

### RECOMMENDATIONS FOR ACTION

- Cambodia should accede to the Convention on Cluster Munitions (CCM) as a matter of priority.
- Cambodia should comply with its obligations under international human rights law to clear cluster munition remnants (CMR) on territory under its jurisdiction or control as soon as possible.
- Cambodia should more accurately establish the extent of CMR contamination, through further systematic and comprehensive evidence-based survey of suspected hazardous areas (SHAs) generated by the national baseline survey (BLS).
- The Cambodian Mine Action and Victim Assistance Authority (CMAA) should ensure technical survey of CMR-contaminated areas is a key part of land release, in order to reduce the extent of clearance of areas that do not contain contamination.
- The CMAA should work with operators to elaborate a dedicated strategy for CMR survey and clearance, with realistic annual targets for land release and an accompanying resource mobilisation plan.
- The CMAA should improve CMR planning and prioritisation guidelines and implement a more targeted and systematic clearance prioritisation process for confirmed hazardous areas (CHAs).
- The CMAA should review and revise the existing national standard on CMR clearance, in collaboration with operators and other stakeholders.

### UNDERSTANDING OF CMR CONTAMINATION

CMR resulted from intensive bombing by the United States during the Vietnam War, concentrated in north-eastern provinces along the borders with the Lao People's Democratic Republic and Vietnam. The US Air Force dropped at least 26 million explosive submunitions, between 1.9 million and 5.8 million of which are estimated to have not exploded.<sup>1</sup>

As the end of 2020, CMR contamination was estimated at over 744km<sup>2</sup> across 18 provinces: 2,002 suspected hazardous areas (SHAs) totalling almost 658km<sup>2</sup> and 420 CHAs totalling more than 86km<sup>2</sup> (see Table 1).<sup>2</sup> This is an increase in total size compared to the more than 716km<sup>2</sup> across 18 provinces as at the end of 2019 (1,748 SHAs totalling more than 638.5km<sup>2</sup> and 374 CHAs totalling more than 77.5km<sup>2</sup>).<sup>3</sup> Cambodia's National Mine Action Strategy 2018–2025 states that known CMR contamination covers 645km<sup>2</sup>.<sup>4</sup> A large proportion of the CMR contamination is located in the eastern provinces close to the border with Vietnam.<sup>5</sup> The actual extent of CMR contamination is likely to be significantly smaller than the current total estimate, as a sizeable proportion of the SHA is expected to be further reduced through technical and non-technical evidence-based survey.<sup>6</sup>

The original BLS of all explosive ordnance (EO) contamination, including CMR, other explosive remnants of war (ERW), and mines, was implemented between 2009 and 2012 across 124 districts. In 2015, the CMAA introduced the land reclamation non-technical survey and baseline survey (LRNTS+BLS) methodology, a stand-alone process to re-survey or re-verify SHAs identified during the BLS. The re-survey/

re-verification efforts, which are now complete for CMR, have helped more accurately define the extent of remaining contamination and cancel those areas currently on the database that are found to have no evidence of contamination and/or which meet the CMAA criteria for reclamation.<sup>7</sup>

The baseline re-survey of cluster munition-contaminated areas was completed in 2020.<sup>8</sup> In the eight provinces in the east and north-east of Cambodia, where most of the CMR are concentrated, the Norwegian People's Aid (NPA)/Cambodian Mine Action Centre (CMAC) partnership project completed the resurvey BLS in December 2020.<sup>9</sup> Mines Advisory Group (MAG) completed the resurvey BLS in other provinces to the south with suspected cluster munition contamination. Cluster munition technical survey (CMTS) has confirmed CMR contamination in the seven eastern provinces of Kampong Cham, Kratié, Prey Veng, Ratanakiri, Stung Treng, Svay Rieng, and Tboung Khmum, and technical survey was also planned in the eastern province of Mondulakiri too. In the remaining ten provinces, contamination is in suspected hazardous areas (SHA) and the actual extent of CMR contamination is likely to be further reduced through evidence-based survey, as and when it takes place.<sup>10</sup>

Furthermore, historically the BLS employed a landmine survey methodology. Non-technical survey applied during the BLS was sometimes limited in scope and therefore failed to take into consideration comprehensively or accurately all relevant evidence. In a number of instances, empirical evidence of the inaccuracy of SHA polygons generated from the BLS has been

demonstrated during subsequent clearance of BLS-generated polygons. The BLS often generated inflated polygons, which contained large amounts of uncontaminated land. But in some other cases, the polygons cleared proved to be far larger than the original SHA polygons recorded during the BLS. Furthermore, there are numerous examples of explosive ordnance disposal (EOD) reports of CMR in Ratanakiri province in areas surveyed as part of the BLS but for which no SHAs were generated as part of the BLS process.<sup>11</sup>

NPA emphasised that, as the BLS only generates SHAs, extensive technical survey will be required in all eastern provinces to determine the extent and location of CMR contamination more accurately and to identify CHAs for clearance.<sup>12</sup> Similarly, MAG believes that more comprehensive and systematic survey, appropriate to CMR and incorporating best practice from across the region, is required to determine the scale of the CMR problem accurately. Any such process should use the data generated through the BLS as a point of departure and must be evidence-based.<sup>13</sup>

**Table 1: Cluster munition-contaminated area by province (at end 2020)<sup>14</sup>**

Province	CHA	Area (m <sup>2</sup> )	SHA	Area (m <sup>2</sup> )
Battambang	0	0	1	26,872
Kampong Cham	36	6,714,812	197	39,737,187
Kampong Chhnang	0	0	18	2,046,122
Kampong Speu	0	0	85	12,366,578
Kampong Thom	0	0	380	62,612,902
Kampot	0	0	2	103,392
Kandal	0	0	57	5,511,202
Kratié	91	25,922,537	180	57,616,148
Mondulkiri	0	0	77	27,412,322
Phnom Penh	0	0	17	1,512,696
Preah Sihanouk	0	0	14	2,984,350
Preah Vihear	0	0	46	177,087,266
Prey Veng	52	10,178,479	232	39,956,892
Ratanakiri	74	7,888,599	251	52,381,879
Stung Treng	25	5,251,773	159	121,882,327
Svay Rieng	51	11,248,628	177	38,576,931
Takeo	0	0	10	1,973,835
Tboung Khmum	91	19,486,392	99	13,874,253
<b>Totals</b>	<b>420</b>	<b>86,691,220</b>	<b>2,002</b>	<b>657,663,154</b>

## OTHER EXPLOSIVE REMNANTS OF WAR AND LANDMINES

Cambodia estimated that in 2018 it had around 468km<sup>2</sup> of ERW contamination apart from CMR.<sup>15</sup> ERW contamination, including air-dropped bombs and ground artillery, is heaviest in the eastern provinces. Cambodia also has an estimated 817km<sup>2</sup> of anti-personnel mine contamination concentrated in, though not limited to, west and north-west Cambodia (see Mine Action Review's *Clearing the Mines* report on Cambodia for further information).

