

ព្រះរាជាណាចក្រកម្ពុជា  
ជាតិ សាសនា ព្រះមហាក្សត្រ



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CAMBODIAN MINE ACTION CENTRE



Saving Lives and Supporting Development for Cambodia



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## GLOSSARY OF ACRONYMS

ALIS	Advanced Landmine Imaging System
AP Mine	Anti-Personnel Mine
APMBC	Anti-Personnel Mine Ban Convention (Ottawa Convention)
AT Mine	Anti-Tank Mine
AXO	Abandoned Explosive Ordnance
BAC	Battle Area Clearance
BAT	Battle Area Clearance team
BAV	Battle Area Clearance by Village team (pro-active BAC)
BC	Brush Cutters
BCT	Brush Cutter & Mine Clearance Team
BLS	Baseline Survey
CAC	Community Anti-Tank Mine Clearance
CBAT	Community-Based Battle Area Clearance Team
CBD	Community-Based Demining Platoon
CBMRR	Community Based Mine Risk Reduction
CBURR	Community Based UXO Risk Reduction
CCL	China-Aided Cambodia Landmines Elimination Project
CCM	Convention on Cluster Munitions
CDC	CMAC Community Development Centre
CFR	Clearing For Results
CMA	CMAC General Account
CMAA	Cambodian Mine Action and Victim Assistance Authority
CMAC	Cambodian Mine Action Centre
CMAS	Cambodian Mine Action Standards
CMC	Community Mine Clearance
CMRS	Cluster Munition Remnant Survey and Clearance in Eastern Cambodia
CMVIS	Cambodian Mine Victim Information System
CPF	Counterpart Fund
CTB	Cambodian-Thai Border
CTS	Cluster Munition Technical Survey
CWS	Central Workshop
DC	Dog Centre
DDU	Development Demining Unit
DFP	District Focal Point
DM	Demining Machine
DMR	Demining Robot
DMT	Demining Machine Teams
DU	CMAC Demining Units
EDD	Explosive Detection Dog
EHP	Explosive Harvesting Program



EOD	Explosive Ordnance Disposal
ERC	Explosive Remnants of War Clearance Teams
ERI	Explosive Remnants of War Intervention Teams
ERW	Explosive Remnants of War
GEJ	Good Earth Japan
GICHD	Geneva International Centre for Humanitarian Demining
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HALO	Hazardous Areas Life-Support Organisation (HALO Trust)
HI-B	Handicap International – Belgium
HQ	Headquarters
ICP	Integrated Clearance Mobile Platoon
IDPs	Internally Displaced People
IED	Improvised Explosive Device
IMAS	International Mine Action Standards
IM	Improvised Mines
IMCCD	International Mine Clearance and Community Development
IMP	Integrated Multi-task Platoon
IWP	Integrated Work Plan
JICA	Japan International Corporation Agency
JICS	Japan international Cooperation System
JMAS	Japan Mine Action Service
KRG	Kurdistan Regional Government
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 Standards
NPA	Norwegian People's Aid
NSSF	National Social Security Fund
NTS	Non-Technical Survey
PAICMA	Presidential Program for Comprehensive Action Against Anti-Personnel
PBC	Platoon Brush Cutter Machines



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



## FOREWORD

It is my great pleasure to briefly introduce readers to the Annual Report 2022 of the Cambodian Mine Action Centre (CMAC). During the reporting period, not only did CMAC remove threats of landmine/ERW from the affected communities, but it also contributed to the socio-economic development in the post-clearance areas and to the infrastructural development for the country. All CMAC's activities ultimately brought about economic growth and poverty reduction on the whole. With those achievements, the people, especially those who reside in or around the affected areas, have enjoyed living their lives with new hopes and prosperities.



In this annual report, the readers will see the key activities delivered by CMAC in 2022, ranging from the delivery of landmine/ERW clearance (both underground and underwater) to grassroots community, education activities, international training programs and corporate managements. All of those activities played very crucial roles in moving Cambodia forward to a new era of safety and prosperity and promoting Cambodia's prestige to the outside world.

The year 2022, especially the first quarter, commenced with the insurmountable difficulties posed by the COVID-19 pandemic throughout the country. However, CMAC managed to safeguard its staff members from dying of COVID-19 even though 112 of them became infected. In spite of the dire situation of COVID-19, CMAC managed to implement its humanitarian demining activities in accordance with the Integrated Workplan 2022 (IWP-2022) and achieved favorable results. Succinctly, CMAC achieved over 194km<sup>2</sup> of landmine/ERW contaminated areas by having found and destroyed 17,779 landmines and 43,498 UXOs, collected 362kg of small arms, 2,288,123 pieces of fragmentation and 52 other munitions, and responded to 3,235 requests from the local authorities and communities for interventions. More remarkably, CMAC also found 14 new locations of chemical drums dropped from the US aircrafts during the Vietnam War. These achievements have been beneficial directly to 11,468 families (approximately 43,372 people) and 3,012 teachers and students and beneficial indirectly to 326,836 families (approximately 11,498,182 people).

In the pursuit of these achievements, CMAC faced the many challenges such as the dangerous nature of demining work, the outbreak of COVID-19, the environmental factors, the flood, the condensed minefields/UXO-fields, the impact of deminers' ageing, and suchlike. No matter how challenging it faced, CMAC still managed to achieve favorable results—inevitably contributed to saving lives and supporting development for Cambodia, especially bolstering the Royal Government of Cambodia's ambition for the Kingdom of Cambodia's Landmine-Free by the end of 2025. Thus, as of 2022, Cambodia has declared 9 landmine-free capital/provinces such as Phnom Penh, Kandal, Takeo, Kampot, Kep, Preah Sihanouk, Kampong Speu, Kampong Cham, and Svay Rieng.

CMAC's work would not be possible without support from international donors, development partners, the RGC, CMAA, PMAC, MAPU, and local authorities. Therefore, I would like to take this opportunity to convey my profound thanks and gratitude to all these stakeholders for their continued support and cooperation with CMAC to combat against the legacy of landmine/ERW in efforts to remove threats, return hopes, and rebuild a prosperous future for the Cambodian people. Moreover, I also wish to express my sincere appreciation to all CMAC management and staff, both the retirees and those who already passed away, for their dedication and commitment to removing threat, returning hope, and rebuilding a prosperous future for the Cambodian people.

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



## EXECUTIVE SUMMARY

CMAC’s activities in 2022 ranged from the delivery of large-scale landmine/UXO clearance (both underground and underwater clearance operations) to grassroots community education activities, community development assistance, international training programs and cutting-edge research.

The year 2022 commenced with the insurmountable difficulties of COVID-19 pandemic spread in the entire country in the full first quarter. The Royal Government of Cambodia (RGC) thus called on measures and issued directives for the people to take good care of their personal and family health, and by doing so, that could be seen as the efforts to call a halt to the spread of COVID-19 pandemic. In spite of that difficulty, CMAC still managed to conduct its tasks in terms of mine action activities in accordance with the Integrated Work Plan 2022 (IWP-2022) set out and achieved favorable results.



CMAC field operations were successfully integrated by all types of demining tools—such as manual demining, detection animal, and mechanical demining—so as to accelerate the clearance productivities.

In 2022, CMAC was able to clear and release more than 194 km<sup>2</sup> (194,523,982 m<sup>2</sup>) of



landmine/ERW contaminated areas, which represents 91.59% compared to the revised plan target of 212,380,000m<sup>2</sup>. During that reporting period, CMAC found and destroyed a total of 17,779 landmines (consisting of 17,667 APMs, 98 ATMs, and 14 IMs) and 43,498 UXOs (including 34 aerial bombs, 7,739 cluster munitions, and 35,725 other UXOs), collected 362 kg of small arms, 2,288,123 pieces of fragmentation and 52 other munitions, and responded to 3,235 requests from the local authorities and communities for

interventions. More remarkably, CMAC also found 14 new locations of chemical drums dropped from the US aircrafts during the Vietnam War.



Not only did CMAC conduct clearance operation, but it also supported development assistance in the communities, especially the post-clearance areas. Actually, those completely cleared areas were handed over to the local authorities and communities for other purposes in accordance with their requests. Regarding the socio-economic benefits in 2022, a large portion of the cleared land was used to support development, resettlement, and agriculture activities, and another small portion went to humanitarian and emergency purposes. Those achievements have been beneficial directly to 11,468 families (approximately 43,372 people) and 3,012 teachers and students and beneficial indirectly to 326,836 families (approximately 11,498,182 people).

The achievements made in 2022 contributed significantly to the country not only in terms of landmine/ERW contamination and casualty reduction but also in terms of the enhancement of livelihood, resettlement, socio-economic and infrastructural activities for the individuals and the affected communities so as to meet the National Strategy in poverty reduction. Without demining, most development activities could not be taken place as a result of ERW scattered in the entire country. Therefore, demining activities have been still prioritized to support the Royal Government of Cambodia's ambition to make Cambodia free from the threats of landmines and UXOs.



In the pursuit of attaining such results mentioned above, CMAC conducted its core activities by focusing on the execution of the four main programmes: Mine/UXO Risk Education, the Mine Information and Survey, the Mine/UXO Clearance, and the Training and Research & Development in Mine Action.





Firstly, regarding the Mine/UXO Risk Education, it is divided into five types of networks, namely the CMAC Mobile Teams itself, the Community-Based Mine Risk Reduction (CBMRR), the Community-Based UXO Risk Reduction (CBURR), the National Police, and the Buddhist Preaching Education Program. With all the programs and efforts by CMAC's MRE team and the volunteer network in conducting Mine/UXO risk education activities throughout the country in 2022, especially in the high-risk areas, there is eventually an accumulation of 20,275 MRE courses for 846,853 households from 10,806 Mine/UXO affected villages. The number of audiences amounted to 1,342,794 peoples, consisting of 484,137 men, 535,992 women, 236,258 students (in-school children), and 86,407 out-school children.



After Mine/UXO risk education messages were disseminated to the localities, it is notable that many people—old and young, especially those who participated in the courses—become more aware of the danger of Mine/UXO and particularly know how to send messages to CMAC directly or through local authorities or volunteer network when they encounter mines, UXOs, or other suspected objects. Therefore, through the volunteer network, CMAC, in 2022, received 3,193 emergency requests for intervention, consisting of 2,128 requests of anti-personnel mines (APMs), 33 requests of anti-tank mines (ATMs), 15,578 requests of Unexploded Ordnances (UXOs), and 438 requests of small arms. The Mine/UXO accidents accounted for 28 cases with 41 casualties including 10 deaths throughout the country.

Secondly, the Mine Information and Survey has also contributed greatly to the clearance achievements. The primary aim of CMAC's survey is to collect and verify landmine/ERW contamination information so as to quickly and reliably identify and classify the contaminated areas, level of risks and to enable the clearance requirements to be more clearly defined. With accurate information about minefields and UXO-fields, the demining teams therefore are able to speed up the clearance with high productivities. Evidently, 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.

In 2022, CMAC Survey Teams conducted the Baseline Survey in some suspected provinces including Battambang, Pailin, Tbong Khmum, Kampong Cham, Prey Veng, Stung Treng, and Monduliri. The team covered the land areas of more than 51 km<sup>2</sup> (51,510,153 m<sup>2</sup>) by having marked a total of 549 minefields and UXO-fields as well as conducting the liner of marking of 57,185 m.

Thirdly, the Mine/UXO Clearance involves many factors. However, CMAC categorizes in this part into three sup-parts. In Demining Tool, the report will show work and results of Manual Demining,



Detection Animal, and Mechanical Demining. In Clearance by DU, all achievements by DU will be shown, while in Special Units, this report will talk about expertise and achievements of each CMAC's special units.

Lastly, the Training and Research & Development in Mine Action are also the core activities of CMAC, contributed to the clearance outputs. Regarding the trainings, CMAC categorizes into two types: nationwide trainings (including CMAC staff members itself, RCAF, National Police, NGOs) and international trainings. In 2022, TIMA conducted 17 training courses (14 national and 3 international training courses) with a total participation of 1,229 trainees, consisting of 957 trainees from internal CMAC itself and 240 trainees from RCAF/Police/local NGO, 15 trainees from Colombian Military, 10 trainees from Myanmar, and other 7 trainees from Lao PDR. Besides that, CMAC, in recognition of the benefit of Research and Development, has been always focused on the innovation and advancement of demining tools and equipment. Evidently, in the same reporting period, CMAC has been carrying out R&D on 5 different studies: Magnetometer, Demining Robot-5 (DMR-5), the Advance Landmine Imaging System (ALIS), Press Device Attached with NIKKEN Brush Cutter, and Mine Detection Rat (MDR).

These achievements were the joint efforts contributed by each of CMAC demining and special units. CMAC currently has 17 demining and special units, including its own Headquarter (HQ) in Phnom Penh, 8 Demining Units (DUs) located in Banteay Meanchey "DU1", Battambang "DU2", Pursat "DU3", Siem Reap "DU4", Tbong Khmum "DU5", Preah Vihear "DU6", Kampong Chhnang "DDU", and Pailin "PFU", Technical Institute of Mine Action (TIMA), Dog Centre (DC), Special Unit of Underwater Operations (SUUO), and Explosive Harvesting Program (EHP) in Kampong Chhnang, Community Development Centre (CDC), Special Unit of Post-Clearance Development and Victim Assistance (PCD), and Central Workshop (CWS) in Battambang, and Peace Museum of Mine Action (PMA) in Siem Reap. Most of these Units operationally cover more than one province, enabling CMAC to cover most of the areas in Cambodia.

It is also accepted that there would be no operational achievements thereof without a combination of strong corporate management that regulated how much the operation teams could perform their tasks at the grassroots level. In efforts to accelerate the speed and efficient productivity of landmine/ERW clearance, all relevant entities simultaneously contributed their hard works to supporting the operation teams.

Department of Human Resources, in 2022, managed 1,725 staff deployments, including 1,491 permanent staff members and 199 Short Service Agreement (SSA) staff members, in a well-maintained condition so as to respond to the need of the field operations. In building staff capacity, the department also coordinated 17 training courses with 1,194 CMAC/RCAF/Police/NGO trainees. In terms of staff motivation, the department provided equal opportunities to all staff members to receive trainings, to be promoted to higher positions, to receive an increase in salary, to work in different positions, and to regularly access work areas for staff safety. During the reporting period, there was a total of 1,622 cases of staff promotion. At the same time, 71 staff contracts were terminated. The main factors of staff separation were job abandon, resignation, death, retirement, and contract end owing to misconducts.



Besides, CMAC, through the Department of Human Resources, has been committed to a reasonable staff compensation policy to ensure that staff are fairly treated in case of injuries, death or other types of staff separation, in consideration of their past performance and duration of service. In 2022, CMAC spent a total amount of USD 40,981.93 on staff compensation, in which USD 32,400 was paid on compensation due to staff death and USD 8,581,93 for medical operations. Staff health was also prioritized by human resources management as well so as to maintain CMAC's efficient clearance productivities. Despite the 9 deaths, the health division of the department did its best to coordinate with hospitals to successfully provide other 69 sick staff members with hospital services in 2022. More remarkably, 1,005 CMAC staff members throughout the countries got jabbed with the fifth dose of vaccines as of December 2022 in order to further develop immunity against COVID-19. Plus, the health division provided anti-COVID-19 medicines to 112 staff who got infection by COVID-19 and decided to receive treatment at home. Fortunately, no CMAC staff members died of COVID-19.



Department of Support also played important function in contribution to land clearance in 2022 since it could still manage to supply the operation teams with all equipment and logistical supports, albeit difficulties in transportation resulted from the restriction during the widespread of subsequent wave of COVID-19 in the first quarter and the under-construction roads, particularly National Road 5.



In order to run the clearance operations smoothly, another inevitable need is the fund. The Department of Project Management and International Cooperation has been doing every effort to fund and monitor the projects. In 2022, the department gathered a total of 22 projects consisting of 17 bilateral projects, 3 bidding projects, and 2 contractual projects.

The good leadership of CMAC has undeniably relied on the Quality Management and Internal Audit since this function serves as a tool for top management in decision-making, prospective evaluation, and problem solving. Internal audit was also applied during the operational year on support services, operation function, and finance and found some 83 deficiencies to correct for accuracy, 50 correct case, and 33 cases to follow up.

The activities of CMAC throughout the year were of honors, attaining favorable achievements such as large amount of Mine/UXO clearance areas, casualty reduction, post-clearance development, poverty reduction in affected areas, contribution to economic growth, promotion of national prestige on international stages, national capacity building in mine action, institutional enlargement and modernization, partnership and ownership, and the like. However, along with these achievements, CMAC also went through so many challenges such as dangerous nature of demining work, outbreak of COVID-19 in early 2022, environmental factors, flood, condensed Minefields/UXO-fields, impact of deminers' ageing, and suchlike.

All of these challenges have always posed difficulties for CMAC in achieving the its target workplan in terms of both the clearance outputs and management quality. Nonetheless, CMAC has been committed to finding the best possible solutions to deal with all those problems that emerged during the operation as well as to prevent future problems, too.

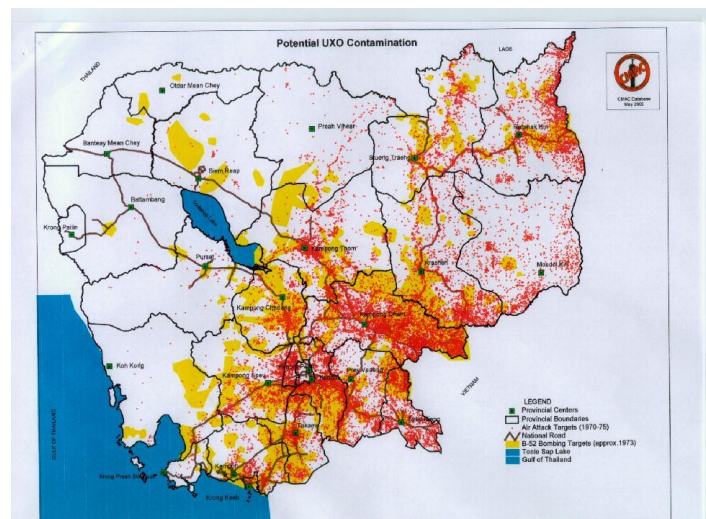


## 1. History of Landmine/ERW Problem in Cambodian

Prior to the arrival of the French, Cambodia fell in the annexation plan of the neighboring countries. The weapons utilized in the ancient war were swords, spears, arrows or other stuff made from metal. The blades of those weapons sometimes were dipped/soaked with poisonous substances in order to fiercely kill the enemies in the warfare. Until the French occupation of Cambodia from 1863 to 1953 and World War II, the Cambodian residents started to hear and get injured, maimed, or killed by the modern gunshots. Nonetheless, Cambodia had yet to have serious landmines and Explosive Remnants of War (ERW) problems.

Under the leadership of His Majesty King Norodom Sihanouk during the 1960s after Cambodia officially obtained and declared independence from France on 09 November 1953, the people of the Kingdom of Cambodia could enjoy a prosperous era, but it did not last long. The Cold War, a period of geopolitical tension between the Western and the Eastern Blocs, broke out in March 1947 following World War II and led to Vietnam War in 1955. In order to protect South Vietnam from the invasion of North Vietnam, the US, due to their geopolitical interests, decided to participate in Vietnam War and therefore dropped millions of tons of bombs on Indochina Peninsula.

It is thus evident that the presence of ERW problems in the Kingdom of Cambodia was undeniably on account of geopolitics of the region which resulted in internal political instability, thereby ultimately triggering the civil war in the country. The Vietnam War—and the US's involvement—was the curse of Cambodia in no uncertain terms. The bombardment data by the US and its allies on Cambodia's territory showed that there was a total of 223,273 bombardment records on Cambodia with 539,291 sorties, 113,716 sites, 15,562 polygons which is equivalent to 15,429 Km<sup>2</sup> of contaminated land. The amount of this bombardment data accounted for 4,038,265 tons, of which 2.8 million tons were dropped by the US.



Map of UXO contaminated areas in Cambodia

That drastic bombardment resulted in an immense devastation for the Kingdom of Cambodia and thus led to the coup d'état in March 1970 by Lon Nol to overthrow King Norodom Sihanouk as accused of involvement in the presence of the North Vietnamese troops in Cambodia's territory to fight the South for integration.

Since Lon Nol led the state, it marked the change of Cambodia 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 Kampuchea Republic Regime of Lon Nol. Inevitably, Khmer Rouge took complete control of Cambodia on 17 April 1975. Under the brutal leadership of Pol Pot, Democratic of Kampuchea became a fierce genocidal regime until Hanoi launched a major offensive in January 1979 in response to the Khmer Rouge incursions into

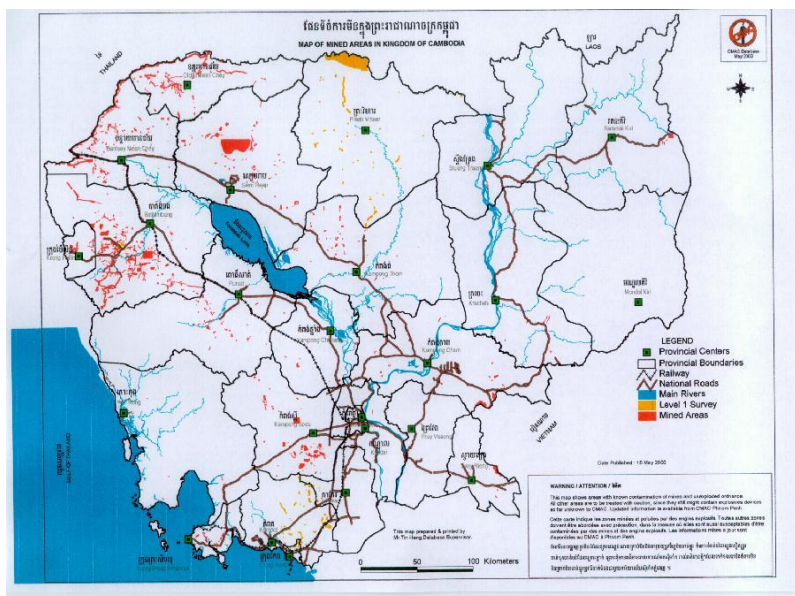


Vietnam and the unfolding humanitarian crisis. This pushed the Khmer Rouge to the northwest region of Cambodia where they still continued to resist until 1998.

