

KINGDOM OF CAMBODIA

NATION RELIGION KING



**CAMBODIAN MINE ACTION CENTRE
(CMAC)**

PROGRESS REPORT

JANUARY - JUNE 2023

SAVING LIVES AND SUPPORTING DEVELOPMENT FOR CAMBODIA

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GLOSSARY OF ACRONYMS

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
BCT	Brush Cutter & Mine Clearance Team
BLS	Baseline Survey
CAC	Community Anti-Tank Mine Clearance
CBAT	Community-Based Battle Area Clearance Team
CBD	Community-Based Demining Platoon
CBMRR	Community-Based Mine Risk Reduction
CBURR	Community-Based UXO Risk Reduction
CCL	China-Aided Cambodia Landmines Elimination Project
CCM	Convention on Cluster Munitions
CDC	CMAC Community Development Centre
CFR	Clearing For Results
CMA	CMAC General Account
CMAA	Cambodian Mine Action and Victim Assistance Authority
CMAC	Cambodian Mine Action Centre
CMAS	Cambodian Mine Action Standards
CMC	Community Mine Clearance
CMRS	Cluster Munition Remnant Survey and Clearance in Eastern Cambodia
CMVIS	Cambodian Mine Victim Information System
CPF	Counterpart Fund
CTB	Cambodian-Thai Border
CTS	Cluster Munition Technical Survey
CWS	Central Workshop
DC	Dog Centre
DDU	Development Demining Unit
DFP	District Focal Point
DM	Demining Machine
DMR	Demining Robot
DMT	Demining Machine Teams
DU	CMAC Demining Units
EDD	Explosive Detection Dog



EHP	Explosive Harvesting Program
EOD	Explosive Ordinance Disposal
ERC	Explosive Remnants of War Clearance Teams
ERI	Explosive Remnants of War Intervention Teams
ERW	Explosive Remnants of War
GEJ	Good Earth Japan
GICHD	Geneva International Centre for Humanitarian Demining
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HALO	Hazardous Areas Life-Support Organization (HALO Trust)
HI-B	Handicap International – Belgium
HQ	Headquarters
HRIS	Human Resource Information System
ICP	Integrated Clearance Mobile Platoon
IDPs	Internally Displaced People
IED	Improvised Explosive Device
IMAS	International Mine Action Standards
IM	Improvised Mines
IMCCD	International Mine Clearance and Community Development
IMP	Integrated Multi-task Platoon
IWP	Integrated Work Plan
JICA	Japan International Corporation Agency
JICS	Japan International Cooperation System
JMAS	Japan Mine Action Service
KFU	Kampong Thom Frontline Unit
KRG	Kurdistan Regional Government
L1S	Level One Survey
LLD	Long Leash Dog
LR	Land Release
MA	Mine Action
MAG	Mines Advisory Group
MAPU	Mine Action Planning Unit
MCTU	Mine Clearance Training Unit
MDD	Mine Detection Dog/Short Leash Dog
MDR	Mine Detection Rat
MF	Minefield
MOU	Memorandum of Understanding
MP	Mobile Platoon
MRE	Mine Risk Education
NGO	Non-Governmental Organization
NMAS	National Mine Action Strategy
NPA	Norwegian People's Aid



NSSF	National Social Security Fund
NTS	Non-Technical Survey
PAICMA	Presidential Program for Comprehensive Action Against Anti-Personnel
PBC	Platoon Brush Cutter Machines
PC	Provincial Coordinator
PCD	Special Unit of Post-Clearance Development and Victim Assistance
PDM	Platoon Demining Machine
PFU	Pailin Frontline Demining Unit
PIMV	Project for Integrated Mine Clearance and Landmine Victim Assistance
PMA	Peace Museum of Mine Action
PMAC	Provincial Mine Action Committee
PMD	Platoon Manual Demining
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
RCAF	Royal Cambodian Armed Forces
RGC	Royal Government of Cambodia
RSDB	Reconstruction Support with Demining Disposal in Banteay Meanchey
SHA	Suspected Hazard Areas
SIDA	Swedish International Development Agency
SLD	Short Leash Mine Detection Dog or see MDD/SLD
SNC	Supreme National Council
SOP	Standard Operating Procedure
SSA	Short Service Agreement
SUUO	Special Unit of Underwater Operations
SVC	Safety Village Construction
TC	Training Centre
TCTP	Third Country Training Program
TIMA	Technical Institute of Mine Action
TNA	Training Need Assessment
TS	Technical Survey
TS-App	Tracking System Application
TSC	Technical Survey for Clearance team
TSD	Technical Survey Dog
TSO	Technical Survey Officer
TSS	Technical Survey Supervisor
UN	United Nations
UNAMIC	United Nations Advanced Mission in Cambodia
UNDP	United Nations Development Program
UNTAC	United Nations Transitional Authority in Cambodia
UXO	Unexploded Ordnance
WB	World Bank



FOREWORD



With a profound sense of pride and gratitude, I present the Foreword to the Six-Month Report of 2023 for the Cambodian Mine Action Centre (CMAC). This report encapsulates the unyielding commitment and tireless dedication of CMAC's exceptional team, providing a vivid testament to our collective journey toward a safer and more prosperous Cambodia.

CMAC's unwavering mission of "saving lives and supporting development for Cambodia" has been our guiding North Star, propelling our unflagging efforts forward. The achievements highlighted in this report not only underscore the strides we've made in the past six months but also emphasize the continued progress we're making to shape a mine-free Cambodia—a vision in alignment with the Royal Government of Cambodia's (RGC) unwavering commitment to the Ottawa Convention's aspiration for a safer world. Each square meter of land

liberated from the grip of landmine/ERW signifies a tangible and profound change in the lives of Cambodian citizens. Our mission goes beyond the mere act of demining; it's about cultivating an environment where hope thrives, communities flourish, and the horizon of possibilities is redrawn.

Intriguing statistics tell part of our story: an impressive 151 km² cleared, exceeding our six-month target and propelling us toward the ambitious 2023 annual goal of 268 km². Yet, it's the human stories—those often hidden behind the numbers—that truly define our accomplishments. With each liberated area, we witness more than just barren terrain transformed; we see reinvigorated farmlands, new opportunities for growth, and the return of normalcy to communities once gripped by fear. Families, who once lived in the shadow of uncertainty, now stand poised to thrive and realize their full potential. The heartwarming metamorphosis we witness daily serves as a powerful reminder of the significance of our mission and fuels our determination to push forward.

CMAC's influence transcends Cambodia's borders, resonating across distant landscapes. By sharing the wealth of expertise we've amassed, we've extended a compassionate hand to nations grappling with similar challenges. Empowering countries like Lao-PDR and Ukraine through training underscores Cambodia's status as a beacon of humanitarian assistance in mine action. Our evolution from aid recipients to guidance providers reflects the significant strides we've taken since our inception—not just demonstrating organizational growth but also serving as a source of inspiration and knowledge.

However, as we rightly celebrate our achievements, we remain conscious that our journey remains incomplete. The dedication required to declare districts and provinces "mine-free" marks a beginning, not an end. We must remain vigilant, as latent threats persist in unforeseen corners. Explosive remnants of war continue to pose a risk. To address this, CMAC's Mine Risk Education (MRE) teams have forged a unique partnership with communities. A network of 4,100 volunteers, including local residents, police officers, and even Buddhist monks, embodies the power of collaboration. It stands as a testament to our shared responsibility in safeguarding lives and underscores our commitment to creating a safer environment.

I wish to take this opportunity to clarify a vital point: The declaration of "mine-free" districts or provinces signifies a significant milestone but doesn't eliminate the risk of explosive remnants of war. While we've cleared the recorded minefields, the threat from ERW remains, including those outside the recorded database. Residents remain at risk if they disregard this threat. Addressing this, CMAC's MRE teams have cultivated a vigilant network, harnessing the proximity of local residents, police officers, and monks to swiftly report mine/ERW information. Additionally, our Explosive Ordnance Disposal (EOD) teams stand ready to respond to emergencies, reaffirming our unwavering commitment to the safety of all residents.

To our invaluable partners and stakeholders—international donors, development partners, RGC, CMAA, PMAC, MAPU, local authorities, and communities—I extend my deepest gratitude. Your unwavering support forms the bedrock of our achievements. It's through this shared commitment that we've achieved so much and continue striving for a brighter future.

To the incredible men and women of CMAC, both past and present, your dedication radiates hope throughout Cambodia. Your tireless efforts embody the very essence of service and resilience that defines our nation.

In summation, the Six-Month Report of 2023 is a celebration of progress, a testament to collaboration, and an unwavering commitment to crafting a safer, more prosperous Cambodia. As we move forward, let our resolve be fortified, confident that our mission will usher in transformative change—not just for individuals, but for the pages of history itself.

With heartfelt appreciation and unwavering optimism,

H.E. Heng Ratana
Delegate of the Royal Government
In charge as Director General of CMAC

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EXECUTIVE SUMMARY

In the spectrum of Cambodia's efforts to neutralize landmines and explosive remnants of war (ERW), the National Mine Action Strategy (NMAS) 2018-2025, endorsed by the Royal Government of Cambodia (RGC) on 12 December 2017, remains a cornerstone. This strategy underscores the pressing issue of contamination across the nation, with approximately 1,970 km² plagued by landmines and ERWs. This contamination encompasses minefields spanning 946 km², UXO fields covering 379 km², and cluster submunitions fields encompassing 645 km². The RGC's commitment to citizen welfare and safety fuels its actions to tackle these challenges.

Cambodia's mine action landscape has undergone dynamic shifts, buoyed by the RGC's resolve to achieve a mine-free Cambodia by the end of 2025, aligning with the Ottawa Convention's stipulations. Pioneered by Samdech Akka Moha Sena Padei Techo Hun Sen, the Prime Minister of the Kingdom of Cambodia, this ambition signals the government's unwavering dedication to protecting the Cambodian people from the perils of landmines.

To bolster the RGC's commitment and the Ottawa Convention's objectives, the Cambodian Mine Action Centre (CMAC) has meticulously gauged its capabilities. Drawing from real-world scenarios, technical proficiency, and past methodologies, CMAC devised a comprehensive Integrated Workplan (IWP) for 2023. This blueprint aims to boldly clear over 268 km² of landmine and ERW-affected areas. This strategic move underscores CMAC's synchronization with the RGC's drive toward a mine-free Cambodia by the end of 2025.

CMAC's IWP 2023 encapsulates a wide array of tools, including landmine and ERW clearance, community mine risk education, community development initiatives, international training ventures, and cutting-edge research and development efforts. This comprehensive program demonstrates CMAC's commitment to addressing all aspects of mine action and paving the way for safer and more secure communities nationally, regionally, and globally.

Operational Triumphs: CMAC's drive has yielded monumental outcomes. In a remarkable feat, CMAC has exceeded expectations by clearing over 151 km² of hazardous terrain, surpassing the six-month target by a staggering 113.28%. This feat constitutes a commanding 56.64% of the annual goal of 268 km². A total of 36,315 landmines and ERWs have been successfully eliminated, while 680 kg of small arms, 1,141,945 fragmentation pieces, and 5 unidentified munitions have been safely collected. CMAC's swift response to 1,719 appeals for intervention underscores its role as a safeguard for communities at risk.

Historical Milestones: CMAC's legacy is profound. Between 1992 and June 2023, CMAC's efforts have culminated in the clearance of 1,616 Km² and the discovery and neutralization of 3,133,503 landmines and ERWs, alongside 131,895 unidentifiable munitions, 115,008 kg of small arms, and an astonishing 468,506,446 pieces of fragmentation. Notably, CMAC's accomplishments represent 57% of Cambodia's cumulative clearance of 2,847 km² since 1992—an unparalleled achievement.



Empowering Communities: A pivotal facet of CMAC's work is its Mine Risk Education (MRE) program. By arming 4,100 volunteers—including local residents, police officers, and Buddhist monks—with critical MRE knowledge, CMAC has fortified high-risk regions. An impressive 11,648 MRE courses have reached 892,129 individuals, including men, women, students, and children. This cascade of awareness translates into proactive reporting, as reflected by the mere 21 landmine/ERW casualties in the first half of 2023.

Catalyzing Socioeconomic Growth: Beyond clearance, CMAC's impact on socioeconomic outputs is something to be proud of. With increased awareness of danger through the MRE program, a significant portion of the cleared land, amounting to 59%, has been repurposed for agricultural use. This allocation has initiated the growth of socioeconomic development for the families residing in and around the post-clearance areas. This achievement demonstrates the positive benefits the program brings to the local communities, fostering economic opportunities and improving their quality of life.

Building Capacities and International Standing: CMAC's dedication extends to capacity building and international engagement. While 372 staff members underwent comprehensive training, 525 trainees from the Cambodian National Police (CNP) and the Royal Cambodian Armed Forces (RCAF) absorbed vital insights. Internationally, CMAC's training initiatives have extended to Lao-PDR and Ukraine, enriching the global mine action landscape and concomitantly promoting Cambodia's image in the eyes of the world.

Navigating Challenges: CMAC's odyssey has not been devoid of challenges. Predominant hurdles, including budget fluctuations, environmental complexities, compacted minefields, aging deminers, and the inherent perils of demining, have collectively cast shadows. Nonetheless, effective management, orchestrated through internal departments like Human Resources, Support, Project Management, and Quality, has adeptly mitigated these challenges.

In Conclusion: The triumphs of the initial six-month of 2023 reverberate across multifaceted dimensions. They encompass ameliorating contamination, curtailing casualties, stimulating livelihoods, and aligning with poverty reduction strategies. Moreover, CMAC's feats elevate Cambodia's global stature, underscoring its unwavering commitment to development. The imperative of demining in unleashing development potential underscores the urgency of CMAC's mission.

In essence, CMAC's accomplishments are not just numerical victories; they epitomize a nation's resilience and determination. As challenges are confronted head-on, Cambodia's path toward a mine-free future gains momentum. With each hectare made safe, CMAC lays the foundation for prosperity, solidifying its role as a harbinger of hope and transformation.

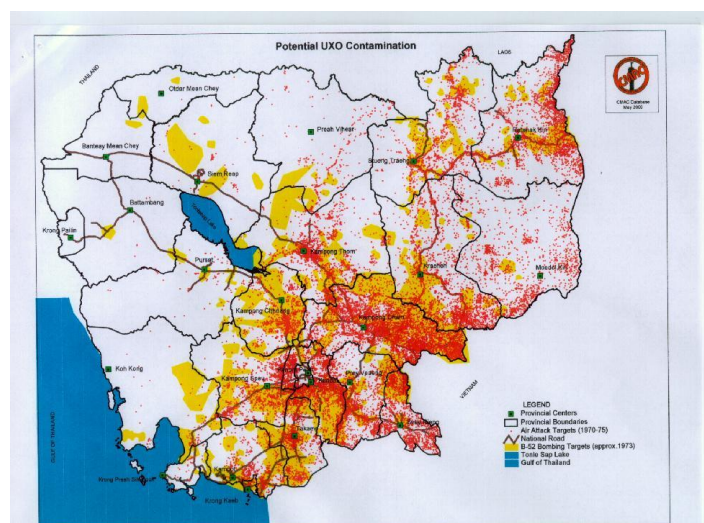


1. HISTORY OF MINE/ERW ISSUE IN CAMBODIA

As stated in the International Campaign to Ban Landmine, antecedents of the weapons are believed to have initially seen action during the American Civil War in the 1800s; however, it was during World War II that anti-personnel mines (APMs) were employed extensively. Subsequently, they were utilized in various conflicts such as the Vietnam War, the Korean War, and the First Gulf War. Throughout the Cold War era, numerous nations strategically planted extensive lines of landmines along their borders.

Here comes the case of Cambodia. In the wake of officially winning independence from France on 09 November 1953, the people of the Kingdom of Cambodia could contentedly enjoy a very prosperous era under the leadership of His Majesty King Norodom Sihanouk—but only in a short period of time during the 1960s. Disturbingly, the Cold War, a period of geopolitically tightened tension between the Western and the Eastern Blocs which germinated on the heels of the denouement of World War II, came about in March 1947 and slowly but surely led to the Vietnam War in 1955—just 2 years subsequent to the Cambodian Independence Day. In an effort to protect South Vietnam from the invasion of North Vietnam, the US, most likely due to their geopolitical interests, decided to participate in the Vietnam War and thus drastically dropped millions of tons of aerial bombs on the Indochina Peninsula.

It is therefore evident that the presence of ERW problems in Cambodia was undeniably on account of the geopolitical issue of the region which resulted in the internally political instability, thereby triggering the civil war in the country eventually. The Vietnam War, in particular the US's involvement, was the curse of Cambodia in no uncertain terms. The data on bombardments carried out by the US and its allies on Cambodia's territory reveals a total of 223,273 bombardment records. These records encompass 539,291 sorties, 113,716 sites, and 15,562 polygons, which equate to approximately 15,429 km² of contaminated land. The total amount of bombardment data is estimated to be 4,038,265 tons, with the US alone responsible for dropping 2.8 million tons.



Map of ERW contaminated areas in Cambodia

That ruthlessly heavy bombardment did really cause immense devastation in the Kingdom of Cambodia. What is more, General Lon Nol used it as a pretext to overthrow the Cambodian Chief of State, King Norodom Sihanouk, in a coup d'état in March 1970 while the monarch was paying his visit to Moscow. The coup was based on accusations that the King was involved in allowing North Vietnamese troops to fight in Cambodia's territory in order for territorial integration with the South.

Since Lon Nol led the state, it marked a change in Cambodia's involvement in the Vietnam War, for he issued an ultimatum to the North Vietnamese forces to leave Cambodia. Since then, the



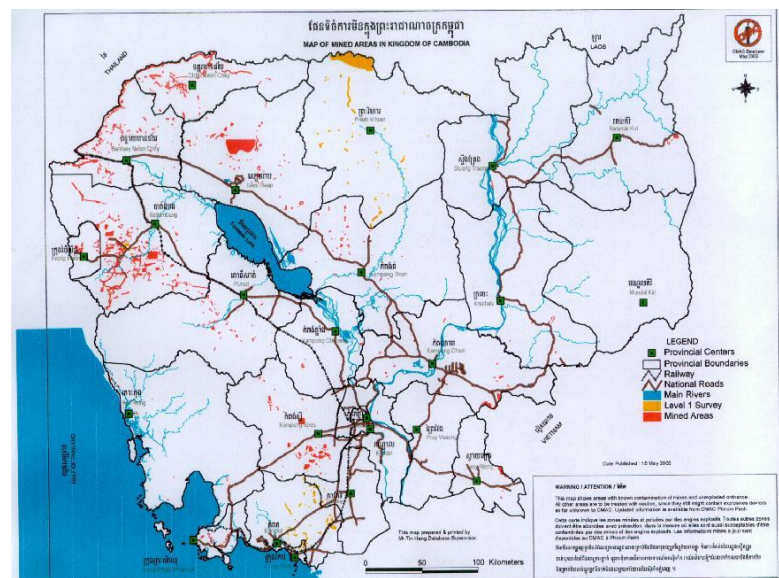
warfare in Cambodia escalated from day to day. In 1973, the proliferation of the rising Khmer Rouge troops started a military race for power from the Kampuchea Republic Regime of Lon Nol. Inevitably, Khmer Rouge took complete control of Cambodia on 17 April 1975. Under the brutal leadership of Pol Pot, the Democratic of Kampuchea became a brutal genocidal regime until Hanoi launched a major offensive in January 1979 in response to the Khmer Rouge incursions into Vietnam and the unfolding humanitarian crisis. This pushed the Khmer Rouge to the northwest region of Cambodia where they still continued to resist until 1998.

Even though the Khmer Rouge collapsed, the skirmishes had yet to end. The internal conflict for control of the country could be still unsolved, albeit a historical general election organized by the United Nations Transitional Authority in Cambodia (UNTAC) in 1993. On that basis, Cambodia would have no complete peace and unity unless the then Samdech Techno Hun Sen back then successfully applied his Win-Win Policy in 1998 to entirely cut off the roots of the Khmer Rouge political and military organization in Cambodia. During the internal warfare and skirmishes among those political entities, numerous amounts of ERW, especially landmines, were scatteringly laid all over the country.

Therefore, as a result of the US bombardment and the civil war among its political groups competing for power over the three decades, it is estimated that there were 4 to 6 million landmines scatteringly laid and a total of 30 million ERWs (consisting of cluster munitions, heavy bombs, and chemical bombs) heavily dropped and hastily abandoned, in the entire country. All of these items have caused millions of Cambodian people—not only the combatants but also the innocent residents—to physically injure, maim, or die. The rest who did not lose life and limb also have psychologically suffered so far since they were frightened and lost their beloved ones. Besides, a wide diversity of the country's infrastructures was badly damaged.

In spite of complete peace throughout the country in 1998, it did not mean that the Cambodian people would not suffer anymore. In addition to mental suffering, they were still injured, maimed, or murdered by the so-called hidden killers: landmines and ERWs (ERW consists of both UXO and AXO). This legacy of the war has left Cambodia with consequences of landmines and ERWs which remain a constant threat to the safety and security of the people and a big hindrance to the development of the country until these days. Based on the National Level One Survey throughout the country between 1999-2000, Cambodia had a total contaminated land of 4,544 Km² in 1,641 villages from 588 communes, 147 districts, and 25 capital/provinces. This issue negatively impacted 124,427 families back then.

Numerous lives were tragically lost due to landmine and unexploded ordnance (UXO) incidents in 1979, with a devastating total of 4,674 casualties. However, following the establishment of the Cambodian Mine Action Centre (CMAC) by the Supreme National Council (SNC) on 10 June 1992, there has been a significant decline in annual casualties. In 1995, there were 3,333 recorded



Map of mine contaminated areas in Cambodia



2. INTRODUCTION

The National Mine Action Strategy (NMAS) 2018-2025, approved by the Royal Government of Cambodia (RGC) on 12 December 2017, indicates that Cambodia still has a vast expanse of landmine and explosive remnants of war (ERW) contaminated areas throughout the country, covering an area of approximately 1,970 km². This contamination includes 946 km² of minefields, 379 km² of UXO fields, and 645 km² of cluster submunitions fields. In view of this, the RGC has taken several measures to ensure the safety and well-being of its citizens.

During the commemoration of National Fish Day on July 1, 2022, held at the Trapeang Thmor reservoir situated in Trapeang Thmor village, Poy Char commune, Phnom Srok district, Banteay Meanchey province, Samdech Akka Moha Sena Padei Techo Hun Sen, Prime Minister of the Kingdom of Cambodia, was confronted with the stark reality of the challenges faced by victims of landmine accidents, particularly those left disabled. This encounter led him to implore the Minister of Economy and Finance, Aun Pornmoniroth, to contemplate the inclusion of landmine clearance expenses in the national budget for the fiscal years 2023-2024. This strategic move is aimed at propelling the nation towards achieving its ambitious objective of becoming landmine-free by 2025.

In addition to the operations supported by the existing foreign aid projects and the above governmental intervention, the Prime Minister also issued a call to action to all domestic philanthropists, urging them to contribute towards the cause of landmine and Explosive Remnants of War (ERW) clearance. This appeal sparked a significant wave of local donations, thereby bolstering the mine action service within the country, especially the southern parts, under the project "Samdech Techo Project Fund for Mine Action", initiated by Samdech Techo Hun Sen on 04 July 2022.

On the heels of the end of the Samdech Techo Project Fund for Mine Action, the RGC has established the Cambodia Mine-Free 2025 Fund, aimed at clearing all the anti-personnel mines from Cambodia by 2025. The fund, established through a sub-decree signed by the Prime Minister on 03 December 2022, was to allocate resources to clear landmines and ERWs. This fund, together with the operations being implemented by the existing foreign aid projects, has great significance in responding to the residual issues.

Notably, the Cambodia Mine-Free 2025 Fund has been set up to achieve landmine and ERW clearance at an accelerated rate to support the Royal Government's goal of "Cambodia Mine-Free 2025". To achieve this goal, CMAC has introduced the Integrated Workplan (IWP) 2023, which is a roadmap aimed at ensuring that CMAC is aligned with the national and international mine action contexts and is in compliance with the RGC's policies. The IWP 2023 has been prepared with consideration of CMAC's capabilities, particularly its operational ones.

In its IWP 2023, CMAC has committed itself to clearing 268,050,099 m² of minefields and UXO fields to help RGC get nearer to achieving its mine action goals. Additionally, CMAC has planned to conduct mine/ERW risk education (MRE) and enhance the livelihoods of the individuals residing in and around landmine and ERW-contaminated areas through the provision of safe land for agricultural activities and the reconstruction of public infrastructure.



The establishments of the Cambodia Mine-Free 2025 Fund and the CMAC's IWP 2023 are vital for Cambodia to realize its ambitious goals of becoming landmine-free. It is evident that mine clearance activities will improve the socio-economic indicators of the country drastically. The clearing of contaminated land leads to the growth of transportation and construction industries, which helps reduce poverty rates, ameliorate living conditions, and increase access to healthcare and education services.

Overall, CMAC is implementing various measures and strategies to ensure the safety of Cambodian citizens by ensuring that every corner of the country is cleared of landmines and other explosive remnants of war. The establishment of the Cambodia Mine-Free 2025 Fund by RGC, in addition to the projects supported by foreign donors, is a crucial step toward achieving a landmine-free Cambodia by 2025. The significant impact of mine clearance activities on socioeconomic development cannot be overemphasized, and it is crucial that stakeholders continue to support these efforts.





3. OUTPUTS IN THE FIRST SIX MONTHS

The Cambodian Mine Action Centre (CMAC), a preeminent national demining institution in Cambodia, serves as the esteemed assistant to the Royal Government of Cambodia. Its primary objective is to save lives and promote development throughout the entire country, aligning with the government's policies. This section will illustrate the significant achievements of CMAC within a six-month time frame, spanning from January to June 2023, specifically focusing on operational and socioeconomic outputs together with those of the Mine Risk Education (MRE) program.

3.1. Operational Outputs

In late 2021, CMAC encountered challenges in formulating its operational work plan for 2022 due to uncertain funding. The organization strived to maximize deployment within limited financial resources. However, the situation evolved in the first half of 2022 as CMAC secured additional foreign financial resources and initiated a domestic fund, supported by Samdech Techo Hun Sen, the Prime Minister of Cambodia. With these newfound resources, CMAC thoroughly reviewed and subsequently increased its target for operational clearance of landmine and explosive remnants of war (ERW) contaminated areas.

Fortunately, the adversities did not persist into 2023. As mentioned earlier, CMAC experienced an influx of foreign aid projects and received financial support from the Royal Government of Cambodia for the new "Cambodia Mine-Free 2025" project. This notable support was granted through a sub-decree signed on 3 December 2022 by Prime Minister Samdech Techo Hun Sen. Armed with these favorable circumstances, CMAC confidently constructed its ambitious Integrated Workplan (IWP) 2023 and subsequently launched it in late 2022. The IWP 2023 outlines CMAC's determination to clear and release 268,050,099 Km² of minefields and UXO fields.





This operational target represents a significant endeavor, aligning with the National Mine Action Strategy (NMAS) 2018-2025 and CMAC Strategic Plan 2019-2025. Its accomplishment aims to reduce risks, support development, alleviate poverty in Cambodia, and fulfill the Royal Government's commitment to the OTTAWA convention—an international treaty aiming to eliminate anti-personnel mines worldwide by 2025.

In readiness for operational clearance in 2023, CMAC has diligently integrated manual demining (MD) with mechanized demining (heavy machine systems), as well as employed mine detection animals (consisting of dogs and rats), to bolster operational efficiency and speed. During the first half of this year, CMAC deployed a total of 1,306 deminers (including 154 women deminers), 28 brush cutters (BC), 11 demining machines (DM), 46 mine detection dogs (MDD), and 51 mine detection rats (MDR). These demining tools and forces have undergone rigorous capacity-building processes and integrated into 172 teams before being dispatched across various projects in the country.

As a result, CMAC has achieved significant progress in terms of operational clearance in the first six months of 2023. Specifically, CMAC has successfully cleared and released over 151 km² (151,817,425 m²) of landmine/ERW contaminated areas, representing 113.28% of the six-month plan of 134,025,050 m² and 56.64% of the total work plan of 268,050,099 m² for the year 2023. These accomplishments have been made possible through the effective utilization of mechanical demining machines, detection animal systems, improved demining methodologies, toolbox integration, field management, increased training, and implementation of the Land Release Methodology.





During this reporting period, CMAC has discovered and destroyed a total of 10,530 mines (including 10,474 APMs, 53 ATMs, and 3 IMs) and 25,785 ERWs (comprised of 27 aerial bombs, 3,511 cluster munitions, and 22,247 UXOs). Additionally, CMAC has collected 680 kg of small arms, 1,141,945 pieces of fragmentation, and 5 unidentified munitions. The organization has also responded to 1,719 requests from local authorities and communities for intervention. Furthermore, CMAC's survey teams have marked 377,286 m of minefields and identified 425 polygons of suspected minefields and UXO fields, totaling 73,603,977 m².