## NATIONAL OWNERSHIP AND PROGRAMME MANAGEMENT

The CMAA was established by royal decree in 2000 with the mandate to regulate, monitor, and coordinate the mine action sector in Cambodia.<sup>16</sup> The CMAA has noticeably strengthened in recent years, and its roles and responsibilities have become more clearly defined.<sup>17</sup> CMAC, which was established in 1992, had previously been responsible for regulating and coordinating the sector in addition to undertaking clearance. Since 2000, CMAC's activities have been limited to conducting demining, risk education, and training.<sup>18</sup> CMAC, which conducts both humanitarian and commercial survey and clearance, is Cambodia's largest mine action operator.<sup>19</sup>

Provincial Mine Action Committees (PMACs) and Mine Action Planning Units (MAPUs) were established in 2004, tasked with establishing clearance priorities in consultation with affected communities to ensure that clearance addresses their housing, agricultural, and infrastructure needs.<sup>20</sup> MAPUs meet regularly with all mine action operators to plan annual mine action activities.<sup>21</sup>

The Cambodian government established the Technical Working Group on Mine Action (TWG-MA) as a consultative mechanism between the government and implementing

partners.<sup>22</sup> It meets on a bi-annual basis and is attended by the CMAA, relevant ministries, operators, and donors.<sup>23</sup> In 2020, however, TWG meetings were suspended due to the COVID-19 pandemic.<sup>24</sup> The Mine Action Coordination Committee (MACC) and seven Technical Reference Groups (TRGs) have been established by the CMAA to facilitate coordination and feedback at a strategic and technical level in areas such as survey and clearance, risk education, victim assistance, information management, gender, cluster munitions, and capacity development.<sup>25</sup> In March 2020, clearance operators proposed the creation of a separate TRG for the survey and clearance of CMR, which was agreed by the CMAA.<sup>26</sup> The CMAA subsequently established a TRG on CMR survey and clearance to share best practice among operators and address challenges. The first meeting of the newly formed TRG, which was expected to meet twice yearly, took place in October 2020.<sup>27</sup>

The operating environment in Cambodia is permissive, with the Cambodian government open to the presence of international operators and supportive in administrative actions such as the granting of visas, approval of Memoranda of Understanding (MoUs), and importation procedures. The CMAA is open to the trialling and use of innovative clearance methods and tools to improve efficiency.<sup>28</sup>

The GICHD provides information management and risk management support to the CMAA. In 2019, GICHD support to capacity development included stakeholder workshops on the IMSMA Core migration; initial development of the new database; support on developing residual capacity in line with Cambodia's mine action strategy; gender mainstreaming activities in mine action; and workshops on risk management and national mine action standard development.<sup>29</sup>

NPA, as part of a United Kingdom Foreign, Commonwealth & Development Office (FCDO, previously the Department for International Development (DFID))-funded partnership that includes MAG and The HALO Trust, conducts capacity development activities in support of the CMAA on gender equity and mainstreaming, information management, knowledge management, planning and prioritisation, quality management (QM), and strategic planning.<sup>30</sup>

The Cambodian government contributes funding for clearance and management of the sector.<sup>31</sup> This support includes covering the expenses of the CMAA and providing funds to support planning and prioritisation, quality assurance/quality control (QA/QC), database management, Cambodia mine/ERW victim information system (CMVIS), and risk education.<sup>32</sup> The cost of the database unit is, however, shared by NPA and UNDP.<sup>33</sup> The Cambodian government also provides a 10% in-kind contribution to any new donor funding.<sup>34</sup> The Cambodian government has reported contributing just under 30% of the total funding to the mine action sector (US\$99.49 million of US\$340.2 million) in 2010–18.<sup>35</sup> Cambodia funds mine and ERW survey and clearance by CMAC and the National Centre for Peacekeeping Forces Management, Mines and Explosive Remnants of War Clearance (NPMEC).<sup>36</sup> Indirectly, tax exemptions on mine action equipment have contributed to humanitarian demining.<sup>37</sup> Local authorities coordinate and provide security support to survey and clearance operations on the ground.<sup>38</sup> Cambodia has estimated it will need almost \$119 million for CMR clearance in 2020–25.<sup>39</sup>

Cambodia is not yet a State Party to the CCM but made accession by 2020 a goal of the National Mine Action Strategy 2018–2025.<sup>40</sup> This goal has not yet been realised.

## GENDER AND DIVERSITY

The CMAA has developed a Gender Mainstreaming in Mine Action Plan (GMAP 2018–2022), an objective of the National Mine Action Strategy 2018–2025, which consists of six goals. These include: the preparation of guidelines to aid gender mainstreaming across all mine action; capacity building of relevant stakeholders to implement the GMAP 2018–2022; and the representation and participation of women in planning and prioritisation, risk education, and in mine action and advocacy at all levels. As at July 2021, a new GMAP 2021–2025 had been drafted to supersede the GMAP 2018–2022, and was due to be approved after the CMAA Gender team had held a consultation meeting with operators and relevant stakeholders.<sup>41</sup>

The latest National Mine Action Strategy three-year Implementation Plan (2021–23) sets out activities in support of these goals.<sup>42</sup> NPA, as part of its capacity development, is supporting the CMAA with training on gender mainstreaming in mine action, on implementation of the GMAP 2018–22 and the development of associated guidelines, and on how to use gender- and age-disaggregated data in planning and prioritisation processes.<sup>43</sup> Guidelines for Gender Mainstreaming in Mine Action were approved in December 2019. In 2020, trainings were provided to MAPU and quality management team (QMT) staff on the new guidelines, as well as on implementation of the GMAP 2018–22,<sup>44</sup> and on disaggregating data by sex and age (SADD).<sup>45</sup> Twenty-six data collection forms now need to be updated to fully roll out the collection of SADD. Further training is needed with

the MAPUs, operators, and CMAA staff to ensure that SADD are used for prioritisation and planning.<sup>46</sup> Furthermore, an assessment has been conducted on capacity, efficiency, and challenges of all demining operators and stakeholders in gender mainstreaming, in order to update the GMAP 2018–22 to GMAP 2021–25.<sup>47</sup>

The GICHD, which conducted a gender and diversity baseline assessment of the CMAA in 2019, has a joint action plan to support gender and diversity mainstreaming efforts for the remainder of the GMAP strategy period.<sup>48</sup>

A CMAA Gender Mainstreaming Team (GMT) was established to coordinate with the TRG on Gender (TRG-G), one of seven TRGs ensuring coordination of the sector. The TRG-G is composed of representatives from UNDP, Ministry of Women's Affairs (MoWA), Ministry of Social Affairs, Veterans and Youth Rehabilitation (MoSVY), MAPU, operators, and international and national organisations working in mine risk education (MRE) and victim assistance (VA).<sup>49</sup> Of the CMAA's 150 employees in 2020, 39 (26%) were female, with women in 15 of 71 (21%) managerial level positions and 13 of 44 (29%) supervisory positions.<sup>50</sup>

Survey and community liaison teams are said to be inclusive and mixed gender. Women are given access to job announcements and female candidates are given priority during the recruitment process. Women and children in affected communities are consulted during village meetings and community liaison activities, including regarding

prioritisation. This commitment is reinforced by the demand for all reporting forms to have SADD and by the provision of training to MAPU and QMT staff.<sup>51</sup>

Support for increased and inclusive engagement of women and marginalised populations in the planning and prioritisation process was also demonstrated by the development and approval of a new “Village Meeting to Prioritize Minefields for Clearance (coordinated by Village Chief)” guideline. Drafted with input from the CMAA SEPD (Socio-economic planning and database management) and Gender Team, the UNDP Clearing for Results project team, and MAPUs, the guidance aims to support village chiefs to undertake inclusive village consultations. These are to be held before the commune meetings at which chiefs and other key village members present the minefields and ERW-contaminated areas they want cleared as a priority.<sup>52</sup>

As at April 2021, women made up 30% of Cambodian Self-help Demining (CSHD)’s workforce, with women in 5% of managerial/supervisory roles and 33% of operational positions.<sup>53</sup>

