Data Collection Survey for Assistance in Demining sector to Ukraine's crisis

Final Report

September 2023

Japan International Cooperation Agency (JICA)

Japan International Cooperation System (JICS)

GP
JR
23-028

Table of Contents

Ukraine Location Map

Source : https://www.mofa.go.jp/mofaj/area/ukraine/index.html

Source : https://www.worldatlas.com/upload/22/2e/50/provinces-of-ukraine-map.png

(Remarks) Areas circled in red are priority areas for this survey.

List of Illustrations

Figure Contents

Index

Abbreviations

Abbreviation	Official Words
A/A	Agent Agreement
ALIS	Advanced Land Imaging System
B/A	Banking Arrangement
BAC	Battle Area Clearance
CHA	Confirmed Hazardous Areas
CMAC	Cambodian Mine Action Centre
DCA	Dan Church Aid
DOC	Decoration of Conformity
DRC	Danish Refugee Council
DS	Demining Solution
E/N	Exchange of Notes
EOD	Explosive Ordnance Disposal
EORE	Explosive Ordnance Risk Education
ERW	Explosive Remnants of War
FSD	Fondation suisse de déminage
G/A	Grant Agreement
GICHD	The Geneva International Centre for Humanitarian Demining
HALO Trust	HALO Trust
HDC	Humanitarian Demining Centre
HI	Humanity & Inclusion
HRW	Human Rights Watch
ICBL	International Campaign to Ban Landmines
IED	Improvised Explosive Device
IMAS	International Mine Action Standards
IMSMA	Information Management System for Mine Action
JPF	Japan Platform
MAC	Mine Action Center
MAG	Mines Advisory Group
MASC	Mine Action Sub-Cluster in Ukraine
MOD	Ministry of Defense
MOI	Ministry of Interior
MoRTOT	Ministry for re-integration of temporarily occupied territories
MRE	Mine Risk Education

NATO	North Atlantic Treaty Organization
NGO	Nongovernmental Organizations
NMAC	National Mine Action Center
NMAS	National Mine Action Standards
NMAA	National Mine Action Authority
NPA	Norwegian People's Aid
NPU	National Police Unit
NTS	Non-Technical Survey
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OHCHR	Office of the High Commissioner for Human Rights
OSCE	Organization for Security and Co-operation in Europe
OSCE-PCU	OSCE Project Co-Ordinator in Ukraine
PFRU	Partnership Fund for a Resilient Ukraine
QA/QC	Quality Assurance / Quality Control
RMAC	Regional Mine Action Center
SESU	State Emergency Service of Ukraine
SFPL	Solidarity Fund PL
SHA	Suspected Hazardous Area
SOP	Standard Operating Procedure
STS	State Special Transport Service
SWEDEC	Swedish EOD and Demining Centre
TS	Technical Survey
UDA	Ukrainian Deminers Association
UNDP	United Nations Development Program
UNMAS	The United Nations Mine Action Service
URCS	Ukrainian Red Cross Society
VAT	Value Added Tax

(Remarks)

In this report, the words "mines," "mines and UXO," "mines and UXO and other explosive devices," and "explosive remnants of war (ERW)" are used as synonym sometimes, because the original users (information senders) of the words do not distinguish these words depending the original meanings. In addition, the words "landmine" is getting to be expressed as "Explosive Remnants of War (ERW)" in a broader sense, due to the change of times. Therefore, each word is used without consideration of the original meaning strictly in this report.

1. Survey Summary

1.1. Background and Objectives of the Survey

1-1-1 Background of this survey

Ukraine is located in central Eastern Europe and consists of 24 provinces and the Autonomous Republic of Crimea, with an area of 603,700 km^2 and a population of approximately 41.59 million. Its capital is Kyiv, the largest city, and Ukrainian is the official language. Ukraine had been experiencing contamination of landmines and UXO since the Ukrainian conflict in 2014, as well as UXO from the World War II at the time of the conflict. Subsequently, the Russian military invasion of Ukraine occurred in February 2022, and contamination by mines, UXO, and residual explosives has spread throughout Ukraine, particularly in the eastern and southern regions.

In parallel with the counterattack against the military invasion by Russia, the government of Ukraine has begun to move toward recovery in various parts of Ukraine. The government of Ukraine presented its National Recovery Plan at the Recovery Conference in Lugano, Switzerland in July 2022. The third national program, "Rebuild a clean and safe environment," includes a target to remove mines and UXOs from 5% of the Ukraine's land area by 2022. As Russian military aggression continues into 2023, the government of Ukraine is strengthening the system and personnel in charge of mine and UXO clearance and is demonstrating its commitment to Mine Action with support from other countries. In response to the military invasion by Russia, Mine Action in Ukraine are not only a humanitarian issue that must be urgently addressed, but also a medium- to long-term challenge because it is a precondition for the safe return of Ukraine and the rehabilitation and reconstruction of the region, including the rehabilitation of urban functions and agricultural lands.

1-1-2 Purpose of this survey

The three main objectives of this survey are as follows:

- Basic information collection: Collect, organize, and analyze information on the landmine and UXO sector in Ukraine, including the status of contamination and damage caused by mines and UXOs in Ukraine, the status of efforts related to surveys, clearance, training, public awareness, etc., the implementation system for Mine Action, and donor support.
- Study of projects contributing to Mine Action: Formulation of concrete support project plans (drafts) for Grant Aid, Technical Cooperations, etc. to meet the short- to medium- to long-term needs and challenges of the Government of Ukraine with regard to Mine Action, and organization of points to be considered in implementing the support projects.
- Implementation of a pilot project for the ALIS (Advanced Land Imaging System) (hereinafter referred to as "ALIS") landmine detector: Implementation of a pilot project, including training in the handling of the actual ALIS landmine detector, for the future full-scale introduction of

the ALIS dual-sensor landmine detector in Ukraine, and Confirmation of the effectiveness of the introduction of ALIS in Ukraine through the pilot project, identification of issues to be addressed at the time of introduction, and consideration of countermeasures.

1.2. Surveyed area

The area to be covered by this survey for the collection and analysis of information on mines and UXO is the entire Ukraine. The ALIS training for the pilot project was conducted in Cambodia with the full cooperation of the Cambodian Mine Action Centre (CMAC), which has extensive experience in handling ALIS. The follow-up training for ALIS was conducted in Poland, a neighboring Ukraine, with the cooperation of the Polish Police.

1.3. How the survey was conducted

- Basic information gathering: Since it was difficult to travel to Ukraine for this study, information was gathered through reliable information on the Web, regular donor meetings, interviews with participants from the State Emergency Service of Ukraine (SESU) at ALIS operational training in Cambodia and the ALIS follow-up training in Poland, and local resources.
- Study of projects contributing to Mine Action: Analyzed the information collected and confirmed the needs of SESU through web conferences with SESU, training on ALIS and follow-up training on ALIS, and formed a Grant Aid project (draft) and Technical Cooperation needed by SESU were confirmed through web conferences with SESU, training on ALIS, and follow-up training on ALIS.
- Implementation of the pilot project for the ALIS : A series of basic plans were developed from the training for handling the actual ALIS equipment to the follow-up training for handling the actual ALIS equipment. Based on the basic plan, we were also in charge of securing a training site, coordinating schedules with training participants, lecturers, and other parties involved in the training, determining training content and implementation methods, managing training costs, and other administrative tasks. At the same time, we secured a staffing structure to provide technical support for the smooth start of ALIS use after its delivery to SESU.

1.4. Survey team

No.	Name	Role	Organization /Company
1	FUJISAKI Seiyu	General / Mine Action / Support for SOP formulation (1)	Japan International Cooperation System
2	SEKIGUCHI Masaya	Capacity Enhancement Plan/SOP Formulation Support (2)	Oriental Consultants Global Co.

3	WATANABE Jinichi	Equipment planning/budget planning	Japan International Cooperation System
4	KAWASAKI Ryuji	Damage Situation Analysis / Victim Support and Awareness / Strengthening Donor Coordination (1)	Japan International Cooperation System
5	YASUDA Masahiro	Damage Situation Analysis/Victim Support and Awareness Raising/Strengthening Donor Coordination (2)	Japan International Cooperation System

1.5. Study period

From September 30, 2022 to September 29, 2023

2. Basic Information on Landmine and UXO Contamination Situation and Countermeasures

2.1. Landmine and UXO contamination and damage in Ukraine

2-1-1 Contamination and human casualties due to mines and unexploded ordnance (UXO) before the Russian military invasion

(1) Contamination by mines and UXO before the military invasion by Russia

1) History and situation of landmine and UXO contamination prior to Russian military invasion

Before the Russian military invasion in February 2022, Ukraine had been contaminated by mines and UXO, mainly in the eastern part of the Ukraine. In addition to mines and UXO left throughout Ukraine during the wars between Nazi Germany and the Soviet Union during World Wars I and II, the recent contamination was caused by explosives such as cluster munitions used during the 2014 armed clashes in Luhansk and Donetsk in eastern Russia between Ukrainian Army and rebel and separatist groups supported by the Russian military. The explosive remnants of war (ERW), such as unexploded cluster munitions, were used during the armed clashes between rebel and separatist groups and Ukranian armed forces in the eastern Russian cities of Luhansk and Donetsk in 2014.

2) According to the Landmine & Cluster Munition Monitor (Landmine Monitor 2021), a report compiled and published annually by the International Campaign to Ban Landmines (ICBL), a coalition of international NGOs formed to abolish the production and use of anti-personnel landmines. According to the Landmine & Cluster Munition Monitor (Landmine Monitor 2021), a report compiled and published annually by ICBL (International Campaign to Ban Landmines), 7,000 km^2 or about 8% of the total land area of Ukraine was contaminated with landmines and UXOs in 2021, before the Russian military invasion.

(Source: International Campaign to Ban Landmines - Cluster Munition Coalition (ICBL-CMC) website, URL List No. 2-1)

3) According to the United Nations Organization (OCHA: United Nations Office for the Coordination of Humanitarian Affairs), the situation of contamination by mines and UXOs in the eastern part of Ukraine prior to the Russian military invasion in February 2022 is shown in Figure 2-1, According to the United Nations Office for Coordination of Humanitarian Affairs (UNA: United Nations Office for Coordination of Humanitarian Affairs), the situation of landmines and UXO contamination in the eastern part of U.S. before the Russian military invasion in February 2022 is shown in Figure 2-1.

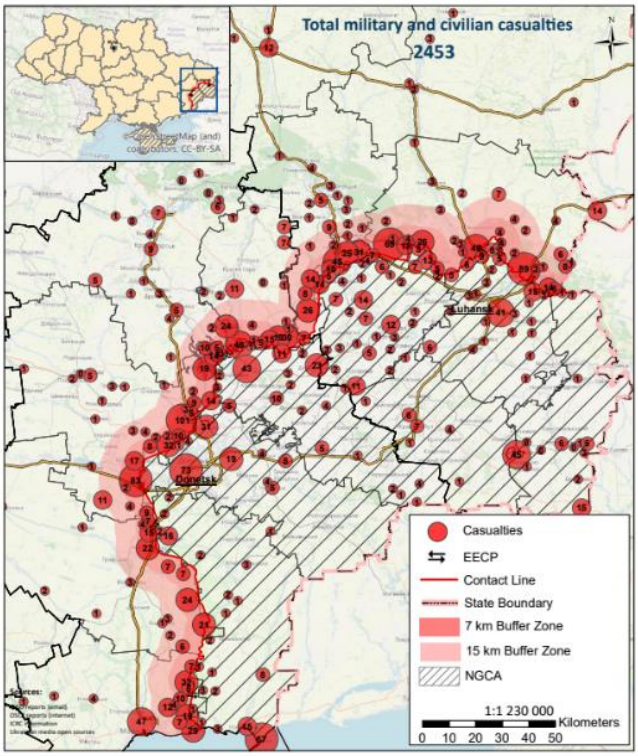


Figure 2-1　Map of landmine contamination in eastern Ukraine before the start of the Russian military invasion

(Source: OCHA's website, URL List No. 2-2)

4) According to data from UNICEF and AAR Japan, an international NGO, the types of mines, UXO, and other explosives buried in Ukraine before the Russian invasion are reported to be limited (compared to the types reported after 2022). (Sources: UNICEF website and AAR Japan website, URL List No. 2-3)

(2)　Casualties due to mines and UXO before the Russian military invasion

The Landmine & Cluster Munition Monitor reports that 2,727 landmine casualties (941 dead and 1,786 injured) were recorded between 2014 and 2019. Casualty data peaked in 2015 and 2016, with 706 and 785 casualties, followed by a decrease in 2018 and 2019, with 325 and 324 casualties reported, respectively. The human casualty situation in 2019 is shown in Table 2-1.

Table2-1　Human losses due to mines and UXO in 2019

Annual Casualties (2019)	
Casualties	324 (Ref: 325 / 2018)
Number of deaths and injuries	Deaths: 105, Injuries: 219
Breakdown of casualties	Civilians: 174 / Military personnel: 144 Deminers: 3 / Unknown: 3

Other	Adults: 284 (male: 247/ female: 22/ unknown: 15)
	Children: 37 (male: 25 / female: 5 / unknown: 7)

(Source: Landmine & Cluster Munition Monitor, 22 February 2021, URL List No.2-4)

2-1-2 Contamination by mines and UXO after military invasion by Russia

(1) Areas contaminated by mines and UXO

1) The HALO Trust, an international NGO, shows the map in Figure 2-2 regarding the contamination status of mines and UXOs since the military invasion of Ukraine in February 2022. According to the map, the damage and burial sites of mines, UXOs, and other explosive devices are shown in spots throughout Ukraine, especially in the cities (areas) where heavy fighting with Russia took place, such as the capital cities of Kyiv and Kharkiv. In particular, the distribution of damage and burial sites of mines, UXOs, and other explosives caused by the Russian military invasion is shown in the eastern and southern regions of the Ukraine, including Chernihiv, Donetsk, Dnipro, Kharkiv, Kherson, Kyiv, Luhansk, Mykolaiv, and Sumy, which were subject to the Russian military invasion for a long period of time, Zaporizhia, and are concentrated on the borders of Zaporizhia.

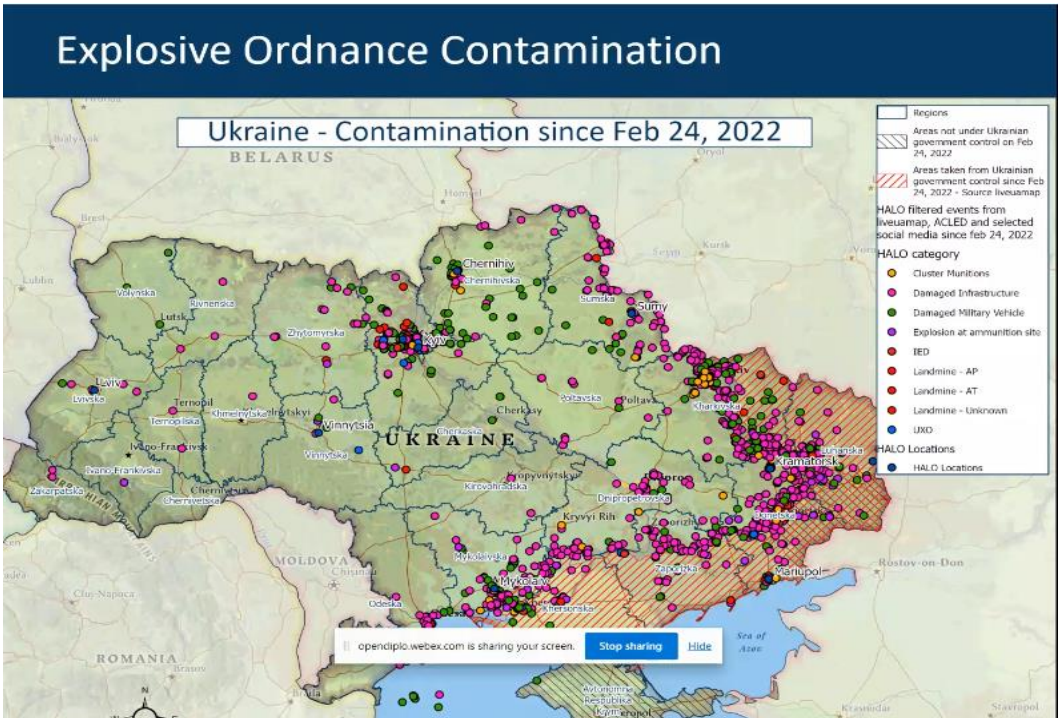


Figure 2-2 Mines, unexploded ordnance, and other explosive contaminated areas in Ukraine

(Source: HALO Trust presentation material dated October 26, 2022)

2) The Geneva International Centre for Humanitarian Demining (GICHD) provides the latest data on the damage caused by landmines, UXO, and other explosive devices in Ukraine, as shown in Figure 2-3, which is posted on its website. The same situation is

shown in Figure 2-3, which is the latest data available on the website of the GICHD

Figure 2-3 Map showing damage caused by mines, unexploded ordnance, etc. (dated April 21, 2022)
(Source: GICHD website, National Mine Action Authority (NMAA) prepared material Challenges for Mine Action due to Russian aggression against Ukraine (URL List No. 2-5) (Collected List No. 2-1-2))

(2) Area of landmine and UXO contaminated areas in Ukraine

1) According to SESU's explanation at the "Ukraine Mine Action Donor Coordination Workshop" held in Geneva from November 28 to 30, 2022 (hereinafter referred to as "Ukraine Mine Action Workshop"), it was reported that the contaminated area in Ukraine is about 30% of the whole territory (603,700 km^2) or 175,000 km^2 (land) and 15,000 km^2 (underwater). Publicly available information on the area of landmine and UXO contaminated areas in Ukraine is shown in Table 2-2.

2) The area contaminated by mines, UXOs, and other explosives before the Russian military invasion was 7,000 km^2 as mentioned above, but after the Russian invasion it was 175,000 km^2 (Source: SESU data from the Mine Action Workshop in Ukraine, Reference List 1-1-3), indicating that the area contaminated by the military invasion has increased dramatically by approximately 25 times. The area of contamination has increased dramatically to about 25 times due to the military advance. (Source: International Campaign to Ban Landmines - Cluster Munition Coalition (ICBL-

CMC) website, URL List No. 2-1）

Table2-2 Information on the area suspected to be contaminated by mines and UXO

No.	Mine/UXO contamination area		Remarks	Sources.	
	Ha.	km^2		Name of corporate body	Materials/Home Page
1	19,000,000	190,000	(Breakdown) 175,000 km^2 (land) 15,000 km^2 (underwater)	SESU (Govt. of Ukraine)	Mine Action Workshop Materials in Ukraine (List of Collected Materials No.1-1-3)
(Remarks)	2,100,000	21,000	Areas of armed conflict within the whole of the UKRAINE	MOD (Govt. of Ukraine)	United Nations Mine Action in Ukraine 2.4_masg_meeting_undp_ukraine.pdf
(Remarks)	14,400,000	144,000	Contaminated areas in the Occupied Area under the control of the Government of Ukraine	MoRTOT (Govt. of Ukraine)	Workshop on Mine Action in Ukraine, Presentation materials

(Source: United Nation's website, as indicated by the sources in the table, confirmed November 22, 2022)

3) According to Ukrainian media report dated October 23, 2022, SESU Secretary told the media interview, "30% of U.S. is contaminated by explosives (mines, UXOs, etc.) As of October 24, 2022, 70,000 tons have been cleared, but a large number of mines and UXOs (170,000 tons) remain a problem. However, contamination over a wide area remains a problem due to the large quantity of mines and UXO (170,000 tons). A single day of fighting requires 30 days of mine clearance work. The situation of landmine contamination is explained in the following paragraph. (Source: Serhiy Kruk's website for the interview with Secretary Kruk, URL List No. 2-6).

2-1-3 Human casualties due to mines and UXO after military invasion by Russia

(1) Report by SESU

The following is a report by SESU on the human casualty situation at the Mine Action Workshop in Ukraine.

- The number of accidents caused by landmines, UXO, and other explosives to which Ukrainian government agencies responded after the military invasion by Russia was 281 (landmines: about 25%, UXO and other explosives: 75%) in about 9 months until November 2022, with 149 deaths (of which children: 19, agricultural workers: 10, etc.) and 334 injuries (of which children: According to SESU presentation in Cambodia in January 2023 (Collection List No.2-3-8), the number of human casualties increased to 185 killed and 589 injured in the 11 months to January 2023. Thus, since the military advance by Russia, in addition to many military personnel, children, agricultural workers, and others have been damaged by mines, UXO, and other explosives in Ukraine, which means that about 2 civilians are killed every month.
- There are still about 5 million people living close to contaminated areas by mines, UXO, and other explosives in Ukraine, and if future returnees are included, the number of residents exposed

to the risk of mines and UXO is about 15 million.

(2) Report by the Office of the United Nations High Commissioner for Human Rights

1) The Office of the United Nations High Commissioner for Human Rights (OHCHR: Office of the High Commissioner for Human Rights) stated that the number of civilians affected by the fighting between February 24, 2022 and March 19, 2023, following the Russian military invasion to Ukraine, was 22.209, of which 8,317 were killed and 13,892 were wounded. The OHCHR states that "due to the delay in obtaining information from the areas where heavy fighting is taking place, the above figures are only those that have been confirmed, and the actual damage is even greater.

(Source: MASC meeting, April 14, 2023, OHCHR publication)

2) According to OHCHR, from February 24, 2022 to March 24, 2023, the number of civilian casualties due to landmines, UXO, and other explosive devices in Ukraine was 730 (dead: 250, injured: 480), with the breakdown of victims (adult male, adult female, minor: boy or girl, unknown) as The breakdown of victims (adult male, adult female, minor: boy or girl, unknown) is reported in the figure below.

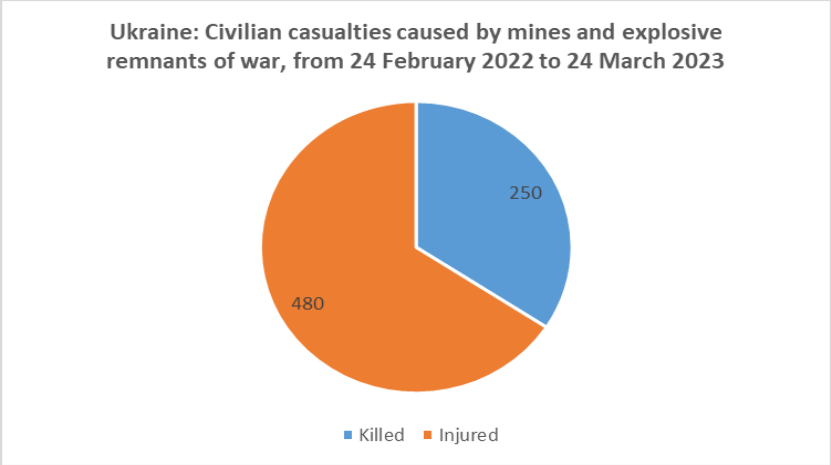


Figure2-4 Civilians killed / injured by mines, UXO, and other explosives (number of people)

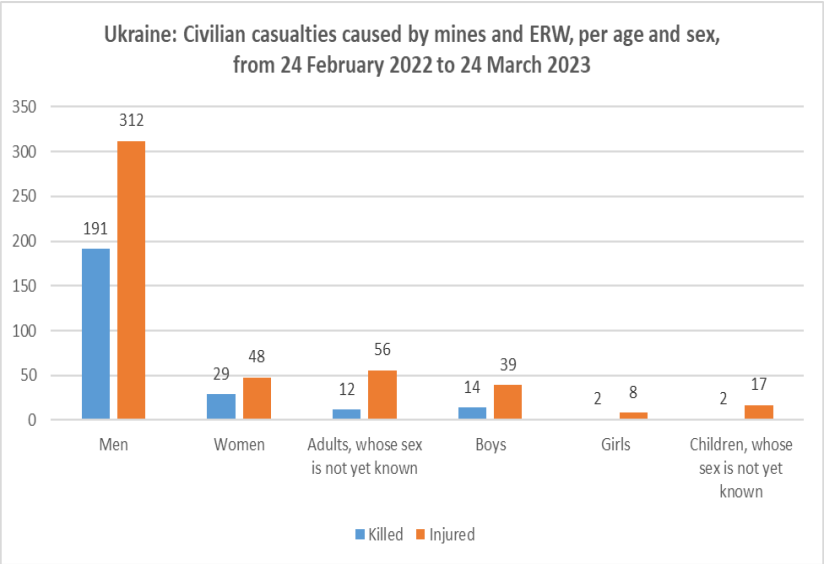


Figure 2-5 Civilians killed/injured by mines, UXO, and other explosive devices (breakdown)

3) According to the OHCHR report, civilian casualties from landmines, UXO, and other explosives by region are as follows: Compared to Russian-controlled areas (occupied areas), the number of casualties in areas under Ukrainian government control is three to four times higher. In addition, the number of civilian casualties by oblast is prominent in regions where fighting has intensified, such as Kharkiv, Donetsk, and Kherson, and there is concern that the number of civilian casualties will continue to increase.

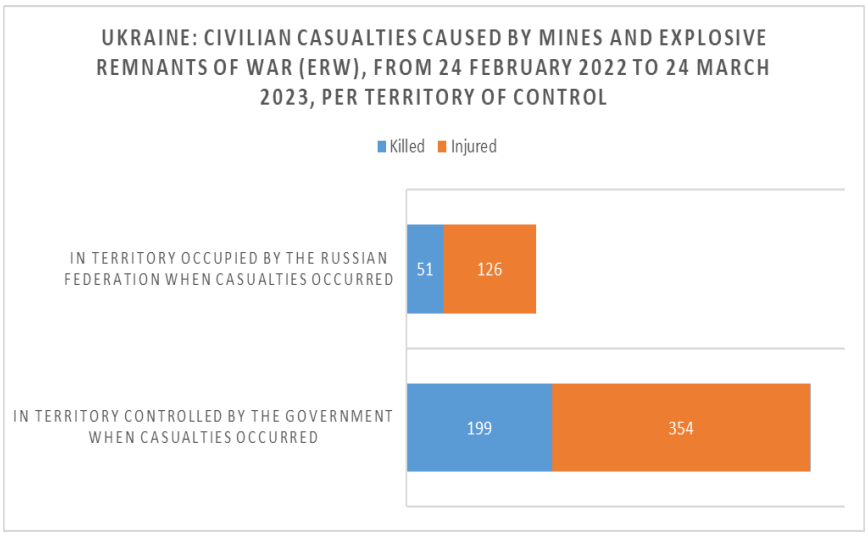


Figure 2-6 Civilian casualties due to mines, UXO, and other explosives (region)

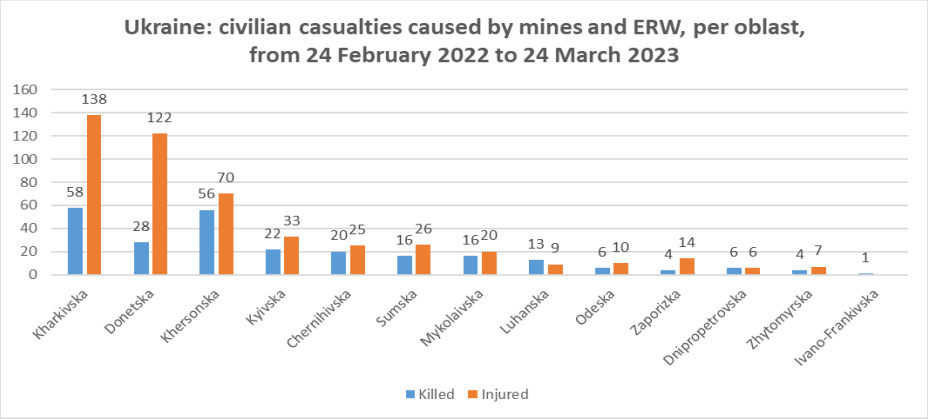


Figure 2-7　Civilian Casualties from Mines, UXO, and Other Explosives, by Province

(Source: Presentation prepared by OHCHR at the Mine cluster meeting, March 24)

(3) Report by Mine Action Sub-Cluster in Ukraine (MASC)

According to a report compiled by the Mine Action Sub-Cluster in Ukraine (MASC) chaired by the United Nations Development Program (UNDP) as of March 1, 2023 (Figure 2-8 below), the number of citizens in need of assistance in the field of Mine Action in Ukraine is 10.6 million. According to the report (Figure 2-8 below), there are 10.6 million people in need of assistance in the area contaminated by landmines, UXO, and other explosive devices, where is a growing and serious problem throughout the Ukraine.

Number of citizens in need of assistance (all sectors)	In the field of demining Number of citizens in need of assistance
17.6 million	10.6 million
Number of citizens targeted by support groups (All sectors)	Number of citizens targeted by aid organizations in the field of demining
11.1 million	3 million
Number of Internally Displaced Persons	Number of returnees
5.4 million	5.6 million
Organizations conducting Mine Action activities	
13 organizations	
Number of Mine Action activities	
6,396 times	

Figure 2-8　Assistance needs in all sectors and in the demining sector in Ukraine

(Source: UKRAINE Mine Action - 5W Situation Report (As of 01 March 2023), URL List No. 2-7)

2.2. Status of Mine Action

2-2-1 Mine Action before Military Invasion by Russia

(1) Efforts by the Government of Ukraine to Counter Landmines and UXO

The Government of Ukraine, based on the situation of contamination and damage caused by landmines and UXOs in Ukraine since around 2014, has strengthened its activities for Mine Action, including humanitarian mine detection and clearance activities and mine risk education, mainly in the eastern region of Ukraine where particularly serious contamination and damage have occurred, initiated by SESU.

(2) Mine clearance activity by SESU through 2021

The following Table 2-3 and Figure 2-9 show SESU's humanitarian demining and UXO clearance results for the eight-year period from 2014 to 2021. These are mostly the results of activities in Donetsk and Luhansk.

Comparing the pre-invasion (2021) and post-invasion (2022) figures, the clearance area and the number of units removed have increased significantly. On the other hand, the number of people mobilized for clearance has decreased. This indicates that under wartime conditions, it is difficult to remove as many people as in the past, and that work must be conducted intensively with a limited number of personnel.

Table2-3 SESU's Achievements in Humanitarian Mine and UXO Clearance

Year	Clearance Area (ha)	Number of pieces removed (pcs)	Total number of manpower engaged (persons)
2014	3,030	151,100	7,090
2015	10,667	50,152	8,081
2016	8,153	80,011	10,372
2017	68,836	112,7281	13,167
2018	86,720	168,812	10,917
2019	6,949	67,415	11,891
2020	4,939	73,375	14,166
2021	4,554	89,614	120,909
2022	41,019	311,586	77,362

(Remarks) 1ha = 10,000m^2

(Source: Mine Action Workshop handout and SESU document THE STATE EMERGEMCY SERVICE OF UKRAINE, Execution of Mine Action by the State Emergency Service of Ukraine) (Prepared by the survey team based on Collection List No. 2-1-3)

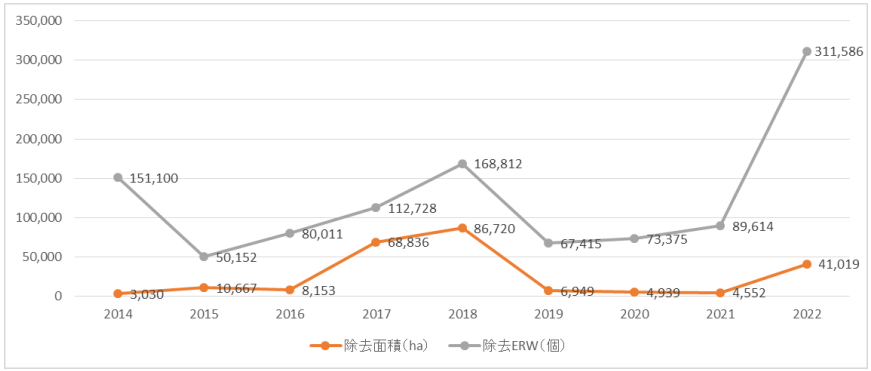


Figure 2-9　Humanitarian demining by SESU by year (graphed in table above)

(Source: SESU handout THE STATE EMERGEMCY SERVICE OF UKRAINE, Execution of Mine Action by the State Emergency Service of Ukraine, Prepared by the survey team based on Collection List No. 2-1-3)

(3) Risk Explosive Ordnance Risk Education Achievements by SESU through 2021

SESU has long been conducting nationwide explosive device risk education as part of its demining activities, and in 2021, the year before the Russian military invasion, SESU conducted 2,285 explosive device risk training sessions for a total of 54,142 people (26,164 children and 27,978 adults) in Ukraine.

(Source: SESU handout THE STATE EMERGEMCY SERVICE OF UKRAINE, Execution of Mine Action by the State Emergency Service of Ukraine, Collection List No. 2-1-3)

(4) Assistance status by each donor for Ukraine

In response to the above-mentioned efforts by the government of Ukraine on Mine Action, the governments of European Union and the United States have provided assistance through international non-governmental organizations (NGOs), UN agencies, and international organizations since around 2015, as shown in Table 2-4.

Table2-4　Assistance of Mine Action before military invasion by Russia

Donor	Mine and UXO clearance support details
Canada	Support for Mine Action in the eastern part of Ukraine through FSD (Fondation suisse de déminage) from 2019 to 2022 and support to NMAA Mine Action through UNDP
EU	Support for survey, clearance, equipment provision, risk education, and capacity building in eastern Ukraine through DRC and HALO Trust from 2015-2021
Germany	Supporting the survey and clearance of landmines in the eastern part of Ukraine through HALO Trust from 2016 to 2021.

