



KINGDOM OF CAMBODIA



CAMBODIAN MINE ACTION CENTRE

# ANNUAL REPORT 2010



**Saving Lives and Supporting Development for Cambodia**

## DEDICATION

This report is dedicated to all deminers who work tirelessly in hostile conditions, distant from homes and relatives to bring safety and security to the people of Cambodia. We are profoundly grateful for their tremendous efforts and commitment to this life saving task, beyond their call of duty.

We pay tribute to deminers who have courageously given their lives and lost health for such a noble and important cause. Their courage and sacrifice for the safety of others will be eternally remembered.

We especially pay our respect to all victims of landmines, both here in Cambodia and across the world.

May they know that they will never be forgotten.

We promise to continue our work to bring safety to Cambodia and provide it with the opportunity for growth and prosperity.



## FOREWORD

It is my pleasure to present to you the 2010 Annual Report of the Cambodian Mine Action Centre (CMAC). CMAC is Cambodia's national demining body, mandated by royal decree to rid our nation of its most deadly enemy – landmines and UXO. By removing landmines and UXO from Cambodia's provinces, we are not only making our country a safe place to live, work and play, but we are contributing to the development of our country, working to once again bring about economic growth and prosperity; and above all bring peace to our embattled nation.

2010 marked the beginning of a new phase in Cambodia's mine action history. In December 2009, Cambodia was granted a 10 year extension to the requirement set by the Anti-personnel Mine Ban Convention (The Ottawa Convention) that all anti-personnel mines were removed by 2009. Like many other heavily contaminated countries, this original ten year timeframe was simply not long enough.

In 2010, the Royal Government of Cambodia reconfirmed its commitment to mine action, and to fulfilling its obligations to the Anti-personnel Mine Ban Convention, by developing the National Mine Action Strategy (NMAS) 2010-2019. CMAC played a major role in helping the government shape the future of mine action here in Cambodia and we look forward to seeing these plans come to life.

2010 was a mixed year for mine action. On one hand, Mine and UXO accidents rose dramatically compared to the previous year. In 2009, 244 people were killed or injured by mines or UXO. In 2010 this rose to 286. For us here at CMAC, any number of mine victims above zero is unacceptable. To counter this, we have redoubled our efforts in mine risk education and reduction, creating an entirely new department, the Department of Mine Risk Education, Victim Assistance and Post Clearance Development. This department will focus on providing risk reduction education to communities and support for victims, as well as innovative activities in newly cleared areas to support the long term development of rural communities.

On the other hand, 2010 also witnessed some great achievements. CMAC planned to clear mine fields totaling 28,000,000m<sup>2</sup> and former battlefields totaling 7,000,000m<sup>2</sup> in 2010. The final clearance figures were significantly larger, with 33,044,822m<sup>2</sup> of minefields and 33,811,926m<sup>2</sup> of former battlefields cleared by the close of the 2010 working year. CMAC also completed its allocated portion of the National Baseline Survey, well ahead of schedule, and stands ready to move on to the next phase of national cooperation. Innovation remains a priority for CMAC and in 2010 CMAC successfully trialed the groundbreaking Land Release methodology, paving the way for more efficient clearance programs in 2011.

Internationally, funding for mine action remains scarce as we compete with issues of equal importance such as climate change, disaster response and global poverty reduction. However CMAC is lucky to maintain excellent partnerships with our donors and partners, who continue to support our work and inspire us with their commitment to mine action in Cambodia.

Our most sincere thank goes to the Royal Government of Cambodia, for continuing to prioritise mine action in Cambodia and for their ongoing support of CMAC's programs. We would also like to thank our donors and partners for their unwavering support of mine action in Cambodia. Your assistance is integral to the task of rebuilding a mine free Cambodia.

In this report, you will see the key activities delivered by CMAC during the year 2010. Our activities range from the delivery of large scale mine clearance to grass roots community education activities, international training programs and cutting edge research. All of these activities play a vital role in moving Cambodia forward to a new era of safety and prosperity.

As we look to the future, to these next ten years of mine action in Cambodia, CMAC remains committed, as always, to our mission of saving lives and supporting development for Cambodia.

H.E. Heng Ratana  
Director General  
Cambodian Mine Action Centre

## ABOUT CMAC

The Cambodian Mine Action Centre (CMAC) is Cambodia's leading demining organization, working in the key areas of Survey and Land Release, Mine and UXO Clearance, Mine and UXO Risk Education and Training, Research and Development. CMAC currently has 2300 staff across Cambodia, including a national office in Phnom Penh, six provincial demining units and a Training Centre in Kampong Chhnang, working towards the mission of 'Saving lives and Supporting Development in Cambodia'

CMAC was established during the United Nations Transitional Authority in Cambodia (UNTAC) in 1993, in order to assist the safe return of thousands of refugees to their homelands across the country. Recognizing that the large number of landmines and UXO across Cambodia was a significant threat to post conflict reconstruction and continuing development, CMAC became an autonomous national organization in 2000 and developed a series of programs including landmine awareness, landmine field information, landmine and UXO clearance and training in landmine clearance to achieve the safe transition to peace and security for the people of Cambodia.

Name: Cambodian Mine Action Centre (CMAC)

Established: 2000

HQ: Phnom Penh

Training Centre and Central Warehouse: Kampong Chhnang

Demining Units: Banteay Meanchey, Battambang, Pailin/Preah Vihear, Siem Reap (including Kampong Thom & Preah Vihear), Kampong Cham and Siem Reap (including Oddar Meanchey & Preah Vihear)

Central Workshop: Battambang

Number of staff: 2300

Area cleared to date: 331 410 240m<sup>2</sup>

Number of AP & AT mines cleared to date: 450 003

Number of UXO cleared to date: 1, 637 857

About Cambodia:

Official name: The Kingdom of Cambodia

Size: 181,035 sq km \*

Population: 14,753,320 \*

Estimated total area of current landmine/UXO contamination: 1,019,834,934m<sup>2</sup>

Total area cleared to date (all operators): 639 622 074m<sup>2</sup>

Total number of landmines cleared to date (all operators): 923 272

Total number of UXO cleared to date (all operators): 2 063 175

Total number of landmine related casualties: 50368

Total number of UXO related casualties: 13475

International Conventions: Anti-Personnel Mine Ban Convention, Convention on the Rights of Persons with Disabilities, Convention on the Rights of the Child

\*CIA World Factbook 2010.



# TABLE OF CONTENTS

<b>CMAC Dedication</b>	
<b>FOREWORD</b> .....	i
<b>About CMAC</b> .....	ii
<b>Table of Contents</b> .....	iii
<b>GLOSSARY</b> .....	iv
<b>1. 2010 OVERVIEW</b> .....	1
<b>2. BACKGROUND</b> .....	4
<b>3. STRATEGIC CONTEXT</b> .....	2
3.1 Article 5 ExtensiRequest .....	2
3.2 National Strategy for Mine Action 2010-2019 .....	3
<b>4. OPERATIONAL AREAS</b> .....	4
4.1 DEPARTMENT OF OPERATIONS AND PLANNING .....	4
4.1.1 MINE FIELD/UXO CLEARANCE .....	5
4.1.2 LAND RELEASE (LR) .....	9
4.1.3 BASELINE SURVEY .....	9
4.1.4 MINE/UXO DETECTION DOG (MDD/EDD).....	11
4.1.5 SOCIO-ECONOMIC BENEFIT AND BENEFICIARY .....	12
4.1.6 RISK MANAGEMENT .....	16
<b>4.2 MINE RISK EDUCATION, VICTIM ASSISTANCE &amp; POST CLEARANCE DEVELOPMENT</b> .....	16
4.2.1 MINE RISK EDUCATION .....	17
4.2.2 VICTIM ASSISTANCE .....	17
4.2.3 POST CLEARANCE DEVELOPMENT .....	18
<b>4.3 TRAINING, RESEARCH AND DEVELOPMENT</b> .....	19
4.3.1 TRAINING.....	21
4.3.2 RESEARCH AND DEVELOPMENT.....	22
<b>5. SUPPORT AREAS</b> .....	19
5.1 FINANCE.....	21
5.2 LOGISTICS SUPPORT AND HUMAN RESOURCES MANAGEMENT.....	22
5.3 QUALITY ASSURANCE .....	21
5.4 PUBLIC AFFAIRS AND COMMUNICATIONS.....	22
<b>6. CROSS CUTTING ISSUES</b> .....	19
6.1 GENDER.....	21
6.2 HIV/AIDS .....	21
6.3 ENVIRONMENT .....	21
<b>7. FUTURE PLANS</b> .....	19
SPECIAL THANKS TO THE FOLLOWING DONORS AND PARTNERS.....	19
APPENDICES.....	29
Appendix I: CMAC 2010 operational progress report summary	
Appendix II: Current Deployment Map	
Appendix III: Projects implemented in 2010	
Appendix IV: Photo Galleries	

# GLOSSARY

2IC	Second in Command
ALIS	Advanced Landmine Imaging System
AP Mine	Anti Personnel Mine
APMBC	Anti Personnel Mine Ban Convention (Ottawa Convention)
AT Mine	Anti Tank Mine
AXO	Abandoned Explosive Ordnance
BAC	Battle Area Clearance
BAT	Battle Area Clearance team
BAV	Battle Area Clearance by Village team (pro-active BAC)
BC	Brush Cutters and other clearance machines
BLS	Baseline Survey
BLS-FS	Baseline Survey – Field Supervisor
CBAT	Community-Based Battle Area Clearance Team
CBD	Community-Based Demining Platoon
CBMRR	Community Based Mine Risk Reduction
CBURR	Community Based UXO Risk Reduction
CCM	Convention on Cluster Munitions
CDPO	Cambodian Disabled People's Organisation
CL	Community Liaisons
CMAA	Cambodian Mine Action and Victim Assistance Authority
CMAC	Cambodian Mine Action Centre
CMAS	Cambodian Mine Action Standards
CMC	Community Mine Clearance
CMDG	Cambodia's Millennium Development Goals
CMVIS	Cambodian Mine Victim Information System
CPF	Counterpart Fund
DFP	District Focal Point
DM	Demining Machine
DU	CMAC Demining Units
EC	European Commission
ECOSORN	Economic and Social Re-Launch Of Northwest Provinces In Cambodia
EDD	Explosive Detection Dog
EOD	Explosive Ordnance Disposal
ERC	Explosive Remnants of War Clearance Teams
ERI	Explosive Remnants of War Intervention Teams
ERW	Explosive Remnants of War
FATS	Fixed Asset Tracking System
GEJ	Good Earth Japan
GICHD	Geneva International Centre for Humanitarian Demining
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HALO	Hazardous Areas Life-Support Organisation (HALO Trust)
HI-B	Handicap International – Belgium
HQ	Headquarters
HSTAMIDS	Handheld Standoff Mine Detection System
ICP	Integrated Clearance Mobile Platoon
IDPs	Internally Displaced People
IED	Improvised Explosive Device
IMAS	International Mine Action Standards
IMP	Integrated Multi-task Platoon
ITEP	International Test and Evaluation Program for Humanitarian Demining

IWP	Integrated Work Plan
JICA	Japan International Corporation Agency
JICS	Japan international Cooperation System
JMAS	Japan Mine Action Service
L1S	National Level One Survey
LLD	Long Leash Dog
LR	Land Release
MA	Mine Action
MAG	Mines Advisory Group
MAPU	Mine Action Planning Unit
MDD	Mine Detection Dog/Short Leash Dog
MDG	Millennium Development Goals
MF	Minefield
MoEYS	Ministry for Education Youth and Sport
MP	Mobile Platoon
MRE	Mine Risk Education
MRE-VA-PCD	Department of Mine Risk Education, Victim Assistance and Post Clearance Development
MUC	Mine and UXO Committee
NGO	Non-Governmental Organization
NMAS	National Mine Action Standards
NPA	Norwegian People's Aid
NTS	Non-Technical Survey
PAICMA	Programa Presidencial para la Accion Integral Contra Minas Antipersonal
PC	Provincial Coordinator
PDRD	Provincial Department of Rural Development
PLA	Participatory Learning and Action
PMAC	Provincial Mine Action Committee
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
RCAF	Royal Cambodian Armed Forces
RFP	Request for Proposal
RGC	Royal Government of Cambodia
SHA	Suspected Hazard Areas
SLD	Short Leash Mine Detection Dog or see MDD/SLD
SOP	Standards Operating Procedures
SOS	Spirit of Soccer
SSA	Short Service Agreement
SVC	Safety Village Construction
TC	Training Centre
TMO	Training and Monitoring Officer
TOR	Terms of Reference
TOT	Training of Trainer
TS	Technical Survey
TSC	Technical Survey for Clearance team
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
UNTAC	United Nations Transitional Authority in Cambodia
URSMD	UXO Risk Reduction through Scrap Metal Dealers
UXO	Unexploded Ordnance
WB	World Bank



# 1. 2010 OVERVIEW

CMAC's activities for the 12 months ranged from the delivery of large scale mine clearance to grass roots community education activities, international training programs and cutting edge research.

The year commenced with CMAC's involvement in celebrating National Mine Awareness Day on 24 February 2010. The 2010 National Mine Awareness Day was organized by CMAA and supported by other mine risk education operators, including the Ministry of Education, Youth and Sport.



## Operations

CMAC field operations saw successful integration of many types of demining tools, ranging from mobile platoons, Mine

Detection Dog teams to demining / brush cutter machines, in order to increase productivity.

Direct operations on the ground resulted in removal of mine/UXO threats and freeing up of land for productive use, for example, the release of 33,044,822 sq m of land through full clearance, Technical Survey and Non-Technical Survey, the release of ERW field totaling 33,811,926 sq m through full clearance, Technical Survey and Non-Technical Survey, as well as the location and destruction of 18,473 Anti Personnel mines and 402 Anti Tank Mines.

## Mine Risk Education

The year also saw the establishment of Department of Mine Risk Education, Victim Assistance and Post Clearance Development, to have particular focus on providing risk reduction education to communities and support for victims, as well as innovative activities in newly cleared areas to support the long term development of rural communities.





CMAC's Mine Risk Education team conducted consultations for behavior change through 65,614 household/field (working sites) visits and mine risk education presentations to groups of people at risk, including children at school and out-of-school, with a focus on danger avoidance and reporting channels for mine and UXO disposal. On average 1,030 villages were visited each month in 2010, 438,417 people received mine risk education, of which 37% were children, approximately 33% men and 30% women.

## Knowledge Exchange



In 2010, CMAC exchanged knowledge with its regional and international friends and partners. With generous funding support from the Government of Japan, through Japanese International Cooperation Agency (JICA), CMAC provided 30 delegates received training in mine risk education, victim assistance and post clearance development to representatives of Colombia's national demining program, the Programa Presidencial para la Accion Integral contra Minas Anti-personal (PAICMA).

Delegations from Sri Lanka, Eritrea, Laos, Vietnam and Thailand also visited Cambodia to observe several MRE project sites, including the multi-skilled Mine Risk Education and Reduction teams and the Community-Based Mine Risk Reduction Program.

## Training



CMAC continued to place emphasis on training staff so they have capacity to do the job effectively and safely. During the year, the CMAC Training Centre offered 60 training courses. There were 1,684 participants, including 1,081 CMAC staff, 602 external trainees and 120 mine detection dogs.

## Research

In terms of trialing new methodologies, a successful trial of Land Release concept on a trial site was completed. As a result of the trial, the land was released to the community. CMAC now makes an effort to integrate the new methodology of Land Release on its clearance tasks identified in its Integrated Work Plan and also on clearance tasks along the Cambodia – Thai border in areas where the RGC has proposed for 15 new villages to accommodate poor and landless people.





## 2. BACKGROUND

Over 30 years of international and internal conflicts has left 4-6 million landmines and 2.7 million tons of bombs scattered across Cambodia. From landmines laid during the Khmer Rouge regime to bombs dropped during the Vietnam War, it is estimated that over 4,544 square kilometers of land has been contaminated with landmines or explosive remnants of war (ERW), leaving Cambodia one of the most heavily mined countries in the world.

The nature of landmine and ERW contamination in Cambodia is highly complex, both with their own unique challenges. The most heavily mine affected area is the Cambodian-Thai border region, known as K-5 mine belt, where millions of landmines were laid in the 1980s. 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.



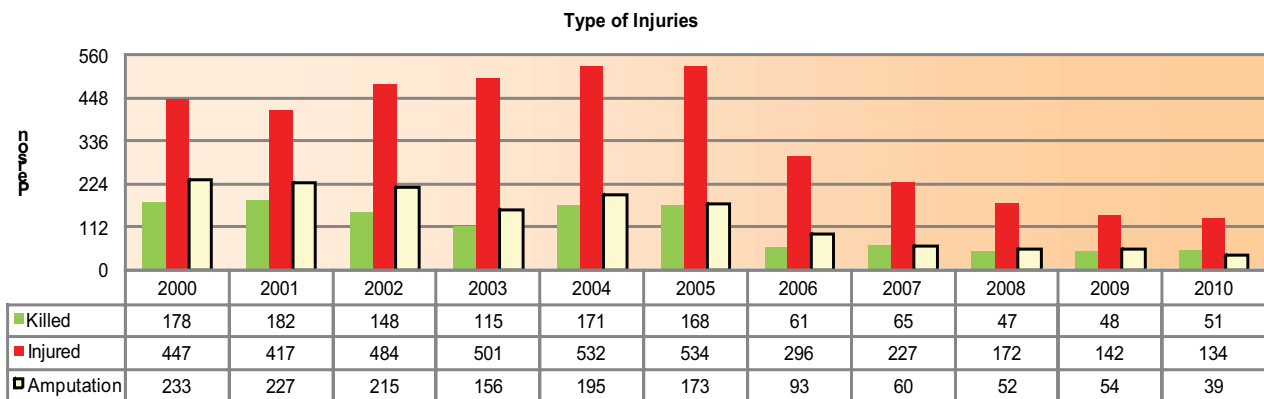
The majority of known ERW contamination (including unexploded ordnance (UXO) such as cluster munitions) in Cambodia is located in the eastern regions bordering Vietnam and Laos and is the result of conflict during several distinct periods. From the mid 1960s until 1976, the south, central and north-east provinces were heavily hit by US, South Vietnamese and Cambodian air forces attempting to cut North Vietnamese supply routes to South Vietnam. Following these campaigns, the Khmer Rouge increased their offensive against the Lon Nol Government in Phnom Penh, which included an extensive aerial bombardment campaign in response until April, 1975. In 1979, Hanoi launched a major offensive in response to Khmer Rouge incursions into Vietnam and the unfolding humanitarian crisis. This pushed the Khmer Rouge to the northwest region of Cambodia where they continued to resist until 1998.





