Cluster Munition Contamination in Lebanon

Using Survey Data

British Embassy Beirut

MAG
saves lives builds futures

Acknowledgements

This project would not have been possible without the support of the scores of individuals whose commitment and dedication gave shape to it.

We are grateful for the ongoing and strong partnership with the British Embassy in Beirut, whose support turned this project from an idea into a reality. Our sincere thanks go to the Lebanon Mine Action Centre (LMAC) and its staff for their time and partnership. Without them, the project would not have been achievable. MAG is also grateful to our mine action partners and the municipal authorities in Lebanon, whose contributions, facilitation and input made this project possible.

This report is dedicated to the Lebanese people, particularly the communities of southern Lebanon, Mount Lebanon and the Bekaa, who have suffered the effects of cluster munition contamination and who must continue to live alongside it until clearance is completed.

Mines Advisory Group (MAG) in Lebanon

MAG saves lives and builds futures. MAG has worked in Lebanon to reclaim land contaminated with mines, cluster munitions and explosive remnants of war since 2000. We reduce the daily risk of death and injury for civilians, and create safe and secure conditions for development. MAG shared the 1997 Nobel Peace Prize for its work to ban landmines.

Foreword

The hostilities in southern Lebanon in 2006 saw one of the most concentrated deployments of cluster munitions in the last decade. The immediate and devastating effect on civilians shocked the world and was a pivotal moment in galvanising international support for a convention banning cluster munitions.

This report is the result of cooperation between the Lebanon Mine Action Centre (LMAC) and MAG, with the support of the British Embassy in Beirut. Its findings and recommendations are based on a pre-clearance impact assessment and non-technical survey of the cluster munition contamination that remains in Lebanon. Its purpose is nevertheless forward looking. It aims to focus clearance resources on areas of real contamination and to enable prioritisation of clearance where it will have the greatest effect on Lebanese communities and Syrian refugees throughout the country.

Like the Convention on Cluster Munitions, the report has people at its heart. The findings and recommendations can assist Lebanon in moving closer to its goal of becoming free of cluster munitions. With continued international cooperation and commitment, a cluster munition free Lebanon can be a reality. It will enable communities to live free from fear and in true safety. There is no reason to delay for a day longer than necessary to achieve this.

Lord Williams of Baglan
Chair of MAG and former UN Under Secretary-General
& Special Coordinator for Lebanon

Amal Nader conducting manual clearance

Contents

Acronyms

CBU	Cluster Bomb Unit
CM	Cluster Munitions
ERW	Explosive Remnants of War
IMSMA	Information Management System for Mine Action
LMAC	Lebanon Mine Action Centre
MAG	Mines Advisory Group
MRE	Mine Risk Education
NGO	Non-Governmental Organisation
NMAS	National Mine Action Standards
NTS	Non-Technical Survey
POD	Peace Generation Organisation for Demining
RMAC	Regional Mine Action Center
UXO	Unexploded Ordnance

Terminology

This report is based on the results of a survey. The project was initially designed as a pre-clearance impact assessment initiative which aimed to improve prioritisation based on analysed socio-economic data. The potential to incorporate elements of non-technical survey was identified during the first trial, in particular the opportunity to more accurately assess areas of remaining cluster munition contamination. After further trials and in partnership with LMAC, these elements were incorporated into the survey instrument. ‘Survey’ is used in this report to refer to the socio-economic and non-technical survey elements of the project.

1 | Executive Summary

Introduction

This report is the product of a survey of the remaining known or suspected contamination from cluster munition remnants in Lebanon along with the impact of contamination on communities and their socio-economic development. It was undertaken between September 2013 and April 2014 and was the first survey of its kind since the 2006 hostilities.

The aims of the project were twofold. Firstly, to confirm areas of remaining contamination as accurately as possible and inform operational planning. Secondly, to identify the socio-economic impact of remaining clearance and provide this information to LMAC to inform and improve operational prioritisation. The findings of this survey don't, on their own, claim to be the complete answer to the problem, but they can play a vital role in moving forwards towards a cluster munition free Lebanon.

Key Findings

The survey confirmed 347 clearance tasks in 111 communities, with these tasks covering approximately 13 million square metres of land which had strong evidence of contamination. The survey has led to 96 recommendations for land release through cancellation, equating to almost three million square metres of land. This has the potential to reduce the cost of achieving a cluster bomb free Lebanon by $7-11 million.

In addition, the survey provided information on the impact of contamination against structured criteria that include accident data, fear of accident and injury, risk-taking behaviour and plans for land use after clearance. This can be used to prioritise clearance tasking so contamination affecting communities most can be cleared first.

Cluster munition contamination continues to have a significant impact on the agricultural community, particularly in southern Lebanon and the Bekaa. In 81% of tasks surveyed, contamination from cluster munitions makes access to resources unsafe or blocks access altogether. Yet significant numbers of landowners and workers still enter contaminated areas, stating that they have no other choice.

