



**KINGDOM OF CAMBODIA**  
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**The Convention on the Prohibition of the Use, Stockpiling,  
Production and Transfer of Anti-Personnel  
Mines and on Their Destruction**

**Request**

**for an extension of the deadline for completing the destruction of anti-personnel  
mines in mined areas in accordance with Article 5**

**Submitted to Ambassador Jürg Streuli of Switzerland,  
President of the Ninth Meeting of the States Parties to the Convention**

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## **I- Executive Summary**

Cambodia's landmine problem is the result of a protracted sequence of internal and regional conflicts that affected the country from the late 1960s until the end of 1998. The nature of landmine and unexploded ordnance contamination in Cambodia is highly complex. The north-west regions bordering Thailand are heavily affected, while other parts of the country are considered moderate to low. It was originally estimated that somewhere around four to six million landmines were laid during conflicts. The country is also heavily affected by explosive remnants of war (ERW) due to aerial bombing and ground battles. Mines and ERW have caused an unacceptable number of casualties, both military and civilian, which peaked at 4,320 in 1996.

Cambodia officially started humanitarian mine clearance in 1992. However, clearance of the Cambodian-Vietnamese border region began as early as 1979. By 1998, demining was at full throttle, with four demining operators, the Royal Cambodian Armed Forces (RCAF), the Cambodian Mine Action Centre (CMAC), Mines Advisory Group (MAG) and the HALO Trust all conducting clearance operations. On 28 July 1999, Cambodia ratified the Anti-Personnel Mine Ban Treaty (APMBT), and the Treaty entered into force on 1 January 2000.

Early in Cambodian mine action, surveys and clearance requests were the means employed to identify areas with landmine contamination. However, when Cambodia began to focus on longer-term development goals, the need for a more systematic and holistic approach to mine action management arose. In order to ascertain and quantify the full scope of the country's landmine problem, a Level One Survey (L1S) was undertaken between late 2000 and April 2002. The completed L1S identified 4,544 square kilometers contaminated with mine and ERW, affecting 6,416 villages (out of 13,910 villages) – or 46.1% of all villages. Contamination was suspected in each of Cambodia's 24 provinces. Mines have had a huge negative humanitarian, social and economic impact on Cambodia, leading to mine action being integrated into the Government's major national development policies and strategies as well as added as an additional Cambodian Millennium Development Goal (MDG9).

Despite the optimistic view that the L1S would provide a clear map of areas containing anti-personnel landmines, it soon became apparent through subsequent survey activities by operators that there were also other mined areas sitting outside the L1S, and that some of the L1S polygons were unrealistically large. The problems emanating from this situation are widely recognized, and continue to become more clearly understood as time passes. To ensure demining resources were targeting contaminated areas, an innovative mine action planning mechanism was introduced which facilitates both community and demining operator inputs into prioritization of mine clearance plans (known as the MAPU process). In order to greater address risk reduction the Community-Based Mine Risk Reduction (CBMRR) network was introduced in 2001.

The last few years have seen an emergence of new, meaningful mine action initiatives. In 2006, an Area Reduction Policy was initiated in recognition that much of the L1S needed to be reclassified. The Area Reduction Policy aimed to develop agreed protocols and standards through which area that was previously classified as suspect, but which had been in productive use without incident, could be reclassified within the national database. Taking this initiative one step further, Cambodia is currently developing a Land Release policy which provides a framework that encourages greater use of land release methodologies and tools in order to accelerate the release of safe land to communities.

As mine action evolved, stronger systems and structures emerged. The Royal Government of Cambodia (RGC) has in September 2000 established the Cambodian Mine Action and Victim Assistance Authority (CMAA) to regulate and coordinate mine action activities throughout

Cambodia. The CMAA has established a number of policies and guidelines for the management of the mine action programme in Cambodia and is striving to enhance mechanisms to improve coordination of the mine action sector.

The Cambodian mine action sector has achieved remarkable results from 1992 to 2008, thanks to a combination of all operators' demining activities with efforts from stakeholders in the sector. The three humanitarian demining operators CMAC, MAG and the Halo Trust have cleared 305,863,922 square meters of land across 7,589 mined areas resulting in substantial socio-economic benefits. In addition, the Royal Cambodian Armed Forces reports the clearance of 170,640,882 square meters. In total, from 1992 until 2008, CMAC, MAG, HALO Trust and the RCAF combined, report having cleared 814,198 APM, 19,109 ATM and 1,740,831 items of ERW as part of their demining activities. Overall, huge amount of suspected land has been released for productive use - including the safe resettlement of thousands of refugees and Internally Displaced People (IDP) - and to enable social and physical infrastructure reconstruction and development to begin.

Since 1992, operators, guided by their own Standard Operating Procedures (SOPs), have been using clearance and survey methods to release suspect mined areas. In 2005, the CMAA began developing the Cambodian Mine Action Standard (CMAS) and six CMAA Quality Assurance teams are currently monitoring that standards are being applied by the operators in accordance with CMAS.

However, despite some noticeable successes, Cambodia is still challenged by a serious contamination problem, and thus the necessity to ensure that precious mine clearance assets are directed to those areas that need it the most. The considerable casualty reduction, 271 cases in 2008, down from 4,320 cases in 1996, demonstrates that the mine action sector contribution in Cambodia has been essential. However, this does not disguise the fact that there is a large problem that has a significant impact on both national and local development priorities. It remains clear that international support must be maintained in order to assist Cambodia's mine action efforts to support poverty reduction and economic growth whilst complying with its international obligations.

Cambodia has benefited greatly from sustained and significant contributions from the international community to fund mine action activities since 1992. The overwhelming majority of mine action funding has been directed to mine clearance, but significant contributions have also been made to MRE, victim assistance, mine action governance, integrated mine action programs, and research and development. While Cambodia remains a developing country with great pressure on its National Budget to address a wide range of different needs, the RGC has managed in recent years to increase its budget allocation to mine action.

Cambodia requires an extension of its deadline to enable meeting the APMBT's Article 5 obligation due to the high level of contamination. However, even within this extension period, adverse circumstances could severely impede Cambodia's efforts. Sustained funding combined with maximizing land release methodologies will assist Cambodia to comply with its international obligations.

The contribution of Cambodia's mine action program since 1992 to the social and economic situation of people living in affected areas is considerable. This occurred primarily through clearing land with a purpose of reducing casualties and providing safe land for resettlement, agriculture activities and enhanced livelihoods for poor and vulnerable people.

Addressing the next 10 years begins with a new effort to quantify the remaining landmine problem. In August 2009, a Baseline Survey (BLS) commenced which aims to supersede previous L1S contamination and to define remaining contamination through a national land

classification system. The findings of the BLS will complement the MAPU system and enhance planning and prioritization that should see clearance assets targeted where the greatest needs are. Survey of the 21 most mine-affected districts shall be completed by December 2010 and will be followed by subsequent phases which will cover all remaining districts by December 2012.

The Baseline Survey is a major milestone in clarifying the remaining contamination in Cambodia; however its results will not be available in time for the submission of this Extension Request. Therefore, the CMAA has developed a nationally owned methodology to derive an estimate of the remaining contamination that takes into account the broad knowledge and experience of all operators involved in Cambodia. The CMAA recognizes that the remaining contamination remains an estimate but has strived to demonstrate how this situation will be solved. In an effort to keep States Parties of the Anti-Personnel Mine Ban Treaty informed, Cambodia will provide updates on regular basis on Baseline Survey achievements and subsequent reviews of workplans.

According to Cambodia's projection, 648.8 square kilometers remain mine affected and will need to be addressed over the next ten-year period. The Baseline Survey will refine the projection by capturing all known contamination and superseding all previous recorded contamination. Based on the current productivity levels, Cambodia estimates that demining undertaken by the three operators combined can achieve 470 square kilometers which will require approximately USD 330 million. This demonstrates that current productivity levels will not be sufficient to fulfill Article 5 within the next ten years. However, with a 38% increase of financial resources made available to the sector and a greater involvement of the RCAF in addressing the remaining challenge, productivity rates can be increased which may make completion of clearance of all known minefields within the extension period possible.

Cambodia is seeking a ten-year extension period, commencing in January 2010 and concluding in December 2019. Within the ten-year extension period, Cambodia commits to undertake a number of activities that will support achieving the goals of the APMBT Article 5 obligation. Cambodia aims at identifying all remaining mine contaminated areas and at releasing land through clearance and survey with a primary focus on casualty reduction and poverty alleviation. In order to meet the obligations Cambodia has come up with the following activities that form an indicative workplan for the Extension Period:

- A Baseline Survey (BLS) commenced in August 2009 which will capture by the end of 2012 all remaining mined areas in the 122 affected districts recorded by the LIS;
- Improve the use of land release including the development of a national policy and CMAS on Land Release. The ultimate aim of land release is to convert mined or suspected land into an end state land implying that the land can safely be used;
- Finalization of a National Mine Action Strategy (NMAS) by the end of 2009 in support of the goals of the National Strategic Development Plan as well as Cambodia's APMBT obligations;
- Accreditation of the Royal Cambodian Armed Forces (RCAF) by the end of 2009;
- Enhance the existing planning and prioritization system to incorporate the use of BLS findings and to support the goals of the NMAS and the Extension Request;
- Improve mine action information management to support strategic planning and prioritization of demining activities;
- Formulation of Annual Clearance Workplan to target resources and monitor progress against the NMAS and the Extension Request; and
- Clearance of all identified mine areas.

## LIST OF ACRONYMS & ABBREVIATIONS

APM	Anti Personnel Mine
APMBT	Anti Personnel Mine Ban Treaty
ATM	Anti-Tank Mine
AUSAID	Australian Agency for International Development
BLS	Baseline Survey
CBMRR	Community-Based Mine Risk Reduction
CBO	Community Based Organization
CDS	Cambodian Demining Service
CDC	Council for Development of Cambodia
CIDA	Canadian International Development Agency
CMAA	Cambodian Mine Action and Victim Assistance Authority
CMAC	Cambodian Mine Action Centre
CMAS	Cambodian Mine Action Standards
CMVIS	Cambodian Mine/ERW Victim Information System
CRC	Cambodian Red Cross
CSD	Council for Social Development
CSHD	Cambodia Self Help De-mining
DAC	Disability Action Council
DBU	Database Unit (CMAA)
DFID	Department for International Development (UK)
DU	Demining Unit
EC	European Commission
EOD	Explosive Ordnance Disposal
ERW	Explosive Remnants of War
FYMAP	Five-Year Mine Action Plan
GTZ	German Development Cooperation
HIB	Handicap International Belgium
IDP	Internally Displaced People
IMAS	International Mine Action Standards
IMSMA	Information Management System for Mine Action
JICA	Japan International Cooperation Agency
Km <sup>2</sup>	Square kilometer
L1S	Level One Survey
LMS	Landmine Survivor
M <sup>2</sup>	Square meter
MACC	Mine Action Coordination Committee
MADWG	Mine Action Districts Working Group
MAG	Mines Advisory Group
MAPU	Mine Action Planning Unit
MoEYS	Ministry of Education, Youth and Sport
MoH	Ministry of Health
MoSAVY	Ministry of Social Affairs, Veterans and Youth Rehabilitation
MRE	Mine Risk Education
NGO	Non Government Organization
NMAS	National Mine Action Strategy
NPA	Norwegian People's Aid
NSDP	National Strategic Development Plan
NTS	Non-Technical Survey
ODA	Official Development Assistance
PMAC	Provincial Mine Action Committee
PMAP	Provincial Mine Action Plan
PWD	Person with Disability
QA	Quality Assurance
QC	Quality Control
RCAF	Royal Cambodian Armed Forces
RGC	Royal Government of Cambodia
SMA	Suspected Mined Area
SOP	Standard Operating Procedures

TS	Technical Survey
TWG	Technical Working Group
UNAMIC	United Nations Advance Mission in Cambodia
UNDP	United Nations Development Programme
UNHCR	Office of the UN High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNMAS	United Nations Mine Action Service
UNOPS	United Nations Office for Project Services
UNTAC	United Nations Transitional Authority in Cambodia
UXO	Unexploded Ordnance
VDC	Village Development Committee

## **DETAILED NARRATIVE**

### **1. Origins of Cambodia's Article 5 implementation challenge**

Cambodia's landmine problem is the result of a protracted sequence of internal and regional conflicts that affected the country from the late 1960s until the end of 1998, when the few remaining Khmer Rouge units were dismantled and secession of hostilities were achieved between all warring factions. Whilst all provinces were affected by conflict, it is the strip of north-western provinces bordering Thailand that were the most mine affected, and which remain the major problem requiring further action. The most affected provinces are Battambang, Banteay Meanchay, Pailin, Oddar Meanchey, Preah Vihear and Pursat located in the north and north-western part of Cambodia which in the period 2007-8 accounted for 242 of Cambodia's 254 landmine casualties.

The nature of landmine and explosive remnants of war (ERW) contamination in Cambodia is highly complex. The most heavily affected area is the Cambodian-Thai border region, known as K-5 mine belt, where millions of landmines were laid in the 1980s and which remains the heart of the challenge. While it is densely contaminated, at around 1,000 kilometers long and 100 to 500 meters wide, it is also somewhat well defined. Royal Cambodian Armed Forces (RCAF) sources claim that on average, there are 2,400 anti-personnel mines per K-5 linear kilometer, making it one of the most densely mined areas on the planet.

During the 1980s and seasonally through periods during the 1990s, there was regular fighting in the north-west in general, and around the Cambodian-Thai border in particular. This fighting was driven by a variety of ever-changing political alignments and realignments, and led to many landmine casualties. The number of casualties rose further as hundreds of thousands of Cambodians seeking refuge in refugee camps at the Cambodian-Thai border attempted to navigate their way through the dangerous land. Due to nature of civilian war, there was also scattered fighting around key strategic positions across the country. This resulted in further dense and scattered mine laying campaigns.

Peace came in phases to Cambodia, and this is reflected in the casualty statistics. The repatriation of refugees facilitated by the United Nations Transitional Authority in Cambodia (UNTAC) brought about a partial peace to the country, but it also led to a population explosion in areas adjacent to some of Cambodia's most landmine hazardous areas, again contributing to a spike in casualties.

A range of short but intense conflicts during the mid and late 1990s added to Cambodia's landmine contamination problem. During these conflicts, landmines were laid year after year to establish defensive perimeters as combatants retreated to safe ground to wait out the wet season after annual dry season offensives. These sporadic and overlapping mine fields present a different challenge in that they follow no regular pattern, and there are few if any records relating to their location.

It was only at the end of the 1990s with the final integration of the last Khmer Rouge units that a genuine peace finally took hold in the countryside. Immediately, these previously lightly populated areas experienced significant inward migration because of their proximity to lucrative Thai-border trade, employment opportunities and fertile land. This situation led to a relative surge in populations surrounding the most hazardous Cambodian-Thai border area, with new community members establishing small farms by cutting into forested areas that were frequently suspect. While marking is practiced in Cambodia, livelihoods in these areas have long been so marginal that risk taking is common in the scramble for land and resources.

Cambodia officially started humanitarian mine clearance in 1992. However clearance of the Cambodian-Vietnamese border region started as early as 1979 (it should be noted that one of the female deminers involved in early clearance efforts was recognized as a national heroine). By 1998, demining was at full throttle, with four demining operators, RCAF, CMAC, MAG and the HALO Trust all conducting clearance operations.

Since demining began in Cambodia, the country has been very active in undertaking all aspects of mine action to address the challenges, and particularly in adopting the Anti-Personnel Mine Ban Treaty (APMBT). On 28 July 1999 Cambodia ratified the APMBT, and the Convention entered into force on 01 January 2000. On 28 June 2000, Cambodia submitted its initial transparency report, which indicated that there were areas under Cambodia's jurisdiction or control in which anti-personnel mines were known or suspected to be in place. In accordance with Article 5 of the Convention, Cambodia undertook to destroy or ensure the destruction of all anti-personnel mines in these areas as soon as possible but no later than 01 January 2010.

## **2. Nature and extent of the original Article 5 challenge: quantitative aspects**

Providing an overview of the nature and extent of the original Article 5 challenge is best done in two parts, first by looking at efforts at the end of the conflict to determine contaminated areas and second with the implementation of a comprehensive Level One Survey.

### **2.1 Nature and extent of the contamination at the end of the conflict**

While it was known in the 1990's that Cambodia was suffering from a significant landmine problem, there was a lack of understanding over the true extent of the problem. The number of Cambodian refugees arriving in the border camps presented worrying evidence that the problem was extreme, as many mine casualties arrived in the camps.

The first efforts to determine the extent of Cambodia's landmine problem were initiated by UNHCR (contracting for a rapid survey, implemented by HALO Trust in 1991-1992) and the United Nations Advance Mission in Cambodia (UNAMIC) in 1991. As UNHCR sought to locate safe areas for the 360,000 Cambodian refugees based in border camps and due for imminent repatriation to Cambodia, the UNAMIC was established with the mandate of assisting the four Cambodian parties to maintain their ceasefire during the period prior to the establishment and deployment of the United Nations Transitional Authority in Cambodia (UNTAC).

During peace negotiations, a commitment was made to returnees that an option would exist whereby they would be provided with two hectares of productive land per family, "*in a District of their choice*". Ability to deliver on this commitment was soon put into question when it was discovered that much of the land available for resettlement was in fact only available because it was suspected or known to be mined. Anxieties were heightened when a 1991 UNHCR survey found that 57% of returnees (about 190,000 people) had declared their intention to resettle in Cambodia's most mine affected province of Battambang, with the majority of the remainder planning to return to other mine affected north-western provinces.

This UNHCR (HALO implemented survey) further found that of the 700 square kilometers of available land in Battambang province set aside for allocation to returnees 308 square kilometers was "probably clear of mines", 280 square kilometers "probably mined", and 112 square kilometers "heavily mined".

Such findings meant that mine clearance very quickly shifted from being an 'important issue' requiring significant attention within UNTAC, to becoming the most urgent of issues requiring an immediate and massive response. It was in this context that a decision was taken in 1992



## **2.2 Nature and extent of the contamination according to the Level One Survey**

With the final cessation of all conflicts and the momentum generated through Cambodia's signing of the APMBT on 28<sup>th</sup> May 1999, Cambodia recognized the need for its management of mine action to shift from an emergency approach to a more medium term, developmental focus. Quantifying the total mine and ERW threat was regarded as an immediate need and Cambodia commissioned in late 2000, a landmine impact survey, as the 'Provision of a National Level One Survey to the Royal Government of Cambodia' project - funded by the Government of Canada. A Memorandum of Understanding (MOU) was signed between CIDA and CMAC establishing detailed arrangements for cooperation between the two organizations. GeoSpatial International was commissioned as the Chief Executing Agency to assume responsibility for implementation of the Project. The L1S was certified by the UN to meet the standards as defined by the Survey Working Group<sup>1</sup>, and the data from the L1S were handed over to the newly established Cambodian Mine Action and Victim Assistance Authority (CMAA).

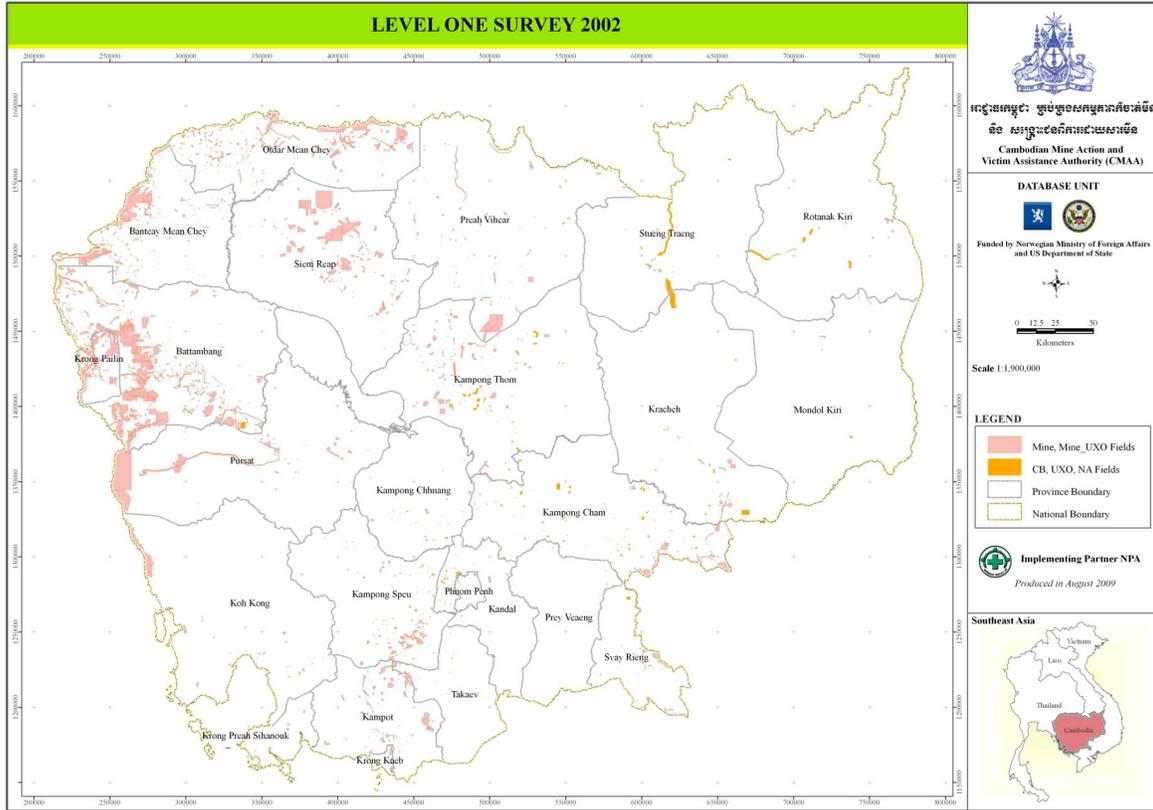
The Survey was undertaken between late 2000 and April 2002 in an attempt to ascertain and quantify the full scope of Cambodia's landmine problem. Using participatory appraisal methods, all but two of Cambodia's 13,908 villages were visited by trained survey staff who worked with communities to document their understanding of their landmine problem. The completed L1S identified 3,066 suspect hazardous areas totaling 4,544 square kilometers (or 2.5% of total landmass) and affecting 6,416 villages – or 46.1% of all villages. Contamination was suspected in each of Cambodia's 24 Provinces.

It is important to note that this survey did not provide a full reach; it was designed to define the impact on communities and get an overall snapshot of the mine and ERW contamination effects, and was useful in that sense. It did not however define precise mined area boundaries and their characteristics in order to provide sufficient information for the deployment of appropriate clearance resources.

