



UXO Risk Education Needs Assessment

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Cover picture: Young girl using a metal detector/ Sean Sutton/MAG. The child's face in this picture has been blurred to protect her identity. This same technique has been used throughout the document to protect children's identities.

GLOSSARY	5
1. EXECUTIVE SUMMARY	6
1.1 INTRODUCTION	6
1.2 METHODOLOGY	7
1.2.1 Literature Review	7
1.2.2 KAP Questionnaire	7
1.2.3 Qualitative Assessment	7
1.3 FINDINGS	7
1.4 RECOMMENDATIONS	11
2. INTRODUCTION	11
3. LITERATURE REVIEW	15
3.1 HUMANITARIAN MINE ACTION	15
3.2 HEALTH AND SAFETY PROMOTION AND MINE RISK EDUCATION	16
3.3 WHAT MAKES HEALTH AND SAFETY PROMOTION PROGRAMMES WORK.....	18
4. METHODOLOGY	19
4.1 SAMPLING	19
4.2 DATA ANALYSIS	20
4.3 LOCATION	20
4.4 ETHICS	21
4.5 TRAINING OF DATA-GATHERERS	21
4.6 QUALITY CONTROL	21
4.7 SPECIAL CONSIDERATIONS FOR THE PARTICIPATION OF CHILDREN.....	21
4.8 STAKEHOLDER MEETING.....	22
4.9 LIMITATIONS.....	22
5. FINDINGS	22
5.1 SUMMARY OF FINDINGS	22
5.1.1 UXO Mortality and Morbidity.....	22
5.1.2 Cause of UXO Accidents.....	24
5.1.3 UXO Risk in the Lao PDR	25
5.1.4 Communication Channels	30
5.2 GENERAL FINDINGS	31
5.2.1 General Findings – Adults	31
5.2.2 General Findings – Children.....	38
6. HIGH RISK GROUPS	41
6.1 RISK TAKING BEHAVIOURS	41
6.2 RISK FACTORS: PREDISPOSING, ENABLING AND REINFORCING	42
6.3 HIGH RISK GROUPS.....	43
6.3.1 Scrap Metal Collection	43
6.3.2 Farmers Who Move UXO to Farm Land	49
6.3.3 Scrap Metal Dealers	51
6.3.4 Adults who Dismantle UXO to Collect Scrap Metal.....	54
6.3.5 Children Who Play or Tamper with UXO	55
6.3.6 Children Who Collect Scrap Metal.....	56
6.3.7 Children Aged 0-8 years of Age	60
6.3.8 Adults and Children Working in Agricultural Land.....	61
6.4 CONCLUSIONS.....	61

7. RECOMMENDATIONS	62
7.1 ESTABLISH A PROCESS FOR ENGAGING STAKEHOLDERS	63
7.2 IMPROVE TARGETING AND DEPLOYMENT OF UXO CLEARANCE ASSETS.....	64
7.3 REVIEW LEGISLATION AND REGULATORY CONTROLS.....	65
7.4 REVIEW AND REVISE CURRENT MRE MESSAGES AND STRATEGIES	66
7.5 REVIEW AND REVISE CURRENT INFORMATION MANAGEMENT SYSTEMS.....	69
7.6 STRATEGIES TO REDUCE THE RISK TO CHILDREN.....	69
7.7 STRATEGIES TARGETING ADULTS AND CHILDREN WHO COLLECT SCRAP METAL ..	71
7.8 STRATEGIES TO REDUCE THE RISK TO PEOPLE WHO DISMANTLE UXO.....	71
7.9 STRATEGIES TO REDUCE THE RISK TO FARMERS WORKING IN FIELDS.....	72
ANNEXES	73
1. PREDISPOSING, ENABLING, REINFORCING FACTORS.....	73
2. REFERENCES	81
3. MRE NEEDS ASSESSMENTS	83
4. LIST OF PEOPLE INTERVIEWED	97

Glossary

AusAID	Australian Agency for International Development
CA	Community Awareness
CDC	Centres for Disease Control and Prevention
GICHD	Geneva International Centre for Humanitarian Demining
HIB	Handicap International Belgium
HMA	Humanitarian Mine Action
IMAS	International Mine Action Standards
IMSMA	Information Management Systems for Mine Action
KAP	Knowledge, Attitude, Practice
LYU	Lao Youth Union
MAG	Mines Advisory Group
MRE	Mine Risk Education
NGO	Non Government Organisations
NRA	National Regulatory Authority for the UXO sector in Lao PDR
PPS	Probability Proportional to Size
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme
UNDAF	United Nations Development Assistance Framework
UXO	Unexploded Ordnance

1. Executive Summary

1.1 Introduction

As a result of intense ground battles and extensive bombing during the Indo-China War, especially during the years 1964 – 1973, Lao PDR has the distinction of being, per capita, the most heavily bombed nation in the world. The war left widespread unexploded ordnance (UXO) contamination, which thirty years on continues to act as a barrier to socio economic development causing death and injury to adults and children. UXO injury, especially in a country such as Lao PDR where access to adequate health services is limited, can result in long-term medical and psychological sequelae (Handicap International, 2004) as well as a huge financial burden to affected individuals, families, their communities and health services. Often, those who suffer a landmine/UXO injury are aware of the risk (International Campaign to Ban Landmines, 2000; Geneva International Centre for Humanitarian Demining, 2003).

In the Lao PDR as a response to the continuing UXO threat, the Government, with assistance from United Nations Development Programme (UNDP) and UNICEF established the Lao PDR Trust Fund for UXO in 1995 to finance a national programme of clearance and education. In common with most other mine action programmes, the Lao national UXO programme (1996-ongoing), aims to reduce risk through survey, marking, surface and sub-surface landmine/UXO clearance and mine risk education (MRE). MRE aims to promote safety in UXO contaminated communities and in the Lao PDR has been primarily underpinned by psychological theories of behaviour change, such as the Health Belief Model (Rosenstock 1974). More specifically, UNICEF has supported MRE for children in several at risk communities in 12 of the most heavily contaminated provinces. Since 2002, this support was concentrated on implementation of two projects: the introduction of UXO awareness as an extra curricular activity within the primary school system, implemented by World Education Consortium with the Ministry of Education and 'Sport in the Box' safe play activities implemented by the Lao Youth Union (LYU).

Since the outset, UNICEF has supported continuous monitoring and evaluation, including UNICEF funded evaluations in 2000 (Delneuville, A.) and 2005 (GICHD). In 2001 UXO LAO also undertook a Knowledge, Attitude and Practice (KAP) study in 3 provinces followed by a more in depth qualitative study in one province to try and understand the contributing factors to UXO risk behaviour and injury (UXO LAO, Sisawath, B and Durham, J. 2001 and Sisawath, B. and Durham, J. 2002). In 2005 UNICEF also commissioned a study into the Scrap Metal Trade in the Lao PDR (GICHD, 2005).

An evaluation of UNICEF MRE activities was also commissioned by UNICEF in 2005 and recommended that in preparation for the next 5 year strategy, a MRE assessment be undertaken to ascertain who is currently at risk, why and what can be done to mitigate the risk. As a result of the evaluation recommendations, this assessment aims to answer these questions. More specifically the main objectives of the assessment were:

1. To collect and analyse quantitative and qualitative data to identify who is at risk of UXO accidents, why and what can be done about it
2. To involve a range of stakeholders in the assessment
3. To provide a report based on the above which can be used to underpin the MRE strategy for the Lao PDR and for UNICEF specifically and can be used to develop measurable impact and outcome objectives and indicators

4. To provide recommendations on appropriate UXO messages and risk reduction strategies

1.2 Methodology

The assessment took an eclectic approach and consisted of three components:

- Literature review
- Development and administration of a quantitative KAP questionnaire
- A qualitative assessment

1.2.1 Literature Review

The literature review was used to inform the assessment and provided an overview of humanitarian mine action (HMA) and MRE to show a more global and historical context to the assessment.

1.2.2 KAP Questionnaire

After field testing, the KAP was administered in the 5 provinces of Houaphan, Xieng Khouang, Saravan, Savanakhet and Attapeu. Participants were randomly chosen totalling 1312 adults, 54% of which were men and 46% were women. Seven hundred and twenty children between the ages of 8-18 (69% were boys and 31% were girls) also completed a children's KAP questionnaire.

1.2.3 Qualitative Assessment

Following an analysis of the KAP to identify key trends and areas for further exploration, the qualitative phase was undertaken in three provinces: Saravan, Khammouane and Xieng Khouang. The qualitative phase of the assessment used focus group, semi-structured and key informant interviews. Focus group discussions were held with 14 groups of men and 12 groups of women. Eighteen focus group discussions were also held with children. In interviewing children, UNICEF ethical guidelines were used.

Triangulation was ensured through using a range of tools and informants and the multi disciplinary nature of the research team. Neither the quantitative nor qualitative data collection tools required participants to be able to read or write as in line with *International Mine Action Standards (IMAS) Mine Risk Education Best Practice Guidebook 2, Data Collection and Needs Assessment for MRE as well as the IMAS for MRE Best Practice Guidebooks*.

1.3 Findings

The assessment largely confirmed the earlier 2002 UXO LAO assessment and the UNICEF Scrap Metal Study conducted by GICHD and shows that UXO risk is usually underpinned by a complex set of socio-economic factors and will require a multi faceted and multi level response.

The assessment found overall a high level of awareness and understanding among both adults and children and the risks associated with coming into contact with UXO. For example, 82% of the adult respondents indicated that no UXO is safe. The following were given as some of the most common events that cause a UXO to detonate: impact from a strong force, touching / moving the UXO, high temperatures from a fire, vibration from movement and tampering. Of the children, 99.6% considered UXO to be dangerous and 97% reported being afraid of UXO.

The children identified that accidents could happen by touching, hitting, playing, throwing or burning farmland. Nevertheless, despite these known risks many people, including women and children, on an almost daily basis, continue to interact with live or potentially live ordnance. This apparent inconsistency can be rationally defended by risk takers even though this perception is not based on scientific risk estimates or 'expert' views of safe behaviour in a UXO environment. Particularly high risk groups were identified as:

- Adults who actively collect scrap metal
- Adults who move UXO out of farming land
- Scrap metal dealers
- Adults who deliberately dismantle UXO
- Children who opportunistically and actively collect scrap metal
- Children who play or tamper with UXO
- Adults and children who work on agricultural land
- Out of school youth and young children

The assessment found that the general categories often used to characterize at risk populations, that is, the uniformed, the unaware, the reckless and the intentional, were less relevant to the context of the Lao PDR and has categorized UXO exposure as either voluntary/intentional or involuntary. The assessment also found that voluntary exposure to UXO was rarely perceived by communities or individuals as the only option. More commonly intentional UXO risk taking was found to be based on a rational decision making process involving the weighing up of the potential costs and benefits of a range of available livelihood options.

From the sample, voluntary, intentional exposure is by far the most common form of engagement and is generally a pragmatic, rational and habitual response to UXO contamination. Voluntary exposure may include, for example, moving items of UXO from agricultural land and moving UXO from areas where children undertake daily activities. Other forms of voluntary exposure are primarily driven by economic imperatives and include collecting scrap metal and in some cases deliberately tampering with live ordnance, primarily to disable the UXO to render the scrap saleable. While people are generally aware of, and understand the risk, the habitual presence of UXO, the routine handling of ordnance which does not always result in harm, alongside the degree to which people feel they can control the level of risk, for example, by moving an item carefully, being sure not to hit it and so forth means that on the whole people feel the level of risk is acceptable or at least manageable. Risks may also be rationalised through weighing up the costs versus the benefits by considering the hazard, for example, some items of UXO are considered safer than others so the perceived cost of moving those items is deemed acceptable. The following quote helps to demonstrate this:

"I moved 3 bombies from the bottom of a bomb crater. When I was digging I hit one of the bombies so I slowly picked it up and moved it out from the bomb crater to a nearby area. I was afraid when moving the bombie but I needed the money - in one bomb crater I could get 40kg of scrap metal" (Female scrap collector, Saravan).

The most common ways in which people voluntarily expose themselves to UXO risk is through collecting or dealing in scrap metal, moving UXO from farmland and dismantling UXO.

Predisposing factors include, level of contamination of farming land, beliefs that some UXO are relatively safe to move, perceptions of safe behaviours and digging to investigate metal detector signals. Enabling factors include, ease of which people can pick up UXO items and move them, availability of metal detectors and inability of clearance agencies to respond timely to reports of UXO on farming land. Reinforcing factors include, food security problems which motivate people to engage in the collection of scrap metal, lack of alternative income generating activities, price of scrap metal and lack of access to alternative farming land which is not contaminated with UXO. The following quote from one of the female respondents helps to illustrate how UXO contamination levels, inability of clearance agencies to meet community needs, food security and alternative options contribute to people deciding to voluntarily take risk:

"I found more than 10 BLUs in my new farming land, each time I moved them into one place and kept farming as my family land is very small so I need to keep farming in that area" (Female , Saravan).

Almost everyone who voluntarily exposed themselves to potential live ordnance was able to provide examples of the risk reduction strategies they took, despite these strategies having little bearing on actual safety, illustrating their perceived control over the situation, itself a contributing factor in risk taking behaviours. Some of the risk reduction strategies described, which do not necessarily improve safety, included:

- Do not turn the BLUs when moving them and move the BLU very slowly and put it down very slowly
- Place soil around the BLU before moving it
- Use a shovel to pick up the BLU
- If placing the BLU in the hole of a tree use a rope to put the BLU in the hole
- Before moving the UXO decide what is going to be done with it
- Turn head and back away when putting the UXO down

Scrap metal collectors were identified as a high risk group, especially those who actively search for sub-surface scrap using readily available Vietnamese metal detectors which can be purchased for approximately US\$12. A common strategy used to reduce risk concerns the perceptions of the accuracy of a signal given by a detector, despite this strategy being based on misinformation the statements below represent views held by many:

"I feel safer when digging, more confident that it isn't a UXO when I hear the small beeps" or "the system of the detector is that if we find a small piece of scrap we get a different sound, if we find a large piece of metal we get no sound".

Scrap dealers were also identified as a high risk group although almost all of them reported that they did not buy items of UXO as they could not sell them. Evidence suggests that this may not always be the case. In scrap yards for example, UXO can be found and dealers reported a number of strategies for reducing the threat of UXO, including:

- Making the scrap collector take the items away
- Storing items in bags / drums on the premises
- Removing UXO from premises to nearby location

- Storing until UXO clearance agency can deal with the item

Further, not all dealers have the skills to differentiate between safe and unsafe ordnance as shown in the quote below:

“Without knowing it I have bought many things from villagers, BLUs with explosives, hand grenades with no pins, bullets, mortar shells with gunpowder inside” (Female scrap dealer, Xieng Khouang).

Likewise some of the people bringing scrap to the dealers may not have the skills or knowledge to distinguish safe from unsafe scrap, this may be particularly true of children, according to one dealer for example:

“Children sometimes bring me UXO items, especially boys around 7-13 years of age. The children send them to me as they don’t know or understand the dangers of UXO, so when they find something they always think that it is a piece of scrap to make money’ (Male, scrap metal dealer, Xieng Khouang).

Of the children surveyed 52% reported collecting scrap metal which in the context of the Lao PDR where children often contribute to the household labour and income this is perhaps not surprising. Almost all of the children who reported collecting scrap recognised it was a potentially dangerous activity giving the following reasons:

- It is not safe to collect scrap metal below the surface when using a small shovel to dig as they cannot see the UXO below the surface (again highlighting the fear surrounding involuntary contact)
- It is dangerous while digging, for example, in bomb crater areas
- Cannot tell if there is a fuse or explosive inside
- Afraid that they might inadvertently collect a UXO such as a ‘bombie’
- UXO might be in the ground and can explode
- High risk from UXO which can kill

Involuntary exposure, for example exposure to sub surface UXO while farming, is generally feared due to the lack of control people have over the situation. People reported voluntarily exposing themselves to UXO, for example, removing items from farming land, in order to avoid possible unintentional exposure later. Contributing factors to involuntary exposure include the limited ability of clearance agencies to respond to the needs of farmers and lack of alternative agricultural land. The following quote expresses a view shared by many and helps to illustrate this as well as highlighting the higher level of fear that surrounds involuntary exposure:

“No clearance team comes and helps us so even though it is not safe to move, when we find UXO this farming season we need to move them, otherwise the following year when we farm again we don’t know where they are” (Male, Saravan).

In summary, the assessment has demonstrated that UXO related behavioural decisions are not motivated by single causal factors but are made within a complex and interlocking milieu of economic, social, political and cultural factors. Reducing risk taking behaviour to a single causal factor is therefore likely to over simplify the situation and result in less effective interventions. UXO risk takers, including women and children, generally are aware of the risk and activate some form of risk assessment process and use this to make rational and

deliberate decisions regarding acceptable risk. Within other stakeholder perspectives however, for example, humanitarian mine action 'experts', regulatory bodies, educationalists and decision makers there are different views on acceptability and rationality of local risk assessment processes. This conflict is largely about a divergent definition of risk, differences in ways problems are structured and solved, differences in judgments about the probability of an accident and different kinds of knowledge. While this gap may be difficult to bridge, the UXO sector in the Lao PDR is at a dynamic and pivotal period and this alongside a move towards a risk management approach to UXO contamination presents an opportunity to develop strategies to bridge some of the gaps and work in partnership with the various stakeholders to reduce UXO risk.

1.4 Recommendations

This assessment has been undertaken primarily as a MRE assessment and to inform MRE strategies and programming and many of the recommendations will be focused on MRE. Nevertheless, it is clear from the assessment that while information and education will remain a prerequisite for promoting UXO safe behaviour, particularly for children, on its own it is inadequate as a risk reduction strategy. In order to reduce risk the underlying vulnerabilities of risk and the way UXO risk is perceived by all stakeholders, also needs to be addressed. Recommendations therefore relate not only to MRE but also to broader structural issues including policy and legislation and clearance processes. Further, information and advocacy efforts will need to target different levels of society including policy makers, service providers and affected communities. The legislative training aimed at legislators in the HMA sector, which occurred at the end of 2006, is a good start. The information gathered during this assessment will inform development of the NRA Risk Management and Mitigation Strategy being developed by the Geneva International Centre for Humanitarian Demining (GICHD) with support from UNDP. The recommendations made are related to the below points and are further elaborated in Section 7 Recommendations:

- Establish a process for engaging stakeholders
- Improve targeting and deployment of UXO clearance assets
- Review legislation and regulatory controls
- Review and revise current MRE messages and strategies
- Review and revise current information management systems
- Develop strategies to reduce the risk to children and youth
- Develop strategies targeting adults & children who collect scrap metal
- Develop strategies to reduce the risk to people who dismantle UXO
- Develop strategies to reduce the risk to farmers working in the fields

2. Introduction

The Lao People's Democratic Republic (Lao PDR) is a landlocked country in Southeast Asia with an estimated population of 5.8 million and an annual growth rate of 2.3% (World Bank Development Indicators Database, August 2004). An estimated 28% of the population is living on less than a dollar a day making Laos one of the poorest countries in the world. Its geographical conditions restrict both the quantity and quality of agricultural produce as well as posing difficulties in providing adequate infrastructure and access to basic services. These

development challenges are compounded by a predominantly rural population (82.9% of the population live in rural and remote areas), great ethnic diversity and UXO. Years of aerial bombardment during the Second Indochina War has left approximately 50% of the land and surface area of the country contaminated with UXO.

Lao PDR has the distinction of being, per capita, the most heavily bombed nation in the world. As a result of intense ground battles and extensive bombing during the Indo-China War, especially during the years 1964 – 1973 there is widespread contamination of UXO, which thirty years on continues to act as a barrier to socio economic development and causes death and injury to adults and children. UXO injury, especially in a country such as Lao PDR where access to adequate health services is limited, can result in long-term medical and psychological sequelae (Handicap International, 2004) as well as a huge financial burden to affected individuals, families, their communities and health services. Often, those who suffer a landmine/UXO injury are aware of the risk (International Campaign to Ban Landmines, 2000; Geneva International Centre for Humanitarian Demining, 2003).

In the Lao PDR as a response to the continuing UXO threat, the Government, with assistance from UNDP and UNICEF established the Lao PDR Trust Fund for UXO in 1995 to finance a national programme of clearance and education. A National Survey on the Socio-economic Impact of UXO was conducted (Handicap International, 1997) and of the eighteen provinces in Lao PDR, fifteen reported contamination in 2,861 villages (25% of all Lao villages). Nine hundred and forty eight rural villages reported UXO in the centre of the village. As a result, UXO was deemed a major safety and development issue and a mine action programme was established.

The United Nations Development Assistance Framework (UNDAF) for Lao PDR, 2007-2011, also recognises that UXO is a cross cutting issue in tackling poverty and recognises the importance of an approach which facilitates the provision of an enabling environment for growth and development. Key areas seen as critical components include pro-poor policy reform, support to natural resource development and the environment, clearance of UXO, nutrition and household food security, reproductive health, disaster management, promotion of trade and private sector development, and strengthening of donor and aid coordination and alignment (UNDAF, 2006). As the results of this assessment will show, creating an enabling and multi-faceted approach to improved livelihoods will also contribute to a reduction in UXO risk.

In the UNDAF as well as other documents it is recognised that the continued presence of UXO more than three decades after the end of the war, poses an on-going threat to both livelihood security and personal safety. UXO for example, continues to kill or injure more than 150 people a year, with 77 children being injured or killed due to UXO accidents in 2005 (UXO LAO).

In common with most other mine action programmes, the Lao national UXO programme (1996-ongoing), aims to reduce risk through survey, marking, surface and sub-surface landmine/UXO clearance and MRE. MRE aims to promote safety in UXO contaminated communities and in the Lao PDR as in many other programmes of its time, has been primarily underpinned by psychological theories of behaviour change, such as the Health Belief Model (Rosenstock 1974). More specifically, in the Lao PDR, UNICEF has supported MRE for children in several at risk communities in 12 of the most heavily contaminated provinces. Since 2002, this support has been focused on the implementation of two projects: the introduction of UXO as an extra curricular activity within the primary school system,

implemented by World Education Consortium with the Ministry of Education and 'Sport in the Box' implemented by the Lao Youth Union.

Since the outset, UNICEF has supported continuous monitoring and evaluation, including UNICEF funded evaluations in 2000 (Delneuve, A.) and 2005 (Geneva International Centre for Humanitarian Demining). In 2001 UXO LAO also undertook a KAP study in 3 provinces followed by a more in depth study in one province to try and understand the contributing factors to UXO risk behaviour and injury (Sisawath, B and Durham, J.). Two other important studies which informed this assessment were two Cambodian studies into the motivations of villagers to undertake their own demining and the deliberate handling of live ordnance (Bottomley, 2003; Moyes, 2004) and a UNICEF commissioned study into the Scrap Metal Trade in the Lao PDR (GICHD, 2005).

Recognizing that while information and awareness is a prerequisite to change and the value of such activities should not be underestimated, the UNICEF commissioned evaluation in 2005 recommended that in preparation for the next 5 year strategy, a risk assessment be undertaken to ascertain who is currently at risk, why and what can be done to mitigate the risk.

Risk assessment is the process of identifying and assessing risks and risk taking behaviour in order to provide decision makers with the information they require. Based on information provided in a risk assessment, operational decisions can be made that balance costs against benefits and also take into account political, social and economic considerations as well as statutory or policy requirements. Risk assessment, therefore, involves identifying the hazard and the type of problems caused and how a particular hazard is perceived by different stakeholders. This will influence behaviour and level of risk people are prepared to accept. Risk assessment also involves identifying for example, who is exposed to the hazard, in what ways and what factors contribute to or lead to a person coming into contact with a particular hazard. Information gathered during the risk assessment process feeds into risk management decisions which may be technological, regulatory and educational or more frequently, a combination of all three based on available funds, feasibility, land use and impact.

Specifically, this assessment aimed to identify 'Who is at risk?' 'Why?' and 'What can be done about it?' Specific objectives were:

- To collect and analyse quantitative and qualitative data to identify who is at risk of UXO accidents, why and what can be done about it

- To involve a range of stakeholders in the assessment

- To provide a report based on the above which can be used to underpin the MRE strategy for the Lao PDR and for UNICEF specifically and can be used to develop measurable impact and outcome objectives and indicators

- To provide recommendations on appropriate UXO messages and risk reduction strategies

The assessment took an eclectic approach to the risk assessment combining ecological approaches to health promotion and injury prevention and risk management approaches to environmental health. The study was also informed by the '*International Mine Action Standards (IMAS) Mine Risk Education Best Practice Guidebook 2, Data Collection and Needs Assessment for MRE as well as the IMAS for MRE Best Practice Guidebooks and the UNICEF technical note Children Participating in Research Monitoring and Evaluation – Ethics and Your Responsibilities as a Manager*'.

Data was gathered in six provinces: Houaphan, Xieng Khouang, Saravan, Savanakhet, Khammouane and Attapeu using a Knowledge Attitude and Practice (KAP) survey form. In total, 1312 adults completed the KAP questionnaire and 26 adult focus group discussions were held. A total of 720 children between the ages of 8-18 completed the KAP questionnaire, of these there were 495 boys and 225 girls and 18 focus group discussions were held. Following the KAP, a more qualitative data collection phase was undertaken in three provinces: Khammouane, Xieng Khouang and Saravan to enable a more in-depth examination of risk taking behaviour and factors that underpin risk.

The assessment found that the general categories often used to characterize at risk populations, that is, the unformed, the unaware, the reckless and the intentional, were less relevant to the context of the Lao PDR. Instead, the study distinguished between intentional exposure (i.e. voluntary) to live ordnance, that is, where actors aware of the risk, purposefully expose themselves to live ordnance, and unintentional exposure (involuntary). Voluntary exposure may include for example, moving an item of UXO to another location or tampering with ordnance for economic gain. Unintentional exposure to UXO injury is where a person's exposure to live ordnance is unplanned and may include for example exposure due to inattention or lack of knowledge. While some of the prevention activities may be the same, intentionality is an important variable and particularly relevant in the Lao PDR where UXO injury due to intentional exposure to live ordnance, for example through the deliberate tampering of ordnance for the scrap metal trade is thought to be increasing. To promote the concept of UXO safety it is also important to understand and address people's perceptions of safety, danger and risk.