According to the Cambodia Mine/UXO Victim Information System (CMVIS), a database of information pertaining to Mine/UXO casualties within the country, over 63,000 people have been killed or injured by landmines and UXO. Increased mine risk education throughout Cambodia saw annual casualty figures decrease significantly from the mid 2000's, but while this drop in casualties is a positive sign, indicative of the dedication of the many stakeholders involved in the mine action (MA) sector, the number of casualties caused by landmines and UXO in Cambodia remains very high.

Figure 1: Type of injuries (CMVIS, 2010)



Landmines and ERW are one of the main obstacles to development in Cambodia. Not only do they continue to kill and maim with disproportional prejudice against the poorest and most vulnerable of the population but their presence acts as a physical and psychological barrier restricting access to essential facilities such as water sources, roads, bridges, schools, and agricultural land thus perpetuating the poverty cycle. As such, the socio-economic impact of landmines in Cambodia is far reaching, particularly in the north and northwest where severe contamination complicated by a large internal migration has greatly hindered economic development.

CMAC was established during the United Nations Transitional Authority in Cambodia (UNTAC) in 1993, in order to assist the safe return of thousands of refugees to their homelands across the country. Recognizing that the large number of landmines and UXO across Cambodia was a significant threat to post conflict reconstruction and continuing development, CMAC became an autonomous national organization in 2000 and developed a series of programs including landmine awareness, landmine field information, landmine and UXO clearance and training in landmine clearance to achieve the safe transition to peace and security for the people of Cambodia. Today, CMAC leads a strong contingent of mine action operators, working in Cambodia.

Table 1: Mine/UXO clearance in Cambodia by operators (1992-2010)

PROGRESS	CMAC	RCAF	MAG	HALO TRUST	TOTAL	Private Commercial
Area (m <sup>2</sup> )	300,983,553	210,475,823	30,465,883	62,090,924	604,016,183	Unknown
AP Mines (pieces)	438,852	163,520	57,797	229,819	889,988	Unknown
AT Mine (pieces)	8,570	8,362	759	2,964	20,655	Unknown
UXO (pieces)	1,610,411	110,532	169,546	139,903	2,030,392	Unknown



## 3. STRATEGIC CONTEXT

### 3.1 Article 5 Extension Request

Given the extensive contamination still remaining, Cambodia requested a ten-year extension (2010-2019) under Article 5 of the Convention in December 2009. For the purpose of the request, it was calculated that 648.8km<sup>2</sup> still required clearance with a further 1,097.8km<sup>2</sup> needing to be released through baseline and technical surveys.

The request was approved at the Cartagena Summit on a Mine-Free World in December 2009, the Second Review Conference of the APMBC, where member states also reconfirmed their commitment to international cooperation and assistance for achieving the Convention's aims in the Cartagena Plan of Action.

As the national implementation agency and largest mine action organisation in Cambodia, CMAC operations have a key role to play in supporting Cambodia to meet its revised

Convention deadline of 2019. In particular, CMAC is exploring new initiatives and innovative strategies to address the pressing needs for faster and safer land release in areas with suspected and/or confirmed landmine contamination. These priorities will continue to influence operations in the most heavily contaminated provinces in western Cambodia. With an



estimated USD455million required for Cambodia's mine action sector to achieve these ambitious targets, CMAC acknowledges the fundamental importance of continuing the spirit of international cooperation, outlined in Article 6 of the Convention, in working towards these goals.

The more recent Convention on Cluster Munitions (CCM) 2008 also impacts CMAC's operations, reflecting the increase in global interest and advocacy efforts to address cluster munitions contamination. Separate articles in the CCM concern assistance to victims, clearance of contaminated areas and destruction of stockpiles. After signing, a 10 year deadline comes into place for all cluster munitions held to be cleared and destroyed. Although Cambodia is not a signatory, the Convention and its intention is already impacting



the global mine action environment and priority and funding scenarios, with more attention focused on cluster munitions. CMAC has been directly addressing the threat posed by cluster munitions through an increasing number of ERW-targeted projects over the past couple of years, particularly in the eastern provinces.

Given Cambodia is one of the most heavily ERW contaminated countries in the world, CMAC will continue to build its capacity in ERW operations, striving to obtain and set best practice standards, bringing these operations in line with CMAC's demining operations, that have been the traditional focus of the organization since 1992.

## 3.2 National Strategy for Mine Action 2010-2019

From a national perspective, mine action in Cambodia is shaped by a number of coordinated strategies that have been approved by the RGC. These include the RGC's Rectangular Strategy Phase II, the National Strategic Development Plan Update 2009-2013, Cambodia-specific ninth Millennium Development Goal in Mine Action and the recently released National Mine Action Strategy (NMAS) 2010-2019. There are also national laws that guide behaviour, notably the National Law to Ban the Use of Anti-Personnel Landmines, and the National Law on The Management of Weapons, Explosives and Ammunition. These laws and national strategic frameworks shape CMAC's priorities, strategic planning processes and operations.

The new NMAS 2010-2019 was developed under the leadership of the Cambodian Mine Action and Victim Assistance Authority (CMAA), Cambodia's national mine action authority. The NMAS is designed as a guiding reference document for mine action operators, development partners and anyone else interested in supporting the Cambodian mine action sector. It includes four goals over the next ten year period. These are:

- Goal 1: Reduce Mine/ERW casualties and other negative impacts
- Goal 2: Contribute to economic growth and poverty reduction
- Goal 3: Ensure sustainable national capacities to address residual mine/ERW contamination
- Goal 4: Promote stability, and regional and international disarmament

These goals are supported by a number of implementation measures including:

- Baseline survey
- Land release
- Planning and prioritisation
- Capacity development and coordination
- Regional and international stability
- Risk education and victim assistance
- Sustainability

## 4. OPERATIONAL AREAS

### 4.1 DEPARTMENT OF OPERATIONS AND PLANNING

Since its inception in 2000, CMAC has developed into Cambodia's leading mine action program. CMAC currently employs over 2000 staff members, many of whom are deployed in field teams across the country. CMAC's field staff are responsible for the implementation of multiple demining tools such as manual demining platoon, demining machine, brush cutters and mine detection dogs. These versatile tools can be used in various combinations, from very small to large teams, to address different needs and challenges posed by the mine action sector.

The Department of Operations and Planning is responsible for operational planning, supervision of team mobilization, implementation on field of operations and demobilization. Part of the work of the department is also to support project management activities within CMAC.

Table 2: List of CMAC toolbox

	TOOLS	Abbr.	No. Team
1	Mobile Platoon	MP	26
2	Short Leash Dog	SLD	8
3	Long Leash Dog	LLD	4
4	Community Base Demining	CBD	3
5	Community Mine Clearance – big team	CMC7	8
6	Community Mine Clearance – small team	CMC5	3
7	Demining Machine	DM	9
8	Brush Cutter	BC	20
9	Explosive Remnant of War Clearance	ERC	3
10	Battle Area Clearance Team	BAT	4
11	Battle Area Clearance by Village	BAV	7
12	Community Based Area Clearance Team	CBAT	1
13	Explosive Detection Dog	EDD	5
14	Mine Risk Education	MRE	3
15	Explosive Remnant Disposal	EOD	26
16	Technical Survey Clearance	TSC	8
17	Base Line Survey	BLS	16
18	Community Base Mine Risk Reduction	CBM	34
19	Community Base UXO Risk Reduction	CBU	33

## 4.1.1 MINEFIELD/UXO CLEARANCE

### Clearance Teams

In addition to mobile platoons, other teams include: the Community Mine Clearance Team (CMC), Baseline Survey Team (BLS), Technical Survey for Clearance team (TSC), ERW Clearance Team (ERC), Battle Area Clearance Team (BAT), Battle Area Clearance Team by Village (BAV), and the Community-Based Battle Area Clearance Team (CBAT).

A number of explosive ordnance disposal teams (EOD) are also available to respond to community and local authority requests for help to mitigate dangers.

Complementing the standard platoons are the smaller units such as the CMC teams (5 and 7



### Clearance Teams

In addition to mobile platoons, other teams include: the Community Mine Clearance Team (CMC), Baseline Survey Team (BLS), Technical Survey for Clearance team (TSC), ERW Clearance Team (ERC), Battle Area Clearance Team (BAT), Battle Area Clearance Team by Village (BAV), and the Community-Based Battle Area Clearance Team (CBAT).

A number of explosive ordnance disposal teams (EOD) are also available to respond to community and local authority requests for help to mitigate dangers.

Complementing the standard platoons are the smaller units such as the CMC teams (5 and 7 persons complement), the Mine Detection Dog teams (SLD and LLD) and the Explosive Detection Dog teams (EDD). With their strong reputation, CMAC also sub-contracts its MDD and EDD teams to another humanitarian mine action operator in Cambodia.

The manual demining platoon structural arrangement is also applied to the Community Based Demining (CBD) teams where the majority of CMAC's female deminers are deployed.





## Multifaceted teams

Multifaceted demining teams have also been developed in recognition of the need to respond flexibly and innovatively to the changing operational environment. Currently, 26 platoons are equipped with various demining capabilities. Teams include platoons with standard manual demining capability and platoons with mixed capabilities, such the Integrated Clearance Mobile Platoon (ICP) and the Integrated Multi Task Mobile Platoon (IMP).

The mixed capabilities platoons deploy combined standard metal detectors, GPR detectors (Handheld Standoff Mine Detection System - HSTAMIDS and Advanced Landmine Imaging System-ALIS) and in some cases, are mixed with MDD teams engaging in the clutter rejection concept, for land to be released as quickly as possible.

## Demining/ Brush Cutter machine teams

Demining Machines (DM) and Brush Cutters (BC) have enabled CMAC to substantially increase its clearance productivities in these past years. When integrated with other demining tools, they give CMAC greater flexibility and speed to clear land. These resources have proved to be critical tools for CMAC and provide a competitive edge regarding the clearance efficiencies. These operational innovations also provide useful lessons learnt for other mine affected countries to learn from.

## MINEFIELD CLEARANCE IN 2010

In 2010, CMAC had set a target of 28 000 000m<sup>2</sup> for annual clearance. By the end of December 2010, CMAC had released 33,044,822m<sup>2</sup> through full clearance, Technical Survey and Non-Technical Survey, 5 044 822m<sup>2</sup> over CMAC's initial target.

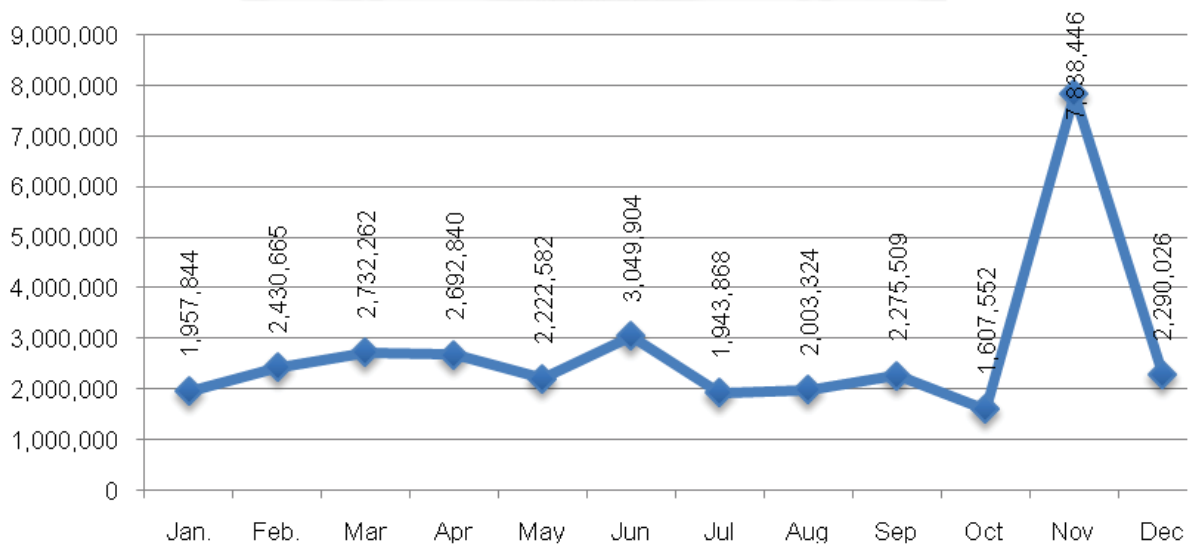
Table 3: CMAC achievement at minefield from Jan. – Dec. 2010

Description	Unit	Plan for 2010	Achievement in 2010	Remark
Safety Site	M2	Not specified	123,443	No site sketch thus not to be included in the productivity
Spot Check	M2	Not specified	961,721	
Surveyed Area for Minefield Marking	M2	Not specified	583,180	
		Total	1,668,344	
Number of minefield cleared	Minefields	423	592	140% (data as of end of Nov. 2010)
Minefield release through Full clearance	M2	Not specified	22,215,384	
Minefield release through Technical Survey	M2	Not specified	8,202,782	
Minefield release through Non-Technical Survey	M2	Not Specified	1,960,505	
Total	M2	28,000,000	33,044,822	



This figure does not include a total area of 1,668,344m<sup>2</sup> that had been cleared to create a safety parking lot, field office, access road and spot check around Mine/UXO sites. Usually such clearance is recorded but there no site sketch is required or recorded. Out of 423 minefields planned to be cleared, CMAC cleared 592 minefields. Putting together the last month of its operation, CMAC achieved 140% of minefields and 109% of MF size.

Figure 2: Minefield release through full clearance + TS + NTS by CMAC in 2010 by month



## ERW FIELD CLEARANCE IN 2010

CMAC planned to clear 7 million m<sup>2</sup> in 2010 and by the end of December 2010, CMAC had released ERW field totaling 33,811,926m<sup>2</sup> through full clearance, Technical Survey and Non-Technical Survey.

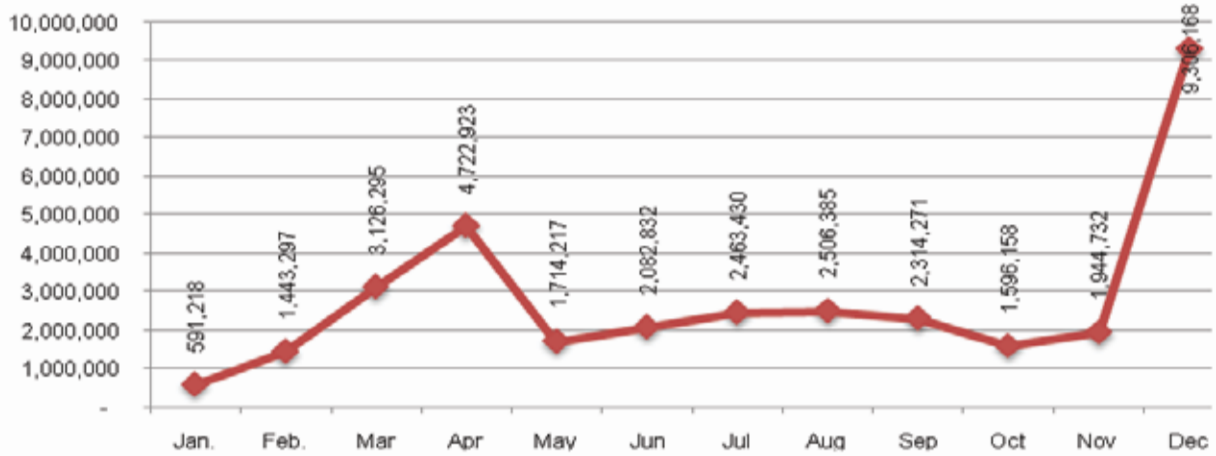


Table 4: ERW clearance by CMAC in 2010 (Jan. – Dec.)

