

**KINGDOM OF CAMBODIA**

**NATION RELIGION KING**



**CAMBODIAN MINE ACTION CENTRE  
(CMAC)**

# **ANNUAL REPORT 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
CDM	Cluster Demining Machine Team
CFR	Clearing For Results
CLR	Cluster Munitions Land Release Team
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
CTD	Cluster Munitions Technical Survey Dog Team
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
FFE	Free From Explosive
GEJ	Good Earth Japan
GICHD	Geneva International Centre for Humanitarian Demining
Global	Global Training Academy
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
IDP	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
RONCO	RONCO Consulting Corporation
RSDB	Reconstruction Support with Demining Disposal in Banteay Meanchey
SHA	Suspected Hazard Areas
SIDA	Swedish International Development Agency
SLD	Short Leash Mine Detection Dog
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 Team
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
UOT	Underwater Operation Team
USAID	United States Agency for International Development
UXO	Unexploded Ordnance
WB	World Bank



## FOREWORD



With a profound sense of pride and gratitude, I am honored to present CMAC's Annual Report 2023, a testament to our relentless pursuit of a safer Cambodia. Our firm mission, "Saving Lives and Supporting Development for Cambodia," has been the guiding force behind our tireless efforts. This report not only highlights our significant achievements over the past year but also emphasizes our continued dedication to shaping a mine-free Cambodia in alignment with the Royal Government's commitment to global safety initiatives.

The statistics speak volumes: nearly 282 km<sup>2</sup> of hazardous terrain cleared, surpassing our ambitious annual goal of 268 km<sup>2</sup> by 105.20%. However, beyond these numbers lie the human stories that truly define our progress. Each liberated area represents more than just cleared land—it signifies revitalized communities, renewed hope, and restored livelihoods. Families once gripped by fear now stand on the brink of a brighter future, thanks to CMAC's unwavering commitment.

More remarkably, CMAC's influence extends far beyond Cambodia's borders, as we share our expertise and support with nations facing similar challenges. Through partnerships and training initiatives, such as those from Colombia, Lao-PDR, and Ukraine, we have become a beacon of humanitarian assistance in mine action, showcasing our organizational growth and knowledge exchange on a global scale.

While we celebrate our achievements, we remain mindful that our journey is far from over. Declaring districts and provinces "mine-free" marks a significant milestone, but the threat of Explosive Remnants of War (ERW) persists. To address this, our Mine Risk Education (MRE) teams have forged partnerships with communities, empowering them to recognize and report potential dangers. Additionally, our Explosive Ordnance Disposal (EOD) teams stand ready to respond to emergencies, ensuring the safety of all residents.

It is crucial to clarify that declaring areas "mine-free" does not eliminate all risks. Despite our efforts, the threat of ERW remains, emphasizing the need for continued vigilance and community engagement. Our dedicated network of 5,816 volunteers, including local authorities, residents, police officers, and even Buddhist monks, exemplifies the power of collaboration in safeguarding lives.

To our partners and stakeholders—international donors, development partners, RGC, CMAA, PMAC, MAPU, local authorities, and communities—I would like to extend, on behalf of CMAC management and staff, my deepest gratitude. Your jointly unwavering support has been instrumental in our progressive success. It is through our shared commitment that we will continue to strive for a safer, more prosperous Cambodia. Your continuously steadfast support forms the bedrock of our achievements, and it is through this shared commitment that we have 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. You all are the backbone of our organization, and your tireless efforts embody the very essence of service and resilience that defines our nation.

In closing, the Annual Report 2023 is a testament to our progress, collaboration, and untiring commitment to building a safer Cambodia. As we move forward, let us remain steadfast in our resolve, confident that our mission will bring about transformative change for generations to come—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







## EXECUTIVE SUMMARY

Cambodia's mine action endeavors are anchored in the National Mine Action Strategy (NMAS) 2018-2025, a pivotal document endorsed by the Royal Government of Cambodia (RGC) on December 12, 2017. This strategy, recognizing the widespread landmine/ERW contamination across the nation, outlines a robust plan to address the approximately 1,970 km<sup>2</sup> affected by landmines and explosive remnants of war (ERWs). This contamination includes minefields spanning 946 km<sup>2</sup>, UXO fields covering 379 km<sup>2</sup>, and cluster submunitions fields encompassing 645 km<sup>2</sup>. The RGC's steadfast commitment to citizen welfare underscores its resolve to tackle these challenges head-on.

Driven by the vision of a mine-free Cambodia by the end of 2025, as championed by Samdech Akka Moha Sena Padei Techo Hun Sen, the former Prime Minister of the Kingdom of Cambodia, the nation's mine action landscape has witnessed dynamic shifts. This ambitious goal serves as a beacon of hope for the Cambodian people, signaling a future free from the devastating impacts of landmine/ERW. The government's unwavering dedication to safeguarding its citizens from the perils of landmines underscores its commitment to ensuring the safety and prosperity of all communities.

To bolster the RGC's commitment and align with the Ottawa Convention's objectives, the Cambodian Mine Action Centre (CMAC) meticulously gauges its capabilities. Drawing from real-world scenarios, technical proficiency, and past methodologies, CMAC crafts a comprehensive Integrated Workplan (IWP) for 2023. This blueprint aims to boldly clear over 268 km<sup>2</sup> of landmine and ERW-affected areas, synchronizing with the RGC's drive toward a mine-free Cambodia by the end of 2025.

CMAC's IWP 2023 encompasses a diverse array of tools, including landmine and ERW clearance (both underground and underwater), community mine risk education, community development initiatives, international training ventures, and cutting-edge research and development efforts. This multifaceted program underscores CMAC's commitment to addressing all facets of mine action and paving the way for safer and more secure communities nationally, regionally, and globally.

The outcomes of CMAC's efforts in 2023 are monumental. Surpassing expectations, CMAC cleared nearly 282 km<sup>2</sup> of hazardous terrain, exceeding the IWP's annual goal of 268 km<sup>2</sup> by a commanding 105.20%. Notably, 60% of this cleared land has been repurposed for agricultural use, fostering socioeconomic development for families residing in and around post-clearance areas. CMAC's swift response to 3,459 EOD requests for intervention underscores its role as a safeguard for communities at risk. Additionally, a total of 83,814 landmines and ERWs have been successfully eliminated, while 2,828 kg of small arms, 2,192,034 fragmentation pieces, and 5 unidentified munitions have been safely collected.

Moreover, CMAC's legacy is profound. Between 1992 and 2023, CMAC's endeavors culminated in the clearance of 1,746 km<sup>2</sup> and the discovery and neutralization of 3,049,652 landmines and ERWs, alongside 131,895 unidentifiable munitions, 117,156 kg of small arms, and an astonishing



469,563,830 pieces of fragmentation. Notably, CMAC's accomplishments represent 58% of Cambodia's cumulative clearance of 3,024 km<sup>2</sup> since 1992—a remarkable feat.

A pivotal facet of CMAC's work is its Mine Risk Education (MRE) program, which has fortified high-risk regions by arming 5,816 volunteers—including 3,000 local authorities and residents, 2,323 national police officers, and 493 Buddhist monks—with critical MRE knowledge. An impressive 24,513 MRE courses have benefitted a remarkable 1,261,956 households, reaching 1,951,485 individuals. This cascade of awareness translates into proactive reporting, as reflected by the mere 32 landmine/ERW casualties in the entirety of 2023.

Beyond clearance, CMAC's impact on socioeconomic outputs, once again, is something to be proud of. With increased awareness of danger through the MRE program, a substantial portion of the cleared land, accounting for 60%, 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 program's positive benefits to the local communities, fostering economic opportunities and improving their quality of life.

Furthermore, CMAC's dedication extends to capacity building and international engagement. While 488 staff members underwent comprehensive training at TIMA or CDC, 568 trainees from the Cambodian National Police (CNP), the Royal Cambodian Armed Forces (RCAF), and Norwegian People's Aid (NPA) absorbed vital insights. Internationally, CMAC's training initiatives have extended to a total of 38 individuals from Lao-PDR, Ukraine, and Colombia, enriching the global mine action landscape and concomitantly promoting Cambodia's image in the eyes of the world.

Aside from the aforementioned achievement, CMAC's odyssey has not been devoid of challenges. Predominant hurdles, such as budget fluctuations, environmental complexities, compacted minefields, aging deminers, and the inherent perils of demining, have collectively cast shadows on its path. Nonetheless, effective management, orchestrated through internal departments like Human Resources, Support, Project Management, Quality, and other related bodies, has adeptly mitigated these obstacles, ensuring continued progress and success through strategic coordination and proactive measures despite the adversities it faces.

In conclusion, CMAC's accomplishments in the entirety of 2023 epitomize a nation's resilience and determination, encompassing 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. As challenges are confronted head-on, Cambodia's path toward a mine-free future gains momentum, laying the foundation for prosperity and solidifying CMAC's role as a harbinger of hope and transformation.

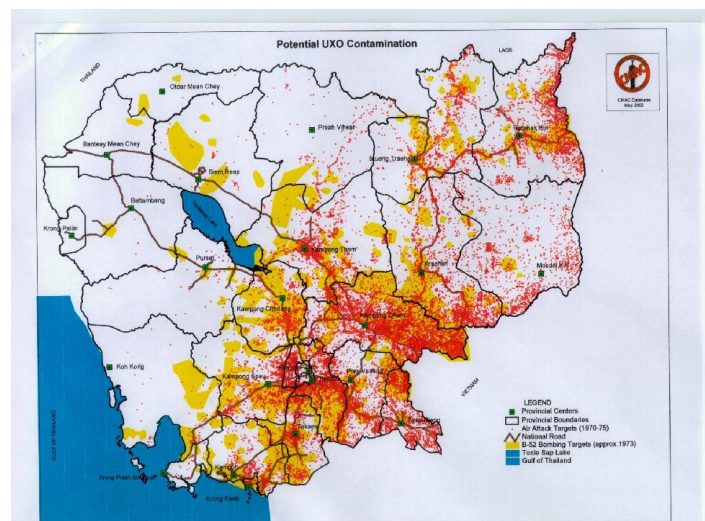


# 1. HISTORY OF MINE/ERW ISSUE IN CAMBODIA

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 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 Cambodia's Independence Day. In an effort to protect South Vietnam from the invasion of North Vietnam, the U.S., most likely driven by geopolitical interests, decided to participate in the Vietnam War, leading to the drastic dropping of 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 km<sup>2</sup> 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



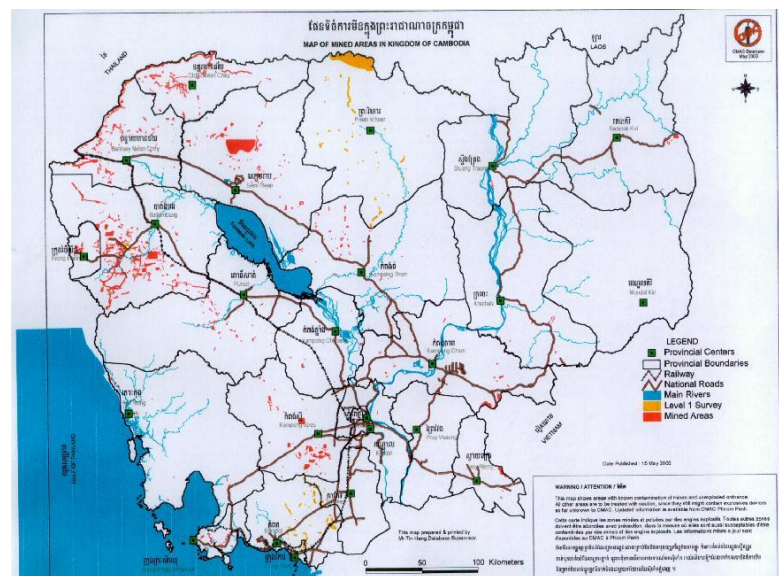
warfare in Cambodia escalated from day to day. In 1973, the proliferation of the rising Khmer Rouge troops started a military race for power from the Kampuchea Republic Regime of Lon Nol. Inevitably, the Khmer Rouge took complete control of Cambodia on 17 April 1975. Under the brutal leadership of Pol 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 continued to resist until late 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 all badly damaged.

In spite of complete peace throughout the country since late 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 Km<sup>2</sup> 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

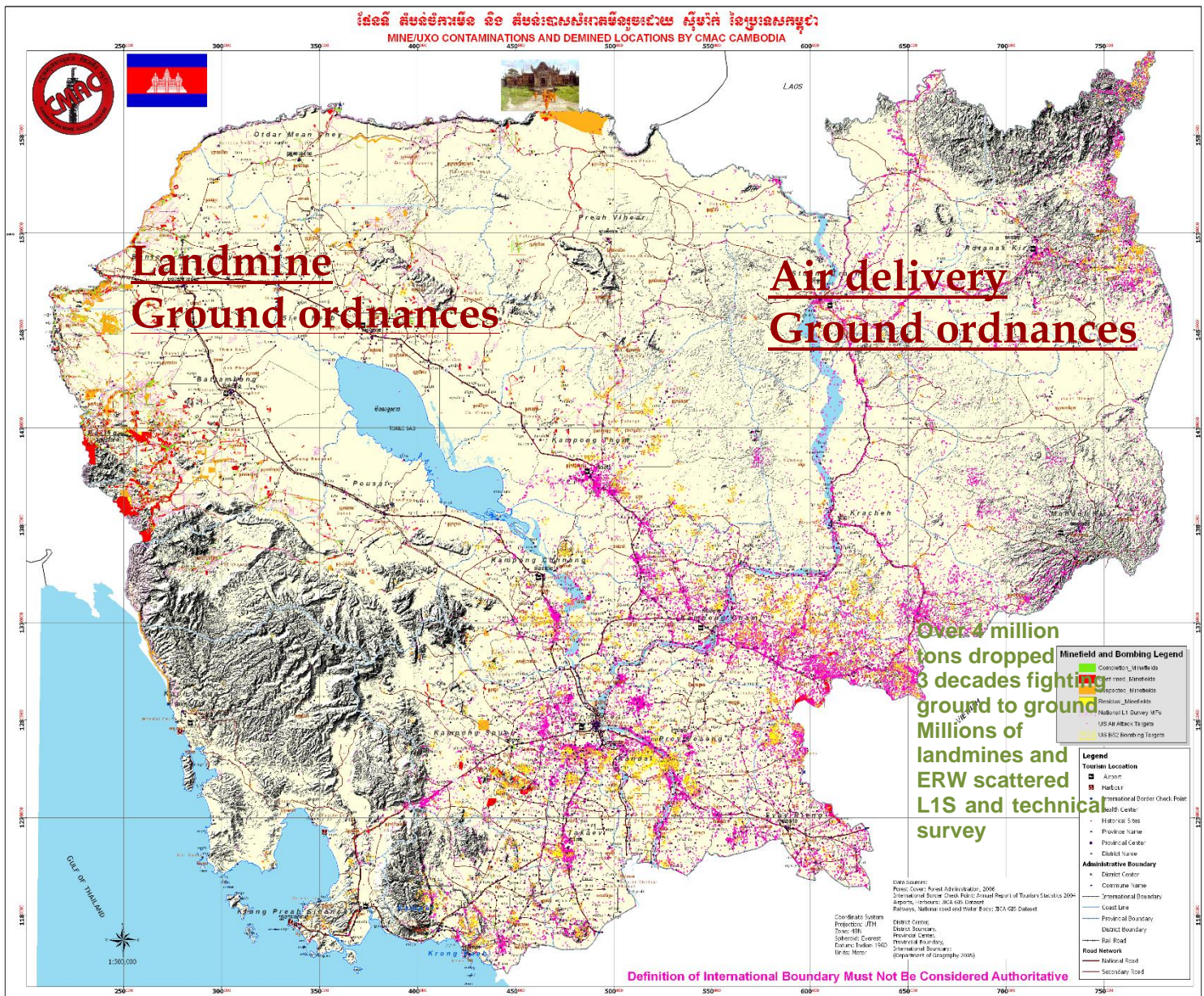




casualties, which decreased to 1,153 in 1999, further plummeting to 858 in 2000. Subsequently, the numbers continued to decline, reaching 65, 44, and 41 casualties in the last three years (2020, 2021, and 2022 respectively).

Despite this notable decrease in casualties, it is crucial to acknowledge that Cambodia still confronts a formidable challenge in the form of landmines and UXOs. These lethal remnants pose a constant threat to personal security, community and national reconstruction efforts, economic recovery, and other essential developmental activities.

For the aforementioned reasons, as well as to support the Royal Government of Cambodia (RGC) in addressing the issue of landmines and explosive remnants of war (ERWs), CMAC has consistently made significant efforts to enhance its clearance productivity. This has resulted in a reduction in contaminated land areas and the provision of Mine Risk Education (MRE) messages to more Cambodian residents, thereby raising their awareness about the dangers of landmines and ERWs in their localities.





## 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 km<sup>2</sup>. This contamination includes 946 km<sup>2</sup> of minefields, 379 km<sup>2</sup> of UXO fields, and 645 km<sup>2</sup> 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 m<sup>2</sup> 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 establishment 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 2023

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 mission 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 in 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 Km<sup>2</sup> 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. In 2023, CMAC deployed a total of 1,255 deminers (including 187 women deminers), divided into 215 teams, consisting of 4 Platoon Manual Demining teams (PMD), 27 Brush Cutter teams (BC), 13 Demining Machines teams (DM), 77 Technical Survey and Clearance teams (TSC), 9 Battle Area Clearance teams (BAC), 8 Cluster Munitions Land Release teams (CLR), 14 Explosive Ordnance Disposal teams (EOD), 2 Underwater Operations Teams (UOT), 6 Short Lease Dog teams (SLD), 6 Cluster Munitions Technical Survey Dog Teams (CTD), 2 Technical Survey Detection Dog Teams (TSD), an Improvised Explosive Device Dog Team (IED), 3 Mine Detection Rat teams (MDR), and 45 Mine/UXO Risk Education teams (MRE). These demining tools and forces have undergone rigorous capacity-building processes before being dispatched across various projects in the country.





As a result, CMAC has achieved significant progress in terms of operational clearance in 2023. Specifically, CMAC has successfully cleared and released nearly 282 km<sup>2</sup> (281,975,328 m<sup>2</sup>) of landmine/ERW contaminated areas, representing 105.20% of the total work plan of 268,050,099 m<sup>2</sup> for the whole 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.

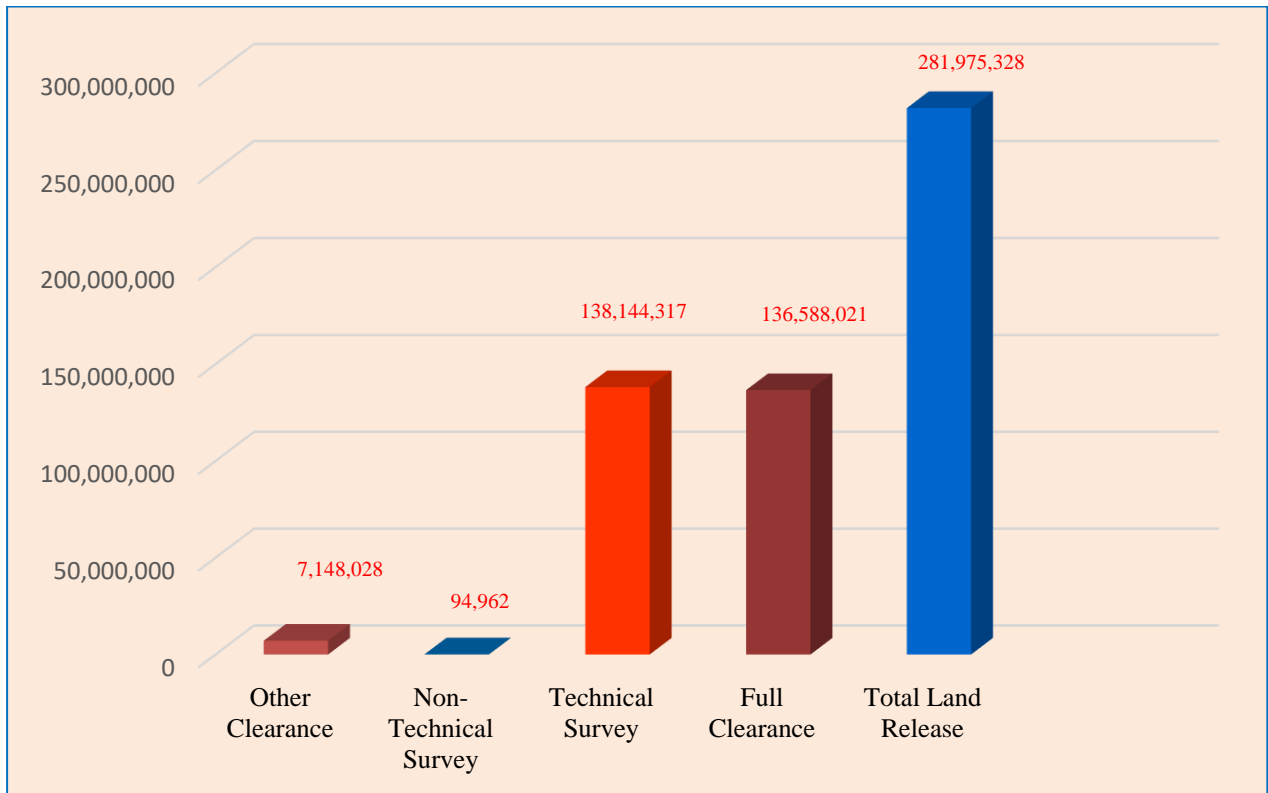
During this reporting period, CMAC has discovered and destroyed a total of 19,025 landmines (including 18,870 APMs, 127 ATMs, and 28 IMs) and 64,789 ERWs (comprised of 36 aerial bombs, 7,091 cluster munitions, and 57,662 UXOs). Additionally, CMAC has collected 2,828 kg of small arms, 2,192,034 pieces of fragmentation debris, and 5 unidentified munitions. The organization has also responded to 3,459 requests from local authorities and communities for intervention.