As will be shown, the assessment found generally a high level of UXO awareness and knowledge of risk taking and risk reduction behaviours. Despite this however, the assessment also found that many people, including women and children, on an almost daily basis, continue to voluntarily interact with live, or potentially live ordnance. This apparent inconsistency can be rationally defended by risk takers and behavioural decisions are taken based on a cognitive process of risk assessment influenced by individual and group perceptions of risk. The assessment identified a number of perceptual, cognitive, pragmatic and economic market factors which inform this rationale defence of risk taking behaviour. Also key is a weighing up of benefits and costs of UXO risk activities compared with an evaluation of other household risks.

A key household risk is basic food insecurity and this is often a motivating force in the decision to engage with, or at least potentially engage with, UXO. In trying to meet basic needs such as food security, individuals and households also consider the costs and benefits of alternative income generating options, often preferring activities which may expose them to UXO, for example scrap metal collection in contaminated areas. This is compounded by the ease with which detectors, which potentially bring people in more regular contact with UXO, can be bought, the inability of clearance agencies to respond in a timely manner to meet the needs of those affected and a certain level of social and parental acceptance of UXO risk taking behaviour, even where a UXO incident may have economic and social consequences for families and communities. Further, while people may have the knowledge, intent and skills to change their behaviour, they may feel unable to do so in the light of other household risks and the perceived costs of other household income generating options. A number of contradictions were also identified, for example, scrap metal collection is on the one hand perceived as being potentially risky but on the other hand is not necessarily associated with accidents. This may be due to a cognitive coping strategy whereby the risk is explained away as being exaggerated or a belief that the person has the necessary skills to remain in control.

The complex milieu in which behavioural decisions are made, poses a particular challenge for agencies in developing and responding to UXO contamination in the Lao PDR and suggests a need for a collaborative, multi-sectoral and multi-level response which will include a range of legislative and regulatory strategies as well as improved UXO clearance methodology and targeting of resources, skills training, MRE and shifts in perceptions. Central to this is developing processes to ensure the meaningful engagement of a range of stakeholders. For this reason, while the recommendations focus primarily on educational and training interventions, the report also makes a number of other recommendations. It was also clear from the literature review that currently the public health sector lacks the necessary skills and expertise to provide adequate emergency and rehabilitation care and although not the specific focus of this assessment, it is important that health care provision is improved and more specifically UXO injury surveillance and health care for UXO casualties integrated into the public health system.

3. Literature Review

The literature review was used to inform the assessment and begins with an overview of HMA and MRE to provide a more global and historical context to the assessment. As MRE is essentially a health and safety promotion activity, the review also includes a section on contemporary approaches to health and safety promotion and their application to MRE.

3.1 Humanitarian Mine Action

HMA is the term used to describe those activities that attempt to address the problems faced by people as a result of landmine/UXO contamination. It is composed of five components: mine clearance and survey; stockpile destruction; mine risk education; survivor and victim assistance; and advocacy and aims to recreate an environment in which people can live without landmines/UXO and in which mine survivors are fully integrated into their societies (United Nations, 2003a).

Humanitarian mine action, which has its roots in the military, developed as a response to the landmine/UXO problem in current and former areas of conflict and is now governed by international standards and operating procedures. In the early 90s, western humanitarian mine action NGOs were also formed with programmes established in Afghanistan, Cambodia and northern Iraq. The aim of these programmes was to reduce risk and return land and infrastructure to safe productive use to a specified depth through as close as possible to 100 per cent clearance (Eaton, Horwood and Niland, 1997). Different methods of landmine/UXO clearance have been tried, (for example using dogs or mechanical clearance techniques) however, until recently there has been a general consensus that manual clearance, although time consuming, costly and labour intensive, is the most effective.

More recently, there has been much discussion within the sector of applying risk management approaches to UXO clearance. Risk management is the process of optimising the use of scarce resources to reduce the risk that a person or community faces from a hazard. Risk management begins with a risk assessment which is usually based on a review of a combination of epidemiological and health surveillance data, behavioural surveillance and an assessment of the level and type of hazard, its current or likely impact and an analysis of who is likely to be exposed to the hazard, in what way, for what reasons, when and where and what the likely outcome will be of that exposure.

In terms of UXO contamination, risk management usually means a combination of regulatory, educational and technical interventions and involves a compromise based on available funds,

feasibility, land use and impact. In adopting a risk assessment/management approach clearance operators are also moving away from a zero risk approach to acknowledging that 100% clearance is unrealistic and that there will be a residual risk. Part of the risk management process therefore and based on the risk assessment is determining what is an acceptable level of residual or tolerable risk. The outcome of any clearance should be a risk that is tolerable to the end users, but which represents the best use of the resources available (GICHD, 2005). Given that risk management is premised on the basis of tolerable risk for the end user, implicit in a risk management approach is the involvement of affected communities in the risk management process.

Risks associated with the situation also have to be placed within the context of other real or perceived risks. This determines the level of acceptable levels of risk. In this respect, people's perceptions of risk also play an important part as people's perceptions may be at variance from actual risk. In assessing risk and in determining appropriate responses to risk it is important therefore to engage in public consultation.

Frameworks for environmental health risk management include the following steps:

- Defining the problem/context including defining the hazard and its potential impact, identifying stakeholders and determining risk management goals
- Analysing the risks including who is at risk and contributing factors to exposure to the hazard
- Reviewing the various management options based on resources and acceptable risk
- Taking risk management decisions
- Developing action plans including plans for risk communication
- Monitoring and evaluating the risks and risk management interventions

Key to all stages of the process is engagement with stakeholders and taking a multi-contextual, multi-risk view to risks and hazards. As will be seen below, such an approach is also consistent with contemporary paradigms of health and safety promotion.

3.2 Health and Safety Promotion and Mine Risk Education

A review of the literature shows two dominant paradigms in health and safety promotion. One is underpinned by the medical view of health and is focussed mainly on individual behaviours and lifestyles. The approach taken in this model of health promotion has arisen from the fields of medicine and psychology, in particular socio-cognitive theories of behaviour. This approach has traditionally underpinned many MRE programmes.

The second approach takes a broader view of health, and tries to address structural issues such as the social, political and economic determinants of health. This approach has been influenced by the principles of the Ottawa Charter for Health Promotion (World Health Organisation 1986) and stems from systems approaches, particularly socio-eco systems models.

Under the socio-cognitive theory of behaviour change the responsibility for behaviour change is seen to reside primarily within the individual and is influenced by several different factors. Some of these factors include:

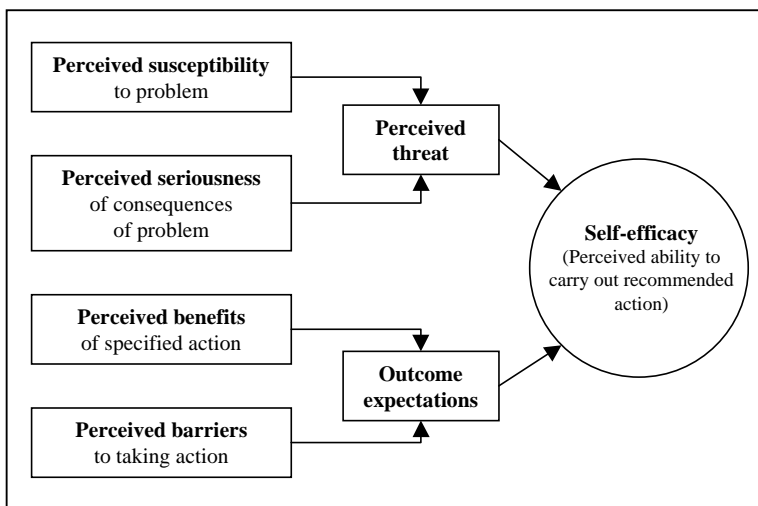
The Rational Factor which is based on knowledge, that is, people are expected to behave rationally if they have sufficient knowledge about something. If people know about the

potential harm of unsafe behaviours and know how they can avoid harm, they are more likely to adopt a new behaviour.

The Practical Factor, this is based on the personal skills acquired to carry out the new behaviour. People change their behaviour. In other words people will practice the new behaviour if they feel competent in practising a new behaviour.

The Social Network of Interpersonal Communication: People change their behaviour if they can associate with, and be supported by, others to share their behaviour. A member of a group is more likely to accept and follow a safe behaviour because other members are practising that behaviour.

Socio-cognitive theories to behaviour change recognise that behaviour change is not a one time event, but rather it is a process with people moving through several intermediate stages — each taking time — between behaving one way to behaving another way consistently. Further, as will be discussed in more detail below, a person’s decision to change their behaviour depends not only on their own ability but also on the extent to which the environment supports positive behaviour change. People are also more likely to accept and apply recommended risk reduction behaviours if they perceive themselves to be susceptible to a problem, and feel the recommended behaviour change will not only reduce their susceptibility to the problem, but that the changed behaviour will bring about other benefits that will be at least equal to the effort expended in adopting the new behaviour.



Research has shown that an individual will take preventive health action based on the interaction between four different types of beliefs as shown in the Figure 1 *Preventive Health Action Process*¹, thus behaviour change is a complex incremental process, influenced by existing values, norms, and emotions.

There are, however, limitations to these socio-cognitive theories: first, they are focussed primarily on the individual. Secondly, while it is true that an individual can exert some control of their behaviour and their immediate environment, they are not completely free agents. People may for example, suffer injury or death as a consequence of someone else’s behaviour, or through the physical environment in which they live or the social environment in which they behave.

Haddon (1980) incorporated these other non behavioural factors in the Haddon matrix which applied epidemiological principles to injury. More recently a systems approach to safety has been taken. This approach focuses on the milieu in which individuals behave and tries to make changes in the system. From this perspective, an injury event is rarely the result of an

¹ Nutbeam, Don and Harris, Elizabeth, *Theory in a Nutshell — A guide to Health Promotion Theory*, McGraw-Hill 1999

isolated behaviour error on the part of an individual; rather it is a combination of weaknesses in the system, triggering events and behavioural errors.

Bosnia and Herzegovina (Lusica 2003) have also applied a risk assessment model to analysing UXO/mine risk which also takes into account the environment, economic conditions and public safety, human behaviour, social impact and economic impact. UNICEF has developed a number of matrixes based on level of threat, level of impact and level of risk to develop a risk register and plan interventions. The matrixes are used to develop a picture of at risk groups which is followed by a SWOT analysis to further define at risk communities and devise appropriate interventions.

Green and Kreuter's (1999) social ecological model of health promotion also places health and safety within the context of the whole ecological system and provides a useful paradigm for understanding risk. The framework has been applied usefully as a tool for analysing UXO risk in the Lao PDR (UXO LAO in depth study in Boulapha District 2002, Durham, J. et al. 2005, Durham, J. 2006) and is included in the IMAS Guide to MRE (GICHD, 2005) and is used in this assessment.

3.3 What Makes Health and Safety Promotion Programmes Work

As discussed, any approach to injury prevention and UXO safety needs to embrace a range of strategies which target not only individual behaviour but also communities as well as socio-economic, policy, legislation, environmental and technological interventions. Nevertheless, awareness and education remains a prerequisite for change and its importance in UXO risk reduction should not be underestimated. Risk communication is the third aspect of risk assessment/risk management paradigm and is very closely related to risk management.

In mine/UXO action programmes, communication interventions may be used to raise awareness of the UXO threat, promote safe behaviour among people who are already aware of the threat or may specifically target communities that have been identified as being particularly high risk due to the presence of a number of socio-economic and environmental indicators (UNICEF/GICHD, 2005). It is also important to note that a communication strategy may not only target those who are directly affected but also those who may be able to contribute to solving the problem, for example, politicians, donors, legislators and journalists (GICHD). Risk communication may include one way messages but also a range of other communication processes and strategies are suggested:

Barriers to risk communication may include:

- Characteristics and limitations of the information about the risk – the message
- Characteristics and limitations of people communicating the message – the source
- Characteristics and limitations of the media in reporting of risk information – the channel
- Characteristics and limitations of the public in evaluating and interpreting risk information (for example perceptions, judgments on risk acceptability, complexity of issues – the receiver)

In summary the literature review provided direction in answering the research questions of who is at risk, why and what can be done about it? What is clear from the UXO LAO study, is that exposure to risk is not just about individual behaviours. Rather a complex web of interlocking and related risk factors and vulnerabilities underlie risk taking behaviours and even where UXO clearance has occurred, people may continue to be vulnerable to exposure

to live ordnance. This will be especially true where those vulnerabilities to high risk behaviour remain (Bottomely, 2003). Crucial therefore in framing an appropriate response to UXO risk is firstly identifying and then addressing these underlying risk factors and vulnerabilities. The apparent upward trend in UXO related mortality and morbidity also suggests that the professional UXO community is not currently fully meeting the needs of affected communities.

4. Methodology

The assessment took an eclectic approach and consisted of four main components: a literature review; development and administration of a quantitative knowledge, attitude and practice (KAP) questionnaire; a qualitative assessment and data analysis. Given the inconsistencies and incompleteness of the current accident data, a full analysis of the accident data was not included although the available data was reviewed and used to inform the assessment.

The KAP form was developed based on a review of similar forms and in a workshop with the LYU and the MAG research team. The KAP was used to provide broad contextual information on a general level of community mine/UXO awareness, attitudes to the deliberate exposure of live ordnance, people's assessment of the attendant risk associated with such practices and how these opinions have been informed. The results of the KAP were used to develop the qualitative survey tools in a participatory workshop with the data gatherers and research team. The KAP was field tested in Khammouane.

The qualitative tools were used to identify the individual circumstances, motivations and contributing factors which lead to voluntary or deliberate and non deliberate exposure to live ordnance and provide a detailed understanding of the range of contributing socio-economic, psychological, cultural, political and legal factors that contribute to risk behaviours and exposure to live ordnance. Triangulation was ensured through the collection of qualitative data using different tools, for example, semi/un structured interviews, focus group discussions and collecting information from different sources and the multi disciplinary nature of the research team. Neither quantitative nor qualitative data collection tools required participants to be able to read or write thus ensuring that those who were illiterate were not excluded from the assessment.

Data gathering tools were developed based on existing forms and tools and adapted to the Lao context. The IMAS Mine Risk Education Best Practice Guidebook 2, Data Collection and Needs Assessment for MRE Guidelines was also used as a guide for the development of appropriate data collection tools.

4.1 Sampling

To ensure the sample was as representative as possible, multistage cluster sampling was used with districts selected based on UXO contamination and impact. In each Province two districts were selected based on contamination levels, reported injury rates, recent UXO related surveys and accessibility. The sample size for the KAP was based on the need to include 2,000 respondents and a proportion of male and female adults and children exposed to the UXO. In each province, districts were chosen with probability proportional to size (PPS) with a list of villages prepared as a sampling frame for each district with approximately 50 villages being selected by simple random sampling with probability of selection proportional to the number of villages.

Following this, the sample population was estimated based on PPS and in each sample village the number of respondents was selected using a list of households with adults and

children over 8 years of age as the unit of the sampling frame. Using systematic random interval sampling, respondents were then selected by dividing the total number of households in the village by the number of sampling units required in each village. Once in the village, the survey team started from the centre of the village, and randomly chose the first household. Following this, subsequent households were selected by adding the sampling interval until the total number of adult males and females, boys and girls over 8 years of age of each village were obtained. In cases where there were no people in the selected household the next house was chosen and where there were insufficient households in one direction, the researchers returned to the centre and started working in another direction based on the direction of a spun pen.

Occasionally, due to the timing of the assessment and many farmers being away from their house and working in the rice fields, it was not possible for the selection of sampling units to be completely random. Nevertheless, MAG feels that the results are generally representative and due to the large sample size it is possible to make generalizations based on the data collected.

In total 1312 adults completed the KAP questionnaire of which 54% were men and 46% were women. Focus group discussions were held with 14 groups of men and 12 groups of women. The main occupation of the respondents was farming and livestock production. A total of 720 children over 8 years of age completed the KAP questionnaire, of these there were 495 boys and 225 girls. Eighteen focus group discussions were also held with children.

4.2 Data analysis

The aim of the data analysis was to understand from the perspective of affected communities, the nature of the risk associated with UXO contamination. The results of the KAP study was analysed through using standard software: Statistical Package for the Social Sciences.

Content analysis was used to analyse the qualitative data and to identify predisposing, enabling and reinforcing contributing factors² to risk behaviour (refer also to IMAS Mine Risk Education Best Practice Guidebook 2, Data Collection and Needs Assessment for MRE, Annex 2) and to identify appropriate strategies and communication mechanisms for promoting safety and mitigating risk.

4.3 Location

The KAP study was conducted in villages selected from five provinces identified by UNICEF and LYU with high, medium and low levels of UXO contamination based on the HIB socio-economic impact study (1997). Two of the study sites were selected from among those with the highest reported UXO incident and casualty numbers while a third was chosen from among provinces that, although affected by similar levels of UXO contamination, had low incident and casualty numbers.

The qualitative data gathering phase which primarily utilised semi and unstructured interviews and focus group discussion was undertaken initially in two Provinces (Xieng Khouang and Saravan) and in consultation with UNICEF, an additional province (Khammouane) was also included.

² Predisposing (motivating), for example, knowledge, beliefs, values and attitudes; Enabling (facilitating), that is those factors that enable a behaviour or situation to occur. Reinforcing (maintaining or rewarding) these are factors that provide incentives for health behaviours to be maintained.

Site selection also took into account the location of the recent UXO Victim and Survivor Assistance (Handicap International Belgium, 2006) study in Savanakhet and Xieng Khouang. In the three districts included in the study in Savanakhet for example, all known UXO survivors were interviewed and care was taken not to raise expectations through further interviews with the same survivors although information gathered in the HIB survey did inform the assessment analysis.

4.4 Ethics

In each data collection site the MAG research supervisor explained the purpose and nature of the data collection, how the information would be used, data collection methods employed, the right for informants to withdraw at any stage in the assessment process without retribution, possible benefits, harms and outcomes and avenues for complaint and how such complaints would be investigated. Training in confidentiality was also provided to data gatherers which included interviewing individuals in places where as much as possible they would not be overheard. They were also trained in the appropriate storing of information. Questionnaires and interview tools will remain anonymous with no names or identifying features appearing on completed questionnaires or interview notes. Access to the records and the length of time the data will be kept will be agreed in consultation with UNICEF.

Community leaders and individuals were asked to give informed verbal or written consent as considered appropriate. Prior to the commencement of the data gathering phase, the assessment methodology was agreed with UNICEF and checked to ensure that it met UNICEF's ethical research guidelines.

4.5 Training of Data-gatherers

The MAG research team was already trained in data gathering for health research and was lead by an International Team Leader and a National Principle Researcher. Additional training was provided however, in ethics of data collection and working with children. Research Assistants were allocated to each province, where they trained the LYU data gatherers in that particular location.

4.6 Quality Control

In addition to the training provided, the MAG International Team Leader and the National Principle Researcher provided day to day quality control and monitoring support. Further, in the data collection phase for the KAP, one Research Assistant was deployed to each province to work alongside and provide management support to the LYU data gatherers. The Research Assistants checked that forms were completed properly, provided one to one support where needed and held regular debriefing sessions with the data gatherers.

4.7 Special Considerations for the Participation of Children

Given that children form part of the wider community affected by UXO contamination, many UXO casualties are children and that information collected will be used to inform decisions that will relate to children and MRE interventions aimed at children, the assessment aimed to ensure that child informants were actively included in the assessment. Both quantitative and qualitative information was gathered from children.

Including children in the assessment however presented its own challenges in ensuring that the rights of the child and the best interests of the child were built into the assessment design. To ensure this the assessment, based on UNICEF guidelines aimed to:

- Ensure that children were not exposed to risks or potential harm through the assessment process. Children and their carers were informed of the assessment, its purpose and design and the right to non participation, interviews were conducted in safe areas with children having the opportunity to be accompanied by a friend or carer.
- Child participation was based on the child's consent. Children were also informed and given opportunities to practice saying 'no' so that they could withdraw from the process at any time
- Confidentiality was maintained in all records and reports
- Researchers and data gatherers were trained in gathering data from child participants
- Literacy was not a pre condition for inclusion in the assessment
- UNICEF reviewed the final assessment design specifically for ethical aspects and its approach to children

4.8 Stakeholder Meeting

The findings and preliminary recommendations of the risk assessment were presented at a stakeholder meeting on the 21st September 2006. Participants at the stakeholder meeting included the Lao Youth Union, MRE service providers and the NRA. The stakeholder meeting provided an opportunity for a question and answers session and presented a forum in which the findings could be discussed and comments and inputs from the stakeholder meeting were incorporated into the final report along with input from group discussions which informed the recommendation section of the final report.

4.9 Limitations

Road conditions during the rainy season meant some districts of Saravan were inaccessible; these districts were districts which had the highest level of contamination and reportedly the highest active involvement in scrap metal collection. As the KAP survey was conducted during the peak farming season the adult labour force was mobilized planting rice crops, impacting on the availability of people to be interviewed. These two factors may have resulted in the incidence of high risk activities such as moving UXO out of farming land and adults who actively collected scrap metal in fact being under reported as highly contaminated districts could not be accessed and farmers, who potentially were moving UXO were working in the fields at the time.

5. Findings

5.1 Summary of Findings

This section provides a general overview of the assessment. The section is divided into three main parts: UXO mortality and morbidity, UXO risk and channels of communication. A more detailed presentation of the findings of the KAP arranged under the three areas of knowledge, attitude and practice follows in the next section under general findings.

5.1.1 UXO Mortality and Morbidity

As part of the assessment, a review was undertaken of the available UXO accident data which was provided primarily by UXO LAO. A review of this data shows that in common with many other developing countries, injury surveillance and resulting data is insufficient, incomplete and lacking standardization and socio-demographic data. Further, given that almost all of

UXO LAO's data comes only from the 9 provinces in which it is operational, UXO accidents are likely to be underreported. A review of the other available literature, also suggests that hospital data is also incomplete and excludes fatalities or other cases that are not treated in a tertiary level health care facility. To provide a broad overview of the accident and casualty situation there have been a total of 976 recorded accidents from 1999 – 2006, in the 9 provinces of UXO LAO operations. In 2005 UXO LAO recorded a total of 164 casualties, 88 children (54%) and 76 adults (46%) with 36 accidents resulting in death. Eighty nine percent of these casualties were males or boys, with 11% of the casualties being women or girls.

Available statistics are therefore inadequate from a research perspective because of incomplete reporting, inaccuracies and insufficient classification of information. Quantitative statements on the prevalence, incidence and risk estimates on probability of a UXO accident therefore are not currently possible. Nor is it possible to accurately analyse whether there is any correlation between UXO accidents and UXO action. Notwithstanding these difficulties, however, the data that does exist and anecdotal evidence shows that accidents are occurring during the course of routine livelihood activities such as working in agricultural fields, collecting forest products and from cooking fires along with activities in which the individual is intentionally engaging in contact with the UXO, such as scrap metal collecting and playing.

This is supported by the HIB Victim and Survivor Assistance Study (2006) which analysed data in Xieng Khouang and Savanakheth from the UXO LAO database and found field work (defined as working in rice fields, cultivation, gathering food in the forest and construction) as the greatest cause of accidents.

Cause of accident	Xieng Khouang and Savanakheth	Xieng Khouang	Savanakheth
Field work (rice field cultivation, forest gathering and construction)	33%	27%	38%
Cooking fires	29%	27%	31%
Scrap metal collection	21%	9%	31%
Playing with UXO	13%	27%	0%
Nearby at time of explosion	4%	9%	0%

The table below gives the rate of UXO accidents per province per 1000 people and shows Xieng Khouang has an accident rate of 1.5 accidents per 1000 people followed by Attapeu with 0.8 accidents per 1000 people. Interestingly, in the remaining provinces the accident rate is very similar. It should be noted however, that the population figures used are for the whole province rather than the population of people affected by UXO contamination, or from the districts where UXO LAO gathers data.

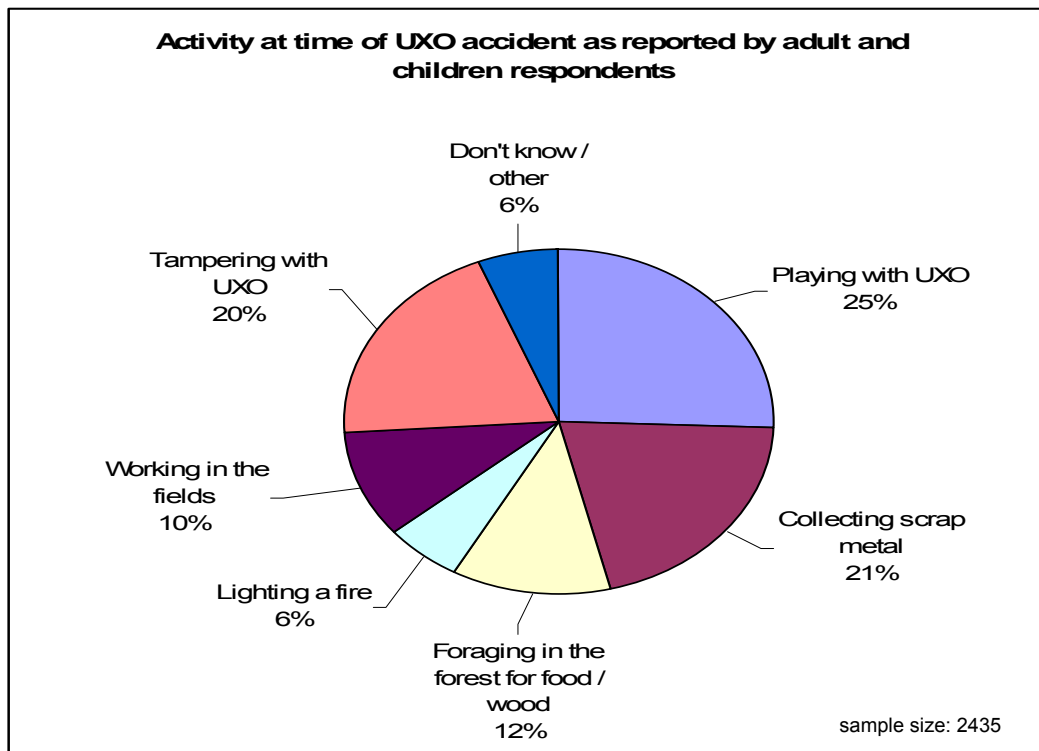
Number of accidents 1999-2005*					
Province	Population #	Total casualties*	Injuries	Deaths	Accident rate per 1000 people
Luang Prabang	407,039	88	59	29	0.22
Houaphan	280,938	63	53	10	0.22
Xieng Khouang	229,596	334	248	86	1.5
Khammouane	337,390	70	42	28	0.21
Savanakhet	825,902	160	120	40	0.19
Saravan	324,327	47	33	14	0.14
Sekong	84,995	17	12	5	0.20
Champasak	607,370	107	73	34	0.18
Attapeu	112,120	90	47	43	0.80

Population data courtesy Steering Committee for Census of Population and Housing (2006)

* Accident data courtesy of UXO LAO

5.1.2 Cause of UXO Accidents

Interestingly while the perception tends to be that most accidents are caused by scrap metal collection, the available data suggests that the cause of UXO accidents is in fact spread over a range of activities, including people who are going about their routine agricultural work or collecting food or wood, to children who are playing and adults who are tampering with UXO. Some caution is needed however as it may be that due to the legal status of dealing in war scrap the activity at the time of a UXO incident may at times be misreported.