CMAC’s strategy addresses gender sensitivity and it is working to promote gender in its strategic goal. CMAC said this is achieved through promoting gender in mine action through policies and procedures, by providing equal opportunities for women to work at CMAC, nurturing a gender-friendly working environment, continuing to encourage the recruitment of women to management positions, and promoting gender mainstreaming in all CMAC’s activities. CMAC also said its strategy considers social norms and promotes gender mainstreaming in a culturally sensitive fashion. CMAC ensures its mine action teams are gender-balanced, and an increasing number of women have been employed as deminers and in operational support positions in the field. At the beginning of 2020, CMAC recruited mostly women for vocational training (64 female trainees) and appointed a large number of women as team

leaders, office workers, and office chief.<sup>54</sup> CMAC operates in accordance with Cambodian labour law and is actively recruiting women with a view to reaching an aggregate of 15% women in its workforce. Women currently work across all levels of the organisation, including in managerial level/supervisory positions. Two of the six directors were women in 2020.<sup>55</sup> As at June 2021, there were 178 female staff at CMAC, which is 13% of CMAC’s workforce. Of these, 23 women were in managerial/supervisory positions and 86 women in operational positions.<sup>56</sup>

During non-technical survey and pre-clearance impact assessments, MAG deploys mixed-gender community liaison teams to gather information on the suspected location of CMR and the impact on the community. Of MAG’s total employees in Cambodia, 32% are women. In its survey and clearance teams, 29% of staff are women, as are 24% of managerial level/supervisory positions.<sup>57</sup> In Q4 2020, MAG secured funding to conduct a gender analysis of its programme, in order to promote gender equity and mainstreaming and ensure more women in operational supervisory and management roles within the programme. The assessment was planned for the first half of 2021.<sup>58</sup>

NPA considers the needs of women and children in communities affected by CMR-contaminated areas in prioritising, planning, and tasking its survey and clearance. It is working towards achieving gender equality in its Cambodia programme, both in the composition of its survey and clearance teams and in the consultation of all groups affected by CMR contamination.<sup>59</sup> Overall, 56% of NPA’s employees in Cambodia are women: this includes 68% of operational staff and 55% of managerial level/supervisory positions.<sup>60</sup>

According to CMAA data, as at March 2019, NPMEC had a total of 294 employees (290 operational), all of whom were men.<sup>61</sup>

All international operators in Cambodia disaggregate relevant mine action data by gender and age.

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## INFORMATION MANAGEMENT AND REPORTING

The CMAA has used the Information Management System for Mine Action New Generation (IMSMA-NG) since 2014. The CMAA is now upgrading the system to IMSMA Core. As at May 2021, however, the COVID-19 pandemic was slowing progress towards this goal.<sup>62</sup> A significant backlog of data entry was resolved in 2019/20, to enable large-scale migration of existing data to IMSMA Core to begin.<sup>63</sup> CMAC, with support from NPA, finished uploading 8,381 backlogged CMAC records from EOD spot tasks onto the national database in 2020.<sup>64</sup> International Mine Action Standards (IMAS) minimum data requirements will be incorporated as Cambodia migrates to IMSMA Core.<sup>65</sup> All the standardised data collection forms are being digitised and tested in the new system.<sup>66</sup>

The CMAA’s database unit (DBU) is responsible for collecting, storing, analysing, and disseminating data in support of planning and prioritisation.<sup>67</sup> Improvements to information management are ongoing in Cambodia,<sup>68</sup> and the CMAA has also worked closely with the GICHD on the development of an application for daily data collection, a web application for QA/QC, and a dashboard to view the output summary in order to assist planning and decision making, to allow for mobile data collection in the field and allow MAPUs and QMTs to enter data online and verify the data submitted by operators.<sup>69</sup>

Strengthening the national information management system for mine action is an objective of the National Mine Action Strategy 2018–25.<sup>70</sup> NPA has been conducting capacity development activities with the CMAA under an FCDO consortium project.<sup>71</sup> This included introduction of a web-based application for MAPUs to enable better prioritisation of the tasks for operators’ annual work plans, which is expected to increase the effectiveness of mine clearance across the sector in Cambodia.<sup>72</sup> It also included the development of a national mine action standard (IM-CMAS [Cambodian Mine Action Standard]) on information management. The IM-CMAS has been implemented since 2019 and the CMAA ensures compliance internally within the CMAA and by clearance operators.<sup>73</sup>

Regular TRG meetings organised by the CMAA DBU and held with operators continued throughout 2020, to discuss challenges, lessons learnt, and areas of improvement. They also allowed for reconciliation of data and the updating of IMSMA.<sup>74</sup> The main operators (CMAC, HALO, MAG, and NPA) agree that data collection forms are consistent.<sup>75</sup>

The CMAA shares all available data with operators every one or two months.<sup>76</sup> In 2018, the DBU set up a virtual private network (VPN), which allows operators to send their daily data input directly into the DBU IMSMA database. The DBU controls the quality of all submitted reports and approves them via this online network.<sup>77</sup> The CMAA plans to move everything related to data submission online in the near future.<sup>78</sup> In 2020, the CMAA successfully tested a new system and deployed it to CSHD to support field data collection and their daily operation.<sup>79</sup>

The CMAA has introduced a new reporting form following the endorsement of the national standard on CMRS in November 2018.<sup>80</sup> The new Cluster Munition Technical Survey (CMTS) reporting form, in conjunction with the standard, has

improved both the effectiveness of the CMRS and the quality of reporting of survey results to the national database. This is because operators are now able to submit the actual CHA after completing technical survey, which improves the quality of clearance work plans.<sup>81</sup>

Between August and December 2019, NPA/CMAC deployed 11 BLS teams in the eastern provinces, creating a huge number of records. Due to lack of capacity, there had been a delay in entry of the BLS reports into the national database. However, NPA confirmed in May 2021 that the backlog of data entry of records had now been resolved.<sup>82</sup> But issues remain with the accuracy of historical information on CMR contamination collected under the BLS.<sup>83</sup>

## PLANNING AND TASKING

Cambodia's National Mine Action Strategy 2018–2025 was officially launched in May 2018 with eight goals for clearance of mines, CMR, and other ERW, setting the direction for the mine action sector in Cambodia. It includes targets for tackling CMR contamination as the second of its eight goals. It called for "release of prioritised cluster munition-contaminated areas of 43.4km<sup>2</sup> of total 130.2km<sup>2</sup> by 2025" and specified two broad CMR-related objectives:<sup>84</sup>

- Plan and prioritise CMR-contaminated areas to be released; and
- Conduct survey and release confirmed areas of CMR contamination, develop national standards for survey and clearance, implement the cluster munition remnant survey (CMRS) methodology and increase survey and clearance capacity.