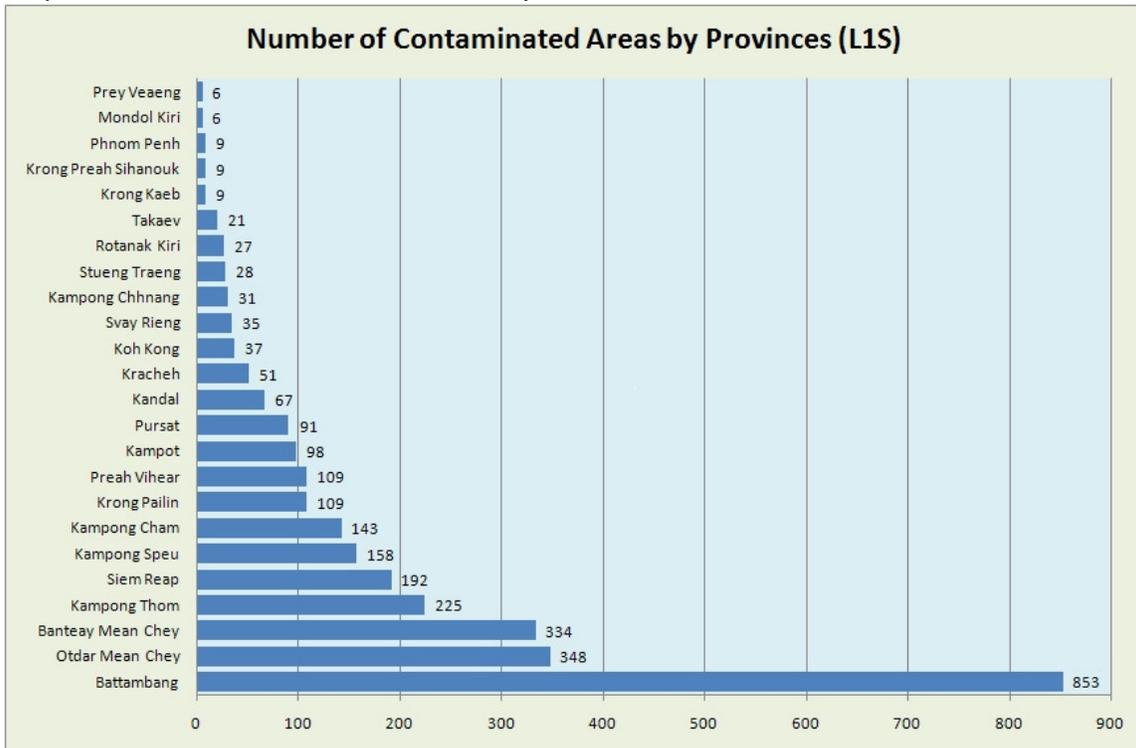
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<sup>1</sup> The Survey Working Group (SWG) was established by NGOs, the United Nation Mine Action Service (UNMAS) and the Geneva International Center for Humanitarian Demining (GICHD) to monitor standards and facilitate the international coordination of resources and expert personnel for the completion of the Global Landmine Survey in countries worst affected by landmines.

Map 2: Level one Survey Contamination



Graph 1: Number of Contaminated Areas by Province from the L1S database



### **3. Nature and extent of the original Article 5 challenge: qualitative aspects**

As for the previous section, the qualitative aspects of the nature and extent of the landmine challenge in Cambodia can be best done looking at the efforts before the L1S was implemented and the results of the L1S in terms of socio-economic impact as well as the casualty rate trends.

#### **3.1. Nature and extent of the contamination at the end of the conflict**

Cambodia's mine problem is most easily considered in two distinct periods: pre and post the final ceasefires between the Government and the Khmer Rouge in 1998.

The United Nations Transitional Authority in Cambodia (UNTAC) was established to ensure implementation of the Agreements on the Comprehensive Political Settlement of the Cambodian Conflict, signed in Paris in October 1991. Central to the UNTAC mandate was the 'safe' repatriation and resettlement of 360,000 refugees from camps along the Thai-Cambodian border and other countries, and a commitment that returnees could return to the *place of their choice*, and that families would receive two hectares of land if the location they chose was in a farming area. The preference of the overwhelming majority of these 'returnees' was to be returned to Cambodia's north-western provinces, which were perceived to be safer, since they offered easier access back to refuge in Thailand should hostilities recommence. Unfortunately, these preferred provinces were also the location of the overwhelming majority of the mine accidents that had been occurring in the years leading up to the repatriation.

As UNHCR looked for resettlement options for returnees, the UNAMIC was established by the Security Council, with the mandate of assisting the four Cambodian parties to maintain their ceasefire during the period prior to the establishment and deployment of UNTAC; and also to initiate mine-awareness training of civilian population. Based on the growing evidence being gathered by the UNHCR/HALO survey in relation to the threat levels of the areas that returnees would be resettled, the Security Council enlarged the mandate of UNAMIC in January 1992 to include a major training programme for Cambodians in mine-detection and mine-clearance and the mine-clearing of repatriation routes, reception centres and resettlement areas. UNAMIC's deployment and expansion was central to the decision that led to the development of a national mine clearance capacity through establishment of the Cambodian Mine Action Centre (CMAC)<sup>2</sup>.

The vastly more serious mine problem found by UNAMIC and the experience of the early months of UNTAC meant that the majority of returnees were unable to receive the house and land package promised in the peace settlement. This situation meant that many families had no choice but to settle for 'Option C' which was to be resettled without land, and with only a cash entitlement of USD50 per adult and USD25 per child to re-establish their lives. This situation left the majority of returnees few livelihood options but to forage in nearby forests for food, wood and other forest products. It was also common for returnees to go forth to find and

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<sup>2</sup> In 1992, in recognition of the need for a sustainable national mine action capacity, the Cambodian Mine Action Centre (CMAC) was created under the auspices of the U.N. Transitional Authority in Cambodia (UNTAC). In Annex 1 of the Paris Peace Agreement, one of the UNTAC mandates called for assistance in clearing mines, undertaking training programs in mine clearance and development of a mine awareness program to help educate the Cambodian people. The mission of CMAC was to achieve an atmosphere in Cambodia where people were free of the threat of mines and ERW, thus allowing reconstruction and development activities to take place in a safe environment. In this respect, CMAC was tasked to implement four main programs: mine awareness, mine field information, mine and ERW clearance and training in mine clearance. These programs were carried out according to well-defined priorities. The highest priority concerned humanitarian purposes — with the most immediate concern at the time of CMAC's commencement being the resettlement of displaced persons. The second priority concerned supporting opportunities for economic development, including the expansion of agriculture, rehabilitation, reconstruction and development projects. This second purpose is best viewed in the context of the times, which was a fragile peace with concerns that economic weaknesses could be exploited to reignite tensions.

settle on their own land - in an environment where virtually all safe lands were already occupied meaning that vacant potential farmland was very likely to be hazardous area.

Prior to the arrival of UNTAC, mine/ERW casualties had run for a decade at an average of close to 3,000 casualties per year. Unfortunately, casualty trend actually increased during UNTAC and continued to do so for the following four years. Casualties (for the modern era) peaked at 4,320 in 1996 occurring to both military personnel and civilian population, owing to the flaring of conflict between Government and Khmer Rouge forces. However, the figures for this period were also significantly affected by the risk taking behavior of many returnees and internally displaced persons (IDP) seeking for land and new opportunities to enhance livelihood, brought about by the extreme poverty they were experiencing as they tried to establish their lives in these hazardous areas.

It was during this period that Cambodia became a focus for the International Campaign to Ban Landmines, highlighting the horrific impact that landmines can wreak on a country. The campaign was effective in the Cambodian Government giving unique prominence to mine action within the national system of governance. Mine action became a priority in National Development strategies and a 9<sup>th</sup> Millennium Development Goal specific to Mine Action was adopted in 2003. In 2004, a Government-Development Partner (Donor) Technical Working Group for oversight of the issue was established.

The year 1998 is an important transition point in Cambodia when the few remaining Khmer Rouge units surrendered and ceasefires were achieved between all warring factions meaning that groups would no longer be laying landmines. This, coupled with the fact that Cambodia had become a signatory to the APMBT the year before, meant that Cambodia had committed to constructively address the mine contamination problem.

At the end of 1998, when the few remaining Khmer Rouge units were dismantled and hostilities had ceased between all warring factions, Cambodia had become a signatory to the Anti-Personnel Mine Ban Convention in 1997, and through that decision had committed to its implementation.

The final cessation of hostilities also opened access to some of Cambodia's most mine affected areas which up until that time had been inaccessible because of security concerns. The opening up of these areas allowed for a more systematic approach to the problem, and led to clearer recognition of the need for Cambodia to more holistically plan and manage its mine action program.

Around this time, a series of important actions were taken, including Cambodia becoming a State Party to the APMBT on 1<sup>st</sup> January 2000. In 2000, agreement was reached to conduct a Level One Survey (L1S). And in late 2000, the CMAA was established to provide holistic national leadership to the sector, and to symbolize Cambodia ownership of the problem that had up until then been largely managed by the international community.

Despite all efforts, accident continued. While mine and ERW related accidents occurred more frequently during the transitional end of the conflict (1996-1998); the trend continued to remain high during the reintegration and rehabilitation period (1999-2005); then gradually lower during the development phase (2005-present).

The landmine problem faced by Cambodia has been extreme, and has negatively affected the country in several ways. These include:

- Putting further pressure on Cambodia's already weak healthcare system
- Causing psychological trauma for those forced to live alongside such a threat

- Rendering potentially productive land unproductive
- Weakening livelihood options such as cattle raising and foraging for forest products
- Constraining agriculture production
- Restricting safe access to drinking water
- Placing financial and emotional hardship on families needing to care for a landmine survivor
- Blocking physical access to infrastructures, services and markets
- Placing demand for allocation of resources to mine clearance and related services, diverting funds away from other needs such as health and education
- Affecting Cambodia's international reputation, contributing to missed opportunities for the country and its citizens in terms of tourism and trade
- Food insecurity and low income leading people to enter mined areas regardless of the risk, to forage for food or other saleable products, or to pass through to bordering Thailand to seek employment opportunities.

### 3.2 Nature and extent of the contamination according to the L1S

The L1S implemented during late 2000 and April 2002 intended to: (a) define the problem in terms of scale, type, location, hazard and socio-economic impact, (b) improve national planning by allowing for clear prioritization of resources, (c) foster development of national plans with well-defined immediate, intermediate and end-state objectives, and (d) establish baseline data for measuring mine action performance.

The L1S reported that some 6,416 (46.1%) out of 13,908 villages in Cambodia were affected. Each of these villages was asked to rate the severity of the impact on a scale from very severe to not severe.

Table 1: Socio-economic impact of landmines on villages (L1S)

Socio-economic impact	Total	Very Severe	Severe	Less Severe
Not enough housing land	1006 = 61.3%	362 = 22.0%	399 = 24.3%	245 = 14.9%
Not enough agriculture land	1406 = 85.7%	767 = 46.7%	444 = 27.0%	194 = 11.8%
Too high human casualties	1283 = 78.2%	243 = 14.8%	258 = 15.7%	782 = 47.6%
Loss of livestock	929 = 56.6%	55 = 3.3%	172 = 10.4%	701 = 42.7%
Difficult water access	790 = 48.1%	47 = 2.8%	112 = 6.8%	631 = 38.4%
Gathering activities	1201 = 73.2%	96 = 5.8%	215 = 13.1%	890 = 54.2%

To more precisely assess the socio-economic effects of suspect areas on the life of village populations, villagers were asked to assess the number of houses, families or villages affected in 14 specific activities.

Table 2: Socio-economic effects of landmines on activities

Socio-Eco Blockages	No. Areas	% Areas	% Area Surface	Impact
Home	792	26.8	58.8	32,904 Houses
Home construction land	590	20.0	50.5	16,168 Houses
Agriculture land	2,077	70.4	84.5	102,778 Families
Pasture land	1,781	60.4	72.6	105,707 Families
Water sources	1,184	40.1	64.1	84,588 Families
Forests	2,000	67.8	90.9	172,878 Families
School	525	17.8	47.2	44,079 Students
Dams, canals	335	11.3	15.0	1,031 Villages
Markets	439	14.9	41.4	1,334 Villages
Business activities	353	11.9	37.1	596 Villages
Health centre	455	15.4	41.9	1,312 Villages
Pagoda	527	17.8	45.3	1,487 Villages
Bridge	136	4.6	14.6	242 Villages
Neighboring villages	896	30.4	55.2	2,272 Villages

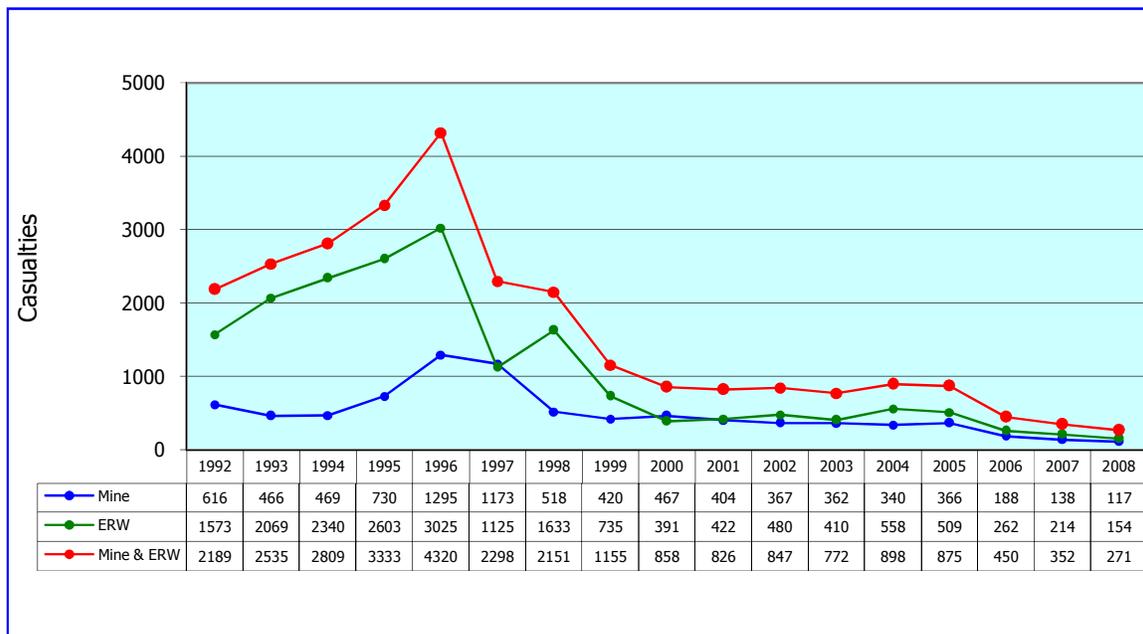
The most commonly reported blockages on activities were access to agricultures land, pasture land, forested, and water resources implying that these communities would be further pushed into poverty. Living in a mined area has many negative effects such as impeding access to safe livelihood options, and inflicting great psychological trauma and emotional hardship on individual and families.

In terms of the most direct impact of landmines, Cambodia continues to have one of the highest casualty rates of victims globally. During war times casualty rates were in the thousands. During resettlement rates stayed high as people settled on contaminated land. Due to the scale of contamination, to this day Cambodia still has one of the highest victims' rates globally. These terrifying accidents have a massive physical and psychological effect on victims and their families and communities, not to mention putting further pressure on Cambodia's already weak healthcare system.

The following table is presenting the number of mine and ERW casualties collected by the Cambodian Mine Victim Information System (CMVIS) project managed by the Cambodian Red Cross (CRC) and the CMAA.

Graph 2: Mine and ERW casualties (1992-2008)

#### 4. Methods used to identify areas containing / suspected to contain AP mines



A number of survey procedures have been used by different organizations in Cambodia to identify areas known or suspected to contain antipersonnel mines. However, no single consistent uniform sets of procedures have been followed, neither between the different organizations nor over time. As a result, data has been collected in different ways and areas classified in different ways. Furthermore, surveys were designed for different purposes: to define the impact of communities (LIS), to produce well-defined tasks for clearance (HALO survey, some of CMAA's survey), and to capture the areas considered to be minefields by villagers and CMAA (some of CMAA survey).

These efforts produced 6 types of survey reports in the current national data set at CMAA:

Table 3: List of survey reports

Name	Description
Minefield survey	Suspected hazardous area, which is subsequently examined and defined as mine contaminated, following interviews with local information sources, and an analysis of history of conflict in the area. <i>Produced by HALO since 2002.</i>
Confirmed minefield	Land not presently used for housing or agriculture and where there is historical and physical evidence of mines. <i>Produced by CMAC since 1993.</i>
Suspected minefield	Land not presently used for housing or agriculture and where there is historical evidence of mines. <i>Produced by CMAC since 1993.</i>
Residual minefield	Land in use for housing, cultivation or other purposes where there is historical and physical evidence of mines (accident or visibility) within the past 2 years. May have been cleared using local clearance methods by villagers. Low probability of finding mines. <i>Produced by CMAC since 2002.</i>
Reclaimed Land	Land previously reported as suspected and later on found to be in productive use for three years without accident.
L1S hazard area	Land identified as contaminated or suspected to be contaminated by mines and/or ERW with the objective of measuring the impact on the community. <i>Produced by GSI/CMAC in 2000-2002, owned by CMAA.</i>
Work plan tasks	Plots of land to be cleared as requested through the MAPU/PMAC process. <i>These areas are not included in the CMAA national data set as planned tasks, but are entered as clearance reports if and when completed.</i>

Certain categories of these reports do not accurately describe the current location and extent of mined areas in Cambodia, in particular reports from the L1S, as it was designed to measure the impact of mines on communities rather than accurately map mined areas. The result of these practices is that the national data set compiled at the CMAA in cooperation with NPA, CMAC, The HALO Trust, MAG and CMVIS by August 2008, contains areas of conflicting information (overlapping areas, conflicting classifications), poor definition of area boundaries (many individual reports include several mined areas with poor description of their location and extent) and lacks many areas that should have been included. The lack of uniform procedures and the problems caused by this are duly recognized by all operators and the CMAA.

CMAA Database Unit (DBU) over the last few years strived to address these challenges by enhancing the quality of the reporting mechanisms between operators and DBU and by setting data quality assurance procedures to ensure integrity, completeness and accuracy of data in the database. Data quality control throughout the data management cycle including feedback mechanisms between CMAA DBU and operators has been enhanced as part of the collective effort to improve information management in Cambodia.

The national data set at CMAA includes two more types of reports, which are described in more detail in Chapter 8: (a) Completion reports for cleared land and (b) reclaimed land reports for land in productive used without mine accidents for three years (cf. Chapters 6 & 8 for more details about Cambodia's Area Reduction Policy).

The former lack of a Cambodia Mine Action Standard (CMAS) chapter on survey and a set of national forms for reporting mined areas have contributed to this rather unclear situation.

#### 4.1 Survey prior to 2000

Much of Cambodia's early mine clearance tasking during the 1990's occurred in response to relieving the problem at casualty hot spots and in supporting resettlement of the very large refugee population that returned to Cambodia during the UNTAC period. Such was the breadth of Cambodia's mine problem that it was not difficult for operators to locate areas where clearance could be easily justified, or where accidents recently occurred and therefore

effective, high humanitarian impact clearance could occur despite there not being a thorough understanding of the full extent and spread of the problem.

During this period, demining operator survey teams, in response to the community clearance requests to clear confirmed or suspected mined areas, conducted general survey or minefield verification to locate and prepare minefields for clearance. The result of this investigation allowed for operators to classify the request areas as confirmed or suspected hazard areas and placed them on clearance task lists. Verification teams at CMAC went further to identify new contaminated areas with leads they obtained from local authorities, armed forces personnel and villagers in an advance preparation for the immediate future years clearance deployment. Mined areas along Cambodian-Thai border were also identified; this was more simplistic as the mine laying patterns were well defined, although undocumented.

As focus gradually shifted from emergency response to planned response through the 1990's, mine clearance effectiveness and prioritization became increasingly important.

#### **4.2 National Level 1 Survey**

With the final cessation of all hostilities and the momentum generated through Cambodia's signing of the Anti-personnel Mine Ban Convention on 28<sup>th</sup> May 1999, Cambodia recognized the need for its management of mine action to shift from an emergency approach to a more medium term, developmental focus. Quantifying the total mine and ERW threat was regarded as an immediate need and a National Level One Survey (L1S) was undertaken between 2000 and 2002 to clarify the full scope and impact of Cambodia's mine and ERW problem. The L1S was intended to: (a) define the problem in terms of scale, type, location, hazard and socio-economic impact, (b) improve national planning by allowing for clear prioritization of resources, (c) foster development of national plans with well-defined immediate, intermediate and end-state objectives, and (d) establish baseline data for measuring mine action performance. The L1S was implemented by GeoSpatial International in partnership with CMAC, it was certified by the UN to meet the LIS standards as defined by the Survey Working Group, and the data from the L1S were handed over to the newly established CMAA.

The L1S identified and quantified the impact of mines and ERW on communities by community interviews and identification of hazard areas affecting the communities. The hazard areas were reported as either: (a) mined areas, (b) cluster bombs areas, or (c) spot ERW contamination. The main output from the L1S relevant to the extension request is area affecting communities (mined areas above), hereafter referred to as *L1S hazard areas*.

Many L1S hazard areas were reported based on suspicion of mines and their extent was described by a polygon based on information of highly variable quality. The L1S was designed to describe the impact on communities at the time and therefore did not clearly identify known or suspected mined areas. However, there is a widely recognized concern about how well these polygons should be considered as the results of a reasonable effort to identify all areas in which anti-personnel mines are known or suspected to be emplaced. Indeed, many of its polygons were unmanageably large. As an example, the 20 largest polygons total more than 1,300 square kilometers. It also became quickly apparent that large sections of contaminated area had been missed in the Survey (cf. chapter 14).

#### **4.3 Surveys after L1S**

Since the completion of the L1S all three operators have been conducting various types of survey operations which have resulted in much of the L1S areas being released. Of particular

note was the CMAC comprehensive survey of 15 districts. Based on CMAC experience with these surveys land was classified land for clearance, suspected land or residual land<sup>3</sup>. The CMAC classification system will be superseded once the national land release policy and standards are approved (see below).

Similarly the HALO Trust survey teams have also been contributing to recording reclaimed land and releasing land through survey. In a number of instances the survey teams are not only reducing L1S areas but are identifying new areas that were not picked up by the L1S.