According to the available data, males are far more at risk from a UXO injury than females; for example, UXO LAO data shows that between 1999 and 2006 males constituted 81% of UXO injuries. In 2005 and 2006 males account for 89% of total number of injuries reported with 25% of accidents resulting in fatal injuries.

Casualties usually suffer severe and long term injury and disability and the fatality rate is high. What is also disturbing is that for that for this period, 1999 – 2006, the available figures show that just over half of the casualties are children and the majority of adults killed or injured fall within the productive age of 18-45. The large proportion of children injured by UXO reflects the type of UXO contamination in Laos. UXO are often found in the village and other areas where children work and play. The prevalence of cluster bomb sub munitions (bombies) pose a particular hazard for children who account for approximately 51% of accidents.

Due to the inconsistencies and possible misreporting of UXO related accidents to authorities, the assessment has provided valuable insight into accident causation directly from the affected communities. Seventy eight percent of the adult respondents and 63% of the children knew of someone who had been injured or killed by a UXO accident. The above graph highlights the activity individuals were reported to be carrying out at the time of the UXO accident.

The principal cause of death or severe injury is severe blood loss; the geography of the country limiting quick access to health care institutions capable of providing blood transfusions; usually available only at provincial level hospitals. The needs resulting from an UXO accident, for both adults and children require a long term integrated multi-sectored approach to providing assistance to people with disabilities. Currently the assistance for survivors of UXO accidents in Lao PDR is limited in scope and reach and is far from adequate.³ This limited health and rehabilitation support makes it crucial to ensure that accidents where possible are prevented. In order to do this in an effective and efficient manner, a thorough understanding of peoples' interactions with UXO and the motivating factors behind risk taking behaviours is needed in order to develop MRE messages as part of an overall strategy aimed at reducing accident rates.

5.1.3 UXO Risk in the Lao PDR

The risk assessment found that almost all people living in contaminated areas are potentially at risk of exposure to live ordnance although the level of exposure and reasons underpinning exposure, and the risks taken when exposed to UXO are different.

The risk to the population is both surface and subsurface UXO, with the largest number of reports indicating exposure to BLU sub munitions. No one single factor can be contributed to people's exposure to UXO, rather exposure is often the consequence of complex interlocking factors including;

- Exposure to live ordnance, both surface and subsurface
- Engagement in routine farm or household activities at the time of the incident or engaged in some way in scrap metal trading
- Poverty and low cash income contributing to households seeking income derived from UXO as either scrap metal, or through tampering and dismantling UXO
- Lack of real or perceived sustainable livelihood options

³ HIB, 2006

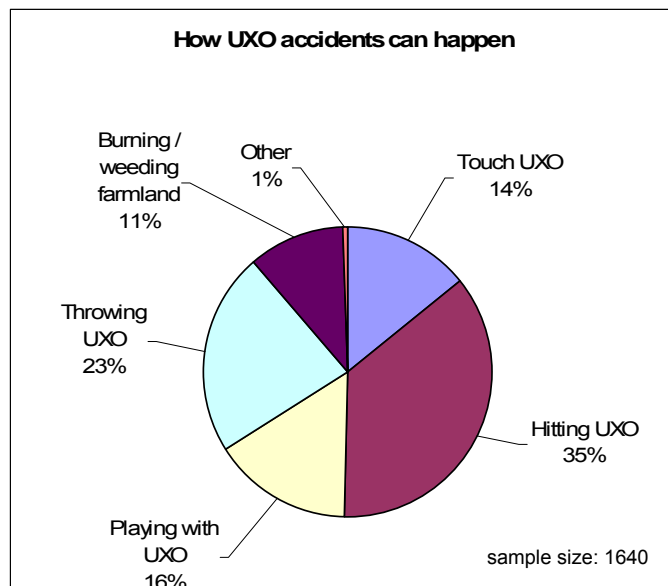
- Perceived costs of other alternative livelihood options compare unfavourably with other options even though those other options may put people at greater risk from UXO
- Lack of farmland, resulting in continuation of farming contaminated land and households inability to produce enough food to ensure food security
- Inability of clearance agencies to meet community needs
- Access to a market in which to sell scrap metal
- A lack of parental supervision of children
- Active involvement of children in high risk activities such as scrap metal collecting

Lack of knowledge, however, was not found to be a major contributing factor to UXO exposure. Generally, the assessment found a high level of awareness and understanding among both adults and children and the risks associated with coming into contact with UXO are overall well understood. For example, 82% of the adult respondents indicated that no UXO is safe and provided a number of reasons for UXO detonating. Reasons given included: impact from a strong force, touching / moving the UXO, high temperatures from a fire and vibration from movement and tampering. Of the children, 99.6% considered UXO to be dangerous and 97% of the children reported being afraid of UXO.

From the multiple responses given the children identified that accidents could happen through touching the UXO, by hitting the UXO, through playing with the UXO, by throwing the UXO and by burning farmland.

Children also reported having a number of strategies to protect themselves from UXO related accidents including:

- When coming across a UXO not going close to it (51%)
- Being careful when going where never been before (5%)
- Being careful when digging (17%)
- Being careful when slashing and burning (8%)
- Building domestic fires off the ground on stones in case a UXO was subsurface (4%)
- When finding a UXO report it (12%)
- Other (3%)



These strategies also largely reflect the standard UXO messages and in this sense are perhaps less sophisticated than strategies reported by adults which are based more on experience and folklore and relate more to the ways in which adults actually handle UXO.

In general, both adults and children's engagement with items of UXO can be categorized as either voluntary and intentional or involuntary and unintentional. Voluntary, intentional exposure is often a pragmatic and habitual response to UXO contamination and the risk assessment found the reasons for voluntary contact were to move items of UXO from agricultural land and moving UXO from areas where children go. The other form of voluntary exposure was primarily driven by economic imperatives and includes collecting scrap metal and in some cases deliberately tampering with live ordnance, primarily to disable the UXO to render the scrap saleable.

Predisposing factors (that is factors related to knowledge, beliefs, values and attitudes) for voluntary engagement with UXO include, level of contamination of farming land, people's beliefs that some UXO are safe to move and digging to investigate metal detector signals. Enabling factors (that is those factors that enable a behaviour or situation to occur) include ease of which people can pick up UXO items and move them, availability of metal detectors, and inability of clearance agencies to respond timely to reports of UXO on farming land. Reinforcing factors include, food security problems which motivate people to engage in the collection of scrap metal, lack of alternative income generating activities, price of scrap metal and lack of access to alternative farming land which is not contaminated with UXO.

Men, women and children all engage in the scrap metal trade, 52% of the children surveyed for example, reported having collected scrap metal which in the context of the Lao PDR where children often contribute to the household labour and income is perhaps not surprising. Almost all of the children who reported collecting scrap recognised it was a potentially dangerous activity giving the following reasons:

- It is not safe to collect scrap metal below the surface when using a small shovel to dig as they cannot see the UXO below the surface (again highlighting the fear surrounding involuntary contact)
- It is dangerous while digging, for example, in bomb crater areas
- Cannot tell if there is a fuse or explosive inside
- Afraid that they might inadvertently collect a UXO such as a 'bombie'
- UXO might be in the ground and can explode
- High risk from UXO which can kill

Almost all of these children had received money for scrap collected which they used for three main activities, buying school supplies, buying clothes and buying sweets. In the previous 12 month period 2% of the adults had destroyed or dismantled UXO. UXO were destroyed or dismantled in the following ways:

- Used a strong object to break it open (11%)
- Placed the UXO in a hot fire (56%)
- Used spanner to open large bomb (7%)
- Put salt over the UXO (7%)
- Others, which included opening UXO with a knife or a small spade (19%)

The majority of people who destroyed UXO do so by burning them on farming land in order to clear the land for farming and to make the environment safer (74%), while 16% reported that

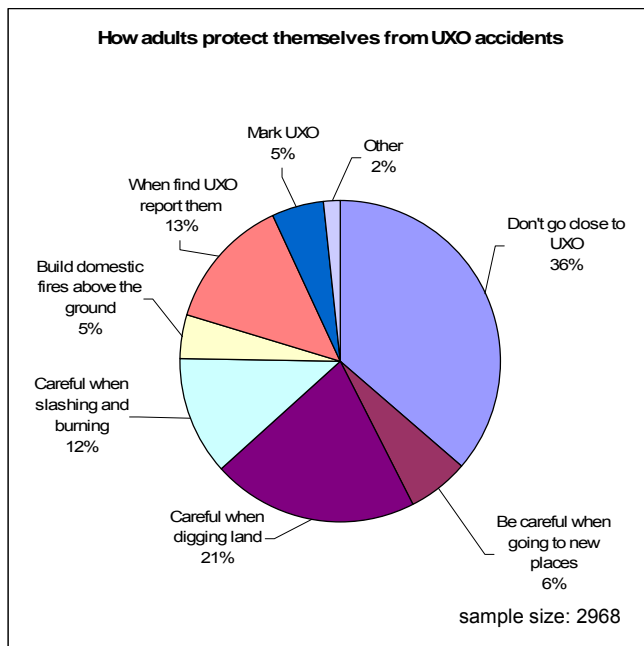
they dismantle UXO to collect the scrap metal, with 3% dismantling UXO to collect the explosive and 7% dismantling UXO to be able to use it as a lamp. People who destroy or dismantle UXO have learnt how to do this through their experiences as a soldier and from friends who also conducted this activity.

Further, 17% of the adults included in the KAP thought that handling UXO on a regular basis made it safer to handle UXO in the future and 19% of the people surveyed were interested in watching people handle UXO both to learn how to dismantle UXO and out of curiosity as they had never seen someone handling a UXO before. This was reinforced during the focus group discussions where it was reported on numerous occasions:

“We hear from the UXO team that we can not touch or move UXO safely so when we see someone do this we want to see why and how they can do that safely” (Male, former scrap metal dealer, Xieng Khouang).

This tendency to be interested in and to watch people dismantling UXO may also provide one reason why there are often multiple casualties in accidents involving tampering and has implications for risk messages.

While people are generally aware of, and understand the risks, the habitual presence of UXO and routine handling of ordnance, alongside the degree to which people feel they can control the level of risk - by moving an item carefully, or being sure not to hit it - means that on the whole people feel the level of risk is acceptable or at least manageable. Many of the respondents who reported UXO exposure for example, were able to explain risk reduction strategies they used as shown in the graph below.



Involuntary exposure, particularly to sub surface UXO while farming, is generally feared due to the lack of control people have over the situation and people reported voluntarily exposing themselves to UXO, such as removing items from farming land, in order to avoid possible involuntary exposure later. Contributing factors to involuntary exposure include the level of contamination on farming land, methods used when farming, such as digging, lack of alternative uncontaminated farming land, lack of knowledge and the inability of UXO clearance agencies to meet communities' clearance needs.

In general, as highlighted in the preceding paragraphs, individuals in contaminated environments understand the dangers of UXO. Yet there are individuals who having not grown-up in a contaminated environment have not developed strategies to deal with UXO or are simply unaware of the risks UXO pose and may unintentionally place themselves in

danger. This was highlighted by a woman originally from Vientiane who had married and moved to a village contaminated by UXO in Xieng Khouang. After living in the village for a short time she saw that many people collected scrap metal which could be sold to make money. Completely unaware of the dangers she collected all the BLU sub munitions in her skirt that her husband had piled up in their home garden and carried them to a near by tree. She then proceeded to throw the BLUs at the tree to break them open so she could sell them as scrap. Fortunately for her, a family member came and saw what she was doing. *‘everyone was very mad at me, but I didn’t know it was dangerous’* she said.

Relocated communities are also at risk, as highlighted by a village in Houaphan which had relocated from a mountainous area to be closer to health facilities after many people died of illness in the village. They had moved from an area of low level contamination to another area of low contamination, so were not faced with the threat of UXO, however what was clear was the community lacked general knowledge about UXO and had not developed strategies to deal with UXO. If they had relocated to an area of medium or high contamination the community would have been at risk. This should become a consideration in future MRE campaigns if populations living in mountainous areas are relocated closer to infrastructure and facilities, possibly exposing individuals to UXO and placing them at an increased risk of intentional and unintentional contact.

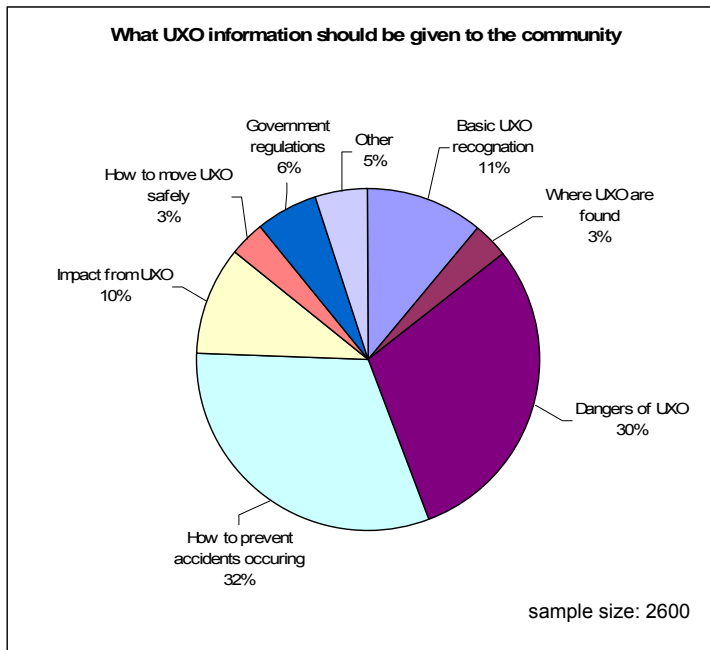
The risks associated with a particular situation also have to be placed within the context of the real or perceived risk; this real or perceived risk determines what level of risk is acceptable to the risk taker. The risk assessment found many examples where judgments and decisions were made based on misinformation, such as the safety precautions taken when moving UXO and what items of UXO are ‘safe’ to move. In this respect people’s perceptions of risk also play an important part, as it is these perceptions that form the basis from which adults and children rationalise a risk taking behaviour. However the risk assessment found that people’s perceptions of risk are at times in variance from actual risk, placing them in danger of injury or death from a UXO accident. As an example, the inadequate safety precautions farmers take when moving UXO such as turning their heads when placing the UXO down will have little impact in preventing injury or death.

In summary, the risk assessment found that voluntary exposure to UXO is first and foremost driven by the need to improve household income and food security, as is the case with scrap metal collection. Rural areas of Lao PDR have few options available at the household level to generate cash flow. The risk assessment identified the selling of labour, the collection of non-timber forest products to sell at the local market, the selling of livestock assets and scrap metal collection as the primary means in which households generate income outside of the cropping production. In view of the options available, the collection of scrap metal is seen as a viable option to providing a cash flow to poor households due to the low level of investment that is required for the return gained, whereas the selling of labour can result in the break up of the family unit in order for someone to move to an urban centre to seek employment.

Contradictions were also found within the study, parents would warn children of the dangers of UXO and scrap metal collection and then actively involve children in these activities. The biggest contradiction of all however, was the level of knowledge and awareness surrounding high risk activities and yet the involvement of many people in these activities. As the report will show this is primarily due to people’s ability to rationalise a risk through the development of risk reduction strategies and the lack of, consistent negative consequences reinforcing a particular behaviour as high risk. Further, people may deny or discount risk when the perceived benefits resulting from accepting the risk are deemed to outweigh the risks.

To summarize, the assessment has demonstrated that behavioural decisions are made within a complex and interlocking milieu of economic, social, political and cultural factors. UXO risk takers, including women and children, generally are aware of the risk and activate some form of risk assessment process and use this to make rational and deliberate decisions regarding acceptable risk. The following sections will look at this more closely and examine the motivations and driving forces that underpin specific high risk behaviours.

5.1.4 Communication Channels

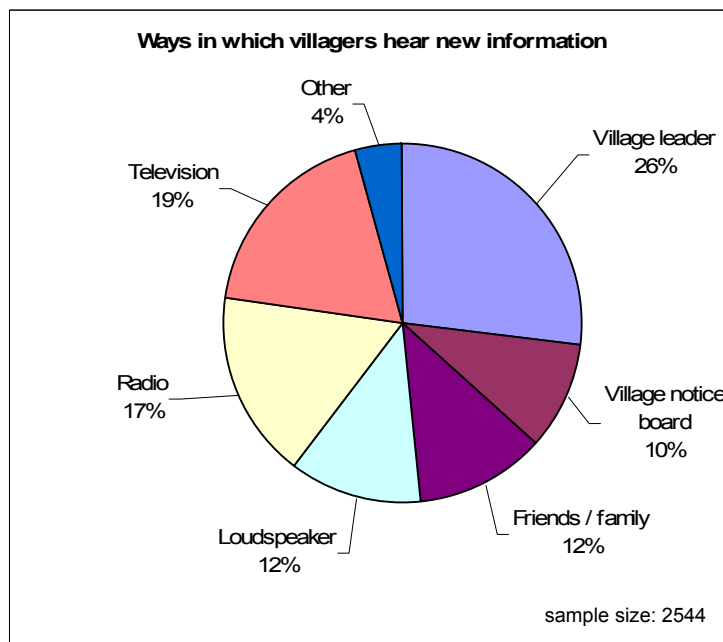


Adults identified the following community awareness information that should be given to their communities.

The main gateway of information to the village level remains through a fairly formal and hierarchical chain from central government, to provincial, district and village level. These formal communication structures however, may also act as an entry point to non formal structures. Other factors that affect access to information include geographical location, socio-economic status and ethnicity and language. Populations living in urban,

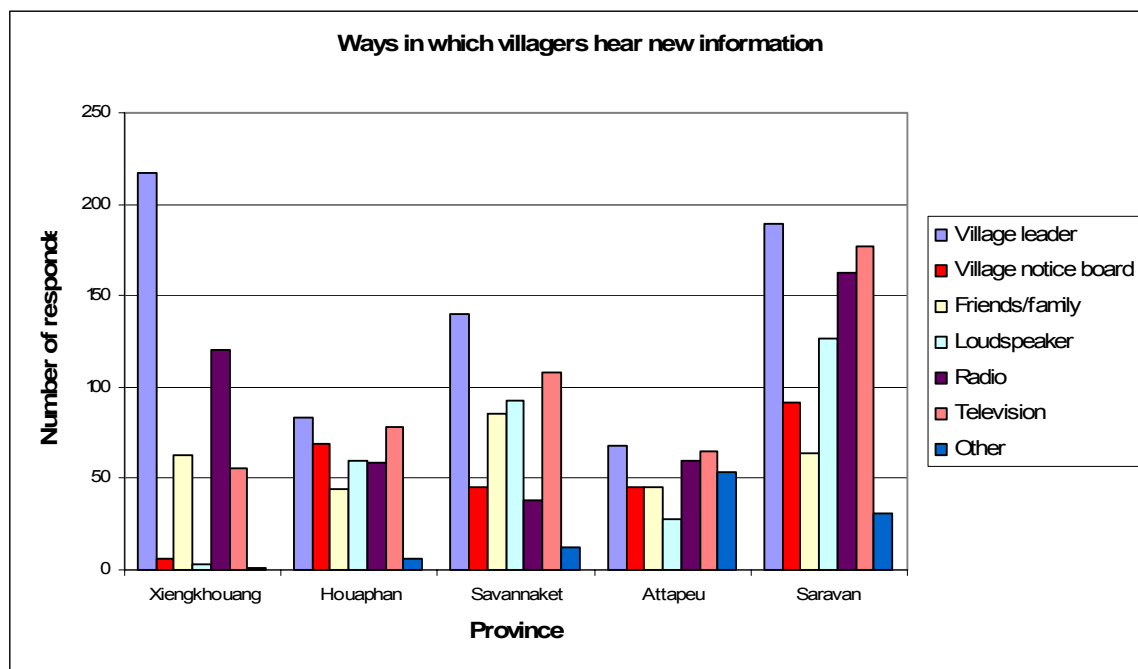
peri-urban and lowland areas generally have better access to information due to better access to electricity and mass communication mechanisms as well as better access to education and public services, higher socio-economic status and higher literacy levels.

There are therefore, a range of communication opportunities to reach communities in these circumstances. As villages become more remote and the percentage of poor people increases so opportunities for disseminating risk education and communication materials tend to diminish.



Households of lower socio-economic status for example, may have fewer opportunities to attend meetings and gain access to radio or may not be able to repair broken radios or replace batteries. Rural women, partly due to their work patterns may have even less access to or even be excluded from any form of mass media. Further, rural women and ethnic women particularly, are more likely to be illiterate and have less social and formal contacts than men, with information most often being received orally through informal channels of communication such as family members, peers and friends. It is important therefore, that any risk communication campaign in Lao PDR takes into account a range of possible communication channels to ensure inclusion of all at risk groups and sub-groups. The KAP respondents receive information about health or agricultural activities in a variety of ways as shown in the chart below.

The various ways in which people receive information differs greatly due to their geographic location (as highlighted below) and the wealth of a household and their ability to afford radios or televisions. This will need to be considered in future communication strategies, as discussed further in the recommendations.



5.2 General Findings

The general findings section has been separated out into two sections, adults and children.

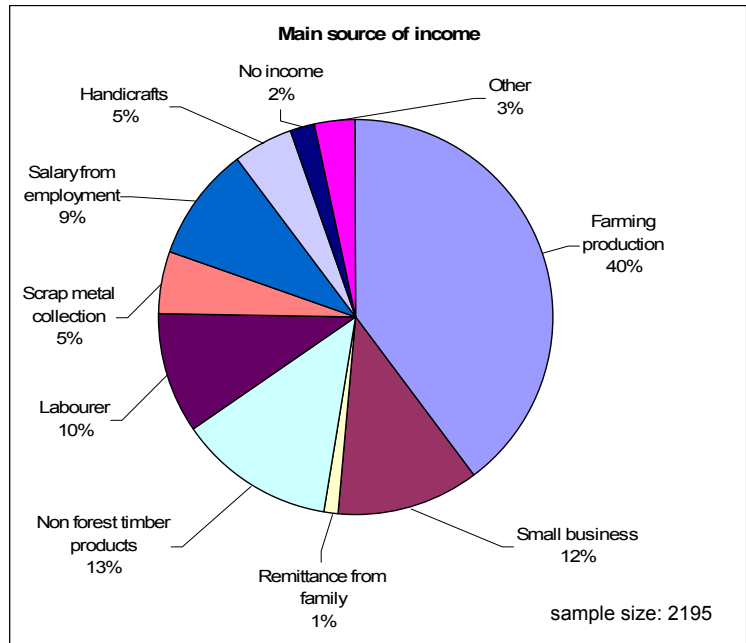
5.2.1 General Findings – Adults

This section presents the findings from the quantitative KAP survey and is organised under the headings of knowledge, attitude and practice. A total of 1312 adults completed the KAP questionnaire, 54% men and 46% women. The age of the adults ranged from 19-21 years of age (5%), 22-26 years of age (12%), 27-35 years of age (23%), 36-45 years of age (28%) and over 46 years of age (32%). Focus group discussions were held with 14 groups of men and 12 groups of women.

The respondents were mainly farmers (76%), government officials (9%) or small business owners (9%). Ninety three percent of the respondents owned their own land with income being derived from a variety of sources.