Even though the Khmer Rouge collapsed, the skirmishes had yet to end. The internal conflict for control of the country could be still unsolved, albeit historical general election organized by the United Nations (UN) in 1993. On that basis, Cambodia would have no complete peace and unity unless Samdech Hun Sen 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 scattered all over the country.

Therefore, as a result of the US bombardment and civil war among its political groups competing for power over the three decades, it was estimated that there were 4 to 6 million landmines and a total of 30 million cluster submunitions, heavy bombs, and chemical bombs, which have become the Explosive Remnants of War (ERW) in Cambodia thus far. All these types have caused millions of the Cambodian people—both the involving and innocent residents—to physically injure, maim, or die. The rests also have been psychologically suffered so far since they were frightened and lost their beloved ones. Besides, all types of the country's infrastructure were badly damaged.

In spite of complete peace throughout the country in 1998, it did not mean that the Cambodian people would not be suffered anymore. In addition to mental suffering, they were still injured, maimed, or murdered by the so-called hidden killers: landmines and unexploded ordnances (UXOs). This legacy of war has left Cambodia consequences of landmines and UXOs which remain a constant threat to the safety and security of the people and a big hindrance for 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, 25 capital/provinces. This issue negatively impacted 124,427 families.



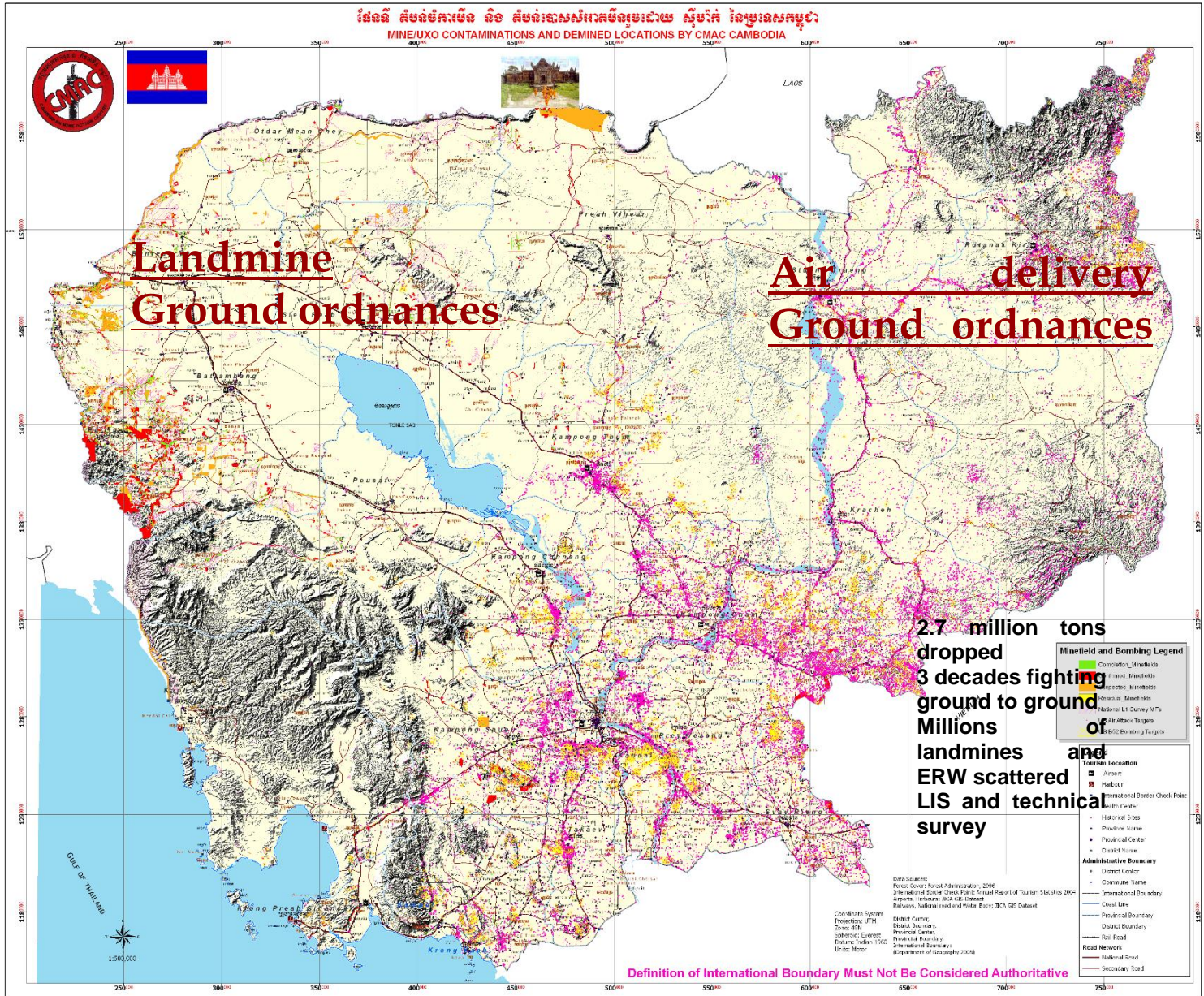
Map of mine contaminated areas in Cambodia

Obviously, the landmines/UXOs casualties in 1979 amounted to 4,674 people. Nonetheless, since the inception of the Cambodian Mine Action Centre (CMAC) by the Supreme National Council (SNC) in 1992, the annual casualty data dropped from 3,333 casualties in 1995 to 1,153 casualties in 1999 to 858 casualties in 2000 and further fell down to 65 and 44 casualties in 2020 and 2021, respectively. Despite the slump in number of casualties thereof, Cambodia has been facing a huge problem of landmines and UXOs, causing daily threats to personal security, community and national reconstruction, economic recovery, and other developmental activities.

Hence, in an attempt to support the Royal Government of Cambodia (RGC) in dealing with landmine/UXO problem, CMAC, from year to year, has spared no effort to accelerate the



clearance productivity in order for the reduction in contaminated land areas and to provide Mine Risk Education (MRE) messages to more Cambodian residents in order for the increasing awareness of the danger of landmine/UXO in the localities.





## 2. History of CMAC's Establishment

The United Nations (UN) helped maintain the ceasefire in Cambodia by deploying a small advance mission consisting mainly of military liaison officers in order to help the conflicting parties to address and resolve any violations or alleged violations of the ceasefire. Such an advance mission could be envisaged as the first stage of the good offices mission foreseen in the draft peace agreements. On that basis, the UN Secretary-General recommended that the Security Council authorize the United Nations Advance Mission in Cambodia (UNAMIC) to become operational on 09 November 1991 when Mr. A.H.S. Ataul Karim (Bangladesh) assumed his functions as Chief Liaison Officer of UNAMIC in Phnom Penh as soon as the Paris Agreements were signed on 23 October 1991.

UNAMIC had responsibility for maintaining contact with the Supreme National Council (SNC) on preparations for the deployment of UNTAC. In addition to its mission of consultation with the United Nations High Commissioner for Refugees (UNHCR) to seek repatriation routes, reception centers and resettlement areas for the Cambodian returnees and Internally Displaced Peoples (IDPs) from refugee camps along the Cambodia-Thailand border, UNAMIC deployed small teams of military personnel with experiences in training civilian populations on how to avoid injury from mines or booby traps as well as another 3 platoons consisting of about 100 demining experts who were liaison officers and disbanded soldiers from various conflicting parties in order to form mine awareness unit and conduct mine clearance. However, mine clearance was just conducted as a pathfinding procedure only to ensure the safety of those returnees and IDPs.



*CAMBODIA - SEPTEMBER 01: Mine clearance under control of French Peacekeepers In Cambodia In September, 1992-1997 "Frog" mines removed in one day. (Photo by Chrix LOVINY/Gamma-Rapho via Getty Images)*





At the end of December 1991, the Secretary-General reported to the Security Council on the need to expand UNAMIC's mandate to undertake on an urgent basis demining effort in Cambodia. **Lt. Gen. John Sanderson**, an Australian Army and former Force Commander of UNTAC, said during his visit to CMAC's minefield in Battambang on 01 May 2022 that the UN officers, acknowledging the huge landmine and ERW problems in Cambodia, used to have a meeting discussion in November 1991, aiming at creating a demining organization with a staff of 10,000 deminers in an attempt to speed up the clearance.



This effort should have begun even before the establishment of UNTAC to prepare the ground for the safe and orderly repatriation of Cambodian refugees and IDPs. Nonetheless, UNAMIC was absorbed into UNTAC once UNTAC was established on 19 February 1992 by the UN Security Council and become operational in 15 March 1992. Regarding mine action, UNTAC submitted a request to the Supreme National Council (SNC) to create a national demining organization, but there was no response yet.

Mr. I Soeun, a former MCTU staff and current CMAC staff, said that MCTU was established in April 1992 under the auspices of UNTAC to mobilize disbanded soldiers from all conflicting parties for technical trainings in mine-action. The trainings were conducted in Siem Reap Kampong Thom, Banteay Meanchey, Battambang, and Pursat provinces before moving its headquarters to Phnom Touch, Battambang Province, and each training was for a demining platoon, composed of 32 trainees. After the training, deminers were deployed in those provinces under the auspices of UNTAC. In addition to demining trainings, MCTU also developed training courses for demining technical trainers and supervisors by recruiting from the platoon leadership, with the aim of gradually enabling Cambodian staff to have ability to lead their platoon by themselves prior to the UNTAC's withdrawal from Cambodia. In 1993, before the withdrawal, all platoons of MCTU in the provinces thereof were moved to gather at the Military Barracks at Phnom Touch, Battambang Province, a place more suitable for MCTU's mine action activities than in Siem Reap



because Mine/UXO explosion in Siem Reap would affect the temples. He added that before leaving Siem Reap, MCTU conducted a total of 47 basic demining training courses (about 1,500 people) and two demining technical training courses (20 people in total).

Meanwhile, the Cambodian Mine Action Centre (CMAC) was also created as a national demining organization by SNC in June 1992, with a mandate to conduct mine clearance and mine risk education as well as to coordinate with International NGO operators such as Handicap International (HI), Mine Advisory Group (MAG), the HALO Trust, and Norwegian People's Aid (NPA). All demining operator started their mine clearance operations in the northwest of the country that same year. The Governing Council of the organization was composed of representatives from the SNC Presidency and from the office of the Special Representatives of the Secretary-General (SRSG).



The first meeting of CMAC Governing Council was thus subsequently held in November 1992 to officially run CMAC. Since then, the deminers of MCTU were subsumed into CMAC due to the UNTAC's withdrawal in August 1993 so that this new national demining organization had a total staff of approximately 2,000 individuals. Hence, the United Nations Development Programme (UNDP) and the United Nations Office for Project Services (UNOPS) started to provide technical and financial support to CMAC through a UN Trust Fund for Demining in Cambodia.

Although CMAC was already established as a national demining organization in June 1992 by SNC, this statute was further extended by the Royal Decree dated 01 November 1993 and the revised statute was approved by the Royal Decree dated 25 February 1995, conferred to CMAC the statute of an autonomous public institution with the legal entity placed under the responsibility of the Prime Minister of Kingdom of Cambodia.

On 21 June 1999, a subsequent Royal Decree gave a new statute to CMAC by providing a new structure of the executive responsibilities within CMAC. The need to formally ascertain the roles of CMAC Governing Council vis-a-vis the new Authority, the Cambodian Mine Action and Victim Assistance Authority (CMAA) formally established in September 2000 as a regulatory body,



The Prime Minister, Sam Dech Hun Sen, presented Excellent Working Medal to every Demining Unit and Training Centre of CMAC on the National Mine Awareness Day and 10<sup>th</sup> Year Anniversary of Demining Operations in Cambodia, held at Ratanak Mondul District, Battambang Province, on 24 February 2003

gave rise to the new Royal Decree on the establishment of CMAC pronounced on 07 August 2001. This new Decree condensed the size of the CMAC Governing Council membership from 12 to 7 members and clarified CMAC's roles as a National Institution to provide mine action services for



humanitarian and development programs. Subsequently, the issuance of new Royal Decree on the appointment and promotion of CMAC Governing Council Members of 8 on the 2<sup>nd</sup> November 2018.



So far, CMAC becomes a largest and oldest national demining institution in Cambodia. It is also the second oldest demining actor in the world after Afghanistan's. Currently, CMAC employs a staff of 1,725 individuals that work throughout the Kingdom of Cambodia with many demining tools including Manual Demining Teams, Mine/UXO Detection Dog, Mine Detection Rats, Mechanical Clearance Systems, Survey, EOD, and Mine/UXO Risk Education, and now some of Mine/UXO Detection Dog Teams are on their mission abroad, especially Turkey.



CMAC as of June 2022 is employing a staff of 1,752 individuals throughout the country and has its own Headquarter (HQ) in Phnom Penh, the Technical Institute of Mine Action (TIMA), Dog Centre (DC), the Special Unit of Underwater Operations (SUUO), and the Explosive Harvesting Program (EHP) in Kampong Chhnang, the Community Development Centre (CDC), Special Unit of Post-Clearance Development and Victim Assistance (PCD), and the Central Workshop (CWS) in Battambang, the Peace Museum of Mine Action (PMA) in Siem Reap, and 8 Regional Demining Units (DUs) located in Banteay Meanchey "DU1", Battambang "DU2", Pursat "DU3", Siem Reap "DU4", Tbong Khmum "DU5", Preah Vihear "DU6", Kampong Chhnang "DDU", and Pailin "PFU". Most of these Demining Units operationally cover more than one province, enabling CMAC to cover most of the areas in Cambodia.



This demining national institution, with its motto of "Saving Lives and Supporting Development for Cambodia", has been responsible for implementing mine action in the Kingdom of Cambodia with the mission statement of "Removing Threats, Returning Hopes, and Rebuilding a prosperous future for the Cambodian" by mainly focusing on the execution of the four core programs: (1) Mine/UXO Risk Education, (2) Minefield Information and Survey, (3) Mine/UXO Clearance, and (4) Training in Mine Action.





### 3. Outputs

CMAC, as the largest and oldest national demining institution in the country and the assistant to the Royal Government of Cambodia, has been conducting the many mine action activities in order to support its mission of “Saving Lives and Supporting Development for Cambodia” thus far. Nevertheless, two main types of outputs in year 2022—evidently contributed to supporting the mission thereof—will be discussed in this part: the Operational Outputs and the Socio-Economic Outputs.

#### 3.1. Operational Outputs

In terms of planning, it is not that easy due to the uncertainty of funding and the restructuring which prevailed during most of the first half of 2022 and required many reviews to the plan to match deployment and resources. At the end of 2021, CMAC launched its plan for year 2022 to clear and release 114,227,500 m<sup>2</sup> of landmine/ERW contaminated areas throughout the country.

However, in an attempt to meet the National Mine Action Strategy (NMAS), the CMAC Strategic Plan 2019-2025 for risk reduction, support of development, and poverty reduction strategy in the Kingdom of Cambodia as well as supporting the Royal Government’s goal in responding to the OTTAWA convention (Anti-Personnel Mine Ban Convention) by eliminating the anti-personnel mines by 2025, CMAC operational teams in all Demining Units have improved and increased their efforts and capacities to carry out the landmine/ERW clearance effectively and efficiently. Therefore, CMAC revised its plan to undertake the larger scale of landmine/ERW clearance by increasing up to 212,380,000 m<sup>2</sup> in earlier May 2022 in the entire country.





Two months later, seeing the difficulties of landmine casualties, particularly the disabled, at a ceremony for National Fish Day on 01 July 2022 at Trapaing Thmor reservoir located in Trapaing Thmor village, Poy Char commune, Phnom Srok district, Banteay Meanchey province, Samdech Techo Hun Sen, Prime Minister of Cambodia, requested that Minister of Economy and Finance Aun Pornmoniroth consider including expenses for landmine clearance in the national budget for 2023-2024 in order to achieve the goal of Cambodia Mine-Free 2025. More than that, the Prime Minister also called on all local philanthropists to donate for landmine/ERW clearance. Following that, there was a big movement of local donation to support mine action service in the country.

In response, CMAC's demining tools have been transformed as a big change and moved from Western to Southeast and Eastern provinces (Kampong Chhnang, Kampong Cham, Svay Rieng, Takeo, Kampot and Kampong Speu) to deploy in Samdech Techo Project (STP) under the scheme of "providing safe land, creating smile" since earlier August 2022 including conducting Baseline Survey and providing Mine Risk Education (MRE) by all Demining Units (DUs), Development Demining Unit (DDU), Pailin Frontline Unit (PFU), Technical Institute of Mine Action (TIMA), and CMAC Headquarters (HQs).

In this context, CMAC has integrated all its demining toolboxes so as to respond to the complication of minefields and UXO-fields in all projects throughout the Kingdom of Cambodia: bilateral, earmark, counterpart, and Samdech Techo projects.

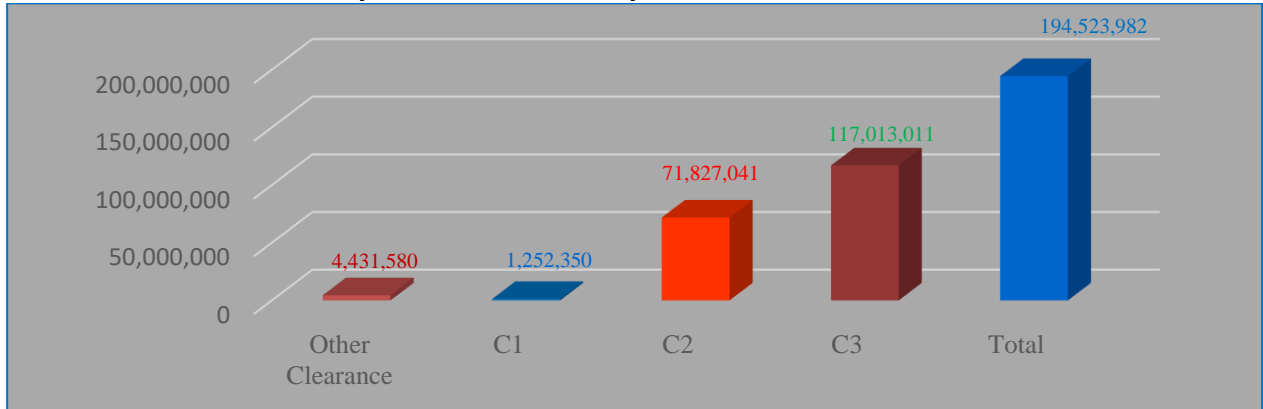
As a result, CMAC could achieve tremendous results in terms of operational clearance in 2022, almost reached the revised plan. Succinctly, CMAC cleared and released more than 194 km<sup>2</sup> (194,523,982 m<sup>2</sup>) of landmine/ERW contaminated areas, which represents 91.59% compared to the revised plan target of 212,380,000 m<sup>2</sup>. These achievements have been practical on account of the full use of mechanical demining machines, animal detection system, improved demining methodologies, toolbox integration, field management, increased trainings, and implementation of Land Release Methodology.

During that reporting period, CMAC found and destroyed a total of 17,779 landmines (consisting of 17,667 APMs, 98 ATMs, and 14 IMs) and 43,498 UXOs (including 34 aerial bombs, 7,739 cluster munitions, and 35,725 other UXOs), collected 362 kg of small arms, 2,288,123 pieces of fragmentation and 52 other munitions, and responded to 3,235 requests from the local authorities and communities for interventions. More remarkably, CMAC also found 14 new locations of chemical drums dropped from the US aircrafts during the Vietnam War.