### **Cambodia's Area Reduction Policy**

Recognizing the extent of land reclamation or village demining CMAA adopted an Area Reduction Policy in May 2006. The policy enabled previously suspected lands which had been returned to productive use, without current evidence of threat, by reclassifying and recording them in the national mine contamination database as reclaimed land.

On completion of the Land Release policy and standards, the Area Reduction Policy shall be superseded. The new land classification system refers to areas such as reclaimed land as End State land implying that these areas are no longer considered as containing APM.

#### **4.4 MAPU's**

In October 2004, the RGC issued Sub-decree No. 70/ANK/BK on socio-economic management of mine clearance operations. Based on the Sub-decree, the CMAA issued guidelines on socio-economic management of mine clearance operations in February 2005, revised in November 2006. The Policy Guidelines present roles and responsibilities of concerned institutions and partners in socio-economic management of mine clearance operations. The Operational Guidelines describe detailed activities to be implemented. Sub-Decree No. 70 details a bottom up planning process that allows local communities to participate in the process of identifying suspect mined areas and to contribute to clearance prioritization leading to the development of Provincial clearance plans. The system is managed by province based Mine Action Planning Units (MAPUs) who work under guidance from a Provincial Mine Action Committee (PMAC).

Sub-Decree No. 70 mandates MAPU's to conduct field investigations to identify mined areas to be cleared and to monitor the clearance activities as well as post clearance land use in accordance with the national socio-economic guidelines for mine clearance. The MAPU's do not submit reports and polygons of mined areas to CMAA as a product of the process, but the results of clearance are reported to the national database by operators after clearance is completed.

#### **4.5 CMVIS**

The Cambodian Mine/ ERW Victim Information System (CMVIS), implemented by the Cambodian Red Cross and supported by HIB, commenced in 1994. CMVIS trains and deploys a nationwide surveillance network of Cambodian Red Cross Volunteers who report in detail to District Officers on the location, cause and profile of individual mine/ERW incidents. The locations where casualty occurred are then reported in the CMAA national database allowing further refinement of understanding of those areas containing a mine/ ERW threat. CMVIS reports are distributed monthly to a mailing list of interested stakeholders and provide a rapid

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<sup>3</sup> The classification of survey polygons into confirmed, suspected or residual was used by the operator CMAC before the Land Classification that derived from the Baseline Survey was developed. During CMAC's survey process land in use with suspicion of mines is classified and mapped as *residual minefields*. While land with no accidents occur during a following three-year period, with productive use, this land is then reclassified as reclaimed land by MAG and HALO Trust in support to the area reduction policy of the government.

update of casualty trends to further inform clearance. Both operators and MAPUs use the CMVIS data as a key data set to inform work planning. Confidence in CMVIS has further strengthened since 2006, when stricter application of GPS positioning to accident sites was introduced, thus making casualty data even more reliable than was previously the case.

A large number of accidents occur in areas not yet identified as mined areas or hazard areas by surveys. In the future, all accidents caused by *in situ* mines will trigger a survey team to investigate the accident and report a new mined area to CMAA.

#### **4.6 Limitation of the L1S and need for a Baseline Survey**

The RGC considers the L1S hazard areas to present the first national overview of the extent and location of Cambodia's mine and ERW contamination. However, since its completion and subsequent experience gained by the operators the L1S is no longer considered to be accurate enough for the following reasons:

- The size of the suspect area totaled 4,544 square kilometers, with several single polygons more than 100 square kilometers in size, and the largest twenty polygons totaling 1,344 square kilometers in total size, much of which was released by follow on survey interventions;
- A significant part of all clearance is actually directed to areas outside L1S hazard areas. For example, in the 2003 and 2004 Work Plans, 25-30% of clearance occurred in areas that were not recorded in the L1S – these areas were mostly in the conflict areas where no populated village was established at the time of the L1S. In these remote areas where the conflict had been most intense, villages had been destroyed by the war, and it took time for the villages to be resettled, and hence at the time of L1S, there were few people who had returned, let alone people who were adequately informed to respond to the questions being put by the L1S.
- More than 1 of 3 accidents reported by CMVIS from 2006 to 2008 occurred outside L1S hazard areas. Survey after the L1S has confirmed that extensive mined areas are sitting outside the L1S hazard areas

Based on the L1S limitations, the RGC recognizes the need for carrying out a more detailed and focused survey of mined areas in order to identify and define the exact extent of remaining mined and suspected areas in Cambodia and commenced a Baseline Survey in August 2009. The Baseline Survey is conducted by the three main demining operators under the leadership of the CMAA with a focus on the 21 most mine-affected districts<sup>4</sup> first (cf. Chapter 15). The Baseline Survey will supersede all previous recorded suspect hazard areas, and as such will provide an up to date picture utilizing standard approaches and methodology. The Baseline Survey methodology forms a crucial part of the land release process in Cambodia. Initial data suggests that the Baseline Survey may actually reduce the known hazard size in a district by as much as 60%. As the survey proceeds more robust analysis will be possible and this will not only significantly aid CMAA with planning and prioritization but it will also assist in informing donors about the remaining problem and assist with decisions regarding funding.

## **5. National Demining Structures**

### **5.1. Cambodian Mine Action and Victim Assistance Authority (CMAA)**

The Cambodian Mine Action and Victim Assistance Authority was established under Royal Decree No. 177 (6 September 2000) with the Prime Minister and Deputy Prime Minister as CMAA President and Vice-President. The CMAA Secretary General is responsible to manage on daily basis all activities related to mine and ERW clearance as well as the assistance to victims

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<sup>4</sup> See list of 21 most mine-affected Districts in Annex 3.

of landmines. The establishment of the CMAA reflects the shift from an emergency and early recovery context to a longer-term development focus requiring a holistic approach of the management, planning and coordination of mine action in Cambodia.

CMAA is to regulate and coordinate all mine action activities throughout the country and establish policies and procedures. CMAA is also responsible for the implementation of national mine action strategic plans to achieve the goals and priorities identified into the Royal Government's development policies such as the Rectangular Strategy, the National Strategic Development Plan and the Cambodian Millennium Development Goals.

CMAA is also the coordinating body for mine action in Cambodia, and chairs various coordinating mechanisms such as the Mine Action Technical Working Group, the Mine Action Coordination Committee, and various Technical Reference Groups.

## **5.2 The Mine Action Technical Working Group (MA-TWG)**

The Mine Action Technical Working Group (TWG) was formerly established by a Government Decree on 19 November 2004. The Mine Action TWG is part of a broader mechanism for enhancing government-donor coordination on aid effectiveness that brings representatives of the RGC and its development partners together as a regular mean of consultation, collaboration and cooperation at the sector level. In turn, development partners supporting mine action in Cambodia have also committed to promote aid effectiveness and development partnership under the framework of the TWG-MA. The Technical Working Group meets 2-3 times per year to discuss strategic and policy issues relevant to the sector with a view of improving coordination, promoting alignment and harmonization of approaches in the sector, identify gaps and review progress. More specifically, the MA TWG supports the development of a nation wide mine action strategy in support of Cambodia's Rectangular Strategy and the National Strategic Development Plan, link with other TWGs on crosscutting issues and promote aid effectiveness as per the Paris Declaration and the Accra Action Plan on Aid Effectiveness.

## **5.3 Cambodian Mine Action Centre (CMAC)**

The Cambodian Mine Action Centre (CMAC) was established as a national demining organization in June 1992 by the Supreme National Council of Cambodia. This status was extended by the Royal Decree of November 01, 1993 and a revision approved by the Royal Decree of February 25, 1995, conferred to CMAC the status of a public institution with the legal individual authority placed under the Prime Minister.

On June 21, 1999, a subsequent Royal Decree gave a new status to CMAC by providing a new structure conferring executive responsibilities within CMAC. In 2000, the need to formally ascertain the roles of CMAC Governing Council vis-à-vis the newly created Cambodian Mine Action Authority (CMAA) formally established as a regulatory body, gave rise to the Royal Decree on the establishment of CMAC pronounced on August 07, 2001. This Decree condensed the size of the CMAC Governing Council membership and clarified CMAC's roles as a national institution to provide mine action services for humanitarian and development projects.

CMAC has its main headquarters (HQ) in Phnom Penh, one Centre for Training and Research & Development in Mine Action and Explosive Remnants of War (Siem Reap and Kampong Chhnang), and five Demining Units (DUs) located in Banteay Meanchey "DU1", Battambang & Pursat "DU2", Pailin "DU3", Preah Vihear, Kampong Thom "DU4", Siem Reap & Oddar Meanchey "DU6", and one Eastern Regional Office (DU5) covering 6 Provinces of Svay Rieng, Prey Veng, Kampong Cham, Stueng Traeng, Kra Cheh & Ratanakiri.

Currently CMAC employs some 2,300 staff; about 95% are employed as field staff.

## **5.4 The Royal Cambodia Armed Forces (RCAF)**

The Royal Cambodian Armed Forces (RCAF) role in mine action is defined by the RGC. It includes (i) urgent demining in support of government priority projects throughout the country such as roads, airfields, irrigation, resettlement, agriculture, military base and some remote communities, and (ii) strengthening the capacity of RCAF to undertake demining in support of UN Peace Keeping Operations. In recent years, RCAF has successfully deployed its deminers to participate in the UN peacekeeping mission in Sudan. In 2005, the demining capacity was about 1,310 personnel. RCAF deminers are currently working closely with the CMAA in order to become an accredited operator in Cambodia. It is expected that RCAF will be accredited by the end of 2009.

## **5.5 Police**

The General Commissariat of the National Police is also involved in mine action as part of their core responsibility to maintain safety, security and public order. The national police is mainly involved in ERW reporting aimed at reducing potential casualties and preventing possible terrorism and crime.

The general commissariat of the national police established an ERW working group in 2006 operating in a number of ERW affected provinces. Around 1,000 police officers are engaged at central, provincial, district and commune level and were trained by CMAC on ERW identification and to become resource persons for field operational staff.

## **5.6 PMAC/ MAPU**

In 1999, the RGC initiated a Province based mine action governance structure for local coordination of mine clearance operations whereby local demining requirements are established at the grassroots level. This decentralized system for establishing clearance priorities was later enshrined in a Sub Decree on Socio-Economic Management of Mine Clearance Operations (SD # 70). Based on the sub-decree, the CMAA issued guidelines on socio-economic management of mine clearance operations on 18 February 2005.

The guidelines were reviewed after two years to reflect the current situation and resulted in a new set of Policy and Operational Guidelines. The Policy Guidelines introduces the concept and the roles of institutions and partners in the socio-economic management of mine clearance operations while the Operational Guidelines describe the set of activities to be implemented.

This priority setting mechanism works through a series of government institutions at various levels starting at the village level, working through the commune, the district up to the provincial level where governors established Provincial Mine Action Committee (PMAC), Mine Action Planning Unit (MAPU) and the Mine Action District Working Group.

- Provincial Mine Action Committees (PMACs) are composed of directors of provincial departments and headed by either a Governor or more commonly a Deputy Governor. The PMAC have the final authority to approve the annual clearance plans (and thus the minefields to be cleared during the next year) and are responsible for ensuring that this plan complies with national and provincial-level development strategies and is derived from a process that is transparent will full participation of local authorities, demining operators and development organizations.
- Mine Action Planning Units (MAPUs) are the technical support unit of the PMACs. They are working groups composed of government officers selected from across different provincial departments, as well as the Governor's Office. They carry out a broad range

of roles that include “[coordinating] in prioritization and selection of demining tasks, [ensuring] that demining contributes to risk reduction and development priorities, [developing an] annual demining workplan, and monitoring post clearance land use.” There is a total of 8 MAPUs in Cambodia.

- The Mine Action District Working Group (MADWG) is established by the provincial governor in the districts where demining work is greatly required. The composition of MADWG includes members from district line offices and from stakeholders involved in demining activities in the district. The role of the MADWG is to facilitate fair and transparent prioritization and selection of demining tasks and to ensure proper use of demining lands.

The process consists of commune meetings where each village chief presents the village wish list of priority clearance sites to the commune. Village chiefs, CBMRR and members of Village Development Committee (VDC), development agencies, villagers and the commune chief participate in the commune meeting facilitated by MAPUs. Village chiefs confirm what the land will be used for on each site and the development agency can indicate if they have any plans for these sites. After the commune meetings, minefields are investigated. The MAPU, clearance operator, village chief and development agency if appropriate conduct the minefield investigation. They identify the area to be cleared, review the intended beneficiaries and see whether the land is in dispute. They also connect information on accidents that occurred in that area.

Once all minefield investigations have been completed of all proposed sites, there is a District Workshop with the village chiefs, members of the VDC, two people from each commune (commune chief and CBMRR at the commune level), District Governor, development agencies and clearance operators, and the MAPU. During that workshop, the commune meeting and minefield investigations are presented and each demining site is scored using criteria developed by the Province in accordance with the Operational Guidelines. In line with the scoring, each minefield is categorized as “high, medium or low risk”. In addition, operators may present their plans and ideas for priorities as well as their operational capacity. Based upon the available number of demining assets, the workshop participants have to determine which sites from the priorities can be cleared. High-risk sites are first on the list.

Once the task lists are finalized at the District Workshop, they are presented at the PMAC for final approval. The PMAC may also add some of its own priorities to the final list. The MAPU then prepares a list of all approved tasks with the location and name of the operator assigned to each task. It becomes then the responsibility of each operator to prepare its own plan for each site. There is no task dossier or formal tasking order. Demining operators’ annual clearance plans are then forwarded to CMAA for inclusion in the database.

## **5.7 International Demining NGOs**

### *The HALO Trust:*

The HALO Trust commenced work in Cambodia in 1991 when it was contracted by UNHCR to undertake a ‘fire brigade survey’ of the mines threat across the country in order to allow for safe repatriation of refugees from Thailand. HALO began formal mine clearance operations in 1992 and has remained concentrated in the north-western Provinces. Originally establishing operational bases in Banteay Meanchay and Pursat Provinces in 1992 to provide mine clearance support to the emergency relief efforts of UNTAC and the international aid community, HALO’s clearance programme has expanded to 1,200 national staff with four permanent operations locations (Kamrieng District of Battambang Province, Malai and Thma Puok Districts of Banteay Meanchey Province, and Anlong Veang District of Otdar Meanchey

Province) and a programme headquarters in Siem Reap (HALO maintains a small liaison office in Phnom Penh).

HALO's mine clearance efforts have concentrated on casualty reduction through survey and clearance of mined ground impacting on the local population. Today, HALO is working in Battambang, Pailin, Banteay Meanchey, Odtar Meanchey and Preah Vihear Provinces. The back bone of HALO Cambodia is large scale manual mine clearance (100 x 8-lane manual demining sections) complemented by 6 x survey teams, 2 x EOD teams, 4 x mechanical support teams (vegetation cutters, armored loaders and shovels) and 1 x MRE team. During 18 years of fulltime demining operations in Cambodia HALO has led the introduction to global humanitarian mine action of many important innovations, including One Man One Lane demining, vegetation cutting with armored brush cutters, deployment of hand held strimmers, and most recently in cooperation with the US Department of Defense the full evaluation and deployment of very latest in dual sensor detectors. These detectors combine the best available metal detection technology with ground penetrating radar, allowing operators to speed up productivity by discriminating between metal signals and metal adjacent to mass which indicates the possibility of a mine.

*Mines Advisory Groups (MAG):*

MAG started working in Cambodia in 1992 and has since then been providing demining activities to affected communities including manual clearance work, mechanical demining, mine detection dogs, community liaison and explosive ordnance disposal. MAG also built partnership with development organizations to systematically integrate mine action with development activities especially with regards rural development. Since 2006, MAG has supported Cambodia's Area Reduction Policy to identify previously suspected land currently in use by communities. MAG currently deploys 21 Manual clearance teams, seven Explosive Ordnance Disposal teams, one Technical Survey teams, three Tempest scrub-cutting teams, seven Community Liaison teams and three Mine Detection Dog teams.

MAG currently employs around 475 members of staff, working across six provinces: Battambang, Krong Pailin, Banteay Meanchey, Preah Vihear, Kampong Thom and Kampong Cham. Of these, 34% are female and 9% are amputees. MAG Cambodia has pioneered the locality demining approach, recruiting deminers from the poorest communities, and is working on innovative strategies for more targeted clearance across the whole country.

## **5.8 Other stakeholders:**

*Village demining:* Mine clearance activities by villagers are considered as unsafe practices. It is ultimately a response to adverse environmental and economic conditions by a section of the population that has the ability to draw on existing knowledge and skills, i.e. demobilized soldiers. However, there are also villagers who have no military background but will move mines out of their way because of economic and livelihood necessity. The practice is extremely risky. This type of demining continues to exist despite attempts to discourage it.

*Commercial companies:* There are several commercial demining companies registered in Cambodia. In addition, there have been also a number of Cambodian deminers and experienced EOD specially contracted to work overseas such as in Lao, Taiwan, and Korea.

*International Stakeholders:* The key international stakeholders are donors and development agencies such as AusAID, CIDA, DFID, JICA, GTZ, Adopt-A-Minefield; the UNDP and other UN entities such as UNICEF, UNHCR, UNMAS, and UNOPS; other organizations are GICHD, NPA, HI-B; and development partners such as World Vision, CARE, Austcare, CWS, LWF.

*National Stakeholders:* The main national stakeholders are the Royal Government of Cambodia Ministries, Authorities and Agencies such as the Ministry of Foreign Affairs and International

Cooperation (MOFAIC), the Ministry of Agriculture, Forestry and Fishery (MAFF), the Ministry of Interior (MOI) and the National Police, The Ministry of Defense and the Royal Cambodian Armed Forces (RCAF), the Ministry of Water Resources and Meteorology (MoWRAM), the Ministry of Rural Development (MRD), the Ministry of Women's Affairs (MWA), the Ministry of Land Management, Urban Planning and Construction (MLMUPC), the Ministry of Education Youth and Sport (MoEYS), The Ministry of Social Affairs, Labor, Vocational Training and Youth Rehabilitation (MOSALVY), the Council for the Development of Cambodia (CDC), APSARA authority, Preah Vihear Authority, Cambodian Red Cross (CRC), and the Disability Action Council (DAC).

**Local Stakeholders:** These stakeholders include provincial and local authorities (District and Commune Councils), local NGOs, CBOs, CBMRR voluntary network, and community self-help groups

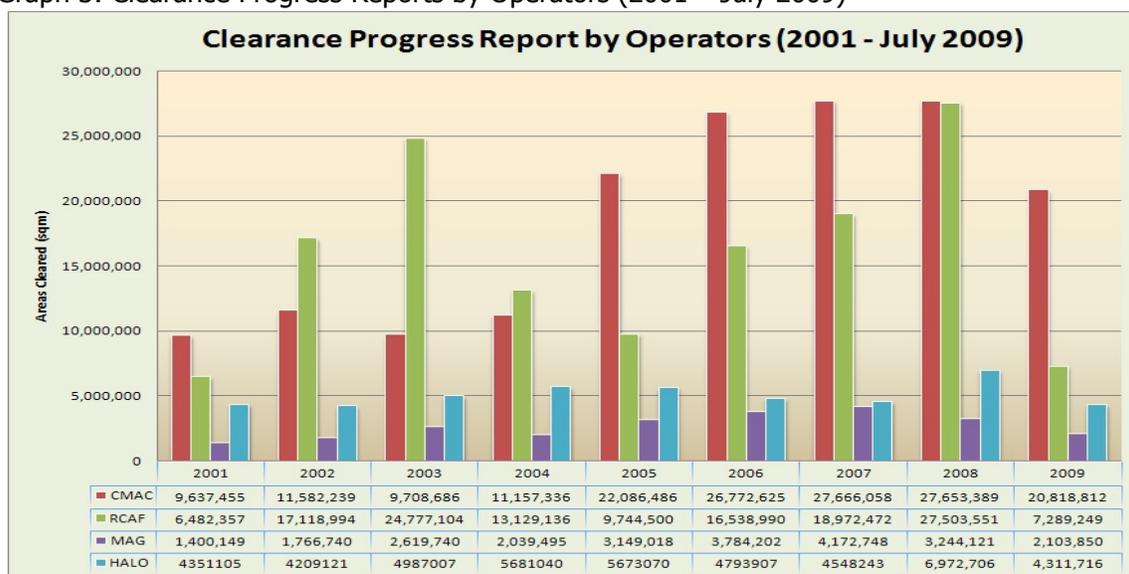
**Beneficiary groups:** The mine action beneficiary groups are people living in Cambodia; specifically vulnerable people living in mine affected areas, Community Based Organizations and authorities, and private and developmental organizations.

## 6. Nature and extent of progress made: quantitative aspects

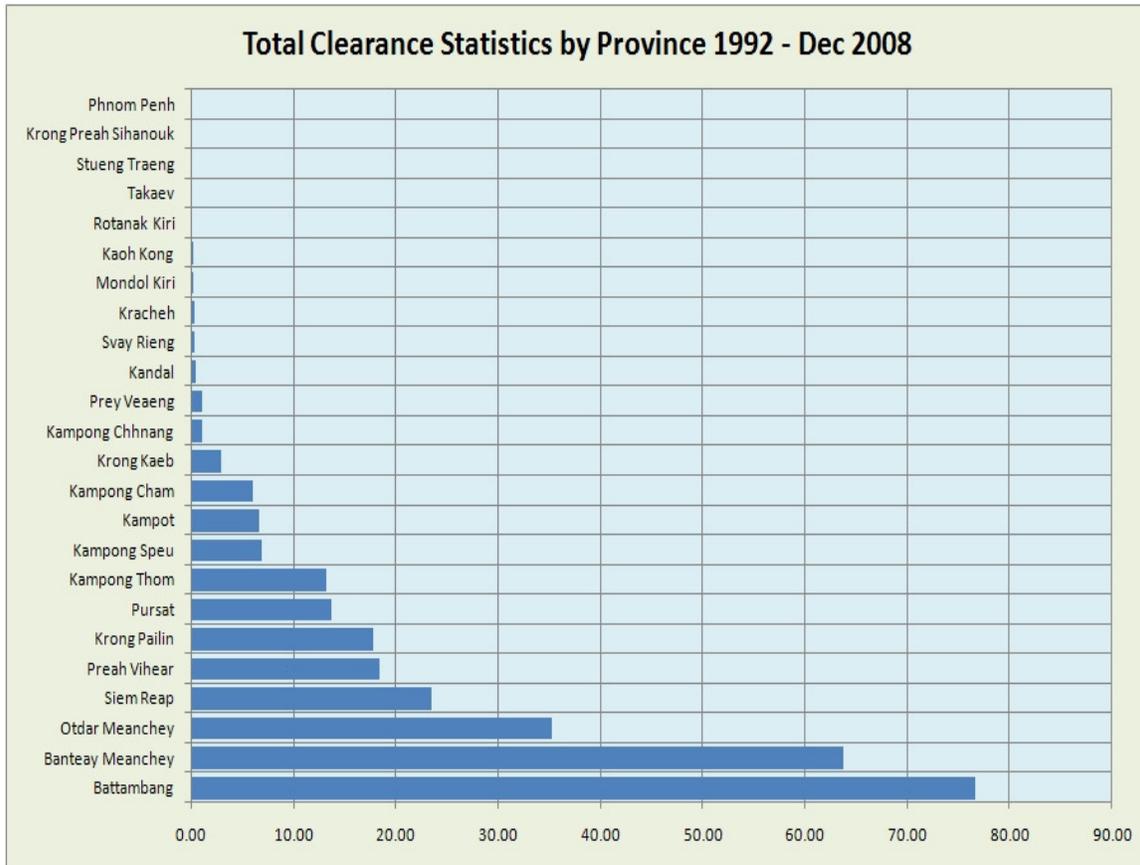
Between 1992-2008 the three humanitarian demining operators CMAC, MAG and the Halo Trust have cleared 305,863,922 square meters of land across 7,589 mined areas resulting in substantial socio-economic benefits. In the process of clearing mined areas, operators have removed and destroyed 652,562 anti-personnel mines, 10,772 anti-tank mines, and 1,640,663 items of unexploded ordnance. Considerable progresses have been made as the annual clearance rate has risen from an average of 17.5 square kilometer in the period 2002-2004 to an average of 35 square kilometer in the period 2005-2008.