On average households reported having rice from their own agricultural production for 9.6 months of the year. When families experienced food shortages a variety of strategies were used to be able to generate income to buy rice, the multiple responses include:

- Borrow rice (6%)
- Borrow money to buy rice (5%)
- Collect scrap metal to buy rice (8%)
- Go out labouring (15%)
- Sell livestock (31%)
- Sell handicrafts (6%)
- Collect and sell non timber forest products (17%)
- Small business (4%)
- Other (8%)

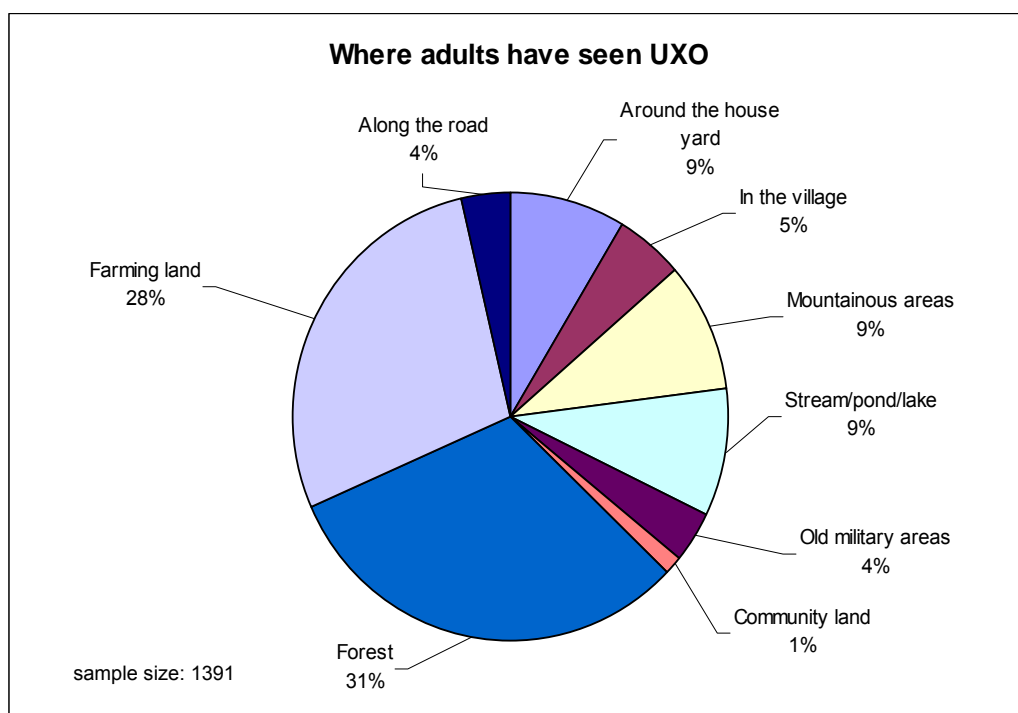


Fifty five percent of the adults had reported seeing UXO in the last 12 months; predominately men over the age of 27, with men over 46 years of age making up the majority of this group. Adults are coming across UXO primarily in farming land and forest areas.

5.2.1.1 Knowledge

Adults are well informed that UXO is dangerous and amongst the multiple responses the following were identified as what could make a UXO explode:

- Impact from a strong force (40%)
- Touching / moving the UXO (24%)
- High temperatures from a fire (18%)
- Vibration from movement (10%)
- Tampering (5%)



As discussed in the summary of findings, adults could identify strategies to protect themselves from UXO accidents or injury. It is important that when asked what makes a UXO safe, 82% of the respondents indicated that no UXO is safe, indicating a good general awareness of the dangers of UXO.

Adults' understanding of how far away you need to be to prevent injury or death from an explosion varied greatly with the distance ranging from 1m to 3000m, with the average being 49m, with many respondents indicating that it depended on the type of ordnance that exploded.

5.2.1.2 Attitude

Male scrap metal collectors were identified by the communities interviewed as being most at risk from UXO. The community identified men as being most at risk (97%) and perceived them to be at risk when involved in the following activities:

- Scrap metal collectors (36%)
- Farmers working in the fields (24%)
- People foraging in the forest (17%)
- Children who play with UXO (21%)
- Other (2%) which included UXO clearance teams

Seventy two percent of the respondents knew someone that had been killed or injured by UXO, with 52% believing the person knew it was dangerous at the time, 27% believing they

didn't know it was dangerous and 21% were unsure. The multiple responses given for the activities they were conducting at the time included:

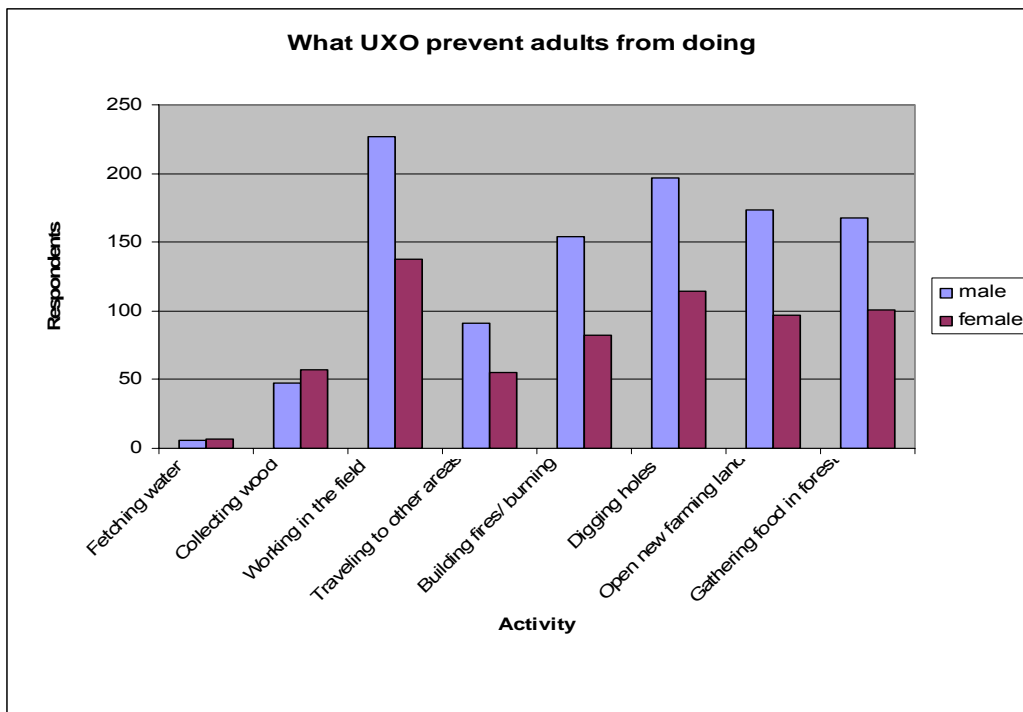
- Playing with the UXO (21%)
- Collecting scrap metal (19%)
- Foraging in the forest (10%)
- Collecting firewood (2%)
- Lighting a fire (5%)
- Working in the fields (10%)
- Dismantling / tampering with the UXO (28%)
- Other (5%)

Seventeen percent of the adults thought that handling UXO on a regular basis made it safer to handle UXO in the future. Of the people surveyed 19% (men (63%) and women (37%)) were interested in watching people handle UXO, of these 34% watched to learn how to dismantle UXO, 31% watched out of curiosity, 10% wanted to see what was inside with 25% to how brave the person was being and to give advice.

This was reinforced during the focus group discussions where it was reported on numerous occasions: *"We hear from the UXO team that we can not touch or move UXO safely so when we see someone do this we want to see why and how they can do that safely"* (Male, former scrap metal dealer, Xieng Khouang).

5.2.1.3 Practice

Fifty two percent of the adults report that UXO prevent them from carrying out normal day to day activities, such as those shown in the table below.



Moving UXO out of Farming Land

Sixteen percent of the adults surveyed had previously moved UXO to then be able to use the land. This land was predominately used for farming (41%) and home gardens (32%). The primary reason for moving UXO was to make it 'safer' to farm in that area and to reduce the risk the farmers face when digging their land and home garden areas.

"If we find UXO in the forest we never move them, we only move UXO out of our farming land"
(Male, Saravan).

When asked how you can tell if a UXO is safe 82% of the adults responded that no UXO is safe. This was reinforced in the focus group discussions by adults who were moving UXO out of farming land all acknowledging that the practice they were undertaking was a dangerous one; there was no acknowledgement that what they were doing was safe.

General Handling of UXO

Ten percent of the adults interviewed had moved or handled UXO in the last 12 months; 80% of these people were men, 20% women, with men over 27 years of age accounting for the greatest proportion of people who moved UXO. The predominate UXO that adults are moving are "bombies" (BLU sub munitions). Based on answers given in the KAP, the level of education of the adults does not seem to have a bearing on whether they moved a UXO.

The primary reason for the moving and handling of UXO is to be able to farm agricultural land (42%) and to prevent children from playing with the UXO (43%). Adults who move or handle UXO generally did so alone (74%) and if not alone with a friend (11%), relative who is an adult (7%), and in some cases a relative who is a child (4%).

Of these adults who moved UXO in the past year, 17% did so on a regular basis, 2-3 times per week, 2% on a weekly basis with 61% doing so monthly, with the remaining 20% moving UXO once or twice a year.

Storing of UXO

Four percent of the adults had stored UXO in the previous 12 months, 80% of which were males and 20% females. Adults are storing UXO in the house (5%), garden and farming land (20%), in a stream or lake (4%) and in the forest (57%) or other (14%) which included in the mountains.

Adult men aged 27 and above are primarily storing UXO, on average 4 times a year and are primarily storing UXO to prevent children from playing with them. Other reasons given by both men and women were that they own the UXO as they found it on their land and they were waiting for the scrap metal collector to come.

Destroying or Dismantling UXO

In the previous 12 month period, 2% of the adults had destroyed or dismantled UXO. Adults who destroyed or dismantled UXO did so in a variety of ways:

- Used a strong object to break it open (11%)
- Placed the UXO in a hot fire (56%)
- Used spanner to open large bomb (7%)
- Put salt over the UXO (7%)

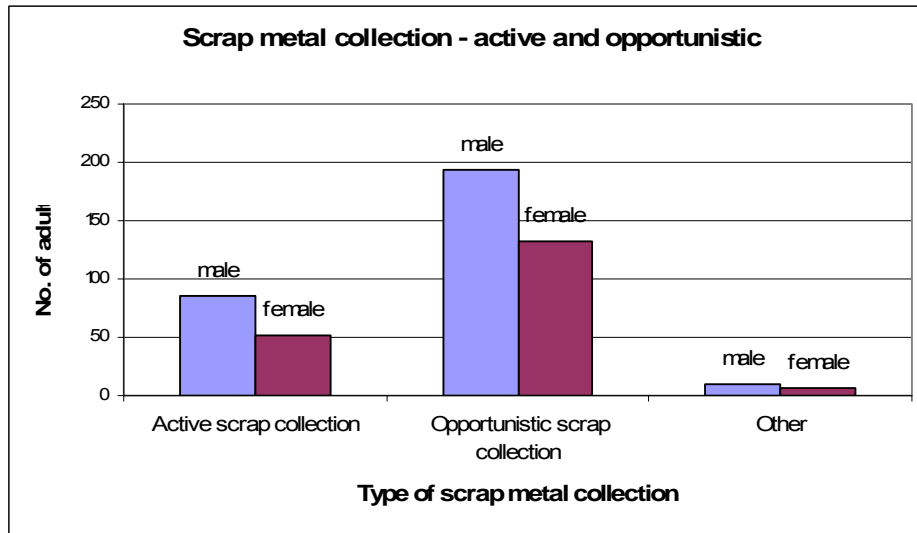
- Others, which included opening UXO with a knife or a small spade (19%)

Four percent of the adult respondents reported destroying UXO on a daily basis, 26% monthly and 56% 1-5 times per year. The majority of people are destroying UXO by burning them on farming land to then be able to use the land. Seventy four percent dismantled UXO to make the environment safer while 16% undertook the activity to collect the scrap metal. People who destroy or dismantle UXO have learnt how to do this through their experiences as a soldier and from friends who also conducted this activity.

Scrap Metal Collection

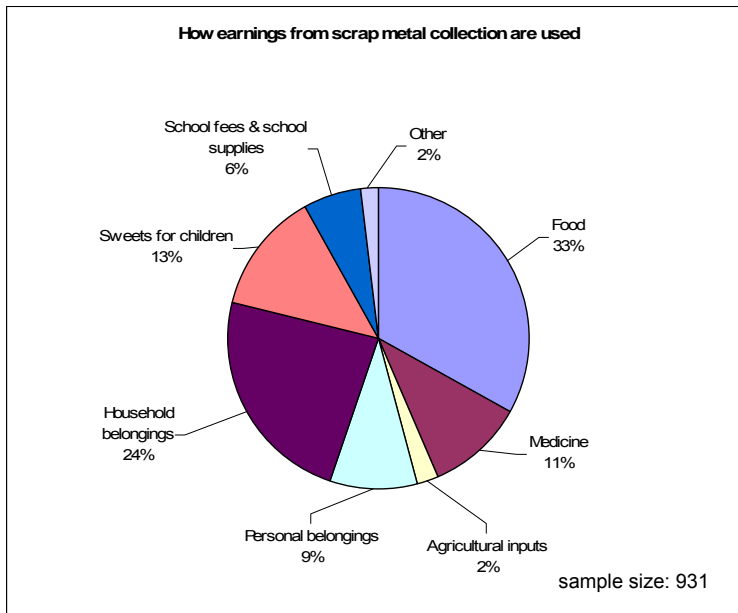
Thirty one percent of adults had collected scrap metal in the previous 12 months; 60% were men, 40% women. The educational level of the adults has no influence on whether adults become involved in scrap metal collection according to the data collected in the KAP.

Adults predominately collect scrap metal opportunistically when they come across it in their everyday activities. Other methods used to collect scrap metal include using a metal detector and actively digging for scrap metal. From the multiple responses given, 65% of the adults collected scrap metal from the surface, and 30% collected sub-surface items.



As opportunistic scrap metal collectors only collect scrap metal when they come across it, the frequency in which they engage in this activity varies greatly; it may be daily, weekly or monthly. Active scrap metal collectors predominately collect scrap metal when their labour is not being utilised in farming production. *“We collect scrap metal all year round except in the farming season [this was identified as June and July]; more and more people go collecting scrap when they have no job in the fields”.* (Male, active scrap metal collector, Khammouane)

Ninety percent of the respondents indicated that scrap metal dealers do not buy UXO which still contain fuses or explosives. Seventy four percent of the scrap collectors identified that it was a dangerous activity with 23% indicating it was safe. Sixty two percent of the scrap collectors had been warned about the dangers of collecting scrap metal, primarily from UXO LAO Community Awareness Team (31%), local authorities (25%), family (19%) and friends (19%).



Scrap metal is usually sold to a scrap metal dealer in the village (73%) or to a scrap metal dealer who comes to the village (19%). The revenue from scrap metal collection is used for a variety of purposes.

Four percent of the respondents had used a metal detector to clear their own land.

Children and UXO

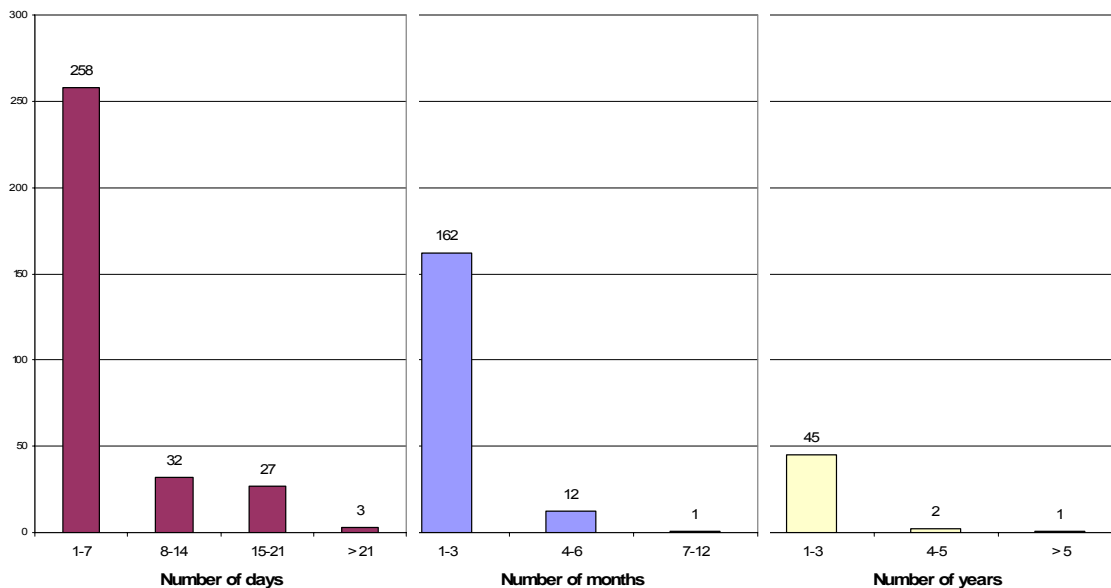
Fourteen percent of the adults reported having seen children in the village playing with UXO. Adults reported talking with their children about the dangers

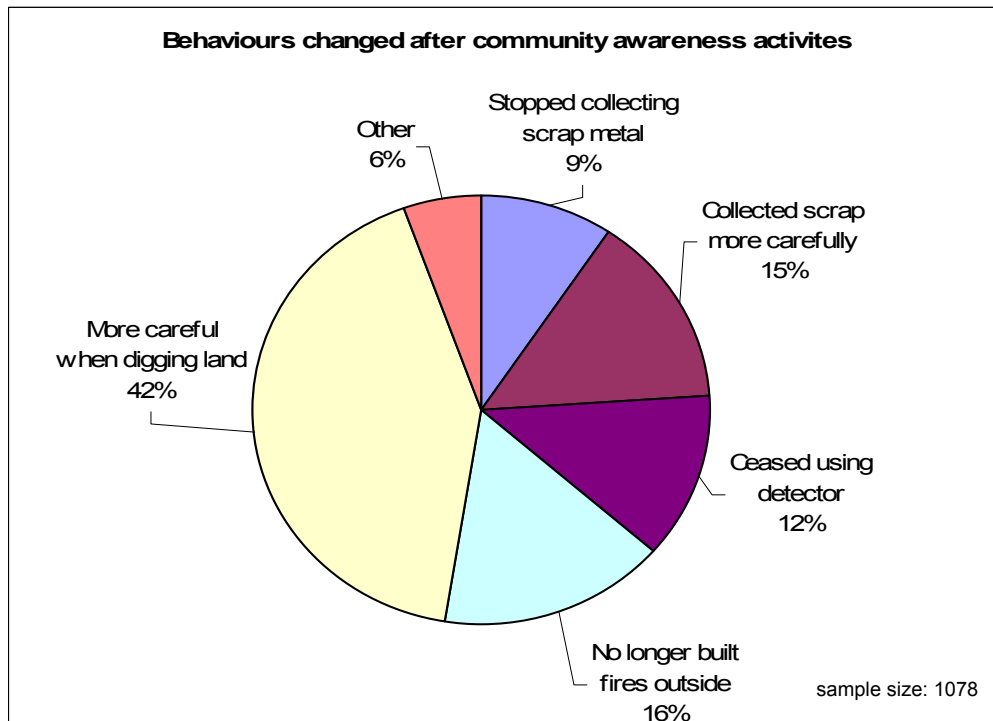
of UXO, when they heard children were collecting UXO (1%), after they heard about an accident (8%), about once a month (38%), every week (29%), never (20%) other (4%).

Reporting of UXO

Forty five percent of adults surveyed had reported UXO, 33% reported UXO to the village leader, 44% to a UXO clearance agency, 9% to village authorities and 11% reported UXO to friends and family. The response time from the clearance agency varied greatly from responding within a week to taking months or even years.

UXO clearance agencies response times





Adults who have not reported UXO did so as they had not found any UXO to report or they had no-one to report the UXO to (33%). Ten percent of the respondents had moved UXO to a 'safer' place until the UXO clearance agency could come.

Community Awareness

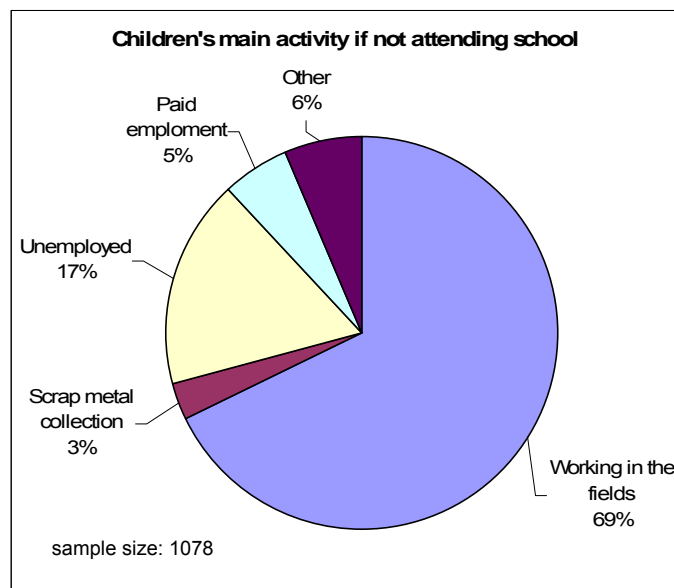
Fifty four percent of the adults surveyed had participated in some form of UXO community awareness activities, primarily games or puppet shows, question and answer sessions or were informed about the dangers of UXO through meetings. Ninety four percent of the adults who participated in these community awareness activities reported that due to this explanation they changed their behaviour in some way as shown in the graph above.

5.2.2 General Findings – Children

A total of 720 children between the ages of 8-18 completed the KAP questionnaire, of these there were 495 boys (69%) and 225 girls (31%). Thirty one percent from age group 8-11, 48% from age group 12-15 and 20% from age group 16-18. Eighteen focus group discussions were also held with children.

Eighty seven percent of the children attended school, for the 13% of children who did not attend school their main activity is working in the fields.

Of the 13% of children who reported not attending school, 24% were 8-11



years of age, 34% were 12-15 years of age and 42% were 16-18 years of age. Boys were more likely to not be attending school (69%) than girls (31%). There was a significant provincial variation between the northern provinces of Xieng Khouang and Houaphan, and the southern provinces of Attapeu, Saravan and Savanakheth for the percent of children who were not attending school (Attapeu -26%, Saravan - 27%, Savanakheth - 32%, Xieng Khouang - 8%. Houaphan -7%).

5.2.2.1 Knowledge

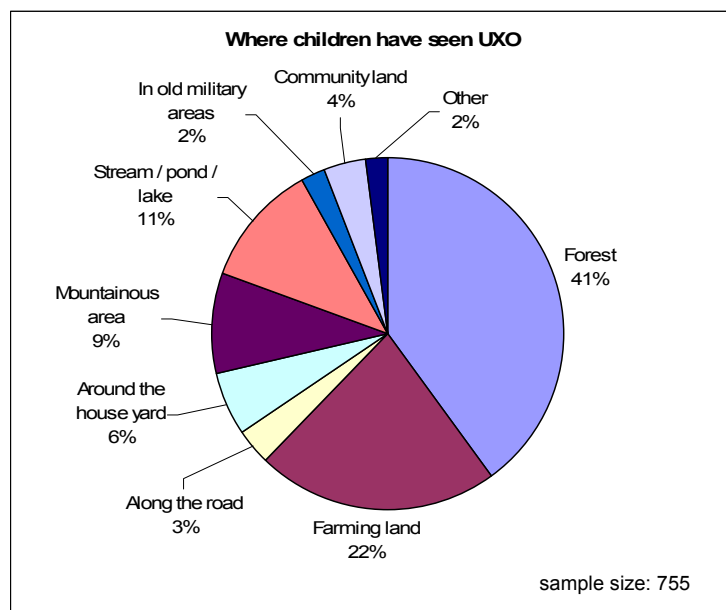
Ninety nine point six percent of the children considered UXO to be dangerous with 97% of the children being afraid of UXO. Seventy six percent of the children identified that they knew what UXO were. Eighty three percent of the children had talked about UXO with their school teachers.

The children identified, in multiple response answers that accidents could happen in the following ways;

- Through touching the UXO (14%)
- Hitting the UXO (36%)
- Playing with the UXO (16%)
- Throwing the UXO (23%)
- Burning farmland (8%)
- Weeding farmland (3%)

To protect themselves from accidents children identified in multiple responses the following strategies:

- When see a UXO don't go close to it (51%)
- Be careful when going where never been before (5%)
- Be careful when digging (17%)
- Be careful when slashing and burning (8%)
- Build domestic fire above the ground on stones (4%)
- When find a UXO report it (12%)
- Other (4%)

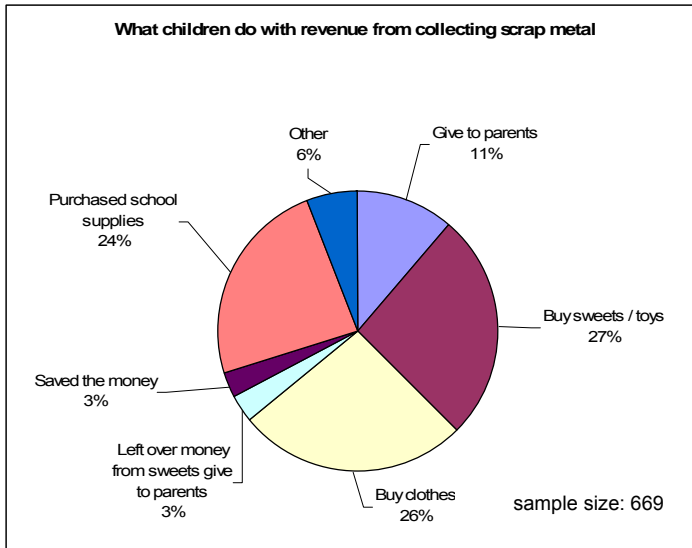


Children's contact with UXO

Of the 54% of children who had seen UXO in the last 12 months, the first thing the children did was to run away (77%) some children reported the UXO item (13%), did nothing (7%) or shot it with a catapult (1%).

Of the 54% of children who reported having seen UXO in the last 12 months it was predominately boys (76%), 12-15 years of age who were finding UXO in forest areas. The above graph depicts the multiple responses given to where children have seen UXO. How frequently children discussed UXO with family and friends varied considerably, from a daily, weekly, monthly basis to never.

