

External Evaluator: Yukiko Sueyoshi, International Development Center of Japan Incorporated (July 2021)
 Duration of the Study: October 2020-October 2021
 Duration of the Field Study: March 9, 2021-March 31, 2021

Cambodia	<The Project for Improvement of Equipment for Demining Activities (Phase VII)>
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Project site



CMAC deminers and pick-up trucks procured by the project

I. Project Outline

Background	<p>In Cambodia, while more than 20 years have passed since the end of the conflict in 1991, contamination through landmines and unexploded ordnances (hereinafter referred to as “UXOs”) was a serious problem. According to the nationwide baseline survey results obtained until 2014, approximately 2,839 km² of the area was contaminated by landmines/UXOs. Most of the areas contaminated were found to be concentrated in rural areas, where most of the country’s population lives. While the annual number of landmine/UXO victims was found to be decreasing, there were still 154 victims recorded in the year 2014, at the time of the project planning. Thus, it was an urgent issue to remove landmines/UXOs to build a safe living environment and to promote socioeconomic development. Under these circumstances, Japan has continuously provided support to improve the capacity of the Cambodian Mine Action Center (hereinafter referred to as “CMAC”) for landmine/UXO clearance activities through six grant aid projects to provide their equipments, technical cooperation projects, deployment of experts, and south-south cooperation. However, there were still many areas contaminated with landmines/UXOs, and it became an issue to update the equipments that were crucial for CMAC to continue its landmine/UXO clearance activities. Therefore, the seventh grant aid project for equipment improvement was implemented.</p>		
Objectives of the Project	<p>To maintain and improve the landmine/UXO clearance activities through the procurement of necessary equipment for CMAC, thereby contributing to the promotion of social development.</p>		
Contents of the Project	<ol style="list-style-type: none"> 1. Project Site: Landmines/UXOs buried area in Cambodia 2. Japanese Side: <ul style="list-style-type: none"> ▪ Brush cutter 9 units ▪ Mine/UXO detector 729 sets ▪ UXO detector 62 sets ▪ Deep search detector 2 sets ▪ Protective vest 450 units ▪ Protective visor 450 units ▪ Vehicles-station wagon 35 units ▪ Single cabin pickup truck 11 units ▪ Double cabin pickup truck 39 units ▪ Ambulance 3 units 3. Cambodian Side: <ul style="list-style-type: none"> ▪ Payment of commissions to the bank ▪ Completion of the procedures required to get exemption from customs and import duties ▪ Assistance for the Japanese nationals involved in this project on entry to Cambodia and during their stay in Cambodia to perform their duties for this project, etc. 		
Implementation Schedule	E/N Date	March 21, 2016	Disbursement Date
	G/A Date	March 21, 2016	Completion Date
	July 6, 2017 (delivery date)		
Project Cost	E/N grant limit/G/A grant limit: 1,372 million yen; actual grant amount: 1,248 million yen		

Executing Agency	Cambodian Mine Action Center (CMAC)
Conditions (Loan Only)	-
Borrower (Loan Only)	-
Contracted Agencies	Main consultant: Ingerosec Corporation Agents: Toyota Tsusho Corporation, FutureBud International Co., Ltd.

II. Result of the Evaluation

Summary

This project was implemented with the aim of providing the equipments needed to carry out landmine/UXO clearance activities and maintaining the capacity of CMAC in Cambodia, which suffers from the serious problem of landmine/UXO contamination. The purpose of the project was consistent with Cambodia's national development policy and development needs at the time of planning, and consistent with Japan's aid policy. Thus, the project is highly relevant. At the time of the ex-post evaluation, there were serious concerns about the spread of Covid-19 pandemic, but, due to the importance of the activities, the CMAC staff were prioritized by the government to receive the vaccine. As a result, the demining activities were carried out as usual and the equipments procured under the project were used appropriately. In addition, it was clear from the progress in the landmine/UXO clearance activities that CMAC's operational capacity has been maintained and strengthened since the completion of the project. Furthermore, the positive impact of the project was confirmed once CMAC cleared the land previously contaminated with landmines/UXOs and released it to the residents. The land was available for safe use and the convenience of life improved through the construction of roads and public facilities. Thus, the effectiveness and impacts of the project are found to be high. All the equipments planned for the project was procured as planned, and the project cost and period were generally the same as they were planned, thus, the efficiency of the project is high. While the sustainability of CMAC in terms of its structure and technical capacity has been confirmed to be high, the financial sustainability of the project is fair due to the uncertain prospects for future financial resources.