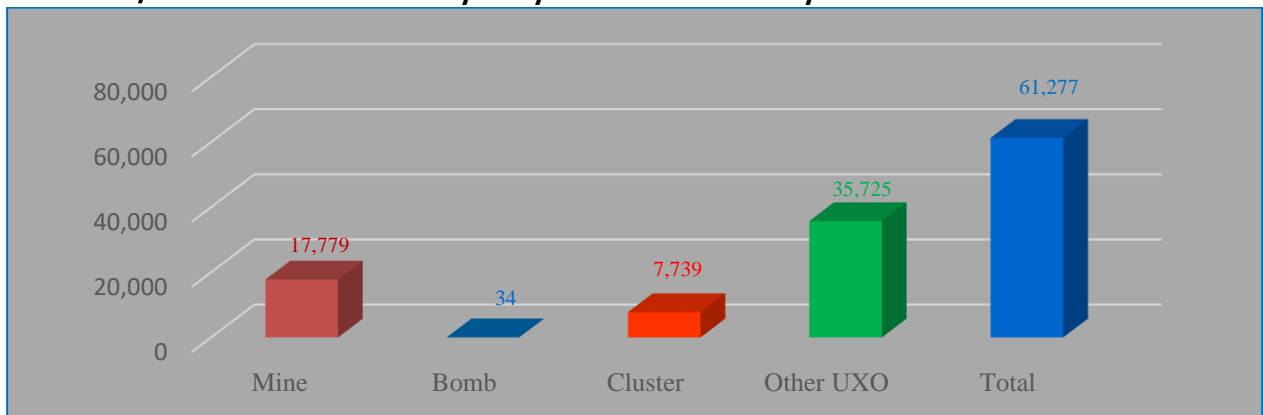




**Land Release Conducted by CMAC from January to December 2022**



**Landmine/ERW Found and Destroyed by CMAC from January to December 2022**



This new operational achievement contributed to the accumulation of more than 1,463 km<sup>2</sup> of land release made by CMAC alone from June 1992 to December 2022. Regarding the items, CMAC found and destroyed a total of 585,623 landmines (consisting of 571,928 APMs, 11,321 ATMs, and 2,374 IMs) and 2,379,613 UXOs (including 2,904 aerial bombs, 433,549 cluster munitions, and 1,943,160 other UXOs), collected 114,328 kg of small arms, 467,361,542 pieces of fragmentation and 131,890 other munitions, and responded to 121,963 requests from the local authorities and communities for interventions. The total chemical drums dropped from the US aircrafts during the Vietnam War were found and hence increased to 87 locations in Cambodia’s territory.





Nationally, Cambodia has thus cleared and released 2,580 km<sup>2</sup> since 1992. Of this, CMAC contributed 57% of the total clearance (and land release) figure, and the rests were made by other demining operators including RCAF (NPMEC), MAG, HALO Trust, CSHD, and NPA.

### 3.2. Socio-Economic Outputs

As mentioned thereof, CMAC completed the clearance and release of more than 194 km<sup>2</sup> for a period of 12 months from 01 January 2022 to 31 December 2022. Those completely cleared areas were handed over to the local authorities and communities for other purposes in accordance with their requests.

The achievements contributed significantly to the country not only in terms of the landmine/ERW casualty reduction but also in terms of the enhancement of livelihood, resettlement, socio-economic and infrastructural activities for the individuals and the affected communities so as to meet the National Strategy in poverty reduction. Without demining, most development activities could not be taken place as a result of landmine/ERW scattered in the entire country. Therefore, demining activities have been still prioritized to support the Royal Government of Cambodia’s ambition to make Cambodia free from the threats of landmines and UXOs.



Regarding the socio-economic benefits, a large portion of the cleared land was used to support development, resettlement, and agriculture activities, and another small portion went to humanitarian and emergency purposes. Those achievements have been beneficial directly to 11,468 families (approximately 43,372 people) and 3,012 teachers and students and beneficial indirectly to 326,836 families (approximately 11,498,182 people).

How is demined land being used	Land Areas (m <sup>2</sup> )	Remark
Resettlement	987,337	535 families
Agriculture	128,993,198	9,264 families
Resettlement & Agriculture	11,668,797	1,669 families
Canal & Irrigation	676,579	25,728 m
Roads	2,829,834	35,931 m
Schools	453,829	6 school buildings
Pagodas	283,494	6 pagodas
Historical Temple	3,084,241	13 temples
Tourist Resort	3,968,210	21 resorts
Others	34,195,131	730 other purposes

Other demined land was used for the communities and other public infrastructures such as electricity plant, airport, and suchlike.





## 4. Core Activities

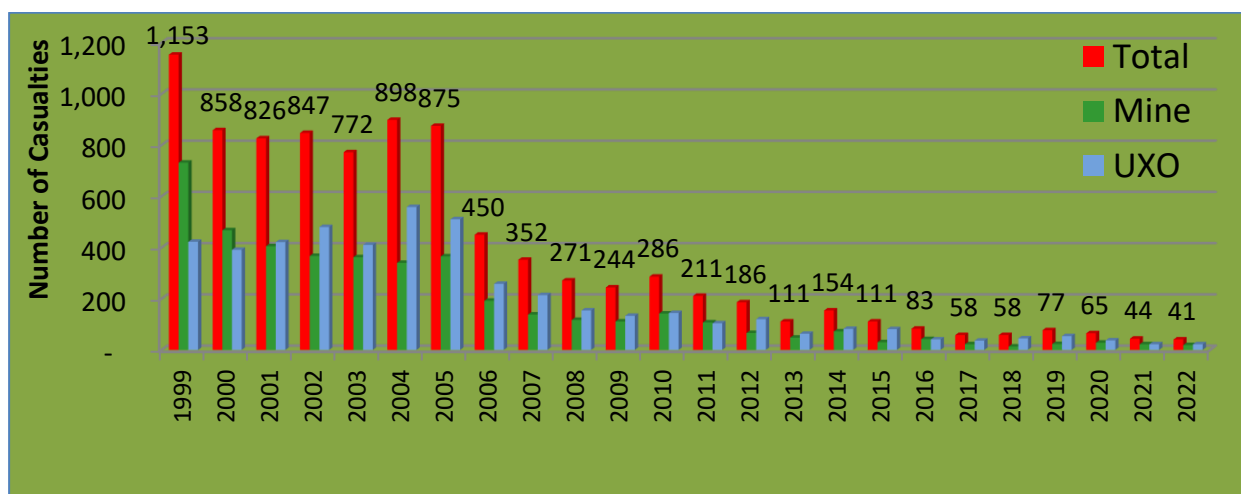
CMAC has continued to evolve with a current emphasis on developing links to the community in conjunction with land release projects. The CMAC mission that guides all activities is “Saving Lives and Supporting Development for Cambodia” with strong confidence in conducting activities of removing threats,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

### 4.1. Participatory Approach in Mine/UXO Risk Education

Mine/UXO awareness activities in Cambodia have begun since 1991 when UNAMIC initiated the program focusing on training returnees and internally displaced people (IDP) who were settling in the often-heavily-contaminated areas along the Cambodia-Thailand border on how to avoid injury from mines or booby traps.

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

Thanks to demining clearance and Mine/UXO risk education programs, the casualties decreased from year to year. Based on data provided by the Cambodian Mine Victim Information System (CMVIS) of Cambodian Mine Action and Victim Assistance Authority (CMAA), between 1979 and 2022, there were 65,005 casualties within Cambodia consisting of 51,167 casualties by landmines and 13,838 by UXO. The data fell down from 4,674 casualties in year 1979 to 858 casualties in year 2000 and continued dropping to less than 100 in year 2016—that was only 83 casualties. For a period of 12 months in 2022 alone, Mine/UXO accidents accounted for 28 cases with 41 casualties including 10 deaths throughout the country. The following bar chart indicates the number of casualties from 1999 to 2022.



Despite the significant reduction in accidents since the inception of the clearance and Mine/UXO risk education program, there were people recorded as being injured, maimed or killed by



landmines or UXOs within Cambodia. For many families in rural parts of Cambodia, landmines and UXOs remain a daily threat and a serious obstacle to their ability to maintain a sustainable livelihood and to achieve some level of socio-economic development as well as a big hindrance for developing the country's infrastructures on the whole.

Therefore, CMAC remains committed to working with local NGOs as a linkage with donors to provide assistance including financial support and community development to benefit mine/UXO victims. More remarkably, CMAC has been very active in coordinating to send the casualties to hospital. CMAC prepared its ambulances and even helicopter—a contracted one—to do this job. More than that, CMAC also prioritizes Mine/UXO clearance and Mine/UXO risk education simultaneously on the road to zero accident.

On this path, CMAC has deployed the volunteer network in the grassroots of the affected community in order to effectively provide messages about the hazard of Mine/UXO. On that basis, CMAC thus far divides the MRE programs into five types, namely the CMAC Mobile Teams itself, the Community-Based Mine Risk Reduction (CBMRR), the Community-Based UXO Risk Reduction (CBURR), the National Police, and the Buddhist Preaching Education Program.

#### 4.1.1 CMAC MRE Mobile Teams

Every CMAC staff member, both office and field staff, is the network of Mine/UXO Risk Education (MRE). In particular, the Mine/UXO clearance and intervention teams, namely 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), have always contributed to conducting Mine/UXO risk education in their operational areas.

More than that, CMAC deployed a core MRE team with 39 members to focus on strengthening the capability of the volunteer network throughout the country. In 2022, this team provided Mine/UXO risk education as a capacity building to 4,100 volunteers consisting of 2,209 local authorities and communities, 1,183 national police officials, 43 monks, and 665 CMAC staff members in order that these groups of awareness receivers will be able to further forward the Mine/UXO risk education messages to the locals residing in or around Mine/UXO affected areas.



#### 4.1.2. Community-Based Mine Risk Reduction (CBMRR)

CBMRR aims to reduce the number of landmine/UXO casualties in its target areas through strategies that can distribute to risk reduction. This network works to develop the capacity of communities to interact with other mine action components and to ensure that these mine action components are responsive to community requests. Local people in the target areas are



mobilized to become focal point for the Mine/UXO problems in their community through the establishment of Mine/UXO Committee at village, commune and district level. At the same time, the CBMRR Project establishes links with community development Projects to assist with development Projects, which can help to reduce the risk, and with victim assistance Projects to facilitate reintegration of individual injured by Mines/UXO.

So far, CBMRR, with its 2,335 volunteers consisting of 126 national police officials and 2,209 local authorities and communities, is currently providing mine risk education messages in a total of 859 villages from seven heavily landmine-affected provinces including Pursat, Battambang, Pailin, Banteay Meanchey, Oddar Meanchey, Siem Reap, and Preah Vihear.

#### 4.1.3. Community-Based UXO Risk Reduction (CBURR)

With similar objectives to CBMRR, CMAC established CBURR since 2004 to disseminate the Mine/UXO risk education messages to the UXO-affected provinces. Less than a decade of operation, it was unfortunately suspended in 2010 by virtue of financial constraints. However, this program became activated again in 2012 with financial support from the US project to provide Mine/UXO risk education messages in heavily UXO-affected provinces. So far, varieties of resources managed by CMAC have been utilized to support this network.

Currently, CBURR, with its 1,722 volunteers consisting of 1,057 national police officials and 665 CMAC staff, is providing Mine/UXO risk education messages in 17 UXO-affected provinces including Kampong Thom, Kampong Cham, Kampong Chhnang, Kampong Speu, Kandal, Takeo, Prey Veng, Svay Rieng, Stung Treng, Tbong Khmum, Siem Reap, Preah Vihear, Oddar Meanchey, Banteay Meanchey, Battambang, Pailin, and Pursat.

#### 4.1.4. MRE Program with National Police

Having the same objectives as what just mentioned above, national police officials were trained by CMAC's MRE teams in pursuit of enrichment for more understanding and awareness of Mine/UXO risk. After well trained, this volunteer network works independently, not organized by CMAC anymore, to provide Mine/UXO risk education messages in the affected localities.

Nowadays, there are 1,183 national police officials who newly received Mine/UXO risk education from CMAC's MRE teams to become part of MRE program. This network currently conducts the operation in the same provinces as CBMRR and CBURR do, for CMAC recently has updated the MRE program by involving national police officials and monks in order to increase the spread of Mine/UXO awareness.





#### 4.1.5. Buddhist Preaching Education Program

In efforts to spread the Mine/UXO awareness into all corners of the affected localities as a mean to eliminate the possibility of its accident, CMAC, in good cooperation with the local authorities and monks, recently insert Mine/UXO risk education messages into the Buddhist preaching education. Thus far, there are 43 Buddhist monks who kindly cooperate with CMAC MRE's team to provide Mine/UXO risk education. Therefore, whenever a Buddhist monk is invited to a religious ceremony, that monk—especially when offering the preaching education—always reminds all Buddhist laypeople and participants about the danger of Mines and UXOs as well as calling for and teaching them how to report to CMAC or the nearest local authorities on mines, UXOs, or other suspected objects that they will encounter. More than that, audiences in this program will further forward the messages to the members of their families, relatives, friends, and the like.



With all the programs and efforts by CMAC's MRE team and the volunteer network in conducting Mine/UXO risk education activities throughout the country in 2022, especially in the high-risk areas, there is eventually an accumulation of 20,275 MRE courses for 846,853 households from 10,806 Mine/UXO affected villages. The number of audiences amounted to 1,342,794 peoples, consisting of 484,137 men, 535,992 women, 236,258 students (in-school children), and 86,407 out-school children.



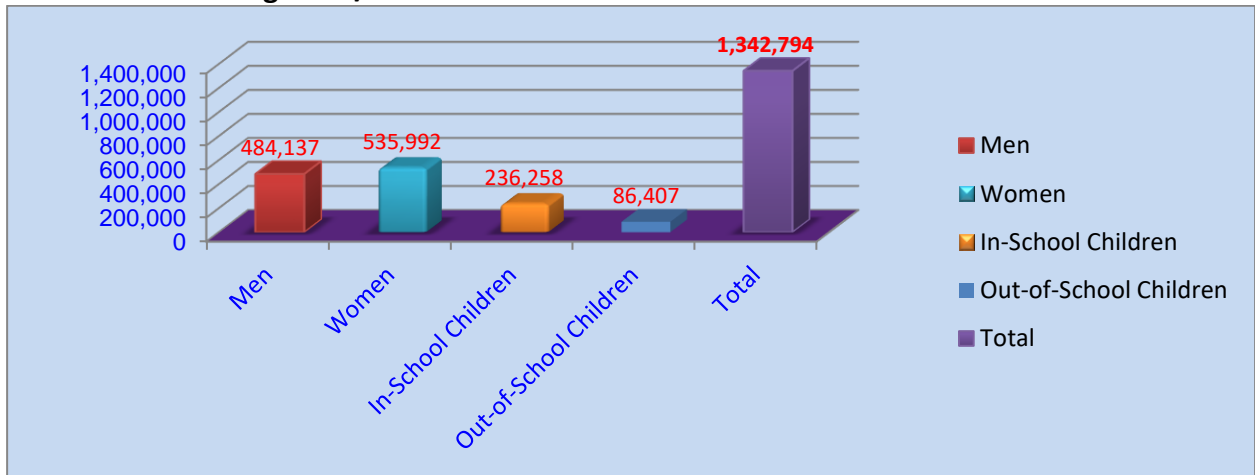
After Mine/UXO risk education messages were disseminated to the localities, it is notable that many people—old and young, especially those who participated in the courses—become more aware of the danger of Mine/UXO and particularly know how to send messages to CMAC directly or through local authorities or volunteer network when they encounter mines, UXOs, or other suspected objects. Therefore, through the volunteer network, CMAC, in 2022, received 3,193 emergency requests for intervention, consisting of 2,128 requests of anti-personnel mines



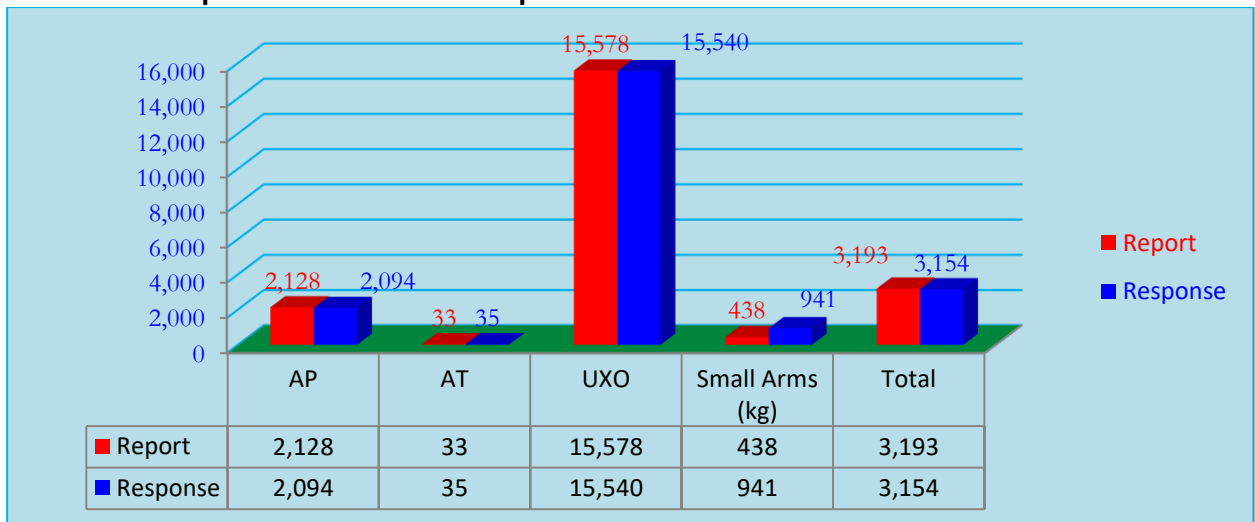
(APMs), 33 requests of anti-tank mines (ATMs), 15,578 requests of Unexploded Ordnances (UXOs), and 438 requests of small arms.

MRE's Achievements from January to December 2022																
Courses	Households	Audience Group					Numbers of Requests/Reports from Local Authorities and Communities					Numbers of Responses to the Requests from Local Authorities and Communities				
		Men	Women	Students	Outside-School Children	Total	Requests	APMs	ATMs	UXOs	Small Arms	Responses	APMs	ATMs	UXOs	Small Arms
20,275	846,853	484,137	535,992	236,258	86,407	1,342,794	3,193	2,128	33	15,578	438	3,154	2,094	35	15,540	941

Audiences Receiving Mine/UXO Risk Education in 2022



Number of Request Vs. Number of Response in 2022





## 4.2. Minefield Information and Survey

As estimated, there were 4 to 6 million landmines and a total of 30 million cluster submunitions, bomb, and chemical bombs, which have become the Explosive Remnants of War (ERW) scattered all over the Kingdom of Cambodia.

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

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



After having conducted NL1S, the outcome of the survey in the entire country showed that the Kingdom of Cambodia had a total contaminated land of 4,544 km<sup>2</sup> in 1,641 villages from 588 communes, 147 districts, 25 capital/provinces. This issue negatively impacted 124,427 families. Hence, demining operators conducted their mine action activities based on the outcomes of NL1S.

CMAC has initiated the land release through technical survey 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 measure 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 has 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 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 works has been the development and implementation of 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.



In 2022, CMAC Survey Teams conducted the Baseline Survey in some suspected provinces including Battambang, Pailin, Tbong Khmum, Kampong Cham, Prey Veng, Stung Treng, and Monduliri. The team covered the land areas of more than 51 km<sup>2</sup> (51,510,153 m<sup>2</sup>) by having marked a total of 549 minefields and UXO-fields as well as conducting the liner of marking of 57,185 m.

### 4.3. Mine/UXO Clearance

The priority to release Mine/UXO contaminated areas has been one of four main core programmes of CMAC stated in the Royal Decree. Without the clearance, the casualty data would not drop, the agricultural land could not be used, the country's infrastructure and national construction would not happen, while the fear of Mine/UXO would not be reduced, and suchlike—but vice versa with CMAC's efforts to clear and release so far. Therefore, the report



will structure this part into the demining tools CMAC utilized, the demining units, and the special units, which have been a joint contribution to saving lives and supporting development for 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 Ordnances (UXOs), or other suspectedly metal objects under the ground, thereby unearthing to remove them. Later, under the cooperation with Swedish Armed Forces, CMAC established Mine Detection Dog program in 1996 and launched the program in the operational clearance in 1997. Until 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 the Japan's ones just happened from 2006 onwards since its innovation and modification to adapt to the situation of contaminated areas in Cambodia were time-consuming. CMAC thus has categorized its main demining toolboxes into three types: Manual Demining, Detection Animal, and Mechanical Demining.

##### 4.3.1.1. Manual Demining

The manual demining refers to demining tasks 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 December 2022, the teams under this category includes 7 Platoon





Manual Demining teams (PMD), 9 Battle Area Clearance teams (BAC), 73 Technical Survey and Clearance teams (TSC), 8 Cluster Munitions Land Release teams (CLR), 14 Explosive Ordnance Disposal teams (EOD), and 2 Underwater Operations teams (UOT).



#### 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 Development 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 landmine 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 the 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 in 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 productivities in Cambodia. So far, CMAC categorizes its mine detection animals into two types: Mine Detection Dog (MDD) and Mine Detection Rat (MDR).

### Mine Detection Dog

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



After the Swedish Armed Forces completed its mission in Cambodia in 2002, Mine Detection Dog Program was handed over to CMAC to manage on its own. Since then, CMAC, in partnership with Norwegian People's Aid (NPA) and with the financial support from Norwegian Ministry of Foreign Affairs, continued its cooperation and developed several searching 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 December 2022, CMAC's Dog Centre has a total of 130 dogs including dog operations, dog under training, puppy under training, and bitches for breeding. Among the total dogs, there are 46 operational dogs that have been both deployed for the dog operations and integrated with other demining tools to conduct the clearance such as Cluster Munitions Technical Survey Dog (CTD), Short Leash Detection Dog (SLD), Explosive Detection Dog (EDD), Improvised Explosive Device Dog (IED), and Technical Survey Dog (TSD).

Dog Situation:	Varieties	Sex		Total
		Male	Female	
Dog Operations	EDD/CTD	5	3	8
	SLD	17	17	34
	IED	3	1	4
Dog Under Training	Semi-training	31	27	58
	Full Training	4	4	8
Puppy Under Training	Green training	3	2	5
Bitches For Breeding		1	12	13
Total:		64	66	130

### 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 at the very first time on 27 April 2015, and more MDRs arrived in subsequent years.