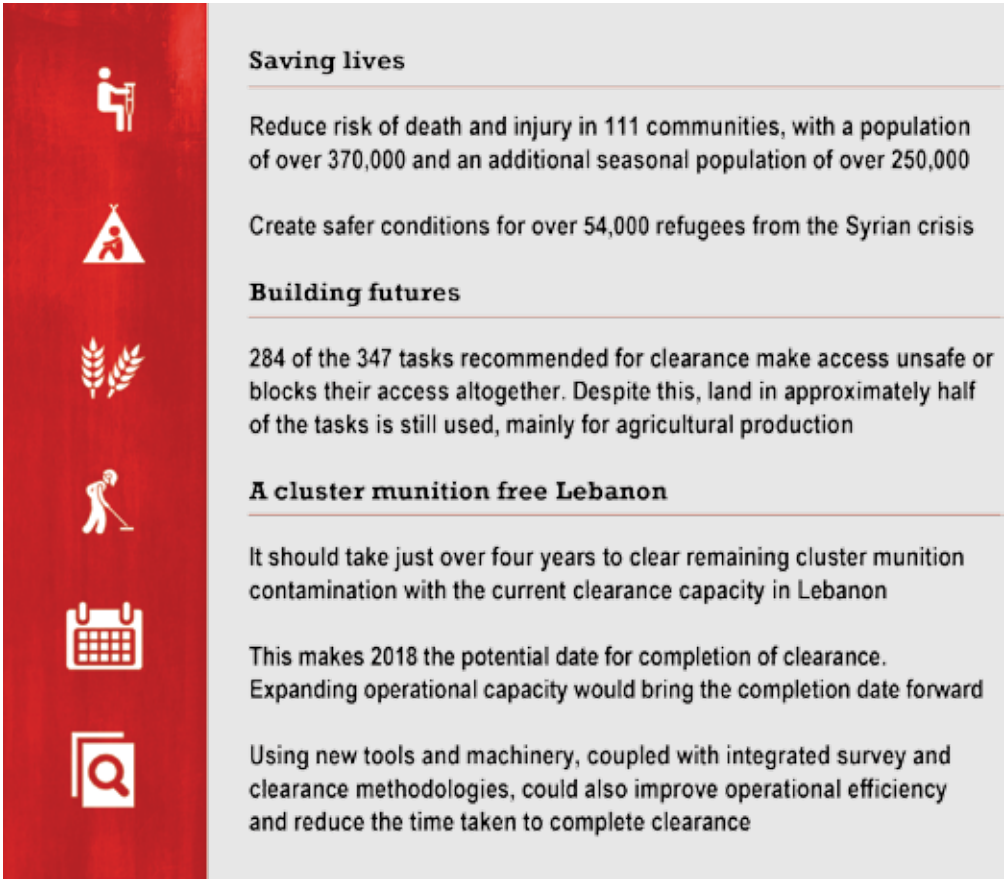
After clearance, over 1.4 million square metres of currently unused contaminated land will be used for agricultural production by some of the poorest communities in Lebanon. More than $2 million of public and private investment is planned for land that is currently contaminated.

The survey also highlighted the need for risk education in threatened communities, notably agricultural workers and labourers. Although risk awareness is prevalent in many Lebanese communities, there are still significant levels of risk taking behaviour. This is prominent in agricultural communities, where there are few or no other income generating opportunities.

In addition to the Lebanese population, the Syrian refugee community is also vulnerable as most risk education campaigns in Lebanon took place before 2011, when the influx of Syrian refugees began. The findings of this survey can be used to inform the design of risk education programmes that target at-risk groups and trends in risk-taking behaviour.

This survey should leave no doubt that cluster munitions continue to affect the lives and livelihoods of thousands of civilians every day. It makes a clear case for continued international support for cluster munitions clearance in Lebanon.

Nick Roseveare, Chief Executive of MAG



Saving lives

Reduce risk of death and injury in 111 communities, with a population of over 370,000 and an additional seasonal population of over 250,000

Create safer conditions for over 54,000 refugees from the Syrian crisis

Building futures

284 of the 347 tasks recommended for clearance make access unsafe or blocks their access altogether. Despite this, land in approximately half of the tasks is still used, mainly for agricultural production

A cluster munition free Lebanon

It should take just over four years to clear remaining cluster munition contamination with the current clearance capacity in Lebanon

This makes 2018 the potential date for completion of clearance. Expanding operational capacity would bring the completion date forward

Using new tools and machinery, coupled with integrated survey and clearance methodologies, could also improve operational efficiency and reduce the time taken to complete clearance

Key Recommendations

- LMAC should consider cancellation of the 96 tasks identified following this survey, incorporating information collected into the national contamination database. This could involve visits by mine action organisations and LMAC to sites recommended for cancellation for verification. In all cases, the process for handover of land that has been recommended for cancellation should be clear, accountable and transparent.
- There should be further dialogue between LMAC and mine action organisations about technologies and approaches that could increase the efficiency of clearance in Lebanon.
- Clearance planning should take into account priorities at the local and national levels, involving all stakeholders. Socio-economic data collected during the survey should be included in the priority setting process and tasking by national authorities.
- Post-clearance impact assessment should be undertaken in the six-month period after clearance to enable socio-economic impact comparison and evaluation.
- The international community should maintain or increase the levels of assistance to clearance in order for Lebanon to achieve its obligations under Article 4 of the Convention on Cluster Munitions.
- For Lebanon to reach full compliance with its obligations under Article 4 of the Convention on Cluster Munitions, further survey will be required on some or all of 129 partially cleared tasks and 37 tasks which were inaccessible for security reasons during the survey.
- Additional international assistance should be identified to create additional capacity to deliver risk education to at-risk groups, including Lebanese and Syrian communities.
- Wherever possible, clearance activities as well as risk education should be supported and tied into broader development projects that include both the Lebanese population and Syrian refugees in Lebanon.
- The international community should include mine action in the Syrian refugee response strategy, while maintaining support to clearance capacity and priorities in Lebanon.