The accompanying Three-Year Implementation Plan 2018–20 has now been replaced by a new Implementation Plan 2021–23, which sets out activities and indicators to implement the strategy.<sup>85</sup>

Development of the planning and prioritisation guidelines on CMR were finalised by the CMAA in 2018, although according to operators, they lack clarity and are not systematically applied.<sup>86</sup> The CMAA has developed a new three-year implementation plan 2021–23, which it planned to launch in Q2 of 2021.<sup>87</sup>

Since March 2018, CMAC, the CMAA, and NPA have been working together as part of a United States (US)-funded project to define and draft a comprehensive plan that references the Cambodian National Mine Action Strategy 2018–2025, with a view to freeing eight targeted provinces in eastern Cambodia from the humanitarian impact of ERW, including CMR.<sup>88</sup> The significant deployment of BLS teams in 2019 and early 2020 was expected to contribute to more accurate data on the scope of CMR contamination and to inform the third draft of the work plan.<sup>89</sup> The third work plan was elaborated in July 2020, with a long-term objective of reducing the effects of mines, CMR, and other ERW to a level requiring only a reactive response capacity. Specific objectives include resolving data backlogs; completing

the BLS in districts allocated by the CMAA to CMAC/NPA; capacity building of CMAC staff to update CMRS methodology and conduct CMRS in target provinces; and releasing prioritised CMR-contaminated areas.<sup>90</sup>

The CMAA maintains the annual national clearance work plan for mines and CMR, which comprises all the provincial clearance work plans. MAPUs are responsible for developing their own work plans in accordance with the planning and prioritisation guidelines. The PMACs approve the MAPU's work plans, which are then endorsed by the CMAA. The MAPUs use the provincial work plan to monitor clearance performance and report progress to the PMAC and the CMAA.<sup>91</sup>

The current planning and prioritisation practices in Cambodia follow a combination of top-down and bottom-up approaches. The top-down approach involves CMAA establishing a list of priority villages based on agreed criteria. The bottom-up approach involves MAPUs coordinating at the provincial level to develop a clearance list, again, using agreed criteria.<sup>92</sup>

However, the prioritisation process for the selection of CMR tasks is not as well established as the prioritisation process for releasing mined areas, largely due to the absence of comprehensive, verifiable CMR data. Task prioritisation begins with the MAPU as part of the annual work plan development process. Although the exact prioritisation criteria are not as well defined for CMR clearance as they are for mine clearance, the process at present typically works as follows: consultation with village leaders > commune workshop > SHA reconnaissance > SHA prioritisation > district workshop > provincial workshop > work plan finalisation.<sup>93</sup> The end use for most clearance tasks is agriculture and often the land is already being cultivated regardless of CMR contamination. This makes it difficult to produce clear prioritisation criteria, so the survey and the clearance plan is based on village-by-village, commune-by-commune, and district-by-district approaches.<sup>94</sup> As at May 2021, the CMAA was planning to review the planning and prioritisation guidelines on CMR "soon".<sup>95</sup>

According to NGO operators, survey and clearance task dossiers are issued in a timely and effective manner.<sup>96</sup>

# LAND RELEASE SYSTEM

## STANDARDS AND LAND RELEASE EFFICIENCY

Mine action is conducted according to Cambodian Mine Action Standards (CMAS), which are broadly consistent with IMAS.<sup>97</sup>

The CMAA approved the CMRS methodology in principle in 2017 and signed a national mine action standard for CMRS (CMAS-16) in November 2018, which is being implemented by operators.<sup>98</sup> CMAS-16 is largely based on the experience of other programmes implementing the CMRS method across the region.<sup>99</sup> The CMAA has agreed that operators can apply evidence-based technical survey to SHA polygons generated through the BLS, which are often inflated, in order to reduce the area and ensure a more efficient use of resources.<sup>100</sup> Previously, operators were expected to fully clear the entire BLS polygon regardless of whether technical survey had defined a much smaller CHA within the original SHA.<sup>101</sup>

No changes were made to CMRS methodology in 2020,<sup>102</sup> but a TRG meeting took place in Ratanakiri on 17 October 2020 to discuss land release with regards to cluster munitions and CMAS-16. It was agreed that further work was needed to review and amend the standard over the course of 2021.<sup>103</sup> According to international operators, further discussion is required on the criteria for application of technical survey to reduce those areas in existing BLS polygons that are not

contaminated with CMR, especially given that the BLS was EO based. This will improve the speed and efficiency of CMR clearance.<sup>104</sup> As at April 2021, however, the requisite meeting of the TRG had yet to take place owing to the COVID-19 pandemic.<sup>105</sup>

In 2019–21, the CMAA, with support from NPA with FCDO funding and in consultation with other mine clearance operators, is in the process of developing new standards.<sup>106</sup> New standards on animal detection, mechanical demining, information management, and the environment were elaborated in 2019.<sup>107</sup>

As at April 2021, the CMAS chapter on mechanical clearance was pending approval having received comments from international operators, CMAC, and armed forces; the CMAS on animal detection systems and on the environment were finalised and awaiting approval by the CMAA; and the CMAS on information management had been finalised and approved by the CMAA.<sup>108</sup> In addition, the CMAS on explosive ordnance risk education (EORE) has also been revised and updated to bring it in line with IMAS.<sup>109</sup> A comprehensive review of CMAS, referenced in the National Strategy, was planned for 2021.<sup>110</sup>

## OPERATORS AND OPERATIONAL TOOLS

CMR clearance in 2020 was undertaken by national operators CMAC and CSHD, and international operators MAG and NPA (see Table 2). In addition, from November 2020, APOPO began CMRS using technical survey dog teams, in partnership with CMAC.<sup>111</sup>

**Table 2: Operational CMR clearance capacities deployed in 2020<sup>112</sup>**

Operator	Manual teams	Total clearance personnel	Animal detection capacity	Machines	Comments
APOPO (in partnership with CMAC)	1	6	APOPO, in partnership with CMAC, has 4 TSD units using SMART systems, used for CMRS in Preah Vihear province.	0	Commenced CMRS and follow-on cluster munition clearance in November 2020.
CMAC	4 BAC; 4 BAC-TS; 5 BAC-FC; and 4 BAC-MTT	153		N/A	Excluding 1 brush cutter
CSHD	1	12	0	0	
MAG	10	100	0	4	Increased capacity of three additional BAC teams from Q3.
NPA	3	15	2 teams, totalling 4 dogs and 4 handlers.	0	The three clearance teams also conduct EOD and cluster munition survey, as required.
<b>Totals</b>		<b>286</b>	<b>8 dogs</b>	<b>4</b>	

APOPO, in partnership with CMAC, had previously only undertaken anti-personnel mine operations in Cambodia, but began CMRS operations on 10 November 2020 in the east of Preah Vihear province. APOPO, in partnership with CMAC, is using technical survey dog (TSD) teams on cluster munition-contaminated areas, to reduce areas found not to contain CMR and identify CHAs. Following technical survey using dogs, APOPO's manual clearance teams then clear the CHA under the same project.

CMRS operations were started as part of the GICHD SMART TSD Evaluation Project, which had been working for 18

months in mined areas in Preah Vihear. The methodology combines long-range search dogs with the use of track and trace systems and unmanned aerial vehicles (UAVs). The results of the project were expected to be published in the course of 2021. Based on the promising productivity and cost-efficiency gains seen during the project, APOPO has decided to continue use of technical survey dogs for CMRS. APOPO has one survey team with six personnel and four TSD units using track and trace systems, and one manual clearance team with six personnel. The project was due to end on 31 July 2021, but APOPO is planning to increase the number of TSD teams working in CMRS in 2021–2023.<sup>113</sup>

CMAC had 14 non-technical survey teams, totalling 70 survey personnel and 4 technical survey teams totalling 20 personnel;<sup>114</sup> MAG had two non-technical survey teams, totalling four survey personnel and three technical survey teams (including two new teams from Q3), totalling thirty survey personnel;<sup>115</sup> and NPA had three survey teams (also referred to in Table 2), totalling fifteen survey personnel, who conduct survey, clearance, and EOD as required.<sup>116</sup>