5.2.2.2 Attitude and Practice



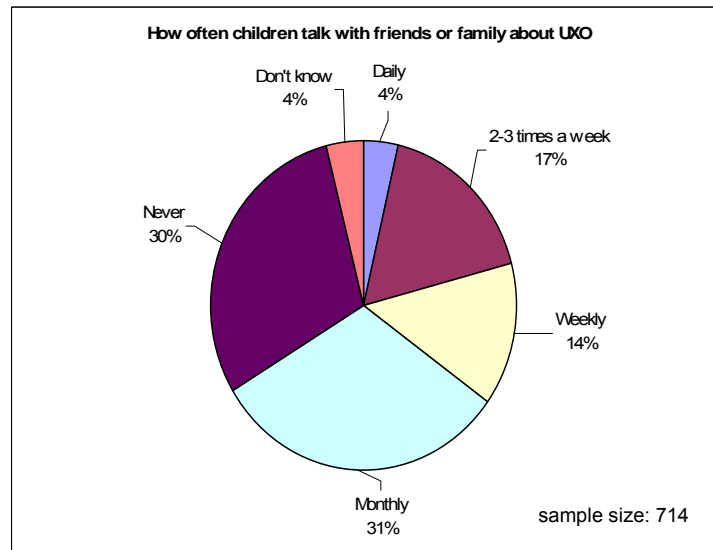
Sixty three percent of the children reported knowing someone who had been killed or injured by a UXO. Fifty two percent of the children surveyed had collected scrap metal. Eighty two percent of the children who collected scrap metal received money which they used for three main activities; buying school supplies, buying clothes and buying sweets.

Of the children who collected scrap metal 78% thought it was dangerous to do so. From all children surveyed 63% had been warned about the

dangers of scrap metal collection, from the multiple responses given the children were warned by:

- Mother (31%)
- Father (32%)
- Other family members (3%)
- Friends (9%)
- Teachers (18%)
- UXO LAO CA team (3%)
- Local authorities (2%)
- Other (1%)

Four percent of children reported playing with UXO, by picking it up and throwing it, showing it to friends and moving the UXO around with a stick.



Fifty three percent of the children had reported an item of UXO to someone, responses given were:

- Friends (15%)
- Relatives (29%)
- Village leader (28%)
- Local authorities (6%)
- UXO clearance agency (14%)
- Others (7%)

6. High Risk Groups

Using Green and Krueters' ecological framework (1999), which provides a holistic lens through which to view UXO related risk behaviour; this section considers eight high risk groups:

- Adults who actively collect scrap metal
- Adults who move UXO out of farming land
- Scrap metal dealers
- Adults who deliberately dismantle UXO
- Children who opportunistically and actively collect scrap metal
- Children who play or tamper with UXO
- Adults and children who work on agricultural land
- Out of school youth and young children

The section begins with a brief overview of risk taking behaviour and contributing factors before moving on to explore specific UXO risk behaviours and contributing factors identified in this assessment.

6.1 Risk Taking Behaviours

While actual risks associated with a certain hazard can be quantified, based on epidemiological surveillance and levels of a particular hazard, for example, public perceptions of risk may be different from statistical risk. While the ideal approach may be for an individual to avoid exposure to risks, in reality risk is subjective and based on valued judgments. Often risks people make can be defended rationally even if scientific evidence suggests otherwise.

A review of the literature and the findings of the risk assessment show that perceptions of risk are still not fully understood nevertheless a number of conclusions can be drawn:

- Voluntariness of exposure – involuntary risks are less acceptable
- Familiarity – unfamiliar risks are less acceptable
- Understanding – risks which are understood are more acceptable
- Natural or manmade – man made are less acceptable

- Catastrophic potential – large scale concerns cause more concern than numerous small scale consequences
- Controllability – a risk is more acceptable if an individual has more control
- Feared– more feared outcomes are less acceptable
- Affects particular sections of society – risks to children are generally less acceptable
- Prevention – adults will accept a level of risk to themselves if it is seen as reducing a greater risk to others, especially children
- Positive reinforcement – a risk is more acceptable if the risk taking activity has been previously conducted with no negative consequences or if the possible consequences of an incident are difficult to imagine or recall
- Presence of benefits – people are less concerned about risks that have perceived benefits
- Trust in institutions – people are less concerned about risk where the risk management institution is trusted and is seen as credible.

Risk therefore is multi-dimensional rather than single-dimensional and an important factor in deciding what level of risk is acceptable is not so much a technical question, based on technical expertise and quantifiable risk estimates, but a value question. People vary in how they evaluate risk. People weigh the various factors according to their own values and stake in the outcome. As acceptability is a matter of values and opinions and these differ between individuals and groups, there is often a gap between 'expert' and lay people definitions of acceptable risk with debates about risk being about values, accountability and control. As will be seen in the analysis of risk behaviours, perceptions of risk are an important factor and need to be taken into consideration both in a risk management and communication approach to UXO contamination. Taking these other perceptions into account may also therefore require a shift in attitudes and understanding in 'experts', in order to better accommodate the perceptions and values of affected communities.

6.2 Risk Factors: Predisposing, Enabling and Reinforcing

Green and Kreuter's (1999) social ecological model of health promotion places health and safety within the context of the whole ecological system and provides a useful paradigm for understanding risk. The framework has been applied usefully as a tool for analysing UXO risk in the Lao PDR (UXO LAO in depth study in Boulapha District 2002, Durham, J. et al. 2005, Durham, J. 2006) and is included in the IMAS Guide to MRE (Geneva International Centre for Humanitarian Demining, 2005).

Based on this ecological model, risk factors are separated into behavioural and non-behavioural causes of the health problem. Factors that affect behaviour may include:

- Predisposing (motivating), for example, knowledge, beliefs, values and attitudes.
- Enabling (facilitating), that is those factors that enable a behaviour or situation to occur.
- Reinforcing (maintaining or rewarding) these are factors that provide incentives for health behaviours to be maintained. Reinforcement may come from an individual or group, from persons or institutions or society.

These factors are used to analyse UXO risk as identified in this assessment and show that a move away from earlier Health Belief models is required in order to design and implement an effective risk management and MRE programme.

6.3 High Risk Groups

The UXO risk education needs assessment identified groups of people who, for variety of predisposing, enabling and reinforcing factors, are considered high risk groups with high levels of risk taking behaviour. The assessment found that the general categories that are often used to characterize at risk populations, that is, the uninformed, the unaware, the reckless and the intentional were less relevant to the context of the Lao PDR. UXO risk taking behaviour identified in the assessment can be categorized under two broad headings: voluntary exposure and involuntary. The assessment also found that voluntary exposure to UXO was rarely perceived by communities or individuals as the only option. More commonly, voluntary or intentional UXO risk taking was found to be based on a rational decision making process, involving weighing up of the potential costs and benefits of a range of available livelihood options. These different high risk groups are described in this section.

6.3.1 Scrap Metal Collection

6.3.1.1 Opportunistic scrap metal collection compared with active metal scrap collection

Seventy four percent of the adults who collected scrap identified it as a dangerous activity. It is important to distinguish between scrap metal that is collected 'opportunistically' and scrap that is collected 'actively', as the level of risk associated with the different methods of scrap collection varies, as do the strategies the scrap collectors implement to minimise the risk they face from a UXO accident when collecting scrap.

Adults viewed themselves as being opportunistic scrap metal collectors when they collected scrap metal by:

- Never digging for scrap metal
- Only collecting scrap metal when they came across it
 - When walking to the fields or gathering food in the forest
 - When digging in the fields and finding scrap metal
- Never collecting UXO

The majority of the adults in the focus group discussions strongly identified that it was safe to collect scrap metal when collecting opportunistically as they only collected scrap metal from the surface, were only collecting pieces of scrap metal, and they could clearly see if the UXO had or hadn't exploded. For the minority that thought it was dangerous this was due to the inability some people may have in being able to tell UXO from scrap metal.

Adults when collecting opportunistically identified strategies when collecting scrap metal to make it safer, including not collecting UXO, not collecting UXO with fuses or explosives, or if people suspected that it is a UXO they would not collect it.

6.3.1.2 Active scrap metal collection

Active scrap metal collectors on the other hand identified scrap metal collection as:

- Using a metal detector

- Digging subsurface for scrap metal
- Actively going out with the sole purpose of finding scrap metal
- The primary activity outside of the planting season

The majority of people who actively collect scrap metal recognise it as a dangerous activity as:

- There is a worry when digging that a UXO and scrap metal may be close together and when digging may hit the UXO and it will explode
- Sometimes the detector gives the 'wrong signal' and there are UXO (for example a signal will be given which indicates a piece of scrap will be found, yet in actual fact a UXO is found, it is just deeper in the ground)
- High risk as we are digging, during the wet season the soil is easy to dig, but in the dry season force is needed to dig otherwise we would never reach the scrap

For the few in the focus group discussion who did think active scrap metal collection was a safe activity it was because they dug slowly and did not tamper with the UXO and did not collect UXO.

The collection and selling of scrap metal, despite its risks, has many perceived advantages over other dry season crops, some of these include:

- Low initial investment, detectors can be purchased for US\$12
- Quick return on investment
- Buyers come to the village or are located in the village
- High price of scrap metal
- Individuals can stay with their family unit

Adults identified scrap metal collection as a dangerous activity and risk reduction strategies were employed to minimise the risk when collecting scrap metal, however as with other high risk activities these strategies at times do not minimise the actual risk faced, including:

- When finding too many UXO in an area, stop looking for scrap metal in this area
- Don't collect scrap metal alone, always go in a team of 4 or 5 people
- When the metal detector gives us a signal we place the search head on the ground and dig around it. This is safer as we try to dig around where the scrap is without hitting it
- When digging in the bomb craters dig slowly and carefully
- If people suspect that the scrap metal is a UXO they do not collect it

As with other high risk activities these strategies allowed the scrap metal collectors to rationalise the risks they were taking, this combined with a degree of confidence in their ability to discern scrap from dangerous items, resulted in the risk associated with scrap metal collection being seen as acceptance. See Annex 1 for more details on the predisposing, enabling and reinforcing factors that contribute to active scrap metal collection.

6.3.1.3 Poverty and food security problems

Poverty is frequently mentioned as a primary motivator for engagement in the scrap metal trade. The UXO LAO qualitative study (2002:9) however, found that it is not necessarily absolute poverty that drives people to engage in the scrap metal trade, but increased material aspirations as a result of structural changes to the economy and increased access to market commodities also play a part.

This study reinforces the UXO LAO findings, and in a village in Khammouane where scrap metal collection is very active, households on average had enough rice from their own farming production for only 6 months of the year. This village relies on scrap metal collection as an additional source of income.

“If we could not collection scrap metal we would have no food for our family” (Male, Khammouane).

Yet as highlighted the earnings from selling scrap metal are used for a variety of purposes, predominately buying food, but also to purchase medicine, household goods and personnel belongings and sweets for children.

Two factors that are closely linked with poverty and food security problems and which reinforce the high risk behaviour of scrap metal collection are lack of alternative income generating options and lack of farming land.

Lack of Alternative Income Generating Options

Many poor, underdeveloped areas of Laos have limited alternate income generating activities to farming production, so if farming production does not meet their food needs poor farmers are left with few income generating choices. The risk assessment identified the selling of labour, the collection of non-timber forest products to sell at the local market, the selling of livestock assets and scrap metal collection as the primary means in which households generate income outside of the cropping season. In view of the options available the collection of scrap metal is seen as a very viable option to providing a cash flow to poor households due to the low level of investment that is required for the return gained and the general ease at which scrap metal can be collected.

“I wanted to borrow money from the Agricultural Bank to buy fertilisers but the bank did not approve my loan so I had to collect scrap metal” (Female, Saravan).

Lack of Farming Land

A lack of farming land is a major contributing factor to active scrap metal collection. The majority of adults in focus group discussions reported that their farming land was not enough to meet their production needs to ensure adequate food for their families.

These statements were repeated in villages that were actively involved in scrap metal collection: *“if we had more farming land and enough to eat we wouldn’t collect scrap metal”* or *“need to open new farming land for every family, poor families are very active in collecting scrap metal”*.

When farmers are idle after the main farming season they are also more likely to engage in scrap metal collecting during their spare time.

6.3.1.4 Digging to Collect Scrap Metal

Using a metal detector and digging for scrap metal is the primary method used by adults who actively engage in scrap metal collection. Villagers in Saravan reported:

“Before we got the detectors we were looking for scrap in bomb craters by digging. Later when the Vietnamese dealer came to our village asking about scrap and came with detectors he explained that if we use these [the detectors] it would be easy to find scrap. With the bomb craters we thought there was no more scrap left but by using the detectors in the bomb crater we could dig deeper and deeper as we were still finding scrap”.

The use of metal detectors actively encourages adults to dig subsurface to investigate metal detector signals, resulting in adults coming into contact with UXO. Adults recognise that digging for scrap metal is a highly dangerous activity and in one particular village when the UXO clearance agency was in their village the villagers reported:

“We watched them [UXO technicians] and how they dug the land...we asked the UXO technicians what is the safe way to dig and what is unsafe. We wanted to ask more questions but we were worried about getting into trouble from UXO LAO”.

6.3.1.5 Active Scrap Metal Collection Facilitates Regular Contact with Live Ordnance

Active scrap metal collecting facilitates adults coming into regular contact with UXO. While working in the scrap metal industry is not necessarily dangerous in itself as much of the scrap is remnants of the Indo-China conflict, it often brings people into regular contact with ordnance, including live ordnance.

In a village in Khammouane all adult men interviewed had found UXO while scrap collecting. The scrap metal collectors then have 2 choices; not to touch the UXO and leave it where it is, or to initiate some form of contact with the UXO.

The majority of villagers reported that when a UXO was found they left it where it was and continued searching for scrap metal. Yet there were reports that some people would try to destroy the UXO to collect the scrap by trying to burn the fuses of the large bombs, trying to dismantle the bombs and then burning out the explosives, or moving the UXO to continue to search for scrap metal.

“I moved 3 bombies from the bottom of a bomb crater. When I was digging I hit one of the bombies so I slowly picked it up and moved it out from the bomb crater to a near by area. I was afraid when moving the bombie but I needed the money. In one bomb crater I could get 40kg of scrap metal” (Female scrap collector, Saravan).

Locating scrap metal with the aid of a metal detector increases the likelihood of unintentional contact with a UXO resulting in an accident, or this initial unintentional contact turning into a more high risk activity of tampering and / or moving UXO.

6.3.1.6 Reliance on Metal Detector Signals

Vietnamese metal detectors are a basic piece of equipment and as such can give inaccurate signals, being used in a technical manner in which the operators are relying on the accuracy of the signal given to discern between scrap metal and UXO and making decisions regarding safety and digging based on these signals.

All scrap metal collectors explained the same procedure in using the detectors:

- Switched on: when the metal detector is switched on there is a constant noise from the detector
- Small beeps: the metal detector has located small pieces of scrap metal
- No sound: The metal detector has located a large piece of scrap metal or a UXO

A common strategy to reduce risk concerns the misperceptions of the accuracy of a signal given by a detector, the statements below represent views held by many:

“I feel safer when digging, more confident that it isn’t a UXO when I hear the small beeps” or “the system of the detector is that if we find a small piece of scrap we get a different sound, if we find a large piece of metal we get no sound”.

What is concerning is the reliance that is placed on the accuracy of the signal. This system has proven inaccurate on many occasions and the potential is that, this over familiarity with the signals could cause the detector operators to become complacent resulting in an accident. Villagers reported that they do find UXO when they hear the small beeps which should have indicated the presence of scrap metal. When this occurred the villagers reported that they predominately found BLU sub munitions which were deeper in the soil, approximately 15cm deep, therefore the detector gave them the ‘wrong signal’. The adults also reported finding smaller bombs in larger bomb craters.



Picture: Female forcefully digging to find scrap after getting a metal detector reading (Lisa Ognjanovic, MAG)

A woman in Khammouane Province demonstrated how the metal detectors operated for the research team, during this demonstration the detector picked up a signal (small beep) indicating that there was a piece of scrap metal below the surface. Although this woman had just explained the safety precautions taken when digging for scrap metal she then proceeded to forcefully dig into the ground. When questioned why she didn’t dig slowly and carefully like she had explained in the focus group she responded “the

sound from the detector tells me it is only scrap metal”.

6.3.1.7 Knowledge Gaps

There are gaps in people’s knowledge surrounding what makes it safe, and the safety precautions taken, when collecting scrap metal:

- In some instances the scrap dealers who sell the detectors to the villagers are actively encouraging the villagers to search in the bomb crater as they will be able to find more scrap metal *“bomb craters are safer to collect scrap metal in as the bomb has already exploded and there are only bomb fragments left” (Female, scrap collector, Khammouane).*

- Digging slowly and gently will prevent accidents from occurring
- Which items are safe or unsafe to collect

6.3.1.8 Decline in Scrap Metal

GICHD (2005) noted that a number of people predicted a decline in the scrap metal trade in their local area in the foreseeable future. They saw metal as a finite resource that is being rapidly exploited now but which will become harder and harder to find in the future years. This was also supported by the risk assessment with some villagers also reporting a decline in scrap metal.

A decline in scrap metal could have two potential consequences.

Consequence 1: as the amount of readily available scrap metal declines people may seek alternative ways to generate income and cease all together or become less involved in scrap metal collection; or

Consequence 2: if no alternative income generating activities are available people continue to collect scrap in an environment where the availability of scrap metal is reducing which may result in the scrap collectors taking more risks to find and collect scrap metal.

The reality of these two options is well highlighted in a village in Saravan Province, which is located across the river directly opposite Saravan Township, and from a discussion with a scrap dealer in Xieng Khouang.

In Saravan Province:

“we are not getting the metal detectors anymore as the scrap is getting less and less [this village would rent metal detectors on a needs basis] to solve our food problems we will work as labourers in the town.....before we started collecting scrap metal we worked as day labourers, now that we stop collecting scrap again we will go back to labouring” (Male villager in Saravan).

In coming to the decision to no longer actively collect scrap metal, the villagers have gone through a process of:

- Weighing up the risks and the gains of continuing to collect scrap metal in an environment where the resource is declining
- Identifying alternative sources of income which have similar daily cash benefits as scrap metal collecting
- Reinforcement from other villagers has been given, and as a group a decision has been made and
- Ceased active scrap metal collection and moved into alternative forms of income generation.

Accessibility to alternative sources of income was crucial in the villagers deciding to stop actively collecting scrap metal in an environment where scrap is declining.

Scrap Dealer:

“In my experience as a scrap dealer for the last 4 years, before there was a lot of scrap metal for people to collect and it was very easy for them to find scrap metal everywhere

therefore they didn't collect parts of UXO or live ordnance. Nowadays the scrap metal is less and less making it difficult to find and people are making a smaller income for their families. So when they need more income for their families they will dismantle the UXO for scrap. I can compare the last 4 year period, last year people brought me many different parts of UXO they had dismantled" (Male scrap metal dealer, Xieng Khouang).

6.3.1.9 Triggers to Scrap Metal Collection

The risk assessment identified during the focus group discussions with the villagers' particular triggers that encouraged people to actively collect scrap metal:

- Poverty – this was identified as the principal factor
- No work after the rice has been planted
- No alternative sources of income
- Lack of readily available cash
- Price of scrap metal

"If the price of scrap metal is higher then the villagers actively collect it" (Female, Xieng Khouang).

6.3.2 Farmers Who Move UXO to Farm Land

While farmers are generally aware of, and understand the risks of moving UXO out of farming land the habitual presence of UXO, the routine handling of ordnance which does not always result in harm, alongside the degree to which people feel they can control the level of risk, for example, by moving an item carefully, being sure not to hit it and so forth means that on the whole people feel the level of risk is acceptable or at least manageable.

Adults who voluntarily move UXO out of contaminated farming land prefer this voluntary contact over possible unintentional contact which may occur when carrying out their normal farming activities if a UXO item is left where it is. Through initiating this contact, instigating risk reduction strategies it is felt that they can control the risk they face.

As part of the process of assessing the risk, adults in some cases, although not all, do take into account a variety of considerations before moving UXO:

- No factors were considered, the UXO needed to be moved out of the farming land
- Do not know how to assess if it is safe to move, a chance is taken that it won't explode
- Some farmers consider the type of UXO and reported not moving BLU 3Bs
- What the UXO looked like, for example, if the surface of the BLU is intact it is safe to move, however if the BLU has a hole or the outside is damaged it is not safe to move

See Annex 1 for more details on the predisposing, enabling and reinforcing factors that contribute to the removal of UXO from agricultural land.

6.3.2.1 Level of Contamination of New Farming Land

Lao PDR has the distinction of being, per capita, the most heavily bombed nation in the world. As a result of intense ground battles and extensive bombing during the Indo-China War, especially during the years 1964 – 1973. The fighting left widespread contamination by UXO.

The majority of adults believe that the new farming land they opened would be contaminated by UXO, this belief was reinforced by:

- History of the war in the area
- The area is new farming land no one has been working there to clear the UXO
- When previously opening up farming land in an adjoining area it had been contaminated with UXO
- When cutting grass in new areas to be opened UXO were found
- When collecting food in these areas UXO were found

“I found more than 10 BLUs in my new farming land, each time I moved them into one place and kept farming as my family land is very small so I need to keep farming in that area” (Female, Saravan) or “A lot of new land has bombies, a small piece of land [defined as 6x7m] has 5-6 bombies, it is difficult to expand new agricultural land in our village” (Female, Xieng Khouang).

6.3.2.2 Capacity of Clearance Agencies to Respond to Reports of UXO in Farming Land

The inability of clearance agencies to respond timely to reports of UXO results in adults moving UXO out of their farming land as this is perceived as the “safer” option than leaving the UXO where they are. Once a villager had reported a UXO the response time varied considerably across UXO clearance agencies. Some responded within weeks, some within months or years and in some cases no response was even provided.

A common sentiment felt was that when a UXO is found, it was ‘safer’ to move it out of the farming land than leave it where it was. Farmers worried that if they didn’t remove the item, when the crops grew, it would be difficult to remember where it was, exposing them to danger when digging to prepare the land for the next season.

“No clearance team to come and help us, so even though it is not safe to move, when we find UXO this farming season we need to move them, otherwise the following year when we farm again we don’t know where they are” (Male, Saravan).

“We do not report to the Village Leader or the UXO agencies because they do not come to clear quickly. When we report this year the UXO agency will come next year (Female, Saravan).

6.3.2.3 Inability to Assess the Risks Associated with Moving UXO

Three factors contribute to adults’ inability to assess the risks associated with moving UXO:

- Lack of knowledge about which items are ‘safe’ or ‘unsafe’ to move
- Perceptions about what makes it “safe” to move UXO and the “safety” precautions taken
- Perceptions of accidents

Lack of knowledge about which items are ‘safe’ or ‘unsafe’ to move

Eleven percent of the adults who had moved UXO did not know the type of UXO they were moving and 3% of the adults move all types of UXO found.

“We don’t know how to identify each item, we just move them”

Perceptions about what makes it “safe” to move UXO and the “safety” precautions taken

Almost everyone who voluntarily exposed themselves to potential live ordnance was able to provide examples of the risk reduction strategies they took, illustrating their perceived control over the situation, itself a contributing factor in risk taking behaviour. As with other high risk behaviours the risk reduction strategies taken are misinformed or insufficient strategies to prevent an accident. Some of the misinformed risk reduction strategies described:

- Do not turn the BLU sub munitions when moving them and move the BLU very slowly and put it down very slowly
- Place soil around the BLU before moving it
- Use a shovel to pick up the BLU
- If placing the BLU in the hole of a tree use a rope to put the BLU in the hole
- If the BLUs are not hit they would never explode
- Before moving the UXO decide what is going to be done with it
- Turn head and back away when putting the UXO down

The risk reduction strategies employed here highlight how people’s perceptions of risk are at variance from the actual risk. The moving of BLU sub munitions, regardless of if they are moved slowly or with the aid of a shovel, is a very dangerous practice as some types of BLU sub munitions (BLU 26 and BLU 36) are indistinguishable externally and may look similar yet the BLU 36 contains a fuse with a cocked striker, which can function if subjected to the slightest movement causing the BLU 36 to explode. Farmers would not be able to distinguish between a BLU 26 and a BLU 36. Resulting in these ‘safety’ precautions they are taking having no actual impact on safety.

Perceptions of accidents

Adults identified touching and moving UXO as one of the primary activities which can cause UXO to explode; this knowledge appears to be overridden by the desire to move UXO out of farming land to make it ‘safer’. Highlighted in the focus group discussions was that **all** villagers reported that no accidents had occurred in their village from farmers moving UXO out of farming land. This reinforces to the villagers that the ‘safety precautions’ taken to control the risk associated with moving UXO are working.

“I have moved many BLUs and I am confident that if I move them slowly and in the same direction nothing will happen” (Male farmer, Xieng Khouang).

6.3.3 Scrap Metal Dealers

The role of the scrap metal broker is to provide a local market for the scrap collector and to support collection and haulage of metal to foundries (either in Laos or Vietnam). The inputs required for this business are minimal – an area to store metal, and cash liquidity to purchase metal when it is brought in by the collectors. For these brokers the buying and selling of scrap metal is usually also a supplementary activity, running alongside farming or other commercial enterprises such as trading in agricultural produce or running a small shop, restaurant or guest house (GICHHD, 2005).

Scrap dealers are aware of the high risk activity they are engaging in and implement risk strategies to minimise the risk they face, these strategies include the checking of scrap bought in by villagers yet they are still handling UXO on a routine basis. This routine handling of ordnance by the scrap dealers appears to elicit a certain kind of familiarity in which they can control the level of risk, for example, by removing any UXO items brought to the dealership and returning these items to the scrap collectors or segregating UXO items. Again the risk reduction strategies employed mean that on the whole people feel the level of risk is acceptable or at least manageable, yet these strategies are often based on misinformation, and at times ignorance, with some scrap dealers not having the skills or knowledge to distinguish safe from unsafe scrap.

See Annex 1 for more details on the predisposing, enabling and reinforcing factors contributing to individuals engaging in scrap metal dealing.

6.3.3.1 Villagers Bring UXO Items to Scrap Dealers

Ninety percent of scrap metal collectors interviewed stated that scrap dealers do not buy UXO items if they still contain a fuse or explosives. All of the scrap dealers spoken to stated that they do not buy UXO with explosives or fuses as they can not sell them to anyone else, so they lose money. There are contradictions to these statements as in Khammouane Province there are scrap dealers who actively buy BLU 42 to dismantle and sell the fuses. This is also reinforced by the KAP survey which found that one reason given as to why people store UXO is to wait until the scrap dealer comes to village, which can only be assumed, is to try to sell them or to try to hide the UXO with other scrap metal.