Table: Land Release (m²) Conducted by CMAC from January to June 2023

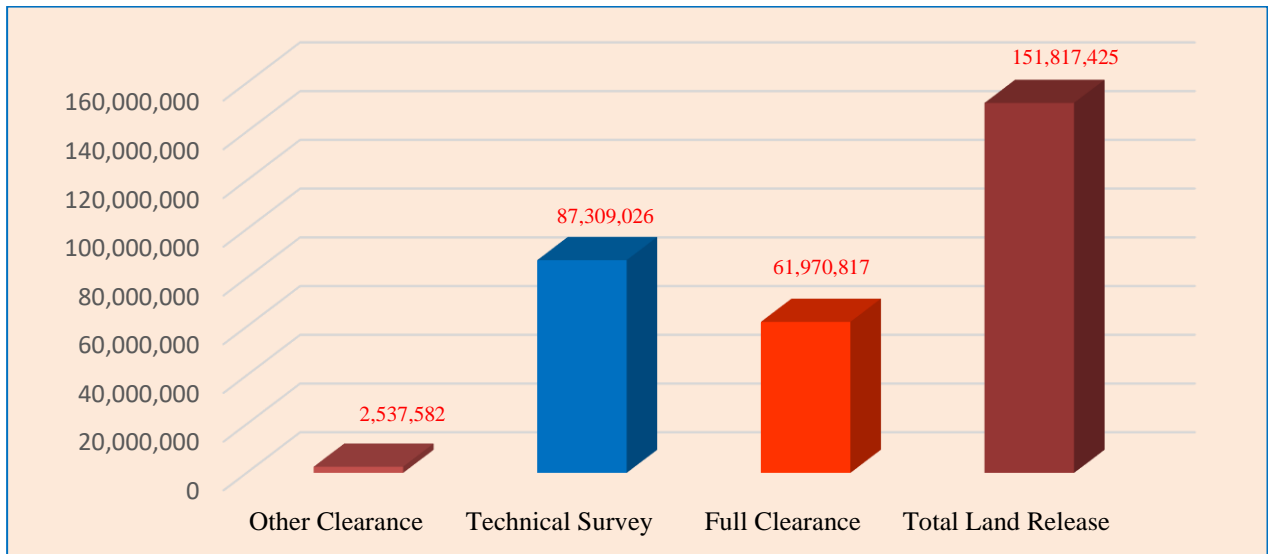
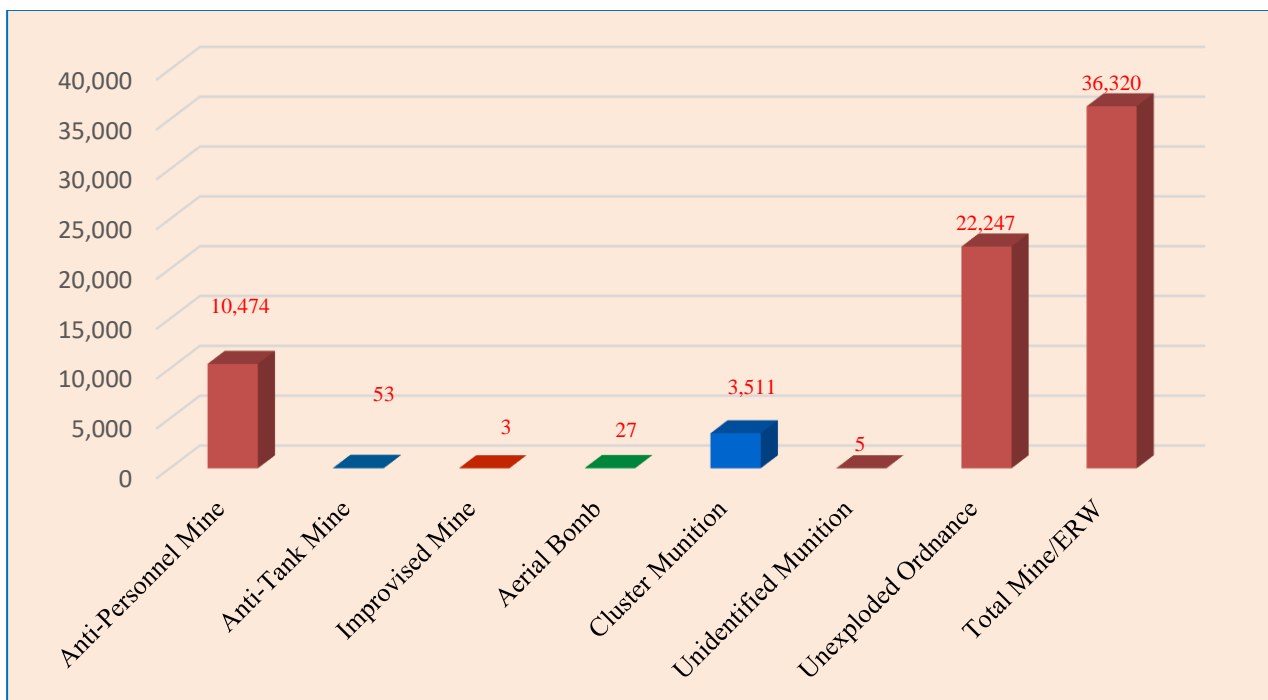


Table: Landmine/ERW Found and Destroyed by CMAC from January to June 2023



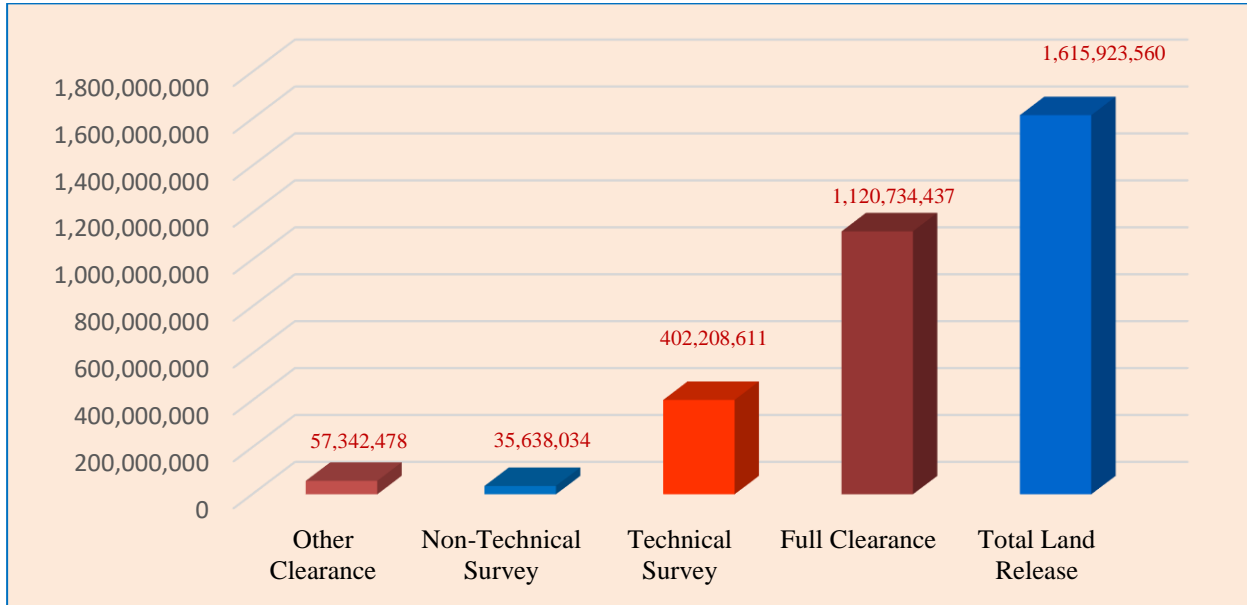
**Table: Summary Table of Operational Outputs in the First Six Months of 2023**

✚ Land Released	151,817,425 m²
▶▶ Minefield Released	124,011,290 m ²
▶▶ UXO-Field Release	27,806,135 m ²
✚ Landmine/ERW Found and Destroyed	36,315 Mines/ERWs
▶▶ Anti-Personnel Mine	10,474
▶▶ Anti-Tank Mine	53
▶▶ Improvised Mine	3
▶▶ Aerial Bomb	27
▶▶ UXO	22,247
▶▶ Cluster Munition	3,511
▶▶ Unidentified Munition	5
✚ Small Arm	680 kg
✚ Fragment	1,141,945 pieces
✚ EOD Call/Request Responded	1,719 requests
✚ Landmine/ERW Free Village	
▶▶ Number of Villages Released	87 villages
▶▶ Number of Minefields	238 minefields
▶▶ Land Area of Minefields Released	20,711,982 m ²
✚ Anti-Personnel Mine Free Province (8 Capital/Provinces and 4 City/Districts of Pursat Province): Phnom Penh, Preah Sihanouk, Kampot, Takeo, Kandal, Kampong Chhnang, Kampong Cham, and Svay Rieng Provinces as well as Pursat City, Bakan, Krakor, and Kandieng Districts of Pursat Province.	
✚ Minefield Information and Survey	
▶▶ Marking Minefields	377,286 m
▶▶ New Landmine/ERW Suspected Areas Found	425 Polygons (73,603,977 m ²)

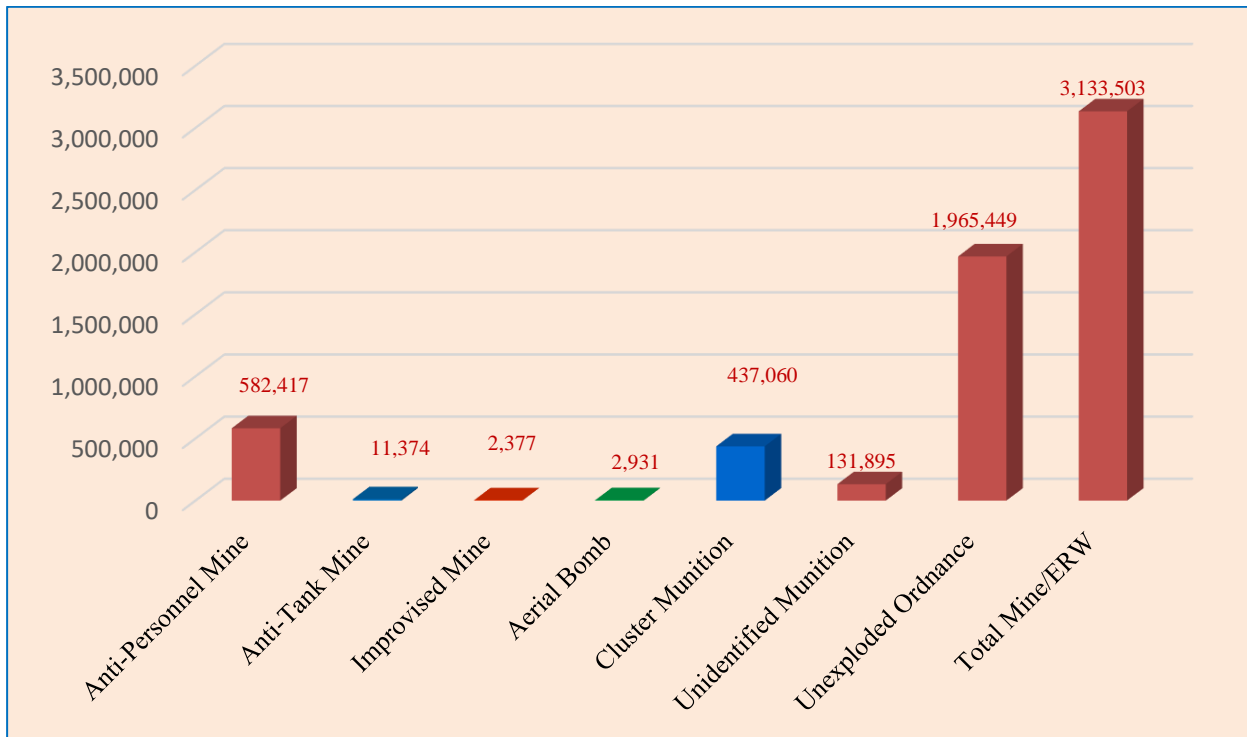
This recent operational achievement has contributed to CMAC alone releasing almost 1,616 km² of landmine/ERW-affected areas between June 1992 to June 2023. Regarding the items found, CMAC discovered and destroyed a total of 596,168 mines, including 582,417 APMs (Anti-Personnel Mines), 11,374 ATMs (Anti-Tank Mines), and 2,377 IMs (Improvised Mines). Additionally, CMAC disposed of 2,537,335 ERWs (Explosive Remnants of War), consisting of 2,931 aerial bombs, 437,060 cluster munitions, and 1,965,449 UXOs (Unexploded Ordnance), along with 131,895 unidentified munitions. This governmental organization also collected 115,008 kg of small arms and 468,506,446 pieces of fragmentation, while responding to 124,682 requests from local authorities and communities for interventions. Most notably, the number of locations where chemical drums dropped by the US aircraft during the Vietnam War was discovered and increased to 87.



Bar Chart: Land Release (m²) Conducted by CMAC between June 1992 and June 2023



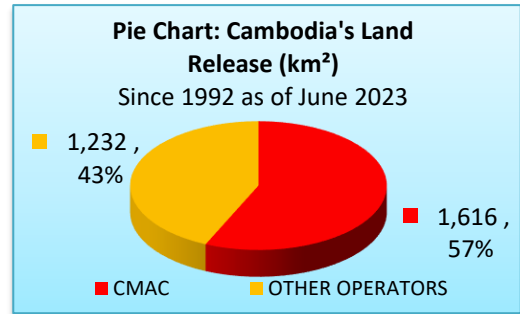
Bar Chart: Landmine/ERW Found and Destroyed by CMAC between June 1992 and June 2023



With great pride in the diligent clearance efforts undertaken by CMAC, the Cambodian Mine Action and Victim Assistance Authority (CMAA) has officially declared a significant milestone: the designation of eight capital/provinces and four city/districts within Pursat Province as Anti-Personnel Mine Free Zones. These areas include the following: Phnom Penh, Preah Sihanouk, Kampot, Takeo, Kandal, Kampong Chhnang, Kampong Cham, and Svay Rieng Provinces, as well as Pursat City, Bakan, Krakor, and Kandieng Districts within Pursat Province. This achievement is a testament to the unwavering commitment and effectiveness of CMAC's clearance operations in the entire country since 1992.



On a national level, Cambodia has successfully cleared and released a total of 2,847 km² since 1992. Of this figure, CMAC alone has contributed 57% to this clearance and land release, with the remaining portion accomplished by other demining operators, including the National Centre for Peacekeeping Forces (NPMEC), the Mines Advisory Group (MAG), the HALO Trust, the Cambodia Self Help Demining (CSHD), and the Norwegian People's Aid (NPA).



3.2. MRE Program Outputs

In spite of the end of the war and then the modern era, the impact of landmines and other explosive remnants of war (ERWs) on the lives of civilians still has been devastating in the Kingdom of Cambodia. Innocent individuals have suffered from countless accidents caused by landmines, unexploded ordnances, and abandoned explosive ordnances even though CMAC has made significant efforts to mitigate the harmful effects of these deadly devices.

Thanks to the effective implementation of demining clearance initiatives and comprehensive MRE programs in Cambodia, there has been a significant decline in casualties over the years, though. According to data sourced from the Cambodian Mine Victim Information System (CMVIS) of the Cambodian Mine Action and Victim Assistance Authority (CMAA), a total of 65,005 casualties were recorded within Cambodia between 1979 and 2022. Among these, 51,167 were attributed to landmines, while 13,838 resulted from ERWs.

The data demonstrates a consistent reduction in casualties, with the number declining from 4,674 in 1979 to 858 in 2000. The trend continued to decrease, reaching less than 100 in 2016, marking a remarkable decline with only 83 reported casualties that year. However, individuals are so far being maimed, injured, or killed by landmines or ERWs despite notable progress in reducing accidents since the implementation of clearance and MRE programs in Cambodia. For rural families, these devices pose a daily threat and present serious obstacles to the achievement of sustainable livelihoods, socio-economic development, and the broader infrastructural goals of the country.

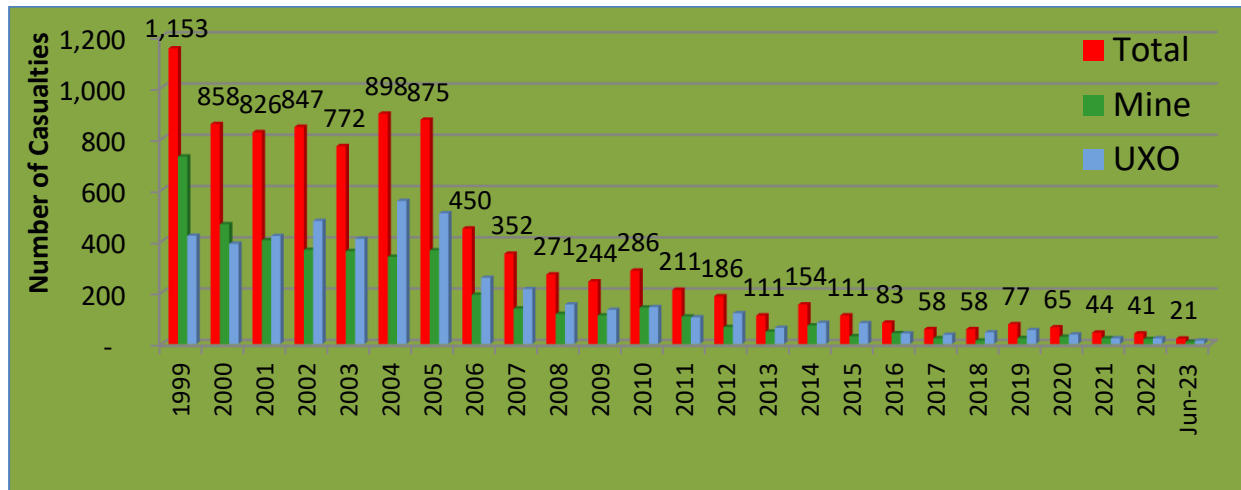


It is important to note that the first six months in 2023 alone witnessed a resurgence in Mine/ERW accidents, accounting for 21 cases that resulted in 18 injuries and 3 fatalities across the country. To further illustrate this trend, the accompanying bar chart presents the number of



casualties reported from 1999 to June 2023. Through concerted efforts in demining activities and comprehensive risk education, the decline in casualty figures underscores the effectiveness of ongoing initiatives in mitigating the threats posed by landmines and ERWs in Cambodia.

Bar Chart: Landmine/ERW Casualty Data in Cambodia from 1999 to June 2023



CMAC thus remains fully committed to its mission of clearing landmines and other explosive remnants of war (ERWs) from affected areas while simultaneously raising awareness among local communities regarding the serious risks these deadly remnants pose. This arduous duty has involved the development and implementation of a comprehensive MRE program that trains volunteers and local authorities in affected areas to identify, report and manage landmine and unexploded ordnance risks in their respective regions. Such efforts have not only helped promote a culture of safety among those living in affected zones but have also facilitated the successful removal of these life-threatening devices from numerous localities.

Through intensive training and MRE capacity building, CMAC has effectively equipped 4,100 volunteers throughout the country, including 2,874 local residents, 1,183 national police officers, and 43 Buddhist monks, with the knowledge and skills necessary to prevent accidents caused by landmines and ERWs. These volunteers have, in turn, played a vital role in disseminating the MRE message to their communities and raising awareness about the dangers associated with landmines and explosive remnants.

To this end, CMAC's MRE team and dedicated volunteer network managed to conduct a wide range of comprehensive programs to educate people about the risks associated with landmines and ERWs. These initiatives were particularly concentrated in high-risk areas. The result of efforts in the first half of 2023 was an impressive accumulation of 11,648 MRE

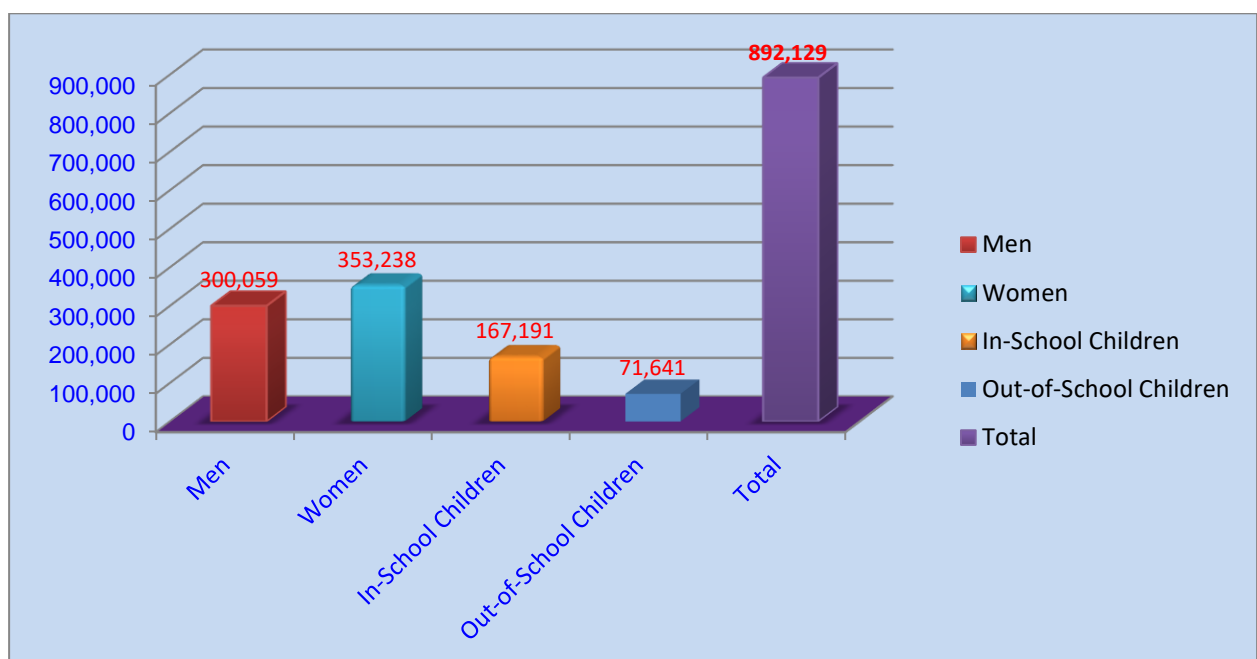




courses provided to the residents of 1,152 Mine/ERW-affected villages, benefitting a remarkable 571,810 households. The impact of these courses was far-reaching, reaching an extensive audience of 892,129 individuals. This audience included 300,059 men, 353,238 women, 167,191 in-school students, and 71,641 out-of-school children.



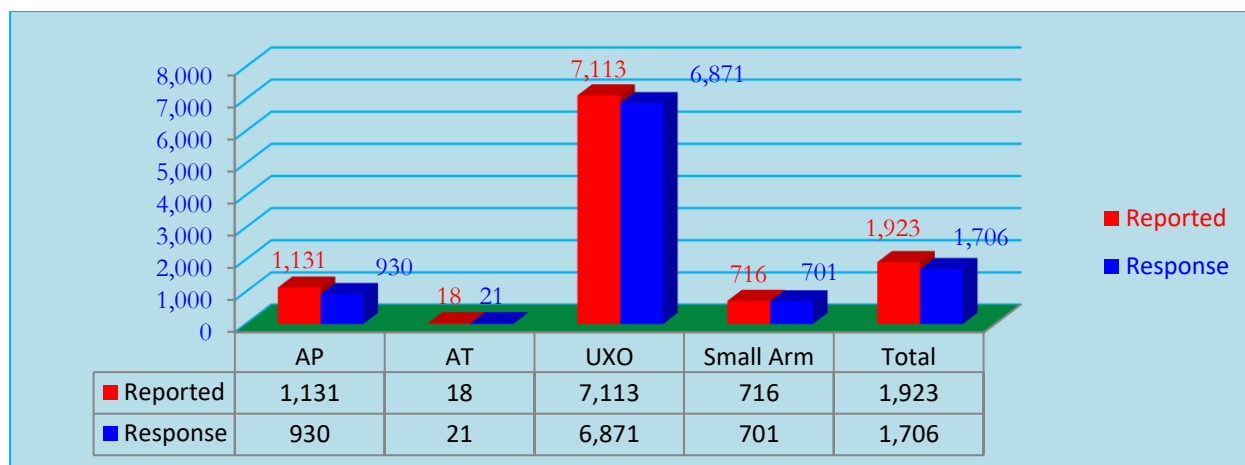
Bar Chart: Audiences Receiving Mine/UXO Risk Education from January to June 2023





As a result of CMAC's MRE program, the number of emergency intervention requests related to landmines and ERWs has increased dramatically. With the aid of the volunteer network, CMAC has received a considerable number of intervention requests, ranging from anti-personnel mines (APMs) to small arms. In response, CMAC's Explosive Ordnance Disposal (EDO) teams have successfully handled over 1,700 emergency cases in the first six months of 2023.

Bar Chart: Number of Requests Vs. Number of Responses from January to June 2023



Through their tireless efforts to train and empower volunteers, CMAC has created a unique and powerful model for addressing the impact of landmines and ERWs on local populations. With heightened awareness and increased knowledge, volunteers are now able to quickly and effectively report any potential Mine/ERW threats, allowing CMAC's EOD teams to spring into action and prevent harm to civilians. CMAC's innovative approach has not only saved countless lives and prevented debilitating injuries but also provided hope for people living in regions affected by landmines and other ERWs.

Table: Summary of MRE's Achievements from January to June 2023

MRE's Achievements from January to June 2023																
Courses	Households	Audience Group					Numbers of Requests/Reports from Local Authorities and Communities					Numbers of Responses to the Requests from Local Authorities and Communities				
		Men	Women	Students	Outside-School Children	Total	Requests	APMs	ATMs	UXOs	Small Arms	Responses	APMs	ATMs	UXOs	Small Arms
11,648	571,810	300,059	353,238	167,191	71,641	892,129	1,923	1,131	18	7,113	716	1,706	930	21	6,871	701



3.3. Socio-Economic Outputs

As previously specified, CMAC has successfully cleared and released over 151 square kilometers of land and concomitantly provided Mine/ERW risk education messages to a staggering audience of 892,129 individuals within a six-month time frame, spanning from January to June 2023. These cleared areas have been handed over to local authorities and communities for alternative use, as per their specific requests. This noteworthy achievement showcases CMAC's professionalism and commitment to creating a safe environment, fostering progress, and ensuring a brighter future for Cambodia.

This accomplishment has notably contributed to the reduction of landmine/explosive remnants of war (ERW) casualties in the country, as well as supported the enhancement of livelihoods, resettlement, and socio-economic and infrastructural activities for individuals and affected communities. These efforts align with Cambodia's National Strategy for poverty reduction and have been critical to enabling progress in developmental activities that would have otherwise been impeded by the presence of landmines/ERWs scattered throughout the country. Demining activities remain a priority in support of the Royal Government of Cambodia's aspiration to eradicate the threat of landmines and ERWs from the country.



The socio-economic benefits of these achievements have been substantial, with a significant portion of the cleared land utilized for development, resettlement, and agricultural activities; a smaller portion was used for humanitarian and emergency purposes. This has directly benefitted 9,118 families (approximately 252,073 people) and 6,167 teachers and students, with an indirect benefit to 234,856 families (approximately 880,337 people). Additionally, the demined land has



provided space for the construction of community and public infrastructure, including electricity plants, airports, and other amenities.

Table: How Demined Land Is Used from January to June 2023

How demined land used	Land Areas (m ²)	Remark
Resettlement	1,270,253	324 families
Agriculture	82,697,717	7,924 families
Resettlement & Agriculture	7,015,275	870 families
Canal & Irrigation	13,165	10,948 m
Roads	4,875,925	39,621 m
Schools	511,429	9 Places
Health Center	3,710	1 Place
Admin Office	30,041	1 Place
Pagodas	212,120	4 pagodas
Historical Temple	1,360,616	13 temples
Tourist Resort	3,862,773	6,489 Places
Others	37,668,600	184,982 Places

Other demined land was used for communities and other public infrastructures such as electricity plants, airports, and the like.

As a result of these commendable efforts in demining and land clearance, significant and far-reaching impacts have emerged, greatly enhancing the lives of Cambodians and playing a pivotal role in driving the country's socio-economic development forward. The outcomes yielded through these endeavors have translated into a multitude of community benefits, including improved safety and security, increased access to previously inaccessible land for agricultural and infrastructure



purposes, and the promotion of economic growth and opportunities. Moreover, these actions have effectively diminished national risks, mitigating the potential dangers posed by landmines and other ERWs, while concurrently fostering a climate conducive to sustainable development goals. Recognizing these profound contributions, it is evident that the ongoing commitment to demining and land clearance in Cambodia epitomizes a vital path toward fostering long-term prosperity and a brighter future for the nation.



4. CORE ACTIVITIES

CMAC has continued to evolve with a current emphasis on developing links to the community in conjunction with land release projects. The CMAC mission that guides all activities is “Saving Lives and Supporting Development for Cambodia” with strong confidence in conducting activities of removing threats, returning Hopes, and rebuilding a prosperous future for Cambodians. In efforts to achieve this mission, CMAC has been categorized and focused on the execution of four main core programs: (1) Mine/ERW Risk Education, (2) Mine Information and Survey, (3) Mine/ERW Clearance, and (4) Training and R&D in Mine Action.

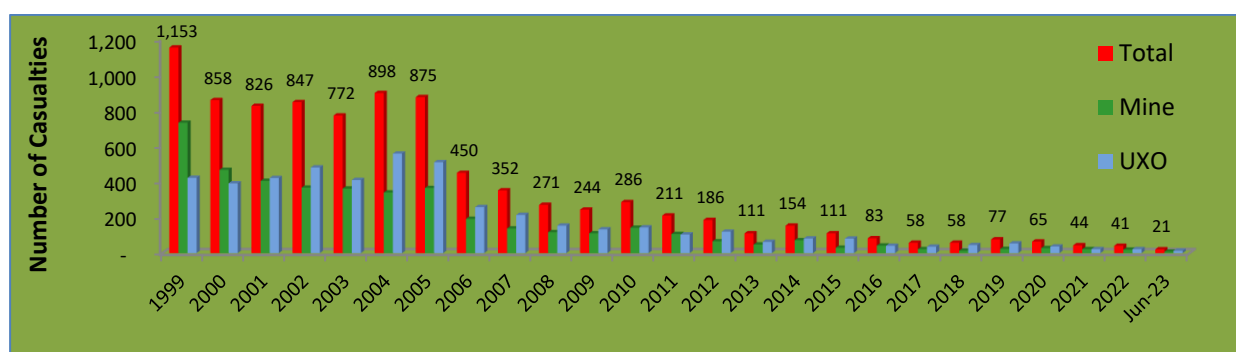
4.1. Participatory Approach in Mine/ERW Risk Education

Mine/UXO awareness activities in Cambodia commenced in 1991 with the initiation of a program by UNAMIC (United Nations Advance Mission in Cambodia). The program's primary focus was to provide training to returnees and internally displaced people (IDP) who were resettling in areas along the Cambodia-Thailand border that were frequently afflicted by extensive landmine contamination. The objective was to educate and equip these individuals with the knowledge and skills necessary to prevent injuries resulting from mines or booby traps.

The Mine/ERW Awareness Program of CMAC came into being in 1994, focusing primarily on refugees, internally displaced people, and returnees. The main components of the program included a mobile mine/ERW awareness team, a mass media campaign, a billboard campaign, and an NGO campaign. Awareness was usually provided by roving educational teams who gave presentations in villages outlining the different types of ordnance, the danger they posed, and the steps that could be taken to avoid or minimize the risk of accidents.