2 | Contamination, Survey & Clearance

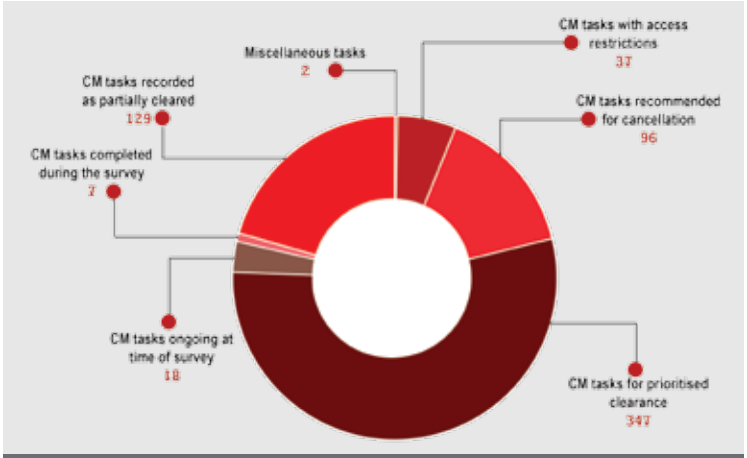
Contamination

The LMAC has estimated that 56,945,675 m² of land was contaminated with cluster munitions after the 2006 hostilities. By September 2013, when this survey started, 38,512,372 m² was recorded as having been released through surface and sub-surface clearance. Of 1,480 tasks reported after the hostilities, 636 were recorded as remaining for clearance.

This initiative sought to improve the estimate of remaining contamination and identify areas for land release through cancellation against criteria within National Mine Action Standards (NMAS). It also sought to enable more effective prioritisation of tasks. This section of the report summarises the outcomes of the survey concerning the extent of remaining contamination. The following two sections consider socio-economic impact and prioritisation. Data on the locations of remaining contamination has been shared with LMAC but is not included in this summary report.

Survey

The survey was conducted at 443 of the original reported total of 636 remaining cluster munition tasks. A summary of the process and methodology used is detailed in the Annex. 347 were recommended for clearance and 96 were recommended for cancellation. In addition to the 443 tasks recommended for clearance and cancellation, 129 tasks had been partially cleared and subsequently suspended by LMAC in favour of higher priority clearance activities. 37 tasks were inaccessible due to security reasons and at 25 tasks, clearance was either ongoing or had been completed pending handover. Two tasks had been incorrectly recorded in the database as contamination from cluster munitions, one of which was a minefield task.



Status of remaining cluster munition tasks

Terminology

Recommended for Cancellation: No evidence of cluster munition contamination has been found after all reasonable effort has been expended at a task site.

Recommended for Clearance: Strong evidence of contamination.

Ongoing: Clearance work was ongoing in task area during time of survey.

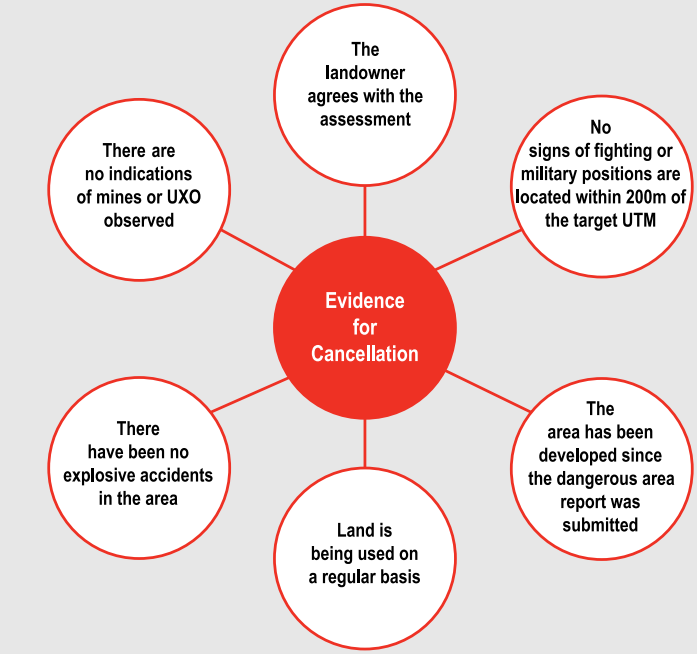
Completed: The task area has been cleared and is awaiting release.

Miscellaneous: Incorrect database entries.

Recommendations for Cancellation

96 tasks (covering an estimated 2,830,704 m^2) were recommended to LMAC for cancellation, with MAG teams having expended all reasonable effort and found no evidence of contamination. Of the 96 tasks, three were recommended for cancellation due to their very close proximity to others, with a recommendation made that multiple tasks be merged in the contamination database. One additional task was recommended for cancellation because of duplication in database coordinates. Indicators and criteria that were used in making recommendations for cancellation are shown in the diagram below.

Clearance costs in Lebanon range between $2.5 and $4 per square metre. Land release through cancellation of the 96 tasks could therefore result in a saving of $7-11 million dollars on default clearance, and prioritisation of clearance on areas of genuine contamination.



Cancellation indicators

Recommendations for Clearance

The total area surveyed covered 15,787,230 m^2 (443 tasks). Of these, 347 tasks (covering an estimated 12,956,526 m^2) were recommended for clearance. 327 of these tasks were the result of remaining contamination from the 2006 hostilities. Of the 20 areas contaminated prior to 2006, 18 (in Bekaa West, Rachayya, Hasbayya, El Maten and Aley) were contaminated in 1982 and two in 1978 (in Al Boreghli and Hasbayya).