CMAC's operational capacity for CMR in 2020 remained broadly the same as in 2019, and then increased its technical survey and clearance capacity slightly from March 2021.<sup>117</sup>

CMAC and NPA have an ongoing CMR partnership project in eastern Cambodia. Under this project CMAC Demining Unit 5 (DU5) teams conduct survey and clearance while NPA provides mentoring and monitoring of all aspects of the project. In addition, CMAC conducts EOD with one team based in Takeo province (mainly working around Takeo and Kandal provinces around Phnom Penh, but sometimes further afield). CMAC's DU5 (191 CMAC staff) has been fully supported by NPA since 2014 with US funding.<sup>118</sup> The objectives of the project were to complete baseline survey to define the CMR contamination in the remaining districts allocated to NPA/CMAC (achieved in 2020), develop the capacity of CMAC staff to conduct CMRS in the targeted provinces (ongoing), and to release prioritised CMR-contaminated areas in the targeted provinces (ongoing).<sup>119</sup> In addition, Norway funded the project to resolve the CMAC data backlog, which was completed in 2020.<sup>120</sup>

CSDH clearance capacity remained constant in 2020, compared to the previous year, and no changes to capacity were expected in 2021.<sup>121</sup>

As well as having its main operational base in the west of the country focused on minefield survey and clearance, MAG also has an operations base in Ratanakiri province concentrating on CMR survey and clearance. MAG uses the data from EOD tasks to plot initial CHAs using its Evidence Point Polygon (EPP) mapping approach pioneered in the Lao People's Democratic Republic. MAG also continues to trial advanced detection systems for CMR survey and clearance, provided by the US Humanitarian Demining Research and Development programme, and uses drones to conduct non-technical survey, task planning, and post-impact monitoring.<sup>122</sup>

NPA's survey and clearance capacity remained stable between 2019 and 2020, and NPA expected it to remain constant in 2021.<sup>123</sup> NPA conducted a successful trial of explosive detection dogs (EDDs) for technical survey in 2018, but did not deploy EDDs for technical survey of CMR in 2019 or 2020.<sup>124</sup> NPA deploys drones for aerial mapping of both technical survey and BAC tasks. Drones are also used during EOD tasks and for quality assurance. NPA has also been conducting field tests of all-terrain vehicles (ATVs) and have found them particularly useful in transporting personnel and EDDs in hard-to-reach areas.<sup>125</sup>

## LAND RELEASE OUTPUTS AND PROGRESS TOWARDS COMPLETION

### LAND RELEASE OUTPUTS IN 2020

Based on data provided by the CMAA, in 2020, clearance operators in Cambodia released a total of 38.56km<sup>2</sup> of cluster munition-contaminated area, of which 30.99km<sup>2</sup> was cleared, 7.50km<sup>2</sup> was reduced through technical survey, and nearly 0.07km<sup>2</sup> was cancelled through non-technical survey. A total of 8,181 submunitions were destroyed during clearance and technical survey in 2020, and a further 2,529 submunitions were destroyed during EOD spot tasks.<sup>126</sup>

A total of nearly 20.53km<sup>2</sup> was confirmed as cluster munition-contaminated by operators through technical survey in 2020.<sup>127</sup>

### SURVEY IN 2020

In 2020, CMAC, MAG, and NPA surveyed nearly 55.84km<sup>2</sup> and confirmed more than 20.53km<sup>2</sup> as containing CMR (see Table 5). In addition, more than 7.50km<sup>2</sup> of CMR-contaminated area was reduced through technical survey, more than half by CMAC (see Table 4) and nearly 0.07km<sup>2</sup> was cancelled by NPA (see Table 3).<sup>128</sup> This represents an increase compared to 2020, when 4.48km<sup>2</sup> of CMR-contaminated area was reduced through technical survey and no area was cancelled.<sup>129</sup>

In its partnership with CMAC, APOPO conducted CMRS as part of a GICHD Evaluation Project of the SMART TSDs. More than 0.79km<sup>2</sup> were surveyed, of which 0.29km<sup>2</sup> was confirmed.<sup>130</sup>

NPA said that the size of the CHAs created in 2020 was, on average, smaller than those in 2019 owing to less CMR evidence being found. Overall land release, however, did increase due to the teams deploying tools such as drones for assistance during the survey process.<sup>131</sup>

**Table 3: Cancellation through non-technical survey in 2020 (CMAA data)<sup>132</sup>**

Operator	Province	Area cancelled (m <sup>2</sup> )
NPA	Ratanakiri	69,477
<b>Total</b>		<b>69,477</b>

**Table 4: Reduction through technical survey in 2020 (CMAA data)<sup>133\*</sup>**

Operator	Area reduced from BLS (m <sup>2</sup> )
CMAC	4,959,266
MAG	1,251,892
NPA	1,292,475
<b>Total</b>	<b>7,503,633</b>

\* Submunitions destroyed during technical survey are included in Table 4.

**Table 5: Cluster munition-contaminated area confirmed through technical survey in 2020 (CMAA data)<sup>134\*</sup>**

Operator	Area surveyed (m <sup>2</sup> )	Area confirmed (m <sup>2</sup> )
CMAC	42,015,607	7,619,074
MAG	8,390,000	9,294,963
NPA	5,432,500	3,617,870
<b>Totals</b>	<b>55,838,107</b>	<b>20,531,903</b>

\* Submunitions destroyed during technical survey are included in Table 5.

## CLEARANCE IN 2020

In 2020, almost 31km<sup>2</sup> of CMR-contaminated area was cleared by CMAC, CSHD, MAG, and NPA (see Table 6). This is an increase on the equivalent 25km<sup>2</sup> cleared in 2019. According to the CMAA, the higher clearance output in 2020 is explained by the increased clearance capacity of operators.<sup>135</sup>

According to CMAA, during EOD spot tasks in 2020, a further 2,529 submunitions were destroyed: 1,077 by CMAC; 5 by CSHD; 1,192 by MAG; 194 by NPA; and 61 by the HALO Trust.<sup>136</sup>

In 2020, 15 cluster munition-contaminated areas, totalling nearly 1.48km<sup>2</sup>, were subject to technical survey and clearance, but found not to contain submunitions.<sup>137</sup>

In partnership with CMAC, APOPO conducted clearance of CHAs identified through its SMART TSD team. APOPO cleared 286,150m<sup>2</sup> of cluster munition-contaminated area in 2020 and destroyed 54 submunitions (36 during technical survey and 18 during clearance) and 25 other items of UXO (19 during technical survey and 6 during clearance).<sup>138</sup>

The amount of CMR-contaminated areas cleared by CMAC in 2020 was slightly less than the previous year.<sup>139</sup> CSHD's CMR clearance output increased in 2020 compared to 2019.<sup>140</sup> MAG's clearance output also increased in 2020 over the previous year, due to additional funding to support clearance in Ratanakiri. CMR were found in all MAG's clearance tasks in 2020.<sup>141</sup>

**Table 6: CMAA data on CMR clearance in 2020<sup>142</sup>**

Operator	Area cleared (m <sup>2</sup> )	Submunitions destroyed*	Other UXO destroyed
CMAC	26,158,331	6,576	19,048
CSHD	217,865	65	115
MAG	3,498,347	774	62
NPA	1,114,936	766	43
<b>Totals</b>	<b>30,989,479</b>	<b>8,181</b>	<b>19,268</b>

\* Includes submunitions destroyed during technical survey.

