebanon. Within these provinces, a total of 306 communities were identified as affected by mines and/or UXO.

Nabatiyah province has 65 affected communities, with 220 contaminated areas and 35 square kilometres affected. Mount Lebanon has 115 affected communities with 359 affected sites and 50 square kilometres contaminated. South Lebanon province has 52 communities, with 181 contaminated areas totaling 19 square kilometres. The Bekaa Valley reported 45 communities affected, with 139 contaminated sites and more than 19 square kilometres of affected land. North Lebanon is the least-affected, with only 29 communities and 81 sites affected,

TABLE 1

AFFECTED COMMUNITIES BY PROVINCE

Impact category	Bekaa Valley	North Lebanon	South Lebanon	Mount Lebanon	Nabatiyah	Total
High	4	4	4	6	10	28
Medium	15	19	33	54	43	164
Low	26	6	15	55	12	114
TOTAL	45	29	52	115	65	306

totaling 12 square kilometres. Most of the affected communities in the North lie within the district of Batroun.

In Table 1 the survey results at the level of the province are presented.

The survey found an estimated 3.47 new victims per year per 100,000 population. Victim rates are unequally distributed across provinces, with the provinces of Nabatiyah, South Lebanon and Mount Lebanon having the highest rates. Along with certain districts in the Bekaa Valley, the south of the country suffers rates several times those reported for Mount Lebanon and the North.

IMPACT ON COMMUNITIES

The impact survey standard scoring mechanism was used to rank communities in broad categories, which reflect the degree of mine impact. Using this ranking system, Lebanon contains 28 "high- impacted" communities, 164 "medium-impacted" communities, and 114 "low-impacted" communities.

The indicators used to determine this ranking include the number of victims in the past 24 months, blocked access to facilities or livelihood areas, and the nature of the contaminating munitions. In Lebanon, 97,685 people live in highly impacted communities, 615,968 in medium-impacted communities and 373,596 in communities where impact is low.

The affected communities lying along the Blue Line also make a special case. Much of the land owned by these communities' will be opened up for potential agricultural use by the Litani and Wazani water supply projects. However, all of these communities have land blocked by landmines and UXO. These communities form a dense cluster of 21 high and medium-impacted communities that need to be prioritized for mine clearance, if the potential being released by these water supply projects is to be realized.

IMPACT ON SECTORS

The survey collected extensive information regarding the types of livelihoods that are denied local populations because landmines and UXO are present. Rain-fed cropland is the most frequently reported blocked resource type—82 percent of all communities indicate some loss in this regard. Blocked access to pastureland is the second most commonly reported loss, followed by non-agricultural land (e.g., forest) and then irrigated crop land. In Lebanon, mines and UXO rarely affect roads, housing areas and other major types of infrastructure.

MINE INCIDENTS

The survey identified 108 persons that had come to harm or death due to a mine incident in the 24 months preceding the survey. A further 2,259 victims were recorded from incidents in earlier years. Recent incidents took place in 54 out of the 306 impacted communities in Lebanon, and the highest rates of injury were in Nabatiyah province. At least 94 percent of all recent victims are males, mostly clustered into the prime working years of between 15 to 29 years of age (20 percent), and 30 to 44 years of age (31 percent).

The most frequent activity at the time of injury was reported to be picnic walking (17 percent), followed by herding animals (16 percent). Tampering and playing with munitions caused 15 percent of recent incidents. In the most general terms, the typical profile of an average mine incident victim in Lebanon is a working-age male, herding his animals or out walking or enjoying his leisure time.

CAUSALITY

Statistical analysis of the survey data, particularly that relating to community attributes, allows one to see relationships between a variety of factors and the risks that mines pose to specific communities. In Lebanon, survey teams found that those factors most associated with past conflict, particularly the length of time since conflict ended in a community and the size of the contaminated area, outweigh other factors that might allow the community to adapt to the risk that it faces. Reliance on business or trade also reduces a community's risk factor, taking people away from intense use of land.

BUDGET AND EXPENDITURE

The final international expenditure for the impact survey in Lebanon was 1,360,000 EUR. Of this amount, approximately 160,000 EUR was spent on non-expendable equipment that was provided to the NDO and is now available to support other mine action efforts.

CONCLUSION

The results of the impact survey plainly indicate that Lebanon still suffers adversely from the presence of landmines and UXOs, especially in its southern provinces and Mount Lebanon. Clearly, the extensive contamination that exists in Lebanon's crop and pasture land will pose a hazard for many years to come. The information gained during the impact survey process will allow for the development of an appropriate, well-targeted response that combines marking, area reduction, and large-scale clearance. The results can also further contribute to the development and refinement of planning in mine risk education and victim assistance in a manner that will produce positive and immediate results.

Survey Results and Findings

Survey Results and Findings

Scope of the Problem

NUMBER OF COMMUNITIES AFFECTED

The survey identified five out of six provinces with some kind of impact from landmine or UXO contamination. Within these provinces, 22 districts and 306 communities reported a problem. The resident population in these affected communities is estimated to total 1,087,249 persons.

Looking at Table 2 (see next page), there are noticeable differences among provinces in the number of mine-affected communities and the population residing in them. However, the size of the population does not indicate that the province, district or community is more or less affected than another smaller one. On the contrary, the LIS results show that the most affected provinces are Nabatiyah, South Lebanon and Bekaa Valley. Contrary to the idea that a larger population places more people at greater risk, community population size in Lebanon does not indicate that a highly-populated region is more affected than a less-populated one. This concept is further clarified and discussed in the section titled 'Community Background and Mine Effects'.

Using figures for population residing in affected communities, the province of Mount Lebanon has 115 affected communities with two-thirds of the population estimated to reside in them. However, Mount Lebanon is also the most urbanized and densely populated province, with eight of the ten largest affected communities. The province of Nabatiyah has more than 200,000 people living in affected communities and the Bekaa Valley is next with 119,251 persons. South Lebanon has 66,110 people living in affected communities. North Lebanon has both the lowest number of impacted communities and the smallest affected population.

No methodology currently exists which can accurately estimate the number of people living in each community who are affected by contaminated land. The impact survey methodology currently collects the resident population of affected communities. Unfortunately, for urban and suburban areas, the resident population is not as useful when estimating the 'affected population' as it is for small, rural communities. Obviously, urban and suburban communities do not interact with the land in the same way a rural community would. This is especially important in Lebanon, where 41 percent of the communities surveyed were classified as either urban or suburban. In Lebanon, the LIS also collected information on the number of direct beneficiaries for clearance of land as identified by the communities themselves. Even though neither of these figures reflects the exact population affected by the presence of mines or UXO, they are the best estimates available[1].

For example, Choueifete, an urban community on the south-east periphery of Beirut and the largest community surveyed, has a total resident population of

[1] Interviews were held with a small sample of community leaders in some of the larger urban communities. The community leadership was unable to estimate the exact population affected by each contaminated area. In all cases, they reiterated the population figures and clearance beneficiary figures as collected by the survey teams.

TABLE 2

AFFECTED DISTRICTS, COMMUNITIES AND POPULATIONS BY PROVINCE

	District	Affected communities	Resident winter population	Community identified clearance beneficiaries
Bekaa Valley	Baalbek	6	22,100	23,708
	Beqaa El-Gharbi	16	52,446	47,405
	Rachaiya	21	39,675	35,667
	Zahle	2	5,030	2,100
	TOTAL	45	119,251	108,880
North Lebanon	Batroun	19	10,523	33,857
	Bcharre	4	905	5,020
	Koura	3	1,830	3,700
	Minie Danniyeh	1	10,000	2,500
	Zgharta	2	14,000	11,900
	TOTAL	29	37,258	56,977
South Lebanon	Jezzine	32	12,360	42,849
	Saida	5	26,100	3,727
	Sur	15	27,650	30,025
	TOTAL	52	66,110	76,601
Mount Lebanon	Aley	35	367,440	104,182
	Baabda	20	122,850	93,323
	Chouf	34	109,485	70,141
	El Metn	12	26,920	38,213
	Jubail	7	2,630	22,725
	Kasrouane	7	35,100	106,045
	TOTAL	115	664,425	434,629
Nabatiyah	Bint-Jbeil	18	50,270	62,160
	Hasbaya	14	24,970	14,693
	Marjeyoun	19	52,015	237,520
	Nabatiyah	14	72,950	77,055
	TOTAL	65	200,205	391,428
	GRAND TOTAL	306	1,087,249	1,068,515

225,000 people. However, Choueifete's four suspected areas do not impact on the community members in the same way as mined areas blocking access to agricultural land in a rural community would. Choueifete's mined areas are well-known, fenced and marked. Although the community is densely populated, the population can avoid entering into these areas because they have alternative employment and livelihood options in the nearby city. A rural, agricultural community such as Houla in Marjeyoun district in the south of Lebanon does not have the same opportunities available to its residents. Community members rely on their land in a much more direct way and, if access to this land is blocked, it often has more severe consequences.

Table 2 shows the distribution of communities and populations living in mine-affected provinces and districts in Lebanon. The last two columns show the resident population in winter and the communities' estimate of how many people would directly benefit from clearing contaminated land. Interestingly enough, the total number of people living in the communities and the total number estimated by the community to benefit directly from clearance are in many cases very similar.

However, Table 2 also shows a number of interesting discrepancies between these two variables. For example, the province of Nabatiyah stands out as having large differences between the resident population and the estimated beneficiaries of clearance—200,205 and 391,428 respectively. And in Mount Lebanon, the resident population (664,225) is significantly different from the estimated beneficiaries (434,629). This reflects the unique nature of each province—many communities in Mount Lebanon province are urban while Nabatiyah province is mostly made up of rural villages. In Mount Lebanon, urbanized communities are not as directly affected by contaminated areas and so, estimated beneficiaries of clearance are less than the resident population. Nabatiyah province is a rural agricultural region with a high number of displaced people. Communities in Nabatiyah identified a larger number of beneficiaries for clearance because they believe that clearance will be one of the factors that could open more land up for production and encourage the return of some of the displaced population.

SETTLEMENT TYPE AND POPULATION SIZE

Mines and UXO in Lebanon primarily affect rural communities. However, due to the relative small size of the rural communities, the majority of the population living in affected communities are found in urban and suburban settlements.

Table 3 shows that 160 of the 306 affected communities are rural. However, these communities only have a total population of 260,124 inhabitants. This means that the populations of individual communities are relatively small, with an average population of only 1,626.

TABLE 3

AFFECTED COMMUNITIES AND POPULATIONS, BY SETTLEMENT TYPE

Settlement type	Affected communities	Population living in affected communities	Mean population
Urban	25	454,345	18,174
Suburban	100	326,220	3,262
Rural	160	260,124	1,626
Other*	21	46,560	2,217
TOTAL	306	1,087,249	3,553

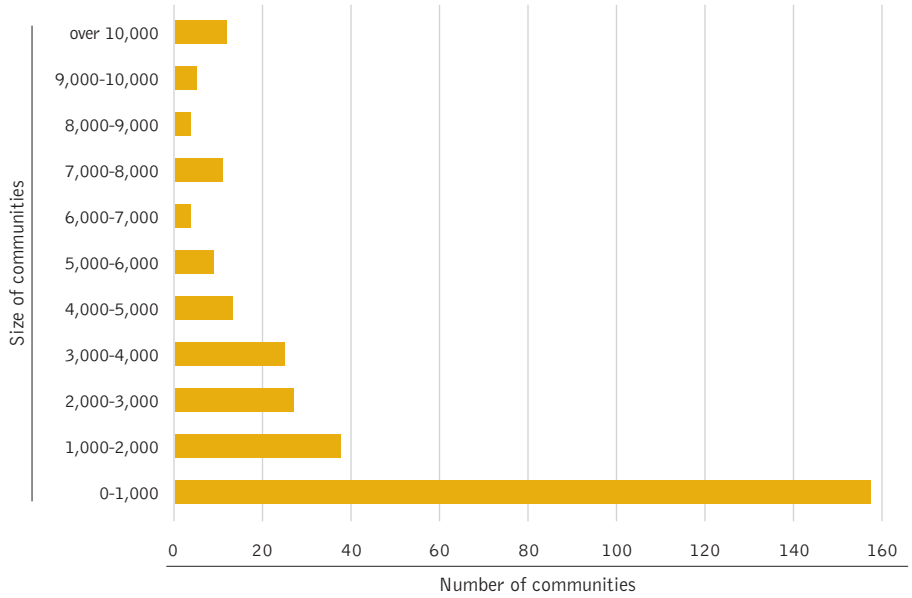
*Other = seasonal villages; nomadic and undetermined

On the other hand, although the number of communities is less, the populations of suburban and urban communities make up more than three-quarters of the total affected population. Twelve communities alone contain almost half of the affected population, with more than 10,000 inhabitants living in each of these them.

Figure 1 (see next page) shows the magnitude of the population size distribution for affected communities and clearly demonstrates that the survey results show a small number of large communities of more than 10,000 population and a large number of small communities with populations of less than 1,000. However,

FIGURE 1

POPULATION SIZE DISTRIBUTION, COMMUNITY LEVEL (WINTER)



it should be stressed again that the impact of mines and UXO is thought to be less on the large, urban communities than on the small, rural communities.

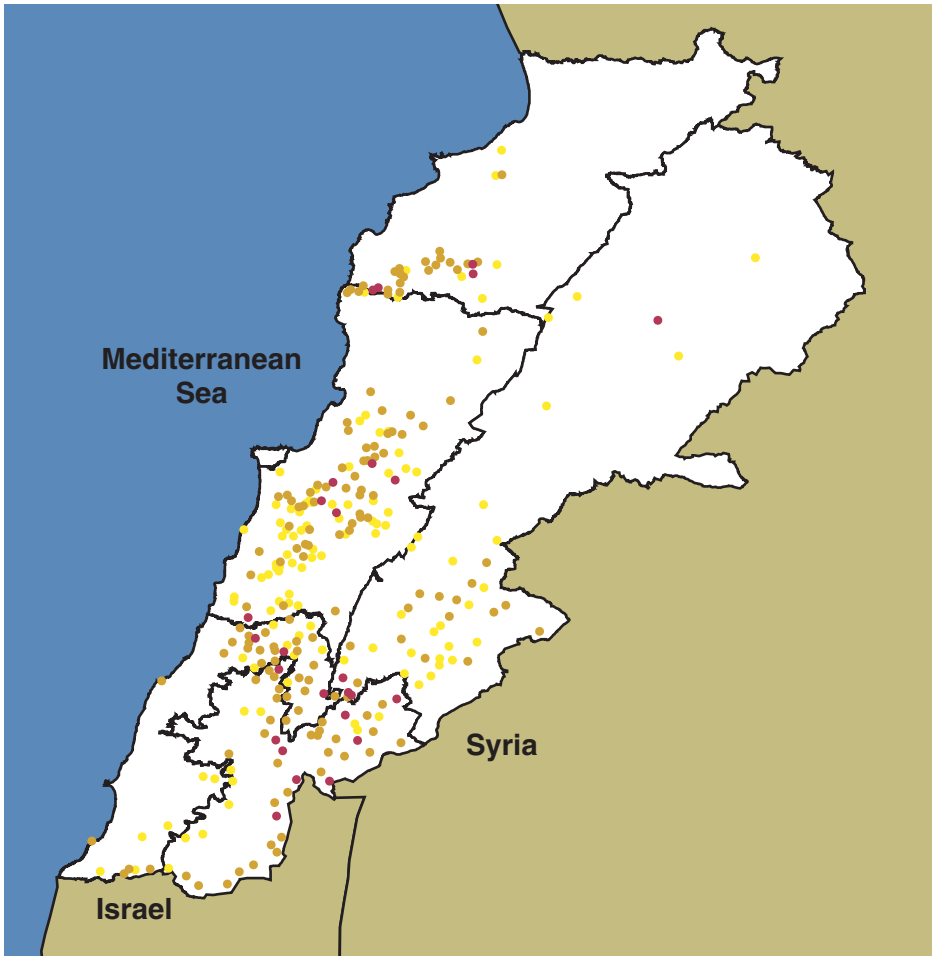
GEOGRAPHIC DISTRIBUTION OF IMPACTED COMMUNITIES

Map 1 shows the location of the impacted communities. It clearly demonstrates that affected communities are widely dispersed over the territory of Lebanon. The majority of high impact communities are found in South Lebanon and Nabatiyah provinces, with Mount Lebanon and North Lebanon also having several highly-affected communities.

Even so, the number of high impact communities reported in the south of Lebanon may surprise some observers. During the survey in the areas covered by the Operations Emirates Solidarity program, it was apparent that many communities which were previously classified as being high-impact had been successfully cleared. In the OES areas, there has also been an extensive community liaison and mine risk education program implemented—this, too, would have contributed to the decrease in recent victims and ultimately reflected in lower impact scores in the survey. Indeed, some communities who were listed as still being affected by the Mine Action Coordination Centre South Lebanon (MACCSL), were so satisfied with the clearance work then being done, that they no longer considered themselves as affected by the problem of mines or UXO. These communities declared themselves to be mine-free and are listed as such by the survey.

Special note should also be taken of the 'Blue Line', the area running along the southern border of Lebanon with Israel and the Occupied Territories. The Blue Line is reportedly the most heavily contaminated area in Lebanon, with a heavy

concentration of mined areas lying right up against the border fence. The impact survey data shows that three of the 24 communities lying along the Blue Line are high impact, 18 are medium-impact, and 3 are low-impact. The communities with cadastral boundaries along the Blue Line are predominantly rural with the populations depending on agriculture as their economic base. There are special problems facing these communities, some of the worst affected by the war and by landmines and UXO.



MAP 1

LOCATION AND IMPACT OF LANDMINES/UXO AT COMMUNITY LEVEL

Community impact

- High
- Medium
- Low

The province of the Bekaa Valley has the least number of affected communities. The two southern districts of West Bekaa and Rachaiya do have medium and low-impact communities and one Bale district has one high-impact community.

Map 2 (see next page) clearly shows that the southern part of the country is the area with the most recent reported conflict. This links in with the occupation by the Israeli Forces up to May 2000. Other reported conflict periods in the south after the year 2000 are related to sporadic and light shelling around the area of the Shebaa Farms[2] along the Blue Line on the southern border of Lebanon.

[2] Military intelligence officers responsible for this area of Lebanon confirmed that there had been shelling in the area as recently as 2003.

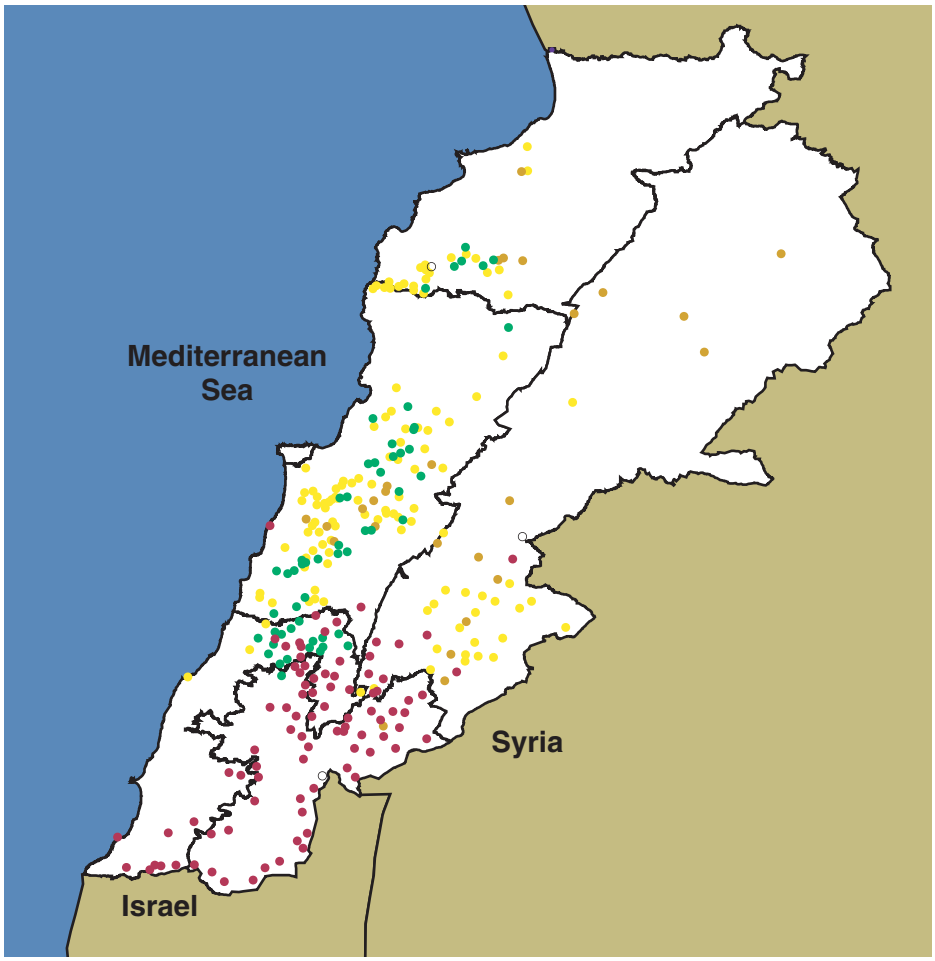
MAP 2

IMPACTED COMMUNITIES, BY AGE OF CONFLICT

Mines/UXO contamination

- 2000-2003
- 1991-1999
- 1984-1990
- 1976-1983
- No data

(2003 conflict related to shelling of Shebaa Farms area)



The survey identified 980 distinct areas of suspected landmine and/or UXO contamination. Individual contaminated areas differ greatly in their relative size. The size of affected areas ranges from 12 square meters to more than 15 square kilometres. The average size of these areas was 208,660 square meters. The median[3] size of a contaminated area was 129,500 square meters, which equals a square with sides 360 meters long.

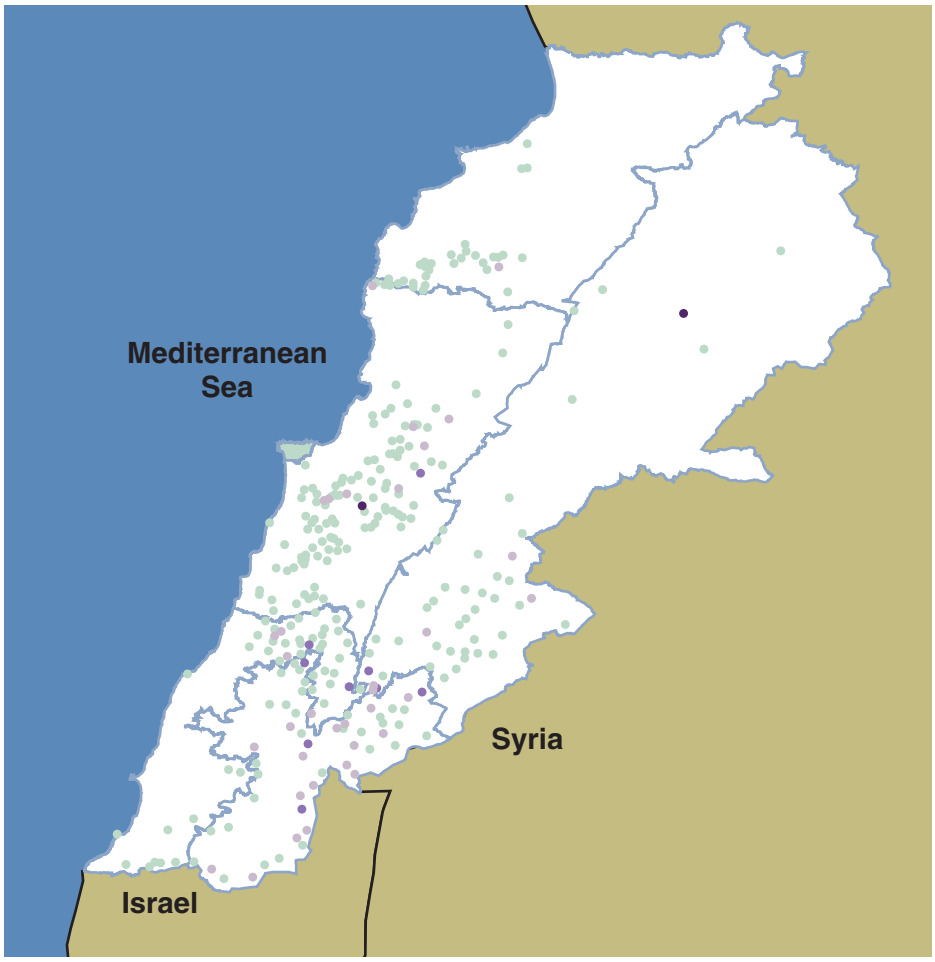
Table 4 shows that more than one half of the affected communi-

[3] The median is the most 'typical' number in the middle of a set of numbers; that is, half the numbers have values that are greater than the median, and half have values that are less.

TABLE 4

COMMUNITIES, BY NUMBER OF DISTINCT SUSPECTED AREAS

Distinct suspected areas in the community	Number of communities	Percent
1	60	20%
2	61	20%
3	73	24%
4	53	17%
5	27	9%
6	13	4%
7	7	2%
8	6	2%
9	3	1%
10	3	1%
TOTAL	306	100%



MAP 3

COMMUNITIES WITH RECENT VICTIMS

- 6-7
- 3-5
- 1-2
- None

ties have three or more suspected areas. Lebanon's affected communities have a comparatively higher numbers of suspected areas, when compared with other countries surveyed to date.

VICTIMS OF MINE AND/OR UXO INCIDENTS

Among the 306 communities surveyed and found affected, 262 had a history of mine or UXO incidents, which injured one or more persons. Among these communities, 54 recorded recent victims. For the purposes of this survey, 'recent' means that an "incident took place within the past 24 months."

Of the total, 255 communities had victims from periods where incidents occurred more than two years previously (see Table 5, next page).

More information was elicited about recent victims than about victims from more than 24 months past. This is in part due to the fact that interviewees find it easier to recall the relevant details of events occurring in the recent past. The figures concerning less recent victims are less reliable than the information provided for the more recent victims.

Based on the figures for the 108 recent victims, the survey calculated an estimated incidence of landmine and UXO victims per 100,000 people per year. These

TABLE 5

MINE AND UXO VICTIM SURVEY

Period	Communities involved	Victims		
		Killed	Injured	All
Recent victims (<24 mths)	54	11	97	108
Victims of less recent date (>24 mths)	255	742	1,517	2,259
All victims	262	753	1,614	2,367
Had no victims	44	—	—	—

Note: Some communities may have both recent and less recent victims, hence, the first two rows will not total 306.

rates are estimated using population figures prepared by the Research Centre for Social Sciences of the Lebanese University for the Ministry of Social Affairs in 1996. The rates work out as 9.93 within the populations of affected communities; 4.82 within the population of affected districts and 3.47 within the entire nation.

Map 3 shows that most of these recent incidents are clustered together in the two southern provinces of the country, Nabatiyah and South Lebanon. However, Mount Lebanon, North Lebanon and the Bekaa Valley also experienced mine and UXO-related incidents in the last two years.