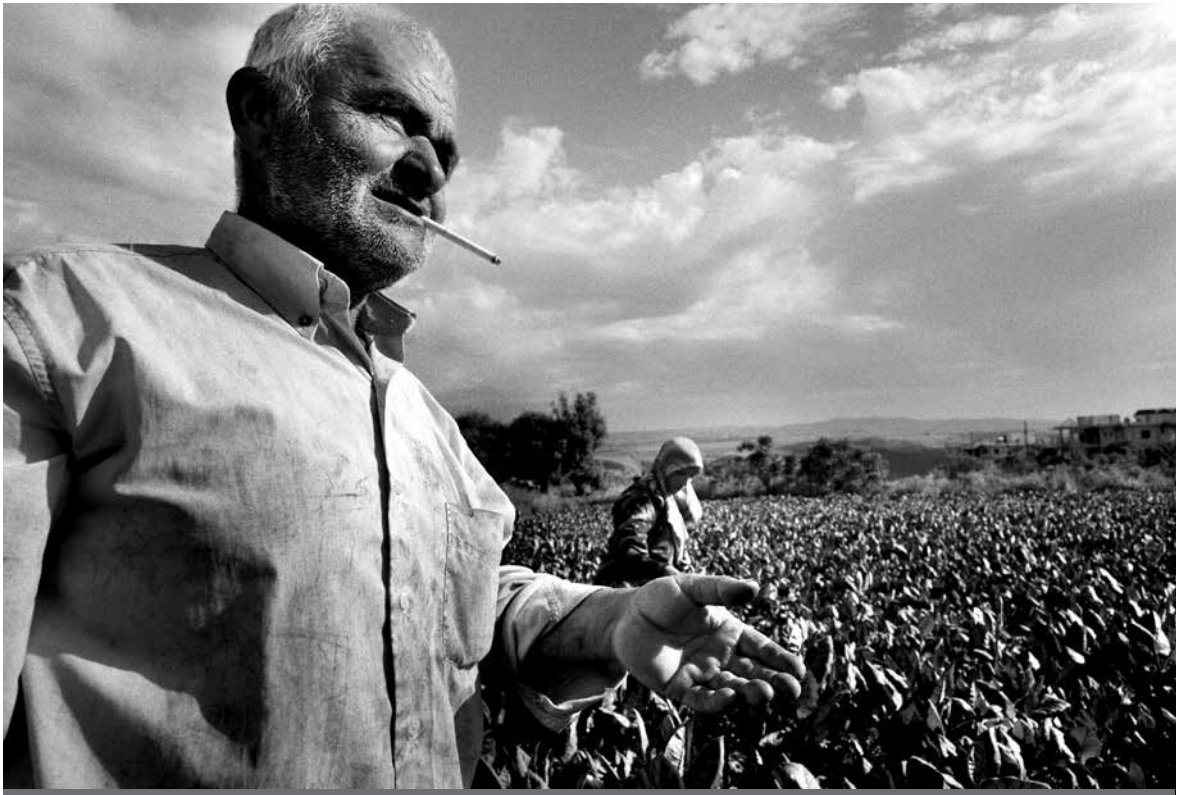
Further survey and clearance will be required on some or all the partially cleared tasks and tasks which were inaccessible for security reasons.

Non-technical survey meeting between MAG and community members

3 | Impact of Contamination & Benefits of Clearance

This section of the report is based primarily on socio-economic data from the survey of tasks recommended for clearance. The scope of the socio-economic component of the survey did not include the 129 tasks which were reported as having been suspended by LMAC.

Analysis of survey data highlights the importance of agriculture and livestock to the economy in the south of Lebanon, the Bekaa and Mount Lebanon. It also shows that the effects of remaining contamination are felt predominantly by members of resident agricultural communities, many of whom take daily risks by accessing contaminated land out of economic necessity and do so with a significant level of fear. But it also highlights a sizeable seasonal population at risk from cluster munitions remnants, as well as Syrian refugees living alongside Lebanese villages close to contaminated areas. It demonstrates how clearance will benefit the rural communities in the south by reducing daily risk to life and limb, but also by increasing agricultural production and enabling investment in housing, infrastructure and the economy.



Abdalla Mahdi is now able to safely grow tobacco, thyme and tomatoes

Contamination & Communities

Contamination from cluster munition remnants in the 347 tasks identified for clearance affects the everyday lives and livelihoods of 370,000 people in 111 communities. Approximately 50% of the communities in the south of Lebanon are affected by cluster munition contamination.

The table below provides details of the resident communities affected by cluster munitions, and shows that a significant seasonal population in areas affected by cluster munitions, particularly in the south. This is linked primarily to agricultural production and results in over 253,000 additional people being present in communities with contamination from cluster munitions. The survey also showed over 54,000 Syrian refugees living in contaminated communities, many of whom have not received risk education (see Section 5). Areas 3, 6, and Bekaa West show the highest concentration of refugee populations living in the proximity of cluster munition contamination.