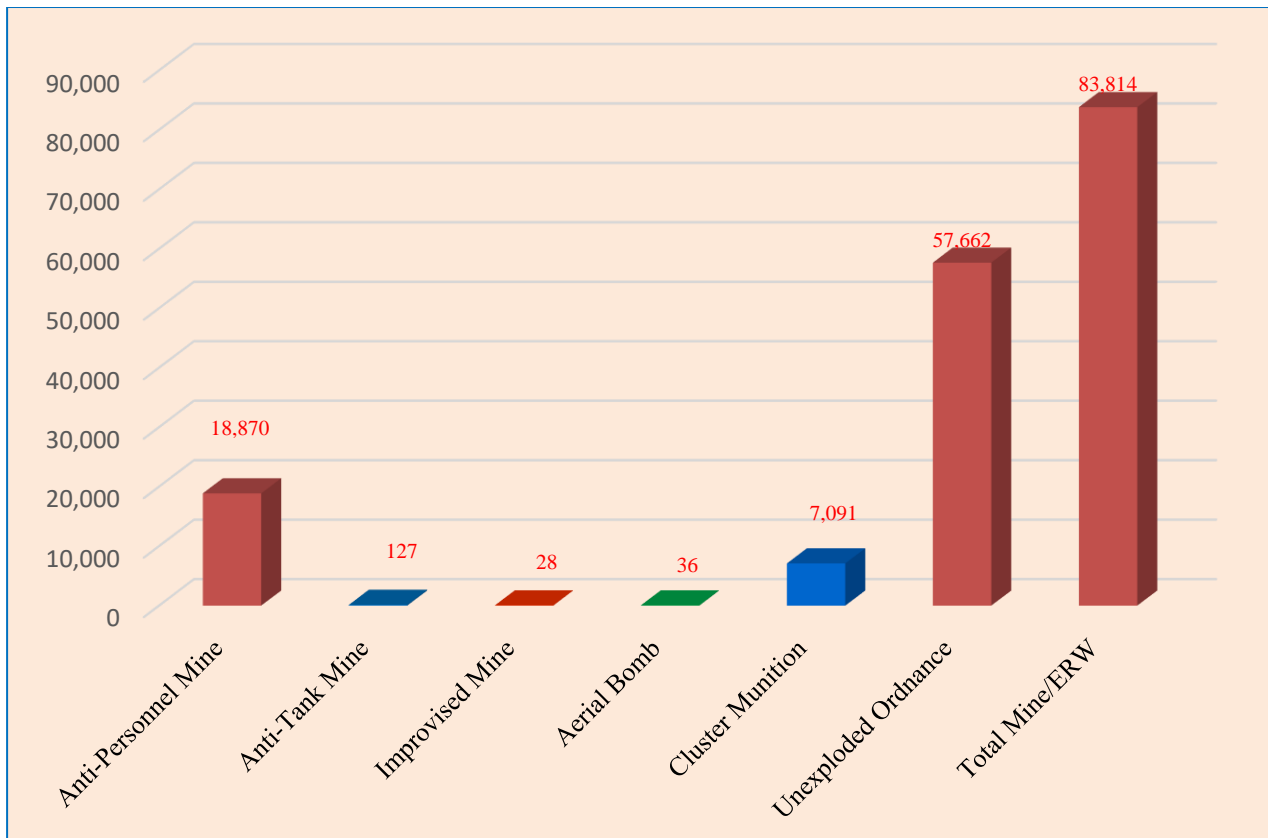
Furthermore, CMAC's survey teams have visited 234 villages suspected of landmine/ERW contamination in the provinces of Banteay Meanchey, Battambang, Pursat, Siem Reap, Svay Rieng, Kampong Cham, Preah Vihea, Tbong Khmum, Kratie, Stung Treng, and Kampong Thom. The result was that the teams identified 872 polygons of suspected minefields and UXO fields, totaling 161,835,105 m<sup>2</sup>, with a combined perimeter of 695,497 meters marked around these areas.



**Table: Land Release (m<sup>2</sup>) Conducted by CMAC from January to December 2023**



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



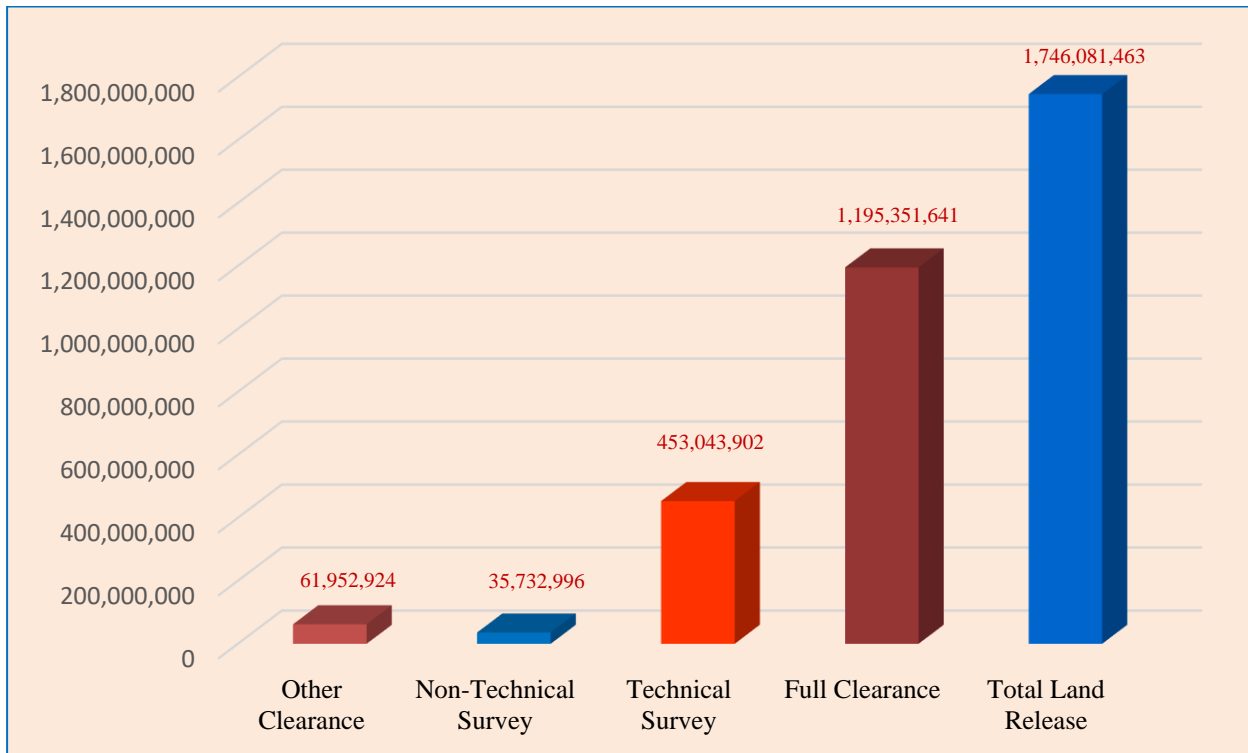
**Table: Summary Table of Operational Outputs in 2023**

<b>✚ Land Released</b>	<b>281,975,328 m<sup>2</sup></b>
▶▶ Minefield Released	233,850,163 m <sup>2</sup>
▶▶ UXO-Field Release	48,125,165 m <sup>2</sup>
<b>✚ Landmine/ERW Found and Destroyed</b>	<b>83,814 Mines/ERWs</b>
▶▶ Anti-Personnel Mine	18,870
▶▶ Anti-Tank Mine	127
▶▶ Improvised Mine	28
▶▶ Aerial Bomb	36
▶▶ UXO	57,662
▶▶ Cluster Munition	7,091
<b>✚ Unidentified Munition</b>	<b>5</b>
<b>✚ Small Arm</b>	<b>2,828 kg</b>
<b>✚ Fragment</b>	<b>2,192,034 pieces</b>
<b>✚ EOD Call/Request Responded</b>	<b>3,459 requests</b>
<b>✚ Landmine/ERW Free Village</b>	
▶▶ Number of Villages Released	87 villages
▶▶ Number of Minefields	2,602 minefields
▶▶ Land Area of Minefields Released	274,831,021 m <sup>2</sup>
<b>✚ Anti-Personnel Mine Free Province (9 Capital/Provinces and 4 City/Districts of Pursat Province): Phnom Penh, Preah Sihanouk, Kampot, Takeo, Kampong Speu, Kandal, Kampong Chhnang, Kampong Cham, and Svay Rieng Provinces as well as Pursat City, Bakan, Krakor, and Kandieng Districts of Pursat Province.</b>	
<b>✚ Minefield Information and Survey</b>	
▶▶ Marking Minefields	695,497 m
▶▶ New Landmine/ERW Suspected Areas Found	865 Polygons (161,548,438 m <sup>2</sup> )

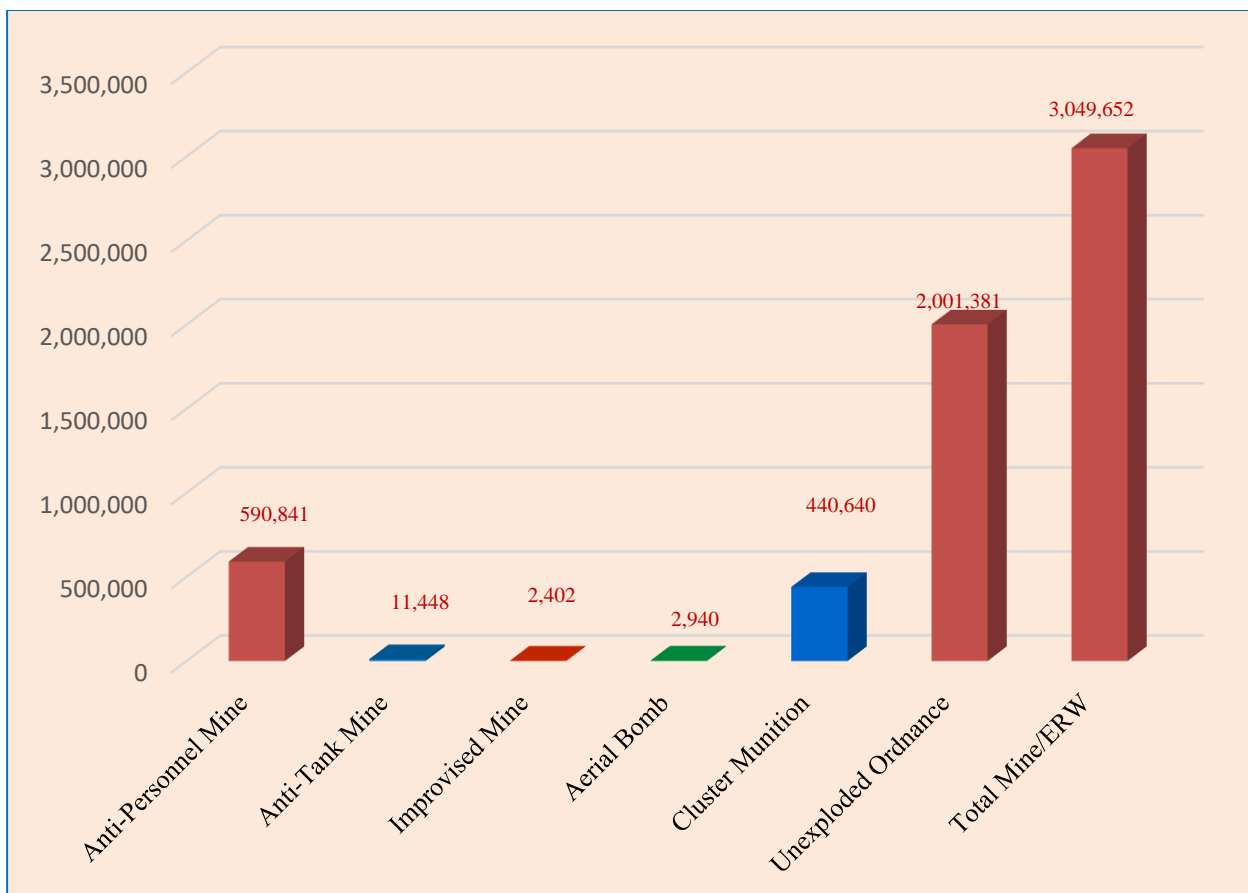
This recent operational achievement has contributed to CMAC alone releasing over 1,746 km<sup>2</sup> of landmine/ERW-affected areas between June 1992 to December 2023. Regarding the items found, CMAC discovered and destroyed a total of 604,691 mines, including 590,841 APMs (Anti-Personnel Mines), 11,448 ATMs (Anti-Tank Mines), and 2,402 IMs (Improvised Mines). Additionally, CMAC disposed of 2,444,961 ERWs (Explosive Remnants of War)—consisting of 2,940 aerial bombs, 440,640 cluster munitions, and 2,001,381 UXOs (Unexploded Ordnance)—along with 131,895 other unidentified munitions. This national organization also collected 117,156 kg of small arms and 469,563,830 pieces of fragmentation, while responding to 126,373 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 (m<sup>2</sup>) Conducted by CMAC between June 1992 and December 2023**



**Bar Chart: Mine/ERW Found and Destroyed by CMAC between June 1992 and December 2023**

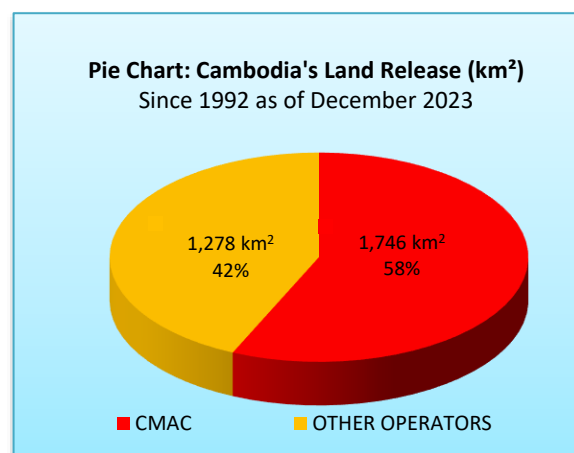






With great pride in the diligent clearance efforts undertaken by CMAC, the Cambodian Mine Action and Victim Assistance Authority (CMAA) has officially declared a significant milestone: the designation of nine capital/provinces and four city/districts within Pursat Province as Anti-Personnel Mine Free Zones. These areas include the following: Phnom Penh, Preah Sihanouk, Kampot, Takeo, Kampong Speu, 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 successfully cleared and released over 444 km<sup>2</sup> in 2023 alone, having found and destroyed 90,524 landmines/ERWs. Zooming out from 1992 to 2023, a cumulative total of 3,024 km<sup>2</sup> have been cleared and released, with over 4.3 million landmines/ERWs (4,311,297 items) found and destroyed during this period. CMAC played a significant role in this achievement, contributing 58% to the clearance and land release efforts, while 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), accounted for the remaining portion. Notably, CMAC found and destroyed 71% of the total landmines/ERWs cleared and released nationally, with other operators contributing 29%.



This impressive progress underscores the collective efforts of various demining organizations in Cambodia, with CMAC emerging as a pivotal national contributor to the country's demining efforts. By effectively clearing and releasing vast areas of land contaminated with landmines and ERWs, these organizations have significantly reduced the threat posed by these hazardous remnants of war, paving the way for safer communities and facilitating socio-economic development in affected regions.

**Table: All Demining Operators' Collective Progress Report 1992 to 2023**

All Demining Operators' Collective Progress Report 1992 to Dec-2023							
All Operators Progress							
YEAR	PROGRESS	CMAC (C1,C2,C3)		OTHER OPERATORS		TOTAL	
		m <sup>2</sup>	km <sup>2</sup>	m <sup>2</sup>	km <sup>2</sup>	m <sup>2</sup>	km <sup>2</sup>
1992 UP TO	Land Release	1,746,081,463	1,746	1,277,875,263	1,278	3,023,956,726	3,024
CMAC : Dec-2023	Land Release	1,746,081,463	1,746	1,277,875,263	1,278	3,023,956,726	3,024
OTHER OPERATORS : Dec-2023	MINES/UXOs Destroyed		3,047,250		1,264,047		4,311,297
	AP Mines		590,841		588,524		1,179,365
	AT Mine		11,448		14,891		26,339
	ERW		2,444,961		660,632		3,105,593
	Fragments		469,563,830		36,368,083		505,931,913
All Operators Progress From Jan to Dec-2023							
YEAR	PROGRESS	CMAC (C1,C2,C3)		OTHER OPERATORS		TOTAL	
		m <sup>2</sup>	km <sup>2</sup>	m <sup>2</sup>	km <sup>2</sup>	m <sup>2</sup>	km <sup>2</sup>
CMAC : Dec-2023	Land Release	281,975,328	282	162,213,115	162	444,188,443	444
OTHER OPERATORS : Dec-2023	Land Release	281,975,328	282	162,213,115	162	444,188,725	444
2023	MINES/UXOs Destroyed		83,786		6,738		90,524
	AP Mines		18,870		5,076		23,946
	AT Mine		127		77		204
	ERW		64,789		1,585		66,374
	Fragments		2,192,034		41,513		2,233,547





### 3.2. MRE Program Outputs

Despite 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.

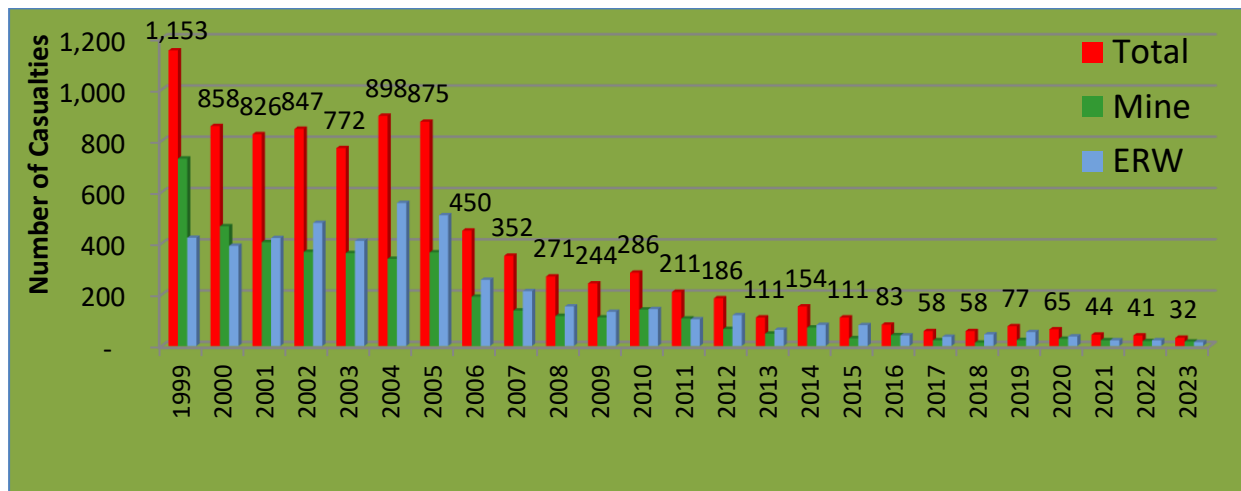
The data demonstrates a consistent reduction in casualties, with the number declining from 4,674 in 1979 to 858 in 2000. The trend continued to decrease, reaching less than 100 in 2016, marking a remarkable decline with only 83 reported casualties that year. However, individuals are so far being maimed, 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 in 2023, Cambodia witnessed a still-significant number of accidents caused by landmines and ERWs, totaling 32 cases resulting in 28 injuries and 4 fatalities across the country. However, it is encouraging to observe a decrease in accidents by approximately 21.95% compared to the previous reporting year in 2022, which recorded 41 incidents. To further illustrate this trend, the accompanying bar chart below presents the number of casualties reported from 1999 to 2023.





**Bar Chart: Landmine/ERW Casualty Data in Cambodia 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. Despite the challenges, this progress highlights the resilience and dedication of organizations and individuals working tirelessly in this field to ensure the safety and well-being of Cambodian communities.

Based on the above bar chart, there has been a discernible decrease in landmine/ERW accidents in this last decade, especially those caused by landmines. This trend aligns with the Royal Government of Cambodia's (RGC) ambition of achieving a landmine-free status by 2025, as well as the objectives outlined in the Ottawa Convention. Cambodia acceded to the Ottawa Convention in 2000, obligating State Parties to eliminate all anti-personnel mines within ten years, as stipulated in Article 5 of the Convention.

However, despite concerted efforts, landmine accidents persist due to the substantial density of landmines still concealed underground. Recognizing these challenges, in 2009, the RGC requested a 10-year extension of the deadlines set by the Ottawa Convention to clear all known mined areas by 2019. Acknowledging the operational and financial hurdles, the RGC further sought an extension until 2025 during the Maputo Review Conference on a Mine-Free World in 2014. So far, the decline in accidents signals progress toward Cambodia's goal of achieving a landmine-free status by 2025. Therefore, the Cambodian Mine Action Center (CMAC) remains steadfast in its commitment to clearing all known mined areas by 2025, with the strategic goal of eliminating ERW by 2030.

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 5,816 volunteers throughout the country, including 3,000 local authorities and residents, 2,323





national police officers, and 493 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.

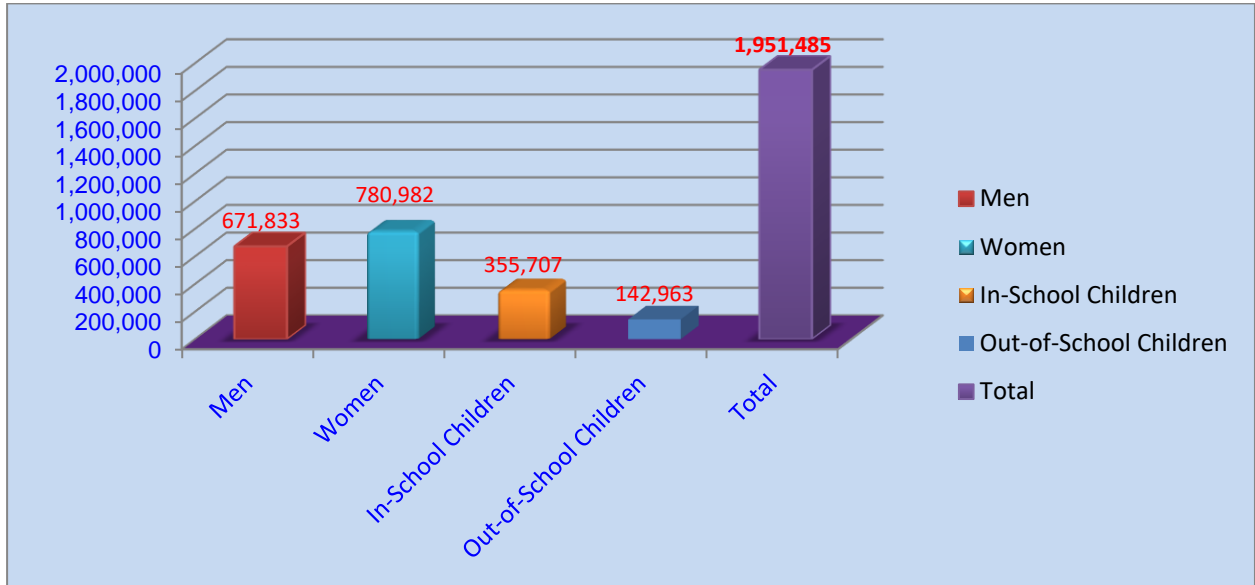
To this end, CMAC's MRE team and dedicated volunteer network managed to conduct a wide range of comprehensive programs to educate people about the risks associated with landmines and ERWs. These initiatives were particularly concentrated in high-risk areas. The result of efforts in 2023 was an impressive accumulation of 24,513 MRE courses provided to the residents of 997 Mine/ERW-affected villages, benefitting a remarkable 1,261,956 households. The impact of these courses was far-reaching, reaching an extensive audience of 1,951,485 individuals. This audience included 671,833 men, 780,982 women, 355,707 in-school students, and 142,963 out-of-school children.