Impact on Communities

SEVERITY OF IMPACTS

For each affected community, the survey calculated a point score expressing the severity of the various mine impacts. The score takes three major factors into account:

- Number of recent victims
- Livelihood and institutional areas to which mines and UXO block access
- Class of munitions

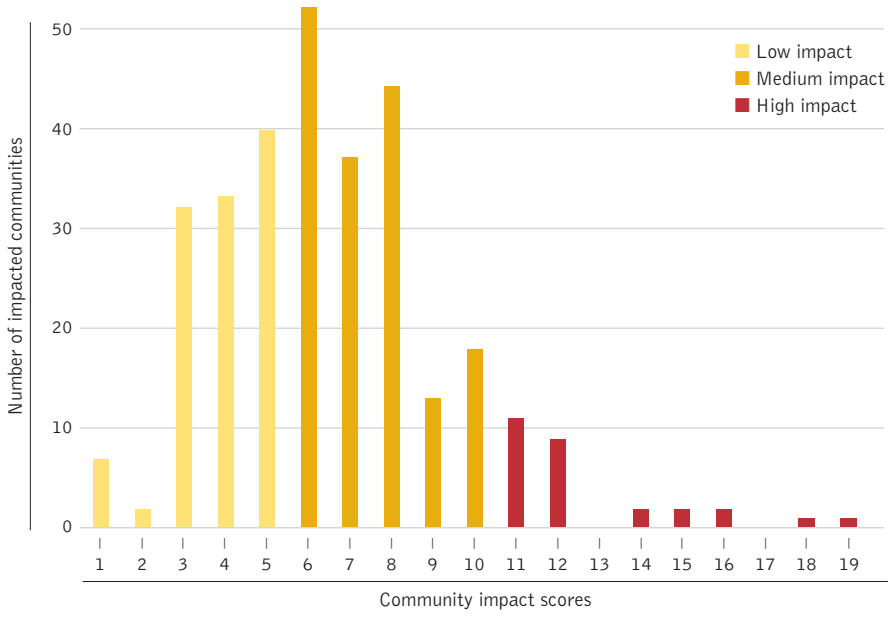
The score is used to classify communities as low, medium, or high impact. Scores ranged from one to 19 in the Lebanese survey results.

A score of one indicates that a community reported only the presence of UXO and no serious blockages or recent victims. As reflected in Figure 2, the survey found seven communities with this very mild signature. At the other end of the scale, a score of 19 was assigned to the community of Chaat in Baalbek district in the Bekaa Valley due to the presence of eight recent victims, four of which were injured in one incident in November 2001. Another community with eight recent victims is Mansouriye in Aley district in Mount Lebanon with a score of 18.

However, most communities had a score of eight or less. The modal score, the score most often assigned, was six. The median score was six meaning that half of the communities scored six or less. The average score was 9.41. Score ranges

FIGURE 2

DISTRIBUTION OF IMPACT SCORES



that qualify an affected community as low, medium or high impact are shown in Table 6.

With this classification, 114 or 37 percent, of the 306 affected communities are low impact communities. Medium-impact communities total 164 or 54 percent of the total, while 28 communities, or nine percent, are classified as high impact. Figure 3 portrays the distribution of low-, medium-, and high-impact communities.

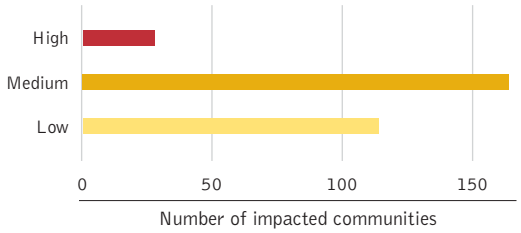
TABLE 6

IMPACT SCORE CLASSIFICATION

Score range	Classification
1–5	Low
6–10	Medium
11 and higher	High

FIGURE 3

IMPACT CLASSIFICATION



Communities of high and medium impact comprise nearly two thirds of the total affected communities in Lebanon. These communities are often clustered close to each other geographically. This indicates that populations may be greatly affected by the presence of mines and UXO within a limited territory. This is especially noticeable in the two southern provinces of Nabatiyah and South Lebanon, along sections of the Mount Lebanon range and belt of affected communities in Batroun district in North Lebanon.

POPULATIONS BY IMPACT CATEGORY

It is estimated that 1,087,249 people live in mine-affected communities in Lebanon. Of these, approximately 97,685 people live in high impact communities, and an estimated 615,968 live in medium-impact communities.

Communities in Lebanon also estimated that there would be 1,068,515 direct beneficiaries of mine and UXO clearance nationwide. Compared with the resident population, the figures for these self-identified clearance beneficiaries show that communities estimate that clearance of high and medium impact communities would benefit more people than actually reside in their communities.

Thus, the majority of people whose lives are affected by mines and UXO live in communities that the survey rated as high or medium impact. This information is summarized in Table 7. This is an unusual finding, since in all other countries surveyed to date, the majority of affected communities are classified as being overwhelmingly low-impact.

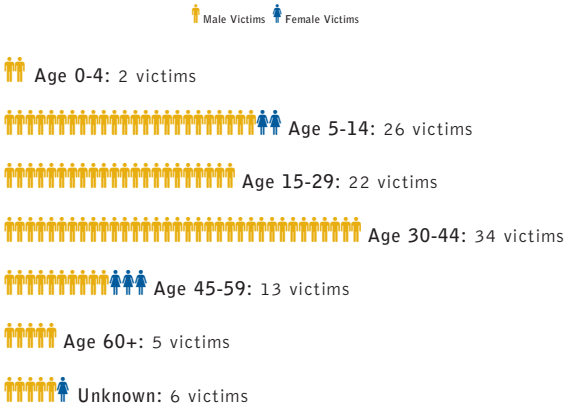
TABLE 7

COMMUNITIES AND POPULATIONS BY IMPACT CATEGORY

Score	Communities	Resident population	Community identified beneficiaries
High	28	97,685	103,324
Medium	164	615,968	674,132
Low	114	373,596	291,059
TOTAL	306	1,087,249	1,068,515

FIGURE 4

RECENT VICTIMS, BY AGE AND GENDER



DEMOGRAPHY OF RECENT VICTIMS

The survey identified a total of 108 recent victims in Lebanon. Victims were recorded in 255 of the 306 affected communities, with 54 communities still reporting recent victims.

Males account for 102 or 94.4 percent, of the victims and females six, or 5.5 percent, of the victims. Among both male and female victims, the age groups most affected are the 30 to 44 year-olds. This distinguishes it from other countries, in that the age of victims tends to be older in Lebanon. This is perhaps due to the fact that many small rural communities rely more on a permanent, aging population, which continues to practice agriculture.

Figure 4 indicates recent victims by age and gender.

Table 8 presents a breakdown of recent victims by sex, military/civilian status, and civilian occupation prior to the incident. The primary finding is that 87 percent of the victims were civilians, 16.7 percent (18) of whom were herding. Only 13 percent (14) of the recent victims were military.

TABLE 8

RECENT VICTIMS, BY GENDER, MILITARY/CIVILIAN STATUS, AND CIVILIAN OCCUPATION

	Male	Female	Total
Military	14	0	14
Civilian	88	6	94
Herding	17	1	18
Student	15	0	15
Education	7	2	9
Farming	7	0	7
Tractor driver	3	0	3
Construction worker	3	0	3
Government	2	0	2
Artisan	2	0	2
Transport	2	0	2
Office work	1	0	1
Not earning	1	0	1
Other	12	0	12
Unknown	16	3	19
TOTAL	102	6	108

INCIDENTS AND CONSEQUENCES

Activities at the time of the incident fall into several dominant categories (see Table 9, next page): picnicking and walking being the most frequently reported activity at the time of an incident. Of the 108 recent victims, 18 fall into this category.

Herding is the second most frequently reported activity and accounts for 17, or nearly 16 percent of, recent victims. Playing or tampering with mines or UXO is also an important cause of accidents in Lebanon—sixteen recent victims, or nearly 15 percent, were reported to have been tampering or playing at the time of the accident

The classification 'Military' includes accidents involving deminers. Communities were usually unaware of, and therefore unable to give, details of

demining accidents. According to the NDO, NGOs and commercial companies had 12 demining accidents for the period 2002–2003 and the LAF Engineer Regiment had 16 demining accidents during 2001–2003.

Table 10 shows the distribution, by gender, of mine incident survivors and fatalities. No women died as a result of their injuries, all fatalities being male. Only 11 of the accidents resulted in the death of a victim, probably pointing to the high quality and efficiency of emergency care in Lebanon.

Table 11 highlights the fact that 75 (or 69 percent) of those not immediately killed, received some form of emergency care.

The table also shows a lack of physical and vocational rehabilitation services as reported for mine incidents survivors. However, there are a number of extensive and well-known victim assistance programs in Lebanon. Information on their programs has been collated and presented in the chapter 'Summary of Past Mine Action'. There could be a number of reasons as to why information on these programs does not appear in the survey results. During a number of inter-

TABLE 9

ACTIVITY AT TIME OF INCIDENT

	Male	Female	Total
Military	14	0	14
Civilian	88	6	94
Picnic walk	15	3	18
Herding	17	0	17
Playing and tampering	16	0	16
Farming	8	0	8
Hunting	7	0	7
Collect herbs	1	3	4
Travel	1	0	1
Construction	1	0	1
Unknown	1	0	1
Other	21	0	21
TOTAL	102	6	108

TABLE 10

INCIDENT SURVIVORS AND FATALITIES, BY GENDER

	Survived	Fatal	Total
Male	91	11	102
Female	6	0	6
TOTAL	97	11	108

TABLE 11

TYPE OF CARE RECEIVED BY THOSE VICTIMS NOT KILLED IMMEDIATELY

	Male	Female	Total
Emergency care	72	3	75
Rehabilitative care	1	0	1
Vocational training	0	0	0
Other care	18	2	20
No care	2	0	2
Unknown care	12	1	13
TOTAL	105	6	111

Note: Some male victims received more than one type of care, resulting in the higher total numbers seen here.

views, community members stated that they were always aware of when an accident occurred because of the explosion and the arrival of the local emergency services. However, as one mukhtar put it, 'we don't know what happens after they come back from the hospital'. Perhaps this is due to the mobile and urbanized nature of most communities, with many members living most of the time in Beirut or other cities and thus, being unaware of post-emergency care for victims.

The National Demining Office Victim Assistance Steering Committee estimates that the different organizations working in rehabilitation have provided: 20 wheelchairs, 45 crutches, seven walkers, 228 prosthetic limbs, 21 hearing aids, 40 artificial eyes and 86 silicon hoses to mine incident survivors over the last two years. There are also socio-economic and income-generating programs working on victim assistance (details of these programs can be found in the section titled, 'Summary of Past Mine Action').

As a result of their wounds, 24 of the 97 survivors suffered amputations of the lower extremities, while six suffered amputations of the upper limbs. Five victims (all men) lost their eyesight, while 57 sustained other kinds of injuries. For nine victims the types of injuries were not available (see Table 12).

Table 13 shows the current occupation and gender of the survivors. Most remarkable is the increase in the numbers of people who had an accident and who are now not working. Only one survivor was known to

TABLE 12

TYPE OF INJURY, BY GENDER

	Male	Female	Total
Amputation upper	6	0	6
Amputation lower	21	3	24
Loss of sight	5	0	5
Other wound	54	3	57
Unknown	9	0	9
TOTAL	95	6	101

Note: There were 97 survivors, some of whom suffered multiple types of injury, resulting in the higher total numbers seen here.

TABLE 13

MINE INCIDENT SURVIVORS, BY GENDER AND OCCUPATION

	Male	Female	Total
Military	1	0	1
Civilian	90	6	96
Was not earning	16	0	16
Education	8	2	10
Herding	3	0	3
Office work	2	0	2
Farming	2	0	2
Government	2	0	2
Transport	2	0	2
Artisan	1	0	1
Household work	0	1	1
Student	1	0	1
Other	22	0	22
Unknown	31	3	34
TOTAL	91	6	97

have remained in active military service, with 11 of the 14 military victims being 'unknown' or 'other'. Communities are naturally unaware of the current occupation of military personnel. The large number of victims whose current occupation is unknown also indicates the communities' lack of knowledge regarding victims post-incident.

Impact on Sectors

TYPES OF BLOCKAGE

Key informants in the affected communities pointed to several major areas in which landmines and UXO were blocking access:

- Rain-fed cropland
- Pasture
- Non-agricultural land
- Irrigated land
- Water for purposes other than drinking

However, pasture and non-agricultural land may not always be distinguished clearly, and in fact were mentioned together by many key informants. Similarly, irrigated land and water other than for drinking together may form a fluid perceptual field.

Table 14 ranks resource types by the percentage of communities that reported blocked access to them. Several findings are apparent:

TABLE 14

PERCENTAGES OF COMMUNITIES REPORTING BLOCKED ACCESS

Area of blocked access	Communites affected	Communites
Rain-fed crop	82%	251
Pasture any	73%	222
Migratory pasture	55%	168
Non-agricultural land	50%	154
Fixed pasture	47%	145
Irrigated crop	30%	93
Drinking water	15%	47
Water any type	27%	82
Other water uses	25%	78
Roads to administrative centers	.6%	2
Roads and trails any type	23%	70
Other roads	22%	68
Housing	6%	17
Other infrastructure	10%	30

Note: Percentages are based upon a total of 306 affected communities. They do not add up to 100 percent because a given community may have access blocked to more than one resource or institutional area.

- *Rain-fed cropland* is the most frequently reported mine-impacted resource type, with more than three quarters of the communities reporting a problem (82 percent). The importance of cropland is demonstrated in the fact that despite the urban and suburban nature of much of Lebanese society eighty percent of the landmine-affected communities rated agriculture as one of the main bases of their local economy. This could be explained in a number of ways. First, urban and densely-populated areas were prioritized and extensively cleared following the end of hostilities, leaving rural communities with an ongoing problem. Second, according the Agricultural Census data, the amount of land actively being cultivated in Lebanon has remained relatively stable, while the number of people depending on it has increased since 1961 by 35 percent. Effectively, the amount of land under cultivation has remained stable and even slightly decreased, while nearly 200,000 people (or six per-

cent of Lebanon's population) still depend on agriculture to make a living. This trend is most notable in South Lebanon with a population increase of 74 percent, the Bekaa Valley with a 40 percent increase and North Lebanon with an increase of 31 percent (Ministry of Agriculture. 2000. Résultats Globaux du Recensement Agricole. Beirut: Ministry of Agriculture).

In fact, the development of modern agriculture in Lebanon has followed very different regional paths and the large number of communities reporting this type of blockage, therefore, does not represent a uniform situation.

- *Pasture and non-agricultural land* form another important complex, with 73 and 50 percent respectively of affected communities reporting such blockages. These two blockage types often wash into each other. Some types of non-agricultural land are not pasture, however; stands of valuable pine forest were reportedly mined in some communities. Communities also reported the blockage caused by mines and UXO of the collection of wild herbs and foods in non-agricultural tracts of high importance.
- *Irrigated land* is being denied by mines and/UXO in almost a third of all affected communities. In Lebanon, 47 percent of all active agricultural land is under irrigation, with important regional variations according to the Agricultural Census undertaken by the Ministry of Agriculture (2000). Irrigated farmland is a high-value resource and landmine and UXO blockages may significantly reduce the communities' earning potential. Blockages to irrigated land may go hand in hand with blocked water sources. The percentages of communities reporting these two types of problems are respectively 27 and 25.
- *Water*: 15 percent of the affected communities found that landmines and UXO were affecting their drinking water supplies. As stated above, 25 percent were experiencing landmine-related problems with water supplies for other purposes, primarily irrigation and the watering of animals. These situations vary a great deal, notably as a function of available alternatives. Access difficulties were experienced at the water source and, in a small number of cases, for the repair of damaged pipelines. The landmine-related access problems may be part of larger water issues; in several communities, the resumption of active farming in cleared land or the construction of tourism facilities are contingent on adequate water supplies[4].
- Landmines and UXO blocking *roads and trails* was mentioned in 23 percent of the surveyed communities. It is doubtful that this kind of blockage constitutes a serious problem. Only two communities reported their roads blocked to administrative centers. For most communities, alternatives were readily available. This finding does not preclude the risk of fresh incidents on footpaths that local communities wrongly consider mine-free, or the need to build new agricultural access roads in areas where suspected ones fell into disrepair.

[4] Lebanon currently has two large water supply projects commencing construction in the southern provinces, the Al-Wazani River project and the Al-Litani River project. If other factors do not limit their impact, these projects have the potential to open up large amounts of fallow land for cultivation, however, most of the region covered by these projects also contain large areas contaminated by landmines.

TABLE 15

MAGNITUDE OF BLOCKED ACCESS

Impact type	Communities affected	Resident population	Contaminated areas	Estimated surface (sq km)
Rain-fed cropland	251	874,868	851	124.53
Pasture	222	584,354	731	117.10
Non-agricultural land	154	591,194	538	72.37
Irrigated cropland	93	495,445	325	43.20
Water, other than drinking	78	190,510	273	41.33
Roads and trails	70	164,386	227	40.09
Drinking water	47	126,090	164	37.10
Infrastructure	30	117,015	112	13.11
Housing	17	25,960	66	8.20

Note: Numbers of affected communities add up to more than 306 affected communities. A given community may have access blocked to more than one resource or institutional area. For the same reason, the estimated surface values exceed significantly the total estimated contaminated area of 137 square kilometres.

- Landmines and UXO within *residential areas* was a problem for six percent of the communities only. Although the prevalence is small in comparison with other blockages, having contamination by mines and unexploded ordnance close to inhabited areas is assumed to present the population with a particularly high risk of accidents. Moreover, this appears to be the type of blockages where the historic land use and future needs diverge most. While few existing residential areas are close to suspected areas, new housing developments appear to be constrained by the presence of landmines and UXO in a number of communities.
- *Other infrastructure* was checked as being blocked by ten percent of the affected communities. There is no common pattern among these; and the types of infrastructure affected include low numbers of religious, educational and health care facilities as well as of factories, stone and sand quarries. Some communities reported blocked water and sewage pipelines or areas of value to tourism under this heading. There were no communities with landmines or UXO frustrating the functioning of several key public infrastructures.

Eventually, the size of the population affected by a particular problem as well as the numbers and surface of the contaminated areas involved have been calculated and are summarized in Table 15. It should be kept in mind that a given contaminated area may be blocking several resource types and thus, the overlap between these categories is considerable.

TYPICAL COMBINATIONS OF IMPACTS

In Lebanon, impact types within affected communities occur in a considerable number of combinations. Statistically, the most frequent blockage type—rain-fed cropland—is associated relatively most closely with pasture and non-agricultural

land. Similarly, housing, infrastructure, and roads form loosely associated blockage types, in neighborhoods with water blockages. Blockages of irrigated land hold a middle ground between those two groups, although somewhat closer to the second complex.

At most, one may speculate that some communities—depending on settlement type, institutional endowments and distance to the nearest mined areas—may see more of their high-value assets such as residential houses, public facilities, water sources and irrigated farms impaired. Others may have remained relatively unscathed, with the contamination limited to low-value resources chiefly such as pastureland. These associations are so weak that the affected communities cannot be assigned to a manageably small number of typical impact communities only.

One may still attempt to detect basic groupings reflecting the types of resources made unavailable to communities. These groupings are called "clusters" of impacts. If the clusters are limited to the better discriminating blockage types—those with a middle frequency including pasture, non-agricultural land, irrigated cropland, water, roads and trails, one can reasonably distinguish four clusters or, as one may say more naturally, "types":

- *Type A* refers to blockages of pastureland only (within the set of five blockage types in this table) and represents 45 communities.
- *Type B* adds non-agricultural land to the list of blockages. A good number of the 96 communities included here also reported problems with water, roads and trails.
- *Type C* adds blockages of irrigated land to pasture and non-agricultural land. Water, road and trail blockages occur in some of the 45 communities.
- *Type D*-communities are defined by the absence of blocked pasture. While irrigation and water blockages occur significantly among the 103 communities bearing this type, it is dominated by the blockage types not included in this tableau—rain-fed cropland, infrastructure and housing.

TABLE 16

COMBINATIONS OF SELECT IMPACT TYPES

Blockage type	Frequency	A	B	C	D
Pasture	72%	■	■	■	
Non-agricultural land	49%		■	■	
Irrigated crop	31%			■	▪
Water	27%		▪	▪	▪
Roads and trails	23%		▪	▪	
COMMUNITIES CONCERNED		45	96	45	103

■ Blockage type present in more than 80% of cases
▪ Blockage type present with at least two thirds frequency.
Note: N = 287.

TABLE 17

REGIONAL ASSOCIATIONS OF IMPACT COMBINATIONS

Province	Communities	A	B	C	D	Total
Bekaa Valley	44	25%	30%	0%	46%	100%
North Lebanon	29	7%	69%	14%	10%	100%
South Lebanon	47	17%	40%	15%	28%	100%
Mount Lebanon	114	11%	19%	20%	49%	100%
Nabatiyah	53	21%	42%	21%	17%	100%

Note: N = 287.

This and other blockage-based typologies are of limited value vis-à-vis the complexities of landmine-affected communities in Lebanon. Notably, and differently from several other affected countries, communities do not differ from type to type regarding the frequency of landmine incidents. They do, however, differ on several other counts: in the typical size of the associated contaminated surfaces, and in the median years of end of conflict. These differences may ultimately be explained by regional associations; in fact, these are statistically significant. The final table of this chapter shows the row profile of these associations, with types that dominate in each province by more than 40%, marked with grey shading (see Table 17).

Accordingly, the southern provinces and the north are dominated by Type-B communities while the most frequent type among the affected communities in the Bekaa Valley and in Mount Lebanon is D. Type B is essentially defined by blockages of pasture and non-agricultural land, Type D by the absence thereof. In other words, the essential differences appear to be base on the combination of regions and the persistence of more far-reaching forms of rural livelihoods such as animal husbandry and the exploitation of forest resources.

Summary of Past Mine Action

BACKGROUND

Lebanon has not yet acceded to the Mine Ban Treaty. In January 2001, Lebanon's Minister of Foreign Affairs, Mahmoud Hammoud, told the UN Secretary-General, "Lebanon is ready to adhere to this convention whenever Israel is adhering." However, the Foreign Ministry indicated to the Landmine Monitor that Lebanon "is looking for the day to join the Convention on Conventional Weapons and the Convention on Conventional Weapons Amended Protocol II." Although Lebanon has not signed the Treaty, representatives of the Lebanese authorities have repeatedly stated their support for the Mine Ban Treaty. The NDO implements the principles of this treaty and other relevant international conventions in the national mine action program. In addition, Lebanon is never known to have produced or exported anti-personnel mines.

Since the May 2000 withdrawal of the Israeli Forces, the Lebanese mine action program has focused mostly on the south. However, mine clearance activities have been ongoing since the end of the war, mostly implemented by the Engineer Regiment of the Lebanese Army. At present, the Operations Emirates Solidarity (OES) clearance program covers those areas in southern Lebanon to the south of the Litani River. The Engineer Regiment and other agencies working under the auspices of the NDO work to the north of this river. The Engineer Regiment, however, also undertakes emergency tasks along the Blue Line[5].

Reflecting this situation, there are currently two IMSMA databases in Lebanon, the first being installed in the MACCSL office and the second in the NDO in Beirut. These two databases have weekly synchronizations and, after the completion of the OES program, the NDO will receive the country database and all mine action data will be centralized there.

Funding for mine action activities in Lebanon comes from many diverse sources. These include many different governments, embassies and funding agencies. Some of the most important of these include the United States government, the European Commission and the United Arab Emirates.

THE MINE ACTION COMMUNITY

National Demining Office (NDO)

The National Demining Office was established by a resolution from the Council of Ministers on 15 April, 1998. The mission statement of the NDO is 'to develop a Strategic Integrated National Mine Action Plan aimed at

- Reducing casualties;

[5] The Blue Line is the area lying along the southern border of Lebanon, between Echo Road and the southern border between Lebanon and Occupied Palestinian Territories and Israel.

- Clearing lands of mines and UXOs;
- Facilitating the return of displaced groups;
- Promoting rehabilitation and social reintegration of landmine survivors and
- Supporting the socio-economic development of Lebanon.

The NDO provides coordination in humanitarian mine action in the following areas:

- Operations:
  - Annual work plan and coordination of all activities related to demining projects in Lebanon;
  - Emergency EOD response to clear UXOs located close to housing.
- Database and Research:
  - The Information Management System for Mine Action has been installed at the NDO by UNMAS;
  - The section has been actively updating the database with information from the Engineer Regiment and the various mine action projects nationwide.
- Mine Risk Education:
  - MRE campaign in schools, universities, NGOs and the communities at large;
  - Workshops with the NGOs and international agencies;
  - Media campaigns, production and distribution of leaflets and posters related to MRE;
  - Coordination of work done by NGOs and agencies active in MRE.
- Landmine Victim Assistance:
  - Coordination of agencies and NGOs working in victim assistance, which provide social assistance and physical rehabilitation to survivors and their families;
  - Research into victims and their families to focus the support of the program on essential needs.
- Socio Economic development:
  - Coordinate with other agencies on socio-economic development for affected communities.

Lebanese Army Engineer Regiment

The Engineer Regiment of the Lebanese Army has undertaken an extensive demining and EOD program in Lebanon. The regiment has four demining companies, one EOD company and one command company, and has its headquarters in Beirut. The regiment works in six regions of Lebanon, with platoons in Batroun, Souk El Gharb, El Madfoun and demining companies in Nabatiyah, Jezzine and West Bekaa. The Regiment uses various clearance methods including mechani-

cally-assisted demining (Armtrack 100), manual demining and mine detection dogs. It also has a team responsible for quality assurance of cleared areas.

The mine action community in Lebanon is well-developed and has the commitment of a number of local and international NGOs, associations, ministries and agencies. The achievements of the mine action community provide the national program with a solid foundation upon which the NDO plans to expand. The NDO supports and coordinates the actions and programs of all national and international organizations, including:

Al Jerha Association

The Al Jerha Association started as an association caring for the war injuries and handicapped. Al Jerha has different centers operating at Al Abbas, Beit El Jareeh and has several centers under construction in south Lebanon and the Bekaa Valley. The association is responsible for 1,178 victims in Beirut, 996 in the South, 434 in the Bekaa Valley and 16 victims in North Lebanon. Al Jerha Association receives its funding from private donations, bank loans and donations from international organizations. Al Jerha is a member of both the Mine Awareness and Victim Assistance Steering Committees coordinated by the National Demining Office.

The association is divided into four departments:

- The social department is responsible for skill development of the injured and disabled and also works in vocational training, sports education and prepares housing suitable for handicapped people.
- The education department works in cooperation with technical schools and secondary schools to give out scholarships to landmine survivors who come to the association. To date they have offered 34 scholarships.
- The communication and media department implements awareness campaigns for handicapped people and the general community in order to change social attitudes.
- The health department works in hospitals, dispensaries and operates an ambulance service which is responsible for emergency transfer of injured, provision of prosthetics, physical and vocational rehabilitation.

International Mine Initiative (IMI)

IMI is a non-profit Greek NGO, funded by the Greek government. IMI is currently conducting humanitarian mine clearance in Nabatiyah region.