Area	Communities	Permanent Population	Seasonal Population	Refugee Population
1 South Lebanon	10	20,900	12,850	2,020
2 South Lebanon	14	19,600	9,500	1,776
3 South Lebanon	12	28,850	39,450	4,300
4 South Lebanon	8	13,075	33,300	951
5 South Lebanon	8	17,140	18,350	4,100
6 South Lebanon	30	163,650	75,120	22,965
7 South Lebanon	7	18,800	5,600	1,880
8 South Lebanon	9	40,800	16,350	1,465
West Bekaa	7	20,170	14,380	11,060
Mount Lebanon	2	5,200	4,200	500
Aley	2	14,000	16,000	1,470
Rachayya	1	8,500	4,500	300
Al Maten	1	2,000	4,000	1,500
Total	**111**	**372,685**	**253,600**	**54,287**

Location of communities affected by cluster munition contamination

There are multiple tasks remaining in over 60% of communities still affected by cluster munitions. The communities with the highest number of tasks are Zawtar Al Gharbieh and Zebqin with thirteen tasks each, Al Rihan with ten CM tasks and Tebnin, Al Tiri, Al Ghandouriyeh and Yater with nine each. These are all areas where multiple clearance activities can be conducted at the same time. The table below looks more closely at the concentration of cluster munition strike areas in communities.

Number of tasks per affected community	Number of communities
1 task in a community	43
2-3 tasks per community	30
4-5 tasks per community	20
6-7 tasks per community	10
8+	8

Frequency of tasks in affected communities

Accidents involving Cluster Munitions

Even after eight years of clearance, communities remain at significant risk of death and injury from cluster munitions. Respondents from communities still affected by cluster munitions reported 18 fatalities and 36 injuries since 1979. The majority involved cluster munitions and took place after 2006 (11 fatalities and 31 injuries), with the most recent having taken place in Deir Qanoun in 2013. The incidents were spread over 20 communities, with ten informing survey teams that they had never received risk education. Respondents from six of the 20 communities stated that they had not received any risk education after 2011. The risk to agricultural workers and the refugee population are explored further in Section 5 of the report.

Information from LMAC also indicated an increase in accidents involving explosive remnants of war (ERW) beyond the scope of this survey. Between seven and ten incidents involving Syrian and Palestinian refugee children were reported from contaminated areas nearby Akkar in the north. According to available information, the children had been injured while playing.

Psychosocial impact

Cluster munition contamination continues to trap individuals and communities in fear. 1,252 people provided responses on level of fear from cluster munitions during the survey. Respondents included landowners, land users, labourers and municipality members. They were asked to rate their fear relating to the presence of unexploded ordnance (UXO), landmines and cluster munitions on a scale of one to five, with one indicating 'not afraid' and five indicating 'very afraid'. 66% respondents indicated fear levels of three or higher. There was a close correlation between those giving higher ratings and landowners who claim to use land contaminated by cluster munition remnants on a regular basis.

Analysis of survey data showed fear levels remaining high in areas where clearance had taken place but not completed. In 21 communities where only surface clearance had taken place previously, the majority of respondents reported fear levels of four or five and did not use contaminated land. In 54 communities, land use resumed after surface clearance had been performed but average fear levels remained above three (62%).

Level of fear	Number of respondents
1	97
2	334
3	357
4	192
5	272

Fear levels in communities affected by cluster munitions

> **"The results of the survey suggest strongly that surface clearance was not sufficient to raise confidence in communities affected by cluster munitions."**

An interview with Hajje Zahiya Kasab from Kfarshouba

Access to Resources and Infrastructure

The presence of cluster munitions continues to restrict access to resources and infrastructure. This includes roads, fields used for farming or grazing and access to other natural resources. The survey results show that contamination in 284 of the 347 tasks recommended for clearance makes access unsafe or blocks their access altogether. Despite this, land in approximately half of the tasks is still used, mainly for agricultural production. 48% of respondents who stated that they entered contaminated land said that they did this on a daily or weekly basis, mainly to graze animals or to plough, harvest or irrigate agricultural land.

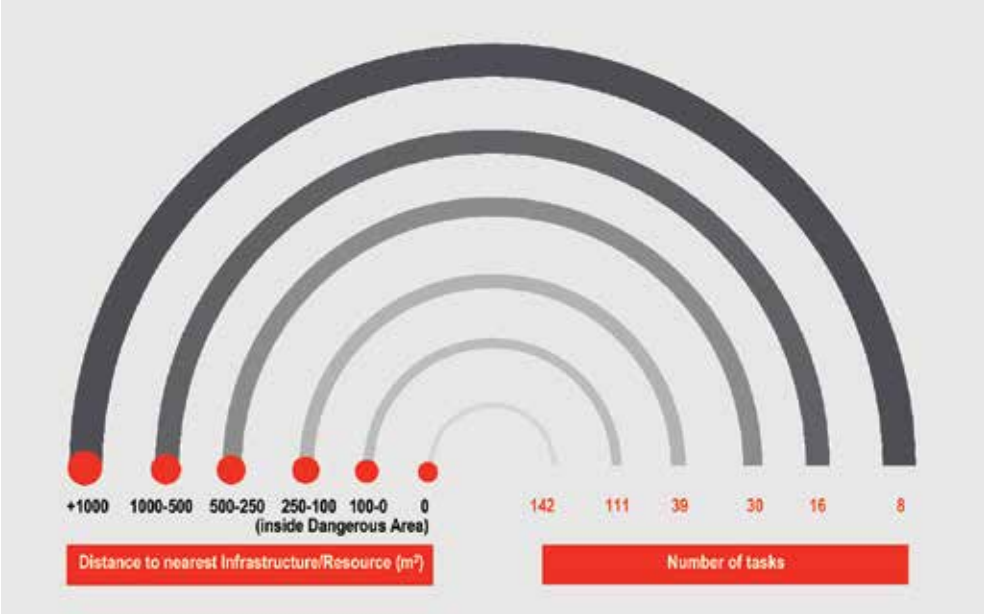
Number of tasks where access is blocked or made unsafe	284
Number of tasks being used despite unsafe access	180