Thanks to demining clearance and Mine/ERW risk education programs, the casualties decreased from year to year. Based on data provided by the Cambodian Mine Victim Information System (CMVIS) of Cambodian Mine Action and Victim Assistance Authority (CMAA), between 1979 and 2022, there were 65,005 casualties within Cambodia consisting of 51,167 casualties by landmines and 13,838 by ERWs. The data fell down from 4,674 casualties in the year 1979 to 858 casualties in the year 2000 and continued dropping to less than 100 in the year 2016—that was only 83 casualties. For a period of six months in 2023 alone, Mine/ERW accidents accounted for 21 cases with 18 injuries and 3 deaths throughout the country. The following bar chart indicates the number of casualties from 1999 to June 2023.

Bar Chart: Landmine/ERW Casualty Data in Cambodia from 1999 to June 2023





Despite notable progress in reducing accidents since the implementation of clearance and Mine/ERW risk education programs in Cambodia, individuals are still being maimed, injured, or killed by landmines or ERWs. For rural families, these devices pose a daily threat and present serious obstacles to the achievement of sustainable livelihoods, socio-economic development, and the broader infrastructural goals of the country.

Therefore, CMAC remains steadfast in its commitment to collaborate with local NGOs as an intermediary with donors to provide essential assistance, such as financial aid and community development initiatives, to Mine/ERW victims. Notably, the CMAC's proactive coordination has made it possible to swiftly transport casualties to hospitals via prepared ambulances and even a contracted helicopter. Furthermore, CMAC places equal emphasis on Mine/ERW clearance and risk education, both of which are necessary for achieving zero accidents.

To this end, CMAC has established a grassroots volunteer network to effectively deliver messaging that outlines Mine/ERW hazards to affected communities. This has led to the development of five distinct MRE programs, which include the CMAC Mobile Teams, the Community-Based Mine Risk Reduction (CBMRR), the Community-Based UXO Risk Reduction (CBURR), the National Police, and the Buddhist Preaching Education Program. By addressing these issues head-on through collective measures, CMAC remains steadfast in its mission to ensure the safety and well-being of every citizen in the country.

4.1.1. CMAC MRE Mobile Teams

CMAC has recognized the paramount importance of Mine Risk Education (MRE), in addition to clearance, as a key component in achieving its objective of zero accidents related to landmines and ERWs. In this pursuit, every single CMAC staff member of 1,810 individuals, whether in an office or field role, is part of the MRE network. Particularly, the CMAC's dedicated Landmine/ERW clearance and intervention teams, such as Explosive Ordnance Disposal (EOD), Cluster Demining Machine (CDM), Battle Areas Clearance Team (BAT), Technical Survey and Clearance Team (TSC), Baseline Survey Team (BLS), Mine Detection Dog Team (MDD), Explosive Detection Dog Team (EDD), Mine Detection Rat (MDR), Brush Cutter Team (BC), Explosive Remnants of War Intervention (ERWI), and Mobile Platoons (MPL), routinely contributes to MRE activities in the locations where they operate.





To further bolster the MRE efforts, CMAC has deployed a specialized MRE team consisting of 46 highly trained members. As of June 2023, this core team has undertaken the responsibility of providing MRE capacity building to a remarkable 4,100 volunteers. Among these volunteers, 2,874 are local authorities and residents working under the auspices of CMAC's core team, 1,183 are national police officers working independently, and 43 are Buddhist monks. By equipping these individuals with the necessary knowledge and skills, CMAC ensures that they can effectively disseminate the MRE message to residents residing in or near landmine/ERW-affected areas.

The core MRE team deployed by CMAC, ranging from the Director of the MRE department to the grassroots staff members, serves as a vital resource, leveraging their expertise and experience to impart essential MRE training to the volunteers. This comprehensive capacity-building initiative empowers the volunteers to educate their respective communities about the risks associated with landmines and ERWs, as well as the necessary precautions to mitigate these hazards. By leveraging the local knowledge and presence of these volunteers, CMAC enhances the effectiveness and reach of its MRE efforts.

The engagement of local residents as volunteers in the MRE activities not only facilitates better communication but also fosters a sense of ownership and responsibility within the affected communities. These volunteers, having received specialized training from CMAC's MRE team, become instrumental in raising awareness, educating their peers, and ensuring the safety of their fellow residents. Moreover, the inclusion of police personnel and Buddhist monks in the volunteer network reflects CMAC's commitment to collaborating with diverse stakeholders who play critical roles in community safety.

By expanding the MRE network through the training of volunteers, CMAC strengthens its ability to disseminate vital information and promote safe practices in landmine/ERW-affected areas. This proactive approach, coupled with the dedication of CMAC's staff and clearance teams, underscores the organization's commitment to achieving the ultimate goal of zero accidents related to mines and ERW. Through their collective efforts, CMAC and its extensive network of volunteers contribute significantly to the well-being and security of communities living in or near landmine/ERW-affected regions.

4.1.2. Community-Based Mine Risk Reduction (CBMRR)

CBMRR network stands as another crucial component of CMAC's comprehensive approach, employing targeted strategies to effectively reduce both landmine and ERW casualties in specific target areas. Its primary focus lies in building community capacity to engage with other mine action groups and ensuring their responsiveness to community requests and needs.

Additionally, the CBMRR Project collaborates with community development programs to support risk reduction and victim assistance initiatives that promote the reintegration of





people injured by Mines/ERWs. Currently, CBMRR, with its 2,335 volunteers, comprising 126 national police officials and 2,209 local authorities and communities under the auspices of CMAC, is providing mine risk education messages in 859 villages across seven provinces that are heavily impacted by landmines and ERWs. These provinces include Pursat, Battambang, Pailin, Banteay Meanchey, Oddar Meanchey, Siem Reap, and Preah Vihear.

To achieve these objectives, the CBMRR Project establishes Mine Committees at the village, commune, and district levels across the provinces thereof. These committees serve as essential mechanisms for engaging with local residents and mobilizing them to become focal points for addressing landmine/ERW issues. By involving community members directly, CMAC ensures that the initiatives undertaken are aligned with the specific requirements and circumstances of the affected areas.

Furthermore, the CBMRR Project collaborates with community development programs to provide vital support for risk reduction and victim assistance. This collaboration enables CMAC to integrate mine risk reduction efforts into broader community development initiatives, fostering a holistic and sustainable approach to addressing the challenges posed by landmines and ERWs.

Through the establishment of Mine Committees, CMAC enhances community participation and ownership in mine action activities. These committees serve as platforms for knowledge sharing, awareness raising, and coordination among community members, CMAC, and other relevant stakeholders. By empowering local residents to take an active role, CBMRR ensures that the strategies implemented are tailored to the unique needs, concerns, and cultural contexts of the communities affected by landmines and ERWs.





Moreover, the collaboration between the CBMRR Project and community development programs strengthens the overall impact of CMAC's efforts. By integrating risk reduction and victim assistance measures into existing community development initiatives, CMAC maximizes the resources and expertise available. This collaboration not only addresses immediate needs but also contributes to the long-term well-being and resilience of the affected communities.

In summary, the CBMRR network plays a vital role in CMAC's approach to mine action. By establishing Mine Committees and mobilizing local residents as focal points, CMAC ensures community involvement and responsiveness to Mine/ERW issues. Additionally, the collaboration between CBMRR and community development programs promotes a comprehensive and sustainable approach to risk reduction and victim assistance. Through these concerted efforts, CMAC strives to create safer environments, reduce mine casualties, and support the overall development and resilience of the communities it serves.

4.1.3. Community-Based UXO Risk Reduction (CBURR)

With similar objectives to the aforementioned CBMRR network, the Community-Based UXO Risk Reduction (CBURR), since its nascent inception in 2004, has aimed to disseminate information and raise awareness about the risks associated with unexploded ordnance (UXO), abandoned explosive ordnance (AXO), and landmines, and promote safe behavior among local communities affected by both landmines and explosive remnants of war (ERW).

However, this program was unfortunately suspended in 2010 by virtue of financial constraints. Not a long period of time, it was reactivated again two years later (in 2012) through financial support from the US project, providing landmine/ERW risk education messages within heavily ERW-affected provinces. Though the assistance to the CBURR network has been volatile, CMAC still manages to utilize a variety of resources to continuously support this network, thus far.



At present, CBURR engages 1,722 volunteers, including 1,057 national police officers and 665 local authorities and residents under the auspices of CMAC, who provide Mine/ERW risk education messages in 138 villages across 23 ERW-affected provinces, namely Banteay Meanchey, Pailin, Battambang, Pursat, Kampong Chhnang, Oddar Meanchey, Siem Reap, Kampong Thom, Preah Vihear, Ratanakiri, Stung Treng, Mondulakiri, Kratie, Tbong Khmum,



Kampong Cham, Prey Veng, Svay Rieng, Kampong Speu, Takeo, Kampot, Kep, Koh Kong, and Preah Sihanouk. The CBURR program has successfully amplified and reached a wider audience, ultimately raising awareness of the risks posed by both landmines and ERWs.

4.1.4. MRE Program with National Police

In the realm of MRE activities (Mine Risk Education), CMAC recognizes the power of collaboration and understands that its efficacy lies in forging partnerships. Over the past few years, CMAC has embarked on a comprehensive endeavor to expand its reach beyond its independent efforts. One significant aspect of this initiative involves equipping police officers with the necessary training to integrate them into a network of volunteer educators and reporters, specifically tasked with addressing the issue of landmines and ERWs within their respective communities.

By enlisting the support of local law enforcement, CMAC has effectively harnessed the collective power of both its organization and the police force. This strategic collaboration not only streamlines CMAC's operations but also facilitates a more accessible channel for citizens to report critical mine-related information or suspicious objects. The proximity and constant interaction between citizens and local police officers within their communities create an ideal environment for fostering efficient communication and reporting.

By empowering citizens to actively participate in reporting mine-related incidents or potential threats, CMAC benefits from a substantial reduction in both the time and financial resources required for information gathering. This collaborative mechanism effectively leverages the inherent knowledge and presence of community members, while also capitalizing on the training and professional expertise of the police officers involved.



The integration of police officers into CMAC's volunteer network establishes a robust system whereby citizens are encouraged and motivated to report any landmine/ERW-related findings or suspicious objects promptly. This approach not only enhances the accuracy and timeliness of information but also strengthens the overall safety and security of local communities. Furthermore, citizens can find reassurance in the fact that they can readily approach and communicate with a police officer who is well-versed in the specific concerns associated with landmines, UXOs, AXOs, and other suspicious objects.



To put it in a nutshell, CMAC's decision to collaborate with the local police force signifies a progressive step toward a more comprehensive and community-driven approach to MRE activities. By training police officers to serve as volunteer educators and reporters, CMAC effectively taps into the collective knowledge and presence of citizens, while simultaneously promoting a safer environment for everyone involved. This collaborative effort not only optimizes the efficiency of CMAC's operations but also empowers individuals to actively contribute to the eradication of landmines and the overall well-being of their communities.

For reason to be aligned with the aforementioned objectives, CMAC's core MRE team provides training to national police officers to enhance their understanding and awareness of Mine/ERW risk. On the heels of their training, these newly-trained police officers work independently to provide Mine/ERW risk education messages in affected localities, without the need for ongoing organizing by CMAC.



Presently, there are 1,183 national police officials who have received Mine/ERW risk education training from CMAC's MRE teams to become part of the MRE program. This network conducts operations in the same provinces as the CBMRR and CBURR programs. Notably, CMAC recently updated the MRE program by engaging national police officials and monks to increase the spread of Mine/ERW awareness throughout the entire country.

Through the collective efforts of these programs, CMAC has successfully increased awareness of Mine/ERW risks within vulnerable populations, thereby reducing accidents related to landmines and ERWs in Cambodia. Moreover, such programs have highlighted the importance of community involvement in fostering a countrywide culture of awareness and safety.



4.1.5. MRE Program with Buddhist Preaching

Very similar to the program with the national police, CMAC also has recognized the proximity and constant interaction between citizens, particularly the laypeople, and Sangha (Buddhist monks) within their communities creating an ideal environment for fostering efficient communication and reporting. Therefore, CMAC has been collaborating closely with monks to incorporate Landmine/ERW risk education into Buddhist preaching. Currently, a commendable total of 43 Buddhist monks have generously partnered with CMAC's MRE team to independently offer Mine/ERW risk education.

In a concerted effort to disseminate Landmine/ERW awareness across all affected localities and eradicate the potential for accidents, Buddhist monks conscientiously stress the peril posed by landmines and ERWs as well as simultaneously instruct laypeople and attendees on how to promptly report any encountered landmines, UXOs, AXOs, or suspicious objects to CMAC or the nearest local authorities, whenever a Buddhist monk participates in a religious ceremony or any gatherings involving sangha—at pagodas or in communities. With this purpose in mind, the program's audience members actively extend these crucial messages to their family members, relatives, friends, and beyond.



With an array of comprehensive programs and unwavering commitment from CMAC's MRE team and its dedicated volunteer network, extensive Mine/ERW risk education initiatives have been conducted throughout the nation in the first six-month of 2023, with a particular focus on high-risk areas. As a result, an impressive total of 11,648 MRE courses have been amassed, benefitting an astounding 571,810 households residing in 1,152 Mine/ERW affected villages. The far-reaching impact of these courses resonates with an expansive audience of 892,129 individuals, encompassing 300,059 men, 353,238 women, 167,191 in-school students, and 71,641 out-of-school children.

On the heels of the dissemination of MRE messages to local communities, a remarkable trend has emerged whereby individuals of all ages, particularly those who participated in the MRE courses, have demonstrated heightened awareness regarding the perils associated with landmines and ERWs. Moreover, these individuals have acquired the knowledge and skills



necessary to promptly relay crucial information to CMAC either directly or through local authorities or the volunteer network whenever they encounter landmines, UXOs, AXOs, or other suspicious objects.



Consequently, in the first six-month of 2023, CMAC received an impressive total of 1,923 emergency intervention requests via the volunteer network. These requests encompassed a diverse range of scenarios, including 1,131 requests related to anti-personnel mines (APMs), 18 requests pertaining to anti-tank mines (ATMs), 7,113 requests concerning unexploded ordnance (UXOs), and 716 requests associated with small arms. In response, CMAC's EDO teams managed to handle the first 1,706 cases, encompassing 930 requests concerning APMs, 21 of ATMs, 6,871 of UXOs, and 701 of small arms.

Table: Summary of MRE's Achievements from January to June 2023

MRE's Achievements from January to June 2023																
Courses	Households	Audience Group					Numbers of Requests/Reports from Local Authorities and Communities					Numbers of Responses to the Requests from Local Authorities and Communities				
		Men	Women	Students	Outside-School Children	Total	Requests	APMs	ATMs	UXOs	Small Arms	Responses	APMs	ATMs	UXOs	Small Arms
11,648	571,810	300,059	353,238	167,191	71,641	892,129	1,923	1,131	18	7,113	716	1,706	930	21	6,871	701



4.2. Minefield Information and Survey

With an estimated 4 to 6 million landmines and a total of 30 million cluster submunitions, bombs, and chemical bombs, known as Explosive Remnants of War (ERW), scattered throughout the Kingdom of Cambodia, the need for mine action activities is crucial.

Mine action activities in Cambodia have come into existence since the arrival of UNAMIC in November 1991 and then were carried on by the UNTAC's Mine Clearance Training Unit (MCTU) in March 1992. Later, on 10 June 1992, CMAC was established as a national demining organization to conduct Mine/ERW clearance and Mine/ERW Risk Education with other demining NGOs such as the Handicap International (HI), the Mine Advisory Group (MAG), the HALO Trust, and the Norwegian People's Aid (NPA).

Throughout years of mine action activities by all demining operators, Cambodia has still faced the problem of landmine/ERW. Therefore, in order to easily understand the Mine/UXO information and to accelerate the clearance outputs, the Government of Canada and the Royal Government of Cambodia, on 08 May 2000, signed a memorandum concerning the provision of a National Level 1 Survey (NL1S) of mine-affected areas in Cambodia. The primary aim of CMAC Mine Information and Survey was to collect and verify Mine/UXO contamination information so as to quickly and reliably identify and classify the contaminated areas and level of risks as well as to enable the clearance requirements to be more clearly defined.



After having conducted NL1S, the outcome of the survey in the entire country showed that the Kingdom of Cambodia had a total contaminated land of 4,544 km² in 1,641 villages from 588 communes, 147 districts, and 25 capital/provinces. This issue negatively impacted 124,427 families. Therefore, demining operators conducted their mine action activities based on the outcomes of NL1S since then.

CMAC has initiated the land release through technical surveys since 2002, and the concept of CMAC's technical survey has evolved ever since in response to the national strategy of accelerated area reduction. CMAC also introduced different measures to improve its technical



survey capability and efficiency in order to identify the real threats and release non-threat and low-threat areas.

In 2006, as the land release was internationally becoming the focus, it was clear that a national standardized land release policy needed development and execution. For Cambodia, the 4,544 km² of land areas reported as NL1S or impact survey as suspected to be landmine and UXO contamination offered some indication of the size and location of hazardous areas, but its information was not precise enough to effectively target demining tasks and may encompass the many areas which are in fact risk-free. Hence, a more effective survey of land release methodology was needed to accurately pinpoint the hazardous areas and to release hazard-free areas.

The year 2006 also marked a time whereby CMAC redesigned its technical survey approach with technical assistance from NPA, GICHD, and Stockholm University. Over the past years, CMAC developed a Non-Technical Survey (NTS) process in 2009 which later ran in parallel to the Cambodian Baseline Survey.

The purpose of this process was to develop planning data for further land release activities at the NTS stage. CMAC NTS has intended to produce two sets of outputs: one to support compliance with the Baseline Survey (BLS) and the other for supporting land release through technical survey operations. By late 2010, with extensive trials, evaluation, and improvement, CMAC finally officialized its technical survey procedure. The result of all this work has been the development and implementation of the Land Release Methodology which seeks to release land without having to fully clear all suspected areas.





This has been another positive but challenging step forward in the mine action sector, and indeed at CMAC, as the methodology is being implemented and with all possibility, it must be implemented by all across CMAC's operational activities. Since the initiation of the survey, the CMAC's land release outputs have supersized remarkably to around 100 km² per year from 2010 onwards. More notably, the land release conducted by CMAC resonated with almost 200 Km² (194,523,982 m²) in the year 2022.

To improve its land release productivity for the year 2023, CMAC Survey Teams conducted the Baseline Survey in 6 suspected provinces, including Battambang, Pursat, Siem Reap, Stung Treng, and Svay Rieng provinces. The survey teams for the first six-month in 2023 marked a total of 440 minefields and UXO fields, covering 6,378,459 m², as well as conducted the lining of marking of 377,286 m. With sustained efforts, CMAC remains committed to reducing landmine/ERW contamination and improving the safety of the people of Cambodia.



4.3. Mine/ERW Clearance

Ensuring the clearance and release of Mine/Explosive Remnants of War (ERW) contaminated areas has been established as a paramount objective among the four fundamental core programs of CMAC, as outlined in the Royal Decree. Without the diligent pursuit of this objective, the distressing casualty statistics would persist, hindering the utilization of agricultural land, and impeding the country's infrastructure and national development endeavors. Moreover, the omnipresent and unsettling fear of Mine/ERW would remain unabated, undermining CMAC's concerted efforts to alleviate such concerns. Consequently, this report aims to meticulously detail the various demining tools, demining units, and special units employed by CMAC, which have emerged as crucial components in saving lives and fostering the socio-economic progress of Cambodia.

4.3.1. Demining Tools

CMAC at the very beginning deployed only manual demining platoons. In its operational clearance, deminers used mine detector machines to detect landmines, Unexploded Ordinances (UXOs), or other suspected metal objects under the ground, thereby unearthing to remove them. Later, under the cooperation with Swedish Armed Forces, CMAC established the Mine Detection Dog program in 1996 and launched the program in the operational clearance in 1997. In 1999, the first arrival of the RHINO mechanical demining system was introduced by Telerob of the Federal Republic of Germany to trial in Battambang Province. In 2000, Finland assisted the demining operations of DU1 in Banteay Meanchey province by introducing the Flails mechanical demining system at the same as the trials of Japan's mechanical system in TC (currently TIMA), Kampong Chhnang Province. Yet, the full use of Japan's ones just happened from 2006 onwards since its innovation and modification to adapt to the situation of contaminated areas in



Cambodia were time-consuming. CMAC thus has categorized its main demining toolboxes into three types: Manual Demining, Detection Animal, and Mechanical Demining.

4.3.1.1. Manual Demining

Manual demining refers to demining tasks in which deminers use their mine detector machines to detect landmines, UXOs, or other suspected objects under the ground and most recently under the water. If detected, deminers will carefully unearth to remove those landmines, UXOs, or objects by their hands.

As of June 2023, the teams under this category resonate with 114 teams, including 7 Platoon Manual Demining teams (PMD-17 Staff), 5 Battle Area Clearance teams (BAC-7 Staff), 4 Battle Area Clearance teams (BAC-5 Staff), 71 Technical Survey and Clearance teams (TSC-7 Staff), 3 Technical Survey and Clearance teams (TSC-5 Staff), 14 Explosive Ordnance Disposal teams (EOD-5 Staff), 2 Underwater Operations teams (UOT-5 Staff), 8 Cluster Munitions Land Release teams (CLR-7 Staff).



4.3.1.2. Detection Animal

Evolution has endowed many species with a good sense of smell, which they use to find food and mates, avoid predators, communicate with one another, and the like. Humans have relied on dogs' keen noses to help them find food and detect intruders from the time dogs were domesticated—roughly 15,000 years ago to date, according to the National Center for Biotechnology Information (NCBI) of the US. The use of dogs for demining purposes began during World War II (the 1939-45 war), but dogs have only become established as a significant contributor to the global humanitarian demining effort in the last few decades.



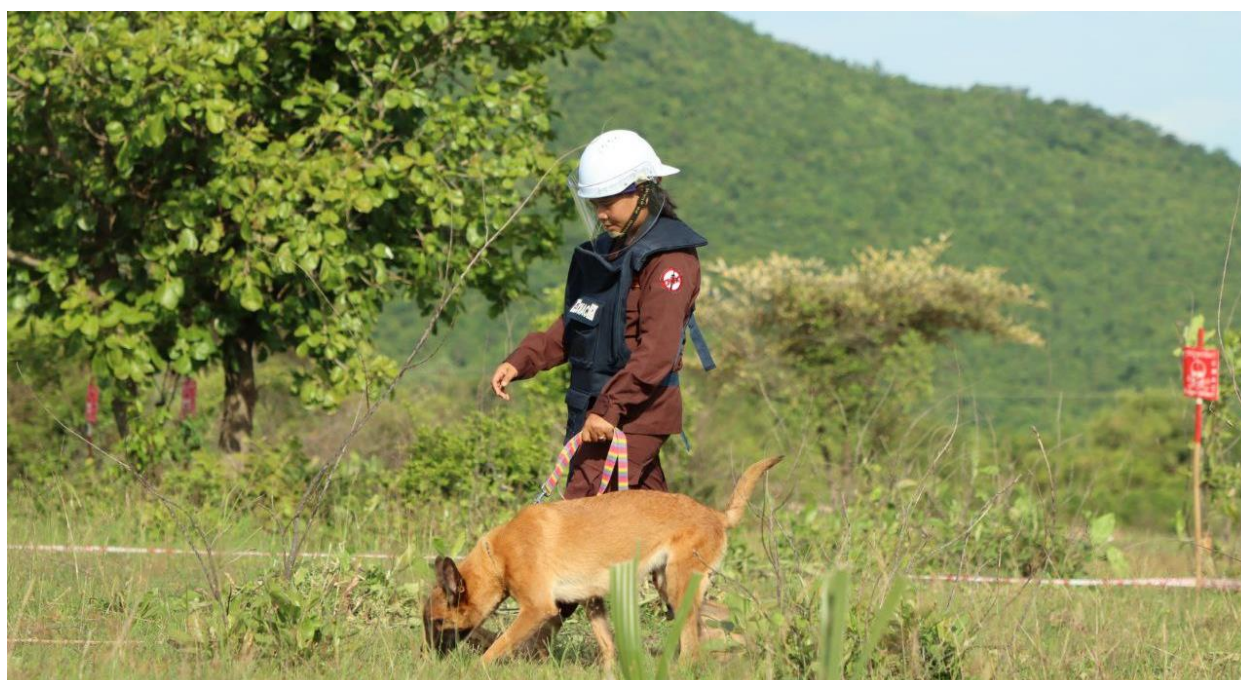
Based on Dan Hayter, an author, and expert from the Global Training Academy (Global), in the fall of 1989, the RONCO Consulting Corporation (RONCO), a US contractor that manages Agriculture Devolvement Programs and Commodities Distribution for USAID, and the Global Training Academy (Global) agreed by contract to team up in an effort to build indigenous Mine Detection Dog capacities. As a result, the first dogs were trained and deployed to detect landmines and other Explosive Remnants of War (ERW) in Afghanistan in 1990 prior to the expansion to various landmine/ERW-affected countries throughout the world. That marked the first humanitarian mine detection dogs in the world.

Nonetheless, according to the Geneva Center for Humanitarian Demining, even though dogs have an established and valuable niche in mine detection, no demining strategy is appropriate for all applications. Recognizing this—and being committed to finding local solutions to local problems—Bart Weetjens, a Belgian product developer and also the founder of APOPO, began to explore the possibility of using the giant African pouched rats as mine detection animals for Africa in 1997.

Therefore, with those two pioneering successes in mine detection animals, demining tasks since then did not involve and depend on only humans alone. Based on experiences from the developed countries, CMAC, in cooperation and partnership with donors and development partners, has brought mine detection animals to be integrated with its existing manual demining teams so as to accelerate the efficiency and productivity in Cambodia. So far, CMAC categorizes its mine detection animals into two types: Mine Detection Dog (MDD) and Mine Detection Rat (MDR).

Mine Detection Dog

Under the cooperation between CMAC and Swedish Armed Forces, the concept of the CMAC's Mine Detection Dog Program was established in 1996, and the project was launched in 1997 at the CMAC Training Centre in Kampong Chhnang province with technical support from the Swedish Armed Forces and the financial support from the Swedish government through the Swedish International Development Agency (SIDA).





After the Swedish Armed Forces completed its mission in Cambodia in 2002, Mine Detection Dog Program was handed over to CMAC to manage on its own. Since then, CMAC, in partnership with Norwegian People's Aid (NPA) and with financial support from the Norwegian Ministry of Foreign Affairs, continued its cooperation and developed several search techniques such as Long Leash Detection Dog (LLD) and Explosive Detection Dog (EDD) for the purpose of speeding up the operation and providing security to the high-ranking officials for the Royal Government of Cambodia (RGC).

CMAC's Mine Detection Dog (MDD) ownership was reflected through successfully breeding and training its high-quality mine detection dogs which were recognized by national authorities, local operators, and regional and international demining organizations throughout the world. As of June 2023, CMAC's Dog Centre has a total of 123 dogs including dog operations, dogs under training, puppies under training, and bitches for breeding.

Among the total dogs, CMAC employed 46 operational dogs and integrated with other demining tools into 15 teams, consisting of 8 Short Leash Detection Dog Teams (SLD-10 staff/2 dogs), 4 Cluster Munitions Technical Survey Dog Teams (CTD-6 staff/4 dogs), 2 Technical Survey Dog Team (TSD-5 staff/4 dogs), and one Improvised Explosive Device Dog Team (IED-5 staff/4 dogs).

Table: CMAC's dogs as of June 2023

Dog Situation:	Varieties	Sex		Total
		Male	Female	
Dog Operations	EDD/CTD	5	3	8
	SLD	17	15	32
	IED	4	2	6
Dog Under Training	Semi-training	32	11	43
	Full Training	2	2	4
Puppy Under Training	Green training	5	9	14
Bitches For Breeding		1	15	16
Total:		66	57	123

Mine Detection Rat

Mine Detection Rat (MDR) is a new animal demining tool for CMAC's clearance operations. The rats are native to the United Republic of Tanzania, an East African country bordering the Indian Ocean. There were 15 MDRs arriving in Cambodia for the very first time on 27 April 2015, and more MDRs arrived in subsequent years.



In the first six months of 2023, CMAC, in partnership with APOPO, deployed 51 rats and integrated them into 3 Mine Detection Rat Teams (MDR-15 staff) to conduct clearance in Preah Vihear (DU6) and Siem Reap (DU4). The three MDR teams thus released a total of 2,674,441 m² by having found and removed 185 landmines and 124 UXOs. The clearance achievements made by MDR teams have been beneficial to 2,639 families, equating to approximately 11,004 people.

4.3.1.3. Mechanical Demining

Since its inception in June 1992, CMAC's clearance productivities averaged around 12 km² per year, and this rate doubled to 22 km² in 2005 by virtue of the arrival and implementation of mechanical demining and has further increased in subsequent years to approximately 40 km² per year until 2009. Thus, it was evident that the use of mechanical demining could speed up the work of manual deminers and make it safer, thereby significantly accelerating the clearance outputs. Over the years of innovation, CMAC has deployed two types of mechanical demining systems from Japan: The Demining Machine (DM) and the Brush Cutter (BC).

Demining Machine

The presence of the Demining Machine (DM) in mine action activities in the Kingdom of Cambodia is not just recently known. Actually, the RHINO mechanical demining system from Germany was first introduced to CMAC in 1999 for a trial in Battambang Province; later in 2000, the Flails from Finland were also sent to CMAC for a trial in Banteay Meanchey Province as well



prior to the presence of Japan's mechanical demining systems in 2006 in the Kingdom of Cambodia.



Nonetheless, by virtue of the contextual changes in mine action, the geographies where DM is utilized, the local transportation, the environmental factors, and suchlike, there is so far only Japan's mechanical demining system which has survived in Cambodia and been deployed by CMAC until these days. Plus, based on evaluation and experiences, Japan's Demining Machines achieved a high degree of efficiency in clearing anti-personnel mines (APMs) at different depths, soil types, and environments.

Therefore, as of June 2023, CMAC deployed a total of 12 heavy demining machines out of 13 Japan Demining Machines (DMs) to integrate with CMAC's Manual Demining to form 12 Demining Machine Teams (one DM for one team) for conducting Mine/UXO clearance under various Demining Units (DUs) throughout the country. Those teams include 8 Platoon Demining Machines (PDM-16 Staff), 3 Demining Machine Teams (DMT-2 Staff), and a Cluster Demining Machine Team (CDM-2 Staff).

Once again, it is noteworthy that one Demining Machine is usually integrated with one Manual Demining Team in order to form a demining machine team in an effort to contribute to increased manual demining efficiency and effectiveness as well as safety.