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

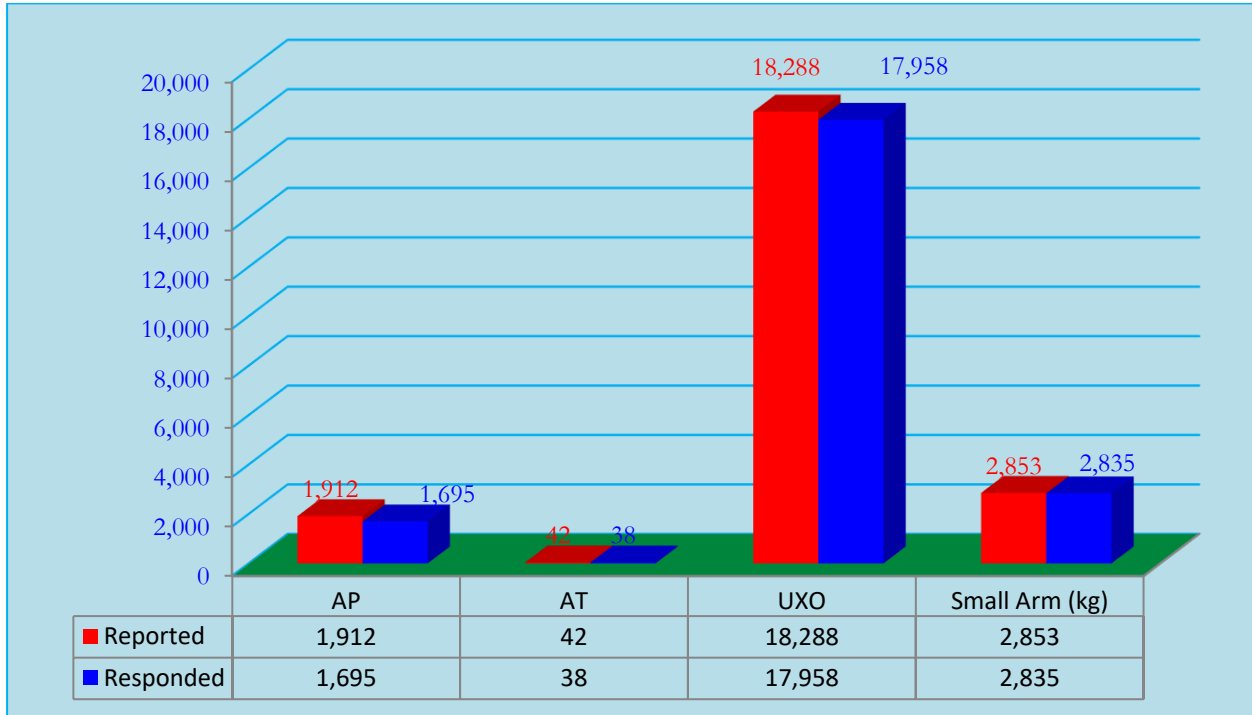


As a result of CMAC's MRE program, the number of emergency intervention requests related to landmines and ERWs has increased dramatically. With the aid of the volunteer network, CMAC has received a considerable number of intervention requests, ranging from anti-personnel mines (APMs) to small arms. In response, CMAC's Explosive Ordnance Disposal (EDO) teams have successfully handled over 3,459 emergency cases in 2023.





**Bar Chart: Items of Mine/ERW Reported Vs. Responded from January to December 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 December 2023**

MRE's Achievements from January to December 2023																
Courses	Households	Audience Group					Items of Mine/ERW Reported from Local Authorities and Communities					Items of Mine/ERW Responded to Local Authorities and Communities				
		Men	Women	Students	Outside-School Children	Total	Requests	APMs	ATMs	UXOs	Small Arms (kg)	Responses	APMs	ATMs	UXOs	Small Arms (kg)
24,531	1,261,956	671,833	780,982	355,707	124,963	1,951,485	3,879	1,912	42	18,288	2,853	3,459	1,695	38	17,958	2,835





### 3.3. Socio-Economic Outputs

As previously specified, CMAC in the year 2023 successfully cleared and released nearly 282 square kilometers of land. Simultaneously, it provided Mine/Explosive Remnants of War (ERW) risk education messages to an impressive audience of nearly 2 million individuals within a 12-month timeframe, spanning from January to December 2023. These cleared areas have been handed over to local authorities and communities for multi-faceted use. This achievement showcases CMAC's professionalism and commitment to ensuring a safe environment, fostering progress, and securing a brighter future for Cambodia.

Furthermore, this accomplishment has notably contributed to the reduction of landmine/ERW casualties in the country and 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 entire country. Demining activities remain a priority to support 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. A significant portion of the cleared land was utilized for development, resettlement, and agricultural activities, while a smaller portion was allocated for humanitarian and emergency purposes. This has directly benefitted 12,513 families (approximately 267,381 individuals) and 6,167 teachers and students, with an indirect benefit to 532,865 families (approximately 2,086,857 individuals). 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 December 2023**

How demined land used	Land Areas (m <sup>2</sup> )	Remark
Resettlement	1,610,717	337 families
Agriculture	164,320,801	11,095 families
Resettlement & Agriculture	10,710,680	1,081 families
Canal & Irrigation	13,165	10,948 m
Roads	9,859,415	87,967 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	1,410,226	14 temples
Tourist Resort	8,385,865	6,508 Places
Others	77,194,039	185,237 Places

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

Over the extensive timeline of the past 30 years, dating back to CMAC's inception, the collective impact of CMAC's relentless mine action endeavors has reverberated across Cambodia, touching the lives of an immense almost 7.5 million beneficiaries (7,464,672 individuals). This substantial figure underscores the profound and far-reaching effects of CMAC's commitment to ensuring the safety and well-being of communities affected by landmines/ERW, both directly through its direct interventions and indirectly through the broader societal benefits stemming from demining efforts.

In addressing deeper socioeconomic issues, CMAC recently established the Socio-Economic Support to Landmines and ERW Victims (SLV) project, targeting disabled individuals affected by landmines/ERWs in Pursat, Battambang, Pailin, and Banteay Meanchey provinces. The pilot project, with its duration of 3 months from 01 October to 31 December 2023, was initially launched in Samlot district, Battambang province, covering 7 communes consisting of 59 villages. Since then, the project has expanded to Koas Krala district, Battambang, and several districts in Pailin province.

The tangible outcome is that SLV in its pilot phase has provided assistance to 110 amputees in Battambang and Pailin provinces, repairing prosthetic legs, walking canes, and wheelchairs. Additionally, SLV distributed essential first aid





kits, including medicines, antiseptics, bandages, gauze compresses, and other essentials, to 62 amputees in those localities. Moreover, the pilot project offered consultations on vegetable farming and animal husbandry to 65 amputee families, in addition to establishing 3 disabled/amputee communities comprising 62 families in Keas Krala and Samlot districts, Battambang province.

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, especially the disabled, 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 clearance activities. 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) Minefield Information and Survey, (3) Mine/ERW Clearance, and (4) Training and R&D in Mine Action.

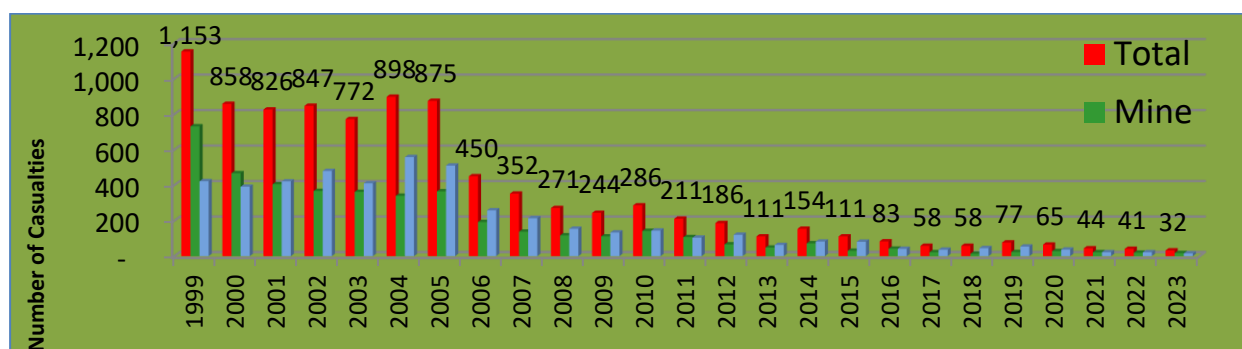
### 4.1. Mine/ERW Risk Education

Mine/UXO awareness activities in Cambodia began in 1991 with the initiation of a program by UNAMIC (United Nations Advance Mission in Cambodia). This program primarily aimed to provide training to returnees and internally displaced people (IDP) resettling in areas along the Cambodia-Thailand border, which were frequently affected by extensive landmine contamination. The objective was to educate and equip these individuals with the knowledge and skills necessary to prevent injuries caused by mines or booby traps.

The Mine/ERW Awareness Program of CMAC was established in 1994, focusing primarily on refugees, IDPs, 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 typically provided by roving educational teams, which conducted presentations in villages outlining the different types of ordnance, the dangers they posed, and steps that could be taken to avoid or minimize the risk of accidents.

Thanks to demining clearance and Mine/ERW risk education programs, casualties decreased steadily over the years. According to data from the Cambodian Mine Victim Information System (CMVIS) of the 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 number of casualties declined from 4,674 in 1979 to 858 in 2000, continuing to drop to less than 100 in 2016, with only 83 casualties recorded. In 2023 alone, Mine/ERW accidents accounted for 32 cases, resulting in 28 injuries and 4 deaths throughout the country, bringing the cumulative total of Landmine/ERW casualties from 1979 to 2023 to 65,037, with 51,184 caused by landmines and 13,853 by ERWs. The following bar chart indicates the number of casualties from 1999 to 2023.

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





Regardless of 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, particularly those residing in the affected areas, these devices pose a daily threat and present serious obstacles to achieving sustainable livelihoods, socio-economic development, and the broader infrastructural goals of the country.

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 landmine/ERW victims. Notably, 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 landmine/ERW clearance and risk education, both of which are necessary for achieving zero accidents in the near future.

To this end, CMAC has established a grassroots volunteer network to effectively deliver messaging that outlines Mine/ERW hazards to affected communities. This initiative has led to the development of five distinct MRE programs, including 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 ensuring 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) as a key component in achieving its objective of zero accidents related to landmines and ERWs, in addition to clearance activities. In pursuit of this goal, every single CMAC staff member, totaling 1,789 individuals as of December 2023, whether in an office or field role, is actively engaged in the MRE network. Particularly, CMAC's Landmine/ERW clearance and intervention teams, including the 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 contribute to MRE activities in the locations where they operate.

To further bolster the MRE efforts, CMAC has deployed a specialized MRE team consisting of 52 highly trained members. As of the end of 2023, this core team has undertaken the responsibility of providing MRE capacity building to a remarkable 5,816 volunteers. Among these volunteers, 3,000 are local authorities and residents working under the auspices of CMAC's core team, 2,323 are national police officers working independently, and 493 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 program collaborates with community development programs to support initiatives for risk reduction and victim assistance, facilitating the reintegration of individuals injured by Mines/ERWs. Currently, CBMRR, boasting a team of 2,335 volunteers, which includes 126 CMAC staff alongside local residents and authorities ranging from village to district level, operates under the auspices of CMAC. This team is actively engaged in providing mine risk education messages in 859 villages across seven provinces 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 program 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 program 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 program 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 and authorities 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) initiative, established in 2004, has been dedicated to disseminating information and raising awareness about the dangers of unexploded ordnance (UXO), abandoned explosive ordnance (AXO), and landmines. Its primary goal is to promote safe behavior among local communities affected by these hazards, including both landmines and explosive remnants of war (ERW).

However, due to financial constraints, the CBURR program was unfortunately suspended in 2010. However, it was once reactivated in 2012 with support from a US project, allowing it to resume providing crucial landmine/ERW risk education messages within heavily ERW-affected provinces. Despite facing fluctuations in assistance, CMAC has remained committed to supporting the CBURR network, utilizing various resources to ensure its continuity.







Currently, CBURR engages 2,988 volunteers, including 2,323 national police officers and 665 CMAC staff, operating under CMAC's auspices. The program delivers Mine/ERW risk education messages in 138 villages across 23 ERW-affected provinces, including Banteay Meanchey, Pailin, Battambang, Pursat, and others. Through these efforts, the CBURR program has successfully expanded its reach, effectively raising awareness of the risks posed by both landmines and ERWs to a wider audience.

#### 4.1.4. MRE Program with National Police

In the realm of Mine Risk Education (MRE) activities, CMAC recognizes the power of collaboration and understands that its efficacy lies in forging partnerships. Over the past several years, CMAC has embarked on a comprehensive endeavor to expand its reach beyond its independent efforts. A 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 Explosive Remnants of War (ERWs) within their respective communities.



By enlisting the support of the local police force, CMAC has effectively harnessed the collective power of both its organization and its police counterparts. 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 close interaction between citizens and local police officers within their communities creates an ideal environment for fostering efficient communication and reporting.



Empowering citizens to actively participate in reporting mine-related incidents or potential threats results in 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 enhances the accuracy and timeliness of information and strengthens the overall safety and security of local communities. Furthermore, citizens 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.

Presently, 2,323 national police officials have received landmine/ERW risk education training from CMAC's MRE teams to become part of the MRE program. These police members are also members of CBURR. 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 Buddhist monks to increase the spread of landmine/ERW awareness throughout the entire country.



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 Mine Risk Education activities. By training police officers to serve as volunteer educators and reporters, CMAC effectively taps into the collective knowledge and presence of citizens while promoting a





safer environment for everyone involved. This collaborative effort optimizes the efficiency of CMAC's operations and empowers individuals to actively contribute to the eradication of landmine/ERW and the overall well-being of their communities.

#### 4.1.5. MRE Program with Dharma Talks

Similar to the program involving the national police, CMAC has recognized the proximity and constant interaction between citizens, particularly laypeople, and the Sangha (Buddhist monks) within their communities. This interaction creates an ideal environment for fostering efficient communication and reporting. Therefore, CMAC has collaborated closely with monks to incorporate Landmine/ERW risk education into Buddhist monks' Dharma talks. Currently, an admirable total of 493 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 and eliminate potential accidents, Buddhist monks conscientiously emphasize the dangers posed by landmines and ERWs during their Dharma talks. They also instruct laypeople and attendees on promptly reporting any encountered landmines, UXOs, AXOs, or suspicious objects to CMAC or the nearest local authorities. These talks occur during religious ceremonies or gatherings involving the Sangha, whether at pagodas or in communities. With this purpose in mind, audience members actively extend these crucial messages to their family members, relatives, friends, and beyond.







With a comprehensive array of programs and unwavering commitment from CMAC's MRE team and its dedicated volunteer network, extensive Mine/ERW risk education initiatives were conducted throughout the nation in 2023, with a particular focus on high-risk areas. As a result, an impressive total of 24,531 MRE courses were conducted, reaching an astounding 1,261,956 households residing in 997 Mine/ERW affected villages. The impact of these courses resonates with an expansive audience of 1,951,485 individuals, encompassing 671,833 men, 780,982 women, 355,707 in-school students, and 142,963 out-of-school children.

Following 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 2023, CMAC responded to an impressive total of 3,459 cases out of 3,879 requests for emergency intervention via all types of volunteer networks. The EOD teams responding to the requests have thus found and collected 1,696 anti-personnel mines (APMs), 38 anti-tank mines (ATMs), 17,958 unexploded ordnances (UXOs), and 2,835 kg of small arms.

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

MRE's Achievements from January to December 2023																
Courses	Households	Audience Group				Items of Mine/ERW Reported from Local Authorities and Communities					Items of Mine/ERW Responded to Local Authorities and Communities					
		Men	Women	Students	Outside-School Children	Total	Requests	APMs	ATMs	UXOs	Small Arms (kg)	Responses	APMs	ATMs	UXOs	Small Arms (kg)
24,531	1,261,956	671,833	780,982	355,707	124,963	1,951,485	3,879	1,912	42	18,288	2,853	3,459	1,695	38	17,958	2,835



## 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 Landmine/ERW 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 landmine/ERW 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 km<sup>2</sup> 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 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 km<sup>2</sup> 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 km<sup>2</sup> per year from 2010 onwards. More notably, the land release conducted by CMAC resonated with almost 200 Km<sup>2</sup> and 282 Km<sup>2</sup> in 2022 and 2023, respectively.



To enhance its land release productivity for the year 2024 and accelerate progress toward achieving Cambodia Mine-Free 2025, CMAC Survey Teams throughout the year 2023 conducted the Baseline Survey in 234 villages out of 11 suspected provinces, including Banteay Meanchey, Battambang, Pursat, Siem Reap, Svay Rieng, Kampong Cham, Preah Vihea, Tbong Khmum, Kratie, Stung Treng, and Kampong Thom. As a result, the teams identified new 872 polygons of suspected minefields and UXO fields, totaling 161,835,105 m<sup>2</sup>, with a combined perimeter of 695,497 meters marked around these areas.





### 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 the Swedish Armed Forces, CMAC established the Mine Detection Dog program in 1996 and launched the program in 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 only 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 the end of 2023, the teams under this category resonate with 114 teams, including 4 Platoon Manual Demining teams (PMD-17 Staff), 5 Battle Area Clearance teams (BAC-7 Staff), 4 Battle Area Clearance teams (BAC-5 Staff), 73 Technical Survey and Clearance teams (TSC-7 Staff), 4 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 has categorized 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 the 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, the 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 the end of 2023, CMAC's Dog Centre has a total of 153 dogs including dog operations, dogs under training, puppies under training, and bitches for breeding.



Among the total number of dogs, 42 were operational. CMAC deployed 34 operational dogs, integrating them with other demining tools into 15 teams. These teams comprised 8 Short Leash Detection Dog Teams (SLD) with 10 staff members each, 4 Cluster Munitions Technical Survey Dog Teams (CTD) with 6 staff members each, 2 Technical Survey Dog Teams (TSD) with 5 staff members each, and one Improvised Explosive Device Dog Team (IED) with 5 staff members. The remaining 8 operational dogs were divided into two teams with 11 staff per team and seconded to MAG.

**Table: CMAC's dogs as of December 2023**

Dog Situation:	Varieties	Sex		Total
		Male	Female	
Dog Operations	EDD/CTD	5	3	8
	SLD	17	11	28
	IED	4	2	6
Dog Under Training	Semi-training	10	5	15
	Full Training	17	11	28
Puppy Under Training	Green training	19	24	43
Bitches For Breeding		0	25	25
Total:		72	81	153





## 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.

As of December 2023, CMAC, in partnership with APOPO, deployed 42 rats and integrated them into 3 Mine Detection Rat Teams (MDR-10 staff) to conduct clearance in Preah Vihear (DU6) and Siem Reap (DU4). The three MDR teams thus released a total of 16,165,676 m<sup>2</sup> by having found and removed 667 landmines, 592 UXOs, and 60 cluster submunitions. The clearance achievements made by MDR teams have been beneficial to 3,834 families, equating to 14,967 people.



### 4.3.1.3. Mechanical Demining

Since its inception in June 1992, CMAC's clearance productivities averaged around 12 km<sup>2</sup> per year, and this rate nearly doubled to 22 km<sup>2</sup> in 2005 by virtue of the arrival and implementation of mechanical demining and has further increased in subsequent years to approximately 40 km<sup>2</sup> 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 December 2023, CMAC deployed a total of 13 Japan Demining Machines (DMs) to integrate with CMAC's Manual Demining to form 13 Demining Machine Teams (one DM for one team) for conducting Mine/UXO clearance under various Demining Units (DUs) throughout the country. Those teams include 6 Platoon Demining Machines (PDM-16 Staff), 3 Demining Machine Large Teams (DML-9 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.







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 to take around 70%-80% of deminers' time spent on cutting the vegetation manually. As of the end of 2023, CMAC deployed 27 BCs out of 44 BCs donated by the Japanese Government, consisting of one Platoon Brush Cutter Machines (PBC-15 Staff), 13 Brush Cutter Machine Teams (BCT-9 Staff), and 13 Brush Cutter Machine-Developments (BC-S-2 Staff).