Islamic Health Commission (IHC)

The Islamic Health Commission was established in 1984 and provides medical and health activities. The IHC has 53 dispensaries and three hospitals located throughout Lebanon. As well, the IHC has a socio-medical program, which implements prevention programs aimed at raising the overall level of community health. Funding for the IHC programs comes from UNAIDS, UNICEF, UNDP and

UNFDA. The commission has supported several surveys and studies and has strong links with many Arab and Lebanese Universities. The Islamic Health Commission aims to 'serve the people in need or living in isolated areas; work on improving the health and environmental issues that affect the poor, provide activities to all beneficiaries and raise the level of health and environmental awareness in communities.' IHC also transports victims from the place of injury to the hospital and provides first aid.

Landmine Resource Centre for Lebanon (LMRC)

The Landmines Resource Centre for Lebanon was established in 1997 at the faculty of Health Sciences of the University of Balamand in Beirut. In 1998, a grant was given to support the work of the LMRC from the United States Agency for International Development (USAID).

LMRC is a member of both the National Mine Awareness Committee and the Victim Assistance Committee, which are affiliated to the NDO. The LMRC's work in MRE includes participation in a campaign targeting schools and local communities in the Liberated South, West Bekaa, Rachaiya and Mount Lebanon. The centre was also contracted to implement a community liaison program in all communities lying within the OES areas of operation. The LMRC contributes to the victim assistance program through data gathering and capacity building, as well as disseminating information to victims and their families.

The LMRC under the supervision of the NDO and with the assistance of other NGOs, has conducted a national survey on victims, their families and their needs. It is in the process of updating this data for use by the NDO Victim Assistance Committee. The LMRC also disseminates information on international conventions and humanitarian laws, mine awareness and victim assistance. The Centre has taken a leading role each year in researching and writing for the Landmine Monitor.

Lebanese Red Cross

The Lebanese Red Cross was established in 1945 and is a member of the International Committee for Red Cross and Red Crescent Societies. Lebanese Red Cross works at all levels of society right down to community level and has active networks in every district of Lebanon. In accordance with the Ottawa Treaty, the Lebanese Red Cross works on Mine Risk Education and Victim Assistance. LRC provides physiotherapy, prosthetics and medical support for accident survivors in their socio-medical centers. In 1997, the Lebanese Red Cross joined the National Steering Committee for Landmine Victim Assistance. In 1999, Lebanese Red Cross prepared a training program for 250 trainers on behavior change and MRE—it now has 130 active volunteers in MRE and victim assistance, as well as 12 trainers. The LRC has participated in the MRE campaigns coordinated by the NDO in southern Lebanon, the Bekaa Valley and Mount Lebanon.

The LRC's other main domains of intervention include provision of medical facilities; health awareness campaigns and prevention programs; blood donations and supply; emergency care; First Aid and First Aid training workshops. The

Lebanese Red Cross's main sources of funding include the ICRC, World Rehabilitation Fund, USAID and UNICEF.

Lebanese Welfare Association

The Lebanese Welfare Association for the Handicapped is dedicated to providing support to people with special needs by enhancing 'their dignity, independence and productivity'. The association's head office is in Beirut, but works mostly in southern Lebanon. It has strong networks down to community level and a broad experience in the fields of health, social support, rehabilitation and community development. The agency has a large, well-equipped centre in Nabatiyah, the Nabih Berri Rehabilitation Center, which provides a wide range of rehabilitation services, including: medical, physical rehabilitation, provision of prosthetics and orthotics, speech and hearing therapy, occupation therapy and vocational training. The association also has family support programs; support and rehabilitation of mine victims and their families and participated in the national mine risk education program.

Mines Advisory Group Lebanon

The Mines Advisory Group is an international, humanitarian mine action NGO based in Manchester in the United Kingdom and a founding member of the International Campaign to Ban the Landmine (ICBL). MAG carried out an assessment mission in September 2000 and a Senior Technical Advisor/Program Manager arrived in country in December 2000. An office was established in Nabatiyah in March 2001. MAG recruited and trained one mine action team consisting of 15 deminers and support staff, with live operations beginning in May 2001. A technical survey team was trained in March 2002 and deployed in the OES area until the end of its contract in November 2002.

Demining operations such as this one have been extensive in OES Areas 1-4 in southern Lebanon.

The mine action team was redeployed and clearance operations recommenced in Aaramta area of Jezzine district in August 2002, with a second mine action team deployed in the area in September 2002. In October 2002, MAG took delivery of one MINECAT (a mechanical mini-flail demining machine) to assist in clearance operations. To date, MAG has cleared over 28,000 square meters destroying over 300 Anti Personnel mines, 25 Anti Tank mines and over 800 items of unexploded ordnance. MAG currently employs over 70 Lebanese staff. MAG retrained and redeployed two technical survey teams in January 2003, with a contract with UNOPS due to end in July 2003. To date, technical survey teams have verified over 30 suspected hazardous areas for future clearance and

cleared over 25 suspected hazardous areas. One survey team is currently confirming routes between UNIFIL positions close to the southern border.

Operations Emirates Solidarity

In 2001, the United Arab Emirates pledged to clear landmines and UXO in the former occupied zone of southern Lebanon. The Mine Action Coordination Centre South Lebanon (MACCSL) was established in January 2002 to coordinate all mine clearance operations for the OES areas. The MACCSL is composed of representatives from the United Arab Emirates, officers from the National Demining Office and the United Nations. Its headquarters is in Tyre, south Lebanon.

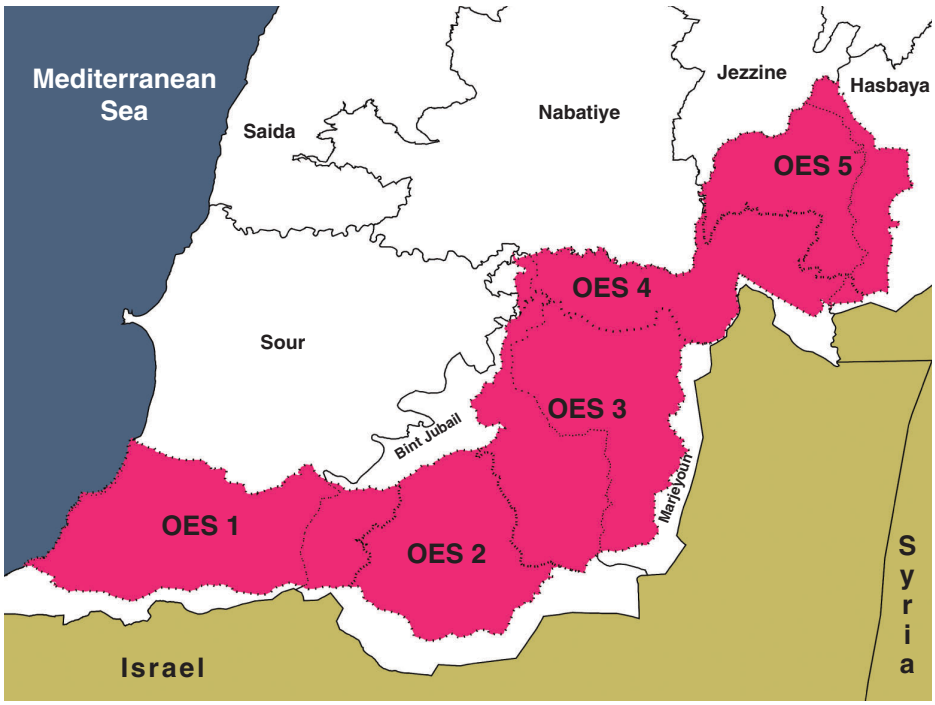
The OES program divided its area of operations into four areas and gave out commercial demining contracts to two demining companies, Minetech and Bactec. The area covered by the OES totals 4,040,000 square meters and covers at total of 88 communities. The OES program is divided in to 2 phases:

- *Phase one:* started in November, 2001 and completed in early March, 2002. This phase was made up of a technical survey implemented by Bactec.
- *Phase two:* started March 2002 and is expected be completed by June 2003, almost one year earlier than initially planned.

Bactec started clearance operations in March 2002 and is responsible for OES Areas One and Two, which are located in South Lebanon and Nabatiyah provinces. These areas cover the southern section of the districts of Sour and Bint Jbeil. Their demining activities cover about 37 communities in total. Up to 30 March 2003, they have cleared 6,602 anti-personnel mines, 96 anti-tank mines and 905 UXOs from an area totaling 1,389,977 square meters.

MAP 4

OES AREAS 1-5



Minetech also started operations in March 2002. Minetech is responsible for OES Areas Three and Four which are located in the southern-most sections of Marjeyoun and Bint Jbeil districts in Nabatiyah province. Minetech's operations cover around 40 communities. Up to 30 March 2003, Minetech has cleared 25,315 anti-personnel mines, 1,383 anti-tank mines and 2,845 UXO. They have cleared more than 2,695,770 square meters.

Philanthropic Association for the Disabled Care

This association started operating in 1987 in Nabatiyah district and their office is located in Nabatiyah town. The association was established to meet the needs of the handicapped in south Lebanon generally and in Nabatiyah District, specifically. The associations program includes two physiotherapy centers, a speech rehabilitation clinic, a medical care program, a loans scheme for the handicapped, a MRE component, a landmine victim assistance component and capacity building. Funding for the association comes from the World Rehabilitation Fund, UNICEF, Norwegian People's Aid and the Near East Association.

The association has worked in 23 communities, 25 schools and trained numerous individuals during its MRE campaigns. The association's landmine victim assistance program distributes first aid kits, provides prosthetic devices, medical aid, provides physiotherapy services, prepares and equips housing and provides loans and vocational training for landmine accident survivors.

Ris'Ala Association

Ris'Ala Association is a Lebanese NGO working in mine awareness and victim assistance. The agency works in mine awareness in the villages of Mount Lebanon and South Lebanon provinces, as well as the district of West Bekaa. It also provides emergency first aid and transports injured people to hospitals. Ris'Ala is also active in providing vocational training in agriculture for survivors and undertaking victim surveys to prepare for the establishment of mine awareness programs. The association also provides support to victims' families and facilitates victims' access to the national social security plan of the Caisse Nationale de la Sécurité Sociale.

RONCO

RONCO is an United States demining company working in Lebanon in cooperation with the National Demining Office and the Lebanese Army Engineer Regiment. RONCO has been working in Lebanon since January 2000. RONCO's team acts as technical advisors and dog trainers, with their main objective being capacity building. RONCO is funded by the US government with a total budget of US$6 million. They have two offices in Lebanon, one in Broumana in Al Metn district and the second in Nabatiyah district. RONCO's project is made up of three parts:

- Technical support and advice to both the National Demining Office and the LAF Engineer Regiment on demining issues.

- Training of 18 demining dogs. These dogs are purchased in Europe, trained in the US and then sent out to Lebanon, where RONCO continues their training for ten more weeks. The handlers and their dogs undergo a period of daily supervision before they are sent to work in the field with only periodic supervision.
- RONCO has also trained 18 medics for trauma medical support.

Syrian Army

The Syrian Army provides three Engineer company elements that conduct demining in coordination with LAF Engineer companies working in South Lebanon and the West Bekaa Valley.

United Nations Interim Forces In Lebanon (UNIFIL)

UNIFIL was established in 1978 and deployed to the southern border area of Lebanon. Its area of operation covers an area south of the Litani River in southern Lebanon, including the Blue Line separating Lebanon and the Occupied Palestinian Territories. UNIFIL is currently made up of one Ukrainian, one Ghanaian and one Indian battalion.

UNIFIL provides support with selected demining tasks within its area of operations.

UNIFIL's main tasks are to patrol, observe, report and react to any changes in the area; liaise with relevant parties and provide humanitarian assistance. UNIFIL has a demining and EOD capacity, under the command of the Demining Coordination Cell (DCC). The DCC is responsible for operational mine clearance in the UNIFIL area of operation, including the activities of the Ukrainian Engineer Battalion. The DCC provides operational demining support to UNIFIL operations around UN positions and patrol routes. It also conducts technical surveys of minefields around UN positions and along the Blue Line. It also has an emergency response capability. The DCC is responsible for the maintenance of data and coordination with the Mine Action Coordination Centre South Lebanon.

UNICEF

UNICEF's work in mine action is based on two principles: UNICEF was mandated as the focal agency for mine risk education within the UN, alongside victim assistance and advocacy, and secondly, UNICEF's work in Lebanon over many years has earned a strong credibility and confidence among both government officials and the population at large. The intention now is to move from the emergency phase of information campaigning to a development phase where sustainability and capacity building of national organizations take place.

UNICEF Lebanon country office was among the first agencies to get involved in mine action in Lebanon following the liberation of the south in May 2000. UNICEF has assisted in the implementation of the initial phase of a national program; a wide-spread information campaign with persons living in the regions of the south and West Bekaa district and displaced people returning to the area following liberation. A total of 200 volunteers working for national NGOs have been trained as Mine Risk Facilitators. UNICEF provided support for a public campaign in the schools, which took place mostly in South Lebanon and West Bekaa and reached 155,574 students. The campaign also included the schools of southern Beirut where many children of the south now live.

During 2002, UNICEF provided capacity building and technical input to the National Demining Office through an international advisor. This contributed to the further development of a national mine risk education program conducted by local NGOs under close supervision by the NDO. UNICEF also covered the costs incurred for the campaign by the local NGOS for 120 affected villages in the south and West Bekaa areas. The NGOs targeted, through these campaigns, the inhabitants of the mine-affected villages by providing them with necessary information. This phase of the program was carried out with the communities through dialogue and addressed specific risk taking behavior and recommendations to safeguard them from mines and UXO dangers. UNICEF also supported the placement of mien awareness billboards placed along the sides of roads in South Lebanon and West Bekaa.

Vision Association

Vision Association opened their doors in 1993 in the district of West Bekaa. The association's main concerns are with landmine victim assistance and mine risk education. Vision Association receives funding from UNICEF, Norwegian People's Aid and World Rehabilitation Fund. Vision Association's victim assistance program includes provision of medical care, physiotherapy services, finding job opportunities, rehabilitation of schools and housing for handicap use, vocational training and the provision of loans and scholarships. The association has provided 135 prosthetic limbs, assisted 203 victims with physiotherapy, gave out three scholarships and four loans to landmine survivors. The association has also rehabilitated four schools for handicap access, as well as providing language and computer lessons. As well, the association has distributed first aid kits and given one scholarship for a survivor to study at the Omar El Mukhtar Institution.

Vision Association has various MRE programs being implemented in Mount Lebanon, the Bekaa Valley and Nabatiyah. The association has 55 MRE trainers who are located in Rachaiya, West Bekaa and Hasbaya districts. These trainers travel around to schools and visiting communities to implement MRE. To date, the association has visited 86 out of 123 schools and 75 communities in these districts. The number of beneficiaries for the MRE program totals 26,105 students in Rachaiya and West Bekaa and 3,650 students in Hasbaya. The association will be establishing a program in Aley district in coordination with the NDO MRE campaign.

World Rehabilitation Fund (WRF)

The WRF is an international NGO whose main objective is to plan, execute and evaluate programs and activities pertaining to disability prevention, rehabilitation and social reintegration. This NGO is funded by WRF USA, USAID, USAID Leihy Fund for War Victims and UNDP. WRF supports the national mine action program, community-based rehabilitation and various victim assistance programs in the south and Bekaa Valley. WRF also provides support for data collection activities related to problems arising from landmines; community-based mine awareness; development of local enterprise.

Some of these programs include:

- Mine Action Program: nationwide.
- Victim assistance program and development of socio economic potential for adolescent girls in the villages of Jezzine district.
- Community development projects program for mine victims: Rachaya, West Bekaa & South Lebanon.
- Community based rehabilitation program: in the community of Debeen in Marjeyoun district, South Lebanon.
- Guide for provision of rehabilitation services: nationwide.

Agencies working in mine action were requested to provide information on their activities; unfortunately, some organizations did not provide information for various reasons but deserve to be mentioned. The following organizations also work in mine action in Lebanon: the Lebanese Ministry of Social Affairs, the National Centre for Development and Rehabilitation (a local NGO active in victim assistance) and Norwegian People's Aid (an international NGO working in various HMA and development programs).

COMMUNITY PERSPECTIVE OF MINE ACTION

During the 306 community interviews of the Landmine Impact Survey, questions related to mine action received the following responses:

Questions related to mine action positive responses

Has the community had mine awareness training?	218 (or 71%)
Have any marking or survey activities been undertaken in the community?	103 (or 34%)
Has any landmine or UXO clearance occurred in your community?	109 (or 45%)

The community responses indicate that most affected communities have been exposed to some kind of mine action activities. The number of communities reporting mine awareness activities in their villages is especially striking.

Factors Influencing Mine and UXO Clearance

There are many factors to be considered when planning mine clearance and explosive ordnance demolition in any country. Of these, the physical characteristics that most influence clearance are the types of ordnance, the size of the suspected areas, the type of existing vegetative cover and the characteristics of the terrain.

SIZE AND DEFINITION OF SUSPECTED AREAS

Areas of mine and UXO contamination in Lebanon range in size from 12 square meters to 15 square kilometres. The size and the definition of the boundaries of suspected areas are fundamental issues when reviewing approaches to clearance. However, the survey does not provide the same kind of information as a technical survey, which would redefine the boundaries of each suspected area, often reducing the size considerably from that reported by the community. The survey results are designed to be used as a starting point—for example, the results of the Lebanon survey are already being used by MACCSL to task technical survey and clearance teams in southern Lebanon.

The survey recorded 771 areas with an estimated surface of 100,000 square meters or less. The differentiation of medium tasks also provides a useful filter for tasks that can, if required, be undertaken in a realistic time frame using demining teams alone. Large poorly defined areas and areas normally considerably greater than 100,000 square meters account for only 205 sites, or 21 percent, of the reported suspected areas in Lebanon. Many of the large contaminated areas are made up of cluster bomb units (CBU) strike areas and battlefield sites, of which the exact size and boundaries are difficult to establish.

CONTAMINATED LAND BY VEGETATION AND TERRAIN

The 331 mined areas identified in Lebanon have different ground profiles and are covered by different types of vegetation that are critical factors to be considered when planning clearance operations. While the size and definition of a suspected area can suggest particular clearance techniques, the physical characteristics of vegetation and topography, especially at larger sites, have the most influence on the final approach selected. Information is available upon request from the IMSMA database located in the National Demining Office for planning and operational tasking from national down to community level.

Table 18 (see next page) presents the mined areas in terms of ground profile and vegetative cover.

Terrain with minimal vegetation and flat surface is the simplest and fastest to clear of mine contamination. In Lebanon, only one percent of the suspected con-

TABLE 18

CONTAMINATED SURFACE AREA, BY VEGETATION AND GROUND PROFILE TYPES

Vegetation	Ground Profile (sq km)				
	Flat land only	Ravine, hillside, or ridge	Other	Unknown	Total
None	0.70	3.27	1.04	0.00	5.01
Bushes or trees, at least some	3.12	51.71	37.52	0.00	92.35
Short grass only	4.11	5.26	0.78	0.00	10.15
Tall grass, at least some	0.53	4.51	1.08	0.00	6.12
Other	2.09	9.69	12.04	0.00	23.81
Unknown	0.00	0.00	0.00	0.04	0.04
Grand Total	10.54	74.45	52.46	0.04	137.48
Percentage	*7.66*	*54.15*	*38.16*		

taminated area is flat ground covered with grass. Mined areas tend to be made up of areas of high relief, with bushes or trees covering them. Mine clearance activities in such areas are particularly difficult, especially in regions where additional restrictions hinder movement of cumbersome clearance apparatus.

CONTAMINATED LAND BY ORDNANCE CLASS

The types and distribution of munitions in the contaminated areas also affect the choice of clearance technique. The survey elicited information about generic types of munitions, i.e., anti-personnel (AP) mines, anti-tank mines (AT) or UXO.

The survey recorded 331 mined areas accounting for nearly one third of the total number of contamination sites recorded in Lebanon. These areas included sites with anti-personnel (AP) mines only, anti-tank (AT) mines only or a mix of the two types.

The survey also identified 117 areas contaminated with UXOs of various kinds, including, most notably in Lebanon, booby-traps and cluster bomb units (CBU). Interestingly enough the majority of areas reported to be contaminated by communities are a mix—either AP mines, AT mines and/or UXO. These areas make up nearly 76 square kilometres (or 55 %) of the total area identified as being contaminated. Any mix of munitions such as this presents its own unique challenges for clearance operations.

For more details on this, see Tables 20, 21 and 22 in the chapter titled, ‘Consequences for Mine Action’.

Community Background and Mine Effects

COMMUNITY ADAPTATION

The history of conflicts that created the landmine and UXO hazard in hundreds of local communities is well known to the Lebanese and is not the subject of this survey. However, much less is known about the response that the affected communities have developed to the hazard. The significant number of communities whose key informants had a clear recollection of past mine awareness education and clearance events—both local and from the outside—suggests that this response has been active in many of those communities.

Where the hazard is ongoing, it may be assumed that the communities go on refining their response to it. This includes the communications that community members exchange on threat assessment and reduction, the circumspect use of resources in dangerous areas and the continued search for, and development of, alternatives.

Social science assumes that the response depends not only upon the nature of the hazard, but also upon the social factors that operate on those exposed to it. Community adaptation, much like individual adaptation, is circumscribed by history as well as current organization and resources. Unfortunately, in the case of a landmine and UXO problem affecting a large number of communities, it is difficult to find indicators that are universally available and that make a valid point about the degree of successful adaptation to the mine hazard.

One such candidate is the ability to avoid mine incidents. It stands to reason that the ability to know the location of landmines, to develop alternatives to the use of resources trapped in polluted areas, and to mobilize outside connections for clearance should be inversely proportional to the risk of new incidents. Also, it is plausible to assume that not all communities can build this ability to similar degrees. Moreover, the choice of this indicator is motivated by the belief that the data about recent mine incident victims is of good reliability.

Statistical methods were used to find associations between recent mine incidents and the characteristics of the communities in which they happened. Knowledge of such correlations can help to determine indicators of vulnerability to which the mine action community in Lebanon (and elsewhere) should be sensitive. Also, it may help to validate the method used in scoring and classifying the affected communities for priority attention.

It does not, however, obviate the need to listen to the concerned communities and to other knowledgeable groups about what they have to say due to long-term adaptation and rehabilitation. In this regard, it is hoped that the case studies appended to the main report will bring to the fore a healthy dose of local insight and knowledge.

Factors considered for the adaptability of the communities

A great many factors affect a community's ability to deal with mines and UXO; the survey did not gather information on all of them. The survey did, however, collect data on a number of variables that are commonly thought to be relevant to community adaptation and/or landmine situations.

1) *The size of the current population.* Other things being equal, more people means more chances to interact with the hazard. In addition, in poorer communities that have few employment alternatives, more people may increase the pressure on the available resources. A positive correlation with incidents is assumed. However, it is possible that mines may affect the land or property of a few people only and not the entire population, in which case the relationship between population size and incidents is not direct.

2) *The principal bases of livelihood.* Most of the landmines tend to be hidden in the ground (rather than above ground level such as in the rubble of collapsed buildings), and a common assumption, therefore, has been that frequent contact with soil such as in land-based occupations entails greater risks from landmines. Communities that rely chiefly on farming and animal husbandry, or on charcoal burning and tree logging, should therefore have more landmine incidents than communities with economic bases that are more diversified into off-land industries.

3) *The legacy of the conflict.* This is expressed in three dimensions: the estimated surface of the contaminated areas in the community, the intensity of regional landmine use as indexed by the distance to the nearest other community with some recent victims, and by the number of years that have passed since mines or UXO were last planted in the community. In some models, the location of contaminated areas vis-à-vis the dense social space, as measured by the distance from the center of the community to the nearest contaminated area, was also considered.

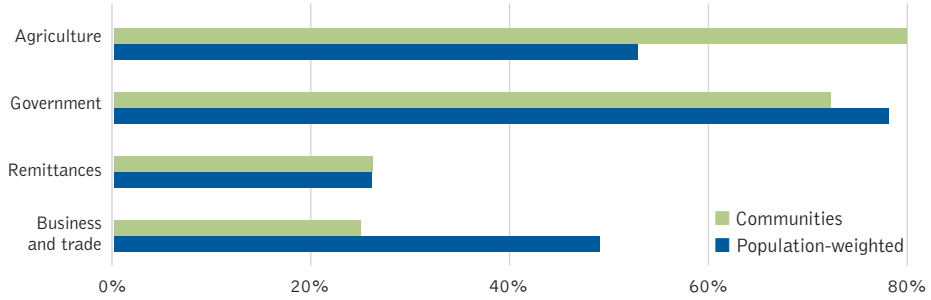
Readers may readily appreciate the first and third factors. The second demands more explanation. The non-technical part is given here, and technicalities are relegated to the appendix.

Livelihood bases

Lebanon has undergone considerable social change since the time when the surveyed communities became contaminated with landmines and UXO, and these changes have continued after the conflicts ended. One assumption is that fewer residents in the affected communities depend on income from local farm and animal husbandry operations. A large part of the population commutes to urban centers; and many families meet or significantly supplement their household budgets with remittances from relatives working in the cities or overseas. These changes should have lowered the risk of landmine incidents by lessening contact with the land, particularly such land as has become agriculturally marginal due to increased competition by foreign suppliers of farm produce.

FIGURE 5

BASES OF THE LOCAL ECONOMY



The survey measured livelihoods in summary ways. Interviewer teams asked local key informants to nominate up to three sectors from a list of principal income sources. The list included government employment, agriculture, remittances from overseas, various business categories such as tourism, and others. The following graph shows the percentages of affected communities who chose agriculture, government employment, remittances, or business and trade as principal bases of their local economy.

Two estimates are given, the first being the simple percentage of communities that chose one of the four sectors, the second weighting their choices by the relative size of their winter-time resident populations. This second measure gives more influence to the larger communities.

In both measures, agriculture and government employment are dominant economic bases for a high portion of the affected communities. Government employment and remittances from overseas are robust to the weighted versus unweighted procedures. When larger communities exercise a heavier weight, agriculture loses some 25 percentage points to business and trade, yet remains one of the principal bases in over 50 percent of the affected communities. This is surprisingly high; and one may ask whether this reflects a romantic attachment to forms of patrimonial agriculture rather than actual principal income sources.

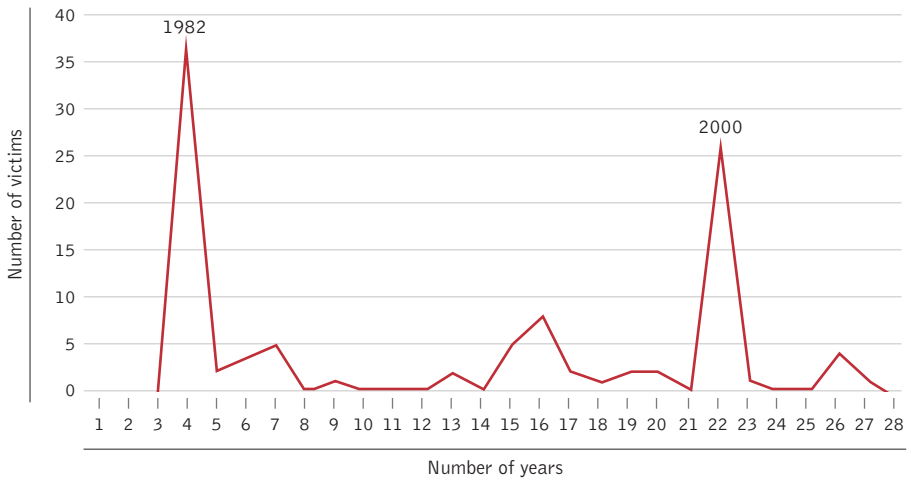
The legacy of the conflict

Another of the main indicators used to measure mine impact is the number of years that have passed since landmines or UXO were last laid or left in the community. The assumption is that the more time has passed since the various devices were left, the more time the community has had to become familiar with the locations of the mines and UXO and to find ways around them, as well as to develop alternatives to blocked resources.