Description	Unit	Plan for 2010 (sq.m)	Achievement in 2010	Remark
ERW release through full clearance	M2	A least 7,000,000m <sup>2</sup>	21,295,936	304%
ERW release though TS	M2	Not specified	12,515,990	
ERW release though NTS	M2	Not specified	0	
Small Arms	Kg.	Not specified	9,749	including AXO
Requested (EOD & MRE[2]) calls for emergency interventions	Calls	Not specified	13,347	
Respond to emergency call (EOD & MRE)	Calls	around 10,000 EOD	12,410	109%
Destroy mines/UXO of all types	Pieces	At least 130,000	143,924	162%
Number of UXO destroyed	Pieces	Not specified	126,473	Including mine & AXO
Total Mine/UXO	Pieces		270,397	Including mine & AXO
Total UF cleared	M2		33,811,926	



Figure 3: ERW field release through full clearance + TS + NTS by CMAC in 2010 by month



### ANTI PERSONNEL (AP) MINES FOUND AND DESTROYED IN 2010

Figure 4: AP mines found by CMAC in 2010 by month

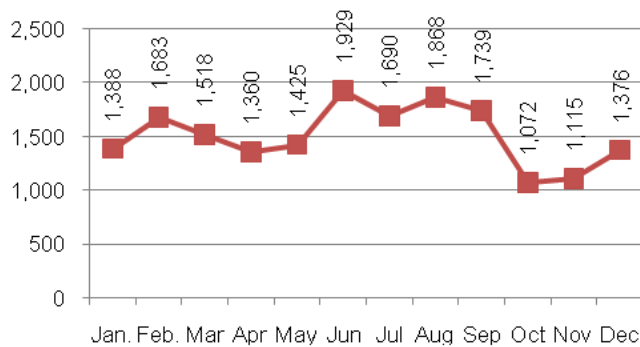
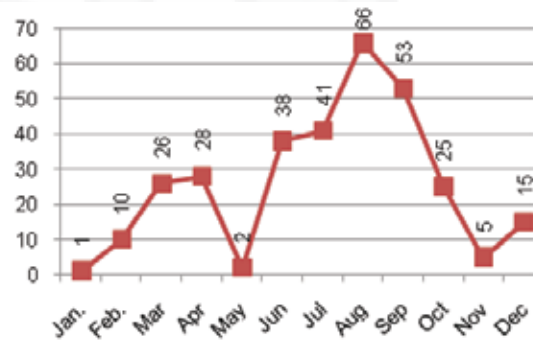


Figure 5: Improvised mines found by CMAC in 2010 by month



The number of AP mines found and destroyed by CMAC in 2010:

Description	Unit	Plan for 2010	Achievement in 2010	Remark
AP mines	Mines	Not specified	18,163	
Improvised mine	Mines	Not specified	310	
Total	Mines		18,473	

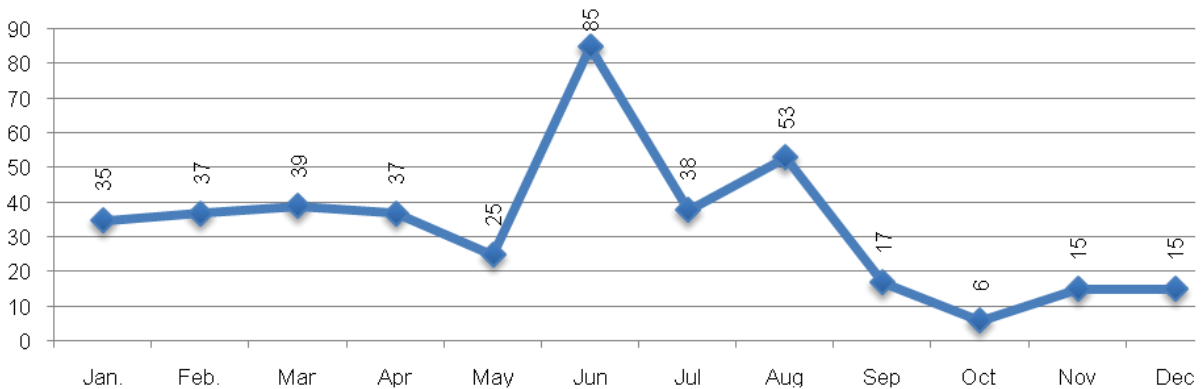


It is interesting to note that, on average, in 2010:

- Within 10,000 m<sup>2</sup> or 1ha of minefield there were 8.2 AP mines
- Deminers remove 1,024 pieces of fragments for ever AP mine or UXO
- It is time consuming to remove AP mines since deminer has to spend time detecting, prodding and excavating over 1,000 potential mines. If each cycle of detection, prodding and excavation take an average 1 minute, a deminer loses more than 15 hours of work productivity on false alarms for every AP mine found
- Out of 100 AP mines there are 1.7 improvised mines
- Out of 100 AP mines there are 2.2 AT mines
- Out of 1 AT there are 1.3 improvised Mines

## ANTI-TANK (AT) MINES FOUND AND DESTROYED IN 2010

Figure 6: AT mines found and destroyed by CMAC in 2010 by month



It is interesting to note that from 1992/3 - 2010, AT mines have been cleared by CMAC as follows:

- Total AT mines cleared: 8,606 AT mines
- Average AT mines cleared by CMAC: 478 AT mines/year
- AT found/destroyed in 2010: 402

Similar to ERW, AT are not specified in the extension request, thus their priority for clearance is lower than those of AP mines at this point in time.

The depth at which AT mines are placed creates a significant constraint to clearance process. When AT mines are placed too deep underground, its location will only produce a low signature for detection, which makes it tremendously difficult to excavate.

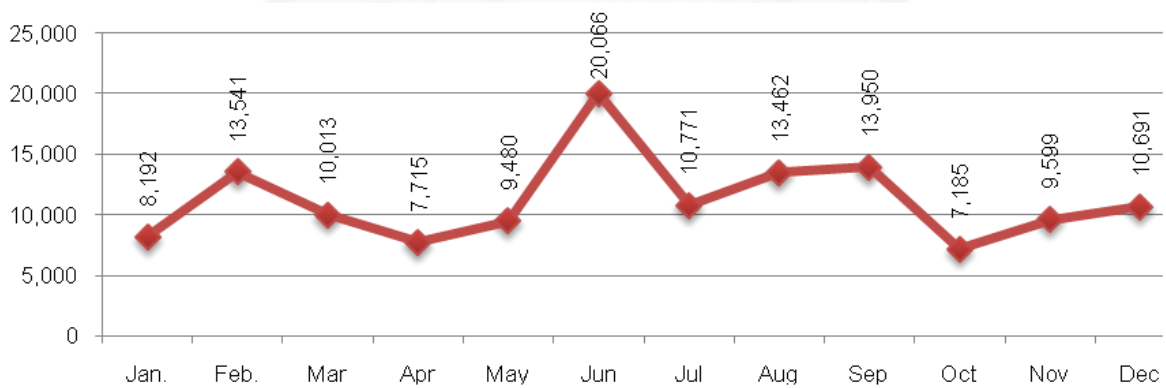
If left at such a depth, it provides false



safety to the local population in dry conditions and poses a serious threat in wet conditions. This is evidenced by two serious incidents involving AT mines in 2010. The first, which took place on 16 November 2010, involved a blast from an AT mine on a local trek. This resulted in the death of 14 people from 5 families in Banan, Battambang province. Also in 2010, a Brush Cutter in Banteay Meanchey province also sustained significant damaged due to an AT explosion during an AT excavation that was approximately 1.5m deep.

## UNEXPLODED ORDNANCE (UXO) FOUND AND DESTROYED IN 2010

Figure 7: UXO found and destroyed by CMAC in 2010 by month



It is interesting to note that from 1992/3 - 2010, UXO has been found and destroyed by CMAC as follows:

- Total UXO destroyed: 1,637,857 UXO
- Average UXO cleared by CMAC: 90,992 pieces/year
- UXO destroyed in 2010: 134,665 pieces
- Average UXO cleared by CMAC staff: 43.3 UXO/ person/year





The number of UXO found and destroyed in 2010 were:

Table 5: Number of UXO found and destroyed by CMAC in 2010 (Jan. – Nov.)

Description	Unit	Plan for 2010 (sq.m)	Achievement in 2010	Remark
Small Arms	Kg.	Not specified	9,955	including AXO
Requested (EOD & MRE) calls for emergency interventions	Calls	Not specified	13,347	
Respond to emergency call (EOD & MRE)	Calls	around 10,000 EOD	12,410	109%
Destroy mines/UXO of all types	Pieces	At least 130,000	153,540	162%
Number of UXO destroyed	Pieces	Not specified	134,665	Including mine & AXO
Total Mine/UXO	Pieces		288,205	Including mine & AXO

## ABANDONED EXPLOSIVE ORDNANCE (AXO) FOUND AND DESTROYED IN 2010

Improvised Explosive Device (IED): CMAC, in collaboration with government agencies, has responded to IED calls, particularly in Phnom Penh vicinity.



RCAF transferred over one hundred thousand pieces of munitions to CMAC for destruction. Several hundred thousand pieces were destroyed and 65,992 pieces plus 1,500kg of small calibers are awaiting destruction.

A plan had been made with military in the provinces to remove AXO and old weapons for destruction and explosive harvesting. However, progress is slow on this project is slow.

Even though AXO is part of ERW, a concrete plan for AXO is not clearly specified in the strategic plan, as well as in CMAC recording system. Thus tracking data on this sector is complicated. Usually it is included in the UXO sector.



## 4.1.2 LAND RELEASE (LR)

Several training sessions were provided by CMAC to improve work quality and efficiency. Most of the training took place at CMAC training center in Kampong Chhnang province.

- 80 staff (MP and their 2IC) in May 2010
- 50 staff (Operations officers, assistants and Technical Survey supervisor) in September and November 2010
- 90 staff (BLS) in April 2010
- 30 staff (DU managers and QA team) in Sep 2010
- CMAC conducted two field visits in Sep and Nov on the trial minefield participated by 110 staff from all Demining Units (DU)

Key achievements in Land Release that took place in 2010 are:

- A review of field reporting was conducted to ensure work is implemented according to the guidelines. This was carried out with assistance provided by the Geneva International Centre for Humanitarian Demining (GICHD) and Norwegian People's Aid (NPA)
- A recording and reporting system was developed by the database and operations section. This activity took place in August and November 2010.
- Quality Assurance (QA) activities were carried on the trial Land Release site on 30 November 2010. This process was attended by key parties from both CMAC and the local community, including CMAC's DU managers,



Several training sessions were provided by CMAC to improve work quality and efficiency. Most of the training took place at CMAC training center in Kampong Chhnang province.

- 80 staff (MP and their 2IC) in May 2010
- 50 staff (Operations officers, assistants and Technical Survey supervisor) in September and November 2010
- 90 staff (BLS) in April 2010
- 30 staff (DU managers and QA team) in Sep 2010
- CMAC conducted two field visits in Sep and Nov on the trial minefield participated by 110 staff from all Demining Units (DU)

Key achievements in Land Release that took place in 2010 are:

- A review of field reporting was conducted to ensure work is implemented according to the guidelines. This was carried out with assistance provided by the Geneva International Centre for Humanitarian Demining (GICHD) and Norwegian People's Aid (NPA)
- A recording and reporting system was developed by the database and operations section. This activity took place in August and November 2010.
- Quality Assurance (QA) activities were carried on the trial Land Release site on 30 November 2010. This process was attended by key parties from both CMAC and the local community, including CMAC's DU managers, Operations Officers, HQ staff and QA staff as well as Mine Action Planning Unit (MAPU) representatives and beneficiaries. CMAC used this process to explain the purpose of LR and the process of conducting LR so that MAPU and beneficiaries could utilize the land



with full confidence. Once the QA had been completed the released land was officially handed over to the community

- An effort had been made to integrate LR methodology (with demining toolboxes) on clearance tasks in CMAC's Integrated Work Plan (IWP). The first effort took place at CMAC DU2, Traeng commune, Rattanak Mondul district, Battambang province (western part of Cambodia). The integration of LR methodology on clearance tasks will also be implemented along the Cambodia – Thai border. This area, extending from Preah Vihear to Oddor Meanchey and Banteay Meanchey provinces, is the RGC's proposed site of 15 new villages to accommodate poor and landless people
- According to the preliminary result from the field, mines are still found even at NM1 category (No Mine at lowest level or the potential of having mine is at the lowest)
- There is a need in CMAC to train not only BLS people but also management in office and those working in the field to fully understand the concept of LR (through technical and non-

### 4.1.3 BASELINE SURVEY

In 2010 CMAC, along with several other mine action operators, took part in the most recent national Baseline Survey of Cambodia. Each operator was given a set area to work. CMAC's productivity is noted below.



Table 6: Base Line Survey (BLS) clearance plan and achievements in 2010

No.	Plan for 2010	Achievements in 2010
1	Conduct baseline survey allocated by CMAA in 13 high priority districts from 1st Jan – 31st Dec 2010	<ul style="list-style-type: none"> <li>• There were 651 villages, 71 commune of 13 districts had been surveyed from 1st Jan. – Nov. 2010:</li> <li>• 651 villages had been surveyed.</li> <li>• 3771 SHA found 275,450,482 m2 of contaminated area</li> <li>• 121 SHA were inaccessibility with 3,154,081,232 m2 of contamination land.</li> <li>• 13 AP and 2 AT mine had been found and destroyed by the team.</li> </ul>
2	Deploy Baseline Survey QA teams to provide QA to Baseline Survey activities	<ul style="list-style-type: none"> <li>• Two QA/QC groups:</li> <li>• Group number 1:</li> <li>• From Jan to June 2010 the group deployed at Seam Reab province to control 6 BLS teams.</li> <li>• From Jul to Dec 2010 the group received 1 more BLS team to be placed under their supervision.</li> <li>• Group number 2:</li> <li>• From Jan to Jun 2010 the group deployed at Battambang province to control 10 BLS teams.</li> <li>• From July to Dec 2010 the group deployed at Banteay- Meanchey to control 8 BLS teams</li> </ul>
3	Train and deploy new 3 new Baseline Survey teams	The 3 new BLS teams had been trained in CMAC Training center Kampong Chhnang for 2 weeks. The course started from 29 March and last until 9 May 2010.
4	Record and report baseline survey information to CMAC and CMAA Database unit	CMAC database provide both hard and soft copy to CMAA database every end of the month.
5	Plan new survey activities on the next priority districts post completion of the 13 high priority districts allocated to CMAC.	The 16 BLS teams completed 1st phase survey on 13 districts in July 2010. The 2nd phase survey start at Mongkol borey, Banteay Meanchey, Praneth Preah and Phnom Srok districts. This phase will be completed by end of December 2010.

The problems encountered during BLS include an underestimation of the number of villages in CMAC's district allocation (CMAC was initially tasked with 13 districts and 594 villages, however, in practice there are more than 600 villages that the survey teams needed to work with), limited or no access to roads and a dispersed population. Despite these challenges, CMAC completed its section of the BLS by the end of 2010.

#### 4.1.4 MINE/UXO DETECTION DOG (MDD/EDD)

In 2010, CMAC's MDD/EDD program aimed to clear a total of 4,200,000 m<sup>2</sup> of landmine contamination area (minefields) and 1,200,000 m<sup>2</sup> of UXO contamination area (UXO fields) in order to support national and Provincial Mine Action Committee (PMAC)/MAPU's priorities and risk reduction activities.



However, by the close of 2010, only about 50% of the target (2,829,717 m<sup>2</sup>) had been achieved.

The reduction of productivity can be explained by:

- A reduction of SLD teams
- The suspension of the SLD operation due to a lack of funding
- Lack of budget to purchase additional supporting material such as trimmers.
- Time spent training new dog handler due to the change of either dog/handler.
- Working area is flooded

During their operation, MDD/EDD found and destroyed:

- Clear MF: 802,133 m<sup>2</sup>
- AP mines: 269 pieces
- AT mine: 0.00 pieces
- UXO: 1,016 pieces (by MDD) and 4,080 pieces (by EDD)
- Improvised Mine: 03 pieces

CMAC also leased its MDD to MAG. They have found and destroyed:

- AP mines: 193 pieces
- AT mines: 10 mines
- UXO: 112 pieces
- Improvised Mine: 0.00 pieces



A breeding program is underway in an attempt to find a solution to the short supply of dogs in the field. This program has experienced some considerable setbacks in the early stage of the program (approximately 90% of the puppy litter died), however given the importance of the MDD/EDD program, CMAC is committed to continuing the breeding program.

- 9 puppies received from NPA-GTC are under training to replace dogs in operation
- 7 puppies that were bred by CMAC are under training, however one has been put down due to sickness
- Usually MDD and EDD work only in the morning due to weather. However, since July 2010, EDD took part in the “clutter rejection” clearance operation. This concept was initiated by the CMAC R&D team in response to the slowness of “metal free” demining operation



#### 4.1.5 SOCIO-ECONOMIC BENEFIT AND BENEFICIARY

This request clearly identifies size to be cleared, location, beneficiary (by number of family and names) and even a resettlement plan. In 2010, RGC planned to establish dozen of villages along Cambodia-Thai border.

This plan is hatched from the national level participated by several ministries and agencies including CMAC. Since the project site is located at the former war zone, a request had been made to CMAC to survey, to clear and clean up those areas



before the development could be taking place. This development project planned to accommodate a certain number of villagers in each village. However, because of the time constraint, the selection of which family to settle in which village is in progress. Without delay, soon after receiving request from RGC, CMAC work in surveying and clearing landmine/UXO started.

#### 4.1.6 RISK MANAGEMENT

By its very nature, the demining sector is a very high risk sector. While CMAC accepts that there are risks involved in the implementation of its programs, such as booby traps, challenging terrain and environment, sensitivity of old and damaged mines and 72 different types of complicated AP mines, CMAC works very hard to ensure that all safety standards and requirements are upheld at all times.

CMAC's deminers have managed these challenges very well in 2010, with zero accidents occurring throughout the year.



## 4.2 MINE RISK EDUCATION, VICTIM ASSISTANCE & POST CLEARANCE DEVELOPMENT

Mine Risk Education (MRE) has played an important role in CMAC's humanitarian demining programs for many years, with community consultation and education programs, as well as strategic development activities, carried out to reduce the number of casualties in landmine and ERW affected communities and to contribute to the reconstruction of communities in both a safe and productive way.

Since it was introduced in 2001, the most successful component of CMAC's MRE program has been the Community-Based Mine Risk Reduction (CBMRR) initiative. Founded on the principles of community participation and empowerment, the CBMRR program reduces landmine/ERW risk by supporting communities to fully participate in determining the mine-action priorities in their communities. The program provides ongoing local risk education to civilians at high risk and ensures greater integration with victim-assistance services and community-development projects that will provide alternative income-generating activities for groups at risk.



Established by CMAC in northwest Cambodia, the CBMRR project puts village populations living with landmines and explosive remnants of war at the center of the mine-action process. Through a network of local-level committees known as mine/UXO Committees (MUC), community members define, analyze and address contamination problems in their own community and are provided with access to mine-action and victim-assistance services and community-development activities that contribute to risk mitigation and poverty reduction.

The success of this initiative has resulted in the expansion of the CBMRR program into many parts of the country, where it has been universally accepted by all stakeholders due to its relevancy, effectiveness and impact. In particular, the program has expanded into the eastern provinces of Cambodia where communities are severely affected by unexploded ordnance (UXO). The CBMRR program structure has now been adapted to meet the different needs of UXO affected communities and is operating in eight provinces in eastern Cambodia as the Community Based UXO Risk Reduction (CMURR) program.





But despite the ongoing success of the MRE program, mine/ERW incidents are once again increasing, particularly during the year 2010, when casualties increased considerably compared to the previous year.

Recognizing how valuable the MRE process is in reducing casualty rates and in supporting other areas of mine action, CMAC established a new department in 2010 which now oversees the direct implementation of all current and future MRE activities- the Department of Mine Risk Education, Victim Assistance and Post Clearance Development (MRE-VA-PCD).

This department is now responsible for carrying out mine risk education, victim assistance and post clearance development activities across the country. CMAC strictly follows the prioritization process of the PMAC/MAPU to ensure that, in addition to risk reduction, minefields selected to be cleared offer the most benefits to communities and that these benefits are optimized during the mine clearance process.