Netherlands	Supporting survey, clearance, and risk education in eastern Ukraine through the HALO Trust from 2016-2021.
Norway	Support for survey and clearance in the eastern part of Ukraine through HALO Trust from 2016 to 2021.
Sweden	Support for survey and clearance in eastern Ukraine from 2018 to 2021; support capacity building of Ukrainian government agencies through the Swedish EOD and Demining Centre (SWEDEC).
United Kingdom	Supporting the work of SESU's National Mine Action Center through HALO Trust and UNDP since 2015.
United States of America	Since 2017, the State Department's Office of Weapons Removal and Abatement has been working with the Danish Refugee Council (DRC), FSD, HALO Trust, GICHD, and the European Organization for Security: (OSCE: Organization for Security and Co-operation in Europe).
UNECEF	Since 2014, she has been providing EORE and psychological care for displaced children and their parents, focusing on children in the eastern part of Ukraine.
OSCE	From 2016 to 2021, support capacity strengthening of relevant institutions and human resources involved in humanitarian demining in Ukraine (support for establishment of MACs, training of humanitarian demining personnel, development of Mine Action information management system (IMSMA) and operators, training of educational personnel in EORE, development, and distribution of teaching materials)

(Source: Prepared by the research team based on materials from the Workshop on Mine Action in Ukraine and Donor Activities in Humanitarian Mine Action in Ukraine, UNICEF website, URL List No. 2-8)

(5) HALO Trust's mine detection and clearance activities in Ukraine

HALO Trust, an international NGO working on mine detection and clearance activities and education on risk, reports that from 2014 to 2022 it has detected and cleared mines and UXOs in an area of 420 ha (4.2 km^2) in eastern Ukraine, employing about 400 Ukrainians in Donetsk and Luhansk in the eastern part of Ukraine. The report states that they have detected and cleared mines and UXO in an area of 420 ha (4.2 km^2) in eastern Ukraine. (Source: HALO Trust website, URL List No. 2-9).

2-2-2 Countermeasures against mines and UXO after military invasion by Russia

(1) Results of landmine and UXO clearance activities by the Government of Ukraine

1) In the Mine Action Workshop of Ukraine, the Government of Ukraine reported that since the military invasion by Russia as shown in Table 2-5, the respective agencies of the Government of Ukraine (MOD, SESU, NPU, STS, etc.) responsible for demining (7.5% of 603,700 km^2), or 45,000 km^2 of the total area of Ukraine, have cleared mines and UXO. Of this area, SESU reportedly cleared 758 km^2 of mines and UXO. On the other hand, the actual area of mines and UXO cleared by donors is reported to be 536,936m^2 as described in section 2-4-1 "Donor Assistance Coordination and MASC in the Mine Action Sector, (3) Mine Action activities by donors".

Table 2-5 Area of Mine Action Activities

No.	Cleared area		Remarks	Sources.	
	Ha.	km^2		name of corporate body	Materials/Home Page
1-1	4,500,000	45,000	45,000km Work has been performed on^2 and safety confirmed for 30,000km ^{2}	Govt. of Ukraine	Workshop on Mine Action in Ukraine (As of November 30, 2022) (List of collected materials No. 1-1-1)
	75,884	758	Area surveyed by SESU	SESU	
1-2	89,786	897	Area surveyed by SESU	SESU	SESU presentation at the follow-up training for handling ALIS actual equipment in Poland (July 3, 2023)
2	37,000	370	Area of land that has been removed and turned over to residents, etc.	MOD	UNITED NATIONS UKRAINE Mine Action in Ukraine https://www.Mine Action.org/sites/default/files/2.4_masg_meeting_undp_ukraine.pdf

(Source: UNITED NATIONS UKRAINE on its website, confirmed on January 27, 2023; No. 1-2 is SESU Situation update, Collection list No. 4-2-2-1)

2) The actual number of mines and UXO cleared by the Government of Ukraine including SESU (as of January 27, 2023) is shown in Table 2-6, and it is reported that all state organizations of the government of Ukraine have cleared about 340,000 pieces, of which SESU has cleared 200,000 pieces.

Table2-6 Information on the number of mines and UXO cleared

No.	Number of removed/destroyed mines and UXO	Remarks	Sources.	
			Organization	Materials/Home Page
1	Approx. 340,000 pieces	Explosive Ordnance Disposal (EOD) Type Breakdown: UXO: 67%. Anti-tank mines 16%. Cluster bombs 16 Anti-Personnel Mine 1%.	Govt. of Ukraine	Workshop on Mine Action in Ukraine (NMAA announcement)
	Approx. 440,000 pieces (March - November 2022)	Breakdown of removalists: SESU: 200,000 (46%) National Police: 150,000 (34%) National Border Guard: 90,000 (20%)	SESU	Workshop on Mine Action in Ukraine (SESU announcement)
2	400,340 pieces	Cleared by: SESU (As of July 3, 2023)	SESU	SESU presentation at the follow-up training for handling ALIS actual equipment in Poland (July 3, 2023)
(Reference)	More than 250,000 pieces (March - October 2022)	Results in areas potentially contaminated by mines or UXO since March 2022	MASC Public Information	5W Situation Report (As of 01 November 2022) https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/masc_situation_report_20221031.pdf
(Reference)	Approx. 80,000 (March-April 2022)	Achievement of full-scale humanitarian demining efforts	International Organization	GICHD's website: https://www.gichd.org/en/what-we-

		by the Government of the Ukraine as of May 13, 2022, in a situation where such efforts are not possible.	GICHD	do/our-news/news-detail/clearing-landmines-from-ukraine-may-take-decades-work-to-find- map-and-remove-them-has-already-begun/

(Source: As per sources in the table; GICHD website confirmed on January 27, 2023)

3) In Kyiv, which has the second highest number of dispatches of demining teams in Ukraine, 71,500 explosive devices have been detected and processed by explosive ordnance disposal teams since the start of demining and UXO clearance until October 22, 2022, and clearance operations were completed in 21,298.25 ha, 2,077 housing units, 1,273 facilities, 1,865.4 km of roads, 12 km of railroads, 1,389.437 km of electric lines, and 11.443 km of gas pipelines were detected for mines and UXO.

(Source: Kyiv State Military Executive Branch website, dated October 22, 2022, URL List No. 2-10)

(2) SESU's record of activities to clear mines and UXO

1) According to SESU, the number of dispatches in each province or approximately 8 months from February 2022 to October 26, 2022 is shown in Table 2-7 SESU has conducted an interview survey (NTS: Non-Technical Survey) covering an area of 73,477 ha since February 2022. As a result, 256,614 explosives and 2,615 kg of explosive materials have been detected, cleared, and treated.

Table2-7 Number of SESU Dispatches for Demining in Ukraine

Province	Number of dispatches of demining team
Kharkiv.	10,459 times
Kyiv	6,637 times
Chernihiv.	4,018 times
Donetsk.	2,079 times
Mykolaiv	1,774 times
Sumi (Soomey)	1,344 times

(Source: SESU Facebook (dated October 26, 2022), URL List No. 2-11)

2) Although contamination by UXO has become more serious as the fighting has intensified, the number of explosives including mines and UXOs disposed of or removed by SESU from February 2022 (Russian military invasion) to April 5, 2023 is reported to be 340,000, showing a steady increase in the number of SESU activities.

(Source: Ukraine Mine Action-5W Situation Report (As of 05 April 2023), URL List No. 2-12)

3) SESU reports as following at MASC

- On September 8, 2022, approximately 110 deminers were deployed to Kharkiv province to map contaminated areas and begin clearing mines and UXOs from roads, settlements (including populated areas), power lines and gas and other pipelines, and other infrastructure and facilities, surveying approximately 790 hectares in two weeks of work, and finding 13. During the two-week operation, more than 13,000 explosive devices were detected. They also reportedly surveyed approximately 28 km of power lines, 70 km of roads, and 18 km of gas pipelines.
  (Source: Report by SESU @ MASC meeting held on September 23, 2022)

- Clearance activities in the Kherson province began in November 2022, with 20 demining teams conducting mine and UXO clearance operations. Antipersonnel mines, anti-tank mines, mortars, grenades, and trap wires have been detected as common explosives in the province of Kherson. On the other hand, the team reported that finding explosives in plastic cases and anti-personnel mines buried in the ground is a challenge.
  (Source: Report by SESU @ MASC meeting held on December 2, 2022)

- Kharkiv, Kherson, and Donetsk provinces have been designated as priority areas for removal, and more than 50 deming teams are active throughout Ukraine, up to January 13, 2023, the total area cleared: 778 km^2 and the number of explosives processed: 314,000. The number of activities related to EORE) in 2022 was reported to be about 10,000 and the number of beneficiaries was reported to be over 293,000.
  (Source: Report by SESU @ MASC meeting held on January 13, 2023)

- 52 teams are continuing removal activities in Kharkov, Kherson, Donetsk, and Mykolaiv provinces. 1 week from January 15 to 22, 2023, approximately 1,300 mines and explosives including UXOs were cleared.
  (Source: Report by SESU @ MASC meeting held on January 27, 2023)

- Since the beginning of 2023, 846 events have been held to raise the public awareness on how to avoid explosives, with approximately 35,000 people benefiting from these events. In addition, on the Mine and UXO Awareness Day (April 4), explosive device risk education events were held throughout Ukraine.
  The NPA and the Haward Buffet Foundation are working together to establish a trial platform for the use of mine detection dogs.
  (Source: Report by SESU @ MASC meetings held on February 24, March 24 and April 14, 2023)

4) A media release by SESU is as following

- As of September 21, 2022, the area contaminated by mines, UXOs, and other explosives in the Kharkiv province was 12,000 km^2, and contamination by anti-personnel mines was conspicuous. SESU has deployed 129 deminers to the Kharkiv province to clear public infrastructure facilities, educational institutions, medical institutions, roads (4,000 km), electric lines (50 km), and all residential areas by the end of 2022. The project will target to conduct clearance works on 32 large energy infrastructure facilities. The second phase of mine and UXO clearance will cover forests, grasslands, rivers, ponds, and other areas not mentioned above, and is expected to take several years. If clearance is to be carried out by a team of experts from abroad, security must be guaranteed, but this is not possible under the current circumstances of ongoing fighting.
  (Source: ukrinform.ua/Укрінформ Media release by SESU Deputy Secretary General dated September 21, 2022, URL List No. 2-13)

- The level of contamination by explosives in Kharkiv province is extremely high. Most infrastructure facilities, including gas pipelines and water pipes, are rigged with mines, UXO, and other explosive devices. In the Chuhuiv and Izyum districts of Kharkiv and the city of Balacreya, 1,000 to 1,500 mines are detected, removed, and disposed of each day. Because mines are planted over a wide area, a remotely operated demining machine is needed.
  (Source: ukrinform.ua/Укрінформ Media release by SESU spokesperson, dated October 11, 2022, URL List No. 2-14)

5) SESU reported the following about its own investigation and activities at the follow-up training for handling ALIS actual equipment in Poland in July 2023 (as of July 3, 2023).

- The total area contaminated by mines and UXO throughout Ukraine is estimated at 174,000 km^2, of which 13,500 km^2 is estimated to be contaminated underwater.

- SESU has been working on clearance work for dams, sluices, bridges, rivers, lakes, reservoirs, and ports (in the Sea of Azov and the Black Sea) as underwater contaminated areas in Ukraine. and treated more than 1,400 explosives.

- SESU has been dispatched 58,891 times, clearing 400,340 mines and UXOs and surveying 89,786 ha.

- In transportation and social infrastructure, which are considered important targets for survey and clearance,

(Transportation) Highways: approx. 3,600 km and railroads: approx. 600 km have been surveyed.

(Social Infrastructure) Completed surveys of 2,395 surveyed facilities, including more than 6,009 km of power lines and 426 km of gas pipelines.

- The total area of farmland reported to be removed is approximately 470,000 ha, as shown in Table 2-8 (of which Zaporizhzhia and Cherkasy areas have been removed by SESU).

Table2-8 Area to be cleared (Agricultural Land)

Name of Province	Area to be cleared (ha)	Name of Province	Area to be cleared (ha)
Kherson	208,000	Sumy.	2,000
Kharkiv	159,000	Chernihiv	2,000
Mykolaiv	85,000	Zaporizhzhia	1,000
Kyiv	10,000	Cherkasy	855
Dnipropetrovsk	2,000	Total Area (ha)	469,855

(Source: SESU Situation update, Collection List No. 4-2-2-1)

- The project has conducted 17,787 public education campaigns on the risk education through cartoons, games, booklets, and flyers, with 465,025 people benefiting from the campaigns. In addition, from April 4, 2023 (Mine and UXO Awareness Day) to June 15, 2023, as many as 410 events were held throughout Ukraine, with 25,600 people participating in these events.

(2) Human casualties among SESU deminers due to landmines, UXOs, and other explosives

The following table provides information on the human casualties of SESU engaged in demining and UXO demining operations in Ukraine since February 2022. The information below is information that has been made public through the media, SNS, etc., but due to the nature of the information, not all of it has been made public, and it is expected that there have been other human casualties of deminers in addition to those listed below.

Table 2-9 Reports on casualties of SESU due to mines and UXO

Report	Sources.
45 people were killed and 152 injured by October 21, 2022.	Interview with SESU Director, reported on Facebook by Serhiy Kruk of local media on October 23, 2022
On October 26, 2022, in Izyum district, Kharkiv Province, one person was killed and five others injured due to SESU vehicle was damaged by	Telegram of the Governor of Kharkiv (October 26, 2022, 22:45)

anti-tank mine.	
Six people were killed and two injured during explosives clearance operation in the province of Kherson on May 6, 2023.	UKRAINSKA PRAVDA 23 (May 6, 2023, 19:14) reports Censor NET (May 6, 2023, 19:11) reports

(Sources: As indicated by the sources in the table. URL List No. 2-15)

2-2-3 Landmines, UXO, and other types of explosive devices after military invasion by Russia

(1) In the Mine Action Workshop, the Government of Ukraine reported that due to the Russian military invasion since February 2022, as shown in Figure 2-10, there is a mixture of anti-personnel and anti-tank mines in Ukraine, as well as a wide variety of ERW such as anti-personnel mines with vibration sensors, remote anti-personnel mines, cluster bombs, IEDs, and trap wires: The report also states that it is difficult to detect and remove ERW using conventional detection and removal methods in Ukraine because of the variety and diversity of ERW, such as anti-tank mines with vibration sensors, remote anti-tank mines, cluster bombs, Improvised Explosive Devices (IEDs), and trap wires that have been laid and left in the Ukraine.

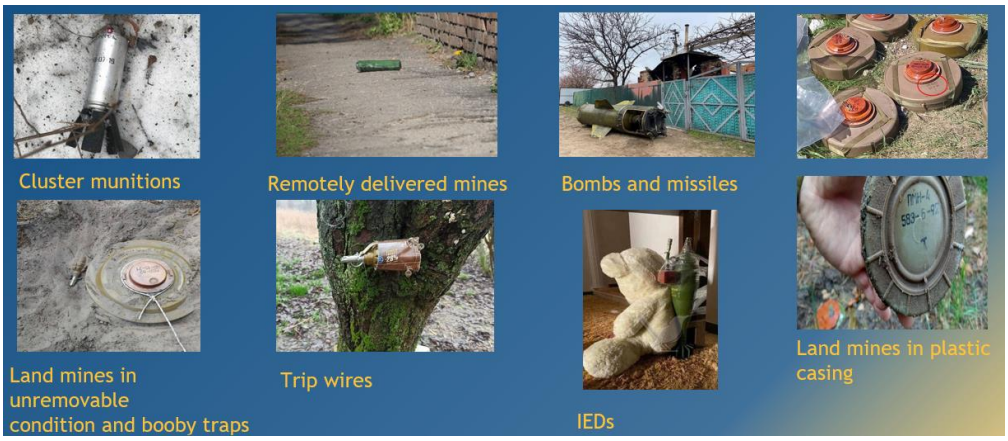


Figure 2-10 Various types of mines, UXO, and other explosive remnants of war that remain in Ukraine.

(Source: SESU handout at the workshop on Mine Action in Ukraine)

(2) GICHD reports that more than 100 types of ERW, mainly anti-personnel and anti-tank mines, have been found in Ukraine, as shown in the table below: (Report: EXPLOSIVE ORDNANCE GUIDE FOR UKRAINEFIRST EDITION, GICHD).

Table2-10 ERWs found in Ukraine

Category	Types	Name
Anti-personnel mine	11	MON-50, -90, -100, -200, OZM-72, PFM-1, PMN, PMN-2, -4, POM-2, -3

Anti-tank mines	7	TM-62M, -62P3, PTM-1, -3, -4, PARM2/DM22, PTKM-1R
Blasting powder	5	3B30, 9N210/9N235, 9N24, PTAB-1M, SPBE
Stray bomb	4	RBK250-275, RBK-500, FBA500M62, OFZAB-500
Fuse / Detonator	13	MVCH-62, MVP-62M, M-6, -12, RGM-2/V-429 PROJECTILE FUSE, GPV-3, AR-5, T-7, MRV/MRV-U ROCKET FUSE, TM-120 ROCKET FUSE, ATK MT SERIES, AVU SERIES, UZRGM- 2, UZRGM- 2
Hand grenade	9	F-1, RGD-5, VOG-17/VOG-17M, VOG-17 IMPROVISED HAND GRENADE, VOG-25, -25M, VOG-25 IMPROVISED, RGO/RGN, RKG-3
Mortar	4	82mm0-832, 120mmof-843, -49, 240mmf-864
Projectile	14	OF-17, -19, -25, -26, -32, -43, -45, -462, BM-26, 32, BK-13M, -14, BP-540, S-463
Rocket and recoilless rounds	24	AT-4, OG-7V, -15, PG-7M, -7V, -7VL, -7R, -15, -18, -22, -26, -27, -29, TG-73, TBG-7L, M72LAW, RGW90HH, RPO-A, RPG-76KOMAR,S-5KOROCKET,S-8KOROCKET PANZERFAUST3,122MM9M22GRADROCKETS,300MM9M55 SMERCHROCKETS
Anti-tank missile	8	9K111FAGOT AT-4SPIGOT, 9K113KONKURS AT-5SPANDREL, 9M119SVIR AT-11SNIPER, SKIF/STUGNA-P, NLAW, 9K127VIKHR AT-16 SCALLION, FGM-148 JAVELIN, 9K133KORNET AT-14 SPRIGGAN
Portable Air Defense Missile	7	9M32MSTRELA2/SA-7BGRAIL,9M36MSTRELA3/SA-14GREMLIN, 9M313/GLA-1/SA-16, PPZRPIORUN 9m342/gla-s/sa-24, 9m313/gla-1/sa-16, strastrek
Surface-to-air missile	1	9m37kbuk-sa-11-gapfly/sa-17-grizzly
Ballistic missile	2	OTR-21 9K7919M79TOCHKASS-21 SCARAB 9k715/9k720/9k728/iskandar ss-26 stone
Others	5	9B899DECOY, OFS AERIAL BOMB, RKG-100AERIAL BOMB, PM-11SMOKEPOT, UDSH SMOKE POT

(Source: GICHD data on its website, URL List No. 2-16)

(3) Human Rights Watch (HRW) reports that anti-personnel mines are buried in the Donetsk, Kharkiv, Kyiv, and Sumy regions of eastern of Ukraine., while anti-tank mines are heavily buried in the Donetsk, Kharkiv, Kyiv, Sumy, Chernihiv, Odessa, and Zaporizhia regions (Report: Background Briefing: Landmine Use in Ukraine, June 2022, Human Rights Watch, Source: HRW's website, URL List No. 2-17)

2.3. Policy on s Mine Action in Ukraine

2-3-1 Policies for mine and UXO clearance (High-level plans and policies)

The Government of Ukraine announced its National Recovery Plan and 15 national programs at the

Recovery Conference in Lugano, Switzerland, in July 2022, calling on the international community to support its recovery and reconstruction efforts. Mine Action by the government of Ukraine was included in the third national program, "Rebuild clean and safe environment," which aimed to eliminate mines and UXOs in 5% of the Ukraine's land area by 2022. From 2023 onward, as shown in section 2-3-8, NAMM has developed a plan for the clearance of mines and UXOs.

2-3-2 Laws and Regulations Related to Mine Action

The main laws and regulations concerning Mine Action in Ukraine are as follows:

(1) Law of Ukraine "Mine Action in Ukraine" No. 2642-VIII

Adopted by Congress on December 6, 2018, effective January 25, 2019, revised September 17, 2020

1) The Act provides for the division of responsibilities among state agencies in Ukraine, a framework for humanitarian demining, the establishment of NMAA, the approval on the organizations for Mine Action, and the establishment of the Ukraine's own National Mine Action Standards (NMAS), taking into account the provisions of the International Mine Action Standards (IMAS) set forth by the United Nations Mine Action Service (UNMAS) in March 1997.

(Reference 1) UNMAS

It was established as a bureau within the United Nations organization and carries out the following activities

- Coordination of Mine Action activities within the UN organization
- Implement Mine Action such as mine clearance and EORE
- Management and administration of the United Nations Trust Fund for Mine Action Assistance
- Development of mine countermeasure safety and technical standards
- Advocacy for Mine Action support

(Reference 2) IMAS

The IMAS standard has been adopted or accepted as the NMAS standard in most Ukraine around the world.

(Reference 3) NMAS

Standardized Ukraine-level guidelines to achieve the goals of a Mine Action program. NMAAs in each Ukraine are required to develop NMAS appropriately for Ukraine in order to conduct

effective, efficient, and safe Mine Action operations. NMAS include technical specifications, standards, and guidelines for the preparation of Standard Operating Procedures (SOP) by demining organizations operating in Ukraine.

2) Basic flow of demining activities as defined by the Mine Action Law

The basic sequence of flows applicable in peacetime to demining activities in Ukraine as described in the Mine Action Law are described below. Survey and clearance activities by Ukraine government agencies in the context of the emergency situation following the military invasion by Russia are not carried out in accordance with the NTS and TS procedures stipulated in IMAS.

Flow of demining activities applicable in peacetime

1) Applied to the Ministry of Defense to clear land mines in an area.
2) Detection by NTS of the area of interest. 3) Determination of the presence or absence of contamination in the area. Submission of detection results to the Ministry of National Defense.
3) Technical Survey (TS) of the target area. Identification of the area and depth of contamination in the contaminated area using mine detectors. Marking and mapping
4) Mine clearance operations
5) Confirmation of mine clearance by the Ministry of Defense and issuance of confirmation documents.
6) Handover of cleared areas

(Source: Excerpt from the Mine Action Act)

(2) Creation and revision of national standards

The Government of Ukraine, which had piloted the IMAS established by UNMAS, developed a draft NMAS on basic provisions of the Mine Action management process and introduced the NMAS (DSTU P 8820:2018 Mine Action) on September 1, 2016, in accordance with the Ukraine Mine Action Act No. 2642-VIII.

(3) National Plan for Mine Action 2017~2021

The Government of Ukraine formulated the State Program on Mine Action in Ukraine in 2017-2021 (official name: State Program on Mine Action in Ukraine in 2017-2021) based on the Law on Mine Action, and relevant ministries and public institutions of the Government of Ukraine cooperated in accordance with the said State Program to conduct mine The relevant ministries, agencies, and public institutions of the Government of Ukraine cooperated to implement Mine Action activities based on the National Plan, including mine and UXO clearance, bomb disposal,

EORE, and support for people injured by mines and UXOs. The National Plan is currently not publicly available on the website of the government of Ukraine.

(4) Development and application of Standard Operating Procedures for Mine Action activities by SESU

The "SOP 0 7.10/SES: Plan for the implementation of Mine Action missions and measures by civil protection agencies and units" was developed and applied as of July 25, 2019 to regulate Mine Action activities targeting the civilian population by SESU. (Source: SESU website, URL List No. 2-18)

2-3-3 Public Institutions and Sharing of Roles in Mine Action Sector in Ukraine

(1) Overall picture for Mine Action (as of November 2022)

According to the explanation by the Government of Ukraine at the Mine Action Workshop in Ukraine: The relationships and roles of the main ministries and public institutions involved in mine and UXO clearance in Ukraine as of November 2022 are shown in Figure 2-11. NMAA has been established under the Cabinet Office, SESU, under the Ministry of Interior, is responsible for humanitarian demining activities, and several other Ukrainian ministries and national institutions work together on Mine Action on a broad scale.

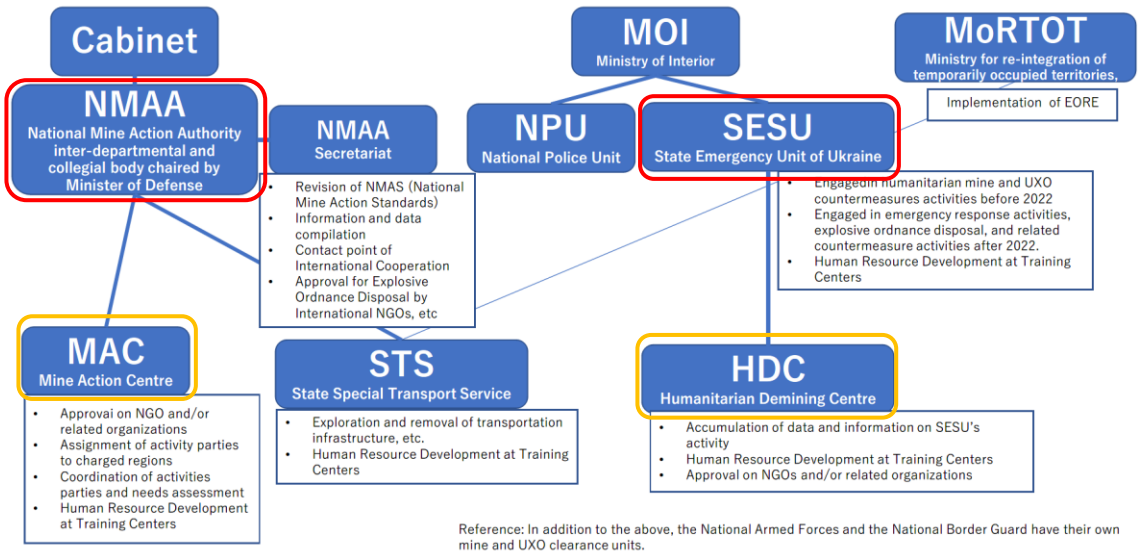


Figure 2-11 Relationships and activities of ministries and public organizations involved in Mine Action

(Source: Prepared by the survey team based on the handout from the Mine Action Workshop in Ukraine)

(2) Role of each ministry and agency in Mine Action

Table 2-11 shows the role of ministries and agencies of the Government of Ukraine in Mine Action.

Table 2-11 Roles of Major Ministries and Agencies Related to Mine Action

No.	Authorities	Role of mines and UXO field
1	MOD (Ministry of Defense)	(1) Chair of NMAA (2) Management of the NMAA Secretariat
	NMAA	(1) See Section 2-3-4: Organization and Role of the NMAA (2) Mine Action Center (MAC) established under the umbrella of the Mine Action Center (3) Established the State Special Transport Service (STS) under its umbrella.
	NMAA Secretariat	Advisory support for the National Mine Action Coordination Meeting
	MAC	Planning, implementation, and coordination of Mine Action activities in Ukraine
	STS	Exploration and removal of transportation infrastructure.
2	MOI (Ministry of Interior)	(1) SESU Supervision (2) Supervision of the National Police Unit (NPU) (3) Supervision of the National Border Agency (National Border Guard)
	SESU	(1) Emergency mine and UXO clearance (2) See Section 2-3-5: Organization and Role of SESU (3) Establishment of Humanitarian Demining Centre (HDC) under its umbrella
3	Ministry of Education, Science and Social Reinstatement	Implementation of EORE
4	MoRTOT (Ministry for re-integration of temporarily occupied territories)	Implementation of EORE in temporarily occupied areas and efforts regarding victims of mines and UXO
5	Department of Health	Initiatives for victims of landmines and UXO

(Source: handout from the workshop on Mine Action in Ukraine)

(3) Revision of the role of ministries and agencies in Mine Action

Since several ministries and state agencies were urgently working on Mine Action due to the military invasion by Russia, the Government of Ukraine clarified the roles of ministries and implementing agencies involved in Mine Action in December 2022, and the roles were assigned as shown in Table 2-11.

Furthermore, the official website of the Government of Ukraine on February 11, 2023 states that at a meeting held on the same day, chaired by the Prime Minister of Ukraine and attended by the Ministry of Interior, Ministry of Defense, Ministry of Economy, and National Emergency Service, "it was decided to establish a new national institution (named: Ukrainian Center for Humanitarian Demining/CHD) to serve as a secretariat and analysis center to collect and summarize information on demining needs from relevant ministries, states, partner Ukraine, and international organizations in Ukraine. departments, states, partner Ukraine, and international organizations in the Ukraine. According to the "Draft Mine Action Structure" distributed by MASC on June 6, 2023, it is assumed that the CHD will be a subordinate organization of the NMAA, but details of its specific position and activities have not been announced at the time of the survey, and the organization is still under preparation for its establishment, including the division of roles. The organization is still in the process of establishment, including the division of roles.
(Source: Official website of the Government of Ukraine, https://www.kmu.gov.ua/en/news/humanitarian-demining-center-to-be-established-in-ukraine-prime-minister)
(Source: MASC handout "Draft Mine Action Architecture," June 6, 2023, Collection List No. 3-2)

(4) Plan for increase in personnel for Mine Action

1) At the international symposium "MINE ACTION 2023" held in Croatia in May 2023, NMAA announced that "the current situation is that the removal of contaminated farmland is being carried out mainly by SESU and STS, but that an additional 1,000 people are needed. The goal of increasing the number of removal crews to 300 teams/total of 1,500 people by the end of 2023 was also announced (see Figure 2-17).
2) At the follow-up training for ALIS actual equipment in July 2023, it was reported that the planned increase in staffing during 2023 was revised upward to 340 teams/ 1,700 persons in total, based on the growing need for removal activities (it was also confirmed that the target of 200 teams/ 1,000 persons in total for 2022 was achieved as of July 3, 2023) (see Figure 2-18). (The target increases of 200 teams/ 1,000 people in total for 2022 was confirmed to have been achieved as of July 3, 2023) (see Figure 2-18).

2-3-4 Organization and Role of NMAA

(1) Legal Status of NMAA

NMAA is an organization established pursuant to Cabinet Decision No. 1207 of November 10, 2021 (Establishment of the National Mine Action Agency). NMAA meets at least once a quarter.

(Source: U.S. Parliament HP, Про утворення Національного орг... | від 10.11.2021 № 1207 (rada.gov.ua))

NMAA conference participants

- Minister of Defense (Director General of NMAA), Deputy Minister of Defense
- Deputy Minister of the Interior, Deputy Director of the National Emergency Agency
- Deputy Minister of Reintegration of Temporary Occupied Territories
- Deputy Minister of Education and Science
- Deputy Minister of Health
- Deputy Minister of Social Policy
- Deputy Minister of Foreign Affairs
- Deputy Vice-Minister of Agricultural Policy and Food
- Deputy Minister of Community and Territorial Development
- Deputy Minister of Infrastructure
- Representatives of the Security Service of Ukraine

(2) Role of NMAA

The role of NMAA in Ukraine, as indicated in Cabinet Decision No. 1207, is as follows: NMAA is the organization that plays a central role in the following Ukrainian demining activities in terms of policy, including the proposal of a law on demining.

Role of NMAA

- Submission to the Cabinet of Ministers of Ukraine of a proposal on the development of a law on demining and other normative legal acts
- Determining the use of financial assistance for donor-supported demining activities
- Analysis of the effectiveness of national policies in the field of Mine Action
- Proposal of measures to increase the efficiency of demining activities in the field of Mine Action to the Ministerial Council of Ukraine
- Capacity building in the field of Mine Action and promotion of international assistance for demining activities
- Assistance in the preparation of reports required for the fulfillment of international obligations assumed by the Government of Ukraine in Mine Action.
- Proposal of priorities for the development of scientific and technological activities in the field of Mine Action to the Ministerial Council of Ukraine
- Study of a draft plan for setting national Mine Action standards in accordance with international Mine Action standards
- Conduct media coverage of the status of demining activities
- Provide information on the dangers posed by explosives and implement educational initiatives to prevent explosives hazards.
- Implementing support and rehabilitation initiatives for victims

(3) Additional information about NMAA's activity

The following is supplemental information on the work of NMAA, based on the results of SESU interviews, publicly available information such as handouts at the donor meetings, and the minutes materials.

1) NMAA is working with GICHD and MAC to revise NMAS to conform to IMAS and is also organizing the approval process for international NGOs to engage in explosive ordnance disposal themselves, which is strongly requested by international NGOs.
2) In addition to organizing the conference, NMAA Secretariat, together with the Ministry of Foreign Affairs of Ukraine serves as the contact point for international cooperation in the field of Mine Action.
3) MAC is responsible for coordinating and allocating the activities and target areas of ministries, public institutions, local governments, companies, and NGOs engaged in Mine Action activities under the direction of NMAA and is also involved in Mine Action by the national military. It is also involved in Mine Action by the national army. Together with HDC (the central division of SESU), it is responsible for approving the activities of NGOs and other organizations in Ukraine. The results of NTS on the status of landmine and UXO contamination following the Russian military invasion are compiled in MAC and shared with ministries, agencies, and local governments.
4) STS, which is under the jurisdiction of NMAA, conducts detection and removal activities of transportation infrastructure and other facilities in Ukraine in cooperation with MAC and HDC.

2-3-5 Organization and Role of SESU

(1) Legal Status of SESU

1) SESU is an administrative agency under the Ministry of the Interior, the former the Ministry of Emergency, was renamed SESU in 2012 and placed under the Ministry of Defense. SESU is currently responsible for the protection of the population and local communities during emergencies, prevention, containment, rescue, firefighting, accident rescue, and hydro-meteorological activities, with the main objective of civil protection in 2014.

			
Fire trucks and paramedics (SESU)	Wildfire and other firefighting activities (SESU)	Mine Detection and Disposal Operations (SESU)	UXO disposal operations (SESU)

Figure 2-12 Activities by SESU

(Source: Wikipedia homepage (photo), URL List No.2-19)

(Source: SESU prepared material THE STATE EMERGEMCY SERVICE OF UKRAINE, Execution of Mine Action activity by the State Emergency Service of Ukraine, Collection List No. 2-1-3)

2) The role of SESU as an administrative body in Ukraine is defined in Resolution No. 1052 of the Cabinet of Ukraine dated December 16, 2015, entitled "Regulations on SESU". The operations for the disposal of mines, UXO and other explosives are described in Section 4, paragraph 16), and SESU is engaged in urgent and humanitarian mine and UXO clearance operations in accordance with this section.