Similar to its counterpart 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





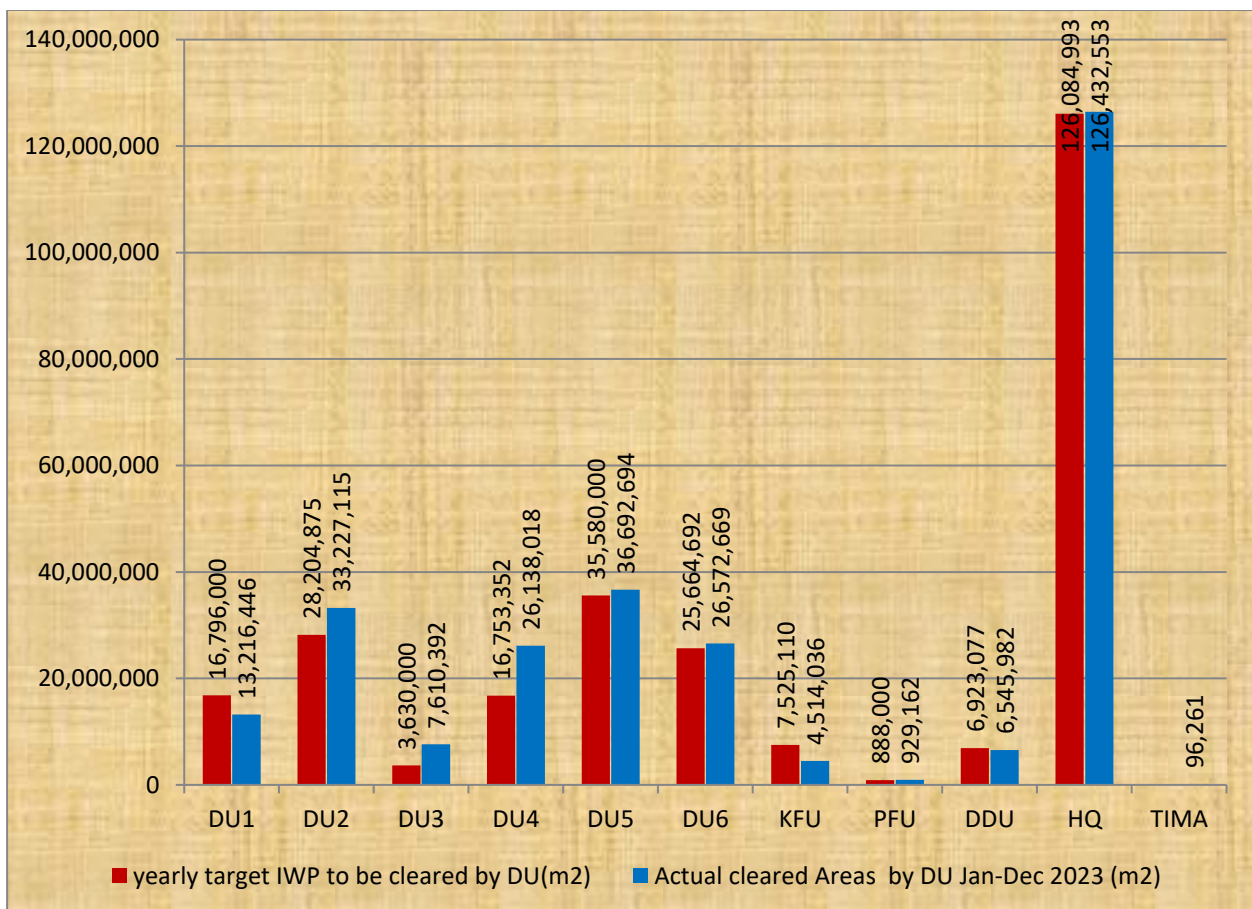
noting that a portion of the BC machines that were not actively employed were temporarily unavailable due to ongoing repair work. Additionally, there were instances where certain machines were extensively damaged, rendering them irreparable and thus unfit for further use.

### 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 1,789 personnel has been meticulously assigned to either office-based or field-based duties, operating across diverse demining 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) operates from its headquarters located in the CMAC Building, nestled on Duong Ngeap Street in Kork Chombak Village, Sangkat Teuk Thla, Khan Sen Sok, PO Box 116, Phnom Penh, within the Kingdom of Cambodia. With a dedicated team of 190 staff members, CMAC HQ serves as the nerve center overseeing office operations nationwide



and coordinating field activities across seven key capital/provinces: Phnom Penh, Kandal, Takeo, Kampot, Kep, Kampong Speu, and Preah Sihanouk.

While top-level management and administrative/office staff are stationed at headquarters, some portions of CMAC's workforce are engaged in fieldwork, dispersed among various teams tasked with clearance operations. Throughout the duration spanning January to December 2023, CMAC HQ made substantial strides in land release initiatives, effectively addressing a sprawling expanse of 126,432,553 square meters contaminated by landmines and other Explosive Remnants of War (ERWs).

This commendable achievement was realized through the meticulous discovery and disposal of 7,111 anti-personnel mines, 15 anti-tank mines, 5 aerial bombs, 50 cluster submunitions, and 9,423 unexploded ordnances (UXOs). Additionally, CMAC HQ expediently removed 507,632 pieces of fragmentation, demonstrating a proactive approach to neutralizing potential hazards. Furthermore, the headquarters' responsive teams promptly addressed 179 requests for intervention from local authorities and communities, ensuring a swift and comprehensive response to emerging threats.

Moreover, CMAC's survey teams played a crucial role in identifying and demarcating hazardous areas, marking a total of 34 new polygons encompassing 8,609,630 square meters. These marked areas, with a combined perimeter of 67,210 meters, serve as vital indicators of potential danger, enhancing safety measures and guiding clearance efforts in affected regions.

In conclusion, the accomplishments of CMAC's headquarters underscore not only the organization's operational efficiency and dedication but also the effectiveness of its leadership and management in orchestrating comprehensive mine action efforts. By efficiently coordinating office operations and field activities, CMAC HQ has played a pivotal role in advancing land release initiatives and ensuring the safety of communities across key provinces. The proactive approach in addressing emerging threats, coupled with the strategic efforts of survey teams in identifying hazardous areas, reflects the organization's commitment to excellence in mine action. With strong leadership at the helm and a dedicated workforce, CMAC continues to pave the way toward a safer and mine-free Cambodia.



## 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, operational SOPs, and more. 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 December 2023, TIMA, with its 34 staff members, orchestrated an impressive array of 14 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 8 comprehensive courses exclusively tailored for the esteemed staff of CMAC itself. These training sessions served as a platform for 405 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.





TIMA proudly hosted international training courses catering separately to representatives from UXO-Lao and Ukraine 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 first training course on Operational Management included 9 trainees from UXO-Lao and 3 trainees from CMAC, totaling 12 participants, while the second training course, namely the Technical Training on Demining Technologies, took place at the start of the year and included 8 trainees from the State Emergency Service of Ukraine (SESU). This training initiative demonstrates a shared dedication to addressing the challenges posed by landmines and ERW contamination through collaboration and knowledge sharing.

In addition, TIMA also welcomed participants from Colombia under the CMAC-JICS cooperation. The third training course catered to the 8 experts from Colombia, focusing on Brush Cutter Maintenance. 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. Later, the fourth one, under the CMAC-APOPO partnership, held at the end of the year, focused on Intensive Basic Demining and had 13 participants via APOPO, including 10 Ukrainians, 2 Colombians, and one Sudanese. 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.

In toto, these remarkable training endeavors, meticulously curated by TIMA, brought together a total of 961 participants, whose collective dedication and commitment to mine action resonated with great pride. The following three 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 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
8	EOD Training	TIMA	Refresher DUs	36	0	36	05Dec23	06Dec23
<b>TOTAL:</b>				<b>285</b>	<b>110</b>	<b>395</b>		

**Table: External Training in 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
<b>TOTAL:</b>				<b>-</b>	<b>-</b>	<b>525</b>		

**Table: International Training in 2023**

No.	Name of Course	Nationality	Trainee	Start	Finish	Venue
1.	UXO-Lao: Operational Management	Cambodian (03 staff)	12	09-01-23	20-01-23	Cambodia
		Laotian (09 staff)		27-02-23	10-03-23	Lao-PDR
2.	SESU-Ukraine: ALIS	Ukrainian	08	16-01-23	20-01-23	Cambodia
3.	Brush Cutter Maintenance	Colombian	08	28-10-23	05-12-23	Cambodia
4.	APOPO: Intensive Basic Demining	Ukrainian	10	11-12-23	29-12-23	Cambodia
		Colombian	02			
		Sudanese	01			
<b>Total:</b>			<b>41</b>			<b>3 CMAC staff</b>





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 twelve months of 2023, TIMA's dedicated Explosive Ordnance Disposal (EOD) team successfully cleared a substantial area spanning 96,261 square meters, which had been contaminated by landmines and ERWs.

Through their meticulous efforts, the EOD team unearthed and safely disposed of 3 aerial bombs, 53 cluster submunitions, and 878 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 21,624 fragments, effectively mitigating the risk of further harm. Furthermore, TIMA's unwavering commitment to community safety was exemplified by its prompt response to 240 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 ERWs. 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 26 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 submunitions, 240 UXOs, 10,799 fragments, and 19 kg of small arms. KFU also responded to 60 intervention requests from local authorities and marked 31 new polygons, indicating the extent of the challenges remaining in Kampong Thom Province. Additionally, KFU conducted 49,570 meters of lining marking.







However, as of December 31, 2023, due to factors such as staff redeployment, retirements, and other considerations, KFU remains with only 26 personnel. Nevertheless, operations continued smoothly. Therefore, the cumulative total operational output of KFU from April to December accounted for 4,514,036 square meters, with findings including 102 anti-personnel mines, one aerial bomb, 148 cluster submunitions, 768 UXOs, 23,270 fragments, and 24 kg of small arms. KFU also responded to 167 requests from local authorities and communities. Moreover, KFU identified 106 new polygons, totaling 19,676,674 square meters, with a combined perimeter of 190,533 meters marked around these areas, further enhancing its mine clearance capacity for the next years.

### 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 2023, DDU, deploying 63 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 achieved significant success in land release, recording an impressive figure of 6,545,982 square meters. This means that a considerable amount of land has been cleared of mines and made safe for development activities.

The dedicated staff members 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 149 anti-personnel mines (APMs) and 16,714 unexploded ordnances (UXOs). In addition to these hazardous items, DDU teams have also collected and removed 43,271 pieces of fragmentation, reducing the risk of injuries caused by these deadly remnants of conflict.



The accomplishment of DDU certainly demonstrate the commitment to creating a safer environment, conducive to development projects across Cambodia. DDU's 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 200 personnel, DU1 successfully achieved significant land release achievements during the period of January to December 2023.



During this designated timeframe, DU1's dedicated teams effectively cleared and released a staggering 13,216,446 square meters of landmine/ERW-contaminated areas. Their concerted efforts led to the discovery and safe disposal of 1,613 anti-personnel mines, 14 anti-tank mines, one cluster submunition, and 1,929 UXOs, thereby promoting safer environments for local communities. Additionally, DU1 diligently removed and meticulously collected 223,268 fragments, as well as 22 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.

DU1's proactive approach encompassed more than just clearing operations. They also responded to 176 out of 177 requests for intervention from both local authorities and communities. Plus, DU1 survey teams identified 17 new polygons with an area of 1,663,713 square meters and marked a combined perimeter of 8,500 meters around these areas. This underscores the exceptional dedication and commitment of DU1's staff to ensuring the safety and well-being of Banteay Meanchey Province's residents. Through their timely responses, well-coordinated





interventions, and identification of new hazardous areas, 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 significant achievements, inclusive of the vast land release, successful disposals, prompt interventions, and identification of new hazardous areas, 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, located in Andoung Chenh Village, Sangkat O'cha, Krong Battambang, 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 Battambang Province.

Throughout the twelve months of 2023, DU2, comprising a staff of 326 dedicated individuals, successfully achieved the release of 33,227,115 square meters of landmine/ERW-contaminated areas. This tremendous feat was accomplished through the discovery and destruction of 5,111 anti-personnel mines, 75 anti-tank mines, 2 aerial bombs, 1 cluster munition, and 10,275 UXOs. Additionally, they diligently removed and collected 515,102 pieces of fragmentation and promptly responded to 450 EOD calls/requests related to Landmine/ERW 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 132 new polygons, totaling 22,534,365 square meters, and performed the lining of marking for a total perimeter distance of 250,753 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 throughout 2023, which include the clearance of over 33 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 hire a new office location in Toul Makak Village, Sangkat Roleab, Krong Pursat, Pursat Province. This relocation follows their move from Pailin province 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.

Throughout 2023, CMAC's DU3, consisting of 179 dedicated staff members, made impressive strides in their efforts to clear landmines and explosive remnants of war (ERW) contaminated areas. With unwavering commitment, they successfully identified and destroyed a staggering total of 990 anti-personnel mines, 1 aerial bomb, and 1,441 unexploded ordnances (UXOs).







Furthermore, the DU3 team also undertook the crucial task of removing and collecting 69,907 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 7,610,392 square meters, these once-contaminated lands can now be utilized for essential infrastructure projects, agricultural purposes, and the establishment of residential and commercial areas. Additionally, DU3's survey teams identified 311 new polygons, totaling 50,809,745 square meters, with a combined perimeter of 32,433 meters marked as minefields, serving as essential warnings to prevent accidental contact with hazardous landmine-affected areas.

The achievements of CMAC's DU3 in 2023 highlight its exceptional dedication and expertise in dealing with the complex challenges associated with landmine and ERW contamination. Through DU3's 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. Additionally, CMAA has already declared Pursat City, Bakan, Krakor, and Kandieng Districts as mine-free zones, further exemplifying the progress made in Pursat Province.

#### Demining Unit 4 (DU4)

Situated in Anlong Pir Village, Trapeang Thom Commune, Prasat Bakong District, Siem Reap Province, DU4 serves as a cornerstone in the mine action endeavors spanning Siem Reap, Kampong Thom, and Banteay Meanchey provinces. With a dedicated team of 167 staff, DU4 has spearheaded a multitude of initiatives, achieving remarkable milestones throughout the expansive landscape from January to December 2023.

Throughout this reporting period, the relentless efforts of DU4 have resulted in the clearance of an impressive 26,138,018 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 sets the stage for further development and prosperity in these provinces.





To achieve these results, the diligent team at DU4 undertook the challenging task of locating and neutralizing various dangerous ordnances. Through their meticulous work, they successfully eliminated 957 anti-personnel mines, 2 anti-tank mines, 1 aerial bomb, 5 cluster submunitions, and 2,374 items of unexploded ordnance (UXOs), along with 5 other munitions. Additionally, they diligently removed and collected 247,230 fragments and 35 kg of small arms, thereby mitigating potential threats and establishing a secure environment.

Furthermore, DU4 has effectively responded to 262 explosive ordnance disposal (EOD) calls and requests from local authorities and communities. This prompt 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 teams at DU4 have undoubtedly made a lasting positive impact on the affected communities, instilling a sense of security and fostering socio-economic development in these provinces.

Additionally, in their relentless pursuit of ensuring safety and security, DU4's survey teams embarked on extensive fieldwork across numerous villages within Siem Reap, Kampong Thom, and Banteay Meanchey provinces. Over the course of January to December 2023, their diligent efforts yielded significant results, with 147 new polygons identified as landmine and explosive remnants of war (ERW) affected areas. These polygons collectively encompassed an extensive area totaling 27,375,871 square meters. As part of their comprehensive approach, DU4 meticulously marked these areas with a combined perimeter spanning 143,568 meters, signifying the presence of potential hazards and emphasizing the need for caution and vigilance in these regions.

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 entirety of 2023, DU5, with its 151 personnel, cleared and released 36,692,694 square meters of contaminated land and destroyed 34 anti-personnel mines, 5 anti-tank mines, 22 aerial bombs, 6,462 cluster munitions, and 9,599 UXOs. They also removed and collected 170,917 pieces of fragmentation and 2,678 kg of small arms, while also responding to 1,491 intervention requests from local authorities and communities.



DU5 also conducted a baseline survey and identified 22 new polygons, totaling 5,552,928 square meters, with a combined perimeter of 2,500 meters marked around those areas. 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)

DU6, headquartered in Siem Reap Province, encountered financial struggles when the Federal Government of Germany ceased funding CMAC in 2016. This decision led to the reallocation of deminers and staff members to other projects, resulting in a temporary halt to DU6's operations. Fortunately, financial constraints were later alleviated, allowing DU6 to reactivate and establish a rented office in February 2019 at its







current address in Sra Aem Khang Tbound Village, Kantuot Commune, Choam Khsant District, Preah Vihear Province.

DU6 comprises 290 staff members tasked with conducting operations in four provinces: Preah Vihear, Oddar Meanchey, Stung Treng, and Kratie. Throughout 2023, DU6 achieved an impressive land release milestone, clearing 26,572,669 square meters of land contaminated by mines and unexploded ordnance (UXO). The team successfully located and destroyed 2,522 anti-personnel mines, 15 anti-tank mines, 28 improvised mines, 1 aerial bomb, 371 cluster submunitions, and 3,755 UXOs. Additionally, they removed and collected 349,535 pieces of fragmentation and 59 kg of small arms. Furthermore, they responded to 368 explosive ordnance disposal (EOD) calls and requests from local communities and authorities, significantly contributing to community safety and well-being.



In addition to their clearance operations, DU6 conducted a baseline survey in various areas, identifying 103 new polygons totaling 154,500 square meters. This data is crucial for planning future clearance operations and ensuring the safety of communities.

The success of DU6 underscores the importance of continued support for mine action initiatives. Adequate financial support is essential to ensure the safety of vulnerable communities and mitigate the devastating impact of unexploded ordnance. DU6's ongoing efforts to remove dangerous explosives are instrumental in creating a more peaceful and secure future for those living in affected areas. It is imperative to sustain and bolster their work to ensure long-term safety and stability.

#### 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 Special Unit of Ammunition Neutralization (SUAN), 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 (TPM), 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 landmines and 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 other similar techniques. 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 and EDD. These initiatives have proven crucial to the safety and security of Cambodian communities and their high-ranking officials by ridding the country of landmines and 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, Dog Centre (DC), under CMAC's ownership, 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, and providing meticulous training that hones their obedience and detection abilities, the staff at DC 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





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

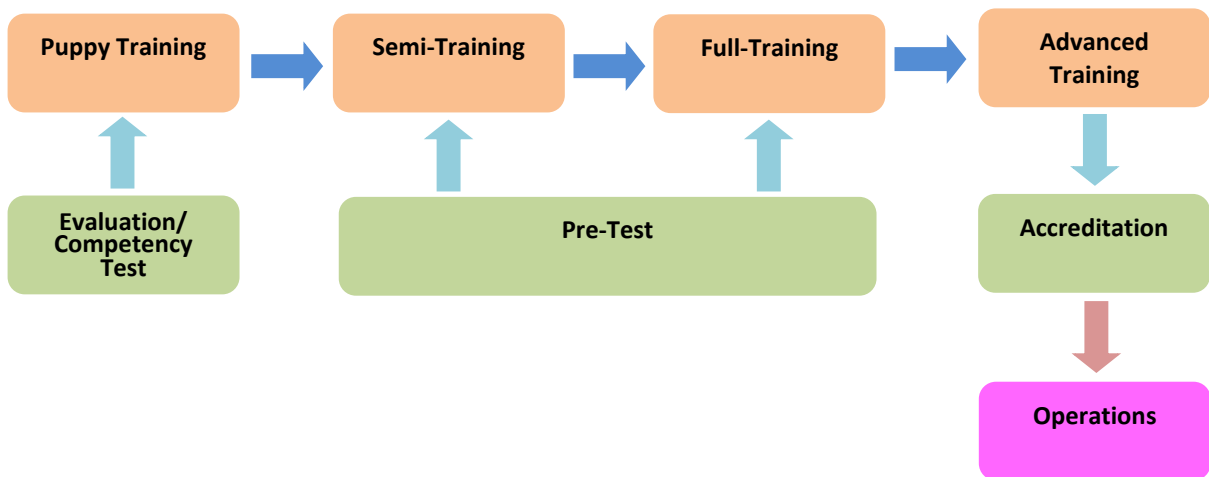


Table: MDD’s Situation as of December 2023

Dog Situation:	Varieties	Sex		Total
		Male	Female	
Dog Operations	EDD/CTD	5	3	8
	SLD	17	11	28
	IED	4	2	6
Dog Under Training	Semi-training	10	5	15
	Full Training	17	11	28
Puppy Under Training	Green training	19	24	43
Bitches For Breeding		0	25	25
Total:		72	81	153





Table: Dog Training Course in the Entirety of 2023

Course Title	Team	No. of Course	No. of Trainees		No. of Instructor	Date	
			Staff	Dog		Start	End
Refresher	SLD06,BHQ01	263	05	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
Refresher	PBC07	271	02	02	01	03-Jul-23	14-Jul-23
Refresher	SLD07, SLD09	272	04	04	01	03-Jul-23	14-Jul-23
Refresher	NCTFS01, BHQ02,SFC911	273	06	12	04	07-Aug-23	18-Aug-23
Refresher	NCTFS02, BHQ02	274	04	04	01	21-Aug-23	31-Aug-23
Refresher	BHQ03	275	04	04	01	11-Sep-23	29-Sep-23
Refresher	IED02, CTD01, 02	276	06	06	04	25-Sep-23	06-Oct-23
Refresher	SLD05,12	277	08	08	02	30-Oct-23	08-Nov-23
Refresher	CTD03,04	278	06	04	02	29-Nov-23	15-Dec-23
Refresher	IED01	280	02	02	01	11-Dec-23	22-Dec-23
Refresher	PDM03,05,09	281	05	68	02	11-Dec-23	22-Dec-23
<b>Total:</b>		<b>18</b>	<b>104</b>	<b>149</b>	<b>38</b>		

Table: Advanced Courses in the Entirety of 2023

Advanced Course							
No	Name Course	N. of Course	N. of Trainees		Instructor	Date	
			Staff	Dog		Start	End
1	Patrol Cr	1	25	05	03	06-Feb-2023	11-Feb-2023
2	Advance Course	61	02	02	02	27-Feb-2023	17-Mar-2023
3	Advance Course	62	05	05	01	27-Mar-2023	26-Apr-2023
4	Advance Course	63	02	02	01	05-Jun-23	30-Jun-23
5	Advance Course	64	03	03	01	19-Jun-23	31-Aug-23
6	Advance Course	65	02	02	01	28-Aug-23	15-Dec-23
<b>Total:</b>		<b>06</b>	<b>39</b>	<b>19</b>	<b>09</b>		



## Special Unit of Ammunition Neutralization (SUAN)

SUAN, initially known as the Explosive Harvesting Program (EHP), was established on 01 March 2005 through a collaborative effort between CMAC-Golden West, with generous financial and technical support from the United States of America via the Golden West Humanitarian Foundation. This innovative program aims to address the persistent threat of unexploded ordnances (UXOs) by collecting various types of explosive remnants from CMAC DUs, Demining NGOs, communities, and defective bombs stored in the warehouses of the Royal Cambodian Armed Forces (RCAF) and National Police. These collected materials are then meticulously recycled into new explosives, which are utilized to safely detonate landmines or UXOs that cannot be safely excavated or transported to secure locations.



Since its inception in 2005 until December 2023, SUAN has achieved remarkable outcomes, demonstrating its effectiveness in mitigating the risks posed by UXOs and landmines. Over the years, the program has successfully dismantled/cut 44,984 ordnances and destroyed 286,939 individual ordnance items. Additionally, it has recovered substantial amounts of free-from-explosive (FFE) metals, totaling 227,365.75 kilograms, along with 81,817.98 kilograms of explosives. Furthermore, SUAN has produced an impressive total of 606,261 blocks of newly recycled explosives, contributing significantly to the arsenal of tools used for mine and UXO clearance operations.

In the entirety of 2023 alone, with a dedicated team of 7 staff members, SUAN continued to make strides in its mission. During this reporting period, the program successfully dismantled 1,051 ordnances, destroyed 60,159 ordnance items, and recovered 10,041.61 kilograms of FFE metals and 3,060.28 kilograms of explosives. Additionally, SUAN generated 11,500 blocks of newly recycled explosives, further enhancing its capacity to address the UXO threat effectively.