CMAC has a long history of working with development partners such as Austcare, CARE International, Norwegian People's Aid (NPA), Peace-Boat, Rotary Club, ZOA Refugee Care, Good Earth Japan and Japan Mine Action Service (JMAS). In addition to clearance support, these organizations provide development support to the



These activities and supporting strategies have been designed and developed in line with the mine action environment in Cambodia and other internationally recognized standards, to meet the needs of landmine and ERW affected communities.

In addition, the department is currently managing the Program for Integrated Mine Clearance and Landmine Victim Assistance in the Kingdom of Cambodia under Japan's Grant Aid for Conflict Prevention and Peace-building. This is a three-year program starting from January 15, 2010 with three main components (1) Mine clearance, (2) Community Assistance and (3) Equipment Procurement, and worth approximately US\$12 million. The project sites are located in Banan and Bavel districts of the Battambang province.





## 4.2.1 MINE RISK EDUCATION

### MRE Resource and Deployment

#### MRE staff

121 CMAC MRE staff and 992 volunteer networks were engaged in CMAC's Mine Risk Education and Reduction program in 2010, operating in the most mine and UXO affected communities in Cambodia.

These included 1 Program Coordinator, 1 Mine Risk Education Officer, 24 staff from multi-skilled Mine Risk Education and Reduction teams, 1 Training and Monitoring Officer (TMO), 5 Provincial Coordinators (PC), 36 District Focal Points (DFP) of the Community-Based Mine Risk Reduction Program, 53 Districts Focal Points of the Community-based UXO Risk Reduction Program, 852 local volunteer networks from the Community-Based Mine Risk Reduction Program and 140 scrap metal dealers/collectors from the UXO Risk Reduction for Scrap Metal Dealer program.

The CMAC regular teams, including BAV, BAC, EOD, ERI, ERC, CMC, MPL, BC, BLS, TSC, also conducted mine and UXO risk education and reduction activities to people at risk located within their operation sites.

#### Team Deployment

In 2010, CMAC deployed 6 multi-skilled mine risk education and reduction teams in 9 provinces, including Phnom Penh, Kampot, Kampong Cham, Kratie, Kampong Thom, Preah Vihear, Battambang, Banteay Meanchey and Pailin provinces, and was supported by funding from UNICEF, UNDP, WB, GR and BHP projects. These teams can be moved to support other provinces based on requests from the affected communities and local authorities.

The Community-Based Mine Risk Reduction Program (CBMRR) was implemented in 7 of the most mine affected provinces, including Pursat, Battambang, Pailin, Banteay Meanchey, Oddor Meanchey, Seam Reap and Preah Vihear provinces (west and north-western parts of Cambodia), and supported by funding from UNICEF, UNDP, USA, GR, CPF and ECOSORN projects.

The Community-Based UXO Risk Reduction Program (CBURR) was implemented in 13 of the most UXO affected provinces, including Kampong Speu, Kandal, Takeo, Prey Veng, Svay Rieng, Kampong Cham, Kratie, Stung Treng, Ratanak Kiri, Mondul Kiri, Koh Kong, Sihanoukville and Seam Reap provinces, and supported by funding from JMAS, USA and BHP projects.

The UXO Risk Reduction through Scrap Metal Dealers Project was implemented in Kandal and Kampong Speu provinces and was supported by funding from UNICEF.



## Achievements

The average number of visits per month by all MRE groups from January – December 2010, is shown as follows:

- Number of teams working: 108.3 teams/month
- Villages visited: 1,030 villages/month
- Number of visits: 1,106 visits/month
- Number of daytime courses delivered: 1,514 courses/month
- Number of nighttime courses delivered: 46 courses/month

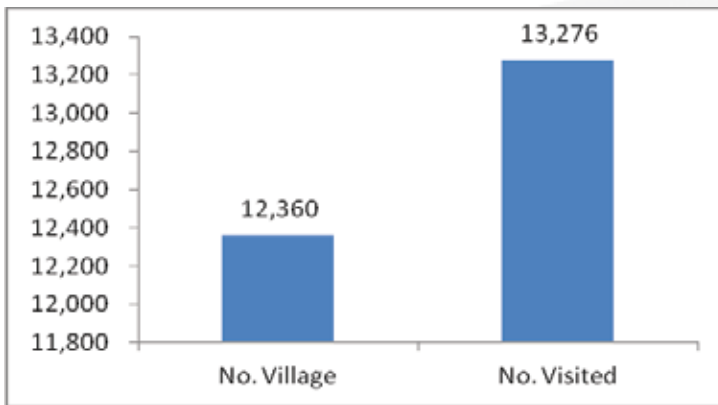


Figure 8: Village information

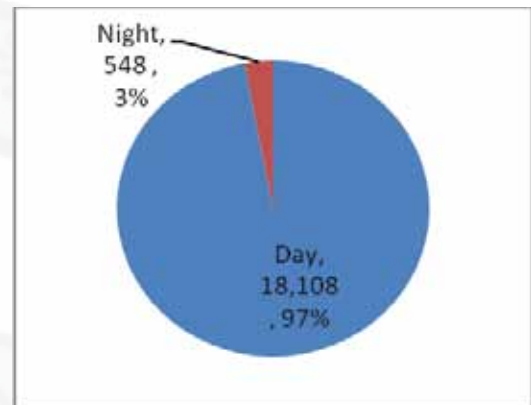


Figure 9: Meeting time

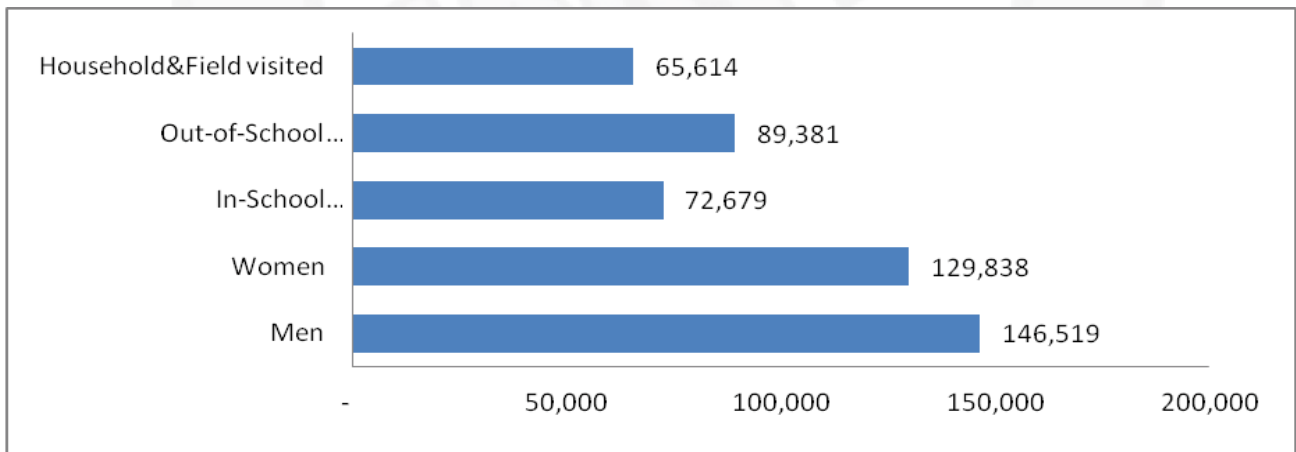


Figure 10: Audience Group

CMAC's Mine Risk Education team has conducted consultations for behavior change through 65,614 household/field (working sites) visits and mine risk education presentations to groups of people at risk, including children at school and out-of-school, with a focus on danger avoidance and reporting channels for mine and UXO disposal. In 2010, 438,417 people received mine risk education, of which 37% were children, 33.4% men and 29.6% women

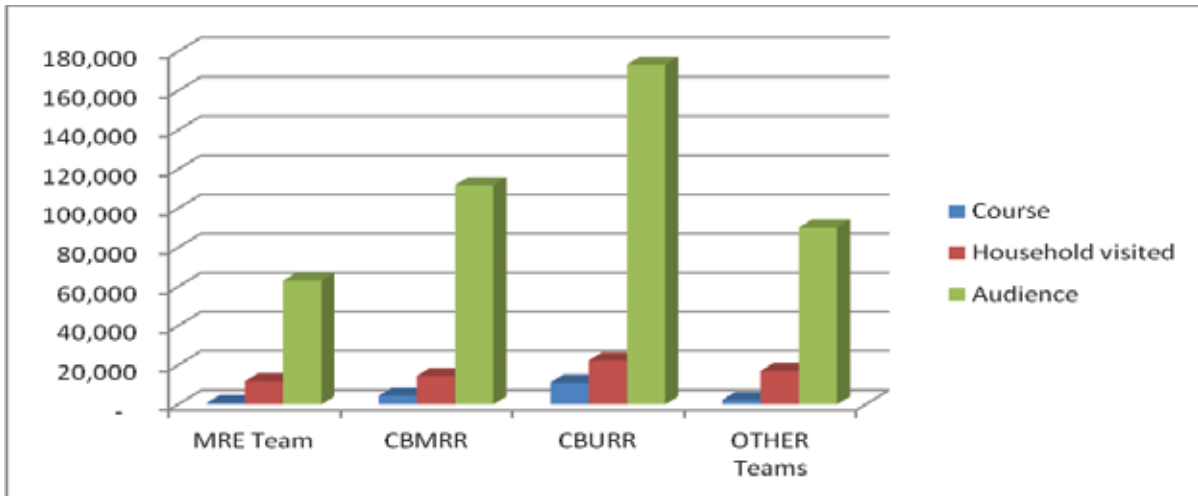


Figure 12: Request and devices destroyed by Report and response

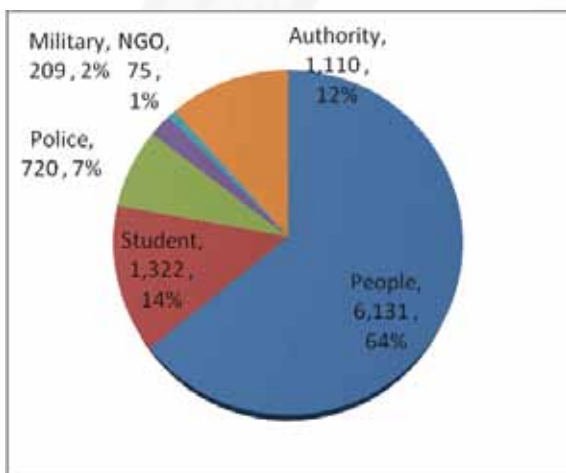


Figure 13: Source of report

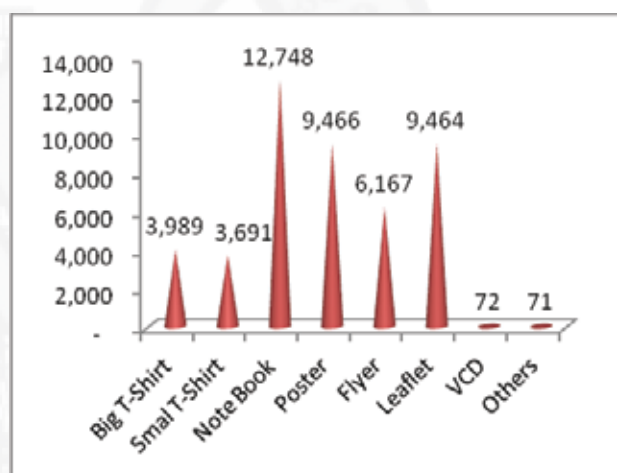


Figure 14: MRE material used

Based on this result, CMAC responded to 9,058 requests reported from communities and local authorities (equal to 91% of the requests). From these responses, CMAC has collected and destroyed 54,026 mines and UXOs and 1,388 pieces of caliber.

In response to the needs of the affected communities, CMAC recruited 6 DFP's to expand the activities of its Community-Based Mine Risk Reduction program into Oddor Meanchey and Preah Vihear provinces.

CMAC was involved in celebrating National Mine Awareness Day on 24 February 2010. The 2010 National Mine Awareness Day was organized by CMAA and supported by other mine risk education operators, including the Ministry of Education, Youth and Sport (MoEYS), the Royal Cambodian Armed Force (RCAF), National Police, local authorities, UNICEF, JMAS, HI-B, World Vision, MAG, HALO Trust and SOS. The 2010 National Mine Awareness Day took place in Ratanak Mondul district, Battambang province. CMAC's Mine/UXO Risk Education and Reduction teams also celebrated Mine Awareness Day by conducting a mine risk education campaign in the districts they were working in.

## Capacity Building and Workshops

In 2010, CMAC provided the following:

- Training of Trainer (TOT) on Mine and UXO Risk Education and Reduction skills to 12 police trainers from Battambang, Banteay Meanchey, Pailin, Oddor Meanchey, Siam Reap and the National Police. The course was conducted at Demining Unit 2, Battambang province over 5 working-days from 31 May to 4 June 2010
- Community Liaisons (CL) and Participation Learning and Action (PLA) training to 4 District Focal Points (DFP) and 86 volunteer networks of the 4 new target districts of Banan, Anglong Veng, Trapeang Prasat and Choam Ksan district. To follow up this training, a refresher course was also conducted for 86 volunteer networks
- Mine and UXO Risk Reduction and Reduction and Community Liaison skills training to 19 Community-based UXO Risk Reduction teams (District Focal Points) from Kampong Speu, Takeo, Siam Reap provinces. The course was conducted at the Training Center, Kampong Chhnang province over 5 working-days from 21-25 October 2010
- Mine and UXO Risk Education and Reduction, Community Liaison and Participatory Learning and Action skills training to 37 staff from Battlefield Area Clearance by Village (BAV) teams of the CMAC-HI-B project
- Mine and UXO Risk Education and Reduction, Community Liaison and Participation Learning and Action skills training to 75 staff from World Vision in Ratanak Mondul district, Battambang province
- MRE presentation given to 125 participants, including the Director, teachers and pre-teachers at a workshop organized by the Ministry of Education, Youth and Sport in Battambang province, to encourage and enable them to participate in providing mine risk education to students and people in their communities
- On 30 September 2010, CMAC's Department of Mine Risk Education, Victim Assistance and Post Clearance Development, with funding support from UNICEF, held a full day workshop in Battambang province to discuss the increase of casualties caused by landmines and UXO and to identify an appropriate solution. The workshop was presided over by H.E Chum Bon Rong, Adviser to the Prime Minister and Secretary General of CMAA and H.E Heng Ratana, Adviser to the Prime Minister and Director General of CMAC. 244 participants from various MRE operators and authorities attended, including Cambodia Mine Action Authority and Victim Assistance, the Ministry of Education, Youth and Sport, the Ministry of Interior, the Mine Action Planning Unit (MAPU) of Battambang province, UNICEF, CMAC MRE staff, HI-B, JMAS, MAG, HALO Trust, World Vision, SOS and the CBMRR/CBURR Mine/UXO Committees (Volunteer network)





- On 15 November 2010, CMAC’s Mine Risk Education Officer and CBMRR staff, in collaboration with CARE and CMC, organized a workshop to discuss and disseminate findings of the workshop on 30 September 2010 to local authorities and communities, to encourage further participation in the prevention of landmine and UXO accidents
- On 21-23 December 2010, CMAC’s Department of Mine Risk Education, Victim Assistance and Post Clearance Development held an annual workshop to discuss achievements in 2010 and to plan for 2011. The workshop also contributed to capacity strengthening for 57 MRE staff. The workshop was conducted in Battambang province, Demining Unit 2 and was presided over by H.E Heng Ratana, Adviser to the Prime Minister, and Director General of CMAC. The workshop identified five main problems, including the utilization of modern agricultural machineries, poverty due to no job opportunities, lost information of the locations of anti-tank mines, expanding agricultural land into suspected landmine contaminated areas and dangerous and irresponsible behavior that needs to be addressed in the coming year
- CMAC MRE staff participated in the National Workshop for MRE “2010 Achievements and Plan for 2011”, which was organized by CMAA in Sihanouk Ville from 27-28 December 2010, which was presided over by H.E Prak Sokhonn, Minister attached to the Prime Minister and Vice President of CMAA. The workshop addressed two issues; strategies to reduce the incidence of anti-tank mine accidents and strengthening the application of explosive law. Through group discussions, the workshop identified problems and developed a discussion paper that will be addressed further, before it is integrated into the 2011 National MRE Operator plan

## Handover of Projects and CBMRR Target Villages



CMAC, with funding support from UNIECF, successfully implemented the UXO Risk Reduction through Scrap Metal Dealer (URSMD) project in Chbar Morm district, Kampong Speu province and Ang Snoul district, Kandal province. The project, which commenced in 2007, has built up a network for UXO Risk Education and Reduction which includes 140 trained scrap metal dealers/collectors. In 2010, the project was transferred to the commune council, who will continue to oversee and implement the project.

CMAC's Community-Based Mine Risk Reduction program has become a regional leader in sustainable mine risk education and reduction activities, mine action coordination and the facilitation of victim assistance and post clearance development, with a volunteer network of 852 people working across affected communities in Cambodia. To ensure its continuation, 100 villages with 362 mine and UXO volunteer networks in 49 communes of the 18 districts in Battambang, Pursat, Pailin, Banteay Meanchey and Oddor Meanchey provinces were transferred to commune councils, who will continue to oversee and implement program activities within their communities.

## Knowledge Exchange

CMAC has developed into a global leader in the mine action sector and has shared its considerable knowledge and experience with other mine and UXO affected countries, both in the region and internationally.

In 2010, delegations from Sri Lanka, Eritrea, Laos, Vietnam and Thailand observed several MRE project sites, including the multi-skilled Mine Risk Education and Reduction teams and the Community-Based Mine Risk Reduction Program. Delegates also visited other mine risk education activities, including the Child to Child initiative of the Children's Club and mine awareness through a football match organized by Spirit of Soccer (SOS). Demonstrations of Community-Based Mine Risk Reduction activities, including village map updating, coordination for landmine and UXO clearance, development, mine risk education for people at risk and mine and UXO disposal were also held for the delegations. Further demonstrations of Mine Risk Education for large groups of people were showcased. These large group education programs are delivered by CBMRR in collaboration with MRER teams.