Brush Cutter

As a result of its efforts to improve mine clearance safety, productivity, and cost-effectiveness, CMAC received the first four Brush Cutter machines (2 Hitachi-EX 150 LC and 2 Komatsu-PC60-7) from Japanese Grand Aid Assistance in March 2000. Training of operators was conducted at TIMA (the former CMAC Training Centre) during the period April-May 2000. The machines were first deployed on operational trial in order to develop Standard Operating Procedures (SOPs) from June-August 2000 and this was followed by field operations from September 2000.

Based on field experience, the machines proved to be appropriate mechanical equipment to be included in the demining toolbox. The clearance rate of the manual demining platoon increased from 90%-110% when integrated with the Brush Cutter (BC). This type of machine can easily survive an anti-personnel mine (APM) blast, or the blast from a small UXO. The machines are easy to maintain locally, and suitable to the climate and condition of minefields in Cambodia.



The purpose of the Brush Cutter machines is to clear vegetation in minefields and UXO fields, which was estimated of taking around 70%-80% of deminers' time spent on cutting the vegetation manually. As of June 2023, CMAC deployed 28 BCs out of 44 BCs donated by the Japanese Government, consisting of 2 Platoon Brush Cutter Machines (PBC-15 Staff), 15 Brush Cutter Teams (BCT-9 Staff), and 11 Brush Cutter Machine-Developments (BC-S-2 Staff).



Similar to its counterpart, the Demining Machine (DM), one Brush Cutter (BC) machine is typically integrated into one manual demining operation, forming a cohesive Brush Cutter Team. This strategic collaboration aims to enhance the overall productivity, efficiency, and effectiveness of manual demining efforts, while prioritizing the paramount aspect of safety. However, it is worth noting that a portion of the BC machines that were not actively employed were temporarily unavailable due to ongoing repair work. Additionally, there were instances where certain machines were extensively damaged, rendering them irreparable and thus unfit for further use.

4.3.2. Clearance by Demining Units

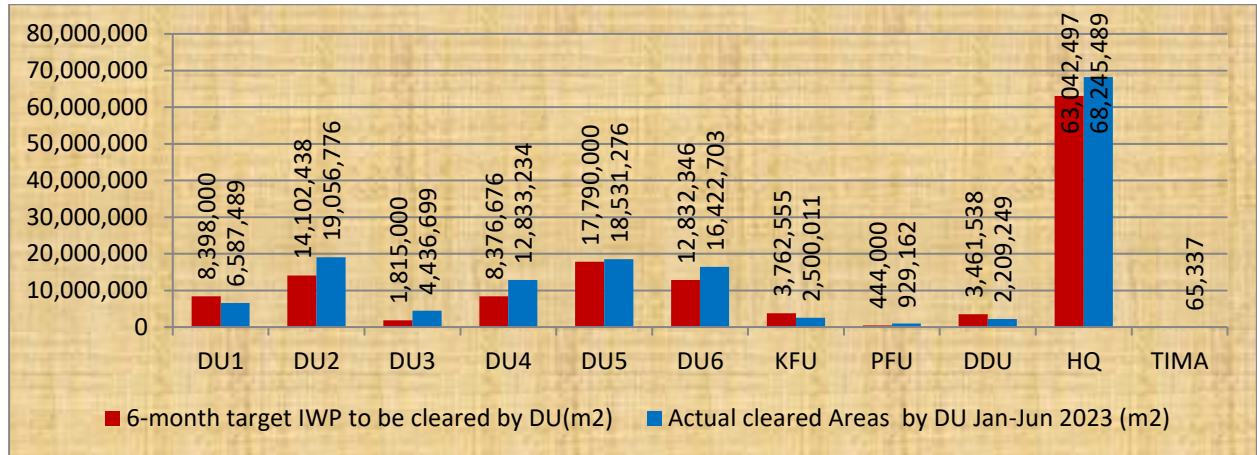
In its efforts to ensure efficient management of landmine/ERW clearance, CMAC has diligently focused on reducing downtime and optimizing cost-effectiveness. It has also strived to enhance efficiency in addressing challenges encountered during the reporting period's landmine/ERW clearance operations. Additionally, CMAC has explored alternative approaches to support Demining Units (DUs) in enhancing their activities. This includes implementing internal monitoring activities at both the DU and middle management levels to assess progress achieved in relation to the annual work plan, existing projects, project targets, demining resources, and CMAC's strategic clearance techniques and methodologies.

Hence, CMAC has undertaken the strategic approach of decentralizing its operational clearance responsibilities to its subordinate DUs, thereby ensuring efficient project implementation across their respective jurisdictions. Presently, a comprehensive workforce of 1,810 personnel has been meticulously assigned to either office-based or field-based duties, operating across diverse units within the nation. It is important to note that all members of the CMAC team, including both



those stationed in offices and those deployed in the field, diligently operate under the meticulous management and vigilant supervision of the CMAC headquarters.

Bar Chart: Land Release Conducted by Each CMAC’s Clearance Units Compared to the Target Plan



Headquarters (HQ)

The Cambodian Mine Action Centre (CMAC) is headquartered in the CMAC Building, situated on Duong Ngeap Street in Kork Chombak Village, Sangkat Teuk Thla, Khan Sen Sok, PO Box 116, Phnom Penh, in the Kingdom of Cambodia. Within its dedicated 185 staff members, the CMAC HQ oversees office operations throughout the country and field operations across seven capital/provinces, namely Phnom Penh, Kandal, Takeo, Kampot, Kep, Kampong Speu, and Preah Sihanouk.





In addition to the top-level management and office personnel at the headquarters, the majority of the staff are involved in fieldwork, divided into 60 various teams responsible for clearance activities. Consequently, during the period of January to June 2023, CMAC HQ achieved significant progress in land release, covering a vast area of 68,245,489 m² contaminated by landmines and other ERWs. This remarkable accomplishment was made possible by the discovery and destruction of 4,187 anti-personnel mines, 2 anti-tank mines, 4 aerial bombs, 50 cluster munitions, and 5,235 unexploded ordnances (UXOs). Additionally, CMAC HQ successfully removed 267,905 pieces of fragmentation and promptly responded to 93 requests for intervention from local authorities and communities, which is 100% responding. Furthermore, the survey teams marked a total of 34 minefields and UXO fields and conducted 67,210 m of the liner of marking.

Technical Institute of Mine Action (TIMA)

TIMA is upgraded from CMAC Training Centre (TC), which was constructed in 1997 in Mong Barang Village, Sangkat B'er, Krong Kampong Chhnang, with financial support from the Federal Republic of Germany. TC was absorbed into TIMA on 01 March 2015, and so far, with its expert instructors, it is still a repository of technical expertise and operational SOPs. All national and international training, ranging from Basic Demining Course to EOD Level 4 as well as Mine/ERW Awareness, Vehicle Driving, Radio Communication, Mine Detection Dog, and other relevant courses in the mine action sector are most of the time conducted at TIMA. When there is a need, more expert instructors are sent from CMAC HQ and other demining and special units.

During the illustrious period of January to June 2023, TIMA, with its 31 staff members, orchestrated an impressive array of 12 training courses, each contributing to the cultivation of expertise and knowledge in the realm of mine action. These courses were thoughtfully designed to cater to the diverse needs of participants, encompassing both internal and external training initiatives. In terms of internal training, TIMA organized seven comprehensive courses exclusively tailored for the esteemed staff of CMAC itself. These training sessions served as a platform for 372 dedicated CMAC personnel to enhance their skills and deepen their understanding of mine action operations.





In addition to bolstering the capabilities of CMAC staff, TIMA extended its expertise beyond the confines of CMAC, conducting three external training courses (countrywide, not international). These specialized programs were specifically tailored for the Cambodian National Police and the Royal Cambodian Armed Forces (RCAF). Both the Cambodian National Police and RCAF, which are vital components of the nation's security apparatus, benefited from the knowledge imparted to a total of 525 trainees, who eagerly absorbed the invaluable insights shared during the training.



In terms of cross-country training, TIMA proudly hosted an international training course that brought together representatives from UXO-Lao and CMAC under the South-South Cooperation funded by JICA. This collaboration showcased the commitment of both organizations to mutual learning and the exchange of best practices in mine action. The course included 9 trainees from UXO-Lao and 3 trainees from CMAC, totaling 12 participants. This training initiative demonstrates a shared dedication to addressing the challenges posed by landmines and ERW contamination through collaboration and knowledge sharing.

In addition to the collaboration between CMAC and UXO-Lao, TIMA also welcomed participants from Ukraine. The training course included 8 trainees from the State Emergency Service of Ukraine (SESU). This cross-border training initiative represents humanitarianism, altruism, global solidarity, and a collective determination to address the ongoing challenges of landmines and ERW contamination in the currently war-torn Ukraine. By bringing together professionals from different countries, TIMA is able to facilitate international cooperation and enhance the effectiveness of mine action efforts on a global scale.

In toto, these remarkable training endeavors, meticulously curated by TIMA, brought together a total of 914 participants, whose collective dedication and commitment to mine action resonated with great pride. The following tables provide a comprehensive breakdown of the internal training for CMAC staff, the training of Cambodian National Police and RCAF, and the training of foreign trainees hailing from landmine/ERW-affected countries.



Table: Internal Training in the First Half of 2023 (For CMAC Staff)

No.	Name of Course	Location	Trainee Source	Num. Trainee			Duration	
				M	F	Total	Start Date	Finish Date
1	Pedagogy & Teaching Methodology	TIMA	CMAC Staff	35	17	62	05Jan23	29Jan23
2	Basic Demining Course 143	TIMA	CMAC Staff's Kid	92	23	115	30Jan23	10Feb23
3	Patrol Dog	TIMA	CMAC Staff	18	9	27	06Feb23	11Feb23
4	Basic Dog Handling	TIMA	CMAC Staff	21	4	25	29May23	18Aug23
5	TSS/TSO	TIMA	Refresher DUs	19	12	31	19Jun23	23Jun23
6	Specialist EOD I	TIMA	Refresher DUs	24	31	55	26Jun23	09Oct23
7	Specialist EOD I	TIMA	Refresher DUs	40	14	54	31Jul23	23Nov23
TOTAL:				249	110	369		

Table: External Training in the First Half of 2023 (For National Police and RCAF)

No.	Name of Course	Location	Trainee Source	Num. Trainee			Duration	
				M	F	Total	Start Date	Finish Date
1	Patrol Dog	TIMA	Police/RCAF	7	1	8	06 Feb 23	11 Feb 23
2	Basic Demining Course	RCAF-5	RCAF			498	20 Feb 23	11 Apr 23
3	Basic Dog Handling	TIMA	RCAF	19		19	29 May 23	18 Aug 23
TOTAL:				-	-	525		

Table: International Training in the First Half of 2023

No.	Name of Course	Country	Trainee	Start	Finish	Remarks
1.	UXO-Lao: Operational Management	Cambodia	12	09-01-23	20-01-23	Completed
		Lao PDR		27-02-23	10-03-23	
2.	SESU-Ukraine: ALIS	Ukraine	08	16-01-23	20-01-23	Completed
Total:			20			

Recognizing the paramount importance of training in the realm of mine action, TIMA has taken significant measures to enhance its teaching and instructional capabilities. In this vein, TIMA, with invaluable financial support from JICA, has collaborated closely with the Phnom Penh Teacher Education College (PTEC) to organize a comprehensive training program on pedagogy and teaching methodology. This intensive course, held at the TIMA premises, was skillfully designed



and conducted by PTEC, ensuring the highest standards of education and professional development for the participants.

Spearheading this endeavor, CMAC HQ played a pivotal role in identifying potential trainees, who exhibited exceptional aptitude and dedication in their respective fields. Covering a duration of four months, from 05 January to 26 May 2023, a total of 62 meticulously selected individuals underwent this rigorous training program. These promising individuals are poised to assume the positions of lecturers and instructors at TIMA, embodying an unwavering commitment to professionalism and excellence.

Through this remarkable collaborative effort, TIMA is poised to raise the bar in the field of mine action training. Equipped with the refined pedagogical techniques and comprehensive knowledge imparted during the program, these proficient instructors and lecturers will undoubtedly thrive in their roles, imparting invaluable expertise to future trainees—both nationals and foreigners—at TIMA. The humanitarian investment made by JICA, CMAC, and PTEC in recognizing the significance of quality education is poised to yield substantial dividends, bolstering the effectiveness and success of mine action initiatives in Cambodia, forwarding CMAC expertise to other landmine/ERW-affected countries, and simultaneously promoting Cambodia's prestige in the outside world.

Furthermore, alongside its training efforts, the Technical Institute for Mine Action (TIMA) has actively engaged in landmine and explosive remnants of war (ERW) clearance operations within the Kampong Chhnang and Kampong Thom provinces. During the initial six months of 2023, TIMA's dedicated Explosive Ordnance Disposal (EOD) team successfully cleared a substantial area spanning 65,337 square meters, which had been contaminated by landmines and ERW.

Through their meticulous efforts, the EOD team unearthed and safely disposed of three aerial bombs, 36 cluster munitions, and 455 unexploded ordnances (UXOs), thus eliminating potential threats to the local population and infrastructure. In addition to this commendable achievement, the team diligently collected and removed 16,751 fragments, effectively mitigating the risk of further harm. Furthermore, TIMA's unwavering commitment to community safety was exemplified by its prompt response to 119 requests for intervention from local authorities and communities, providing crucial assistance and expertise when needed.

These remarkable achievements highlighted here serve as a testament to the exceptional proficiency and steadfast commitment demonstrated by TIMA. Alongside its rigorous training programs, TIMA has consistently displayed unparalleled prowess in effectively addressing the formidable challenges posed by landmines and ERW. By meticulously carrying out their vital operations, TIMA has significantly contributed to the collective safety and enhanced quality of life for the inhabitants residing within these afflicted areas.

Pailin Frontline Unit (PFU) / Kampong Thom Frontline Unit (KFU)

PFU was established in March 2021 at a rented office in Chamkar Kaphe Village, Sangkat Tuol Lvea, Krong Pailin, Pailin Province. The PFU's primary responsibility was to conduct clearance operations and provide Mine/ERW risk education throughout Pailin Province under the projects supported by the United Nations Development Programme (UNDP) and the Government of Japan. Regrettably, the uncertainty surrounding the projects supported by these organizations necessitated the premature cessation of PFU's operations by 31 March 2023.



However, during its first quarter, the unit, with its 47 members, accomplished a land release milestone of 929,162 square meters, while also successfully locating and destroying 281 anti-personnel mines, an anti-tank mine, and 506 unexploded ordnances (UXOs). They also removed and collected 20,278 fragmentations and responded to 35 EOD requests from local authorities and communities for intervention.

To prevent the former PFU staff members' unwarranted hardship due to the lack of salary support and maintain their clearance objectives, CMAC established the Kampong Thom Frontline Unit (KFU) on 01 April 2023 with the backing of China's Kampong Thom clearance project. Located in a rented office in West Throne Village, Sangkat Damrey Choan Khla, Krong Steung Sen, Kampong Thom Province, KFU hired the former PFU staff members and deployed them to conduct clearance operations and EOD responses in Kampong Thom Province.

In the second quarter of 2023, KFU, employing 187 personnel, cleared an impressive 2,500,011 square meters of landmine/ERW affected areas, finding and destroying 59 anti-personnel mines, 113 cluster munitions, 240 UXOs, 10,799 fragmentations, and 19 kg of small arms. KFU also responded to 60 intervention requests from local authorities and marked 31 new minefields, indicating the extent of the challenges remaining in Kampong Thom Province. Additionally, KFU conducted 49,570 meters of the lining of marking, further enhancing its mine clearance capacity.

Development Demining Unit (DDU)

DDU is situated in Mong Barang Village, Sangkat B'er, Krong Kampong Chhnang, which shares a venue with the Technical Institution of Mine Action (TIMA). It was established with the aim of providing support for development projects across Cambodia. Their teams are dedicated to responding to the needs of various stakeholders, including the Royal Government, non-governmental organizations (NGOs), and private entities.

In the first half of 202, DDU, deploying 85 personnel for both office and field roles, extended its development services to several provinces, including Kampong Cham, Kampong Chhnang, Kampong Thom, Kandal, Koh Kong, Prey Veng, Svay Rieng, and Siem Reap. Throughout this period, DDU, within its 5 teams, achieved significant success in land release, recording an impressive figure of 2,209,249 square meters. This means that a considerable amount of land has been cleared of mines and made safe for development activities.

The 5 dedicated teams of DDU have played a crucial role in identifying and eliminating dangerous ordnances, ensuring the safety of communities. Over the reporting period, they have discovered and destroyed 24 anti-personnel mines (APMs) and 2,085 unexploded ordnances (UXOs). In addition to these hazardous items, DDU teams have also collected and removed 19,125 pieces of fragmentation, reducing the risk of injuries caused by these deadly remnants of conflict.

The accomplishments of DDU demonstrate their commitment to creating a safer environment, conducive to development projects across Cambodia. Their efforts in clearing vast areas of land and disposing of dangerous ordnance have significantly reduced the threat of landmines and explosive remnants of war, facilitating the country's growth and progress. The collaboration between DDU and various stakeholders showcases the importance of collective action in addressing the challenges posed by landmine/ERW and promoting development in Cambodia.



Demining Unit 1 (DU1)

CMAC has recently secured a lease agreement to oversee the operational activities of DU1's office located in Ou Ambel Village, Sangkat Ou Ambel, Krong Serei Saophoan, Banteay Meanchey Province. This strategic move allows CMAC to efficiently manage the clearance operations and provide Mine/UXO risk education solely within the confines of this north-western province. With a diligent workforce comprising 149 personnel, DU1 successfully achieved remarkable land release outcomes during the period of January to June 2023.

During this designated timeframe, DU1's dedicated teams effectively cleared and released a staggering 6,587,489 square meters of landmine/ERW-contaminated areas. Their concerted efforts led to the discovery and safe disposal of 820 anti-personnel mines, 6 anti-tank mines, and 829 UXOs, thereby promoting safer environments for local communities. Additionally, DU1 diligently removed and meticulously collected 126,971 pieces of fragmentation, as well as 1 Kg of small arms. These proactive measures aimed at neutralizing potential threats from explosive remnants of war have overwhelmingly contributed to the overall security and well-being of the province's inhabitants.

The proactive stance adopted by DU1 extended beyond the clearing operations alone, as they also responded to 86 requests for intervention from both local authorities and communities. This showcases the exceptional dedication and commitment of DU1's staff in ensuring the safety and protection of those residing in Banteay Meanchey Province. Through their timely responses and well-coordinated interventions, DU1 effectively addressed potential risks, minimizing the harm caused by hazardous explosives in the jurisdiction areas.

Overall, CMAC's DU1 office has made impressive strides in landmine clearance and risk education initiatives within the province of Banteay Meanchey. Their discernible achievements, inclusive of the vast land release, successful disposals, and prompt interventions, have undoubtedly solidified their reputation as a pinnacle organization in providing safety and security in areas afflicted by landmines and explosive remnants of war.

Demining Unit 2 (DU2)

DU2 is located in Andoung Chenh Village, Sangkat O'cha, Krong Battambang, and has been actively involved in clearance operations, community assistance development, and Mine/UXO risk education in the provinces of Battambang, Pailin, and Pursat. However, in order to expedite the process of freeing this region from the threats of landmines/ERW, CMAC has tasked DU2 to concentrate its efforts solely on only Battambang Province.

During the first half of 2023, a six-month period, DU2, comprising a staff of 322 dedicated individuals, successfully achieved the release of 19,056,776 square meters of landmine/ERW-contaminated areas. This tremendous feat was accomplished through the discovery and destruction of 2,609 anti-personnel mines, 27 anti-tank mines, 1 aerial bomb, 1 cluster munition, and 4,896 UXOs. Additionally, they diligently removed and collected 266,230 pieces of fragmentation and promptly responded to 201 EOD calls/requests from both local authorities and communities.

In addition to their clearance operations, DU2's survey teams have also been working diligently. They have recently marked 62 new minefields and performed the lining of marking for a total



distance of 124,226 meters. These efforts are crucial in ensuring safety and security in DU2's jurisdiction areas, as the markings serve as essential warnings to prevent accidental contact with hazardous landmine-affected areas.

The work carried out by DU2 not only involves clearing the land from explosive remnants but also includes engaging with the local communities. Through community assistance development, DU2 aims to educate and empower the people by providing them with the necessary knowledge and skills to identify and avoid the risks associated with landmines and ERW. By doing so, they are actively promoting a safer environment for the residents of Battambang Province.

In conclusion, DU2 has exhibited exceptional dedication and expertise in its mission to clear landmine/ERW-contaminated areas in Battambang Province. Their achievements in the first half of 2023, which include the clearance of over 19 million square meters and the disposal of various explosive devices, demonstrate their commitment to securing a safer future for the province. With its survey teams diligently marking minefields and the community assistance development programs, DU2 is making remarkable progress in ensuring land free from the threats posed by landmines and ERW.

Demining Unit 3 (DU3)

CMAC has signed a lease agreement to operate from a new office location in Toul Makak Village, Sangkat Roleab, Krong Pursat, Pursat Province. This relocation follows their move from Pailin earlier this year in March 2021. CMAC's office in Toul Makak Village will now serve as the central hub for their operations in the entire Pursat Province.

During the first half of 2023, CMAC's DU3, consisting of 63 dedicated staff members, made impressive strides in their efforts to clear landmine and explosive remnants of war (ERW) contaminated areas. With unwavering commitment, they successfully identified and destroyed a staggering total of 589 anti-personnel mines, 1 explosive bomb, and 895 unexploded ordnances (UXOs).

Furthermore, the DU3 team also undertook the crucial task of removing and collecting 44,417 fragmented pieces of explosive material, reducing the potential harm it posed to local communities. Additionally, they safely collected and disposed of 10 kilograms of small arms, ensuring the elimination of dangerous weaponry from the region.

In addition to their meticulous work in conducting controlled detonations and removing hazardous devices, CMAC's DU3 actively responded to 42 EOD calls/requests for intervention from local authorities and communities. This prompt and effective response certainly demonstrates CMAC's commitment to ensuring the safety and well-being of the people in Pursat Province.

CMAC's tireless efforts in landmine and ERW clearance not only protect lives but also contribute to the overall socio-economic development of the province. By reclaiming vast areas amounting to 4,436,699 square meters, these once-contaminated lands can now be utilized for essential infrastructure projects, agricultural purposes, and the establishment of residential and commercial areas.



The achievements of CMAC's DU3 in the first half of 2023 highlight its exceptional dedication and expertise in dealing with the complex challenges associated with landmine and ERW contamination. Through their relentless efforts, Pursat Province is gradually being transformed into a safer and more prosperous region for its inhabitants. The ongoing collaboration between CMAC, local authorities, and communities is set to further enhance the collective endeavor of building a landmine-free Cambodia, where peace and development can thrive. For instance, CMAA has already declared 4 city/districts of Pursat Province as mine-free zone: Pursat City, Bakan, Krakor, and Kandieng Districts.

Demining Unit 4 (DU4)

Located in Anlong Pir Village, Trapeang Thom Commune, Prasat Bakong District, Siem Reap Province, DU4 plays a crucial role in the operations carried out across Siem Reap, Kampong Thom, and Banteay Meanchey provinces. With a dedicated team of 256 staff, DU4 has made remarkable achievements in the period of January to June 2023.

During this time, the relentless efforts of DU4 have led to the release of a staggering 12,833,234 square meters of landmine and explosive remnants of war (ERW) contaminated areas. This significant accomplishment not only ensures the safety of local communities but also paves the way for the development and prosperity of these provinces.

To achieve these results, the diligent team at DU4 undertook the challenging task of locating and destroying various dangerous ordnances. Through their meticulous work, they successfully neutralized 461 anti-personnel mines, one anti-tank mine, five cluster munitions, and 998 items of unexploded ordnance (UXOs). In addition, they diligently removed and collected 97,015 fragments and 30 kg of small arms, thereby eliminating potential threats and establishing a secure environment.

Furthermore, DU4 has effectively responded to 123 explosive ordnance disposal (EOD) calls and requests from local authorities and communities. This quick and efficient response has minimized the risks posed by explosive remnants and significantly contributed to the preservation of life and property in the region. The dedication and expertise demonstrated by the DU4's teams have undoubtedly made a lasting positive impact on the affected communities, instilling a sense of security and fostering socio-economic development in these provinces.

The exceptional achievements of DU4 serve as a testament to their professionalism, expertise, and unwavering commitment to their mission. Through their efforts, they have played a vital role in preventing accidents and ensuring the well-being of the communities they serve. Their tireless work contributes to the broader goal of creating a safer and more prosperous future for Siem Reap, Kampong Thom, and Banteay Meanchey provinces. With their continued dedication, DU4 will undoubtedly continue to make a significant difference in the lives of countless individuals, fostering sustainable development and improving the overall quality of life in these regions.

Demining Unit 5 (DU5)

DU5 is located in Toultra Choeng Village, Chup Commune, Tbong Khmum District, Tbong Khmum Province. Their primary responsibility is to conduct clearance operations in the UXO-affected provinces of Cambodia, including 16 capital/provinces: Kampong Cham, Kampong Speu, Kampot,



Kandal, Kep, Koh Kong, Kratie, Mondul Kiri, Phnom Penh, Preah Sihanouk, Prey Veng, Ratanak Kiri, Stung Treng, Svay Rieng, Takeo, and Tbong Khmum.

Even though some provinces are declared as mine-free provinces, DU5 still conducts clearance operations in those areas because a mine-free province does not guarantee that there are no other UXOs, AXOs, cluster munitions, or other explosive remnants. To declare a province mine-free, it means that all the known and recorded minefields in that province have been cleared. However, there may still be unrecorded areas with mines, which is why DU5 ensures their ability to serve mine action services across their jurisdiction provinces.

During the first half of 2023, DU5, with its 155 personnel, cleared and released 18,531,276 square meters of contaminated land and destroyed 16 anti-personnel mines, 5 anti-tank mines, 17 aerial bombs, 3,048 cluster munitions, and 4,119 UXOs. They also removed and collected 84,031 pieces of fragmentation and 610 kg of small arms, while also responding to 759 intervention requests from local authorities and communities.

DU5 also conducted a baseline survey of an area measuring 6,030,133 square meters, marked 20 new minefields, and lined 2,500 meters of liner marking. Their achievements speak to their dedication to keeping their communities safe and free from the dangers of landmines and other unexploded ordnances.

Demining Unit 6 (DU6)

Founded in Siem Reap Province, DU6 faced financial struggles when the Federal Government of Germany ceased funding CMAC in 2016. This decision forced CMAC to reallocate deminers and official staff members to other projects, putting a halt to DU6's operations for a period of time. Thankfully, financial constraints were later eased, and DU6 was reactivated with a rented office in February 2019 with its current address at Sra Aem Khang Tboung Village, Kantuot Commune, Choam Khsant District, Preah Vihear Province.

DU6 consists of 239 staff members responsible for conducting operations in four provinces, including Preah Vihear, Oddar Meanchey, Stung Treng, and Kratie. In the first half of 2023, DU6's land release achievement reached an impressive 16,422,703 square meters. The team found and destroyed 1,428 anti-personnel mines, 11 anti-tank mines, 3 improvised mines, 1 aerial bomb, 258 cluster munitions, and 1,989 UXOs, while also removing and collecting 189,155 pieces of fragmentation and 10 kg of small arms. Furthermore, they responded to 201 EOD calls/requests from local communities and authorities, making a positive impact on those communities.

More than the aforementioned, DU6 also conducted a baseline survey on 154,500 square meters, crucial in planning for future clearance operations. The team's efficiency and dedication in carrying out their tasks demonstrate their commitment to preserving the safety of their communities.

DU6's success highlights the need to continue supporting mine action initiatives. More financial support is necessary to guarantee the safety of vulnerable communities and prevent the disastrous effects of unexploded ordnance. DU6's continued efforts to remove dangerous explosives ensure a more peaceful and secure future for those living in affected areas, and it is crucial to maintain and support their work for long-term safety.



4.3.3. Special Units

In addition to its extensive land release operations across the country, CMAC boasts a diverse range of specialized units, each equipped with unique expertise aimed at eliminating threats, restoring hope, and fostering a prosperous future for the Cambodian people. These exceptional units, which will be delved into in this section, include the esteemed Dog Centre (DC), the groundbreaking Explosive Harvesting Program (EHP), the formidable Special Unit of Underwater Operations (SUUO), the transformative Special Unit of Post-Clearance Development & Victim Assistance (PCD), the empowering Community Development Centre (CDC), the enlightening Techo Peace Museum (PMA), and the innovative Central Workshop (CWS). Prepare to be captivated by the remarkable work and unwavering dedication of these extraordinary units as we embark on a journey toward progress and resilience.

Dog Centre (DC)

The Demining Centre (DC) located on the premises of today's Technical Institute for Mine Action (TIMA) was established in 1997 with technical support from the Swedish Armed Forces and financial support from the Swedish government through the Swedish International Development Agency (SIDA). The initiative was a result of the cooperation between the Cambodian Mine Action Centre (CMAC) and the Swedish Armed Forces, with the aim to mitigate the negative impact of unexploded ordnance (UXO) in Cambodia.

Initially, the Mine Detection Dog Program (MDD) was implemented by the Swedish Armed Forces until their mission in Cambodia was over in 2002, and ownership was then transferred to CMAC. The program continued through CMAC's partnership with Norwegian People's Aid (NPA) with funding from the Norwegian Ministry of Foreign Affairs. The collaboration led to the development of various search techniques such as the Long Leash Detection Dog (LLD), the Explosive Detection Dog (EDD), and most recently (2021) the COVID-19 Detection Dog. These developments have enabled the program to increase efficiency in mine and explosive detection operations, providing safety and security to high-ranking officials for the Royal Government of Cambodia (RGC).

Over the years, CMAC has successfully bred and trained high-quality mine detection dogs, which have been recognized by national authorities, local operators, and regional and international demining organizations worldwide. CMAC's ownership of the MDD has enabled them to demonstrate their expertise in mine detection and continue to provide safe living environments throughout Cambodia.

In a nutshell, the successful collaboration between CMAC, NPA, and the Norwegian Ministry of Foreign Affairs has led to the development of highly effective search methods for mine detection such as the LLD, EDD, and COVID-19 Detection Dog programs. These initiatives have proven crucial to the safety and security of Cambodian communities and their high-ranking officials by ridding the country of unexploded ordnance. The recognition of CMAC's MDD by international and local organizations reflects the organization's expertise and proficiency in demining activities, and the continued success of this partnership will lead to greater safety and security for all.