In 2022, CMAC, in partnership with APOPO, deployed 84 rats in mine action activities in Preah Vihear and Siem Reap in 62 minefields with land release achievements of 6,840,923 m<sup>2</sup>. During the reporting period, MDR detected 607 anti-personnel mines, 8 anti-tank mines, 176 cluster



munitions, and 435 UXOs. Plus, the team integrated with MDR also found and collected 104,318 pieces of fragmentation. This clearance achievements made by MDR teams have been beneficial to 18,516 families (approximately 80,409 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 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 is so far deploying two types of mechanical demining systems from Japan—they are Demining Machine (DM) and Brush Cutter (BC).



#### Demining Machine

The presence of 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 was 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 the 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 high degree of efficiency in clearing anti-personnel mines (APMs) at different depths, soil types, and environments. Therefore, in 2022, CMAC deployed a total of 11 demining machines out of 13 Japan's Demining Machines (DMs) to integrated with CMAC's Manual Demining to form 11 Demining Machine Teams for conducting Mine/UXO clearance under various Demining Units (DUs) throughout the country.

It is noteworthy that a Demining Machines was usually integrated with the Manual Demining in order to form a demining machine team in efforts to contribute to increased manual demining efficiency and effectiveness as well as safety.

### **Brush Cutter**

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

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



The purpose of the Brush Cutter machines is to clear vegetation in minefields and UXO-fields, which was estimated of taking around 70%-80% of deminers' time spent on cutting the vegetation manually. In 2022, CMAC deployed 28 Brush Cutter machines donated by Japanese Government. The same as DM, a BC machines is usually integrated with the manual demining to form a Brush Cutter Team in efforts to contribute to increased manual demining efficiency and effectiveness as well as safety.



#### 4.3.2. Clearance by Demining Units

In maintaining effective management in landmine/ERW clearance, CMAC has struck to minimize a downtime and maximize cost effectiveness and efficiency in addressing the problems encountered during the reporting period landmine/ERW clearance operations as well as finding alternative ways to assist Demining Units (DUs) to improve their activities via internal monitoring activity at DU and middle management Levels to reflect progress achievement against the annual work plan based on existing projects, projects' targets, demining resources, clearance techniques, and methodologies of CMAC's strategy,

Therefore, CMAC has divided and tasked the operational clearance to its subordinate demining units to implement the projects in their responsible areas. In 2022, a total of 1,725 staff members has been divided into office and field staff working in various units throughout the country. All staff members, both office and field staff, have been working under the management and monitoring of CMAC HQ.

#### Headquarters (HQ)

The Cambodian Mine Action Centre (CMAC) has its own headquarters in CMAC Building, Duong Ngeap Street, Kork Chombak Village, Sangkat Teuk Thla, Khan Sen Sok, PO Box 116, Phnom Penh, the Kingdom of Cambodia. Among the total staff members, HQ was responsible to cover the area of both office and field work in 7 capital/provinces including Phnom Penh, Kandal, Takeo, Kampot, Kep, Kampong Speu, and Sihanouk Ville.

Besides the top management and office staff in HQ, the rest were field staff divided into various teams to conduct the clearance. As a result, CMAC HQ (January-December, 2022) attained the land release of 30,449,668 square meters of landmine/ERW contaminated areas by having found and destroyed 1,670 anti-personnel mines, 4 aerial bombs, 25 cluster munitions, and 2,914 other



UXOs, removed 120,136 pieces of fragmentation, and responded to 195 requests from local authorities and communities for intervention.

### 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 the financial support from the Federal Republic of Germany. TC was absorbed into TIMA on 01 March 2015, and so far, with its expertise instructors, it is still a repository of technical expertise and operational SOPs. All national and international trainings, ranging from Basic Demining Course to EOD Level 4 as well as Mine/UXO Awareness, Vehicle Driving, Radio Communication, Mine Detection Dog and other relevant courses in mine action sector are most of the time conducted at TIMA. When there is a need, more expertise instructors are sent from CMAC HQ and other DUs.

In 2022, TIMA conducted 17 training courses (14 national and 3 international training courses) with a total participation of 1,229 trainees, consisting of 957 trainees from internal CMAC itself and 240 trainees from RCAF/Police/local NGO, 15 trainees from Colombian Military, 10 trainees from Myanmar, and other 7 trainees from Lao PDR.

#### Internal Trainings in 2022 (Countrywide Level)

No	Training Course	Location	Trainee Source	Num. Trainee			Duration		
				M	F	Total	Start Date	Finish Date	Total Days
1	Basic Dog Handle Course 18	TIMA	DUs	11	9	20	13-Dec-21	15-Mar-22	93
2	Basic Demining Course 142	TIMA	Children of Staff	196	93	289	18-Jan-22	22-Feb-22	35
3	Basic Demining Course 142	TIMA	Children of Staff	194	92	286	2-May-22	13-May-22	12
4	Basic Dog Handle Course 19	TIMA	DUs	18	10	28	1-Mar-22	28-Jun-22	
5	EOD level 3	TIMA	DUs	8		8	13-Jun-22	22-Jul-22	40
6	Refresher Course for Team Leader/Commander	TIMA	DUs	119	2	121	28-Jul-22	4-Aug-22	7
7	EOD Level 3 plus	TIMA	DUs	12		12	1-Aug-22	9-Sep-22	
8	Refresher Mine Detector Machine nad Integrate	TIMA	DUs	64	7	71	18-Oct-22	21-Oct-22	
9	Basic Demining Course 143	TIMA	Children of Staff	90	29	119	24-Oct-22	16-Dec-22	
<b>SUB TOTAL:</b>				<b>712</b>	<b>242</b>	<b>954</b>			
<b>GRAND TOTAL:</b>				<b>954</b>					

#### External Training in 2022 (Countrywide Level)

No	Training Course	Location	Trainee Source	Num. Trainee			Duration	
				M	F	Total	Start Date	Finish Date
1	EOD level 3	TIMA	CSDH	10	2	13	13-Jun-22	22-Jul-22
			Police	1				
2	Basic Demining	TIMA	APOPO	6	2	8	4-Jul-22	22-Jul-22
3	EOD Level 3 plus	TIMA	CSDH	10	2	13	1-Aug-22	9-Sep-22
			Police	1				
4	Mine Detector Machine	Takeo	RCAF	188		188	8-Aug-22	19-Aug-22
5	Basic Dog Handler	TIMA	RCAF	18		18	4-Oct-22	31-Dec-22
<b>SUB TOTAL:</b>				<b>234</b>	<b>6</b>			
<b>GRAND TOTAL:</b>				<b>240</b>				



In addition to the trainings, TIMA has been also involved with landmine/ERW clearance operations in Kampong Chhnang and Kampong Thom provinces. In 2022, the teams under TIMA cleared and released 1,985,609 square meters of landmine/ERW contaminated areas by having found and destroyed 164 anti-personnel mines, 3 bombs, 209 cluster munitions, 889 UXOs, and 52 other munitions, removed and collected 62,400 pieces of fragmentation, and responded to 170 requests from local authorities and communities for intervention.

### **Pailin Frontline Unit (PFU)**

PFU was created in early May 2021 with a rented office in Chamkar Kaphe Village, Sangkat Tuol Lvea, Krong Pailin, Pailin Province. The teams under PFU have to be responsible for the clearance operations and Mine/UXO risk education in the whole Pailin Province.

PFU land release achievement in 2022 was recorded for 4,689,873 square meters. In this reporting period, all teams found and destroyed a total of 818 anti-personnel mines, 2 anti-tank mine, and 2,247 UXOs, removed and collected 120,136 pieces of fragmentation, and responded to 195 requests from local authorities and communities for intervention.

### **Development Demining Unit (DDU)**

Sharing venue with the Technical Institution of Mine Action (TIMA) in Mong Barang Village, Sangkat B'er, Krong Kampong Chhnang, DDU was established to support all types of development projects throughout the country. The teams under DDU was in response to the needs of development projects from the Royal Government, NGOs, private entities, and suchlike.

In 2022, DDU provided development services to various stakeholders in Kampong Cham, Kampong Chhnang, Kampong Thom, Kandal, Koh Kong, Prey Veng, Svay Rieng, and Siem Reap provinces, and its land release achievement was recorded for 22,316,693 square meters. In this reporting period, the teams of DDU found and destroyed 1,366 anti-personnel mines, 1 aerial bomb, and 2,229 UXOs and removed and collected 81,658 pieces of fragmentation and 1kg of small arms.

### **Demining Unit 1 (DU1)**

CMAC has signed a lease to run DU1's office in Ou Ambel Village, Sangkat Ou Ambel, Krong Serei Saophoan, Banteay Meanchey Province. DU1 divided its staff into various teams to conduct the clearance operations and Mine/UXO risk education only in this north-western province.

As a result, DU1 (January-December, 2022) attained the land release of 12,479,261 square meters of landmine/ERW contaminated areas by having found and destroyed 1,274 anti-personnel mines, 13 anti-tank mines, and 1,640 UXOs, removed and collected 303,551 pieces of fragmentation and 9kg of small arms, and responded to 135 requests from local authorities and communities for intervention.

### **Demining Unit 2 (DU2)**

DU2 is located in Andoung Chenh Village, Sangkat O'cha, Krong Battambang. Previously, DU2 was responsible for clearance operation, community assistance development, and Mine/UXO risk





education in Battambang, Pailin, and Pursat provinces. So far, the DU2's operations have been condensed to focus on only Battambang Province in efforts to speedily free this province from the threats of landmine/ERW.

For a period of 12 months in 2022, DU2 attained the land release of 42,466,683 square meters of landmine/ERW contaminated areas by having found and destroyed 8,075 anti-personnel mines, 57 anti-tank mines, 7 improvised mines, 4 aerial bombs, and 10,082 UXOs, removed and collected 944,246 pieces of fragmentation and 20kg of small arms, and responded to 322 requests from local authorities and communities for intervention.

### **Demining Unit 3 (DU3)**

CMAC has signed a lease to run DU3's office in Toul Makak Village, Sangkat Roleab, Krong Pursat, Pursat Province after moving from Pailin in March 2021. DU3 is responsible for conducting the operations in the whole Pursat Province.

For a period of 12 months in 2022, DU3 attained the land release of 13,710,761 square meters of landmine/ERW contaminated areas by having found and destroyed 1,935 anti-personnel mines, 2 anti-tank mine, and 4,267 UXOs, removed and collected 162,164 pieces of fragmentation, and responded to 266 requests from local authorities and communities for intervention.

### **Demining Unit 4 (DU4)**

DU4 is located in Anlong Pir Village, Trapeang Thom Commune, Prasat Bakong District, Siem Reap Province. DU4 is responsible for conducting the operations in Siem Reap, Kampong Thom, and Banteay Meanchey provinces.

As a result, DU4 (January-December, 2022) attained the land release of 10,626,049 square meters of landmine/ERW contaminated areas by having found and destroyed 773 anti-personnel mines, 6 anti-tank mines, 5 improvised mines, 1 aerial bomb, 101 cluster munitions, and 1,516 UXOs, removed and collected 147,860 pieces of fragmentation and 199kg of small arms, and responded to 225 requests from local authorities and communities for intervention.

### **Demining Unit 5 (DU5)**

Located along National Road 11, Toultra Choeng Village, Chup Commune, Tbong Khmum District, Tbong Khmum Province, DU5 has been responsible for conducting its operations in the UXO-affected eastern 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.

In 2022, DU5 cleared and released 35,271,771 square meters of the contamination land by having found and destroyed 97 anti-personnel mines, an anti-tank mine, 18 aerial bombs, 6,141 cluster munitions, and 7,387 UXOs, removed and collected 172,764 pieces of fragmentation and 69kg of small arms, and responded to 1,362 requests from local authorities and communities for intervention.



## Demining Unit 6 (DU6)

Previously, DU6 was situated in Siem Reap Province; however, by virtue of the halt in financial support from the Government of the Federal Republic of Germany in 2016, deminers and officials staff members under DU6 were reallocated to other projects, and DU6 was suspended for a period of time. When financial constraints could be solved, CMAC reactivated DU6 in February 2019 with its current address: Sra Aem Khang Tbound Village, Kantuot Commune, Choam Khsant District, Preah Vihear Province.

DU6 is now responsible to conduct the operations in 4 provinces such as Preah Vihear, Oddar Meanchey, Steng Treng, and Kratie. In 2022, DU6 land release achievement was recorded for 21,138,583 square meters. In this reporting period, all teams found and destroyed a total of 1,510 anti-personnel mines, 17 anti-tank mines, 2 improvised mines, 3 aerial bombs, 1,263 cluster munitions, and 2,596 UXOs, removed and collected 186,399 pieces of fragmentation and 30kg of small arms, and responded to 394 requests from local authorities and communities for intervention.

### 4.3.3. Special Units

In addition to the land release operations in the entire country, CMAC also has different varieties of special units with different expertise in removing threats, returning hopes, and rebuilding a prosperous future for Cambodian people. Those special units are Dog Centre (DC), Explosive Harvesting Program (EHP), Special Unit of Underwater Operations (SUUO), Special Unit of Post-Clearance Development & Victim Assistance (PCD), Community Development Centre (CDC), Peace Museum of Mine Action (PMA), and Central Workshop (CWS).

#### Dog Centre (DC)

As mentioned in the demining tool already, the concept was initiated in 1996 under the cooperation between CMAC and Swedish Armed Forces. In 1997, DC was established on the premises of the today TIMA with the technical support from the Swedish Armed Forces and the financial support from the Swedish government through the Swedish International Development Agency (SIDA). After the Swedish Armed Forces completed its mission in Cambodia in 2002, Mine Detection Dog Program became the ownership of CMAC.



Since then, CMAC, in partnership with Norwegian People's Aid (NPA) and with the financial support from Norwegian Ministry of Foreign Affairs, continued its cooperation and developed several searching techniques such as Long Leash Detection Dog (LLD), Explosive Detection Dog (EDD), and the most recently (2021) COVID-19 Detection Dog for the purpose of speeding up the



operation and providing security to the high-ranking officials for the Royal Government of Cambodia (RGC).

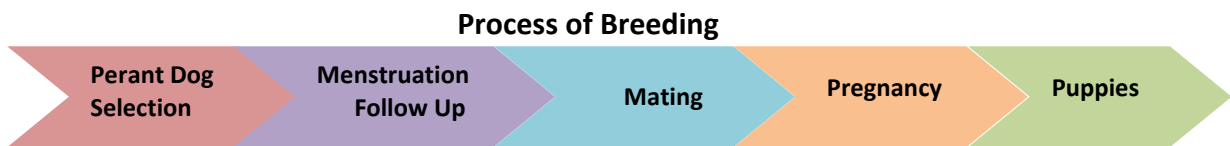
CMAC Mine Detection Dog (MDD) ownership was reflected through successfully breeding and training its high-quality mine detection dogs which were recognized by national authorities, local operators and regional and international demining organizations throughout the world.

***Dog Breeding***

To ensure 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 on-going mission and domestic market, but also for potential exports of quality dogs and services overseas.



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



***Dog Training***

Training for MDDs has begun 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 potential to be MDDs is extremely difficult and involves an ability to foresee potential in the dog.



CMAC has continued to seek for 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 upper level of training called semi-training which lasts for six months.



2. *Adult Dog Training*

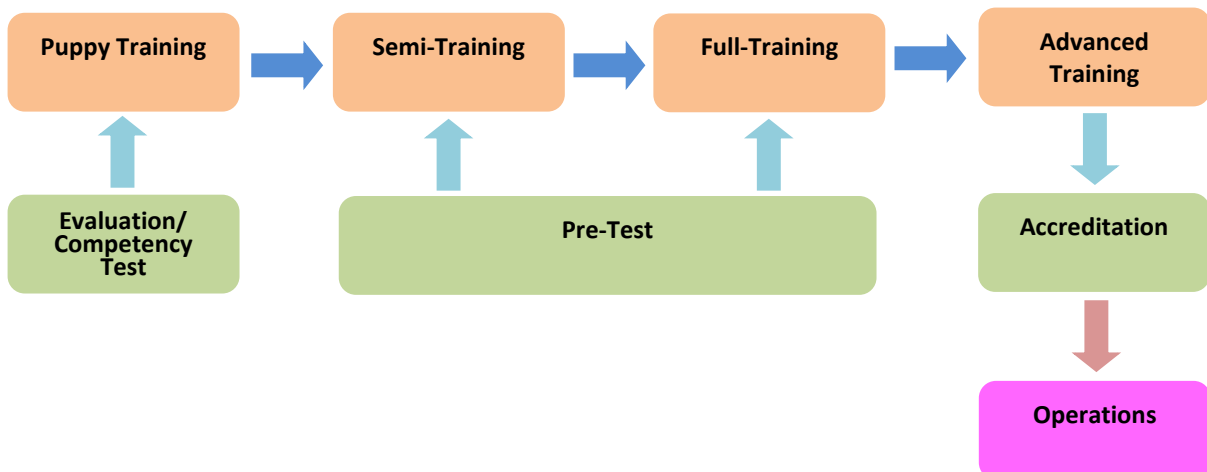
Training and test/accreditation of dogs have been done in full accordance with international and national standards and strictly follows CMAC’s own procedures to ensure quality and reliability of the products.

Dogs are trained with all kinds of ammunition and repellents and sniffed for processed or real ammunition and then put them 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 to the dog training equipment and tools, CMAC Dog Centre has both field location and sufficient technical training equipment for dog training, including dog physical training and dog technical skills. In addition to the dog skills above, CMAC Dog Centre plans to train other dog skills, including drug dogs, protection dogs, and social demonstration dogs or bodyguard dogs, etc.

3. *Process of Training*





### Progress Achievement in 2022

Dog Situation:	Variety	Dog Total		Total
		Male	Female	
Dog Operations	EDD/CTD	5	3	8
	SLD	17	17	34
	IED	3	1	4
Dog Under Training	Semi-training	31	27	58
	Full Training	4	4	8
Puppy Under Training	Green training	3	2	5
Bitches For Breeding		1	12	13
<b>Total:</b>		<b>64</b>	<b>66</b>	<b>130</b>

### Dog Training Course in 2022

Course Title	Team	N. of Course	N. of Trainees		Instructor	Date	
			Staff	Dog		Start	End
Refresher	SLD06,09	249	10	04	02	17-01-2022	28-01-2022
Refresher	Forces CBRE#01	250	07	04	01	16-03-2022	01-04-2022
Refresher	Forces CBRE#02	251	07	04	01	28-03-2022	08-04-2022
Refresher	SLD03	252	06	02	01	02-05-2022	13-05-2022
Refresher	SLD02	253	05	02	01	16-05-2022	27-05-2022
Refresher	SLD06	254	04	02	01	13-06-2022	24-06-2022
Refresher	SLD09	255	05	02	01	18-7-2022	29-7-2022
Refresher	IED01	256	02	01	01	22-8-2022	02-9-2022
Refresher	CTD01,02	257	12	04	01	5-09-2022	16-9-2022
Refresher	Forces CBRE#1	258	07	04	01	3-10-2022	14-10-2022
Refresher	SLD05,12,CTD03,04	259	30	12	04	3-10-2022	14-10-2022
Refresher	SLD03	260	01	01	01	14-11-2022	24-11-2022
Refresher	SLD02	261	05	02	01	05-12-2022	16-12-2022
Refresher	IED01	262	02	02	01	14-12-2022	30-12-2022
<b>Total:</b>		<b>14</b>	<b>103</b>	<b>46</b>	<b>18</b>		

Advance Course							
No	Name Course	N. of Course	N. of Trainees		Instructor	Date	
			Staff	Dog		Start	End
1	Advance Course #	57	2	2	1	06-12-2022	28-1-2022
2	Advance Course #	58	16	16	4	21-2-2022	31-3-2022
3	Advance Course #	59	21	21	5	4-7-2022	16-9-2022
4	Advance Course#	60	1	1	1	1-10-2022	30-10-2022
5	Advance Course#	61	3	3	1	1-12-2022	13-1-2022
<b>Total:</b>		<b>5</b>	<b>43</b>	<b>43</b>	<b>12</b>		



## Explosive Harvesting Program (EHP)

The Explosive Harvesting Program (EHP) was established since 01 March 2005 under CMAC-Golden West cooperation. The program, financially and technically supported by the US through Golden West Humanitarian Foundation, has been aimed at collecting all types of UXOs from all CMAC DUs, Demining NGOs, and communities as well as defective bombs in the RCAF's warehouse and National Police's warehouse to be recycled into new explosives for using to explode any landmines or UXOs that cannot be unearthed or transported to safe places.

Since its inception from 2005 to 2022, EHP achieved eminent results such as cutting 43,933 ordnances, destroying 226,780 items of ordnances, recovering 217,324.14 kg of FFE metals and 78,757.7 kg of explosives, and producing 594,761 blocks of newly recycled explosives. In 2022 alone, EHP was able to cut 1,655 ordnances, destroy 57,873 items of ordnances, recover 7,338.57 kg of FFE metals and 2,646.6 kg of explosives, and produce 20,450 blocks of newly recycled explosives.