In 2010, CMAC also provided training and experience sharing in mine action for Colombia's national demining program, the Programa Presidencial para la Accion Integral contra Minas Anti-personal (PAICMA). Over a two week period, 30 delegates received training in mine risk education, victim assistance and post clearance development.



#### Other MRE Activities

- 129 CBMRR sign boards in Battambang, Banteay Meanchey, Pailin and Oddor Meanchey were repaired, with funding provided by UNICEF
- 90 CBMRR work-books were printed and distributed to the new MUC in Banan, Anlong Veng, Trapeang Prasat and Cheam Ksan district, with fund provided by UNICEF

## 4.2.2 VICTIM ASSISTANCE

Mine and UXO Committees (Volunteer networks) of the Community-Based Mine Risk Reduction Program coordinated and facilitated access to victim assistance services, including physical rehabilitation, medical care and social reintegration, for 400 people with a disability (including landmine victims).

CMAC's Mine Risk Education office has coordinated and facilitated access to health insurance (for a one year period) from GREAT SKY for 10 people with a disability from the Cambodian Disabled People's Organization (CDPO). Funding for this initiative was provided by the semi-marathon in Phnom Penh.





### 4.2.3 POST CLEARANCE DEVELOPMENT

Development activities and projects facilitated by CBMRR staff Mine and UXO committees (Volunteer networks) of the Community-Based Mine Risk Reduction Program have built relationships with development partners to bring development projects into their communities. The development projects include rehabilitation and construction of rural roads to a total length of 59,854 meters (laterite and earth roads); 850 meters of farm canal; 12 schools; 27 water wells; 45 community ponds; water supply; as well as micro-credit and agricultural training within 336 villages, which have benefited up to 39,006 families.

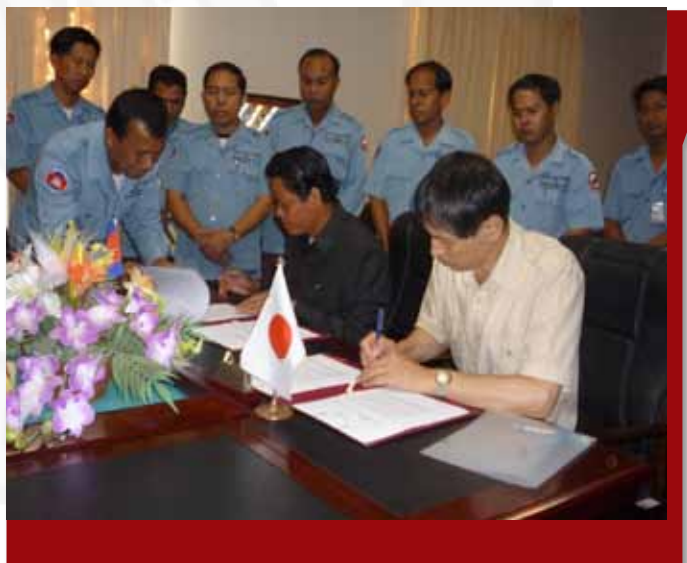
#### Good Earth Japan (GEJ)

CMAC has collaborated with Good Earth Japan (GEJ) since 2007 to promote post-mine clearance development of the affected communities, in order to improve the living standard of the people and support the socio-economic development of Cambodia.



In 2010, CMAC, in partnership with GEJ, and in collaboration with the Provincial Department of Rural Development (PDRD) and Provincial Department of Agriculture (PDA) implemented a post-mine clearance development project in Ratanak Mondul and Banan districts of the Battambang province that has directly benefited up to 748 families. The main achievements of this project are as follows:

- 1,700 metres of laterite road, 7 meters base wide and 5 meter top wide and an embankment were constructed by CMAC's engineering team with contributions from Raksmei Sangha village and Anderk Doubmouy village, Sdao commune, Ratanakmondul district of the Battambang province
- 450 farmers from 3 target villages, including Raksmei Sangha, Kork Chor and Andeuk, received agricultural training, in which 150 farmers were trained in vegetable production (home garden), 150 farmers were trained in fruit tree plantation and 150 were trained in chicken raising
- 300 farmers from the target villages took part in follow up training activities (150 farmers participated in rice production training and 150 farmers participated in red corn production). The follow up activities were conducted for a period of 10 weeks, one day per week, to enable farmers to discuss problems they encountered and appropriate solutions, share information, experiences, and receive technical advice for their rice and red corn cultivation
- 138 farmers took part in exchange programs, visiting the Agriculture Research Station to learn more about fruit trees/orchard and rice seed farms and chicken raising and vegetable farming systems at the farms of a model farmer



### **Safety Village Construction (SVC)**

The overall goal of the Safety Village Construction (SVC) project was “to bring about the personal security and safety of the people and community living in mine affected areas in Kilo & Chea Montrey village, Treng commune, Ratanak Mondul district, Battambang province, and to improve their economic and social opportunity through community infrastructure rehabilitation and development”.





The project was implemented by CMAC in partnership with JMAS in Kilo and Chea Montrei villages, Traeng communes. The project deployed two teams which carried out different tasks including (1) Demining team, consisting of one demining machine, one brush cutter machine, and one mobile platoon was assigned to provide demining services to support the infrastructure construction activities, and (2) Infrastructure construction team assigned to carry out community development activities. The project was partially funded by KOMATSU Co. Ltd and the Grand Aid for Japanese NGO project through Embassy of Japan in Cambodia and the Japan Mine Action Service (JMAS) in Phnom Penh Cambodia. The achievements of the infrastructure construction component from July 2009 to July 2010 are:

- 3,100 meters of laterite road and 15 pipe culverts constructed
- 11 community ponds constructed
- 1 school, 3 classrooms and 1 staff room constructed
- 4 wells constructed

Program for Integrated Mine Clearance and Landmine Victim Assistance “The Peace-building Project”

The Program for Integrated Mine Action and Landmine Victim Assistance (The Peace-building Project), under Japan’s Grant Aid for Conflict Prevention and Peace-building, is a 3 year program which commenced 15 January 2010. The program aimed to accelerate the removal and destruction of landmines and improve the living conditions of local people who live in landmine contaminated areas. This was achieved through community assistance



and the promotion of productive land-use after mine clearance.

The community assistance component consisted of land reclamation, agricultural infrastructure construction and agriculture training, which the aim to convert the minefields into farmlands after demining operations had ceased. The agricultural infrastructure construction was focused on farm roads, irrigation and drainage facilities. These irrigation facilities will be ponds for collecting rainwater where there is no water source.



Based on the project outline, agricultural training was conducted by a contractor, the Agronomy and Agricultural Land Improvement Office of the Provincial Department of Agriculture, Battambang. Two specific agriculture schools have been provided to targeted farmers, the Rice Farming School with a total 186 farmers attending over a total of 8 training days, and the Upland Crop “Corn” Farming School, with a total of 155 farmers attending over a total of 8 training days. The necessary agricultural inputs have been provided to the trained farmers, including 2,790 kg of rice seed and 1,240 kg of corn seed, which has been distributed to trained farmers in three project targeted villages (Ou Donpov, Kampong Makak, & Rosei Ro).

The Community Development team also conducted landholder survey and land-use data gathering in order to identify project beneficiaries and categories of land to be supported by the project through agricultural land preparation.

Construction of agricultural infrastructure will be developed for the land reclamation process of changing minefields to farmland. This construction will take the form of farm roads, canals and community pond facilities. 16 roads, with a total length of 27,214 meters and 5 community ponds were identified and proposed by communities in the target villages.

The Civil Engineering component of the community development team conducted an infrastructure needs assessment in order to identify the exact number and size of community needs, through discussions with target communities and local authorities and in consultation with provincial departments such as Department of Rural Development, Department of Agriculture, Department of Water Resources and Forest Administration. All relevant provincial departments were invited to visit proposed infrastructure sites in order to avoid any negative impacts resulting from the implementation of community development activities. A specific plan for infrastructure development was designed by the professional engineering team employed by the Cambodian Mine Action Centre (CMAC), in collaboration with relevant provincial technical departments.

After many discussions, an agreement and Terms of Reference (TOR) for survey and design civil engineering works were developed and the Minute of Discussion was signed on 22 October 2010, by CMAC and the Japan International Cooperation System (JICS). In the Minutes of Discussion, CMAC and JICS agreed that 11 roads with the total length of 16,965 meters, 54 pipe culverts and 5 community ponds, including 1 well with wind/solar pump to supply water to the pond need to be surveyed further, with design and drawing, before concluding the construction. The Provincial Department of Rural Development (PDRD) was selected to carry out this task. As a result, the civil engineering work to be carried out for the target villages is as follows:

- 11 roads along with drainage on both sides, including 10 earth roads with a total length of 15,272 meters and one laterite road with total length of 2,490 meters
- 27 double-pipe culverts and 19 single pipe culverts
- 5 community ponds
- 2 water gates

Based on the above results, CMAC and JICS have concluded the agreement for the construction of these agricultural infrastructures, starting from February 2011. The project will continue to be implemented by CMAC's civil engineering teams, overseen by the Department of Mine Risk Education, Victim Assistance and Post Clearance Development.

### Mentor College Canada

In 2010, students from the Mentor College of Canada carried out fundraising activities amongst their family and friends to raise funds to support CMAC's demining program. The funds were used to support activities in post-mine clearance areas in Banteay Meanchey and Battambang provinces, including livelihood support for people living in landmine and UXO affected communities. Two community ponds were constructed: 1 pond, 40x25x4m in size, is located in O'Ampil village, Toul Pong Ro commune, Malay district, Banteay Meanchey province and features a water pump, and the other, 40x30x4m in size, is located in O'lmoun village, Plov Meas commune, Ratanak Mondul district, Battambang province. Both ponds will support clean water to 216 families of the two villages.





## 4.3 TRAINING, RESEARCH AND DEVELOPMENT

### 4.3.1 TRAINING

Like CMAC's other main programs, training in mine action has been a key to CMAC success in providing professional mine action training courses to its staff and clients both local and international.

In 2010 alone, 65 courses were conducted at different CMAC facilities catering to 1,822 participants. The majority of the training courses supported CMAC operational teams to sharpen their skills through refresher classes as well as introducing them to new methodologies and initiatives such as baseline survey, land release methodology, proactive battle area clearance, and clutter rejection methodology.



#### National Training

Although CMAC demining teams have all been accredited; their knowledge needs to remain up to date. The team demining skills, knowledge and attitudes need to be periodically polished. This is done in a planned training program, either conducted at the training centre or in the field.

Training sessions not only cover operational aspects; but also social and civic areas of knowledge are also important, as deminers are members of the community. As new methodologies are being introduced or amended; training and meeting sessions are necessary to convey the new information and knowledge. Training programs are facilitated by an instructor from the CMAC Training Centre or by other CMAC qualified personnel. On occasions through 2010, members of the Cambodian Counter Terrorism Unit, Military Police, Police and Royal Cambodian Armed Forces also received training from CMAC.





The following is the overview of CMAC’s training program (courses and number of trainees):

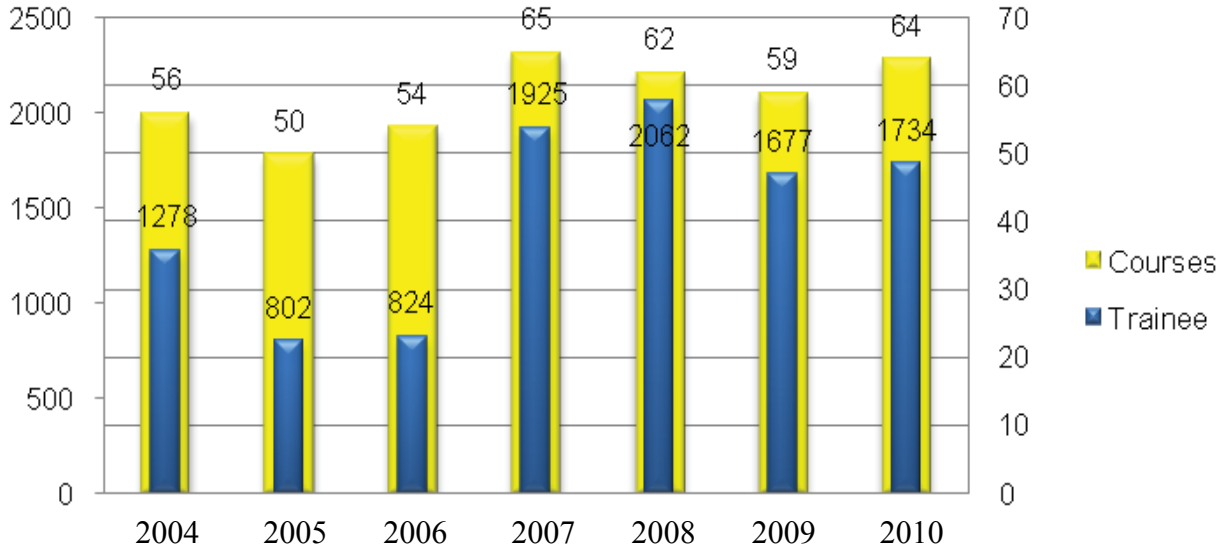


Figure 15: Training courses and number of trainee trained by CMAC

### International Training

CMAC’s reputation as a leader in training courses has resulted in CMAC being approached by other mine action programs based internationally, such as the Presidential Program for Comprehensive Action against Antipersonnel Mines (PAICMA) from Colombia (32 trainees, sponsored by JICA) and the organizations of other international training, such as the UXO Technician Level 1 and the Mechanical Demining Operation.



In collaboration with US team, a plan had been made with the Ministry of Interior to train police in EOD related subjects. The training program in CMAC in 2010 received direct support from Japan (through JICA), United States and New Zealand

Table 7: Training courses in CMAC in 2010

1	Bomb Dog Handler Training Course	33	Middle Management Training Course
2	Demining Refresher Training Course	34	Mine Detection Trial Schonstedt GA-72cd/Ebinger Magnex 105 SP Training Course#01
3	Battle Area Clearance by Village Training Course	35	Training of trainer advanced course
4	MDD Advanced Training Course	36	Baseline survey refresher training course
5	MDD Advanced Training Course	37	HSTAMIDS Operator Training Course
6	IED Refresher Training Course	38	EOD level 3 distance learning training course
7	Battle area clearance Team Training Course	39	Kamatsu Demining Machine Operation Course
8	EOD Basic Training Course level II	40	Hitachi Swing type Operation Course
9	EOD Advance Level III Training Course	41	Land Release through Technical Survey Course
10	Topography and Field Management/Leadership	42	MDD Advance training course
11	Community Based Demining Team Training Course	43	Minelab F3 UXO training course
12	Intensive Demining Training Course	44	LLD#01/02 Refresher training course
13	Baseline Survey Training Course	45	EOD/CBURR Refresher training course
14	Using GPS Map 60 CSX Training Course	46	CBURR training course
15	MDD Refresher Training Course	47	MDD Refresher training course
16	Multiple-Skill on landmine TS MF/Management	48	EDD#02 Refresher training course
17	Middle Management Training Course	49	LLD#03/04 Refresher training course
18	EOD Distance Learning Level 1& 2 Course	50	EDD#03 Refresher training course
19	SLD Refresher Training Course	51	Land Release through Technical Survey
20	EDD Refresher Training Course	52	Community-Liaison skill and dev./Mine/UXO Risk Education
21	LLD Refresher Training Course	53	SLD Refresher training course
22	Intensive Demining Training Course	54	Quality Management training course
23	EDD Training Course	55	EOD Level 3 training course
24	Multiple-Skill on landmine TS/ Field Management	56	Weapon Mass Destruction training course
25	SLD/EDD Refresher Training Course	57	SLD#02/11 Refresher training course
26	Middle Management Training Course	58	SLD#01/06 Refresher training course
27	Mine lab F1A4 Training Course	59	SLD#10 Refresher training course
28	SLD#02/11 Refresher Training Course	60	CBD Refresher training course ( for JMAS Project )
29	SLD#06/10 Refresher Training Course	61	Paicma phase I (International training)
30	SLD#01 Refresher Training Course	62	Paicma phase II (International training)
31	EOD Level 2 Training Course	63	EOD level 2 (distance learning)
32	EOD Level 3 Training Course	64	EOD level 3 (distance learning)

## TRAINING CENTRE

In 2010 the CMAC Training Centre in Kampong Chhnang Province provided training programs for many trainees from CMAC and other institutions such as Royal Cambodian Armed Forces, National Police, and National Headquarters of Counter-Terrorism Special Forces. The Training Centre offered 60 training courses. There were 1684 participants, including 1081 CMAC staff, 602 external trainees and 120 mine detection dogs.