Almost all of the victims in communities that form the year 2000 peak came to harm in the south; the older peak of victims in communities that saw active contamination ending in 1982 were predominantly in the Bekaa Valley and in Mount Lebanon. It is interesting to note that these two accident peaks correspond

FIGURE 6

POST-CONFLICT TIME AND VICTIMS



exactly with two important external events—the 1982 invasion and bombardment by Israel and the year 2000 withdrawal of Israel from the south of the country.

It has been thought that the intensity of armed conflict is spatially concentrated and that this extends to the density of mining or UXO contamination. This results in the more intense the conflict, the greater density of mines or UXO in a region. It is possible to reason that incidents in one community may predict incidents in neighboring communities. This measure may be approximated by the distance to the nearest community with recent incident victims. Typically, communities that had some recent victims were about 4.9 km from the nearest other such community; other communities, without recent victims, were 5.9 km apart from the nearest that had some[6].

Factors influencing the probability of mine incidents

As noted previously, 46 of the 289 affected communities suffered one or more incidents with UXO or mines in the last two years. There were a total of 96 victims. The number of victims in a particular incident depends on situational factors and is not likely correlated with the social structure of the community. The key informants may not reliably know the number of mine incidents. Therefore, this analysis is limited to investigating the association of risk factors with the simple fact of whether the community has had any incidents during the last two year period or not.

The number of victims is a good indicator of whether a community has adapted successfully to mine and UXO contamination or not. Thus, their ability to avoid, or greatly reduce, the number of mine incidents will reflect the degree they have developed their coping skills to avoid incidents altogether or greatly reduce their number.

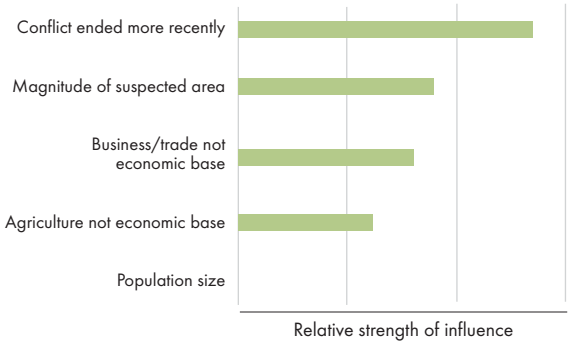
[6] These are the median distances. The distances were calculated from 287 affected communities, they were measured to this set plus communities within OES areas 1-4 known to have had recent victims.

However, due to the small number of communities that had any recent victims only a simplified model can be calculated on the Lebanon data set. Instead of considering absolute victim numbers, we look at the risk that an affected community may suffer at least one incident in a two-year period.

In Figure 7, the relative strength of factors contributing to mine incidents is portrayed. The time since the end of the of conflict is the most influential among the factors included in this model; this may surprise readers of Figure 6 who noticed the high number of recent victims in communities that saw hostilities ending more than twenty years ago. However, these victims are concentrated in a relatively small portion of a larger group of communities who returned to peace in the early eighties. By contrast, 17 out of 41 communities who saw fighting until the year 2000 had landmine /UXO victims in the last two years prior to the survey. These communities, all of them in the south, may be more densely mined; also, they have had less time to familiarize with the extent of the contamination.

FIGURE 7

RELATIVE STRENGTH OF FACTORS CONTRIBUTING TO MINE/UXO INCIDENTS



The magnitude of the suspected area is also statistically highly significant. All other things being equal, a tenfold increase in the size of the contaminated area within a community sends the odds of some incident in a two-year period up by about 80%.

As expected, communities which claim business and trade as one of their important economic bases run a significantly lesser risk of mine and UXO incidents. This is in line with assumptions that business and trade create employment alternatives that take workers off contaminated land. It comes as a surprise—and as an apparent refutation of what was just said about the beneficial influence of trade and business—that agriculture as an important base has the same effect statistically. In other words, in Lebanon, agriculturally oriented communities have fewer incidents. We are unable to interpret this result. There is a suspicion that many key informants, out of an attachment to past farming glory, overstated the importance of this sector for their communities; but this cannot be proven with this data.

The size of the population has no discernible effect on the probability of landmine incidents, neither directly nor when other factors are controlled for. This indicates that the number of persons in contact with the hazard does not grow with

community size at all; in larger communities, very circumscribed subgroups of the population only must be going to suspected areas.

Two other factors were examined outside the statistical model on which the above graph is built. The presence of UXO significantly contributes to incidents. The odds of having at least one incident in a two-year period go up by a factor of 3.5 in the presence of UXO and/or unknown munitions. The second factor is the spatial clustering of communities with some recent victims. Every time the distance to the nearest neighboring community with some recent victim is cut by a factor of 10; the odds of having an incident go up by a factor of two. This result, however, is not statistically significant.

LANDMINES AND AGRICULTURE

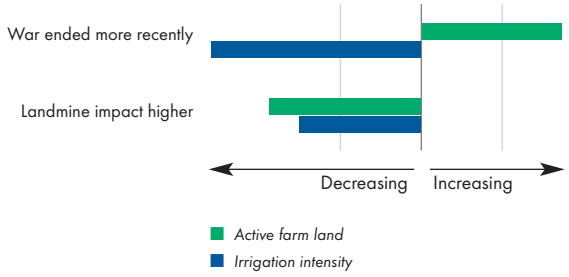
Data from the Lebanon agricultural census 1999 made it possible to compare affected communities with non-affected ones concerning the use of farmland. The differences between these groups reveal the impact of the landmine and UXO contamination on local agriculture.

Data from 1,633 agricultural census tracts was imputed to 1,741 communities—both affected and non-affected ones—inside the tracts. The communities differ greatly in the degrees to which they have abandoned farmland, and to which they irrigate their farmland in use.

For these behaviors, the local agro-climatic environment is a strong factor. In some environments, irrigation is naturally less feasible than in others. In some, farming is less productive, therefore less competitive and more prone to leaving some land fallow for long periods of time or reverting to pasture and wilderness. Some agro-climatic environments correlate with closeness to cities and therefore greater opportunities to move from farming to other employment sectors.

FIGURE 8

COMMUNITIES DISTINGUISHED BY LAST YEAR OF CONFLICT AND IMPACT SCORES



Taking into account the influence of the agro-climatic environments, statistical analysis looked at the impact that the conflict experience at large as well as the landmine and UXO have on land use. It is assumed that the reconstruction challenges are greater in communities that were exposed to hostilities until recently than for those that have enjoyed peace for much longer. As for the landmine and UXO burden, it is summarized in the impact score, which is the basis for classifying communities as non-affected, low, medium or high-impact.

Distinguishing communities by the last year of conflict and the landmine impact scores, some surprising results emerge.

Communities that have enjoyed peace since, say 1990, tend to have a lower farm land use ratio than those that stayed exposed to war until recently, say, 2000.

Communities that came out of war early may have enjoyed greater opportunity to develop non-agricultural employment and in the process may have allowed more of their cropland to go out of cultivation. Other communities, those that remained exposed to hostilities until recently, may be stuck in high levels of agricultural employment and land use because investment in other sectors could not take place.

The effect of recent conflict is the other way round for *irrigation* intensity. Again in a different formulation: Taking into account the other factors, communities that have enjoyed peace since, say 1990, tend to have a *higher* irrigation intensities than those that stayed exposed to war until recently, say, 2000. This result conforms to findings from other contexts that war causes communities to adopt less capital-intensive forms of production.

Landmines and UXO depress both ratios—land use as well as irrigation intensity. But this effect is more selective. It is limited to communities that might otherwise be in the highest land use and irrigation levels—but which, because of blocked farming land or other adverse consequences, find themselves at a lower tier. The contamination does not seem to make much of a difference for communities already at lower levels of land use or irrigation. Even for the top tiers, the time elapsed since the end of the conflict is stronger than the landmine effect, as regards the irrigation intensity, and the about the same as that of landmines and UXO on active farmland use, indicating that effects of war other than from landmines and UXO are equally or more inhibiting for economic reconstruction.

COMMUNITY PROFILES

Eight community profiles, arranged by increasing probability of incidents, are presented in the following Table 19 (see next page). These communities are from four different provinces. They include the four communities that were the object of intensive case study efforts. The profiles span a great diversity of conditions, noticeable in most of the variables, except for the uniformly present contamination with anti-personnel mines and UXO, and for a predominantly small population. Only Miryata is a somewhat larger settlement, and the only one among the profiled communities for which trade and business form an important bases of the local economy.

TABLE 19

MINE INCIDENTS AND COMMUNITY BACKGROUND VARIABLES—EXAMPLES

	Communities with incident probabilities that are:						
	Very low		Low			High	
	Miryata	Jouar el Haouz	Zahriye	Niha	Yarun	Kafer Houne	Al Wazani
Province	North Lebanon	Mount Lebanon	Mount Lebanon	North Lebanon	Nabatiyah	South Lebanon	Nabatiyah
District	Zgharta	Baabda	El Metn	Batroun	Bint-Jbeil	Jezzine	Marjeyoun
Probability of some incidents within two-year period	0.003	0.004	0.142	0.273	0.313	0.647	0.715
Total recent victims	0	0	0	2	1	0	1
Impact score	3	4	10	12	10	9	11
Last year of conflict	1976	1977	1991	1990	2000	2000	2003
Total estimated surface (sq m)	70,000	325	555,000	555,000	180,000	1,144,000	3,120,000
Distance to nearest other community with some recent victims	20.9	3.0	4.3	22.2	4.4	5.7	2.4
Has AP	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Has AT	Yes	No	No	Yes	Yes	Yes	Yes
Has UXO	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Irrigated cropland impacted	No	Yes	Yes	Yes	Yes	Yes	Yes
Rainfed cropland impacted	No	No	Yes	Yes	Yes	Yes	Yes
Pasture impacted	No	No	Yes	Yes	Yes	Yes	Yes
Water sources impacted	No	No	Yes	Yes	Yes	No	Yes
Current residents (winter)	13,000	150	500	100	1200	500	350
Principal bases of local economy:							
Remittances	No	Yes	No	Yes	Yes	Yes	No
Agriculture	Yes	Yes	Yes	No	Yes	No	Yes
Active farmland ratio*	1.00	.74	.95	.93	.43	.32	.92
Irrigation ratio*	.39	.98	.05	.30	.02	.12	.00
Government	No	No	Yes	Yes	Yes	Yes	No
Business and trade	Yes	No	No	No	No	No	No
Case study?	No	No	Yes	Yes	Yes	No	Yes

*These ratios are imputed from the surrounding Agricultural Census tract values.

Consequences for Mine Action

GENERAL PLANNING CONSIDERATIONS

As mentioned previously, affected communities often cluster together geographically, forming a collection of communities that could be targeted concurrently by mine action planners. As mentioned previously, neighboring communities often report the same or similar combinations of impacts. Such clusters are usually spread over a fairly small distance, usually within the boundaries of one district.

In some instances, several affected communities can relate to, or share, one large contaminated area. In others, not surprisingly in a small, densely-populated country such as Lebanon, several contaminated areas are involved and are blocking the same types of resources. Clearing contaminated sites in regions with tightly clustered contaminated areas that are blocking communities' access to resources makes good planning and operational sense. For the purposes of planning mine action interventions, it is also possible to target community clusters, which are made up of a mix of high and medium-impact.

Many contaminated sites lie outside of the southern part of the country, which has been the main focus of recent clearance activities. Although the Lebanese Army has been working in many of these areas, there is a recognized need also for mine action planners to refocus on areas lying outside of the south. A good example is the most densely populated region, that of Mount Lebanon province, lying on the periphery of Beirut municipality. The survey found that Mount Lebanon, although highly urbanized, is still very affected by the presence of mines and UXO. As the population and as tourism continue to increase in this province, the pressure to use and enter contaminated areas will also most likely increase. In recognition of the importance of this area, the NDO's Mine Awareness Steering Committee has commenced a mine risk education program there. Other regions with significant problems include Batroun district in North Lebanon province and the southern-most tip of the Bekaa Valley made up of the two districts of West Bekaa and Rachaiya. However, to effectively undertake this task, the National Demining Office and the Lebanese Army Engineer Regiment need further reinforcement of their capacity, including their institutional and management structures.

TECHNICAL PLANNING CONSIDERATIONS FOR CLEARANCE

The purpose of the Landmine Impact Survey is not to investigate purely technical mine action issues in detail but to define the nature of the landmine/UXO problem at the national level. It aims to provide an appropriate framework within which national strategic planning, program design and resource allocation decisions can be made. At present, a strategic planning process is projected to take place in Lebanon in the near future using the survey data and integrating this into the current plan.

DISTRIBUTION CONSIDERATIONS

Five of the six provinces were reported as contaminated by mines and UXO in Lebanon, although the degree of contamination and community impact varies considerably. The municipality (or province) of Beirut is the only region that did not report being affected by landmines or UXO. However, a number of dangerous areas were reported lying within the boundaries of the city, which communities reported as not affecting them but which still require clearance.

As mentioned above, many of the suspected areas lie in the southern half of the country, although a large number of communities reported a problem in Mount Lebanon province. Other areas with clusters of affected communities are the southern end of the Bekaa Valley and a band of communities located along a former front-line in Batroun district in North Lebanon.

Class of munitions

Munitions type is an important factor in determining appropriate clearance methods as well as what types of equipment are both safe and effective in a given mined area. Table 20 illustrates munitions type relative to selected physical characteristics of contaminated areas.

Unexploded ordnance recovered in Southern Lebanon.

The results show that the largest categories of suspected areas in Lebanon result from contamination by a mix of AP and UXO (270 areas) or by AP mines only (207 areas). However, a significant proportion of the areas were reported contaminated by a mix of AP, AT and UXO, totaling 125 areas. Sites contaminated only by UXO, total 117. The number of sites reporting the presence of UXO by itself or in combination with other munitions is not surprising considering the reported importance

TABLE 20

SIZE OF CONTAMINATED AREAS IN RELATION TO MUNITION TYPE, VEGETATIVE COVER AND GROUND PROFILE

	Type of munitions									Ground Profile				Vegetation					
Area (sq m)	AP	AT	UXO	AP, AT	AP, UXO	AT, UXO	AT, AP, UXO	Uk*	Total	Flat	Contains ravine, hillside or ridge	Other	Uk*	None	Short grass	Tall grass	Bushes or trees	Other	Uk*
Less than 10,000	109	22	31	39	105	2	34	39	381	62	203	115	0	15	43	34	224	64	0
10,001-100,000	77	9	45	24	112	3	55	65	390	54	225	111	1	12	42	16	262	58	1
100,001- 500,000	18	6	23	17	41	0	25	21	151	14	85	52	0	6	12	7	99	27	0
500,001 - 1,000,000	1	0	10	6	10	0	9	3	39	2	23	14	0	2	2	1	26	8	0
More than 1,000,000	2	0	8	1	2	0	2	0	15	1	10	4	0	1	1	1	9	3	0
TOTAL	207	37	117	87	270	5	125	128	976	133	546	296	1	36	100	59	620	160	1

Note: For four areas, no surface area estimation was possible.
*Uk = Unknown

of cluster bomb (CBU) contamination in many areas.

Only 37 suspected areas have been recorded that are exclusively AT mine fields and these represent a minute surface area when compared to the overall figures for the country. AT mine contamination in combination with AP mines and/or UXO does exist in other areas, making up 92 cases. For clearance purposes, the presence of AT mines is significant when deploying most clearance machinery.

TABLE 21

AFFECTED COMMUNITIES, CONTAMINATED SITES, AND SURFACE AREA, BY MUNITIONS TYPE

	Communities	Suspected areas	Surface area (sq km)
AP only	34	207	16.86
AT only	3	37	2.76
UXO only	21	117	30.56
AP, AT, UXO	225	490	75.84
Unknown	23	129	11.46
TOTAL	306	980	137.48

Note: Though only one type of munitions or landmine may have been reported for many of the areas described in this table, a definitive assessment is only possible by technical mine action personnel.

The data also shows the majority of the areas to be much smaller in dimensions than in other countries, with almost 80 percent, or 771 areas, with a surface totaling less than 100,000 square meters. This should facilitate the tasking of clearance operations, if the large numbers of smaller areas are prioritized over larger less well-defined areas.

In Table 21, the number of affected communities, contaminated sites with their surface areas are shown by munitions type. Again, the large number of communities with areas contaminated by a mix of AP mines, AT mines and UXO presents specific clearance issues, with demining and EOD teams having to work in close cooperation. Even so, there are still 34 communities reporting only AP mines as contaminating in their land.

Vegetation and ground profile

Vegetation and ground profile survey data for the country as a whole indicate that trees or bushes are found in the vast majority of contaminated sites (620 areas). Also important for clearance teams, and which increases the difficulty of clearance tasks, is the predominant feature of many contaminated sites—more than 40 percent of them are in areas of high relief. Flat surfaces with either no vegetation or grassy conditions account for only one percent of the total contaminated surface area reported for the whole country (see Table 18 for details).

Some of the largest suspected areas reported in some regions are poorly defined. This is due to the difficulty experienced by community members and data collectors alike in defining areas covering mountains or which survey teams were unable to closely approach due to existing security issues[7]. Widespread bombardment of areas by UXOs and CBUs also means that the boundaries of such areas are not easy to define.

[7] It should be stated again that the survey in southern Lebanon took place during the war in Iraq and that this area required, at the time, increased security measures which further limited access to some areas.

TABLE 22

RELATIONSHIP OF VEGETATION, TERRAIN, AND CONTAMINATED AREAS IN HIGHLY IMPACTED COMMUNITIES

Vegetation difficulty		Ground profile difficulty: Flat land only	Contains ravine, hillside, or ridge	Other	Total
None	Contaminated areas	2	3	1	6
	Surface (sq km)	0.01	0.60	0.00	0.61
Short grass only	Contaminated areas	5	11	1	17
	Surface (sq km)	3.17	0.73	0.00	3.90
Tall grass, at least some	Contaminated areas	1	1	0	2
	Surface (sq km)	0.00	0.02	0.00	0.02
Bushes or trees, at least some	Contaminated areas	10	40	18	68
	Surface (sq km)	0.78	14.60	3.39	18.77
Other	Contaminated areas	3	11	7	21
	Surface (sq km)	0.12	3.72	0.17	4.01
TOTAL	CONTAMINATED AREAS	21	66	27	114
	SURFACE (sq m)	4.07	19.67	3.56	27.30

Table 22 shows in detail the distribution of vegetative cover in relation to the terrain and contaminated surface area and the number of suspected areas for *highly impacted* communities. The national tendency is repeated in these communities, with most areas having bushes or trees in combination with ravines, hillsides and ridges. This will limit the use of mechanical clearance methods and force a reliance on slower, more expensive manual clearance techniques. Clearance teams working in the field support this finding and also report the added difficulties of the high rock content of the soil in Lebanon, high temperatures in summer and, in a number of areas, snow and ice in winter. All of these factors further slow and, at times, completely halt clearance activities.

TABLE 23

AGE AND SIZE OF CONTAMINATED AREAS

Age of conflict	Contaminated areas	Contaminated surface (sq km)	Average size of area (sq km)
1975–1983	69	9.64	0.14
1984–1990	387	38.62	0.10
1991–1999	166	20.58	0.12
> 2000	355	68.61	0.19
TOTAL	977	137.46	0.56

Note: For three areas there is no date for when conflict ended.

Table 23 summarizes the reported time since conflict ended at a particular site and the corresponding estimated surface area of contamination, grouped into four time intervals. Although there are obviously significant regional differences,

the average size of a suspected area is only slightly more than half a square kilometer (or a square with sides of 748 square meters).

Table 23 also shows that the majority of contaminated areas are linked to communities who suffered conflict between 1984 and 1990. However, communities also reported large numbers of areas related to events in 2000—many communities believe that just before and during all the military activity associated with the withdrawal of the Israeli Army in the south, mines were laid.

MARKING

Marking of suitable low-impact contaminated areas with warning signs may prove to be a cost-effective way to reduce the overall risk that mines pose to populations while other tasks with higher priority are accomplished. The marking of dangerous areas can be addressed at various levels. At one extreme, full technical surveys can be undertaken that involve area reduction techniques and perimeter fencing and are supported by mine warning signs. At the other extreme, individual mine signs can be placed at highly localized contamination sites or run along one edge of a suspected mined area, such as along a road verge. Close liaison with communities during the process of marking and fencing has proven to be an effective way of maintaining fences and signs in many countries—communities can then take responsibility and ownership for the ongoing upkeep of marking until clearance activities can take place.

Minefield marking.

Communities reported 777 suspected areas as being completely unfenced or marked. Another 161 areas are reported as being only partially fenced or marked. This means that 95 percent of the suspected areas reported in the survey have either none or inadequate fencing or marking. Fencing and marking these areas to international standards could significantly reduce the danger to the population.

MINE AWARENESS

Knowing the age and sex of the victims as well as the victim's activity at the time of the incident can help develop a targeted, appropriate mine awareness campaign. In addition, an understanding and identification of areas with large numbers of recent victims can provide the national program with information on areas in greatest need of prioritization. Although the survey shows that many affected communities (70%) reported MRE having taken place in their community, there is an ongoing need for this kind of program to maintain awareness of the problem.

Age and sex of victims

Victims are almost exclusively male, with 5.5 percent female victims being recorded. Of the 108 recent victims, 20 percent were 15 to 29 years old; 31.5 percent were 30 to 44 years old and, surprisingly, 12 percent were 45 to 49 years old. More than a quarter of the incidents involved children below the age of 14 years. Even so, using this data, there is a real and urgent need to also target adult males in the mine awareness program. In order to start to meet this need, the NDO's Mine Awareness Steering Committee has started a MRE program for all new inductees undergoing national service in the Lebanese Army.

Activities of recent victims at the time of incident

At the time of incident, 17 percent of recent victims were picnicking. Another 16 percent of the victims were herding and 15 percent of the victims were playing or tampering with unexploded devices. A further seven percent were engaged in farming activities.

Location of victims

When planning mine awareness activities, it is important to prioritize and target locations. Of the 108 recent victims recorded, 47 percent had incidents in Nabatiyah province. Both Mount Lebanon and the Bekaa Valley areas make up 20 and 19 percent respectively of the recent victim count. South Lebanon had 11 percent of the victims but it should be taken into consideration that when compared with the population residing in the south, this is still a considerable figure. Less than two percent of the victims came to harm in North Lebanon.

More detailed analysis of victim data at a local level can support further development of specific messages and can suggest appropriate means of delivery. There already exists extensive data on landmine victims and their families, there are many diverse NGOs working in the area and there is enormous potential to continue developing tailored approaches across the country.

LANDMINE VICTIM ASSISTANCE

Care

The survey identified 2,259 victims of landmine and UXO incidents; of these victims, 1,517 survived and remain living with a disability. In the last two years, there have been 108 incidents. In these recent incidents, ten percent of victims died as a result of their injuries.

Since not all the victims were available for interview in many cases and in order to maintain the right to privacy of the survivors and their families, most data on victim care came from a third party. Thus, the

Incident survivor assisting with community mapping exercise at a meeting in Niha, Chouf district in Mount Lebanon.

statistics on the care of recent victims that are illustrated in Table 24 should be considered approximate. Based on the data received, more than 69 percent of recent survivors are confirmed to have received emergency care shortly after their injury. Less than two percent were reported to have received no care. The medical facilities in Lebanon are excellent by most standards with a well-structured health system administered down to district and community level.

TABLE 24

RECENT VICTIM CARE, BY PROVINCE

Province	Emergency	Rehabilation	Vocational training	Other	None	Unknown
Bekaa Valley	14	0	0	6	0	4
North Lebanon	2	0	0	2	0	0
South Lebanon	5	0	0	1	1	3
Mount Lebanon	14	0	0	5	1	2
Nabatiyah	40	1	0	6	0	4
TOTAL	75	1	0	20	2	13

For rehabilitation and vocational training of survivors, the findings of the survey are surprising due to the presence of numerous victim assistance agencies operating in Lebanon. The lack of data on these activities is believed to be an anomaly. There is further detail on the support and care delivered to victims in the section titled, 'Summary of Past Mine Action'.

Types of injury

Of the 108 recent victims, 11 died as a result of their injuries, 4 of which were recorded as immediately fatal. Of the remaining survivors, 6 suffered from amputation of the upper limbs and another 24 of the lower limbs. Five male victims lost their sight.

For further details and geographic distribution, see Table 25.

TABLE 25

RECENT VICTIM INJURIES, BY PROVINCE

Province	Fatal	Amputation upper	Amputation lower	Loss of sight	Other wound	Unknown
Bekaa Valley	1	2	1	2	13	2
North Lebanon	0	0	1	0	1	0
South Lebanon	2	1	3	0	4	2
Mount Lebanon	2	1	5	0	13	1
Nabatiyah	6	2	14	3	26	3
TOTAL	11	6	24	5	57	8

Background and Methodology

Background and Methodology

Team Leader's Report

BACKGROUND TO SURVEY IN LEBANON

The Lebanese civil war was one of the better-known conflicts of the past century—Lebanon and Beirut, its capital, became synonymous with bitter inter-sectarian fighting. The civil war in Lebanon was a complex one—with militias and political parties frequently changing sides and constantly regrouping. Periods of relative peace were followed by periods of intense fighting followed by relative peace followed by a return to conflict and so on. Fighting could be either dispersed across the entire territory of the country or, at times, localized intensively in one region. During this period, there were several important military interventions and invasions by Israel. As a result, Lebanon emerged from 15 years of civil war much of its infrastructure in ruins and its economy and social fabric destroyed. Added to this was the death and disablement of tens of thousands of civilians. As well, many Lebanese nationals migrated to West Africa, Canada, Australia, Europe and the United States and many hundreds of thousands of internally displaced people made their way to settle in the suburbs in and around Beirut and other large cities. This huge population displacement has resulted in a large demographic change in the nature of Lebanese society, with many people now living and working in Beirut and its periphery. In some areas, rural villages have been denuded of their younger residents, as an aging population struggles to maintain farming land and agricultural activities.

Reconstruction of the country for the past 13 years has focused mostly on rebuilding the physical infrastructure, re-establishing a market economy, restoring the rule of law and the reconstruction of a functioning governmental structure. In other parts of the country, such as in the south, Israel only withdrew their forces of occupation three years ago. The reconstruction, development and re-integration of this area have really only just begun.

A NEUTRAL, INDEPENDENT SURVEY

One issue that was made apparent during the Lebanon Landmine Impact Survey was the importance of the implementing agency to be neutral and independent. In a highly politicized climate such as in Lebanon with a bitter civil war, it is important for the organization implementing the survey to be independent of the political processes of that country. The organization must make all efforts to both act and publicly appear to all players as a neutral agency. It must also be able and prepared to resist political pressure of all kinds during the course of the survey in order to ensure the survey results are reliable and not biased through political interference.