The Royal Cambodian Armed Forces reports the clearance of 170,640,882 square meters. This accounts for 161,636 antipersonnel mines, 8,337 anti-tank mines and 100,168 items of ERW. However, it should be noted that formal accreditation only commenced in Cambodia from 2006. Since 2006 quality assurance by the CMAAs Quality Assurance Teams is required on all clearance work conducted. Although not yet accredited the CMAA recently received a request from RCAF to become accredited and is working with the RCAF to achieve this. The CMAA is also working closely with RCAF clarifying clearance records to date.

Graph 3: Clearance Progress Reports by Operators (2001 – July 2009)



Graph 4: Clearance statistics by provinces (1992 – 2008)



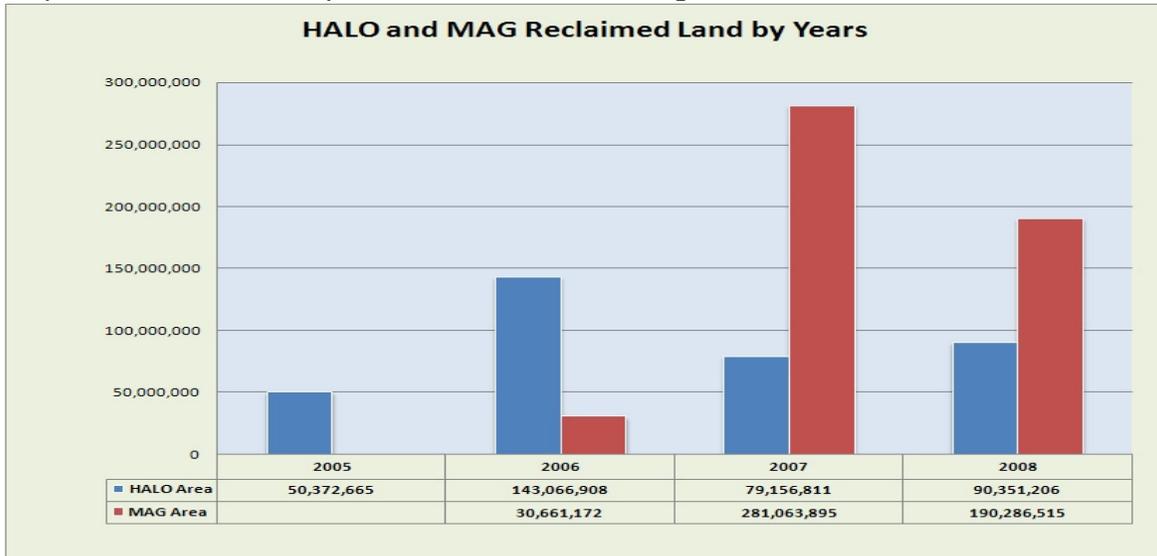
### Reclaimed Land as per the 2006 Area Reduction Policy

After the termination of the L1S, very rapid internal migration of the population after conflict ceased changed the settlement and use of land quite dramatically. Forest loss, especially in the north-west provinces, in the last few years has been extremely rapid and exceeds several hundred square kilometers. The extent of land reclamation by local people and new settlers – also referred to as informal demining or village demining – is extremely large in the north-west provinces. As a result, it changes the status of current suspected mined areas had to be formally recorded. Thus, in May 2006, an Area Reduction Policy was adopted by CMAA in order to improve the mine clearance planning by targeting clearance on areas posing the greatest risk to communities, and by doing so, recognize previously suspected lands which have been returned to productive use without current evidence of threat by reclassifying and recording them in the national mine contamination database as reclaimed land. Reclaimed land is land that was previously suspected of having a mine hazard, but has been returned to productive use by locals for three years without accident.

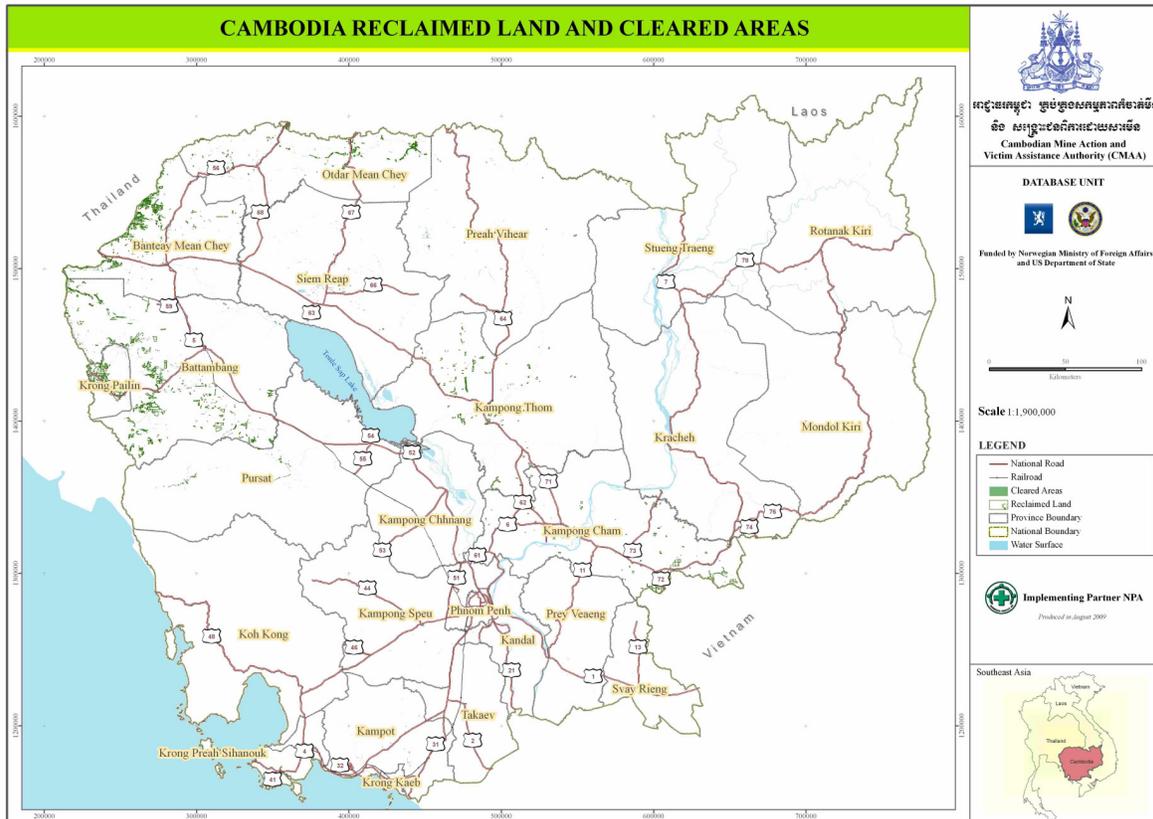
Reclaimed land is land where the threat has been reduced to a level that is acceptable to locals and that due to limited resources; clearance of such land should not be considered, unless there is a particular need to do so. The process of reclassifying previously suspected hazardous land into reclaimed land involves a non-technical survey approach whereby operator staff undertakes community visits to document land use patterns and accident data. Reclaimed land, as defined in the new land classification (see Chapter 15), is considered End State Land by the RGC or land with no obvious threat or contamination by APM, and thus no longer an obligation under Article 5.

MAG and HALO have reclassified 865 square kilometers of previously suspected land according to this rule, MAG using the LIS hazard areas as a starting point and HALO also including other areas previously suspected by the communities. Following the decision to conduct the Baseline Survey all recording of reclaimed land ceased as at December 2008. This is in recognition of the fact that the Baseline Survey shall provide a new statement on contamination that will take reclaimed land into account.

Graph 5: Reclaimed land by HALO Trust and MAG during 2005-2008



Map 3: Clearance and reclaimed land areas



## **7. Nature and extent of progress made: qualitative aspects**

Cambodia has long been synonymous with the issue of landmines – both in terms of the impact it was suffering, but also for the energy and innovation of the Government and the international community to address the problem. The Royal Government of Cambodia is committed to conclude Cambodia's mine story in a positive way, and establishing itself as a model for effective and sustained management of widespread landmine contamination. That mine action is clearly articulated and prioritized in National Development plans is evidence of this commitment, including designation of mine action as an additional Millennium Development Goal requested by the Royal Government of Cambodia to demonstrate its commitment to the issue.

Over the last few years there has been an emergence of meaningful mine action strategies and actions led by the CMAA with the support of mine action practitioners and other stakeholders in the sector. Key strategies put forward by the CMAA include the National Five Year Plan for 2005-2009, the ERW strategy (16 November 2006), the MRE strategy (24 May 2006), the Area Reduction Policy (24 May 2006), the enhancement of the National Database Centre for Mine Action, the improvement of the application of the Socio-Economic Guideline and post-clearance monitoring, the technical reference group for Area Reduction and the National Plan of Action for People with Disability.

However, despite these strategic approaches, there remains uncertainty regarding the scale and nature of the remaining challenge and the extent and exact location of Cambodia's vast mine contamination problem. While various initiatives have been put in place to address this weakness, they have only been partially successful, meaning that quantification remains a great challenge to this day.

The scale of Cambodia's mine problem and the total number of suspected mined areas necessitated accurate prioritization of clearance tasks to address these needs. The mine action planning process (MAPU, PMAC) established at the provincial level explained earlier facilitated community participation in prioritizing mine clearance activities for annual work plan, and to ensure a transparent and equitable process for the allocation of cleared land to beneficiaries.

Since 2001, another innovative programme has been implemented by CMAC called Community Based Mine Risk Reduction (CBMRR). CBMRR emerged in recognition of the need for mine risk education and to link the affected communities with other services and to develop a more community-oriented approach in severely affected communities, in order to allow for more people and more types of people to be reached over a longer and more sustained period of time. Through the engagement of MAPUs and CBMRR with a cross section of people, human capital has been built within mine affected communities for management of all aspects of mine action, including integration of community perspectives in setting tasks.

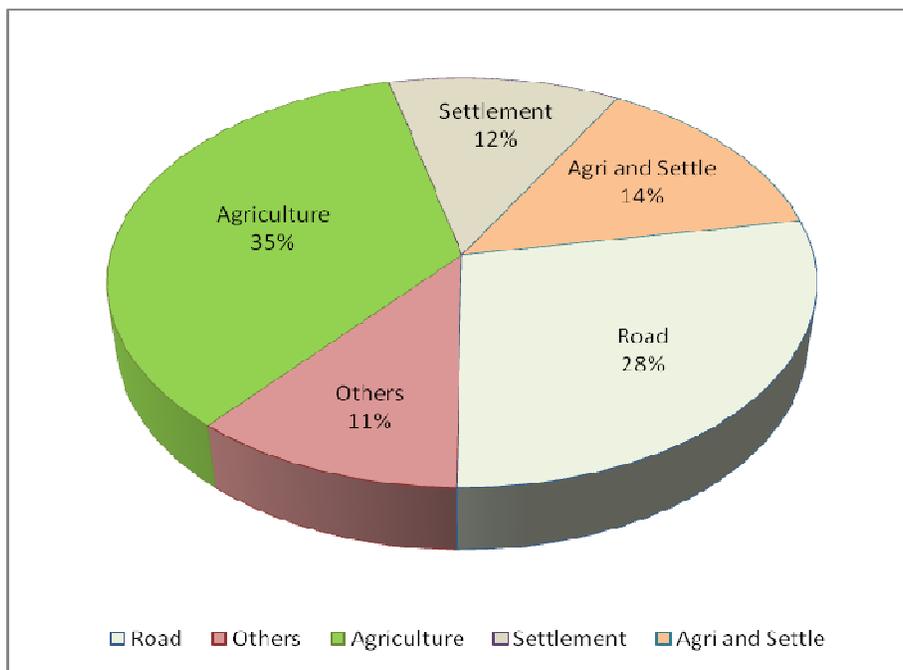
Mine clearance operations were prioritized according to the dual objectives of (i) rendering the land safe for development purposes (housing, agriculture, roads, schools, reconstruction, etc.) and (ii) dramatically reducing the casualty rate. These objectives also reflect the findings of the LIS, which showed that the most severe socio-economic impact of landmine contamination on villages was primarily related to accessing land for housing and agriculture purposes, and villagers' concerns about the high number of casualties. Moreover, financial constraints in an environment of unacceptably high casualty numbers have meant that clearance has focused on addressing the urgent needs of casualty hot spots. The sharp reduction in casualty rates in recent years is evidence that the clearance planning processes that are in place are effective.

As a result, the past 16 years of demining have achieved extensive socio-economic benefits allowing poor and rural communities access to services and markets, land for resettlement and

agriculture, irrigation and road infrastructure, access to services by people living with disability including mine/ERW victims. Demining activities have also enabled the construction of schools, community centres, health centres, and access to sources of water. Moreover, casualty numbers have fallen substantially.

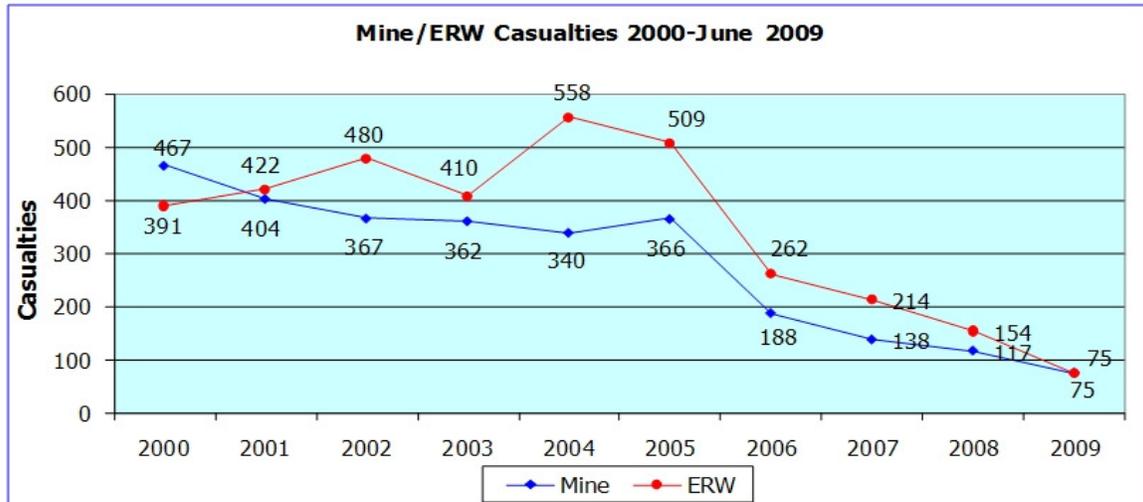
The success of the prioritization processes is clearly demonstrated in the post-clearance land use monitored by the CMAA. Nationwide data show that from 2007 to 2008, 61 percent of all clearance activities were targeting agriculture and resettlement purposes, while roads represented 28 percent and clearance for other purposes representing 11 percent of the actual post-clearance land use (this includes land cleared for school, pagoda, pond, health center, dyke and risk reduction purposes). It should be noted that these statistics are reflective of locally identified priorities and vary from province to province. In Siem Reap for example, where many of Cambodia’s ancient temples are located, land is more likely to be cleared for tourism purposes, while in the fertile province of Battambang, more land may be cleared for agricultural purposes. The post-clearance land use chart below compiles land use of 343 cleared sites that had been monitored by the CMAA Socio-economic teams in 2007 and 2008.

Graph 6: Post-Clearance Land Use as Recorded by Post-Clearance Monitoring in 2007 and 2008



While Cambodia still experiences unacceptably high mine/ERW casualty rates, the situation has drastically improved over recent years. From a peak of 4,320 casualties in 1996, casualty rates leveled in the early 2000s at around 850 casualties per year. Over the past three years, there have been further significant decreases in casualties, with the 2008 casualty figure of 271 representing about 6 % of the 1996 figure. Furthermore, mine accidents are now lower proportion of the total casualty count as the frequency of ERW injury raises.

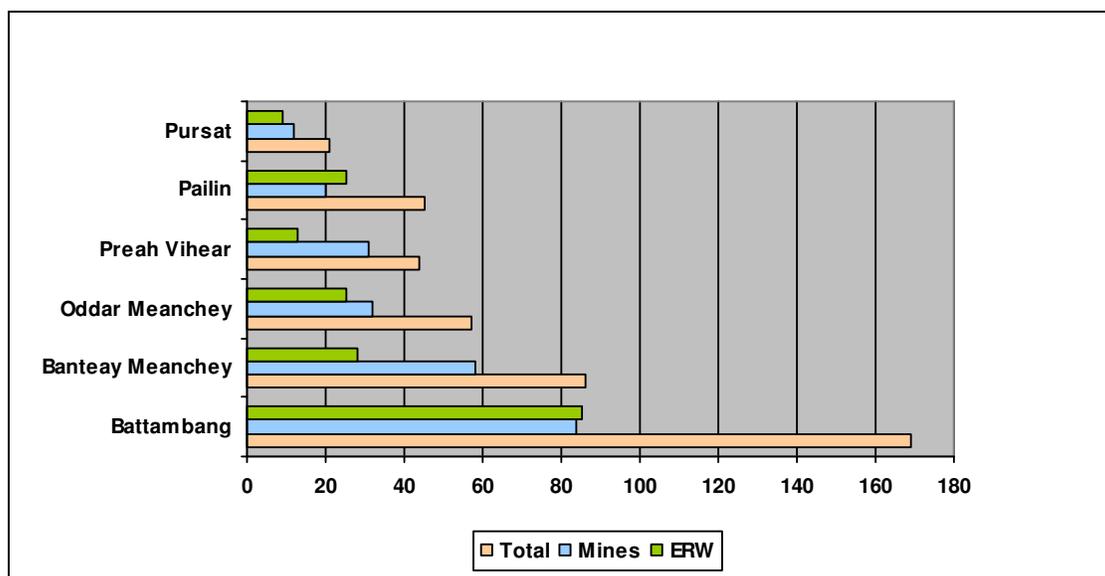
Graph 7: Mine & ERW casualties from 2000- June 2009



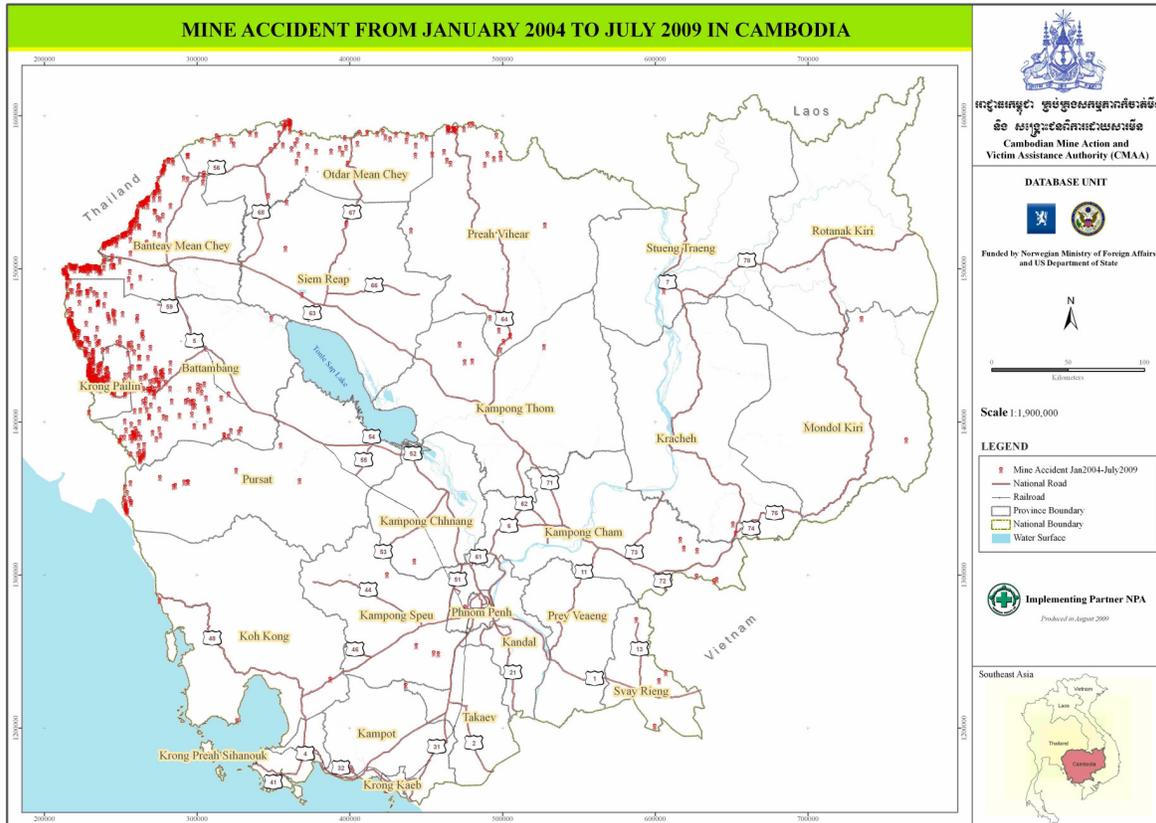
The areas most affected by landmines in Cambodia prior to the 1998 ceasefire were sparsely populated. However, the arrival of peace saw many people returning to areas that had previously been rendered unsafe because of the conflict. The region also experienced a rush of poor people seeking opportunities (and land) inside these very dangerous areas. While all effort was made to mark all known minefields, the severe poverty faced by many led people to knowingly enter suspect areas, since they regarded the 'risk' to be acceptable given their extreme poverty. Extensive mine risk education and marking programmes were put in a place in an attempt to redress this problem.