Other activities for the Training Centre included:

- Collected UXO as requested by local authorities on 59 occasions
- Demolished 853 UXOs, 108 mines, 40 kilogrammes small arms and Propellant PGF 23
- In total cleared 47160m<sup>2</sup> of land on four occasions for VIP delegation visits
- Sent staff to missions 141 occasions
- Sent technical advisors to train at each Demining Unit for 43 occasions
- Welcomed 141 visitors to the Training Centre on 10 visits
- In total arranged 40000m<sup>2</sup> of minefields on three sites for Mine/UXO detection dog training
- Dog breeding programme for 7 dogs and the dogs are under training



Table 8 - Technical training activities for CMAC staff

No	Course Title	Q/T of Course	Number of Trainees	Remark
1	Demining Refreshers	02	129	
2	Battle Area Clearance by village Training (BAV)	01	42	
3	IED Refreshers	01	10	
4	Battle Area Clearance Team Training (BAT)	01	53	
5	EOD Level II	02	39	
6	EOD Level III	03	90	
7	Topography and Field Management	01	7	
8	Basic Demining for CBD Training	01	17	
9	Baseline Survey Training Course	02	113	
10	Using GPS Map60 CSX Training	01	19	
11	Multiple Skill on landmine TS MF/Mgt	02	72	
12	Middle Management Training	03	60	Training by(QSI)
13	EOD distance Learning Level I&II	01	14	
14	Mine Detection Trial Schonstedt GA-72cd/ Ebinger Magnex105 SP Training	01	12	
15	Training of Trainer advanced Course	01	30	
16	HSTAMIDS Operator Training	01	19	
17	EOD distance Learning Level III	01	10	
18	Kumazu Demining Machine Training	01	09	
19	Hitachi Swing type Operation Course	01	21	
20	Land Release Through Technical Survey Course	02	46	
21	Mine Lab F3 UXO Training Course	01	12	
22	EOD/CBURR Refresher Training	01	33	
23	CBURR Training Course	01	13	
24	Community Liaison Skill and Development Mine/UXO Risk Education	01	35	
25	Quality Management Training	01	30	Training by(QSI)
26	Weapon Mass Destruction Training	01	03	
<b>Total:</b>		<b>35</b>	<b>938 Attendees</b>	

Table 9 - External training activities

No	Course Title	Q/T of Course	Number of Trainees	Remark
1	Intensive Demining Course	02	477	PMBU/Military
2	Mine Lab F1A4 Training Course	01	121	Engineering
3	Bomb Dog Handler Training Course	01	4/4 dogs	PMBU
<b>Total:</b>		<b>04</b>	<b>602 Attendees</b>	

Table 10 - Mine/UXO Detection Dog training activities

1	MDD Advanced Training Course	03	06	6 dogs
2	SLD Refreshers Course	09	74	72 dogs
3	Basic EDD Training Course	01	18	8 dogs
4	EDD Refreshers Course	04	21	14 dogs
5	LLD Refreshers Course	04	24	16 dogs
<b>Total:</b>		<b>21</b>	<b>143 Attendees</b>	<b>116 dogs</b>

### 4.3.2 RESEARCH AND DEVELOPMENT

Linked with training, research and development activities are aimed at enhancing the safety and efficiency of CMAC operations, such as the trial of dual sensors detection, HSTAMIDS, and ALIS.

A number of research projects were implemented in 2010.






Table 11: Research implemented by CMAC in 2010

No	Project	Associate partner	Type	Description
1	HSTAMIDS	Night Vision, NVESD, DOD, USA	Field operational evaluation/ Training	American dual sensor detector
2	ALIS	Tohoku University, Japan	Research/Field operational evaluation	Japanese dual sensor detector
3	Rechargeable battery Minelab D-size	CMAC	Field operational evaluation	Rechargeable battery
4	Foerster Multi-probe holder (FEREX@4.032)	Germany	Trial	German seep search detector
5	Schonstedt Ga-72Cd	USA	Trial	AT and UXO detector
6	Ebinger Magnex 150SP	Germany	Trial/Research	AT and UXO detector
7	Rake grapple	Yamanashi –Hitachi Construction Machinery	Trial/modification	UXO removal rake
8	Man Portable Vector (MPV) and Sub-Audio Magnetometer	Sky Research Company	Trial/Research	Australian dual Sensor Detector
9	Deep penetration using shape charge	CMAC, Golden West	Training/trial	Using shape charge to attack deep AT/UXO objects

From this research a number of concepts have been devised including the “clutter rejection” concept for mine clearance operation. This concept eliminates time spent clearing fragments that is currently being carried out by most demining operations.



Figure 16: Clutter rejection concept

					
Step →	Step 1	Step 2	Step 3	Step 4	Step 5
Process →	Open Box/ marking	Grass cutting	Fragment Detection	Clutter rejection	Excavation/data recording
Machine/ Tools →	F3/wire	Trimmer	Metal detector (F3)	MDD/EDD HSTAMIDS ALIS	F3
Chip			Blue chip (all target)	Yellow (fragment) Red (mine)	
Excavation					



In another case, a brushcutter triggered the explosion during excavation of a deep AT mine. The AT was located approximately 1.5m underneath an active local road. The BC operator was safe and to tackle the threat from deep placed AT mine (mostly double stack with potential IPM attached), the research team trialed the use of a shape charge head taken from HEAT munitions were used to penetrate the ground to disable future AT mines.



Another product of Research and Development is the successful implementation of Japanese-Made Demining Machines. Excluding Brush Cutter, which have limited capacity in surface AP mine clearance, there were 3 demining machines implemented by CMAC (1 Komatsu, 1 Hitachi Push type and 1 Hitachi Swing type). Another 5 demining machines (4 Hitachi Swing type and 1 Komatsu) arrived and had been handed over to CMAC on 21 December 2010. All demining machines operate in Battambang province.

## 5. SUPPORT AREAS

### 5.1 FINANCE

#### Funding Requirements

Funding continues to be a challenge facing mine action operators in Cambodia and this challenge is no stranger to CMAC. CMAC continues to research ways to increase clearance efficiencies with the aim of meeting the targets outlined in the Article 5 extension request. These are ambitious targets; however CMAC remains committed to achieving them and appreciates the support provided by donors in 2010.

In 2010, the projected operational budget was USD 13,556,471. The actual funding was USD 13,556,471 which had left CMAC with a shortfall of USD 1,190,855. In-kind contribution amounted to USD 124,858 which consists of Japan Equipment Grant Aids, Research and Development projects, Technical Assistance and provision of international volunteers (from AusAID). In comparison to 2009, aging machines contributed to an increased in higher expenditures on spare parts, maintenance and fuels.

Table 12: 2010 Funding and contributions supporting CMAC operations

Budget 2010	Amount
Funding Expectation (Operational Budget)	USD 13,556,471
Funding Received (Operational Budget)	USD 12,365,616
Funding Shortfall (Operational Budget)	USD 1,190,855
In-Kind Contribution Received	USD 124,858

The current funding outlook for 2011 remains uncertain at this stage with a number of projects yet to be finalised. In this context, CMAC remains optimistic that the key outlines in 2011 Operational Workplan will receive strong notice and is grateful for supports provided by donors, development partners and other entity in general.

### 5.2 LOGISTICS SUPPORT AND HUMAN RESOURCES MANAGEMENT

CMAC is an operation driven institution that requires timely and efficient logistical and human resource management support. The Department of Support and Human Resources has a vital role in the organization, ensuring the efficient functioning of CMAC operations as a whole. Effective management of the key components of logistics and human resource management has been instrumental to the achievements of CMAC as the leading national mine action organization in Cambodia.

In 2010 the Department of Support and Human Resources put great effort into providing better support services across all CMAC operations, with a particular focus on improving staff welfare. This work has included a review of and improvements to human resources policies and procedures, investigating ways to improve living conditions for staff in the field, as well as staff motivation across the organization.

## ACHIEVEMENTS

### LOGISTICS SUPPORT

Answering the challenges posed by logistical support to a workforce deployed to various remote parts of Cambodia, the Department of Support and Human Resources gives a high level of attention to, and closely monitors, communication and logistical systems. Ensuring the efficient flow of both systems has enabled the department to perform its work and to achieve highly satisfactory results in 2010. During the year, the department successfully provided timely and appropriate support to all of CMAC’s workforce divisions.

The following is a list of key equipment under the management of the Department of Support and Human Resources:

Equipment	Quantity
Vehicles of various classifications	365
Brush cutting machines (excavator type)	27
Bulldozers	02
Heavy demining machines	03
Motorbikes	99
Mine detectors and deep search machines (including 1,265 units in storage for maintenance)	3037

Key achievements of the department during 2010 included:

- Conducted and reconciled the first stock take on expendable stores and reported findings to CMAC top management.
- Improved the implementation of the supply system used to re-supply Demining Units and operational sites, as well as to equip newly established and re-structured teams.
- Improved the Fixed Asset Tracking System (FATS) at DU levels and associated sections within CMAC, with a focus on monthly reporting of fixed assets.
- Equipped new project teams, partly funded by HIB, with additional assets and equipment (i.e. BAV02, BAV03, BAV04 and BAV05 teams).
- Equipped a number of Mobile Platoons and Mobile Teams with rechargeable batteries and chargers donated by the Government of Japan (Phase V), which has reduced operating costs and minimized impact on the environment because alkaline batteries were replaced with rechargeable batteries.





- Conducted a stock take on fixed assets as well a second stock take on expendable stores. The department's findings were communicated to top management.
- Regularly updated the fixed assets log of asset movement, its status and users into SunSystem, based on information provided by De-mining Units, and obtained through spot checks and stock takes.
- In coordination with the Finance Department, the department registered 376 items purchased by NPA for the Baseline Line Survey as well as items donated by JICA to CMAC Training Center, into CMAC Fixed Assets List (SunSystem).
- Coordinated with CMAC Central Workshop to receive cutting tools that had been repaired and distribute these to Mobile Platoons and other teams.
- Conducted spot checks on the management, custody and utilization of stores at De-mining Units and a number of Mobile Platoons.
- Implemented the Fixed Asset Tracking System for stock management and reporting.

## MAINTENANCE AND TRANSPORTATION

Transportation is the biggest component of CMAC's operations. As such, it constitutes the largest cost in the inventory. The cost is cumulative and includes costs for spare parts, fuel and maintenance.

The Office of Machinery and Transport put substantial effort into the management of the transport fleet, to ensure its quality and reliability in order to support operations on the ground.

Some remarkable achievement during 2010 can be described, as follows:

- Received DO Litter, EA Litter and Lubricant Litter from the Royal Government of Cambodia for CMAC Headquarters operation
- Upgraded and replaced un-serviceable vehicles of the Mobile Platoons and Demining Units, as well as vehicles for newly established teams
- Coordinated and conducted the servicing of vehicles and routine maintenance to support the smooth running of CMAC Headquarters operations, as well as other mobile teams attached to Headquarters
- Conducted spot checks on vehicles used by Demining Units, the Training Centre and other projects
- Provided training courses to deminers, drivers, platoons and team leaders on traffic law, preventative maintenance and on-going maintenance
- With the Procurement Section, purchased Third Party Liability Insurance for CMAC Vehicles and issued the insurance to all DeMining Units, the Training Center and Central Workshop

## MEDICAL SECTION

Improving the health of its de-mining workforce is a key focus area for CMAC and health promotion is an important activity for the Medical Section. In 2010, CMAC deployed 47 medical staff including doctors, medical assistants and nurses, all with various levels of education.

### Annual patient statistics:

Medical Staff conducted physical checks on field staff and their living quarters. They inspected personal health care and hygiene, food preparation and storage, cleanliness of accommodation and surrounding areas, as well as cleanliness of personal clothing and bedding. Medical Staff collaborated with both field and headquarters staff to promote health messages across the organisation, especially to field staff. They provided education sessions on matters that can impact on personal health. Such steps helped reduce the number of patients received in 2010 compared to the previous year.



Table 12 below shows that annual statistic for patients from the Headquarters, Demining Units and Training Center receiving medical treatment was 133, the same figure as for 2009.

Year	Statistic OF CASES								Total
	HQ	DU1	DU2	DU3	DU4	DU5	DU6	TC	
2008	4	51	37	42	15	0	18	7	174
2009	0	35	37	30	8	9	12	2	133
2010	3	24	32	32	12	15	12	3	133

Source: Department of Support and Human Resource 2010

Other activities in 2010

- Physical check of new recruits and re-deployed staff (69 persons)
- 646 instances of medical checks of field staff to identify problem areas and promote health care and hygiene messages, on matters such as food safety, the importance of clean clothes, and keeping accommodation and surrounding areas clean at all times
- Published Health Flash and via medics distributed it to field staff to educate them on personal hygiene and how to prevent transmissible diseases
- Staff injuries benefit promoted across the organization by Medical Staff at each Demining Unit to staff who were injured while working for CMAC



- 159 MEDEVAC exercises conducted at mine/UXO fields
- Malarial prevention through spreading chemical solution at site accommodation on a weekly basis, regular treating of mosquito nets and the distribution of skin insect repellent to all field staff
- AH1N1 vaccination to more than 2,000 CMAC staff and their families
- A study into the living conditions of field staff which was used to inform a plan for action in 2011
- Monthly check of first aid kits held by platoons and teams and refilled as required



## HUMAN RESOURCES OFFICE

The human resources capacity has been well managed and strengthened with necessary skill sets and information technology over the past years.

The commitment towards building staff proficiencies is shown through the provision of training courses to employees.

In June 2010, CMAC staff were encouraged to attend an Explosive Ordnance Disposal course, while other training courses were also provided to increase capacity, enhance capabilities and equip staff with diverse skills ranging from technical field operations through to office management.

From the beginning of 2010, CMAC has invested in the development of a human resource information system to enhance management of staff information, staff reallocations and the essential database of staff information within the organisation. This information system has significantly improved the process of staff information management, therefore enhancing the management of skills and resources within the organization. Furthermore, the process of identifying key skills to match areas of work has been improved, allowing CMAC to better utilize the expertise of staff.

### Staff Deployment

CMAC, by the end of 2010, had deployed 2,010 staff over the 12 month period. This included 1,798 permanent staff and 212 Short Service Agreement (SSA) staff. Of the total number of staff, CMAC 150 female staff (7.11% of total staff) were deployed.

Tale 13 below shows the locations where staff are working.

Table 13: Number of staff by location

No.	Location/ Operation Site	Permanent Staff	SSA Staff	Total Staff (31 Dec 2010)
1	Headquarters-PNP	141	34	175
2	Training Center	39	20	59
3	Demining Unit 1	334	20	354
4	Demining Unit 2	437	42	479
5	Central Workshop	22	05	27
6	Demining Unit 3	151	12	163
7	Demining Unit 4	164	33	197
8	Demining Unit 5	184	25	209
9	Demining Unit 6	326	21	347
<b>Total</b>		<b>1,798</b>	<b>212</b>	<b>2,010</b>

## Staff and Re-structure

In 2010 the number of permanent staff was 1,798 persons, with the number of permanent staff deployed 210 less than the previous year.

CMAC's top management, in collaboration with the Personnel Committee, occasionally re-structures organizational resources, including staff, to meet the current requirements of de-mining in Cambodia. In light of this, and the availability of donor funding and the need to make efficient use of the limited funds, the decision was made to restructure staff composition in order to minimize operating costs, whilst taking every opportunity to minimise the necessity to retrench staff.

A summary of re-structuring to staff and teams during 2010 is described below:

- Restructured the Department of Planning and Operations to meet the current requirement
- Established a new department, the Department of Mine Risk Education, Victim Assistance and Post Clearance Development
- Demobilized 2 mobile platoons, 1 SLD Team, 1 EDD Team and 2 BC Teams, rearranging the majority of personnel to fill gaps in capacity of other mobile platoons
- Established new teams - one CBAT, 16 BLS and one BAV teams
- Converted 4 ERC teams into 4 BAV teams

## Staff Training

During the year, the human resources capacity had been well managed and strengthened with the necessary skill sets and information technology. The commitment towards building staff proficiencies can be shown through the provision of training courses to employees irrespective of their current job positions. This is apparent in the carrying out of the Explosive Ordnance Disposal course to office staff members in June 2010.

## Staff Motivation

In terms of staff motivation, CMAC provides an equal opportunity to all staff to access training, opportunities, to be promoted to higher positions, to receive an increase in salary paid, mobility to change positions, or have staff work areas re-allocated to meet personal requirements. In 2010, 1,063 staff took advantage of these types of opportunities:

- |                                 |               |
|---------------------------------|---------------|
| ● Changing Position (same rank) | =125 persons  |
| ● Promoted to higher position   | =118 persons  |
| ● Increasing the salary paid    | =110 persons  |
| ● Sick leave without pay        | = 01 persons  |
| ● Leave without pay             | = 07 persons  |
| ● Maternity/Pregnancy leave     | = 03 persons  |
| ● Re-location work station      | = 71 persons  |
| ● Re-appointment                | = 18 persons  |
| ● Staff transfer                | = 891 persons |
| ● New Recruitment               | = 69 persons  |

## Staff Separation

In 2010, CMAC terminated 201 staff contracts. The main factors of their separation are as listed below.

- Abandon the post = 11 persons
- Disability of work and chronic illness = 17 persons
- Retirement = 09 persons
- Layoff = 35 persons
- Dismissal = 10 persons
- Termination temporary (Pregnancy) = 03 persons
- Termination by other reason = 05 persons
- End Contract = 01 persons
- Resignation = 116 persons
- Death = 04 persons

The majority of staff who resigned or had their contract terminated have found new employment. Some of these have found employment that provides a better work environment and/or better pay, for example working with new de-mining companies operating in Cambodia or overseas. Some of the staff who resigned however did so due to personal or family matters, such as moving to a new province or health problems.

## Compensation and incentive paid

CMAC has committed to implement its human resources policies and continuously improves these in ways to assist staff with their and their families' livelihoods. In 2010, CMAC provided compensation to 16 staff with a disability or chronic illness (total \$16,980) and provided compensation for four deaths (total \$9,600). The compensation fund is raised through the collective effort of CMAC staff members, with individuals contributing \$3 each month.

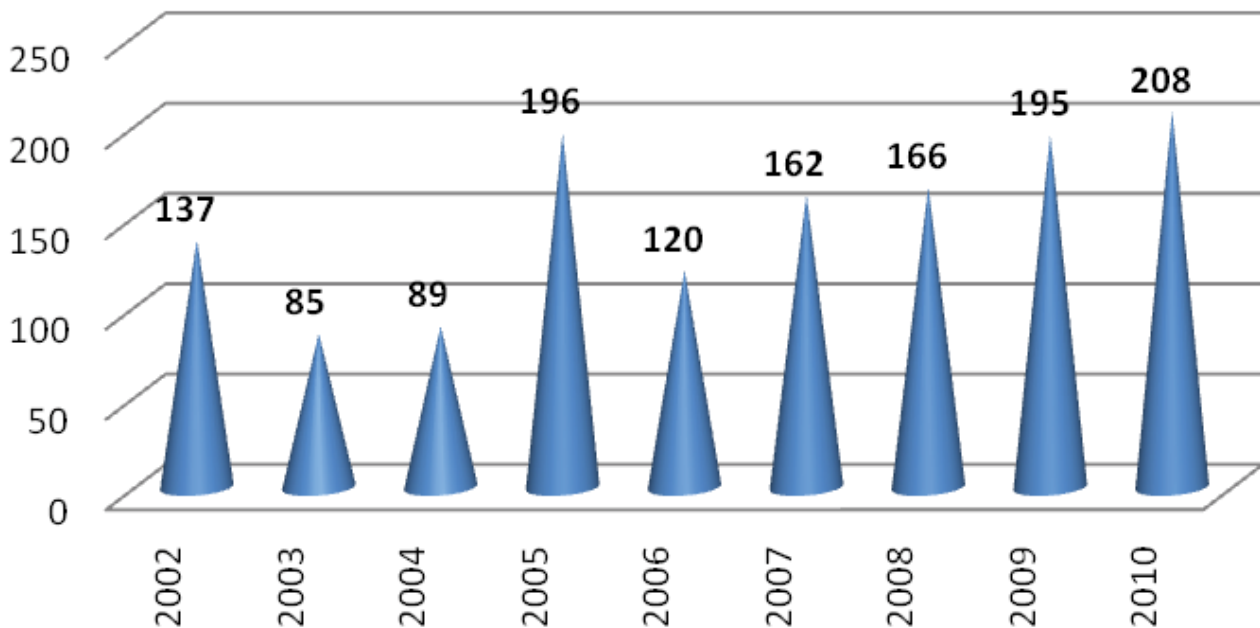
After an accident, injured staff are discharged from CMAC and compensation is provided. In the event of death, compensation is \$8,000 in a single installment, paid to immediate family. Injury benefit is \$4,000/person, also paid in one installment.