In the context in which we were working, it was especially important for the survey teams to maintain their neutrality. The project had to work with many different political configurations and different communities with diverse local histo-

ries of conflict and political alliance. Even though the survey faced some tough situations while maintaining this non-partisan approach, as an international humanitarian organization, the Mines Advisory Group was able to successfully maintain its independent role up to the end of the project.

It was also essential that the survey teams were selected with this issue in mind. In Lebanon, survey teams were selected very carefully to ensure they were as much as possible non-sectarian in their approach and able to work in any community of any kind to which they were sent. All staff also had to put aside their political affiliations to one side when representing MAG in the field. For this reason also, field teams were recruited from throughout the country and were representative of most of the groups in Lebanon.

A major decision regarding the deployment of teams was whether to send field staff to work in the regions from which they themselves originated and to work with communities of the same religious or political background, or whether to use mixed teams in all areas.

This issue was discussed with the main stakeholders and with social scientists, with many and varying views being expressed. Some felt that in some communities, field staff might not be accepted if they were from the "wrong" side. Others felt that if the field teams were from the same area and affiliation that pressure could be applied to them by groups in those communities leading to bias in the survey data. After careful consideration, it was decided to use mixed teams throughout the country, as this was preferable from a methodological perspective and logistically more manageable. The survey management team also wished to avoid risking the danger of reinforcing sectarian divides.

The mixed teams worked well and the staff immensely enjoyed the opportunity to explore new regions of their own country. During the war, people tended not to travel outside their areas and often used specific routes to and from work and for their daily activities. During the survey, our teams entered areas they had previously never dared enter and learnt about communities very different from their own. Thus, this policy also had the unintentional benefit of exposing staff to many different kinds of communities. Teams were given the opportunity to better understand the war and their national history from many perspectives, rather than only from their own regional, political or religious background. Many of the team members were appreciative of this opportunity and even expressed surprise at how the experiences of different communities differed from their pre-conceived points of view. A number of local commentators also expressed their view that by not giving in to sectarian pressures, the survey had done the country a great service.

IMPORTANCE OF NON-CORE ACTIVITIES

When the survey team arrived in Lebanon, there was an expectation from a number of quarters that the entire survey process would total only nine months. From the start, the survey team was under pressure to finish quickly and to save any money left from the grant for mine clearance activities. In some ways, the Lebanon survey was fortunate because both of the surveys in Thailand and Chad

needed funding 'top-ups' by the end of their surveys. However, there is a need to recognize that a comprehensive Landmine Impact Survey takes, on average, 15 to 18 months to implement. This includes the preparation and establishment of management team, administrative structures, establishing data processing systems as well as undertaking data collection, analysis and report writing.

Although being under pressure to finish is normal in a short-term project, unreasonable expectations sometimes lead to a decrease in the quality of the survey products. From past experience, we know that the amount of time and resources needed for certain phases of the survey have been underestimated. Outsiders to the survey process often believe that a survey is just going out collecting some data, doing some quick sums and going home. Planning appears to fail to take into consideration tasks which can take up a lot of the survey teams' time and resources—including setting up an operational office, developing relationships and liaison with stakeholders (ongoing and time-consuming), recruitment and training (and retraining) of staff. Basically, it does not take into consideration all the administrative, logistical and management tasks associated with a successful survey.

As well, the final phases of the survey are often neglected—that is, data checking and cleaning, consolidation of the data base, data analysis and report writing. And, since the data is collected to be used, a strong follow-up needs to be planned. The national partner and any relevant main stakeholders—in Lebanon, the NDO and the Engineer Regiment—need to be included in a process that introduces them to the survey results, explains the results carefully and draws out all the implications of the different findings. In fact, the 'Survey Integration Process' needs itself to be integrated into the survey timeline from the start and a budget line set aside for it.

As a final note, although perhaps this is a manager's dream, but it would also be beneficial if the core personnel were recruited before the team arrives in country. This includes not only, the project manager and deputy/operations manager, but also the data management and finance-administration officers. This would allow the initial set-up phases of the project to proceed smoother and quicker. Having the administrator/finance officer on board early during the Chad survey certainly assisted the establishment of the survey office and recruitment of the admin and support staff (essential to the establishment of the local logistics and admin systems). The Information Management Officer would greatly assist in evaluation of the IMSMA data base and the real needs of this database in terms of staff, equipment and future use. This will also save time in the long run and allow the management team to get on with the often-difficult task of establishing the project in-country, recruiting senior survey staff and developing initial stakeholder relationships.

MAG LIS PERSONNEL

The management team would like to also express it's thanks to the survey teams who worked so hard to make the Landmine Impact Survey in Lebanon a success. The names of the in-country team appear below:

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Case Studies

AL WAZANI

Background

Al Wazani village is located in Marjeyoun district of Nabatiyah province in the south of the country, only six kilometres away from the Occupied Territories and Israel. This village has recently been a center of international media attention due to the ongoing conflict between the Lebanese and the Israeli governments over the use of the waters of the Al Wazani River. During Israel's 22 years of occupation of the village most of the river's water was being used by Israel. In order to maintain the advantages of controlling this part of Lebanon and its water resources, Israel attempted to include the village in its territory when it withdrew from southern Lebanon in May 2000.

The Al Wazani River is formed from the connection of the Al Hasbani River and the Al Wazani water source. The river runs for five kilometres along the eastern side of the village. To the west of Al Wazani are the villages of Sarada and Aamra villages and to the south are the occupied Palestinian territories and Israel. In addition, the Maronite Church owns extensive tracts of lands to the north of village. The village's surface area totals 5,000 dounoums[8] (5,000,000 square meters). Al Wazani's registered population is 1,200, but the number of actual inhabitants is presently around 300 (or 50 households).

The main occupation of the community is herding. About ninety percent of the population also engage in agriculture as a second source of income apart from herding. As well, ten percent, mostly the younger generation, work in the construction industry to generate additional income. The average family is made up of between seven to nine persons. All of the approximately 60 school-aged children attend school. However, both girls and boys tend to leave school at about age 15. Boys to help their parents with herding activities, girls to assist in domestic chores, including milking the cows and caring for the other animals. Men and women in this village marry at about 23 and 17 years of age respectively.

The land of Al Wazani village was originally owned by Al Abdallah family who are from the nearby, larger Al Khiam town. The Al Abdallah family started to allow the people of Al Wazani to use the land in the 19th century. The villagers started settling and building mud houses in the 1920s, but only began to buy land in the late 1950s and build houses. Most of the existing housing stock was built or renovated in early 1980s.

The community was originally nomadic and continues to depend on herding as the main source of income. Up to the present, while animal husbandry is the villagers' principal source of income, wheat is cultivated for livestock fodder and domestic consumption. However, all the villagers expressed a desire to grow wheat if the land was cleared of mines.

[8] One dounoum= one thousand square meters.

All the houses in the village have electricity for at least 15 to 20 hours a day and have access to piped water. No health facilities exist in the village. For medical services the villagers have to travel either to Al Khiam town, which is eight kilometres away or to the district capital, Marjeyoun (12 kilometres away). A doctor from the United Nations Interim Forces for Lebanon (UNIFIL) also visits the village occasionally. The village does not have any telephone land lines. The sewage system in the village was recently installed by Mercy Corps, an international NGO active in rural development.

History of landmine contamination

The Landmine Impact Survey classifies Al Wazani as a "high impact" community and daily life in this village attests to the local residents' astounding ability to adapt and cope with ongoing hazards. Local people have grown accustomed to the frequent loss of livestock and to their children playing with and collecting mines. On a few occasions, children reportedly have been caught by their elders trying to detonate mines in order to watch them explode.

The village was occupied by Israeli forces from 1978 to 2000. During the occupation, a number of the residents were jailed by the Israeli forces in the infamous Al Khiam prison. Well before the start of occupation, Al Wazani suffered from Israeli attacks as early as the 1948 Arab-Israeli War.

The villagers' first wave of emigration started with 1948 War, followed by another significant exodus as a result of the 1967 War. In the 1970s, Palestinian militias started launching military attacks against Israel from Al Wazani village. The Israeli Army retaliated by shelling the village and causing even more of the community to flee their homes. Then, in 1978, the Israeli Army invaded Lebanon and occupied Al Wazani, thus, forcing the majority of the community members to leave. Up to the present, 80 percent of the original residents have not returned to the village.

In 1982, the Israeli Army invaded again and occupied territory right up to, and including, the city of Beirut. This destabilized the central region of the country and brought the war to the capital. Fighting was now concentrated in or around Beirut, and the south, already under occupation for four years, stabilized and became relatively 'safer' to live in. Even so, very few local people returned to live in the village between 1982 and 1983. At present, only 40% of the original local population has returned to the village. The rest of the population now live in other areas in the south, such as the communities of Zahrany and Nabatiyah, or are living in and around Beirut.

The first mines were laid in the village in 1965 by the Lebanese Army as part of a military agreement between Egypt, Syria and Lebanon in a joint stand against Israel. In 1976, the Israeli Army planted large numbers of anti-personnel and anti-tank landmines in areas to the south, close to the border with the occupied territories and Israel. The placement of landmines and bombardment continued right up until the Israeli withdrawal. Even now, the community suffers from localized, light shelling due to an ongoing territorial conflict with Israel.

Al Wazani has three mined areas. The first mined area is called locally, Mouhit Al Balda. This area is to the east of the village and is the closest to the residential area.

The second mined area is called Al Aamra-Al Hamames. This area is a Lebanese Army base, not owned by the Al Wazani community, but still used by them for herding.

The third area to the north of the village called Al Sharit. This minefield begins at Al Ghajar bridge, continues through Srayta, Hammary, Tarbakhanieh, Abel Al Qamh and ends at Ain Kurdieh.

The head of municipality, the deputy head of municipality and the mukhtar share ownership of the first mined area. The remainder of mined area one, as well as part of the third mined area are the property of the municipality. Al Sharit is partly made up of lands bequeathed to, and controlled by, the Maronite Church.

Impact of mines

Most of the contaminated areas are made up of potential agricultural land. However, the community is forced to use these areas as pastureland due to the unavailability of other suitable land for their animals. As a result, the community has now stopped cultivating these areas. In order to cultivate wheat, the villagers rent land in nearby Al Khiam town, as well as in Al Aadeisse, Markabe and Al Qlaiaa villages.

In spite of the heavy contamination of Al Sharit area, the villagers continue to use it for herding. However, due to contamination by anti-tank mines, only goats and sheep are allowed to graze there, since these mines are believed to only explode if stepped on by cows. Nevertheless, many goats and sheep have been injured, while cows forage on land nearby. The herders view these accidents as fate and refer to them as the "Al Sharit tax".

Accident survivors

All recent mine accident victims during the past two years were from outside the village. The first was a deminer who lost both his forearms and suffered injuries to the face. The second victim, Ali Mohamad Tawbi (23 years old), previously a construction worker, was injured in Al Sharit area in 2003 while collecting scrap metal. He lost right leg and is now on a wheel chair living in his village (Burj Qalaway) and is no longer working.

During the 1980s, the village also had a total of 14 people injured due to accidents with mines.

Village socio-economics

HOUSEHOLD ONE

Ali Al Ahmad is a shepherd of 48 years of age. He is married with five boys and three girls. Only the youngest girl still goes to the public school in Al Khiam town.

Another daughter is married, while the rest of the children assist their parents with herding, agricultural and domestic activities.

The family has a herd of 15 cows and 60 sheep. They lost two cows last year in Al Sharit area, when the cows wandered into the mined area during heavy rain and were killed. The family rents 75 dounoums in Al Khiam to grow wheat and owns three dounoums in Al Wazani where they have built their house and a barn.

The rental price per dounoum of agricultural land in Al Khiam is 25,000 LL per year and the cost of growing wheat is 60,000 LL per season. None of the wheat produced is sold as it is barely enough to feed the animals. Whatever is left over is used for household consumption.

The oldest son also supplements the family income with the income from his job as a cement renderer. However, he can now only find work for no more than seven days in each month. He is paid only 1,000 to 1,500 LL per square meter for each wall rendered. However, even these payments are never made regularly and sometimes he does not get paid at all. Before the withdrawal of Israel he used to be paid 3,000 LL per square meter. This is supported by an interview with another family—Fadel Al Mohamad also works as a plasterer, supplementing his income with what his eight cows produces. Fadel did not use to engage in herding since his work in construction satisfied his family needs. Previously, he received between 3,000 and 3,750 LL per square meter of plastering. Now, however, he gets paid 1,500 per square meter. The low salaries forced him to take up herding to provide enough for his family.

TABLE 26

INCOME FROM ANIMAL HUSBANDRY PER YEAR

	Costs (LL)	Income (LL)	
		Sale of milk	Sale of calves or lambs[9]
Cow fodder	1,200,000	720,000	500,000
Sheep fodder	750,000	45,000	40,000
Grain for replanting	60,000		
Land rental	1,875,000		
TOTAL	3,885,000	1,305,000	

As well, like other women living in the village, his wife used to be paid 20,000 LL per day for harvesting vegetables. However, at present, due to the influx of cheaper Syrian labor, wages have dropped to 3,000 to 5,000 LL per day. This is an unacceptable rate for local workers and as a result women in Al Wazani mostly choose to stay at home.

Table 26 shows that, without adding any additional income gained outside herding, the family has an annual income of approximately 2,580,000 LL (around US$1,720). However, Fatima Shehab (38 years old), Ali's wife, estimated that family's net income as being only 1,200,00LL annually (or US$800).

The family finds it difficult at present also because even though prices are lower than before, the market for wool and sheep milk is currently depressed.

HOUSEHOLD TWO

Adnan Al Mohamad is a 32 years old shepherd with a Technical Baccalaureate. All of his children go to school. In 1978, the family left the village but returned in 1984. His family owns 20 cows and 250 sheep jointly with his father. Last winter, during heavy rain, he lost ten sheep when they entered the part of Al Sharit area with anti-

[9] The market value for each cow is 1,000,0000 LL and 150,000 LL for a sheep

personnel mines. Similarly, in April 2003, eight of his cows entered an area with anti-tank mines and two were killed. Adnan sells most of the milk produced to factories in other areas that do not have transport facility. He also rents 100 dounoums of church land close to Al Wazani for 40,000 LL per dounoum per year.

Most of his crop (wheat & straw) is used for animal fodder and household consumption. The land produces 750 kilograms of straw and 500 kilograms of wheat per dounoum per year. The price of one kilogram of wheat is set at 350 LL by the government. The government usually buys only premium quality wheat, otherwise he has to sell this to other traders at 300 LL per kg.

Adnan indicated that even if the mines were removed from his land the family would still be faced with the problem of selling their agricultural produce. Additionally, the price of renting land would probably increase due to the presence of big farmers from other villages in the Bekaa Valley. These farmers are renting most of the land surrounding Al Wazani. Adnan also expressed an interest in renting more of the cleared land for agriculture.

The estimated profit from wheat only for this household per year is approximately 1,050,000 LL (or US$700). This is estimated using the total amount of wheat sold, which is 7,000 kilograms at a sale price of 350 LL per kilo, minus the production costs[10]. This household only sells a small proportion of its crop, No estimation was given regarding profits from the sale of animals for this household.

TABLE 27

GROWING WHEAT

Expenses/kg (rental/cultivation/harvest)	Sale price (kg)	Total production (kg)	Total quantity sold (kg)	Profit/year
200 LL	350 LL	50,000 LL	7,000	1,050,000 LL

HOUSEHOLD THREE

The mukhtar, Ahmad Al Mohamad, (31 years old) has five children, three of whom still go to school. His wife, Osama Al Mostafa (27 years old), is a school teacher and earns 500,000 LL per month (US$330). The mukhtar has a feed factory operating ten months a year, producing around 4 metric tons of feed daily, with each kilogram costing 225 LL and being sold for 240 LL. He makes a gross profit of about 1,800,000 LL (US$1,200) per month. The household has a regular gross monthly income of around US$1,500.

The mukhtar owns 20 dounoums of land, two dounoums of which are mined. He has himself cleared part of the land and built a house on it, but still finds mines around his house. The rest of his property is shallow land and unusable. Mr Al Mohamad intends to cultivate his mined land when it gets cleared. He added that, in addition to the problem with landmines, farmers also need a lot of assistance to cultivate their lands and in selling their produce.

[10] The cost of producing a kilogram of wheat has been calculated by adding the rental cost per dounoum plus production cost of wheat per dounoum divided by the quantity produced per dounoum.

Willingness to contribute towards clearance

Only the mukhtar, head of municipality and deputy head of municipality own part of the first mined area (Mouhit Al Balda)—their shares total approximately 450 square meters. Half of the third mined area, Al Sharit, is owned by the municipality. The remainder of the land belongs to the church.

All of the landowners interviewed, stressed that they neither have the financial ability nor the willingness to contribute to the expenses of mine clearance. For the mukhtar, mine clearance is the sole responsibility of those who planted them.

The mukhtar went on to specify the price of non-contaminated land—3,000,000 LL (US$2,000) per dounoum. The deputy head of the municipality, Ahmad Deeb Al Mohamad, had the same point of view as Mr. Al Ahmad, yet when asked the price mined land he said it would be the same price as uncontaminated land. He is personally clearing part of his land with his own tractor. They all said that none of the people in village can pay even the smallest amount of money for clearance.

Hussein Al Ahmed was also not willing to pay for mine clearance as he was sure that the Operations Emirates Solidarity program would eventually clear their village. He intends to use the land once it is cleared for housing with the government's support. However, if there is no funding for housing, the villagers would cultivate the land, if they receive assistance for land reclamation. If this assistance arrived, then he would be willing to offer part of the produce to help recover the costs of demining.

Mine action

Indeed, OES has started clearing part of Al Aamra mined area and worked for a short time in the mined area called Mouhit Al Balda, but left. Currently, Mercy Corps is helping the villagers reclaim part of Mouhit Al Balda area and during their work there they have found mines and defused them. The villagers themselves have also been occasionally clearing parts of Mouhit Al Balda area, by either defusing mines, collecting them or using tractors to explode them.

With regards to fencing and marking, the only area which has marking and is almost totally fenced is Al Sharit. A small piece of Mouhit Al Balda is fenced and Al Aamra is only partially fenced.

As part of its Mine Awareness campaign, the Lebanese Army has placed some posters on walls in the village and distributed leaflets. There have not been any actual mine awareness sessions in Al Wazani. However, students have received awareness sessions in Al Khiam public school by the Islamic Health Commission, a local mine action NGO.

Conclusion

Al Wazani village has been suffering from ongoing insecurity due to occasional Israeli attacks and occupation. The presence of big farmers coming from outside the village who buy and rent surrounding land increases the rental costs for local

agriculturalists and pastoralists. This factor makes renting suitable land increasingly unaffordable for most local residents. Moreover, opportunities for salaried work, such as in construction, are also being lessened due to the influx of cheap foreign labour.

The community's livelihood is also made more difficult by the lack of a market for animal products, such as milk and wool, and difficulty in selling their agricultural crops. In addition to these obstacles, the villagers have a large amount of their territory contaminated by landmines. Even though half of the mined areas are not owned by Al Wazani community, the presence of landmines in the village has impacted peoples' lives, forcing them to rent agricultural land outside the village and frequent cattle loss while grazing in mined areas.

Animal Husbandry is the primary income source of the community and has been a traditional livelihood for many generations. Villagers believe that one possible way to assist their community is for the authorities to facilitate the sale of their agricultural produce by re-opening the dairy factory in the nearby town of Al Khiam. This factory was established by the government in 2001, but is now closed down. Recommencing operations in this factory would also create valuable job opportunities for local people.

The people's attachment to their land is manifested by their refusal to sell contaminated land at any price. This is possibly due to a long, historical link with the land, as well as a result of their enduring dependence on the land for herding and cultivation. Added to that, the area of land owned by the community is also very limited and this creates a need to actually expand land ownership rather than getting rid of land.

Al Sharit area is the most suitable land for herding, but is not likely to be cleared before a peace is achieved between the Lebanese and Israeli governments. Moreover, even after clearance, the mined agricultural land has lost its productivity and needs costly rehabilitation to be put back in use. Further more, the location of some of the mines near the houses (Mouhit Al Balda area) constantly exposes residents to danger, especially children.

Feelings of insecurity regarding the future, along with ongoing contamination of their land, are forcing community members to seek alternative sources of income. Cases like that of Saada Al Mostafa, who established the only grocery store in the village three months after losing three cows in a 2002 Israeli bombardment, are becoming more common. The low average income of the community and the neglect by the authorities since the occupation years are contributing factors to the decline of this community. These factors further forces young people to discontinue their education earlier and find work to supplement the incomes of their families. This reinforces the overall trend, as educational standards drop and opportunities for work decrease.

Authors: Lina Mikdashi & Nedaa Zein | May 2003

ZAHRIYEH

Background

Zahriyeh, a village of one hundred fifty residents, is a mixture of a suburban town and a traditional village, where the war has left massive scars. Covering less than a square kilometer and home to a century old church, it lies in the Metn district in Mount Lebanon province. Only seven residents are long-term inhabitants of Zahriyeh, and they make up only two households. The Jaamani River, which separates the Districts of Metn and Baabda, runs along the edge of the town. The towns of Qaaqoor, Zaraaoun, Al Kinnaba and Baabda also border Zahriyeh. There was a school in Zahriyeh, but it closed its doors forty years ago. There are no medical facilities available in the village and there is not even a local grocery store. The only kind of social activity is organized by the local church youth group.

Starting in 1975, the area around Zahriyeh enjoyed relatively improved safety and security. This fact along with the relatively low land prices, the beautiful greenery, the abundance of water, the impressive setting and climate, and the proximity to Beirut, Bekfaya and Baabda lured a number of upper-middle class buyers to settle there. Some of the new settlers were Armenians in need of a place in which they could settle permanently, other new residents were seeking a summer resort, while still others looked for a location close to the city, which preserved the welcoming old village atmosphere. This ambience is present to this day in Zahriyeh, where people still make their own Arak, Liqueur, Dibs Inab and Dibs Kharoub.

There are three mined areas surrounding the village of Zahriyeh. In these three areas, two people have been killed and twenty-one injured. These minefields block access to water, agricultural land and pastures. They caused complete economic paralysis for a while, forcing people away from their traditional way of life. Despite their impact, the first time they were reported was during the Landmine Impact Survey and they are yet to be marked and cleared.

History of landmine contamination

During the war, the village was in the centre of a combat zone between the Syrian Army and the Christian militia, the Lebanese Forces. At certain periods during the war, Zahriyeh became famous for being in a zone so militarized that it was deemed a 'lost' village. The village was completely encircled by both military bases and mined areas.

With the start of the Lebanese civil war in 1975, Zahriyeh faced problems with displacement of its residents. In fact, the war in Mount Lebanon led to many villages such as this to be abandoned by its inhabitants. This population displacement had many different aspects and phases depending upon the ever-changing front lines. The fighting in 1976 and 1977 took place far from Zahriyeh, making it a relatively safer place to live. As a result, internally displaced persons from other war affected regions fled here, purchased land and built homes.

However in 1978, Zahriyeh came under direct attack and consequently, landmines were laid and UXO left behind. Mines were placed in the vicinity of the Jaamani River, and this direct assault forced residents, as well as the newer settlers, to flee the village. These population displacements continued until 1984. In some instances, the new settlers usurped the lands and homes of the original residents, who had fled to other neighboring villages of Baabda, Al Khalle and Al Kinnabe to escape the conflict.

In the mid-eighties, in wake of new attacks, more mines were deployed along the village borders. During these hostilities, only a few residents remained living in the village.

By 1987, pre-war some of the original inhabitants began returning to the village to reclaim their land and homes. These returnees were forced out of the areas they had been displaced to earlier to escape war in Zahriyeh. This trend continued till the end of war in 1990to 1991, however not before a new round of mine-laying occurred in 1990. When the war ended, the people who had moved into Zahriyeh to escape the war either returned to their native hometowns or remained living there.

Socio-economic impact and adaptation

Youssef Abu Samra and George Abdo Labaki, are the heads of the two households native to Zahriyeh. Along with parliamentary deputy Nassib Lahhoud from Baabda, these households own most of the land in the village. This includes all the contaminated land, the rest of the land is divided between thirty other households. In fact, Abu Samra's household is the only household permanently residing in Zahriyeh, native to it and with no houses located elsewhere. All of the other households also own homes outside the village.

HOUSEHOLD ONE: MR YOUSSEF ABU SAMRA

Youssef Abu Samra, seventy-four years of age, owns a large percentage of the land in Zahriyeh and has lived off this land for most of his life. He married in 1963 and now has four children, two boys and two girls—all young adults now. The older son, Abdo, works as a hairdresser. During the war, Abdo got involved with some of the warring parties, eventually dropping out of school when he was fourteen. His younger son hopes to become a plastic surgeon, which would mean that the family would have to sell some land to finance his education. Youssef said that, in that case, he would prefer to sell mined land for a cheaper price than cleared land.

Before the war, Youssef was quite wealthy and owned pine plantations and large orchards planted with many varieties of fruit. He also owned other plots which were excellent pastureland and he used to rent these out to shepherds. The best of these plots were either by the river (crossing points used by the different warring factions) or in pine forests at the borders with neighboring villages. As a result, these plots were heavily mined and booby-trapped. At present, he and his children cannot use more than one third of their land due to the presence of mines and UXO. Despite the fact that the family has suffered significant economic losses

as a result of landmine contamination, their main concern remains the safety of their children.

Between 1978 and 1987, Youssef and his family were displaced due to the war and had no income. Luckily, the family had accumulated enough savings to maintain their standard of living during this enforced displacement. On return to Zahriyeh, Youssef found that he could not use his orchards due to the presence of mines and could only cultivate plots closer to his homes that he found to be mine-free.

A lot of things changed for him since the war. He used to pick his own trees, tend and trim them, and hired laborers from neighboring villages. He had expected that he would pass the responsibility of the land on to his children, but that dream has been shattered. His children have abandoned agriculture and he now hires workers from Syria and Egypt to tend to his land. Due to his age, Youssef himself has now restricted his role to one of supervision.

HOUSEHOLD TWO: MR GEORGE ABDO LABAKI

George Abdo Labaki is the other major landowner in Zahriyeh. He was previously forced to move to Baabda during the war and decided to stay there. George owned farmland before the war, but now works in real estate and also manages Deputy Nassib Lahhoud's property. George also owns a building whose apartments and shops, which he rents out.

During the war, he neglected and ignored his property. Eventually, he sold the largest portion of his land (around 250,000 square meters of both contaminated and cleared land) to Deputy Lahhoud, and invested the money in real estate. Currently, around fifteen percent of his remaining land is contaminated by mines. George, who was forced to change to a more suburban lifestyle after selling his land, now seems to prefer it. His age is another factor that prevents him from returning to a physically-demanding agricultural life.

His response to the issue of whether he was willing to contribute to paying for land to be cleared, was that land had been neglected for twenty-eight long years, and required large investments to make it productive. The resulting cost of reclaiming his land is too high to be a priority for him, and he would not contemplate contributing anything to its clearance. He would rather allow someone to clear the land and then use it as they like, rather than continue to watch the land lie unused. However, he would also consider selling the contaminated land at the rate of between four to six US dollars per square meter.

However, his son, Abdo, indicated that he would be willing to contribute around a 100,000 LL (about US$70) per 1,000 square meters to clear the land. This was subject to the condition that everyone else in the community had to do the same and that no-one benefited from clearance operations without all the villagers having equal opportunities. In Abdo's opinion the price of land would only be influenced if all of Zahriyeh were mine-free. Abdo's father was, however, insistent land clearance was the responsibility and duty of the Lebanese Army and so, could not understand why he would have to pay.