(Source: Ukrainian government website, URL List No. 2-20)

3) Ukrainian Emergency Ministry Decree 791 (2010)

The Ministry Order was formulated during the period of the Ministry of Emergency Situations of Ukraine and regulates the procedures for clearing land and water of mines and other explosive devices left in Ukraine after World War II Collected List No. 2-2-1 (in Ukrainian) and No. 2-2-2 (provisional English translation)).

(2) Organizational Structure and Staff of SESU

1) The organizational structure of SESU consists of a central management unit, a central division, and 25 regional offices, as shown below. The organizational chart is shown in Figure 2-13.

- Central administrative departments (economic and financial affairs departments,

human resources departments, and other administrative departments)

- Central divisions (divisions such as Special Emergency Centers, Humanitarian Demining and Emergency Response Interregional Centers, etc., with jurisdiction over various regions)
- 25 regional offices
- Institutions of higher education and research (fire academies, Ukrainian Hydrometeorological Center, etc.)
- Special Forces and others

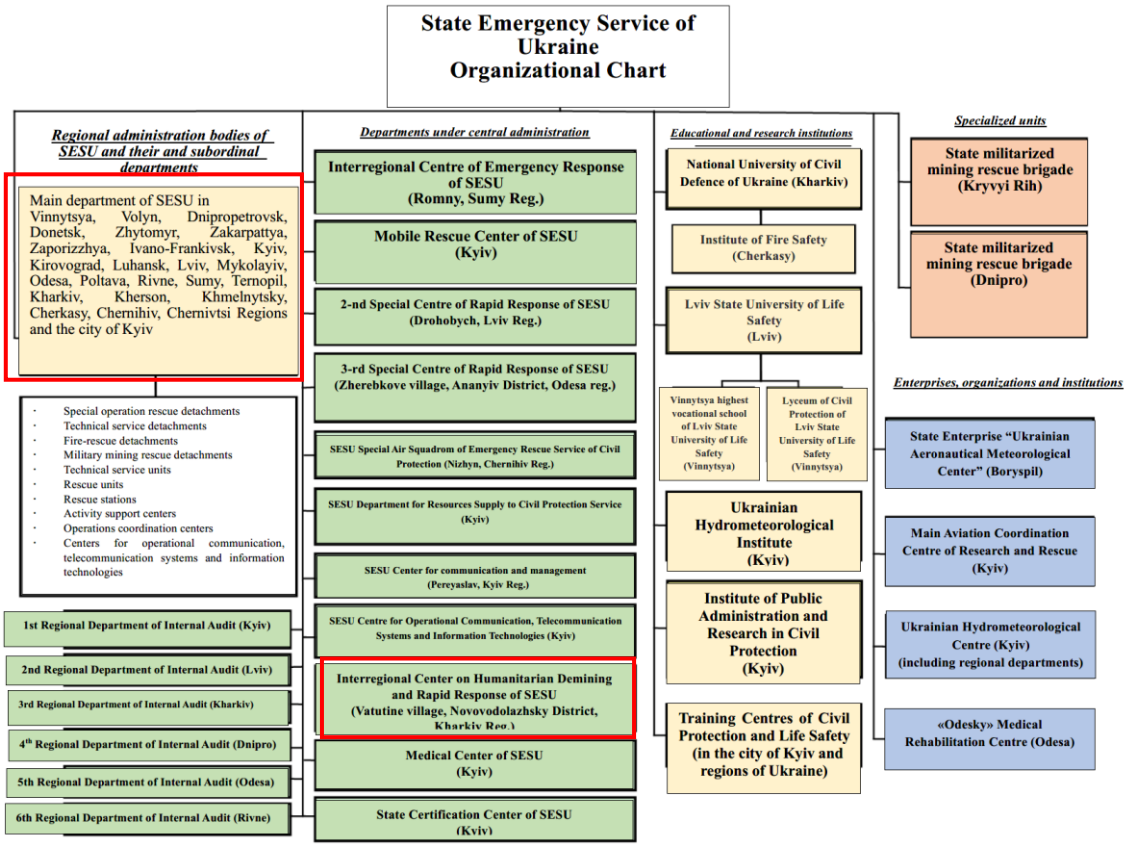


Figure 2-13 SESU Organization Chart and Positioning of HDC

(Source: Ukrainian government's open data site, URL List No. 2-21)

2) Number of personnel belonging to SESU

According to the data on SESU website, the number of personnel belonging to SESU in peacetime before the military invasion to Ukraine by Russia was 59,039, of which 46,570 (79%) were men and 12,469 (21%) were women, and about 600 (about 1% of the total SESU personnel) were engaged in activities to counter landmines and UXOs. The number of personnel engaged in Mine Action activities was approximately 600 (approximately 1% of the total number of SESU members). The number of personnel engaged in Mine Action activities was increased from 600

due to the military invasion to Ukraine by Russia, as described in section 2-3-7.

(Sources: Wikipedia, SESU's website, URL List No. 2-22)

(Source: "Ukraine Rapid Damage and Needs Assessment" - August 2022, a joint document prepared by the World Bank, the Government of Ukraine, and the European Commission)

(3) Budget of SESU

The budget for SESU in 2023 is 37 billion hryvnia (approximately 140 billion yen; conversion rate at the time of the survey: 1 hryvnia = 3.77 yen), an increase of 5.4 billion hryvnia (approximately 18.85 billion yen; conversion rate at the time of the survey: 1 hryvnia = 3.77 yen) over the previous year. Due to a lack of information, we have not been able to confirm how much of SESU budget is for Mine Action.

(Source: Financial Club's website, URL List No. 2-23)

(4) Department in charge of demining of SESU

1) SESU's department in charge of demining is HDC established in Kharkiv in September 2020. The role and organizational structure of HDC, as stipulated in the "Mine Action Law" of the Ukraine, is as follows: In order to fulfill a wide range of roles related to Mine Action, various administrative divisions have been established to manage and coordinate the main tasks of the HDC, including the Mine Action Unit, which carries out humanitarian demining operations in the field. In addition, emergency response teams from 25 regional offices also work with the HDC and are responsible for demining in Ukraine over a wide area.

Role of HDC

- Implementation of humanitarian demining
- Participation in Mine Action Plan
- information management
- Certification of demining crews and inspection of cleared areas
- Testing and implementation of national Mine Action standards
- Participation in International Cooperation
- Implementation of a unified system for training and professional development of personnel involved in demining
- Explosives Ordnance Risk Education
- Scientific and technical support for Mine Action

Inter-regional Center for Humanitarian Demining and Rapid Response (ICHD RR:) of SES has been functional since September 2020.

Functions of the Inter-regional Center for Humanitarian Demining established, based on "Ukraine Law on Mine Action".

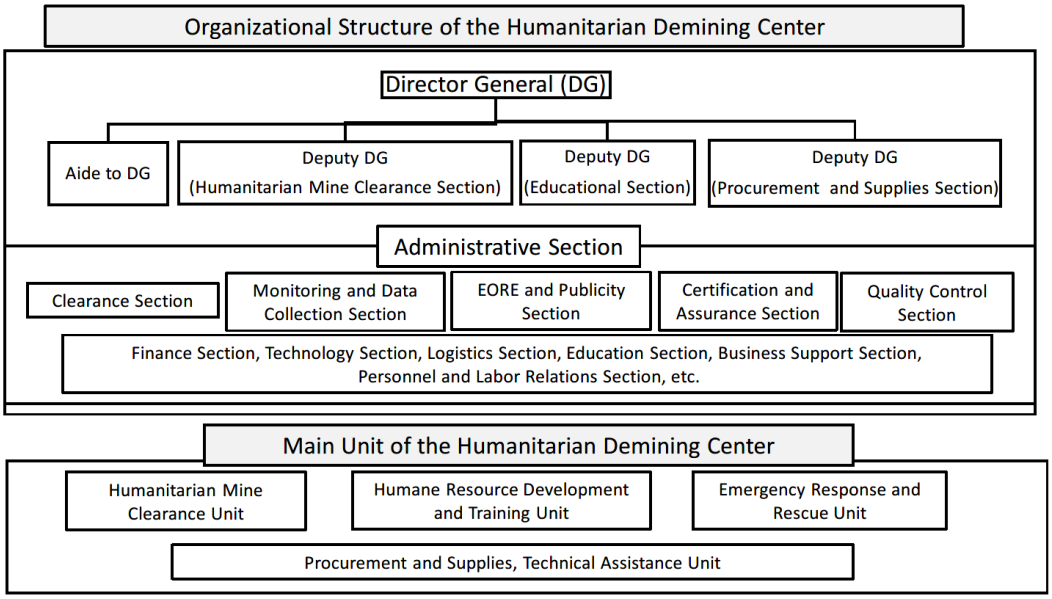


Figure 2-14 HDC Organizational Structure Chart

(Source: SESU prepared material THE STATE EMERGEMCY SERVICE OF UKRAINE, Execution of Mine Action measures by the State Emergency Service of Ukraine, Collection List No. 2-1-3)

(5) SESU demining team deployment prior to military invasion by Russia

Prior to the Russian military invasion, a total of 104 demining teams (86 surface demining teams, 16 underwater demining teams, and 2 mine/UXO detection dog teams) were deployed by SESU (HDC) nationwide as shown in Figure 2-15. The basic structure of one demining team is a five-member team, consisting of a leader, a senior deminer, a deminer (junior) and two drivers (one to transport personnel and the other to transport equipment, mines, etc.).

According to information from SESU, the following four Mine Action activities are being carried out at the field level, led by SESU Demining Team. These activities are the same as those usually carried out for humanitarian demining in Ukraine.

- Detection and removal activities in contaminated areas
- Explosive Ordnance Disposal Ammunition Disposal Activities
- Support activities for victims of landmines and UXO
- Explosives Ordnance Risk Education Activities

Figure 2-15 Deployment map of SESU demining team (before invasion)

(Source: SESU handout THE STATE EMERGEMCY SERVICE OF UKRAINE, Execution of Mine Action by the State Emergency Service of Ukraine)

(6) Plan to strengthen the system of demining activities after the military invasion by Russia

1) As shown in Figure 2-16, SESU has strengthened its structure to respond to the enormous demining needs in Ukraine after the Russian military invasion, with a total of 165 demining teams (144 surface demining teams, 17 underwater demining teams, and 4 mine/UXO detection dog teams) nationwide. According to SESU, as of November 2022, SESU will have the capacity to detect and clear more than 1,000 ha (more than 10 km^2) in about one month.

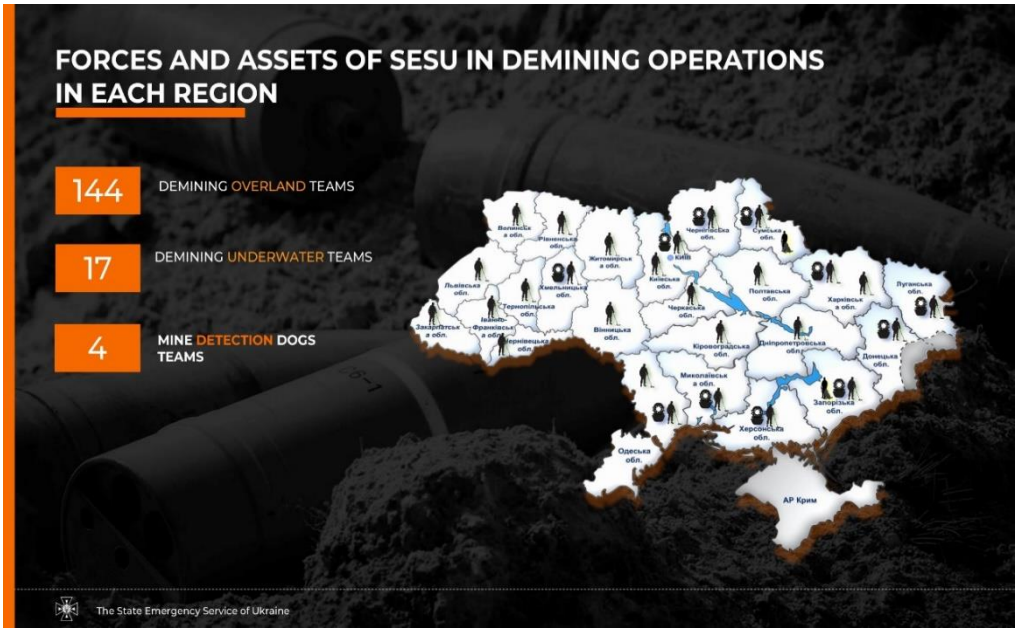


Figure 2-16 Deployment map of SESU demining team (after invasion by Russia)

(Source: SESU handout of the Workshop on Mine Action in Ukraine, Collection List No. 1-1-3)

2) At the Mine Action Workshop in Ukraine in November 2022, SESU announced that, as shown in Figure 2-17, it plans to gradually increase the number of personnel to strengthen the mine clearance system to 200 demining teams (total 1,000 personnel) by the end of 2022 and 300 teams (total 1,500 personnel) next year in 2023. The company plans to strengthen its mine clearance system to 200 teams (totaling 1,000 personnel) by the end of 2022 and 300 teams (totaling 1,500 personnel) by 2023.

SESU is calling for donors to provide the necessary support to strengthen the demining system, as this is an issue that is difficult for the government of Ukraine to address on its own. SESU is calling for donors to provide necessary support to strengthen the mine clearance system, as this is an issue that the government of Ukraine alone cannot address.

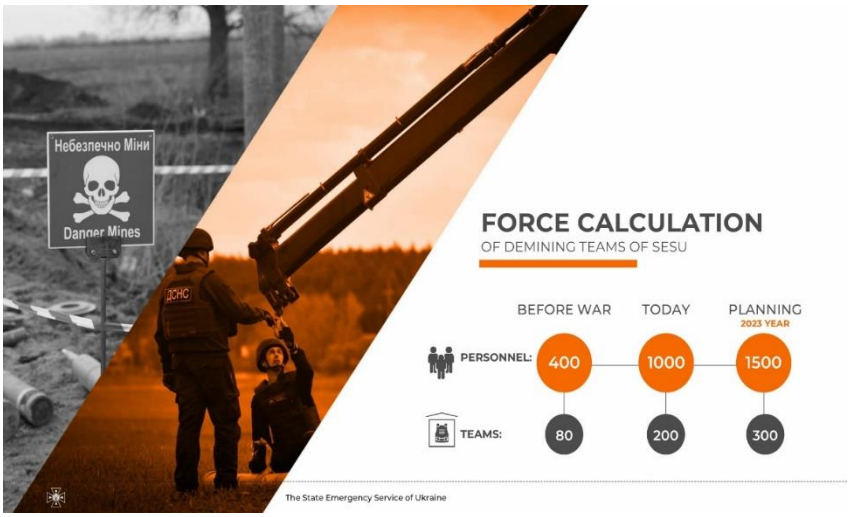


Figure 2-17 Plans to increase the number of SESU demining teams (1)

(Source: SESU handout of the Mine Action Workshop in Ukraine, Collection List No. 1-1-3)

3) Under these circumstances, SESU is implementing training for new deminers at SESU (HDC) training center (located in Kharkiv,[1], etc.), which is in charge of training its own deminers, to increase the number of personnel, an urgent issue. The training course, which previously lasted three months, has been changed to an intensive one-month training course (10 hours per day, 6 days per week), with general education subjects omitted), and human resource development is being carried out at a rapid pace. Those who complete the intensive training are officially registered as removalists (EOD Level 3) and assigned to a team. Once assigned to a team, deminers receive on-the-job training in their respective teams before engaging in demining activities.

4) The National Police Unit (NPU) under the Ministry of Internal Affairs, the National Paramilitary Police of Ukraine, and the National Border Service of Ukraine (National Border Guard) also conduct demining on their own, but when necessary they cooperate with SESU (HDC) to conduct humanitarian demining to counter the National Border Service of Ukraine (National Border Guard) is also an organization that conducts its own demining activities.

5) As described in 2) above, SESU presented a plan to increase the number of personnel at a workshop on Mine Action in Ukraine, and as shown in Figure 2-18, SESU reported the need for further increase in personnel at ALIS follow-up training in July 2023. This indicates that the prolonged Russian military invasion has increased the serious contamination of mines and UXO,

[1] SESU is in charge of training for humanitarian Mine Action. In addition, SESU has a training center in Romny city (Sumy Province), which provides training in underwater explosives, detection dogs, and special techniques for dealing with chemical weapons.

and that there is an urgent need to remove such ordnance.

Figure 2-18 Plans to increase the number of SESU demining teams (2)

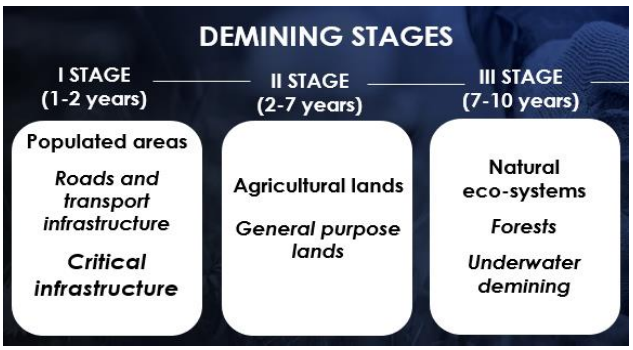
(Source: SESU presentation material of ALIS follow-up training, Situation update) Collection List No. 4-2-2-1)

(7) SESU's demining activities at the time of the survey

1) Since the military invasion by Russia in February 2022, SESU has suspended its peacetime Mine Action operations, which had been conducted mainly in the eastern region of Ukraine and has been prioritizing emergency mine and UXO detection and clearance of infrastructure facilities (residential areas, roads, railroads, gas and electricity related facilities, etc.) in areas that had been subject to Russian military invasion. Priority is given to the detection and removal of mines and UXO in infrastructure facilities (residential areas, roads, railways, gas and power facilities, etc.). When removing mines and UXOs detected in residential areas, the mines and UXOs are moved out of the residential areas by explosion-proof vehicles and detonated at a safe location.

2) In parallel with emergency response described above, SESU has also established a policy, as shown in Figure 2-19, to prioritize Stage I: residential areas, road and transport infrastructure, and major infrastructure; Stage II: agricultural land and general use land; and Stage III: natural ecosystem, forest, and underwater as the targets of mine and UXO clearance activities, The plan for Mine Action activities is being developed.

Figure 2-19 Priority Areas for Demining Activities



(Source: SESU presentation materials of ALIS follow-up training, Collection List No. 4-2-2-1)

2-3-6 Equipment for demining activities

(1) Certification system for equipment demining

In general, although SESU website does not officially confirm the adoption of such a system, similar to other UXO-contaminated countries, it is presumed that the Ukraine has adopted a testing and evaluation procedure based on a certification system in line with IMAS.

According to an interview with Tetra Tech, which is supporting the introduction of IMAS, training (capacity building) for deminers based on IMAS has been widely implemented, but the introduction of a certification system (testing and evaluation procedures) for removal-related equipment in line with IMAS has not been formally institutionalized, although it is a goal in the war-torn Ukraine. However, the introduction of a certification system (testing and evaluation procedures) for clearance-related equipment in line with IMAS has not been formally institutionalized, although it is a goal in the war-torn Ukraine, and is an issue for the future.

(2) Status of equipment related to demining

1) Despite the many expressions of support by the international community, there is still a shortage of equipment related to humanitarian demining. Although the specifications of the equipment and the required quantity and number of units have not been clarified, the NMAA reported the current shortage of equipment related to the clearance of mines and UXOs at the international symposium "MINE ACTION 2023" held in May 2023. Figure 2-20: Equipment for personnel transport, vehicles for transporting explosives, remotely operated construction equipment, metal detectors, demining equipment, and protective clothing for demining).

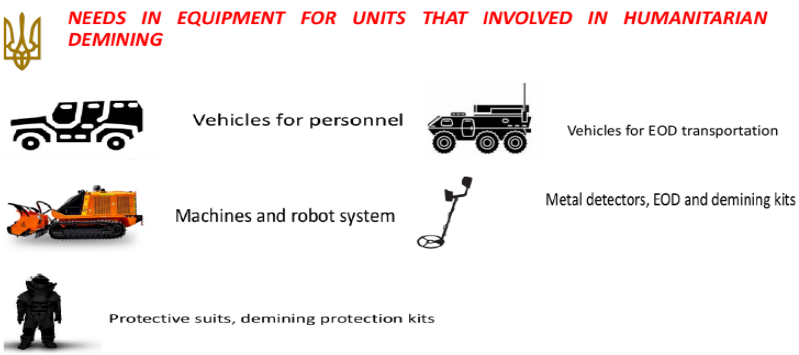


Figure 2-20 Demining equipment needed (1)

(Source: International Symposium "MINE ACTION 2023" in Croatia, NMAA handout, Collection List No. 3-1-2)

2) In addition to the equipment listed in 1) above, at the ALIS follow-up training held in Poland in July 2023, SESU again indicated the need for the equipment listed in Figure 2-21 (vehicles for transporting personnel, vehicles for transporting explosives, robotic complexes, demining machines, special mine clearing boat, mobile hydrometers, underwater metal detectors, and 3D acoustic depth meters). SESU reported on the current lack of equipment and needs for such equipment for use in SESU's field clearance activities.

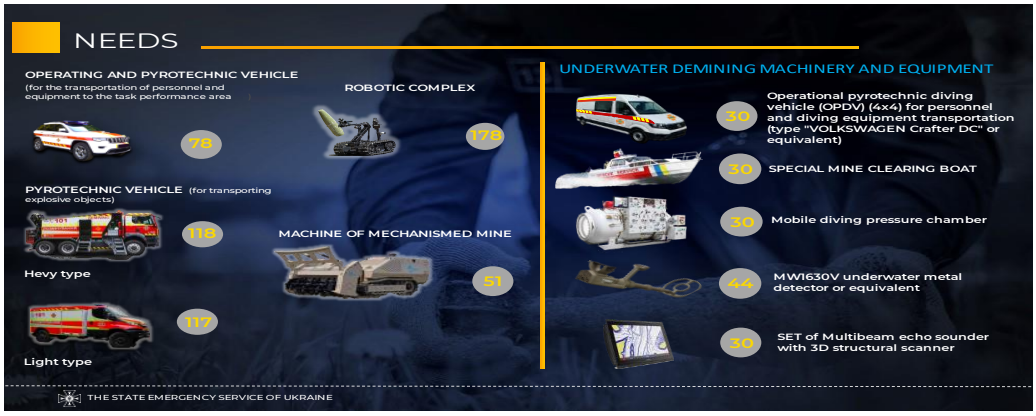


Figure 2-21 Mine and UXO clearance equipment needed (2)

(Source: SESU presentation material for ALIS actual equipment handling follow-up training, Collection List No. 4-2-2-1)

(3) Status of equipment related to mine and UXO clearance of SESU

1) The aforementioned SESU's 165 demining teams are equipped with equipment for manual mine detection and clearance. Various types of equipment related to mine and UXO clearance have been provided by governments, UN agencies, international organizations, international NGOs, and other donors. The equipment and quantities available from publicly available information

are as shown in "Attachment 2-1: List of Major Donors' Equipment to SESU," which was later revised upward to 300 demining teams (totaling 1,500 personnel) (later revised upward to 340 demining teams (totaling 1,700 personnel). As shown in Figure 2-18, there is still a significant shortage of landmine and UXO clearance equipment compared to the 300 demining teams (total of 1,500) (later revised upward to 340 (total of 1,700).

2) SESU plans to improve the efficiency of demining activities, which are currently conducted manually, by upgrading additional equipment for use in demining activities, which will be required in conjunction with the increase in the number of demining teams (personnel), with the support of its own budget and donors. The specific equipment maintenance plan is described in Section 3-2-2, Project Outline and Project Plan (Equipment List).

2-3-7 SOP for SESU's demining activities

(1) According to SESU, with the technical support of the Danish Refugee Council (DRC), 11 SOP for demining in line with IMAS had been developed for SESU, and demining and UXO clearance activities were conducted in accordance with these SOP in peace time before the military invasion by Russia. (The 11 SOP used by SESU are shown in Collection List No. 2-2-3 (in Ukrainian language) and No. 2-2-4 (provisional English translation)).

However, after the military invasion by Russia, an urgent removal response is required, and therefore, in accordance with No. 11 of this SOP and Order 791 (2010) of the Ministry of Emergency Service of Ukraine, activities to remove explosives and other materials are being carried out.

During ALIS follow-up training in July 2023, SESU explained to us that when conducting exploration and clearance in humanitarian demining, including agricultural land, SOP developed in accordance with the aforementioned IMAS are applied, and that 100% metal fragment removal is required for quality control purposes.

Table 2-12 List of SOP used by SESU

No.	SOP Name (Contents)	No.	SOP Name (Contents)
1	510 Information Management	7	911 Battle Area Clearance (former battle area processing) (Remarks) The disposal of explosives and explosion-related materials in former combat zones and in areas where NTS results have confirmed that there is no immediate explosion hazard, such as particularly hazardous mines.
2	710 Planning	8	1210 Risk Training
3	810 Non-Technical Survey	9	101040 Safety Measures
4	820 Technical Survey	10	B383 TEMPORARY ORDER organization and maintenance of civil protection bodies and units blasting operation (tentative procedures for the organization and implementation of explosive works by civil protection organizations and units)

5	840 Marking Territories (marking explosive contaminated areas)	11	B485 The procedure for prompt response of bodies and civil protection units to reports of detection of explosive objects (The procedure for prompt response of bodies and civil protection units to reports of detection of explosive objects)
6	910 Manual Demining		

(Source: SESU website, URL List No. 2-24)

(2) No. 6 "910 Manual Demining" in Table 2-11 is SOP used by SESU in a series of peacetime humanitarian demining operations, but this SOP does not have a separate SOP as an annex for demining equipment such as mine detectors and demining equipment, as in SOP for Cambodia and Bosnia and Herzegovina. However, this SOP does not include a separate SOP as an annex for demining-related equipment such as mine detectors and demining equipment, as in SOP of Cambodia and Bosnia and Herzegovina. In addition, SESU does not currently develop SOP for demining-related equipment already in place.

(3) On the other hand, at ALIS follow-up training in July 2023, SESU reported that "SOP for demining-related equipment already installed will be developed as needed with the support of Canada" and that "SOP for demining operations by mine detection dogs will also be developed with the support of NPA and GICHD. SOP for mine detection dog removal operations will also be developed with the support of NPA and GICHD.

2-3-8 Future plans for demining activities in Ukraine

(1) Reported by NMAA (as of November 2022)

At the Mine Action Workshop in Ukraine, the NMAA Executive Director presented a plan and schedule for future demining and UXO clearance activities, and noted that as of November 2022, the first stage of work will be carried out mainly by Ukrainian government agencies, while the second stage, Steps 4 to 6, will be implemented according to international standards, The second stage, Steps 4 to 6, will be carried out in accordance with international standards, and the mine and UXO clearance activities included in Step 5 will be carried out with the participation of international NGOs in addition to the above-mentioned government agencies of the Government of Ukraine. The work of Step 6, QA/QC (Quality Assurance/Quality Control), is planned to be carried out by MAC of NMAA and HDC of SESU, both of which are national organizations.

Stage 1 (emergency response and EOD Spot clearance activities on land and in the water by UKRAINE government agencies)

- Step 1: Emergency response (bombing, shelling, and clearance operations at government buildings)
- Step 2: EOD Spot Response (clearance work in public infrastructure and residential areas)
- Step 3: EOD Spot Response (clearance operations on agricultural land)

Stage 2 (humanitarian demining)

- Step 4: Establish Confirmed Hazardous Areas (CHA) and Suspected Hazardous Areas (SHA) by Non-Technical Survey (NTS).
- Step 5: Detection and clearance by equipment (TS: Technical Survey, BAC: Battle Area Clearance, and mine clearance)
- Step 6: Verify mine clearance accuracy QA/QC (quality assurance and quality control)

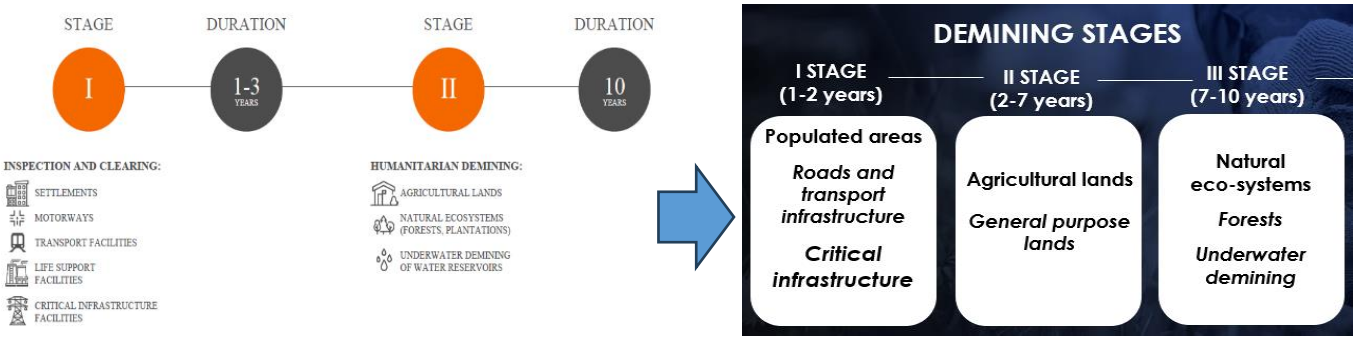
(Remarks) Definition of Confirmed Hazardous Areas (CHA):

IMAS defines a CHA as "an area reasonably suspected of being contaminated by explosives based on indirect evidence of the presence of ERW.

(2) SESU plans for mine and UXO clearance activities (as of November 2022 and July 2023)

At the Mine Action Workshop held in November 2022 in Ukraine, SESU announced a plan for the demining and UXO clearance activities to be carried out by SESU, which will prioritize the clearance of mines and UXOs in the residential areas of returned residents, roads, and transportation infrastructure in the initial 1~3 years as "Stage 1", and then in the 10 years of "Stage 2 In the "second stage," which will last 10 years, the government has announced a plan to clear agricultural land and underwater areas of mines and UXOs. It was explained that NTS for agricultural lands in the "second stage" would begin by the end of 2023. (See Figure 2-22).

At the ALIS follow-up training in Poland in July 2023, SESU announced that the landmine and UXO clearance action plan, as shown in Figure 2-20, would be divided into three stages instead of two, with the first stage, which targets the initial residential areas of returned residents and road and transportation infrastructure, being shortened to one to two years. The "first stage," which covers the initial stage of demining of residential areas, roads, and transportation infrastructure, has been shortened to one to two years, while the "second stage," which covers agricultural land and general use land of high importance, has been divided into two to seven years to carry out demining in advance.



(As of November 2022) (As of July 2023)

Figure 2-22 SESU Plan of Action for Mine and UXO Clearance

(Source: THE STATE EMERGENCY SERVICE OF UKRAINE, Collection List No. 1-1-3 and No. 4-2-2-1)

(3) Report by NMAA (May 2023)

At the international symposium "MINE ACTION 2023" held in Croatia in May 2023, NMAA reported on the progress of 1) and 2) above as follows.

(Remark) In the "MINE ACTION 2023" report by NMAA, the term "stage" was used for activities that were previously described as "steps". In this study report, the definition in 2-3-8 (1) is used for consistency.

1) As shown in Figure 2-23, the first stage remained unchanged from the original plan, while the second stage was subject to conditions for implementation, as indicated by the note "Implementation depends on the safety situation.

Figure 2-23 Reporting on Demining Activities

(Source: International Symposium "MINE ACTION 2023" in Croatia, NMAA handout, Collection List No. 3-1-2)

2) So far, Ukrainian government agencies (200 teams / 1,000 people) have been working on Step 1: Emergency Response (demining activity on attacked government facilities) and Step 2: EOD Spot Response (demining activity on attacked public infrastructure and residential areas), with the following results reported by May 2023 The following results are reported to have been obtained by May 2023.

- Number of settlements with completed EOD / Area: 1,700+ / 80,000 km^2
- Area surveyed: 90,000 ha; transportation network: 6,000 km; rail network: 4,000 km; electricity network: 5,900 lines; buildings: 9,800,
- Number of EODs (discovered and processed): 570,000+

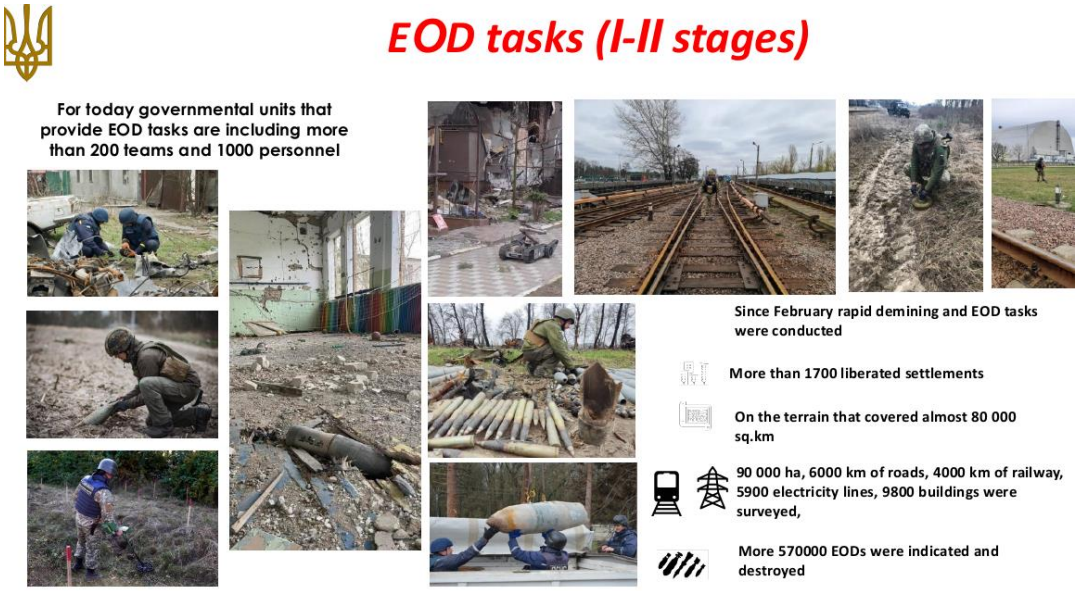


Figure 2-24 Track record of EOD compliance

(Source: International Symposium "MINE ACTION 2023" in Croatia, NMAA handout, Collection List No. 3-1-2)

3) As of May 2023, the NMAA has initiated Step 3, which, as shown in Figure 2-25, states that 47,000 ha of farmland are in need of urgent clearance and survey, and that an increase in manpower (1,000 clearance workers) and 8 demining machines are needed to achieve the goal. It also states that 91 ha of the 4,000 ha of farmland in need of humanitarian demining and UXO clearance have been cleared.