The number of times scrap metal collectors bring live ordnance items to the dealers varies, but the underlying issue here is that it is occurring on a regular basis endangering the lives of the scrap collectors and the scrap dealers:

- *“On average people try to sell UXO to me quite often, on average 3 times per week” (Scrap dealer, Saravan).*
- *“Out of 10 villagers who bring scrap metal 6 would have some form of UXO or something with explosive” (Scrap dealer, Xieng Khouang).*
- *“When I am out in the villages buying scrap metal, the village will often show me scrap they want to sell which still has explosives. I tell them I never buy UXO with explosives or fuses” (Scrap metal dealer, Saravan).*

This is resulting in live ordnance being sold to dealers when it has been mixed with other scrap metal, either intentionally by scrap metal collectors who are trying to increase the weight of the scrap they are selling, or unintentionally as the scrap collector is unaware that the items are dangerous.

The scrap metal dealers engage in one or more of the following strategies to reduce the risk they face when items of live ordnance have been bought to their dealerships:

- **Make the scrap collector take the items away.** All scrap metal dealers report actively checking all scrap that is coming in from villagers by cutting open the sacks and checking through the contents. If they find live ordnance they will not buy these items and make the scrap metal collector take the item away with them.
- **Store items in bags / drums on the premises:** If items of live ordnance, or items the dealers are unsure about, are found after the scrap collectors have left the premises the scrap dealers place the suspect items together in sacks or a drum and store them.

- **Remove UXO from premises to a nearby location:** Some scrap dealers reported putting suspect items in a sack and placing the items a 'safe' distance from the house, or placing the items in a nearby bomb crater.
- **Store until UXO clearance agency goes by:** For villagers that live on routes where UXO LAO frequently drive it was reported that the suspect items would be kept aside until the UXO LAO team passed by and could be stopped and the items given to them.



Picture: scrap dealer's yard, Khammouane (Cliff Allen, MAG)

The risks associated with scrap metal dealing is tragically highlighted by the story of a scrap dealing family in Xieng Khouang as told here by a 35 year old women:

"Before we were farmers, but in 2003 we moved to this village and built a small house and thought we would try a small business. My husband saw that there were a lot of people sending scrap metal to Phonsavan and he thought it would be a good idea to stop them and buy it here and then sell it to the Vietnamese. One Vietnamese dealer gave us the money in advance to buy the scrap metal. We would sell our scrap to the Vietnamese; the first time we sold 6 tonnes, second time 7 tonnes, and third time 3 tonnes. On the fourth time we had 10 tonnes ready to sell when my husband went with our small tractor to pick up the scrap our friend had collected in the surrounding villages. Our family normally checked the scrap for UXO but this time we thought our friends had checked. There were 5 sacks to load onto our tractor, when my husband loaded the last sack it exploded. At first I thought my husband was OK, but then I shook him and tried to wake him, but I found that a large piece of metal had gone into his heart. My son and I were also hit by shrapnel. It was a very sad day".

6.3.3.2 No Process to Remove UXO from Dealerships

"Without knowing it I have bought many things from villagers, BLUs with explosives, hand grenades with no pin, bullets, mortar shells with gunpowder inside" (Female scrap dealer, Xieng Khouang).

Scrap dealers have no formalised procedures with a UXO clearance agency to remove UXO they have separated from scrap metal. Although some dealers reported stopping UXO LAO vehicles on the road, this is on a very irregular basis and still requires UXO to be stored in a residential environment until a UXO LAO vehicle passes by.

This results in highly dangerous items located in large numbers in residential areas. The examination, by a MAG Technical Field Manager, of a bag in which a scrap dealer had placed suspect items or items she had identified as UXO contained possible 12 x M50 4lb thermite bombs (some armed), 1 x M23 with Fuse Mechanical Unit, 7 WP igniters (very dangerous item, this one had already burnt out), a large number of 20mm High Explosive fused, a large number 37mm High Explosive fused and un-fused, a number of M 26 High Explosive hand grenades un-fused but full, a number of F1 High Explosive hand grenades un-fused but full, M

904 bomb nose fuse, a number of miscellaneous fuses, booster elements, half BLU sub munitions containing explosive, 82mm Mortars full of explosive and a number of projectiles containing explosive.

The items pose a danger to the scrap dealer and her family and to the residents in the surrounding area. Due to the inability of the scrap dealer to deal with these items they were stored in a bag and placed behind the side door of the house.



Picture: Children playing in scrap metal yard/Cliff Allen/MAG

6.3.4 Adults who Dismantle UXO to Collect Scrap Metal

Adults who tamper with and dismantle UXO are undertaking a high risk activity. Adults who actively dismantle UXO appear to have this behaviour reinforced by the fact that they do not suffer negative consequences as a result of their actions. This is despite occasions when trying to speak to the local bomb expert who they had called upon to deal with UXO; the research team was unable to do so as they had been killed when dismantling UXO. The one time a negative consequence is experienced, it is often fatal.

Very few strategies are initiated to minimise the risk they face when dismantling UXO. Instead what appears to play a major role is the belief in fate related to accident causation and the role that Theravada Buddhism plays in the daily lives of many Lao people. See Annex 1 for the predisposing, enabling and reinforcing factors that contribute to adults dismantling UXO to collect scrap metal.

6.3.4.1 Engaging in a Highly Dangerous Activity

UXO have been designed to kill, maim or incapacitate, and if not dealt with from a position of knowledge and proper experience all UXO, no matter how small, have the potential to function

as designed and inflict injury and death. Dismantling UXO is a highly dangerous activity, yet there appears a certain confidence, and at times over confidence, from some adults who dismantled UXO.

“All types of UXO can be dismantled depending on how much scrap metal it is possible to collect from each item.....everyone can dismantle a BLU 42, men, women or children as it is very easy to dismantle and it doesn’t explode” (Male, Xieng Khouang).

There also appears to be one person in the area who is willing to try to dismantle difficult UXO *“I sometimes found large bombs and I could not dismantle them so I sold them to someone else who could” (Male, Khammouane).*

6.3.4.2 Poverty and Lack of Alternative Income Generating Activities

Poverty is the driving force for adults to dismantle UXO. *“I need scrap metal to sell to have some money each day to support my family with food and daily utensils. I know that I am 100% at risk while I am dismantling UXO but I have to do this for my family’s life” (Male, Khammouane).*

“A few years ago I saw my friend die when dismantling a UXO, but this hasn’t stopped me, as I have no other way to earn money” (Male, Xieng Khouang).

6.3.4.3 The Village Expert

A major contributor to adults continuing to dismantle UXO is that they are often seen as the village bomb expert, although they have had very limited experience (relying on experience from the war) or no training at all. The 1997 Handicap International Belgium study found that these men were often viewed as being a little bit crazy or even stupid by other villagers, but they were also seen as being courageous. Bomb openers were also perceived as providing an essential service to the community that no-one else dared perform at a reasonable cost.

6.3.4.4 Beliefs and Fate Related to Accident Causation

Theravada Buddhism plays an important role in the daily lives of many Lao people, especially Lao Loum and may also be used to explain accidents. In Theravada Buddhist cultures for example, misfortune is frequently understood in terms of fate or karma, with concepts of fate/karma often providing an explanatory framework for accidents and misfortune. Animistic beliefs are also widely practiced, in both Buddhist and non-Buddhist cultures, in the Lao PDR and the actions of spirits may also provide an explanation for UXO accidents. To date there is little documented evidence of the part that beliefs about fate, karma and concepts of bravery play in UXO related incidents in the Lao PDR. In Cambodia however, a BBC mine victim survey found such beliefs encouraged a sense of fatalism related to mines and mine avoidance (Grant, 1997).

An acceptance of the fate of someone who dismantles UXO was expressed by a male who actively dismantles UXO in Xieng Khouang – *“people all have to die one day”*. He seemed almost resigned to this fact, as this was his job; this was his fate in life.

6.3.5 Children Who Play or Tamper with UXO

Children are living in an environment where UXO are part of everyday life; bombs are used as pig troughs, stilts for houses or a small bridge over a drain. BLU 3Bs have been dismantled and are used as lamps in the house. This familiarity with UXO in children’s environment may make it difficult for younger children (0-6 years of age) to distinguish between these items

which have been rendered safe, and highly dangerous items they may come across in their communities.

Children may also witness their parents or other community members and people they hold in high esteem moving UXO out of farming land or home garden areas. Children's natural curiosity combines with their lack of comprehension of the power of explosives and lack of knowledge and awareness is a potentially deadly combination.

One village leader remarked "*with everyone in the village now playing "petonk" many adults are worried for the younger children that if they find a BLU they may play with it as it looks so similar to the petonk ball*". See Annex 1 for the predisposing, enabling and reinforcing factors which contribute to children playing or tampering with UXO.

6.3.6 Children Who Collect Scrap Metal

The majority of children identified scrap metal collection as a dangerous activity and had been warned of the dangers. The risk reduction strategies that the children instigated are less informed and developed than the adults and consisted primarily of identifying if what they are collecting is a UXO or a piece of scrap and to not collect UXO. The strategies the children implement are to say the least very basic risk reduction strategies that are informed on the knowledge base of young children. Never the less these strategies help the children to rationalise and justify their involvement in scrap metal collecting.

Children's active involvement in scrap metal collecting and their familiarity in this activity, due to the frequency in which they undertake it, results in the children being confident in their abilities as scrap metal collectors and their ability to discern scrap from dangerous items, cumulating with their acceptance of the level of risk they face when collecting scrap metal.

As with the adults who actively collect scrap metal there are some overlapping areas with why children are at risk, including:

- Poverty and food security problems
- Not enough farming land for their family
- The method of collection with children looking for scrap metal both on the surface (73%) and below the surface (26%)
- Children are also coming regular contact with UXO
- Reliance on metal detectors signals
- Active involvement in the industry from adults and
- Knowledge gaps about where it is safe or unsafe to look for scrap metal.

Children collect scrap metal in a variety of ways, some methods posing more of a risk to the children than others:

- Opportunistically when on the way to the fields and come across scrap metal on the surface
- When working and digging in the fields or home garden and unearthing scrap metal
- By using a small shovel, hoe or piece of wood to actively dig for scrap metal, generally 10 – 20cm below the surface

- Looking in areas after slash and burning cultivation and all the vegetation had been burnt
- Using metal detector to look for scrap metal
- For some children this involved actively digging in bomb craters

See Annex 1 for predisposing, enabling and reinforcing fact details of the factors which contribute to male children collecting scrap metal.

6.3.6.1 Children's Understanding of the Negative Consequences of Scrap Metal Collecting

Seventy eight percent of the children who collected scrap metal considered it dangerous, identifying the following:

- It is not safe to collect scrap metal below the surface when using a small shovel to dig as we cannot see the UXO below the surface
- Because we use detectors and it is dangerous while digging, like in bomb crater areas
- Do not know if there is a fuse or explosive inside
- We are afraid that we might collect a UXO such as a 'bombie'
- UXO sometimes might be in the ground and can explode
- High risk from UXO when we collect scrap and UXO can kill us

Of the 22% of the children who considered it safe to collect scrap metal the children could identify the below reasons as to why, again the view of what is 'safe' or 'unsafe' is often based on misinformation, and in the case of children their lack of knowledge regarding safe practices.

- Because the UXO is in pieces, would never collect if unsure what it is
- We can see the scrap clearly as it is on the surface, we can see if it is a UXO or pieces of metal
- The UXO has already exploded and is in fragments
- Only collect scrap metal from the 'bombies' that have exploded
- Only collect the scrap metal from the bombs that have already exploded

Yet despite this high level of awareness about the dangers of scrap metal collection, children do not readily associate scrap metal collection with accidents occurring. Only 0.4% of the children identified scrap metal collection as how UXO accidents could occur. This lack of association of scrap metal collection resulting in negative consequences is a major factor contributing to children collecting scrap metal and adults continuing to actively involve children.

The negative consequences of scrap metal collection also appear not to be reinforced in the school environment. Children did not list the dangers of scrap metal collection as information they received in school based UXO education activities. This is not to say these messages are not given, only that the children are not reporting this as a major outcome of the lessons. This may indicate that they are not receiving strong re-enforcement through school UXO awareness that scrap metal collection is a dangerous activity.

School age children all reported discussing UXO with their teacher at school. What varied was the structure and length of the lessons; however the content and messages were very similar:

- While digging to be careful and don't dig with a hoe
- Don't cut the grass low to the soil
- Do not touch or play with UXO
- Do not throw the UXO
- The history of UXO, when they were dropped
- When building fires to build them off the ground
- Do not hit or try to dismantle UXO
- Do not shoot the UXO with a sling shot
- When finding a UXO report it to parents and village leader

"Children sometimes bring me UXO items, especially boys around 7-13 years of age. The children send them to me as they don't know or understand the dangers of UXO, so when they find something they always think that it is a piece of scrap to make money" (Scrap metal dealer, Xieng Khouang).

The children's perception about safe behaviours and inability to associate the negative consequences with scrap metal collection is highlighted by the story of a young man in Xieng Khouang.

A male youth, aged 16, who had completed 2nd year of lower secondary school had an accident while out collecting scrap metal in January 2006. He lost his lower right arm and received many shrapnel wounds in his body.

In the morning he went to the farming land with his friend and they saw ½ BLU26 on the path where they were walking, he picked it up and saw that it was full of soil. As it was ½ a BLU he thought it was safe. He kept walking and found a rock which he used to knock the soil out from inside. The first time he hit it nothing happened, second time he hit it nothing happened, third time he hit it, it exploded blowing off his lower arm from below the elbow. His friend, who was a few meters away when the accident happened, ended up with shrapnel in his stomach, but no life threatening injuries.

The youth had previously collected scrap opportunistically when he came across it when going out to the fields to work,



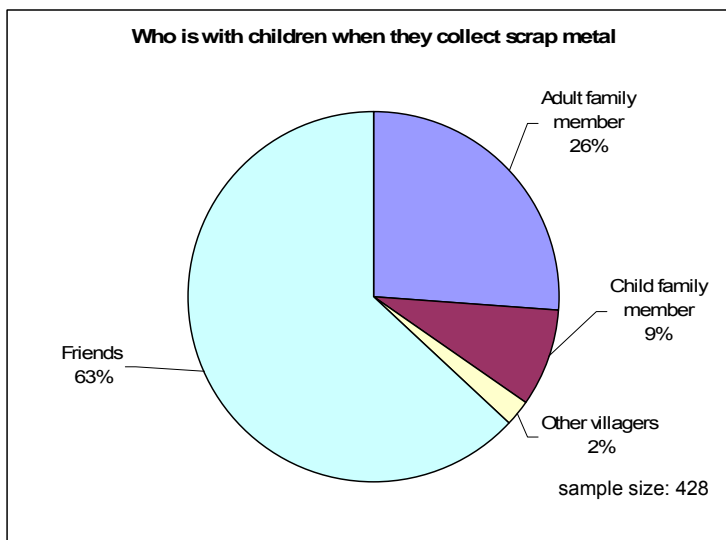
Picture: BLU3B which has been modified to be used as a lamp, (MAG UXO Risk Assessment 2006)

however he never actively collected scrap and would never dig for scrap metal only collect what was on the surface. Before the accident he thought it was not dangerous as he would only collect pieces and scrap, which to him was not dangerous. Previously when collecting scrap metal he had found UXO, they at first looked like scrap but it was a UXO, when this happened he left it there and never picked it up.

The youth had not attended any UXO LAO CA activities, however he had learnt about UXO through lessons at Primary School. He considered himself to be well informed about the dangers of UXO, never touch live UXO or play with UXO, he strongly identified that ½ BLU was safe to collect and nothing would happen.

6.3.6.2 Lack of Supervision by Adults or Adults Actively Engaging Children in Scrap Collecting

Twenty six percent of children who collected scrap metal reported that they did so with an adult family member, indicating that adults are willing to actively engage children in the collection of scrap metal.



In a village in Khammouane Province the scrap metal industry is highly organised. In the morning a truck organised by the local scrap dealers picks up the villagers and then transports the villagers to sites towards the Vietnamese boarder. “At the end of the day we get paid for the scrap we collect by the dealer and the truck brings us back to our village”.

When questioned about children’s involvement in

this the Village Leader explained, “Children can go on the truck as well, some children who are 5-6 years old they go with their older brothers and sister, these children don’t use detectors but join with their parents and older children to help carry scrap metal back. Children do use the detectors, especially in the village areas, but these children are normally above 7 years of age”.

Children have minimal parental supervision, resulting in the children often being free to do as they wish. Children as young as 6 years old are involved in collecting scrap metal. In Khammouane, with a group of 3 young girls recently found to be collecting scrap metal, their mother was questioned as to why she allowed the children to use the metal detector ‘I have been in the fields all morning and only just come back, I didn’t know they had taken the detector and gone out’. Whether this is the case or not is difficult to judge, when so many children report going scrap collecting with adult family members. In some villagers where children are actively involved in collecting scrap metal there is also a level of acceptance by adults in the role children play in, not only helping there parents to carry scrap metal, as is the

case for the younger children, but also actively collecting scrap metal to contribute to the household income, as is the case with the older children.

6.3.6.3 Lack of Out of School Activities / Employment Opportunities for Children

Children predominately report collecting scrap metal on weekends and in school holidays when they are free to do so. Lack of out of school activities leaves children free to collect scrap during these periods.

Also contributing to children being at risk, is that once children have finished school they lack employment options in small villages and work in the fields with their parents, however when their time is not being utilised they are free to collect scrap to supplement their incomes.

6.3.7 Children Aged 0-8 years of Age

Children of this age group are particularly at risk as they are too young to comprehend the risk they face from UXO. Younger children generally under the age of 6 are at a very high risk of inadvertently playing or tampering with UXO as they have

not yet developed a level of awareness or an understanding of the highly dangerous nature of UXO.

These children have not yet started school, therefore miss out on where the UXO awareness message is integrated into the school curriculum. The children's ability therefore to identify what UXO are, or to process and discern between dangerous items and items which have been rendered safe and are common in their home environment, has not yet developed. See Annex 1 for predisposing, enabling and reinforcing factors contributing to children handling and playing with UXO.

"In March 2005 a bad accident occurred in our village. A company was to establish a nursery and had dug up all the land in a field with machinery. Some of the village children went down to the lake to go for a swim and when they had finished they walked back across the field which had been dug up. We believe they found a BLU and all the children gathered around to look at it, we are not sure, but they may have tried to break it open. The UXO exploded and all of the children were killed" (Village Leader, Xieng Khouang). The children were aged between 4 and 6 years of age. 5 children were killed in this accident, 3 of whom were from the same family.



Picture: Young scrap metal collector, (MAG UXO Risk Assessment 2006)

The village leader went on to explain that the children were not even born last time the UXO LAO Community Awareness team visited in 1999, and one of the children had just started school so they hadn't received the UXO message from their teacher yet.

As the table below highlights, since the beginning of data collection by UXO LAO in 1999, children aged 0 to 8 years of age have on average made up 15% of the casualties from UXO accidents and in some years accounting for as many as 25% of the casualties.

Casualty Information*

Year	Children 0-8 years of age				Total number of accidents		
	Casualties	Injuries	Deaths	% of total casualties	Casualties	Injuries	Deaths
1999	15	13	2	15	101	75	26
2000	7	3	4	7	102	63	39
2001	20	18	2	17	121	86	35
2002	21	18	3	21	99	71	28
2003	7	5	2	6	109	76	33
2004	49	31	18	25	194	128	66
2005	22	20	2	13	164	128	36
	141	108	33	15	890	627	263

*Data courtesy of UXO LAO

6.3.8 Adults and Children Working in Agricultural Land

Twenty nine percent of all adults surveyed reported finding UXO in their farming land in the last 12 months, 59% of the adults were men, with 41% women, both men and women are at risk when working in agricultural land as are children who are often working in farming land with family members.

Farmers face the risk of unintentionally coming into contact with a subsurface UXO resulting in an accident, primarily when digging in farming land, cutting or when carrying out slash and burn shifting cultivation. This unintentional contact with UXO is greatly feared as unintentional contact can not be controlled. See Annex 1 for predisposing, enabling and reinforcing factors contributing to contact with UXO.

6.4 Conclusions

The assessment has demonstrated that behavioural decisions are made within a complex and interlocking milieu of economic, social, political and cultural factors, with many factors contributing to high risk behaviours. Framing UXO risk programmes in terms of a single causal factor, simplifies the situation and is likely to lead to inadequate interventions. Using ecological approach to analysis provides a more holistic lens through which to view UXO risk and brings into sharp relief the complexity of behavioural decisions.

The assessment has also shown that UXO risk takers, predominately men but also women and children, generally are aware of the risk and activate some form of risk assessment process and use this to make rational and deliberate decisions regarding acceptable risk. Yet, as the discussion has shown this rationalization is often based on misinformation and has little bearing on rendering an activity safe.

The assessment has also helped to highlight differences in ways problems are structured and solved, differences in judgments about the probability of an accident and access to different kinds of knowledge often resulting in different definitions of risk. A collective paradigm shift may be needed therefore in government, service providers and communities alike in order to bridge the current gap between 'expert' and 'lay' opinions and assessment of risk. The NRA as the lead government agency can play a pivotal role in bringing together the different government bodies, service providers and communities to rise to this challenge.

As the recommendations below suggest, answers to addressing the challenges in reducing UXO risk in the Lao PDR lie in good government policies and strategies, clear prioritisation and targeting criteria, adequately resourced, appropriate and focused regulation of the scrap metal industry and its practices, building on community strengths and knowledge, and continuing engagement and awareness raising with communities, as well as examining strategies to enable communities to manage any residual risk once clearance operations have finished.

7. Recommendations

In summary, the assessment has taken an eclectic approach to analysing UXO risk and in doing so has placed risk taking into the broader socio-economic and political environment in which behavioural decisions are made. This approach to safety and injury prevention is consistent with contemporary models of health and safety promotion, for example the ecological approach (Green and Kreuter, 1999) as well as environmental health risk assessment and risk management frameworks. The assessment has highlighted the complex and multi causal nature of UXO and has shown how UXO risk is also interdependent on other risks, for example, food insecurity. Reducing UXO risk therefore is going to require a creative, collaborative, integrated and multi-strategic approach. Developing these strategies will require a risk management approach that addresses the interdependence and cumulative effects of various contributing factors, engages a range of stakeholders and enables the setting of priorities in order to make sound and cost-effective risk management strategies.

An effective risk management programme will also need to be appropriately targeted with different interventions and messages for different sectors and sub-sectors of the population. Criteria for the targeting of affected communities will also have to be developed and based on a number of variables that have been shown in this assessment to influence risk, including: levels of contamination, land use and type of UXO that influence the likelihood of exposure. As shown, factors influencing risk taking behaviour include food insecurity, access to the scrap metal market, the price of scrap metal, real or perceived cash needs, alternative livelihood options with the same benefits as the scrap metal trade, the responsiveness and efficiency of a surface clearance capacity, the attitude of local authorities towards the war scrap trade, levels of knowledge and an urgency to open up more land. Where there is a UXO threat and a number of variables influencing high risk taking behaviour, MRE resources should be deployed. Targeting may also take into account variables which influence the impact of a UXO incident including the ability and capacity of the health service to respond.

Risk decision matrices are a basic tool for assessing risk and may be applied to HMA and targeting of resources and have been used to target such activities in Bosnia-Herzegovina.

7.1 Establish a Process for Engaging Stakeholders

A general principal that underpins this recommendation is the importance of engaging with stakeholders at every stage of the process. A stakeholder is anyone who has a 'stake' in a risk management solution. Stakeholders typically include groups or communities directly or potentially affected by the risk and programme managers and other groups either involved in minimising the risk or affected by the risk in some way, for example, development agencies. Stakeholder participation will result in more effective and more sustainable interventions. Stakeholders bring with them important information, knowledge, expertise and insights for crafting durable and acceptable solutions and are more likely to accept and implement risk management decisions that they have participated in shaping.

In the case of UXO in the Lao PDR, stakeholder participation is particularly important for risk management because as the assessment has shown, there are different interpretations about the nature and significance of UXO risk. Collaboration and stakeholder involvement will provide opportunities to bridge some of the gaps in understanding, values and perceptions and facilitate an exchange of ideas that will lead to a better understanding and more informed decision making by all parties.

It is also vital to continue and expand the dialogue with development agencies. One factor driving high risk activity is poverty and as Moyes (2005) found it is not simply a question of providing some other economic activity; the alternative must compete with the levels of income and market integration in order to see a reduction of high risk taking activity.

- 7.1.1 Present the findings of the risk assessment at provincial and practitioner level stakeholder meetings. This would include UXO LAO community awareness teams, NGO community liaison and MRE staff and government implementing agencies such as the LYU.
- 7.1.2 Develop a risk management strategy including MRE with stakeholders.
- 7.1.3 Develop MRE materials with stakeholders.
- 7.1.4 Include public health agencies and practitioners in developing risk reduction interventions and deploy the tools of public health to monitor risk; for example, epidemiology and surveillance and develop services to meet the needs of UXO casualties. To ensure the sustainability and cost effectiveness of such programmes there should be collaboration with other sectors in public health.
- 7.1.5 Hold stakeholder meetings at all levels from the village to the national strategic level with those involved in the scrap metal trade to discuss and analyse risk taking behaviours and agree on risk reduction strategies in relation to scrap metal collection.
- 7.1.6 Develop a holist approach to the UXO risk sector in Lao PDR built upon strong partnerships between international organisations and agencies, national and local government and national implementing bodies, best practices and lessons learnt.
- 7.1.7 Involve communities in defining tolerable risk.
- 7.1.8 Institutionalise stakeholder participation in the MRE unit of the National Regulatory Authority (NRA), by providing key NRA staff with training on stakeholder involvement,

establishing mechanisms to support this and enable full stakeholder participation in the development of the MRE sector in Lao PDR.