From a gender perspective, the overwhelming majority of mine accident victims are male. In the 2007-2008 period, 85% of all 621 mine/ERW casualties were male, with 32% of the total being boys under the age of 18. Geographically, the north-western provinces are the most affected, with 466 of the 621 casualties coming from the string of seven provinces bordering or nearest the Thai border.

Graph 8: Casualties in North-Western Provinces 2007-2008



Map 4: Mine accident districts (2004-2008)



## 8. Methods and standards used to release known/suspected areas

### 8.1 Release of land through clearance

In Cambodia, the traditional approach to release land known or suspected to contain mines has been through full clearance. CMAS Chapter 6 relates to “Clearance requirements – demining” and aims to ensure that “the beneficiaries of humanitarian demining programmes are confident that cleared land is safe for their use. This requires management systems, clearance procedures and well-documented QA/QC processes which are appropriate, effective, efficient and safe. It must also be established that cleared land is appropriate for its intended use through consultation with the beneficiary community and the PMAC, MAPU and CMAA”.

Mine Action organizations operating in Cambodia have applied the full demining toolbox available with the aim of removing the landmine threat. Tools used include manual demining teams, MDD’s, mechanical assets, as well as Battle Area Clearance (BAC) and Explosive Ordnance Disposal (EOD) assets. These “tools” are generally used to complement each other to ensure an efficient and cost effective clearance effort.

Cambodia has also been at the forefront of the mine action industry with regards to research, development and trial of new and more efficient clearance equipment and techniques. Cambodia and its operators have also been proactive in inventing and taking into use new methodologies and techniques in regards to clearance efforts. This has led to a steady improvement in clearance output and efficiency.

Manual clearance is increasingly supported by mechanical assisted demining tools (such as brush cutters and push and swing type demining machines), Mine Detection Dog (MDD) and

EOD assets. The speed with which these machines can process land allow for quick land release as experienced in the last few years. These innovative tools come about as operators search for efficient more means to release land to productive use. The extent and complexity of the mine laying in Cambodia (and political stability, ease of access since 1998) has led to its use by operators and supporting research institutions as an environment in which to test and experiment with new mine action technologies.

Land known or suspected to be mined is not the only type of contaminated land being released in Cambodia. The nature of the past armed conflicts calls for clearance of large battle areas that are scattered throughout the whole country. As aforementioned, Cambodia suffers from a massive US bombing campaign as well as ERW left scattered as a result of various ground engagements over an extended period of time. This requires clearance assets to not only proactively clear or release former battle areas but also to respond to ad hoc requests to remove and destroy ERW.

## **8.2 CMAC's survey**

Since 2005, CMAC has undertaken a comprehensive resurvey of 15 districts. This survey process has been effectively used by CMAC to release L1S hazardous areas, or parts of these areas.

This resurvey has identified new mined area boundaries and classification based on new information. In this process large areas identified as hazardous areas by the L1S were found not to be areas containing AP mines. Other areas, not mapped by the L1S, were identified to be suspect hazardous areas and have as such been added on to national mine contamination database. CMAA has updated the national mine contamination database with the new CMAC survey information. This information supersedes the L1S information in these districts. The positive result is that large areas previously suspected to contain AP mines have been released from suspicion and are therefore considered not to be dangerous due to the presence or suspected presence of APM. During CMAC's survey process land in use with suspicion of mines is classified and mapped as residual minefields. If no accidents occur during a following three-year period, with productive use, this land is then reclassified by what CMAA defines as reclaimed land, see below.

CMAC as the main national demining operator commenced its operations by using a number of survey tools before the introduction of the L1S - Minefield Survey Teams (MST) to conduct limited general survey, Minefield Verification Team (MVT) to verify minefields, and Minefield Marking team (MMT) to mark minefields for clearance. The first two did not conduct clearance; however they released suspected land through non-technical means. MMT on the other hand conducted limited clearance in the process of minefield marking. MMT was also deployed to clear of small hot spots, tasks that were not suited for larger team (platoon). In later years after the completion of L1S MMT team were converted to become Technical Survey Clearance Team (TSC) conducting the same function as MMT. While MST and MVT became Technical Survey Teams (TST); they performed technical survey to reduce minefield to precise boundaries and define the level of threat for clearance to take place more efficiently, but more importantly through their technical survey works, they have release substantial suspected land from L1S since 2004. It is important to note that beside releasing suspected land from the L1S, CMAC non technical survey has also found and recorded additional suspected mined area.

## **8.3 HALO Trust survey**

HALO currently deploys 6 x general survey teams in Cambodia. The primary role of HALO Cambodia survey teams is to provide programme senior management with the information they require to prioritize ground for clearance and to draw up annual workplans in conjunction

with the provincial MAPU/PMAC process. This information includes the location, total area, approximate boundaries, mine type and density, terrain, accessibility, land-use and proximity to the nearest habitation of every mined area within the relevant district(s). Systematic survey has allowed Location Managers and programme senior management to select tasks for the workplan from a comprehensive list of known mined areas. For long-term planning 'negative' information – (about areas where there is little risk of a mine accident) - is just as important as 'positive' information about existing mined areas; in Cambodia, negative information principally means the survey of reclaimed land – defined as land covered by the L1S, or otherwise suspect, that has been hand-planted for three years or machine ploughed three times without accident or incident. HALO Cambodia survey teams have been mapping, recording, and reporting on reclaimed land since 2005 (see below). A secondary role for HALO survey teams is to provide the demining supervisors and field officers with sufficient on the spot information to plan and commence clearance of a workplan task.

#### **8.4 Cambodia's Area Reduction Policy**

As mentioned in Chapter 6, due to the extent of land reclamation by local people and new settlers – also referred to as informal demining or village demining – especially in the north-west provinces, CMAA adopted in May 2006 an Area Reduction Policy to improve the mine clearance planning by targeting clearance on areas posing the greatest risk to communities, and by doing so, recognize previously suspected lands which have been returned to productive use without current evidence of threat by reclassifying and recording them in the national mine contamination database as reclaimed land.

The process of reclassifying previously suspected hazardous land into reclaimed land involves a non-technical survey approach whereby land that was previously suspected of having a mine hazard, but has been returned to productive use by locals for three years without accident. Reclaimed land, as defined in the new land classification (see Chapter 15), is considered End State Land by the RGC or land with no obvious threat or contamination by APM, and thus no longer an obligation under Article 5.

Following the decision to conduct a Baseline Survey, all recording of reclaimed land ceased as of December 2008. This is in recognition of the fact that the Baseline Survey shall provide a new picture of the remaining contamination that will take reclaimed land into account.

#### **8.5 Improving and standardizing land release through survey**

In addition to its efforts to record all remaining contaminated areas through the Baseline Survey process, Cambodia is developing a Land Release CMAS. The Baseline Survey commenced in August, as planned, and shall record mined and suspected areas and classify them accordingly into the various sub-categorization of A (Mined Areas) or B (Residual Threat) land (cf. Annex 4). When the baseline survey is completed in a district, previously suspect hazardous areas are superseded by the results from the baseline survey and will consequently not be part of the updated national mine contamination database. I.e. the new baseline survey will replace and render obsolete old survey information. The full process of land release (non-technical survey, technical survey, and clearance) will be applied to the known or suspect hazardous areas as defined by the baseline survey. The aim of Land Release is to convert land into C (End State) land.

The Land Release CMAS relies heavily on the Land Classification system and promotes the use of survey methodologies in releasing land. Operators are strengthening their own systems and procedures to make greater use of land release techniques. The Land Release CMAS shall be completed and disseminated by the end of 2009.

The traditional use of clearance as the only method to release land has led to large areas being cleared without finding any mines. In most cases the perceived threat had been based on inaccurate or incorrect survey data, or simply not enough information on an area to refute a claim of mines. It is anticipated that a greater utilization of land release methodology and subsequent targeting of existing assets on areas with an obvious threat shall possibly increase the productivity figures in Cambodia.

Land release is the process of changing the status of known or suspected mined areas (or parts of those areas ) to end state land which is released from the suspicion of mines through non-technical survey, technical survey and/or clearance resources. Land release encourages the use of traditional full clearance methodologies as the final activity to be conducted. Each step of the land release process including any reclassification of land shall be shared with the MAPU system and should help strengthen and inform the prioritization process and subsequent application of clearance assets.

A suspected hazardous area, or parts of it, can be released through survey by gathering enough information to be able to say with a high degree of confidence that there is no evidence of mines. While there is always some level of risk present in mine action (even after full clearance as mines might be deeper than the set clearance depth, outside the boundaries, or just missed by clearance operations), well-defined criteria and a credible well-documented process can assure 'all reasonable efforts' have been undertaken before land is released. In Cambodia, suspected hazardous land will not be released without the above being in place. Approval should be reached from the landowner and the local community that they accept/understand what has been done and that there is no obvious threat in using the land. Land released through survey or clearance is considered end state land with no known threat due to mines or ERW.

## **9. Methods and standards of controlling and assuring quality**

Quality Assurance (QA) and Quality Control (QC) within most demining operations are deemed to be a very important part of the entire regulation process. In Cambodia, CMAA's Regulation and Monitoring Department (R&M) is responsible for the regulation of all mine action activities undertaken within the country.

The CMAA R&M Department is mandated to write and publish Cambodian Mine Action Standards (CMAS) as well as conduct accreditation of all mine action operators who undertake any mine action activity within the country. The CMAA R&M Department maintains regular QA site visits to all accredited operators where they monitor that standards are being maintained. The QA teams have the authority to suspend demining sites where they feel serious safety or standards violations have occurred. In 2009, to support effective project management of the Baseline Survey, a Baseline Survey Unit was established as part of the R&M department.

Currently CMAA is responsible for its own QA recruitment, training and deployment. There are six teams who monitor the accredited demining operators working in Cambodia. The QA teams also have an accident/incident investigation role.

In 2005, Cambodia commenced the process of development of Cambodian Mine Action Standards (CMAS), informed by the UN's International Mine Action Standards (IMAS), but reflective of Cambodia's history and situation. The Cambodian Mine Action Standards (CMAS) were established as the regulatory framework for all mine action activities in Cambodia with CMAA responsible for drafting, reviewing and updating of the CMAS. The aim of the CMAS is to assist CMAA, national agencies and international agencies to establish technical guidelines and Standard Operating Procedures as a clear frame of reference for use while undertaking

Cambodian mine action activities. CMAS also provide the basis for the development of legal contracts between donors and implementing organizations.

## **10. Efforts to ensure the effective exclusion of civilians from mined areas**

Mine Risk Education has been a constant activity throughout north-west Cambodia since 1993, aiming to encourage people to adopt mine/ERW risk avoidance behaviors to prevent mine/ERW injuries. Since 2000, Mine Risk Education has been coordinated by the MRE Unit of the CMAA and implemented through both government and non-government service providers. Organizations such as CMAC, Cambodian Red Cross (CRC), UNICEF, CARE, The HALO Trust, Handicap International Belgium (HIB), MAG, World Vision, Spirit of Soccer, National Police and the Ministry of Education, Youth and Sports (MoEYS) have all been active in MRE since the early 1990s or later - the Cambodian Red Cross has been active since the early 1980s.

MRE has been required to evolve along with the quickly changing communities that the information is directed at. Population movements, scrap metal prices, changing risk patterns, and other trends have all forced adaptation of the message. From mass and traditional media campaign aiming to reach large number of people such as the use of billboard, radio and TV spots to employment of a community based mine/ERW risk reduction strategy; and from incorporation of MRE messages into primary school curriculum and development programme to law enforcement; all these have been successfully employed to meeting the changing of community and social landscape.

In January 2008, the Mine Action Technical Working Group decided to conduct an external evaluation of MRE activities under the coordination of the National Mine Risk Education Technical Reference Group led by CMAA. It concluded, "the MRE sector in Cambodia has been remarkable in adapting its response to the different phases. Overall, coverage has been good with the most affected areas targeted. The program has also been effective in raising awareness and knowledge of risk avoidance strategies. However, messages while relevant in the early stages of the program are less relevant in the current context and need some revision to ensure they are more contextually specific."<sup>5</sup>

In Cambodia context, affected communities have been included in MRE programmes through the CBMRR initiative as noted before. Cambodia acknowledges that effective MRE is based upon careful and ongoing assessment of the needs of the affected communities with involvement of existing community structures and local authorities in prioritizing tasks for mine action programmes. The planning of MRE should be linked to demining, victim assistance and community development programme planning. Based on this guiding principle, Cambodia's long-term strategy for mine/ERW risk education is to gradually transfer skills and knowledge to the local communities.

The CBMRR programme has been designed to serve that purpose. The affected communities are empowered to recognize, manage and address the mine/ERW problem with their own means, through task identification and prioritization, with the support from the demining operators and development partners through the PMAC/MAPU process. Through teams of volunteer network (Mine/UXO Committee or MUC) based at village/commune level and their respective District Focal Point (DFP), MRE can mobilize a very high participation by the affected communities themselves, thus building up the community's capacity and commitment to risk reduction and strengthening the community functions and networks.

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<sup>5</sup> J. Durham, Evaluation of the Mine Risk Education Program in the Kingdom of Cambodia

One of the main indicators of the sheer volume of mines laid in Cambodia, and one of the single greatest justifications for continued, targeted humanitarian mine clearance is the simple fact (reported consistently by CMVIS over many years), that more than 75% of all mine victims recorded had received Mine Risk Education at some point prior to their accident which indicates that communities continue to observe risk behaviors due to the pressure of accessing land for livelihood activities.

## **11. Resources made available to support progress to date**

Cambodia has benefited greatly from sustained and significant contributions from the international community to fund mine action in Cambodia since 1992. While there has been no systematic recording of contributions to mine action, it is well known that the overwhelming majority of mine action funding has been directed to mine clearance, but significant contributions have also been made to mine risk education, victim assistance, mine action governance, and integrated mine action programs.

In 2007, as part of Cambodia's effort to manage aid more effectively, the Cambodian Rehabilitation and Development Board (CRDB) and the Council for Development of Cambodia (CDC) set up the ODA Database<sup>6</sup> to record all development assistance to Cambodia. The overall objective of the ODA Database is to provide a practical tool to promote and monitor the alignment of ODA with the priorities of the National Strategic Development Plan (NSDP) and the aid management principles included in the RGC Action Plan on Harmonization, Alignment and Results (H-A-R Action Plan). These objectives are further articulated in the Cambodia Declaration (October 2006) and the Paris Declaration on Aid Effectiveness (March 2005).

The ODA Database provides access to information on project financing and therefore support reporting, information sharing and coordination functions that are intended to promote dialogue and development of more effective aid management practices. At a strategic level, the intent is for the ODA Database to become a fully integrated part of the national aid management architecture. This will ensure that a more evidence-based approach can be taken to promoting aid effectiveness and to monitoring the contribution of aid to achieving the development results that are envisaged in the NSDP. The major analytical outputs of the ODA Database and the broader aid partnership dialogue are presented annually in Cambodia's Aid Effectiveness Report.

For the period 2007-2009, the ODA database reports 44 projects in support of all aspects of mine action including clearance, mine risk education, victim assistance and development integrated projects. Among these 44 projects, 14 were completed in 2007 or 2008. While the ODA Database started recording projects in 2007 only, some projects' records go up to 2006. For the period 2007-2009, the ODA database reports a total contribution to mine action of USD 58,950,924 from Australia (Ausaid), Canada (Cida), Finland, Germany, Japan, Spain, the European Commission, UNDP and UNICEF. It should be noted that this record is not complete since a few donors' contributions have not been reported into the database. This figure does not account neither for all public and private sector investment projects acquiring mine clearance services. In addition, all in-kind contributions of equipment such as metal detectors, vehicles, IT equipment, demining machines, research and development activities and other mine-clearance related equipment are not systematically reported by providers in the database.

For the period prior to 2007, the Landmine Monitor provides a comprehensive record of most contributions based on donor reports for a range of different mine action activities. The

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<sup>6</sup> <http://cdc.khmer.biz/>

Landmine Monitor recorded a total contribution of nearly USD 217 million for the period 2001-2008. The average annual contribution since 2006 is about USD 29.4 million.

Despite pressures on the national budget due to competing needs, Cambodia has successfully managed in recent years to increase its budget allocation to mine action. The government's contribution includes support to mine action related activities undertaken by CMAA, CMAC, RCAF, the Police and the Ministry of Social Affairs, Veterans and Youth (MoSAVY). In addition, the Government has been able to make in-kind contributions to mine action through waiving import duties on humanitarian demining operators' mechanical and technical equipment, being imported into the country.

The RGC contribution has seen a net increase over the years. With an initial contribution of USD 200,000 in 2003, it reached 3.5 million in 2009. In total, for the period 2003-2009, RGC contributed nearly USD 11 million. It should be noted that the above contribution does not account for the entirety of the RGC's contribution to RCAF for demining in support of public infrastructure and development projects. Other resources devoted, particularly by the local authority and community involvement contributing to the successful execution of the last 16 years mine action programme are difficult to quantify, however, they continue to be an extremely valuable contribution.

The MA-TWG is an essential platform to improve transparency and accountability of the resources allocated to mine action while identifying technical support, projects and programmes that promote the achievement of Cambodia's policies and strategies. The MA-TWG will undertake an Aid Effectiveness study in 2009 to map and analyze current projects and programmes and whether they are aligned with Cambodia's Aid Effectiveness Agenda. The study shall provide recommendations on how the sector (both the Government and Development Partners) could move towards a more coherent and programme based approach to manage aid assistance to mine action. As the TWG Lead-Government agency, this study should provide CMAA with greater tools to effectively manage, coordinate and record assistance provided to the sector and therefore be in a greater position to monitor the resources mobilized to achieve the targets of the Extension Request Workplan.

## **12. Circumstances that impede compliance in a ten year period**

Several circumstances have impeded compliance in the period 2000-2010. The first and foremost challenge for Cambodia has been the sheer scale of the problem as compared to available resources and capacities. From official statistics, in the past 16 years of effort and commitment Cambodia has addressed only parts of its full problem. The number of mines destroyed, size of areas cleared, number of mine victims and the size and abundance of areas still known or suspected to contain mines demonstrate that the mine problem of Cambodia was – and still is one of worst – if not the worst – in the world.

Most mine action experts agree that Cambodia still has a lot of demining to complete in the next ten to twenty years if demining technologies and methodologies are to remain the same and the available resources are not increased. Therefore innovative technologies and methods, including releasing land through surveys, coupled with sufficient funding is needed to help solve the problem. Without these two elements, the remaining problem will remain a great challenge for Cambodia.

While donor contributions to mine action have been consistently generous throughout the ten year period, the truth is that they have never been sufficient to meeting the actual need that exists, let alone the critical mass necessary to achieving full compliance. Given this situation, Donors and Operators have chosen to direct most precious resources to the north-west of the

country in an attempt to focus their resources on casualty reduction. The financial factor will continue to be a challenge for Cambodia in the next ten years.

Cambodia has experienced strong levels of economic growth, but widespread poverty in much of rural Cambodia (caused by a wide range of factors) means that there are competing forces seeking support from an already stretched National Budget. Government contributions to mine action have increased, however they remain only a small proportion of the total budget required to maintain the mine action sector at current levels, let alone the resourcing needed to achieve full compliance. Paradoxically, the ability to mobilize donor support for the sector is undermined by the sector's success. As casualty rates decline sharply, some donors have taken decisions to redirect resources to other sectors which they determine have greater need.

Long term planning for mine action is problematic given the erratic nature of mine action funding. This situation contributes to resources not being allocated to clarification of lower priority suspect areas given that donors demand that operators are directing funds to high priority areas.

### **13. Humanitarian, economic, social and environmental implications**

The contribution of Cambodia's mine action program to the social and economic situation of people living in affected areas is considerable. This occurs primarily through the major contributions that mine action makes to 1) reducing the number of casualties and 2) distributing land and livelihoods to poor and vulnerable people.

There are positive links between mine action and economic returns. According to a cost-benefit analysis study on mine clearance operations in Cambodia in 2005,<sup>7</sup> mine action is contributing substantially to the Cambodian economy and the country in general. Analysis of the 2004 clearance programme indicates a benefit cost ratio (BCR) of 0.38, implying that benefits are in general 38% higher than the costs, on basis of an average clearance cost rate of USD 0.9 per square metre (some demining operators costs such as CMAC's are below 50 cents per m<sup>2</sup>). The internal rate of return based on the same assumptions will be 14%. The benefits amount to about USD 37 million in total, distributed with 80% on clearance for development and 20% on reduced human loss. Roads and bridges make up the largest parts with 45%, even though such clearance tasks only comprise 19% of the total area cleared. Smaller size tasks related to irrigation canals also contribute considerably. For agricultural land the situation is inverted, it constitutes as much as 65% of the cleared area while making up only 28% of the benefits. The benefits from renewed access to more direct road links can be considerably larger than the costs required for clearance. Clearance of roads and bridges could thus be undertaken even in cases of relatively high cost levels. The benefits of access to wells for local water supply, schools and health stations are easily justified for clearance, on the basis of the reduced travel time and travel costs for the community members including students.

A significant additional and very positive (but not often reported) economic implication of large scale mine clearance is the amount of money paid out by operators in the form of staff salaries. The mine action sector has employed over 4,000 national staff for more than a decade, so that a conservative estimate of total USD entered into the Cambodian economy in the form of mine action salaries during 1998 – 2008 will be in excess of USD 86 million; over the full 18 years+ it may amount to over USD 150 million, 90% of it paid out to demining staff of relatively humble origin, many of whom were recruited from the most impoverished districts of the mine-affected north-western provinces.

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<sup>7</sup> Cost-benefit analysis of mine clearance operations study was conducted by Bjørn Gildestad in 2005.

A needs assessment undertaken by an International NGO (Austcare) in 2005 suggested that presence of landmines are a key cause leading to the insufficient livelihood and poverty among the rural poor living in mine affected areas especially in communities bordering Thailand particularly the provinces of Battambang, Banteay Meanchey, Oddar Meanchey and Pailin. Insufficient livelihood leads to food insecurity, then to hunger, and hunger forces poor and vulnerable people to foraging for food and to find forest by products in mine affected forest; or scavenging for scrap metal for sale. This risk taking behavior may lead to becoming a mine/ERW casualty which often results in perpetual poverty and hardship for the family. The study also found that lack of market, poor job availability, lack of capital, lack of vocational skill, and agriculture constraints are also some of the leading causes of the inadequate livelihood.