Therefore, the result of the evaluation is highly satisfactory (A).

Overall Rating¹	A	Relevance	3²	Effectiveness & Impact	3	Efficiency	3	Sustainability	2
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<Special Perspectives Considered in the Ex-Post Evaluation/Constraints of the Ex-post Evaluation>

Implementation of a remote field survey using local survey assistants

Due to the spread of Covid-19 in the project country, the external evaluator did not travel to the project site. However, the external evaluator conducted the field survey remotely from Japan. The survey was conducted with the help of a local survey assistant, who in turn conducted an on-site inspection of the project sites, collected information and data, interviewed the people involved in the project, etc. The external evaluator examined the information collected and made an evaluation analysis and judgment.

Indicators for judging the effectiveness of the project

There were two quantitative indicators for effectiveness set in the ex-ante evaluation sheet: "Cleared Area of Landmine/UXO (full clearance)" and "Released Area by Technical Survey (technical survey)." These indicators were based on the different methods used to clear landmines/UXOs. CMAC chooses the method of full clearance or a technical survey depending on the conditions of landmines/UXOs buried in the assigned land. Therefore, depending on the conditions of the land, the planned targets for each of the indicators may differ from the actual results. For this reason, CMAC officially discloses to the public the total area declared safe, which is the sum of the full clearance and the technical survey, as CMAC's actual results. Furthermore, since the equipments of the project are used in both methods, the effectiveness of the project should be judged based on the achievement of the sum of these values, rather than on the achievement of each indicator³.

Inspection of the operation and maintenance of the equipments

The equipments procured under the project are mainly used in six demining units in Cambodia. In consideration of the risk of COVID-19 among the local survey assistants and the CMAC staff, we visited only three demining units and the central workshop, where the number of infections was relatively low at the time of the ex-post evaluation and checked the operation and maintenance condition of the equipments on site. All the other equipments were checked based on the latest information available in the equipment database at CMAC Headquarters.

1 Relevance

<Consistency with the Development Policy of Cambodia at the Time of Ex-Ante Evaluation>

At the time of the planning, "Rectangular Strategy for Growth, Employment, Equity and Efficiency Phase III" (2013) focused on good governance in the following four areas: (1) Promotion of Agriculture Sector, (2) Development of Physical Infrastructure, (3) Private Sector Development and Employment, and (4) Capacity Building and Human Resource Development. Since it was necessary to secure the safe land for strengthening the agricultural sector, the necessity of landmine/UXO clearance activities was clearly stated in the national strategy.

Furthermore, "National Development Strategic Plan 2014-2018," the action plan for the above strategy, stipulated that, although landmine/UXO activities had been steadily making progress, contaminated areas still existed. It was also stated that landmine/UXO clearance activities were still important because they hindered the socio-economic development of Cambodia.

¹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

² ③: High, ②: Fair, ①: Low

³ The same indicator was set in the 6th phase project. In the ex-post evaluation of the 6th phase, the technical survey was not considered for the judgment of effectiveness because it was in the trial stage after its introduction and there was a gap between the planned and the actual value. In this ex-post evaluation of the 7th phase, the technical survey was fully introduced in all the sites as a demining method, thus, it was considered during the judgment of effectiveness.

<Consistency with the Development Needs of Cambodia at the Time of Ex-Ante Evaluation>

The number of accidents caused by landmines/UXOs had been declining since its peak at 4,320 in 1996. This was the result of a multifaceted and continuous effort. Although the number of people affected by landmines/UXOs had decreased to 154 in 2014, accidents continued to happen. The reasons for this were as follows: (1) with population flowing from urban areas to rural areas because of the economic crisis, people started to live in areas that were not previously residential, and (2) due to the increased size of the agricultural machineries, the number of accidents with anti-tank mines and UXOs buried in relatively deep areas had increased. For this reason, even if the number of accidents decreased, it was essential to continue removing landmines/UXOs to protect the safety of the residents.