Guidelines for stakeholder participation

- ⇒ In considering stakeholder involvement, the NRA and coordinating bodies need to decide to what extent they will accommodate stakeholder involvement to make best use of stakeholder time;
- ⇒ The goals of stakeholder involvement should be clarified at the outset;
- ⇒ Stakeholder involvement should include representatives of all affected groups to ensure a range of perspectives. This may necessitate the offering of incentives to ensure the participation of some groups;
- ⇒ Stakeholders must be willing to listen, negotiate and be flexible;
- ⇒ Stakeholder input should be credited and where it is not used explanations should be given as to why.

7.2 Improve Targeting and Deployment of UXO Clearance Assets

Risk taking behaviours are at times the direct result of the clearance agencies inability to meet communities' clearance needs, as is the case with adults who move UXO out of farming land and from community areas. The following factors can contribute to risk taking behaviours; lack of a UXO reporting structure, requesting area clearance, lack of feedback and direction from clearance agencies, and the realistic time frames for the clearance to begin. It is also recognised that the clearance needs in Laos are such that it is not possible to clear all requested areas, therefore strategies must also be developed to enable communities to manage unmet needs and any residual risk.

- 7.2.1 Develop risk communication strategies to improve awareness of reporting processes for UXO and develop a mechanism which delivers a response back to the village level in a timely manner clearly outlining the outcome of the request and the response times.
- 7.2.2 Involve communities in the prioritisation of static UXO clearance sites – static clearance sites are where clearance teams are deployed to clear an area of ground that will require several days work, as opposed to roving tasks which visit sites to clear surface UXO and then move on to the next request. Once these sites have been identified, technical teams can apply a risk assessment/management process to these sites to determine the most appropriate (if any) clearance assets to be deployed to the site and when.
- 7.2.3 Define acceptable risk with community/end user input. Acceptable risk should be defined both in terms of acceptable residual risk and acceptable number of fatalities per year. Acceptable risk should be judged on severity not just probability. Other criteria that can be used to help determine acceptable risk include:
 - Whether exposure is involuntary (less acceptable)
 - Consequences of exposure e.g. almost certain death, severe lifelong injuries with long term complications (less acceptable)
 - Distribution of risk (risks to children may be less acceptable)

- Basic needs are threatened (e.g. food security)
- 7.2.4 Develop institutional and community strategies to deal with residual risk, which may include an increased focus on training communities in the recognition of highly dangerous items that must be reported immediately.
- 7.2.5 Develop and apply risk communication messages. The risk management approach consists of 3 stages; risk assessment, risk management and risk communication. These strategies must be developed in co-operation with the communities.

For example: stage 1, a risk assessment, such as this study in which high risk groups and high risk activities are identified; stage 2, risk management strategies identified and developed through community meetings and workshops; stage 3, risk communication, the development of culturally and socially applicable messages and media focusing on safe livelihood strategies (see recommendation 4 for further details).

7.3 Review Legislation and Regulatory Controls

Legislation and regulatory controls form part of the multi-strategy approach to reducing risk. In an environment where there are inadequate regulatory controls, or lack of enforcement of the existing regulatory controls, high risk activities continue to occur unchecked. Provincial letters, memos and decrees exist in various forms throughout Laos outlining the legal status of collecting UXO, scrap metal derived from UXO and the use of metal detectors. Some are linked with the Articles of the Criminal Act and some outline penalties. What is inadequately defined in all these documents is clear definitions of what is acceptable and unacceptable scrap metal collection and enforcement of existing regulations. An opportunity exists within the UXO sector in Lao PDR with the GICHD legislation training at the end of 2006, to assist in understanding the effect of properly implemented legislation.

Further, as highlighted by the assessment, it should be acknowledged that there are also risks attached with stringent regulation which could force high risk taking behaviour underground, making it even more difficult to work with high risk groups. This was highlighted in Xieng Khouang Province, where it was reported from Provincial Authorities that the Police would go out at night into the forest areas to catch local villagers using their metal detectors.

7.3.1 A clear definition of what is and what is not acceptable metal within the scrap metal trade:

- National level formulation of what is and is not acceptable metal within the scrap metal trade needs developed (any war scrap, any metal derived from ordnance, any items containing explosives) (GICHD, 2005)
- Participatory involvement of scrap dealers, collectors and HMA actors in jointly negotiating and agreeing a definition of what this is
- Dissemination of this new information to scrap metal collectors and scrap metal dealers

7.3.2 Enforcement of appropriate regulations:

- Establishment of a penalty system for people caught trading in what has been defined as unacceptable scrap metal
- Participatory involvement of stakeholders such as provincial authorities, scrap metal collectors, traders and the police in the establishment of such a penalty system

- Identification and training for enforcement agency
 - Selecting and training scrap dealers as peer educators in what is and isn't acceptable scrap metal
 - Developing with stakeholders information and educational materials about safe and unsafe scrap metal
- 7.3.4 Accreditation of scrap metal dealers through a national level accreditation system managed by the NRA. Some of the following may be included in this accreditation:
- Undergo a basic UXO identification course in dangerous items recognition
 - Compliance with national standards for what is and isn't acceptable scrap metal to purchase
 - Moving dealerships out of populated residential areas (as defined through accreditation standard)
 - Scrap metal collectors must not purchase metal derived from ordnance from children (GICHD, 2005)
 - Scrap dealers must store suspect items in a segregated area and must report such items for inspection by an authorized capacity (GICHD, 2005) such as UXO LAO
 - Premises inspected by authorized personnel to ensure compliance
 - Where scrap dealers organise scrap collectors into groups, and transport them to locations to collect scrap metal, it must be made illegal to involve children in these activities
- 7.3.5 Establishment of an ordnance disposal service for scrap metal dealers. A formalised response process must be established between UXO clearance agencies and scrap dealers to remove dangerous items from scrap dealers' yards and scrap foundries which pose a direct risk to the wider community. This process could be facilitated by the relaxing of the MOU process and the removal of project specific MOUs enabling UXO clearance agencies to respond to community needs outside of their direct project locations.

Funding should not be diverted from humanitarian assistance; however it must be recognised that scrap dealers and the surrounding communities are at risk of accidents and injury and therefore funding which can be specifically used to provide a ordnance disposal service to scrap metal dealers should be identified and the process of providing this service established with UXO LAO and other UXO clearance agencies.

- 7.3.6 Review of provincial standards and development of national standards in relation to metal detector use and enforcement:
- Licensing of detector operators
 - Stronger cross border enforcement at key border crossings with Vietnam to prevent metal detectors from entering Laos in large numbers

7.4 Review and Revise Current MRE Messages and Strategies

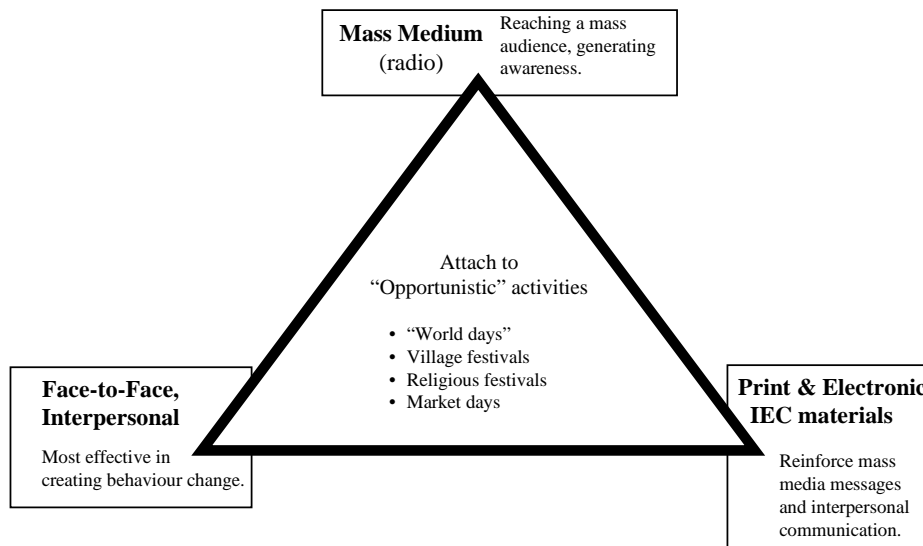
Any approach to injury prevention and UXO safety needs to embrace a range of strategies of which awareness and education remains a prerequisite for change and its importance should

not be underestimated. Risk communication is the third aspect of the risk assessment/risk management paradigm.

Risk communication does include one way message delivery but this is only one part of the risk communication process. The “triangular” Δ formula proposed by UNICEF (UNICEF Vietnam, 2002) below also suggests that the delivery of health and safety promotion messages is more effective when a combination of three key approaches is utilised. These three key approaches include:

- ⇒ a *mass medium* such as radio or village broadcasts;
- ⇒ a *face-to-face communication* by a community leader, health worker, family member, friend, etc; and,
- ⇒ a *print or electronic IEC material* such as leaflets, posters, flipcharts, teaching cards, booklets, and radio or video cassettes.

The “triangular (Δ) formula” is illustrated below:



Triangular Formula for Health and Safety Promotion (UNICEF Vietnam, 2002)

7.4.1 Continue development of a “UXO Risk Education Strategy” including MRE with stakeholders (as recommended in 1.2) which is currently being initiated by the NRA, UNICEF and GICHD.

7.4.2 Develop MRE materials with stakeholders (as recommended in 1.3). The development of new MRE materials should include:

- Materials in ethnic languages
- Oral forms of communicating messages developed for illiterate populations
- Materials which consider different geographical locations
- Materials which consider seasonality
- Materials which target high risk groups, especially children and youth
- Develop self confidence and life skills such as negotiation skills

7.4.3 Development of a communication strategy:

- The risk communication strategy developed must adopt a range of communication channels to ensure inclusion of all at risk groups and sub-groups
- Deliver information through community-based, face-to-face education activities, via existing community networks. The benefit will be that these individuals will be able to deliver information to the target groups in their own languages
- Develop radio programming and audiocassettes in appropriate languages in co-operation with Lao National Radio and provincial radio. Develop new, original programming promoting safe behaviours
- Incorporate messages and activities into existing structures, occasions and events such as World Health Day, World Food Day, village or ethnic festivals and so forth.

7.4.4 Training for service providers and message deliverers:

- Build the capacity of village groups, district, and provincial staff (e.g. LYU/UXO LAO). Focus training to make service providers aware of behavioural change principles, planning and monitoring and evaluation of communication activities
- Train UXO accident survivors as peer educators in their local communities
- Train service providers in contemporary health promotion skills including interpersonal communication/counselling skills, IEC material use, and design and implementation of simple injury prevention/MRE activities that can be linked to existing outreach and community-based activities
- Train more senior level management/planning staff in the design, implementation and monitoring of injury prevention/MRE campaigns
- Identify existing communication strategies, for example health based messages, in which MRE messages could be included
- Identify organisations responsible for the delivery of MRE messages and develop a more coordinated approach to MRE delivery among agencies

7.4.5 Communication of new risk messages:

- Use of ‘triangular’ approach to communicate MRE messages. Target groups should be informed about the importance of safe behaviours through the sustained application of a combined and coordinated set of communication activities using a mix of interpersonal, mass media and print materials
- Target groups should include primary beneficiaries, as well as secondary target groups who can influence the behaviour of primary beneficiaries
- Influential groups and individuals within targeted communities should be used to act as “change agents” or “champions” among their peers, this may include village leaders, LYU in the village, teachers or Lao Women’s Union representatives
- Messages should highlight existing positive beliefs and practices that exist among target groups for example, adults who do not allow children to actively collect scrap metal
- Messages should be consistent across all channels

- Messages should enhance the image of promoted behaviours by countering misconceptions and misunderstanding
- Messages and activities should attempt to instil confidence at the community, family and individual level. The behaviours being promoted need to be considered as “doable” allowing community members to recognise that they do have the power to change their situations
- All materials and activities to be developed should be focused, reinforcing, attractive, entertaining, simple and sustainable in design:
 - **Focused:** The target audience(s) must be clearly identified and sub-divided. The message content must be specific to each target group and to the purpose of the health promotion intervention.
 - **Reinforcing:** The message content must be reinforced by being consistently delivered to the target audiences through different channels of communication. For example, messages targeting youth can be delivered at school by teachers or through scheduled visits from UXO LAO enhanced by print materials posted in and around the school, video presentations at locations where youth gather, and on radio.
 - **Attractive:** IEC materials must be attractive in design: colourful, well presented, clear, and entertaining to appeal to the target audiences.
 - **Simple and sustainable:** Health promotion approaches should be low cost so that production and distribution can be sustainable
- Messages and materials should be field tested prior to wider dissemination

7.5 Review and Revise Current Information Management Systems

Efficient information systems are required to fully understand the current situation, monitor change, target resources and assess the impact of activities in the humanitarian mine action sector. As shown earlier however, current systems in Lao PDR are underdeveloped and incomplete, making analysis and accurate targeting problematic.

- 7.5.1 Incorporate UXO injury surveillance into existing public health systems. This will be more cost effective than establishing a new system and will also provide public health services with the necessary information for appropriate resource allocation and ensure sustainability in an effective injury surveillance system. The surveillance system will provide a clear view of the national health burden caused by UXO injury.
- 7.5.2 Use GIS systems to map contamination, HMA and record accidents in order to identify hot spots for prioritisation for UXO action.
- 7.5.3 Clean and standardise available data.

7.6 Strategies to Reduce the Risk to Children

Young children’s knowledge and awareness of what UXO is and what are safe or unsafe practices is not fully developed. Adults are also often away from the home environment which can result in children being left on their own or with minimal supervision. This can potentially result in children with limited parental supervision coming across UXO and not having the knowledge or understanding of appropriate behaviour in relation to the UXO. It is therefore crucial to target interventions for this group.

Strategies targeting of children 0 – 8 years of aged

7.6.1 Identification of high risk areas to target campaigns

- These areas may have a lot of high risk activities occurring such as an active scrap metal trade, or high levels of poverty resulting in children not attending school until they are older

7.6.2 Targeting of secondary groups who can influence the younger children

- Development of a parenting orientation module based on UXO awareness and parental responsibilities
- Peer group educators for parents, reinforcing positive messages concerning parental supervision and acceptable behaviour for children with regards to UXO
- Build on the decision making process within the community to enforce community responsibility for children who are seen engaging in high risk activities
- Targeting of older children with school based UXO awareness messages to encourage them to inform younger children and relatives of the dangers of UXO

NB: Peer educators must be clearly identified as people who are not actively involved in high risk activities themselves, it is important the message they are giving is reinforced through their actions.

7.6.3 Delivery of MRE messages to children

- Utilising existing Lao Youth Union networks (potentially building on the network of trained volunteers from the UNICEF initiative 'Sport in a Box') to identify peer educators in villages
- Training of peer educators in MRE specifically aimed at young children which would include games and singing
- 'Activity mornings' for activities with young children in which MRE messages are incorporated

Strategies aimed at reducing the risk to school children

7.6.4 Review and modify existing school based UXO awareness education

- Development of life skills and negotiating skills approach to risk education
- Inclusion of peer group educators
- Increased focus on scrap metal collection as a dangerous activity
- Review of current materials used to deliver messages
- Development of new MRE materials (see recommendation 4)

7.6.5 Continue and expand new UXO awareness education in the school curriculum

- Children in high risk areas continue to receive UXO awareness education in their school environment
- Expansion of UXO awareness activities, incorporated into provincial level curriculum to be implemented at district level. UXO awareness messages need to be expanded

outside existing highly contaminated areas as children in less contaminated environments are also at risk if they come into contact with UXO and are unaware of the dangers or have not developed appropriate response mechanisms

7.7 Strategies Targeting Adults and Children who Collect Scrap Metal

The reduction of children operating in the scrap metal industry will require a strategic approach targeting the whole community; adults, children and scrap metal dealers. Adults express a desire to protect their children from UXO which is shown in their reasoning behind moving UXO, yet on the other hand, adults seem to let their children collect scrap and in some instances actively engage their children in the collection of scrap.

The Lao Government is a signatory to the Convention on the Rights of the Child and is duty-bound to support the best interests of children and Article 32:

States Parties recognise the right of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health ...

It is important that targeted messages provide positive reinforcement and show this is a highly dangerous activity. Adults on the other hand are generally aware of the risks, yet continue to collect scrap metal primarily for socio-economic reasons; therefore new MRE messages must be specifically targeted at this group.

For Children

7.7.1 Targeting of secondary groups who can influence children, or agents who have been actively involving children in scrap metal collection

- Peer group educators for parents to positively reinforce scrap metal as a high risk activity for children to be engaged in
- Build on community strengths and current decision making processes within the community to enforce no detector use by children
- Educate scrap metal dealers who are actively transporting children to scrap metal collection sites and consider imposing penalties on those that do so

7.7.2 Review of school based UXO awareness education material to include a greater focus on scrap metal collection

For Adults

7.7.3 Development of messages specifically targeting scrap metal collection

- What is safe and unsafe scrap metal to collect
- What to do if a UXO is found
- Messages need to be developed to improve the level of awareness about digging and safety precautions to take when digging for scrap metal

7.8 Strategies to Reduce the Risk to People who Dismantle UXO

A clear definition and enforcement of what constitutes acceptable and unacceptable scrap metal will hopefully go some way to reducing this high risk behaviour as there would no longer be a market for items of UXO that have been dismantled. Yet relying solely on enforcement is

not an adequate response, message based approaches and involvement of the wider community will also be required.

7.8.1 Development and dissemination of MRE messages targeting people who actively dismantle UXO. Messages should include:

- If you dismantle UXO, don't leave the live fuses where children can find them⁴
- If you want to dismantle UXO, don't bring the item into the village where others may be hurt⁵

7.8.2 Development of community strategies

- Build on community strengths and current decision making processes within the community to enforce safer behaviour from individuals who dismantle UXO
- Discourage communities from calling upon the local 'bomb expert' to dismantle UXO on their behalf and encourage them to follow the correct reporting process

7.9 Strategies to Reduce the Risk to Farmers Working in Fields

7.9.1 Develop strategies to enable farmers to more adequately deal with residual risk, this may include an increased MRE focus on training communities in recognition of highly dangerous items that must be reported immediately

7.9.2 Prioritisation of roving tasks requests

Priority of roving tasks should be given to:

- Tasks which pose an immediate threat to an individual
- Reports of UXO in agricultural land where the item is impeding agricultural production and there is a risk the land owner will move the UXO
- Areas where new agricultural land is being opened up

7.9.3 Development and dissemination of MRE messages targeting people who are at risk of moving UXO out of farming land

- Focus messages to dispel the myths surrounding perceived safe precautions when moving UXO

⁴ GICHD, 2005

⁵ ibid

ANNEXES

1. PREDISPOSING, ENABLING, REINFORCING FACTORS

RISK GROUP: Adults who actively collect scrap metal - men and women of all ages

Of the people who collected scrap metal, 29% do so actively through the use of a metal detector or digging for scrap metal, of which 65% are men and 35% women. Active scrap collectors are from all ages groups, although the older age groups are more actively involved. Those 27 years and above group represented 82% of the collectors.

RISK BEHAVIOUR: Digging to investigate metal detector signals and unintentionally or intentionally coming into contact with UXO

Predisposing Factors	Enabling Factors	Reinforcing Factors
Need for cash income	Availability of scrap metal to collect	Poverty and food security problems
Reliance on metal detector signals to give signal indicating only scrap metal is present	Availability of metal detectors, with scrap dealers often bringing detectors directly to the villagers	Lack of agricultural production land resulting in families continuing to look for scrap metal to supplement household incomes
Digging subsurface to investigate signals	Access to scrap metal dealers, either in the villager or who travel to the village to buy the scrap metal	Limited alternative employment options offering a similar level of financial return
Knowledge gaps in: <ul style="list-style-type: none"> • What is scrap metal and what is ordnance • What are 'safe' UXO to collect and what are 'dangerous' UXO to collect, inability to discriminate between live and safe items • Where is it considered 'safe' to look for scrap metal (i.e. bomb craters) 	Failure to enforce regulations regarding the collection of ordnance and the use of metal detectors	Lack of consistent sanctions or negative response from authorities (local police, village chief etc) ⁶
Lack of knowledge about regulations governing the collection of ordnance and the use of metal detectors	Highly organised nature of scrap collecting industry, where in some circumstances scrap collectors are transported out to locations to collect scrap daily	Price of scrap metal

⁶ Moyes, 2004

RISK GROUP: Farmers who move UXO out of agricultural land - predominately men over 36 years of age.

16% of adults had moved UXO to enable the cleared land to be used for agricultural production. Men (72%) over 36 years of age (72%) made up the majority

RISK BEHAVIOUR: Moving and relocating UXO

Predisposing Factors	Enabling Factors	Reinforcing Factors
Level of contamination of agricultural land	Lack of clarity regarding reporting systems for EOD response ⁶	Communities not informed of the outcome of requests for clearance
Need to utilise the land safely / want to reduce the risk of farming ⁷	Inability of UXO clearance agency to respond to clearance requests in a timely manner	Lack of information on when a formal EOD response will be made ⁶
Belief that some UXO are 'safe' to move	Ease of which a UXO can generally be picked up and moved	Process is effective and results in useable land ⁶
Belief that it is 'safer' to move the UXO than leave it in farming land		Enhanced sense of self-efficacy at having solved a problem ⁶
Knowledge about what makes it safe or unsafe to move a UXO		Lack of association of accidents occurring as a result of moving UXO out of the farming land with adults moving UXO without negative outcomes
Belief that the 'safety precautions' taken when moving UXO will prevent a UXO exploding, or an injury occurring		Lack of access to alternative or new agricultural land that is not contaminated
People believe that they can control their interaction with UXO ⁶		Poverty, reinforces the need to continue to farm in contaminated areas and potentially moving UXO

⁷Moyes, 2004

RISK GROUP: Men and women scrap metal dealers

Both men and women are engaged in scrap metal dealing, generally as a family business. Scrap metal dealers, their families and the residents in the immediate surrounding environment are all at risk, as scrap dealing often results in the presence of live ordnance in a residential area.

RISK BEHAVIOUR: Through the purchasing of scrap metal intentionally and unintentionally coming into contact with UXO

Moving, handling and storing UXO within a residential area

Predisposing Factors	Enabling Factors	Reinforcing Factors
<p>Need for cash income</p> <p>Lack of knowledge about UXO items, and inability to distinguish between live and safe items</p> <p>Scrap collectors regularly, both intentionally and unintentionally bringing UXO items to scrap dealers</p> <p>No process for scrap dealers to dispose of UXO, resulting in dealers handling, moving and storing UXO</p> <p>Locations of scrap dealers in residential areas is placing the surrounding community at risk</p>	<p>Larger scrap dealers advance the start up money to smaller dealers enabling them to being a business</p> <p>No standardised procedure to remove items of UXO from scrap dealerships</p>	<p>Price of scrap metal</p> <p>No form of accreditation required for scrap dealers enabling people with no experience or taking any safety precautions to operate a business</p> <p>Lack of consistent sanctions or negative responses from authorities (local police, village chief etc)⁸</p>

⁸ Moyes, 2004

RISK GROUP: Adults who dismantle UXO – men over 36 years of age

Predominately men (89%), who are over 36 years of age (81%), actively report dismantling UXO.

RISK BEHAVIOUR: Dismantling UXO to collect scrap metal

Predisposing Factors	Enabling Factors	Reinforcing Factors
Need of cash income	The simplicity of equipment used to dismantle UXO being readily available	Financial reward
Lack of apparent economic alternatives	There is a market in which to sell dismantled UXO	People destroy and dismantle UXO without suffering negative outcomes
Willingness to expose themselves to risk	Often called upon by local villagers and seen as the 'bomb expert' or the 'UXO expert'	Poverty and food security problems resulting in adult men dismantling UXO to supplement household incomes
Belief that they can control their interaction with UXO (self-efficacy)		Limited alternative employment options offering a similar level of financial return
Some basic knowledge of techniques for dismantling specific types of UXO		Price of scrap metal
General exposure to UXO gives people an understanding of the mechanics of UXO		Lack of consistent sanctions or negative response from authorities (local police, village chief etc)
Military experience gives people a prior understanding of the mechanics of UXO		
Over familiarity with dismantling UXO leading to over confidence		
Beliefs and fate related to accident causation		

HIGH RISK GROUP: Children who play or tamper with UXO

Predominately boys of all age groups. Of the 4% of children who played with UXO 77% were boys representing all ages. 8-11 years of age (38%), 12-15 years of age (35%) and 16-18 years of age (27%).

RISK BEHAVIOUR: Playing, picking up and handling UXO

Predisposing Factors	Enabling Factors	Reinforcing Factors
Ignorance of what the item is (accidental risk-taking) Knowledge that the item is dangerous (deliberate risk taking) Desire for excitement and desire to be brave ⁹ Curious nature of children Lack of comprehension of the power of explosives Familiarity with UXO due to UXO being present in their home and community environment in a dismantled form Inability of children to associate that some UXO are dangerous whilst others have been rendered safe	Presences of UXO in the community Lack of parental supervision Herding activities bring children in contact with UXO No activities for children during school holiday times resulting in children having many hours free each day	Peer response Children playing with UXO without suffering negative outcomes UXO education and awareness is not part of the school curriculum in all area of Laos resulting in some children not receiving UXO education messages at schools despite living in contaminated environments

⁹ Moyes 2004

RISK GROUP: Boys of all ages, (8 – 18) who collect scrap metal

Boys were considerably more active with 76% of the children collecting scrap being boys from all age groups.