### EHP's Achievements in 2022

2022	Ordnance Processed (Cut)	Ammunition Found & destroyed	Recovering of FFE metals (Kg)	Recovering of explosives (Kg)	Producing of newly recycled explosives (blocks)
Jan-22	237	4509	811.68	125.4	3500
Feb-22	2	1595	320	180	3500
Mar-22	414	21951	1252.25	562.56	3500
Apr-22	191	1341	1020.22	219.93	3100
May-22	164	3079	1222.39	706.25	1100
Jun-22	0	15998	0	0	0
July-22	5	5617	212.45	98.93	0
Aug-22	5	1890	200.83	98.17	0
Sept-22	69	1474	198.53	31.57	0
Oct-22	311	118	1215	250.69	0
Nov-22	212	238	754.72	116.60	3000
Dec-22	45	63	130.50	256.50	2750
<b>TOTAL</b>	<b>1,655</b>	<b>57,873</b>	<b>7,338.57</b>	<b>2,646.6</b>	<b>20,450</b>

## Special Unit of Underwater Operations (SUUO)

The Special Unit of Underwater Operations (SUUO) was established by CMAC in 2013 and technically supported by the US Government in the aim to conduct the underwater clearance, ranging from recovery underwater UXO/AXO, sunken barge search and clearance, bridge and pier searches, evidence collection, stranded vessels, and downed aircraft to damaged structure and body recovery or personal rescue.

Nevertheless, the year 2013 was the training and trial phase only; SUUO started its underwater operations in 2014 onwards by having found and





destroyed a total of 3,099 items and involving in safeguard for high-ranking government officials for many times. Most of these achievements were recent results of the operations in 2021 and 2022 when SUUO gained trust from the government, particularly from the inter-ministries in charge of underwater clearance, to conduct the underwater clearance operations in the riverbed.

Located on the premises of TIMA, SUUO, with its 47 demining divers, has been conducting the underwater clearance operations in the entire country. In 2022, SUUO extracted 3,037 items of projectiles and 4,672kg of small arms found in the riverbed. The following table indicates the very details of those items and small arms found and removed in year 2022.



No.	Types	Model/Effect/Origin	Size	Quantity	Remarks
1	Artillery	M-1/HE, US	105mm	1,710	
2	Artillery	M-314/Illum, US	105mm	8	
3	Artillery Fuze	M-48	61mm	149	
4	Artillery	Smoke-WP, M-110 US	155mm	2	
5	Bomb Fuze	Igniter M-23	99mm	1	
6	Mortar	M-362/HE, US	81mm	38	
7	BOMB	MK-82/GP, US	274mm	2	
8	Mortar	M-49/HE, US	60mm	399	
9	Mortar	Model-33/HE, China	120mm	3	
10	Artillery	M-48/HE, US	75mm	412	
11	Hand Grenade	M-67/HE	64mm	15	
12	Rocket	HEAT, PG-7, USSR	85mm	6	
13	Grenade Launcher	M-381/HE, US	40mm	267	
14	Direction Mine	M18A1, US	83mm	5	
15	Trip Flare Mine	M49A1, US	63.50mm	17	
16	Artillery	HE-TSD(M3) MK2, US	40mm	1	
17	Artillery	Mk-56/HE-I	20mm	2	
18	Small Arms and steel				4,672Kg
<b>TOTAL</b>				<b>3,037 Items</b>	<b>4,672kg</b>
HE: High Explosive; US: Made in the United States of America; Illum: Illumination; GP: General Purpose; T-SD: Tracer Self-Destruct; WP: White Phosphorus					

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

In efforts to promote socio-economic improvement in the landmine/ERW affected localities, CMAC has long been a proponent of integrating sustainable development activities into its demining operations. Partnering with international NGOs and other international organizations, and private companies, CMAC has established the Special Unit of Post-Clearance Development & Victim Assistance (PCD) in year 2007 as a holistic approach to community and victim support



by implementing projects with a strong community development focus after its demining activities. Some projects have its development packages to sustain rehabilitation in the local area, and if not, CMAC will approach other NGO's and private companies or individual to provide development assistance.

Community Development Assistance has been provided based on the most prioritized needs on necessary infrastructure development in the post-clearance areas in order for better socio-economic improvement in the north-west landmine/ERW heavily affected provinces of Cambodia: Banteay Meanchey, Battambang, Pailin, and Pursat. The projects also aimed at converting minefields/UXO-fields into green farmlands after the clearance activities.



PCD worked in close collaboration with the demining components in order to integrate demining and community development activities together.

Since its inception, PCD has built many schools and community markets, constructed many roads, canals, water cross structures, ponds, drainages, and so on, and provided agricultural and animal-husbandry trainings to the individuals and communities residing in the post-clearance areas. There were few projects for supporting community development assistance; however, there have been so far only two projects, supported by the People and Government of Japan, contributing to community development: the Project for Integrated Mine Clearance and Landmine Victim Assistance, Phase I (PIMV-I), implemented in Pailin and Pursat provinces in cooperation with the Crown Agents Japan Limited (CA) and the Safety Village Construction (SVC) implemented in Banteay Meanchey in cooperation with the Japan Mine Action Service (JMAS).



In 2022, PCD constructed 9,059 meters of rural roads,





one community market, one drainage dam, one box drain, and 2 places of water cross structure under PIMV-I in Pailin Province and constructed 2,000 meters of laterite road, one box drain, and 3 places of single drain as well as provided the trainings on chicken husbandry courses to 77 farmer trainees and on vegetable production courses to 35 farmer trainees under PIMV-I in Pursat Province. PCD also prepared 477 square meter of school yard and installed 13 sewers for the local people in Pursat Province.

In that same period, PCD constructed 3 km of laterite road, 6 km of waterway, a pond, a school, and 6 culverts and repaired 2 culverts in Sralao Chrom village, Toul Pongro commune, Malai district, Banteay Meanchey province under SVC of CMAC-JMAS cooperation.

**Community Development Centre (CDC)**

All CMAC’s field staff members always move from place to place in their job. When they finish the landmine/UXO clearance in one site, they will have to move to start clearing in other sites at different places, so their lives—and the families—are not in only one area, focusing on doing certain business and developing the economy for the family. Deminers sacrifice their lives, efforts, and time in removing threat and danger from landmines and UXOs as well as in contributing to development for Cambodia. However, looking back at themselves, their livelihood is far inferior to the people in the post-clearance community.



In order to encourage—or in other word to compensate—the deminers, CMAC, approved by Samdech Techo Prime Minister Hun Sen, established a so-called CMAC Community Development Centre (CDC), situated in Koas Kralo District, Battambang Province, in 2014 with a land area of 1,800 hectares. In acknowledgement of deminers’ devotion in providing the safety for individuals and communities as well as contributing to the development of the country, CDC aims at enhancing the livelihood of CMAC Staff members, especially the retirees and the disabled, by promoting resettlement, agricultural production, agritourism, cultural and eco-tourism in a sustainable manner.



CDC contributed development not just to CMAC retired staff members but also to individuals and communities nearby. The school, market, roads, ponds, reservoirs, canals, drainages, trees and





more have been beneficial to both the people residing in and near CDC. Thus far, CDC staff has the role to maintain the infrastructure in good conditions. In 2022, CDC produced and planted 1,900 young ornamental plants along Road 1 and Road 30, planted 3,200 mature trees along Road 1, Road 30, and Road 38, planted 140 cactus trees and 6 hectares of Sorghum, Restored and constructed a total of 9,950 meters of canal, conducted 10,800 meters of brush cutting along Road 1, 3, 5, 7, 9, 12, 13, 15, 17, 19, and 157, and restored 2,000 meters of gravel road.



### Peace Museum of Mine Action (PMA)

Situated in Anlong Pir Village, Trapeang Thom Commune, Prasat Bakong District, Siem Reap Province, this museum previously was a small collection of the DU4 under direct supervision of CMAC HQ in Phnom Penh. Later on, with a long vision of promoting core values of CMAC as well as nationally and internationally providing research materials, knowledge, and evidence of legacy of war in Cambodia for the young generation, the top management has transformed this small exhibition room into a so-called “Peace Museum of Mine Action” by separating the museum and a demining unit into two different units but sharing the same building and location in 2017. In the same year, in July, PMA was officially inaugurated with attendance from many high-ranking officials, embassies, donors and development partners.

So far, PMA has been employing Mine/UXO victim staff, along with other staff members, to maintain the museum in good conditions as well as to guide and to do presentation for both national and international visitors. In 2022, there were not many visitors coming to PMA as a result of subsequent waves of the spread of COVID-19 throughout the world. Only 535 visitors, including 228 Khmer residents and 307 foreigners came to explore the legacy of war in the Kingdom of Cambodia.





### Central Workshop (CWS)

CWS was created since the start of demining operations in the Kingdom of Cambodia so as to inspect the quality and conditions of CMAC vehicles and mechanical demining machines as well as conduct the repairs. Through years of evolution of CMAC’s mine-action activities, CWS was built in 2002 on the premises of DU2, located in Andoung Chenh Village, Sangkat O’cha, Krong Battambang, and the current CWS building was rebuilt again in 2005 with the fund from the



People and Government of Japan. CWS is currently employing a staff of 18 individuals in order to respond to the need for repairs from all CMAC’s Demining and Special Units throughout the country.

In 2022, CWS provided 60 repairing services to mechanical demining machines (including 39 Brush Cutters, 8 KOMATSU Demining Machines, 7 SWING Demining Machines, 2 Push Demining Machines, and 4 Excavators/Bulldozers) and 165 repairing services to vehicles (cars and heavy trucks). Among the total vehicle repairing services, there were 18 mobile workshop services throughout the country. More than that, CWS also transported 131 mechanical demining machines and serviced 56 mechanical demining machines and 208 cars/trucks during the reporting period. What is more remarkable is that CWS in 2022 provided a basic training course on “Mechanical Repair” to 7 operators of mechanical demining system from DU2. The objective of that course was to build machine operators’ spirit to take good care of the machines as well as strengthening their mechanical knowledge and know-how so as to conduct the basic repairs by themselves.





#### 4.4. Trainings and Research & Development in Mine Action

In addition to Mine/UXO risk education, survey, and clearance, the training and research & development in mine action are also the core activities of CMAC. Regarding the trainings, CMAC categorizes into two types: countrywide trainings (including CMAC staff members itself, RCAF, National Police, NGOs) and international trainings. Besides that, CMAC, in recognition of the benefit of Research and Development, has been always focused on the innovation and advancement of demining tools and equipment.

##### 4.4.1. Countrywide Trainings

In order to conduct demining operations, good attitude deminers must be well equipped with skills and techniques in mine action work. Therefore, CMAC has conducted many training courses required for demining jobs. Those courses include the refresher training courses and new training courses such as Demining, Mine Marking, EOD, First Line Management, First Aid, Platoon Commander Demolition, Platoon Supervisory, Mine Awareness, Vehicle Driving, Radio Communication, Mine Detection Dog, Mine Neutralization, and suchlike. All courses are conducted at both the Technical Institute of Mine Action (TIMA) and in the field.

Not only does CMAC train its internal staff members, but it also provides trainings in mine action to external trainees within Cambodia such as the Royal Cambodian Armed Forces (RCAF), the Bodyguard Headquarters (BHQ), the National Police, Officers from the local authorities and communities, and the Cambodia-based demining Non-Governmental Organizations (NGOs). In 2022 alone, the Technical Institute of Mine Action (TIMA) conducted 14 countrywide training courses with a total participation of 1,194 trainees, consisting of 954 CMAC trainees, 24 CSHD trainees, 8 APOPO trainees, 2 police official trainees, and 206 RCAF trainees.

##### 4.4.2. International and South-South Cooperation

Cambodia has moved from solely solving its own landmine/ERW problem to assisting other countries to do so. In this regard, CMAC has played an important role in promoting international cooperation and knowledge exchange by sharing its experiences and know-how with other mine affected countries and demining organizations. Most of these exchanges were conducted in a less formal way, whereby exchange visits and study tours were arranged directly with CMAC.





However, since 2006, the year when Japan started to play a more important role in the promotion of international cooperation under South-South Cooperation scheme, a more official exchange program has been established with the support of JICA. With this support, demining organizations from 15 African countries came to visit and learn from CMAC. Since then, further visits were organized and a more formal international cooperation arrangement was taking shape under the tripartite training arrangement supported by JICA.



Since its inception, CMAC has been an institution valued and respected for the quality of its work as a result of standardized training system and adoption of best management practice in place. This culture has been well noted by donors, development partners, and experts from other mine action institutions globally. Thanks to its operational expertise and capability, CMAC has attracted and hosted many study visits from other mine action programs.

The value of CMAC’s contributions to the mine action sector and the potential to share its leanings and experiences in implementing mine action program over the years were internationally recognized. In 2008, JICA initiated a technical assistance project called “Strengthening CMAC’s Function for Human Security Realization” to further enhance CMAC’s ability to share its know-how widely by further enhancing the capacity of CMAC’s training teams. This project was in line with one of CMAC’s strategic goals “to make CMAC’s Training Centre (TC) a Centre of Excellence for Mine Action”, making the center and other related facilities accessible as venues for delivering mine action training for both national and international clients.



The strategic objective of CMAC in realizing this goal would be to promote and strengthen international cooperation through its policy and technical exchange programmes to encourage cooperation among the 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), a scheme in which JICA provides participants from developing countries with a technical training program in collaboration with a Southern partner (third country) for the purpose of transfer or sharing of development experiences, knowledge, and technology for mine affected countries, was realized.

A signing ceremony for Memorandum of Understanding (MOU) on cooperation between CMAC, PAICMA (the Presidential Program for Comprehensive Action against Anti-personnel Landmine), and JICA marked the start of a tripartite arrangement 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. Three successful training courses were implemented during Japan Fiscal Year (JFY) 2010-2011 involving 15 participants from Colombia for a period of two weeks in Cambodia.



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



In 2022, CMAC provided three differences of international training courses in Cambodia with a total of 32 foreign trainees. The first was to the Colombian military on the “Quality Management and SOPs” under South-South Cooperation program which started on 30 May 2022 and finished on 10 June 2022 with a total participation of 15 Colombian soldiers.

The second international training course was when CMAC spent its own budget to train 10 demining personnel from the Humanitarian & Inclusion Organization from Myanmar on the “Non-Technical Survey” courses from 21-29 July 2022 in Cambodia. This training has been viewed as contribution to Cambodia’s effort as the ASEAN Chair 2022 to deal with the current Myanmar’s crisis.



The third one was the 2-week-period training to 7 trainees from UXO-Lao and 3 CMAC trainees itself



on the “Logistics and Procurement Management” course from 12-23 September 2022 and 03-14 October 2022 in Cambodia.

#### 4.4.3. Research & Development

CMAC recognizes the importance of acquiring and maintaining a high-quality demining capacity through quality training and research & development (R&D) activities. Today in the dynamic mine action environment, CMAC regards research and development as a very important component in its mine action since it has played very important roles in contribution to the achievements of Mine and UXO clearance in the Kingdom of Cambodia. Without R&D, the speed and efficiency of clearance must have been unacceptably too slow, and it must have been too dangerous to work in mine action sector. R&D has advanced the technology of mine detection machines, demining machines, brush cutter machines, and suchlike in order for more safety, productivity, and efficiency.

Therefore, CMAC has kept conducting R&D in order for the advancement of demining tools and equipment. Evidently, in 2022, CMAC has been carrying out R&D on 5 different studies: Magnetometer, Demining Robot-5 (DMR-5), the Advance Landmine Imaging System (ALIS), Press Device Attached with NIKKEN Brush Cutter, and Mine Detection Rat (MDR).

**Magnetometer:** an instrument for measuring the strength and sometimes the direction of magnetic fields, including those on or near the Earth and in space. Magnetometer is also used to calibrate electromagnets and permanent magnets and to determine the magnetization of materials. CMAC since the start of 2022 has been conducting the studies and researches on the use of magnetometer with mine detection machine to detect the military barges down in the rivers.

**Demining Robot-5:** CMAC has closely worked with the Innovative Operations System on the innovation of Demining Robot-5 (DMR-5). In 2021, the study was on its capacity of the carrier to load the air system, and from May to June, 2022, R&D team continued to conduct the research on DMR’s capacity in investigating suspected placed by detector and by air-compressor.

**Advanced Landmine Imaging System (ALIS):** CMAC R&D team, in cooperation with Tohoku University of Japan, has conducted many case studies and researches, since 2007, on the use of the Advance Landmine Imaging System (ALIS)

in minefields and UXO-fields in Cambodia in order that the technical teams from Tohoku University could understand and update ALIS technology so as to accurately speed up the clearance with efficiency and safety. From June to October 2022, the team conduct field evaluation ALIS in minefields.

## 4. ALIS IN OPERATION STAGE

TEST AND EVALUATION (DRY AND WET CONDITIONS)





**Press Device Attached with NIKKEN Brush Cutter:** CMAC R&D team conducted performance trial on press device attached with NIKKEN Brush Cutter against the light bomb unit (LBU) in August 2022, in PDR Laos.

**Mine Detection Rats (MDR):** In August 2022, CMAC R&D team, in cooperation with APOPO, conducted performance trial on a total of 19 Mine Detection Rats (MDRs) before deploying them in the operations.







## 5. Corporate Management

### 5.1. Human Resources Management

In maintaining the function of CMAC, the Department of Human Resources implements the human resource information system to enhance the management of staff information, staff relocations, and essential database staff information within the organization. This information system has significantly improved the process of staff information management, therefore enhancing the management of skills and resources within the organization. Furthermore, the process of identifying key skills to match areas of work has been improved, allowing CMAC management to better utilize the expertise of staff. In addition to this, the system enables staff's personal data to be stored in a central database maintained at CMAC Headquarters in Phnom Penh to be well maintained and protected.

#### 5.1.1. Staff Deployment

In 2022, CMAC deployed 1,725 staff members including 1,491 permanent staff members and 199 Short Service Agreement (SSA) staff members to support its field operations and office work. Furthermore, 35 staff stood down from the job. For further details, please kindly find the following table.

No.	Demining and Special Units	Permanent Staff	SSA Staff	Stand-Down	2022
					Total Staff
1	Headquarters	167	19	9	195
2	Demining Unit 1 (DU1)	129	25	1	155
3	Demining Unit 2 (DU2)	454	61	9	524
4	Demining Unit 3 (DU3)	115	12	0	127
5	Demining Unit 4 (DU4)	86	10	1	97
6	Demining Unit 5 (DU5)	156	7	1	164
7	Demining Unit 6 (DU6)	138	18	9	165
8	Development Demining Unit (DDU)	61	6	3	70
9	Pailin Frontline Demining Unit (PFU)	43	4	0	47
10	Technical Institute of Mine Action (TIMA)	28	10	1	39
11	Dog Centre (DC)	36	13	0	49
12	Special Unit of Post-Clearance Development & Victim Assistance (PCD)	6	3	0	9
13	Special Unit of Underwater Operations (SUUO)	47	0	0	47
14	Explosive Harvesting Program (EHP)	6	2	0	8
15	Community Development Centre (CDC)	2	3	1	6
16	Central Workshop (CWS)	15	3	0	18
17	Peace Museum of Mine Action (PMA)	2	3	0	5
<b>Total:</b>		<b>1,491</b>	<b>199</b>	<b>35</b>	<b>1,725</b>

### 5.1.2. Staff Training

In 2022, the human resources capacity has been well managed and strengthened with the necessary skill sets and information technology. The commitment towards building staff effectiveness can be shown through provision of training courses to employees irrespective of their current job positions. The Department of Human Resources worked very closely with the relevant departments, especially Technical Institute of Mine Action (TIMA), to conduct a training needs assessment (TNA), identify and organize training courses, arrange staff for training and make sure that training records were well updated and maintained for all staff. The trainings were well embedded within the human resource management system and categorized into internal and external trainings.



In spite of the context of COVID-19 in the early 2022, the internal trainings were still conducted in an attempt to strengthen as well as to refresh the capacity of CMAC staff members—usually before deploying to the new projects. Not just were what mentioned thereof, but the internal trainings also provided the Basic Demining Course to the raw recruits (completely new deminers) before they became well-trained deminers to fight against the legacy of war in contribution to saving lives and supporting development for Cambodia. The following table indicates the internal and external trainings that TIMA conducted in 2022:

No	Training Course	Location	Trainee Source	Num. Trainee			Duration		
				M	F	Total	Start Date	Finish Date	Total Days
1	Basic Dog Handle Course 18	TIMA	DUs	11	9	20	13-Dec-21	15-Mar-22	93
2	Basic Demining Course 142	TIMA	Children of Staff	196	93	289	18-Jan-22	22-Feb-22	35
3	Basic Demining Course 142	TIMA	Children of Staff	194	92	286	2-May-22	13-May-22	12
4	Basic Dog Handle Course 19	TIMA	DUs	18	10	28	1-Mar-22	28-Jun-22	
5	EOD level 3	TIMA	DUs	8		8	13-Jun-22	22-Jul-22	40
6	Refresher Course for Team Leader/Commander	TIMA	DUs	119	2	121	28-Jul-22	4-Aug-22	7
7	EOD Level 3 plus	TIMA	DUs	12		12	1-Aug-22	9-Sep-22	
8	Refresher Mine Detector Machine nad Integrate	TIMA	DUs	64	7	71	18-Oct-22	21-Oct-22	
9	Basic Demining Course 143	TIMA	Children of Staff	90	29	119	24-Oct-22	16-Dec-22	
<b>SUB TOTAL:</b>				<b>712</b>	<b>242</b>	<b>954</b>			
<b>GRAND TOTAL:</b>				<b>954</b>					

Not only did Human Resource Department focus on internal training, but the Department also cooperated well with other departments, particularly TIMA, in providing training course to other NGOs, Police, ARCAF, and suchlike, who were not CMAC staff.