Despite CMAC's efforts to maintain its equipments in its own central workshop, the equipments did get damaged and aged quickly due to the severe operating environment, including working in rough and remote areas that have a tropical monsoon climate with dry and rainy seasons. Under these conditions, there was a concern that the work efficiency would decline. To maintain the accuracy and efficiency of the clearance activities in the future, it was necessary to update the aging equipments, but, CMAC did not have a sufficient budget. In addition, most of the assistance from UN agencies and bilateral donors was invested in the operating expenses of landmines/UXOs clearance activities, making it difficult to update the necessary equipments.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

"JICA Country Analysis Paper (March,2014)" analyzed that the continuous support provided to CMAC's activities was an important matter. In addition, "Japan's Country Assistance Policy for Cambodia (April,2012)" identified "clearance of antipersonnel landmines" as one of the issues to be supported by JICA under "promotion of social development," one of the areas of priority. Therefore, this project was in line with Japan's aid policy at the time of planning.

<Evaluation Result>

In light of the above information, the relevance of the project is high.

2 Effectiveness and Impacts

<Effectiveness>

In this evaluation, the effectiveness of the project will be judged by "CMAC's landmine/UXO cleared area" as a quantitative effect and "maintaining CMAC's landmine/UXO clearance capacity and improving operational efficiency and safety" as a qualitative effect.

<Quantitative Effect: CMAC's landmine/UXO cleared area>

There are two main methods that are used for clearing landmines/UXOs: full clearance and technical survey. When it comes to the former, the whole area where landmines/UXOs are definitely buried is detected and cleared. In the latter, interviews are carried out to determine the land where landmines/UXOs are likely to be buried, but not yet confirmed, instead of detecting the whole area. Based on this information, a small area is detected if the probability of burial is low, and a large area is detected if the probability of burial is high, mainly using a mine detection equipments. The indicators set at the time of the planning of the project are: (a) the full clearance area and (b) the area released by the technical survey.

The Provincial Mine Action Committee (PMAC), established in each province, determines the priority of the land to be cleared of landmines/UXOs, and allocates the land to each clearance organization. CMAC will survey the allocated land and decide whether to conduct the full clearance or the technical survey. Even if CMAC chooses to conduct the technical survey, it may switch to the full clearance depending on the land conditions. Due to the nature of these activities, the values planned for each of the indicators set at the time of planning may differ from the actual results. For this reason, CMAC officially discloses the total area declared safe to the public, which is the sum of the full clearance and the technical survey, as CMAC's actual results. Therefore, as mentioned at the beginning of this report, the effectiveness of the project will be judged by the achievement of the total value, not by the achievement of each indicator.

As shown in the table below, the cumulative area of landmines/UXOs cleared by CMAC (full clearance) in 2019 was about 820 km², with the target of 826 km². The target was almost achieved. The cumulative area released by the technical survey was below the target, at 210 km² compared to the target of 405 km². In terms of the total area, however, the target was 1,231 km² and the actual area was 1,029 km², which is about 80% of the achievement rate.

At the time of the ex-post evaluation, despite concerns about the spread of Covid-19, the CMAC staff were given priority for vaccination by the government due to the importance of the activities, and as a result, demining activities were being carried out as usual. It was confirmed that the equipments procured through the project were being appropriately used to support their demining activities.