RISK BEHAVIOUR: Opportunistically and actively collecting scrap metal, using a detector and digging

Predisposing Factors	Enabling Factors	Reinforcing Factors
Need for cash income	Availability of scrap metal to collect, scrap dealers who will purchase items from children	Peer response
Reliance on metal detector signals to give signal indicating only scrap metal is present	An market in which the children can sell the scrap	Lack of consistent sanctions or negative response from authorities (parents, village chief, local police, monks etc) ⁸
Digging subsurface to investigate signals from the metal detectors	Familiarity with UXO (whether safe or unsafe) ⁸	Children see their 'peers' or respected members of their community engaging in this activities
Lack of comprehension of the power of explosive ¹⁰	Lack of parental supervision enabling children to collect scrap metal	Children are aware that scrap collecting is dangerous, however they collect scrap metal without any negative consequences occurring
Knowledge gaps in:	Parents don't investigate children's income sources ⁸	Price of scrap metal
<ul style="list-style-type: none">• What is scrap metal and what is ordnance• what are 'safe' or 'unsafe' items of scrap to collect• Where is it considered 'safe' to look for scrap metal (i.e. bomb craters)• That scrap metal collection is a dangerous activity	Active involvement in scrap metal collection by adult family members	
	Given access to scrap metal detectors by family members	
	Highly organised nature of scrap collecting industry, where children are transported out to locations to collect scrap daily	
	Lack of activities for children during school holidays and weekends when children are most active in collecting scrap metal	

¹⁰ Moyes, 2004

HIGH RISK GROUP: Children aged 0-8 years old

RISK BEHAVIOUR: Playing, picking up and handling UXO

Predisposing Factors

Ignorance of what the item is (accidental risk-taking)
Knowledge that the item is dangerous (deliberate risk taking)
Desire for excitement and desire to be brave
Curious nature of children
Lack of comprehension of the power of explosives
Familiarity with UXO due to UXO being present in their home and community environment in a dismantled form
Inability of children to associate that some UXO are dangerous whilst others have been rendered safe

Enabling Factors

Presence of UXO in the community
Lack of parental supervision
Herding activities bring children in contact with UXO
No developed pre-school system for children to activities for children during school holiday times resulting in children having many hours free each day

Reinforcing Factors

Peer response
Children playing with UXO without suffering negative outcomes
Role models and peers may be engaging in this activity
UXO education and awareness is not part of the school curriculum in all area of Laos resulting in some children not receiving UXO education messages at schools in contaminated environments

RISK GROUP: Farmers who are working in agricultural production, planting, slashing and burning and cutting vegetation.

RISK BEHAVIOUR: Unintentional contact with subsurface UXO

Predisposing Factors	Enabling Factors	Reinforcing Factors
Level of contamination of agricultural land Manner in which land is being farmed, (digging, cutting, burning) Lack of knowledge of the presence of UXO Suspected knowledge of the likely presence of UXO but inability to take action to find and remove the UXO	Lack of clarity regarding reporting systems for EOD response ¹¹ Communities are not actively involved in the prioritisation of clearance tasks Inability of UXO clearance agency to respond to clearance requests in a timely manner	Communities not informed of the outcome of requests for clearance Lack of information on when a formal EOD response will be made ⁹ Lack of access to alternative or new agricultural land that is not contaminated Poverty, reinforces the need to continue to farm in contaminated areas

¹¹ Moyes, 2004

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3. MRE NEEDS ASSESSMENTS

ADULT QUESTIONNAIRE

Interviewer's Name	
Date	
Village	
District	
Province	

Introduce yourself, explain why this survey is being conducted, ensure you explain to the interviewee their right to withdraw at any time. For all questions in the survey a child is under the age of 18. This is to be explained clearly to the interviewee when answering questions concerning children.

Type of housing (do not ask this question interviewer to look for self)

1. Concrete house with tiled / tin roof
2. Concrete house one or two floors with thatched / wooden roof
3. Two story house (first floor with concrete and second floor with wood) with tiled/tin roof
4. Wooden house with tiled roof
5. House with wooden / thatched roof
6. Simple bamboo house
7. Other

SECTION 1: PERSONAL INFORMATION

1.1 Sex of interviewee

1. Male
2. Female

1.2 Age of interviewee

1. 19-21
2. 22-26
3. 27-35
4. 36-45
5. Over 46

1.3 Level of education

1. No education
2. Completed grade primary school 1-3 / adult literacy training
3. Completed grade primary school 4-5
4. Completed grade secondary school 1-3
5. Completed grade secondary school 4-6
6. Other

1.4 Main Occupation

1. Farmer
2. Labourer
3. Small business
4. Student
5. Scrap metal collector
6. Unemployed
7. Government Official
8. NGO
9. Other

1.5 Source of Income (multiple answers)

1. Farming production/ livestock
2. Small business
3. Family living overseas / other provinces send money
4. Non forest timber products
5. Work on someone else's farm or in construction
6. Scrap metal collection

7. Salary from employment
8. Handicrafts
9. No income
10. Other

1.6 From your own farming production how many months of the year do you have rice?

1.months. (If enough food go to 1.8)

1.7 If the rice doesn't last all year, how do you get more rice? (multiple answers possible)

1. Borrow rice
2. Borrow money to buy rice
3. Scrap metal to raise the money
4. Go out labouring
5. Farming / livestock
6. Handicrafts
7. Non forest timber products
8. Small business
9. Other

1.8 How many people living in your family?.....people.

1. Men.....
2. Women.....
3. Boys.....
4. Girls.....

SECTION 2: ASSESTS

2.1 Do you own land?

1. Yes
2. No

2.2 What livestock do you own and how many?

1. If they have
2. If they don't have (**go to section 3**)
3. Pigs.....
4. Ducks / Chickens.....
5. Buffalo.....
6. Cow.....
7. Goats.....
8. Horse.....
9. Other.....

SECTION 3: GENERAL CONCERN

3.1 What are the main concerns that you have (*do not read this list out*) (rank 1 as what concerns the person the most, 3 as what concerns the person the least)

1. Not having enough money
2. Not having enough food
3. Sickness
4. Accident from UXO
5. Livestock/poultry diseases
6. Lack of labour
7. Not enough farming land
8. Natural event (flooding/drought....)
9. Lack of clean water
10. Nothing
11. Other

3.2 What are the main concerns you have for your children (*do not read this list out*) (rank 1 as what concerns the person the most, 3 as what concerns the person the least)

1. Do not have children

2. Playing with UXO and get injured
3. Accident (drowning, fall out of trees, electrocution, road)
4. No job for children in the future
5. Sickness
6. Not getting an education
7. Lack of clean water
8. Drug abuse
9. Not enough clothes
10. Not enough food
11. Children work hard
12. Other

3.3 How often would you have a conversation with family / friends about UXO?

1. Never
2. Some reasons (1-5 times per year)
3. Sometimes (Monthly)
4. Often (Weekly)
5. Always (Daily)

SECTION 4: UXO INFORMATION

4.1 Have you ever seen an item of UXO in the last 12 months?

1. Yes
2. No (if no, go to section 5)

4.2 Where have you seen UXO? (multiple answers possible) (do not read this list out)

1. Forest
2. Farming land
3. Along the road
4. Around the house yard
5. In the village
6. In mountain area
7. Stream / pond / lake
8. Old military areas
9. Public land (temple, school, health centre)
10. Other

4.3 Do UXO stop you going anywhere important or doing normal day to day things?

1. Yes
2. No (if no, go to section 5)

4.4 If yes, what do they stop you from doing? (multiple answers)

1. Getting water
2. Collecting wood
3. Working in the field
4. Travelling to other areas
5. Building fires / burning
6. Digging holes
7. Open new farming land
8. Gathering food in forest
9. Other

SECTION 5: Moving / Handling /Storing UXO

5.1 Have you ever moved or handled UXO last 12 months?

1. Yes
2. No (if no, go to section 6)

5.2 Where did you move the UXO to? (multiple answers possible)

1. Off the path / road
2. Out of the agricultural land

3. Took it home
4. Took it to scrap metal dealer
5. Moved to forest area
6. Other

5.3 What made you move / handle / store the UXO? (multiple answers possible)

1. To prevent children touching it
2. To collect scrap metal
3. To avoid someone steal or see it
4. To farm agricultural land
5. To play with it
6. Other

5.4 In the last 12 months how many times have touched UXO?

1. Daily
2. 2-3 times a week
3. Weekly
4. Monthly
5. Other

5.5 Does anyone help you move / handle UXO with you? (multiple answers)

1. No one
2. Friends
3. Relatives who are adult
4. Relatives who are children
5. Neighbours
6. Other villagers
7. Others

5.6 What types of UXO do you touch or move / handle in the last 12 months? (multiple answers possible)

1. Don't know the type
2. Everything
3. Bombies
4. Projectiles
5. Large bombs
6. Motor shells
7. Rockets / missiles
8. Hand grenades
9. Mines
10. Bullets
11. Other

5.7 Have you ever stored UXO in the last 12 months? (multiple answers possible)

1. Yes
2. No (if no, go to section 6)

5.8 Where did you store the UXO?

1. House
2. Garden / farming land
3. In the stream / lake
4. Forest
5. Other

5.9 Approximately how many times have you stored UXO?

1. times

5.10 Why did you store the UXO? (multiple answers possible)

1. So children wouldn't play
2. Waiting for scrap metal collector to come

3. Because I own them
4. Because they were found on my land
5. Other

SECTION 6: Destroying / Dismantled UXO

6.1 Have you destroyed / dismantled UXO in the last 12 months?

1. Yes
2. No (if no, go to section 7)

6.2 How often would you destroy / dismantle UXO?

1. Never
2. Some reasons (1-5 times per year)
3. Sometimes (Monthly)
4. Often (Weekly)
5. Always (Daily)

6.3 Was someone with you when you destroyed or dismantled the UXO? (multiple answers)

1. Alone
2. Friends
3. Relatives who were adults
4. Relatives who are children
5. Neighbours
6. Other villagers
7. Others

6.4 How did you learn to destroy or dismantle UXO?

1. Through my experience as a soldier
2. Learnt from friends
3. Learnt from family
4. Learn from other villagers
5. Learn from watching UXO team
6. Others

6.5 How did you destroy or dismantle the UXO?

1. Use strong object to break open (hammer / rock)
2. Place the UXO in a hot fire
3. Use spanner to open large bomb
4. Put the salt over them
5. Other

6.6 Why do you destroy / dismantle UXO?

1. To collect the scrap metal
2. To collect the explosive
3. To do farming
4. To make it's safer
5. Other

SECTION 7: Scrap metal collection

7.1 Have you ever collected scrap metal in the last 12 months?

1. Yes
2. No (if no, go to section:8)

7.2 How often do you collect scrap metal?

1. / week
2. / month
3. / year

7.3 How do you look for the scrap metal?

1. Use detector
2. By digging for scrap metal
3. Looking in the forest area

4. Looking in agricultural area
5. After slash and burn
6. Come across scrap, opportunistically
7. Other

7.4 Where in the ground is the scrap metal you are looking for? (multiple answers)

1. On the ground
2. Below the ground
3. Under the water
4. Other

7.5 Who do you sell scrap metal to? (multiple answers)

1. Scrap dealer who comes to our village
2. Scrap dealer in village
3. Send to factory
4. Unsure who they are
5. Other

7.6 How much money do you make selling scrap metal?

1.kip / week
2.kip / month
3.kip / year

7.7 What do you do with the money that you make from selling scrap metal? (multiple answers)

1. Buying food
2. Buy Medicine
3. Buy agricultural inputs (seeds / fertilisers)
4. Purchase household / personal belongings
5. Education fees for children, school supplies and snacks
6. Buy sweet for children
7. Other

7.8 Do scrap metal dealers buy UXO even if it still contains some explosive or the fuse?

1. Yes
2. No
3. Don't know

7.9 Is collecting scrap metal dangerous or not dangerous?

1. Dangerous
2. Not dangerous
3. Don't Know

7.10 Has anyone warned you about the dangers of collecting scrap metal?

1. Yes
2. No (if no, go to 7.12)

7.11 If yes, who has warned you? (multiple answers possible)

1. UXO LAO community awareness team
2. Local authorities
3. Family
4. Friends
5. Teachers
6. Other

7.12 What are the main times of the year you collect scrap metal?

1. Rainy season
2. Dry season
3. When farming is not busy
4. Before Lao New Year
5. When I need money
6. Other

SECTION 8: Removal of UXO to use the land

8.1 Have you ever removed UXO to then use the cleared land?

1. Yes
2. No (if no, go to section 9)

8.2 Have you ever used a metal detector to clear your own land?

1. Yes
2. No (if no, go to 8.4)

8.3 What did you use the cleared land for? (multiple answers)

1. Farming
2. To build a house / rice storage building
3. Garden
4. Livestock shelter (pigsty / cattle pen)
5. Fish pond
6. Other

8.4 Do you think it is safer to move a UXO off your land or leave it where it is?

1. Move it off land is safer
2. Leave it where it is safer
3. Unsure

SECTION 9: Move UXO to avoid children finding / playing with an item

9.1 Have you ever seen any children in the village playing with UXO?

1. Yes
2. No

9.2 How often do you talk to your children about the danger of UXO? (do not read the list out)

1. Do not have children
2. Never
3. Every week
4. About once a month
5. After I have heard about an accident
6. When I heard children are going to collect UXO
7. Other

SECTION 10: KNOWLEDGE

10.1 How can you tell if a UXO is safe? (do not read the list out)

1. I can see it has already exploded
2. I can see the fuse is missing
3. It looks rusty
4. The UXO has been there for a long time
5. No UXO is safe
6. Other

10.2 How can you protect yourself from being injured by a UXO accident (multiple answers possible) (do not read the list out)

1. When see UXO don't go close to it
2. Be careful when going where never been before
3. Careful when digging land
4. Careful when slashing and burning
5. Build domestic fires above the ground on stones
6. When find it report it to someone
7. Mark it for someone know that
8. Other

10.3 Can you tell me what makes a UXO explode? (multiple answers possible) (do not read the list out)

1. Impact from a strong force
2. High temperature from fire

3. Touching / moving it
4. Trying to take out the explosive
5. Vibration from movement
6. Others

10.4 How far away can a UXO explosion kill or injury you? (multiple answers)

1. meters
2. It depends on the type of UXO that explodes
3. Unsure
4. Other

10.5 Do you know anyone who has been killed or injured by a UXO?

1. Yes
2. No (**go to 10.8**)

10.6 If yes, what were they doing at the time? (do not read this list out) (multiple answers possible)

1. Playing with UXO
2. Collecting scrap metal
3. Foraging in the forest
4. Collecting firewood
5. Lighting a fire
6. Working in the fields
7. Dismantling / hitting UXO
8. Don't know
9. Other

10.7 Do you think they knew it was dangerous at the time?

1. Yes
2. No
3. Don't know

10.8 If you touch UXO often does it make it safer to handle UXO in the future?

1. Yes
2. No

SECTION 11: ATTITUDES

11.1 Who do you think are most at risk from UXO in your community?

1. Farmers working in the fields
2. People foraging in the forest
3. Scrap metal collectors
4. Children who play with UXO
5. Other

11.2 Are these people men or women?

1. Male
2. Female

11.3 Are you interested in watching people handle UXO?

1. Yes
2. No (**go to 11.5**)

11.4 Yes if interested, why is this so?

1. I want to see what is inside
2. I had never seen someone handling a UXO before
3. I want to know how he dismantles it.
4. Other

11.5 No, not interested, why is this so?

1. It is dangerous
2. Have been told not to go near UXOs
3. Other

11.6 What would you do if you were walking and saw a friend with a UXO? (do not read this list out) (multiple answers possible)

1. Tell this it is dangerous and to put it down immediately
2. Tell them to throw it away as far as possible
3. Run away from them
4. Tell the village leader
5. Take the UXO and throw it
6. Take the UXO and put it down safely
7. Don't know
8. Other

SECTION 12: REPORTING

12.1 Are there teams near your village who can destroy UXO?

1. Yes
2. No

12.2 Have you ever reported UXO to anyone?

1. Yes
2. No (go to 12.5)

12.3 If yes, who did you report the UXO item to? (multiple answers possible)

1. Friends
2. Relatives
3. Village leader
4. Local authorities
5. Provincial authorities
6. UXO clearance agency
7. Others

12.4 How long did it take for the team to come and destroy these items?

1. / day
2. / month
3. / year
4. / have not yet come. When did you report it.....

12.5 If no, why have you not reported UXO?

1. Have not found any to report
2. Not my business to report them
3. Afraid to report them to authorities
4. It does not worry me
5. No one to report to
6. Other

12.6 Have you ever moved an item to a safe place until the team could come?

1. Yes
2. No

12.7 Do you think it is better to have the UXO clearance team come and destroy the items?

1. Yes
2. No (if no, go to 12.9)

12.8 If yes, why do you think it is good for the team to destroy UXO? (multiple answers)

1. Safer environment for community
2. To avoid accidents
3. For Physiology reasons
4. Easier gathering
5. Safer for farming activities
6. The team know how to destroy UXO
7. Other

12.9 If no, why is it not good to have a clearance team come and destroy the UXO?

.....
SECTION 13: UXO RISK EDUCATION

13.1 Have any people or team come here to your village to explain about dangers of UXO?

1. Yes
2. No (if no, go to 13.6)

13.2 When did they last come?

1.month.....year

13.3 If yes, how did they explain the dangers? (multiple answers possible)

2. Told the villagers the dangers when they have a meeting
3. Playing games / puppets
4. Ask and answer questions / role plays (roving CA team)
5. Can't remember
6. Others

13.4 Due to this explanation did you change your behaviour in any way?

1. Yes
2. No (if no, go to 13.6)

13.5 If yes, how did you change your behaviour? (multiple answers possible)

1. Stop collecting scrap metal
2. Collected scrap more carefully
3. Don't touch or use detector forever
4. Use metal detector now
5. Don't build fires outside
6. More careful when digging land
7. Other

13.6 What information should be given to your community about UXO? (multiple answers)

1. Basic UXO recognition / colour of UXO
2. Where locations are found
3. How to identify different types of UXO
4. Dangers of UXO
5. How to prevent accidents occurring
6. Impact from UXO
7. How to move UXOs safely
8. Government regulation
9. How to avoid from UXO accidents while farming in the field
10. Don't know
11. Other

SECTION 14: COMMUNICATION

14.1 What is the main way that people in your village get new information about health, agricultural or other issues that are important? (multiple answers)

1. Village leader
2. Village notice board
3. Friends / family
4. Loudspeakers
5. Radio
6. Television
7. Other

14.2 Has consent been given to use photo's or reference discussions?

1. Yes
2. No

Thank the respondents for their help and ask them if they have any questions they would like to ask you

CHILDREN QUESTIONNAIRE

Interviewer's Name	
Date	
Village	
District	
Province	

Introduce yourself, explain why this survey is being conducted, ensure you explain to the interviewee their right to withdraw at any time, ensure that the adolescent has an adult with them. For all questions in the survey a child is under the age of 18.

SECTION 1: PERSONAL INFORMATION

1.1 Sex of interviewee

1. Male
2. Female

1.2 Age of interviewee

1. 8-11
2. 12 -15
3. 16-18

1.3 Do you attend school?

1. Yes (go to section 2)
2. No

1.4 If no, what is your main activity? (do not read out)

1. Working in the fields
2. Scrap metal collection
3. Unemployed (stay at home with family)
4. Paid employment
5. Other

SECTION 2: GENERAL CONCERNS

2.1 What are 3 things that most worry you and your friends? (do not read this list out)

(rank 1 as concerns the person the most, 3 concerns the person the least)

1. Playing with UXO and get injured
2. Drowning
3. No job for children in the future
4. Sickness
5. Not being able to go to school
6. Not enough food to eat
7. Lack of clean water
8. Nothing
9. Other

2.2 Are you and your friends afraid of UXO?

1. Yes
2. No

2.3 Are UXOs dangerous?

1. Yes
2. No

2.4 How often do you talk with friends/family about UXO?

1. Daily
2. 2-3 times a week
3. Weekly
4. Monthly
5. Never
6. Don't know

2.5 Do you know what UXO are?

1. Yes
2. No

2.6 Do you ever play with UXO?

1. Yes
2. No

2.7 How do you play with UXOs

1. Shoot at it with a catapult
2. Pick it up and throw it
3. Show it to friends
4. Move it around with a stick
5. Try to break it open with a rock
6. Other

2.8 Do you know anyone who has been killed or injured by a UXO?

1. Yes
2. No

2.9 If yes, what were they doing at the time?

1. Playing with UXO
2. Collecting scrap metal
3. Foraging in the forest
4. Collecting firewood
5. Lighting a fire
6. Working in the fields
7. Don't know
8. Other

2.10 Do you think they knew it was dangerous at the time?

1. Yes
2. No
3. Don't know

2.11 In the last 12 months have you ever seen a UXO while walking or playing with friends?

1. Yes
2. No

2.12 If yes, what was the first thing that you did? (do not read this list out)

1. Ran away
2. Shot it with the catapult
3. Threw it
4. Played with it
5. Reported it
6. Picked it up
7. Keep going
8. Nothing
9. Other

2.13 Where have you seen UXO? (multiple answers possible) (do not read this list out)

1. Forest
2. Farming land
3. Along the road
4. Around the house yard
5. In mountain area
6. Stream / pond / lake
7. Old military areas
8. Public land (temple, school, health centre)
9. Other

2.14 What would you do if you were walking and saw a friend with a UXO? (do not read this list out) (multiple answers possible)

1. Tell this it is dangerous and to put it down immediately
2. Tell them to throw it away as far as possible
3. Run away from them

4. Take it away from them
5. Tell an adult
6. Take the UXO and throw it
7. Take the UXO and put it down safely
8. Don't know
9. Other

2.15 How can UXO accidents happen? (multiple answers possible)

1. Touch UXO
2. Hitting UXO
3. Playing with UXO
4. Throwing UXO
5. Burning farmland
6. Weeding farmland
7. Walking over UXO in the ground
8. Collecting the UXO
9. Other

2.16 How can you protect yourself from a UXO accident (multiple answers possible) (do not read the list out)

1. When see UXO don't go close to it
2. Do not handle UXO
3. Be careful when going where never been before
4. Careful when digging land
5. Careful when slashing and burning
6. Build domestic fires above the ground on stones
7. When find it report it to someone
8. Other

2.17 Have any of your teachers at school talked about UXO to you?

1. Yes
2. No

SECTION 3: SCRAP METAL COLLECTION

3.1 Have you ever gone and collected scrap metal with your family or friends?

1. Yes
2. No

3.2 If yes, who was with you?

1. Adult family member
2. Child family member
3. Friends
4. Other villagers
5. Others

3.3 Where in the ground is the scrap metal you are looking for?

1. On the ground
2. Below the ground
3. Other

3.4 Did you receive money from collecting scrap metal?

1. Yes
2. No

3.5 What do you do with the money that you make from selling scrap metal? (multiple answers possible)

1. Children
2. Give to parents
3. Buy sweets / toys
4. Buy clothes
5. Left over money from sweets give to parents
6. Saved the money
7. School supplies

8. Others

3.6 Did you think it was dangerous when you were collecting scrap metal?

1. Yes
2. No
3. Don't Know

3.7 Has anyone warned you about the dangers of collecting scrap metal?

1. Yes
2. No

3.8 If yes, who has warned you? (multiple answers possible)

1. Mother
2. Father
3. Other family
4. Friends
5. Teachers
6. UXO LAO CA
7. Local authorities
8. Lao Youth Union
9. Other

SECTION 4: REPORTING UXO

4.1 Have you ever reported UXO to anyone?

1. Yes
2. No

4.2 Who did you report the UXO item to?

1. Friends
2. Relatives
3. Village leader
4. Local authorities
5. Provincial authorities
6. UXO clearance agency
7. Lao Youth Union
8. Others

4.3 Has consent been given to use photo's or reference discussions?

1. Yes
2. No

Thank the respondents for their help and ask them if they have any questions they would like to ask you.

4. LIST OF PEOPLE INTERVIEWED

World Education Consortium

Mr. Martin Dunn, Country Representative

Mr. Arthur Crisfield, Education Coordinator

Representatives from Xieng Khouang and Houaphan Provinces

Federation Suisse Deminage

Mr. Tony Fish, Programme Manager

Mr. Didier Bastien, EOD expert

Handicap International Belgium

Mr. Chris Bath, UXO Programme Manager

Ms. Clair Jacobs, Consultant

Lao Youth Union

Mr. May Lattanabounheuang, Director, LYU

Ms. Laysone Lakenchanh, Project Director, LYU

National Regulatory Authority for the UXO sector

Mr. Joseph Wenkoff, CTA

Mr. Maligna Saignavongs, Director

UNICEF

Ms. Amy Delneuve, Assistant Project Officer, Child Protection Section, Vientiane

UXO LAO

Mr. Bounpheng Sisawath, Chief of Public Information

Mr. Khamphane, Chief of Community Awareness

Mr. Vilaysouk Bouamanivong, Chief of Database Unit

E-mail communication with:

Norwegian People's Aid, Ms. Ruth Bottomely, Research and Policy Development Advisor

Landmine Action, Mr. Richard Moyes

Semi-Structured Interviews

Xieng Khouang

Mr. Thongde Phonasa, Chief of Administration, Pek District

Mr. Maikham Sivongsa, Provincial Labour and Social Welfare

Male, UXO accident survivor

Scrap metal dealer (x3)

Person who actively tampers with UXO (x2)

Village leaders from Suoi Village, Lek Village, Khan Khai Village

Saravan

Mr. Liem Maixay, Provincial Coordinator, UXO LAO

Deputy Provincial Coordinator, UXO LAO

Scrap metal dealers (x 6)

Lao Ngam District Governor

Representatives of Provincial Commercial Department

Village leaders from Mark Nao Noi Village, Thao Phoon Village, Theme Pho Phoon Village

Khammouane

Persons who actively tamper with UXO

Houaphan

Mr. Viengkham Pengsoulit, Provincial Coordinator, UXO LAO

Mr. Anousay Khamvongsack, Deputy Provincial Coordinator, UXO LAO

UXO LAO CA team

Village leaders :Nakai Village, Naloung Village, Kaleurn Village, Pong Nakhao Village, Nadeur Village, Souplao Village, Huay Mai Village, Longaung Village, Meungpeun Village

Focus Group Discussions - Men, 14 groups with 140 people, women 12 groups with 113 people, boys 9 groups with 105 people, girls 9 groups with 87 people