No	Training Course	Location	Trainee Source	Num. Trainee		Total	Duration	
				M	F		Start Date	Finish Date
1	EOD level 3	TIMA	CSDH	10	2	13	13-Jun-22	22-Jul-22
			Police	1				
2	Basic Demining	TIMA	APOPO	6	2	8	4-Jul-22	22-Jul-22
3	EOD Level 3 plus	TIMA	CSDH	10	2	13	1-Aug-22	9-Sep-22
			Police	1				
4	Mine Detector Machine	Takeo	RCAF	188		188	8-Aug-22	19-Aug-22
5	Basic Dog Handler	TIMA	RCAF	18		18	4-Oct-22	31-Dec-22
SUB TOTAL:				234	6			
GRAND TOTAL:				240				

### 5.1.3. Staff Motivation

In terms of staff motivation, CMAC provides equal opportunities to all staff members to receive trainings, to be promoted to higher positions, to receive an increase in salary, to work in different positions, and to regularly access work areas for staff safety. The table below shows the staff motivation activities in 2022.

No	Description	Staff: Jan-Dec 2021	Staff: Jan-Dec 2022
1.	Position/Location Rotation	1,051	909
2.	Promotion/Salary	86	216
3.	Sick leave without pays	11	04
4.	Leave without pay	21	24
5.	Maternity/Pregnancy leave	06	16
6.	Re-appointment	28	13
7.	New position appointment	122	440
TOTAL		1,325	1,622



#### 5.1.4. Staff Separation

For this reporting period, 71 staff contracts were terminated. The main factors of staff separation are listed below:

No	Description	Staff: Jan-Dec 2021	Staff: Jan-Dec 2022
1.	Abandon the post	01	03
2.	Resignation	21	27
3.	Disability of work and chronic illness	00	00
4.	Death	07	09
5.	Retirement	45	26
6.	Turnover	02	03
7.	Incompetence	00	00
8.	End Contract	17	03

#### 5.1.5. Compensation Policy

CMAC has been committed to a reasonable staff compensation policy to ensure that staff are fairly treated in case of injuries, death or other types of staff separation, in consideration of their past performance and duration of service. In 2022, CMAC spent a total amount of USD 40,981.93 on staff compensation, in which USD 32,400 was paid on compensation due to staff death and USD 8,581,93 for medical operations. The following table indicates the comparison of amount of money spent on compensation policy between 2021 and 2022.

No	Compensation Policy	Staff: 2021	Staff: 2022
1.	Family of Death Staff	USD 25,200	USD 32,400
2.	Medical Operations	USD 8,936.64	USD 8,581.93
	<b>Total:</b>	<b>USD 34,136.64</b>	<b>USD 40,981.93</b>

#### 5.1.6. Staff Health Care

CMAC has also taken good care of the health of staff members by introducing emergency education, general health check and health care, and so on and providing first aid trainings and evaluating staff health.

For instance, in 2022, the Department provided emergency education, general health check and health care to 350 staff members and performed 79 evacuation exercises for helping the victim in case of emergencies. More than that, CMAC coordinates with the National Social Security Fund (NSSF) to issue NSSF Card for 1,281 CMAC staff members so that they can get health check or hospitalized for free. In case they are seriously sick, CMAC coordinates directly with the hospital to rescue them by helping deal with the payment. For instance, CMAC, from January to December 2022, sent 78 staff members to the hospital for rescue. Unfortunately, there were 9 deaths among the 78 sick staff members.

Until 2022, no one exactly know how long protection from COVID-19 vaccines lasts, but most people so far have strong protection against serious illness and death for at least 6 months. In an



attempt to prolong the immunity against the infection, CMAC top management spared no effort to closely work with the Ministry of National Defense and Ministry of Health to get CMAC staff members jabbed with the fourth and fifth dose of vaccines. However, not all 100% staff got jabbed; those who did not get the vaccines were due to some reasons such as allergy, chronic disease/illness, and pregnancy or plan for pregnancy.

No.	HQ/DU	Vaccine Data for CMAC Staff Members as of December 2022				
		First Dose	Second Dose	Third Dose	Fourth Dose	Fifth Dose
1	HQ	139	139	139	139	139
2	DU1	133	139	139	109	21
3	DU2	279	279	334	465	269
4	DU3	138	138	138	105	120
5	DU4	29	29	29	41	54
6	DU5	137	139	139	150	135
7	DU6	134	134	135	10	133
8	PFN	43	43	44	44	44
9	DDU	Data counted in TIMA				
10	TIMA	88	88	47	59	59
11	MDD	49	3	9	19	19
12	CWS	15	16	16	18	6
13	CDC	6	6	6	3	3
14	PCD	7	7	7	7	3
15	PMA	Data counted in DU4				
<b>Total</b>		<b>1,197</b>	<b>1,160</b>	<b>1,182</b>	<b>1,169</b>	<b>1,005</b>

In spite of attempt to prevent the infection of COVID-19 by pouring vaccines into all staff members, there were still 112 CMAC staff members who became infected in 2022. However, there were no death of this pandemic. All of them were rescued at their respective homes and ultimately got a well recovery. The following table indicates the COVID-19 infected staff in each demining and special unit from January to December 2022.

No.	HQ/DU	COVID-19 INFECTION from January-December in 2022	DEATH
1	HQ	45	NO
2	DU1	17	NO
3	DU2	22	NO
4	DU3	2	NO
5	DU4	11	NO
6	DU5	1	NO
7	DU6	11	NO
8	PFU	0	NO
9	DDU	0	NO
10	TIMA	2	NO
11	MDD	1	NO
12	CWS	0	NO
13	CDC	0	NO
14	PMA	0	NO
<b>Total</b>		<b>112</b>	<b>NO</b>



## 5.2. Support Management

The Department of Support has been assigned to provide improvement of support services to all operational areas of CMAC. The department has made tremendous efforts to support the operational work of CMAC, ranging from assessing logistical needs to the procurement and distribution of supplies, the maintenance of small vehicles and repairs, and the support to the management of the CMAC transport fleet and machinery.



### 5.2.1. Logistic Management

Responding to the challenges of providing equipment, logistical support to an organization deployed work forces to various remote parts of Cambodia. The department paid a high level of attention to their communication and logistic systems, ensuring that there was continual monitoring. The current systems have enabled the department to perform its duties and deliver satisfactory results. The followings are the achievements in 2022:

- ❖ Prepared a table comparing the increase or decrease of state assets for 2021.
- ❖ Regularly and monthly managed and monitored the movement of all equipment.
- ❖ Received and supplied some types of operational equipment from MAG and APOPO, including 90 units of Tablet Samsung Galaxy Tab-A7, one unit of Smart TV Samsung 65, one unit of desktop, one unit of NEC Projector, 3 units of Prolink Mobile WIFI, 3 units of GPS Garmin Astro-430, and 10 units of laptops.



- ❖ Received and supplied a Demining Machine (Model BM307-V24) for deploying in PIMV-I.
- ❖ Received and distributed the materials donated by the Royal Government budget such as laptop, desktop computer, office desk and chairs to all demining units.
- ❖ Received and supplied 8 units of Drone DJI Mavic-3 to all DUs for Minefield Survey.





- ❖ Cleared the documents of the 4 mine detection dogs sold to APOPO.
- ❖ Registered 72 dogs in the CMAC inventory.
- ❖ Double-checked and evaluated the reliability of equipment and the needs for equipment/materials for supporting the field operations.
- ❖ Provided equipment/materials for field operations, including uniforms, water boots, T-shirts, car tires, lubricants, dog food, dog equipment, and all kinds of equipment for supporting the field operations.



- ❖ Collaborated with relevant management in the demining and special units to inspect operational equipment and equip the teams before the start of operations.
- ❖ Facilitated the preparation of hygiene items such as alcohol and soap for distribution to staff in all units as a measure for prevention of the spread of Covid-19.
- ❖ Received and distributed Rapid Test for Covid-19 to all demining and special units.
- ❖ Received and distributed the training materials for new demining trainees, including chairs, mosquito nets, blankets, mats, blue T-shirts, and sneakers.

### 5.2.2. Maintenance and Transport Management

Transportation is the biggest component of CMAC operations and constitutes the largest cost in the inventory. The costs are mainly attributed to spare parts, fuel, and maintenance costs. To run its operations smoothly, there must be a proper maintenance and strict management for vehicles, mechanical machines (Brush Cutter and Heavy Demining Machines), and other demining materials and equipment.

No.	Type of Vehicles	Quantity	Remarks
1	Vehicles of various classifications	511	
2	Brush cutting 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	





Through the efforts to manage the means of transport to ensure their quality and reliability for supporting operations on the ground, some achievements in 2022 will be presented in this part as follows:

- ❖ Received fuel consumption plans from all Demining and Special Units and double-checked with the project and then submitted to Department of Finance for reimbursement.
- ❖ Monitored and updated vehicles and machinery to ensure both quality and efficient usage to meet the operation requirement in the fields.
- ❖ Repaired and restored 7 cars of Land Cruiser and supplied to DUs.
- ❖ Inspected and provided oil service to 23 cars and repaired 16 cars at the HQ's workshop.
- ❖ Assigned vehicles to support 284 missions from Phnom Penh to provinces and 235 times for general work within Phnom Penh.
- ❖ Evaluated cost to restore the broken vehicles and planned the repairs to support the upcoming projects.
- ❖ Organized a workshop on the shift from filling fuel at the station to using the special fuel cards and how to submit the monthly reports.
- ❖ Prepared vehicle support documents and cooperated with the General Department of taxation to prepare for the road tax payment for 2022.

### 5.2.3. Mine Detector Management

Mine Detector is the key tools for supporting the demining operations. In efforts to support the demining operations in 2022, Mine Detector Section conducted many tasks as the followings:

- ❖ Repaired 105 units of all type of mine detection machines.
- ❖ Coordinated with DU2 to inspect the quality of batteries for mine detector and replace 220 batteries.





- ❖ Coordinated with QA/QC department to check and verify the unserviceable mine detector in the store for future repair.
- ❖ Repaired and installed 2 Codan communication radios for the Development Demining Unit (DDU).
- ❖ Repaired and installed 8 Codan communication radios for the Royal Cambodian Armed Forces (RCAF).
- ❖ Participated in the training on how to use the underwater metal detection machine.
- ❖ Provided refresher training courses on how to use and take care of all types of mine detection machines to DU1, DU2, and DU3, held at CDC.
- ❖ Provide trainings to the Royal Cambodian Armed Forces on the use of Ebinger UPEX 740M, Minelab F3 and CEIA-D1/DS.
- ❖ Demonstrated of mine detection machines in the Handover Ceremony of PIMV-I and Commencement of PIMV-II on 06 April 2022 in Veal Chambang, Samlot district, Battambang province.
- ❖ Modified and adjusted the straps for Minelab F3 UXO in order to reduce weight and put it back to the teams for operation.

#### 5.2.4. Explosive Management

In 2022, the CMAC explosive section played a vital role in explosive delivery, not only to all CMAC demining and special units but also to other demining operators throughout the country. The followings are thus the achievements for a period of 12 months from January to December 2022:

- ❖ Received 10,5000 blocks of recovered explosives (1,500 blocks of 100g EHP Charge and 9,000 blocks of 100g EHP Charge Booster) from Explosive Harvesting Program (EHP) under CMAC-Golden West Cooperation.
- ❖ Issued 100g EHP Charge to all Demining Units and Demining Operators in Cambodia, including HALO Trust, MAG, NPA and CSHD for supporting their operations.
- ❖ Cooperated closely with the National Explosive Ordnance Disposal Unit to provide security and safety to the leaders during various high-ranking official meetings and national ceremonies.
- ❖ Conducted spot check on store custody, management and utilization of explosives at all Demining and Special Units and other demining operators such as HALO Trust, MAG, CSHD and NPA.





- ❖ Conducted surprise checks to mobile teams for the usage and requirement of explosives in order to ensure that the management, transportation, and storage of explosives have been properly conducted in a safe manner.
- ❖ Regularly inspected and arranged explosives at K86 warehouse.

### 5.2.5. Procurement Management

Given the nature, size and locations of CMAC's operations which is based on stock, on-time support is a vital role for Procurement Section. The Section must identify and purchase quality materials and equipment in a transparent manner, then deliver it in a timely manner to field teams and Demining Units to meet requirements of field operations. Some key achievements in 2022 are described as follows:

- ❖ Conducted 89 documents of purchase orders and 200 documents for settlement for all projects.
- ❖ Prepared procurement plan for 2023 budget supported by the Royal Government for the purchase of fuel and office equipment.
- ❖ Prepared contract documents, supply of materials and fuel, rented accommodation and other services.
- ❖ Coordinated with specialized institution in preparing legal documents to import fuel, mechanical demining machines and their spare parts with taxes and duties borne by the state.
- ❖ Coordinated with specialized institution in preparing legal documents to import mechanical demining machines and their spare parts donated by Japanese Government to the Royal Government of Cambodia to support the project of Peace Building, Japanese Mine Action Service, Sorghum Plantation, and fuel for operational support.
- ❖ Coordinate with the Department of Operations and Planning to organize emergency rescue drills (using helicopter ambulance services) to support CMAC's operations in remote areas of Stung Treng Province—so called Medivac service.

### 5.3. Project Management

To smoothly manage all the projects and accurately develop an advance project proposal, CMAC in early 2012, newly created one of the most important pillar Departments which currently is the Department of International Cooperation and Project Management (DIC&PM). DIC&PM liaises with all departments of CMAC to ensure that project proposals are well developed, funding secured, resources deployed and to ensure project outcomes and outputs are monitored, analyzed and reported. DIC&PM also maintains CMAC's relationships with the donor countries and development partners to make sure that their requirements will be achieved by the projects that have been funded. Besides, DIC&PM also ensures that the new funding opportunities will be identified and secured.



More importantly, DIC&PM has been established in order to strengthen project management and coordination as well as donors/partners relationship. DIC&PM, moreover, coordinated with mine affected countries and international organizations to advance the sustainable development campaign via trainings. DIC&PM also plays an active and responsible role towards the international community and to contribute to international training programs on mine action sector through sharing experiences and learning from CMAC.

The nature of project funding to CMAC has been provided through a number of Channels. However, the financial cash flows into CMAC have so far involved with two kinds of project funding types: the project funding received from donor contributions including bidding projects and the project funding received from contractual service. In 2022, CMAC received most of its project funding through donor contributions and bilateral contractual aside from the bidding projects. There were 55 projects, including 22 on-going projects, 15 completed projects, 5 in pipeline and 10 expected/under negotiation projects.

### 5.3.1. Project Funding from Donor Contributions

The project funding contribution refers to the humanitarian specific projects bounded by agreements signed between CMAC, on behalf of the Royal Government of Cambodia, and the particular development partners. This type of contribution was directly channeled to CMAC. In 2022, CMAC implemented 17 bilateral projects and 3 bidding projects. However, it is suggested that donors and development partners who wish to support CMAC operations place their support through bilateral funding scheme.

### 5.3.2. Contractual Service Projects

Besides humanitarian demining activities, CMAC also provided the contractual services to support development in various sectors in the Kingdom of Cambodia. In 2022, CMAC had 2 contractual projects with the Mine Advisory Group (MAG).

The table below shows the operational projects through bilateral contribution, bidding, and contractual ones among donors and partners in 2022.

No.	Grand Title	No. of Projects
<b>I.</b>	<b>BILATERAL PROJECTS</b>	<b>17</b>
1	Royal Government of Cambodia	1
2	United States of America-NPA-DU5	1
3	Golden West Humanitarian-TIMA	1
4	Improving Settler for Disabled Staff	1
5	CCL4-China Aid	1
6	PIMV-JPN	1
7	IMCCD-JPN	1
8	Samdech Techo Project (Creating Smile and Providing Safe Land)	1
9	CMAC-JMAS (RSDB-RSCS & SVC) Project	3
10	APOPO Fund	2
11	Japan International Cooperation Agency (JICA)	3
12	Counterpart Fund	1



<b>II.</b>	<b>BIDDING PROJECTS</b>	<b>3</b>
1	UNDP-Clearing for Result (CFR)	3
<b>III.</b>	<b>CONTRACTUAL PROJECT</b>	<b>2</b>
1	MAG-MDD	2
<b>IV.</b>	<b>BILATERAL, BIDDING AND CONTRACTUAL PROJECTS IN 2022 IN TOTAL</b>	<b>22</b>

#### 5.4. Quality Management and Internal Audit

Quality Management and Internal Audit are key management function that would be done based on CMAC internal procedures and standard, serving as a tool for managers in decision-making, prospective evaluation, and problem solving. Monthly, weekly field visit 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 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 advises were given to the top management in terms of operational point of view and support function to speed up field productivities when feedback and physical monitoring at the fields have been received and conducted.

##### 5.4.1. Internal Audit on Support Services and Operations Function

In 2022, CMAC audit teams has conducted audit on support services function and operations function and found 83 deficiencies requiring immediate attention on site correction and further action. These found deficiencies require addressing on site correction and to be addressed at the field by the Demining Unit level and headquarter staff.

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	01 shift	00	10	09	01
2	Sub QA	00	00	00	00	00
3	QA DU1	8 shifts	10 shifts	22	5	17
4	QA DU2	5 shifts	00	21	8	13
5	QA DU3	00	00	00	00	00
6	QA DU4	00	00	00	00	00
7	QA DU5	13 shifts	17 shifts	30	28	02
8	QA DU6	00	00	00	00	00
<b>Total</b>		<b>27 shifts</b>	<b>27 shifts</b>	<b>83</b>	<b>50</b>	<b>33 cases</b>

For further detail, please see the finding 83 deficiencies in different demining units in year 2021 as described in the table below:



No	Description	Deficiencies (Cases)	Corrective Action
1	<b>SOPs Compliance:</b> <ul style="list-style-type: none"> <li>BCT#13 and BCT#05-DU1: Not yet received newly updated SOPs.</li> </ul>	02	<ul style="list-style-type: none"> <li>Debrief to DUs Manager, OPS and DUs QA.</li> <li>Follow up</li> </ul>
2	<b>Mine Marking:</b>	10	
3	<b>Medevac:</b> <ul style="list-style-type: none"> <li>CTS#02, CTS#12, BAC#13, CLR#07/DU5: Medicine form were not completely fulfilled into document medicine.</li> <li>CTS#02/DU5: stretcher was not ready not prepared in some cases</li> <li>PBC#05/DU6: Not yet received stretcher for evacuation.</li> </ul>	07	<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>CLR#07/DU5: PPE were not used when excavating the ground</li> </ul>	01	<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>BAC#04/DU5: not prepared fragments/UXO pit</li> <li>BCT#13, BCT#05/DU1 and BAC#13, CLR#01/DU5: Control point was located in a far distance from the teams who are in operations</li> </ul>	07	<ul style="list-style-type: none"> <li>Immediate debrief to team leaders, correcting in place.</li> </ul>
7	<b>Tools integration:</b> <ul style="list-style-type: none"> <li>CTS#05, CT# 06, CTS#12/DU5: teams do not have full members</li> <li>PMD#04, PMD#06, PMD#08/DU2: teams do not have full members</li> <li>SLD#03, PBC#05, EOD#04/DU6: teams do not have full members</li> </ul>	11	<ul style="list-style-type: none"> <li>Debrief to DUs Manager, OPS and DUs QA.</li> </ul>
8	<b>Demining Drill:</b>	0	
9	<b>Quality Control</b>	0	
10	<b>Productivity:</b> <ul style="list-style-type: none"> <li>MDR#02/DU6: be able to clear 3900sqm to 4000sqm but BCT22/DU6 is allowed to operate only 4hours/day, able to cut only 2500sqm to</li> </ul>	01	<ul style="list-style-type: none"> <li>Debrief to DUs Manager, OPS and DUs QA.</li> </ul>



	2600sqm of vegetation, thus MDR#02 is not able to achieve its target.		
11	<b>Tasks Dossier Documents:</b> <ul style="list-style-type: none"> <li>▪ TSC#05, SLD#03, TSC#47, PBC#05/DU6: No request and beneficiaries in tasks Dossier, but operation is in progress</li> </ul>	4	<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>
12	<b>Completed Minefield Site Sketch:</b> <ul style="list-style-type: none"> <li>▪ CTS#02/DU5: daily records were not made in the daily task book</li> <li>▪ CTS#05, CTS#12, CTS#02, CTS#03, CLR#01, BAC#13/DU5: some missing points were found in briefing</li> <li>▪ PBC#05/DU6: Team leader has not recorded the symbol of Helicopter Landing sign and code in the briefing A0 Sketch</li> </ul>	13	<ul style="list-style-type: none"> <li>▪ Immediate debrief to Team Leaders and correcting in place.</li> </ul>
13	<b>Explosive Storage and Explosive Safety Case:</b>	0	
14	<b>Minefield Management:</b>	0	
15	<b>Quality of Equipment and Equipment Maintenance:</b> <ul style="list-style-type: none"> <li>▪ PMD#05/DU2: Accommodation tent was aged and torn</li> <li>▪ PMD#08/DU2: Accommodation tent was aged and torn</li> <li>▪ PMD#01, PMD#02, PMD#05/DU2: Vehicles tyres have been worn out</li> <li>▪ PMD#05/DU2: Battery charges for detector have been in a used manner</li> <li>▪ PMD#01, PMD#05 /DU2: Deminer's tents (2mx3m) were aged and torn</li> <li>▪ CTS#05, CTS#06, CTS#03, CLR#01/DU5: Team's vehicles have not been cleaned</li> <li>▪ BAC#10/DU5: Team's metal table was broken</li> </ul>	15	<ul style="list-style-type: none"> <li>▪ Debrief to DUs Manager, OPS and DUs QA.</li> </ul>