As stated in 2) above, the initial plan was to move to the second stage by the end of 2023 (NTS for farmland falling under Steps 4 and 5 will be implemented by the end of 2023), but the overall process is currently delayed because Step 3 is currently being implemented and, furthermore, there are issues in achieving the goal as stated above.

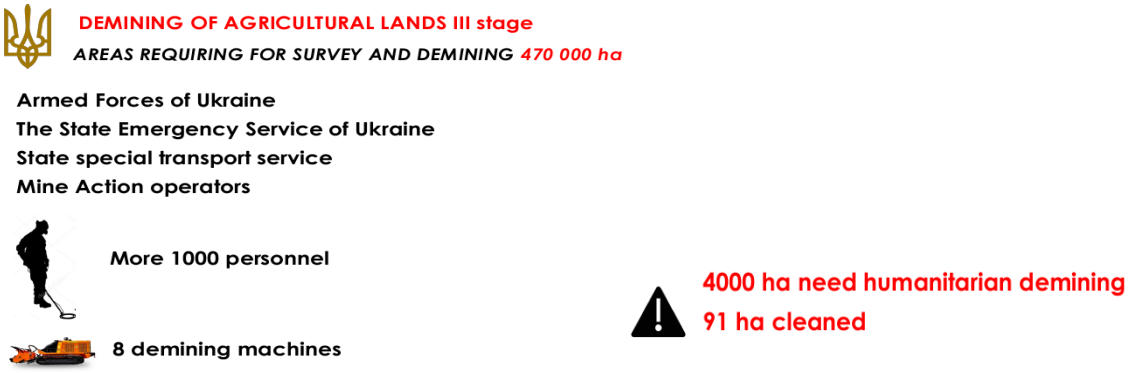


Figure 2-25 Step 3: Current Status of EOD Spot Response (Demining on Agricultural Land)

(Source: International Symposium "MINE ACTION 2023" in Croatia, NMAA handout, Collection List No. 3-1-2)

2-3-9 Mine Clearance Information System (IMSMA) Maintenance and Data Management

(1) Introduction of Mine Action information management system

1) Information Management System for Mine Action (IMSMA: Information Management System for Mine Action) is software developed by the Federal Institute of Technology Zurich (ETH) and used in more than 80% of Mine Action programs worldwide. The software facilitates the sharing of information with relevant parties and has the ability to provide real-time visualization of the degree of contamination in a particular location and indicate the priority level of treatment in areas where mines have been laid.

2) Ukraine, which had been facing the problem of landmine and UXO contamination even before the military invasion by Russia, started to introduce IMSMA in 2014 with the support of GICHD. At the same time, GICHD provided training on the management and use of IMSMA to Ugric government agencies, including SESU, from 2014 to 2015. As a result, pilot operation by SESU was completed in late 2015, and pilot operation by MOD began at the end of 2015.

3) Then, in 2019, SESU and MOD will start the migration from the old system, IMSMA NG, to the new system, IMSMA CORE, which incorporates geographic information system (GIS) functionality, and data migration will be completed by the end of 2021. The data migration will be completed by the end of 2021, and the data will be managed on separate servers of SESU and MOD.

4) IMSMA database had to be reconstructed due to a cyber-attack just before the start of the military invasion by Russia in February 2022, but with the support of the GICHD, it was transferred to the cloud and will resume functioning in April.

5) In the Mine Action Workshop in Ukraine, GICHD explained that information system development and data management are important to promote mine and UXO clearance activities, and as mentioned above, GICHD is supporting SESU in the development of information systems and the results of NTS and the contamination status of mines and UXOs in Ukraine, As mentioned above, GICHD is supporting the development of an information system for SESU, and all information related to Mine Action, such as the status of mine and UXO contamination, NTS results, on-site treatment, and risk education, is input into IMSMA.

6) For efficient utilization of IMSMA, GICHD has established several training courses for NMAA and MAC (Capacity building) as well as SESU and is conducting them on a regular basis. OSCE is also focusing on IMSMA maintenance / training and is providing training and necessary equipment to HDCs.

(2) Data sharing through Mine Action information management system

1) At this time, in order to access the information and data of the IMSMA in Ukraine, it is necessary to register as a user and obtain approval from the NMAA.

2) Regarding data sharing, NMAA made the following presentation at the Ukraine Mine Action Workshop.

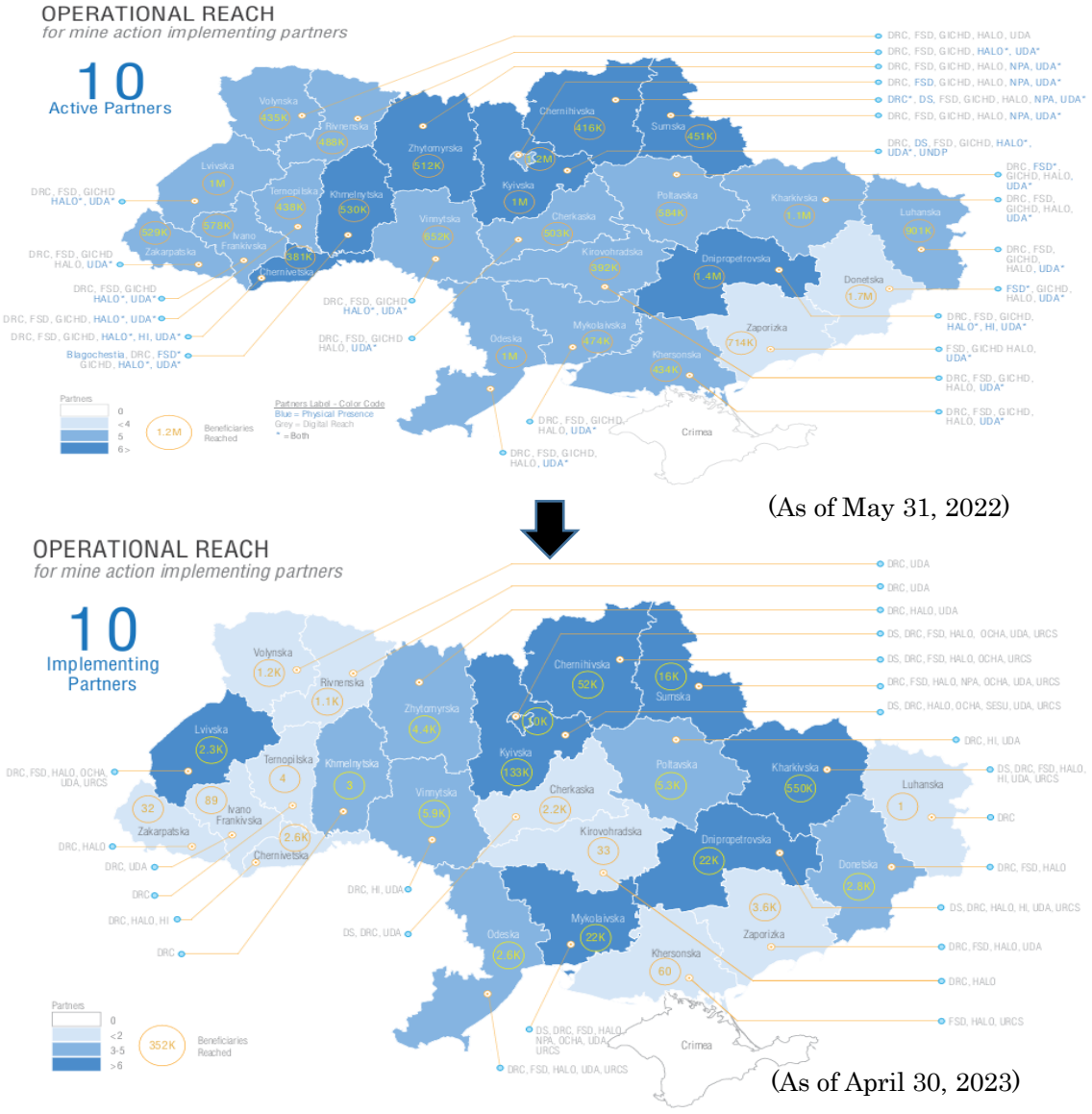
> ① Post relevant information on the Web, excluding sensitive information.
> ② A dashboard for donors is expected to be completed by the end of March 2024.
> ③ We plan to share necessary information with ministries and agencies involved in recovery activities through the NMAA.
> ④ The integration of SESU's database into IMSMA is underway and will be completed in the next few months.

3) GICHD's "Currently (as of the end of April 2023), it is possible to assess the damage caused by mines and UXOs and enter TS and other information; IMSMA is used to collect data from various sources and is continuing to support the reconstruction of the respective databases that SESU and MOD have" and Based on the report , it is assumed that ④ is currently underway and ① to ③ are partially implemented (as per ① above, access to the data requires user registration and approval by the NMAA, so the actual data has not been confirmed).

2-3-10 Support Activities for Mine Action by Non-Governmental Organizations (NGOs) in Ukraine

(1) Non-governmental organizations, etc. that provide support for Mine Action

In response to the serious landmine and UXO contamination following the military invasion by Russia, international NGOs and UN agencies are conducting support activities in Ukraine to combat landmines and UXOs. Figure 2-26 shows the figures as of the end of May 2022 (top) and April 2023 (bottom). Although the number of active organizations did not change (from 10 to 10), the largest number of 13 organizations were active in June 2022 (activities in Ukraine ended with the expiration of the program implementation period). The number of beneficiaries was also reported to have increased by 340,000 (from 12,000 to 352,000), indicating the significant significance of the presence of international NGOs and other organizations.



Abbreviations: Danish Church Aid (DCA), Danish Refugee Council (DRC), Demining Solution (DS), Fondation suisse de déminage (FSD), Geneva International Centre for Humanitarian Demining (GICHD), Humanity & Inclusion (HI), Mines Advisory Group (MAG), Norwegian People's Aid (NPA), OSCE Project Co -Ordinator in Ukraine (OSCE-PCU) ,Ukrainian Deminers Association (UDA), United Nations Development Program (UNDP), URCS(Ukrainian Red Cross Society), United Nations Development Program

Figure 2-26 Non-Governmental Organizations (NGOs) engaged in mine and UXO clearance activities in Ukraine

(Source: UKRAINE Mine Action - 5W Situation Report (As of 31 May 2022 & As of 05 May 2023, URL List No. 2-25)

(2) Approval of non-governmental organizations, etc. that provide support activities for Mine Action

1) In order for non-governmental organizations to conduct demining and UXO clearance activities in Ukraine, they must be approved by the government of Ukraine. At the time of this study, MAC and SESU (HDC) were in charge of this approval, and four organizations, HALO Trust (an

international NGO), DRC (Danish Refugee Council), FSD (Fondation suisse de déminage), and a Ukrainian NGO, Demining Solution (DS), were approved. Demining Solution (DS), a Ukrainian NGO, and eight organizations were in the approval process.

2) According to the Ukrainian multimedia platform for broadcasting, as of December 7, 2022, eight foreign international NGOs have been recommended by SESU for participation in humanitarian demining activities in Ukraine, and another 20 foreign organizations have reportedly expressed to SESU their desire to participate in humanitarian demining activities in Ukraine. In addition, 20 international organizations have reportedly expressed to SESU their willingness to participate in humanitarian demining activities in Ukraine.
(Source: Ukrainian multimedia platform for broadcasting's website (article published December 7, 2022), URL List No. 2-26)

3) Subsequent hearing from SESU (conducted in May 2023) confirms that "the arrangements for Ukrainian government agencies for mine and UXO clearance have been changed and the approval for non-governmental organizations is now centralized in the NMAA. This approval is now valid for a period of five years (renewable).

(3) Expansion of support activities and scope of activities by non-governmental organizations, etc.
1) Non-governmental organizations' support activities for Mine Action in Ukraine are mainly categorized into the following 7 activities. At the time of the survey, explosive ordnance disposal was not an activity of non-governmental organizations.

① EORE
② Capacity Development (formerly Capacity Building and Institutional Support)
③ Information transmission
④ Organizational strengthening
⑤ Mine and UXO clearance and explosive ordnance disposal
⑥ NTS (interview survey)
⑦ Support for victims of landmines and UXO

(Source: Ukraine: Mine Action 2023 Monitoring - 5W Situation Report (As of 05 May 2023) - Ukraine | ReliefWeb)

2) It was announced at the Mine Action Workshop in Ukraine that a total of 24 teams of 480 people from 4 organizations approved by the MAC and HDC (SESU) of the Government of Ukraine are engaged in NTS and have conducted NTS covering 380 residential areas in 48 communities. It was also announced that 3,823.36 ha (38.23 km^2) and 228 Confirmed Hazardous Areas

(CHA)/Suspected Hazardous Areas (SHA) have been surveyed and 849 ha (8.49 km^2) and 111 CHA/SHA are under survey and confirmation. The survey was conducted on 849 ha (8.49 km^2) and 111 CHA/SHA are currently being surveyed and confirmed.

It was mentioned that the government of Ukraine expects to establish a system of 150 units (1,500 members in total) of demining teams by international NGOs and other non-governmental organizations, as support from such organizations is indispensable.

3) According to the UKRAINE Mine Action - 5W Situation Report (As of 31 April 2023), as of the end of April 2023, the following non-governmental organizations are conducting activities in the field or remotely for ①, ②, ⑤, and ⑥ of the above seven activities to clear mines and UXOs. The following non-governmental organizations are reported to be conducting activities in the field or remotely.

① Explosives Ordnance Risk Education (EORE): DRC, DS, FSD, HALO Trust, HI, NPA, UDA

② Capacity development: FSD, HI

⑤ Mine and UXO clearance and explosive ordnance disposal: DRC, FSD, HALO Trust (explosive ordnance disposal is conducted by SESU)

⑥ NTS (interviews): DRC, DS, FSD, HALO Trust, UNDP

Abbreviations: Danish Church Aid (DCA), Danish Refugee Council (DRC), Demining Solution (DS), Fondation suisse de déminage (FSD), Geneva International Centre for Humanitarian Demining (GICHD), Humanity & Inclusion (HI), Mines Advisory Group (MAG), Norwegian People's Aid (NPA), OSCE Project Co -Ordinator in Ukraine (OSCE-PCU) ,Ukrainian Deminers Association (UDA), United Nations Development Program (UNDP), Ukrainian Red Cross Society (Ukrainian Red

As previously mentioned, approval for non-governmental organizations, etc., is currently given by the NMAA, but for NTS, the NPA is newly recognized as an approved organization and has joined the activities. At least 34 teams are conducting NTS activities, and 458 activities were recorded in the last four months (January-April 2023) (as of the end of April 2023).

4) As of November 2022, due to legal restrictions in Ukraine, MACs and SESU (HDCs) receive cleared mines and UXOs and dispose them, however, MACs and SESU (HDCs) have not been able to keep up with this disposal operations. Therefore, the plan NGO's are allowed to dispose the explosives ordnance, such as mine and UXO, which are detected and cleared by their own.

2.4. Donor assistance to Ukraine in the field of mines and UXO

2-4-1 Coordination of Donor Assistance in the Mine and UXO Sector and MASC

(1) MASC Objectives and Key Points

MASC, chaired by UNDP, was established in 2015 for Mine Action mainly in the eastern part of

Ukraine. MASC had worked on unique information sharing and coordination platform among country-wide, regions, and localities even after the Russian military invasion in 2022 until July 2023. MASC's focus points are as follows. The key points of MASC are as follows.

- Providing strategic advice to strengthen the sustainable structures and capacities of Ukraine
- Capacity building and collaboration among humanitarian, development, and peace sectors
- Coordination on cross-sectoral issues including gender and environment
- Promoting compliance with key disarmament treaties and implementation of action plans through advocacy

(2) MASC participants

1) Since the military invasion by Russia in February 2022, the number of participants has increased significantly, and as of the end of April 2023, MASC participants are the following Figure 2-27, such as the government of Ukraine, UN agencies, international organizations, international NGOs, and each government of donors.

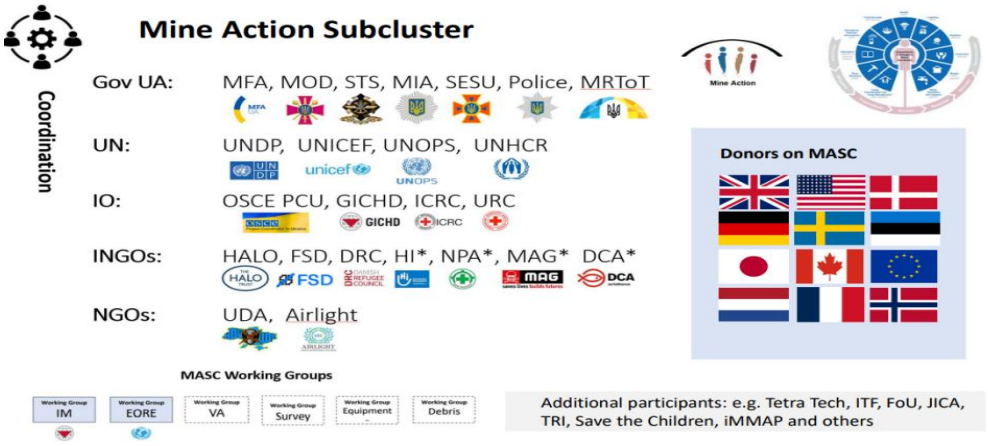


Figure 2-27 MASC Participants

List of MASC participants

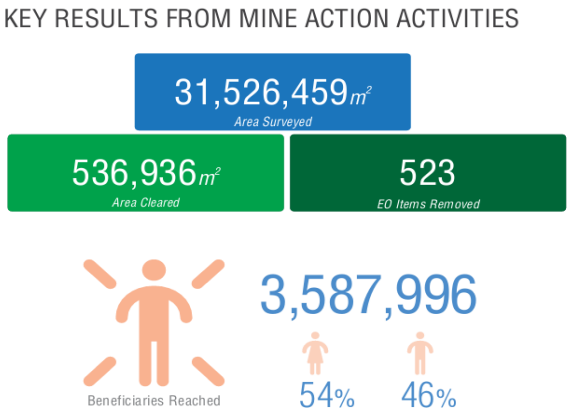
- Government of Ukraine: MFA, MOD, STS, MIA, SESU, Police, MOToT
- UN agencies: UNDP, UNMAS, UNICEF, UNOPS, OCHA, OHCHR, UNHCR
- International Organizations : OSCE, PCU, ICRC, GICHD
- International NGOs: HALO Trust, FSD, DRC, HI, SC, NPA, MAG, PHA
- Other NGOs: UDA, MACF, Airlight
- Governments: Estonia, France, USA, UK, Netherlands, Sweden, Norway, Canada, Germany, Japan, Denmark, EU
- Other Organizations : SWEDEC, etc.

(Source: UNDP document Mine Action Support Group, Briefings, Global and Regional Mine Action, URL List No. 2-27)

2) At the international symposium "MINE ACTION 2023" held in Croatia in May 2023, the activities by government agencies (National Mine Action Centers, National Laboratories, etc.) and private organizations that are not MASC members' country (Croatia, Serbia, Tajikistan) were introduced. The committee reported that they will continue to provide support for Ukraine with a view to involvement in MASC.

(3) Donors' record of activities to remove mines and UXO

According to MASC data, the activities for Mine Action by MASC participants after the military invasion by Russia are shown in Figure 2-28 below (as of March 1, 2022).



Mine Action Results	
Area surveyed by NTS 31,526,459 m^2	
Cleared area 536,936m^2	Number of cleared explosives 523 pieces
Number of beneficiaries Approx. 3,588,000	

Figure 2-28 Donors' Experience in Mine and UXO Clearance Activities

(Source: UKRAINE Mine Action - 5W Situation Report (As of 01 March 2023), URL List No. 2-28)

2-4-2 New Donor Support Coordination System

Since the military invasion by Russia in 2022, the need for support of Mine Action for Ukraine has been dramatically increased, however, MASC had been unable to adequately meet such needs as various stakeholders required for discussion and coordination. Therefore, the proposal on the establishment of following three forums was made at the January 2023 MASC meeting, in order to allow Ukraine himself to coordinate and meet proactively and adequately such needs. The proposal has been under discussion still

① National Mine Action Coordination Meeting - held monthly
② Mine Action Area of Responsibility
③ Mine Action Donor Forum – held quarterly

The relationships among the three proposed forums are shown in Figures 2-29 and 2-30 below, where the three forums are expected to work together to coordinate donor assistance to Ukraine in the

landmine sector.

According to interviews with SESU, the NMAA Secretariat is responsible for coordinating the activities of Ukrainian government agencies and NGOs and other approved organizations in relation to mine and UXO clearance activities (Therefore, demining is not included in any of the working groups shown in Figure 2-27).

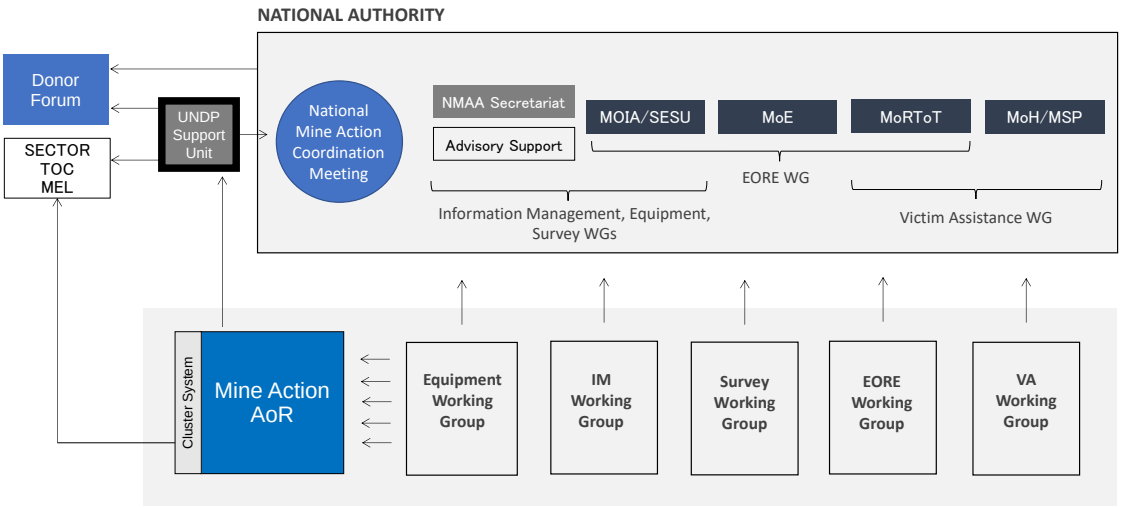


Figure 2-29 Mine Action National Coordination Chart

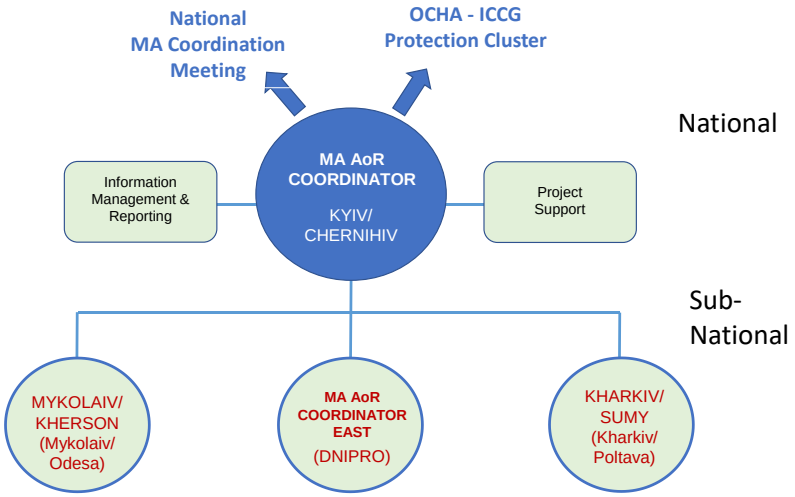


Figure 2-30 Mine Action Area Map

(Source: handout from the workshop on Mine Action in Ukraine)

2-4-3 Other Coordination of Donor Assistance in the Mine Action Sector

(1) Geneva International Centre for Humanitarian Demining (GICHD)

(1) The Geneva International Centre for Humanitarian Demining (GICHD) works to reduce the risks posed by landmines, cluster munitions and other weapons. It provides four main types of support:

local support focusing on advice and training to national and local governments, donors, the United Nations, other international and regional organizations, non-governmental organizations, commercial enterprises, academia, and other partners; multilateral work focusing on norms and standards; research and development focusing on cutting-edge solutions; and facilitating dialogue and cooperation. The program provides a combination of services.

In November 2022, the First Ukrainian Mine Action Donor Coordination Workshop was held in Geneva, where stakeholders from various Ukraine discussed the establishment of a common understanding of priorities related to Mine Action in Ukraine, Mine Action activities, etc., and the plan and schedule developed at this workshop was followed up on progress by the GICHD The GICHD is expected to follow up on the progress of the plan and schedule formulated at the workshop.

(2) As described in "2-3-9 Mine Clearance Information System for Mine Action (IMSMA) Development and Data Management," the GICHD has provided support for the introduction of an information management system for Mine Action (IMSMA: Information Management System for Mine Action).

(2) Multi-agency Donor Coordination Platform for Ukraine

On January 26, 2023, the Multi-agency Donor Coordination Platform for Ukraine was launched with the participation of Ukraine, G7 EU, and international financial institutions (European Investment Bank, European Bank for Reconstruction and Development, International Monetary Fund, and World Bank). The Multi-agency Donor Coordination Platform for Ukraine was newly launched. The platform aims to promote long-term, sustainable, and strategic recovery and reconstruction in Ukraine through coordination of donors' short- and medium-term assistance activities to Ukraine. The meetings have been held from January 2023 to July 2023 to discuss and coordinate on priority areas of rehabilitation and reconstruction (including the mine sector) in Ukraine.

2-4-4 Donor Assistance to Ukraine in the field of mines and UXO

Various information resources are available on Ukraine's assistance in the field of mines and UXOs: the document "Finance Tracking Service, Ukraine 2022" on the OCHA website reports donor assistance to Ukraine in the field of mines and UXOs to be US$91,634,366 in 2022 (44 projects) and US$28,519,033 in 2023 (20 projects) (as of June 10, 2023). (44 projects) in 2023 and US$28,519,033 (20 projects) in 2023 (as of June 10, 2023).

(Source: "Finance Tracking Service, Ukraine 2022/2023" document on OCHA's website, URL List No. 2-29)

2-4-5 Overview of Donor Assistance to Mine Action Sector

(1) Outline of Government Assistance

Table 2-17 below lists the major Western governments' assistance to Ukraine in Mine Action since the Russian military invasion. As shown in the table, assistance by Western Ukraine was provided through international NGOs, UN agencies, or international organizations.

Table 2-13 Policies and actual assistance provided by each donor to Ukraine in Mine Action sector (2022)

Name of Donor	Assistance provided by each donor to Ukraine
Canada	(In 2022) Funding for HALO Trust (removal, contaminated land mapping, bomb disposal, EORE) Provision of equipment to National Guard of Ukraine Provision of Canadian-made protective clothing and other equipment to SESU through Alinea International (international NGO) ($7.5M/2022) Provision of EDO robots and other equipment to the National Guard ($3.2M/2022) Support for Ukrainian government agencies through the PFRU
	Remarks Mine Action is a cooperative effort that contributes to the humanitarian-development nexus, with C$7.5 million under consideration to be provided by Tetra Tech for training and equipment support to government agencies in Ukraine.
Denmark	(In 2022) Funding for DRC (clearance, EORE, equipment and activity support to SESU) Funding for DCA (EORE after organization approval) Financing to UNDP (capacity building of SESU)
EU	(In 2022) Funding for DRC (NTS, clearance, EORE) Funding for HALO Trust (NTS, clearance, EORE) Funding for UNDP (provision of equipment for bomb disposal to SESU) Provision of equipment to Ukrainian government agencies through the Union Civil Protection Mechanism Funding for HI (EORE)
	Remarks Support through UNDP, HALO Trust, DRC, etc. since 2014 (total amount: 80 million euros); US$ 1 million EOD equipment provided to SESU; US$ 1 million EOD equipment provided to SESU; US$ 1 million EOD equipment provided to SESU; US$ 1 million EOD equipment provided to SESU. The overall reconstruction assistance to Russia from 2022 is expected to be large, and the Mine Action activities, which are a prerequisite, will show tangible results. 5 million euros will be allocated for the provision of equipment to SESU.

Name of Donor	Assistance provided by each donor to Ukraine
Germany	(In 2022) Funding for DRC (training and activity support to SESU) Financing to HALO Trust (NTS, clearance, EORE, training and equipment to SESU) (6 million EUR/2022) Financing to UNDP (capacity building for SESU, provision of equipment, and renovation of related facilities such as training centers) Financing for HI (EORE) (EUR 400,000/2022) GICHD (Conference held)
	Remarks SESU will be supported through international NGOs and international organizations. The humanitarian aid to Ukraine in 2022 is 460 million euros.
Netherlands	(In 2022) · Financing for DRC (EORE, support for training and activities for SESU) (1.25 million EUR/2022-2024) Financing to HALO Trust (provision of training and equipment to SESU) (EUR 2 million/2022-2024) Contribution of funds to UNDP (10 million euros/2022-2024)
	Remarks For support to demining in Ukraine, we have provided 1 million euro/year since 2015; for support starting in 2022, we place importance on national ownership and capacity building from a long-term perspective. Direct support to the government of Ukraine, which provides these assistances through international NGOs, is not possible. The humanitarian/development nexus is important, and future discussions are needed on linking Mine Action with other sectors.
Norway	Funding to HALO Trust (NTS, removal) and to NPA (NTS, clearance and EORE after approval of the organization) (EUR 15 million / 2022 - planned) (Provision of medical equipment and removal equipment to SESU and Unit 10, and support for mine detection dogs to SESU)
	Support Policy: Assistance through NGOs
Sweden	(In 2022) Funding for DRC (survey, clearance) Funding to UNICEF and ICRC, EORE coducted by Sida Training by Swedish EOD & Demining Centre
United Kingdom	(In 2022) Funding for HALO Trust (NTS, clearance EORE, support for SESU) (£2m (via GMAP)/2022-2024) Providing equipment and capacity building to SESU through the Partnership Fund for a Resilient Ukraine (PFRU) Support for UNDP's coordination function
	Remarks Supporting HALO Trust's activities in the Donbass region since 2016; applying the Theory of change after 2022; applying impact bonds implemented in Ukraine that combine clearance and livelihood improvement, with the intention of piloting this in Ukraine as well. Wants to promote the Mine Action/humanitarian/development nexus; plans to conduct a tender through GMAP for international NGOs, etc. to take on NTS/landmine clearance in order to support the mine and UXO sector after 2023.

Name of Donor	Assistance provided by each donor to Ukraine
United States of America	(In 2022) Support through Tetra Tech (training and training facility development, equipment provision, technical support, activity support, and EORE to SESU, STS, NPU, MOD, and other government agencies) Funding for HALO Trust (NTS, clearance, EORE) Funding for DRC (survey, clearance) Funding for FSD (NTS, clearance, EORE) Dispatch of experts to GICHD to strengthen the information systems sector of NMAA, MOD, and MAC Provision of equipment to NPU and MOD through OSCE (Reference) Fund size (2022 - September 2023) Tetra Tech (US$47.6 million)
	Remarks US$91.5 million has been set aside for Mine Action in the coming years, starting in 2022. US$47.6 million of this amount will be provided through the U.S. company Tetra Tech (through September 2023). Experts will be deployed in Ukraine to provide training and equipment for clearance personnel of Ukrainian government organizations. The training will be conducted by three Tetra Tech teams, with providing the equipment and training platform.
Poland	(In 2022) Support is provided through the Polish Solidarity Fund (SFPL: Solidarity Fund PL) (For information on SFPL support, see section 2-4-5, "Polish Solidarity Fund").
	Remarks In the future, we will consider providing SESU with necessary equipment such as fire suits and protective clothing, as well as fire trucks.
Switzerland	(In 2022) Conducted training on NTS and IMSMA for SESU and other Ukrainian government agencies using the GICHD. The overall budget/contribution for the demining sector is CHF 17 million/year.
	Remarks Support FSD's EORE activities in Donbass starting in 2021, to be rolled out nationwide after February 2022.
Japan	(In 2022) Emergency Grant Aid (announced on May 27, 2022; approximately US$1.66 million; transportation assistance for firefighting and communications equipment, medical supplies, and medical equipment urgently needed by SESU) Technical Cooperation, SESU to provide crane trucks to SESU JPF (Japan Platform), with contributions and donations from the Japanese government and through its member Japanese NGOs, provides approximately 4 billion yen in emergency assistance in Ukraine and neighboring Ukraine, including education, health care, water supply and sanitation, and distribution of goods.

(Source: Prepared based on the handout and interview results of the Mine Action Workshop in Ukraine)

(2) Initiatives in the field of mines and UXO by international NGOs, UN agencies, international

organizations, etc.