Currently, CMAC Dog Centre (DC) operates with a highly skilled team consisting of 45 dedicated staff members who oversee various critical aspects of its operations. This multifaceted workforce assumes responsibilities spanning dog breeding, both puppy and adult dog training,



comprehensive veterinary care for the canines, meticulous kennel dog management, and facilitating other essential refresher courses. The expertise and commitment of these individuals enable DC to function smoothly and effectively. From diligently breeding and raising dogs to being well-prepared for their arduous tasks, to providing meticulous training that hones their obedience and detection abilities, the staff at CMAC's Dog Centre play a pivotal role in ensuring the success of both landmine/ERW clearance and security operations.

Dog Breeding

To ensure a sustainable supply of dogs in mine action and other purposes, CMAC relies on its own breeding program. The dogs produced from the breeding program are not only for CMAC's internal use to support its ongoing mission and domestic market but also for potential exports of quality dogs and services overseas.



The program focuses mainly on the selection of quality parent dogs including the consideration of the best age and the best time for breeding. Normally, a CMAC female dog is able to produce offspring on average from 7 to 12 puppies in a litter. About 60 to 70 per cents of the puppies in the litter can be trained to become skilled dogs.

Process of Breeding



Dog Training

Training for MDDs has to begin as early in the dogs' life as possible. There are critical stages in the dog's life that strongly affect their learning and behavior, and many of these occur in the first weeks. Not every dog can be trained for mine detection operations. The dog must naturally possess certain traits and characteristics which can be developed during training. The process of selecting and training dogs with the potential to be MDDs is extremely difficult and involves the ability to foresee potential in the dog.



CMAC has continued to seek new innovations to improve training and deploy dogs in the landmine/ERW areas by diversifying the dog detection skills including the introduction of the current training of cluster munitions technical survey dogs (CTD).

1. Puppy Training

Puppies are trained from the age of one week to the age of 8 months according to the training program and undergo two competency tests before being continued to the upper level of training called semi-training which lasts for six months.



2. Adult Dog Training

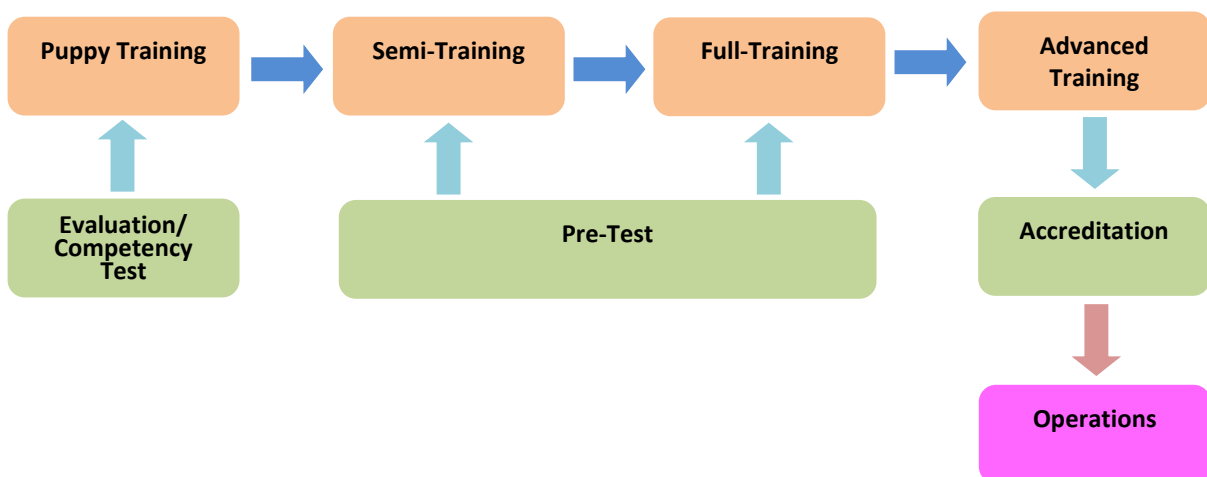
Training and test/accreditation of dogs have been done in full accordance with international and national standards and strictly follow CMAC’s own procedures to ensure the quality and reliability of the products.

Dogs are trained with all kinds of ammunition and repellents and sniffed for processed or real ammunition and then put in a car, in a garden, in a public office, etc. All dogs need to be tested for a license after training and prior to use or operations.



Regarding the dog training equipment and tools, CMAC Dog Centre has both field location and sufficient technical training equipment for dog training, including dog physical training and dog technical skills. In addition to the dog skills above, CMAC Dog Centre plans to train other dog skills, including drug dogs, protection dogs, social demonstration dogs or bodyguard dogs, etc.

3. Process of Training



**Table: MDD's Situation as of June 2023**

Dog Situation:	Varieties	Sex		Total
		Male	Female	
Dog Operations	EDD/CTD	5	3	8
	SLD	17	15	32
	IED	4	2	6
Dog Under Training	Semi-training	32	11	43
	Full Training	2	2	4
Puppy Under Training	Green training	5	9	14
Bitches For Breeding		1	15	16
Total:		66	57	123

Table: Dog Training Course in the First Half of 2023

Course Title	Team	No. of Course	No. of Trainees		No. of Instructor	Date	
			Staff	Dog		Start	End
Refresher	SLD06,BHQ01	263	5	04	03	16-01-2023	27-01-2023
Refresher	BHQ02,SLD09	264	07	04	03	06-02-2023	17-02-2023
Refresher	CTD101,02&IED01	265	14	06	03	13-03-2023	24-03-2023
Refresher	SLD04,SLD07	266	8	4	02	27-03-2023	07-Apr-2023
Refresher	CTD03,CTD04	267	10	04	03	02-05-2022	13-05-2022
Refresher	SLD02,03&IED02	268	06	06	02	15-05-2023	26-05-2023
Refresher	PDM01 &PDM05	269	04	04	02	29-05-2023	09-06-2023
Refresher	PDM07&PDM09	270	03	03	01	05-06-2023	16-6-2023
Total:		8	57	33	21		

Table: Advanced Course

Advanced Course							
No	Name Course	N. of Course	N. of Trainees		Instructor	Date	
			Staff	Dog		Start	End
2	Patrol Cr	1	25	5	3	06-02-2023	11-02-2023
3	Advance	61	2	2	2	27-02-2023	17-03-2023
4	Advance Course	62	4	4	1	27-03-2023	05-06-2023
Total:		3	31	11	6		



Explosive Harvesting Program (EHP)

EHP was established on 01 March 2005, as a collaborative effort between CMAC-Golden West, with financial and technical support from the United States through the Golden West Humanitarian Foundation. The primary objective of this program is to collect various types of unexploded ordnances (UXOs) from CMAC DUs, Demining NGOs, and communities, as well as defective bombs stored in the warehouses of the Royal Cambodian Armed Forces (RCAF) and National Police. These collected materials are then recycled into new explosives, which are utilized for detonating landmines or UXOs that cannot be safely excavated or transported to secure locations.



Since its inception in 2005 until June 2023, the EHP has achieved remarkable outcomes. Notably, it has successfully dismantled/cut 44,170 ordnances and destroyed 235,519 individual ordnance items. Additionally, the program has recovered 220,074.15 kilograms of Ferrous and Ferrous Explosive (FFE) metals, along with 79,967.6 kilograms of explosives. Furthermore, the EHP has produced a total of 601,561 blocks of newly recycled explosives.

In the first half of 2023 alone, the program, with 8 staff members, demonstrated its effectiveness by dismantling 237 ordnances, destroying 8,739 ordnance items, and recovering 2,750.01 kilograms of FFE metals and 1,209.9 kilograms of explosives. Moreover, during this period, the EHP successfully generated 6,800 blocks of newly recycled explosives.

These achievements highlight the significant contributions of the EHP in addressing the persistent threat posed by UXOs and landmines in Cambodia. The program's ability to collect and recycle various types of ordnances not only ensures the safe disposal of hazardous materials but also provides a sustainable source of explosives for neutralizing inaccessible or untransportable landmines and UXOs. This advanced and professional approach to explosive harvesting exemplifies the commitment of CMAC-Golden West, with support from the United States, to promote the safety and well-being of communities affected by explosive remnants of war in Cambodia.



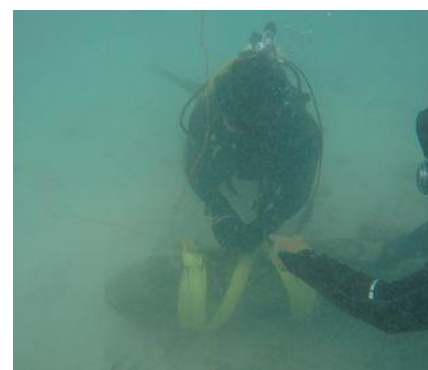


Table: EHP's Achievements in the First Half of 2023

2023	Ordnance Processed (Cut)	Ammunition Found & destroyed	Recovering of FFE metals (Kg)	Recovering of explosives (Kg)	Producing of newly recycled explosives (blocks)
January	1	1,177	4.45	0.71	2,300
February	6	1,402	205.92	98.74	0
March	10	807	1,600	900	0
April	0	1,513	0	0	0
May	34	1,483	277.48	108.15	1,500
June	186	2,357	662.16	102.30	3,000
TOTAL	237	8,739	2,750.01	1,209.9	6,800

Special Unit of Underwater Operations (SUUO)

The establishment of the Special Unit of Underwater Operations (SUUO) by the Cambodia Mine Action Center (CMAC) in 2013 was a groundbreaking move toward ensuring the safety and security of the country's waterways. With technical support from the US Government, the unit was bestowed with the responsibility of conducting complex underwater clearance operations, including the recovery of underwater unexploded ordnance (UXO) and abandoned explosive ordnance (AXO), sunken barge searches and clearances, bridge and pier searches, evidence collection, stranded vessel retrieval, downed aircraft recovery, damaged structure and body recovery, and personal rescue.



During the initial phase of the unit's establishment, the year 2013 was dedicated to training and trial operations. However, the unit began its full-fledged operations in 2014 and has since accomplished remarkable feats in safeguarding high-ranking government officials and clearing the riverbed of explosive hazards. To date, SUUO has located and destroyed a total of 14,553 explosive items, 4,672kg of small arms, and 16,359 Kg of fragmentation.





Most of these achievements were made possible through the government's trust, particularly from the inter-ministries in charge of underwater clearance, to carry out underwater clearance operations in the riverbed. Situated on the premises of the Technical Institute for Mine Action (TIMA), SUUO consists of 47 staff members, divided into office and field roles. The field diving work has been conducted by two teams of demining divers comprising ten members in total. In the first half of 2023, SUUO extracted an impressive 11,454 explosive items of projectiles and 16,359 Kg of fragmentation found in the riverbed.

The impressive work carried out by SUUO underscores the efficacy of Cambodia's mine action initiatives and highlights the nation's unwavering commitment to ensuring the safety and protection of its citizens. With the support of the RGC, CMAC's SUUO will continue to implement innovative and targeted solutions to address the myriad of challenges facing Cambodian waterways.



Table: Explosive Items and Fragments Found and Removed from January to June 2023

No.	Description	No. of Explosive Items	Weight (Kg)	Other
1	Trip Flare (mine)	177		
2	Mortar 60 mm	7,724		
3	Mortar 81 mm	759		
4	Mortar 107 mm	10		
5	Artillery 75 mm	1,381		
6	Artillery 105 mm	752		
7	Artillery 155 mm	214		
8	Launcher Grenade 40 mm	495		
9	Rocket (RPG-7)	1		
10	Hand Grenade	1		
11	Fragments		16,359	
Total		11,454	63,295 Kg (Mine, ERW, Fragment)	



Special Unit of Post-Clearance Development & Victim Assistance (PCD)

In light of Cambodia's decades-long struggle with landmines and explosive remnants of war (ERW), the Cambodia Mine Action Center (CMAC) has undertaken a comprehensive approach to community and victim support by integrating sustainable development activities into its demining efforts. To this end, CMAC established the Special Unit of Post-Clearance Development & Victim Assistance (PCD) in 2007 to drive socio-economic improvement in the landmine/ERW-affected localities.

CMAC has worked in collaboration with international non-governmental organizations, private companies, and other international organizations to provide development assistance to post-clearance areas with PCD implementing the post-clearance projects. This special unit has prioritized the most pressing infrastructure development needs to improve the socio-economic conditions in the north-western provinces of Banteay Meanchey, Battambang, Pailin, and Pursat. In an effort to rehabilitate minefields/UXO fields, PCD undertakes green farmland conversion projects after demining activities have been successfully completed.



Since its inception, PCD has undertaken a range of community development and support initiatives. These include the construction of schools, community markets, roads, canals, water cross structures, ponds, and drainages, along with providing agricultural and animal-husbandry training to individuals and communities residing in the post-clearance areas. Notably, the unit has received support from the People and Government of Japan for two projects, namely the Project for Integrated Mine Clearance and Landmine Victim Assistance, Phase I (PIMV-I), and the Safety Village Construction (SVC).



Last year in 2022, PCD carried out a range of development projects, including the construction of rural roads, community markets, drainage dams, box drains, water cross structures, and a school, along with providing agricultural training to farmer trainees in Pailin and Pursat provinces. Additionally, PCD constructed laterite roads, waterways, and culverts, along with pond and school repair initiatives, under the SVC of CMAC-JMAS cooperation in Banteay Meanchey Province.

Despite the immense progress made by the unit, PCD has been temporarily suspended due to uncertainty surrounding the project, combined with a change of donor focus and the cessation of JMAS. Nevertheless, the unit's staff has been integrated into other mine action programs to maintain its momentum toward achieving sustainable socio-economic development in Cambodia's post-clearance areas.

Community Development Centre (CDC)

Undoubtedly, the efforts of CMAC field staff members have played an indispensable role in clearing the country of landmines and ERW. These brave deminers work tirelessly, moving from site to site, sacrificing their time, energy, and lives to rid the land of the devastating threats posed by landmines and ERW—without focusing on developing their own livelihoods. However, while the deminers have devoted their lives to protecting communities and contributing to economic development, their own livelihoods, especially their retired lives, often pale in comparison to the post-clearance communities they serve.



Recognizing the dedication of deminers and compensating for their sacrifices, CMAC secured approval from Samdech Techo Prime Minister Hun Sen to establish the CMAC Community Development Centre (CDC) in 2014. Situated in Koas Kralo District, Battambang Province, CDC spans 1,800 hectares and aims to enhance the livelihoods of CMAC staff, in particular retirees and individuals with disabilities. CDC focuses on promoting resettlement, sustainable agriculture, eco-tourism, and cultural tourism, always focusing on the most innovative and advanced approaches.



CDC's efforts have not only benefited retired CMAC staff members but also individuals and communities in the region, providing essential infrastructure such as schools, markets, roads, ponds, reservoirs, canals, drainages, and suchlike. To maintain this infrastructure, CDC's ten staff members work tirelessly, ensuring that the infrastructure remains in pristine condition.



In the first six months of 2023, CDC made substantial progress in rebuilding infrastructure and agricultural production. The center restored, repaired, and constructed several vital roads, including 8,000 meters of Road No.1, 2,700 meters of the road bordering the army's land, and 3,600 meters of Road No.29. In addition, CDC planted a variety of crops, including 476 cacti, 1 hectare of barley wheat, 4 hectares of sorghum, 300 papaya plants, and 500 eggplant plants. Additionally, CDC planted 270 Kino trees (known as Doeum Thnong in Khmer) and 540 bamboo plants, while also producing 3,000 bamboo seedlings.



Furthermore, CDC made remarkable progress in clearing 396 hectares of forest for agricultural purposes, plowing and cultivating 178 hectares for the same reason, and planting 127 hectares of land border posts. To promote sustainable agriculture and economic development, CDC offered an agricultural training course on Vegetable Production and Food Processing to 26 CMAC retirees. The training course and the trainees' practicum took place at the CDC, focusing on the cultivation practices of climate-adapted vegetable crops for small-scale farmers. Additionally, the course covered the food processing of dried sweet mango as well as cucumber and cabbage pickles, with the aim of producing the best quality products with long-lasting expired storage to benefit retirees' future socio-economic growth.



It is with immense pride that we acknowledge CDC's achievements and CMAC staff members' sacrifice and dedication. Their unwavering commitment to safeguarding communities and promoting economic development has contributed to shaping the future of Cambodia. Looking forward, stakeholders should continue to celebrate their achievements, provide support, and work together toward a brighter, safer, and more prosperous tomorrow.



Peace Museum of Mine Action (PMA) / Techo Peace Museum (TPM)

Located in Anlong Pir Village, Trapeang Thom Commune, Prasat Bakong District, Siem Reap Province, the Peace Museum of Mine Action (PMA) was a small exhibition room containing DU4. Under the direct supervision of CMAC HQ in Phnom Penh, the museum was initially established to provide information on mine actions to visitors. However, with the long-term vision of promoting the core values of CMAC and raising awareness of the legacy of war in Cambodia, especially for the younger generation, the top management transformed the museum in 2017 into the magnificent "Peace Museum of Mine Action."



In July of the same year, PMA was inaugurated, with a host of high-ranking officials, embassies, donors, and development partners attending the event. Currently, PMA is undergoing construction to be expanded into a massive museum, with financial support for the construction coming from the People and Government of Japan. This new museum will be known as the Techo Peace Museum (TPM), named by Samdech Techo Prime Minister Hun Sen in an electronic note dated 09 June 2023. The construction of the TPM is set to be completed by 2025, after which it will become operational to receive visitors from across the world. Ahead of TPM's readiness, PMA currently employs only five Mine/UXO victim staff, mainly focusing on maintaining the museum's excellent condition and conducting presentations and guided tours to domestic and international visitors.



Even though the museum is under construction, the first half of 2023 saw an impressive total of 640 visitors from 21 countries visiting the PMA, exploring the history of the legacy of war in the Kingdom of Cambodia. This statistic is a testament to the growing interest in the country's past and efforts to move forward with peace and development. The continual growth and expansion of the museum signify a bright future for CMAC and Cambodia, as the country looks to build a narrative of resilience and progress in the face of adversity.





In conclusion, the Peace Museum of Mine Action and its new incarnation as the Techo Peace Museum are crucial elements in the narrative of Cambodia's post-war development. With the upcoming expansion, the museum will play an even more significant role in promoting peace, tolerance, and understanding not only at a national level but also across the world. The tireless efforts of PMA staff and CMAC leadership must be recognized for their commitment to preserving the memory of Cambodia's past while looking toward a bright future.

Table: Visitors to Peace Museum

Nº	Country	Jan		Total	Feb		Total	Mar		Total	Apr		Total	May		Total	Jun		Total	Grand Total
		M	F		M	F		M	F		M	F		M	F		M	F		
1	Cambodia	11	10	21	12	7	19	8	3	11	10		10	3	1	4	8	4	12	77
2	Japan	4	6	10	5	10	15	92	35	127	1		1	3	4	7	4	1	5	165
3	USA	13	4	17	1	2	3	2	4	6	2	1	3	8	8	16	5	7	12	57
4	Germany		1	1																1
5	Vietnam	1		1																1
6	France	3	1	4	4	3	7	1	2	3	1	1	2							16
7	Lao PDR	8	2	10																10
8	Ukraine	15	1	16																16
9	Malta	1	1	2																2
10	Australia				4	2	6				110	5	115							121
11	Europe				30	31	61													61
12	Canada					1	1													1
13	China				1		1				2	2	4	32	27	59				64
14	Philippines				1	1	2													2
15	Portugal							1	1	2										2
16	Singapore							1		1										1
17	India										3		3							3
18	Russia										1		1				1	1	2	3
19	Switzerland										1		1							1
20	Brazil													2		2				2
21	Indonesia																29	3	32	32
22	England																1	1	2	2
22 Countries		56	26	82	58	57	115	105	45	150	131	9	140	46	42	88	48	17	65	640



Central Workshop (CWS)

CWS is another highly specialized unit within CMAC that plays a crucial role in the demining operations in the Kingdom of Cambodia. It was established at the inception of demining activities to ensure the quality and condition of CMAC vehicles, and mechanical demining machines, and conduct necessary repairs. Without the support of CWS, demining work would not be possible.

Over the years, CMAC has continuously evolved its mine-action activities, leading to the establishment of a professional CWS in 2002. Initially located on the premises of DU2 in Andoung Chenh Village, Sangkat O'cha, Krong Battambang, the current CWS building was reconstructed in 2005 with funding from the People and Government of Japan. Presently, CWS employs a dedicated team of 19 individuals who cater to the repair needs of all CMAC's Demining and Special Units across the country.



In the first half of 2023, CWS provided exceptional repair services, performing 42 repairs on mechanical demining machines and 165 repairs on vehicles, including cars and heavy trucks. The workshop serviced a total of 183 vehicles, 32 mechanical demining machines, and 2 generators from DU1, DU2, DU3, DU4, DU6, PFU, and CDC. Additionally, CWS conducted 6 inspections to ensure the proper use and maintenance of vehicles and mechanical demining machines. What is more, CWS successfully conducted 54 separate trailer movements to relocate mechanical demining machines from one site to another.





In addition to the completed tasks thereof, CWS is currently in the process of repairing 8 truck vehicles and 4 mechanical demining machines. The workshop's skilled repair experts not only fix the machines but also provide valuable guidance to operators on how to use and maintain the vehicles and mechanical demining machines in optimal condition. These operators are equipped with essential skills to handle urgent repairs before the arrival of CWS's experts, ensuring the machines are well taken care of. This approach also enhances their mechanical knowledge and expertise, enabling them to conduct basic repairs independently.

With great pride, the CWS's dedication and contribution to CMAC's mine-action activities are indispensable, and their continuous efforts in providing repair services and empowering operators have significantly advanced the efficiency and effectiveness of demining operations in the Kingdom of Cambodia.



4.4. Training and Research & Development in Mine Action

In addition to its vital MRE program, comprehensive surveying, and efficient clearance operations, CMAC places great emphasis on the advancement of mine action through training and research and development (R&D). Training forms a crucial component of CMAC's endeavors, which can be broadly categorized into three types: internal training within CMAC personnel itself, external countrywide training encompassing the Royal Cambodian Armed Forces (RCAF), National Police, and non-governmental organizations (NGOs), and international training programs. Recognizing the significance of innovation and progress in mine action, CMAC has continually directed its efforts towards the development and improvement of cutting-edge demining tools and



equipment. Through its commitment to training and R&D, CMAC strives to enhance the effectiveness, efficiency, and safety of mine action initiatives, both within Cambodia and on a global scale.

4.4.1. Internal Training

In order to effectively carry out demining operations, it is crucial for deminers to possess a high level of expertise and proficiency in mine action work. Recognizing this need, CMAC has implemented a comprehensive training program designed to equip deminers with the necessary skills and techniques. These training courses encompass a wide range of topics, catering to both new recruits and experienced field staff.



CMAC offers a variety of training courses, including refresher programs and specialized courses such as Demining, Mine Marking, Explosive Ordnance Disposal (EOD), First Line Management, First Aid, Platoon Commander Demolition, Platoon Supervisory, Mine Awareness, Vehicle Driving, Radio Communication, Mine Detection Dog, Mine Neutralization, and other relevant subjects. To ensure optimal learning outcomes, these courses are conducted both at the esteemed Technical Institute of Mine Action (TIMA) and in practical field settings.





In line with its commitment to continuous professional development, CMAC has scheduled a series of internal training courses for its personnel within a six-month timeframe, spanning from January to June 2023. These courses, delivered by TIMA, are designed to cater to the needs of both new CMAC deminers and experienced field staff seeking to enhance and multiply their skills. The comprehensive curriculum covers a total of seven courses, consisting of Pedagogy and Teaching Methodology, Basic Demining, Patrol Dog, Basic Dog Handling, TSS/TSO, and (2 courses) Specialist EOD I, resonates with a participation of 372 dedicated CMAC staff members.

By prioritizing the provision of advanced training opportunities, CMAC aims to ensure that its deminers are equipped with the latest knowledge and techniques in mine action work. This commitment to continuous learning and professional development underscores CMAC's dedication to maintaining the highest standards of safety and efficiency in demining operations.

Table: Internal Training in the First Half of 2023 (For CMAC Staff)

No.	Name of Course	Location	Trainee Source	Num. Trainee			Duration	
				M	F	Total	Start Date	Finish Date
1	Pedagogy & Teaching Methodology	TIMA	CMAC Staff	35	17	62	05Jan23	29Jan23
2	Basic Demining Course 143	TIMA	CMAC Staff's Kid	92	23	115	30Jan23	10Feb23
3	Patrol Dog	TIMA	CMAC Staff	18	9	27	06Feb23	11Feb23
4	Basic Dog Handling	TIMA	CMAC Staff	21	4	25	29May23	18Aug23
5	TSS/TSO	TIMA	Refresher DUs	19	12	31	19Jun23	23Jun23
6	Specialist EOD I	TIMA	Refresher DUs	24	31	55	26Jun23	09Oct23
7	Specialist EOD I	TIMA	Refresher DUs	40	14	54	31Jul23	23Nov23
TOTAL:				249	110	369		

4.4.2. Externally Countrywide Training

In addition to training its internal staff members, CMAC's TIMA is committed to providing extensive training in mine action to external trainees within Cambodia. This initiative aims to strengthen the capacity of various institutions and organizations involved in mine clearance operations and enhance their ability to efficiently and effectively address the landmine and explosive remnants of war (ERW) issues in the country.





Among the beneficiaries of CMAC's training programs are the Royal Cambodian Armed Forces (RCAF), the Bodyguard Headquarters (BHQ), the National Police, officers from local authorities and communities, and Cambodia-based demining Non-Governmental Organizations (NGOs). By extending training opportunities to these entities, CMAC seeks to foster collaboration and cooperation among different stakeholders in the field of mine action.



The training provided by CMAC covers a wide range of topics and skills necessary for conducting successful mine clearance operations. This includes technical training on various demining techniques, mine risk education (MRE), as well as capacity building in areas such as team management, safety protocols, and equipment maintenance.

In the first half of 2023 alone, CMAC's TIMA organized three external countrywide training courses, namely Patrol Dog, Basic Dog Handling, and Basic Demining. These courses saw the participation of a total of 525 trainees, predominantly the RCAF soldiers more than the national police officers. By equipping these individuals with the necessary knowledge and skills, CMAC aims to accelerate operational clearance efforts across the country, thereby contributing to a safer and more secure environment for its residents.

CMAC's commitment to training external trainees reflects its holistic approach to mine action. By combining internal capacity building with the empowerment of external stakeholders, CMAC strives to create a cohesive and coordinated network of professionals working towards a common goal – the complete eradication of landmines and ERW in Cambodia.

Table: Externally Countrywide Training in the First Half of 2023 (For National Police and RCAF)

No.	Name of Course	Location	Trainee Source	Num. Trainee			Duration	
				M	F	Total	Start Date	Finish Date
1	Patrol Dog	TIMA	Police/RCAF	7	1	8	06 Feb 23	11 Feb 23
2	Basic Demining Course	RCAF-5	RCAF			498	20 Feb 23	11 Apr 23
3	Basic Dog Handling	TIMA	RCAF	19		19	29 May 23	18 Aug 23
TOTAL:				-	-	525		



4.4.3. International and South-South Cooperation

Cambodia, through the Cambodian Mine Action Center (CMAC), has successfully transitioned from being solely focused on addressing its own landmine and Explosive Remnants of War (ERW) problem to assisting other countries in the region and beyond. CMAC has played a critical role in promoting international cooperation and knowledge exchange, sharing its expertise and experiences with other mine-affected countries and demining organizations.

Since 2006, the year when Japan started to play a more important role in promoting international cooperation under the South-South Cooperation scheme, a more official exchange program has been established with the support of the Japan International Cooperation Agency (JICA). Demining organizations from 15 African countries have visited and learned from CMAC under this program, and further visits have been organized, leading to a more formal international cooperation arrangement under the tripartite training arrangement supported by JICA.

Over the years, CMAC has gained a strong reputation for the quality of its work thanks to a standardized training system and best management practices. Its operational expertise and capability have attracted many study visits from other mine action programs, and its contributions to the mine action sector have been internationally recognized. In 2008, JICA initiated a technical assistance project, “Strengthening CMAC’s Function for Human Security Realization,” to enhance CMAC’s ability to share its know-how further.

One of CMAC's strategic goals has been to make its Training Centre (TC) a Centre of Excellence for Mine Action (since 2015 become TIMA), making the center and related facilities accessible as venues for delivering mine action training for both national and international clients. CMAC aims to promote and strengthen international cooperation through its policy and technical exchange programs to encourage cooperation among landmine/ERW-affected countries to share experiences and expertise.

On 17 June 2009, assisted by JICA, the very first official South-South Cooperation to support the Third Country Training Program (TCTP) was realized. This scheme, in which JICA provides participants from developing countries with a technical training program in collaboration with a Southern partner (third country), aims to transfer or share development experiences, knowledge, and technology for mine-affected countries. A tripartite arrangement was established for a “Third Country Training on Strengthening PAICMA,” whereby CMAC would provide a training program by sharing its knowledge and learning experience with PAICMA staff members from Colombia. Three successful training courses were implemented during Japan Fiscal Year (JFY) 2010-2011, involving 15 participants from Colombia for a period of two weeks in Cambodia.

Following the success of this first South-South Cooperation model with PAICMA, the Republic of Colombia, a similar arrangement was initiated with the support of JICA on Third Country Cooperation between CMAC-UXO Lao, CMAC-INAD Angola, and CMAC-IRAQ/KRG. Another series of exchange workshops were held in order to develop human resources and strengthen the institutional capacity of involved agencies.

In the first half of 2023, the Cambodian Mine Action Centre (CMAC) facilitated two international training courses in Cambodia as part of the CMAC-JICA South-South Cooperation. These courses welcomed a total of 20 foreign trainees, aiming to enhance their skills and knowledge in mine action and demining operations.



The first training course focused on Operational Management and was conducted for personnel from UXO-Lao. It involved the participation of 12 trainees, consisting of 9 individuals from Laos (UXO-Lao staff) and 3 from Cambodia (CMAC staff). This comprehensive training program took place in Cambodia from 09 January to 20 January 2023, with a follow-up session held in Lao-PDR from 27 February to 10 March 2023.