The mukhtar, Nasri Ghsoub, believed that the question of asking landowners if they could contribute to clearance was totally inappropriate. He asked to team to not ask this question to the landowners.

The impact on the real estate market

The price of land in Zahriyeh depends on its proximity to the center. Where the land is located also affects whether or not people suspect landmines in that area. Land by the river is far away from the centre, making it somewhat less suspicious and hence, cheaper. The price is further reduced when it is confirmed to have mines or is in the vicinity of confirmed minefields. The presence of pine trees increases the price, making it more valuable than bush land that can only be used by shepherds. Overall, the community believed the presence of landmines in the village has negatively affected the price of land.

In neighboring mine free Baabda, land goes for US$100 to US$500 per square meter. In Zahriyeh, the price of land is considerably lower, varying between US$6 and US$25 per square meter. Other factors that influence the price of land, include the absence of services and commercial centers. The lower end of the bracket is for mined areas near the river whereas the upper end is for cleared land near the centre of the village. Cleared land by the river would be sold for US$7 to US$8 per square meter, the price being low due to the lack of roads.

Even so, there have been recent real estate transactions in the village: the fiancé of Mr Samra's daughter- a very wealthy man- purchased land at $45 per square meter. The other daughter's husband also purchased land and built a house in Zahriyeh. These are among the very few instances where the groom moves into the bride's village, not the other way around. The people of Zahriyeh pride themselves on events like these, which are not common to other villages. In another instance, a man purchased 2,000 square meters for US$20,000, so he could enjoy sitting by the river in springtime. The villagers' initial response was to refer to him as 'the lunatic by the river' but now a number of people have offered to purchase his land at a higher price.

TABLE 28

DISTRIBUTION OF LAND IN ZAHRIYEH BEFORE AND AFTER THE LEBANESE WAR

	Pre-war area of land		Post-war area of land	
Owner	Square meters	Percentage of total	Square meters	Percentage of total
Resident one	—	0.0%	420,000	53.1%
Resident two	350,000	44.6%	200,000	25.3%
Resident three	375,000	47.4%	75,000	9.6%
Others residents[11]	65,000	8.0%	95,000	12.0%
TOTAL	790,000	100.0%	790,000	100.0%

[11] Others include: One of the mukhtar's family, who sold most of their land, Mar Abda Monastery, a nearby monastery to whom land was donated, Union of Metn Municipalities, who purchased land, new homeowners and people who have purchased land and live outside the village.

According to both George Labaki and Youssef Abu Samra, they would rather sell mined land for a cheaper price and get rid of it. Mr Labaki even said that he would allow anyone who would clear the land to use it, cultivate it and benefit from it for free. As for him, his way of life had completely shifted, and he would not return to agriculture for a living. Abu Samra, on the other hand, is not willing to sell his land soon. He believes that the road will soon be passing close to the river, making the beautiful plots of land he owns, more accessible, raising the price and making it more profitable. So, for the time being, Abu would sell small lots for fast cash in case the need arose but would save larger plots for later. The Samra family were somewhat keen to sell land on the border of the village and replace it with land close to the centre, this being a more worthwhile investment.

Most of the action in the real estate market in Zahriyeh is the result of outsiders buying and selling, not locals. The latter own their homes and some land around it and are not willing to sell unless they wish to desert the village.

Mine accident survivors

Zahriyeh has had two deaths and twenty-one injuries caused by landmines over the years. Of the victims, five or six were newcomers to Zahriyeh, another four were shepherds, and the remainder varied between hunters, hikers or pine tree pickers from outside. Not a single victim was actually native to Zahriyeh.

The first of the victims, Halim Morcos is the most recent one, having been injured in 1990. He had moved to Zahriyeh from Jouar El Haouz. At the time of his injury, he was herding his four hundred goats. This accident occurred in an area he frequently used and had been there with his herd twenty days prior to his injury. On May 20, 1990 at 10 in the morning, an anti-personnel mine detonated under his left foot, amputating the front part of it, and causing multiple injuries to the arm, legs and thighs.

Help did not arrive until five hours after the injury and during this time, he lay on the ground bleeding. At the time, the roads were blocked due to the war and getting him to Hospital was a challenge for his brother and friends who came to his aid. Due to his injury, he was unable to move for a month, and remained in the hospital. Some time after this, he had a stroke, and was forced into the hospital for yet another month. In the year 2000, Halim developed a bone infection in his injured leg, which required another eight months of hospitalization.

After the injury, physicians tried to fit him with a prosthetic. The unusual nature of the amputation made that difficult, and the doctors suggested amputating the leg from above the ankle to fit him with an effective, prosthetic, but he refused. Feeling very uncomfortable with the prosthetic issued to him, Halim refrained from using it, and has continued to refuse to do so.

Halim's lifestyle severely changed after the accident. There are a number of activities he is now incapable of doing such as farming, hunting, hiking, or herding. He was forced to sell his goats, and now works as a butcher in his father's shop. His income is severely compromised and has prevented him from marrying and having a family. Since the injury, Halim cannot stand up for more than an

hour or two at a time. If he tries to force himself to stand for longer than this, his entire leg, thigh through ankle, swells up and aches, forcing him to lie down for up to six hours to recover. To Halim, that is the most unpleasant part of the injury, not the amputation. The fear of swelling means that he has to hire an assistant at the butchery, reducing his income even further. Halim feels that he cannot work, and is dependant on his family, who take care of him. He is still living with his parents and three brothers, and has an excellent relationship with his married sister. His nephews are very fond of him, and to them he is the favorite uncle.

Michel Ne'me moved to Zahriyeh from Joar El Haouz. However, his injuries were caused by a mine before the family finally moved to Zahriyeh. His accident occurred on December 9, 1984. He was twenty years old at the time, and was hunting with his brother and some friends. He has since immigrated to the United States. His family said that that everyone had thought that the mines where higher up from where the accident had happened, but it appears the mines had slid further down due to rain. The explosion damaged the nerves in Michel's left arm, preventing him from using three of his fingers, and his left leg below the knee had to be amputated. He had to be hospitalized for a month. Michel also had difficulties with his prosthetic, but eventually got used to it, but not entirely. Things were quite difficult during the first few years following the injury, while he was still getting adapting. He could not use the prosthetic with ease, nor could he bring himself to leave the house carrying a walking stick. He isolated himself from his friends, and eventually left the country.

The injury, following along from the forced move from Jouar El Haouz was particularly difficult for the family. Because of the stress caused by these events, his mother had a stroke and died soon after. The family continued to suffer a great deal since they were displaced by the war several times since 1978. The first time, they were forced to leave their home on foot, and travel through the forest by night until they reached Zahriyeh. The injury and the mother's death occurred while they were living in Sfaile, during the family's second displacement after the Israeli invasion. After several more forced moves, caused by economic hardship and the security situation, where the family moved from renting homes to living with friends and family, they settled down in Zahriyeh.

Michel migrated to the United States with the help of some friends. He worked for a while as a dishwasher in a friend's restaurant and, then, after getting his green card, became a taxi driver in New Jersey. This has made his daily life easier, because he can take off his prosthetic while driving and can make himself comfortable. Today, he is an American citizen, living with a friend from the village. Although, his family encourages him to get married, he remains single.

As for the family, one of Michel's two brothers and three of his five sisters have married. As for the two single sisters, one stays with their aging father, to whom old age has not been very kind and the other is considering moving to the States to take care of her brother. Michel visits Lebanon every two years or so, and his very young nieces and nephews keep asking their parents how did Uncle Michel's leg get 'broken'?

There were several other accidents with mines or UXO in the village of Zahriyeh. Tony and George El Hajj from Aintoura were injured in Zahriyeh while herding. They saw a Kalashnikov (AK47) rifle lying on the ground and as one of them went to get it, a landmine detonated and injured him. The other rushed to his aid, and he too stepped on a mine. A college student living in Zahriyeh called Bshara Demian ran to help the injured men, and in the process, also stepped on a third mine. It turned out that the rifle was left by an injured militiaman, who had also lost his leg to a landmine. The three injured men lay on the ground for six hours before help arrived. However, their injuries have not stopped them from continuing to work as shepherds. However, they own a smaller herd, selling fresh milk and dairy products to neighbouring villagers.

As well, there was the case of the father and son woodsmen who were killed. While the two were chopping wood in the forest, one of them stepped on a trip wire and a bomb exploded, killing both of them. In another case, Farj Allah Hadwan was injured by a mine detonated by his friend while out hunting. His friend brushed against a trip wire, detonating the mine—his friend was unhurt, but Farj sustained severe injuries. A man picnicking by the river with his family stepped on a mine and lost his foot. Viken Sarkissian, a 17 year old man was jogging in the woods near Zahriyeh and stepped on a mine. He lost his foot, was fitted with a prosthetic but decided to migrate to France for further treatment. The final example of mines causing accidents in the village was that of a woman from Hasbaya who was crossing some land in the village, stopped to pick some figs when a mine exploded. She survived but stayed without help for more than 4 hours.

Reporting the problem

It is interesting to note that during the thirteen years after the following the war, not one villager has formally notified the Lebanese Army of the presence of landmines in Zahriyeh. During the interview, we reminded people that notification procedures exist in order that they inform the Army of their problems and ask for assistance. We received varying responses to this. Some felt that the Army already knew, but were not interested in helping, while others felt that it would be pointless, since the Army would never clear these areas.

Since they have never reported the problem to the relevant authorities, the people of Zahriyeh have never received mine awareness sessions, nor have the minefields ever been marked or surveyed.

Zahriyeh, the future

The impact of the war on the villagers was significant. Many people were forced to move to avoid the conflict and there was constant population movement in the region. This continual internal displacement resulted in a real loss of housing, land, economic stability and social networks. Landmines and their impact make up significant part of the impact of war on this community and its people, especially during the years immediately after the war ended. As a legacy of this war, landmines continue to affect the lives of the villagers, denying them access to

valuable agricultural land, limiting their ability to build housing and depressing the land prices in the village.

Fortunately for the village of Zahriyeh, there have not been any victims in recent years. This is probably due to the fact that the villagers have now had many years to learn where the mined areas are and to avoid them. This is supported by the fact that all of the accidents occurred with visitors to the community, rather than with any long-term residents. Families have also found alternative means of earning income and have let any suspect land become fallow. In addition, cultivating the land for a living is no longer a preferred option, especially for younger people who have taken up other professions. Now, local people would most likely use the land as a supplementary source of income, as hobby farms or want to hold on to it out of patrimonial sentiments.

The impact on the economic and family life of the survivors and their families has also been considerable. Survivors have suffered from severe physical and emotional consequences of their injuries. Two of them have migrated in order to improve their chances at earning a living and obtaining better treatment. Certain survivors or their families expressed difficulty in working in their chosen profession and others have had difficulty finding a suitable spouse due to the nature of their injuries.

Willingness to contribute towards the costs of clearance was not an issue that was accepted as a possible solution to the problem by most of the community members interviewed. Only the son of one of the landowners expressed interest in contributing towards this, with the proviso that all are treated equally and not one landowner gaining special treatment and access to 'free' clearance. The cost of reclaiming land after years of it remaining fallow in addition to the cost of clearing it of mines, was believed to be too high for the landowners to afford. Certain respondents would rather sell their land directly at current low prices rather than clearing and reclaiming it. Another community member would rather see it being used by someone else if they cleared if of mines, rather than letting it lay fallow for year. The recent decrease in the price of land is significant, however, with the proviso that this could also be attributed more to overall poor economic conditions rather than only to contamination by mines.

The fear villagers have of entering suspected land was strongly expressed during various interviews. Community members also expressed strong fear for the safety of their children and the possibility of them having an accident. Fortunately, the adults have the chance to find alternative sources of income and can avoid entering those areas contaminated by landmines. The village of Zahriyeh is in a desirable location to attract new residents but the suspected land limits further development and the housing that can be built in the village itself. It is interesting that in this context that the villagers want their land to be cleared but are very reluctant to contact authorities to do this. The case study was unable to clarify what the real reason for this would be and it is not possible to speculate unnecessarily without further research.

Authors: Blanche Abi Assaf and Firas Abi Ali | May 2003

Project Timeline

The Landmine Impact Survey (LIS) project commenced in February 2002 upon signature of a grant contract between the European Commission and Mines Advisory Group, a registered UK charity. A draft of the final survey report was submitted to the National Demining Office for approval by the Lebanese authorities in July 2003. The LIS project process in Lebanon took a total of 17 months.

February 1999—***UNMAS joint assessment mission*** was conducted at the request of the Lebanese authorities and recommended a Landmine Impact Survey.

July 2001—***An assessment of mine action databases in Lebanon is conducted by UNMAS*** at the request of the National Demining Office. The report strongly recommends the implementation of a full Impact Survey.

February 2002—***Grant contract signed and funding received.*** A grant of 1.6 million Euros was approved by the European Union and a grant contract signed with MAG for implementation of the Landmine Impact Survey in Lebanon.

March–May 2002—***MAG Survey Manager and Deputy Manager arrive in Beirut.*** The Survey Manager, Ms Kim Spurway, and Deputy Manager, Ms Jenny Reeves, arrive in Beirut.

Development of working relationship and common understanding with local partners. Meetings were held with the Director of the National Demining Office (NDO), Brigadier General George Massaad and key NDO staff. A Memorandum of Understanding was drafted and signed between the NDO and MAG on 8 May 2002.

Meetings were held with the NDO Operations Section, NGO representatives and NDO officers responsible for the Victim Assistance and Mine Awareness Steering Committees. Meetings were also held with other stakeholders such as UNDP Resident Representative and with the Mine Action Coordination Centre for South Lebanon (MACCSL) located in Tyre, south Lebanon. The management team also introduced some of the key issues regarding the survey to the International Support Group made up of donors and stakeholders in mine action in Lebanon. An information leaflet on the Landmine Impact survey was produced.

Establishment of office. After some discussion, an agreement was reached to locate the survey office within the NDO premises. This allowed the survey team to further develop coordination between the NDO and MAG. It also meant that liaison and access to the IMSMA database was facilitated. The survey offices were renovated, equipment purchased and administrative staff recruited.

Collect qualitative and quantitative data. Contact was made with national social scientists in several Lebanese universities and general socio-economic data and reports on Lebanon were collected. Existing quantitative data related to landmine and UXO was obtained and an initial assessment made of the data for use as LIS expert opinion. The availability of digital maps was investigated and the gazetteer was obtained.

Recruitment of database/GIS and social scientist consultants. Dr Ghassan Mikati commenced as a consultant in GIS with the LIS. Dr Christine Crumrine, a political science lecturer at the American University of Beirut, also started work as a social science consultant.

June 2002—***Selection of senior field staff.*** Candidates were short-listed from notices placed in the national press and from the NDO, NGO and university networks. Candidates were interviewed and seventeen selected for training. Training sessions were developed and prepared.

Presentation of LIS to relevant local NGOs. A presentation was given to selected local associations in the LIS training room on 13th June. A request was made for information for the expert opinion phase and organizations were informed about LIS staff needs and requested to send along suitable candidates.

Establishment of operational office. The survey office was operational and administrative systems finalized. Five four wheel drive, seven-seater field vehicles arrived in Beirut. One city car was purchased for use by the survey office.

Development of survey methodology for Lebanon. A meeting was held of national social scientists to discuss the impact survey and how it should be adapted to Lebanon. The generic questionnaire was translated into Arabic and distributed to the NDO, MACCSL and local NGOs for feedback.

VVAF Information Management consultant's first intervention (23 May—6 June). Mark Yarmoshuk arrived in Lebanon to carry the assessment and integration of existing databases into the LIS survey plan, assessment and specification of spatial data and development of the information management capabilities of the LIS.

July 2002—***Training and final selection of senior field staff.*** A three week training course was given to the senior field staff candidates. This covered an introduction to mine action, MAG and the LIS, the survey instruments, interview techniques and practice, expert opinion collection, map reading, use of GPS and cameras, scoring, mine safe behavior and first aid. During this training, the generic questionnaire was adapted to Lebanon, and the translation refined in preparation for the first pre-test. At the end of the first pre-test the final selection of candidates was made.

First pre-test and debrief. The first pre-test was undertaken in the district of Aley in Mount Lebanon province. 12 community interviews were conducted, two were confirmed not affected and eight were not surveyed for other rea-

sons. The feedback from the pre-test was used to further refine the survey instruments. It was decided that a second pre-test needed to be conducted.

Recruitment of data collector and drivers. Candidates were short-listed from notices placed in the national press and NDO, NGO and university networks. Candidates were interviewed and thirty five data collectors were selected for training.

August 2002—***Training and final selection of Data Collectors.*** The data collectors underwent a four week training course, given by the senior field staff under the supervision of the program manager.

Second pre-test. This was held in the district of Jezzine, eight communities being surveyed under the supervision of the Deputy Manager. The survey instruments were found to be much improved on the first pre-test version, requiring only minor modifications.

Data Collector training workshop held in LIS offices, Beirut. Following on from this, data collectors were selected for field work based on a set of criteria. Teams were then deloyed to undertake data collection.

Operational planning and preparation. An operational plan was drawn up for field work, with one team being responsible for each district. Field work commenced with a pilot test in the Bekaa Valley, continued onto North Lebanon and Mount Lebanon, with the final phase being South Lebanon and Nabatiyah provinces. Logistical preparations were also fine tuned: vehicles and communication plans were drawn up and close liaison established with military intelligence. A staff handbook was prepared and translated into Arabic.

Expert Opinion Collection. Senior field staff identified potential sources of expert opinion (such as research institutes, academics and local NGOs, relevant ministries). Each source was interviewed to determine what information was available. Staff also visited all the administrative authorities in each province, including the provincial governors and district leaders. Each EOC source was given a copy of the gazetteer and were asked to indicate which communities they suspected of being contaminated by mines and/or UXO. This expert opinion collected by the senior field staff was added to that already held by the NDO on dangerous areas, mined areas and accident survivors.

September 2002—***Pilot test & First Phase of Fieldwork.*** The pilot test ran from 23 September to 1 October, the preliminary visits having been made the previous week. The pilot test covered the entire Bekaa Valley province, with false negative sampling taking place simultaneously with data collection.

VVAF's Information Management Consultant's second intervention, 16 Sept -12 October. Improving data management and data entry capability, synchronization of the MACCSL and NDO IMSMA databases, and data quality supervision were the focus of this intervention.

Recruitment of a new Database/GIS officer. The need for a full-time Database/GIS officer was identified. As the current Database Officer could not commit to a full time role, a new Information Management Officer was recruited. After some difficulties finding a suitable candidate, Richard Shdeed was recruited as the Information Management Officer

October 2002—***Finalization of survey instruments.*** Some minor modifications to the survey instruments were made, in order to produce the final version. Some additional training needs of field staff were identified and further training carried out.

Data entry. A system for data processing was finalized, managed by a designated Data Editor and supervised by the Information Management Officer. Data started to be entered into the IMSMA database by the NDO database staff.

First intervention of VVAF Social Scientist and Information Management Officer. Dr Aldo Benini, VVAF Social Scientist Consultant and Chuck Conley, VVAF Information Management Officer, visited Lebanon to begin a preliminary analysis of the pilot test data and to research the availability of secondary socio-economic data in Lebanon. In particular, data was requested and received from the Agricultural Census Office in the Ministry of Agriculture.

First intervention of the United Nations Quality Assurance Monitor (QAM). Mr. Mohammad Azim conducted his first intervention in Lebanon, which lasted for six weeks. At the end of his intervention he submitted his first report, indicating that there were no significant problems in the survey methodology or process.

Second phase of field work commenced. Field work in North Lebanon and Mount Lebanon provinces commenced and was completed in December.

November–December 2002—***Quality control sampling*** of surveyed communities undertaken by Survey Manager and Deputy in the Bekaa Valley indicated that there were only minor problems with the data.

VVAF Information Management consultant's third intervention. This intervention focused on assessing the quality and operational utility of the data collected during the previous two months of fieldwork. A decision is made to enter the data for south Lebanon in the NDO's IMSMA.

Preparation for data collection in south Lebanon. Some special considerations had to be taken into account for field work in south Lebanon, such as ongoing clearance in the OES areas, the need for close collaboration with NGOs and community based organizations working in mine action in the area, and security issues. Several meetings were held with the NDO, MACCSL and NGOs working in the south.

Presentation of preliminary results. A presentation made by the Deputy Manager of some initial results to NDO representatives and four members of the national Victim Assistance and Mine Awareness committees. The sur-

vey's operational plan for south Lebanon was also presented. Some concerns were raised about the validity of certain data in the Bekaa Valley—these were addressed in the following two months during field trips by the Deputy Manager.

January–February 2003—***Framework developed for cooperation with NGOs.*** In order to facilitate close collaboration between the NGOs and MAG, focal points from each NGO were assigned to work with the Field Supervisor in each district where the NGOs are active. Focal Points worked closely with each Field Supervisor, providing expert opinion and helping to ensure that the community interviews were representative, by identifying knowledgeable individuals in the communities to invite to community meetings.

Quality check. An ongoing 100% quality check is supervised by the Data Editor of all IMSMA reports against the coding sheets and original questionnaires.

Commencement of fieldwork in south Lebanon. Fieldwork was undertaken in two stages. First the districts of Bint-Jbeil, Marjeyoun, Jezzine and Hasbaya were surveyed, except the OES areas. Then Nabatiyah, Saida and Sour districts, with OES Area 5 being the last to be surveyed. Because mine clearance was planned to be completed before the end of the LIS, a decision is reached by the NDO, MAG and the MACCSL not to survey those communities whose boundaries fall entirely within the OES Areas 1-4. This decision was later reversed after a complete appraisal by the VVAF Social Scientist of available data.

QAM's second intervention. Mohammad Azim arrived and conducted field visits to check data and to conduct quality checks of the IMSMA reports against the coding sheets and original questionnaires. A report was submitted detailing his findings. Overall there are no serious issues regarding the survey that need to be addressed.

VVAF Information Management consultant's fourth intervention to address concerns related to the survey effort.

Quality check of false positives in the West Bekaa and Rachaiya districts. To address concerns raised by one of the NGOs, the Deputy Manager conducted a check of false positives in the Bekaa. Some of the communities were found to be minimally contaminated by UXO, with some communities not agreeing amongst themselves as to whether there is a problem or not.

March–April 2003—***Quality checking.*** To address concerns raised by one of the NGOs, the Deputy Manager conducted a check of false positives in Batroun. A sample of IMSMA reports are rechecked by the survey management against the coding sheets and original questionnaire. Overall the results are good, with some minor errors identified.

Completion of data collection. The field work is completed and data entered into IMSMA. Cleaning of data continues in order to prepare for arrival of social scientist for data analysis.

Deputy Manager ends contract and returns to UK. Data Collectors and most drivers finish contracts.

Case studies commence in selected communities. Senior field staff, working with Dr Irshad Shaikh, Epidemiologist with VVAF, selected communities for case studies and undertook fieldwork.

May 2003—***Data analysis commences.*** Arrival of Aldo Benini, VVAF Social Scientist to start data analysis and work with data management team and LIS manager to prepare and draft final report.

Public Presentation of Preliminary Survey Results. Aldo Benini presented the preliminary results and findings to a group of stakeholders in Beirut at the UN building. Several concerns were raised regarding several of the survey findings—since the data itself could not be changed, these issues were dealt by adding additional explanatory text in the final report.

Decision made to survey OES Areas 1-4 in order to have a complete data set. However, no visual verification was undertaken in order not to disrupt mine clearance operations.

July 2003—***Final report finalized and draft handed to National Demining Office*** for initial feedback and comments.

August 2003—***Final report draft handed to government of Lebanon*** for official one-month feedback period. Translation of report into Arabic commences.

Survey office closedown. Departure of Survey Manager and project in-country ends.

Key Participants

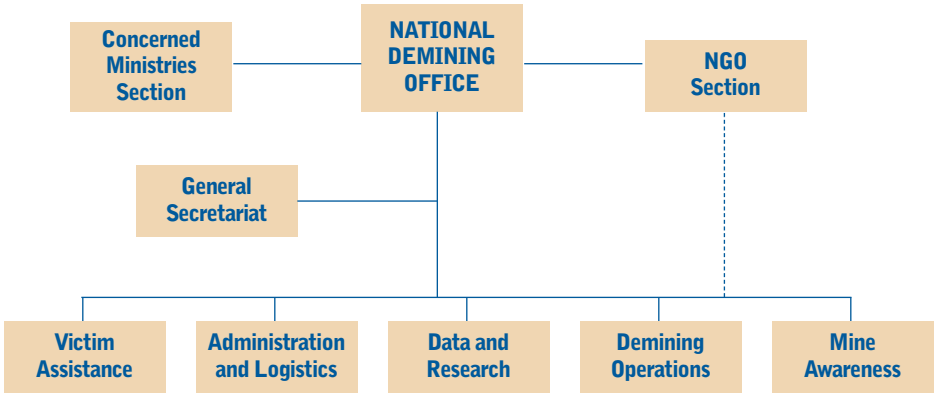
National Demining Office (NDO): the NDO, part of the Lebanese Army and working under the auspices of the Ministry of Defense and the Lebanese government, is the national coordinator for all mine action within Lebanon. It was established by a resolution of the Council of Ministers in April 1998, and its Director is Brigadier General George Massaad. The NDO was the national partner for the Landmine Impact Survey.

The NDO Operations Section coordinates all mine clearance activities in Lebanon. This is not completely applicable for the OES Areas where the NDO manages operations in cooperation with MACCSL. MACCSL management is composed of representatives of the NDO, the UN and United Arab Emirates military forces.

In addition, the National Demining Office also has two other national coordinating bodies working under its auspices: the Mine Awareness Steering Committee and the Victim Assistance Steering Committee. Members of these committees include various community based organizations (CBOs) and non-governmental organizations (NGOs), United Nations agencies and concerned government ministries. The NDO also has an active data management section, which maintains an IMSMA database, containing all mine action data nationwide. Weekly synchronizations occur between MACCSL and the NDO. After the end of the OES mandate, the country database will be relocated to rest with the NDO. Below is a diagram of the current structure of the National Demining Office.

FIGURE 9

NATIONAL DEMINING OFFICE ORGANIGRAM



Engineer Regiment of the Lebanese Army: the Regiment is officially tasked to undertake all mine clearance and EOD activities outside the MACCSL operating areas. They are one of the key players in mine action in Lebanon.

- **Mines Advisory Group (MAG):** MAG was the implementing agency of the Landmine Impact Survey in Lebanon. It also has operations in south Lebanon, conducting clearance and technical survey in Jezzine district and in the proposed Area 5 of the Operations Emirates Solidarity.
- **Vietnam Veterans of America Foundation (VVAF):** Established by a group of Vietnam veterans in 1980, VVAF works throughout the world alleviating suffering caused by conflict. VVAF's Information Management and Mine Action Program (iMMAP) provided technical support to the survey in information management and social science expertise.
- **Mine Action Coordination Centre South Lebanon (MACCSL):** The MACCSL was originally established in 2000 by UNMAS/UNOPS to support UNIFIL missions. Following the United Arab Emirates donation of $50 million for clearance activities in the former occupied areas of southern Lebanon, the MACCSL was restructured in January 2002. It is now made up of representatives from the NDO, the United Nations and Operation Emirates Solidarity (OES). The MACCSL manages the country IMSMA database and maintains records for all areas south of the Litani River.