Access to and use of resources and/or infrastructure in strike areas

MAG searcher near a construction site in Chouf

The following diagram shows the distances from the strike area to the nearest resource or infrastructure. In 83% of tasks, community resources were identified in or within a 250 m radius of contamination. In 142 tasks (40%), the infrastructure or resource was inside the contaminated area. The majority of these were roads or a primary residential premise.

While the survey indicated that land is not currently being used in 167 strike areas, it also showed that there are plans to start using land after clearance in 43 of them, mainly for agricultural cultivation and livestock grazing.



Distance between tasks and nearest infrastructure/resource (based on data from 346 tasks)

Agricultural Production in Rural Communities

Lebanon's agricultural sector has been particularly affected by cluster munitions contamination, and contamination continues to have a disproportionate effect on agricultural communities. Agricultural lands are located mainly in Akkar, the Bekaa, south Lebanon and Mount Lebanon. With the exception of Akkar, all areas were included in this survey. The south has specialised forms of agriculture, in particular tobacco and banana cultivation, as well as widespread fruit, vegetable, grain and nut cultivation. Although the agricultural sector in Lebanon only contributes approximately 6.5% to Lebanon's gross domestic product, regional differences show the particular importance that agriculture plays in the south of Lebanon and the Bekaa. It is the main livelihood source for most communities in these areas.

Olive orchards in an area of confirmed contamination in Al Mtolleh village

	Size of contaminated land currently in use (m^2)	Anticipated size of land use after clearance (m^2)
Crop Cultivation	1,511,077	2,036,637
Livestock	6,234,614	7,147,313
Housing & Infrastructure	140,742	191,142
Recreational	74,935	102,235

Contaminated land in use and anticipated size of productive land after completion

The survey showed that land is currently used for cultivation of crops in 70% of the tasks recommended for clearance. Landowners frequently enter areas suspected to be contaminated out of economic necessity, but not all contaminated land is in use as the risk in some areas is deemed to be too high. 7,745,691 m^2 is currently being used for agriculture and livestock grazing. Clearance will enable this to be cultivated safely, in addition to 1,438,259 m^2 of currently unused land that will be available after clearance. As well as reducing risk to life and limb, and also fear, clearance will have a significant effect on the livelihoods of agricultural communities. The table below shows income from some of the most common types of agricultural production in southern Lebanon.

	Size	Annual cost of maintenance (including fertilizer)	Annual income ($)	Profit ($)
Wheat	1,000m^2	200	500	300
Olive	1,000m^2	200	500	300
Tobacco	1,000m^2	300	1,000	700

Crop specific return on investment in southern Lebanon

Strengthening the agricultural sector and rural development through clearance activities can help to reduce rural poverty in agricultural communities and help overcome regional income inequality.

Housing & Infrastructure

The survey showed that a significant number of houses as well as roads, waste sites and water reservoirs have been built in areas contaminated by cluster munitions, despite the risks that it presents. It also showed that housing and infrastructure projects are planned for over 30,000 anticipated beneficiaries of clearance.

In villages where clearance did not occur immediately after contamination, the value of land rose by at least double after clearance had taken place. For example in Deir al Qamr, the cost of land rose from approximately $13 per square metre before clearance to $73 after clearance had taken place. In other areas such as Adchit where clearance took place immediately after contamination, land prices have remained relatively stable.

Recreational Use & Investment

The survey indicates that 102,235 m^2 of land will be used for investment in recreation after clearance of contaminated areas, with 1,280 people expected to benefit from it in terms of livelihood opportunities. This includes cleared areas being used for picnics, camping, hunting and general entertainment. There are plans for public or private investment in six of the cluster munition tasks recommended for clearance once it takes place.

Building futures in Zawtar West

Zawtar West is a village in Nabatieh district of south Lebanon. During the 2006 hostilities, it was heavily contaminated by cluster munitions, with cluster munition remnants covering almost the entire village. MAG started clearance in Zawtar West the day after the conflict ended. Priority was given to clearance in the village, where the immediate risk to communities was greatest. It included clearance around a public school and a football field. Clearance is still ongoing, mainly in agricultural areas. Over 1,800 cluster munition remnants have been destroyed in Zawtar West alone.