International NGOs, UN agencies, and international organizations are engaged in activities in the field of mines and UXO in Ukraine with funding from national governments and their own resources. The following table outlines the activities of each international NGO, UN agency, and international organization.

Table2-14 Summary of activities in Mine Action by international NGOs and other organization support for SESU

Name of organization	Type	Main Activities	Funds by each government for support SESU	Remarks
DRC	International NGO	NTS, clearance, EORE, victim support, capacity building	Provision of equipment and support for activities (Germany) Training and activity support (Denmark)	Has experience in providing protective clothing, metal detectors, vehicles, etc. to SESU. Metal detectors are made by various manufacturers (Minelab, Vallon, Ebinger, etc.)
HALO Trust	International NGO	NTS, clearance, and EORE	Training and equipment provision (Netherlands)	Conducted various activities from 8 years of mine and UXO clearance work to EORE in Ukraine; approval for activities in Ukraine was renewed in April 2023 (for 5 years). The number of people engaged in demining activities will be increased to 1,200 in 2023 and 2,400 in 2024 to meet the needs of demining in Ukraine.
NPA	International NGO	NTS, EORE, clearance, capacity building	Provision of medical and clearance equipment to 10 units and support for 6 mine detection dogs (Norway)	Support for mine detection dogs will be provided in April 2023 with 14 dogs provided (8 of which will be used in their own activities). EORE is a partnership with UDA.
FSD	International NGO	NTS clearance, EORE, training	-	Training is coordinated with GICHD.
DCA	International NGO	NTS and EORE	Provided ICT equipment and equipment for HDC.	Dispatched technical advisors and medical coordinators.
HI	International NGO	NTS, EORE, victim support	-	Victim support is coordinated with DRC. Supported by UNDP and IOM.

Name of organization	Type	Main Activities	Funds by each government for support SESU	Remarks
MAG	International NGO	NTS and EORE	-	Approved for activity in Ukraine in March 2023.
UDA	NGO in Ukraine	NTS, clearance, EORE, victim support	-	Removal activities are conducted jointly with MAC, which is under the Ministry of Defense, and risk education is conducted jointly with NPA. Currently in the process of renewing approval for activities in Ukraine.
UNDP	United Nations Organization	EORE, information data management, capacity building, capacity building for Ukrainian state agencies and local governments in contaminated areas and coordination work through MASC, explosive ordnance disposal, debris removal, equipment licensing for demining	capacity enhancement (Japan, EU, Germany, UK, Croatia) Provision of equipment for bomb disposal and debris removal (Japan, EU, Germany, Croatia)	Plans to strengthen coordination in cooperation with the NMAA Secretariat and SESU. For details on support, see section 2-4-6 "United Nations Development Program (UNDP).
GICHD	International organization	Information and data management	Support for database reconstruction related to the Information Management System for Mine Action (IMSMA).	IMSMA support is underway in collaboration with MoD, NMAA Secretariat, SESU, and MAC.
ICRC	International organization	EORE, victim support	Support for victims in cooperation with SESU.	Risk education works with the Ukrainian Red Cross.
UNICEF	United Nations Organization	EORE, Secretary of the EORE Working Group	-	Educated 40,000 children and 11,000 parents face-to-face through remote home visits throughout the Ukraine. In addition, the company conducted a virtual reality campaign using You tube, Instagram, and TikTok.

Name of organization	Type	Main Activities	Funds by each government for support SESU	Remarks
Tetra Tech	U.S. Consultant	NTS, EORE, Capacity building	Training and training facility development, equipment provision, technical assistance, activity support, and EORE (U.S.)	Work awarded by the U.S. Department of State (Office of Weapons Removal and Abatement) Train, equip, and mentor Government of Ukraine operators (SES, STS, NPU, MoD, etc.) and send our own demining teams to Ukraine.
OSCE	International organization	Capacity building	-	Coordination with Ukrainian government agencies at the international symposium "MINE ACTION 2023" (May 2023 @ Croatia).
Eastern Europe Foundation	International Fund	EORE	Created an online platform (Zrozumilo) in collaboration with SESU to offer training courses in riskEORE.	The training content will consist of five series and a final test. Training targets are civilians/civilians. Approximately 688,000 people have completed training on this platform by February 24, 2023.

(Source: UKRAINE Mine Action - 5W Situation Report (As of 01 November 2022, 01 January 2023, 05 May 2023), Donor Activities in Humanitarian Mine Action in Ukraine, Report by SESU @ MASC meeting held on 13 January & 24 February 2022 and HP, URL List No. 2-30)

(Remark) U.S. support plan for the training field through Tetra Tech

The following is the U.S. support plan and implementation in the area of training on Mine Action in Ukraine through Tetra Tech, as confirmed in May 2023.

■Line of Effort 1/Area of Activity 1：

Training, advice, and provision of equipment for explosive ordnance disposal and demining personnel.

- Training and advice: EOD training for STS is underway (March to mid-June 2023).
  EOD training for SESU is scheduled to start in June 2023; EOD training for NPU is in the planning stages and start date has not yet been determined.
- Provision of equipment: In April 2023, 15 vehicles for transporting personnel and EOD kits (52 sets) and PPE (100 sets) have been provided.

■Line of Effort 2/Area of Activity 2：

Construction of a demining training center in Ukraine

- Renovation of a facility at the Ministry of Defense to build a training center to conduct explosive ordnance disposal and demining training in line with IMAS, with three training teams, each large enough to train up to 90-100 people simultaneously. The center will be made available for use by all donor programs and projects.
- The beneficiaries are the government agencies of Ukraine related to landmines and UXO. The renovation of the already mentioned Ministry of Defense facility (in the suburbs of Kiev) has been completed and the necessary equipment for the operation of the center is being procured (awaiting export permission for equipment temporarily stored in Poland), and installation work is scheduled to start in June 2023. The start date of the training center's operation has not yet been determined.

■Line of Effort 3/Area of Activity 3：

Utilize demining companies and NGOs for surveying, clearing, and EORE

- Survey: NTS is being conducted in conjunction with UDA (272 NTSs will be conducted in total).
- Removal: Not implemented.
- EORE: In collaboration with UDA, in progress (273 total sessions/approximately 11,300 people are expected to be targeted).

■Line of Effort 4/Area of Activity 4：

Capacity building for strengthening and expanding national programs

- Capacity building for STS, SESU, and NPU is planned, and training content and needs for necessary equipment and materials are being analyzed (as of May 27, 2023).

2-4-6 Polish Solidarity Fund

(1) Polish Solidarity Fund Overview

The Solidarity Fund PL (SFPL) was established in 1997 on the initiative of the President of the Republic of Poland and has been active in the field of development cooperation with neighboring Ukraine such as Ukraine, Moldova, Kazakhstan, and Georgia. Immediately after the start of the Russian military invasion of Ukraine, the Fund PL has been implementing various humanitarian assistance programs for Ukraine with funds from the Polish government and a number of donors including Europe Aid, UK Aid, USAID, GIZ, and others. The program is funded by a number of donors, including Europe Aid, UK Aid, USAID, and GIZ, among others.

(2) Humanitarian Assistance to Ukraine

Immediately after the start of the Russian military invasion of Ukraine, SFPL established a system

to analyze the needs of Ukraine, procure, store, transport, and deliver supplies to various parts of the Ukraine, and has provided humanitarian relief supplies to 120 municipalities in east and central Ukraine more than 50 times while allocating 10 million euro in funds. As shown in Figure 2-31, the humanitarian supplies provided to Ukraine include food, hygiene products, disinfectants, diapers, generators, medical equipment (first aid kits, tourniquets, bandages, defibrillators, ultrasound equipment, ventilators, CT scanners, etc.), ambulances, etc. (as of November 1, 2022).

Figure 2-31 SFPL's Humanitarian Assistance to Ukraine

(Source: Solidarity Fund PL handout, Humanitarian aid by Solidarity fund PL for Ukraine in times of war)

(3) Humanitarian Assistance for Ukraine, and Support for SESU

1) Against the continuing humanitarian crisis in Ukraine, SFPL is planning additional assistance to the Ukraine. Specifically, as shown in Figure 2-32, water filters for water purification, backpacks with hydration functions for EMTs, firefighters, and police officers, stoves (for firewood and coke), sleeping bags, field beds, winter clothes, shoes, gloves, tents with heating systems, emergency vehicles, fire protection and protective clothing for EMTs and firefighters, which are in high demand in the region, fire trucks, etc., and estimates that between 10 and 12 million euros will be required to realize these aid (announced as of November 1, 2022).
2) Support for SESUs is envisioned to include, among other things, necessary equipment such as fire prevention and protective clothing, as well as fire trucks.
3) In addition to the above, SFPL provided various essential support for the follow-up training on ALIS in the pilot project of this study (held in Poland in July 2023), including arranging the training location, preparing for the training, and knowledge sharing on demining (see Chapter 4

for details). (See Chapter 4 for details).

Figure 2-32 SFPL's Humanitarian Assistance Plan for Ukraine

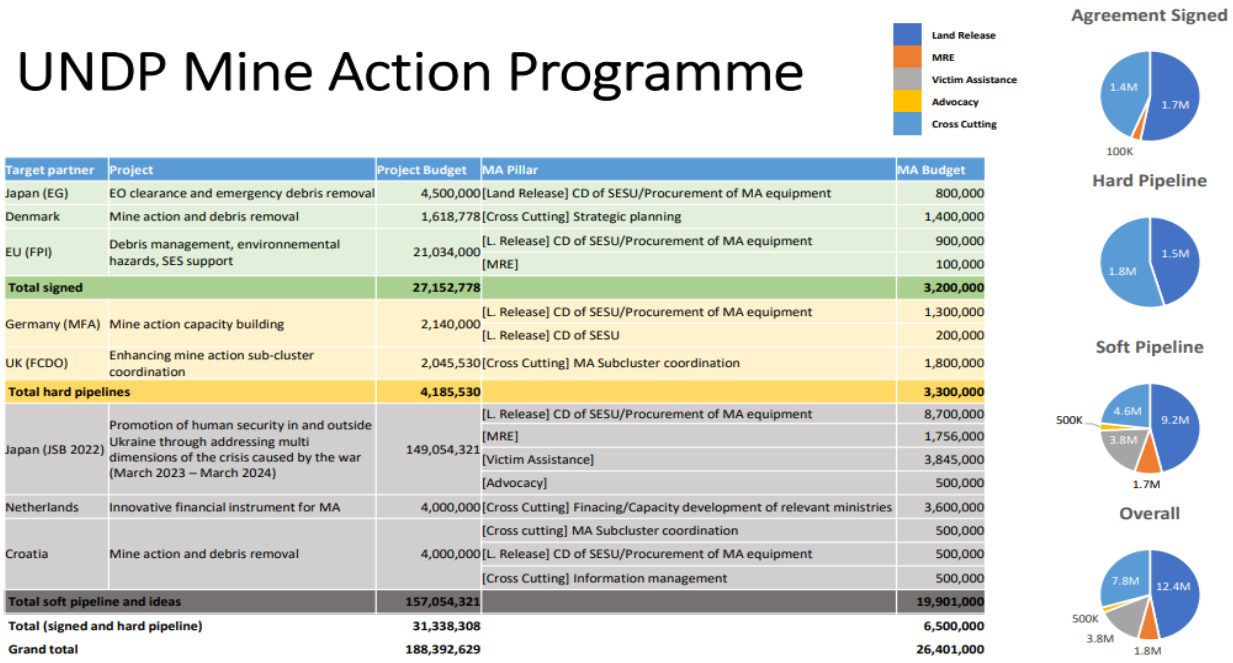
(Source: Solidarity Fund PL handout, Humanitarian aid by Solidarity fund PL for Ukraine in times of war)

2-4-7 United Nations Development Program (UNDP)

(1) Overview of UNDP Activities

While UNDP coordinates national donor support programs to Ukraine for Mine Action, including chairing the Mine Action Sub-Cluster, UNDP itself implements a number of support programs in the field of mines and UXOs (including provision of clearance-related equipment, risk education, and capacity building programs. Since January 2023, six programs have been implemented or are planned by UNDP alone).

The assistance program in Mine Action for Ukraine, which is a collaboration between national donors and UNDP, as published by UNDP on its website, is shown in Figure 2-33.



Target partner	Project	Project Budget	MA Pillar	MA Budget
Japan (EG)	EO clearance and emergency debris removal	4,500,000	[Land Release] CD of SESU/Procurement of MA equipment	800,000
Denmark	Mine action and debris removal	1,618,778	[Cross Cutting] Strategic planning	1,400,000
EU (FPI)	Debris management, environnemental hazards, SES support	21,034,000	[L. Release] CD of SESU/Procurement of MA equipment	900,000
			[MRE]	100,000
Total signed		**27,152,778**		**3,200,000**
Germany (MFA)	Mine action capacity building	2,140,000	[L. Release] CD of SESU/Procurement of MA equipment	1,300,000
			[L. Release] CD of SESU	200,000
UK (FCDO)	Enhancing mine action sub-cluster coordination	2,045,530	[Cross Cutting] MA Subcluster coordination	1,800,000
Total hard pipelines		**4,185,530**		**3,300,000**
Japan (JSB 2022)	Promotion of human security in and outside Ukraine through addressing multi dimensions of the crisis caused by the war (March 2023 – March 2024)	149,054,321	[L. Release] CD of SESU/Procurement of MA equipment	8,700,000
			[MRE]	1,756,000
			[Victim Assistance]	3,845,000
			[Advocacy]	500,000
Netherlands	Innovative financial instrument for MA	4,000,000	[Cross Cutting] Finacing/Capacity development of relevant ministries	3,600,000
Croatia	Mine action and debris removal	4,000,000	[Cross cutting] MA Subcluster coordination	500,000
			[L. Release] CD of SESU/Procurement of MA equipment	500,000
			[Cross Cutting] Information management	500,000
Total soft pipeline and ideas		**157,054,321**		**19,901,000**
Total (signed and hard pipeline)		**31,338,308**		**6,500,000**
Grand total		**188,392,629**		**26,401,000**

Figure 2-33 UNDP Assistance Program in the Field of Mines and UXOs for Ukraine

(Source: UNDP, Mine Action Support Group, Briefings, Global and Regional Mine Action, URL List No. 2-31)

(2) Comprehensive Mine Action program

The following figure shows the contents of UNDP's study on the program of Mine Action activities and its benefits for Ukraine.

As part of this effort, an event called "Mine Awareness Day" will be held in Kyiv on April 4, 2023, to foster interest in UNDP's Mine Action program in Ukraine among the general public, together with Ukrainian government agencies.

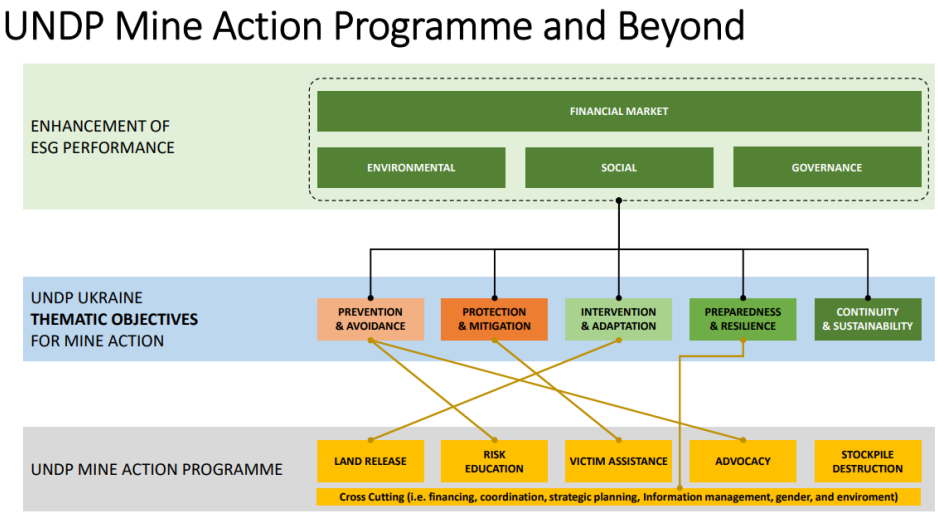


Figure 2-34 UNDP Mine Action Program

(Source: UNDP, Mine Action Support Group, Briefings, Global and Regional Mine Action, URL List No. 2-31)

List of URL

No.	Source URL	Remarks
2-1	http://www.the-monitor.org/en-gb/reports/2021/landmine-monitor-2021.aspx Confirmed May 25, 2023	International Campaign to Ban Landmines - Cluster Munition Coalition (ICBL-CMC)
2-2	https://www.humanitarianresponse.info/en/operations/ukraine/infographic/mine-erw-casualties-eastern-ukraine-eng23022022 May 25, 2023 Confirmation	OCHA HP
2-3	https://www.unicef.or.jp/news/2019/0173.html https://aarjapan.gr.jp/report/4690/ Confirmed February 21, 2023	UNICEF HP AAR Japan HP
2-4	http://www.the-monitor.org/en-gb/reports/2022/ukraine/impact.aspx Confirmed on May 25, 2023	Landmine & Cluster Munition Monitor, 22 February 2021
2-5	https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/nmaa_gva_1.pdf Confirmed on May 25, 2023	GICHD's website, materials prepared by NMAA
2-6	https://l.facebook.com/l.php?u=https%3A%2F%2Fbit.ly%2F3z6lgeV%3Ffbclid%3DIwAR2eXhL93Vd-fSBWTvkx7L43HlgVvgdnzXvtp2lv2z4poo1gaycnfRPI9oc&h=AT1ZjfP-pBYJEDPPsMyCgW1r09Ykflq90KnnogCSllcR30T0SVERRriIGmM8Ej7gww92pWompLrRS9y5KHoLkoJoPl4QGot3IrxXIDcNJdr3 YCYAmChpkxDpfqY9ZMDYEymW&__tn__=-UK-R&c[0]=AT3Q0galJPRFgf3_Srt7_d2wSFNBYZZBJ_3NcQime0fkjFy-OFKM5T12wIknmo4mE62NTLHDvrT8aOzVn4kqaOq-zvckX_IO8AjfdG9OPgfmgGS0WhpyRxZqgJoh56vRLezaF9fL_esQkAvml3USHHHc28iDix3PzERJLz6JvMKPQuYAHhP5Kn5gbRRdSUG8Jee7NnlFTkk1a Confirmed November 7, 2022	HP of the interview with Director Serhiy Kruk
2-7	https://reliefweb.int/report/ukraine/ukraine-Mine Action-5w-situation-report-01-march-2023 Confirmed on May 25, 2023	UKRAINE Mine Action - 5W Situation Report (As of 01 March 2023)
2-8	https://www.unicef.or.jp/news/2017/0279.html Confirmed on May 25, 2023	UNICEF HP
2-9	https://www.HALOtrust.org/where-we-work/europe-and-caucasus/ukraine/ Confirmed May 25, 2023	HALO Trust HP
2-10	https://koda.gov.ua/na-kyyivshhyni-pirotehniky-dsns-zneshkodyly-blyzko-715-tysyach-vybuhonebezpechnyh-predmetiv/ Confirmed November 7, 2022	HP of the Military Executive Branch of the State of Keough, dated October 22, 2022.
2-11	https://www.facebook.com/MNS.GOV.UA/posts/pfbid0nhtv6UdE3TkdVHZHhmbuCtAVbYrJeZ7QsuQvigCstiVEZUXrysKKnxtSmeWGTp7ol?__cft__[0]=AZUGTu1Z3VSM31nqz8q3IG5v9AT908astWvgSZrjN96w6w2_f67l6-Jv_q1vYgUKoVhy94DuLmrbhG-	SESU Facebook (dated October 26, 2022)

	Sbxvk86grnTrD71PNEfqJpOvhhHR_BUOkceWJv-9KAVcf8GofME 5_FxW0OLUPu5GNVxHcDZI5Cjz85a2Fjh97aTdHLbBPeuQu4e54oIxP2gM-9u6jBEU&__tn__=%2CO%2CP-R confirmed 11/07/2022	
2-12	https://reliefweb.int/report/ukraine/ukraine-Mine Action-2023-monitoring-5w-situation-report-05-april-2023 Confirmed on May 26, 2023	UKRAINE Mine Action - 5W Situation Report (As of 05 April 2023)
2-13	https://www.ukrinform.ua/rubric-regions/3576357-u-harkivskij-oblasti-intensivnist-zaminuvanna-teritorij-se-bilsa-niz-u-kiivskij- dsns.html Confirmed November 7, 2022.	ukrinform.ua/Укрінформ (dated September 21, 2022)
2-14	https://www.ukrinform.ua/rubric-presshall/3590706-robota-dsns-pid-cas-likvidacii-naslidkiv-raketnih-udariv-po-ukraini-informacia- pro-zagiblih-ta-postrazdalih.html Confirmed November 7, 2022.	ukrinform.ua/Укрінформ (dated October 11, 2022)
2-15	https://l.facebook.com/l.php?u=https%3A%2F%2Fbit.ly%2F3z6lgeV%3Ffbclid%3DIwAR2eXhL93Vd-fSBWTvkx7L43HlgVvgdnzXvtp2lv2z4poo1gaycnfRPI9oc&h=AT1ZjfP-pBYJEDPPsMyCgW1r09Ykflq90KnnogCSllcR30T0SVERRriIGmM8Ej7gww92pWompLrRS9y5KHoLkoJoPl4QGot3IrxXIDcNJdr3 YCYAmChpkxDpfqY9ZMDYEymW&__tn__=-UK-R&c[0]=AT3Q0galJPRFgf3_Srt7_d2wSFNBYZZBJ_3NcQime0fkjFy-OFKM5T12wIknmo4mE62NTLHDvrT8aOzVn4kqaOq-zvckX_IO8AjfdG9OPgfmgGS0WhpyRxZqgJoh56vRLezaF9fL_esQkAvml3USHHHc28iDix3PzERJLz6JvMKPQuYAHhP5Kn5gbRRdSUG8Jee7NnlFTkk1a Confirmed November 7, 2022 https://t.me/synegubov Confirmed November 7, 2022 6 State Emergency Service workers killed and 2 injured in Russian attack on KKherson Oblast | Ukrainska Pravda confirmed 31 May 2023 Death of rescuers: State emergency department of KKherson region (06.05.23 19:11) " War in Ukraine | Censor.NET confirmed 31 May 2023	Interview with SESU Secretary, reported on Facebook by local media outlet Serhiy Kruk, October 23, 2022, Telegram of the Governor of Kharkiv (October 26, 22:45) UKRAINSKA PRAVDA 23 coverage Censor NET coverage
2-16	GICHD EO Guide For Ukraine - First Edition_20220110 | HumanitarianResponse confirmed 31 May 2023	GICHD HP EXPLOSIVE ORDNANCE GUIDE FOR UKRAINEFIRST EDITION, GICHD
2-17	https://www.hrw.org/sites/default/files/media 2022/06/Background%20Breifing_LandminesUkraine_2022.pdf Confirmed May 31, 2023	HRW HP
2-18	https://dsns.gov.ua/uk/zakonodavstvo/departament-	SESU HP

	reaguvannya-na-nadzvichayni-situaciyi-docs ~~Confirmed~~ November 2, 2022 ~~Currently inaccessible~~	
2-19	https://en.wikipedia.org/wiki/State_Emergency_Service_of_Ukraine Confirmed February 21, 2023	Wikipedia homepage (photo)
2-20	https://zakon.rada.gov.ua/laws/show/1052-2015-%D0%BF/conv#n7 Confirmed June 2, 2023	Ukrainian Government HP
2-21	https://data.gov.ua/dataset/1516bc4e-ce6b-4786-8cb1-7ac8359c48db/resource/6d056044-77e1-45fc-8dec-46a26dceae99 Confirmed June 2, 2023	Ukrainian government's open data site
2-22	https://ja.wikipedia.org/wiki/%E3%82%A6%E3%82%AF%E3%83%A9%E3%82%A4%E3%83%8A%E5%9B%BD%E5%AE%B6%E9%9D%9E%E5%B8%B8%E4%BA%8B%E6%85%8B% E5%BA%81 Confirmed June 2, 2023 Mine Action (dsns.gov.ua) confirmed on November 3, 2022	Wikipedia's homepage SESU HP
2-23	https://finclub.net/ua/infographica/biudzhet-viiny-na-shcho-vytratiat-2-5-tryliona-hryven.html Confirmed June 2, 2023	Financial Club HP
2-24	https://mcgr.dsns.gov.ua/?page_id=11956 Confirmed November 18, 2022 ~~Currently inaccessible~~	SESU HP
2-25	Mine Action 5W SITUATION REPORT 20220531 | Humanitarian Response Ukraine: Mine Action - 5W Situation Report (As of 01 January 2023) - Ukraine | ReliefWeb Confirmed June 10, 2023	UKRAINE Mine Action - 5W Situation Report (As of 31 May 2022 & As of 05 May 2023)
2-26	https://www.ukrinform.net/rubric-ato/3527443-almost-30-foreign-companies-want-to-demine-ukraine.html Confirmed June 10, 2023	HP of Ukrainian multimedia platform for broadcasting
2-27	https://www.MineAction.org/sites/default/files/2.1.1_and_2.1.2_masg_undp_slides_ukraine_sushenko_and_rhodes_-_copy.pdf Confirmed June 10, 2023	UNDP materials Mine Action Support Group, Briefings, Global and Regional Mine Action
2-28	Ukraine: Mine Action - 5W Situation Report (As of 01 March 2023) - Ukraine | ReliefWeb Confirmed June 10, 2023	UKRAINE Mine Action - 5W Situation Report (As of 01 March 2023)
2-29	https://fts.unocha.org/Ukraine/234/flows/2022?order=directional_property&sort=asc&f%5B0%5D=destinationGlobalClusterIdName%3A15%3AProtection%20-%20Mine%20Action confirmed June 10, 2023	Materials on OCHA's website Finance Tracking Service, Ukraine 2022/2023
2-30	Ukraine: Mine Action - 5W Situation Report (As of 01 November 2022) - Ukraine | ReliefWeb Ukraine: Mine Action - 5W Situation Report (As of 01 January 2023) - Ukraine | ReliefWeb Ukraine: Mine Action - 5W Situation Report (As of 05 May 2023) - Ukraine | ReliefWeb Confirmed June 11, 2023	UKRAINE Mine Action - 5W Situation Report (As of 01 November 2022) /(As of 01 January 2023) /(As of 05 May 2023) / , Donor Activities in Humanitarian Mine Action in Ukraine
2-31	https://www.MineAction.org/sites/default/files/2.1.1_and_2.1.2_masg_undp_slides_ukraine_sushenko_and_rhodes_-_copy.pdf	UNDP materials Mine Action Support Group, Briefings,

	Confirmed June 11, 2023	Global and Regional Mine Action

(Remark) Some of URL cannot be accessed at this moment, because the government of Ukraine prohibits access.

<Appendix>

Attachment 2-1: List of equipment provided to SESU by major donors

3. Consideration of projects that contribute to Mine Action

3.1. Challenges and Support Needs in the Mine Action Sector

3-1-1 Overview of Challenges and Support Needs in Demining Activities

Due to the military invasion by Russia starting in February 2022, the response to mine and UXO clearance contamination in Ukraine has become an urgent issue. SESU, which is in charge of humanitarian demining and UXO clearance activities, has been developing a plan to promote demining and UXO clearance activities by strengthening its implementation system, including personnel and equipment. However, the contaminated areas continue to expand, and budget shortfalls and lack of support from donors (governments and international NGOs) continue, there is a high need for assistance in the area of humanitarian demining.

3-1-2 Basic Policy for Supporting Mine Action Activities

(1) Organize basic support policies

1) Japan has implemented various assistance programs as peacebuilding in conflict areas around the world, including Cambodia, Afghanistan, and Bosnia and Herzegovina, according to the respective situations of "humanitarian/emergency phase" and "recovery/reconstruction phase," and has expertise in these areas. Regarding Japan's support policy for Mine Action, which is included in the field of peacebuilding support, JICA has prepared a "SDG Position Paper, JICA's Policy for Efforts to Achieve Goal 16", which states in the section "3. Priority actions for realization, (2) Ensuring peace, stability and security)" that ". In order to build a peaceful and safe society, JICA provides assistance to strengthen the functions of Mine Action. The policy of support is clearly stated as follows.

   (Source: SDG Position Paper, JICA's Policy for Achieving Goal 16:
   https://www.jica.go.jp/activities/issues/peace/ku57pq00002cya2r-att/sdgs_goal_16.pdf
   November 2022 (Confirmed on November 24, 2022)

2) The following table shows the specific cooperation proposals for the problems of anti-personnel mines through Japan's Grant Aid and Technical Cooperation in the Peacebuilding Report of JICA's Project Strategy Research Study.

Table 3-1 Proposals for Cooperation in Mine Action sector through Grant Aid a and Technical Cooperation

No.	Category	Outline	Details (Bilateral assistance)
1	Demining	Detection, clearance and treatment Development of implementation system	Grant Aid (provision of equipment for mine detection and clearance, development of training facilities, etc.) Technical Cooperation (transfer of

		Landmine database development	detection technology, dispatch of advisors, etc.)
2	Explosive Ordnance Risk Education	-	Grant Aid (creation of landmine risk and awareness education materials, creation of publicity posters and radio programs, etc.) Technical Cooperation (preparation of educational materials on mine risk and recognition, provision of educational equipment)
3	Support for Victims	Develop database such as maps of disaster victims Emergency Medicine Surgical Medicine Medical Rehabilitation	Grant Aid (provision of information management equipment, development of hospitals and medical facilities, etc.) Technical Cooperation (transfer of information management, analysis, and processing technology, transfer of technology in the medical field, technical transfer of prosthetic limb manufacturing technology, etc.)
4	Reintegration/ Vocational Training	-	Grant Aid (development of vocational training facilities, provision of equipment) Technical Cooperation (e.g., technology transfer in the field of vocational training)

(Source: JICA Project Strategy Research Study Peacebuilding Report (2001), URL List No. 3-1)

(2) Basic Policyof forming the project

1) The counterpart (implementing agency) to be supported in the field of mines and UXOs in Ukraine shall be SESU, which is responsible for humanitarian demining activities in Ukraine.

2) In forming the project, based on the "Proposal for Cooperation on Mine Action (JICA)," and assuming a combination of Japan's Grant Aid and Technical Cooperation, the project will support SESU's humanitarian demining activities (detection and clearance of contaminated areas, explosive ordnance disposal and munitions disposal activities, support activities for victims of landmines and UXOs, and EORE). The project will consider projects that support SESU's humanitarian demining activities (e.g., detection and clearance of contaminated areas, explosive ordnance disposal and ammunition disposal, support for victims of mines and UXOs, and EORE).

3) In supporting SESU's humanitariandemining activities, avoid duplication with donors from other Ukraine, and give priority to forming projects that take advantage of Japan's comparative advantage in technological know-how and peacebuilding expertise accumulated in conflict areas around the world.

3.2. Grant Aid Project Proposals

3-2-1 Policy for Formation of Project Proposals with Grant Aid

Since it is currently difficult to travel to the site from a safety standpoint, the initial stage of the Grant

Aid project will not be infrastructure development that requires travel to and stay at the site, but rather projects that can be carried out remotely. The formation policy of this project shall be as follows.

- Equipment that meets support needs to improve SESU's demining operations.
- Equipment with short procurement period to meet the urgent needs of SESU for urgent for Amine Action, and phased equipment with larger equipment needed in the medium to long term.
- Equipments that contribute to the safe, efficient, and effective demining, incorporating the technologies of Japanese manufacturers.

3-2-2 Project Outline and Plan

(1) Challenges and Needs in Ukraine

1) SESU already uses a variety of equipment to detect, remove, and dispose of landmines and UXOs, but in response to various types of landmines, UXOs, and other explosive devices, and to increase the number of demining teams (personnel), a list of equipment and quantities needed in the short to medium term (Attachment 3-1: SESU Requested Equipment List (tentative)) was prepared and presented to donors. The list is presented to donors.

2) The "List of SESU Requested Equipment" lists equipment used for detection, removal, and disposal operations, including demining equipment, and includes equipment for demining (metal detectors, demining machine, etc.), equipment to protect the deminers (bulletproof vests, protective helmets, protective clothing, etc.), vehicles for transporting the deminers, and vehicles for transporting recovered explosives. The list includes equipment for demining (metal detectors, demining machine, etc.), equipment to protect the deminers (bulletproof vests, protective helmets, protective clothing, etc.), as well as vehicles for transporting deminers and recovered explosives.

Table3-2 List of Equipment Requested by SESU (Summary)

Type of mine clearance team	Target	Name of main equipment	Remarks
For ground mine clearance teams	For 240 units	● Operational vehicle for mine clearance operations (SUV vehicle) ● Demining Machine ● Metal detector ● Portable Radio ● Relay radio car (relay radio) ● Protective gear (bulletproof vests, bulletproof helmets) ● Tool set for demining ● Laser distance meter, etc. **Total 32 items**	Explanation of the need for demining machines by SESU/NMAA: For treatment in agricultural areas, demining machine should be utilized. This is because unharvested crops/weeds grow up to 2 meters high and are difficult to deal with manually. Mechanical deminers are necessary because cluster bombs, remote bombs, and Improvised Explosive Devices (IEDs) are also common.
For underwater mine clearance teams	For 30 units	● Dedicated river (sea) mine clearance vessels ● Underwater metal detector ● Rubber boat with outboard motor ● Operational vehicle for mine	

		clearance operations (SUV vehicle) ● Cylinders and air compressors ● Air-powered diving equipment ● Wetsuits and dry suits ● Underwater TV system, etc. **Total 21 items**	

(2) Project plan (equipment list)

Since SESU's needs for equipment support for detection, removal, and treatment operations were clarified in SESU Requested Equipment List, this equipment development project was conducted based on the "3-2-1 Policy for Formation of Project Proposals for Grant Aid," and after prioritizing equipment to be covered by the Grant Aid from SESU Requested Equipment List, an agreement on the project scale (amount), equipment names, and quantities was reached through discussions with SESU. Based on the "3-2-1 Policy for Formation of Project Proposals for Grant Aid," we narrowed down the list of equipment to be covered by the Grant Aid from the list of equipment requested by SESU and developed the equipment list shown in Table 3-3 through discussions with SESU. The equipment list was developed with a focus on equipment that incorporates the technologies of Japanese manufacturers and consists of equipment that can be shipped to Ukraine at this point in time.