<b>16</b>	<p><b>Support Service for Operations:</b></p> <ul style="list-style-type: none"> <li>▪ BC#13, BCT#05, /DU1: lack of tent size 4m x 6m and A0 papers for sketching</li> <li>▪ TSC#08 /DU1: No chair, table, white board, admin tent 4mx6m, and deminer’s tent 2mx3m, lack of hand loppers and shears and A0 paper for sketching</li> <li>▪ PMD#01/DU2: lack of Admin tent size 4m x 6m, lack of west cover, and visors.</li> <li>▪ PMD#01/DU2: No Pick-up vehicle</li> <li>▪ TSC#38 /DU2: lack of one detector and one grass cutting machine</li> <li>▪ PMD 02/DU2: Lack of west cover</li> </ul>	<b>12</b>	<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>
<b>17</b>	<b>Site Accommodation:</b>	<b>0</b>	

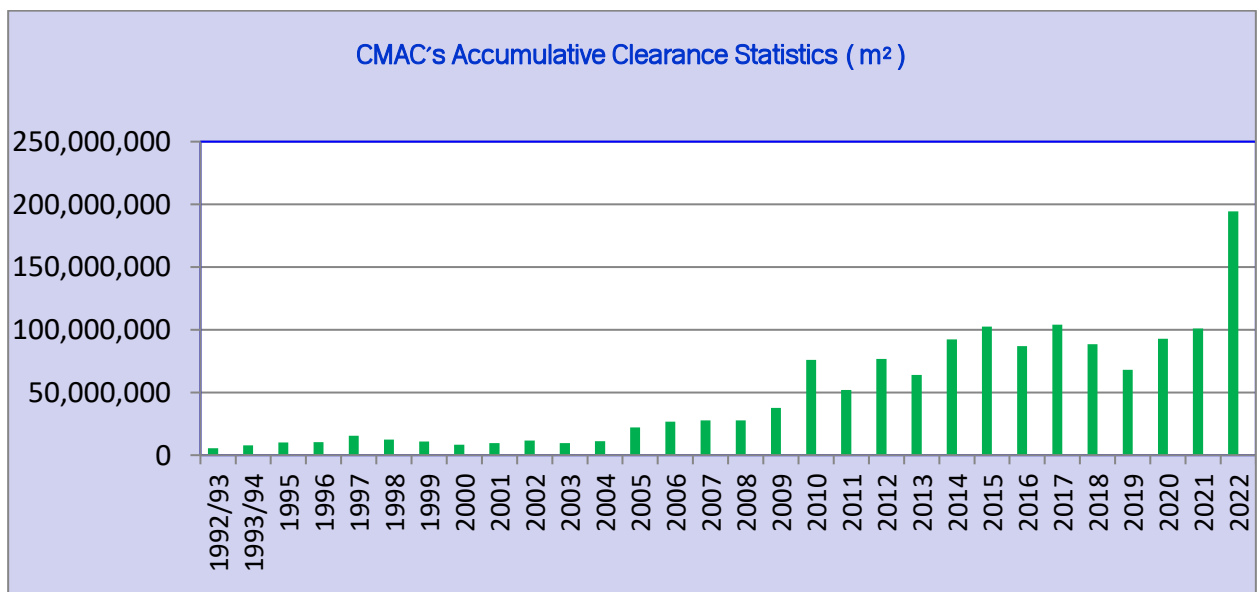
Note: The remaining 33 cases of deficiency were mostly support services e.g., operation equipment which was aged and torn and required for repairing and replacement on time.

**5.4.2. Internal Audit on Finance**

In 2022, Quality Management and Internal Audit Unit on finance was on pending due to new waves of Covid-19 outbreak.

**5.5. Top 10 Key Successes & Events in 2022**

1. A Great Successful Clearance Achievement nearing 200 km<sup>2</sup> in 2022







- Handover Ceremony “The Project for Integrated Mine Clearance and Landmine Victim Assistance (PIMV-I)” in the Kingdom of Cambodia and Groundbreaking Ceremony “The Project PIMV-II” Supported by the People and Government of Japan, Battambang, 06 April 2022.



- A Ceremony of CMAC’s 30-Year Establishment and Awarding Military Ranks for CMAC’s Retired Officials Presided Over by Lt. Gen. Hun Manet, Deputy Commander-in-Chief of the Royal Cambodian Armed Forces (RCAF), Commander of the Royal Cambodian Army, Kampong Chhnang, 04 August 2022





- 4. Implementation of Samdech Techo Project to eliminate the threats from anti-personnel mine and mine free-capital/provinces: 9 capital/provinces including Kep, Preah Sihanouk, Kandal, Kampot, Takeo, Kampong Cham, Kampong, Svay Rieng, Chhnang and Phnom Penh become "Anti-Personnel Mine Free" capital/provinces.





### 5. Preparing CMAC's Strategic Plan beyond 2025 supported by JICA



### 6. Technical Training on Demining Technologies for State Emergency Service of UKRAINE (SESU) supported by JICA





### 7. Pilot Project on Demining Cooperation along the border of Cambodia and Thailand carried out by CMAC and TMAC

#### Demining Cooperation

- 24. The Meeting welcomed the successful operations under the "Pilot Project on Demining Cooperation along the Border of Cambodia and Thailand," carried out by CMAC and TMAC in March – April 2020, which enabled both sides to release additional mine-contaminated areas. Both sides noted that the cooperation project was a success despite the COVID-19 pandemic situation.
- 25. Both sides agreed to continue to work together to further facilitate the humanitarian demining operations in the areas along the border, with the objective of fulfilling each side's respective obligations under Article 5 of the Anti-Personnel Mine Ban Convention.

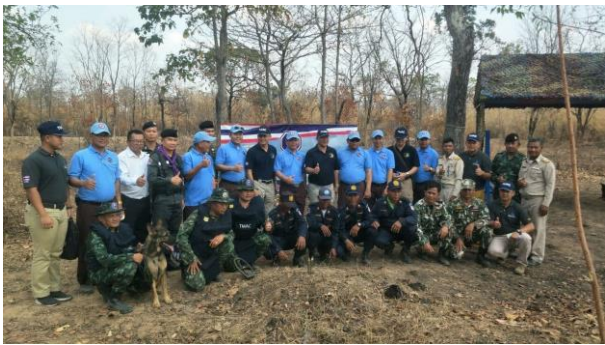


#### សូមគោរពជូន

**សម្តេចអគ្គមហាសេនាបតីតេជោ ហ៊ុន សែន នាយករដ្ឋមន្ត្រី នៃព្រះរាជាណាចក្រកម្ពុជា កម្មវត្ថុ** របាយការណ៍លទ្ធផលកិច្ចប្រជុំគណៈកម្មាធិការព្រំដែនទូទៅកម្ពុជា-ថៃ លើកទី១៥។

តបតាមកម្មវត្ថុខាងលើ ខ្ញុំបាទមានកិត្តិយសសូមគោរពរាយការណ៍ជូន សម្តេចអគ្គមហាសេនាបតីតេជោ នាយករដ្ឋមន្ត្រី មេត្តាជ្រាបដ៏ខ្ពង់ខ្ពស់ថា នៅថ្ងៃទី២៥ ខែវិច្ឆិកា ឆ្នាំ២០២២ ខ្ញុំបាទបានដឹកនាំគណៈប្រតិភូកម្ពុជា ចំនួន៣៦រូប ចូលរួមកិច្ចប្រជុំគណៈកម្មាធិការព្រំដែនទូទៅ (GBC) កម្ពុជា-ថៃ លើកទី១៥ នៅទីក្រុងបាងកក ព្រះរាជាណាចក្រថៃ ដែលដឹកនាំប្រជុំដោយរូបខ្ញុំបាទផ្ទាល់ជាមួយនឹងឯកឧត្តម ប្រាវីជ វង្សសុវណ្ណ ឧបនាយករដ្ឋមន្ត្រី ព្រះរាជាណាចក្រថៃ ជាសហប្រធានកិច្ចប្រជុំកិច្ចគណៈកម្មាធិការព្រំដែនទូទៅ (GBC) កម្ពុជា-ថៃ លើកទី១៥។ កិច្ចប្រជុំបានដំណើរការប្រកបដោយភាពរស់រវើក ការយោគយល់គ្នា សាមគ្គីភាព និងមិត្តភាព ដោយបានឯកភាព លើខ្លឹមសារនៃកំណត់ហេតុដែលបានពិភាក្សាគ្នា រួមមាន ៖

- ១.សន្តិសុខ ការរក្សាសន្តិភាព និងសណ្តាប់ធ្នាប់តាមបណ្តោយព្រំដែន
- ២.កិច្ចសហប្រតិបត្តិការទៅលើគ្រប់វិស័យ ។







10. The Project for the Construction of Training Complex and Outreach facility of Cambodian Mine Action Centre, granted by Japanese Government





## 6. Key Challenges

The activities of CMAC on the whole from January to December 2022 were of honors, attaining favorable achievements such as large amount of Mine/UXO clearance areas, casualty reduction, post-clearance development, poverty reduction in affected areas, contribution to economic growth, promotion of national prestige on international stages, national capacity building in mine action, institutional enlargement and modernization, partnership and ownership, and the like. However, along with these achievements, CMAC also went through so many challenges during this reporting period. The followings are few of them which will be discussed.

**The Dangerous Nature of Demining Work:** A famous quotation from a deminer in Afghanistan

by the United Nations Assistance Mission in Afghanistan (UNAMA) stated, “For a deminer, the first mistake is also the last one. There is no second chance.” Therefore, it has been generally accepted that demining work is a dangerous task; deminers require a high level of concentration and must strictly follow the Standard Operating Procedures (SOPs) as a safety guideline and maintenance of work standards. Reduced funding—and trying to do the same—can more or less put pressure on safety. Hence, CMAC ensures that work practices are undertaken in the safest environment for all staff, and the demining tools and equipment are appropriately allocated, maintained and supported in order to achieve the targeted outputs.



**The Outbreak of COVID-19:** The heavily constant presence of COVID-19 in the Kingdom of Cambodia in the first quarter of 2022 has posed insurmountable difficulties in everyone’s living conditions and in mine action sector as well. In response to the spread of this viral virus, the Royal Government of Cambodia (RGC) called on the nationals to take care of their health and abided by the directives of the Minister of Health as well as imposed the restriction on social interaction in the entire country. Hence, it was hard for deminers to conduct demining operations, leading to the delay in the clearance operations sometimes. Moreover, the COVID-19 protocol of isolation, quarantine, and social distancing, especially the COVID-19 testing, temperature checking, and hand cleansing, have been time-consuming and therefore really impacted CMAC’s activities, in particular impacted the clearance operations and Mine/UXO risk education.

**The Environmental Factors:** The environmental condition has been be one of the biggest impacts on demining activities. Experience shows that environmental factors, including terrain, weather conditions and density of vegetation slowed down demining work considerably. Appropriate solutions must be found to address these issues at the field level. To address this, new





approaches to landmine/UXO clearance and technology will be introduced, demining teams will be retrained and refreshed, multi-skills training will be provided, thus allowing field personnel to appropriately respond to prevailing environment.

**The Flood:** During the raining season, the flood inevitably disturbs the operations every year. In 2022, some teams had to withdraw and moved to other demining sites to escape from the food. Therefore, it was a waste of time and led to lost in clearance production. More than that, the supply of demining equipment also met difficulties.

**The Condensed Minefields/UXO-fields:** By virtue of the 30-year clearance in the national level, the landmine/ERW contaminated areas have been so far reduced to small size in a place although the scale of the total problems is still huge nationally. There have rarely large minefields/UXO-fields like before. Most minefields/UXO-fields are now condensed to small sizes and far from each other; therefore, demining teams have to move from site to site, which is very time-consuming. The too-often move of the demining teams for new sites required time spending, transportation costs, risks on transportation moves of the teams, production lost, and suchlike.

**The Impact of Deminers' Ageing:** The deminers have been getting retired gradually due to the fact that they reach the retirement age. Over the last few years from 2018, there were more than



a thousand CMAC staff who reached retirement requirement and were sent to get pension from the Ministry of National Defense. For the first six months of 2022 alone, CMAC sent another 17 retirees to the Ministry of National Defense, thereby reducing the demining forces, which impacted the clearance outputs as well. CMAC management needs to take this issue into immediate account, or CMAC will face the lack of human resource. The solution to this issue is that sparing resources by recruiting new deminers, who are prioritized and strongly encouraged for the family members of the former or current CMAC deminers.



For instance, CMAC launched a program called New Demining Experts to recruit young generation to replace the retirees in carrying out Mine/UXO clearance. However, it is time-consuming to make the new generation adapt to the demining work like the former ones.



All of these challenges have always posed difficulties for CMAC in achieving the its target workplan in terms of both the clearance outputs and management quality. Nonetheless, CMAC has been committed to finding the best possible solutions to deal with all those problems that emerged during the operation as well as to prevent future problems, too. Less serious impacts could often be dealt with through improving communication, coordination, and trainings and mobilizing appropriate resources and methods to address problems. More serious impacts caused by financial shortfalls or lack of political wills could result in more drastic contingencies which CMAC will have to take into consideration to respond to each crisis as best as possible when they occur.



## 7. Conclusion

CMAC's activities in 2022 ranged from the delivery of large-scale landmine/ERW clearance (both underground and underwater) to grassroots community education activities, community development assistance, international training programs and cutting-edge research.

The year 2022 commenced with the insurmountable difficulties of the new wave of COVID-19 pandemic spread in the entire country in the full first quarter. The Royal Government of Cambodia (RGC) thus called on measures and issued directives for the people to take good care of their personal and family health, and by doing so, that could be seen as the efforts to call a halt to the spread of COVID-19 pandemic. In spite of that difficulty, CMAC still managed to conduct its tasks in terms of mine action activities in accordance with the Integrated Work Plan 2022 (IWP-2022) set out and achieved favorable results in this year.

CMAC have integrated all its tools and utilized the full use of mechanical demining machines, animal detection systems, improved demining methodologies, toolbox integration, field management, increased trainings, and implementation of Land Release Methodology. As a result, the 17 demining and special units of CMAC made a clearance of more than 194 km<sup>2</sup> (194,523,982 square meters) of landmine/ERW contaminated areas, which represents 91.59% compared to the revised plan target of 212,380,000 square meters.

In this reporting period, CMAC found and destroyed a total of 17,779 landmines (consisting of 17,667 APMs, 98 ATMs, and 14 IMs) and 43,498 UXOs (including 34 aerial bombs, 7,739 cluster munitions, and 35,725 other UXOs), collected 362 kg of small arms, 2,288,123 pieces of fragmentation and 52 other munitions, and responded to 3,235 requests from the local authorities and communities for interventions. More remarkably, CMAC also found 14 new locations of chemical drums dropped from the US aircrafts during the Vietnam War.

Not only did CMAC conduct clearance operation, it also supported development assistance in the communities, especially the post-clearance areas. Actually, those completely cleared areas were handed over to the local authorities and communities for other purposes in accordance with their requests. Regarding the socio-economic benefits in 2022, a large portion of the cleared land was used to support development, resettlement, and agriculture activities, and another small portion went to humanitarian and emergency purposes. Those achievements have been beneficial directly to 11,468 families (approximately 43,372 people) and 3,012 teachers and students and beneficial indirectly to 326,836 families (approximately 11,498,182 people).

In conclusion, the achievements made in 2022 contributed significantly to the country not only in terms of landmine/ERW contamination and casualty reduction but also in terms of the enhancement of livelihood, resettlement, socio-economic and infrastructural activities for the individuals and the affected communities so as to meet the National Strategy in poverty reduction. Without demining, most development activities could not be taken place as a result of ERW scattered in the entire country. Therefore, demining activities have been still prioritized to support the Royal Government of Cambodia's ambition to make Cambodia free from the threats of landmines and UXOs.



## 8. Activity Photos of Key Events in 2022

The presence of COVID-19 in the Kingdom of Cambodia since the start of 2020 has posed insurmountable difficulties in everyone’s living conditions—and in mine action sector as well. In response to the spread of this viral virus, the Royal Government of Cambodia (RGC) imposed the subsequent curfews prior to the complete lockdowns throughout the country. Hence, it was hard for CMAC deminers to move their operations from place to place, leading to the delay in the clearance operations sometimes. Moreover, the COVID-19 protocol of isolation, quarantine, and social distancing, especially the COVID-19 testing, temperature checking, and hand cleansing, have been time-consuming before starting field or office work and therefore really impacted CMAC’s activities, both the field operations and the management’s work.

Due to subsequent waves of the widespread pandemic of COVID-19 in the entire country, the in-person activities of individuals in all sectors, including CMAC’s activities in mine action sector, were all strictly re-limited to a minimal extent during the first quarter of 2022. Therefore, some most-prioritized activities and meetings of CMAC’s management during that tough period were held through a newly digital system, known as Zoom Video Communications, instead. As a result, CMAC, in the first half of 2022, had to postpone many events requiring physical presence during the first quarter, hence a lot of activities since the start of the second quarter onwards when the COVID-19 pandemic was mitigated by the joint efforts of all stakeholders.

The activity photos of CMAC’s key events including both the international and the national levels together with the grassroots ones—hereinafter in this part whether via Zoom or in person—will be depicted in pictures and brief written explanations as below.



On March 7, 2022, at the CMAC Headquarters in Phnom Penh, CMAC received a delegation from the International Mine Action Center (GICHD) International Mine Action Research and Development Standard (GICHD). Switzerland has visited Cambodia to assess the progress of the mine sector, especially the Royal Government’s strategic plan in response to the Ottawa International Convention on “Eliminating the Mine Threat by 2025”. Also want to know the strategic plan of SIMAC after 2025.



On 9<sup>th</sup> March 2022 at CMAC's Phnom Penh Headquarters, Mr. Rune Dale Andresen, the resident of Representative of the Norwegian People Aid (NPA) and CMAC Director General signed the Cooperation Agreements, covering three main projects in the total amount of USD 6,444,808 million, one of which is Cluster Munitions Remnant Survey and Clearance in Eastern Cambodia, funded by the U.S. Government and the other two short term projects namely Landmine Survey & Clearance on the Cambodia-Thailand Border and the Landmine Free Provinces in Southern part of Cambodia funded by the Government of Norway.



On Sunday, May 1, 2022, H.E. John Sanderson, former Lieutenant General Commander Representative of UNTAC in Cambodia, accompanied by H.E. Senior Minister Ly Thuch, First Vice President of CMAA, H.E. Sok Lou, Battambang Provincial Governor, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC and Australian Embassy officials, made an official visit to a minefield of Clearing for Results (CFR) project in Battambang province.



On May 05, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director



General of CMAC, accompanied by technical experts, held a meeting of the Inter-Ministerial Committee to discuss the progress achievements regarding underwater unexploded ordinances clearance and recovering sunken vessels, located in Koh Peam Rang village, Koh Chek/Peam Rang communes, Peamchor/Lerk Dek districts, Prey Veng/Kandal provinces. As a leading operator in demining, CMAC also has a main duty to clear ERW under underwater, and the team regularly meets to review the result and plan for further implementation.



on Tuesday, July 5, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, accompanied by high-ranking officials from Phnom Penh Headquarters warmly welcomed the visit of H.E. Ly Thuch, Senior Minister and First Vice President, Cambodian Mine Action & Victim Assistance Authority (CMAA) as well as Indian Ambassador, and others from US Chamber of Commerce and Price Foundation. During the visit, H.E. Senior Minister commended the officers of the Institute for their ability, will and high technical skills in the field of mine related trainings, and he also highly appreciated TIMA's infrastructure, including training equipment.



On May 11, 2022, the delegation of inter-ministerial committee in charge of underwater unexploded ordinances and barges clearance, led by Gen. Neang Phart, permanent secretary of Ministry of defense and chairman of inter ministries, paid a visit to operational site at Koh Peamrang village, Kohchek commune, Peamrang district, Prey Veng province. His Excellency General, chairman of the inter-ministerial working group, commended CMAC and its partners for underwater clearance with fruitful efforts.



On Monday, June 13, 2022, at CMAC’s Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director of CMAC and Mr. Motoyaki Sato, Professor of Tohoku University of Japan signed a Memorandum of Understanding between CMAC and Tohoku University on Operational Field Evaluation of ALIS for dual sensor in minefields which last for 5 months from June 1 to October 31, 2022.



On Friday, May 13, 2022, at Technical Institute of Mine Action, Kampong Chhnang province, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, accompanied by high-ranking officials from Phnom Penh Headquarters presided over a closing ceremony of the Demining Training Course (Batch 142), with a total of 291 trainees, of which 111 were females. This training course lasted for 4 months, starting from January 18 to May 12, 2022.



On Friday, May 20, 2022, H.E. Heng Ratana, Delegate of Royal Government in charge as Director General of CMAC warmly welcomed H.E Senior Minister Ly Thuch, Vice Chairman of CMAA, H.E. Ambassador of Australia to the Kingdom of Cambodia, embassy officials, development partners, donors and private sector visiting the Peace Museum of Mine Action in Siem Reap province.



On Monday May 23, 2022, at CMAC’s Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, warmly welcomed H.E. Remco Johannes VAN WIJNGAARDEN, the newly appointed Ambassador of the Royal Netherlands to the Kingdom of Cambodia. He expressed his heartfelt gratitude to the People and Government of Netherlands for their contributions to demining efforts in Cambodia from 1993 to 2002.