The second training course catered to 8 personnel of the State Emergency Service of Ukraine (SESU), originating from the currently war-torn nation of Ukraine. The course concentrated on Technical Training on Demining Technologies, primarily emphasizing the implementation of the state-of-the-art Advanced Landmine Imaging System (ALIS), developed by Japan, which is equipped with dual sensors for enhanced mine detection capabilities. This training program was conducted in Cambodia from 16 January to 20 January 2023.



These international training courses organized by CMAC under the CMAC-JICA South-South Cooperation platform not only fostered knowledge exchange but also promoted collaboration between different nations in the field of mine action and demining operations. Such initiatives contribute significantly to global efforts in ensuring the safety and security of affected communities and achieving mine-free territories.



Table: International Training in the First Half of 2023

No.	Name of Course	Country	Trainee	Start	Finish	Remarks
1.	UXO-Lao: Operational Management	Cambodia	12	09-01-23	20-01-23	Completed
		Lao PDR		27-02-23	10-03-23	
2.	SESU-Ukraine: ALIS	Ukraine	08	16-01-23	20-01-23	Completed
Total:			20			

4.4.4. Research & Development

The Cambodian Mine Action Center (CMAC) recognizes the vital importance of maintaining a high-quality demining capacity through quality training and research and development (R&D) activities. In today's ever-evolving mine action environment, CMAC regards R&D as an essential component of its mine action efforts, as it has played a crucial role in contributing to the achievements of landmine/ERW clearance in the Kingdom of Cambodia. Without R&D, the clearance process would have been unacceptably slow, potentially dangerous, and inefficient.

One of the most significant impacts of R&D has been the advancement of demining tools and equipment, such as mine detection machines, demining machines, and brush cutter machines, among others. This has significantly enhanced safety, productivity, and efficiency in the mine action sector. Therefore, CMAC has maintained its R&D efforts to develop cutting-edge demining tools and equipment, which has yielded positive results.



To this end, CMAC is currently conducting R&D on four different studies, namely the Demining Robot-5 (DMR-5), training on the Advanced Landmine Imaging System (ALIS) to SESU of Ukraine, internal training on the use and maintenance of ALIS, and a study on the use and maintenance of Germany Vallon VMH3.

Demining Robot-5 (DMR-5): This study involves close collaboration between CMAC and the Innovative Operations System (IOS) on the innovation of the Demining Robot-Phase 5 (DMR-5). In 2021, the study began by investigating the carrier's capacity to load the air system, and in May-June 2022, the R&D team continued research on the DMR's ability to investigate suspected places using the detector and air compressor. Between January and June 2023, the R&D team continued to work with the Japanese team IOS to develop the 5th generation Demining Robot Machine (DMR-5) using blowing air pressure. This will allow for remote control up to 60 meters behind the air compressor for maximum safety.



ALIS Training to SESU: The ALIS study is another vital aspect of CMAC's R&D efforts. CMAC has been collaborating with Tohoku University of Japan since 2007 to conduct case studies and research on the Advanced Landmine Imaging System (ALIS) to accurately speed up the clearance process with efficiency and safety. The R&D team conducted a field evaluation of ALIS in minefields in 2022 and confirmed the success of integrating the state-of-the-art ALIS with dual sensors for landmine/ERW clearance. This led to Ukraine's urgent need for humanitarian demining training on the Technical Training on Demining Technology, focusing on ALIS.





Training on Use and Maintenance of ALIS: The internal training on the use and maintenance of ALIS is yet another study that the CMAC's R&D teams conducted in March 2023. After a reliability study of the ALIS, the R&D team provided internal training to CMAC's demining team leaders and field staff who use ALIS mine detector machines in optimal condition during operation and downtime (rest time).



Germany Vallon VMH3: In June 2023, CMAC's R&D teams additionally conducted another important study on the use and maintenance of the Germany Vallon VMH3 mine detector machine. The study focused on testing the detector head (60 mm) to detect and signalize metal under the ground.



In summary, CMAC's R&D efforts have had substantial benefits to its mine action productivities and have consequently promoted CMAC and Cambodia's reputation and prestige on an international level. Without R&D, the clearance work would not be safe and efficient. With CMAC's continued commitment to R&D, the mine action sector in Cambodia is poised for even greater advancements in the years to come.



5. CORPORATE MANAGEMENT

In the section on corporate management, a comprehensive depiction of the diligent endeavors undertaken by various departments is imperative. Within this context, the human resource management division emerges as a pivotal entity, ensuring adept staff management and fostering an environment conducive to employee growth and productivity. Additionally, the support management team assumes the mantle of handling equipment, materials, procurement, and logistical aspects, thereby facilitating seamless execution of office and field operations related to demining. Equally crucial is the presence of the project management cohort, responsible for securing assistance from generous benefactors, as well as overseeing the comprehensive planning and monitoring of various projects. Lastly, the quality management faction assumes the onus of meticulously examining potential errors and conducting rigorous audits pertaining to support mechanisms and operational undertakings.



5.1. Human Resources Management

To ensure the effective functioning of CMAC, the Department of Human Resources has implemented a robust human resource information system (HRIS) that serves to streamline the management of staff information, relocations, and essential personnel data across the organization. This cutting-edge information system has proven to be instrumental in optimizing the process of staff information management, thus bolstering the overall management of skills and resources within CMAC.

Notably, the HRIS has revolutionized the identification of key skills and their alignment with specific areas of work, empowering CMAC management to harness the full potential of its workforce. By leveraging the capabilities of this sophisticated system, CMAC can now more



efficiently identify the unique expertise of its staff members, thus enabling more effective resource allocation.

Moreover, the HRIS facilitates the centralization and secure storage of employees' personal data within a dedicated database at CMAC Headquarters in Phnom Penh. This state-of-the-art infrastructure ensures the meticulous maintenance and safeguarding of staff records, guaranteeing utmost privacy and security for individuals' personal information.

Overall, the deployment of the HRIS by CMAC's Department of Human Resources has ushered in a new era of advanced staff information management, enhancing skills utilization and data protection. This technology-powered solution underscores CMAC's commitment to efficient and secure operations, ultimately strengthening its mission to effectively address the organization's objectives.

5.1.1. Staff Deployment

The Cambodian Mine Action Centre (CMAC) is a leading national demining organization of the Royal Government of Cambodia (RGC)'s efforts to conduct landmine and ERW clearance and disseminate awareness of those explosive dangers across the country. As such, it is essential that CMAC maintains a robust and reliable workforce capable of responding effectively to the various demands of its mission of "saving lives and supporting development for Cambodia."

Within a six-month timeframe from January to June 2023, the CMAC workforce experienced a range of fluctuations related to factors such as retirements, long-term sickness, resignations, new appointments, and other similar circumstances. These various factors contributed to the continuous changes in staff numbers during this period. However, despite these challenges, CMAC was able to maintain a consistent workforce of 1,772 staff members, including both permanent and Short Service Agreement (SSA) staff members, responsible for supporting field operations and office functions.

During this period, CMAC also had 38 staff members on temporary leave of absence from their roles. However, this small figure could not have affected the organization's ability to provide crucial services, since CMAC ensured that the necessary support was available to mitigate the risk of disruption.

The table provided below shows a detailed breakdown of CMAC's total staff numbers by each special and demining unit as of June 2023:

Table: Number of CMAC Staff Members as of June 2023

No.	Demining and Special Units	Permanent Staff	SSA Staff	Leave of Absence	Jan-June 2023
					Total Staff
1	Headquarters	159	18	8	185
2	Demining Unit 1 (DU1)	127	21	1	149
3	Demining Unit 2 (DU2)	280	36	6	322
4	Demining Unit 3 (DU3)	58	5	0	63



5	Demining Unit 4 (DU4)	221	33	2	256
6	Demining Unit 5 (DU5)	144	7	4	155
7	Demining Unit 6 (DU6)	200	28	11	239
8	Development Demining Unit (DDU)	79	4	4	85
9	Kampong Thom Frontline Demining Unit (KFU)	176	9	2	187
10	Technical Institute of Mine Action (TIMA)	19	11	1	31
11	Dog Centre (DC)	34	11	0	45
12	Special Unit of Post-Clearance Development & Victim Assistance (PCD)	3	1	0	4
13	Special Unit of Underwater Operations (SUUO)	47	0	0	47
14	Explosive Harvesting Program (EHP)	7	1	0	8
15	Community Development Centre (CDC)	6	3	1	10
16	Central Workshop (CWS)	16	3	0	19
17	Peace Museum of Mine Action (PMA)	2	5	0	5
Total:		1,578	194	38	1,810

The above table indicates that CMAC fluctuated between 1,770 and 1,810 staff members during the period. By the end of June, the organization's total workforce stood at 1,772 actively performing field operations and office functions, with 38 on temporary leave of absence.

Despite the challenges posed by the changes in staff numbers during this period, CMAC was able to remain effective in its mission. This is a testament to the organization's commitment to maintaining a highly skilled and dedicated workforce capable of responding to the various demands of its mission.

In conclusion, the changes in CMAC's staff numbers from January to June 2023 were a result of factors such as retirements, long-term sickness, resignations, new appointments, and other circumstances. Despite these fluctuations, CMAC maintained a reliable workforce of 1,772 staff members, including permanent and SSA staff members, who actively supported field operations and office functions. The organization's ability to remain effective during this period highlights its commitment to maintaining a robust and dedicated workforce capable of responding to the challenges of its mission.

5.1.2. Staff Training

In the first half of 2023, the human resources capacity has been effectively managed and strengthened with the necessary skill sets and information technology. The commitment to building staff effectiveness is demonstrated through the provision of training courses to employees, regardless of their current job positions. The Department of Human Resources closely collaborated with relevant departments, particularly the Technical Institute of Mine Action





(TIMA), to assess training needs, organize and coordinate training courses, assign staff for training, and maintain comprehensive training records.

The training was integrated into the human resource management system and categorized into internal and external training. Internal training was held to enhance and refresh the capacities of CMAC staff members, particularly before their deployment to new projects. This internal training also included providing the Basic Demining Course to new recruits, equipping them with the necessary skills to contribute to saving lives and supporting Cambodia's development efforts by combating the remnants of war.



In the period between January and June 2023, not only did TIMA, in coordination with the Human Resources Department, conduct a range of internal training for CMAC staff members themselves, but it also catered to the needs of external countrywide and international training. The details of this training can be found in the following table.



**Table: Internal Training in the First Half of 2023 (For CMAC Staff)**

No.	Name of Course	Location	Trainee Source	Num. Trainee			Duration	
				M	F	Total	Start Date	Finish Date
1	Pedagogy & Teaching Methodology	TIMA	CMAC Staff	35	17	62	05Jan23	29Jan23
2	Basic Demining Course 143	TIMA	CMAC Staff's Kid	92	23	115	30Jan23	10Feb23
3	Patrol Dog	TIMA	CMAC Staff	18	9	27	06Feb23	11Feb23
4	Basic Dog Handling	TIMA	CMAC Staff	21	4	25	29May23	18Aug23
5	TSS/TSO	TIMA	Refresher DUs	19	12	31	19Jun23	23Jun23
6	Specialist EOD I	TIMA	Refresher DUs	24	31	55	26Jun23	09Oct23
7	Specialist EOD I	TIMA	Refresher DUs	40	14	54	31Jul23	23Nov23
TOTAL:				249	110	369		

Table: Externally Countrywide Training in the First Half of 2023 (For National Police and RCAF)

No.	Name of Course	Location	Trainee Source	Num. Trainee			Duration	
				M	F	Total	Start Date	Finish Date
1	Patrol Dog	TIMA	Police/RCAF	7	1	8	06 Feb 23	11 Feb 23
2	Basic Demining Course	RCAF-5	RCAF			498	20 Feb 23	11 Apr 23
3	Basic Dog Handling	TIMA	RCAF	19		19	29 May 23	18 Aug 23
TOTAL:				-	-	525		

Table: International Training in the First Half of 2023

No.	Name of Course	Country	Trainee	Start	Finish	Remarks
1.	UXO-Lao: Operational Management	Cambodia	12	09-01-23	20-01-23	Completed
		Lao PDR		27-02-23	10-03-23	
2.	SESU-Ukraine: ALIS	Ukraine	08	16-01-23	20-01-23	Completed
Total:			20			



5.1.3. Staff Motivation

In the realm of staff motivation, CMAC places great emphasis on fostering a workplace environment that provides equal opportunities for all its staff members. With a staunch commitment to employee development and growth, CMAC ensures that every employee has access to training programs, opportunities to explore higher positions, avenues for salary increments, the ability to assume diverse roles, and regular access to work areas while prioritizing staff safety.

Throughout a six-month period, from January to June 2023, CMAC has implemented a range of comprehensive staff motivation initiatives that have had a profound impact on its workforce. These initiatives are designed to empower employees, enhance their skills, and create a sense of belonging within the organization.

To begin with, CMAC has introduced an extensive training program that covers various aspects of professional development. This program encompasses workshops, seminars, and online courses, enabling staff members to acquire new skills, expand their knowledge, and stay updated with industry trends. By investing in training opportunities, CMAC ensures that employees are equipped with the necessary tools to excel in their current roles and prepare for future career advancements.

Furthermore, CMAC has actively encouraged its employees to explore higher positions within the organization. Through transparent and inclusive promotion processes, employees are given equal opportunities to apply for vacant positions and showcase their potential. This commitment to internal mobility promotes a culture of ambition and growth, motivating staff members to continually improve their performance and contribute to the company's success.

In recognition of employees' dedication and exceptional performance, CMAC has implemented a merit-based system for salary increments. Through regular performance evaluations, employees are rewarded with salary raises commensurate with their contributions and achievements. This approach not only motivates employees to strive for excellence but also fosters a sense of fairness and recognition within the organization.

Moreover, CMAC recognizes the importance of diversity and inclusivity in the workplace. The organization actively encourages employees to assume diverse roles, facilitating cross-functional collaborations and providing opportunities for individuals to broaden their skill sets. By embracing diversity, CMAC creates an environment that values different perspectives and experiences, ultimately driving innovation and creativity.

Additionally, CMAC places great importance on ensuring staff safety and well-being. The company has implemented strict safety protocols and provided the necessary resources to create a secure work environment. Regular inspections, safety training sessions, and the provision of personal protective equipment are just a few of the measures taken to safeguard staff members' physical and mental health. By prioritizing staff safety, CMAC instills confidence and peace of mind among employees, enhancing their motivation and productivity.

In summary, CMAC's commitment to staff motivation is exemplified through its comprehensive initiatives. By providing equal opportunities for training, career advancement, salary increments, diverse roles, and ensuring staff safety, CMAC fosters an environment where employees feel



valued, motivated, and empowered to achieve their professional goals. Through these initiatives, CMAC has created a thriving workplace culture that drives performance, innovation, and long-term success.

Table: CMAC's Staff Motivation (January-June 2023)

No	Description	Staff: Jan-Jun 2022	Staff: Jan-Jun 2023
1.	Position/Location Rotation	477	1,173
2.	Promotion/Salary	87	1,203
3.	Sick leave without pays	3	2
4.	Leave without pay	12	7
5.	Maternity/Pregnancy leave	5	6
6.	Re-appointment	11	2
7.	New position appointment	307	36
TOTAL		902 Staff	2,429 Staff

5.1.4. Staff Separation

During the initial half of 2023, CMAC experienced a series of staff separations, resulting in the termination of 54 staff contracts. These separations encompassed a range of factors, reflecting the diverse circumstances and reasons behind the departures of its staff from the organization.

One of the factors contributing to staff separations was the abandonment of posts or positions. In some cases, employees may have decided to leave their roles without providing prior notice or without completing their assigned tasks. While such instances are regrettable, CMAC maintains policies and procedures to address these situations promptly and ensure the smooth continuation of operations.

Resignations also accounted for a notable portion of staff separations. Employees may have chosen to resign for personal reasons, career advancements, or other opportunities that are better aligned with their goals and aspirations. CMAC respects the decisions of its staff members and strives to maintain positive relationships even after their departure. In numerous instances, CMAC goes as far as rehiring them.

Work disability or chronic illness was another factor leading to staff separations. In situations where an employee's health conditions prevent them from fulfilling their job responsibilities effectively, CMAC prioritizes the well-being of its staff and supports them through appropriate accommodations or medical leave.

Regrettably, the loss of employees due to death occurred within the mentioned period. CMAC recognizes the profound impact of such events on both the organization and the affected individuals' families. During these difficult times, the organization offers its condolences and provides the necessary support, including financial and mental assistance, to the bereaved families affected by the loss.



Retirement, a natural transition in one's career, accounted for some staff separations as well. CMAC values the contributions and experiences of its retiring employees and celebrates their accomplishments while ensuring a smooth knowledge transfer process to maintain continuity within the organization.

Turnover, which refers to the voluntary or involuntary movement of staff members from one position to another, was another factor behind staff separations. This can occur due to various reasons, such as career progression, seeking new challenges, or organizational restructuring. CMAC recognizes the importance of adaptability and endeavors to address turnover by implementing effective talent management strategies.

Incompetence, although an unfortunate circumstance, may have led to the termination of some staff contracts. CMAC maintains high standards of performance and expects employees to meet established job requirements. In situations where an employee consistently fails to meet performance expectations despite support and guidance, the organization may be compelled to terminate the contract.

Lastly, the end of the contract marked the culmination of temporary employment agreements or project-based assignments. As these contracts reach their predetermined conclusion, employees may separate from the organization. CMAC acknowledges the valuable contributions of these individuals and, where appropriate, may extend offers for future employment opportunities.

In summary, CMAC experienced a range of staff separations during the initial half of 2023. Whether due to abandonment, resignation, work disability, death, retirement, turnover, incompetence, or the end of the contract, each separation represents a unique circumstance. CMAC recognizes the significance of these events and strives to handle them with professionalism, empathy, and a focus on maintaining a positive work environment for its remaining staff members.

Table: CMAC's Staff Separation (January-June 2023)

No	Separation Factors	Staff: Jan-Jun 2022	Staff: Jan-Jun 2023
1.	Abandon the post	1	3
2.	Resignation	11	24
3.	Work Disability and chronic illness	0	0
4.	Death	2	4
5.	Retirement	17	22
6.	Turnover	0	0
7.	Incompetence	0	0
8.	End Contract	2	1
Total		33 Staff	54 Staff



5.1.5. Compensation Policy

CMAC has always maintained its steadfastness of commitment to a reasonable staff members' compensation policy, aiming to ensure that employees are treated fairly in the event of injuries, death, or other types of staff separation. This policy takes into consideration the employees' past performance and duration of service, recognizing their contributions and dedication throughout their tenure at the organization.

In the initial half of 2023, CMAC allocated a total amount of USD 15,639.80 toward staff compensation. This significant investment reflects the organization's dedication to providing support and financial assistance to employees and their families during challenging times.

Of the total compensation amount, USD 14,400 was disbursed to address compensation due to staff death. CMAC recognizes the profound impact that the loss of an employee can have on their loved ones and seeks to provide assistance to alleviate financial burdens during such difficult circumstances. The compensation aims to support the families of the deceased employees and help them navigate the aftermath of the loss.



Additionally, an amount of USD 1,239.80 was allocated for medical operations. This portion of the staff compensation serves as a testament to CMAC's commitment to employee well-being and healthcare. It covers medical expenses incurred by employees due to work-related injuries or illnesses, ensuring that they receive the necessary treatment and care without bearing the financial burden alone.



To provide a comprehensive overview, a comparison of the amount of money allocated for staff compensation in the first half of 2021 versus that same duration of 2022 is presented in the following table:

Table: CMAC's Compensation Policy (January-June 2023)

No	Compensation Policy	Staff: Jan-Jun 2022	Staff: Jan-Jun 2023
1.	Family of Death Staff	USD 7,200.00	USD 14,400.00
2.	Medical Operations	USD 4,437.63	USD 1,239.80
	Total:	USD 1,163.63	USD 15,639.80

As illustrated, there has been a notable increase in the allocation of funds for staff compensation in the first half of 2022 compared to that of the previous year. This reflects CMAC's ongoing efforts to enhance its support systems and ensure that employees receive fair and just compensation in line with their contributions and needs.

In summary, CMAC's commitment to a reasonable staff compensation policy is exemplified by its substantial investment in providing financial support to employees facing injuries, death, or other types of staff separation. The allocation of funds for compensation due to staff death and medical operations underscores the CMAC's dedication to valuing and supporting its workforce. This commitment serves as a testament to CMAC's commitment to creating a supportive and caring work environment, where employees' well-being and financial security are prioritized.

5.1.6. Staff Health Care

Ensuring the safety and well-being of its staff has been a top priority for CMAC as always. They've taken several important steps to safeguard the health of their employees. This includes emergency education programs, general health check-ups, and access to healthcare services. Their focus has been on preventing and addressing any potential health issues that might arise. To equip their staff with vital life-saving skills, CMAC has also provided first aid training. Regular assessments of staff health have been carried out to keep a close watch on their well-being.

Between January and June 2023, the Human Resource Department of CMAC partnered with ten reputable hospitals and health centers in the capital and provinces. Additionally, they established a strong collaboration with the medical personnel working within CMAC's demining units. This cooperation was instrumental in setting up procedures for medical evacuation (medevac) on a quarterly basis. This system ensured that field staff members could quickly receive medical attention if needed. To make healthcare more accessible, a meeting was organized to strengthen the connection between CMAC and the National Social Security Fund (NSSF). This was an effort to enable easy access to health services for all CMAC staff, whether they worked in the office or in the field, by utilizing the NSSF Card.

The HR department also took proactive steps in terms of health and safety. They conducted drug testing for 426 newly recruited trainees at TIMA, specifically conducting urine tests at the end of June 2023. Additionally, they procured and distributed eleven new medical kits to DU1 and DU6, further bolstering their medical preparedness.



Despite the best efforts to ensure the well-being of staff, there were still instances where urgent medical attention was required. During the reporting period, the HR department arranged the transfer of 34 CMAC staff to hospitals across the country. Unfortunately, among these cases, four fatalities were reported. These situations remind us of the inherent risks associated with the critical work CMAC staff undertakes.



Table: CMAC's Sick Staff and Referrals (January-June 2023)

Name of Unit	Sick CMAC staff and referrals						Total
	January	February	March	April	May	June	
CMAC HQ	-	-	-	-	1	1	2
Demining Unit 1	3	1	-	-	1	-	5
Demining Unit 2	3	2	-	-	-	2	7
Demining Unit 3	-	-	-	1	1	-	2
Demining Unit 4	-	3	1	-	-	-	4
Demining Unit 5	-	-	-	-	-	-	-
Demining Unit 6	2	-	1	3	4	-	10
K.Thom Frontline Unit	-	-	-	-	-	-	-
Devel. Demining Unit	-	-	-	-	-	-	-
Central Workshop	-	-	-	-	-	-	-
Dog Centre	1	-	-	-	1	-	2
Community Devel.Centre	-	-	-	-	-	-	-
Techo Peace Museum	-	-	-	-	-	-	-
Technical Institute(TIMA)	-	-	1	-	1	-	2
Total	9	6	3	4	9	3	34



With regard to the ongoing COVID-19 pandemic, CMAC remains highly vigilant towards its potential impact. CMAC's commitment to staff safety and infection prevention is unwavering. During this reporting period, CMAC conducted COVID-19 testing on suspected staff members. Subsequently, three staff members were found to be infected, and they were promptly sent home for self-treatment, with CMAC medics closely monitoring their progress. Furthermore, the HR department facilitated COVID-19 testing at three major events, which saw a total of 1,772 participants undergo rapid testing. These events included the 30th Anniversary of Mine Action organized by CMAA at Koh Pich, Phnom Penh, the Inauguration of the China-Aided Cambodia Landmines Elimination Project (phase 5) at Top Chey Temple, Siem Reap Province, and the Koh Pich Exhibition Program in Phnom Penh.

Overall, CMAC, through its Human Resource Department, remains committed to the well-being and health of its staff, implementing comprehensive measures and initiatives to safeguard their welfare. The aforementioned figures and numbers attest to the organization's dedication to ensuring the highest standards of health and safety for all its employees.

5.2. Support Management

The Department of Support at CMAC has been entrusted with the responsibility of enhancing support services across all operational areas of the organization. This department has consistently demonstrated exceptional dedication in assisting CMAC's operational work through the management of various critical tasks. Among the significant contributions made by the Department of Support are its proficiency in logistical coordination, maintenance and transportation operations, maintenance and supply of mine detector machines, efficient management of explosive materials, and effective procurement operations.

5.2.1. Logistic Task

In response to the challenges posed by providing equipment and logistical support to a dispersed workforce operating in remote regions of Cambodia, the department has remained dedicated to ensuring its communication and transportation systems are continually monitored. The efficacy of these systems has been reflected in the successful delivery of satisfactory results throughout the first half of 2023.

- ❖ Prepared a table comparing the increase or decrease of state assets for 2022.
- ❖ Managed and monitored equipment movement regularly and monthly.
- ❖ Received and resupplied ALIS and their spare parts, grass cutters, GPS devices, communication radios, laptops, and printers from the People and Government of Japan through the Project for Integrated Mine Clearance and Landmine Victim Assistance Phase II (PIMV-II).
- ❖ Cleared the documents of 11 detection dogs from CMAC inventory.
- ❖ Examined, verified, and evaluated the condition of the equipment and material requirements to support field operations.



- ❖ Equipped all units with operational support equipment, including uniforms, water shoes, personal items, boots, T-shirts, car tires, lubricants, dog food, dog equipment, and all kinds of operating equipment.
- ❖ Collaborated with relevant management in the demining and special units to inspect operational equipment and equip teams before the start of operations.
- ❖ Collaborated with relevant management in the demining and special units to organize the deployment of operational equipment.
- ❖ Inspected semester 1, year 2023 inventory by the HQs subcommittee.





5.2.2. Maintenance and Transport Task

Transportation is the biggest component of CMAC operations and constitutes the largest cost in the organization's inventory. The costs are mainly attributed to spare parts, fuel, and maintenance expenses. To ensure smooth operations, proper maintenance and strict management for vehicles, mechanical machines (such as Brush Cutters and Heavy Demining Machines), and other demining materials and equipment are necessary.

Table: Vehicle Inventory as of June 2023 (not all are operational due to irreparably broken)

No.	Type of Vehicles	Quantity	Remarks
1	Vehicles of various classifications	511	
2	Brush cutter machines (excavator type)	44	
3	Bulldozers	2	
4	Heavy demining machines	13	
5	Tractor, Kubota	2	
6	Excavator	1	
7	Compact Roller	2	
8	Motorbikes	101	
9	Fork-lift	2	

In this section, the report will present some of the Support Department's achievements in managing means of transport to ensure their quality and reliability in supporting operations on the ground for the first half of 2023:

- ❖ Received fuel consumption plans from all Demining and Special Units and double-checked them with the project before submitting them to the Department of Finance for reimbursement.
- ❖ Monitored and updated vehicles and machinery to ensure their quality and efficient usage to meet the operation requirements in the fields.
- ❖ Repaired and restored 26 vehicles, including five trucks and 21 operational cars, to supply to DUs.
- ❖ Inspected and provided oil services to 33 cars at the HQ's workshop.
- ❖ Evaluated the cost to restore the broken vehicles and planned the necessary repairs to support the upcoming projects.
- ❖ Prepared vehicle support documents and coordinated with the General Department of Taxation to prepare for road tax payments for 2023.





5.2.3. Mine Detector and Demining Electronic Device Maintenance

In efforts to support the demining operations in the first half of 2023, the Mine Detector and Demining Electronic Device Maintenance Section conducted various essential tasks. These tasks included regular maintenance and repair of mine detector machines and their attached electronic devices, ensuring their optimal functionality and reliability during demining operations. Additionally, the section provided comprehensive training to demining personnel on the proper use and maintenance of the devices, enhancing their proficiency and effectiveness in the field. Furthermore, the section prioritized resupplying necessary components and consumables to ensure uninterrupted operations and swift response to any equipment failures, ultimately contributing to the overall success of demining activities.



Repair and Installation:

- ❖ Repaired 165 units of all types of mine detection machines.
- ❖ Coordinated with DU2 and DU4 to inspect the quality of batteries for mine detectors and replaced 220 batteries.



- ❖ Repaired and reinstalled Motorola communication radios and installed a Motorola GP300 communication radio for DDU.
- ❖ Repaired and installed 8 Codan communication radios for RCAF.

Training and Display:

- ❖ Offered training on how to use the mine detection machine ALIS to the CMAC's Technical Survey and Clearance Team (TSC) and Ukraine's SESU.
- ❖ Provided refresher training courses on how to use and take care of all types of mine detection machines to field staff from DU1, DU2, and DU3, which were held at CDC.
- ❖ Provided training to the Royal Cambodian Armed Forces on the use of Ebinger UPEX 740M, Minelab F3, and CEIA-D1/DS.
- ❖ Demonstrated the display of mine detection machines at Koh Pich (Diamond Island), Phnom Penh.
- ❖ Cooperated with R&D teams to conduct a trial test on using the detector head (60 mm) attached to the Germany Vallon VMH3 mine detector machine to detect and signalize metal under the ground.

5.2.4. Explosive Management Task

During the first half of 2023, the explosive section of CMAC played a crucial role in explosive delivery, not only to all CMAC demining and special units but also to other demining operators throughout the country who require the use of explosives to destroy landmines or ERWs. The following noteworthy accomplishments were accomplished in a six-month period from January to June 2023:

- ❖ Received a substantial amount of 6,800 blocks of recovered explosives (100g EHP Charge) from the Explosive Harvesting Program (EHP) under CMAC-Golden West Cooperation.
- ❖ Issued 7,300 blocks of 100g EHP Charge Booster and 800 blocks of 100g EHP Charge to all Demining Units and Demining Operators in Cambodia, including HALO Trust, MAG, NPA, and CSHD, to support their operations.
- ❖ Collaborated closely with the National Explosive Ordnance Disposal Unit to provide security and safety to leaders during various high-ranking official meetings and





national ceremonies, including the 32nd ASEAN Games and the 12th ASEAN Para Games.

- ❖ Regularly inspected and maintained explosives at the K86 warehouse.

5.2.5. Procurement Task

The procurement section plays a critical role in ensuring the success of CMAC's operations, which are based on stock in nature, scattered across different locations, and of significant size. Therefore, providing on-time support is paramount to meeting the needs of field teams and Demining Units. In this regard, the procurement section must identify and purchase high-quality materials and equipment in a transparent manner, ensuring they are delivered on time to field teams and Demining Units.