Table3-3 Equipment List

No.	Name of Equipment	Products / Features	Availability of Japanese manufacturers	Usage (Reference)	Responsible Organization (Primary location of use)
1	Mine Detector with 3D Dual Sensor	ALIS CMAC certified	Available	Figure 3-1.	SESU (contaminated areas)
2	Surveying Drone	Surveying equipment for the purpose of creating mine contamination maps (mine areas and mine specific locations)	Available	-	SESU (contaminated areas)
3	Backhoe Loader	Equipment for debris removal operations	Available	Figure 3-1.	SESU (contaminated areas)
4	Station Wagon	Vehicles for transporting mine detection and clearance personnel	Available	-	SESU (Headquarters and regional offices)
5	Minibus (20~30 passengers)	Vehicles for transporting mine detection and clearance personnel	Available	-	SESU (Headquarters and regional offices)
6	Pick-up Truck	Vehicles for transporting mine detection and clearance personnel and equipment used in mine detection and clearance activities	Available	-	SESU (Headquarters and regional offices)
7	Small Demining Machine (Swing type)	20-ton class equipment for demining, mine clearance, and debris removal (for flat farmland, sloping land, and bushland)	Available	Figure 3-1.	SESU (contaminated areas)
8	Medium Demining Machine (Swing type)	30 ton class equipment for demining, mine clearance, and debris removal (for flat farmland, sloping land, and bushland)	Available	Figure 3-1.	SESU (contaminated areas)
9	Large Demining Machine (Swing type)	38-ton class demining, demining, and debris removal equipment for flat farmland, bushland, and urban heavy debris removal	Available	Figure 3-1.	SESU (contaminated area)
10	Demining Machine (Push type)	Large demining and mine disposal equipment (for flat farmland, can be remotely operated)	Available	Figure 3-1.	SESU (contaminated area)
11	Trailer Truck	For transporting the above demining equipment and heavy equipment	Not Available	-	SESU (Headquarters and regional offices)

12	4WD Truck	Vehicles for transporting materials and equipment related to mine detection and clearance activities	Available		SESU (Headquarters and regional offices)

The timing and purpose of use of equipment No. 1, 3, 7 to 10 in the above list of equipment in the workflow for detection and clearance of landmines in demining activities are shown in Figure 3-2 below. According to the report in Poland in July, SESU has started the second stage of humanitarian demining by the end of 2023, the equipment in the project plan will be used mainly when the humanitarian demining and UXO removal activities in the second stage are in full swing, since it takes a certain amount of time for the equipment to be delivered. The equipment under the project will be used mainly in the second stage of the project, when humanitarian demining activities are in full swing.

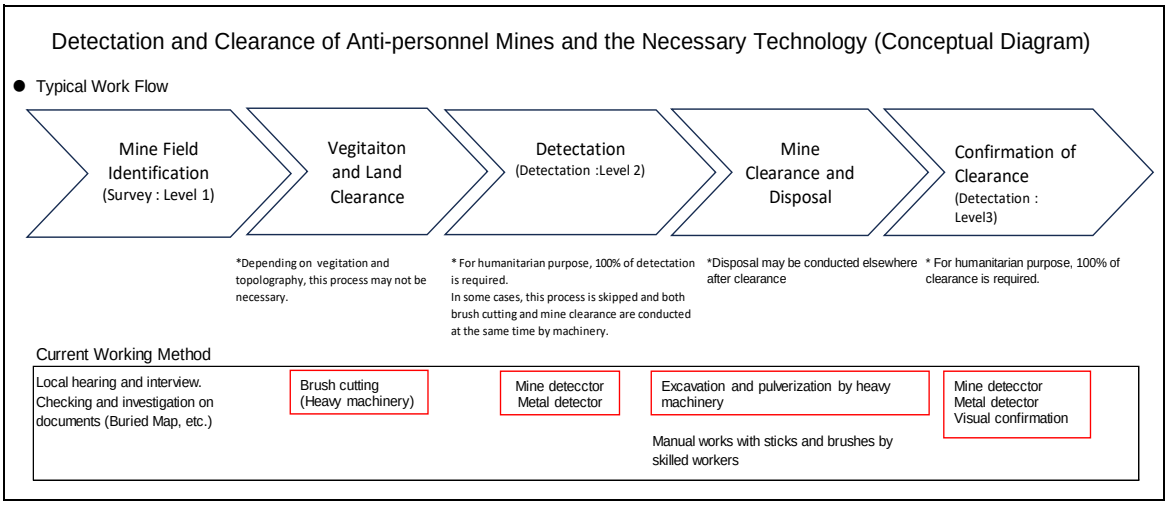


Figure 3-1 Detection and clearance workflow and work methods (equipment used)

(Source: MEXT website with additions by the survey team; URL List No. 3-2)

(Remark) Demining machines No. 7 to 9 in the equipment list can be used for brush cutting by replacing attachments.

(3) Main standards and requirements applicable to the equipment

1) The following table shows the standards, requirements, and the points to note that may be applicable for importation of the equipment listed above into Ukraine.

Table3-4 Major Standards and Requirements with Potential Application

Item	Standards and Requirements	Remarks
Voltage, frequency, plug	Single phase 220V Three-phase 380 V, 50 Hz Plug C type, SE type	● Target equipment: Mine detectors, drones, etc. that require recharging.
Emission	Euro-5 and above in effect	● Applicable equipment: Station

regulations for general vehicles (Source 1)	since January 1, 2016 (Euro-6 will be in effect since January 1, 2025) <Laws and Regulations Law No. 2098-VIII of June 8, 2017; Law No. 2301-VIII of February 27, 2018 (Article 2, Part 2, Section 1, as amended); Law No. 2612-VIII of November 8, 2018	wagons, minibuses, pickup trucks and trailer trucks, etc. ● Excluded equipment: It has been confirmed with SESU that demining machines and other equipment are special vehicles that do not travel on ordinary roads, and therefore are not subject to the emission standards applicable to ordinary vehicles. ● Vehicle certification: handled by a specialized agency accredited by the Ministry of Transport of Ukraine ● SESU's view: SESU stated that Euro-4 is currently applied to general vehicles in Ukraine. Therefore, the specifications will be finalized after confirming the applicable emission regulations with the Ministry of Transportation through SESU at the bidding documents preparation stage of the implementation phase.
Technical regulations on fuels for general vehicles	Gasoline, diesel, and boiler fuels distributed and sold in Ukraine are regulated by law. On the other hand, due to the military invasion from Russia, fuel of environmental class Euro-3 and Euro-4 can be sold in Ukraine until the law is amended and martial law is ended or abolished. <Laws and Regulations Council of Ministers Resolution No. 927 of August 1, 2013 (Source 2)	● Equipment: Station wagons, minibuses, pickup trucks and trailer trucks, as well as heavy equipment such as backhoe loaders and demining equipment. ● Note: Vehicles on the equipment list meet the fuel requirements of the relevant requirement.
Technical Regulations and Conformity Assessment and Declaration of Conformity (DOC: Declaration of Conformity) (Source 3)	For commercial products (for sale on the market), it is necessary to comply with the Ukrainian technical regulations established by the Government of Ukraine. The DOC certifying compliance with the technical regulations is prepared by the manufacturer of the equipment, and the certification body in Ukraine verifies and certifies the content of the DOC. <Laws and Regulations Decree No 124-VIII dated	● We confirmed with SESU that a DOC is not required for humanitarian assistance. However, SESU indicated that if there is a DOC, it should be submitted together with the transportation documents. Therefore, it is advisable to ask suppliers to submit a DOC for delivered equipment if one exists. ● For special vehicles and their parts delivered to end-users, including SESUs, the Ministry of Land, Infrastructure, Transport and Tourism's Decree No. 521 dated August 17, 2012 confirms that they are exempt from the certification procedure. ● In past Grant Aid, DOCs were not

	January 15, 2015	required by the recipient government for products other than medical equipment, and the obligation to submit DOCs was not included in the procurement terms and conditions.
Equipment Safety Standard Conditions (CE)	At this time, CE certification is not required for equipment destined forUkraine.	

(Source 1: Дешевле Rastamozhki.net website, URL List No. 3-3)

(Source 2: HP of Верховна Рада України 1994-2022, URL List No. 3-4)

(Source 3: UkrSEPRO Certification Explanatory HP, URL List No. 3-5)

2) The main regulations that are expected to apply to exports from Japan are as follows:

Item	Relevant products	Remarks (1)	Remarks (2)
Application for export approval to METI	Items listed in Appended Table 2 of the Export Trade Control Order	● Target equipment: Mine detectors and drones ● Products that have been approved for export in the past or already have a comprehensive export license are preferred for smooth export.	Drones to be procured are limited to civilian specifications

3) The Wassenaar Arrangement is a set of regulations that may be applied in the transport of goods in Ukraine and a third country . Normally, when importing equipment subject to the Wassenaar Arrangement, it is necessary to indicate which of the items on the list of items subject to the Wassenaar Arrangement it falls under and obtain an import license. However, the Ukraine of direct import is not a participating Ukraine in the Wassenaar Arrangement, and if the equipment is transported in bonded status, it is not allowed to pass through a third country on the transportation route. In addition, if the goods are transported in bonded status, there is no need to obtain a transit permit in third countries to Ukraine.

(4) Technical level and plan for initial operational guidance, operational guidance, etc.

1) SESU has been engaged in demining for more than eight years since its establishment in 2014 and has accumulated a wealth of knowledge and advanced skills in mine and UXO detection, clearance, disposal, and EORE as an organization through years of engagement activities and human resource development through education at its own training center. The equipment listed in the equipment list is basically equipment that SESU owns and has experience using.

2) On the other hand, on the equipment list, for mine detectors (with 3D dual sensors) and

demining, which are classified as special equipment, initial operational and operational guidance is essential to safely learn how to operate and use the equipment, because the operation and use of the equipment differs depending on the manufacturer. Therefore, initial operational and operational guidance is essential to safely learn how to operate and use the equipment. If dispatch of Japanese technicians to Ukraine is not possible due to security issues, in addition to initial operational guidance by the manufacturer in Japan, the manufacturer and CMAC may consider providing initial operational guidance in Cambodia in cooperation with the manufacturer, if necessary. CMAC has abundant knowledge of the equipment through its use of mine detectors (with 3D dual sensors) and demining machine, as well as experience and expertise in operational guidance and operational guidance. Furthermore, CMAC has a training site for demining, and CMAC conducted training for SESUs in Cambodia during the pilot project conducted in this survey (ALIS operational training), with good results and a good relationship established. Therefore, Cambodia is appropriate place for training on ALIS.

3) For other equipment, initial operation guidance will be provided according to the needs of SESU. If Japanese or non-Japanese technicians cannot be dispatched to Ukraine due to security issues, initial operational guidance will be conducted in Japan or the third countiries where the manufacturer's equipment is available. According to Tetra Tech, which is supporting the U.S. government's landmine and UXO activities in Ukraine, a training center for heavy equipment will be established in Khmelinitsky in the western part of the Ukraine, and experts will be assigned to provide guidance on the operation of heavy equipment. Therefore, the company will consider providing training in cooperation with Tetra Tech for general heavy equipment for which initial operational guidance is available at the center.

(5) Implementation of soft components in collaboration with Technical Cooperations

In order to ensure the effective and continuous use of the equipment to be introduced under this project plan, such as mine detectors (with 3D dual sensors) and demining machine with advanced Japanese-made technology, in addition to initial operational and operational guidance, it would be useful to (1) have all instructor-level technicians acquire advanced skills, (2) have SESU provide technical support for medium- and long-term maintenance, and (3) develop manuals or SOP for appropriate equipment use. In addition to initial operational and operational guidance, it is useful for SESUs to (1) provide technical support for medium- to long-term maintenance and management, and (3) develop manuals or SOP for appropriate use of equipment. Since it is useful to take a variety of approach over the medium to long term, it is judged effective to launch a new Technical Cooperation to address these issues, not within the framework of this project plan. The proposed new Technical Cooperation is described in (1) Humanitarian Mine Action Capacity Building Project

(Full-scale Phase 1) in 3-3-2 Proposed Technical Cooperation.

> (Reference) CMAC's experience and know-how in operation and operational guidance
> From 1998 to the present, Japan has been providing support to CMAC through a combination of equipment for detecting, clearing, and processing landmines and organizational capacity building. As a result, CMAC has grown to be the most capable Mine Action organization in Southeast Asia, clearing contaminated areas in Cambodia at a dramatic pace. Since 2015, the organization has been continuously involved in capacity building training for UXO Lao in Lao PDR, and has also been contributing internationally by sharing its know-how on mine and UXO clearance with mine and UXO contaminated Ukraine in the Middle East, Africa, and South America as part of the South-South cooperation with JICA.

(6) Installation of equipment

No equipment included in this project plan requires installation work.

(7) Equipment delivery schedule and overall schedule

The equipment for this project will be delivered at the timing of the implementation of the second stage (humanitarian demining and UXO clearance activities) by SESU. Therefore, the equipment will be used from the latter half of the "Emergency/Humanitarian Phase" to the "Recovery/Reconstruction Phase" in the mid- to long-term.

The list of equipment for this project consists of a variety of equipment, ranging from equipment with a short manufacturing lead time of only a few months, such as mine detectors (with 3D dual sensors), to large equipment such as demining equipment that is made-to-order and requires a long manufacturing lead time of more than one year, even for one unit. Therefore, it is appropriate to provide support for equipment maintenance by starting with equipment that can address the most pressing issues in the field, and to deliver equipment in order of short delivery time, and to provide initial operational guidance and guidance according to the timing of delivery and technical level of the equipment.

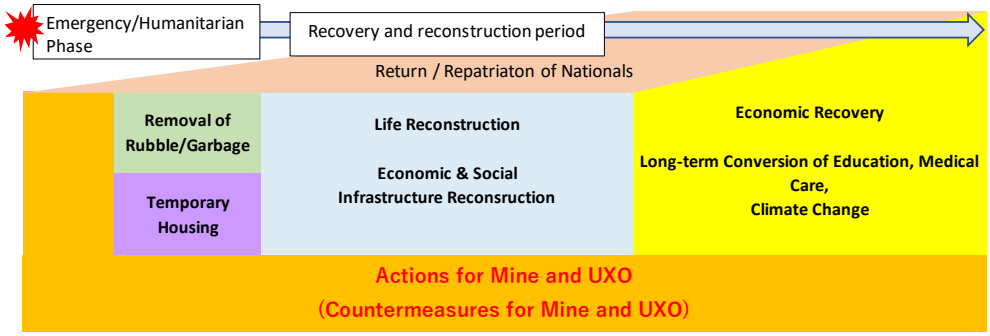


Figure 3-2 Timeline of Mine Action and Equipment Improvement Projects in Ukraine

3-2-3 Transportation, customs clearance, and exemption procedures for project

(1) Transportation of Equipment

Under this project plan, the final destination for equipment transportation will be a designated warehouse in Kyiv or a designated site in Ukraine by SESU. At present, the majority of cargoes are transported by land from European countries via neighbor countries of Ukraine. The transportation method assumed in this project plan is as follows:

1) Combination of sea and land transportation from Japan

Cargo is transported by sea to major European ports such as Germany (Hamburg) and Poland (Gdansk), and then unloaded cargo is transported from the port of unloading to its final destination in Ukraine by inland transportation using trucks. Since ocean transportation from Japan to major ports in Europe takes a long time, the total transportation time to the final destination in Ukraine is about 2~3 months. At present, the port of Odessa on the Black Sea, which has been used for the transport of equipment to Ukraine, is a safety issue.

Although the Constantia port in Romania is subject to safety and capacity constraints, if transportation through the Constantia port is smooth, it will take about 1.5 months from Japan to the final destination in Ukraine, which is a shorter time than other European routes.

2) Combination of air and land transportation from Japan

Equipment is transported by air to major international airports in Europe, such as Poland (Katowice, Warsaw), Germany (Frankfurt), Hungary (Budapest), or France (Charles de Gaulle), and from these international airports, it is transported inland by truck to its final destination in Ukraine. The cargo is then transported from the international airport to its final destination in Ukraine by inland transportation using trucks. It takes about one month to reach the final destination in Ukraine. From the latter half of 2022, the transportation via Poland (Katowice Airport), which has good access to Ukraine, and Hungary (Budapest Airport), where transportation costs are low, is increasing.

3) Transportation from third countries to Ukraine

Freight from third Ukraine other than Japan to Ukraine is transported to final destinations in Ukraine via Poland, Hungary, and other neighboring countries, using a combination of sea, air, and land transport as in the case of transport from Japan.

4) Transportation to final destination in Ukraine

At present, land transportation from major European ports and international airports to Ukraine is being handled by several European logistics companies (carriers) that have established bases in Ukraine in the past and have abundant experience in all-round truck transportation. As for transportation to final destinations (cities), some carriers basically undertake land transportation to all major cities in Ukraine, depending on the war situation, while others limit their services to

highly secure cities such as Kyiv.

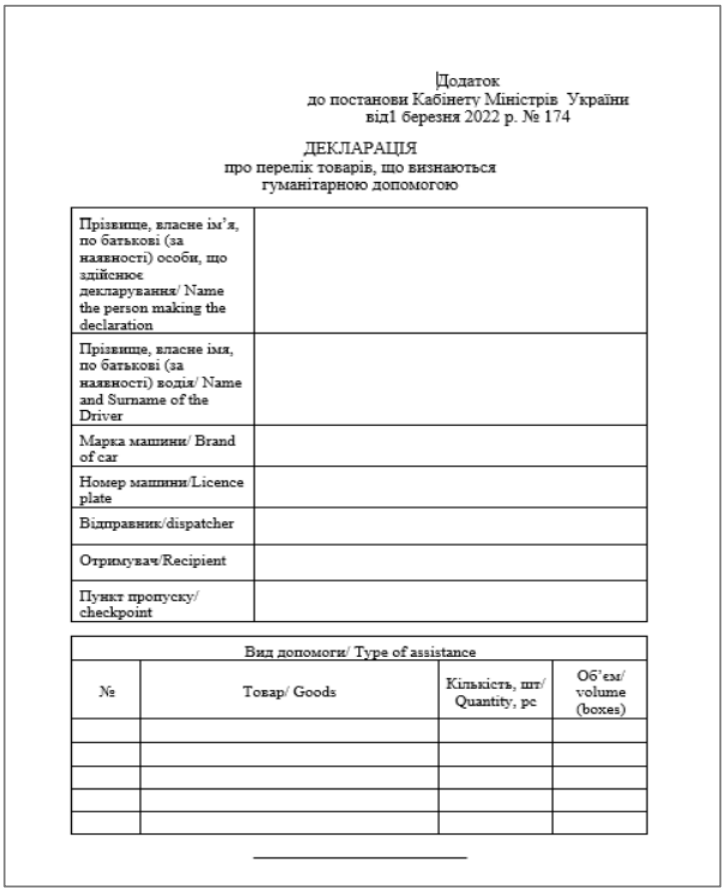
(2) Customs clearance and exemption procedures

1) Overview of Customs Clearance and Exemption Procedures

At present, cargo shipments to Ukraine are divided into two categories, "humanitarian relief goods" and "commercial cargo," based on differences in customs clearance and exemption procedures. Relief goods to Ukraine are treated as "humanitarian relief goods" and are subject to very simplified customs clearance and duty exemption procedures in accordance with Decree No. 174 "Humanitarian Aid from Abroad" dated March 2, 2022, which came into effect under martial law, and related resolutions. Customs clearance procedures for "commercial shipments" are also simplified in accordance with Law No. 7190 (No. 2142-VI) dated March 24, 2022 "On Amendments to the Tax Code of Ukraine and Other Legislative Acts on the Improvement of Laws during Martial Law" and related resolutions. It is assumed that the cargoes transported under the Project will be treated as "humanitarian aid goods" during the period of validity of the aforementioned Decree No. 174 "Humanitarian Aid from Abroad" but will be treated as "commercial cargo" when the said Decree becomes invalid.

2) Customs clearance and exemption procedures for "humanitarian aid goods

At present, when a shipment of "humanitarian aid goods" is shipped to a Ukraine, customs clearance at the border of that Ukraine or in each state requires, in addition to the trade transaction documents generally used for international shipments, two additional documents to be submitted to customs: a "Letter of Donation/Gift" and a "List of Imported Goods". In addition to the trade transaction documents commonly used for international shipments, two additional documents must be submitted to customs for clearance: the Letter of Donation/Gift and the List of Imported Goods. For shipments of "humanitarian relief goods", the complex customs clearance procedures of "commercial shipments" are omitted and all shipments are exempt from taxes (customs duties, VAT and excise taxes). For reference, Figure 3-3 shows the Letter of Donation/Gift provided by the Government of Ukraine, which is a simple format signed by both the donor and the recipient in Ukraine.



Додаток
до постанови Кабінету Міністрів України
від1 березня 2022 р. № 174

ДЕКЛАРАЦІЯ
про перелік товарів, що визнаються
гуманітарною допомогою

Прізвище, власне ім'я, по батькові (за наявності) особи, що здійснює декларування/ Name the person making the declaration	
Прізвище, власне ім'я, по батькові (за наявності) водія/ Name and Surname of the Driver	
Марка машини/ Brand of car	
Номер машини/Licence plate	
Відправник/dispatcher	
Отримувач/Recipient	
Пункт пропуску/ checkpoint	

Вид допомоги/ Type of assistance			
№	Товар/ Goods	Кількість, шт/ Quantity, pc	Об'єм/ volume (boxes)

Figure 3-3 Form of Letter of Donation/Gift

(Source: UNOCH material on its website, confirmed December 28, 2022; URL List No. 3-6)

Customs clearance for "humanitarian aid" and "commercial cargo" to be transported to Ukraine is conducted at the customs offices on Ukrainian borders with neighboring countries such as Poland, Slovakia, and Hungary, or at the customs offices in each state (major cities) in Ukraine. Among the customs offices in each state, customs clearance for shipments destined for the capital city Kyiv is not conducted in Kyiv, but mainly in Lyiv, the city shown in Figure 3-4, which is close to the Polish border. However, since the start of the Russian military invasion in February 2022, a large amount of relief goods from neighbor countries of Ukraine have been transported by land, and if the relief goods exceed the customs' processing capacity, the trucks transporting the goods may have to wait for several days at customs. In some cases, the trucks transporting the cargo have had to wait for several days at the customs offices when the cargo exceeds the customs processing capacity. In addition, when military supplies pass through customs, priority is given to procedures for military supplies with a high degree of urgency.

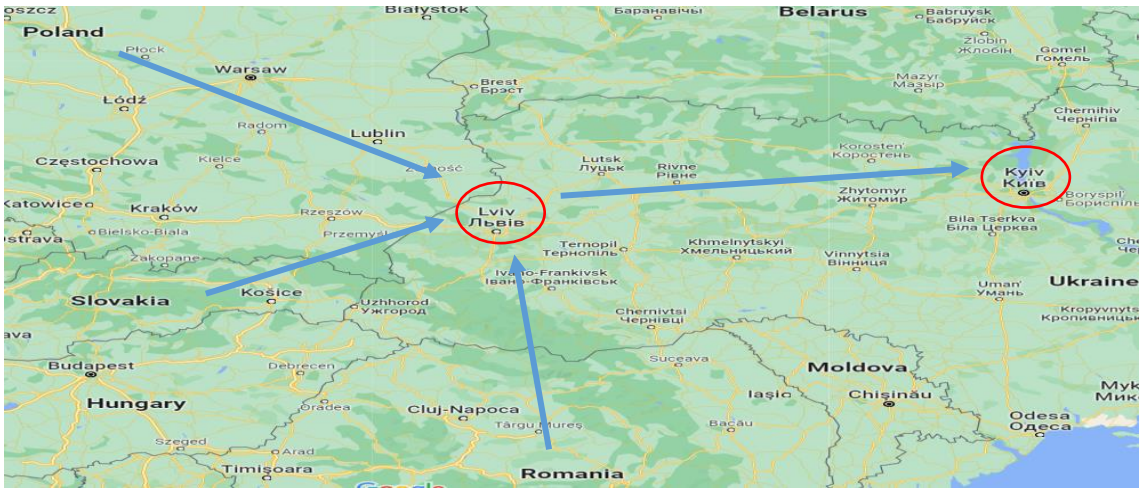


Figure 3-4　Transportation routes for cargoes destined for Kyiv and the location of Lviv
Source: Google Maps

3) Customs clearance and exemption procedures for "commercial cargo

At present, shipments bound for Ukraine destinations that are transported by sea or air to Europe are transported in "T-1 transit," whereby customs clearance is not required at the port or airport in the Ukraine of arrival, and the shipments are transported in bond to Ukraine destinations in one continuous process. In the case of T-1 transit transportation, even if the equipment to be transported passes through the border (customs) of European Ukraine, customs clearance procedures are not required and no customs duties or other taxes are imposed. In addition, customs clearance procedures for "commercial cargo" in Ukraine have been partially simplified in accordance with the laws and regulations under martial law. In addition, if certain conditions are met, duty and value-added tax (VAT) exemptions are also provided in accordance with the law.

Cargo transported under past Grant Aid was transported and cleared as "commercial cargo," but the Ukraine government issued exemption permit for each transport, and all taxes (customs, VAT, and excise taxes) generally applicable to cargo imports were waived upon presentation of the exemption permit (tax exemption number) at customs transit. The specific procedures include the following. The specific procedure for issuing a tax exemption permit (tax exemption number) was for the implementing agency (ministry in charge) to submit a set of documents required for tax exemption application to the State Fiscal Service of Ukraine under the jurisdiction of the Ministry of Finance in Ukraine, which in turn issued the tax exemption permit (tax exemption number). Therefore, even if the laws and regulations in force at the time of martial law do not apply, the same procedure will ensure tax exemption for the importation of equipment.

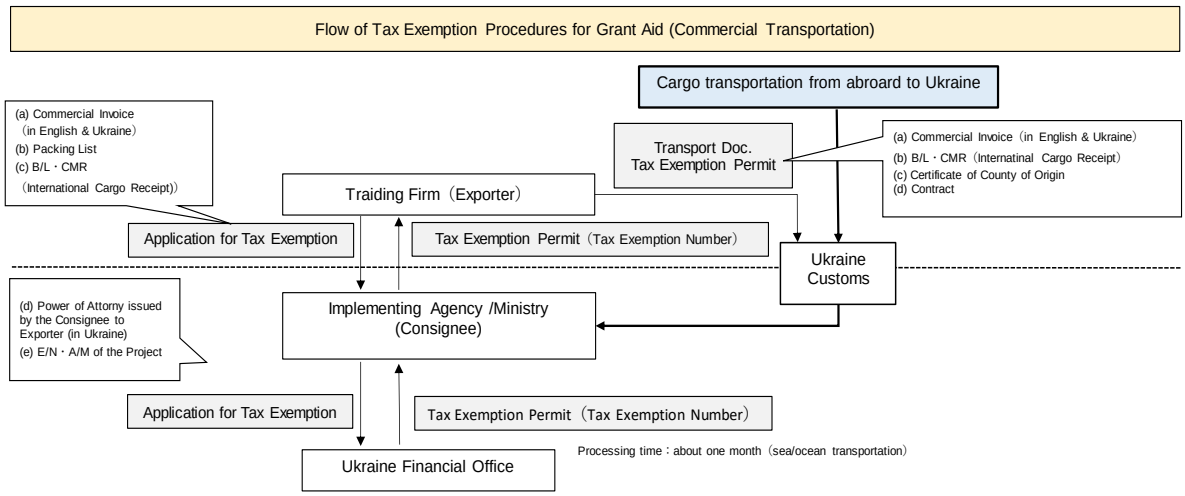


Figure 3-5 Assumed Flow of Tax Exemption Procedures for Grant Aid

4) Laws and regulations related to tax exemption procedures for Grant Aid

As for the legal basis for tax exemption of Japan's Grant Aid by the Government of Ukraine, the "AGREEMENT ON TECHNICAL COOPERATION AND GRANT AID BETWEEN THE GOVERNMENT OF JAPAN AND THE GOVERNMENT OF UKRAINE" signed on June 10, 2004, provides in Chapter 14 that "The Government of Ukraine has agreed to provide tax exemption to the Government of Japan for the Grant Aid provided by the Government of Ukraine". In Chapter 14 of the "AGREEMENT ON TECHNICAL COOPERATION AND GRANT AID BETWEEN THE GOVERNMENT OF JAPAN AND THE GOVERNMENT OF UKRAINE" signed on June 10, 2006, it is stipulated that "the Government of Ukraine shall exempt the goods and services to be supplied by the Grant Aid from all taxes, including customs duties, and other taxes. In addition to the tax exemption clauses in the E/N and G/A, which are concluded on a case-by-case basis, the Agreement ensures a comprehensive tax exemption obligation for Grant Aid by the Government of Ukraine. In addition, Chapter 51 of the Customs Code of Ukraine, entitled "Tariff Privileges (Tariff Preferential Treatment)," states that "in accordance with international treaties and conventions, tariff preferential treatment, such as duty exemption and reduction of tariff rates, shall be applied to goods imported into Ukraine," and the Customs Code of Ukraine also provides that The Ukrainian Customs Code also clearly stipulates the application of duty exemption on the importation of equipment and materials for Grant Aid to Ukraine.

(3) Points to keep in mind regarding transportation of equipment and exemption

Since the military invasion by Russia is still ongoing in Ukraine, land transportation of equipment within Ukraine is subject to several risk factors, such as changes in Ukrainian laws, additional storage costs for equipment, transportation delays and additional transportation costs, and inability to obtain

transportation insurance (war damage rider), as listed in 1) to 5) below, unlike under normal circumstances. It is necessary to note that there are several risk factors, such as changes in the laws of Ukraine, additional storage costs, transportation delays and additional transportation costs, and the inability to obtain transportation insurance (war damage clause). Therefore, the delivery/contract terms and conditions in the bidding documents and contract documents should not be the usual terms and conditions, but should be carefully set so that the contract terms and conditions for the bidding/contract for this project can be set according to the risk factors known at the time of bidding and their impact, with appropriate risk allocation between the ordering party and the contractor, cost sharing through Grant Aid , etc., to make the bidding/contract successful. In particular, it is necessary to pay attention to the following points. In particular, with regard to the costs to be borne by the suppliers and additional costs incurred in Ukraine for the implementation of the project, due to security situation, it is appropriate that such costs can be covered by the project budget with flexibility (e.g., contingency).

1) Changes to Decree 174 "Humanitarian Assistance from Abroad" and other laws and regulations

The war situation in Ukraine is very unpredictable. At present, many cargoes are transported as "humanitarian relief goods" in accordance with Decree 174 and related resolutions, and very simple customs clearance procedures and duty exemption are applied, but various cases of repeal or change of laws and regulations are expected depending on the war situation. Therefore, it is necessary to understand the laws and regulations and to implement the project in accordance with those laws and regulations. It should be noted that additional transportation costs may be incurred if the laws and regulations related to customs clearance and customs in Ukraine are changed during the implementation of the project.

2) Domestic transportable cities in Ukraine and additional storage costs

At the present time, the cargo can be transported as far as the capital city of Kyiv, but the cities within Kyiv that can be transported are subject to military invasion by Russia, so the availability of transportation is in unpredictable conditions. Therefore, even if transportation is possible at the time of order placement, if transportation becomes difficult due to the war situation, the cargo may have to be stored at the manufacturer, at the port of unloading, or at a third party's warehouse in neighboring counties or in Ukraine. It should be noted that additional warehouse storage costs will be incurred in the event of such an event.

3) Transport delays and additional transport costs

After the military invasion to Ukraine by Russia, the volume of cargo transported to Ukraine territory, including relief supplies and military supplies, has been increasing, but there is a shortage of trucks and drivers for land transport, and relief supplies are stored in warehouses due to waiting

at Ukraine customs. In addition, the selection of transportation routes in Ukraine is also unforeseen, depending on the security situation and possible fuel refueling points for trucks. Therefore, it is necessary to note that the carrier entrusted by the client cannot be held responsible for the duration of transportation, and that there is a possibility that additional costs such as customs standby and additional fuel costs may be incurred due to events beyond the carrier's control.

4) Transportation insurance (War-Risks)

At present, European carriers that are contracted to transport cargo to Ukraine arrange cargo insurance for transportation by European insurance companies. According to a confirmation with insurance companies in Japan, the current policy of All Risk cargo insurance (including coverage for war damage, etc.) to cities in Ukraine is to determine the possibility of underwriting and rates on an individual basis, taking into consideration the war situation, equipment, transportation route, and track record of the carrier for each shipment, etc. At this time, there is no indication of whether or not cargo insurance will be provided in the future, and no prices can be quoted. At this point in time, it is not possible to present the possibility or price of cargo insurance for future transports. When this project is implemented, depending on the war situation in Ukraine, it may be difficult to obtain All Risk cargo insurance or a war damage rider, which would be a special contract, from European or Japanese insurance companies. It should be noted that, unlike the terms and conditions of conventional equipment procurement contracts, the contracting party must consider risk-sharing, such as assuming part of the risk of the ordering party. In particular, it should be noted that bidding conditions must be set in light of the fact that there are no European insurance companies that currently underwrite war damage insurance for cargoes bound for Ukraine.