Table 1 CMAC's landmine/UXO cleared area (2015-2020)

Indicators unit: km ²		2014 (baseline)	2019 (target)	2015 (actual)	2016 (actual)	2017 (actual) completion	2018 (actual)	2019 (actual) target year	2020 (actual)
(a) Area cleared of landmines/UXOs	Cumulative	525.8	825.8	584.8	648.8	705.5	767	819.4	885.8
	Annual	-	-	58.6	64.0	56.6	61.5	52.3	66.4
(b) Area released by the technical survey	Cumulative	105.8	405.4	135.8	156.8	174.8	196.8	209.8	225.4
	Annual	-	-	30.1	20.9	17.7	21.5	13.2	16.1
(a) +(b) total	Cumulative	631.6	1,231.2	720.6	805.6	880.3	963.8	1,029.2 (83.6%)	1,111.2
	Annual	-	-	88.7	84.9	74.3	83.0	65.5	82.5

Source: CMAC questionnaire answers and CMAC operational summary progress report (2017-2020)

* The percentages in the table are the achievement rate of the target.

<Qualitative Effect: Maintaining CMAC's Landmine/UXO Clearance Capabilities, and Improving Work Efficiency and Safety>

As for “maintaining CMAC's landmine/UXO clearance capabilities,” the annual total cleared area is shown in Table 1. The total (annual) figures show no significant increase or decrease, except in 2019, indicating that the scale of activities has been maintained after the completion of the project. While it decreased in 2019, it recovered and increased in 2020. According to CMAC, the main factors affecting demining activities, including the reasons for the decline in 2019, are weather and activity budgets. This is because demining is an outdoor activity, and if the rainy season or floods are prolonged, the area of activities will be limited. In addition, since CMAC relies on foreign aid agencies for most of its activities, delays in funding are directly related to the delays in demining activities.

To continue their demining activities, it is important that they secure a stable activity budget, well-trained deminers, and demining equipments. Of these, Japan mainly supports the provision of demining equipments. It can be said that the project has made a significant contribution to the maintenance of CMAC's landmine removal activities. In addition to this, CMAC is also undertaking various other efforts to improve its technical capabilities. For example, since 2016, CMAC has been using mine detection sensors developed by Tohoku University on a trial basis, and by 2020, CMAC has ensured that trained deminers are operating the sensors in the field. In the same year, together with a Belgian NPO, they introduced a mine detection activity using rats. Due to the time and cost required for training, less than 20 rats had completed the training at the time of the ex-post evaluation. Thus, the activity is limited in scale. However, it is playing a role in demining activities.

In the interview with the deminers regarding “improvement of work efficiency and safety,” the following points were confirmed as the contributions of this project.

“Wearing of protective vests and visors allows workers to focus on their work with safety.”

“Renewal of mine detectors has reduced the number of malfunctions and shortened the working hours.”

“Introduction of the brush cutter has made it possible to work safely and quickly in a wide area.”

“More vehicles and fewer breakdowns of new ones have enabled the smooth transportation of more deminers.”



Deminers wearing protective vests and visors

<Impacts>

Social Development through Land Use after Demining

From the completion of the project to the time of the ex-post evaluation, the land cleared by CMAC has been used for agriculture (73%), agriculture and housing (8%), roads (2%), housing (1%), and for the construction of public facilities such as temples, schools, and health centers (as shown in the photos below). According to CMAC, the effective use of such land has come to contribute towards the development of infrastructure such as roads and water supply system as well as population increase, thereby promoting the social development in the area.

In addition, CMAC has been carrying out infrastructure development projects on the released land in cooperation with various organizations and companies, including the Mines Advisory Group (MAG, a demining organization based in the UK), Japan Mine Action Service (JMAS), and Komatsu Ltd.

Promotion of the Economic Activities of Private Companies

CMAC has been entrusted by domestic and foreign companies to carry out demining activities to secure the safe land. As the equipments procured through this project are also used in these activities, it can be said that the project is partially contributing towards the promotion of the economic activities of private companies.

Decrease in the Annual Number of Victims of Landmines and UXOs

While the annual number of casualties due to landmines/UXOs in Cambodia was 154 in 2014, at the time of the planning of this project, it declined to 65 in 2020. Since CMAC has been responsible for about 55% of the landmine removal areas and 70% of the number of landmines/UXOs removed in Cambodia, it can be said that it has made a large contribution to this reduction. In addition, various contributions such as clearance activities by other organizations, risk education provided to residents, baseline surveys to detect contaminated areas, and improved accuracy of demining technology have also contributed to the reduction of the annual number of victims in Cambodia.