These achievements underscore the vital role of SUAN in safeguarding communities and promoting peace and stability in Cambodia. By collecting and recycling various types of explosive remnants, the program 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. The dedication and professionalism of the SUAN team exemplify a concerted effort to alleviate the impact of explosive remnants of war and foster the well-being of affected communities across Cambodia.

**Table: SUAN's Achievements in the Entirety of 2023**

<b>2023</b>	<b>Ordnance Processed (Cut)</b>	<b>Ammunition Found &amp; destroyed</b>	<b>Recovering of FFE metals (Kg)</b>	<b>Recovering of explosives (Kg)</b>	<b>Producing of newly recycled explosives (blocks)</b>
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
July	270	0	775.80	125.10	1600
August	80	12108	284.75	39.45	00
September	106	6936	331.50	54.61	00
October	239	8068	622.90	114.74	3100
November	87	9360	511.25	218.59	00
December	32	14948	4765.40	1297.89	00
<b>TOTAL</b>	<b>1,051</b>	<b>60,159</b>	<b>10,041.61</b>	<b>3,060.28</b>	<b>11,500</b>



## 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 marked a significant milestone in enhancing the safety and security of the country's waterways. With pivotal technical support from the US Government during its initial training phase, SUUO developed robust capacity and expertise. Subsequently, the unit was entrusted by the Royal Government of Cambodia (RGC) with the critical responsibility of executing intricate underwater clearance operations, encompassing the retrieval of underwater unexploded ordnance (UXO) and abandoned explosive ordnance (AXO), searches and clearances of sunken barges, bridges, and piers, evidence collection, stranded vessel retrieval, downed aircraft recovery, damaged structure and body recovery, and personal rescue missions.



Following a dedicated training and trial operations phase in 2013, SUUO commenced full-scale operations in 2014 and has since achieved remarkable milestones in safeguarding high-ranking government officials and ridding the riverbed of explosive hazards. To date, SUUO has located





and retrieved a total of 24,755 explosive items, 4,672 kilograms of small arms, and 21,804 kilograms of fragmentation.

These significant accomplishments were made possible through the unwavering trust of the government, particularly from the inter-ministries overseeing underwater clearance operations, allowing SUUO to conduct thorough clearance activities in riverbeds. Situated within the premises of the Technical Institute for Mine Action (TIMA), SUUO comprises

68 staff members, fulfilling both office and field roles. Field diving tasks are performed by specialized teams of demining divers. In 2023 alone, SUUO retrieved an impressive 21,656 explosive items of projectiles and 21,804 kilograms of fragmentation from the riverbed.



The remarkable efforts undertaken by SUUO underscore the effectiveness of Cambodia's mine action initiatives and exemplify the nation's steadfast dedication to ensuring the safety and well-being of its citizens. With continued support from the Royal Government of Cambodia (RGC), CMAC's SUUO will persist in implementing innovative and targeted solutions to address the diverse challenges encountered in Cambodian waterways.


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

No.	Description	No. of Explosive Items	Weight (Kg)	Other
1	Trip Flare (mine)	186		
2	Mortar 60 mm	13,708		
3	Mortar 81 mm	1,056		
4	Mortar 107 mm	15		
5	Artillery 75 mm	3,650		
6	Artillery 105 mm	2,062		
7	Artillery 155 mm	293		
8	Launcher Grenade 40 mm	682		
9	Rocket (RPG-7)/85 mm	1		
10	Hand Grenade M-67	3		
11	Fragments		21,804	
<b>Total</b>		<b>21,656</b>	<b>87,245 Kg (Mine, ERW, Fragment)</b>	

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

In response to Cambodia's prolonged struggle with landmines and explosive remnants of war (ERW), the Cambodia Mine Action Center (CMAC) has implemented a multifaceted approach to community support and victim assistance, integrating sustainable development activities into its demining initiatives. In pursuit of this aim, CMAC established the Special Unit of Post-Clearance Development & Victim Assistance (PCD) in the year 2007, aimed at fostering socio-economic advancement in areas affected by landmines and ERWs.







PCD collaborates with international non-governmental organizations, private companies, and other entities to provide development aid to post-clearance regions, focusing on infrastructure projects to enhance socio-economic conditions in provinces like Banteay Meanchey, Battambang, Pailin, and Pursat. Following successful demining activities, PCD undertakes projects to convert minefields and UXO fields into green farmland.

Since its inception, PCD has initiated various community development initiatives, including the construction of schools, markets, roads, canals, and water structures, coupled with agricultural and animal husbandry training for local communities. Notably, the unit has received support from Japan for projects like the Project for Integrated Mine Clearance and Landmine Victim Assistance, Phase I (PIMV-I), and Safety Village Construction (SVC).

In 2022, PCD executed several development projects, such as rural road construction, market establishment, drainage infrastructure, and school construction, alongside agricultural training in Pailin and Pursat provinces. Furthermore, under the CMAC-JMAS cooperation, PCD contributed to laterite road construction, waterway development, and pond and school repairs in Banteay Meanchey Province.

Despite significant progress, PCD faces temporary suspension due to project uncertainties and changes in donor priorities following the cessation of funding from JMAS. However, unit personnel have integrated into other mine action programs to sustain momentum in Cambodia's post-clearance regions. Currently, 4 standby staff members maintain unit facilities and equipment, awaiting the commencement of new projects.

Additionally, victim assistance, a key aspect of PCD's focus, is now conducted by Mine Risk Education (MRE) teams. CMAC recently launched the Socio-Economic Support to Landmines and ERW Victims (SLV) project, targeting disabled individuals affected by landmines and ERWs in Pursat, Battambang, Pailin, and Banteay Meanchey provinces. Initially piloted in Samlot district, Battambang province, SLV expanded to Koas Krala district in the same province and various districts in Pailin province.







During the pilot phase from October to December 2023, SLV provided aid to 110 amputees in the Battambang and Pailin provinces, including repairs for prosthetic limbs, walking canes, and wheelchairs. Additionally, essential first aid kits containing medicines, bandages, and antiseptics were distributed to 62 amputees. The project also provided husbandry and agricultural consultations to 65 amputee families and established three disabled/amputee communities in Battambang province.



These combined efforts in demining and land clearance have yielded significant and far-reaching impacts, substantially improving the lives of Cambodians, especially the disabled, and driving socio-economic development in the country. The outcomes include enhanced safety, increased land accessibility for agriculture and infrastructure, and economic growth. Moreover, these





initiatives mitigate national risks posed by landmines and ERWs while fostering an environment conducive to achieving sustainable development goals. The ongoing commitment to demining in Cambodia exemplifies a vital pathway to long-term prosperity and a brighter future for the nation.

### 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 Krala 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.







The efforts of CDC have not only positively impacted retired CMAC staff members but have also brought significant benefits to individuals and communities throughout the region. Through the provision of essential infrastructure such as schools, markets, roads, ponds, reservoirs, canals, and drainage systems, CDC has played a crucial role in enhancing the quality of life for countless people. With a dedicated team of 9 staff members, CDC ensures that this vital infrastructure remains in pristine condition, serving as the backbone of community development and progress.



In the year 2023, CDC achieved notable milestones in the realm of infrastructure rebuilding and agricultural revitalization. The center spearheaded the restoration, repair, and construction of several key roads, spanning a total of 8,000 meters of Road No.1, 2,700 meters bordering the army's land, and 3,600 meters of Road No.29. Additionally, CDC undertook extensive agricultural initiatives, cultivating a diverse range of crops including 566 cacti, 1 hectare of adlay millet (*Coix lacrym-jobi*), 4 hectares of sorghum, 300 papaya plants, and 500 eggplant plants.



Furthermore, CDC's commitment to environmental conservation was evident in their planting of 284 Kino trees (known as Doeum Thnong in Khmer) and 568 bamboo plants, alongside the production of 3,000 bamboo seedlings for future planting endeavors.





In addition to infrastructure and agricultural endeavors, CDC made significant progress in forest clearing and land cultivation for agricultural purposes. With 406 hectares of forest cleared, 178 hectares plowed and cultivated, and 208 hectares dedicated to planting land border posts, CDC has laid the groundwork for sustainable agricultural practices and economic growth in the community.

To further promote sustainable agriculture and empower local communities, CDC offered an agricultural training course on Vegetable Production and Food Processing to 60 CMAC retirees. The comprehensive course, held at the CDC premises, provided practical training on the cultivation of climate-adapted vegetable crops and food processing techniques. By equipping





retirees with valuable skills and knowledge, CDC seeks to foster economic empowerment and enhance livelihood opportunities for individuals in the community.



Reflecting on CDC's achievements, it is essential to recognize the sacrifice and dedication of CMAC staff members who have contributed tirelessly to the center's success. Their unwavering commitment to community development and economic prosperity has played a pivotal role in shaping the future of Cambodia, particularly in securing a prosperous retirement for themselves. Moving forward, it is imperative for stakeholders to continue supporting CDC's endeavors, celebrating their achievements, and collaborating to build a brighter, safer, and more prosperous tomorrow for all.







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

Nestled in the serene locale of Anlong Pir Village, Trapeang Thom Commune, Prasat Bakong District, Siem Reap Province, lies the Peace Museum of Mine Action (PMA). This modest museum finds its home within a small exhibition room within DU4, under the watchful eye of CMAC HQ in Phnom Penh. Initially conceived as an informational hub for mine action efforts, the museum has since evolved into the grand "Peace Museum of Mine Action," embodying CMAC's core values and striving to educate the younger generation about Cambodia's wartime legacy.

The inauguration of PMA in July of the year 2017 was a significant event, drawing high-ranking officials, embassies, donors, and development partners who gathered to celebrate its mission. Presently, PMA is in the midst of expansion, with ambitious plans to transform into the Techo Peace Museum (TPM), named by Samdech Techo Prime Minister Hun Sen via an electronic note dated 09 June 2023, and generously supported by the People and Government of Japan. Scheduled for completion in 2025, TPM will stand as a beacon of peace, welcoming visitors from around the globe to witness Cambodia's journey firsthand.





While the preparations for TPM are underway, PMA continues to fulfill its educational mandate with a dedicated team of 5 landmine/ERW victim staff. Their efforts focus on preserving the museum's integrity and offering insightful presentations and guided tours to both local and international visitors. Despite being a work in progress, PMA remains a hub of activity, attracting 1,694 visitors in the entirety of 2023 alone. This growing interest underscores Cambodia's commitment to peace and development, as it strives to overcome the challenges of its past.







As visitors from around the world continue to explore its exhibits and learn about Cambodia's journey, the museum serves as a testament to the country's resilience and determination. With each passing day, the museum's impact really deepens, inspiring future generations to embrace the values of peace and reconciliation. In the face of adversity, Cambodia's unwavering spirit shines brightly through institutions like PMA,



illuminating the path toward a brighter, more peaceful future for all. In conclusion, the Peace Museum of Mine Action and its forthcoming evolution into the Techo Peace Museum represent pivotal elements in Cambodia's post-war development narrative. As the museum prepares for expansion, its role in promoting peace, fostering tolerance, and nurturing understanding will be even more pronounced, both domestically and globally. It's imperative to acknowledge the unwavering dedication of the PMA staff and CMAC leadership,





who tirelessly work to preserve Cambodia's historical memory while charting a path toward a brighter future.







Table: Visitors to Peace Museum in 2023

2023	Khmer			Foreigner			Monthly Total	Other/Remark
	Female	Male	Total	Female	Male	Total		
January	10	11	21	16	45	61	82	Cambodian=21, Japanese=10, American=17, German=1, Vietnamese=1, French=4, Ukrainian=16, Lao (UXO-Lao)=10, Maltese=2.
February	7	12	19	50	46	96	115	Cambodian=19, French=7, Australian=6, American=3, Europeans=61, Canadian=1, Chinese=1, Japanese=15, Filipino=2.
March	3	8	11	42	97	139	150	Cambodian=11, American=6, Japanese=127, French=3, Portuguese=2, Singaporeans=1.
April		10	10	9	121	130	140	Cambodian=10, American=3, Australian=115, French=2, Swiss=1, Japanese=1, Russian=1, Chinese=4, Indian=3.
May	1	3	4	39	45	84	88	Cambodian=4, Brazilian=2, Japanese=7, American=16, Chinese=59.
June	4	8	12	39	14	53	65	Cambodian=12, Russia=2, American=12, English=2, Japanese=5, Indonesian(ARMAC)=32
July	89	66	155	32	76	108	263	Cambodian=155, Australian=74, French=2, American=1, Japanese=30, Hispanic=1.
August	81	97	178	70	46	116	294	Cambodian=178, Japanese=100, Vietnamese=5, Thai=5, Filipino=2, American=2, Canadian=1, German=1.
September	1	3	4	47	35	82	86	Cambodian=4, English=2, Lao (UXO-Lao)=8, Japanese=24, Australian=34, Colombian=14,
October	29	24	53	27	34	61	114	Cambodian=53, Japanese=40, English=3, American=4, Swiss=2, Colombian (Training)=8, Indian=4.
November		4	4	110	90	200	204	Cambodian=4, Chinese=37, Japanese=103, Swedish=28, Norwegian=29, Polish=1, Belgian= 2.
December	9	10	19	21	53	74	93	Cambodian=19, Thai=7, Australian=2, Indian=1, Hispanic=1, German=1, Japanese=50, Canadian=2, Swiss=2, English=5, German=1, Italian=1, Iraqi=1.
<b>Grand Total</b>	<b>234</b>	<b>256</b>	<b>490</b>	<b>502</b>	<b>702</b>	<b>1,204</b>	<b>1,694</b>	



## 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 25 individuals who cater to the repair needs of all CMAC's Demining and Special Units across the country.



In the entirety of 2023, CWS provided exceptional repair services, performing 64 repairs on mechanical demining machines and 188 repairs on vehicles, including cars and heavy trucks. The workshop serviced a total of 346 cars, 68 mechanical demining machines, 80 trucks, and 2 generators from DU1, DU2, DU3, DU4, DU6, PFU, and CDC. Additionally, CWS conducted 12 inspections to ensure the proper use and maintenance of cars and mechanical demining machines. What is more, CWS successfully conducted 142 separate trailer movements to relocate mechanical demining machines from one site to another.







In addition to the completed tasks thereof, the workshop's skilled repair experts also provided 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 December 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 8 courses, consisting of Pedagogy and Teaching Methodology, Basic Demining, Patrol Dog, Basic Dog Handling, TSS/TSO, and 3 EOD courses, resonates with a participation of 395 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 Entirety 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
8	EOD Training	TIMA	Refresher DUs	36	0	36	05Dec23	06Dec23
<b>TOTAL:</b>				<b>285</b>	<b>110</b>	<b>395</b>		





#### 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 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: External Training in 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
<b>TOTAL:</b>				-	-	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 the 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 was held in order to develop human resources and strengthen the institutional capacity of involved agencies.

Throughout the reporting period spanning from January to December 2023, CMAC played a pivotal role in orchestrating four comprehensive international training courses within Cambodia, as part of collaborative efforts under both the CMAC-JICA South-South Cooperation, CMAC-JICS, and CMAC-APOPO initiatives. These courses served as platforms for the exchange of expertise and best practices, welcoming a combined total of 38 foreign trainees hailing from diverse backgrounds. The primary objective of these courses was to empower participants with enhanced skills and knowledge pertinent to mine action and demining operations, thereby bolstering their capacity to contribute effectively to global efforts in mitigating the dangers posed by landmines and explosive remnants of war.

The first training course, dedicated to Operational Management, was meticulously crafted to enhance the skills and expertise of personnel from UXO-Lao. The course boasted a diverse cohort of 12 trainees, comprising 9 individuals from Laos (UXO-Lao staff) and 3 from Cambodia (CMAC staff). Spanning from 9 January to 20 January 2023, this comprehensive training program provided participants with in-depth insights and practical knowledge in operational management within the context of mine action and demining operations. Following the initial session in Cambodia, a follow-up session was conducted in Lao-PDR from 27 February to 10 March 2023, further solidifying the learning outcomes and fostering cross-border collaboration in mine action initiatives.





The second training course, tailored for 8 personnel of the State Emergency Service of Ukraine (SESU), provided a crucial opportunity for individuals hailing from the war-torn nation of Ukraine to enhance their expertise in demining technologies. The course, focused on Technical Training on Demining Technologies, delved into the intricacies of implementing cutting-edge solutions to address the challenges posed by landmines and explosive remnants of war (ERWs). A central aspect of the training



was the comprehensive exploration of the Advanced Landmine Imaging System (ALIS), a groundbreaking technology developed by Japan. Equipped with dual sensors, ALIS offers unparalleled capabilities in mine detection, thereby significantly enhancing operational efficiency and safety in demining operations. Conducted in Cambodia from 16 January to 20 January 2023, this intensive training program provided participants with hands-on experience and practical insights into the latest advancements in demining technologies, empowering them to contribute effectively to mine action efforts in their home country.





The third training was about mechanical demining with a focus on Brush Cutter Maintenance. With the sponsorship from the Japan International Cooperation System (JICS), CMAC conduct the training course in Cambodia from November to December 2023. This course welcomed 08 Colombian experts.

The third training course was dedicated to mechanical demining, with a specific focus on Brush Cutter Maintenance. Solely sponsored by the Japan International Cooperation System (JICS), CMAC organized and conducted this specialized training course in Cambodia from November to December 2023. The course catered to the needs of 08 Colombian experts, providing them with comprehensive instruction and hands-on experience in the



the maintenance and operation of brush cutters for efficient and safe demining activities. Through this initiative, CMAC aimed to enhance the expertise and capabilities of international demining professionals, furthering Colombia's mission to mitigate the risks posed by landmines and explosive remnants of war.





The fourth training course catered to APOPO staff members based in Ukraine and centered on the Intensive Basic Demining Course, held mainly at TIMA. This comprehensive course spanned three weeks and involved 13 international participants, including 10 from Ukraine, 2 from Colombia, and 1 from Sudan. Participants received extensive training in mine-marking techniques. Practical exercises were conducted in simulated minefield environments to ensure participants were well-prepared to handle real-world demining challenges. Additionally, the course covered the operation and utilization of mine detector machines such as VMH3Cs, Mine Lap F3, Ebinger Upex 740M, and VMX10, providing participants with hands-on experience in using advanced detection technology to locate and neutralize explosive hazards effectively.



These international training courses, spearheaded by CMAC through collaborative initiatives such as the CMAC-JICA South-South Cooperation, CMAC-JICS, and CMAC-APOPO platforms, represent invaluable opportunities for facilitating knowledge exchange and fostering collaboration among nations engaged in mine action and demining operations. By providing a forum for sharing best practices, lessons learned, and cutting-edge technologies, these courses empower participants with the tools and insights needed to enhance the effectiveness and efficiency of mine action efforts worldwide. Through such concerted efforts, we can collectively work toward the overarching goal of creating safer and more secure communities, free from the threat of landmines and explosive remnants of war.

**Table: International Training in 2023**

No.	Name of Course	Nationality	Trainee	Start	Finish	Venue
1.	UXO-Lao: Operational Management	Cambodian (03 staff)	12	09-01-23	20-01-23	Cambodia
		Laotian (09 staff)		27-02-23	10-03-23	Lao-PDR
2.	SESU-Ukraine: ALIS	Ukrainian	08	16-01-23	20-01-23	Cambodia
3.	Brush Cutter Maintenance	Colombian	08	28-10-23	05-12-23	Cambodia
4.	APOPO: Intensive Basic Demining	Ukrainian	10	11-12-23	29-12-23	Cambodia
		Colombian	02			
		Sudanese	01			
<b>Total:</b>			<b>41</b>			3 CMAC staff

#### 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 eight 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, a study on the use and maintenance of Germany Vallon VMH3, Evaluation on ALIS in Ukraine, Operational Testing of Drone dji Mavic 3pro, Operational Testing of Vallon Ferrous Locator VXT1, and Brush Cutter Maintenance.





**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 marks yet another significant advancement by CMAC's R&D teams in March 2023. Following an extensive reliability study of the ALIS, the R&D team proceeded to organize internal training sessions tailored for CMAC's demining team leaders and field staff. These comprehensive sessions aimed to equip personnel with the necessary skills and knowledge to operate and maintain ALIS mine detector machines efficiently. By focusing on optimal usage and maintenance practices, both during active operation and downtime (rest periods), the training ensured that CMAC's demining efforts could proceed with maximum effectiveness and safety.



**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.







**Evaluation of ALIS in Ukraine:** In July 2023, CMAC, sponsored by JICS, dispatched three highly skilled instructors specializing in ALIS Dual-sensor detector machines to assess the deployment of ALIS technology in Ukraine. This comprehensive evaluation, conducted in Poland, aimed to meticulously examine various aspects of ALIS functionality, including the precise identification of locations indicated by the ALIS Dual-sensor detector upon detecting landmines, UXO, or similar objects underground. Additionally, the assessment focused on the effective implementation of Ground-Penetrating Radar (GPR) to capture detailed images of landmines, UXO, or other objects buried beneath the surface.



**Operational Testing of Drone dji Mavic 3 Pro:** In August 2023, the Research & Development team, in collaboration with Drone Cambodia, embarked on an extensive operational testing phase for the dji Mavic 3 Pro drone at the Technical Institute of Mine Action (TIMA). The primary aim of this initiative was to thoroughly evaluate the drone's capabilities in real-world scenarios. With CMAC's strategic vision of harnessing cutting-edge technology for minefield assessments, the testing involved active participation from CMAC field staff. This included individuals specialized in minefield surveys, who provided invaluable insights and feedback throughout the testing process.



**Operational Testing of Vallon Ferrous Locator VXT1:** In August 2023, the Research & Development team embarked on an extensive operational testing phase for the Vallon Ferrous Locator VXT1, a cutting-edge aerial bomb detector machine. Situated at the esteemed Technical Institute of Mine Action (TIMA) in Kampong Chhnang province, this testing initiative represented





a pivotal step forward in CMAC's ongoing commitment to harnessing advanced technology for mine action endeavors. With a primary focus on evaluating the machine's efficacy and reliability, the testing protocols were meticulously crafted to simulate real-world scenarios and environmental conditions. The Vallon Ferrous Locator VXT1, renowned for its precision and sensitivity, underwent rigorous scrutiny to ascertain its capability to detect aerial bombs, particularly the MK82, buried underground at depths of up to 8 meters.



**Brush Cutter Maintenance:** During the intensive training course on Brush Cutter Maintenance held from October to December 2023, the Research & Development team spared no effort in equipping 8 Colombian experts with the necessary skills and expertise. Through a combination of theoretical instruction and practical field exercises conducted in Siem Reap province, Cambodia, participants gained invaluable insights into the operation and maintenance of Brush Cutters. The training aimed to enhance their proficiency in utilizing this essential equipment for effective demining operations, ultimately contributing to the ongoing efforts to ensure clearance speed, safety, and the successful elimination of explosive hazards in mine-affected areas.