## PROGRESS TOWARDS COMPLETION

The CMAA expects to complete CMR clearance on remaining contaminated areas after 2025, as Cambodia's first priority is clearing anti-personnel mines.<sup>143</sup> Cambodia has, however, committed to address 80% of the total known CMR contamination by 2025: 499km<sup>2</sup> of an estimated total of 645km<sup>2</sup> in the National Mine Action Strategy 2018–2025. The remaining 20% of CMR will be categorised as "residual" contamination and dealt with accordingly. To reach its clearance goal, Cambodia planned to release 62km<sup>2</sup> every year from 2018 to 2025, of which 30% would be through land reclamation/cancellation and the remaining 70% through land release methodology. Based on this analysis, Cambodia calculated that approximately 44km<sup>2</sup> will need to be released annually through technical survey and full clearance. From 2014 to 2016, Cambodia released an average of 11km<sup>2</sup> per year through technical survey and clearance.<sup>144</sup>

Clearance output has significantly increased in recent years, with more than 141km<sup>2</sup> cleared in the last five years (see Table 7).<sup>145</sup> The implementation of the CMRS should mean that operators are more effective in their approach and focus clearance on CHAs while reducing SHAs through technical

survey. However, the CMAA will need to ensure that the standard is being applied consistently by all operators and in the most efficient and effective way possible.

**Table 7: Five-year summary of CMR clearance**

Year	Area cleared (km <sup>2</sup> )
2020	30.99
2019	25.23
2018	39.60
2017	23.50
2016	22.38
<b>Total</b>	<b>141.70</b>

Cambodia made steady progress in 2020 despite the COVID-19 pandemic, with the BLS completed and CHA identified in the eastern provinces of Kampong Cham, Tboung Khmum, Prey Veng, Svay Rieng, Kratié, Stung Treng, and Ratanakiri, and CMRS also planned for Mondulkiiri.



While further evidence-based survey is needed to further reduce the size of SHA and confirm the actual extent of contamination, this nonetheless represents significant progress for Cambodia in developing a comprehensive understanding of the scope of its cluster munition contamination.<sup>146</sup> More than 20.53km<sup>2</sup> was confirmed as cluster munition-contaminated by operators through technical survey in 2020 alone.<sup>147</sup> This is the first step in the development of a multi-year plan to define the cluster munition CHAs and clear them.<sup>148</sup>

NPA is now working with CMAC in seven of the eight provinces to conduct CMTS to define the cluster munition CHAs. Under this project there will be approximately a 70%/30% split of resources between technical survey and clearance, with clearance resources used to verify and improve the survey (where necessary) as well as for high priority tasks.<sup>149</sup> In Ratanakiri, the eighth CMR-affected province, both NPA and MAG are conducting technical survey and clearance. Technical survey is both conducted of SHAs created from the BLS as well as from CMR evidence points

that have been captured from EOD spot tasks rather than through the BLS. NPA and MAG, working with MAPU, will look to develop a multi-year technical survey and clearance plan in 2021.<sup>150</sup>

According to the CMAA, survey and clearance of CMR in Cambodia were not badly affected by the COVID-19 pandemic in 2020. CMR land release operations were generally in remote areas where population movement is limited.<sup>151</sup> CMAC reported that its demining operations in 2020 had not been interrupted by COVID-19.<sup>152</sup> CSHD said that its deployment plan was sometimes delayed or changed in 2020 due to COVID-19, and it also saw an increase in costs due to required personal protective equipment (PPE) and COVID-19 health checks twice a month.<sup>153</sup> NPA reported its operations were largely able to continue as normal with staff abiding by COVID-19 hygiene measures.<sup>154</sup> MAG said its operations in Ratanakiri province were suspended for the months of April and May 2020, with teams redeployed to the field in June, following training on COVID-19 prevention and mitigation measures as well as undergoing refresher training.<sup>155</sup>

## PLANNING FOR RESIDUAL RISK AFTER COMPLETION

Goal seven of Cambodia's National Mine Action Strategy 2018–2025 is to establish a sustainable national capacity to address residual threats after 2025. Reference to the issue is also included in the foreword to the Strategy signed by the Cambodian Prime Minister and noted throughout the document. Objectives include reviewing by 2020 the legal, institutional, and operational framework, strategy, and capacity needed to address residual threats.<sup>156</sup> As at July 2021, the review had yet to take place, but was planned for 2022 under the current National Mine Action Strategy's three-year implementation plan 2021–2023.<sup>157</sup>

In Phase I (2018–22) of the national strategy Cambodia planned to “develop a comprehensive residual threats strategy; establish a residual threat legal and institutional framework; and establish residual threats regulatory and operational frameworks including coordination, planning, and prioritisation, and sustained information management system”. In Phase II (2023–25), Cambodia plans to “develop residual threat capacity in preparation to transition from

the traditional mine action program; determine resource mobilisation schemes to support the development of residual threat capacity and its future activities; and to conduct post-programme evaluation of achievements and outcomes after the conclusion of the strategy in 2025 to evaluate performance, lessons learned, recommendations for efficiencies and improvements in any remaining mine action”.<sup>158</sup>

Operators believe that the establishment of a residual-risk-management framework will be essential to define and manage the long-term risk posed by CMR.<sup>159</sup> In its 2019 APMBC Article 5 extension request, the CMAA said it is likely that the Royal Cambodian Army will be tasked with addressing explosive threats after 2025.<sup>160</sup> In February 2021, the CMAA and the GICHD began interviewing national and international operators and other relevant stakeholders, to discuss the topic of institutional and operational frameworks and capacity for addressing residual threat.<sup>161</sup>

- 1 South East Asia Air Sortie Database, cited in D. McCracken, “National Explosive Remnants of War Study, Cambodia”, NPA in collaboration with CMAA, Phnom Penh, March 2006, p. 15; Human Rights Watch, “Cluster Munitions in the Asia-Pacific Region”, April 2008; and Handicap International (HI), *Fatal Footprint: The Global Human Impact of Cluster Munitions*, HI, Brussels, November 2006, p. 11.
- 2 Email from Ros Sophal, Database Unit Manager, on behalf of Prum Sophakmonkol, Director, CMAA, 14 May 2021.
- 3 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 6 September 2020.
- 4 CMAA, *National Mine Action Strategy 2018–2025*, p. 9.
- 5 Email from CMAA, 22 May 2018.
- 6 Interview with Ros Sophal, CMAA, 30 June 2021.
- 7 Anti-Personnel Mine Ban Convention (APMBC) Article 5 deadline Extension Request, 27 March 2019, p. 21; and email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 8 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 9 Email from Portia Stratton, Programme Manager, NPA, 21 April 2021.
- 10 Interview with Ros Sophal, CMAA, 30 June 2021.
- 11 Emails from Rebecca Letven, Programme Manager, MAG, 7 April and 4 September 2020.
- 12 Email from Zlatko Vezilic, Programme Manager, NPA, 19 March 2020.
- 13 Email from Rebecca Letven, MAG, 7 April 2020.
- 14 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 15 APMBC Article 5 deadline Extension Request, 27 March 2019, p. 6.
- 16 CMAA, “Legal framework and mandate”, at: <http://bit.ly/2W7r3dJ>.
- 17 Interviews with Su Yeon Yang, and Tong Try, UNDP, 23 April 2019; and Rebecca Letven, MAG, Phnom Penh, 25 April 2019.
- 18 CMAC, “20 Years’ Achievement in Mine Action 1998-2018 and Path Ahead”, 2018.
- 19 Interview with Heng Rattana, Director General, CMAC, Phnom Penh, 25 April 2019.
- 20 GICHD, “Landmines and Land Rights in Cambodia”, December 2010, pp. 9 and 13.
- 21 Email from Zlatko Vezilic, NPA, 5 May 2020.
- 22 CMAA, *National Mine Action Strategy 2018–2025*, p. 24; and email from Tong Try, UNDP, 18 June 2019.
- 23 Emails from Prum Sophakmonkol, CMAA, 1 July 2020; Oum Phumro, CMAC, 9 June 2021; Rebecca Letven, MAG, 7 April 2020; and Zlatko Vezilic, NPA, 5 May 2020.
- 24 Email from Matthew Hovell, Head of Region SE Asia, HALO, 9 April 2021.