A family in Zawtar West sorting tobacco produce

4 | Prioritisation of Clearance

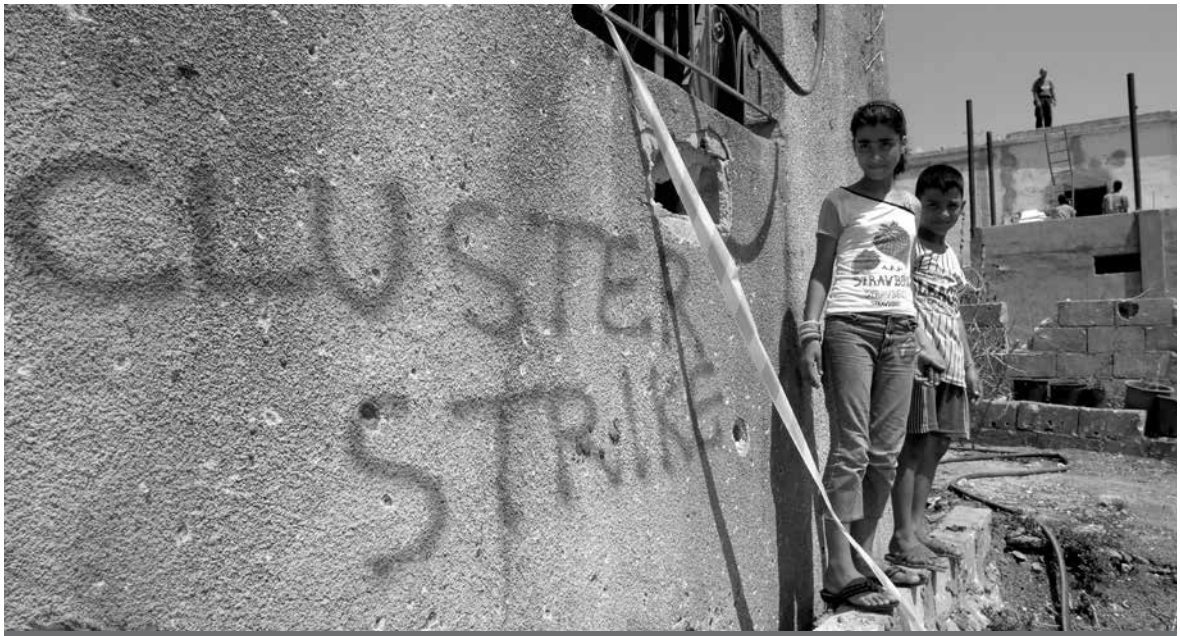
The Lebanese Mine Action Strategy (2011-2020) prioritises the release of land for housing, along with areas adjacent to houses and agricultural land. Prior to this survey, baseline data available to LMAC did not include detailed socio-economic data on contamination and the potential threat that it posed to resident populations. This limited the effectiveness of mine action prioritisation.

The data and analysis from the survey was included in individual task reports, which contain maps and photos. The socio-economic data was also uploaded into a database and analysed using a weighting system. The aim was to identify tasks that have the greatest impact on communities in terms of reducing risk to life and limb, reducing fear and facilitating socio-economic development. The data has been shared with the national authorities. The following table shows the indicators that were used, and the weighting attached to them that give a priority value of between zero and 35. Further details on methodology are also included in the annex.

This survey provides accurate and up to date information on the socio-economic impact, threat and extent of the hazardous areas. It can improve effectiveness of planning and prioritisation of clearance operations.

Indicator	Indicator Category	Scoring				Weighting
		1	2	3	4	
Expected increase in income resulting from clearance	Socio-economic impact	$0-500	$501-1,000	$1,001 - $5,000	More than $5,000	2
Expected investment resulting from clearance	Socio-economic impact	$0-500	$501-1,000	$1,001 - $5,000	More than $5,000	1
Proportion of hazardous area that will be used for socio-economic purposes after clearance	Socio-economic impact	25% or less	50% or less	75% or less	100% or less	1
Number of direct beneficiaries	Socio-economic impact	One or more	More than 10	More than 50	More than 200	1
Number of human, animal or vehicle accidents	Physical risk	No accidents	1 or more animal or vehicle accidents	1 human accident	More than 1 human accident	2

Indicator	Indicator Category	Scoring				Weighting
		1	2	3	4	
Incidence of handling mines or UXO in the past year	Physical risk	No incidence	1 incident	2 or 3 incidents	4 or more incidents	1
Incidence of people entering the hazardous area	Physical risk	Yearly	Monthly	Weekly	Daily	1
Number of households living within 200m of the hazardous area	Physical risk	None	Up to 25 people	25-100 people	More than 100 people	1
Levels of fear amongst land users	Psychosocial impact	0 or 1	2	3	4 or 5	2



Emergency demarcation of task sites after the 2006 hostilities

5 | Risk Education

Risk education was introduced to the Lebanese mine action programme in 1997, and played a significant role in reducing the risk from mines and ERW from then onwards. The July 2006 hostilities resulted in an immediate nationwide risk education campaign carried out by LMAC (through a RE steering committee) and mine action organisations.

The survey has nevertheless highlighted the need for further risk education. In 45 of the communities surveyed, respondents reported never having received risk education. In the other 66 communities affected by contamination, only 20% had received risk education after 2011. This section of the report outlines three main reasons for further, targeted, risk education – population movements, a new generation in Lebanese communities and the influx of Syrian refugees. It also explores options for identifying and successfully reducing the risk to the most vulnerable groups and explains why there is a need for further risk education capacity to meet the need in Lebanon.

Population movements	Many people left the south during the 2006 hostilities and did not return until much later. They were therefore absent during the first round of risk education campaigns in 2007 and 2008. The survey showed that the south of Lebanon also has a seasonal population of over 261,000, most of whom are engaged in agriculture and are at higher risk. It is highly probable that some at-risk groups have not received risk education.
A new generation	Experience of global risk education programmes in the mine action sector highlights the importance of delivering campaigns that are age sensitive but also consider different levels of knowledge and experience. Many children from 2006 and 2007 are now young adults and many will work alongside adults in the agricultural community. This brings the same risks of exposure to cluster munition remnants and necessitates a targeted risk education programme with age-sensitive messaging.
The influx of Syrian refugees	Many of the Lebanese communities living in the affected areas may have received risk education in the past. This is not true for Syrian refugees, who have been growing in number since 2011 as the Syrian crisis has escalated. Interviews with Syrian refugees showed them moving, grazing livestock or playing inside or within 50 metres of areas contaminated by cluster munition remnants and ERW. Interviews also showed that many have little or no knowledge of the nature and location of the contamination in Lebanon, or of the mechanisms to report it.