Table 2 Number of landmine/UXO casualties from 2014 to 2020

Indicators	2016	2017	2018	2019	2020
Landmine casualties (case)	83	58	58	77	65

Source: CMAC questionnaire answers and Cambodian Mine Action and Victim Assistance Authority website

No other negative impacts on the natural or social environment were identified.

<Evaluation Result>

Therefore, the effectiveness and impacts of the project are high.



Agricultural land after landmines/UXOs were removed



CMAC staff assisting bridge construction after demining activities

3 Efficiency

<Project Outputs>

All equipments were procured as planned and were handed over to CMAC. However, the specifications of a total of 85 station wagons and pickup trucks were changed from the ones without car radios to those with car radios. For deminers who move frequently in remote areas, car radios allowed them to obtain local news, weather forecast, and traffic information in real time, which are important to conduct activities smoothly. For this reason, the change was approved. The additional cost was 4.25 million yen, which was paid from the balance. Since the reason for the change is appropriate and the purchase was made through the remaining funds, it is concluded that there is no problem with this change.

The Cambodian side planned to “deliver and allocate procured equipments to each demining unit” and “provide banking fees, customs and duty exemption procedures, and assistance to Japanese personnel.” With regard to the first point, the equipments procured under the project were delivered and allocated based on the requests submitted by each unit, including the allocation status and the period of use of the equipments. With regard to the second point, according to the Japanese consultant, it was confirmed that the bank charges and tax exemption procedures, which were the responsibility of the Cambodian side, were properly carried out.

Table 3 Equipments procured under the project

	Equipments	Units (plan)	Units (actual)
1	Brush cutter	9	9
2	Mine/UXO detector	729	729
3	UXO detector	62	62
4	Deep search detector	2	2
5	Protective vest	450	450
6	Protective visor	450	450
7	Vehicles-station wagon	35	35 *Modifications to the equipments
8	Single cabin pickup truck	11	11 *Same as above
9	Double cabin pickup truck	39	39 * Same as above
10	Ambulance	3	3

Source: documents provided by JICA

<Project Input>

i)Project Cost

While the planned project cost to be incurred by the Japanese side was 1,372 million yen, the actual project cost was 1,248 million yen, which was within the plan (91% of the plan). The planned project cost to be incurred by the Cambodian side was about 9.5 million yen, and although the actual amount is unknown, it was confirmed by the Japanese consultant that it was borne without problems.

ii)Project Period

While the planned project period was 18 months in total, from March 2016 to August 2017, the actual project period was 17 months, from March 2016 to July 2017, which was within the plan (94% of the plan).

Therefore, the efficiency of the project is high.

4 Sustainability

<Institutional/Organizational Aspect>

According to CMAC's current organizational strategy, “25 Years In Mine Action Path Ahead 2018-2025 And Beyond 2025” (the “Organizational Strategy”), CMAC plans to maintain its current scale of activities until 2021, and then gradually decrease its scale until

2025. The strategy states that by 2025, CMAC will release about 58% of the contaminated land identified in the country at the time of the strategy's formulation, with the remaining land to be released by the Cambodian National Army and other organizations. Although the strategy targets "identified contaminated areas," there are still "unidentified contaminated areas" in Cambodia. It is assumed that the remaining landmine/UXO clearance activities will continue after 2025. In addition, it also has the plan to conduct community development projects such as infrastructure development and agricultural support, as well as have technical cooperation with demining organizations operating in countries facing similar problems. To realize this plan, consultations with the ASEAN Regional Mine Action Center (ARMAC)⁴ are ongoing. Moreover, JICA signed the Record of Discussions (R/D) for the technical cooperation project "Cambodia Mine Action Center Organizational Strengthening Project" in December 2019. This project supports CMAC to strengthen its organizational capacity in the areas of finance, project management, public information, and human resource development, as well as to discuss the future of CMAC so that it can continue its demining activities in the country and carry out south-south cooperation after 2026.