- 25 CMAA, National Mine Action Strategy 2018–2025, p. 24; and emails from Tong Try, UNDP, 18 June 2019 and 27 July 2021.
- 26 Emails from Portia Stratton, NPA, 4 September 2020; and Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 6 September 2020.
- 27 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 28 Emails from Zlatko Vezilic, NPA, 4 April 2019; Rebecca Letven, MAG, 9 May and 28 June 2019; and Damian O'Brien, HALO Trust, 10 April 2019.
- 29 Email from GICHD, 1 July 2020.
- 30 Email from Portia Stratton, NPA, 21 April 2021.
- 31 APMBC Article 5 deadline Extension Request, 27 March 2019, p. 12.
- 32 Email from Prum Sophakmonkol, CMAA, 1 July 2020.
- 33 Emails from Rune Dale-Andresen, Country Director, NPA, 26 September 2020; and Portia Stratton, NPA, 21 June 2021.
- 34 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 6 September 2020.
- 35 APMBC Article 5 deadline Extension Request, 27 March 2019, p. 6.
- 36 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 37 Emails from Prum Sophakmonkol, CMAA, 11 September 2019; Rebecca Letven, MAG, 7 April 2020; and Lasha Lomidze, HALO Trust, 15 May 2020.
- 38 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 39 APMBC Article 5 deadline Extension Request, 27 March 2019, p. 55.
- 40 National Mine Action Strategy 2018–2025, p. 13.
- 41 Email from Tong Try, UNDP, 27 July 2021.
- 42 CMAA, Three-Year Implementation Plan 2018–2020, Phnom Penh, undated but 2018, p. 14.
- 43 DFID Capacity Development Report, Activity Detail Extract, 18 September 2018.
- 44 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021; and Portia Stratton, NPA, 21 April 2021.
- 45 Email from Portia Stratton, NPA, 21 April 2021.
- 46 Emails from Portia Stratton, NPA, 21 April 2021; and Tong Try, UNDP, 27 July 2021.
- 47 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 48 Email from Arianna Calza Bini, Head of GMAP division, GICHD, 7 September 2020.
- 49 CMAA, National Mine Action Strategy 2018–2025, p. 22; and email from Tong Try, UNDP, 27 July 2021.
- 50 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 51 Email from Prum Sophakmonkol, CMAA, 1 July 2020.
- 52 Email from Tong Try, UNDP, 27 July 2021.
- 53 Email from Chhun Bora, Training and Monitor Officer, CSHD, 19 April 2021.
- 54 Email from Oum Phumro, CMAC, 9 June 2021.
- 55 CMAC, "20 Years' Achievement in Mine Action 1998-2018 and Path Ahead", 2018; interview with Heng Rattana, CMAC, Phnom Penh, 25 April 2019; and email from Oum Phumro, Deputy Director General, CMAC, 28 July 2020.
- 56 Email from Oum Phumro, CMAC, 9 June 2021.
- 57 Emails from Alexey Kruk, Programme Manager, MAG, 29 March and 28 May 2021.
- 58 Emails from Rebecca Letven, MAG, 7 April 2020; and Alexey Kruk, MAG, 29 March 2021.
- 59 Email from Zlatko Vezilic, NPA, 4 April 2019.
- 60 Email from Portia Stratton, NPA, 20 April 2021.
- 61 APMBC Article 5 deadline Extension Request, Additional Information, undated but August 2019, Annex 18.
- 62 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 63 Email from GICHD, 1 July 2020.
- 64 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021; Oum Phumro, CMAC, 9 June 2021; and Portia Stratton, NPA, 20 April 2021.
- 65 Email from GICHD, 1 July 2020.
- 66 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 67 CMAA, National Mine Action Strategy 2018–2025, p. 22.
- 68 Email from Zlatko Vezilic, NPA, 5 May 2020.
- 69 Emails from Prum Sophakmonkol, CMAA, 1 July 2020; and Ros Sophal, CMAA, 16 August 2021; and interview with Ros Sophal, CMAA, 30 June 2021.
- 70 CMAA, National Mine Action Strategy 2018–2025, pp. 14–15.
- 71 Email from Portia Stratton, NPA, 20 April 2021.
- 72 Email from Lasha Lomidze, HALO Trust, 15 May 2020.
- 73 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 74 Email from Alexey Kruk, MAG, 29 March 2021.
- 75 Email from Zlatko Vezilic, NPA, 5 May 2020.
- 76 Ibid.
- 77 Email from Rebecca Letven, MAG, 9 May 2019; and interview with Prum Sophakmonkol, CMAA, Phnom Penh, 24 April 2019.
- 78 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 79 Ibid.
- 80 Emails from Zlatko Vezilic, NPA, 4 April 2019; and Rebecca Letven, MAG, 9 May 2019.
- 81 Email from Portia Stratton, NPA, 21 April 2021.
- 82 Emails from Zlatko Vezilic, NPA, 19 March 2020; and Portia Stratton, NPA, 4 September 2020 and 20 April 2021.
- 83 Email from Rebecca Letven, MAG, 7 April 2020.
- 84 CMAA, National Mine Action Strategy 2018–2025, pp. 11–12.
- 85 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 86 Email from Rebecca Letven, MAG, 9 May 2019; and Skype interview with Fredrik Holmegaard, Operations Manager, NPA, 30 May 2019.
- 87 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 88 Email from Zlatko Vezilic, NPA, 25 June 2019.
- 89 Email from Zlatko Vezilic, NPA, 19 March 2020.
- 90 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 6 September 2020.
- 91 APMBC Article 5 Extension Request, 27 March 2019, p. 5.
- 92 Ibid., p. 8; and interviews with Prum Sophakmonkol, CMAA, Phnom Penh, 24 April 2018; and Geneva, 11 February 2020.
- 93 Emails from Rebecca Letven, MAG, 7 April and 4 September 2020.
- 94 Email from Zlatko Vezilic, NPA, 4 April 2019.
- 95 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 96 Email from Rebecca Letven, MAG, 7 April 2020.
- 97 Emails from Rebecca Letven, MAG, 7 April 2020; and Zlatko Vezilic, NPA, 19 March 2020.
- 98 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 6 September 2020; and Portia Stratton, NPA, 4 September 2020.
- 99 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 100 Emails from Rebecca Letven, MAG, 9 May 2019; and Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 101 Email from Rebecca Letven, MAG, 28 June 2019.
- 102 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 103 Emails from Portia Stratton, NPA, 21 April 2021; and Alexey Kruk, MAG, 29 March 2021.
- 104 Ibid.
- 105 Email from Alexey Kruk, MAG, 29 March 2021.
- 106 Emails from Prum Sophakmonkol, CMAA, 11 September 2019; and Zlatko Vezilic, NPA, 4 April 2019.
- 107 Emails from Zlatko Vezilic, NPA, 5 May 2020; and Lasha Lomidze, HALO Trust, 15 May 2020.
- 108 Email from Portia Stratton, NPA, 21 April 2021.
- 109 Emails from Portia Stratton, NPA, 21 April 2021; and Matthew Hovell, HALO, 9 April 2021.
- 110 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.