OTHER KEY MINE ACTION PARTICIPANTS

- **Al Jerha Association:** Local NGO established in 1992, providing assistance to all people injured in war.
- **Islamic Health Commission:** Established in 1984, this local NGO provides emergency medical care in southern Lebanon.
- **Al-Ris'Ala Association for Health Care:** This youth organization is based in Nabatiyah and operates throughout the south. It has played an important role in delivering mine risk education.
- **Lebanese Red Cross:** With centers and volunteers throughout Lebanon at community level, the Red Cross has played an important role in providing victim assistance and delivering mine risk education.
- **Lebanese Social Welfare Association for the Handicapped:** This association runs a rehabilitation centre near Nabatiyah and is involved in victim assistance. The president of the association is Randa Berri, wife of the speaker of parliament.
- **Landmine Resource Centre, Balamand University (LMRC):** The LMRC was founded in 1997 to serve as a resource centre for mine action organizations. In collaboration with other local NGOs it conducted a nationwide study of victims in 1998, which was updated in 2002. LMRC also conducted a socio-economic study of the former occupied areas in southern Lebanon in 2000. It is funded by USAID through World Rehabilitation Fund.

- **Ministry of Social Affairs:** Ministry in charge of all issues related to social welfare and is active in the NDO victim assistance and mine awareness committees.
- **Rene Mouwad Foundation:** Works in north Lebanon in community development projects, agriculture, medical activities, social activities, education.
- **Save the Children Sweden:** Has worked in mine risk education using child to child methodologies and has developed some good, innovative educational materials.
- **Secours Populaire Libanais:** A medical and rehabilitation NGO with offices in Nabatiyah and Saida. Also with representation in the mine awareness and victim assistance steering committees.
- **Social Welfare Association for the Handicapped:** Is a local NGO with a rehabilitation centre in Nabatiyah.
- **Vision Association for the Handicapped:** An important player in mine action, providing victim assistance and delivers mine risk education in the West Bekaa, Rachaiya and Hasbaya districts.
- **World Rehabilitation Fund:** Provides rehabilitation and social integration services for individuals with disabilities, works to prevent injuries and addresses the needs of the social welfare sector, including landmine victims and their families. It established an income generation centre in Jezzine district. It is funded by USAID and UNDP. The Landmines Program aimed at "preventing landmine injuries and managing the social burden of landmines in Lebanon" was initiated in June 1998. WRF supports the Landmine Resource Centre.

NON-MINE ACTION KEY PARTICIPANTS

- **Co-operatives Directorate:** Provided MAG with details of agricultural and other cooperatives active in each district and certain communities and ensured that representatives of different cooperatives were informed of the survey process and invited to attend community interviews.
- **Local Government administrative structures:** heads of provinces, districts and municipalities provided valuable support to the survey through information and facilitating field work.
- **Members of all the communities visited**

Administrative Structures

- **Local Partners:** MAG implemented the Landmine Impact Survey in Lebanon in partnership with the National Demining Office (NDO) of the Lebanese Army. The NDO is the national coordinator of all mine action activities and programers in Lebanon. Regular meetings were held with the Director, Brigadier General George Massaad and other members of the NDO. Two national steering committees work under the auspices of the NDO to co-ordinate victim assistance and mines awareness activities nationwide. The members of these steering committees include non-governmental organizations, UN agencies and relevant ministries. MAG also collaborated closely with members of these committees in the implementation of the survey.

- **Survey Office:** MAG's impact survey offices were located within the NDO building currently located in Hazmieh, Beirut. This allowed for the facilitation of communication between the LIS project and its main stakeholder and allowed for easy liaison with the IMSMA database. For parts of Mount Lebanon and North Lebanon the survey staff were based in Beirut, and commuted out to the field on a daily basis. In other locations, such as the south and the Bekaa Valley, the field staff was based in the actual region.

- **Project staff:** The expatriate staff consisted of a survey manager and a deputy manager. The administration staff consisted of one office manager, an administrator/logistician and one administrative assistant. The database staff consisted of an information management officer, a data editor and one data entry operator. Data was entered into IMSMA by the database staff of the National Demining Office. The impact survey also used the services of a social scientist consultant, Dr Christine Crumrine, a professor at the American University of Beirut.

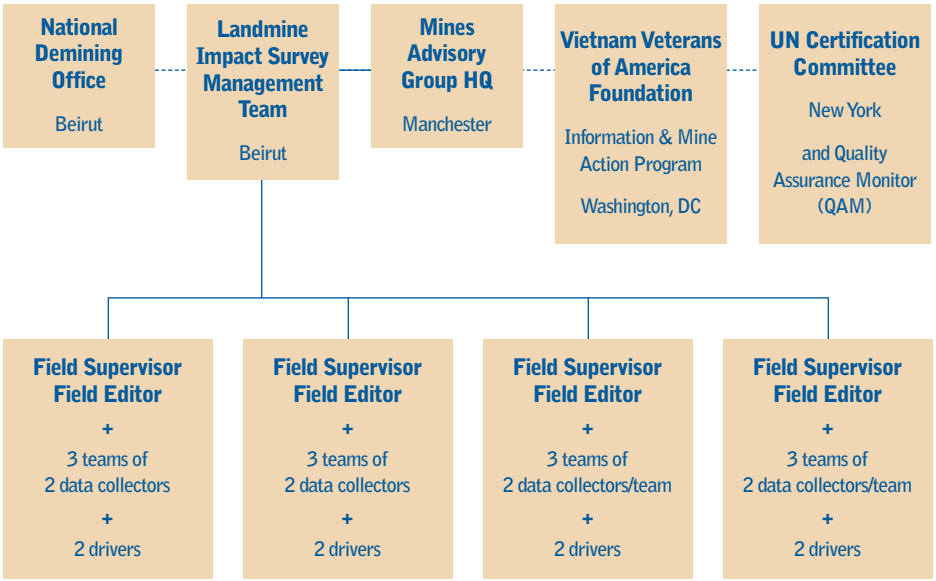
  The field staff consisted of four teams, each composed of one field supervisor, one field editor and six data collectors. The field supervisor conducted preliminary visits, developed the field work-plans and supervised the data collectors work, frequently observing interviews. The field editor checked the data, transferred the data from the questionnaire onto an english language coding sheets and assisted the field supervisor in team management. The data collectors conducted the community meetings and visual verification. Thirteen drivers worked on the survey. A total of 50 local field personnel worked for the survey during field operations.

- **Technical advisory team:** Vietnam Veterans of America Foundation (VVAF) provided technical assistance to the survey team in the fields of social science, survey methodology and design, geographic information systems, information management and statistical analysis.

Quality Assurance Monitor: The United Nations assigned a quality assurance monitor, Mohammad Azim. The UN Landmine Impact Survey Certification Guidelines were the basis for monitoring and evaluation of the progress of the survey. Two reports were produced by the QAM during the course of survey operations. Azim observed community interviews and rechecked some data in the field. He conducted quality checks using IMSMA reports comparing these with both the coding sheets and the original questionnaire. His missions to Lebanon totaled ten weeks, the first at the beginning of fieldwork in October 2002 and the second in January 2003 during field work in south Lebanon.

FIGURE 9

LEBANON LANDMINE IMPACT SURVEY ORGANIGRAM



Finances

BUDGET AND EXPENSES

An original budget of 1.6 EUR million was estimated for the implementation of the Landmine Impact Survey in Lebanon. A funding grant for this amount was signed with the European Commission in February 2002.

After recalculating, MAG estimated that the LIS project in Lebanon would not utilize the budget granted for its implementation. With the agreement of the European Union, funds remaining after the completion of the survey will be used to support MAG's mine clearance activities in southern Lebanon.

Survey budget:

Landmine Impact Survey	1,360,000 EUR	
Mine Clearance	240,000 EUR	(estimation)
Total	1,600,000 EUR	

In addition to the grant from the EC, the Lebanese National Demining Office donated office space, a local telephone connection and the use of utilities (water, electricity and generator) to the survey office, which was located in the NDO compound in Beirut.

The funds expended by the United Nations to cover the costs of the quality assurance monitoring and certification are unknown and are not reflected in this budget.

Survey Methodology in Lebanon

The Lebanon Landmine Impact Survey followed the protocols approved by the Survey Working Group (SWG) for the Global Landmine Impact Survey initiative. These protocols and procedures are part of the standards set by the United Nations Certification Committee. The standard impact survey methodology was also adapted and modified to some extent to fit with the Lebanese context.

The first phase of the survey process was Expert Opinion Collection (EOC). This involved the systematic gathering of information at national, district and province level on the location and number of communities suspected of being contaminated by landmines or unexploded ordinance (UXO). The main sources of this information included the Lebanese Army, United Nations agencies, the Operations Emirates Solidarity program, governors of provinces, district leaders and non-governmental organizations (NGOs).

All communities identified as suspected to be affected were then visited by field supervisors to determine their status. If they were found to be unaffected, a one page form was completed and signed by three members of the community to confirm that the community is not contaminated by mines or unexploded ordinance. If still suspected to be affected, a community interview was arranged to gather data on the impacts of mines and unexploded ordinance. Six to fifteen community members, representing all sectors of the community, in terms of occupation, gender, age, religion and political affiliation, participated in the meeting.

The interview was conducted using a methodology that incorporated some rapid rural appraisal techniques. After an introduction to the survey process, a community mapping exercise was conducted, in which the interview participants were asked to sketch a map of their community and to indicate the mined area(s). A questionnaire was completed to collect data on the background of the community, the impact of mines and UXO and any efforts made to address the problem. The questionnaire was written in modern standard Arabic, but the questions were posed in the Lebanese dialect (which is not found in written form). After the interview, visual verification of the mined areas was conducted, a photograph was taken, a GPS reading of an edge point recorded and a sketch map drawn.

Sketch map produced during community interview.

The survey teams did not perform visual verification in only two cases: when security limited access to certain areas[12] and in those communities lying completely within in the Operation Emirates Solidarity areas 1-4. The OES and the Mine Action Coordinating Centre South Lebanon already had comprehensive data on mined and dangerous areas and so, in order to minimize any potential disturbance to clearance operations, no visual verifications were undertaken in OES areas 1-4.

[12] Security was especially difficult in the south of the country. The survey took place during the war in Iraq and this led to a high security alert status in many areas of South Lebanon, especially along the southern Lebanese border with the Occupied Palestinian Territories and Israel.

Once the community interview was completed, the data was checked, transferred onto a coding sheet and entered into the NDO's IMSMA database.

LEBANON ADMINISTRATIVE STRUCTURE

Administratively, Lebanon consists of 26 districts divided among 6 provinces as follows:

Bekaa Valley:	Baalbek, Beqaa El-Gharbi, Hermel, Rachaya, Zahle
North:	Akkar, Batroun, Bcharre, Koura, Minie Danniyeh, Tripoli, Zgharta
Mount Lebanon:	Aley, Baabda, Chouf, El Metn, Jubail, Kasrouane
Beirut:	Beirut
South:	Jezzine, Saida, Sur
Nabatiyah:	Bint-Jbeil, Hasbaya, Marjeyoun, Nabatiyah

COMMUNITY SELF-IDENTIFICATION

A community was defined in a very practical way by the survey teams—the survey teams started with a list of localities based on administrative structures or cadastral areas. Starting with the gazetteer of the Administration Centrale de la Statistique, a preliminary list of localities was created for each district in each province. This gazetteer was the one being used by the NDO database and research section.

Localities were then visited and the survey teams interviewed local authorities responsible for each cadastral area. A community meeting held in those reported as being affected by mines or UXO. The community members and the leadership were then asked to define their community in spatial and social terms. A spatial definition of the community was especially important for the survey due to the use of geo-referenced data and the geographic information systems used to display this data. A mined or contaminated area both covers the territory of a community and the specificities of each area affect the livelihoods of the community members.

The community self-definition was sometimes different from that of the government gazetteer. This was especially the case spatially, with many communities' territories crossing over into the cadastral areas of other communities and neighboring communities often sharing territory or communal land. As a result, suspected danger areas were also shared between these communities.

In some cases, a locality listed on the gazetteer was no longer inhabited and was termed a 'phantom' locality in the database. In other cases, a locality was defined by the community members themselves as being part of a larger community—these 'related' communities were treated as being part of the larger one, with only one community meeting occurring for both.

In addition, the survey teams relied on the mukhtar and other community members to define the community in a number of other ways. The same method was used for definitions of whether the community was defined as 'rural', 'semi-urban' or 'urban'. The mukhtars defined each community during the preliminary

visit by the supervisor and in accordance with the community's records. Estimates were also made by the mukhtars of the number of people actually living in each affected community, rather than those persons appearing on the electoral role but not actually living in the community as is a common occurrence in Lebanon.

Using mukhtars and community leaders to define basic characteristics at community level is common practice in Lebanon. According to academics working at the American University of Beirut and the Université Saint Joseph, the Ministry of the Interior has recognized that mukhtars are the only reliable source of data on their communities.

EXPERT OPINION COLLECTION AND SELECTION OF AREAS FOR STUDY

The process of gathering information concerning affected community, known as Expert Opinion Collection, started immediately upon the arrival in-country of the LIS management team. The process continued down through the administrative levels until an initial list of suspected affected communities was created. This list was used to plan survey operations and community meetings by survey teams. Lebanon proved to be a relatively data-rich environment and survey team had access to several sources of expert opinion.

1. The Lebanese Army Database

The Lebanese Army data on Dangerous and Mined Areas located in the National Demining Office database was the first and most valuable source of EOC used by the survey teams. All the communities that fell inside a radius of three kilometres of any dangerous or mined area were considered to be suspected affected.

2. The Landmine Resource Centre Database

A national survey was carried out in 1996 in coordination with the Lebanese authorities, mine action NGOs and the Landmine Resources Centre (LMRC). The LMRC victim database contains information on landmine victims in Lebanon. Although primarily created for victim assistance purposes, the database proved to be a useful source of expert opinion, by indicating the location of mine incidents. The victim survey was conducted in 1996 and the information has been updated regularly.

3. NGOs and local associations

A number of local associations and non-government organizations (NGOs) assisted with EOC. The Lebanese Red Cross distributed copies of the gazetteer to their regional centers, which were returned to the LIS team with suspected communities indicated. The Rene Moawad Foundation provided information about the north of Lebanon and representatives from mine action NGOs provided expert opinion about the south of the country. The Directorate of Cooperatives also assisted survey teams to meet with local cooperative representatives during their work in the different districts of Lebanon.

4. Mine Action Coordination Centre South Lebanon (MACCSL)

The MACCSL provided information on clearance operations and community liaison activities in Areas 1-4 of Operations Emirates Solidarity. Based on this information, communities were selected for interviews. All communities with a status of 'cleared' were considered as no longer being affected and not visited by the LIS teams. All other communities still undergoing clearance were surveyed. For more details on the work of the MACCSL and the OES, please see the section titled, 'Summary of Past Mine Action'.

The initial EOC phase showed that all six provinces in Lebanon were suspected to be affected to some degree by landmine and UXO contamination. Only the municipality and province of Beirut, which had been extensively cleared following the end of hostilities, was found to be non-affected. After this information was analyzed, field supervisors moved on to collect information from regional government authorities, provincial governors and then on to district leaders. Out of the 25 districts in Lebanon, all 25 of them were initially suspected to have some kind of impact from remnants of war. A list of suspected areas and communities was created for each affected district and this formed the basis for operational planning and data collector meeting schedules.

OPERATIONAL PLAN AND DEPLOYMENT OF DATA COLLECTOR TEAMS

One field team made up of a field supervisor, one field editor and three data collector pairs was deployed to each affected district. As the team completed a district they then moved systematically on to the next. The survey was conducted in four phases:

1. Bekaa Valley province (pilot test).
2. North Lebanon and Mount Lebanon provinces.
3. South Lebanon and Nabatiyah provinces.
4. OES areas 1-4 in southern Lebanon.

PRE-TESTS AND PILOT TEST

Two pre-tests were held to field test the survey instruments. The first pre-test was held in Aley district in Mount Lebanon province from 2nd to 6th September 2002. A total of 11 communities were visited and community interviews held. For the second pre-test, teams were deployed from 31st August to 4th September, with nine communities were visited in Jezzine district in Nabatiyah province. All the communities visited during the Pre-tests were resurveyed during the main data collection phase.

The pre-tests demonstrated that:

1. The *preliminary visits by the supervisors* need to be of high quality to allow for the collection of valuable background information and actively encourage

the community leaders to invite a representative group. This background information was used by the data collectors in order to have an initial understanding of the community before the interview started. The data collectors had to be aware both before and during the interview of the different groups and how to include as many of them as possible.

2. The *need for monitoring and evaluation systems* was also stressed. Without these systems, it would have been impossible to monitor and follow-up the data flow and verification process. Checklists of materials and monitoring/verification forms were developed and used.

3. The need for the survey teams to *stress the neutrality of the survey.* The impact survey was not interested in who laid the mines or placed the bombs, but in the current difficulties facing the community. It was also important that teams were not to discuss issues external to the survey while in the communities.

4. *Modifications to the questionnaire.* The questionnaire was modified to include some of the lessons arising out of the Pre-tests. The wording of certain questions was clarified, some of the longer questions were split to make them easier for the data collectors to handle and two questions were added to address the issue of the impact of the mine awareness programs in communities.

PRELIMINARY VISITS TO SUSPECTED COMMUNITIES

After creating the list of communities from expert opinion, the first step for the field supervisors was to visit each suspected community. The field supervisor met initially with the head of the community to determine whether or not it was really considered affected by the community, and if so, to prepare for a community meeting.

In Lebanon, there were usually several individuals who were considered leaders of their community: mukhtars (mayors), municipality heads, priests, imams, sheikhs, NGO representatives or school directors. It was often necessary to visit all these individuals, in order to ensure that communities were classified correctly regarding their affected or non-affected status. In each community the field supervisor then had to decide with which individual would organize the community meeting, sometimes a decision complicated by different local rivalries. If the mukhtar or municipality head was not present in the community, or due to long periods of absence was unfamiliar with it, the field supervisor would meet with other responsible members of the community. In the south, representatives of NGOs and CBOs were also met with during preliminary visits to the community.

Non-affected communities

If the community leader indicated that the community was, in fact, not affected by mines or UXO, then a simple form was completed and signed by the community leader. Two additional signatures on this form were obtained, independent of

this meeting to ensure that the community was correctly classified. If any doubts still remained after this, the field supervisor also sought the opinion of several sectors of the community before confirming the community mine free. Sometimes this required considerable time, as often there were strongly differing opinions at community level.

For example, the mayor and municipality head might be adamant that the community was not affected, whereas other members of the community, such as shepherds who have closer contact with the land, indicated that it was. In these cases, the field supervisor had to negotiate carefully with the community leadership in order to set up a community interview. Opposition to an interview sometimes resulted from fear of the stigma of being labeled as mined—thus, scaring away investment and tourism—or concern that the community would be disrupted by demining activities.

Affected communities

In the preliminary meeting, the field supervisor explained the purpose of the impact survey and the community interview process. She/he then asked the community head to arrange a meeting, stressing the importance of having a community meeting that represented different occupations, ages, gender, religious sects and political affiliations.

In a slight variation from standard procedure, during the preliminary visit the field supervisor also completed questionnaire 'Segment 4: Background Observations on this Community' with the head of community. This was done in order to save time at the actual community meeting, to give the community leadership a better understanding of the survey and to provide field supervisors with more opportunities to assess the community. This also gave additional information to the data collectors to assist them in preparing for the community meeting.

An important consideration in planning the community meeting was finding a day and time that was convenient for the participants. Many community members were working in Beirut and had homes in both the city and village. To accommodate for this, community meetings were usually organized for weekends or in the evenings, when more people would be in the village.

In most cases, the preliminary visits were conducted by the field supervisor. However, due to the high numbers of false positives, in some areas data collector teams were used to conduct some preliminary visits. 'False positives' are those communities originally designated as affected by expert opinion but which are surveyed and found to be non-affected.

Adaptation of the procedure for southern Lebanon

Because of the complex political nature of southern Lebanon far more attention had to be paid to make community interviews representative and to ensure reliable data was collected. This work was facilitated by NGOs active in mine risk education and victim assistance. These NGOs had an in-depth knowledge of the region and strong, local networks. To ensure the full representation of all these

networks and to benefit from their knowledge, it was decided to appoint a focal point from each NGO for each district in which they were active. These NGO focal points provided expert opinion at district level, by identifying suspected affected communities. They also facilitated the work of the field supervisors by identifying an individual in each community who was knowledgeable about the mine problem who could attend the community interview.

Demographics of community interviews

Of 306 surveyed communities a total of 3,179 key informants were recorded on the group interview attendance sheets. The vast majority were men, making up 82 percent of the participants.

Concerted efforts by the teams to broaden involvement meant that 581 participants or 18 percent were women. This was a higher percentage than in most other impact surveys to date. Most of the men and women interviewed were more than 15 years old, with only 14 respondents being aged between five and 14 years of age.

Thirty-two of the participants described themselves as survivors of mine incidents.

THE COMMUNITY MEETING

The community meeting was conducted by a data collector team of two, usually made up of one male and one female. At the beginning of the interview the data collectors gave a standard introduction and completed an attendance sheet. When a representative group was thought to be present, the data collectors started the interview.

The interview commenced with a community mapping exercise—this was drawn by community members on a large blank piece of paper, using large, colored marker pens. The community map was then displayed in a place that all participants could see and was used during the remainder of the interview to focus the participants on the interview and on the particular mined area being discussed. The data collectors then worked through each of the questionnaire modules—each mined area being numbered and having one module filled out. Each recent victim was linked to the mined area where the accident occurred and the victim module completed for each one (see explanation of the questionnaire modules below).

The length of time taken in each interview depended on the number of mined areas, the number of recent victims and the amount of general discussion generated. A typical interview would last for about three hours.

After the interview the data collectors went with a member of the community to conduct a visual verification of the mined areas from a safe viewing place. A GPS reading was taken of each mined area, in order to place the mined area on a

digital map in IMSMA. A sketch map was also drawn, showing distance and bearing of the mined area from the visual verification point. A photograph was also taken, and the description of the mined area provided by the community checked. In addition to this standard procedure, in Lebanon, the data collectors cross-checked the impact survey mined areas with the Lebanese Army dangerous areas. Where possible, and depending on how much of the mined area was visible and the skills of the data collectors, they also drew the shape of the mined area onto the army map.

Community meetings such as this one in Hadath El Jebbe in North Lebanon were held in all communities affected by landmines or UXO.

In cases where the data collectors believed the community interview was not sufficiently representative, they went to meet other members of the community. Separate meetings were held with, for example, groups of women, different religious affiliations or political groups.

THE QUESTIONNAIRE

The questionnaire contains four modules that mirror the structure of the relational database (IMSMA) that stores the information. The modules are further subdivided into segments that anticipate the logical flow of conversation. The modular structure of the questionnaire appears in the box, "The Modules and Segments of the Community Interview Questionnaire" (see text box on next page).

Modifications to the survey tools

The survey tools were adapted to Lebanon using advice from various sources. A draft version of the questionnaire was distributed to the main survey stakeholders, including the National Demining Office, UN agencies and local NGOs for feedback. Meetings were also held with social scientists and other academics from the Université Saint Joseph, American University of Beirut, Balamand University and the Lebanese University. Valuable input also came from the senior field staff, which included several sociologists, an agricultural scientist, a political scientist, an economist and a social worker. As well, the translation and retranslation of the questionnaire was very carefully worked on and discussed by the staff. The questionnaire was further modified following field testing during the two pre-tests and the pilot test.

In addition to modification of some questions, some questions were added to the generic questionnaire. The socio-economic blockage concept posed some problems in Lebanon, due to the rapid post-war changes in the country. It was hypothesized that land that had been used for agriculture was contaminated by mines, but that the community would not want to return this land to agricultural production due to the decline of this sector in Lebanon. The community would often prefer to use the land for other purposes such as construction for housing or tourism. It was decided, therefore, to add some questions about the planned

The modules and segments of the LIS questionnaire

Community-level module—Part 1

Segment 1: Identification

Segment 2: Certification

Segment 3: List of attachments and checking

Segment 4: Background observations on this community

Segment 5: Introduction

Segment 6: Community mapping and mined areas summary

Segment 7: Historical context

Segment 8: Total victim numbers

Mined-area module (one for each mined area)

Segment 9: Reference point, description and size

Segment 10: Marking, terrain, suspected ordnance

Segment 11: Impact

Segment 12: Verification from a safe point

Individual victim module (one for each recent victim)

Segment 13: Victim descriptors

Segment 14: Incident and consequences

Community-level module—Part 2

Segment 15: Victims of less recent date

Segment 16: Mine action

Segment 17: End of the meeting

Segment 18: Observations after the meeting

Meeting attendance sheet

future use of such land and what development projects were planned for the area. Due to the findings of the pre-tests in which communities expressed a concern about other socio-economic issues they believed to be more important than landmines, a question was also added which asked whether there were any other obstacles to using the land, apart from mines or UXO.

Another finding early on the survey process indicated that some areas identified as contaminated were not considered as a problem by all of the community. And, during visual verification, it was further found that the land was being intensively used. 'Weak suspicion' areas were those areas that did not strictly contain 'blockages' in a true sense of the word—that is, areas suspected by the community to be affected which are blocked from being used by the community and which can negatively impact on the community. Often, these pieces of land were lightly contaminated, had been cleared at some time during the past by various state or non-state actors or had been cleared over time by the community itself. Usually, a

small minority (or even one person) of the community still considered the area dangerous. This information was collected by the data collectors and a check box was added to the coding sheet and entered into the database to indicate if a community fell into this category of 'weak suspicion'. This would enable these communities to be separated out from other communities when planning clearance operations.

DATA PROCESSING AND DATA CHECKS

After completion of the interview, the data collectors checked the files for completeness and then passed them to the field editors. The field editors rechecked the file and addressed any inconsistencies or missing data, where necessary rechecking with the data collectors or even the community leadership itself. Field editors transferred the data from the Arabic-language questionnaire onto an English-language coding sheet. This coding sheet enabled data quality checking and the fast, efficient entry of data into the English-language IMSMA database at the National Demining Office.

The field editor also used these meetings with data collectors to verify the impact score for each community, indicating if the impact on the community of landmines or UXO was high, medium, or low. This score was established by giving weights for certain impact indicators: the presence of mines and/or UXO, the socio-economic impact on the community, and the number of recent victims. The experience of the data collectors, their observations and ideas regarding the communities and its problems were also summarized and entered as text into the questionnaire. The impact scoring system is further explained in a separate section of this report.

All data, including maps, questionnaires, photographs and other documentation was sent on to the LIS office in Beirut. Here, the data was rechecked by a data editor and sent on to the NDO database operators. The data editor also proved to be an important link between the field teams and the database personnel. The location of the LIS office in the same building as the NDO database allowed for ease of communication and coordination.

Weekly meetings were held between the survey management, the senior field staff and data management officer to discuss pertinent issues related to data quality and field work. Field teams also held weekly meetings to discuss issues arising in their teams during data collection.