Agriculture constraints are the result of the limited land for farming which is in turn often due to land still being contaminated with landmines. Therefore, by clearing land for agriculture and allocating that land to poor people, community needs can begin to be met. By clearing access to services and market mine action can help prevent humanitarian catastrophe and its flow on social impacts.

The social impact of a mine accident goes much further than the physical injuries inflicted. Women and children suffer from a mine explosion, whether they are directly injured or their spouse or parent is a mine casualty. Women are often the primary care-giver, or become the principal income earner or head of the household if their partner is killed or injured in a landmine explosion. For the child of a mine casualty, the impact on the economic situation of the family often results in children losing the opportunity to gain an education, and forcing a child to look for employment to support the family.

Medical care at the time of the accident, as well as the costs related to ongoing care commonly force families into debt, which in turn can lead to landlessness – in other words a spiral of economic and social implications. This is reinforced by research undertaken by the Jesuit Service Cambodia in the provinces of Battambang, Oddar Meanchey, Banteay Meanchey, Siem Reap, and areas surrounding Kampong Speu where interviews with 1,663 survivors revealed that 71% did not have adequate housing; 7% had no house at all; 45% had to travel more than five minutes to get water for drinking and washing; 89% reported food insecurity; 32% had no land for housing or cultivation; 28% received a government pension; 50% had a "job" (including rice farming); and the children of at least 46% did not go to school.

The sharp reduction in casualty numbers in Cambodia has therefore positively affected many more people than are reflected in the raw casualty statistics.

The other side of the 'mine action coin' is the positive social and economic contribution made through allocation of demined land to disadvantaged poor families. The 'MAPU system' provides Cambodia a clear and widely understood system for allocating mined land to beneficiaries, based on criteria detailed under the Sub Decree on Social Land Concessions which outlines the circumstances under which state owned private land can be distributed to poor people who lack land for residential and/or family farming purposes. Since a lot of mined land is officially state owned in Cambodia, demining becomes an important vehicle for application of the Social Land Concessions Sub Decree, which allows for allocation of cleared land to beneficiaries. Decisions regarding post clearance beneficiaries are clearly determined prior to clearance commencing.<sup>8</sup>

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<sup>8</sup> There are legal uncertainties related to beneficiary tenure over demined land allocated under the Social Land Concessions Sub Decree, which the Royal Government is now attempting to address.

## **14. Nature and extent of the remaining challenge: quantitative aspects**

Cambodia estimates that 648.8 square kilometers of land remain affected by mines and will require clearance in the future. This figure is the result of Cambodia's efforts to estimate the remaining challenge based on the breadth of demining experience in Cambodia. While it remains an estimate, the remaining challenge will be more precisely defined through the undertaking of a Baseline Survey over the next three years capturing all remaining mined areas across all affected districts in Cambodia. Stakeholders believe that the BLS will even further reduce that estimate, but no data are currently available to show that trend. Below is the methodology that Cambodia developed to derive the estimate based on all available knowledge and experience.

### **14.1 Best available data as of June 2009**

Policies and implementation plans for both the Baseline Survey and a system for land release are advanced and progressing well to accurately estimate the remaining landmine contamination in the country. In the absence of data providing precise and accurate information on the exact size, location and nature of the remaining challenge at this time, CMAA has developed the below methodology in an attempt to quantify the remaining problem based on the existing data and knowledge on the ground.

The only country wide assessment which has been conducted is the Level One Survey (L1S) completed in 2002. Its primary focus was the provision of socio-economic information on the impact of landmines on communities. It also provided geographical information on the possible location and size of mined areas which formed the national database of Cambodia's landmines and ERW contamination. So far and for the time being L1S data was partially used for following up survey or clearance activities as it was intended. However, experiences show that the L1S information over time proved to be not accurate enough with a large number of suspected areas being overestimated and many other mined areas missed.

Today, based on the actual clearance and non-technical survey activities conducted over the last 8 years, operators and CMAA have gained knowledge and experience on the extent of the remaining contamination. Based on the breadth of humanitarian demining experience and knowledge, CMAA used all existing data to develop a methodology to extrapolate the known contamination in some geographical areas in order to quantify the contamination that can be expected in other geographical areas (with similar parameters) where data are not complete or not available.

CMAA recognized that figure used by Cambodia to project the remaining contamination remains an estimate and that data on the remaining contamination will be updated as Baseline Survey data becomes available.

CMAA is applying the following two distinctive processes in parallel to derive the estimate of remaining mine contamination which would require clearance:

- a. Analyzing the L1S database to estimate the contamination area size requiring clearance which subsequent survey after L1S have not reached;
- b. Analyzing the subsequent survey information from operators (CMAC and HALO Trust) since the L1S was completed.

The remaining challenge in Cambodia will correspond to the sum of the area size of both processes.

## 14.2 Summary of the Methodology

The information presented below represents the process for determining the best available data as of June 2009 for quantification of the remaining challenge, and is based on the following methodology:

1. All surveyed mined area polygons that were identified and recorded before the conclusion of the L1S during 2000-2002 are not considered to be part of the remaining challenge.
2. Where CMAC has completed non-technical survey of an entire district after the L1S, the non-technical survey polygons of confirmed, suspected and residual minefields<sup>9</sup> supersede all L1S polygons in that district.
3. Where CMAC has completed non-technical survey of an entire district, and/or HALO Trust have also conducted survey, the remaining challenge is the sum of CMAC survey polygons and HALO Trust survey polygons (where HALO Trust polygons do not overlap the CMAC polygons).
4. Subsequent surveyed areas by operators (CMAC and HALO Trust) since 2002 is included in the calculation process.
5. UXO and Cluster Bomb contaminated areas from the L1S have been excluded from the calculation because this methodology focuses on landmine contamination as per the obligations under the APMBT.
6. Reclaimed land by HALO Trust and MAG, survey and clearance area polygons to date from all operators overlapping on top of the L1S polygons have been removed from the calculation. Reclaimed land is no longer considered to be contaminated as the land has been put into productive use without accident for three years or more.
7. In districts where subsequent survey activities (after L1S) are incomplete or no survey ever took place, the L1S suspected polygons are the source of information to derive the estimated landmine contamination.

## 14.3 Process to calculate the remaining L1S area requiring clearance

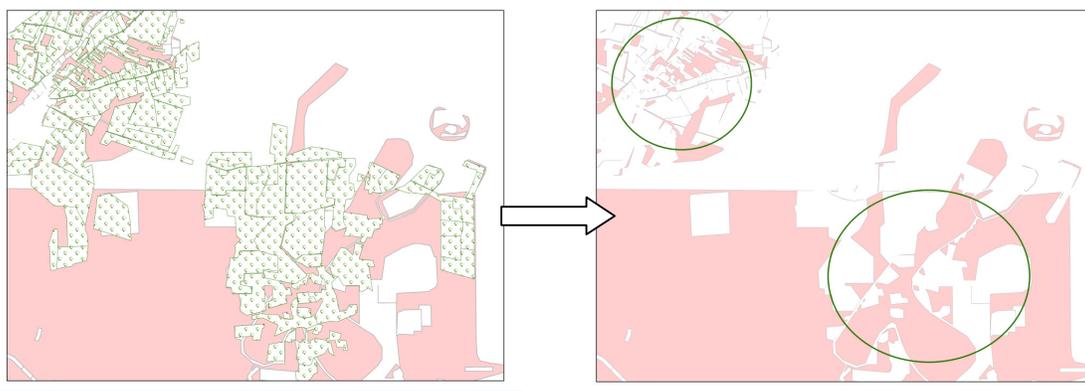
1. The L1S had identified a total contamination of 4,544 Km<sup>2</sup> in 122 impacted districts across the country. The L1S identified 50 Km<sup>2</sup> of land contaminated by UXO and 278 Km<sup>2</sup> of land affected by Cluster Bombs. Those areas were excluded from the calculation. After exclusion of these areas, the remaining L1S area is 4,218 Km<sup>2</sup>. See table below for details.

### L1S LAND CLASSIFICATION AND AREA SIZE

L1S Area classification	Area size m <sup>2</sup>	Remarks
Cluster Bomb	276,012,210	Excluded from the calculation
Mine	4,195,035,931	Part of calculation
Mine & UXO	23,062,409	Part of calculation
Unknown	183,909	Part of calculation
UXO	49,777,302	Excluded from the calculation
<b>Grand Total</b>	<b>4,544,071,762</b>	
<b>Remaining L1S</b>	<b>4,218,282,249</b>	

<sup>9</sup> The classification of survey polygons into confirmed, suspected or residual was used by the operator CMAC before the Land Classification that derived from the Baseline Survey was developed. During CMAC's survey process land in use with suspicion of mines is classified and mapped as *residual minefields*. If no accidents occur during a following three-year period, with productive use, this land is then reclassified by what CMAA defines as reclaimed land

- Overlapping polygons of clearance to date, subsequent surveys by CMAC and HALO Trust, and reclaimed land by MAG and HALO Trust have been subtracted from the L1S remaining area of 4,218 Km<sup>2</sup>. As a result, a total area size of 760.4 Km<sup>2</sup> m is overlapping on top of the L1S polygons and has been excluded from this calculation (4218.1 sq.km – 760.4 sq.km = 3457.7 Km<sup>2</sup>). See below example where reclaimed land (green) overlaps L1S polygons (pink) and have therefore been taken out of the calculation.



- In districts where technical survey/non-technical survey activities have been carried over the entire district after the L1S, results of such survey have superseded the L1S hazard areas. Currently there are 15 districts where technical survey/non-technical survey activities have been completed with a total L1S area size of 1,688.7 Km<sup>2</sup>. This area has been taken out of the L1S total size in order to calculate the L1S remaining area. The surveyed areas recorded in these 15 districts through these non-technical survey activities (and classified as confirmed, suspected and residual<sup>10</sup>) will be included in the calculation together with the known landmine contamination from the subsequent survey after L1S.

As a result: 3457.7 Km<sup>2</sup> – 1,688.7 Km<sup>2</sup> = 1,769 Km<sup>2</sup> of the L1S remain affected.

See table below for details of the 15 districts:

### 15 DISTRICTS WHERE TECHNICAL SURVEY HAVE BEEN ENTIRELY COMPLETED

No	Province	District	L1S m <sup>2</sup>	Confirmed m <sup>2</sup>	Suspected m <sup>2</sup>	Residual m <sup>2</sup>
1	Siem Reap	Angkor Chum	21,051,673	142,641	1,884,118	299,414
2	Siem Reap	Angkor Thum	26,909,043	164,447	1,597,321	159,275
3	Siem Reap	Banteay Srei	111,705,104	0	2,923,555	1,324,134
4	Battambang	Kamrieng	74,164,909	4,222,614	38,098,118	7,227,089
5	Banteay Mean Chey	Malai	98,443,116	5,224,669	47,223,131	12,466,069
6	Krong Pailin	Pailin	99,921,145	59,456,212	3,921,322	2,473,306
7	Battambang	Phnum Proek	13,435,888	5,241,355	1,577,779	6,035,062
8	Battambang	Rotonak Mondol	204,465,517	87,183,857	16,264,786	16,452,048
9	Krong Pailin	Sala Krau	154,330,239	47,348,153	44,411,884	20,249,223
10	Battambang	Samlout	420,599,624	137,018,981	32,527,587	11,987,891
11	Battambang	Sampov Lun	49,091,286	562,243	70,216,932	34,148,804
12	Otdar Mean Chey	Samraong	87,314,915	1,674,206	10,475,622	511,067
13	Siem Reap	Srei Snam	9,555,638	1,967,274	9,401,637	159,389
14	Siem Reap	Svay Leu	131,192,173	42,948	4,431,657	409,368
15	Siem Reap	Varin	186,564,417	3,295,080	19,171,384	842,265
<b>Total</b>			<b>1,688,744,687</b>	<b>353,544,680</b>	<b>304,126,833</b>	<b>114,744,404</b>

<sup>10</sup> The classification of survey polygons into confirmed, suspected or residual was used by the operator CMAC before the Land Classification that derived from the Baseline Survey was developed. During CMAC's survey process land in use with suspicion of mines is classified and mapped as *residual minefields*. If no accidents occur during a following three-year period, with productive use, this land is then reclassified by what CMAA defines as reclaimed land.

4. From the remaining L1S, the top 20 largest polygons are excluded from the calculation (approximately 1,102 Km<sup>2</sup>) as the sector recognizes that these survey polygons were largely overestimated. These 20 polygons would have unfairly influenced the analysis while the reality on the ground for these 20 large areas has significantly changed since the L1S was conducted. Based on the individual particularities of these large polygons, CMAA has defined a percentage of probabilities of contamination for each area. The remaining contamination of these 20 large polygons is believed to be only about 57.5 Km<sup>2</sup>. As a result, the remaining L1S contamination is 1,769 Km<sup>2</sup> – 1,102.6 Km<sup>2</sup>= 666.4 Km<sup>2</sup>. CMAA reviewed and assessed these polygons based on the following criteria:

- a. Current minefield situation and the land use
- b. Accident occurred inside the area in the last 5 years
- c. Historical information of the mined areas and the warring time in the past
- d. Experiences in conducting the L1S
- e. Minefield evolution and land use factor

For more details, see table below.

#### L1S TOP 20 LARGE POLYGONS

No.	Province	District	Original L1S Area m <sup>2</sup>	Contamination Probability	Remaining area m <sup>2</sup>
1	Pursat	Veal Veaeg	298,352,896	7%	20,884,703
2	Koh Kong	Mondol Seima	131,872,583	5%	6,593,629
3	Pursat	Veal Veaeg	91,696,215	5%	4,584,811
4	Banteay Mean Chey	Svay Chek	66,673,885	4%	2,666,955
5	Preah Vihear	Rovieng	47,251,106	3%	1,417,533
6	Otdar Mean Chey	Trapeang Prasat	44,982,607	5%	2,249,130
7	Otdar Mean Chey	Anlong Veaeng	44,388,443	7%	3,107,191
8	Banteay Mean Chey	Svay Chek	43,377,051	3%	1,301,312
9	Banteay Mean Chey	Svay Chek	39,905,172	5%	1,995,259
10	Preah Vihear	Rovieng	34,358,201	3%	1,030,746
11	Kampong Cham	Memot	33,097,238	3%	992,917
12	Pursat	Veal Veaeg	30,652,258	3%	919,568
13	Battambang	Moung Ruessei	30,483,806	3%	914,514
14	Battambang	Bavel	24,380,685	2%	487,614
15	Battambang	Banan	23,943,280	3%	719,298
16	Battambang	Bavel	20,173,757	5%	1,008,688
17	Battambang	Bavel	29,865,809	5%	1,493,290
18	Battambang	Moung Ruessei	22,655,071	3%	679,652
19	Preah Vihear	Rovieng	25,901,795	10%	2,590,180
20	Otdar Mean Chey	Trapeang Prasat	18,583,070	10%	1,858,307
<b>Total</b>			<b>1,102,594,927</b>	<b>N/A</b>	<b>57,494,297</b>

5. Survey results in the 15 districts where non-technical survey was completed after the L1S provides an indication of the percentage of the L1S remaining area that could be contaminated by landmines and requires clearance. Indeed, the total L1S area in these 15 districts is 1,688.7 Km<sup>2</sup>. The result of the non-technical survey shows that the remaining area requiring clearance based on the experience of the operators in these 15 districts is believed to be 289.37 Km<sup>2</sup> (see below table). Comparing the L1S and non-technical survey figures shows that 17.1% of the overall remaining L1S area could be contaminated. For details, see below table

## RESULT OF NON-TECHNICAL SURVEY IN THE 15 COMPLETED DISTRICTS

District	L1S Km <sup>2</sup>	Confirmed Km <sup>2</sup>	70% Confirmed Km <sup>2</sup>	Suspected Km <sup>2</sup>	10% Suspected Km <sup>2</sup>	Residual Km <sup>2</sup>	10% Residual Km <sup>2</sup>	Area requires Clearance Km <sup>2</sup>	Percentage
Angkor Chum	21.05	0.14	0.10	1.88	0.19	0.30	0.03	0.32	1.5%
Angkor Thum	26.91	0.16	0.12	1.60	0.16	0.16	0.02	0.29	1.1%
Banteay Srei	111.71	0.00	0.00	2.92	0.29	1.32	0.13	0.42	0.4%
Kamrieng	74.16	4.22	2.96	38.10	3.81	7.23	0.72	7.49	10.1%
Malai	98.44	5.22	3.66	47.22	4.72	12.47	1.25	9.63	9.8%
Pailin	99.92	59.46	41.62	3.92	0.39	2.47	0.25	42.26	42.3%
Phnum Proek	13.44	5.24	3.67	1.58	0.16	6.04	0.60	4.43	33.0%
Rotonak Mondol	204.47	87.18	61.03	16.26	1.63	16.45	1.65	64.30	31.4%
Sala Krau	154.33	47.35	33.14	44.41	4.44	20.25	2.02	39.61	25.7%
Samlout	420.60	137.02	95.91	32.53	3.25	11.99	1.20	100.36	23.9%
Sampov Lun	49.09	0.56	0.39	70.22	7.02	34.15	3.41	10.83	22.1%
Samraong	87.31	1.67	1.17	10.48	1.05	0.51	0.05	2.27	2.6%
Srei Snam	9.56	1.97	1.38	9.40	0.94	0.16	0.02	2.33	24.4%
Svay Leu	131.19	0.04	0.03	4.43	0.44	0.41	0.04	0.51	0.4%
Varin	186.56	3.30	2.31	19.17	1.92	0.84	0.08	4.31	2.3%
<b>Total</b>	<b>1688.74</b>	<b>353.54</b>	<b>247.48</b>	<b>304.13</b>	<b>30.41</b>	<b>114.74</b>	<b>11.47</b>	<b>289.37</b>	<b>17.1%</b>

6. The CMAA has applied this contamination percentage to the remaining L1S areas as determined in Para. 14.3.4. The result is as follow:  $666.4 \text{ Km}^2 \times 17.1\% = 114 \text{ Km}^2$  requiring clearance of the remaining L1S. The top 20 large polygons accounting for 57.5 Km<sup>2</sup> of probable contamination have been added to the remaining figure of 114 Km<sup>2</sup> requiring clearance. As a result,  $114 \text{ Km}^2 + 57.5 \text{ Km}^2 = 171.5 \text{ Km}^2$  L1S areas probably requiring clearance.

**Based on the above methodology, the total area from the remaining L1S which requires clearance is 171.5 Km<sup>2</sup>.**

### 14.4 Known contamination from subsequent survey after L1S

Following the L1S, various non-technical and technical survey initiatives have been conducted across Cambodia mainly by CMAC and Halo Trust:

- a. CMAC has completed non-technical survey in 15 districts and each suspected polygons was classified as confirmed, suspected or residual mined areas.
- b. Halo Trust has conducted survey in 5 of these 15 districts and polygons were classified as confirmed mined areas.

Based on years of field experience, only a percentage of surveyed polygons will require actual clearance:

- c. CMAC considers that 70% of confirmed areas and 10% of suspected and residual areas will require full clearance and remaining area will be superseded or reduced through applying appropriate land release methodologies.
- d. HALO Trust recognizes that 80% of its survey polygons will require full clearance and 20% of the remaining area will be reduced through survey.

The sum of all operators' subsequent survey experience has been included in the calculation to estimate the remaining challenge in Cambodia.

## 14.5 Calculating clearance area from subsequent survey after completion of L1S

1. After completion of L1S, CMAC has recorded 468.5 Km<sup>2</sup> of *confirmed minefields* across the country in 16 affected provinces. CMAC believes that only 70% of the confirmed minefields require clearance.  $468.5 \text{ Km}^2 \times 70\% = 328 \text{ Km}^2$ . See table below for details.

### CMAC CONFIRMED MINEFIELDS SINCE COMPLETION OF L1S

Province	Confirmed MF	Area m <sup>2</sup>	70% Area m <sup>2</sup>
Banteay Meanchey	274	16,709,057	11,696,340
Battambang	887	251,586,528	176,110,570
Kampong Cham	46	4,554,196	3,187,937
Kampong Speu	1	36,533	25,573
Kampong Thom	44	7,625,065	5,337,546
Kampot	1	21,621	15,135
Kandal	4	120,308	84,216
Koh Kong	4	62,925	44,048
Kratei	5	736,771	515,740
Oddar Meanchey	134	16,954,634	11,868,244
Pailin	590	110,151,511	77,106,058
Preah Vihear	191	33,358,039	23,350,627
Prey Veng	5	187,033	130,923
Pursat	167	16,093,179	11,265,225
Siemreap	83	9,529,709	6,670,796
Stung Treng	2	820,515	574,361
<b>Grand Total</b>	<b>2,438</b>	<b>468,547,624</b>	<b>327,983,337</b>

2. After completion of the L1S, CMAC has also recorded 347 Km<sup>2</sup> of *suspected mined areas* across the country in affected provinces. CMAC believes that only 10% of the surveyed suspected mined areas require full clearance.  $347 \text{ Km}^2 \times 10\% = 34.7 \text{ Km}^2$ .

### CMAC SUSPECTED MINED AREAS SINCE COMPLETION OF L1S

Province	Suspected MF	Area m <sup>2</sup>	10% Area m <sup>2</sup>
Banteay Meanchey	301	53,094,752	5,309,475
Battambang	657	174,140,412	17,414,041
Kampong Cham	13	604,756	60,476
Kampong Speu	1	112,691	11,269
Kampong Thom	7	1,130,678	113,068
Kandal	1	4,884	488
Koh Kong	3	151,826	15,183
Kratei	1	19,820	1,982
Oddar Meanchey	145	12,694,693	1,269,469
Pailin	273	49,353,957	4,935,396
Preah Vihear	58	4,622,922	462,292
Prey Veng	8	134,985	13,499
Pursat	25	1,900,721	190,072
Siemreap	294	45,418,380	4,541,838
Stung Treng	4	101,255	10,126
Svay Rieng	20	3,733,028	373,303
<b>Grand Total</b>	<b>1,811</b>	<b>347,219,760</b>	<b>34,721,976</b>

3. CMAC has recorded 138.7 Km<sup>2</sup> of *residual mined areas* across the country which CMAC believes only 10% of the surveyed residual mined areas require full clearance.  $138.7 \text{ Km}^2 \times 10\% = 13.9 \text{ Km}^2$ .