CMAC's departments were reorganized in January 2020 to reflect the actual operations. This includes the dividing of existing departments, the re-establishing of regional demining units, and the establishing of new departments such as the Peace Museum for Mine Action, the Public Relations and Editing Department, and the General Affairs Department. The total number of staff at the time of the ex-post evaluation was 1,360, down from 1,628 at the time of planning. The main reasons are the retirement of deminers and the reduction of staff due to the withdrawal of foreign donors' projects. According to CMAC, while large numbers of deminers are aging, the budget constraints make it difficult to recruit new staff on a large scale. As a result, CMAC is trying to improve the efficiency of its demining operations. For example, previously personnel were assigned separately to each task such as bush cutting, weeding, detection, excavation, removal, and explosion. However, in recent years, multi-skilled personnel have been trained to be able to handle all of these tasks. This way, CMAC is establishing a system that can operate faster with a smaller team. Moreover, CMAC has been proactive when it comes to adopting new approaches such as mechanization with the use of brush cutters and demining machines, and the introduction of mine detection dogs and rats.

There has been no change in the maintenance and management system for the equipments owned by CMAC since the time of the project planning. The number of staff at the central workshop has increased from 15 at the time of planning to 17 at the time of the ex-post evaluation.

Based on the above information, the institutional sustainability of the project is judged to be high.

<Technical Aspect>

Since the project is a renewal of the existing equipments, the engineers at the central workshop have no problem when it comes to their technical level. When there is a problem with the equipments, and if there is no agency in Cambodia, engineers can contact the manufacturer directly. According to an engineer at the central workshop, while there is no problem regarding the technical level of the staff at the moment, it is desirable to strengthen the maintenance ability of the vehicles in the future. Since vehicles are an important means of transportation to smoothly carry out the work of deminers in remote areas, it is important to be able to repair them immediately when they break down. The engine, air conditioner, brake system, etc. installed in the vehicles are being improved every year. In line with this, engineers also need to acquire new knowledge and skills. For technologies that are not available in Cambodia, technical guidance from overseas is required. Also, since the demining equipments are the updated versions of the same ones, there is no problem at the technical level when it comes to the use and maintenance of equipments for the deminers as well.

CMAC has a training institute called the Technical Institute of Mine Action (TIMA). Training is provided not only to the CMAC staff, but also to the Royal Cambodian Armed Forces and National Police. For CMAC deminers, training is available for each position, such as beginners, team members, and team leaders. As for the training content, various courses have been prepared so that deminers can acquire multi-skills such as land mine detection survey, topographic survey, UXOs disposal, and land mine removal machine. Training participation is one of the criteria for promotion and salary increase. CMAC has signed a training contract with JICA to conduct training programs for demining organizations in other countries. Since 2017, TIMA has offered 14 training courses to 319 students in Colombia, Laos, and Iraq (including plans until January 2022). Based on this experience, CMAC plans to focus on developing human resources involved in landmine clearance not only in Cambodia but also overseas.

Based on the above information, the technical sustainability of the project is judged to be high.

<Financial Aspect>

Table 4 presents the annual budget (revenue) of CMAC. The main sources of CMAC operating expenses are international donors, subcontracting fees, and the Cambodian government. Funds have been continuously allocated from the time of project planning to the time of ex-post evaluation, and there is no tendency for the total annual budget to decrease. As the table provided below shows, more than half of CMAC's total budget comes from international donors. It is predicted that financial assistance from international donors will decrease with the downsizing of landmine clearance activities by 2025. In the CMAC Organizational Strategy, CMAC estimates the targeted area of removal, estimates the personnel and budget required to achieve the target, and indicates the funding required from foreign aid agencies to achieve the target. Based on this strategy, discussions have been held with the potential donors and efforts are being made to obtain the budget. While it has been recognized that increasing the Cambodian government budget will be important in the future, the economic growth rate has been declining due to the impact of Covid-19 and the prospects are uncertain at the time of the ex-post evaluation.