5) Risk Reduction for Transportation (Terms and Conditions)

For the transportation of cargo in equipment projects to Ukraine, contract terms and conditions are generally adopted under which unloading is at the consignee's expense. On the other hand, under the circumstances at the time of the survey, SESU, which is the consignee, may not be able to unload large or voluminous cargoes from the transport trucks, and unloading may be delayed. Therefore, it is necessary to pay attention to reducing the burden on SESUs in setting contract terms and conditions, for example, by introducing transportation terms and conditions that require unloading to be borne by the consignee. In addition, with regard to Incoterms, if the cargo is to be delivered to SESU under the generally adopted trading term "C" with Poland as the cargo destination, SESU will have to bear the burden of financing the transportation and arranging a shipping company, etc. In addition, the party receiving the order will have to go through customs clearance procedures in Poland, an EU member state, in accordance with EU regulations. In addition, the recipient of the order will be subject to customs clearance procedures in Poland, an EU member state, in accordance with EU regulations, which may complicate the procedures and

cause confusion. Therefore, it is necessary to set trading terms as “D” (or trading term “C” with additional conditions) and ensure that the party receiving the order makes arrangements for transportation to the unloading point in Poland, while at the same time setting conditions that do not impose excessive risks on the party receiving the order, including additional storage costs, extended transportation periods, and additional fuel costs, so that the bid amount is within a reasonable amount. In addition, if the war situation continues, it is appropriate to utilize experienced transporters who are still undertaking transportation to Ukraine.

3-2-4 Procedures and Processes for Commencement of Projects

The procedures for implementing a project when Grant Aid is utilized are as follows:

① An Exchange of Notes (E/N) is signed between the two governments, and a Grant Agreement (G/A) is signed with JICA.

② Based on the E/N and G/A, a Banking Arrangement (B/A) is concluded with a Japanese bank, and a government account is opened with the Japanese bank.

③ JICA selects and appoints the procurement agent. Agent Agreement (A/A) shall be made between concerned party of Ukraine and the procurement agent, in order to implement the project under Japan’s Grant Aid.

④ The procurement agent shall be responsible for finalizing the procured equipment and quantities in consultation with the government agencies of Ukraine, preparing bidding documents including equipment specifications, etc., bidding operations, contracts with suppliers, and delivery management.

3-2-5 Ukrainian Agencies Involved in the Implementation of Grant Aid and Bidding Rules

The following is a list of the Ukrainian concerned parties and the bidding rules under Grant Aid.

(1) E/N, G/A, A/A signatory agencies

According to the Ukraine side, the contact point for international cooperation in the field of Mine Action on the part of the Government of Ukraine has been organized as the Ministry of Foreign Affairs and the NMAA Secretariat. On the other hand, taking into consideration the fact that the competent ministries have been the signatories for E/N in the past Grant Aid from the Government of Ukraine, the signatories for E/N, G/A, and A/A for the Grant Aid for this project will be designated by the Government of Ukraine as either the Ministry of Foreign Affairs, Ministry of Finance, Ministry of Interior or SESU as an implementing agency. The signatories of the E/N, G/A, and A/A for the Grant Aid for the project will be designated by the Government of Ukraine.

(2) B/A and government account opening notifiers

The signatories/issuers of B/As with Japanese banks and the notifiers of opening government accounts will be designated by the Government of Ukraine at the time of implementation of past Grant Aid and the conclusion of E/N and G/As, and the name of the bank corresponding to the B/A and the name of the Ukraine government agency that notifies the opening of government accounts will be designated by the Ukraine government.

(3) E/N, G/A, A/A up to and including concerns

Japan's most recent Grant Aid project, the FY2020 Economic and Social Development Program (ESDP), and other Grant Aid projects in the past 10 years did not require parliamentary approval of the E/N or approval of the budget for the entire project, including the burden on the recipient, by the Ministry of Finance and other relevant agencies. The signing and issuance of E/Ns, B/As, and A/As proceeded smoothly. Since there have been no major changes in the legal system related to the commencement of Grant Aid in Ukraine since 2020, when the most recent project was implemented, the signing of E/N, B/A, and A/A is expected to proceed smoothly for Grant Aid for this project as in the past.

(4) Application of Procurement Guidelines

Article 2, paragraph 3 of the Public Procurement Law of Ukraine states that in the case of procurement subject to special procedures stipulated in international treaties, the procurement rules stipulated in the Public Procurement Law do not apply and the international treaties apply. In the past Grant Aid using the procurement agency method, there have been no cases in which the recipient government has requested the application of the Public Procurement Law.

3-2-6 Points to keep in mind when implementing projects

The main points to be considered in the implementation of the project at this time are as follows

(1) Revision of equipment list in response to changes in support needs due to increased contamination of unexploded mines

At this time, the military invasion to Ukraine by Russia, and there is concern that the contamination of mines and UXO may further increase. In addition, donors and international NGOs are actively providing humanitarian assistance to Ukraine for Mine Action. As the contamination situation changes and other donors provide assistance, the equipment and quantities required by Ukraine for mine and UXO clearance activities are also expected to change. Therefore, it should be noted that the equipment (including specifications) and quantities to be procured through Grant Aid are likely to be requested to be revised to the equipment list that meets the needs of SESU based on the most recent needs of the Ukraine at the time of project

implementation upon consultation with SESU at the implementation stage.

(2) Ensure prompt delivery of equipment to Ukraine

This project is to provide equipment and materials to be used for humanitarian demining and UXO removal activities, which are urgently needed in Ukraine, and since demining and UXO removal activities are a prerequisite for reconstruction and rehabilitation of the Ukraine, attention should be paid to ensure prompt delivery of equipment and materials. In the case of implementation under the framework of the Grant Aid, the procurement agent needs to promptly conclude an A/A with the implementing agency after the conclusion of the E/N/G/A and prepare bidding documents based on the revised equipment list and reach an agreement with the implementing agency. Furthermore, in addition to shortening the bidding period by simplifying the bidding process, it is required that the conditions for procurement of equipment should be set in the bidding documents to ensure prompt delivery, such as instructions for staged delivery of equipment, air transportation of equipment in urgent necessity, and use of carriers with extensive experience in transportation to the Ukraine and with local offices in the Ukraine and/or neighbor countries.

(3) Formulation of bidding documents (contract terms and conditions) for Ukraine based on the war situation.

The details of this case are mentioned in the "Points to be Noted Concerning Equipment Transport and Tax Exemption" above. At this point, the military invasion to Ukraine by Russia is continuing, and it is fully assumed that the same situation will exist at the time of bidding. Therefore, it is highly necessary to prepare bidding documents for Ukraine with contract terms and conditions that enable bids from bidders on the premise that additional costs associated with the emergence of risks affected by the war situation will be handled by appropriating Grant Aid. It should be noted that it is highly necessary to prepare bidding documents for Ukraine that set contract terms and conditions under which bids can be accepted from bidders.

3.3. Project Proposal for Technical Cooperation

3-3-1 Formation of Project Proposals through Technical Cooperation

(1) Policies of Japan's Technical Cooperations for Ukraine

There is a huge need for assistance in humanitarian Mine Action in the context of the ongoing Russian military aggression against Ukraine. Japan's assistance to date through Technical Cooperations in the field of mines and UXO in conflict-affected areas has included support for humanitarian Mine Action activities after ceasefires, and South-South cooperation including Cambodian Mine Action Center (CMAC) and other resources has also been successful. On the other hand, Ukraine is currently under a wartime situation, and although there are enormous needs

for assistance, it is difficult for the people engaged in Japan's Technical Cooperations to work in Ukraine. Therefore, it is appropriate to formulate flexible Technical Cooperation plans, keeping in mind the approach of implementing Technical Cooperations in phases according to each situation, from those to be implemented at the time of military invasion to those to be implemented after the military invasion is over.

(2) Technical Cooperations underway for SESU

As a Technical Cooperation for Ukraine, where humanitarian Mine Action are urgent issues, JICA and SESU concluded the Minutes of Discussion (R/D) on January 10, 2023 on the Technical Cooperation "Capacity Enhancement of Humanitarian Mine Action Project" (duration: 1 year and 7 months). Under this Technical Cooperation, a truck with a crane, which is an Isuzu Motors truck with a Tadano crane attached to it, will be purchased for the purpose of enhancing the capacity of SESU to transport processed explosive devices. This Technical Cooperation is an emergency maintenance of vehicles that meet the support needs of SESU by flexibly utilizing the framework of the Technical Cooperation scheme. This is an example of how a technical project can be implemented under these circumstances.

(3) Challenges in Mine Action and needs/opportunities for Technical Cooperation

The urgent issue is to urgently respond to the huge number of landmines and UXOs that continue to increase day by day. SESU officials showed strong interest in demining equipment during the CMAC training in Cambodia for the pilot project in this study and during the visit to Japanese manufacturers of demining machine. In addition to the current situation where landmines and UXO such as anti-personnel mines with vibration sensors, remote anti-personnel mines, and improvised explosive devices (IEDs) are becoming more diverse and sophisticated as military invasions become more prolonged, landmines that intentionally target deminers and plastic anti-tank mines that are difficult to detect (with a metal detector) are being used to clear landmines. In addition, landmines that intentionally target deminers and plastic anti-tank mines that are difficult to detect (with metal detectors), etc., require the study of new methods and new technologies to deal with such situations that go beyond conventional experience and knowledge. In this regard, expectations related to support from Japan were expressed by SESU officials during the follow-up training conducted in Poland, and the possibility of an effective response combining multiple tools such as ALIS and demining machines was also presented by both the Japanese and CMAC sides. The needs of SESU for different stages of Mine Action identified from the survey so far are summarized in the figure below.

	Rapid response / Humanitarian Demining		
Area of Cooperation	Stage I (1-2 years)	Stage II (2-7 years)	Stage III (7-10 years)
ALIS	✓ Use ALIS as a metal detector ✓ Detect specific mines using GPR? ✓ Safer working environment for deminers	✓ Efficient mine detection by advanced dual sensor? ✓ For QC/QA?	✓ Efficient mine detection by advanced dual sensor? ✓ For QC/QA?
Demining Machine	✓ Removing rubbles including ERW?	✓ Efficient mine clearance by advanced functions?	✓ Efficient mine clearance by advanced functions?
Other Equipment	-	✓ Robo-tech demining ?	✓ Underwater demining ?
Institutional Strengthening (IMAS, DX, etc.)	✓ Develop SOPs for rapid response? ✓ Develop effective use of different demining tools	✓ Develop and/or update SOPs corresponding IMAS?	✓ Institutional strengthening for utilisation of new demining technologies

Figure 3-6 SESU's Mine Action Needs by Stage

SESU classifies demining operations into three stages: Stage I, which is the emergency response in wartime to demining in urban areas and major infrastructure in recaptured areas; Stage II, which is humanitarian demining in agricultural land and general land; and Stage III, which is humanitarian demining in natural areas, including underwater. How long it will take to transition to each stage depends on the war situation, but for the time being, operations are expected to focus on emergency response, and once the situation settles down, such as with a ceasefire, operations are likely to gradually shift to humanitarian Mine Action operations. On the other hand, until the war situation is settled down, it is difficult to dispatch the experts including Japanese nationals to Ukraine to implement Technical Cooperation due to security concerns, so for the time being, online or by inviting counterparts to Japan or third countries to implement the training would be a realistic method of Technical Cooperation. However, SESU staff who are busy with emergency response activities have limited time to participate in such training and other activities related to Technical Cooperation, and it is not realistic to invite a large number of staff members to the training in the place where is out of Ukraine. In light of the above, the following possibilities for future Technical Cooperation for Ukraine can be considered.

<Potential for Technical Cooperations

- Technical Cooperation for advanced operation guidance, SOP preparation support, maintenance management, and training for trainers (TOT: Training for Trainers) for advanced operation guidance and maintenance management of Japanese-made demining equipment in cooperation with ALIS developers, CMAC, and Japanese heavy equipment manufacturers under the Mine Action Equipment Improvement Project funded by Grant Aid (short-term and medium-term possibilities). Technical Cooperation (possible short/medium term) for advanced operation instruction and training for trainers (TOT: Training for Trainers) for maintenance management and advanced operation instruction and maintenance management.
- Introduction of the use of Japanese-made demining equipment (ALIS, demining machine, etc.) for emergency response, and hands-on training (for example, how to use ALIS as a metal detector, how to detect special IEDs using its imaging function, how to dispose of debris with deminers, and how to use the equipment to remove landmines and UXO). Effective and efficient combination of such equipment (toolbox development) utilizing CMAC's knowledge (short- and medium-term possibilities)
- New technologies to deal with diversified landmines and UXO (humanitarian purposes, careful consideration of possible military diversion)[2] Technical Cooperation for introduction (medium to long term possibility)
- Technical Cooperation (mid- to long-term potential), leveraging the knowledge of Japanese local governments, firefighters and Self-Defense Forces alumni with experience in disaster recovery and UXO disposal.
- There is also a huge need for assistance related to victim support and EORE, and there is room to utilize CMAC's knowledge and experience and Japanese prosthetic technology in this area (currently supported by other donors and NGOs, which is a mid- to long-term possibility).

(4) High priority Technical Cooperations and future developments

As the Russian military invasion of Ukraine continues, the number of landmines and UXO is increasing day by day and their types are becoming more diverse. Even if the Russian military invasion ends in the near future, long-term efforts will be needed to address humanitarian landmines and UXOs in residential areas, agricultural land, and major infrastructure (gas, electricity, roads, etc.) in order for people to return to normal and safe living conditions. There is an enormous need for equipment and human resources for mine and UXO clearance activities for

[2] If the landmines and UXOs are exposed on the surface and not buried (most of the landmines and UXOs in Cambodia are of this type), it has been suggested that an infrared detection system could be useful, and the detection system being jointly developed by Waseda University, NEC and ICRC deserves consideration for its effectiveness. (Interview with JICA forestry experts dispatched to CMAC)
Also, introduction of the latest technology related to landmine clearance and underwater mine disposal through the use of robot technology. (SESU needs as indicated during the follow-up training)

the foreseeable future.

SESU, which is responsible for humanitarian demining and UXO clearance activities, faces the urgent task of increasing the number of deminers engaged in demining and UXO clearance activities. Although the number of deminers has been increased through intensive training, the introduction of equipment with new technologies (such as ALIS and Japanese-made demining machine) will require the training of personnel and equipment capable of handling such equipment. SOP are required to be in place. Therefore, Technical Cooperations for the development of landmine countermeasure equipment and its efficient and effective use through Grant Aid can be said to be an area of cooperation with high priority for the time being. Figure 3-6 below shows the future development of this Technical Cooperation in this field. This approach can be considered.

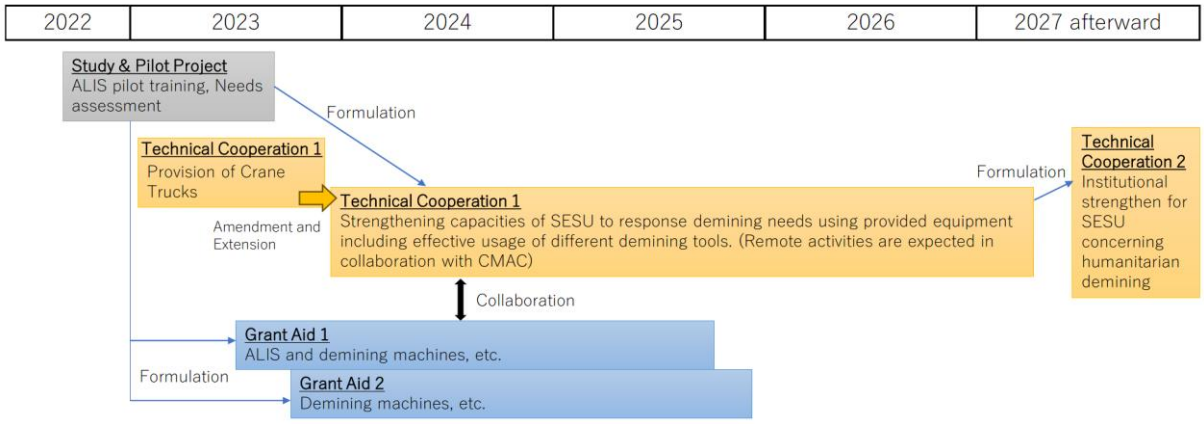


Figure 3-7 Approach to Deployment of Technical Cooperation

Specifically, as shown in Figure 3-7, while utilizing the knowledge gained through on-the-job training in collaboration with CMAC in the pilot training of this study, Technical Cooperation (Technical Cooperation 1) in collaboration with an urgent Grant Aid project for procurement of equipment based on this study (Grant Aid 1) and 2) will be formed and implemented, and through its implementation of Technical Cooperation 1, to formulate and implement a mid-to-long-term Technical Cooperation 2.

3-3-2 Proposed Technical Cooperation

As mentioned above, the Technical Cooperation to improve the technical capacity of the entire organization in the Ukraine side to operate, maintain, and manage the Japanese-made demining equipment to be installed in the urgent project by Grant Aid 1) and 2), and to encourage the efficient and effective use of the equipment, is a high priority from the viewpoint of coordination with Grant Aid and is urgently needed. In terms of coordination with Grant Aid, Technical Cooperations have a high priority and there is an urgent need for such projects. Therefore, in order to promptly implement

the said Technical Cooperation, it is desirable to cooperate with it as a scoping change of the above-mentioned Technical Cooperation currently being implemented. The proposed project plan for this Technical Cooperation is as follows. For details, please refer to the "Draft Outline of Technical Cooperation and Draft PDM" in Attachment 3-2.

(1) The Project for Strengthening Capacity on Humanitarian Mine Action and UXO Clearance (to be addressed through changes to the ongoing technical proposal)

1) Business Overview

Provide technical assistance to SESU to help strengthen effective mine and UXO response capabilities, including TOT (training of trainers) for certification and operation and maintenance (O&M) of equipment to be provided through Grant Aid, such as mine detection equipment ALIS and demining equipment, and preparation and updating of SOP.

2) Implementation period

Three years (January 2023 - July 2027, including the period of the current implementation of the technical proposal)

3) Implementing agency: SESU

4) Cooperating organization

CMAC

Third-country training organizer such as Solidarity Fund (Poland)

Japanese related organizations (ALIS developers, mine detection equipment manufacturers, demining machine manufacturers, etc.)

5) Beneficiary

Direct beneficiaries: SESU counterparts and trained deminers

Indirect beneficiaries: Residents of areas contaminated by mines and UXO

6) Project Objectives and Superior Goals

Project Goal: The effective operational capacity of Mine Action tools for humanitarian Mine Action by SESUs will be enhanced.

Overarching Goal: SESU's performance in Mine Action will be improved.

7) Results

Outcome 1: Existing systems for operation and maintenance of provided equipment are reviewed.

Outcome 2: The capacity of SESU staff and departments to properly utilize the equipment provided is strengthened.

Outcome 3: Mechanisms for effective operation of equipment are developed.

8) Activity

1-1: Deliver equipment (truck with crane) needed to strengthen SESU structure.

1-2: Confirm the system and procedures for removal activities using newly introduced equipment

(dual-sensor mine detectors, heavy demining equipment, etc.).

1-3: Review existing SOP and identify areas for updating for certification of newly installed equipment.

2-1: Identify training needs for newly installed equipment.

2-2: Select a training trainer for newly installed equipment.

2-3: Provide training (TOT) to meet identified training needs (in collaboration with CMAC or Japanese manufacturers).

2-4: Develop training courses for newly installed equipment at SESU (HDC).

2-5: Conduct training courses on newly introduced equipment at SESU (HDC).

2-6: Conduct follow-up training for trainers who received TOT to improve the training course (Ukraine or Cambodia, Japan).

3-1: Examine the effective operation of different mine countermeasure tools in the context of the actual situation in Ukraine.

3-2: Develop a combination of mine countermeasure tools (toolbox) needed for each stage of Mine Action.

3-3: Create and update SOP, taking into account the toolbox developed.

3-4: Practice Mine Action using the developed toolbox.

9) Input (personnel, etc.)

Japan side: Japanese experts (operation chief/capacity enhancement/donor coordination, mine countermeasure equipment/operation and maintenance, ALIS operation, SOP development support, training plan/operation support), training in Japan, training in third Ukraine, training equipment

Ukrainian side: Assignment of counterparts, implementation of training at SESU (HDC)

10) Implementation structure

The possible implementation structure is shown in the figure below. Cooperation by the Polish government is shown as a possibility for cooperation in neighboring Ukraine. If the current war situation continues for the time being, experts from Japan and third Ukraine will not be allowed to enter Ukraine for security reasons.

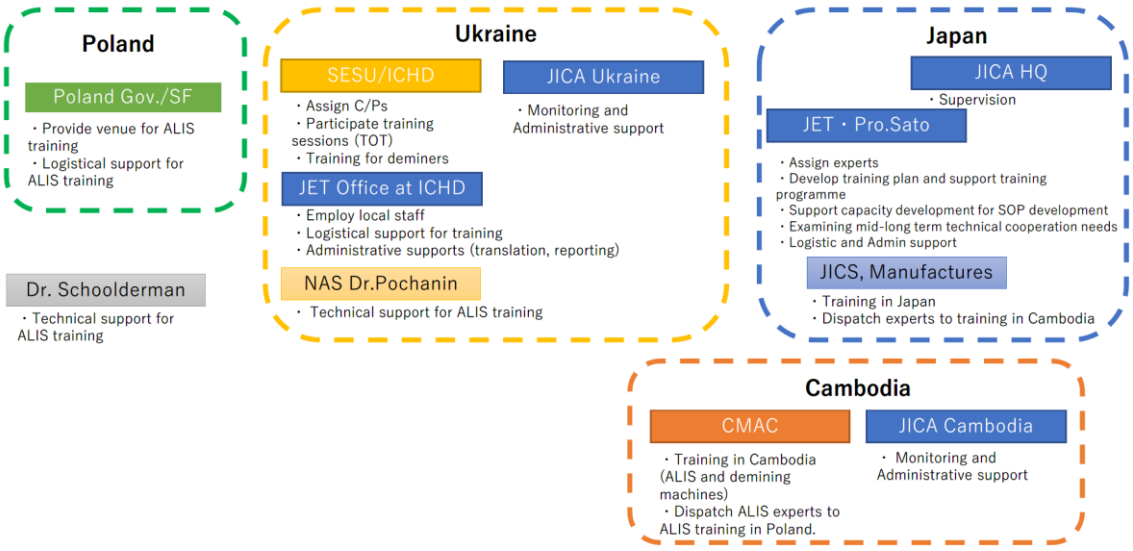


Figure 3-8　Draft Implementation Structure of Technical Cooperations

11) Matters to be paid attention

- In cooperation with CMAC, which has actual operational experience with the equipment provided by the Grant Aid, experience sharing and on-the-job training on the use of the equipment and preparation of SOP can be conducted in third countries including Cambodia. The usefulness of the technical training on landmine detection equipment (ALIS) in the field in Cambodia and in test lanes in Poland was acknowledged in the pilot training conducted in this study.

- When technical training is outsourced to CMAC, it is possible to provide technical guidance, but there are limitations in customizing the training to fit the context of the Ukraine. In developing a training plan, it is essential that the experts thoroughly discuss the content of the training with SESU and CMAC in advance, develop a training plan that better meets the needs of the field, and take on facilitation during the introductory and review sessions during the training as well.

- For on-the-job training in Cambodia, it would be useful to have on-the-job training by the developers and manufacturers of the equipment used for detection and clearance. It would be beneficial to dispatch Professor Sato of Tohoku University to provide on-the-job training on the ALIS landmine detector and engineers from the manufacturers of demining machine to provide on-the-job training on landmine removal equipment.

- The training in Japan is expected to include training in the operation of equipment at a demining machine manufacturer, and experience sharing by local governments, fire departments, and self-defense forces in the removal of earthquake debris containing

hazardous and toxic materials such as asbestos, and the disposal of UXO. It is essential to extract experiences that can be used as a reference in Japan and reflect them in the training plan, taking into account the diversified issues faced by Ukrainians in dealing with landmines and UXO in advance.

- During SESU's visit to Japan for this study, SESU visited Komatsu's headquarters and Nikken's facilities, where they were briefed mainly on bulldozer-type and hydraulic excavator-type demining machine. SESU was particularly interested in the hydraulic excavator-type demining equipment and asked about safety, fuel efficiency, and the availability of distributors for repairs. Regarding training in the operation of heavy equipment, Nikken in particular was positive that such training is possible both in Japan and in the field. According to a trainee (who has experience operating hydraulic excavators in Japan), training is necessary, but it is not difficult for those who have experience operating heavy equipment to acquire skills in a short period of time.

- In formulating the training plan, it is necessary to consider how to use ALIS (Advanced Landmine Detection System), demining equipment, and explosive detection technology using drones, etc., for on-site operations (combination of equipment and methods, etc.), appropriate team organization, and combination with existing systems, with an eye to both emergency response and medium- to long-term humanitarian Mine Action. The combination of existing systems and appropriate team organization should also be considered.
- In supporting the preparation and revision of SOP, it is important to ensure that they are compatible with IMAS, the international standard. On the other hand, the countermeasures against landmines and UXOs in Ukraine are a new challenge for the international community, and it is possible to develop SOP that meet Ukraine's current situation and, conversely, reflect them in international standards. In this regard, Dr. Schoolderman, with whom we collaborated during the pilot training, is an expert in this field and can be expected to provide input in this area.

- SESU staff who are busy with emergency responses have limited time to participate in project activities such as training. In particular, on-the-job training that needs to be conducted in Japan and third Ukraine requires a certain amount of time, so it is necessary to target a limited number of people and devise ways to minimize the training period, including travel time. Especially for portable mine detectors (ALIS), it is desirable to conduct training in neighbor countries of Ukraine as long as there are no customs clearance issues.

- It is desirable to follow up on the training of trainers (TOT) after the arrival of procured equipment under the Grant Aid. Although SESU has only two training centers for Mine Action,

training facilities for firefighting exist in all provinces. Japanese experts could be dispatched to training centers in places such as Kharkiv, or if it is difficult for Japanese to give direct explanations due to safety concerns, SESU facilities in states where safety is ensured could be used. If this is also difficult, especially with regard to ALIS, it would be an option to seek cooperation from the Polish government and others with whom a relationship has been established through this study, and follow up in neighboring Ukraine, such as Poland.

- As for humanitarian mine clearance activities, they tend to stagnate during the winter months. If there is snow cover, or if the ground is frozen more than 1 cm above the ground, removal activities are not supposed to be conducted. Conversely, since demining activities tend to be less busy during this time, it is an appropriate time to conduct training in Japan and third Ukraine (although currently only emergency response is conducted, so it is busy even in winter). In terms of sharing experience in demining during the winter, training could be conducted in Croatia or Bosnia and Herzegovina, where the climate is relatively similar and Japanese equipment has a good track record.

- Although there is a mix of native Ukrainian and Russian speakers in Ukraine, the generation that has been educated since Ukraine's independence in 1991 can handle training and office work in Ukrainian without problems. Since the technical assistance project will be implemented mainly through face-to-face meetings with SESU over the medium to long-term using the Ukrainian language, it is necessary to utilize Ukrainian interpreters to ensure smooth communication.

- During the implementation process of the technical project, it is desirable to identify further support needs for Mine Action equipment through Grant Aid and medium- to long-term support needs in this field, which will lead to the formation of a project.

(2) Humanitarian Mine Action Capacity Enhancement Project (Full-scale Phase 2, after ceasefire)

However, we will focus on improving the organizational structure of SESU, and from the perspective of strengthening countermeasures against various types of landmines and UXO, we will consider training programs for the introduction of new technologies and other measures to strengthen the capacity of SESU to respond to these issues, In addition, from the viewpoint of strengthening countermeasures against various types of mines and UXOs, support for capacity building, such as training for the introduction of new technologies, will be considered. Basically, it is anticipated that activities will make use of the experience and knowledge gained from the full-scale Phase 1.

URL list

No.	Source URL	Remarks
3-1	https://www.jica.go.jp/jica-ri/IFIC_and_JBICI-Studies/jica-ri/publication/archives/jica/field/pdf/2001_03a.pdf Confirmed November 24, 2022	JICA project strategy study, peacebuilding report (2001)
3-2	https://www.mext.go.jp/component/a_menu/science/detail/__icsFiles/afieldfile/2015/05/19/1242353_002.pdf Confirmed January 23, 2023	Materials on the MEXT website
3-3	http://rastamozhki.net/certification-of-vehicles-euro-5/ Confirmed December 28, 2022	Дешевле Rastamozhki.net's homepage
3-4	https://zakon.rada.gov.ua/laws/show/927-2013-%D0%BF#Text Confirmed December 28, 2022	HP of Верховна Рада України 1994-2022
3-5	https://www.qfrom.com/certificateconformitytechnicalregulation/declarationofconformityto-ukraina.php#:~:text=Ukraine%20Declaration %20of%20Conformity.%20The%20Document%20Declaration%20of,with%20the%20standards%20and%20requirements%20established%20by%20law 2022 Confirmed December 28, 2022	UkrSEPRO Certification Description HP
3-6	(https://vosocc.unocha.org/GetFile.aspx?file=114307_20220315_Ukraine_-_Importation_and_Customs_Processes.pdf confirmed December 28, 2022)	Material on UNOCH's website

(Remark) The URLs of some government agencies in Ukraine have been disabled by the government of Ukraine since the survey period.

<Appendix>

Attachment 3-1: List of SESU Requested Equipment (Tentative Japanese Translation)

Attachment 3-2: Technical Cooperation Summary (Draft) and PDM (Draft)

4. Support for certification of mine detector ALIS (pilot project)

4.1. Basic Information on Mine Detectors

4-1-1 Challenges of Metal Detectors and Development of Dual-Sensor Mine Detectors

Metal detectors are widely used at demining sites to detect minute metal fragments contained in anti-personnel mines. However, because the electromagnetic induction type sensors of metal detectors react to metal fragments other than mines, it is necessary to excavate and confirm the actual objects buried in mines that the metal detectors have detected, which requires an enormous amount of time for excavation and removal work. This requires an enormous amount of time for excavation and removal work. Furthermore, as shown in Table 4-1 below, most of the buried objects excavated are metal fragments that are not mines or UXO, which is a major factor hindering the efficient implementation of demining operations.

Table4-1 Antipersonnel Mine Removal Results by CMAC (Percentage of Metal Fragments)

Year	Clearance area (ha)	Anti-personnel mine (pieces)	Piece of metal (pieces)	Percentage of metal fragments
1998-2002	5,277	93,195	91,795,742	99.89%
2003-2006	6,667	175,705	91,813,864	99.80%

(Source: Prepared by the survey team based on the data in No.2-3-5 and No.2-3-6, distributed by CMAC at the ALIS Operational Training)

In response to these issues, a dual-sensor type mine detector was developed to increase the efficiency of mine detection in demining operations by adding the function of a ground-penetrating radar sensor, which recognizes the shape of underground buried objects, to a metal detector.

4-1-2 Comparison of ALIS performance with ordinary dual-sensor landmine detectors

(1) Dual-sensor landmine detector

Other landmine detectors with dual sensors include the US-made MINEHOUNDS, the UK-made HSTAMIDS, and the Australian-made MINELAB. ALIS is the only hand-held, dual-sensor landmine detector in the world that can generate a three-dimensional image of buried mines and allow the user to check the image at hand.

(2) ALIS Features

ALIS measures the movement of ground-penetrating radar sensors using a 3-axis accelerometer and performs signal and image processing using advanced algorithms to image the 3-D projectile shape and display images on a 4.7-inch tablet in color to reduce blurring caused by reflections from moisture in the ground. The images can be displayed in color on a 4.7-inch tablet.

(3) How to use ALIS

The shape and weight (approximately 3 kg) of ALIS are no different from those of conventional metal detectors, making it easy to use in the field. Signal processing is performed by a tablet attached to the pole of the mine detector, and the 3D image is immediately displayed in color on the tablet, allowing the remover to check the image of underground buried objects while conducting the detection operation.

Table 4-2 Comparative Table of Metal Detectors and Dual-Sensor Mine Detectors

Item	metal detector	Dual-sensor landmine detector	
		ALIS	Products of other companies
Sensor	Electromagnetic induction type center	Combined electromagnetic induction and ground-penetrating radar sensor	Combined electromagnetic induction and ground-penetrating radar sensor
Ancillary Functions	N/A	3-axis accelerometer function SAR processing	N/A
Image Processing	N/A	Color LCD display Imaging and visualization of buried objects is **three-dimensional (3D)**	Monochrome LCD display Imaging and visualization of buried objects is **two-dimensional (cross-sectional)**
Detection Method	Detects metallic buried objects in the ground	Detect and manipulate underground metallic buried objects for imaging	Detect and manipulate underground metallic buried objects for imaging
Metal Detection	◎	◎	◎
Plastic Mine Detection	×	'◎	○
Buried Object Imaging Accuracy	×	'◎	△
Operational Efficiency	×	'◎	○
Operational Safety	×	'◎	○
Price	Low	High	High

4-1-3 ALIS Demonstration in Cambodia

(1) Demonstration experiment in cooperation with CMAC

With the cooperation of CMAC, an ALIS demonstration was conducted at CMAC's test site from February 2018 to December of the same year using multiple types of test lanes that replicated typical Cambodian soil and inert mines. The removal crew first used the metal detector function of ALIS to locate the buried objects underground, then used ground-penetrating radar sensors to detect the shape of the objects, which were then imported into ALIS as image data and displayed

in color on an LCD monitor on a tablet for analysis to determine whether the objects were mines or not. Demonstration tests confirmed that ALIS can identify whether a buried metal fragment is a landmine or not at a high rate. When it is unclear whether a piece is a landmine or not, careful work is required, and it can take more than 10 minutes to dig out the buried object.

(2) Certification by CMAC

After the above demonstration tests confirmed the usefulness of ALIS as a mine detector, CMAC began using it in minefields in Cambodia in January 2019, and ALIS was officially certified by CMAC in June 2022.

4-1-4 Results and plans for ALIS introduction

The following table shows the actual and planned introduction of ALIS for each country (as of June 2023).

(1) Cambodia

- Implementing agency：CMAC
- Number of units introduced: 19 (in addition to the 7 units of equipment used in the demonstration experiment, 12 units were procured through Grant Aid in February 2023)

(2) Bosnia and Herzegovina

- Implementing agency: North Atlantic Treaty Organization (NATO)
- Number of units introduced: 4 (4 units have been procured and installed under the NATO research program on demining (Science for Peace and Security, G5607).