Before leaving the country, the survey manager and information management officer worked in close collaboration with a technical team from the Vietnam Veterans of America Foundation, consisting of a data management consultant, a sociologist and a medical epidemiologist. Together they produced the final data analysis and the presentation of the results and worked on the production of a draft national report. Key sections of the final report have also been translated into Arabic.

FALSE NEGATIVE SAMPLING AND CONCEPT OF SAMPLING FRAME

Communities were selected for "false negative" sampling in accordance with the Survey Working Group's "Landmine Impact Survey Sampling Protocol for High Coverage." This sampling method, adapted from lot quality assurance practices, was used to test for false negatives among communities thought to be non-affected. The sampling universe was the set of all non-suspected communities in affected districts that had not been visited under the systematic reconnaissance of suspected affected communities.

"False negatives" are communities said by local expert informants to be non-affected, but which are later found to be affected. False negatives were rare; most informants tended to generate false positives.

"True negatives" are those communities believed to be non-affected and which were visited and confirmed to be so.

The sampling frame was created using the gazetteer obtained from the Lebanese government department, the Administration Centrale de la Statistique (Central Administration of Statistics). These lists of communities and maps were checked with local authorities when teams first visited a district. Teams added any new communities to the map, noted any communities that no longer existed and tracked the movement of others. For example, some localities listed in the gazetteer were abandoned during the war, with the population moving on to completely different area but using the same locality name.

Using these tools, the sampling method ensured that the communities sampled were geographically dispersed and gave a good coverage of all areas of Lebanon.

The teams visited all six provinces, with 22 out of 24 districts being found affected to some degree by landmines or UXO. On average, 12.7 communities per district were sampled for false negatives.

If any community sampled for false negatives or indicated during the reconnaissance phase that it was affected by landmines or UXO, it was surveyed. In addition, the original expert opinion that classified nearby communities as non-affected was rejected and nearby areas were visited to establish if they were affected. If, during this process, another false negative were found, then any communities falling within a three kilometer diameter around this community would also be visited for verification.

THE TOTAL VISIT AND SURVEY EFFORT

All six provinces were visited and all but two districts and one province (Beirut municipality) were found to be affected. A total of 1,380 communities were visited by survey teams to verify the com-

TABLE 29

TOTAL VISIT AND SURVEY EFFORT

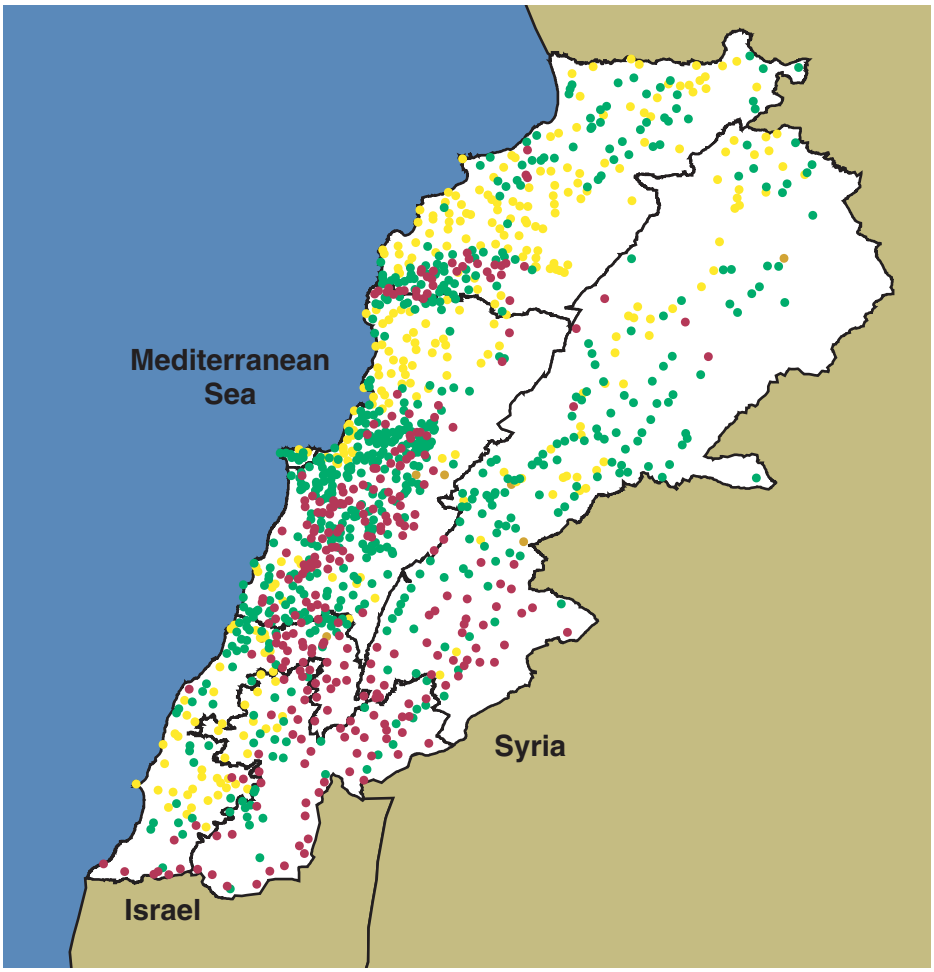
	Actual status		
Expert opinion	Total	Affected	Not affected
Affected	1,065	298	759
Not affected	315	8	307
Total	1,380	306	1,066

Note: Includes nine phantom communities and 182 communities that were designated by the community itself to be related to, and included in, a larger community.

MAP 5

TOTAL SURVEY EFFORT

- True Positive
- False Positive
- True Negative
- False Negative



munity's status and as part of the sampling frame. From this a total of 306 community interviews were conducted.

The LIS team received regular updates of the status of clearance work in the OES Areas via a weekly synchronization of the MACCSL database with the NDO database.

Map 5 demonstrates the extent of the survey teams' efforts and Table 29 (previous page) summarizes this information.

USE OF EXTERNAL DATA BODIES

The survey team expended a considerable amount of time and energy trying to obtain external socio-economic data bodies suitable to inform the LIS findings in ways that would improve their value for strategic planning. After some time, the one success was the Agricultural Census Office of the Ministry of Agriculture, which provided data extracts from its 1999 national agricultural census. This data was processed in a way to permit it to be cross-tabulated with LIS data.

CASE STUDIES

Four case studies were undertaken in affected communities to generate qualitative information on community characteristics and experiences of households as well as individual accident survivors. This information complemented the more quantitative attributes of the impact survey's results.

The specific objectives of the case studies were to provide an insight into and understanding of:

- The main problems affecting the community including that of landmines/UXOs, the community's perception of these and any coping mechanisms to these challenges.
- What conditions, if any, benefited existing residents and determined success of their coping mechanisms given the prevailing challenges, forces, attitudes, and support programs?
- The existence of demand for landmine clearance as a high priority, and if possible, ascertain willingness and the ability of the affected communities to contribute towards landmine clearance using cost-sharing and/or cost-recovery mechanisms.

Communities were selected to represent a diverse range of geography, socio-demographics, ethnicity and exposure to nature and magnitude of conflict. Two of the communities were from the south, one from the north and one from the central part of the country. The LIS impact scoring for the case study communities was 'high' for three and 'medium' for one—all four of the communities had recent victims. Each field team was made up of two members of the Landmine Impact Survey senior staff.

Each team after receiving a briefing and written guidelines on obtaining informed consent and content, equipped with digital cameras and GPS units, spent a minimum of two days in each community. In each case, a cross section of community members was interviewed including mine incident survivors and their families, without being too intrusive to the latter. The case study reports are included in one of the annexes of this report.

Planning, field work and report writing for case studies was guided by the VVAF medical epidemiologist, in collaboration with the LIS manager and VVAF social scientist.

Appendices

Appendices

APPENDIX 1:

Surveyed Communities by District[13]

Bekaa Valley Province

	Community	Suspected	True Positve	False Negative	Details
Baalbek	Ainata	1	1	0	
	Chaat	1	1	0	
	Ras Baalbek	0	0	1	
	Taraya	1	1	0	
	Yammoune	1	1	0	
	Younine	1	1	0	
	TOTAL	5	5	1	
Beqaa El-Gharbi	Aammiq	1	1	0	
	Ain et Tine	1	1	0	first confirmed FP. Rechecked by QA/Jenny.
	Baaloul	1	1	0	
	Joub Jannine	1	1	0	
	Kamed el Laouz	1	1	0	first confirmed FP.
	Khiara	1	1	0	
	Lala	1	1	0	
	Loussa	1	1	0	It's an abandoned village, nobody lives there. Loussa people live in Maidoun, Machghara & Qillya.
	Machghara	1	1	0	
	Maidoun	1	1	0	
	Manara	1	1	0	
	Qillaya	1	1	0	
	Saalouk	1	1	0	Related to Aamiq, nevertheless a separate meeting was conducted in it.
	Souairi	1	1	0	
	Zellaya	1	1	0	
	TOTAL	16	16	0	
Rachaiya	Aaiha	1	1	0	
	Aaqabe	1	1	0	
	Ain Hircha	1	1	0	
	Aita el Foukhar	1	1	0	
	Baka	1	1	0	
	Bire	1	1	0	
	Bkiffa	1	1	0	
	Dahr el Ahmar	1	1	0	
	Deir el Aachayer	1	1	0	
	El Haouch	1	1	0	
	Kfar Mechki	1	1	0	
	Kfarqouq	1	1	0	
	Khirbet Rouha	1	1	0	

[13] All spelling and administrative divisions are based on the Administration Centrale de la Statistique, 'Répertoire des Circonscriptions foncières, des Villes et des Villages au Liban', 2ieme Edition, Beyrouth, Mars 1998.

	Community	Suspected	True Positve	False Negative	Details
Rachaiya (cont.)	Majdal Balhis	1	1	0	
	Marj Es Simah	1	1	0	Related to Rachaiya.
	Mdoukha	1	1	0	
	Mhaidse	1	1	0	
	Rachaiya	1	1	0	
	Rafid	1	1	0	
	Tannoura	1	1	0	
	Yanta	1	1	0	
	TOTAL	21	21	0	
Zahle	Haouch Moussa	0	0	1	Haouch Moussa is also known as Anjar.
	Houch el Oumara	0	0	1	
	TOTAL	0	0	2	
Al-Beqa	TOTAL	42	42	3	
Batroun	Chabtine	1	1	0	
	Chnata	1	1	0	One CM for Chnata el Tahta and Chnata el Fawqa.
	Daael	1	1	0	
	Dahr Abi Yaghi	1	1	0	
	Deir Billa	1	1	0	
	Douq	1	1	0	
	Harbouna	1	1	0	
	Hardine	1	1	0	
	Jrebta	1	1	0	
	Kfar Hatna	1	1	0	
	Kfour El Aarbi	1	1	0	
	Kour	1	1	0	
	Masrah	1	1	0	
	Niha	1	1	0	
	Sghar	1	1	0	
	Sourat	1	1	0	
	Tannourine el Faouqa	1	1	0	
	Toula	1	1	0	
	Zane	1	1	0	
	TOTAL	19	19	0	
Bcharre	Hadet Ej Jebbe	1	1	0	
	Mazraat Aassaf	1	1	0	
	Mazraat Beni Saab	1	1	0	
	Qnat	1	1	0	
	TOTAL	4	4	0	
Koura	Bziza	1	1	0	
	El-Majdel	1	1	0	
	Zgharta Al Mtewleh	1	1	0	
	TOTAL	3	3	0	

Bekaa Valley Province

	Community	Suspected	True Positve	False Negative	Details
Minie Danniyeh	En Nabi Youchaa	1	1	0	
	TOTAL	1	1	0	
Zgharta	Aachach	1	1	0	
	Miryata	1	1	0	
	TOTAL	2	2	0	
Ash-Shimal	TOTAL	29	29	0	
Jezzine	Aaramta	1	1	0	
	Ain Majdalian	1	1	0	
	Al Ayshiya	1	1	0	
	Al Jarmak	1	1	0	
	Al Louazie	1	1	0	
	AL Rihane	1	1	0	
	Anane	1	1	0	
	Besri	1	1	0	
	Bkassine	1	1	0	
	Bouslaya	1	1	0	
	Daraiya	1	1	0	
	Haitoura	1	1	0	
	Hidab	1	1	0	
	Homsiye	0	0	1	
	Istable or Ain El Mir	1	1	0	
	Jezzine	1	1	0	
	Jisnaya	0	0	1	
	Jurnaya	1	1	0	
	Kafer Falous	1	1	0	
	Kafer Houna	1	1	0	
	Karkha	1	1	0	
	Mlikh	1	1	0	
	Mrah Al Hbass	1	1	0	
	Qaytoule	1	1	0	
	Rimat	1	1	0	
	Saidoun	1	1	0	
	Sejoud	1	1	0	
	Sfaray	1	1	0	
	Snaya	1	1	0	
	Srire	1	1	0	
	Wadi Ellaimoun	1	1	0	
	Zhalta	1	1	0	
	TOTAL	30	30	2	

North Lebanon Province

	Community	Suspected	True Positve	False Negative	Details
Saida	Berti	1	1	0	
	Kafer Hatta	1	1	0	
	Kafer Milki	1	1	0	
	Sarafand	1	1	0	
	Tambourit	1	1	0	
	TOTAL	5	5	0	
Sur	Ad Duhayrah	1	1	0	
	Al Joubayn	1	1	0	
	Al Mansuri	1	1	0	
	Alma Al Shaab	1	1	0	
	Arzun	1	1	0	
	As Siddiqin	1	1	0	
	Bustan	1	1	0	
	Majda Zun	1	1	0	
	Marwahin	1	1	0	
	Naqoura	1	1	0	
	Shamaa	1	1	0	2 Cleared Areas (CA).
	Srifa	1	1	0	Nominated by MACCSL as suspected.
	Tayr Harfa	1	1	0	
	Yarin	1	1	0	
	Zibqin	1	1	0	
	TOTAL	15	15	0	
El-Jenoub	TOTAL	50	50	2	
Aley	Aabey	1	1	0	
	Aaramoun	1	1	0	
	Ain Al Saideh	1	1	0	
	Ain Anoub	1	1	0	
	Ain Dara	1	1	0	
	Ain er Remmane	1	1	0	
	Ain Ksour	1	1	0	
	Aitat	1	1	0	
	Aley	1	1	0	
	Bedghane	1	1	0	
	Bhamdoun	1	1	0	
	Bkhechtay	1	1	0	
	Bmahray	1	1	0	
	Bmekkine	1	1	0	
	Bnaiye	1	1	0	
	Bou Zraide	1	1	0	
	Bsous	1	1	0	
	Btater	1	1	0	
	Charoun	1	1	0	
	Chouifete	1	1	0	
	Deir Qoubil	1	1	0	

South Lebanon Province

Mount Lebanon Province

	Community	Suspected	True Positve	False Negative	Details
Aley (cont.)	Dfoun	1	1	0	
	Fsaqine	1	1	0	Named also Bsatine.
	Ighmid	1	1	0	
	Kahale	1	1	0	
	Kaifoun	1	1	0	
	Majdalaya	1	1	0	
	Majdel Baana	1	1	0	
	Mansouriye	1	1	0	
	Mechakhti	1	1	0	
	Mechrefe	1	1	0	
	Qmatiye	1	1	0	
	Ramliye	1	1	0	
	Sofar	1	1	0	
	Souq el Gharb	1	1	0	
	TOTAL	35	35	0	
Baabda	Aabadiye	1	1	0	
	Aarbaniye	1	1	0	
	Arayia	1	1	0	
	Bsaba Baabda	1	1	0	
	Chiayah	1	1	0	
	Chouit	1	1	0	
	Dlaibe	1	1	0	
	Falougha	1	1	0	
	Jouar el Haouz	1	1	0	
	Kfar Selwan	0	0	1	
	Kfarchima	1	1	0	
	Qornayel	0	0	1	
	Qoubbeiaa	1	1	0	
	Qssaibe	1	1	0	
	Qtale	1	1	0	
	Ras el Harf	1	1	0	
	Ras el Metn	1	1	0	
	Rouisset el Ballout	1	1	0	
	Salima	1	1	0	
	Zandouqa	1	1	0	
	TOTAL	18	18	2	
Chouf	Ain El Haaour	1	1	0	
	Ain Zhalta	1	1	0	4 Dangerous Areas (DA).
	Baaqline	1	1	0	
	Bchatfine	1	1	0	
	Beit Ed Dine	1	1	0	
	Benoeti	1	1	0	
	Bkifa	1	1	0	
	Borjein	1	1	0	

	Community	Suspected	True Positve	False Negative	Details
Chouf (cont.)	Bsaba El Chouf	1	1	0	
	Chourit	1	1	0	
	Deir Dourite	1	1	0	
	Deir El Qamar	1	1	0	
	Deir Qouche	1	1	0	
	Halioune	1	1	0	
	Hasrout	1	1	0	
	Jahliye	1	1	0	
	Jlailiye	1	1	0	
	Joun	1	1	0	
	Kfar Faqoud	1	1	0	
	Kfar Him	1	1	0	
	Kfar Katra	1	1	0	
	Kfar Niss	1	1	0	
	Knisse	1	1	0	
	Maaser Beit ed Dine	1	1	0	
	Mechref	1	1	0	
	Mghairiye	1	1	0	
	Mtoulle	1	1	0	
	Naame	1	1	0	
	Niha	1	1	0	
	Ouadi Bnahle	1	1	0	
	Sibline	1	1	0	
	Sirjbal	1	1	0	
	Wardeniyeh	1	1	0	Newly-added village.
	Zaarouriye	1	1	0	
	TOTAL	34	34	0	
El Metn	Ain et Toufaha	1	1	0	
	Baskinta	1	1	0	
	Bteghrine	1	1	0	
	Chouaiya	1	1	0	
	Chrain	1	1	0	
	Douar	1	1	0	
	Mar Moussa Ed Daouar	1	1	0	
	Mtein	1	1	0	
	Qaaqour	1	1	0	
	Qornet El Hamra	1	1	0	
	Zaghrine	1	1	0	
	Zahriye	1	1	0	
	TOTAL	12	12	0	

Mount Lebanon Province

	Community	Suspected	True Positve	False Negative	Details
Jubail	Aaqoura	1	1	0	
	Afqa	1	1	0	
	Barbara	1	1	0	
	Chmout	1	1	0	
	Fghal	1	1	0	
	Kfar Kidda	1	1	0	
	Maad	1	1	0	
	TOTAL	7	7	0	
Kasrouane	Aajaltoun	1	1	0	
	Balloune	1	1	0	
	Biqaatet Kannane	1	1	0	
	Dlebta	1	1	0	
	Jieta	1	1	0	
	Kfar Dibiane	1	1	0	Kfar Debiane was surveyed along with Faqra and Aayoun.
	Qlaiaat	1	1	0	
	TOTAL	7	7	0	
Jabai-Lubnan	TOTAL	113	113	2	
Bint-Jbeil	At Tiri	1	1	0	9 CA + 2 DA.
	Aynata	1	1	0	2 CA.
	Ayta Ash Shaab	1	1	0	
	Aytarun	1	1	0	
	Baraachit	1	1	0	
	Bayt Yahun	1	1	0	2 CA.
	Frun	1	1	0	
	Ghadouriyah	1	1	0	
	Haddathah	1	1	0	Clearance is on going.
	Haris	1	1	0	
	Kafra	1	1	0	
	Kherbet Selem	1	1	0	
	Marun Ar Ras	1	1	0	
	Ramiyah	1	1	0	
	Rumaysh	1	1	0	
	Shaqra	1	1	0	4 CA+ 2 DA.
	Yarun	1	1	0	
	Yater	1	1	0	3 CA.
	TOTAL	18	18	0	
Hasbaya	Abou Quamha	1	1	0	
	Ain Qenia	1	1	0	
	Al Fardis	1	1	0	
	Al Meri	1	1	0	
	Al Wazani	1	1	0	
	Chebaa	1	1	0	
	Dellafeh	1	1	0	
	Hasbaya	1	1	0	

	Community	Suspected	True Positve	False Negative	Details	
Hasbaya (cont.)	Hebbariye	1	1	0		Mount Lebanon Province
	Kafer Chouba	1	1	0		
	Kaoukaba	1	1	0		
	Kfair Ez Zeit	1	1	0	Kfair and Kfair ez Zeit are the same village.	
	Mimess	1	1	0		
	Rachaya Al Foukhar	1	1	0		
	TOTAL	14	14	0		
Marjeyoun	Al Aadeisse	1	1	0		Nabatiyah Province
	Al Boueida	1	1	0		
	Al Khiam	1	1	0		
	Al Qalaa	1	1	0		
	Al Qantarah	1	1	0		
	At Taibe	1	1	0	3 DA.	
	Blate	1	1	0		
	Blida	1	1	0		
	Deir Syriane	1	1	0		
	Dibeen	1	1	0		
	Ebel Es Saki	1	1	0		
	Houla	1	1	0		
	Jdaidet Merjeyoun	1	1	0		
	Kafer Kela	1	1	0		
	Majdel Silm	1	1	0		
	Markabe	1	1	0		
	Meiss Al Jabal	1	1	0		
	Mhaibeb	1	1	0		
	Sarda & Al Amra	1	1	0	Related to Al Aamra.	
	TOTAL	19	19	0		
Nabatiyah	Ain Qana	1	1	0		
	Al Nabattiya Al Faouqa	1	1	0		
	Arab Salim	1	1	0		
	Arnoun	1	1	0		
	Habboush	1	1	0		
	Jarjouaa	1	1	0		
	Jbaa	1	1	0		
	Kafer Fila	1	1	0		
	Kafer Roummane	1	1	0		
	Kfar Tibnite	1	1	0		
	Kfour	1	1	0		
	Qaaqaaiyet El Jisr	1	1	0		
	Sarba	1	1	0		
	Yohmor	1	1	0		
	TOTAL	14	14	0		
	GRAND TOTAL	306	299	299		

APPENDIX 2:

Community Status for Related Affected Towns

Province	District	Community	Detail
Bekaa Valley	Baalbek	Rasm El Hadet	Related to Chaat.
	Rachaiya	Mazraat Jaafar	Related to Haouch.
		Nabi Safa	Related to Kfar Mechki. One Community Meeting (CM).
North Lebanon	Batroun	Beit Kassab	Related to Hardine.
		Bqaiaa	Related to Masrah.
		Dahr el Qotlob	Dahr el Qotlob is a neighborhood in Chabtine.
		Deir Mar Youssef	Related to Jrebta one CM was conducted for both.
	Koura	Zakzouk	Related to El-Majdel, same CM.
South Lebanon	Jezzine	Aaqmata	Hill with bushes related to Aaramta.
		Al Ouzaaiye	Agricultural land related to Ayshiye.
		Al Qatrani	Agricultural land with few houses related to Daraiya.
		Baanoub	Agricultural land related to Quatale.
		Chbail	Agricultural land related to Daraiya.
		Chquadif	Related to Rimat.
		Dahr Ed Deir	Related to Rimat.
		Deir Mzeiraa	Agricultural lands related to KaferHoune.
		Demachqiye	Related to Al Jarmak, but now it's abandoned.
		Haytoule	Relates to Wadi El-Laimoun.
		Jouwaar El Khaoukh	Agricultural land related to KaferHoune.
		Khallet El Khazen	Related to Al Rihan.
		Mahmoudiye	Agricultural land related to Ayshiya.
		Mazraat Aadour	Agricultural land related to Aaramta.
		Mazraat Al Aarqoub	Agricultural land with few houses related to Al Jarmak.
		Mazraat Louzid	Agricultural land related to Al Rihan.
		Mazraat Rehbane	Related to Bkassine.
		Mazzrat Jabal Tour	Agricultural land related to Bkassine.
		Mrah Bou Chdid	It's a forest related to Qaytoule.
		Ouardiye	Agricultural land related to Al Rihan.
		Qattine Jezzine	Agricultural land related to Hidab.
		Qrouh	Agricultural land related to Al Rihan.
		Quatale	Small village, members now live in Anane.
		Roummane Jezzine	Agricultural land related to Bkassine.
		Tamra	Agricultural land related to Al Jarmak.
		Zighrine Jezzine	Related to Aayshiye.

Province	District	Community	Detail
South Lebanon	Saida	Sfenti	Related to the village of Kafer Milki. One CM held for both.
	Sur	Abu Shash	Related to Tayr Harfa.
		Al Bayyadah Sour	Related to Shamaa.
		Al Matmura	Related to Ad Duhayra
		Ash Shawmarah	Related to Naqoura.
		Bouyout Al Sayed	Related to Al Mansuri.
		Marat Al Aqabah	Related to Al Mansuri.
		Mazraat Aaiya	Related to As Siddiqin.
		Mazraat Deir Hanna	Related to Shamaa.
		Niha	Related to Srifa.
		Tallat Irmith	Related to Shamaa.
Mount Lebanon	Aley	Ain Drafil	Related to Aabey.
		Ain el Marj	Related to Mansouriye.
		Hanan	Related to Mechrefe.
		Haret Salem	Related to Bsous.
		Khalde	Related to Chouifete.
		Maaisser	Related to Sofar.
		Ouadi Bedghane	Related to Bedghane.
		Ouata Charoun	Related to Charoun.
		Rouissat Sofar	Related to Majdel Banna.
		Sibaal	Related to Btater.
	Baabda	Ain es Saha	Related to Falougha.
		Btaaline	Related to Ras el Metn.
		Chmaissa	Related to Ras el Metn.
		Deir Khouna	Related to Ras el Metn.
		Deir Saya	Related to Ras el Metn.
		Haql Hassan	Related to Zandouqua.
		Khalouat	Related to Falougha.
		Mazraat Maaissra	Related to Ras el Metn.
		Oaudi Dlab	Related to Bsaba.
		Rouaisset Salima	Related to Salima.
		Taltita	Related to Ras el Metn.
		Zire	Related to Arayia.
	Chouf	Baal en Naame	Related to Naame. One CM.
		Bkerzai	Related to Baaqline, a mined area in Baaqline.
		Haret en Naame	Related to Naame, same community interview.
		Kfar Hamal	Related to Kfar Katra, same CM.
		Mermata	Related to Ouadi Bnahle, same CM.
	El Metn	Sannine	Related to Baskinta.
	Kasrouane	Aayoun Es Simane	Aayoun Es Simane was surveyed along with Kfar Debiane and Faqra.
		Faqra	Faqra was surveyed along with Kfar Debian and Aayoun Es Simane.

Province	District	Community	Detail
Nabatiyah	Bint-Jbeil	Al Baydar	Related to Haddathah.
		Qatmoun	Related to Rumaysh.
		Sammoukha	Related to Rumaysh.
	Hasbaya	Al Khraibe	Related to Rachaya Al Foukhar. One CM.
		Batnaniyeh	Related to Mimess. One CM.
		Halta	Related to Kafer Chouba.
		Majidiye	Related to Al Meri. One CM.
		Mrah Al Beir	Related to Kafer Chouba.
		Mrah Sabyah	Related to Kafer Chouba.
	Marjeyoun	Aamra	Related to Sarda.
	Nabatiyah	Al Arid	Related to Habboush.
		Ali Attaher	Related to Al Nabatiyah al Faouqa and Kfar.
		Mazraat Al Hamra	Related to Yohmor.
		Mazraat Kafra	Related to Jbaa.
		Toul	Related to Kfour En Nabatiyah.

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