In conclusion, CMAC's commitment to research and development represents a crucial pillar of its mission to mitigate the threat of landmines and ERW in Cambodia. By investing in innovative technologies and providing comprehensive training opportunities, CMAC is not only enhancing its operational effectiveness but also elevating Cambodia's standing in the global mine action community. As CMAC continues to advance its R&D initiatives, the mine action sector in Cambodia is poised for significant progress and continued success in the years ahead.





## 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, overseeing the comprehensive planning and monitoring of various projects, and ensuring their successful implementation. Lastly, the quality management faction assumes the onus of meticulously examining potential errors, implementing corrective measures, 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) stands as a leading national demining organization under the Royal Government of Cambodia's (RGC) efforts to conduct landmine and Explosive Remnants of War (ERW) clearance, as well as disseminating awareness of these explosive dangers across the country. Maintaining a robust and reliable workforce is essential for CMAC to effectively respond to the diverse demands of its mission, which is centered on "saving lives and supporting development for Cambodia."

Throughout the twelve-month period from January to December 2023, CMAC's workforce experienced fluctuations due to various factors such as retirements, long-term sickness, resignations, new appointments, and other similar circumstances. These factors contributed to continuous changes in staff numbers during this period. Nevertheless, despite these challenges, CMAC managed to maintain a consistent workforce of 1,789 staff members by the end of December, including both permanent and Short Service Agreement (SSA) staff members, responsible for supporting field operations and office functions.

During this period, CMAC also had 29 staff members on temporary leave of absence from their roles. However, this figure did not significantly impact the organization's ability to provide crucial services. CMAC took proactive measures to ensure that necessary support was available, such as redistributing tasks among existing staff members or temporarily hiring additional personnel to fill any gaps, thereby mitigating the risk of disruption.

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



**Table: Number of CMAC Staff Members as of December 2023**

No.	Demining and Special Units	Permanent Staff	SSA Staff	Leave of Absence	Jan-Dec 2023
					Total Staff
1	Headquarters	161	20	9	190
2	Demining Unit 1 (DU1)	175	23	2	200
3	Demining Unit 2 (DU2)	284	36	6	326
4	Demining Unit 3 (DU3)	163	15	1	179
5	Demining Unit 4 (DU4)	142	23	2	167
6	Demining Unit 5 (DU5)	141	8	2	151
7	Demining Unit 6 (DU6)	260	27	3	290
8	Development Demining Unit (DDU)	58	4	1	63
9	Kampong Thom Frontline Demining Unit (KFU)	21	3	2	26
10	Technical Institute of Mine Action (TIMA)	22	11	1	34
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)	68	0	0	68
14	Explosive Harvesting Program (EHP)	6	1	0	7
15	Community Development Centre (CDC)	6	3	0	9
16	Central Workshop (CWS)	19	6	0	25
17	Peace Museum of Mine Action (PMA)	2	3	0	5
<b>Total:</b>		<b>1,565</b>	<b>195</b>	<b>29</b>	<b>1,789</b>

The table indicates that CMAC fluctuated between 1,760 and 1,789 staff members during the period, with the organization's total workforce standing at 1,760 actively performing field operations and office functions by the end of December, while 29 were on temporary leave of absence.

Despite the challenges posed by the changes in staff numbers during this period, CMAC remained effective in its mission. This underscores the organization's commitment to maintaining a highly skilled and dedicated workforce capable of responding to the diverse demands of its mission.

In conclusion, the fluctuations in CMAC's staff numbers from January to December 2023 were driven by factors such as retirements, long-term sickness, resignations, new appointments, and other circumstances. Despite these fluctuations, CMAC successfully maintained a reliable workforce of 1,760 staff members, including permanent and SSA staff members, actively supporting field operations and office functions. This resilience highlights CMAC's dedication to maintaining a robust and dedicated workforce capable of addressing the challenges inherent in its mission.

### 5.1.2. Staff Training

In 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 December 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 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	Agricultural Training	CDC	CMAC staff	49	6	55	06Oct23	25Aug23
4	Patrol Dog	TIMA	CMAC Staff	18	9	27	06Feb23	11Feb23
5	Basic Dog Handling	TIMA	CMAC Staff	21	4	25	29May23	18Aug23
6	ALIS Training	TIMA	CMAC Staff	-	-	38		
7	TSS/TSO	TIMA	Refresher DUs	19	12	31	19Jun23	23Jun23
8	Specialist EOD I	TIMA	Refresher DUs	24	31	55	26Jun23	09Oct23
9	Specialist EOD I	TIMA	Refresher DUs	40	14	54	31Jul23	23Nov23
10	EOD Training	TIMA	Refresher DUs	36	0	36	05Dec23	06Dec23
<b>TOTAL:</b>				<b>285</b>	<b>110</b>	<b>488</b>		

**Table: Externally Countrywide Training in 2023 (For National Police, RCAF, and NPA)**

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
4	Basic First Aid Training Course	NPA	NPA staff	20	23	43		
<b>TOTAL:</b>				<b>-</b>	<b>-</b>	<b>568</b>		

**Table: International Training in 2023**

No.	Name of Course	Nationality	Trainee	Start	Finish	Venue
1.	UXO-Lao: Operational Management	Cambodian (03 staff)	12	09-01-23	20-01-23	Cambodia
		Laotian (09 staff)		27-02-23	10-03-23	Lao-PDR
2.	SESU-Ukraine: ALIS	Ukrainian	08	16-01-23	20-01-23	Cambodia
3.	Brush Cutter Maintenance	Colombian	08	28-10-23	05-12-23	Cambodia
4.	APOPO: Intensive Basic Demining	Ukrainian	10	11-12-23	29-12-23	Cambodia
		Colombian	02			
		Sudanese	01			
<b>Total:</b>			<b>41</b>			<b>3 CMAC staff</b>





### 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 twelve-month period, from January to December 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 organization'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-December 2023)**

No	Description	Staff: Jan-Dec 2022	Staff: Jan-Dec 2023
1.	New recruits	440	62
2.	Position/Location Rotation	909	1,717
3.	Position/Salary Promotion	216	1,306
TOTAL		1,565 Staff	3,085 Staff

#### 5.1.4. Staff Separation

During 2023, CMAC experienced a series of staff separations, resulting in the termination of 77 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 resignation. Despite CMAC's efforts to foster a positive work environment and provide ample opportunities for growth and development, 30 staff members chose to resign during the year. While the specific reasons for each resignation may vary, factors such as personal career aspirations, family obligations, or better opportunities elsewhere might have influenced their decisions. CMAC acknowledges the contributions of these individuals and wishes them well in their future endeavors.

Additionally, the organization experienced staff separations due to unfortunate circumstances such as death. Tragically, eight staff members passed away during the year. The loss of these individuals impacted the organization professionally and emotionally, as they were valued members of the CMAC family. CMAC extends its deepest condolences to the families and loved ones of the deceased and honors their memory for their dedication and service.

Furthermore, retirement was another significant factor contributing to staff separations in 2023. A total of 37 staff members chose to retire from CMAC during the year, marking the culmination of their careers and the beginning of a new chapter in their lives. Retirement is a natural progression in one's professional journey, and CMAC celebrates the contributions and achievements of these retirees over the years. Their experience and expertise have been invaluable to the organization, and their legacy will continue to inspire future generations of CMAC staff.

Moreover, a small number of staff separations occurred due to the end of contracts. Two staff members saw their contracts come to an end during the year, either due to project completion or other operational reasons. While the termination of these contracts may signal the end of their formal employment with CMAC, the organization remains grateful for their contributions and wishes them success in their future endeavors.

In conclusion, staff separations are a natural part of organizational dynamics, and CMAC recognizes and respects the decisions of its departing staff members. Whether through





resignation, retirement, death, or contract completion, each separation represents a unique chapter in the organization's journey. CMAC remains committed to supporting its staff through transitions and ensuring a positive work environment for those who continue to serve the mission of building a safer Cambodia.

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

No	Separation Factors	Staff: Jan-Dec 2022	Staff: Jan-Dec 2023
1.	Resignation	27	30
2.	Death	9	8
3.	Retirement	25	37
4.	End Contract	3	2
<b>Total</b>		<b>64 Staff</b>	<b>77 Staff</b>

### 5.1.5. 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 December 2023, the Human Resource (HR) 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 78 CMAC staff to hospitals across the country. Unfortunately, among these cases, eight 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-December 2023)**

Description	Sick CMAC staff and referrals												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HQ	-	-	-	-	1	1	-	1	-	1	1	-	5
DU1	3	1	-	-	1	-	-	2	1	1	2	1	12
DU2	3	2	-	-	-	2	-	1	1	-	4	7	20
DU3	-	-	-	1	1	-	-	-	-	-	1	-	3
DU4	-	3	1	-	-	-	1	1	-	-	-	-	6
DU5	-	-	-	-	-	-	-	1	-	2	-	2	5
DU6	2	-	1	3	4	-	-	-	-	-	-	4	14
KFU	-	-	-	-	-	-	-	-	-	-	-	-	-
DDU	-	-	-	-	-	-	-	-	-	-	-	-	-
CWS	-	-	-	-	-	-	-	-	-	-	-	-	-
DC	1	-	-	-	1	-	-	1	-	-	-	-	3
CDC	-	-	-	-	-	-	-	-	-	-	-	-	-
PMA	-	-	-	-	-	-	-	-	-	-	-	-	-
TIMA	-	-	1	-	1	-	-	1	3	2	1	1	10
<b>Total</b>	<b>9</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>9</b>	<b>3</b>	<b>1</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>9</b>	<b>15</b>	<b>78</b>

With regard to the COVID-19 pandemic, CMAC remains highly vigilant towards its potential impact. CMAC's commitment to staff safety and infection prevention is unwavering. During the first half of 2023, 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. Since COVID-19 became manageable, similar activities were no longer conducted, and CMAC continues to ensure the highest standards of health and safety for all its employees.

#### 5.1.6. Compensation Policy

CMAC has consistently upheld its commitment to a fair and reasonable compensation policy for staff members, ensuring equitable treatment in cases of injuries, fatalities, or other forms 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 2023, CMAC allocated a total amount of USD 30,798.53 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.

Out of this total amount, USD 28,800 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 1,998.53 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 2022 versus that same duration of 2023 is presented in the following table:

**Table: CMAC's Compensation Policy (2022 vs 2023)**

No	Compensation Policy	Staff: Jan-Dec 2022	Staff: Jan-Dec 2023
1.	Family of Death Staff	USD 32,400	USD 28,800
2.	Medical Operations	USD 8,581.93	USD 1,998.53
	<b>Total:</b>	<b>USD 40,981.93</b>	<b>USD 30,798.53</b>

As illustrated, there has been a notable decrease in the allocation of funds for staff compensation in 2023 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. One significant factor contributing to this decrease is the streamlining of CMAC policies to reduce expenses, particularly due to the support provided by the Royal Government of Cambodia through the National Social Security Fund (NSSF). This support enables CMAC to cover medical expenses for its sick staff, thereby reducing the financial burden on the organization. Additionally, the implementation of a recruitment policy targeting younger generations has led to fewer deaths and medical expenses in 2023 compared to 2022, as there are now fewer older and sick staff members in the workforce.

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 CMAC's dedication to valuing and supporting its workforce. This commitment serves as a testament to CMAC's dedication to creating a supportive and caring work environment, where employees' well-being and financial security are prioritized. The utilization of resources such as the NSSF and the implementation of strategic recruitment policies further demonstrate CMAC's commitment to efficiently managing its compensation programs while ensuring the welfare of its staff remains paramount.

## 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

The logistics task section has been diligently addressing the challenges associated with providing equipment and logistical support to a widely dispersed workforce operating in remote regions of Cambodia. Despite the inherent difficulties, the department has remained steadfast in its commitment to ensuring that communication and transportation systems are continuously monitored and optimized to support field operations effectively. This dedication has yielded positive outcomes, as evidenced by the successful delivery of satisfactory results throughout the entirety of 2023.

To enhance operational efficiency and transparency, the logistics section has implemented various measures. One notable initiative involved the preparation of a comprehensive table comparing the increase or decrease of state assets for the year 2022. This analytical approach has facilitated a deeper understanding of asset management trends, enabling the department to make informed decisions regarding resource allocation and procurement strategies.

Moreover, this section has undertaken the crucial and demanding task of managing and monitoring equipment movement on a regular and monthly basis. Through the implementation of sophisticated and robust tracking mechanisms, they have proactively ensured the timely availability and diligent maintenance of essential equipment. This meticulous approach not only minimizes operational disruptions but also optimizes resource utilization, thereby enhancing overall operational efficiency and effectiveness. By maintaining a vigilant watch over equipment movement, the section can promptly address any potential issues or discrepancies, ensuring seamless and uninterrupted support to field operations.

An integral aspect of this section's operations involves the procurement and resupply of essential items required for field activities. Through strategic partnerships with international donors such as the People and Government of Japan, the logistics section has successfully received and resupplied critical assets, including ALIS systems, grasscutters, GPS devices, communication radios, laptops, and printers. This collaboration, facilitated through initiatives like the Project for Integrated Mine Clearance and Landmine Victim Assistance Phase II (PIMV-II), has significantly bolstered the Department of Support's operational capabilities.



Furthermore, meticulous attention is paid to inventory management and documentation processes. The logistics section has cleared the necessary documents for 11 detection dogs from the CMAC inventory, ensuring compliance with regulatory requirements and facilitating smooth operational deployment. Additionally, equipment and material requirements are regularly examined, verified, and evaluated to ensure that field operations are adequately supported and resourced.



Recognizing the importance of providing operational support to field personnel, this section has also equipped all CMAC's demining and special units with essential items, including uniforms, water shoes, personal protective gear, and various operational equipment. This comprehensive approach to provisioning ensures that personnel are adequately equipped to perform their duties safely and effectively in challenging field environments.



Effective collaboration and coordination with relevant management units, including demining and special units, are paramount to the logistics section's success. Prior to the commencement of operations, joint inspections and equipment checks are conducted to ensure that demining teams are fully equipped and prepared for the tasks ahead. Additionally, efforts are made to organize and deploy operational equipment in a coordinated manner, optimizing resource allocation and operational readiness.

In line with the established best practices in inventory management, the logistics section recently underwent a thorough and meticulous comprehensive inventory inspection for semester 1, year 2023. This rigorous evaluation process, which was conducted by the Headquarters (HQs) subcommittee, ensures utmost accountability and transparency in asset management practices. By adhering to these rigorous standards, the department demonstrates its commitment to maintaining the highest levels of operational excellence and efficiency. Stakeholders can trust in





the integrity and reliability of the Department of Support's operational capabilities, knowing that every aspect of inventory management is meticulously scrutinized and evaluated.

In conclusion, the logistics section plays a pivotal role in supporting field operations in remote regions of Cambodia. Through meticulous planning, strategic partnerships, and effective resource management, the section continues to overcome logistical challenges and deliver positive outcomes in support of CMAC's activities to promote safety and security in mine-affected areas.



### 5.2.2. Maintenance and Transport Task

The Maintenance and Transport Section plays a pivotal role within CMAC operations, particularly given that transportation constitutes the largest component of the organization's inventory costs. With expenses primarily attributed to spare parts, fuel, and maintenance, it's imperative to uphold rigorous management and maintenance standards for vehicles, mechanical machines, and other demining materials and equipment to ensure smooth operations.



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

No.	Type of Vehicles	Quantity	Remarks
1	Vehicles of various classifications	546	
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	

Throughout 2023, the Support Department has made significant strides in managing transport resources to uphold quality and reliability in supporting ground operations. One notable achievement involves receiving fuel consumption plans from all Demining and Special Units, meticulously verifying them with the project, and subsequently submitting them to the Department of Finance for reimbursement. This process ensures financial accountability and transparency while facilitating efficient resource allocation.

Moreover, the Maintenance and Transport Task has demonstrated unwavering dedication in diligently monitoring and continually updating vehicles and machinery to uphold their quality and ensure efficient usage in meeting operational requirements in the field. This proactive approach is fundamental in minimizing the risk of breakdowns and enhancing operational readiness, thereby maximizing productivity and effectiveness in demining activities. By employing comprehensive monitoring systems and implementing timely updates and maintenance routines, this section not only safeguards the reliability and functionality of CMAC's transportation and machinery fleet but also instills confidence in frontline personnel to carry out their duties effectively. This proactive approach to maintenance and updates highlights the Department of Support's commitment to operational excellence and its crucial role in assisting CMAC to promote safety and security in the mine-affected regions of Cambodia.

A critical aspect of this section's responsibilities lies in its commitment to vehicle maintenance and repair. Throughout the year 2023, the section demonstrated exceptional proficiency by successfully repairing and restoring 26 vehicles, encompassing trucks and operational cars, to supply to both Demining Units (DUs) and Special Units. This concerted effort not only ensures the reliability and functionality of CMAC's transportation fleet but also directly contributes to the operational readiness of frontline units tasked with demining activities. Moreover, the section conducted regular inspections and oil services for 48 cars at the HQ's workshop, employing meticulous attention to detail to ensure the optimal performance and longevity of the fleet. These proactive maintenance measures not only mitigate the risk of unexpected breakdowns but also uphold safety standards and operational efficiency across CMAC's operations. By prioritizing





vehicle maintenance and repair, the Maintenance and Transport Task continues to play a vital role in supporting CMAC to promote safety and security in mine-affected areas of Cambodia.

Furthermore, the maintenance and transport section has demonstrated strategic foresight by evaluating the cost to restore broken vehicles and planning necessary repairs to support upcoming projects. This proactive approach minimizes downtime and ensures that vehicles are readily available to support field operations as needed.



In terms of administrative tasks, the section has played a key role in preparing vehicle support documents and coordinating with the General Department of Taxation to facilitate road tax payments for 2023. These administrative efforts contribute to the efficient management of transportation resources and ensure compliance with regulatory requirements.

Beyond operational support, the Maintenance and Transport Section has played a pivotal role in extending CMAC's reach into humanitarian efforts. One such commendable endeavor involves restoring vehicles to support the team dedicated to repairing artificial limbs for amputees. This initiative underscores CMAC's broader commitment to addressing societal needs beyond its core demining activities. By leveraging its resources and expertise for impactful social initiatives, CMAC not only enhances its reputation as a humanitarian organization but also fosters stronger ties with the communities it serves. This multifaceted approach to addressing societal challenges exemplifies CMAC's holistic and compassionate approach to humanitarian assistance in Cambodia.



has played a crucial role in facilitating staff missions to various provinces, responding to a total of 394 requests for general staff support at the HQ level throughout the year. This logistical support extends beyond the realm of transportation and maintenance, encompassing a wide range of operational activities necessary for the smooth functioning of CMAC's operations across different regions. By efficiently coordinating staff missions and providing logistical assistance, the section ensures that CMAC personnel are equipped with the necessary resources and support to



carry out their duties effectively. This includes coordinating transportation and addressing any logistical challenges that may arise during missions. Such support is essential for enhancing overall organizational effectiveness, enabling CMAC to respond promptly and effectively to operational demands and contributing to the successful execution of its mission to promote safety and security in mine-affected areas of Cambodia.

In addition to its ongoing responsibilities in maintenance and administrative tasks, the Maintenance and Transport Section within the Department of Support has played a pivotal role in strategically enhancing CMAC's transportation capabilities through the procurement of new vehicles. Recognizing the importance of maintaining a modern and reliable fleet, the section took proactive steps to acquire new vehicles in 2023. A total of 35 new vehicles, including models such as the Ford Pick Up XLT and Ford Pick Up Wildtrak, were procured during the year. This significant investment not only strengthens CMAC's operational capacity but also underscores its commitment to maintaining state-of-the-art equipment to support demining activities effectively. By modernizing its fleet with vehicles equipped with advanced features and capabilities, CMAC is better positioned to navigate the logistical challenges inherent in mine clearance operations and respond promptly to evolving operational requirements. This strategic procurement initiative demonstrates CMAC's proactive approach to enhancing operational readiness and ensuring the successful execution of its mission to promote safety and security in mine-affected areas of Cambodia.



Overall, the maintenance and transport tasks within the Department of Support have been instrumental in upholding the quality, reliability, and efficiency of CMAC's transportation resources. Through meticulous maintenance, strategic planning, and proactive management, this section continues to play a crucial role in supporting CMAC's mission of "Saving Lives and Supporting Development for Cambodia."

### 5.2.3. Mine Detector and Demining Electronic Device Maintenance

In efforts to bolster demining operations during the entirety of 2023, the Mine Detector and Demining Electronic Device Maintenance Section diligently executed a series of essential tasks. These tasks encompassed the routine maintenance and repair of mine detector machines and their associated electronic devices, ensuring their optimal functionality and reliability throughout demining endeavors. By meticulously attending to these critical components, the section played a pivotal role in upholding the effectiveness and efficiency of demining activities, thereby advancing CMAC's overarching mission of enhancing safety and security in mine-affected regions.

A key aspect of the section's responsibilities involved providing comprehensive training to demining personnel on the proper use and maintenance of the devices. These training sessions were tailored to enhance the proficiency and effectiveness of demining teams operating in the





field. By imparting essential skills and knowledge, the section empowered personnel to navigate demining tasks with confidence and competence, ultimately contributing to the success of CMAC's demining efforts.

Moreover, the section placed a strong emphasis on ensuring uninterrupted operations by prioritizing the resupplying of necessary components and consumables. This proactive approach enabled swift responses to any equipment failures, mitigating potential disruptions and bolstering the overall success of demining activities. Through meticulous coordination and foresight, the section facilitated seamless demining operations, underscoring its dedication to excellence in equipment maintenance and support.

In terms of repair and installation efforts, the section demonstrated remarkable proficiency, addressing various equipment maintenance needs with precision and efficiency. Notably, the section repaired a total of 215 units of mine detection machines, with a notable focus on deep search mine detector machines, accounting for 65 units. Additionally, collaborative efforts with various Demining Units (DUs) ensured the inspection and replacement of 220 batteries, further enhancing the reliability of mine detectors in the field.



Furthermore, the section actively engaged in training initiatives aimed at enhancing demining capabilities and fostering knowledge exchange. Training sessions ranged from offering guidance on the use of specific mine detection machines, such as ALIS, to providing refresher courses for field staff from multiple DUs. By catering to the diverse training needs of demining personnel, the section played a vital role in bolstering operational effectiveness and proficiency.