To obtain the maximum amount of compensation, staff must have suffered the accident during working hours and they must have been complying with the related SOP. The amount to be given to the injured staff member must be decided by CMAC's committee, which is chaired by CMAC's Deputy Director General, all Department Directors and Chief of Human Resources as secretary.

CMAC's salary is not flexible and has seen almost no change since its establishment. At the same time the value of the US dollar and the purchasing power of money has gone down sharply. This situation creates a burden for CMAC who often seek alternative employment.



Figure 17: Number of staff leaving CMAC by year



## EXPLOSIVE SECTION

- Issued explosives from stocks to all demining units and teams for supporting operations on the ground
- Coordinated with the Explosive Harvesting Program (EHP) to obtain recovered explosive to support CMAC operations on the ground. Obtaining explosives through the EHP has allowed CMAC to make some savings
- Conducted surprise checks on the explosives used by mobile teams and evaluated current requirements of CMAC operations for explosives. Results indicated that the management, transportation and storage of explosives has been properly conducted and in a safe manner
- Conducted spot checks on store management, custody and utilization at De-mining Units

## PROCUREMENT SECTION

To ensure the availability of store and equipment to on-time support for CMAC de-mining operation, the Procurement Section identifies and purchases quality materials and equipment and delivers these to meet the requirements of field operations.

The key achievements of 2010 are summarized, as follows:

- Coordinated with Department of Finance and other departments to identify needs and make purchases based on the procurement list.
- Conducted competitive bidding for critical items such as tyres for vehicles, cutting tools, and lubricant oil

- Coordinated custom clearance using donated equipment under the Project for Integrated Mine Clearance and Landmine Victim Assistant (Peace Building Project) and purchased equipment/materials, which included vehicles tyres, cutting tools, boots for de-miners, medical training equipment, mine detection dogs, spare parts for mine detectors and de-mining machines



- Took lead role for support services on matters including the fuel utilization contract, tax exemption, supplier contracts, and visa and airline tickets arrangements for top management
- Purchased Third Party Liability Insurance for all CMAC vehicles, based on available budgets

## 5.3 QUALITY ASSURANCE

Quality Assurance and Quality Control is a key management function that is based on CMAC internal procedures and standards and serves as a tool for CMAC managers in their decision-making, prospective evaluation, and problem solving.

CMAC recognizes that safety and quality of demining is a prerequisite to all demining activities. The Quality Assurance and Internal Audit Office has various roles and responsibilities in relation to quality assurance and internal audit, including:

- Quality assurance in demining operations
- Quality assurance in support and finance areas
- Regular quality assurance exercises, on request of top management
- Training and skill development to quality assurance and internal audit officials
- Cooperation with all relevant sectors

Quality Assurance and Quality Control achievements

Over the 12 month period, the Quality Assurance and Internal Audit Office achieved remarkable results in identifying issues and assisting sections in CMAC to develop and implement measures to achieve safety and quality across organizational activities.

Regular visits to different sections to conduct audits were made by Quality Assurance and Internal Audit Office staff and Demining Unit Standard Officers to observe work practices and inspect documentation and to have interviews with management and staff. The audit team analyzed and evaluated information gained throughout the process in order to determine whether or not the performance was satisfactory.

Audit findings in 2010 resulted in 128 minor deficiencies, the majority of which were technical issues that were corrected on-site. They occurred in the implementation of demining tools such as mobile platoons, MDD, EDD, EOD, BAT, CBAT, BAV and demining machines.

Seven major deficiencies were found to be adequately addressed in the field by the Demining Unit level and Headquarters staff.

### **Additional Activities in 2010**

As required, the Quality Assurance and Internal Audit Office responded to requests from top management. Two included:

- The investigation of an AT explosion resulting from BC#14 operations – the anti tank mine TM46 explosion occurred on 29 March 2010 at 10:45 am during the operation of BC#14 on a disused road between two minefields at Toul Pong Ro Village, Toul Ponh Ro Commune, Malay District, Banteay Meanchey Province
- Assessment of Land Release (LR) practices – tasked to conduct QA on LR activities at three minefields situated at Don Noy Village of Banteay Meanchey and Natural Village of Preah Vihear and Phcheav Village of Battambang:
  - Minefield at Don Noy M14211 Size: 838,145m<sup>2</sup>
  - Minefield at Natural Village Size: 5,006,456m<sup>2</sup>
  - Minefield at Phcheav M10473 Size: 327,4875m<sup>2</sup>

### **Training**

Office staff participated in internally run ArcMap GIS and Quality Management courses and two staff members attended a course convened by the Training Centre and delivered by QIS (funded by New Zealand). Office staff were also encouraged to pursue additional undergraduate and postgraduate education to develop their knowledge of quality management.

In 2010, the Quality Assurance and Internal Audit Office offered training and development to CMAC management, to support organizational governance more effectively, and to other staff as required to increase their knowledge of quality issues. Examples include encouraging staff to share knowledge and experiences with others during field visits arranged by Quality Assurance and Internal Audit staff, and working closely with Training Centre instructors to share with new trainees the common themes and findings from approximately 200 cases the office investigated.



## 5.4 PUBLIC AFFAIRS AND COMMUNICATIONS

2010 was an exciting and busy year for the newly created office of Public Affairs and Communications. A dedicated team has worked together to design and implement media campaigns and develop public awareness activities promoting the work of CMAC in Cambodia and around the world.

In an effort to increase awareness of the landmines and UXO issue in Cambodia, and to increase information sharing nationally and internationally, the team has provided key news and information updates to the general public in Cambodia, as well as in the international arena. CMAC's media coverage has been extensive, reaching national and regional through to international news agencies and other international websites. The team also coordinated request for information from the general public such as interest groups, media and NGO's on topics such as mine risk, the location of contaminated area and recent progress of the organisation.

Cooperation with the donors and partner community and other key players in the mine action sector were made through regular social events that have forged friendship and partnership. CMAC's in-house photographer attended all events, photographing and filming important activities and honoured guests throughout the year. All photographic footage will be archived and used as historical documentation of the work CMAC carries out each year.

In 2011 the team will continue to expand awareness of CMAC's work and its commitment to a mine free Cambodia. Great effort will be placed on the production and provision of information for all stakeholders, the development of communications materials and mediums and strengthening the partnerships within the mine action and NGO community. The Public Affairs and Communications team will also play a key role in CMAC's contributions to the 11th Meeting of State Parties to the Antipersonnel Mine Ban Convention in November 2011, held this year in Cambodia.

An overview of the Public Affairs and Communications Department's achievements in 2010 is listed below:

- Received national and international media coverage in media outlets, including the national media in Cambodia, Agence Kampuchea Press (AKP), NHK, BBC, ABC, Kyodo, Inter Press Services, Guradian Development Network, the Cambodia Association Auckland Inc. (CAAI) and Al Jazeera
- Organised media campaigns for events, such as handover ceremonies, MoU signings and international training programs
- Initiated a monthly social event for mine action associates, to encourage a strong partnership between mine action stakeholders in Phnom Penh
- Coordinated over 80 field visits and study groups
- Developed and produced CMAC's quarterly newsletter, 'Bombs Away!'
- Developed the first four of a series fact sheets and brochures
- Wrote, produced and enhanced content and presentations of the Annual Report and Six Month Progress report
- Produced photographs and film footages of all key events and key operational activities

# 6. CROSS CUTTING ISSUES

## 6.1 GENDER

CMAC as a whole organization is taking gender issues seriously. To promote gender equality, an increasing number of women have been employed as deminers and in the field as operations support staff. In teams such as the Community Based Demining (CBD) platoons, half of the team members are women. More women have also been appointed to work with Mine Detection Dogs (MDD) in various positions, including instructors.

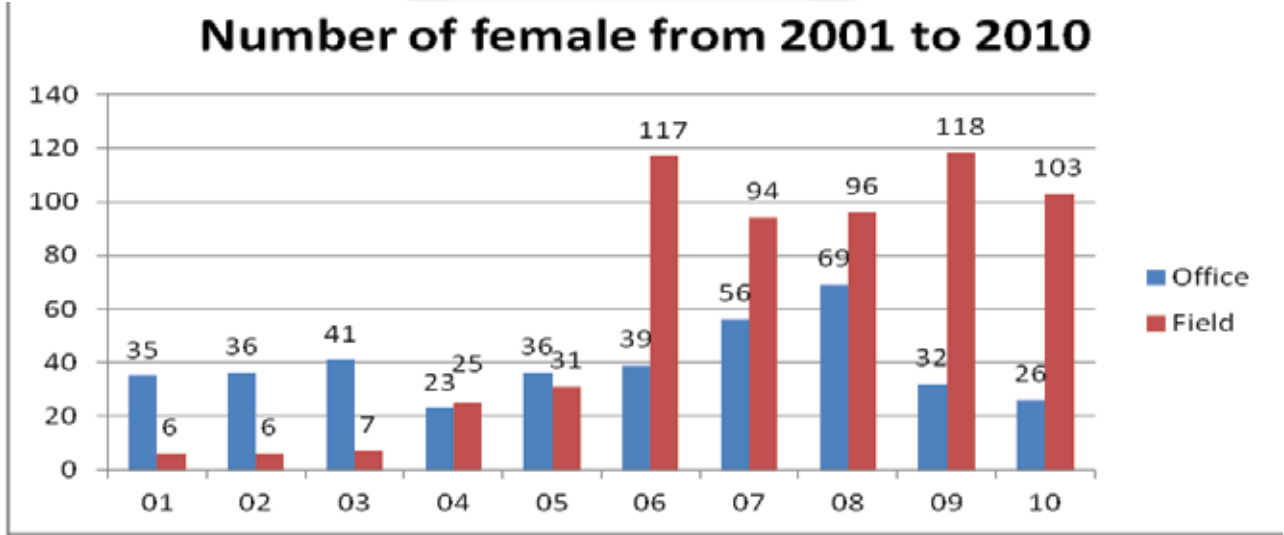


Gender sensitivity was clearly addressed in CMAC's 5 year strategy (2010-14) where CMAC is working hard to promote gender in its strategic goal # 16. To achieve this goal, CMAC is making an effort to promote gender in mine action by nurturing equal opportunity for women to work at CMAC, provide a gender friendly working environment, policies and procedures, continue to encourage a female presence in management positions and to promote gender mainstreaming in all CMAC's mine action activities.

Table X provides a quick view of the number of women working at CMAC, both at Headquarters and in the field.

Note that the number of CMAC staff has decreased from over 3000 staff in the year 2000 to 2000 staff in 2010. However the number of female staff has increased.

Figure 18: Number of female staff from 2001 to 2010



Benefits extended to female staff, as noted in the CMAC Human Resources policy, include maternity leave (Chapter 6, article 30) where female office staff are allocated 3 months leave with pay. Field staff are allocated 3 months leave with pay, with the option of additional leave without pay (if she is not ready to return to her job).

Female staff also receive a gift of about \$20 of recreation and transport on International Women's Day; long time leave without pay starting from the first month pregnancy (should she chose the option to take leave early). At field level, more duty of care is extended to female deminers.

Gender awareness has been included in various training courses and refresher sessions particularly when CMAC staff members have the need work directly with both male and female population and also when members of the team are female. CMAC's Chief Doctor is heavily involved in this training to ensure that public health messages are clear.

CMAC also uses the UN's Gender Guidelines for Mine Action Programs to inform its operations in the field. For example, when gathering survey information from local communities, CMAC staff ensures that information is collected in an inclusive manner, encouraging input from women, girls, boys and men in the affected communities.

## 6.2 HIV/AIDS

According to the NSDP (2009-13), as a result of the large scale up of prevention, care and treatment services, incidences of HIV have decreased significantly since 2000, now standing at only 0.9 percent, which is less than half of 1.9 percent assumed earlier for 2005. The 100 Percent Condom Use Program for HIV prevention covers the capital and 23 provinces with outreach and peer education program reaching more than 90 percent of entertainment workers in 2008. CMAC as a conscious national organization has made great effort to complement the National Strategy to help reducing HIV/AIDS prevalence, for people age 15-49 from 1.% to less than 0.6% (NSDP 2009-13's core indicator) by 2015.

Goal 17 of CMAC's Five Year Strategic Plan commits CMAC to continue promoting HIV/AIDS awareness within the organization and within communities living nearby CMAC operations. The awareness messages focus on reducing risky behaviour and increasing awareness through refresher training administered to CMAC field staff periodically and through mainstreaming the HIV/AIDS subject in other technical training conducted at the CMAC Training Centre.

The CMAC facilitated Community Based Mine Risk Reduction (CBMRR) has built in its Mine/UXO volunteer network's training a component HIV/AIDS awareness messages as part of CMAC's social responsibility action contributing to reducing the prevalence rate.



## 6.3 ENVIRONMENT

Although subject of environment has not yet been listed as strategic goal, CMAC has made a serious attempt in the last ten years to minimize the environmental impact of demining activities. The use of the integrated demining toolbox in CMAC is sensitive to the environmental protection. Specific tools have been designed for use in certain specific missions; this is to avoid unnecessary environmental damage which may happen as a result of unconscious productivity enhancement.

Environmental protection is also listed in the NMAS (2010-19). The NMAS states that ‘...A number of protected forests and National parks are affected by mine/ERW to some extent... Mechanisms to coordinate survey and clearance in these

protected areas are needed to both meet Article 5 obligations and to ensure local residents who are accessing these areas for forest products and national parks are safe...’. Guided by this strategy, CMAC will employ its land release methodology and its environment friendly tools to ensure the environment is well protected.



## 7. FUTURE PLANS

There are three key factors impacting prioritisation for clearance. They are important elements of the strategic operating context. The first one is casualty rate. It is evident that:

- The casualties in 2010 surpass 2009 figures (260 vs. 244)[1], which will be the first increase since a steady decline from 2002. While the increase is not large, it is an indicator confirming the relevance of the humanitarian mine action sector in Cambodia. With substantial contamination and wide spread impacts remaining, CMAC, with its entrusted mandate, will continue as an institution until it has accomplished its mission
- Western and Northern provinces (bordering Thailand) remain the highest mine/UXO contaminated areas, despite more than a decade of clearance
- Accidents tend to be widely distributed amongst remote regions that previously experienced no or limited casualty rates. Based on this observation, accidents are occurring along side infrastructure development. This indicates that current unknown mine/UXO fields will be encountered when remote areas are developed

The second factor is the need to target resources to support the achievement of the National Mine Action Strategy (NMAS 2010-19), particularly Goal 1 and 2.

### **Goal 1.Reduce Mine/ERW casualties and other negative impacts**

- 1.1 Allocate demining assets to the most impacted areas
- 1.2 Provide effective mine/ERW risk education

### **Goal 2.Contribute to economic growth and poverty reduction**

- 2.1 Support local development priorities in communities affected by mine/ ERW
- 2.2 Support national and sub-national development priorities



2.3 Support mine victims/survivors and their families to receive adequate medical care, physical rehabilitation & livelihood assistance

2.4 Support land management process to secure rights of intended beneficiaries on demined land



The NMAS complements other national strategies such as the Cambodian Millennium Development Goals (CMDG), the Rectangular Strategy Phase II, the National Strategic Development Plan (NSDP) – update 2009-2013, and the Ten-Year Article 5 Extension Request for Mine Clearance. As much as possible, in the process of selecting clearance tasks, emphasis will be given to tasks that support these strategies and that through the MAPU process; these are identified as high on the priority list.

CMAC realizes that meeting the NMAS goals requires more than just landmine clearance; it extends to MRE, EOD, BAC and addressing needs of the community through development approaches and support to victims through holistic intervention. Achieving this will require the service of the CBMRR) District Focal Point and their MUC volunteer network.

The third factor is CMAC values. CMAC's core values are set around Safety, Cost Effectiveness, Honesty and Integrity, Appropriate Technology and Expertise. These values will remain primary focus for CMAC in the process of implementing the mine action program. CMAC meets these values through discipline and training; through research and development of new technology and methodology; through integration with other key program areas where appropriate (as in the process of toolbox/toolkit integration); through accurate documentation and reporting; through the application of internal QA and QC; and through replication of best practice.

Going forward CMAC will:

- Follow the guidelines set by the CMAA in regard to the selection of minefields for clearance, particularly complying with the MAPU process and the need to address contaminated area documented in the currently implemented baseline survey
- Apply land release methods in accordance with CMAC land release concept and related SOPs on all of CMAC selected clearance tasks where practical and appropriate. However, effort be given to full clearance with appropriate SOP's application



- Apply where possible and appropriate toolbox integration and effectively manage the process; this includes demining toolbox (i.e. teams) and toolkit (i.e. detectors including the newly introduced in operation dual sensors)
- Analyze lessons learnt and minefield environment and revise productivity of all CMAC toolbox with the aim to enhance clearance speed and effective use of demining resource
- As much as possible, whether through the work of the CBMRR-DFP or mainstreaming in regular demining teams, MRE messages will be conveyed to the affected target communities. These teams will also respond in a timely fashion to the community requests for emergency mine action intervention



- Continue scanning mine action environment, making necessary changes in tool and configuration and mission (including consolidation), improving technology, enhancing methodology, providing quality training and efficient support to demining teams
- Timely and accurately transfer of relevant clearance task records and survey data to CMAC database and to CMAA
- Enhance national and international cooperation and communication to share knowledge and expertise and to market CMAC services

- Strengthen commitment to CMAC staff well-being by offering appropriate benefits and protection provided under the Cambodian Labor Law, the safety and efficiency offered under CMAC SOPs
- Given the Royal Government of Cambodia hosting the 11 MSP of the APMB in November 2011, CMAC is preparing itself to contribute to the successful conference



# SPECIAL THANKS TO THE FOLLOWING DONORS AND PARTNERS

CMAC would like to thank the Royal Government of Cambodia for the support.