### CMAC RESIDUAL MINED AREAS SINCE COMPLETION OF L1S

Province	Residual MF	Area m <sup>2</sup>	10% Area m <sup>2</sup>
Banteay Meanchey	106	13,204,120	1,320,412
Battambang	732	88,268,778	8,826,878
Kampong Cham	30	1,954,959	195,496
Kampong Thom	17	1,792,071	179,207
Kratei	6	434,377	43,438
Oddar Meanchey	72	3,781,828	378,183
Pailin	221	23,248,444	2,324,844
Preah Vihear	9	271,693	27,169
Prey Veng	1	2,376	238
Pursat	17	843,227	84,323
Siemreap	62	3,808,312	380,831
Stung Treng	8	1,013,566	101,357
Svay Rieng	3	143,226	14,323
<b>Grand Total</b>	<b>1,284</b>	<b>138,766,977</b>	<b>13,876,698</b>

4. HALO Trust has surveyed 125.9 Km<sup>2</sup> minefields across the country and HALO Trust believes that 80% of the surveyed area requires clearance.  $125.9 \text{ Km}^2 \times 80\% = 100.7 \text{ Km}^2$ . See table below for details.

### HALO TRUST SURVEYED MINEFIELDS SINCE COMPLETION OF L1S

Province	Survey MF	Area m <sup>2</sup>	80% Area m <sup>2</sup>
Banteay Meanchey	511	22,535,892	18,028,714
Battambang	125	4,904,597	3,923,677
Oddar Meanchey	1,548	63,679,825	50,943,860
Pailin	317	19,285,212	15,428,170
Preah Vihear	222	15,466,438	12,373,151
<b>Grand Total</b>	<b>2,723</b>	<b>125,871,964</b>	<b>100,697,572</b>

5. Summing up all these survey areas requiring clearance i.e. 70% of CMAC *confirmed minefield*, 10% of CMAC *suspected mined areas*, 10% of CMAC *residual mined area* and 80% of HALO Trust *survey area* shows a total of 477.3 Km<sup>2</sup> of surveyed areas requiring clearance. See below table for details.

### SUMMARY OF ALL SURVEY AREAS FOR CLEARANCE SINCE COMPLETION OF L1S

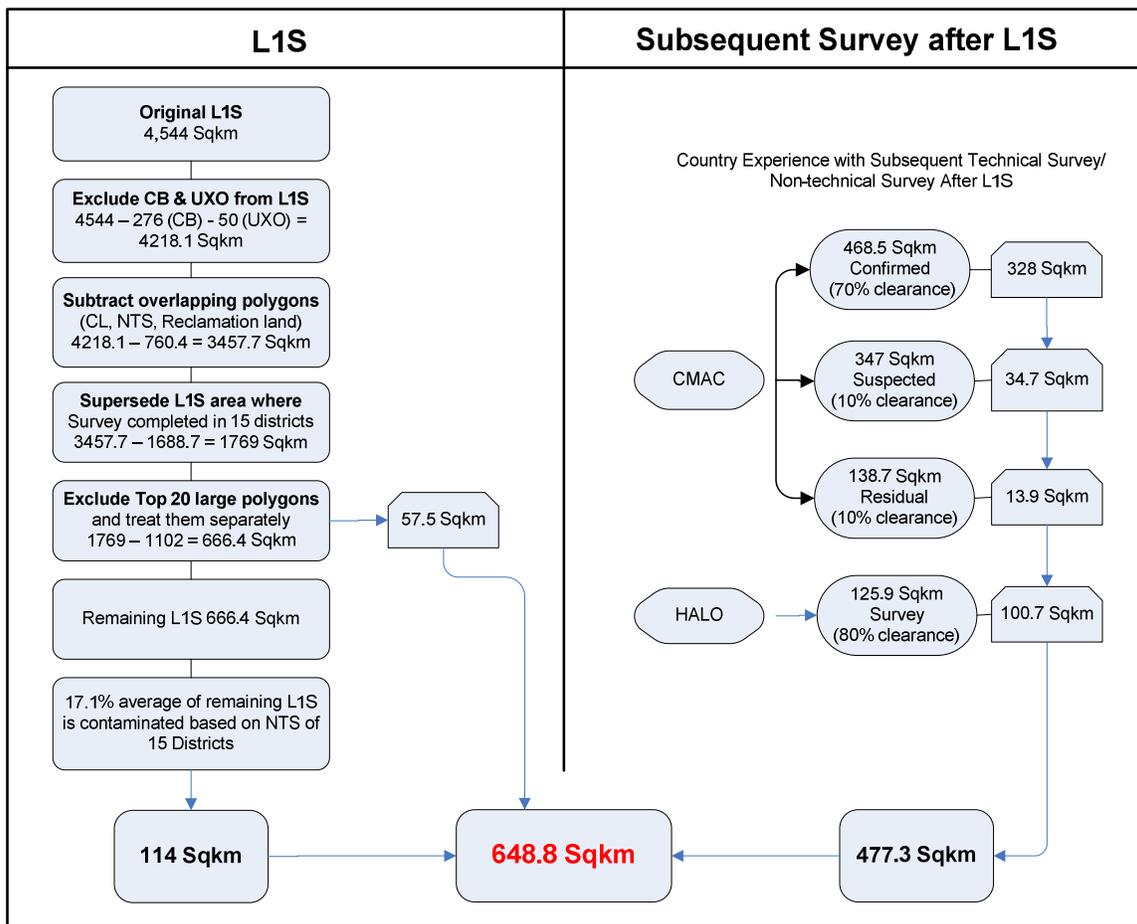
Subsequent Survey after L1S	Total Area m <sup>2</sup>	Percentage require Clearance	Remaining Area for Clearance m <sup>2</sup>
CMAC Confirmed	468,547,624	70%	327,983,337
CMAC Suspected	347,219,760	10%	34,721,976
CMAC Residual	138,766,977	10%	13,876,698
HALO Survey	125,871,964	80%	100,697,572
<b>Total</b>	<b>1,080,406,325</b>	<b>N/A</b>	<b>477,279,583</b>

The grand total of the remaining challenge corresponds to the sum of the clearance required of surveyed areas (477.3 Km<sup>2</sup>) and the clearance required in the remaining L1S areas (171.5 Km<sup>2</sup>). **As a result, CMAA estimates the total area from the remaining L1S requiring clearance is 648.8 Km<sup>2</sup>.**

This expected contamination requiring clearance remains an estimate that will be defined by the Baseline Survey. The BLS is expected to capture all remaining areas requiring clearance (of which a limited percentage will be released by other land release methodologies such as technical survey and will supersede all existing survey data. Therefore, the above calculation does not account for the current L1S areas or further surveyed areas not requiring clearance as these areas will be superseded by the BLS.

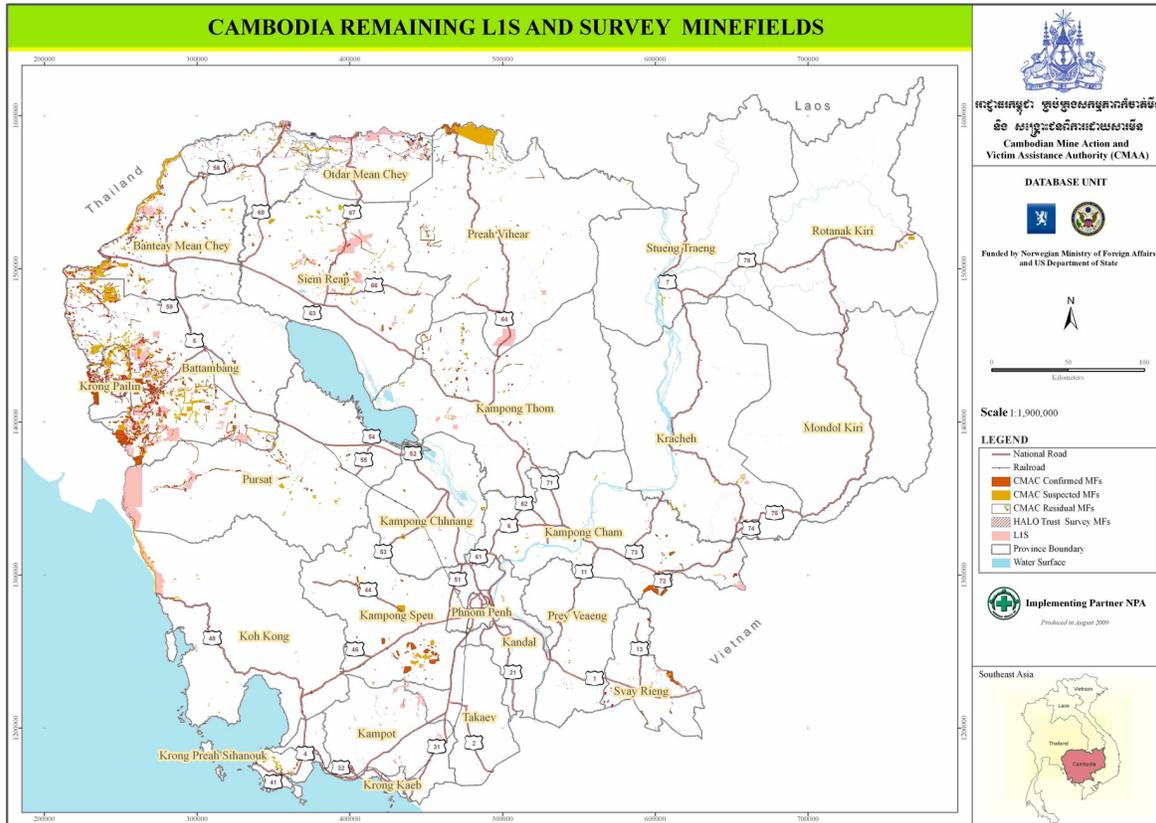
The following flow chart provides a complete picture of the methodology used to derive the estimate.

**DATA ANALYSIS PROCESS CHART FOR ESTIMATING REMAINING CHALLENGE OF LANDMINES IN CAMBODIA FOR EXTENSION REQUEST**



Running through the above steps on the national mine action data-set gives a total of area size of the remaining challenge requiring clearance to be 648.8 square kilometers covering 122 districts.

Map 5: Remaining mine contamination and LIS suspected hazard areas



Province and district maps and statistics showing the current situation is provided in Annex 7.

## 15. Nature and extent of the remaining challenge: qualitative aspects

### Defining a new baseline

In November 2008, CMAA convened a meeting of the Mine Clearance Technical Reference Group, comprising CMAA, CMAC, MAG, HALO Trust, NPA and other interested mine action stakeholders. The purpose of the meeting was to consider the various challenges posed by the Extension Request and to begin developing of a National Mine Action Strategy.

In terms of the nature and extent of the remaining challenge, it was openly acknowledged at this meeting that there were several difficulties associated with Cambodia still being unable to accurately quantify the total suspect hazardous area needing to be programmed into the Extension Period. Operators have focused their efforts on the casualty in the north-western provinces, and believe they have a 'good, general' understanding of the needs that exist there. However it was accepted that for the majority of the country where little or no clearance has occurred, that despite its many known weaknesses, the best available data remains the LIS undertaken in 2002.

In the search for a meaningful way ahead, an agreement was reached that the three leading operators, under the direction from the CMAA, would initiate a baseline survey of the 21 most mine affected districts<sup>11</sup> in Cambodia. Importantly, it was agreed that this baseline survey would occur using common standards, protocols and procedures. These 21 districts were

<sup>11</sup> See list of 21 most affected districts in Annex 3

responsible for 93.1% of all mine accidents in the five years up until 2008. They are already well known to operators, and it is therefore believed that a very clear picture and plan can be developed from the survey results to guide allocation of the majority of mine clearance resources during the Extension Period.

It is important to note, however, that this Baseline Survey first phase of the most mine-affected 21 districts will only provide up to date empirical planning data for these districts. In order to produce genuinely accurate data for the whole country, all remaining mine-affected districts will eventually need to be re-surveyed. It is planned to survey all 122 districts (out of 185 districts for the whole country) by the end of 2012.

Table 4: Mine Accident and Casualty Data (2004 - Dec 2008)

<b>Location</b>	<b>Casualties by number</b>	<b>Casualties as a percentage</b>	<b>Accidents by number</b>	<b>Accidents as a percentage</b>
Inside 21 baseline Survey Districts	1060	91.6%	762	93.1%
Outside 21 baseline Survey Districts	89	8.4%	53	6.9%

The deliberations on the baseline survey have led operators to agree on the types of land to which demining resources should be directed over the next ten year period.

A Land Classification table has been developed with clear and agreed definitions (cf. Annex 4):

Classification A:	Mined Areas
Classification B:	Residual Threat
Classification C:	End State Land

This land classification is firstly designed to clarify the nature of the remaining threat. However it is also regarded as a very important tool in supporting prioritization and allocation of clearance resources. It is agreed across the sector that effective prioritization of mined areas for clearance must incorporate the technical knowledge of operators, and this new approach will help overcome the weaknesses of the existing mine action planning process, which had at times sidelined operator knowledge in order to ensure communities the chance to freely identify suspect areas and prioritize clearance. While communities and operators commonly reached the same conclusions regarding prioritization, there were instances of precious clearance resources being deployed on low threat land because 'that was the community priority'. Categorization of land along the proposed classifications will be integral in determining the allocation of demining resources to clearance tasks. The current national prioritization system will be revised to ensure that clearance occurs in priority on known mined areas polygons coming from the baseline survey (A Land). This will require modification of the 'MAPU Process' so that MAPUs are obliged to utilize the baseline survey results when working with communities. However, MAPUs will also manage a safeguard process that allows communities the opportunity to raise additional suspect areas that the baseline survey might not have picked up, or to request clearance on areas deemed by the baseline survey to be lower threat (B Land), should there be a compelling need for such clearance to occur. Such areas would go through a review process to decide if these areas would be included in current or future mine clearance plans. Eventually all land classified by the Baseline Survey as mined (A Land) or as presenting a residual threat (B Land) should be released following survey or clearance activities before RGC is in a position to declare completion of its Article 5 obligations.

Cambodia will refer to contaminated areas using the following criteria:

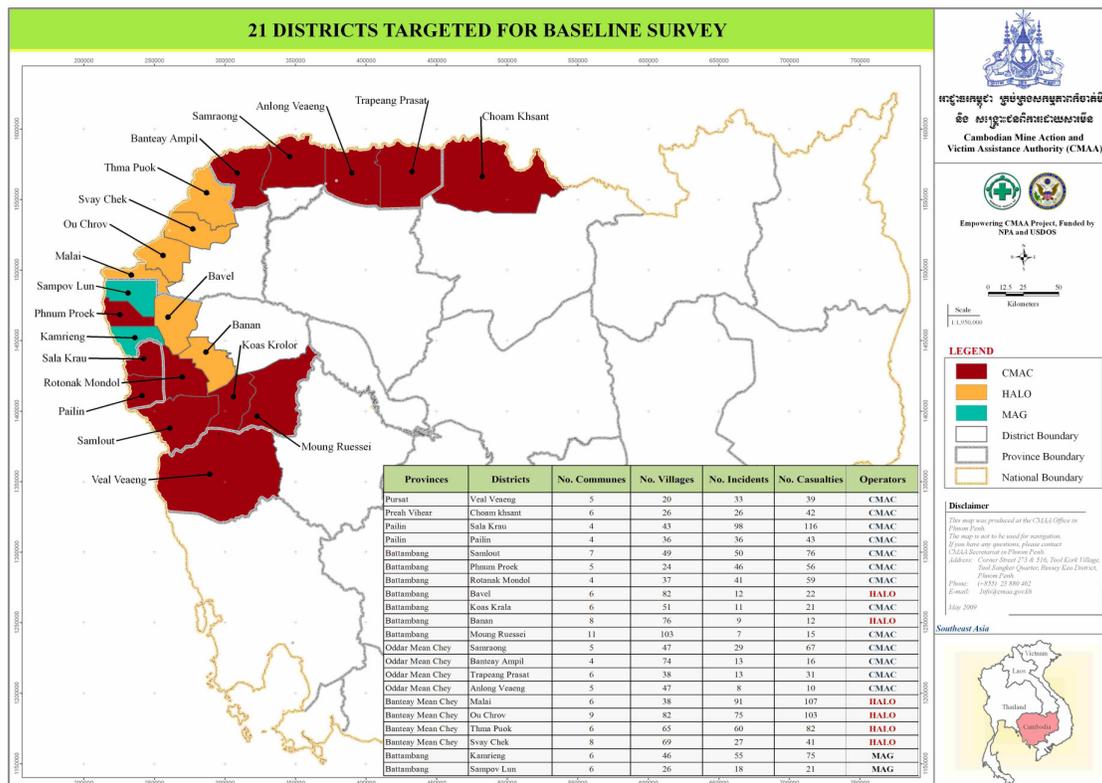
- Areas providing casualties or posing greatest potential for casualties;
- Areas impacting on local and national development;

- Remote Areas which are broadly defined as conservation areas and those locations where there are no people residing;
- Disputed areas on the border with that are dealt with under the directions of the Joint Border Commission. These areas will only be cleared on request of the Joint Border Commission.

Despite these priorities and in particular constraints posed by remote and disputed areas, referred to above, Cambodia has included all know contamination in these areas when estimating the remaining contamination in its extension request. The CMAA will continue to coordinate with relevant RGC ministries and institutions concerning the clearance of all areas as well as strengthening the prioritization mechanism based on village requirements. Cambodia has every intent to clear all known APM contaminated areas and shall priorities accordingly.

The baseline survey commenced in August 2009 as planned. The CMAA have recruited personnel for a Baseline Survey Unit, as part of the Regulation and Monitoring Department, and they will be responsible for the planning and coordination of the survey process. The Baseline Survey will record only mined or suspected areas and classify them accordingly into the various sub-categorization of A (Mined Areas) or B (Residual Threat) land. The Baseline Survey' results will supersede in the database the L1S and subsequent suspected hazard areas recorded through surveys activities and therefore Cambodia has decided not to record or document former L1S or suspected areas being superseded or cancelled by the Baseline Survey. Cambodia's Article 5 obligations apply for all areas containing or suspected to contain APM and classified as A or B land. Land classify as C or "End State Land" constitute reclaim, cleared or surveyed land with no evidence of mine contamination and therefore C areas are no longer considered as mined area. The Baseline Survey methodology will be utilized for any subsequent non technical survey activities conducted in Cambodia and is also an integral part of the land release methodology that is currently being developed.

Map 6: Baseline Survey 21 most affected districts



## **16. Amount of time requested and rationale for this amount of time**

The Kingdom of Cambodia is seeking a ten year extension, commencing January 2010 and concluding December 2019, on the basis that:

- Even though the remaining area requiring clearance cannot yet be accurately quantified, there is sufficient understanding of the remaining threat to suggest that Cambodia will require all of the ten year extension period to address its remaining AP landmine problem.
- In order to achieve full compliance, Cambodia will need to systematically address every suspect area identified through the L1S. However, the Royal Government of Cambodia is determined that this should proceed slowly and strategically and not occur at the expense of known clearance needs in higher priority areas where accidents still occur frequently.
- On the basis of CMAA's methodology to estimate the remaining challenge requiring clearance based on available survey and clearance data from all operators, and the productivity records across the 3 demining operators, it is estimated that at least 10 years are required for Cambodia to address its remaining challenge. The projection remains an assumption which will be further refined based on the results of the Baseline Survey.
- Sufficient funding will be allocated to clearance and other related operations

## **17. Detailed Workplan for the Extension period**

Detailed work planning is problematic at this point in time, however it is anticipated that the range of initiatives described above will quickly allow for a more precise and achievable workplan to be developed within the next twelve months. Furthermore, as additional and more accurate data become available on the extent of the remaining mine problem, Cambodia will revise its workplan accordingly and provide regular updates to the annual Meetings of States Parties. Moreover, as per Article 7 of the APMBT Cambodia will continue to report on its progresses towards achieving Article 5.

The CMAA has worked closely with all operators, integrating extensive experience and knowledge to develop a projection of the remaining contamination that is robust and sound. The projection will be used to inform planning and has served as a useful exercise to assist with the development of a National Mine Action Strategy and to assist in contributing to other national development instruments.

In order to meet the obligations under Article 5, Cambodia has considered the clearance of all known AP mined areas. The projection includes all known areas as at the submission date of this document.

In order to meet the obligations Cambodia has come up with the following activities that form an indicative workplan for the Extension Period:

1. Baseline Survey. The Baseline Survey is a 3 phase project. Phase 1 addresses the 21 most mine affected districts and shall be completed by December 2010. Phase 2 covers a further 40 districts and shall be completed by the end of 2011 with the third phase, in 2012, covering for the remaining districts in order to complete assessment of the remaining mine problem in the 122 affected districts recorded by the L1S. The Baseline Survey shall

provide an accurate status of the remaining contamination facing Cambodia and will classify remaining polygons according to the type and level of threat to assist with improving planning and prioritization. The BLS data shall supersede all previous contamination in the database. Initial results from the first month of the survey suggest that landmine contamination in impacted villages may be reduced by up to 40%. Detailed analysis of the BLS findings will assist with improving planning and prioritization nationally and updating workplans.

2. Land Release. While some operators have already started developing SOPs for the use of Land Release, the development of CMAS 15 on Land Release is defined as a critical activity to implement the workplan and will add onto the work commenced by the Baseline Survey. Land Release is defined by a progression from baseline survey to technical survey, followed by full clearance into targeted areas. The ultimate aim of land release is to convert mined or suspected land into an end state land implying that the land can safely be used. It is anticipated that the adoption of improved land release methodology will assist increasing productivity rates in Cambodia, targeting clearance assets into the most impacted areas and more efficiently release land to villages and other development initiatives.
3. National Mine Action Strategy (NMAS). The CMAA has initiated in mid-2009 the formulation of a sector wide National Mine Action Strategy in a consultative and participatory process. The NMAS will be finalized by the end of 2009 and will reflect the vision of the RGC by aligning itself to the goals of the National Strategic Development Plan as well Cambodia's international obligations such as the Anti-Personnel Mine Ban Treaty. The NMAS is a foundation document that provides a framework for the period 2010 – 2019 based on which to produce annual clearance workplans to reach the goals of the strategy.
4. Accreditation of the Royal Cambodian Armed Forces (RCAF). It is anticipated that this milestone will be achieved by the end of 2009. The accreditation of the RCAF for demining marks an important stage for future clearance efforts in Cambodia. The RCAF is a credible organization that is capable of achieving high clearance output that will assist Cambodia meet its obligations under the Treaty. The CMAA is currently working closely with the RCAF to assist them to achieve accreditation.
5. Improve Planning and Prioritization Mechanisms. The CMAA recognizes the need to improve and enhance the existing planning and prioritization system in Cambodia currently undertaken by the Mine Action Planning Unit (MAPU) and Provincial Mine Action Committee (PMAC). A CMAA working group has been formed to map and identify gaps in the existing planning system. The working group will identify areas for improving the coordination between the various actors involved in the decentralized planning system. Ultimately the working group shall develop a CMAS that will assist all operators and provincial authorities in the area of planning and prioritization. Using the findings of the BLS and improving understanding of land classification should help MAPU/ PMAC to better target mine clearance resources to those areas which are most in need. The Working Group will review existing policy documentation and systems in place to ensure that planning and prioritization is considered and regulated at the most appropriate levels.
6. Information management. Improving mine action information management in Cambodia is seen as an essential activity to provide accurate information to assist in understanding the landmine/ERW contamination problem in Cambodia as well as to support strategic planning and prioritization of demining activities. The CMAA will work on harmonizing information management across the sector, improving the quality of data and creating a comprehensive national mine action database covering all activities in the sector.