On Thursday, May 26, 2022, at CMAC Phnom Penh Headquarters, Mr. Michael Heiman, Program Manager, and H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, signed an agreement on partnership and cooperation for the project of integration of animal detection system teams in Preah Vihear province. This project will be implemented from May 1, 2022 to December 31, 2023 (19 months) in the amount of 284,422 US dollars. Through the project, funded by Belgium, CMAC will clear 4,000,000 square meters.



On the afternoon of Monday, May 30, 2022, at the Peace Museum of Mine Action in Siem Reap





province, H.E. Oum Phumro, Deputy Director General of the Cambodian Mine Action Center (CMAC), and Mr. Hayashi Akihito, JICA Representative, presided over the opening ceremony of a training course on Quality Management and Operational Standards, supported by Japan International Cooperation Agency.



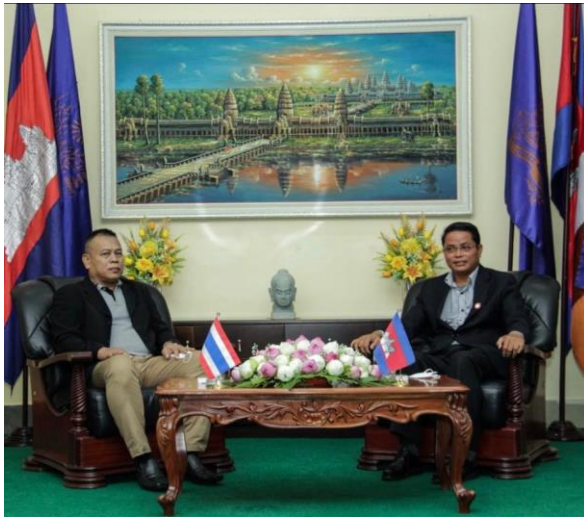
On Monday, June 6, 2022, at CMAC Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC and high-ranking officials, received a courtesy call by H.E. Andrés Pastrana Arango, former President of the Republic of Colombia and current President of the Centrist Democratic International during his official visit in Commune / Sangkat Council elections, and it is just coincidence that the CMAC has been providing a training to Colombian trainees on Quality Management and Operational Standards.



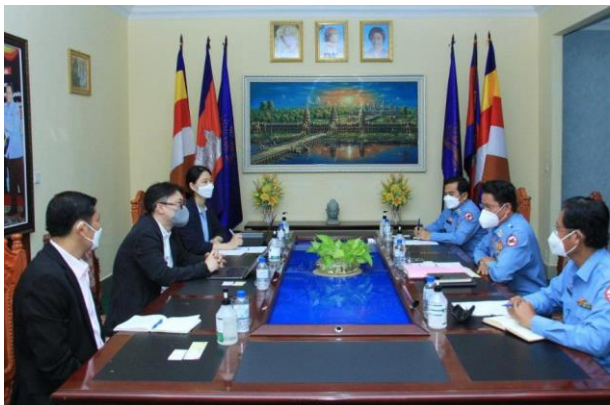
On June 9, 2022, at CMAC’s Phnom Penh Headquarters, H.E. Heng Ratana, Delegate of Royal Government in charge as Director General of CMAC, H.E. Ana Miria Prieto, Ambassador of the Republic of Colombia to Cambodia, Mr. OKADA Naoya, Second Secretary of the Embassy of Japan in Cambodia, together with Mr. Yanagawa Shinji, Senior Representative of the Japan International Cooperation Agency (JICA) presided over the closing ceremony of the training course on Quality Management and Operational Standards.



H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, on June 15, 2022, attended a Workshop on the Management of Residual Contamination for Southeast Asia organized by GICHD in collaboration with ASEAN Regional Mine Action Center, supported by U.S. Department of State and Federal Department of Foreign Affairs. The workshop aims to exchange success stories, challenges and good practices in the region.



Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, on June 17, 2022, at CMAC Phnom Penh Headquarters, received a courtesy call by Lt. General Saman Traisuta, Deputy Director General of TMAC. Lt. General thanked the Royal Government of Cambodia, especially the Ministry of National Defense, for engaging CMAC and TMAC to work together to clear munitions along the Cambodian-Thai border for the mutual interests of the countries.





On Wednesday, June 22, 2022, at the CMAC Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, met with Prof. Dr. Taekyoon KIM from the Research and Evaluation Team of KOICA and the United Nations (UN) in the field of mine action and munitions in Cambodia. The working group aimed to gain an in-depth understanding of CMAC's capabilities in regional cooperation with neighboring countries, and in particular CMAC's experience in building community-based volunteer networks mine action, victim assistance and community development, etc.



On Monday, July 4, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, warmly welcomed H.E. Gotaro OGAWA, former Ambassador of Japan to the Kingdom of Cambodia between 2000 and 2003, H.E. Asahiko Mihara, special adviser to JICA and former member of Parliament and his delegation visiting Peace Museum of Mine Action, located in Siem Reap province. H.E. Gotaro OGAWA was excited to be in Cambodia again and really appreciated the progress in all areas of Cambodia under the leadership of Samdech Techo Prime Minister. He also expressed his pleasure and appreciation of visiting Peace Museum of Mine Action, and admired CMAC's efforts to display landmines and ERW to the public, especially younger generations.



On Tuesday, July 5, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, accompanied by high-ranking officials from Phnom Penh Headquarters warmly welcomed the visit of H.E. Ly Thuch, Senior Minister and First Vice President, Cambodian Mine Action & Victim Assistance Authority (CMAA) as well as Indian Ambassador, and others from US Chamber of Commerce and Price Foundation. During the visit, H.E. Senior Minister commended the officers of the Institute for their ability, will and high technical skills in the field of mine related trainings, and he also highly appreciated TIMA's



infrastructure, including training equipment.



H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, and other high-ranking officials on July 10, 2022 received the visit of H.E. General Meas Sophea, Senior Minister in charge of Mine Action, UXO and Engineering of the Royal Cambodian Armed Forces to a minefield located in Pailin province. The visit was to review the progress achievements, 8,694 meters of gravel road, 3 sluice gates, 1 community market, of the Project for Integrated Mine Clearance and Landmine Victim Assistance supported by the people and government of Japan. It is recalled that the project was directly requested by Samdech Techo to Japan's former Prime Minister, H.E. Shinzo ABE in 2018 and the project started in 2019 and ended in June 2022.



H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, and high-ranking officials on Tuesday, July 12, 2022 warmly welcomed the visit of H.E. General Neang Phat, Permanent Secretary of Ministry of Defense and Cambodia-Thailand General Boundary Commission and delegation to Demining Unit 2 and CMAC Central Workshop located in Battambang province. H.E. General inspected the activities of the CMAC mechanics to repair heavy demining equipment and met with DU2 front line officers in the meeting room of Demining Unit 2.



On July 19, 2022, at the Technical Institute of Mine Action located in 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 EOD Level III Course (Batch 11) for 21 trainees and Basic Demining Course for 8 foreign trainees. Speaking at the event, H.E. Heng Ratana appreciated the lecturers, who transferred know-how to all participants and also encouraged the participants to take the knowledge gained from these training courses to be utilized in its operations in the field of mine action.



On August 2, 2022, at the office of CMAA, H.E. Oum Phumro, CMAC Deputy Director General, accompanied by officials from Phnom Penh Headquarters, together with H.E. Prum Sopheakmonkul, Secretary General of CMAA, signed the contract between the Cambodian Mine Action & Victim Assistance Authority (CMAA) and the Cambodian Mine Action Centre (CMAC), on the Samdech Techo Project for mine action under the theme "Providing Safe Ground, Creating Smiles" so as to boost mine clearance work in Takeo, Kampong Cham, Kampong Chhnang and Svay Rieng to be mine-free provinces. Speaking at the event, H.E. Ly Thuch, Senior Minister and First Vice President of CMAA also appreciated CMAC for its demining operations in Cambodia.



On Thursday, August 7th, 2022, at the Technical Institute of Mine Action, located in Kampong Chhnang province, Cambodian Mine Action Centre celebrated its 30th Anniversary of the establishment (June 10, 1992-June 10, 2022) and Post-Retirement Rank Promotion Award under the presidency of His Excellency Lt. Gen. Hun Manet, Deputy Commander of the Royal Cambodian Armed Forces as the Commander of Royal Cambodian Army. His Excellency highly appreciated the hard work and dedication of all CMAC managements and officials who have devoted to fulfill their noble duties for our motherland, regardless of their lives.



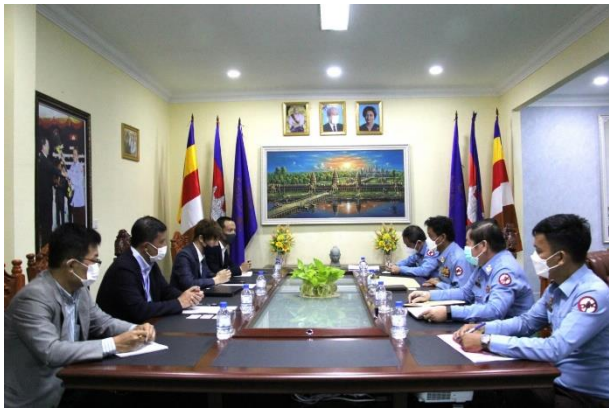
On Wednesday, June 08, 2022, 15 Colombian trainees being trained at CMAC spent time visiting the CMAC Central Workshop and minefield BS / CMAA / 30293 located in Pailam Village, Chaeng Meanchey Commune, Banan District, Battambang Province. Mr. Pring Panharith, Demining Unit 2 Manager, together with his Deputy Manager, Mr. Mam Vannarith, briefed about the general condition of the minefield as well as the achievements. Afterwards, the trainees also observed the activities at the minefield, including manual demining, brush cutter machine, mine detection dog, and so on. The trainees also continued to visit Community Development Center, located in Chhnal Moan Commune, Koas Kralor District, Battambang Province.



On August 11, 2022 at CMAC Phnom Penh Headquarters, the Governing Council of the Cambodian Mine Action Center (CMAC), held a Board Meeting, chaired by H.E. Khem Sophaon, Chairman, together with the Vice Chairman, Secretary General and members so as to 1. review and approve the report of the Meeting on November 30, 2021 and 2. review and approve CMAC achievements report in the first semester of 2022. After the discussion, the meeting expected that CMAC's demining operations would be closer to achieving its plan in 2022, despite some challenges.



On August 11, 2022 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 signed the International Mine Clearance and Community Development (IMCCD) project, supported by the Japan Non-Profit Organization (NPO) in the amount of US \$ 43,714, with a plan to clear 304,875 square meters of contaminated land. The project will run from August 16, 2022 to August 15, 2023. Be informed that IMCCD project focuses on the clearance of anti-personnel mines and all kinds of unexploded ordnance, especially anti-tank mines.



On August 12, 2022, 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 working group from the Japan International Cooperation Agency (JICA) led by Mr. Yuji Shinohara. During the meeting, the JICA side briefed on the results of its cooperation with CMAC, in particular to prepare a meeting with JICA officials from Tokyo and Okinawa on Grant Aid for buildings construction at the Technical of Institute Mine Action and outreach facility, as well as the Joint Coordinating Committee (JCC) meeting, which is scheduled to be held next week.



On Tuesday, August 16, 2022, at CMAC Phnom Penh Headquarters, working group meetings were held with a delegation from the Japan International Cooperation Agency (JICA) in Tokyo and the Phnom Penh Office, as well as consultants from the Okinawa City. Contents of the two separate meetings on Grant Aid and the Joint Coordinating Committee (JCC) meeting were discussed with CMAC experts and top management to reach a common goal. After an in-depth discussion, the minutes of the discussion was signed between CMAC Director General and JICA Chief Representative.







On August 18, 2022, at the Ministry of Mines and Energy, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, led a working group to attend a meeting coordinated and chaired by H.E. Dith Dina, Secretary of State of the Ministry of Mines and Energy. The meeting discussed the management of unexploded ordnance clearance and the salvage of submarines and further strengthen the effectiveness of this operation. The meeting achieved the positive goal of supporting the operation to clear ammunition, remnants of war and recover the submarine as planned.



On Monday, August 22, 2022, at CMAC Phnom Penh Headquarters, H.E. Heng Ratana, Delegate of the Royal Government in charge as of Director General of CMAC, received a courtesy call from a delegation of UXO Lao, led by Mr. Saomany Manivong, Acting Director of UXO Lao, on the occasion of mid-term review program for the third phase of South-South Cooperation, supported by the Japan International Cooperation Agency (JICA). During the meeting, H.E. Heng Ratana briefed the delegation on the progress of the mine action sector in the past 30 years, along with new projects, especially the “Samdech Techo Project for Mine Action” to clear mines by 2025.



On Wednesday, August 24, 2022, at CMAC Phnom Penh Headquarters, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC signed the Memorandum of Understanding with Mr. Sasaki Koji, Director of YAKUMO F&B Co.,LTD, on cooperation on agricultural production, products, safety and marketing. The objectives of this collaboration are to effectively achieve in cooperation in agricultural production in application of technical standard and purchasing of agricultural products in order to promote Cambodian agricultural products to access markets of Japan and global markets and to improve the living standard of retired CMAC staff and deminers living in Community Development Center and local



community.



His Excellency Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, on August 25, 2022, 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 Thnong village, Thna Thnong commune, Romduol district, Svay Rieng province. It should also be noted that in Svay Rieng, which is scheduled to be completed in June 2023, CMAC will deploy about 100 demining experts to clear a total of 139 minefields throughout the province.



On September 06, 2022, Professor HANATANI Atsushi led a group of students from Chuo University, Japan, to visit CMAC Phnom Penh to learn about landmines, unexploded ordnance and war history, resulted in millions of landmines. The purpose of this study tour was to learn about the operational activities of CMAC as well as the post-clearance development. After having known about the operations, achievements and activities, the Professor also thanked CMAC for its good cooperation with Japan, one of main donors in the field of demining activities, and always enables Japanese students to visit, explore and learn about the field of mine action.



H.E. On September 12, 2022, at CMAC Headquarters in Phnom Penh, H.E. Oum Phumro, Deputy Director General of CMAC, presided over the opening ceremony of a training course on “Asset Management” between CMAC and UXO LAO under the scheme of South-South Cooperation, supported by the Japan International Cooperation Agency (JICA). Speaking at that occasion, H.E. DDG warmly welcomed the participants from UXO Lao as well as JICA Lao representative. Knowledge and experience exchange programs are important for the field of demining and unexploded ordnance activities, especially to develop human resources and strengthen institutional capacity through knowledge and experience from the Cambodian Mine Action Centre on mine action sector.



On September 21, 2022, at CMAC Headquarters in Phnom Penh, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of the Cambodian Mine Action Centre (CMAC) together with His Excellency Lt. Gen. Sao Saroeun, Deputy Director General of the General Department of Military Service and The Chairman of the Policy Monitoring and Evaluation Working Group of the Ministry of National Defense, presided over a ceremony of CMAC retired staff inspection, who are the staff of the Cambodian Mine Action Center. It is noted that this is the 5th phase with a total of 385 staff officers being inspected by the Ministry. Since 2018 a total of 1,373 CMAC staff have been entitled in the Royal Cambodian Armed Forces (RCAF) of the Ministry of National Defense in order to receive this pension.



September 22, 2022, H.E Oum Phumro, Deputy Director General of CMAC and High Representative of H.E. Heng Ratana, Delegation of the Royal Government in charge as Director General of CMAC, attended the celebration of the declaration of Phnom Penh as mine-free municipality, presided over by Her Excellency Men Sam An, Deputy Prime Minister, Minister of National Assembly-Senate Relations and Inspection. In Phnom Penh, a total of 90 suspected landmines and unexploded ordnance (UXO) sites, 318 hectares, were completely cleared by CMAC, including 221 anti-personnel mines, 175 anti-tank mines and 28,611 and other ERW found and destroyed. The Cambodian Mine Action Center (CMAC) has completely cleared the area of anti-personnel landmines in Phnom Penh and has turned Phnom Penh into a mine-free municipality.



On October 3, 2022, Mr. Prak Somathy, Senior Director, and high representative of H.E Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over the opening ceremony of the Kennel Training Course (Batch 20) for the Royal Cambodian Armed Forces trainees at the Technical Institute of Mine Action, Kampong Chhnang Province. On this occasion, Mr. Prak Somathy warmly welcomed the trainees, who had been selected for the upcoming training and also instructed all trainees to pay attention and absorb knowledge to serve their units. It is vital to note that the course will be conducted on October 3, 2022 with 18 trainees from 6 Bodyguard Headquarters and 12 from 911 Parachute Special Forces Command.



On October 14th, 2022, a closing ceremony on the theme of “Logistics and Procurement Management” was held at UXO Lao headquarters, co-chaired by H.E. Muon Veasna, Senior Director in charge of Human Resources, and Mr. Saomany Manivong, Acting National Programme Director of UXO Lao. Mr. Yusuke Kubo, representative of JICA Laos, and Mr. Akihito Hayashi, representative of JICA Cambodia, also took part in the closing ceremony. At the end of the ceremony, training certificates were handed over to all CMAC and UXO Lao participants. Be noted that the on-the-job training between UXO Lao and CMAC, supported by Japan International Cooperation Agency (JICA), was carried out for 4 weeks, the first two weeks took place from 12 to 23 September 2022 in Cambodia and then all participants continued the second two weeks of exchange program from 03 to 14 October 2022 in Lao PDR, with 12 participants attended (3 females), including 8 participants from UXO Lao and 4 from CMAC.



On October 31, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, presided over an opening ceremony of Basic Demining Training Course (Batch 143) for 119 trainees. Speaking at the opening ceremony, H.E. gave advice to the trainees to be strict and thorough discipline in duties, good morals and virtues for the nation, religion and the King, as well as for the society, family and local community. Be noticed that the Basic Demining Training Course, a total of 59 days, focusing on the theory and practice in the school and demonstration in the demining site for 21 days from October 24, 2022 to January 23, 2023.



On Saturday, November 12, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, attended the signing ceremony of the Cambodia-Japan Cooperation, including a plan to support CMAC, the Project for the Construction of the Training Complex and Outreach Facility of CMAC, with a grant of 2,451 million yen, approximately 17 million USD. At the same time, the premier and H.E. Kishida Fimio, the Prime Minister of Japan, expressed their commitment to further strengthen cooperation and support the mission to support demining equipment and techniques as well as training of demining experts in Ukraine. On the occasion of the meeting, Samdech Techo also requested his counterpart to continue to help mine action in Cambodia.



On Tuesday, November 15, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, accompanied by senior officials, attended the event of the groundbreaking ceremony of the Royal Cambodian Armed Forces (RCAF) in the Samdech Techo project for mine action "Providing Safe Ground, Creating Smiles", located in Phnom Sruoch District, Kampong Speu Province, under the presidency of His Excellency Lt. Gen. Hun Manet, Deputy Commander-in-Chief of the Royal Cambodian Armed Forces and the Commander of Royal Cambodian Army.



At CMAC’s Headquarters in Phnom Penh, on Tuesday, November 30, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, met with KISIKAWA Kimihiko, President of the Japan Mine Action Service (JMAS), based in Tokyo, Japan and his colleagues. The meeting also focused on cooperation in the field of mine action and demining operations in Cambodia between CMAC and JMAS. We would like to take this opportunity to celebrate the official inauguration of a primary school, held on November 24, 2022, in Banteay Meanchey province, with the donation from Komatsu through the CMAC-JMAS Safe Village Project as well.



At the Cambodian Mine Action and Victim Assistance Authority (CMAA), on December 5, 2022, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, together with some other high-ranking officials, attended the meeting to officially announce "the Foundation of Cambodia Mine-free 2025 ", which was established by Samdach Techo Prime Minister, on December 3, 2022, with start-up budget of 30 million USD. The meeting was also to review the progress achievements of the projects of Samdach Techo for Mine Action, under the theme "Providing Safe Ground, Creating Smiles".



On Tuesday, December 06, 2022, at CMAC Headquarters, H.E. Heng Ratana, Delegate of the Royal Government in charge as Director General of CMAC, met with Ms. Eva Veble, Special Advisor of DMAD Global and Information Officer at PMWRA in Oslo, Mr. Rune Dale-Andresen, NPA Country Director for Cambodia and colleagues. The meeting also focused on cooperation in the field of mine action and UXO clearance operation projects in Cambodia between CMAC and NPA. It should be noted that from 2009 to 2022, through the NPA, the United States has provided assistance to CMAC with a budget of 29,925,558 US dollars and achieved the results of the clearance operation of 222,016,080 square meters, discovered and destroyed 221,793 mines and unexploded ordnance, and educated 1,304,260 people, including 403,139 women and 400,136 children.





**9. Special Thanks to the Royal Government of Cambodia and to the Following Governments, Donors and Partners:**



Kingdom of Cambodia



Australia



Belgium



Canada



China



Denmark



EU



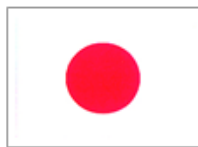
France



Finland



Germany



Japan



Netherlands



New Zealand



Norway



Republic of Korea



Spain



Sweden



Switzerland



UK



UN



USA

- AUSTCARE
- APOPO
- CA (Crown Agents)
- CARE International
- CMAA
- ECHO
- GEJ (Good Earth Japan)
- HI (HIB)
- GICHD
- GTZ
- JICA
- JICS
- JMAS
- KOICA
- Local Authorities
- NPA
- Peace Boat
- Rotary International District 2650
- Save the Children Norway
- UNDP
- UNHCR
- UNICEF
- UNMAS
- UNOPS
- NGOs
- Privates