Identifying & Reaching At-Risk Groups

To be successful, risk education campaigns should be targeted at the most at-risk groups, and be sensitive to age and gender. Section 3 provided information on civilian fatalities and injuries in areas of remaining cluster munition contamination. 71% of incidents have involved males aged 19 and over, with most being farmers, construction workers or shepherds who entered dangerous areas during the course of their work. Most incidents involving people over the age of 40 were male shepherds tending livestock in CM strike areas. The survey therefore identified men and the working young in agricultural communities as the group at highest risk. These at-risk groups can be identified and reached through community liaison approaches.

The approach for risk education in the agricultural community must take into account the fact that many communities are aware of the risks of using contaminated land, but nevertheless choose to take risks in the absence of alternative livelihood options. The survey showed that only 30% of respondents adopt safe practice and also that 68% of land confirmed as being contaminated by cluster munition remnants is still being used. To be effective, risk education should focus on identifying and addressing risky behaviour, as basic awareness of the threat is already present in many Lebanese communities.

71% of accidents involve males aged 19 and over, with most being farmers, construction workers or shepherds who entered dangerous areas during the course of their work.

A farmer leading his cattle in southern Lebanon

The Syrian refugees are widely dispersed, with many refugee families living within host communities. The survey showed the highest concentration of refugees to be in the Bekaa and Nabatieh district, where the survey also showed remaining cluster munitions strikes still affecting 36 Lebanese communities. To be effective, risk education programmes will need to involve house to house visits.

> **"We fled from death in Syria not to die from cluster bombs in Lebanon"**
>
> Abou Tarek, a Syrian refugee in the Lebanese southern village of Kfartebnit

A Syrian worker cultivating land after clearance

Assessment Methodology

The methodological approach comprised five main components:

1. A literature review of background data and information.
2. Development of an appropriate survey instrument for data collection. The pre-clearance questionnaire was developed in Lebanon, drawing on expertise from MAG's Lebanon programme and global headquarters as well as the Regional Mine Action Centre and an Impact Assessment Consultant. It underwent three trial phases before being conducted, during which the potential for adding elements of non-technical survey was identified and successfully incorporated.
3. Conducting the survey for 470 tasks, involving semi-structured key-informant interviews in 111 communities by community liaison teams. In addition to collecting data, community liaison teams took photos and developed contamination polygons and summary task reports to inform cancellation or clearance. All MAG teams were mixed gender teams. Data underwent quality assurance and quality control by MAG's senior operational managers.
4. Capturing data and recording it into the MAG Impact Assessment (MIA) database to enable analysis and ranking based on task priority.
5. Analysis of data and the development of recommendations, including recommendations for cancellation and task prioritisation.

The survey took place between September 2013 and March 2014 and involved interviews with 1,456 people in the south of Lebanon, the Bekaa and Mount Lebanon. The south of Lebanon is divided into eight areas of cluster munition contamination, with Area 6 to the north of the Litani River being the largest area. The first phase of the survey covered only Area 6. The second phase added Areas 2, 3 and 5, with the third phase also incorporating the Bekaa and Mount Lebanon. 316 sites were surveyed in the south, with 31 in the Bekaa and Mount Lebanon. All operations were carried out from Nabatieh by MAG teams, or Peace Generation Organisation for Demining (POD) teams with MAG oversight, and in coordination with LMAC through the Regional Mine Action Centre.

There are no up-to-date census figures for Lebanon. Population figures used in this report are therefore based on data provided by municipalities during the course of the survey.

A template for post-clearance survey (up to six months after clearance) was developed in a format compatible to the survey questionnaire. This report also includes the Arabic and English versions, as well as photos of the land use in the cleared area and beneficiaries. It will enable data collection, analysis and comparison following future clearance and act as a basis for evaluation.

Limitations

The following limitations were identified at the start of the project or during its implementation:

- The project was time bound, with the primary aim of informing efficient and effective operational planning and task prioritisation. It was based on key informant interviews and could not incorporate focus group discussions and purposive household surveys, as MAG has implemented elsewhere. The socio-economic survey was not therefore exhaustive and was driven by the principle of collecting 'just enough data' to meet the project aims.
- Restrictions on the type of socio-economic data that could be collected, particularly household data, also set parameters for the scope of the socio-economic survey.
- The psychosocial component of the survey was limited and does not claim to be comprehensive. It was based on a quantitative analysis due to time constraints, but also to facilitate rapid analysis in line with the aims of the survey.
- It was not possible to obtain supporting evidence to verify planned post-clearance development projects. Proof of projects was secured as far as possible and to a level that was considered proportionate to the purpose and aim of the survey project.
- Infrastructure projects typically take longer to implement after clearance than agricultural use. Post-clearance impact assessment covering infrastructure projects should take this into account.
- Data provided from national IMSMA database was incomplete in some cases, including instances of duplication of UTM evidence points. Missing or incorrect data was rectified in the survey and has been provided to the IMSMA team.

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