- 111 Email from Michael Heiman, APOPO, 8 June 2021.
- 112 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021; Oum Phumro, CMAC, 9 June 2021; Chhun Bora, CSHD, 19 April 2021; Alexey Kruk, MAG, 29 March 2021; and Portia Stratton, NPA, 21 April 2021.
- 113 Emails from Michael Heiman, APOPO, 4 May 2020, 22 March 2021, 8 June 2021, and 28 July 2021.
- 114 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021; and Oum Phumro, CMAC, 9 June 2021.
- 115 Email from Alexey Kruk, MAG, 29 March 2021.
- 116 Email from Portia Stratton, NPA, 21 April 2021.
- 117 Email from Oum Phumro, CMAC, 9 June 2021.
- 118 Email from Rune Dale-Andresen, NPA, 29 September 2020.
- 119 Skype interview with Fredrik Holmegaard, NPA, 30 May 2019; and emails from Prum Suonpraseth, CMAC, 21 June 2019; Zlatko Vezilic, NPA, 2 July 2019; and Portia Stratton, NPA, 21 April 2021.
- 120 Email from Portia Stratton, NPA, 21 June 2021.
- 121 Email from Chhun Bora, CSHD, 19 April 2021.
- 122 Emails from Rebecca Letven, MAG, 9 May 2019 and 4 September 2020; and Alexey Kruk, MAG, 29 March 2021.
- 123 Email from Portia Stratton, NPA, 21 April 2021.
- 124 Emails from Portia Stratton, NPA, 4 September 2020 and 21 April 2021.
- 125 Email from Zlatko Vezilic, NPA, 4 April 2019.
- 126 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May and 1 July 2021.
- 127 Email from Ros Sophal, CMAA, 1 July 2021.
- 128 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May and 1 July 2021.
- 129 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 6 September 2020; and Zlatko Vezilic, NPA, 19 March 2020. There was a discrepancy in the CMAA's data on area reduced through technical survey for MAG compared to the 226,118m<sup>2</sup> reported by MAG. Email from Rebecca Letven, MAG, 7 April 2020.
- 130 Emails from Michael Heiman, APOPO, 4 May 2020 and 22 March 2021.
- 131 Email from Portia Stratton, NPA, 21 April 2021.
- 132 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021; and Portia Stratton, NPA, 21 April 2021.
- 133 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May and 1 July 2021; Alexey Kruk, MAG, 29 March 2021; and Portia Stratton, NPA, 21 April 2021. There was a discrepancy in the CMAA's data on area reduced through technical survey for CMAC compared to the 3,885,517m<sup>2</sup> reported by CMAC. Email from Oum Phumro, CMAC, 9 June 2021, MAG, 7 April 2020. In addition, APOPO, in partnership with CMAC, reported reducing 506,068m<sup>2</sup> in Preah Vihear province, as part of its CMRS using technical survey dogs. Email from Michael Heiman, APOPO, 8 June 2021.
- 134 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021; Alexey Kruk, MAG, 29 March and 28 May 2021; and Portia Stratton, NPA, 20 April 2021. There was a discrepancy in data reported by the CMAA and data reported directly by CMAC. CMAC reported surveying 26,020,219m<sup>2</sup> and confirming 24,569,333m<sup>2</sup> (email from Oum Phumro, CMAC, 9 June 2021), of which APOPO, in partnership with CMAC, reported surveying 792,218m<sup>2</sup> and confirming 286,150m<sup>2</sup> in 2020, as part of the CMRS with technical survey dogs (email from Michael Heiman, APOPO, 8 June 2021).
- 135 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 136 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May and 1 July 2021; and Chhun Bora, CSHD, 19 April 2021. There was a discrepancy in data reported by the CMAA and data reported directly by some operators. CMAC reported destroying 1,069 CMR during spot tasks in 2020 (email from Oum Phumro, CMAC, 9 June 2021). MAG reported destroying 1,185 CMR during spot tasks in 2020. The discrepancy with CMAA spot task data is believed to be because MAG had yet to enter all data into IMSMA. It expected to have completed data entry by end of June 2021 (email from Alexey Kruk, MAG, 29 March 2021). NPA reported destroying 37 CMR during spot tasks in 2020 (email from Portia Stratton, NPA, 20 April 2021).
- 137 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021. CMAC reported clearing 3 cluster munition-contaminated areas, totalling 98,033m<sup>2</sup> without finding submunitions (email from Oum Phumro, CMAC, 9 June 2021); NPA reported clearing cluster munition-contaminated areas, totalling 38,101m<sup>2</sup> without finding submunitions (email from Portia Stratton, NPA, 21 April 2021); MAG reported discovering CMR in all its CMR clearance tasks (email from Alexey Kruk, MAG, 29 March 2021).
- 138 Email from Michael Heiman, APOPO, 8 June 2021.
- 139 Email from Oum Phumro, CMAC, 9 June 2021.
- 140 Email from Chhun Bora, CSHD, 19 April 2021.
- 141 Email from Alexey Kruk, MAG, 29 March 2021.
- 142 Emails from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021; Alexey Kruk, MAG, 29 March 2021; Portia Stratton, NPA, 21 April 2021; and Chhun Bora, CSHD, 19 April 2021. There were some small discrepancies in the number of items destroyed reported by operators in comparison to the clearance data reported by the CMAA. CMAC reported clearing 20,347,065m<sup>2</sup> during clearance and destroying 5,552 submunitions and 1,260 other UXO (email from Oum Phumro, CMAC, 9 June 2021), of which APOPO, in partnership with CMAC, reported it cleared 286,150m<sup>2</sup> of cluster munition contaminated area in 2020, and destroyed 54 submunitions (36 during technical survey and 18 during clearance) and 25 other items of UXO (19 during technical survey and 6 during clearance) (email from Michael Heiman, APOPO, 8 June 2021). CSHD reported destroying 2 items of UXO (and 65 submunitions) during clearance (email from Chhun Bora, CSHD, 19 April 2021.); and MAG reported destroying 610 submunitions and 11 items of UXO during clearance (email from Alexey Kruk, MAG, 29 March 2021).
- 143 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 144 National Mine Action Strategy 2018–2025, pp. 9–10.
- 145 Ibid.
- 146 Emails from Portia Stratton, NPA, 21 April 2021; and interview with Ros Sophal, CMAA, 30 June 2021.
- 147 Email from Ros Sophal, CMAA, 1 July 2021.
- 148 Email from Portia Stratton, NPA, 21 April 2021.
- 149 Ibid.
- 150 Ibid.
- 151 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 152 Email from Oum Phumro, CMAC, 9 June 2021.
- 153 Email from Chhun Bora, CSHD, 19 April 2021.
- 154 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.
- 155 Email from Alexey Kruk, MAG, 29 March 2021.
- 156 CMAA, National Mine Action Strategy 2018–2025, p. 14.
- 157 Email from Tong Try, UNDP, 27 July 2021.
- 158 CMAA, National Mine Action Strategy 2018–2025, p. 16.
- 159 Email from Rebecca Letven, MAG, 7 April 2020.
- 160 APMBC Article 5 deadline Extension Request, Additional Information, undated but August 2019, p. 5.
- 161 Email from Ros Sophal, on behalf of Prum Sophakmonkol, CMAA, 14 May 2021.