The section's commitment to innovation was evident through its collaboration with research and development (R&D) teams to conduct trial tests on new equipment functionalities. For instance, a trial test was conducted on using a detector head (60 mm) attached to the Germany Vallon VMH3 mine detector machine, showcasing the section's proactive approach to exploring cutting-edge technologies and methodologies in demining operations.

Moreover, the section actively engaged in public awareness initiatives by demonstrating the display of mine detection machines at prominent venues such as Koh Pich (Diamond Island) in Phnom Penh. This engagement not only raised awareness about demining efforts but also fostered community engagement and support for CMAC's mission.

In summary, the Mine Detector and Demining Electronic Device Maintenance Section's unwavering dedication and expertise were instrumental in supporting CMAC's demining operations during the entirety of 2023. Through meticulous maintenance, comprehensive training, and innovative initiatives, the section played a pivotal role in advancing demining capabilities and ensuring the safety and security of mine-affected communities.

#### 5.2.4. Explosive Management Task

Throughout 2023, the explosive management section of CMAC played a pivotal role in facilitating the safe and efficient delivery of explosives, crucial for demining operations across Cambodia. Over the course of twelve months, from January to December 2023, the section achieved significant milestones, contributing to the success of demining efforts and ensuring the safety of personnel involved in explosive-related activities.

One of the key accomplishments during this period was the receipt of a substantial quantity of 6,800 blocks of recovered explosives (100g EHP Charge) from the Explosive Harvesting Program (EHP) conducted in collaboration with CMAC-Golden West Cooperation. This influx of recovered explosives replenished CMAC's stockpile, ensuring an adequate supply to support ongoing demining operations and meet the needs of other demining operators throughout the country.

Moreover, the section demonstrated its commitment to supporting demining operations by issuing 7,300 blocks of 100g EHP Charge Booster and 800 blocks of 100g EHP Charge to all Demining Units (DUs) and demining operators in Cambodia. This distribution of explosives was essential in providing the necessary resources for mine clearance activities conducted by organizations such as HALO Trust, MAG, NPA, and CSHD, thereby contributing to the overall efforts to rid Cambodia of landmines and Explosive Remnants of War (ERWs).







In addition to its primary role in managing explosives distribution, the section collaborated closely with the National Explosive Ordnance Disposal Unit to enhance security and safety measures during various high-ranking official meetings and national ceremonies. Notably, the section provided security and safety support during events such as the 32nd ASEAN Games and the 12th ASEAN Para Games, underscoring its crucial role in safeguarding public gatherings and ensuring the smooth conduct of national events.

Furthermore, the section conducted rigorous inspections of explosives warehouses and cases, as well as the management and use of explosives at various demining units, Technical Institute of Mine Action (TIMA), and non-governmental organizations (NGOs) including HALO Trust, MAG, NPA, and CSHD. These inspections were vital in maintaining compliance with safety protocols and regulations, thereby minimizing the risk of accidents and ensuring the responsible handling of explosives.

Additionally, the section maintained a proactive approach to the upkeep of explosives by conducting regular inspections and maintenance activities at the K86 warehouse. This facility served as a central hub for storing and managing explosives, and its maintenance was essential in preserving the integrity and safety of the stored materials.

In summary, the explosive management section of CMAC made significant contributions to demining efforts throughout 2023, ensuring the timely distribution of explosives, enhancing security and safety measures, and maintaining strict compliance with regulations governing explosive handling. Through its diligent efforts, the section played a crucial role in advancing the mission to eliminate landmines and ERWs in Cambodia, thereby contributing to the safety and well-being of the country's population.

#### **5.2.5. Procurement Task**

The procurement section of the Department of Support occupies a pivotal role within CMAC, particularly given the complex nature of its operations, which often involve managing substantial stocks dispersed across various locations. Ensuring the prompt and efficient delivery of support is paramount to meeting the demands of field teams and Demining and Special Units. Therefore, the procurement section is tasked with not only identifying but also acquiring high-quality materials and equipment in a transparent manner, ensuring their timely delivery to support operational needs. This multifaceted responsibility underscores the critical importance of the procurement section in facilitating the smooth and effective execution of CMAC's operations.

Over the span of twelve months, from January to December 2023, the procurement section achieved noteworthy milestones, reflecting its unwavering commitment to ensuring operational success. One such milestone involved conducting a comprehensive review of all purchase orders and settlement documents across all projects. This meticulous review process was undertaken to uphold the principles of transparency and accountability within the procurement process, thereby ensuring compliance with established protocols and regulations. By meticulously scrutinizing each transaction, the procurement section demonstrated its dedication to maintaining the highest standards of integrity and governance in procurement practices.

Furthermore, the procurement section played a pivotal role in developing a detailed procurement plan aligned with the budget supported by the Royal Government. This comprehensive plan encompassed the procurement of essential items such as fuel and office



equipment, which are crucial for supporting field operations. By establishing a structured procurement plan, the section ensured the timely acquisition of necessary resources, thus minimizing potential disruptions to operational activities. This proactive approach not only optimized resource allocation but also enhanced operational efficiency, ultimately contributing to the overall effectiveness of CMAC's mission.

Moreover, the procurement section was responsible for preparing contract documents for the supply of materials and fuel, as well as the rental of offices for some demining units and other services. These contracts served as a framework for procurement activities, providing a structured approach to acquisition and ensuring cost-effectiveness. By adhering to transparent and standardized procurement processes, the section facilitated efficient procurement practices, thereby maximizing the value of each transaction and optimizing resource utilization.

Additionally, the procurement section collaborated closely with specialized institutions to prepare import documents subject to state taxes and duties. These documents covered a diverse range of items essential for supporting operations, including gasoline, diesel, spare parts for mine detection machines, Sorghum seed, and other equipment. By leveraging strategic partnerships and coordination efforts, the section ensured the swift and efficient procurement and delivery of essential items, thereby supporting operational continuity and the overarching mission of CMAC.

In summary, the procurement section's diligent efforts and strategic initiatives have been instrumental in driving the success of CMAC's operations in the entirety of 2023. Through meticulous planning, transparent procurement practices, and effective collaboration, the section has ensured the timely acquisition and delivery of essential resources, thereby facilitating the smooth execution of field operations and advancing CMAC's activities of promoting safety and security in mine-affected regions.

### **5.3. Project Management**

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 counterparts who come to learn from it.





### 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 entirety 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 44 projects, each contributing to the realization of CMAC's overarching vision. Among these projects, 21 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 9 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 December 2023**

No.	Donor and Partner	DU	Project Title	Project Period		
				Month	From	To
I- ONGOING PROJECTS, 2023				21 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
20	NPA	NPA	Ratanakiri Mine Free Project	2	1-Dec-23	31-Jan-24
21	JMAS	JMAS	Reconstruction Support with Demining Disposal in Banteay Meanchey (RSDB)	12	19-Dec-23	18-Dec-24
II- COMPLETED PROJECTS FROM JAN-JUNE, 2023						9 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	
9	MAG	DU2	Leasing MDD to MAG Cambodia Program (SLD #05-MDD2)		1-Nov-23	31-Oct-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						44 Projects	

### 5.3.2. Ongoing Projects

As 2023 unfolded, CMAC unveiled an impressive array of ongoing projects, totaling 21 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, 17 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 2023, CMAC received direct contributions from various development partners toward the implementation of 17 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 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 Mine Advisory Group (MAG) in 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
<b>I.</b>	<b>BILATERAL PROJECTS</b>	<b>17</b>
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
14	Ratanakiri Mine Free	1
15	Reconstruction Support with Demining Disposal in Banteay Meanchey (RSDB)	1
<b>II.</b>	<b>BIDDING PROJECTS</b>	<b>2</b>
1	UNDP-Clearing for Result (CFR)	2
<b>III.</b>	<b>CONTRACTUAL PROJECTS</b>	<b>2</b>
1	Mine Advisory Group	2
<b>TOTAL ONGOING PROJECTS IMPLEMENTING IN 2023:</b>		<b>21</b>



#### 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 productivity when feedback and physical monitoring at the fields have been received and conducted.

In 2023, the audit teams at CMAC performed comprehensive audits for both the support services function and the operations function over a total of 131 shifts. The audits revealed a concerning number of deficiencies, totaling 160, which require immediate attention, on-site correction, and further action. Out of the identified numbers, 122 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 urgently to ensure the proper functioning of the support services and operations.

Additionally, the remaining 38 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-December 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	2 shift	-	69	61	8
2	Sub QA	-	-	-	-	-
3	QA DU1	18 shifts	46 shifts	13	6	7
4	QA DU2	14 shifts	-	36	19	17
5	QA DU3	-	-	-	-	-
6	QA DU4	-	-	-	-	-
7	QA DU5	23 shifts	28 shifts	42	36	06
8	QA DU6	-	-	-	-	-
<b>Total</b>		<b>57 shifts</b>	<b>74 shifts</b>	<b>160</b>	<b>122</b>	<b>38 cases</b>

Upon further examination of demining operations carried out in 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 160 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 our demining experts' lives. The comprehensive examination of these deficiencies serves as an invaluable tool in identifying the areas that



necessitate immediate attention and serves 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-December 2023)**

No	Description	Deficiencies (Cases)	Corrective Action
1	<b>SOPs Compliance:</b>	00	
2	<b>Mine Marking:</b> <ul style="list-style-type: none"> <li>▪ BCT13, TSC01/DU1, TSC27, PMD11/DU2, BAC05, BAC10, CLR07, CTD03, EOD04/DU5: No mine signs found on access road to minefield</li> <li>▪ CTD04/DU5: incorrect heading minefield marking (corrected)</li> <li>▪ CLR07/DU5 incorrect UXO field marking</li> <li>▪ TCD01/DU5: incorrect stick painting in the administrative area</li> <li>▪ BCT13, TSC01/DU1 No access road sign into operational areas</li> </ul>	14	<ul style="list-style-type: none"> <li>▪ Immediate debrief to minefield commander, team leader, and section commanders and correcting in place</li> </ul>
3	<b>Medevac:</b> <ul style="list-style-type: none"> <li>▪ TSC48, BCT3/DU1: The stretcher was not ready and not prepared in operational working hour</li> <li>▪ BAC13, BAC05/DU5: The medicine form was not fulfilled when in use.</li> <li>▪ SLD06, TSC42, BC32, TSVC01, TSC07/DU1: Evacuation drill document was fulfilled incorrectly</li> <li>▪ PDM04, PMD07, PDM08/DU2 and TSC39, TSC41, TSC36, TSC40/DU3: No evacuation drill prior starting operations leading to incorrect evacuation</li> <li>▪ SLD03/DU1 and PDM04, PMD07/DU2: stretcher was not placed properly in some cases.</li> <li>▪ PMD07/DU2: medicine bag was torn</li> <li>▪ TSC39, TSC41, TSC36, TSC40/DU3: medicine tablets and serum were expired.</li> </ul>	24	<ul style="list-style-type: none"> <li>▪ Immediate debrief to minefield commander, platoon, and section commanders and correcting in place.</li> <li>▪ Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>
4	<b>UXO Demolition</b>	0	
5	<b>Safety rule:</b> <ul style="list-style-type: none"> <li>▪ BAC-L#04, EOD07, BAC10, CTD02/DU5: PPE was not used properly when excavating the ground</li> </ul>	04	<ul style="list-style-type: none"> <li>▪ Immediate debrief to team leader, correcting in place.</li> </ul>
6	<b>Site Administration:</b> <ul style="list-style-type: none"> <li>▪ BAC05, CLR07, CTD01/DU5: The administrative tent was deployed far from the operational lane, impossible to oversee the operations.</li> </ul>	15	<ul style="list-style-type: none"> <li>▪ Immediate debrief to team leaders, correcting in place.</li> </ul>





	<ul style="list-style-type: none"> <li>▪ TSC48/DU1: The administrative tent was not installed to oversee the operations.</li> <li>▪ CLR02/DU5: not cutting grass in the detector testing area.</li> <li>▪ TCD01/DU5: detector testing was not conducted properly.</li> <li>▪ BAC04: not prepared UXO fragments pit</li> <li>▪ PMD01/DU2: lack of table</li> <li>▪ PDM03/DU2 TSC35: lack of chairs</li> <li>▪ TSC04/DU2: lack of white board</li> </ul>		<ul style="list-style-type: none"> <li>▪ Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>
7	<b>Tools integration:</b>	<b>00</b>	
8	<b>Demining Drill:</b> <ul style="list-style-type: none"> <li>▪ SLD06/DU1: The vegetation was not cut clearly, hindering the dog's ability to sniff out mines.</li> </ul>	<b>01</b>	correcting in place.
9	<b>Quality Control:</b> <ul style="list-style-type: none"> <li>▪ (TSC07, SLD03, BCT11, SLDU7, SLDO6, TSC01, SLD04, PMC11, TSC42, BC32)/DU1: QC on the cleared land was not conducted on a daily basis</li> <li>▪ PDM01, TSC05, TSC27, PBC07, PDM02, PDM04, PMD07, PDM08/DU2: QC on the cleared land was not conducted on a daily basis</li> <li>▪ TSC39, TSC41, TSC36, TSC40 /DU3: QC on the cleared land was not conducted in a daily basis</li> </ul>	<b>22</b>	<ul style="list-style-type: none"> <li>▪ Immediate debrief to team leaders, correcting in place.</li> <li>▪ Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>
10	<b>Productivity:</b> <ul style="list-style-type: none"> <li>▪ TSC35, PDM08, PDM01, PMD01/DU2: Lack of team members</li> <li>▪ PMD04, PMD05 &amp; PMD07/DU2: Lack of team members</li> <li>▪ EOD07/DU5: Lack of one team member</li> <li>▪ CLR01/DU5: only 3 team members available among 7 members, one member is on maternity leave, one member sent to TIMA, 2 more absent</li> <li>▪ EOD14/DU5: lack of one team member</li> <li>▪ CLR06/DU5: 7 team members, but only 3 members available, one member on job training at DU5 office, one at TIMA and another 2 members have not been fulfilled</li> <li>▪ CLR08/DU5: 7 team members, but only 3 members available, 3 members on leave, and another 1 member has not been fulfilled</li> </ul>	<b>12</b>	<ul style="list-style-type: none"> <li>▪ Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>
11	<b>Tasks Dossier Documents:</b> <ul style="list-style-type: none"> <li>▪ PDM04, PMD07, PDM08/DU2: No request and beneficiaries in tasks Dossier, but the operation is in progress</li> </ul>	<b>3</b>	<ul style="list-style-type: none"> <li>▪ Immediate debrief to minefield commander, platoon, and section commanders and correcting in place.</li> </ul>



			<ul style="list-style-type: none"> <li>Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>
12	<b>Completed Minefield Site Sketch:</b> <ul style="list-style-type: none"> <li>CLR02/DU5: Coloring Polygon on AO paper for visitor presentation was not made based on SOP BLS</li> </ul>	1	<ul style="list-style-type: none"> <li>Immediate debrief to minefield commander, and correcting in place.</li> </ul>
13	<b>Explosive Storage and Explosive Safety Case:</b> <ul style="list-style-type: none"> <li>PDM04/DU2: Using explosives for UXO demolition was not recorded</li> </ul>	1	<ul style="list-style-type: none"> <li>Immediate debrief to commander, and correcting in place.</li> <li>Debrief to DUs Manager, OPS, and DUs QA to follow up</li> </ul>
14	<b>Minefield Management:</b> <ul style="list-style-type: none"> <li>SLD 07/DU1: field presentation is limited, not detailed and clear</li> <li>CLR08, BAC04/DU5: Daily report was not recorded in the record book</li> <li>CLR08, BAC04, CLR02, EOD07, CTD01, BAC11, CLR01, CTD04, CLR06, CTD02/DU5: field presentation is limited, not detailed and clear</li> <li>CTD01/DU5: Detector test prior operations was not conducted properly</li> <li>CTD01, BAC11/DU5: both teams did not list their team members in the monthly record book</li> <li>BAC05/DU5: The team did not record daily reports in the daily record book</li> </ul>	17	<ul style="list-style-type: none"> <li>Immediate debrief to commander and team leaders, and correcting in place.</li> </ul>
15	<b>Quality of Equipment and Equipment Maintenance:</b> <ul style="list-style-type: none"> <li>SLD07, TSC42/DU1: vest covers were aged and torn.</li> <li>TSC42/DU1: The control tent and table were extremely aged</li> <li>TSC14/DU2: The stretcher was aged and torn</li> <li>PMD05, PDM01, TSC14, PDM08, PDM02, PMD04, PMD07/DU2: vest covers were aged and torn.</li> <li>TSC14/DU2: The stretcher was aged and torn</li> <li>PDM02/DU2: vest covers were aged and torn.</li> <li>PDM02/DU2: Visors were aged and torn.</li> <li>PMD06/DU2: Tires were aged and torn</li> <li>TSC#04/DU2: Small tent was aged and torn</li> </ul>	16	<ul style="list-style-type: none"> <li>Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>
16	<b>Support Service for Operations:</b> <ul style="list-style-type: none"> <li>SLD06/DU1: lack of two umbrellas for Dog</li> </ul>	14	<ul style="list-style-type: none"> <li>Immediate debrief to minefield</li> </ul>





	<ul style="list-style-type: none"> <li>▪ SLD06, PMD03, TSC35/DU1: lack of 5 vests for 5 team members</li> <li>▪ SLD06/DU1: lack of 5 deminer's tents.</li> <li>▪ SLD07/DU1: lack of 2 mobile kennels for dogs in the nighttime</li> <li>▪ SLD07/DU1: lack of 17m of leash for operating dog</li> <li>▪ SLD03, TSC42/DU1: Equipment bags and vest bags were wrecked</li> <li>▪ TSC42/DU1: The Visor at the back was aged and wrecked</li> <li>▪ PMD04, TSC27, PDM01, TSC14/DU2: Lack of small tents</li> <li>▪ PMD05, TSC25/DU2: Lack of small tents</li> </ul>		<p>commander, platoon and section</p> <p>commanders and correcting in place.</p> <ul style="list-style-type: none"> <li>▪ Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>
17	<p><b>Site Accommodation:</b></p> <ul style="list-style-type: none"> <li>▪ PMD08/DU2: accommodation tent was aged and torn</li> </ul>	01	<ul style="list-style-type: none"> <li>▪ Immediate debrief to minefield commander, platoon, and section commanders and correcting in place.</li> <li>▪ Debrief to DUs Manager, OPS, and DUs QA.</li> </ul>

Once again, it is important to note that the remaining 38 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 entirety 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 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 impinge on 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 profoundly negative 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, national 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 negatively impacting the 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, CMAC has taken proactive measures to address them.





CMAC, besides purchasing some new vehicles, 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/ERW 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), anyway. 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 twelve-month timeframe in 2023 is CMAC's successful progress in clearing and releasing an excess of nearly 282 km<sup>2</sup>, accounting for 105.20 % of the total work plan for the year 2023 of 268 km<sup>2</sup>. 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 efforts in 2023 showcases a diverse array of activities, ranging from large-scale landmine and explosive remnants of war (ERW) clearance operations to grassroots community education initiatives, community development assistance, international training programs, and cutting-edge research endeavors.

CMAC's approach was marked by the integration of various tools and techniques, including mechanical demining machines, detection animal systems, enhanced demining methods, toolbox integration, improved field management, intensified training programs, and equipping deminers with diverse skills. This meticulous orchestration resulted in the successful clearance of nearly 282 square kilometers of land—an impressive achievement that surpassed the Integrated Work Plan (IWP) 2023 target of 268 square kilometers by an impressive 105.20%.

Throughout the reporting period, CMAC's diligent work led to the discovery and safe disposal of 83,814 landmines and ERWs. Additionally, the organization collected 2,828 kilograms of small arms, safely removed 2,192,034 fragments, and neutralized 5 unidentified munitions. Responding to 3,459 requests from local authorities and communities underscored the direct impact on lives saved and communities secured. Furthermore, CMAC's survey teams visited 234 villages suspected of landmine/ERW contamination, identifying 872 new polygons of suspected minefields and UXO fields totaling 161,835,105 square meters, with a combined perimeter of 695,497 meters marked around these areas.

A significant development was the repurposing of 60% of the cleared land for agricultural use, revitalizing the local economy and catalyzing socioeconomic growth for families in post-clearance areas. Moreover, the liberation of nine capital/provinces and four city/districts within Pursat Province from the threat of anti-personnel mines marked a monumental step forward in enhancing security and stability in these areas.

Zooming out to the timeline spanning 1992 to 2023, CMAC's impact becomes even more compelling. Over this period, CMAC's efforts resulted in the discovery and neutralization of 3,049,652 landmines/ERWs, 131,895 unidentified munitions, and 117,156 kilograms of small arms. A remarkable 469,563,830 fragments have been rendered safe, while CMAC's responsiveness to 126,373 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 underscores its unwavering commitment to safety. The magnitude of CMAC's contribution, culminating in the liberation of 1,746 square kilometers, equates to a remarkable 58% of Cambodia's cumulative landmine clearance—spanning 3,024 square kilometers—since the dawn of demining efforts in 1992.

Beyond physical intervention, CMAC's Mine Risk Education (MRE) program has equipped 5,816 volunteers across Cambodia with vital knowledge to mitigate landmine and ERW accidents. These volunteers, including local residents, national police officers, and Buddhist monks, have played a crucial role in spreading MRE information within their communities, fostering awareness about the inherent dangers of these remnants.





In 2023 alone, CMAC provided 24,513 MRE courses, benefiting over 1.2 million households and reaching nearly 2 million individuals. This far-reaching impact resonates with a diverse demographic, including men, women, in-school students, and out-of-school children. Empowering beneficiaries to promptly report dangerous remnants, CMAC's Explosive Ordnance Disposal (EOD) teams received 3,879 requests for intervention, responding to 3,459 between January and December 2023. Impressively, landmine and ERW casualties dwindled to only 32 individuals during this reporting period—a significant 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 staff members from UXO-Lao in Lao PDR, demining experts from Ukraine's SESU, and experts from Colombia in mine action, CMAC has become a model of international cooperation and goodwill.

Nevertheless, these achievements were not without challenges. CMAC 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. Despite these challenges, CMAC's proactive approach, coupled with adept management practices and unwavering internal support, yielded success.

In summary, CMAC's achievements in 2023 resonate profoundly within Cambodia's landscape. Beyond reducing landmine/ERW contamination and associated casualties, CMAC's initiatives have revitalized livelihoods, facilitated resettlement, fostered socioeconomic growth, and spurred infrastructural development. This alignment with the National Strategy for Poverty Reduction underscores CMAC's multifaceted impact. Additionally, CMAC's efforts have elevated Cambodia's diplomatic reputation, furthering the nation's aspirations for safety and prosperity.

As CMAC continues its mission towards achieving a landmine-free Cambodia by 2025, its dedication remains unwavering. Through collaboration and collective action, CMAC and its partners will continue to work towards a future where all Cambodian citizens can live in safety and prosperity.