7. Annual Clearance Workplan. This is an annual activity that will aim to review progress and ensure that resources are being targeted onto the areas that have been identified through the planning process and that are the most in need. The BLS should provide improved information on size and type of contamination, which should in turn assist operators to forecast time and resources required on site with more accuracy. The annual clearance workplan will be used to monitor progress against the NMAS and the Extension Request.
8. Clearance. The mine action operators will cooperate during the extension period to ensure that the majority of their resources are dedicated to resolving the mine problem within the 21 most affected districts. It is recognized that this will require unprecedented coordination and cooperation across the Government, Operators, Donors and Development organizations.

Within these 21 focus districts, it is further proposed by CMAA and Operators that the overwhelming majority of clearance be focused on Classification A 'Mined Areas' – land that presents compelling evidence of protective, defensive, or denial mine laying patterns. However, prioritization of clearance within and across these 21 Districts will occur through the Provincial mine action planning process (PMAC/MAPU) that will allocate clearance assets according to needs. This process will be implemented by Provincial MAPU staff and Operators, and will require sign off from Provincial Mine Action Committees (PMAC). Capitalizing on the BLS data and working towards improved coordination will be the focus of the efforts of the Planning and Prioritization Working Group.

While the Baseline Survey will better defined perimeters of mined areas, areas captured through the Baseline Survey may be further reduced through enhanced land release methodologies such as technical survey. In developing the extension request, CMAA believes that a 2% increase in full clearance productivity is achievable annually. The planned increase in the use of mechanical machines, particularly in a survey role, is seen to be an important factor which will contribute to the release of suspected areas.

It is anticipated that the accreditation of the RCAF will make a significant increase on the productivity figures. As such accreditation of the RCAF is seen as a major priority for the CMAA.

Milestones for the period 2009-2012:

- End of 2009: NMAS finalized  
RCAF accredited  
CMAS Land Release completed  
38,627,620 sqm of full clearance  
BLS Phase 1 ongoing  
CMAS Planning and Prioritization completed  
Cambodia's 10 year Extension Request submitted
- End of 2010: BLS Phase 1 (21 districts) completed  
39,400,173 sqm of full clearance  
CMAS Land Release followed by operators  
2011 Annual Clearance Plan developed  
BLS progress updated provided to APMBT States Parties
- End of 2011: BLS Phase 2 (40 districts) completed  
40,188,176 sqm of full clearance  
2012 Annual Clearance Plan developed  
BLS progress updated provided to APMBT States Parties

End of 2012: BLS Phase 3 (61 districts) completed  
 40,991,940 sqm of full clearance  
 2013 Annual Clearance Plan developed  
 Extension Request Workplan revised

## 17.1 Budgetary Projections

Considering actual clearance rates with a productivity increase of 2% per year, it is anticipated that Cambodia will require USD 330 million to clear some 470 square kilometers of mine contaminated land over the next ten years. The table below provides the costs required to support the Extension Request.

Table 5: Clearance productivity rates and costs over the extension period

Years	Clearance Productivity (sq. meter)		Costs (USD)			
	Annual	Cumulative	BLS Annual (A)	Clearance Annual (B)	ER Request Annual A + B	ER Request Cumulative
2009	38,627,620		1,550,502	20,464,675	22,015,177	
2010	39,400,173	78,027,793	1,581,512	21,897,202	23,478,714	45,493,891
2011	40,188,176	118,215,969	1,613,142	23,430,006	25,043,148	70,537,039
2012	40,991,940	159,207,909	1,645,405	25,070,107	26,715,512	97,252,551
2013	41,811,778	201,019,687		26,825,014	26,825,014	124,077,565
2014	42,648,014	243,667,701		28,702,765	28,702,765	152,780,330
2015	43,500,974	287,168,676		30,711,959	30,711,959	183,492,289
2016	44,370,994	331,539,670		32,861,796	32,861,796	216,354,085
2017	45,258,414	376,798,083		35,162,122	35,162,122	251,516,207
2018	46,163,582	422,961,665		37,623,470	37,623,470	289,139,677
2019	47,086,854	<b>470,048,519</b>		40,257,113	40,257,113	<b>329,396,790</b>

Notes:

1. Cost includes CMAC 2010 cost projection as 2008 data not available at time of writing
2. Clearance costs include 2% inflation per year, 5% equipment costs and management element.
3. Clearance productivity rate includes 2% increase per annum. It is envisaged that some areas will be further reduced through the use of technical survey. However as Technical Survey productivity is historically unavailable, it is not included in this data.
4. Costs do not include national coordination mechanisms and other Programme components such as MRE, and Victim Assistance.

### Budget Required for the Extension Period (USD)

The Extension Request identifies that there are some 648.8 square kilometers of mine contaminated land that Cambodia will need to address. Based on the total amount requiring clearance and the projections it is anticipated that funding for Cambodia would need to increase by at least 125 million USD over the next 10 year period which is approximately 38% more than what is currently projected.

## 17.2 Assumptions and risk factors

- 1- As previously indicated, this workplan has been developed based on an extrapolation of all available data. The figure must be read considering that the BLS is underway and due to the limitations of the L1S it is likely to be significantly different, if not in total amount then in the location of suspected areas. The sector recognizes the huge benefit

of this projection as an attempt to quantify the remaining problem in Cambodia but also acknowledges the limitations of the methodology used. However, CMAA identifies that when more results become available over time, that the projection must be refined not only for the purposes of this extension request but also for other important national planning instruments.

- 2- Based on the projections and costs provided it is clear that the problem for Cambodia will go beyond 2019 if funding levels do not increase. With Cambodia's current economic situation, external funding will continue to play a crucial role in supporting mine action. Emerging and competing needs, not just locally but globally, will make it very challenging for Cambodia's mine action sector to maintain the current capacities.
- 3- Cambodia has benefited from many research and development initiatives that considerably enhanced the pace and quality of the demining work undertaken. Innovative technologies and methodologies such as refine survey methodologies and demining equipment will be essential for Cambodia to address quickly and efficiently its remaining problem.
- 4- Continued border tensions may affect Cambodia's full ability to meet the obligation of the convention as demarcation and subsequent demining of the border is dependent on Joint Border Commission decisions.
- 5- Regional or national political instability, natural disasters, global, regional or national financial crisis are all factors that may impede Cambodia's ability to meet its obligations under that period.
- 6- It is also assumed that current partnerships with international and national organizations, NGOs and development agencies will continue and expand in order to support Cambodia during the Extension Period with financial and in-kind resources, sharing of knowledge, experience and expertise.

## **18. Institutional, human resource and material capacity available**

Cambodia is considered as a mature, and one of the longest running mine action programmes in the world. During the 16 years of operations, national institutions have been established (CMAA, CMAC) and rendered operational. Demining and other related works have been performed efficiently and the overall intervention can be considered effective. The success of Cambodian mine action services can be seen in the drastic reduction of casualties, the sustained commitment among stakeholders and the RGC, the participation and ownership by the affected communities and the consistent support of generous donors. Internationally, mine action in Cambodia is well regarded and seen as one of the leading examples globally. Despite these above attributes, there is still much to be developed and enhanced.

### Structures:

At the national level, the establishment of CMAA as the Cambodian coordination and regulatory body, and the continued presence of implementing bodies such as CMAC, RCAF and Police, national institutions are in place to support the implementation of the Extension Request. Furthermore, recognizing the contribution of international operators in the past, their continued support in achieving Cambodia's demining objectives under the CMAA framework over the extension period is critical.

### Coordination:

Mine action coordination in Cambodia is one of the most mature developments globally. As stated earlier CMAA was established as the National Authority with the mandate to regulate, manage, oversee and coordinate all mine action activities in Cambodia. Accordingly, the CMAA has developed standards and procedures, prepared national strategies and plans, coordinated and monitored mine action activities, managed information, licensed operators, coordinated with donors, development agencies and government bodies. It performs also an important role as the sector focal point for coordination of mine action in Cambodia in line with national strategic development plan and aid effectiveness agenda through coordination bodies such as the Mine Action Technical Working Group, the Mine Action Coordination Committee, and various Technical Reference Groups.

### Aid effectiveness – TWG and CDC:

The Council for the Development of Cambodia (CDC) can serve as one of the best models for aid coordination and plays a very important role in aid coordination efforts with the donors. The CDC has established a number of Technical Working Groups (TWG), one of which is the Technical Working Group for Mine Action, chaired by the Vice President of the CMAA. This TWG serves as a mean to carry political and technical dialogues between the Government and development partners (donors) with the purpose to create a common understanding on key issues related to mine action, increase transparency and accountability in the delivery of aid, and align donor's aid strategies to the sector's priorities. These mechanisms are essential elements of the Royal Government of Cambodia's effort to achieve effectiveness and efficiency in managing and implementing mine action programmes.

### Prioritization:

Cambodia has developed one of most mature prioritization processes among mine clearance programmes in the world. This prioritization process has been innovative in ensuring communities' involvement in defining clearance priorities thereby further strengthening community-based participatory mechanisms. The system has evolved throughout the years of development and has been taken as good model by many mine action programmes.

The 'MAPU process' is an innovative mechanism that facilitates an additional level of engagement with communities (to those put in place by the Operators) that allows for Government authorities to register the broad location of affected areas, as well as be aware of community preferences in terms of how best to prioritize where clearance should next occur. Since 2001, another innovative programme has been implemented by CMAC called Community-Based Mine Risk Reduction (CBMRR).

As stated earlier, the CMAA through a dedicated working group is currently reviewing the current planning process in order to align it with the most recent developments of the sector such as the Baseline Survey, the NMAS and the Extension Request with the aim of targeting a major part of clearance resources to the most mine affected districts.

### Mine Clearance Operators and Partners:

Cambodia has both national and international non-governmental organizations conducting mine clearance. These organizations must be accredited by CMAA in order to operate in Cambodia. Key operators involved in mine clearance include: CMAC, MAG, Halo Trust and the RCAF - which is yet to be accredited. The National Police also plays a key role in mine risk education, information collection and dissemination, and law enforcement. The sustainability

and strengthening of the national operators in particular will be need careful consideration over the period of the extension request.

In addition to these, Cambodia has a number of other mine clearance and development partners. UNDP has an important role with providing support to the CMAA as well as providing project management for a key clearance project with CMAC. JMAS, NPA, HI-B, GICHD all maintain a strong presence in Cambodia and in particular play an important role in assisting the operators to improve mine clearance effectiveness and efficiency. Furthermore, Cambodia plays a role in Research & Development for the mine action community by conducting numerous trials and pilots. UNICEF is supporting the Mine Risk Education department of the CMAA as well as MRE activities throughout the country.

The Cambodia Red Cross plays a key role in collecting, updating, managing and disseminating mine/ERW casualty information, with its independent and comprehensive CMVIS database. This CMVIS information mechanism again serves a good model for other countries to follow, having the mine/ERW casualty database managed by an independent body.

#### *Human Resources and Equipment:*

Over the past 16 years, Cambodia has trained and produced some of the most experienced deminers, surveyors, dog handlers and machine operators in the world and has built up one of most capable local demining management staff. Productivity figures used in this extension request demonstrate that it is essential that existing deminer levels are maintained throughout the national and international organizations. Fortunately a lot of equipment has been provided over the years and the provision of operating cost for the machines in particular will be very important in increasing productivity through vegetation cutting and the application of land release methodologies. Ongoing maintenance, combined with strong fleet management in areas such as equipment life cycle will need to be a focus in order to provide the required equipment to support operations.

It is anticipated that with the accreditation of the RCAF that this will provide a valuable injection of human resource and equipments to assist Cambodia in reaching its obligations. Once the data and activities of the RCAF are clarified it is likely that the productivity figures per year may increase by up to 30%.

**Operators' Demining Progress Report (1992-2008)**

<b>Year</b>	<b>Clearance Results</b>	<b>CMAC</b>	<b>RCAF</b>	<b>MAG</b>	<b>HALO</b>	<b>Total</b>
1992-2000	Area (Sqm)	81,104,062	36,373,778	4,257,143	10,846,031	132,581,014
	AP Mines	121,426	126,287	8,990	13,494	270,197
	AT Mines	2,324	7,358	76	294	10,052
	UXO	577,106	18,019	25,687	15,014	635,826
	Fragments	232,511,193		553,736		233,064,929
2001	Area (Sqm)	9,637,455	6,482,357	1,400,149	4,351,105	21,871,066
	AP Mines	16,916	2,581	4,898	4,688	29,083
	AT Mines	465	15	37	142	659
	UXO	77,034	4,060	10,816	6,083	97,993
	Fragments	14,069,870		1,075,445		15,145,315
2002	Area (Sqm)	11,582,239	17,118,994	1,766,740	4,209,121	34,677,094
	AP Mines	32,688	1,935	1,870	4,513	41,006
	AT Mines	493	266	50	125	934
	UXO	61,840	3,680	5,882	8,362	79,764
	Fragments	19,767,069		2,041,402		21,808,471
2003	Area (Sqm)	9,708,686	24,777,104	2,619,740	4,987,007	42,092,537
	AP Mines	22,160	25,841	4,790	8,550	61,341
	AT Mines	504	307	44	222	1,077
	UXO	76,671	21,094	4,965	18,742	121,472
	Fragments	21,032,570	42,127	3,773,493		24,848,190
2004	Area (Sqm)	11,157,336	13,129,136	2,039,495	5,681,040	32,007,007
	AP Mines	43,635	1,133	6,688	20,085	71,541
	AT Mines	936	161	58	588	1,743
	UXO	106,360	12,729	16,391	18,573	154,053
	Fragments	20,804,831	20,485	4,498,369		25,323,685
2005	Area (Sqm)	22,086,486	9,744,500	3,149,018	5,673,070	40,653,074
	AP Mines	74,165	234	4,046	38,450	116,895
	AT Mines	851	52	61	611	1,575
	UXO	128,865	9,182	17,375	27,293	182,715
	Fragments	23,866,907	23,089	3,593,224		27,483,220
2006	Area (Sqm)	26,772,625	16,538,990	3,784,202	4,793,907	51,889,724
	AP Mines	35,745	1,528	4,531	34,395	76,199
	AT Mines	1,000	139	37	210	1,386
	UXO	113,296	9,870	18,963	17,190	159,319
	Fragments	26,109,554	13,676	4,978,028		31,101,258
2007	Area (Sqm)	27,666,058	18,972,472	4,172,748	4,548,243	55,359,521
	AP Mines	32,245	219	7,054	38,917	78,435
	AT Mines	587	2	103	123	815
	UXO	114,755	11,712	20,425	10,753	157,645
	Fragments	24,732,667	21,254	3,565,267		28,319,188
2008	Area (Sqm)	27,653,389	27,503,551	3,244,121	6,972,706	65,373,767
	AP Mines	25,543	1,878	4,538	37,542	69,501
	AT Mines	497	37	119	215	868
	UXO	114,101	9,822	19,813	8,308	152,044
	Fragments	19,874,891	162,455	3,119,635		23,156,981
Until July 2009	Area (Sqm)	20,818,812	7,289,249	2,103,850	4,311,716	34,523,627
	AP Mines	12,655	1,250	4,925	10,345	29,175
	AT Mines	419	1	80	129	629
	UXO	83,500	4,288	14,216	4,709	106,713
	Fragments	9,059,629	5,938			9,065,567

Annex 2

Summary of clearance progress

2001 - July 2009	<b>Clearance Results</b>	<b>CMAC</b>	<b>RFAC</b>	<b>MAG</b>	<b>HALO</b>	<b>Grand Total</b>
	Areas m2	167,083,086	141,556,353	24,280,063	45,527,915	378,447,417
AP Mines	295,752	36,599	43,340	197,485	573,176	
AT Mines	5,752	980	589	2,365	9,686	
UXO	876,422	86,437	128,846	120,013	1,211,718	

1992 - July 2009	<b>Clearance Results</b>	<b>CMAC</b>	<b>RFAC</b>	<b>MAG</b>	<b>HALO</b>	<b>Grand Total</b>
	Area m2	248,187,148	177,930,131	28,537,206	56,373,946	511,028,431
AP Mines	417,178	162,886	52,330	210,979	843,373	
AT Mines	8,076	8,338	665	2,659	19,738	
UXO	1,453,528	104,456	154,533	135,027	1,847,544	

## Annex 3

**Districts that accounted for 92% of the mine casualties  
In the country in the past 5 years (2004-2008)**

<b>No.</b>	<b>Most Mine Affected Districts</b>	<b>Province</b>	<b>No. of Accidents</b>	<b>No. of Casualties</b>	<b>No. of Village in District</b>
1	Sala Krau	Krong Pailin	98	116	43
2	Malai	Banteay Meanchey	91	107	38
3	Ou Chrov	Banteay Meanchey	75	103	82
4	Thma Puok	Banteay Meanchey	60	82	65
5	Kamrieng	Battambang	55	75	46
6	Samlout	Battambang	50	76	49
7	Phnum Proek	Battambang	46	56	24
8	Rotanak Mondol	Battambang	41	59	37
9	Pailin	Krong Pailin	36	43	36
10	Veal Veang	Pursat	33	39	20
11	Samraong	Otdar Meanchey	29	67	47
12	Svay Chek	Banteay Meanchey	27	41	69
13	Choam Khsant	Preah Vihear	26	42	26
14	Sampov Lun	Battambang	18	21	26
15	Banteay Ampil	Otdar Meanchey	13	16	74
16	Trapeang Prasat	Otdar Meanchey	13	31	38
17	Bavel	Battambang	12	22	82
18	Koas Krala	Battambang	11	21	51
19	Banan	Battambang	9	12	76
21	Moung Ruessei	Battambang	7	15	103
<b>Total</b>			<b>750</b>	<b>1,044</b>	<b>1,032</b>

Annex 4: Land Classification Table

CLASSIFICATION		SUB-CLASSIFICATION	Art.5	SUB-CLASSIFICATION DETAILS	REMARKS
<b>A (Mined Area)</b> Land that presents evidence of mines.	<b>A1</b>	Land containing dense concentration of AP mines	Yes	Strategically located, logical patterns of protective, defensive or denial mine laying such as mine belts, mines along road alignment, borders, military bases, and other infrastructures.	Deployment of humanitarian clearance resources should be concentrated on A1- A4 land provided it addresses community priorities.
	<b>A2</b>	Land containing mixed AP and AT mines	Yes		
	<b>A3</b>	Land containing AT mines	No	In-use or abandoned route alignment presenting threat of AT mines, regardless of density and regardless of presence or absence of AP mines.	All polygons should be further investigated to delineate the perimeter of the mined area before deployment of full humanitarian clearance assets.
	<b>A4</b>	Land containing scattered or nuisance presence of AP mines	Yes	Land that is not in productive use with limited presence of AP mines laid in a non-defined manner.	
<b>B (Residual Threat Land)</b> Land that presents evidence of ERW or an indeterminate presence of mines.	<b>B1</b>	Land containing ERW (not including mines)	No	Battle areas containing ERW. These areas are suitable for BAC.	Allocation of clearance assets on B land should be limited to those where there is a community requirement.
	<b>B2</b>	Land with no verifiable mine threat	Yes	Previously suspected land that local population is continuously putting back into productive use. No accidents or evidence of mines for a period of 3 years will result in reclassification as C1.	
<b>C (End State Land)</b> Land that presents no obvious threat.	<b>C1</b>	Reclaimed Land	No	Previously suspected land that has been put back into productive use without accident or evidence of mine in the past 3 years as per Cambodia Area Reduction Policy.	Deployment of humanitarian demining assets on this land should not be considered.
	<b>C2</b>	Land Released through Survey (BLS/TS)	No	Previously mined or suspected land where as a result of approved survey methodology no obvious threat remains.	
	<b>C3</b>	Cleared Land	No	Land formally cleared by accredited mine clearance operators adhering to the national standards (CMAS).	
	<b>C4</b>	Unmined Land	No	Land with no indication from local communities or previous survey to contain any mine threat.	

Annex 5: List of Cambodian Mine Action Standards (CMAS)

<b>CMAS ID</b>	<b>CMAS Title</b>	<b>Status</b>
CMAS-01	Application of CMAS	Approved
CMAS-02	Accreditation of Demining Organization and Licensing of operation	Approved
CMAS-03	Monitoring of Demining Organization	Approved
CMAS-04	The Storage, Transportation and Handling of Explosive	Approved
CMAS-05	Reporting and Investigation of Demining Incident	Approved
CMAS-06	Clearance Requirement of Demining	Approved
CMAS-07	Clearance Requirements of ERW	Approved
CMAS-08	Explosive Ordnance Disposal (EOD)	Approved
CMAS-09	Safety and Occupational Health-General Requirements	Approved
CMAS-10	Safety and Occupational Health-Demining Worksite Safety	Approved
CMAS-11	Personal Protective Equipment-PPE	Approved
CMAS-12	Mechanical Demining	Finalized
CMAS-13	Marking Mine & ERW Hazards	Provisionally approved
CMAS-14	Baseline Survey	Provisionally approved
CMAS-15	Land Release	Drafted
CMAS-16	Sampling	Drafted
CMAS-17	Guide for the Use of MDD	Drafted
CMAS-18	Operational Procedure of MDD	Drafted
CMAS-19	Environmental Management During Mine and ERW Clearance Operations	Drafted
CMAS-20	Guide for the Management of Demining Operations	Drafted
CMAS-21	Post Clearance Documentation	Drafted
CMAS-22	The Procurement Process	Drafted
CMAS-23	Guide to research of Mine Action Technology	Drafted
CMAS-24	Test and Evaluation	Drafted
CMAS-25	Information Management	Drafted
CMAS-26	Management of Training	Drafted
CMAS-27	Safety & Occupational Health-Medical Support to Demining & ERW Operations	Drafted
CMAS-28	Communication	Drafted
CMAS-29	Evaluation of MRE Program	Drafted