In a six-month timeframe spanning from January to June 2023, the procurement section achieved significant milestones, including the following:

- ❖ Conducting a thorough review of all purchase orders and documents for settlement for all projects, ensuring transparency and accountability in the procurement process.
- ❖ Developing a comprehensive procurement plan for the budget supported by the Royal Government, including the purchase of fuel and office equipment. This plan helps to ensure that essential items are procured on time to support field operations.
- ❖ Preparing contract documents for the supply of materials and fuel and the rental of offices for some demining units and other services. These contracts provide a structured approach to procurement, ensuring that all items are procured in a timely and cost-effective manner.
- ❖ Coordinating with specialized institutions to prepare import documents, subject to state taxes and duties, including gasoline and diesel, spare parts of mine detection machines, Sorghum seed, and other equipment to support operations. This ensures that all essential items are procured and delivered quickly and efficiently.

In summary, the procurement section's efforts have significantly contributed to the success of CMAC's operations in the first half of 2023. Through diligent planning and coordination with other institutions, the procurement section has ensured that all essential items are procured and delivered on time, supporting the work of field teams and Demining Units.

5.3. Project Management

In order to efficiently manage all projects and develop advanced proposals, CMAC established the Department of International Cooperation and Project Management (DIC&PM) in early 2010, which has since become one of the most critical pillars of the organization. DIC&PM collaborates with all departments to ensure well-developed project proposals, secure funding, and effectively allocate resources, while also monitoring, analyzing, and reporting project outcomes and outputs. In addition, DIC&PM maintains CMAC's relationships with donor countries and development partners to ensure that project requirements are met, and identifies and secures new funding opportunities.



DIC&PM serves a vital role in strengthening project management and coordination, as well as donor/partner relationships. Through collaboration with landmine/ERW-affected countries and international organizations, DIC&PM advances the sustainable development campaign through training programs. In addition, DIC&PM actively contributes to international training programs in the mine action sector, sharing experiences and learning from CMAC.

5.3.1. All Involved Projects

The Cambodian Mine Action Centre (CMAC), through the Department of International Cooperation and Project Management (DIC&PM), employs a diverse range of funding channels to support its projects, ensuring a sustainable financial framework that drives its mission forward. These funding channels encompass a combination of donor contributions and contractual services, enabling CMAC to effectively address various societal challenges.

To delve into the first half of 2023, it becomes evident that DIC&PM has successfully procured a significant portion of its project funding through a strategic blend of donor contributions and bilateral contracts, in addition to participating in bidding projects. This multifaceted approach ensures a robust financial base for DIC&PM's initiatives, allowing CMAC to actively engage in the pursuit of its goals.

At present, DIC&PM is overseeing an impressive portfolio of 41 projects, each contributing to the realization of CMAC's overarching vision. Among these projects, 19 are currently ongoing, representing a steadfast commitment to continuity and progress. These ongoing initiatives serve as a testament to CMAC's dedication to delivering tangible results and making a lasting impact on the communities it serves.

Furthermore, DIC&PM has successfully concluded 8 projects during the aforementioned period, demonstrating their proficiency in project management and their ability to bring projects to fruition. By effectively executing these projects, DIC&PM has showcased its capacity to deliver tangible outcomes and fulfill its obligations to stakeholders and beneficiaries alike.

In addition to ongoing and completed projects, DIC&PM has 4 projects in the pipeline. These projects, carefully curated and meticulously planned, are poised to commence in the near future, further expanding CMAC's reach and impact. The anticipation surrounding these forthcoming initiatives underscores CMAC's commitment to proactively identifying and addressing emerging challenges, ensuring the organization remains at the forefront of transformative change.

Moreover, DIC&PM has 10 projects that are currently in the stage of expectation or under negotiation. These potential projects, still in the preliminary stages of development, hold tremendous promise for CMAC's future endeavors. Through strategic negotiations and proactive engagement, DIC&PM aims to secure the necessary resources and partnerships to transform these projects into impactful realities, bolstering CMAC's mission and solidifying its position as a catalyst for positive change in mine action activities and socioeconomic development.

**Table: All Projects Involved between January and June 2023**

No.	Donor and Partner	DU	Project Title	Project Period		
				Month	From	To
I- ONGOING PROJECTS, 2023				19 Projects		
1	CA-JPN	DU2	The project for Integrated Mine Clearance and Landmine Victim Assistance	45	1-Apr-23	31-Dec-25
2	IMCCD-JPN	DU2	Community Anti-tank Mine Clearance	12	16-Aug-22	15-Aug-23
3	APOPO	DU4 & 6	Animal Detection System-MDR & TSD Integrated with CMAC Demining Capacity	12	1-Jan-23	31-Dec-23
4	APOPO	DU6	Animal Detection System-MDR & TSD Integrated with CMAC Demining Capacity	20	1-May-22	31-Dec-23
5	China	KFU, DU4 & 6	The China-Aided Cambodia Landmines Elimination Project (Phase 5)	9	1-Apr-23	31-Dec-23
6	RGC	KFU, DU4 & 6	Cambodia Mine Free-2025	11	1-Feb-23	31-Dec-23
7	JICA-JPN	HQ	Strengthening CMAC Function		2020	2024
8	JMAS-JPN	DU1	The Project of Safety Village Construction (SVC)	12	1-Apr-22	31-Mar-23
9	USA-GW	TIMA	Explosive Harvesting Program	12	1-Jan-23	31-Dec-23
10	USA-NPA	DU5	Cluster Munition Remnant Survey (CMRS) and Clearance in Eastern Cambodia	12	1-Mar-23	28-Feb-24
11	CA-JPN	CDC	Improving Shelters for Disabled Staff			
12	JICA-JPN	HQ	South-South Cooperation Program on mine action for Lao PDR		2019	2023
13	JICA-JPN	HQ	South-South Cooperation Program on mine action for Colombia		2023	2026
14	German	DU1	Humanitarian Demining Project in the Provinces Along the Thai Border	16	1-May-23	31-Aug-24
15	IOS-JPN	DU4	Operational Field Evaluation of Demining Robotic to Assist Deminer Working in Minefield.	9	1-Sept-22	30-May-23
16	UNDP-CMAA	DU1	Mine/ERW Clearance in BMC (CFR2023)	12	1-Jan-23	31-Dec-23
17	UNDP-CMAA	DU6	Mine/ERW Clearance in PVH (CFR2023)	12	1-Jan-23	31-Dec-23
18	MAG	DU2	Leasing MDD to MAG Cambodia Program (SLD #12-MDD3)	12	1-May-23	30-Apr-24
19	MAG	DU2	Leasing MDD to MAG Cambodia Program (SLD #05-MDD2)	12	1-Nov-22	31-Oct-23
II- COMPLETED PROJECTS FROM JAN-JUNE, 2023				8 Projects		
1	JMAS-JPN	DU1	Reconstruction Support with Demining Disposal in Banteay Meanchey. (RSDB-II)		1-Mar-22	28-Feb-23



2	JMAS-JPN	DU6	Reconstruction Support with Cluster Disposal in Stung Treng. (RSCS-II)		1-Mar-22	28-Feb-23
3	USA-NPA	DU5	Cluster Munition Remnant Survey (CMRS) and Clearance in Eastern Cambodia		1-Mar-22	28-Feb-23
4	CMAA	PFU	Mine/ERW Clearance in BMC (CFR2023)		1-Jan-23	31-Mar-23
5	CA	PFU	The project for Integrated Mine Clearance and Landmine Victim Assistance (PIMV-II)			
6	CA	DU3-PST	The project for Integrated Mine Clearance and Landmine Victim Assistance (PIMV-II)			
7	RGC	PFU	Cambodia Mine Free-2025		1-Feb-23	31-Mar-23
8	MAG	DU2	Leasing MDD to MAG Cambodia Program (SLD #12-MDD3)		1-May-22	30-Apr-23
III- PROJECTS IN THE PIPELINE						4 Projects
1	JICA	HQ	Southwest Irrigation System			
2	PNA		Land Mine/UXO Clearance Securing the Safety around Koh Ke Compound			
3	EOJ	DU2 & 3	Counterpart Fund Assistance for Human Security Projects			
4	ANA		Landmine and ERW Clearance in Angkor Heritage Compound (Phase 2)			
IV- PROJECTS UNDER NEGOTIATION						10 Projects
1	APOPO		Expand Demining Machine & Rats in Preah Vihear			
2	APOPO		Expand Rats & Manual Demining			
3	APOPO		Purchase MDD For oversea Operation			
4	R & D		Excavation Tools from Hiroshima			
5	R & D		Universal Database Field Networking			
6	R & D		Vallon Detection Improvement			
7	R & D		Melbourne University Support MDD			
8	NPA		Strengthening MDD Capacity			
9	NPA		The project for humanitarian demining cooperation between the Cambodian mine action center and Thailand mine action center toward landmine impact free by 2025			
10	PRC		Toward Impact-Free Cambodia 2025: China-Aided Landmine/ERW Elimination Project in the Kingdom of Cambodia			
Grand Total						41 Projects



5.3.2. Ongoing Projects

As the first half of 2023 unfolded, the Cambodian Mine Action Centre (CMAC) unveiled an impressive array of ongoing projects, totaling 19 in number. These projects, which serve as a testament to CMAC's unwavering dedication to its mission, are supported by a diverse range of funding sources. Notably, 15 projects have received support from bilateral funding, highlighting the collaborative efforts between CMAC and international partners in addressing the urgent challenges posed by landmines and explosive remnants of war. Additionally, two projects have been initiated through contractual agreements, reflecting CMAC's ability to leverage its expertise and resources to forge impactful partnerships. Furthermore, CMAC's commitment to fostering fair competition and transparency is evident, as two projects have been undertaken through a bidding process, ensuring that the most qualified entities are entrusted with vital mine action endeavors. *Nevertheless, among the three types, it is suggested that donors and development partners who wish to continuously support CMAC's mine action activities place their support through a bilateral funding scheme.*

Bilateral Project

Bilateral funding schemes are an essential component of development cooperation and aid between nations. These schemes allow for specific projects to be developed and implemented with partner countries, providing tailored support to address specific humanitarian needs.

For CMAC, the Royal Government of Cambodia's representative, bilateral funding schemes have proven invaluable in their efforts to address the country's landmines and explosive remnants of war. In the first half of 2023, CMAC received direct contributions from various development partners toward the implementation of 15 different bilateral projects. These projects aim to provide landmine/ERW clearance work, as well as mine risk education (MRE) programs.

The successful implementation of these bilateral projects not only ensures the safety and well-being of the Cambodian people but also promotes sustainable development and economic growth. CMAC's partnership with individual development partners has allowed for the deployment of modern technologies and trained personnel to efficiently detect and remove landmines and ERWs. Additionally, the implementation of MRE programs increases the awareness and education of communities on the risks of landmines/ERW, mitigating the negative impacts of these remnants and promoting safety.

Overall, bilateral funding schemes have proved to be an effective approach to the efficient and sustainable implementation of development projects, promoting collaborative partnerships between countries and prioritizing the specific needs of local communities. Therefore, as mentioned above, CMAC suggests donors and development partners support through a bilateral funding scheme.

Bidding Projects

The demining efforts initiated by the Cambodian Mine Action and Victim Assistance Authority (CMAA) in coordination with various national and NGO demining operators have been a significant highlight of the ongoing projects in the first half of 2023. The bidding process has been successful in ensuring the standard quality of demining services and providing a way for organizations like CMAC to showcase their advanced tools and expertise at a lower cost. In



CMAC's case, with its advanced tools and expertise, the organization was able to provide high-quality demining services at an acceptably low cost, thereby winning the auction.

The support from the United Nations Development Program (UNDP) has been instrumental in bolstering the demining efforts and making it more efficient. The organization's contributions to two such projects in the reporting period have proved beneficial, not just for their logistical and financial support but also for the technical assistance they provided. UNDP's continued involvement in such projects can indeed lead to better surveillance and tracking of landmines and ERW across Cambodia.

The success of these demining projects has not only brought down the number of casualties caused by landmines and ERW but also opened up vast tracts of land for agricultural and developmental purposes. These efforts have the potential to provide an impetus to Cambodia's economic growth and development in the years to come.

Contractual Projects

Aside from demining activities within its jurisdiction, CMAC also plays a pivotal role in providing contractual services to support other demining operators on a national and international level. Demonstrating its commitment to efficiency and collaboration, CMAC embarked on two ongoing contractual projects with the esteemed Mine Advisory Group (MAG) during the first half of 2023.

These groundbreaking projects are driven by a shared goal: to accelerate the process of landmine and explosive remnants of war (ERW) clearance in Cambodia. Leveraging the exceptional abilities of trained mine detection dogs, CMAC and MAG aim to revolutionize the demining landscape by increasing the speed and effectiveness of clearance operations. Through the deployment of these remarkable canines, organizations are able to harness their impeccable sense of smell, agility, and intelligence to detect hidden landmines and ERWs with remarkable accuracy.

By collaborating in such a capacity, CMAC and MAG are setting new standards in demining practices, emerging as beacons of progress and innovation within the field. This endeavor not only showcases Cambodia's dedication to reducing the threat of landmines, but also serves as a testament to international cooperation in safeguarding lives, fostering sustainable development, and creating safer environments for future generations.

Overall, CMAC's ongoing projects reflect the organization's commitment to addressing Cambodia's humanitarian needs in a comprehensive and sustainable manner. The table below provides detailed information on the operational projects through bilateral, bidding, and contractual contributions among donors and development partners in 2023.

Table: Operational Projects by Type of Contribution

No	Grand Title	No. of Projects
I.	BILATERAL PROJECTS	15
1	PIMVII-JPN	1
2	IMCCD-JPN	1
3	APOPO Fund	2



4	CCL5-China Aid	1
5	Cambodia Mine Free 2025	1
6	CMAC-JMAS (SVC) Project	1
7	Strengthening CMAC Function	1
8	Golden West Humanitarian-TIMA	1
9	United States of America-NPA-DU5	1
10	Improving Shelters for Disabled Staff	1
11	Japan International Cooperation Agency (Lao & Colombia)	2
12	Humanitarian Demining Project in the Province Along the Thai Border (Ger)	1
13	Operational Field Evaluation of Demining Robotic to Assist Deminer Work in Minefield (IOS)	1
II.	BIDDING PROJECTS	2
1	UNDP-Clearing for Result (CFR)	2
III.	CONTRACTUAL PROJECTS	2
1	Mine Advisory Group	2
TOTAL ONGOING PROJECTS IMPLEMENTING IN 2023:		19

5.4. Quality Management and Internal Audit

Quality Management and Internal Audit are key management functions that would be done based on CMAC internal procedures and standards, serving as a tool for the top management team in decision-making, prospective evaluation, and problem-solving. Monthly, and weekly field visits by designated staff both at HQ (QA/QC unit) and Demining Unit QA/QC team will be organized to inspect the support services function and demining operations activities to observe whether the productivity and discipline of deminers are maintained, and to assess what is the requirement in the field for supporting the demining operations effectively and sufficiently.

The internal audit was performed based on a review of the pertinent documentation relating to selected deliverables, interviews with management and field personnel responsible for their tasks, and direct observations of the clearance process. The audit team analyzed and evaluated information gained throughout the process in order to make a determination whether or not the performance was satisfactory. Recommendations and advice were given to the top management in terms of operational point of view and support function to speed up field productivities when feedback and physical monitoring at the fields have been received and conducted.

During the reporting period, the audit teams at CMAC performed comprehensive audits for both the support services function and the operations function over a total of 52 shifts. The audits revealed a concerning number of deficiencies, totaling 76, which require immediate attention, on-site correction, and further action. Out of the identified numbers, 44 cases were found to be correctable on-site, meaning they can be rectified and resolved at the location where they were discovered. These cases should be addressed promptly to ensure the proper functioning of the support services and operations.

Additionally, the remaining 32 cases call for follow-up action. These cases may require more in-depth investigation and interventions beyond immediate on-site correction. The follow-up action



should involve the Demining Unit at the field level as well as the headquarters staff. It is crucial to address these deficiencies thoroughly in order to maintain effective and efficient operations throughout the organization.

The findings of the audits highlight the importance of promptly addressing and rectifying the deficiencies in both the support services and operations functions. By taking appropriate corrective measures and implementing necessary follow-up actions, CMAC can ensure the smooth functioning of its operations and continued commitment to its mission.

Table: Internal Audit's Outcome (January-June 2023)

No.	QA Team	Description (shift)		Finding and Corrective Action		Follow up action
		QA/QC (shift)	QC Prior MF handover	Deficiencies (case)	Correction (case)	
1	QA HQ	1 shift	-	17	17	-
2	Sub QA	-	-	-	-	-
3	QA DU1	10 shifts (17 MF)	20 shifts (21 MF)	11	5	6
4	QA DU2	8 shifts	-	24	3	21
5	QA DU3	-	-	-	-	-
6	QA DU4	-	-	-	-	-
7	QA DU5	9 shifts	4 shifts	24	24	-
8	QA DU6	-	-	-	-	-
Total		28 shifts	24 shifts (MF)	76	44	32 cases

Upon further examination of demining operations carried out in the first half of 2023, it has been discovered that several demining units have various deficiencies. A meticulous analysis of the operations led to the identification of a total of 76 deficiencies, which varied in nature and severity. These deficiencies, encompassing a range of operational aspects, were documented and recorded in the table below for a thorough understanding of the areas that require urgent attention and improvement.

The findings signify the pressing need for a comprehensive evaluation and reassessment of demining practices to ensure the safety and effectiveness of these crucial operations. It is essential to address and rectify these identified deficiencies promptly, as they pose significant risks to the well-being of both demining personnel and the surrounding communities. Moreover, the repercussions of the identified shortcomings could hinder the achievement of the desired progress and impact the overall demining objectives set forth for the year.



To effectively tackle these issues, it is imperative that concerned demining units collaborate meticulously to develop and implement targeted strategies aimed at resolving the identified deficiencies. These strategies must incorporate robust training programs, upgraded equipment provisions, rigorous quality control measures, and a constant focus on enhancing operational procedures. By prioritizing the rectification of these deficiencies, the demining community can ensure that the highest standards are upheld and the people involved are safeguarded from potential harm.

Through a proactive approach and a commitment to continuous improvement, it is possible to strengthen the demining process and safeguard lives. The comprehensive examination of these deficiencies serves as an invaluable tool in identifying the areas that necessitate immediate attention and serve as a catalyst for positive change. By addressing these shortcomings head-on, the demining community can make significant progress toward achieving efficient and safe demining practices, thus contributing to the creation of a safer environment for individuals residing in and near the affected regions.

Table: Detailed Deficiencies (January-June 2023)

No	Description	Deficiencies (Cases)	Corrective Action
1	SOPs Compliance:	00	
2	Mine Marking: <ul style="list-style-type: none"> ▪ BCT13, TSC01/DU1, TSC27/DU2, BAC05, BAC10/DU5: No mine signs found on access road to minefield ▪ CLR07/DU5: incorrect minefield marking ▪ TCD01/DU5: incorrect stick painting in the administrative area 	7	<ul style="list-style-type: none"> ▪ Immediate debrief to minefield commander, platoon, and section commanders and correcting in place
3	Medevac: <ul style="list-style-type: none"> ▪ TSC48/DU1: stretcher was not ready and not prepared in operation working hour ▪ BAC05/DU5: Medicine form were not fulfilled into document medicine when in use. ▪ CTS#02/DU5: stretcher was not ready not prepared in some cases. ▪ (TSC07, SLD03, BCT11, SLDU7, SLDO6, TSC01, SLD04)/DU1, (PDM01, TSC05, TSC27, PBC07, PDM02)/DU2: No evacuation drill prior starting operations leading to incorrect evacuation fulfillment 	14	<ul style="list-style-type: none"> ▪ Immediate debrief to minefield commander, platoon, and section commanders and correcting in place. ▪ Debrief to DUs Manager, OPS, and DUs QA.
4	UXO Demolition	0	



5	Safety rule: <ul style="list-style-type: none"> BAC-L#04/DU5: PPE was not used when excavating the ground 	01	<ul style="list-style-type: none"> Immediate debrief to team leader, correcting in place.
6	Site Administration: <ul style="list-style-type: none"> BAC05, CLR07, CTD01/DU5: Administrative tent was deployed far from the operational lane. TSC08/DU1: Administrative tent was not installed to oversee the operations. CLR02/DU5: not cutting grass in the detector testing area. TCD01/DU5: detector testing was not done properly. 	06	<ul style="list-style-type: none"> Immediate debrief to team leaders, correcting in place.
7	Tools integration:	00	
8	Demining Drill:	00	
9	Quality Control: <ul style="list-style-type: none"> (TSC07, SLD03, BCT11, SLDU7, SLDO6, TSC01, SLD04)/DU1, (PDM01, TSCO5, TSC27, PBC07, PDM02)/DU2: QC on the cleared land was not conducted in a daily basis 	12	<ul style="list-style-type: none"> Immediate debrief to team leaders, correcting in place. Debrief to DUs Manager, OPS and DUs QA.
10	Productivity: <ul style="list-style-type: none"> PMD04, PMD05, PMD01, PMD08, TSC35/DU2: lack of team members leading to the productivity target issue. 	05	<ul style="list-style-type: none"> Debrief to DUs Manager, OPS, and DUs QA.
11	Tasks Dossier Documents: <ul style="list-style-type: none"> (TSC07, SLD03, BCT11, SLDU7, SLDO6, TSC01, SLD04)/DU1, (PDM01, TSCO5, TSC27, PBC07, PDM02)/DU2: No request and beneficiaries in tasks Dossier, but the operation is in progress 	12	<ul style="list-style-type: none"> Immediate debrief to minefield commander, platoon, and section commanders and correcting in place. Debrief to DUs Manager, OPS, and DUs QA.
12	Completed Minefield Site Sketch:	00	
13	Explosive Storage and Explosive Safety Case:	00	
14	Minefield Management:	00	
15	Quality of Equipment and Equipment Maintenance:	07	



	<ul style="list-style-type: none"> ▪ (PMD05, PMD01, PMD08, TSC14)/DU2, SLD07/DU1: vest covers were aged and torn. ▪ TSC14/DU2: The sketch was aged and torn. 		<ul style="list-style-type: none"> ▪ Debrief to DUs Manager, OPS, and DUs QA.
16	<p>Support Service for Operations:</p> <ul style="list-style-type: none"> ▪ SLD06/DU1: lack of umbrella for Dog ▪ SLD06, PMD03, TSC35/DU1: lack of 5 vests for 5 team members ▪ SLD06/DU1: lack 5 deminer's tents. ▪ SLD07/DU1: lack of 2 mobile kennels for dog in the nighttime ▪ SLD07/DU1: lack of 17m of leash for operating dog ▪ PMD01/DU2: lack of administrative tent ▪ PMD01, PMD03, TSC35 /DU2: lack of metal table 	11	<ul style="list-style-type: none"> ▪ Immediate debrief to minefield commander, platoon and section commanders and correcting in place. ▪ Debrief to DUs Manager, OPS, and DUs QA.
17	<p>Site Accommodation:</p> <ul style="list-style-type: none"> ▪ PMD08/DU2: accommodation tent was aged and torn 	01	<ul style="list-style-type: none"> ▪ Immediate debrief to minefield commander, platoon, and section commanders and correcting in place. ▪ Debrief to DUs Manager, OPS, and DUs QA.

Once again, it is important to note that the remaining 32 identified cases of deficiency in support services during the reporting period primarily relate to the operation equipment, which has become aged, torn, and devoid, necessitating timely repairs and replacements. CMAC recognizes the significance of maintaining high-quality equipment to ensure the safety and efficiency of demining operations. Therefore, efforts are being made to address these deficiencies promptly and effectively.



6. KEY CHALLENGES

The first half of 2023 has been a momentous period for CMAC's mine action efforts, marked by significant accomplishments in reducing landmine and Explosive Remnants of War (ERW) victims, fostering post-clearance development, alleviating poverty in affected areas, and bolstering the national and family economy. Moreover, CMAC's contributions to building national mine action capacity, promoting national prestige through international training, and advancing the national economy have been noteworthy. Nonetheless, this reporting period was not devoid of challenges, as CMAC had to grapple with various difficulties that posed serious operational threats.

To delve into this realm, the report will elucidate five prominent challenges that CMAC faced, and how it overcame them during its operations. These challenges include the Project Budget Instability, the Environmental Factors, the Compacted Minefields/UXO-Fields, the Impacts of Deminers' Aging, and the Perilous Nature of Demining. If not adequately mitigated, such challenges can result in project delays, adjustments, or reductions, owing to budget cuts, inadequate funding, or a dearth of manpower. However, when establishing its Integrated Workplan (IWP) 2023 in late 2022, CMAC efficiently anticipated these potential impediments already and thus proactively devised practical solutions to overcome them.

6.1. Project Budget Instability

Budget volatility in project management did cause difficulties for CMAC as this organization too heavily relied on donor funding, posing inherent risks to the organization's operations. Currently, 95% of CMAC's resources and activities are sustained by donors, development partners, and contract clients. Aligning with diverse funding sources brings forth challenges as each entity has specific objectives and expectations. Consequently, CMAC faces periodic pressures to meet various donor requirements. However, leveraging years of practical experience, CMAC has witnessed that fostering effective communication and building strong relationships are pivotal to the long-term alliance between CMAC and its donors. By consistently proving its dedication and impact, CMAC has managed to attain recognition and support as a vital organization in the field.

It is worth noting that during the initial half of the year, the German-funded project budget, administered through the Norwegian People's Aid (NPA), experienced delays due to several reasons. Despite this setback, CMAC and NPA management established proactive measures and reached a successful resolution to mitigate any adverse impacts on its clearance operations. Concurrently, the budget allocation for the "Clearing For Results" project exhibited significant fluctuations. From surpassing USD 3,360,000 in 2022, the budget plummeted to just above USD 1,120,000 in 2023. This financial instability posed challenges for CMAC in meeting the requirement to downsize operational manpower to align with the constrained project budget.

However, thanks to its resourcefulness and ability to mobilize alternative projects, CMAC was able to avoid suspending the remaining operational forces assigned to the "Clearing For Results" project. This adaptability and resilience demonstrate CMAC's commitment to fulfilling its mandate, even in the face of budgetary constraints. As it strives to navigate this dynamic



landscape of funding fluctuations, CMAC remains steadfast in its dedication to providing vital mine action services and promoting peace and security in Cambodia and beyond.

6.2. Environmental Factors

Environmental issues have always played a critical role in the success or failure of demining operations. Since the detection of landmines and other explosive remnants of war (ERW) involves excavation and other significant disturbances to the local environment, it is essential to consider the possible impact of these activities on environmental integrity. Soil conditions, aquatic conditions, forest conditions, and rain and lightning storms can have a direct effect on the accessibility of detection of landmines and ERW, and hence, also impact the progress of demining operations.

Soil conditions, for example, are hard, especially during Cambodia's dry seasons when it does not rain. Plus, the presence of rocks, boulders, and other obstacles on the ground can collectively slow down clearance operations, making it difficult for deminers to cover large areas in a short period. This is equally concerning during emergencies when additional clearance operations need to be conducted fast to allow civilians to return to their homes, farms, or schools safely. Once again, this is a significant issue in Cambodia, where landmines and ERW remain hidden under hard and rocky soils.

Aquatic conditions, on the other hand, can pose unique challenges to demining operations. The depth of the water and seasonal changes can affect the navigation of clearance equipment, making it challenging to cover vast areas of waterbodies. Some mine detector machines, like Minelab, can malfunction if they too much get in contact with water, making it challenging to detect landmines and ERW from waterbodies, especially when their aged search head fails to be waterproof. Similarly, if the water level rises and floods the detection area, it can interfere with the sensors' functionality, making it more difficult for deminers to detect hidden devices.

Similarly, forest conditions, including the presence of dense vegetation cover, pests, and insects, can also pose obstacles to demining operations. The use of brush cutter (BC) machines has made it easier to penetrate dense forests, but accessibility remains an issue in many cases. Demining operations can be slowed down considerably if deminers cannot access areas where landmines and ERW are hidden. Additionally, pests and insects can reduce the productivity of demining operations by causing deminers to tire quickly and lose focus.

What is also challenging is that rain and lightning storms pose significant difficulties for deminers. The damp conditions can cause electrical control boxes to malfunction or sustain damage in mine detection machines. Additionally, working in heavy rain can negatively affect the deminers' health, leading to sick leave and reduced productivity. Demining activities must be temporarily halted during lightning storms to avoid accidents, further decreasing productivity. Even detection animals such as mine detection dogs (MDD) and mine detection rats (MDR) can be adversely affected by the rain conditions, which dilute the scent of explosives and cause confusion. The challenging working





conditions have a profound impact on the demining team's safety, health, and overall success in completing their mission.

Furthermore, when deminers must work in rainy conditions, several factors contribute to the difficulty of the task. Even when deminers use specialized equipment to detect landmines, the unstable and wet environment presents various issues that can lead to malfunction and damage. As a safety measure, deminers must halt the use of all devices susceptible to electrical interference during lightning storms, including all types of mine detector machines and mechanical demining machines like BC and DM. Detection animals such as MDD and MDR are also less effective in wet conditions as the rain dilutes the scent of explosives, causing confusion and hampering their ability to locate them. The adverse and challenging conditions require demining teams to take precautions and implement additional safety measures, impacting their productivity and making it more difficult to achieve their goals.

However, even with these challenges, demining organizations like CMAC have learned to develop solutions to these problems. These solutions can range from adapting the technologies and equipment used in the clearance operations to adapting the training and skills development of the field staff. For example, CMAC has implemented a multi-skilled approach to training its field staff, equipping them with the skills and knowledge to address a range of environmental challenges. This approach can involve training deminers to operate within different environmental conditions, including navigating through thick forests, traversing through deeper waters, and adapting their work to different soil conditions and weathers.

Additionally, CMAC has also invested in improving its technology and methodology to overcome environmental challenges. For example, they have developed specialized equipment for use in underwater and forest clearance operations, as well as adaptive technology that can be used to detect landmines in difficult soil conditions. These approaches allow CMAC to address environmental challenges head-on and make significant progress in removing landmines and ERW as well as simultaneously restoring the ecosystem by not utilizing brush cutter machines in the non-agricultural purpose clearance.

To put it in a nutshell, environmental issues are a significant factor impacting demining operations. Nonetheless, by combining effective adaptation strategies and approaches, demining organizations like CMAC can overcome these challenges and therefore successfully clear landmines and other explosive remnants of war in this reporting period.