# 9. KEY EVENT PHOTOS

Presenting an extraordinary compilation of visually striking photographs, each meticulously accompanied by detailed descriptions, to showcase the remarkable accomplishments of CMAC throughout the entirety of 2023. From prestigious national and international events to grassroots initiatives, these photographs encapsulate the essence of CMAC's unwavering commitment to clearing landmines and explosive remnants of war (ERW) across Cambodia.

Whether captured within the confines of an office, amidst the rugged terrain of the field, or amidst the communities directly impacted by CMAC's efforts, each image narrates a compelling and distinctive story. Through these captivating snapshots, viewers are afforded a fascinating glimpse into the world of CMAC and its extraordinary endeavors during the reporting period.

This comprehensive compilation of photographs, meticulously complemented by detailed descriptions, provides an immersive exploration into the breadth and depth of CMAC's operations. It not only highlights the invaluable contribution of its human resources but also showcases the immense dedication demonstrated by CMAC's staff in fulfilling their mission. Moreover, it underscores the collaborative efforts that have propelled CMAC's mission of making Cambodia a safer and more secure nation.

This visual documentation serves as a testament to CMAC's unwavering commitment to "saving lives and supporting development for Cambodia." It marks significant strides towards achieving this noble objective, showcasing the organization's profound impact on the lives of Cambodian communities and its dedication to fostering a safer and more prosperous future for all.



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 9, 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.' The course, held from January 9 to 20, 2023, facilitated collaboration between CMAC and UXO Lao under the South-South Cooperation initiative, supported by the Japan International Cooperation Agency (JICA).



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



His Excellency Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, convened a meeting on February 01, 2023, with demining teams working on the "Foundation of Cambodia Mine Free 2025" project. During the meeting, he announced the commencement of demining operations 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.

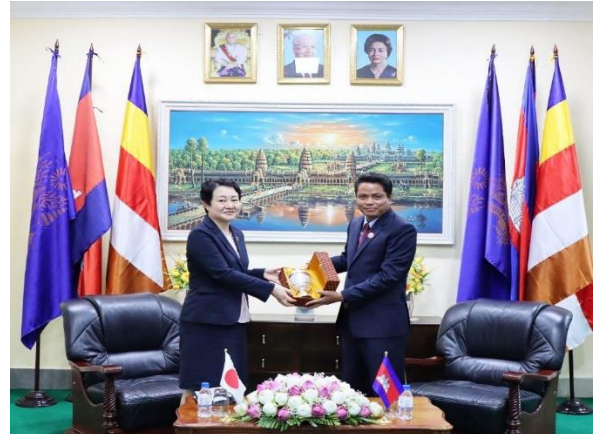
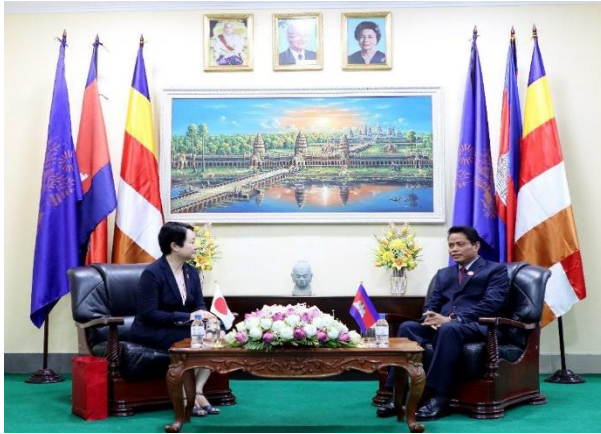


On Tuesday, March 21, 2023, H.E. Oum Phumro, Deputy Director General of CMAC, representing H.E. Heng Ratana, Delegation of the Royal Government in charge as Director General of CMAC, attended the ceremony of the declaration of Takeo as a mine-free province, presided over by H.E. Senior Minister Ly Thuch, 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 April 4, 2023, a significant convening unfolded at the Sokha Hotel Phnom Penh and Residence, where H.E. Heng Ratana, Delegate of the Royal Government and Director General of CMAC, played a pivotal role in the Technical Work Group for Mine Action (TWG-MA). This collaborative forum brought together esteemed representatives from the Royal Government and Development Partners within the mine action sector. Their objective was to conduct an exhaustive review of the progress realized during the initial half of the 2018-2025 timeframe and to deliberate on strategic pathways for the post-2025 landscape.



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.

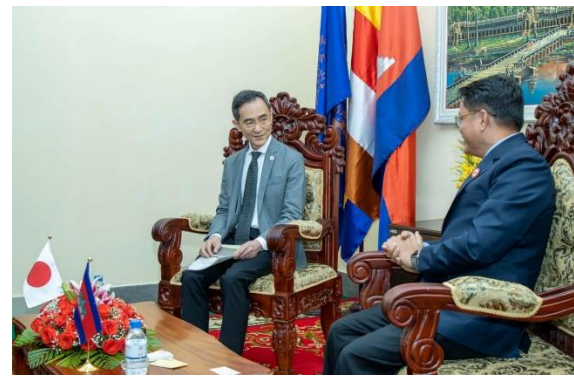
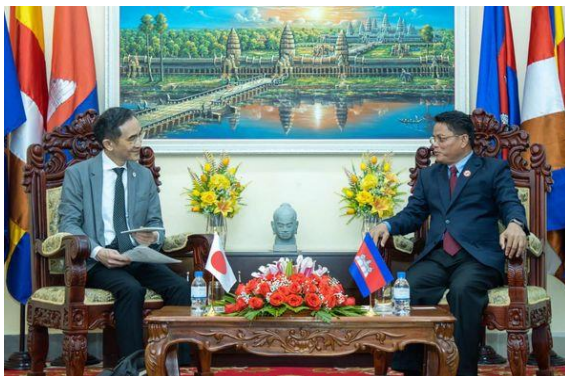


On Monday, May 29, 2023, at the Technical Institute of Mine Action, Kampong Chhnang province, Mr. Prak Somathy, Senior Director, in charge of Animal Detection System and Post Clearance Community Development, presided over an opening ceremony of the Basic Dog Handler Training Course (batch 21) with a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

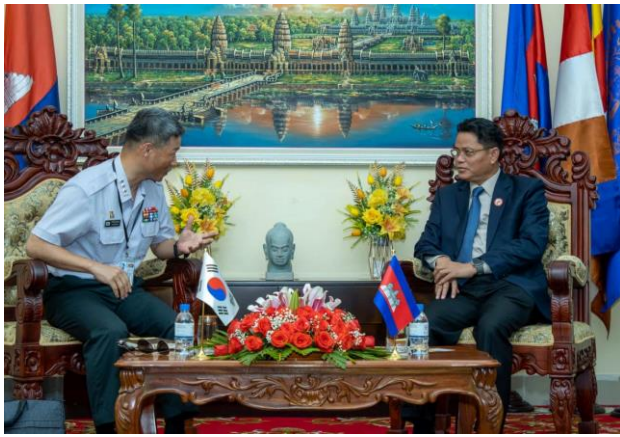




His Excellency Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, on May 31, 2023, welcomed the visit of H.E. Senior Minister Ly Thuch, First Vice President of CMAA, in a meeting ceremony and promotion of mine action and the implementation of the on the Samdech Techo 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, a significant engagement unfolded at CMAC Headquarters in Phnom Penh, as H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, graciously received a delegation from the Republic of Korea, headed by Lieutenant Colonel Pak Suman, the Military Attaché to Cambodia. The primary objective of this courtesy call was to gain insights into CMAC's mine action endeavors. Throughout the meeting, H.E. Heng Ratana provided Lieutenant Colonel Pak Suman with a comprehensive overview of CMAC's journey since its inception in 1992 to the present day, elucidating the organization's core activities and highlighting the operations of its 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).



On August 9th, 2023, at CMAC’s Phnom Penh Headquarters, His Excellency Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, along with Mr. Rune Kristian Dale-Andresen, Country Director of the Norwegian People’s Aid (NPA), signed a Cooperation Agreement for “The Project for Humanitarian Demining in Cambodia.” The agreement entails a total grant of USD 2,100,000, generously supported by the Federal Government of Germany. The project, facilitated by CMAC, will oversee the clearance work by mobilizing demining teams to conduct landmine/ERW clearance, mine risk education, and landmine victim assistance within a 16-month period. These efforts will be concentrated in confirmed hazardous areas spanning approximately 16,000,000 square meters in the north-western provinces of Banteay Meanchey, Oddar Meanchey, and Preah Vihear. This initiative aims to accelerate demining operations in alignment with the Royal Government’s policy of achieving a 'Cambodia Mine-Free 2025'.

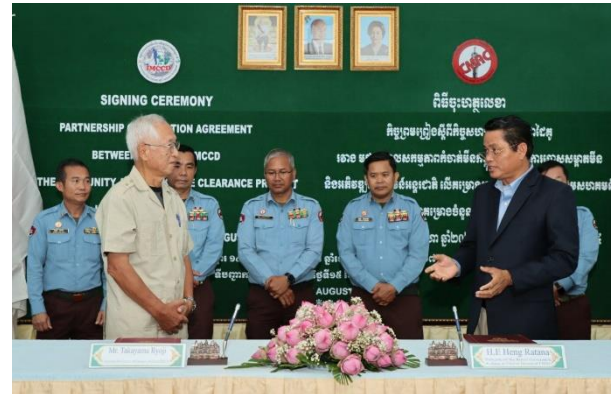


On Thursday, August 10, 2023, at the Technical Institute of Mine Action, Kampong Chhnang province, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over a closing ceremony of the Basic Dog Handling Course Batch 21 with a total of 40 trainees, 19 of whom are from CMAC, 10 of whom are from Special Forces of Command and 11 others are from Bodyguard Headquarters Unit and Patrol Dog Instructor Course with a total of 15 trainees, who were trained by two foreign trainers. Speaking at the closing ceremony, H.E. Heng Ratana praised all the participants who worked hard to learn new knowledge to apply these skills to their units.



During the Working Group Meeting held at CMAC's Headquarters in Phnom Penh on August 14, 2023, the organization celebrated significant achievements made during the first six months of the year 2023. Surpassing planned targets, CMAC successfully released over 151 square kilometers of landmines and unexploded ordnance (UXO) contaminated areas, exceeding expectations by 113.28%. Additionally, the discovery and destruction of 36,315 landmines and UXO further underscored CMAC's commitment to mitigating explosive threats across affected regions. Complementing these efforts, CMAC conducted extensive mine risk education initiatives, reaching over 892,000 individuals across 571,000 households, representing approximately 55.77% of the target outlined for 2023. These accomplishments signify CMAC's unwavering dedication to its mission of ensuring the safety and security of communities in Cambodia.





On August 15, 2023, at CMAC Phnom Penh Headquarters, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, together with Mr. Takayama Ryoji, Country Representative of ICCD, signed the Partnership Cooperation Agreement on Anti-tank Mine Clearance Project, supported by the Japan Non-Profit Organization (NPO) in the amount of USD 43,714, in order to promote better socioeconomic activities in Battambang and Pailin provinces, after clearance is completed. The project will run from August 16, 2023, to August 15, 2024. Be informed that the IMCCD project focuses on the clearance of anti-personnel mines and all kinds of unexploded ordnance, specifically anti-tank mines.



On Wednesday, August 16, 2023, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, accompanied by the management team from the Phnom Penh Headquarters, visited UXO clearance operations at the campus of Queen Kosomak High School in Kratie province. Thus far, CMAC experts have successfully cleared one UXO cache and discovered over 2,100 UXOs, with several more UXO caches yet to be cleared. Based on available information and the initial UXOs found in the other two caches, it is estimated that there may be several thousand more B40 or DK75 UXOs remaining.



On August 21, 2023, Mr. Prak Somathy, Senior Director in charge of the Animal Detection System and Post Clearance Community Development at CMAC, representing H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, together with Mr. Choo Teng Han, General Manager of Prince Security Service, presided over a Signing Ceremony for a Memorandum of Understanding. This agreement marks a significant collaboration aimed at enhancing CMAC's capabilities through the procurement and training of security dogs. The comprehensive 12-week training program underscores CMAC's commitment to leveraging innovative solutions for efficient mine clearance operations and ensuring the safety of communities in mine-affected areas.



On Monday, September 4, 2023, at the Techo Peace Museum, Siem Reap province, H.E. Muon Veasna, Senior Director in charge of the Human Resources Department and Executive Advisor for Financial Affairs, representing H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over the opening ceremony of the “Program/Public Information/ Financial Management” Training Course between CMAC and UXO LAO from September 4 to 15, 2023. There are 8 Lao participants and 3 Cambodian participants attending the training under the South-South Cooperation Project supported by the Japan International Cooperation Agency (JICA).





On September 13th, 2023, at CMAC's Phnom Penh Headquarters, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, convened a crucial meeting with Her Excellency Yuliia Svyrydenko, First Deputy Prime Minister and Minister of Economy of Ukraine, accompanied by H.E Mr. Oleksandr GAMAN, Ambassador of Ukraine to the Kingdom of Cambodia, and his delegation. This high-level gathering was dedicated to addressing humanitarian demining issues, as there are millions of hectares of farmland and residential areas affected by landmines and the remnants of war.



On Monday, September 18, 2023, at the CMAC Phnom Penh Headquarters, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, and high-ranking officials welcomed the visit of a delegation from the Republic of Colombia to learn more about demining operations in Cambodia for upcoming training from CMAC under the support of the International Cooperation Agency (JICA) to support the obligation of the Colombian Government to promote the elimination of anti-personnel landmines and explosive remnants of war that the country and the people of Colombia are facing in the worst civil war of more than 50 years. Colombia has already received 2 training courses, the first phase from 2010 to 2011 and the second one from 2019 to 2022 with a total of 175 participants.



On Friday, September 22, 2023, at the Paradise Hotel in Siem Reap province, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over the workshop on Demining Operations Challenges between CMAC and Colombia under the project for Human Resource Development to implement Comprehensive Mine Action in Colombia from 2024 to 2026, supported by the Government of Japan through Japan International Cooperation Agency (JICA). The workshop aims to collect useful information and strategies to support the obligation of the Colombian Government to promote the elimination of anti-personnel landmines and explosive remnants of war.



On Monday, October 23, 2023, at CMAC Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, graciously welcomed Mr. Vaghinak Sargsyan, Director of Armenia’s Center for Humanitarian Demining and Expertise (CHDE), for a courtesy call. During the meeting, Mr. Sargsyan expressed his profound interest in CMAC's technical expertise and lauded the organization's effectiveness and efficiency in conducting demining operations. He particularly commended CMAC's utilization of integrated tools such as demining experts, demining equipment, demining machines, mine detection dogs, and mine detection rats, underscoring the instrumental role in enhancing the speed and success of CMAC's demining endeavors.





On Monday, October 30, 2023, at the Techo Peace Museum in Siem Reap province, H.E. Oum Phumro, Deputy Director General of CMAC, and Mr. Jinichi Watanabe, JICS Project Manager, presided over the opening ceremony of a training course titled "Brush Cutter and Maintenance." This comprehensive course, spanning five weeks from October 30th to December 5th, 2023, aims to equip eight Colombian trainees with essential skills in brush cutting and equipment maintenance. Supported by the Japan International Cooperation Service (JICS), the training will be conducted by four main instructors who will provide a blend of theoretical knowledge and practical field experience to the participants.



On November 1, 2023, a pivotal event took place at CMAC’s Headquarters in Phnom Penh: the convening of CMAC’s Governing Council Meeting. This gathering served as a platform to announce the new mandate members and to review a comprehensive 9-month progress report spanning from January to September. According to the report, CMAC achieved significant milestones, releasing a substantial 223,860,507 square kilometers (83.51% compared to IWP 2023) of landmines/UXO-contaminated areas. Furthermore, the diligent efforts of CMAC led to the discovery and destruction of 68,350 landmines and unexploded ordinances during this period. Additionally, CMAC’s commitment to community safety was evident in its mine risk education initiatives, which saw over 914,551 households visited and 1,418,863 individuals reached, aligning closely with the objectives outlined in the working plan for 2023.



On Wednesday, November 1, 2023, a significant meeting transpired at CMAC Headquarters in Phnom Penh, where H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, engaged with a delegation from the National Regulatory Authority for UXO/Mine (NRA). Led by Mr. Chomyaeng Phengthongsawat, NRA General Director, the purpose of this gathering was to delve into the structural framework, regulations, and operational policies governing CMAC's mine action sector, as it stands as a prominent demining operator in Cambodia. Following the meeting, the delegation will proceed to Battambang province to conduct a field visit to a minefield, further emphasizing the practical implications of the discussions held.



On Thursday, November 16, 2023, a pivotal meeting took place at the Techo Peace Museum in Siem Reap, where H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, convened with experts from the Okinawa Prefectural Peace Museum, spearheaded by Mr. Ken Sonohara, Senior Advisor. Deliberations centered on formulating a strategic plan to initiate the human resource development process through specialized training programs aimed at cultivating professionals for the Techo Peace Museum. Additionally, the CMAC Director General provided insights into the current physical infrastructure of the museum, slated for future reconstruction under the auspices of grant aid from the people and Government of Japan, underscoring the collaborative efforts toward fostering peace and historical preservation.





On Friday, November 24, 2023, a significant event unfolded at the Technical Institute of Mine Action (TIMA) in Kampong Chhnang province, as H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, took the lead in presiding over the closing ceremony of two pivotal training programs. The first, encompassing Explosive Ordnance Disposal Deminers (batches 23 and 25), boasted a total cohort of 106 CMAC trainees. Additionally, the Basic Dog Handler course (batches 21 and 22) saw participation from 43 trainees, with 23 hailing from CMAC, 12 from the Bodyguard Headquarters Unit, and 3 from Prince Bank. These comprehensive courses, comprising both theoretical classroom instruction and practical field exercises, signify CMAC's steadfast commitment to equipping its personnel and other skill recipients with the requisite skills and expertise to navigate the complexities of mine action effectively.



On Monday afternoon, December 4, 2023, at CMAC's Phnom Penh Headquarters, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, along with Mr. Kazuki Takeuchi, President of JICS, presided over the closing ceremony of a 5-week training course on "Brush Cutter and Maintenance." This comprehensive program aimed to equip eight Colombian trainees with the necessary knowledge, practical experience, and expertise to effectively operate Brush Cutters, thereby enhancing demining efforts in Colombia. By imparting essential skills and know-how, CMAC and JICS seek to bolster the capacity of demining teams, contributing to the acceleration of demining activities and the eventual mitigation of landmine threats in Colombia.



On December 4th, 2023, at CMAC Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, led a workshop on the CMAC’s Strategic Plan beyond 2025, held in collaboration with the Japan International Cooperation Agency (JICA). This marked the fourth workshop in a series, scheduled from December 4th to 5th, 2023, dedicated to further discussions and updates to existing documents crafted during the third workshop held in March 2023. The primary focus of this workshop is to deliberate on additional insights and refine the strategic plan, addressing challenges and enhancing action plans to ensure its efficacy beyond 2025.



On December 06th, 2023, at Landmark Mekong Riverside in Vientiane, Lao PDR, a significant event unfolded as the final review meeting for the South-South Cooperation Program, bolstered by the Japan International Cooperation Agency (JICA), took place. Bringing together representatives from institutions in both Cambodia and Laos, this gathering marked the culmination of extensive collaboration and knowledge exchange endeavors. Participants convened to meticulously evaluate the joint achievements made throughout the course of Phase III. Such collaborative initiatives, rooted in the exchange of work experiences and insights, hold profound significance in the domain of demining and unexploded ordnance activities. They serve as pivotal platforms for nurturing human resources and enhancing institutional capacity through the dissemination of valuable knowledge and the adoption of best practices across borders.





On December 13th, 2023, a pivotal moment unfolded at CMAC’s Phnom Penh Headquarters as H.E. Heng Ratana, Delegate of the Royal Government and Director General of CMAC, joined Mr. Michael Raine, Program Manager of APOPO, in signing a momentous Memorandum of Understanding. This landmark agreement solidified the partnership between CMAC and APOPO, focusing on the integration of Mine Detection Rats and Technical Survey Dogs into CMAC's demining capacity, with a significant investment of USD 387,167. Spanning a twelve-month period from January 1st to December 31st, 2024, this project will be strategically implemented in Siem Reap and Preah Vihear provinces. CMAC is poised to deploy specialized landmine clearance teams, leveraging the advanced capabilities of animal detection systems, meticulously outlined within the Integrated Workplan 2024.



On Monday, December 11th, 2023, CMAC's Phnom Penh Headquarters buzzed with purpose as H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, convened an internal meeting. The agenda centered on a comprehensive update regarding ongoing projects, operational endeavors, and training initiatives. With a keen eye on enhancing CMAC's capabilities, particular emphasis was placed on bolstering efforts in salvage diving (underwater operation) and bomb cutting, notably through the utilization of detection dogs to combat anti-drug trafficking. Encouraging a culture of continuous improvement, H.E. Heng Ratana urged individual officers to remain vigilant in fulfilling their core duties while emphasizing the importance of personal development to align with evolving technological landscapes, ensuring the institution's sustained growth and efficacy.



On December 20th, 2023, CMAC's Phnom Penh Headquarters witnessed a significant moment as H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, joined hands with KARUBE Masakazu, JMAS Resident Representative, to formalize a Partnership and Cooperation Agreement. This agreement, valued at USD 499,135.10, aims to support two critical projects: Reconstruction Assistance with Demining in Banteay Meachey Province and Reconstruction Support with Cluster-Disposal in Steung Treng Province. Spanning a year from December 19th, 2023, to December 18th, 2024, this initiative marks the third year of its implementation. The project's objective is to clear a total of 630 hectares of mine and UXO fields in the designated provinces, reflecting CMAC's ongoing commitment to enhancing safety and facilitating development in affected regions.



On Friday, December 29, 2023, a momentous occasion unfolded at the Win-Win Monument, where H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, took part in commemorating the 25th anniversary of the end of the Cambodian Civil War and the successful implementation of the Win-Win Policy initiated by Samdech Akka Moha Sena Padei Techo Hun Sen, former Prime Minister of Cambodia. This significant event, presided over by Samdech Moha Bovorthipadi Hun Manet, the current Prime Minister of Cambodia, symbolized a pivotal chapter in Cambodia's history. Amidst the celebrations, CMAC seized the opportunity to showcase its demining tools and equipment at a dedicated booth, underscoring the vital role of peace achieved through the clearance of landmines and remnants of war across the nation.





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



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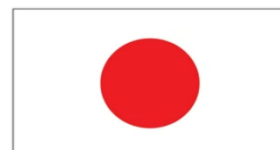
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