Our special thanks extend to donors and development partners:



**Australia**



**Belgium**



**Canada**



**Denmark**



**European Union**



**France**



**Germany**



**Japan**



**Netherland**



**New Zealand**



**Norway**



**Spain**



**Sweden**



**Switzerland**



**United Kingdom**



**USA**



**United Nations**



Australian Agency for International Development (AusAID), ActionAid Australia, BHP Biliton, Cambodian Mine Action Authorities (CMAA), CARE International, European Commission (EC), Handicap International Belgium (HIB), Japan International Cooperation Agency (JICA), Japan Mine Action Service (JMAS), Spanish Agency for International Development Cooperation (AECID), United Nations Development Program (UNDP), Norwegian People's Aid (NPA), Geneva International Centre for Humanitarian Demining (GICHD), United Nations Children's Fund (UNICEF), World Bank Cambodia, Peace Boat, Rotary International District 2650, Good Earth Japan (GEJ), Save the Children Norway, United Nations Office for Project Services (UNOPS), United Nations High Commissioner for Refugees (UNHCR), Good Earth Japan (GEJ)/Hitachi Corporation, Government of Australia, Government of Canada, Government of Japan, Government of New Zealand, Government of Norway, Government of Poland, Government of Spain, Government of USA, Komatsu Ltd and other donors and partners who has supported CMAC over the years.

# APPENDICES

## APPENDIX I: CMAC 2010 Operational Progress Report Summary

Progress  Period	Total of Land Released							Cleared Area Without Sketch		
	None Technical Survey (NTS)	Technical Survey (TS)				Full Clearance		Safety Site (m <sup>2</sup> )	Spot Check (m <sup>2</sup> )	Surveyed Area for Minefield Marking (m <sup>2</sup> )
		Target Inspection (m <sup>2</sup> )	Systematic Investigation							
			Breaching lane (m <sup>2</sup> )	Inspected Box (m <sup>2</sup> )	Un inspected Box (m <sup>2</sup> )	Minefield (m <sup>2</sup> )	Battle Area (m <sup>2</sup> )			
<b>CMAC 2010</b>	<b>1,960,505</b>	<b>820,920</b>	<b>1,063,240</b>	<b>694,031</b>	<b>18,806,732</b>	<b>22,215,384</b>	<b>21,295,936</b>	<b>123,443</b>	<b>961,721</b>	<b>583,180</b>
Jan-2010		9,610	2,640	16,016	398,462	1,531,116	591,218	19,969	36,205	53,602
Feb-2010		44,138	4,980			2,381,547	1,443,297	8,366	65,330	60,282
Mar-2010	548,756	146,541	129,401	4,388	110,169	2,032,225	2,887,077	8,464	161,605	54,466
Apr-2010	728,381	112,127	131,653	12,053	3,005,277	1,662,111	1,764,161	7,869	56,778	33,735
May-2010	370,325	109,788	79,171	10,586	129,945	1,753,723	1,483,261	9,005	137,175	24,352
Jun-2010	169,713	83,231	40,727	17,036	388,876	2,421,765	2,011,388	10,603	134,963	61,135
Jul-2010	143,330	110,556	123,734	238,513	201,548	1,638,013	1,951,604	8,774	62,538	65,662
Aug-2010		80,738	26,955	25,252	74,608	1,858,435	2,443,721	12,179	74,279	77,626
Sep-2010		45,839	54,537	50,345	333,108	1,897,302	2,208,649	10,721	54,288	40,089
Oct-2010			86,992	29,921		1,554,639	1,532,158	6,899	48,862	32,901
Nov-2010		40,852	234,757	81,948	6,110,017	1,511,519	1,804,085	11,754	79,594	48,752
Dec-2010		37,500	147,693	207,973	8,054,722	1,972,989	1,175,317	8,840	50,104	30,578
<b>Grand Total</b>	<b>1,960,505</b>	<b>820,920</b>	<b>1,063,240</b>	<b>694,031</b>	<b>18,806,732</b>	<b>22,215,384</b>	<b>21,295,936</b>	<b>123,443</b>	<b>961,721</b>	<b>583,180</b>



QA/QC	Other											EOD & MRE Tasks	
	Brush Cutter		Survey & Marking		Ammunition Found & Destroyed								
Size (m <sup>2</sup> )	Cutting the Brush (m <sup>2</sup> )	Soil Excavation the mounds (m <sup>3</sup> )	Number of minefield marked	Liner of marking (m)	AP mine	AT mine	UXO	Improvised Mines	Small Arms (kgs)	Others	Fragments	Requested	Responded
221,238	6,917,363	45,307	3,088	2,030,392	18,163	402	134,665	310	9,955	130,675	12,149,188	13,347	12,410
	513,687	979	417	472,564	1,388	35	8,192	1	206		952,673	827	780
	791,074	2,894	300	220,155	1,683	37	13,541	10	1,714		1,036,171	1,044	964
2,033	603,205	6,166	404	181,348	1,518	39	10,013	26	533		1,794,259	1,165	1,065
6,335	539,644	1,903	157	126,775	1,360	37	7,715	28	434		1,779,190	945	884
2,350	559,897	1,639	197	162,851	1,425	25	9,480	2	891		768,940	1,084	998
7,307	673,846	1,323	500	211,568	1,929	85	20,066	38	917	130,000	1,084,374	1,565	1,415
2,176	488,616	1,189	442	203,469	1,690	38	10,771	41	1,014		897,742	970	867
752	651,696	8,796	218	117,728	1,868	53	13,462	66	833	150	889,572	1,407	1,320
64,690	630,611	1,379	170	104,243	1,739	17	13,950	53	577		906,198	1,464	1,407
770	443,733	2,266	114	94,962	1,072	6	7,185	25	493		694,558	655	653
28,814	427,621	15,251	88	87,414	1,115	15	9,599	5	2,021	500	608,778	1,090	1,024
106,011	593,733	1,522	81	47,315	1,376	15	10,691	15	322	25	736,733	1,131	1,033
221,238	6,917,363	45,307	3,088	2,030,392	18,163	402	134,665	310	9,955	130,675	12,149,188	13,347	12,410



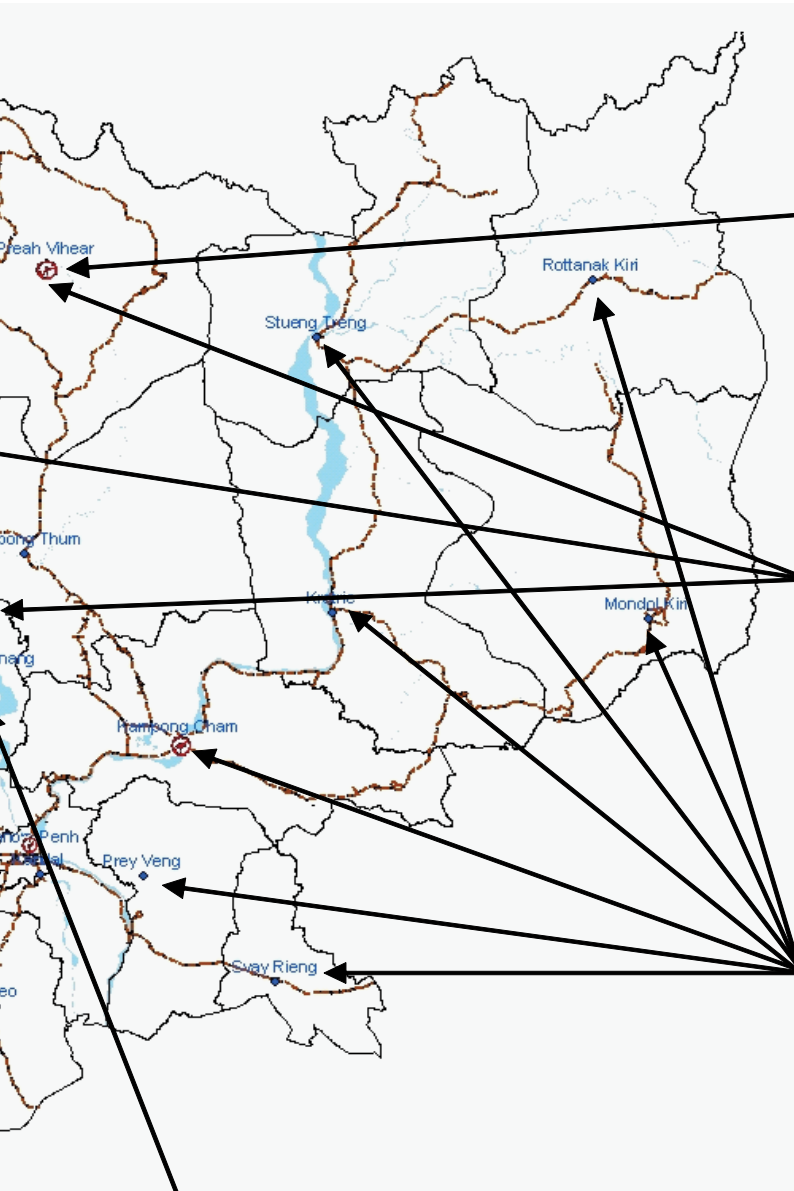




# ANNEX II: DEPLOYMENT MAP



Annex : A



- Demining Unit 3**
- 2 MP
  - 1 BLS
  - 2 BAT
  - OFFICE STAFF
  - 2 CBAT
  - 2 EOD
  - 1 BAV

- Demining Unit 4**
- 3 MP
  - 1 SLD
  - 5 EOD
  - 6 DFP-CBM
  - 6-ALIS
  - 1 EOD Supervisor
  - OFFICE STAFF
  - 2 BLS
  - 1 MRE
  - 3 BC
  - 7 DFP-CBU
  - 1 TSS-BLS

- Demining Unit 5**
- 1 TSC
  - 2 MP
  - 5 BAV
  - 2 MRE
  - 2 BC
  - 1 EOD
  - OFFICE STAFF
  - 1 BLS
  - 3 ERI
  - 3 ERC
  - 2 BAT
  - 3 EDD
  - 14 DFP-CBARR

**Training Centre  
OFFICE STAFF**

**Legend**

- DU Base
- Khet Centre
- Main Road
- River and Sea
- province Boundary

**Kilometers**

0      45      90      180

Dataum.....Indian Thailand 1960  
Zone.....48 N

**1:50000**

## Appendix III: Projects Implemented in 2010

No	Project Name	Donor/Partner	Project Location: DU (Province)	Main Focus	Project Start	Project End
1	USA-DU3 FY09-10	USA	DU3 (Prah Vihear)	Mine/UXO Clearance	1-Sep-09	31-Aug-10
2	USA-DU5 FY09-10	USA	DU5 (Kampong Cham Province)	UXO clearance	1-Sep-09	31-Aug-10
3	USA-TC FY09-10 Supporting and Enchancing CMAC Training Centre	USA	TC (Kampong Chhnang)	Building Capacity of CMAC	1-Sep-09	31-Aug-10
4	USA-DU5 FY09-10 (200K)	USA	DU5 (Kampong Cham Province)	UXO clearance	1-Sep-09	31-Aug-10
5	Royal Government of Cambodia project in Preah Vihear	Royal Government of Cambodia (RGC)	DU3 (Prah Vihear)	Mine Clearance	1-Feb-10	31-Aug-10
6	Clearing For Result 2010	UNDP	DU1, DU2, DU4, DU5, HQ	Mine/UXO Clearance	1-Jan-10	31-Dec-10
7	Pro-Active Battle Area Clearance	Handicap Internaitonal Belgium (HIB)	DU5 (K.Cham, Kratie, Svayrieng)	Battle Area Clearance by Village	15-Dec-09	28-Feb-11
8	Humanitarian Demining DU4 (Grass Root)	Governement of Japan	DU4 (Prah Vihear, Siem Reap)	Mine/UXO Clearance	12-Mar-10	11-Mar-11
9	Germany DU6	Government of Germany	DU6 (Siem Reap and Oddar Mean Chey)	Mine/UXO Clearance	1-Jan-10	31-Dec-10
10	Technical Survey & Develop Land Release Operating Procedure	Norweigian People's Aids (NPA)	DU1, DU2 (Banteay Mean Chey and Battambang)	Technical Survey & Develop Land Release Operating Procedure	1-Jan-10	31-Dec-10
11	Minefield Clearance in Battambang: Safety Village Construction (SVC)	Japan MoFA and Komatsu Co., Ltd/ Japan Mine Action Service (JMAS) and Komatsu Ltd	DU2 (Battambang)	Mine clearance and Infrustructural development	1-Apr-10	14-Jul-11
12	Minefield Clearance in Battambang: Community-Based Demining (CBD)	Japan MoFA/ Japan Mine Action Service (JMAS)	DU2 (Battambang)	Community Based Mine Clearance	15-Jul-10	14-Jul-11



13	UXO Clearance and Community-Based UXO Risk Reduction (CBURR) District Network	Japan Mine Action Service (JMAS)	HQ, DU4 (Kampong Speu, Takeo and Siem Reap)	Explosive Ordnance Disposal (EOD) and Community Based UXO Risk Reduction (CBURR) Network	8-Oct-09	07-Oct-10
14	UXO Clearance and Community-Based UXO Risk Reduction (CBURR) District Network	Japan Mine Action Service (JMAS)	HQ, DU4 (Kampong Speu, Takeo and Siem Reap)	Explosive Ordnance Disposal (EOD) and Community Based UXO Risk Reduction (CBURR) Network	8-Oct-10	07-Oct-11
15	Mine Risk Education and Community-based Mine Risk Reduction Project	UNICEF	All Dus	Mine Clearance, Community capacity building, Mine Risk Education, Mine and UXO disposal	1-Jan-10	31-Dec-10
16	Economic and Social Relaunch of North Western Province (ECORSORN), the ECOSORN-CMAC project; Institutional Support and Demining	European Commission (EC) and Royal Government of Cambodia (RGC) through ECOSORN	DU1, DU2, DU4 (Siem Reap, Banteay Mean Chey and Battambang)	Mine Clearance and Institutional support for rapid response capacity through CBMRR initiative	16-Nov-07	16-Sep-10
17	The Program for Integrated Mine Clearance and Landmine Victim Assistance in the Kingdom of Cambodia	Japan's Grant Aid for Conflict Prevention and Peace-building	DU2 (Battambang)	Mine Clearance and Post-clearance Community development	15-Jan-10	14-Jan-12
18	United Nation Assoc of Sweden	UNDP - AAM	DU1, DU2 (Banteay Mean Chey and Battambang)	Mine Clearance	1-Oct-09	31-Dec-10
19	Mentor College-Canada	Mentor College-Canada	DU1 (Banteay Mean Chey)	Mine Clearance	8-Mar-10	30-Oct-10
20	World Bank Project_ Land Allocation for Social and Economic Development (LASED)	World Bank	DU5 (Kampong Cham Province)	UXO clearance	20-Jul-10	20-Jul-11

21	Advanced Landmine Imaging System (ALIS) Project	Tohoku University (Japan)	DU4 (Kompong Thom)	ALIS Operational field evaluation in minefield.	1-Mar-10	31-Dec-10
22	Mine and ERW Clearance in Srayong Cheung Village, Srayong Commune, Kulen District, preah Vihear Province	Peace Boat	DU4 (Prah Vihear)	Mine/ERW Clearance	1-Aug-10	15-Sep-10
23	Project name??	Good Earth Japan (GEJ), Hitachi Construction Machine Co., Ltd	DU2 (Battambang)	Post-Mine Clearance and Community Development	??	??

No	Contractual Services	Partner Name	Dus, Provinces	Main Focus	Project Start	Project End
1	LMI (2 TSC) Contractual Service	Liberty Mining International Ltd	DU5, Kampong Cham Province	Mine/UXO survey and path finding clearance	1-Aug-10	30-Sep-10
2	Mine Detection Dog Contractual Services (6 months)	Mine Advisory Group (MAG)	DU2, Battambang	Mine Clearance, Contractual Service of Mine Detection Dog (MDD) to MAG	1-Apr-10	30-Sep-10
3	Mine Detection Dog Contractual Services (12 months)	Mine Advisory Group (MAG)	DU2, Battambang	Mine Clearance, Contractual Service of Mine Detection Dog (MDD) to MAG	1-Nov-09	31-Oct-10
4	Mine Detection Dog Contractual Services (12 months)	Mine Advisory Group (MAG)	DU1, Banteay Mean Chey	Mine Clearance, Contractual Service of Mine Detection Dog (MDD) to MAG	1-Jul-10	30-Apr-11







## ទីបញ្ជាការ ស៊ីម៉ង់ - ភ្នំពេញ

អាគារស៊ីម៉ង់, វិថីខ្នង ងៀប, ភូមិគោកចំបក់, សង្កាត់ចោមចៅ, ប ខ័ណ្ឌដង្កោ  
 រាជធានីភ្នំពេញ កម្ពុជា, ប្រអប់សំបុត្រ ១១៦ ភ្នំពេញ ១២២០២  
 ទូរស័ព្ទ: ៨៥៥-២៣-៩៩៥៤៣៧/៨/ ទូរសារ: ៨៥៥-២៣-៣៦៧ ០៩៦  
 E-mail: [info@cmac.gov.kh](mailto:info@cmac.gov.kh)/ <http://www.cmac.gov.kh>

## CMAC HQ - Phnom Penh

CMAC Building, Road Duong Ngeap,  
 Kork Chombak Village  
 Chaomchao Commune,  
 Dongkor District  
 PO Box 116, Phnom Penh 12202  
 Tel: (855) 23 995 437/8 / Fax: (855) 23 367 096  
[info@cmac.gov.kh](mailto:info@cmac.gov.kh) / <http://www.cmac.gov.kh>