6.3. Compacted Minefield/UXO-Field

Over the past 30 years, efforts to clear landmines and explosive remnants of war (ERW) have made significant progress in reducing the affected land areas. However, despite this progress, the scale of the remaining landmine and ERW problems across the country remains substantial. The current situation is characterized by small, isolated minefields and UXO fields, which necessitates the constant movement of demining teams from one site to another.

This frequent movement poses several challenges, including the consumption of valuable time and resources required for travel and transportation of demining personnel and equipment. Moreover, the constant relocation of demining teams has historically resulted in road accidents and disruptions to day-to-day operations. Recognizing these issues, the Cambodian Mine Action Centre (CMAC) has taken proactive measures to address them.



CMAC has undertaken the restoration, rehabilitation, improvement, and upgrading of all operational vehicles used in landmine/ERW clearance activities. This initiative aims to ensure the safety of demining teams and prevent risks on both public and difficult forest roads leading to minefields and UXO fields. By providing reliable and well-maintained vehicles, CMAC can reduce travel duration on the road, instead allowing for increased hours of clearance operations in the minefields and UXO fields.

Additionally, CMAC has implemented a comprehensive training program to enhance the multidisciplinary and multi-skill capabilities of its field staff. This training equips demining teams with a diverse range of skills and knowledge, enabling them to work effectively in various disciplines and solve multiple problems at a single location. This approach significantly reduces the need for team mobility, as one expert with multiple skills can address multiple issues in one place.

By combining the use of rehabilitated vehicles and the deployment of multi-skilled personnel, CMAC not only minimizes the risks associated with frequent team movement but also maximizes the efficiency and effectiveness of mine clearance operations. The reduced travel time allows for more time dedicated to actual clearance work, accelerating the progress in clearing the remaining minefields and UXO fields.



Furthermore, CMAC's approach contributes to the overall safety and well-being of the demining teams, as it mitigates the potential dangers associated with road accidents and minimizes disruptions to daily operations. This holistic approach ensures that resources are utilized optimally, and the clearance efforts can be carried out with the utmost efficiency and effectiveness.

In conclusion, CMAC's strategic focus on vehicle restoration and personnel training has proven to be instrumental in addressing the challenges posed by the small and isolated nature of the residual minefields and UXO fields. By reducing team mobility and enhancing the skills of its field staff, CMAC has significantly improved the efficiency and safety of mine clearance operations. These initiatives play a vital role in advancing the overall goal of reducing the landmine and UXO problem in Cambodia.



6.4. Impacts of Deminers' Aging

The aging of deminers has had significant impacts on clearance operations and progress toward achieving a mine-free Cambodia. As demining specialists reach retirement age, disability, or suffer from chronic diseases, the number of seasoned personnel available for clearance operations diminishes. This, in turn, has led to a reduction in the number of clearance operations being conducted and poses challenges to the Royal Government of Cambodia's (RGC) goal of ending the landmine issue by the end of 2025.

Over the last few years, starting from 2018, more than 1,000 demining specialists have met the retirement requirements and have been referred to retirement, receiving pensions from the Ministry of National Defense. This mass retirement has created a gap in the workforce dedicated to demining and ERW clearance. The loss of these deminers, who have typically served for around three decades, is significant not only by virtue of their experience but also their in-depth understanding of the mine situation in Cambodia.



In response to this challenge, CMAC management has initiated and therefore implemented a strategy to train successors and fill the gap left by retiring deminers. This has involved recruiting the children of deminers or former deminers who wish to work in the field of mine action. These successors undergo a rigorous selection process and thorough training and are properly equipped to carry on the important work of their parent's generation.



Despite these efforts, the context of the mine action sector in Cambodia is rapidly evolving, and the aging deminers' successors are still in the process of adapting to the mine situation in Cambodia. This means that relying solely on the newly trained force, combined with the remaining experienced CMAC staff, will not guarantee the necessary speed of operation to support the RGC's target of achieving a mine-free Cambodia by 2025. The experience gained by the retiring deminers over their three decades of service cannot be instantly replicated in the newcomers.

The problem lies in the fact that the shifting force of newly trained deminers requires some additional time to adapt to the demanding nature of demining tasks and to work as quickly and safely as their older, experienced counterparts. As such, CMAC's management has carefully considered the situation and implemented policies to encourage highly skilled professionals, both old and new, to volunteer for overtime work. This includes providing additional overtime pay to incentivize staff to work beyond their regular hours.

The efforts to motivate demining professionals to work overtime, especially in the context of the "Cambodia Mine-Free 2025 Fund" initiated by Prime Minister Samdech Techo Hun Sen, have yielded positive results. Staff in the project have expressed great satisfaction with the opportunity to contribute further, and their dedication has led to a significant increase in clearance operation results. This has been a source of pride for all involved.

However, it is crucial to acknowledge that relying solely on overtime work by experienced staff and newly trained deminers will not be a sustainable solution in the long term. The scale and complexity of the landmine issue in Cambodia require a continuous supply of skilled deminers who can adapt quickly to changing mine situations. Efforts must be made to bridge the gap between the retiring deminers and their successors, ensuring a seamless transition and continuous progress toward the goal of a mine-free Cambodia by the end of 2025.

In conclusion, the aging of CMAC deminers has had significant impacts on clearance operations. The retirement of experienced deminers, combined with the time required for newly trained successors to adapt fully, has resulted in a reduced speed of operation. However, through policies that encourage overtime work and the dedication of demining professionals, progress has been made toward achieving a mine-free Cambodia. It is crucial for CMAC to further and thoroughly



focus on effectively training and equipping the new generation of deminers to meet the challenging goals ahead and ensure a sustainable solution to the landmine issue in Cambodia.

6.5. Perilous Nature of Demining Work

Demining is an incredibly dangerous task that requires demining specialists to be extremely vigilant and adhere to strict safety protocols and standard operating procedures. It is a task that leaves no room for error, as one mistake can potentially be fatal. As a deminer in Afghanistan once said, "For a deminer, the first mistake is also the last one. There is no second chance." This sentiment holds true not just in Afghanistan, but in every country affected by landmines and Explosive Remnants of War (ERW). Deminers must remain focused every second of their work, as losing concentration even for a moment can have deadly consequences.



Due to the inherent danger involved, demining work is considered to be a slow and meticulous process. Safety and precision take precedence over speed, as the lives of deminers and the surrounding communities depend on it. Therefore, it is widely accepted that deminers require a high level of concentration and must strictly adhere to Standard Operating Procedures (SOPs) as a safety guideline. These SOPs not only ensure the safety of the deminers themselves but also maintain the overall standards of the work being carried out.

However, in Cambodia, the context of mine action has undergone significant changes in recent years. The Royal Government of Cambodia (RGC) has made a commitment to achieving Cambodia Mine-Free 2025 in order to meet the requirements of the Ottawa Convention. This ambitious goal was initiated by Samdech Techo Hun Sen, the Prime Minister of the Kingdom of Cambodia. It is a testament to the determination of the RGC to ensure the safety and well-being of its citizens by eradicating the threat posed by landmines.

This commitment to achieving a mine-free Cambodia by 2025 presents a challenge for the Cambodian Mine Action Centre (CMAC), anyways. Demining work is inherently slow and meticulously conducted, in order to prioritize safety and avoid any potential mishaps. The timeframe set by the RGC puts significant pressure on CMAC to expedite its operations without compromising on safety and thoroughness.

To address this dilemma, CMAC has conducted a careful assessment of its ability and capacity to achieve the ambitious goals set by the RGC. Drawing from real-life situations, technical experience, and past work methods, CMAC has developed an Integrated Workplan (IWP) for 2023. This plan highlights CMAC's efforts to align with and support the RGC's policy of achieving a mine-free Cambodia by 2025.

CMAC understands the importance of upholding safety standards for its staff and the communities it serves. As such, the organization has a diverse range of demining tools at its disposal. By integrating these tools and strategically deploying them in areas where they are most needed, CMAC aims to maximize productivity without compromising on safety.



The CMAC's approach to demining is both systematic and efficient. Through careful analysis and planning, CMAC ensures that the right tools are utilized in the right areas, optimizing the productivity of their operations. This emphasis on productivity is not in conflict with the need for safety; rather, it is a reflection of CMAC's commitment to fulfilling the RGC's goal of a mine-free Cambodia by the end of 2025.

In conclusion, demining is undeniably a dangerous task that requires demining specialists to exercise extreme caution at all times. However, in Cambodia, the landscape of mine action has evolved significantly to align with the RGC's policy of achieving a mine-free country by 2025. CMAC, as the leading organization responsible for demining efforts in Cambodia, has carefully evaluated its ability and capacity to meet these goals and has devised an Integrated Workplan (IWP) for 2023 to support the RGC's policy. Through the strategic integration and deployment of demining tools, CMAC aims to strike a balance between productivity and safety, ensuring that the goal of a mine-free Cambodia will be possibly achieved while prioritizing the well-being of deminers and surrounding communities.

Reiteratively, the Cambodian Mine Action Centre (CMAC) has faced numerous challenges during the reporting period, but it has demonstrated its commitment to finding effective solutions and preventing future problems. Among the aforementioned five major challenges identified, including Project Budget Instability, Environmental Factors, Condensed Minefields/UXO-Fields, Impacts of Deminers' Aging, and the Perilous Nature of Demining, CMAC has worked tirelessly to overcome these obstacles and ensure both clearance outputs and management quality.

CMAC has addressed less serious impacts through improved communication, coordination, and training, as well as mobilizing appropriate resources and methods to tackle emerging problems. However, more severe impacts caused by financial shortfalls or lack of political will have required CMAC to respond with more drastic contingencies. Despite these challenges, CMAC has remained resilient and adaptable, responding to each crisis as effectively as possible.

One notable achievement during the reporting period of the first six-month timeframe in 2023 is CMAC's successful progress in clearing and releasing an excess of 151 Km², surpassing the six-month plan of 134 Km² by 113.28% and accounting for 56.64% of the total work plan for the year 2023 of 268 Km². This remarkable accomplishment not only contributes to saving lives but also supports the overall development of the Kingdom of Cambodia.



7. CONCLUSION

The culmination of CMAC's undertakings in the initial half of 2023 underscores a remarkable spectrum of activities, encompassing everything from large-scale landmine and explosive remnants of war (ERW) clearance efforts—both beneath the ground and underwater—to grassroots community education, community development assistance, international training programs, and cutting-edge research.

CMAC's coordinated approach involved the integration of various tools and techniques, including mechanical demining machines, detection animal systems, enhanced demining methods, toolbox integration, improved field management, intensified training, and equipping deminers with diverse skills. This meticulous orchestration led to the successful clearance of an impressive 151 square kilometers of land—a significant leap beyond the initial six-month goal of 134 square kilometers, exceeding it by an impressive 113.28%. This achievement constitutes 56.64% of the entire annual work plan for 2023, which covers a projected area of 268 square kilometers.

During this reporting period, CMAC's diligent work resulted in the discovery and safe disposal of a staggering 36,315 landmines and ERWs. Additionally, the organization collected 680 kilograms of small arms, safely removed 1,141,945 fragments, and neutralized 5 unidentified munitions. Responding to 1,719 requests from local authorities and communities underscores the direct impact on lives saved and communities secured. In tandem, CMAC's survey teams marked 377,286 meters of minefields, identifying 425 areas with suspected minefields and explosive remnants, summing up to an extensive coverage of 73,603,977 square meters.

Significantly, a considerable portion—59%—of the cleared land was repurposed for agricultural use. This shift has not only revitalized the local economy but also catalyzed socioeconomic growth for families residing in and around these post-clearance areas.

The positive momentum extends to broader territorial achievements as well. The liberation of eight capital/provinces and four city/districts within Pursat Province from the threat of anti-personnel mines has been a monumental step. These areas include Phnom Penh, Preah Sihanouk, Kampot, Takeo, Kandal, Kampong Chhnang, Kampong Cham, and Svay Rieng Provinces. Moreover, Pursat City, Bakan, Krakor, and Kandieng Districts within Pursat Province have also benefited from this security enhancement.

Zooming out to the timeline spanning 1992 to June 2023, CMAC's impact becomes even more compelling. Over this period, CMAC's efforts have led to the discovery and neutralization of 3,133,503 landmines and ERWs, 131,895 unidentified munitions, and 115,008 kilograms of small arms. A remarkable 468,506,446 fragments have been rendered safe, while CMAC's responsiveness to 124,682 requests from local communities and authorities reflects its essential role as a protector. Notably, CMAC's discovery and management of 87 sites where chemical drums were dispersed by US aircraft during the Vietnam War signifies its unwavering commitment to safety. The magnitude of CMAC's contribution, culminating in the liberation of 1,616 square kilometers, equates to a remarkable 57% of Cambodia's cumulative landmine clearance—spanning 2,847 square kilometers—since the dawn of demining efforts in 1992.



What is more, CMAC's mission extends beyond physical intervention. Its Mine Risk Education (MRE) program has also equipped 4,100 volunteers across the country—including local residents, national police officers, and even Buddhist monks—with vital knowledge to mitigate landmine and ERW accidents. These volunteers have played an integral role in spreading this critical MRE information within their communities, fostering awareness about the inherent dangers of these remnants.

The significant impact of these educational efforts is highlighted by the provision of 11,648 MRE courses in the first half of 2023. These courses reached 1,152 villages affected by landmines and ERWs, benefiting an astonishing 571,810 households. The far-reaching impact of these courses resonates with an extensive audience of 892,129 individuals. This diverse demographic includes 300,059 men, 353,238 women, 167,191 in-school students, and 71,641 out-of-school children. By empowering beneficiaries to promptly report dangerous remnants, CMAC's EOD teams received 1,923 requests for intervention, of which they successfully responded to 1,719 between January and June 2023. Impressively, landmine and ERW casualties dwindled to only 21 individuals during this reporting period—a striking reduction.

CMAC's accomplishments have not only contributed to safeguarding lives and supporting Cambodia's development but also elevated the country's global reputation. By training other nations like UXO-Lao's staff members from Lao-PDR and SESU's demining experts from Ukraine in mine action, CMAC has become an exemplar of international cooperation and goodwill.

Yet, these accomplishments have not come without their share of challenges. CMAC has faced formidable hurdles, including project budget instability, environmental factors, compacted minefields/UXO-fields, the implications of an aging demining workforce, and the inherent dangers of demining activities. Without effective mitigation, these challenges could lead to project delays, modifications, or downsizing due to financial constraints, inadequate funding, or limited personnel.

In the face of these challenges, CMAC's proactive approach, coupled with adept management practices and unwavering internal support from various departments, including the Human Resources Department, the Support Department, the Project Management and International Cooperation Department, and the Quality Department, have collectively yielded success. The challenges anticipated within the Integrated Workplan (IWP) 2023 were effectively navigated, attesting to CMAC's adaptability, resilience, and foresight.

In summation, the achievements of the first half of 2023 reverberate profoundly within Cambodia's landscape. Beyond reducing landmine and ERW contamination and associated casualties, CMAC's comprehensive initiatives have rejuvenated livelihoods, facilitated resettlement, fostered socioeconomic growth, and spurred infrastructural development for individuals and communities. This strategic alignment with the National Strategy for Poverty Reduction is a testament to CMAC's multifaceted impact. Equally significant is the resonance of CMAC's efforts on the global stage, elevating Cambodia's diplomatic reputation. CMAC's commitment to demining remains instrumental in realizing Cambodia's ambition of achieving a landmine-free status by 2025—an aspiration that embodies not only safety but also prosperity for the nation.



9. KEY EVENT PHOTOS

Here comes a spectacular collection of visually stunning photographs, each accompanied by a detailed description, that showcases the impressive achievements of the Cambodian Mine Action Centre (CMAC) during the first six months of 2023. From high-level national and international events to grassroots initiatives, these photographs capture the very essence of CMAC's tireless efforts to clear landmines and explosive remnants of war (ERW) in Cambodia.

No matter whether the events that took place were confined within the four walls of an office or out in the field, each of the photographs tells an incredible and unique story, providing a fascinating glimpse into the world of CMAC and its remarkable endeavors during the past six-month reporting period.

This comprehensive and extensive compilation of photographs and accompanying descriptions offers a wonderful opportunity to appreciate the scale of CMAC’s operations, human resources, the enormous amount of dedicated work put in by the staff, cooperation, and the significant progress made by CMAC in making Cambodia a safer and more secure place for its people in alignment with its mission of “saving lives and supporting development for Cambodia.”



The Technical Institute of Mine Action (TIMA) in Kampong Chhnang Province on 05 January 2023, hosted a training course on pedagogy and teaching methodology for CMAC instructors and lecturer trainees. The eight-week course, funded by the Japan International Cooperation Agency (JICA), aims to build and increase the pedagogical capacity of TIMA's instructors and lecturers to fully comply with national standards. The opening ceremony was presided over by H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, H.E. Dr. Sith Seng, Director of the Phnom Penh Teacher Education College (PTEC), and Mr. Hayashi Akihito, Representative of JICA. This collaboration between CMAC, PTEC, and JICA is part of a broader effort to prepare for the post-2025 future of mine action and reflects CMAC's ongoing commitment to South-South Cooperation (South-South) project which has provided training to countries such as Colombia, Iraq, Angola, and Lao-PDR since 2011.



On January 09, 2023, at CMAC Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over the opening ceremony of a training course on “Operational Management” between CMAC and UXO Lao from 09 to 20 January 2023 under the scheme of South-South Cooperation, supported by the Japan International Cooperation Agency (JICA).



On January 16, 2023, at the Technical Institute of Mine Action in Kompong Chhnang province, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, together with Mr. Nozomu Yamashita, Director, Office for Peacebuilding Governance and Peacebuilding Department, presided over the opening ceremony of Technical Training on Demining Technologies for deminers of the State Emergency Services for Ukraine (SESU). This training course lasts for 7 days from 15 to 21 January 2023.



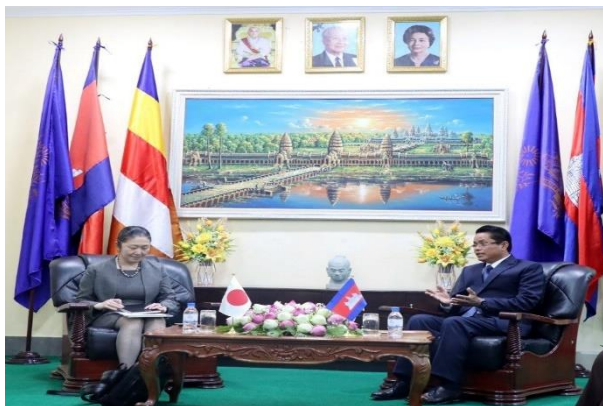
His Excellency Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, on February 01, 2023, met with demining teams for the project of “Foundation of Cambodia Mine Free 2025” and announced the opening of demining operations, which will be implemented in Kampong Thom, Pailin, Preah Vihear, Pursat, and Siem Reap.



On February 06, 2023, at CMAC’s Technical Institute of Mine Action in Kampong Chhnang province, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, attended the opening ceremony on Technical Patrol Dog Training. This 6-day period of training, 06 to 11 February 2023, includes technical detection experts in Cambodia from the general commissariat of the national police, the Royal Gendarmerie of Cambodia, the Special Forces Command, the Cambodian Counter Terrorism Special Forces and CMAC’s dog experts.



On Thursday, March 9, 2023, in Top Chey village, Boeung Mealea commune, Svay Leu district, Siem Reap province, Siem Reap Province, CMAC held a ground-opening ceremony the China-Aided Cambodia Landmine Elimination Project, presided over by Samdech Pichey Sena Tea Banh, Deputy Prime Minister, Minister of National Defense, High Representative of Samdech Akka Moha Sena Padei Techo Hun Sen, Prime Minister of the Kingdom of Cambodia, and H.E. WANG Wentian, Ambassador of the People's Republic of China to the Kingdom of Cambodia.



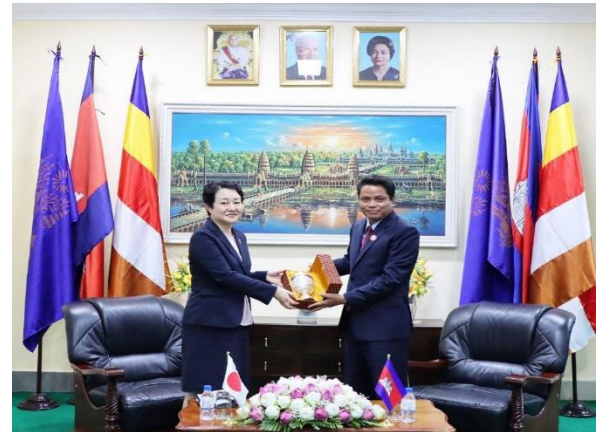
On Thursday, March 16, 2023, at CMAC Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, met with a delegation from the Japan International Cooperation Agency (JICA) led by Mrs. Masuda Juko, General Director of Governance and Peacebuilding Department. During the meeting, the JICA side briefed on the results of its cooperation with CMAC, in particular training for Ukraine with good results.



On Tuesday, March 21, 2023, H.E. Oum Phumro, Deputy Director General of CMAC, representing H.E. Heng Ratana, Delegation of the Royal Government in charge as Director General of CMAC, attended the ceremony of the declaration of Takeo as a mine-free province, presided over by H.E. Senior Minister Ly Thuch, First Vice President of CMAA. In Takeo, there are 78 minefields with 4,400,483 square meters of contaminated area. It was completely cleared by CMAC from 1994 to 2022, including 463 anti-personnel mines, 9 anti-tank mines, 378 cluster bombs, and other 33,503 ERW found and destroyed.



On March 26, 2023, at the Koh Pich Convention and Exhibition Center, the first National Day of Science, Technology, and Innovation 2023 was held under the theme "Building a Foundation for All" organized by the Ministry of Industry, Science, Technology, and Innovation. The three-day exhibition will close on March 28, 2023. The Cambodian Mine Action Centre also participates in the exhibition of its modern demining operations, including the ALIS demining machine, diving equipment, and mine detection dogs equipped with GPS. CMAC's booth receives a lot of attention from the public, especially the dogs.



On Monday, March 27, 2023, at CMAC Headquarters Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge of Director General of CMAC met with Ms. Kamei Haruko, Japan International Cooperation Agency (JICA) Cambodia Office Chief Representative for her farewell as she completes her two-year assignment in Cambodia and returns to Japan next week. His Excellency thanks her for the good culture of cooperation with any projects with CMAC despite the difficult situation posed by Covid-19 during the beginning of her mission in Cambodia, especially the construction project of the Technical Institute of Mine Action and outreach facilities.



On Thursday, March 30, 2023, at the Technical Institute of Mine Action, Kampong Chhnang province, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over a closing ceremony of the Improvised Explosive Detection Dog Training Course with a total of 18 trainees, 12 of whom are from Special Forces Command and 6 others are from Bodyguard Headquarters Unit. This training course is combined with the Basic Dog Handler (batch 20) and Operational Dog Handler, coordinated and instructed by 11 technical instructors.



On 04 April 2023, in Sokha Hotel Phnom Penh and Residence, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, attended the Technical Work Group for Mine Action (TWG-MA) between the Royal Government Representatives in mine action sector and the Development Partners to review progress made in the half path of 2018-2025 and the Path Ahead after 2025.



On Thursday, April 06, 2023, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, attended the ceremony of the declaration of Kompot as a mine-free province, presided over by H.E. Kittisetha Dr. Cham Prasidh, Senior Minister, Minister of Industry, Science and Innovation. CMAC deployed teams, under the project of Samdech Techo for Mine Action, to clear Kompot province to become a mine-free province from August 2022 to the end of November 2022. Contaminated areas affected by the remaining anti-personnel mines recorded in the national database in Kampot province are 101 minefields with a total area of 11,490,582 square meters.



On Wednesday, April 12, 2023, at the 5th Military Region Headquarters, Battambang province, H.E. Ly Thuch, Senior Minister and First Vice President, Cambodian Mine Action & Victim Assistance Authority (CMAA), presided over a closing ceremony of the Deminer Course. According to H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, informed that there are 501 trainees, instructed by CMAC 26 technical instructors, from 5th Military Region, Intervention Division, Infantry Brigade, and Engineering Battalion.



On Friday, April 07, 2023, at the Technical Institute of Mine Action, Kampong Chhnang province, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over a closing ceremony of the ALIS Mine Detector Training Course (Batch 5) with a total of 29 trainees, 8 of whom are females. The training course lasted 4 weeks, starting from March 13, 2023, to April 07, 2023. It is informed that the ALIS mine detector has been utilized and developed by Mr. Motoyaki Sato, Professor of Tohoku University of Japan since 2006.



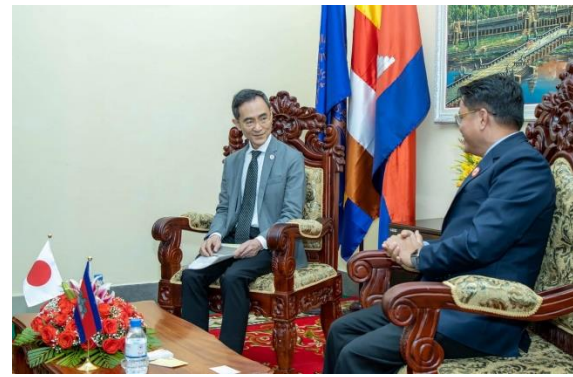
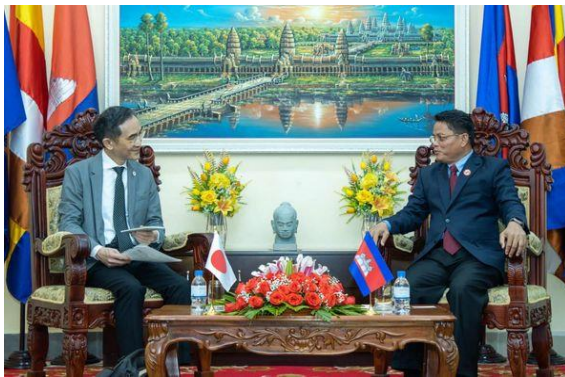
On Friday, April 28, 2023, at CMAC Headquarters Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge of Director General of CMAC met with Mr. SANUI Kazumasa, Japan International Cooperation Agency (JICA) Cambodia Office Chief Representative. During the meeting, H.E. Heng Ratana briefed Mr. SANUI Kazumasa on the history and core activities of CMAC in clearing mines and UXOs in Cambodia to ensure safety and support development projects in the country for the past 30 years.



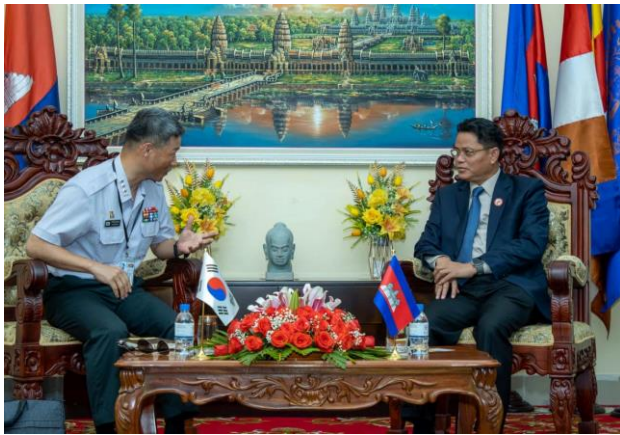
On Monday, May 29, 2023, at the Technical Institute of Mine Action, Kampong Chhnang province, Mr. Prak Somathy, Senior Director, in charge of Animal Detection System and Post Clearance Community Development, presided over an opening ceremony of the Basic Dog Handler Training Course (batch 21) with a total of 34 trainees from Phnom Penh Headquarters, Frontline Unit, Demining Unit and Bodyguard Headquarters Unit.



His Excellency Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, on May 31, 2023, welcomed the visit of H.E. Senior Minister Ly Thuch, First Vice President of CMAA, in a meeting ceremony and promotion of mine action and the implementation of the on the Samdech Techo Project for mine action under the theme "Providing Safe Ground, Creating Smiles" which took place in Reusey Doch village, Sala Visai commune, Prasat Balang district, Kompong Thom province. According to Mr. Yeng Sokunthea, Frontline Unit Manager, over 35 hectares of affected landmines (BS / CMAA / 31701) will be cleared in this area.



On Friday, April 28, 2023, at CMAC Headquarters Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge of Director General of CMAC met with Mr. NAKAZAWA Keiichiro, Senior Vice President (JICA) Japan. During the meeting, H.E. Heng Ratana briefed Mr. NAKAZAWA Keiichiro on the history and core activities of CMAC in clearing mines and UXOs in Cambodia to ensure safety and support development projects in the country for the past 30 years. During the meeting, HE NAKAZAWA Keiichiro thanked the leadership of the Royal Government for supporting JICA projects in Cambodia. At the same time, he would like to thank CMAC for sharing its experience, expertise, and training in the field of mine action with other countries affected by the remnants of war, such as Angola, Colombia, and Laos.



On Friday, April 28, 2023, at CMAC Headquarters Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC received a courtesy call from the delegation of the Republic of Korea led by Lieutenant Colonel Pak Suman, Military Attaché to Cambodia. The main purpose of this meeting was to learn about the mine action sector of CMAC. During the meeting, H.E. Heng Ratana briefed Lieutenant Colonel Pak Suman on the history of the unit from 1992 to the present, the core activities of CMAC, and the seventeen regional units.



On Thursday, June 22, 2023, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, attended the ceremony of the declaration of four districts of Pursat as a mine-free, under the project of "Cambodian Mine Action Fund 2025". The ceremony was presided over by His Excellency Suy Sem, Minister of Mines and Energy, High Representative of Samdech Akka Moha Sena Padei Techo Hun Sen, Prime Minister of the Kingdom of Cambodia. Contaminated areas affected by the remaining anti-personnel mines recorded in the national database in Pursat province are 96 minefields with a total area of 2,393,000 square meters.



On June 26, 2023, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, discussed the progress of research and development of mechanical engineering (DMR robot) involved in demining, which has been researching joint technology between the Japanese company. IOS and CMAC have been developing this technology together for more than 5 years. The research and development of this robot by scientists and robotic specialists takes time to put into practice in the minefield, so as to evaluate its effectiveness, quality, and safety. Moreover, JICA promises to support the study of testing and evaluating this machine for another year (July 2023-May 2024).



SPECIAL THANKS TO THE ROYAL GOVERNMENT OF CAMBODIA AS WELL AS THE FOLLOWING GOVERNMENTS, DONORS, AND PARTNERS:



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