⁴ The ASEAN Regional Mine Action Center was established in 2012 and its headquarters was opened in Phnom Penh in 2014. The center provides risk awareness education on landmine/UXO, provides social rehabilitation support for the victims, and shares its knowledge with ASEAN countries. CMAC has conducted international training under the contract with JICA. To expand these activities in the ASEAN countries, CMAC believes that ARMAC is important as a platform.

Table 4 Annual operational budget of CMAC for 2016-2020 (unit: 1,000 USD)

Item		2016	2017	2018	2019	2020
International donors	Actual	6,584	9,306	11,721	9,344	13,702
	%	63%	57%	84%	76%	88%
Subcontracting fees	Actual	1,351	2,863	523	575	331
	%	13%	18%	4%	5%	2%
Cambodian government	Actual	2,550	4,030	1,772	2,327	1,590
	%	24%	25%	12%	19%	10%
Total		10,485	16,199	14,016	12,246	15,623

Source: documents provided by CMAC

Table 5 Annual maintenance cost and total expenditure of CMAC for 2010-2015 (unit:1,000 USD)

	2016	2017	2018	2019	2020
Consumables' procurement costs (A)	1,668	3,459	2,665	2,055	1,913
Equipment maintenance cost (B)	2,028	2,004	1,630	1,550	2,851
Miscellaneous (C)	320	298	527	6	103
Total O&M cost (A+B+C)	4,016	5,761	4,822	3,611	4,866
Total expenditure (D)	12,394	24,860	15,256	13,648	13,395
Total O&M cost/total expenditure (%)	32%	23%	32%	26%	36%

Source: documents provided by CMAC

Table 5 shows the maintenance costs in CMAC's annual expenditures. When the equipments were procured in 2017, the maintenance cost was 23%, after that, it decreased once, but increased to 36% in 2020. At the time of the ex-post evaluation, there was no impact on maintenance due to budget constraints. However, it is necessary to pay close attention to the impact of the increase in maintenance costs due to the aging of equipments in the future.

As described above, financial sustainability is an issue in terms of securing a budget for the future.

<Current Status of Operation and Maintenance>

As mentioned in the "Constraints of the Ex-post Evaluation" section at the beginning of this report, the equipments procured under the project are generally in good working order as this survey has confirmed. In case of any problems, CAMC's central workshop and engineers at each demining unit are responsible for maintenance. There is no problem in the operation and maintenance of the equipments as there is a system available to contact the manufacturers whenever it is necessary to deal with any problem that CMAC is not able to handle by itself.

<Evaluation Result>

Therefore, the sustainability of the effects by this project is fair.

III. Recommendations & Lessons Learned

Recommendations to the Executing Agency

While most of the funding for CMAC comes from foreign aid agencies, the scale of funding is expected to decrease with the downsizing of demining activities by 2025. It is important to increase the budget of the Cambodian government in the future. However, due to the Covid-19 pandemic, the economic growth rate is declining and there are issues of financial sustainability that have arisen at the time of ex-post evaluation. In addition, the increase in maintenance costs due to the aging of equipments is another concern. Based on the above, it is necessary for CMAC to secure new financial resources.

There are two possible ways to secure these resources. One is to expand the demining human resource development program to other countries, which is mentioned in the Organizational Strategy of CMAC. To do this, TIMA and the International Cooperation Department should take the lead in creating a training program that consolidates the experience of south-south cooperation. Also, as the workforce continues to decrease due to their retirement, efforts should be made to retain the useful knowledge that has been accumulated in CMAC. At the same time, CMAC should build a relationship with ARMAC, who can be an important partner in the international training program. Using these training programs as a platform, it is necessary to formulate a strategy to increase revenue by sending CMAC instructors overseas, networking, and providing consulting services based on the training business as a platform.

Second, CMAC should focus on carrying out public relations activities through the Museum of Mine Action and Peace and other media to receive donations from the public and private sectors. In doing so, it is also necessary to establish a system to publicize the status of fund management and results of activities regularly and clearly.



Repairing of vehicles at the central workshop



Equipment checks carried out by local survey assistants