(3) Colombia

- Organizations: Colombian Campaign Against Mines, an international NGO, and National University of Colombia
- Number of units introduced: 2 units (1 unit each)

(4) Ukraine

- Implementing agency: SESU
- Number of units introduced: 4 (already procured by JICA)

4-1-5 Development of ALIS SOP

(1) Status of ALIS SOP development

CMAC's SOP for ALIS was developed through a demonstration project, and NATO's SOP for ALIS in Bosnia and Herzegovina is being developed through a research program on demining (Science for Peace and Security, G5607).

(2) SOP positioning and structure developed by CMAC

The SOP for ALIS developed by CMAC is treated as an annex to the SOP describing demining operations, and is structured as follows.

1) How to assemble ALIS: Description of the components and their assembly methods
2) How to start: Explanation of how to start the Control Unit of the ALIS main unit and the attached tablet, and how to connect both of them via WIFI.
3) Parameter setting method and operation check method: Correction method based on soil characteristics of the target site and explanation of operation check method of metal detection function
4) Method of operation (metal detection → GPR detection → image analysis): The metal detection function of ALIS is used to identify the location, and the GPR sensor is used to move 6 times in parallel in a 50 cm square around the identified location. Explanation of a series of ALIS operation methods and points to note (tips on how to distinguish data images of mines and metal fragments, etc.), such as capturing data on buried objects in ALIS, displaying the captured data images on a tablet screen, and analyzing the images.
5) Search method: Description of the search operation for buried objects, refer to SOP (109) for demining operations.
6) Maintenance method: Explanation of points to be considered for post-use maintenance
7) Safety management methods: Explanation of safety management considerations, such as wearing protective gear when operating ALIS
8) How to obtain a break: Explanation of when to take a break during ALIS operation.

Note: There is no mention of 100% removal of metal fragments on this SOP.

(3) Positioning and structure of SOP being prepared in NATO's research program on demining

The SOP being developed for the NATO training program on demining in Bosnia and Herzegovina is a revised version of the Ukraine's existing SOP for manual demining using metal detectors, and will be finalized based on verification at actual demining sites.

4-1-6 Development of Next-Generation ALIS

During the follow-up training held in July 2023, Professor Sato gave an introduction to the next generation ALIS, which is being developed for introduction in the near future. The following two main functions are planned to be added.

(1) Utilization of GNSS information

The installation of GNSS (Global Navigation Satellite System) will make it possible to obtain more precise ALIS positional information and greatly expand the possibilities for utilizing the acquired data.

(2) Cloud-based software management (ALIS CLOUD)

By connecting each ALIS to ALIS CLOUD in the cloud space, software management (registration and updating of account information, etc.), which is currently done manually, will become easier, and if ALIS, which contains important information on demining, were to be stolen, it will be possible to stop its function. ALIS, which contains important information on landmine clearance, can be deactivated, in case it is stolen.

In the future, management of mine detection performance and collection of data for automatic mine AI determination are also being considered.

(Collection List No. 4-2-1-3)

4.2. Certification support (pilot projects)

4-2-1 Pilot Project Implementation Details

(1) Purpose of implementation

Confirm the effectiveness of ALIS and identify and analyze issues in Ukraine, where countermeasures against humanitarian mines and UXO are a major challenge.

(2) Outline of implementation

The pilot project will be implemented in the following four phases

Step 1: ALIS Operational Training (January 2023)

Step 2: Support for application to demining sites in Cambodia (to be implemented in July 2023)

Step 3: Support for SOP development and approval process (implemented from February to July 2023)

Step 4: Follow-up training for ALIS actual handling (conducted in July 2023)

4-2-2 Step 1 ALIS training for handling actual ALIS equipment

(1) Purpose of implementation

1) Examine the effectiveness and usefulness of ALIS in Cambodia through basic operation training of ALIS for SESU personnel actually engaged in mine and demining activities in Cambodia.
2) To hear directly from SESU staff on the future introduction of ALIS to UKRAINE, including the results of training using actual equipment, and to consider the possibilities and challenges.
3) Gather information on the operation status of SOP for the introduction of the machine in Cambodia.
4) In Grant Aid and Technical Cooperation, consider the possibility of cooperation with CMAC, which has extensive experience and knowledge in mine clearance equipment, etc., in addition to ALIS, in cooperation with South-South cooperation.

(2) Date and time of the event

1) Dates: Monday, January 16, 2023 - Friday, January 20, 2023

2) Dates: As follows

Date	Training Contents	Training place
January 16, 2023	Opening Ceremony and Lecture	Kampong Chhnang
January 17, 2023	ALIS Basic Operation Training	Kampong Chhnang
January 18, 2023	Training to confirm proficiency in ALIS operation	Kampong Chhnang
January 19, 2023	CMAC Mine Clearance Activities	Battambang
January 20, 2023	Visit to Peace Museum and Closing Ceremony	Siem Reap

(3) Location

The training was conducted at the following CMAC facilities in Cambodia.

1) Technical Institute of Mine Action (Location: Kampong Chhnang)

2) Demining Unit 2 (Location: Battambang)

3) Peace Museum and Demining Unit 4 (Location: Siem Reap)

(4) Lecturers

1) Motoyuki Sato: Professor, Tohoku University (ALIS operation guidance and equipment setup guidance)

2) Mr. Srey Rithisak, Mr. Soeum Samrach, Mr. Mong SokunTherath: CMAC (ALIS operation guidance and equipment setup guidance)

(5) Participants

SESU training participants: 10 in Table 4-3

(2 staff: management class, 8 deminers: leader class)

Table 4-3 SESU's Participant List for Operational Training

No.	Position	Remarks
1	Deputy Chief, Explosive Ordnance Response and Special Operations, Emergency Department	Management class
2	Head of International Technical Assistance Group, EU Integration and International Cooperation Department	Management class
3	Deputy Director, Regional Center for Humanitarian Mine Action and Emergency Response	Leader class
4	Leading Expert, Mine Action Quality Control Department, Humanitarian Mine Action and Emergency Response Regional Center	Leader class
5	Head, Explosive Ordnance Disposal and Special Diving Mission Group, Humanitarian Mine Action and Emergency Response Regional Center, Humanitarian Mine Action Unit	Leader class
6	Humanitarian Mine Action and Emergency Response Regional Center Humanitarian Mine Action Unit Explosive Ordnance Disposal and Special Diving Mission Group Mine	Leader class

	Clearance Personnel	
7	Director, Explosives Response Group, Mobile Rescue and Emergency Response Center	Leader class
8	Mobile Rescue and Emergency Response Center, Deputy Group Leader, Explosive Ordnance Response Task Unit	Leader class
9	Head, Explosive Ordnance Response Unit, Explosive Ordnance Response Group, Khmelnitsky Oblast Emergency Response Team	Leader class
10	Khmelnitsky Oblast Emergency Response Team Explosive Ordnance Countermeasures Group Explosive Ordnance Countermeasures Unit Mine Clearance Officer	Leader class

(Remark) The names of SESU participants are not listed for safety reasons.

(6) Technical support personnel

1) Dr. Gennadiy Pochanin (National Academy of Sciences of Ukraine):

Responsible for: Soil parameter setting (responsible for technical support in Ukraine after introduction of ALIS, such as soil parameter setting)

2) Dr. Arnold Schoolderman (Netherlands Organization for Applied Scientific Research: TNO) : *Online participation

Responsibilities: Support for SOP formulation for ALIS (Based on experience as a project manager of the NATO training program (Science for Peace and Security) in Bosnia and Herzegovina, responsible for supporting SOP formulation for ALIS after its implementation (responsible for supporting the formulation of SOP after the introduction of ALIS in Ukraine.)

(7) Observer

1) Cpt. Marek SADOWSKI: Polish Police (Polish Ministry of Interior)

2) Lt. Leszek CZERSKI: Polish Police Training Center (Polish Ministry of Interior)

(8) Contents of training for handling actual equipment

1) Lecture content

The content of the lectures to the training participants was as follows.

(a) Pilot Project to introduce ALIS to SESU by JICA

(b) Experience exchange "Situation in Ukraine" by SESU

(c) Experience exchange "Mine Action in Cambodia by CMAC

(d) Introduction to ALIS by Prof. Sato

(e) Utilizing ALIS in demining operations and ALIS SOP by CMAC

In Step 1 of the ALIS training, the lecturers used the ALIS training materials Collection List No. 2-3-1 to No. 2-3-7) prepared by the lecturers to explain in detail the functions and features of ALIS as a landmine exploration device and the demining activities conducted by CMAC using ALIS. The presentation included a detailed explanation of the functions and features of ALIS as a landmine surveyor and the demining activities using ALIS by CMAC.

2) ALIS basic operation training

The basic ALIS operation training for SESU participants was divided into three groups. The contents of the basic operation training for the training participants were as follows:

(a) Based on the ALIS manual (in Ukrainian) and tutorial video (in Ukrainian) prepared by Prof. Sato, Prof. Sato and CMAC instructors explained the basic structure and assembly of the equipment and instructed the training participants from SESU on how to operate basic functions.

(b) Training participants from SESU conducted basic ALIS operational training in three outdoor calibration lanes (1.5m x 1.5m) set up for mine detection training.

3) Training in the operation of the metal detection function of ALIS

(a) Mine detection training drills were conducted on three test lanes (5m x 1.5m) prepared outdoors to locate pre-buried simulated mines, UXO, and metal fragments.

(b) In order to reproduce the situation in Ukraine as much as possible, buried materials were selected to include Soviet-made simulated anti-personnel mines (PMN2, OZM-3), simulated anti-tank mines (TM46), hand grenades (F1), and other metal fragments for metal detection operation training.

4) Scanning for buried objects using ground-penetrating radar function

The training involved using the ALIS ground-penetrating radar function to scan for buried objects that responded to metal detection, and displaying the images on the ALIS tablet (display).

5) Analysis of scanned data

Training was conducted to identify buried objects as metal fragments, hand grenades, or land mines, using functions such as the ability to display image images captured by ALIS at different depths.

6) ALIS operation proficiency training

The training was conducted to check the proficiency of SESU participants by using ALIS to search for buried objects in three test lanes (5m x 1.5m) with no knowledge of the buried objects.

7) Introduction of CMAC demining activities

At CMAC's demining training center in Kampong Chhnang, CMAC provided a detailed explanation of the training program that utilizes mine detection dogs and demining equipment at the site. At a demining site in Battambang, CMAC deminers introduced their mine detection method using ALIS. In Siem Reap, the participants visited CMAC's Peace Museum and learned about the history of demining activities in Cambodia, as well as the detection and removal methods using ALIS, mine detection dogs, and demining equipment. The ALIS equipment was demonstrated by SESU participants who had received training in its operation, and the degree of equipment mastery was confirmed.

(9) Training Program in Japan

1) Date: January 23-24, 2023

2) JICA Headquarters: Exchange of opinions on Grant Aid and Technical Cooperations, Chairman Tanaka, Courtesy call on Director Ando, press conference

3) Ministry of Foreign Affairs of Japan: Discussion with Mr. Endo, Director-General of the International Cooperation Bureau, regarding Japan's assistance, press conference

4) Komatsu Corporation: Inspection of the company's mine clearance efforts and demining equipment

5) Nikken Corporation: Introduction of the company's landmine clearance efforts and the demining machine, observation of actual equipment demonstration and press conference

(10) Results of training in handling actual equipment

- SESU participants' average detection result of simulated mines was over 80%, and SESU participants' average image analysis result of simulated mines was about 68%, which were sufficient training results for the first training on handling actual landmines. This was due to the training content, which was a condensed version of CMAC's valuable experience and knowledge under the guidance of Professor Sato, the practical and enthusiastic instruction by the CMAC trainers based on their own experiences in the mine clearance field, and the enthusiasm of all SESU participants to learn new technologies and skills, as the emergency response team, in order to contribute to their home Ukraine. The enthusiasm and commitment of all SESU participants.
- SESU participants made positive comments on the usefulness of ALIS and its introduction in Ukraine, and SESU participants reported that they immediately started to develop a training plan for ALIS, which will be maintained at SESU after their return to Ukraine. To support SESU's efforts, the Ukrainian-language ALIS operation manual and tutorial video prepared by Prof. Sato and the ALIS SOP (English version) prepared by CMAC were shared electronically with SESU participants.

(11) Other results

- In implementing this training program, CMAC utilized its experience and knowledge of training in Laos and Colombia, and mobilized its entire organization to prepare training materials, curriculum, and test lanes for the training SESU, as well as to coordinate the implementation. The training proceeded smoothly. Through this training program, a strong relationship of trust was established between CMAC and SESU, and the foundation for future South-South cooperation in Grant Aid and Technical Cooperation was built.
- There was strong interest in the use of the dual-sensor technology, especially in the medium- to long-term span of humanitarian Mine Action activities after the end of the military invasion.
- SESU participants, who were briefed by CMAC at a minefield in Cambodia on how to utilize the demining equipment to be delivered to Ukraine through Grant Aid, showed great interest in the

demining method that combines ALIS with demining equipment and mine detection dogs. They also actively participated in demonstrations of actual equipment during their visit to Japan at a demining equipment manufacturer, confirming their high expectations for demining equipment.

(12) Challenges in implementing ALIS

As a result of interviews with SESU participants and Professor Sato after the training for handling this actual equipment, the following issues were indicated when introducing ALIS.

- Although SESUs were able to acquire basic ALIS operations within the limited period of this training, more advanced training for SESUs is needed because further improvement of image scanning technology and image analysis capability will increase the efficiency of landmine detection results. This issue will be addressed in "Step 4: Follow-up Training for Handling ALIS Equipment".
- In order to properly set ALIS parameters and maximize its capability, it is important to conduct training in test lanes using soil in multiple areas of mine detection and clearance in Ukraine. Since it is difficult for lecturers to enter the Ukraine, ALIS parameters should be set to suit the Ukraine by analyzing the geology of the demining site and measuring the moisture content. Step 4: Follow-up training for handling ALIS equipment
- SESU participants commented that the ALIS methodology is complex and advanced and requires time to master, and that it is unknown to what extent it can be adapted to the differences in soil and topography between the rural areas of Cambodia, where the training was conducted, and the urban areas expected in Ukraine. Furthermore, it was stated that SESU does not have SOP for demining equipment, etc. at this time. In addition to the measures in "Step 2: Support for Application to Mine Clearance Sites in Ukraine" and "Step 4: Follow-up Training for Handling ALIS Equipment," it is appropriate to address this issue in cooperation with Japan's Technical Cooperation program since it requires multilateral efforts over the medium to long term.

(Reference) The following comments were made by other participants on issues related to landmine clearance activities in general. The government of Ukraine and donors are working on medium- and long-term plans for humanitarian demining, and are also working on the development of human resources, equipment, and training centers to resolve these issues.

- The current situation is that only emergency response is in place and humanitarian mine clearance is not being done.
- Lack of training on equipment provided from overseas

4-2-3 Step 2 Support for application to demining sites in Ukraine

1) Following the completion of the delivery of four units of ALIS to Ukraine (April 2023), for which procurement procedures were carried out by JICA, SESU, with the support of Dr. Pochanin, developed its own training program (draft) and participated in training at SESU's HDC on

handling the actual equipment in Cambodia. The head of the Quality Control Department has taken the lead in testing the use of ALIS according to the geological and soil conditions of the demining sites in Ukraine. Pilot use of ALIS by SESU deminers at demining sites has also started, and following the results of these tests, an online ALIS Technical Conference was held on May 10, 2023, as follows ALIS Technical Meeting was held online on May 10, 2023 to share the results of SESU tests, exchange opinions between SESU and ALIS experts, and confirm the future process for the full-scale deployment of ALIS at demining sites.

(a) Date and Time: May 10 (Wed), 2023, 16:30-18:00 (Japan)/10:30-12:00 (Ukraine)

(b) Participants: SESU, Prof. Sato, Dr. Schoolderman, Dr. Pochanin, CMAC, JICA, JICS

(c) Objective: - Report SESU test results and training plans

Exchange of opinions at the technical level between SESU and the team of experts

Confirmation of work schedule for follow-up training

2) Since GPR, an important function of ALIS, is affected by the moisture content of the soil, it is very important to set parameters appropriate to the geology and soil conditions of the actual Ukrainian demining site, and to perform higher quality image scanning and correct image analysis. Therefore, Dr. Gennadiy Pochanin, who was in charge of the project, took the lead during the follow-up training, and through classroom lectures and practical training in the test lane, conducted a technical transfer of the method of soil testing with a highly accurate moisture meter and the method of setting parameters according to soil moisture content, assuming the soil characteristic of Ukraine (black soil: Chernozem, etc.). The technology transfer of the method of setting parameters according to soil moisture content was carried out.

3) Since there are many procedures involved in ALIS proficiency, prior to the follow-up training, we identified the skills required for ALIS proficiency and compiled a draft curriculum (Attachment 4-1-1) with the necessary training content and time required for each process, after confirming with Professor Sato. As a result, for the training in this study (pilot project), all the processes required to become proficient in ALIS were mainly covered at the elementary level: 1. basic knowledge of ALIS; 2. operation, adjustment, and setting methods; 3. recognition of ground types and topography; 4. learning how to reduce false positives; and 5. learning actual exploration and data analysis. The follow-up training program was designed to provide basic knowledge and skills at the beginner level in the following three areas: 1) the acquisition of basic knowledge and skills at the intermediate level, and 2) the acquisition of advanced knowledge and skills at the intermediate level for the Grant Aid and Technical Cooperation programs scheduled to be implemented after the completion of this study. Unfortunately, during this follow-up training, we were not able to deepen the discussion among the parties concerned on the specific details of the program.

4-2-4 Step 3 SOP development support and approval process support

1) After intermittent discussions with Dr. Schoolderman and CMAC, mainly led by Prof. Sato, a draft SOP was developed by SESU, utilizing as much as possible the existing SOP (910 Manual Demining) applied by SESU for humanitarian demining activities and keeping changes to a minimum, referring to the ALIS SOP currently being developed in Bosnia and Herzegovina and the SOP already developed in Cambodia. The draft SOP was presented to SESU at the ALIS technical meeting in May as mentioned above.
2) In wartime emergencies, the main focus is not on the existing SOP (910 Manual Demining) for humanitarian demining, but on the Ministerial Ordinance for emergencies. The second draft of the SOP developed by Dr. Schoolderman was presented and it was agreed that the existing SOP (910 Manual Demining) should be utilized as much as possible, and changes should be kept to a minimum. SESU will bring the second draft SOP back to the site for further consideration, including the procedures to be followed in the future.
3) During "Step 4: Follow-up Training for Handling ALIS Equipment," time was set aside to exchange opinions on future Technical Cooperation, and it was decided to discuss the formulation of SOP for ALIS as part of the Technical Cooperation support project to be implemented in the future, along with the development of SOP for demining equipment.
4) Dr. Schoolderman, who is in charge of SOP, raised this issue during the "Step 4: ALIS Operational Follow-up Training" and shared his awareness of the problem with SESU. SESU's SOP (910 Manual Demining) states that, in principle, all metal fragments, not just mines and UXO, are to be removed from buried objects detected (since detection by metal detectors has been the main method in the past). If the current SOP (910 Manual Demining) is absolutely required to remove all metal fragments in humanitarian demining activities during peacetime, the characteristics of ALIS, which discriminates between metal fragments and mines, cannot be demonstrated, and the contamination by mines and UXOs after the Russian military invasion is expanding throughout the Ukraine, SESU's work may not be able to be carried out as efficiently as it should be. In addition, the situation of contamination by mines and UXO after the military invasion by Russia is expanding nationwide, which is expected to significantly reduce the efficiency of SESU operations. Therefore, we will exchange views with SESU on the revision of SOP with Japan's support in the future, assuming the full-scale introduction of ALIS to Ukraine.

4-2-5 Step 4 ALIS Follow-up training for handling actual equipment

(1) Purpose of implementation

1) To learn how to acquire good quality GPR images with ALIS and to foster confidence in ALIS.
2) To study how to utilize ALIS in Ukraine with proper understanding and mastery of GPR functions.
3) Organize issues for introduction to the cows Ukraine (SOP and soil parameter setting)

(4) Exchange of views on future Technical Cooperation programs

(2) Date and time of the event

1) Date: Monday, July 3, 2023 - Friday, July 7, 2023

2) Dates: As follows

Date	Training Contents	Training Place
January 16, 2023	Opening ceremony, SESU report (report on current status of landmine contamination and countermeasures and ALIS field test results, report on ALIS activities in Ukraine and other Ukraine, SOP development and soil impacts, ALIS training (review of basic operations)	CSP Training Room
January 17, 2023	Training in the test lanes Basic scanning training indoors Demonstration of ALIS data acquisition and visualization practice with CMAC in the test lane	CSP Training Room Outdoor test lanes
January 18, 2023	Exchange of opinions on the use of ALIS in Ukraine based on SESU report (2) (actual situation of landmine disposal and challenges faced in the field) Actual equipment training (practice data acquisition and visualization in a mixed environment of mines and metal fragments)	CSP Training Room (lecture and exchange of opinions) Outdoor test lanes
January 19, 2023	Evaluation tests, courses (exchange of opinions on Technical Cooperation)	CSP Training Room (lecture and exchange of opinions) Outdoor test lanes
January 20, 2023	Explanation of evaluation test results, summary, closing ceremony, demonstration for media	CSP Training Room (explanation and summary of evaluation results), CSP Ceremony Hall (closing ceremony), stage and wooden sandbox by the ceremony hall

(3) Location

Police Training Center (CSP) in Legionowo, near Warsaw, Poland

The classroom training was conducted in the CSP training room, and the actual training was conducted in the sand and soil test lanes (consisting of a 1.5m x 1.5m Calibration Box and a 1.5m x 20m test lane) set up outdoors on the CSP premises. For the soil lanes, black soil (Chernozem), which is common in Ukraine, was prepared in consultation with CSP to reproduce conditions more similar to local conditions.

(Remark) Solidarity Fund funds were used to cover part of the burden on the Polish side in organizing the event (making mock mines, arranging name tags for participants, folders and memos for distributing materials, national flags, welcome and fair-well sessions, etc.).

(4) Participant

SESU training participants: 8 participants in Table 4-4 (8 deminers: leader class)

Table4-4 SESU's Participant List for Follow-up Training

No.	Position	Remarks
1	Deputy Director, Regional Center for Humanitarian Mine Action and Emergency Response	Leader Class
2	Leading Expert, Mine Action Quality Control Department, Humanitarian Mine Action and Emergency Response Regional Center	Leader Class
3	Expert, Mine Action Quality Control Department, Humanitarian Mine Action and Emergency Response Regional Center	Leader Class
4	Head, Explosive Ordnance Disposal and Special Diving Mission Group, Humanitarian Mine Action and Emergency Response Regional Center, Humanitarian Mine Action Unit	Leader Class
5	Humanitarian Mine Action and Emergency Response Regional Center Humanitarian Mine Action Unit Explosive Ordnance Disposal and Special Diving Mission Group Mine Clearance Personnel	Leader Class
6	Mobile Rescue and Emergency Response Center, Deputy Group Leader, Explosive Ordnance Response Task Unit	Leader Class
7	Head, Explosive Ordnance Response Unit, Explosive Ordnance Response Group, Khmelnitsky Oblast Emergency Response Team	Leader Class
8	Khmelnitsky Oblast Emergency Response Team Explosive Ordnance Countermeasures Group Explosive Ordnance Countermeasures Unit Mine Clearance Officer	Leader Class

(Remark 1) Management class did not participate.

(Remark 2) The Director of the Explosive Ordnance Response Group of the Mobile Rescue and Emergency Response Center who participated in the training for handling actual equipment did not participate in follow-up training (due to mine accident)

(Remark 3) Expert Participant, Mine Action Quality Control Department, Regional Center for Humanitarian Mine Action and Emergency Response

(Remark 4) The names of SESU participants are not listed for safety reasons.

(5) Instructors and technical support personnel

Setp1: Same as ALIS operational training

From the Polish side, Solidarity Fund, contracted by JICS, served as the local coordinator, coordinating with CSP and Solidarity Fund from the preparatory stage on the maintenance of training facilities and test lanes, arrangement of landmine simulations, support for SESU participants entering and leaving the Ukraine (including bringing in ALIS), etc. He was also involved in the operation and progress during the training period.

(6) Content of follow-up training for ALIS

1) Lecture Contents

(a) Introduction of ALIS applications in other countries (Prof. Sato)

(b) Review of basic operations (Prof. Sato)

(c) SOP Development (Dr. Schoolderman)

(d) Soils of Ukraine (Dr. Pochanin)

(e) ALIS in Cambodia (CMAC)

(f) Maintenance and operations for ALIS (CEIA, Inc.)

(g) Introduction of next generation ALIS (Prof. Sato)

2) Training Contents

(a) Review and demonstration of basic operations (Prof. Sato and CMAC)

(b) Instruction of basic ALIS movements (Prof. Sato)

The participants practiced the operation in the training room, making four turn operation in a 50 cm square area until the trajectory was obtained correctly, and all 8 participants confirmed that they could acquire the basic scanning.

(c) Exemplary ALIS data acquisition demonstration in the test lane (Prof. Sato, CMAC)

CMAC instructor demonstrated and showed an exemplary ALIS data acquisition method in the sand lane.

(d) Visualization practice of targets buried in sand lanes (SESU)

SESU participants themselves practiced burying and visualizing each target at the training site

(e) Demonstration of searching metal fragment buried closely to the target (Prof. Sato, CMAC, SESU)

In the current situation in Ukraine, emergency mine detection and clearance is being conducted in areas where many metal fragments are buried. ALIS system was used to confirm that the two objects could be separated and imaged when there were metal fragments in close proximity. We explained that ALIS can identify objects that cannot be detected by conventional metal detectors, and SESU participants practiced imaging the

objects themselves.

(f) Visualization exercise for targets buried in soil lanes (SESU)

The participants experienced similar imaging in adjacent soil lanes to experience the difference in ALIS images due to differences in soil.

3) Opinion exchange

(a) Utilization of ALIS in Ukraine

SESU participants gave an earnest explanation of the actual situation in Ukraine, there is an urgent need for mine detection and clearance technology in places where many metal fragments are buried, using photos, videos, and diagrams on a white board. In response to this situation, Professor Sato and his team of experts again explained the difference between what ALIS can basically do and what conventional metal detectors cannot do, and exchanged opinions on the advantages and possibilities of using ALIS in situations where metal fragments are buried in complex locations.

(b) Possibilities for Technical Cooperation in Ukraine

Sample of Technical Cooperation in the field of UXO in other countries, such as Cambodia were introduced, and opinions were exchanged on the possibility of effective clearance in a larger context by combining various tools such as ALIS and demining machines, dividing the discussion into two stages: emergency response during wartime and humanitarian clearance after cease-fire. For details, see 3-3 Proposed Projects by Technical Cooperations.

4) Test for evaluation

For several simulated mines and metal fragments buried in advance in a 1.5m x 2.5m area of a soil lane, without telling the type, number, location, or depth of the mines, we first identified the burial location using a metal detector, then acquired GPR data at the identified location to determine the metal fragment or mine. The purpose of this evaluation was to improve the reliability of detection, not detection time.

After the evaluation study was completed, Prof. Sato and CMAC conducted data analysis.

The results of the evaluation test showed that all eight participants were able to visualize the mines clearly.

The four identified mines and metal fragments and performed complete detection.

Two people judged the piece of metal to be a mine, but it was a safety-side decision and not a problem.

Two of them judged the mines to be pieces of metal, but there was no problem with the ALIS operation or data acquisition itself, and there would be no problem if they were given a training course to understand the meaning of the acquired data.

(7) Outcomes of Follow-up training

1) The participants gained a deeper understanding of ALIS and improved their operating techniques. In particular, the aim was to provide sufficient training in data acquisition, which

could not be done in the previous training, so that SESU participants would become proficient in how to acquire good quality GPR images with ALIS. 6 out of 8 participants were proficient enough, and 2 were confirmed to have no problems in operating ALIS and acquiring data.

2) As a result of frank discussions among all parties concerned, including SESU, on the possibility of utilizing ALIS in accordance with the actual situation in Ukraine, SESU shared the idea of a toolbox in which ALIS would not be used alone to improve the efficiency of mine detection and clearance in SESU, but would be combined with other tools such as metal detectors, demining machines, mine detection dogs, etc., in order to increase the effectiveness of ALIS implementation. SESU shared the concept of a toolbox to increase the effectiveness of ALIS implementation by combining other tools such as metal detectors, deminers, and mine detection dogs, instead of using ALIS alone.
3) Constructive exchange of views on future Technical Cooperation in the medium- to long-term and broad context.
4) The introduction of next-generation ALIS functions (GNSS functions and software management on the cloud) helped the participants to realize the expanding possibilities of ALIS utilization.
5) After the follow-up training, questionnaire also showed a certain level of satisfaction from the participants, with responses of 4 or 5 out of 5 for the following items: (1) training content, (2) materials, (3) lecturers and interpreters, (4) facilities and equipment, and (5) schedule.

(8) Issues to be improved for follow-up training

On the second day of the follow-up training, operational training in the test lane began, and a heated discussion ensued on how to conduct it between the expert team, which focused on steady acquisition of basic skills including GPR scanning and image analysis in an ideal test environment, and SESU participants, who were eager for immediate use in the emergency response field under the urgent, complex, and challenging wartime environment. The differences in views between SESU participants, who were more focused on the steady acquisition of basic technology, including scanning and image analysis, and SESU participants, who were more eager to immediately apply the technology to emergency response situations in wartime, a complex and challenging environment. The Japanese participants urgently reexamined the implementation method, and after receiving detailed explanations from SESU participants about the actual situation in the field and the challenges they were facing through photos, videos, and diagrams, they deepened their understanding. Next, after confirming that all participants had operational skills in image scanning and image analysis, a more complex environment in which metal fragments and mines coexist was recreated in a test lane and a detection exercise was conducted, allowing participants to experience the potential of ALIS in the field of emergency response. As a result, through the aforementioned discussion process, mutual understanding was further deepened and the objectives of the training were clarified, which contributed to making the training more meaningful, but SESU participants

(1) had excessive expectations that ALIS alone would improve efficiency in mine detection, and (2) were not sure what kind of training (including on-the-job training) they would need before learning ALIS. The participants in SESU did not fully understand how long the training (including on-the-job training) would take until they could master the skills, and did not fully understand the position of the training in Cambodia and Poland in the total itinerary. It is undeniable that some issues remained in the prior coordination of the training.

(9) Summary

The following results were obtained through the ALIS Operational Training in January 2023 and the ALIS follow-up training in July 2023.

1) All steps (step 1 to 4) were completed as originally planned.
2) SESU participants correctly understood the special features of ALIS, improved their operational skills including GPR image acquisition and image analysis, and increased their confidence in ALIS.
3) A common understanding was formed among the parties concerned (SESU, Prof. Sato, Expert team, CMAC, JICA) on how to utilize ALIS and the necessary training.
4) In preparation for the introduction of ALIS, the draft of SOP was developed to lay the groundwork for future local certification.
5) We were able to sort out the possibilities of utilization and issues related to the introduction of ALIS to Ukraine, taking into account the actual situation of demining sites in Ukraine, and to identify items that should be implemented through Technical Cooperation in the future.

<Reference>

Geotechnical Engineering 16, "Detection Technology and Current Status of UXO and Landmines in Southeast Asia", by Motoyuki Sato, Professor, Tohoku University,

<Appendix>

Attachment 4-1: List of participants of SESU for ALIS Operational Training and Follow-up Training
Attachment 4-2: Photos of ALIS Operational Training and Follow-up Training
Attachment 4-3: Supporting documents for the development of SOP (by Dr. Arnold Schoolderman)

5. Summary / Recommendations on future projects for Ukraine

5-1 Situation and Challenges in Ukraine

The military invasion to Ukraine by Russia that began on February 24, 2022 has been started and continues as of August 2023. Under the circumstances of ongoing fighting in Ukraine, the damage caused by landmines and UXO continues to increase, and it has been pointed out that the assistances by international community may continue to expand and become more prolonged in the future. On the other hand, since it is extremely difficult to identify how assistance is needed and conducted as local activities in Ukraine under wartime, it is necessary to carefully consider how these needs should be addressed.

(1) Collection of information on Ukraine and SESU

The study was conducted under the severe restriction that no one was allowed to enter Ukraine, and information had to be collected remotely, through information on the Web and attendance at regularly scheduled online donor meetings. In addition, access to relevant information was restricted by Ukrainian controls, which limited the information that could be gathered.

The opportunity to hear directly from SESU in Cambodia, Japan, and Poland during the training on ALIS was very useful in understanding actual situation in demining site and SESU's activities. However, since the participants mainly belonged to departments engaged in the demining works, there were some items for which no answers could be obtained, such as the policy for mine and UXO clearance for the entire Ukraine and SESU's plans as an organization. In addition, SESUs engaged in demining and UXO clearance activities are extremely busy with emergency responses, and it is undeniable that the fact that it is not easy to coordinate schedules for online meetings, etc., was a limiting factor when collecting information.

In Ukraine, a Ukraine at war, it is extremely difficult to grasp the ever-changing needs for assistance in the field in a timely manner. We have tried to collect the latest information on landmines and UXOs in Ukraine from international NGOs and consultants who are engaged in support activities in Ukraine, making use of the connections we have made through the landmine and UXO projects we have conducted in other countries, but we could only obtain partial information. However, it was difficult to obtain information on the status of contamination by mines and UXOs and the implementation of support measures in Ukraine as a whole.

It is inevitable that we face similar challenges in the future under the further survey and project formulation. Therefore, it is essential to 1) collect information through regular online meetings, 2) collect information through participation in international conferences such as donor meetings, and 3) collect the latest information transmitted and disclosed by the governments of Ukraine, donors, international organizations, and other relevant parties, in order to update and analyze the current situation. In such a situation, it is essential to update and analyze the situation by collecting

information based on 1) and 2) above. In addition, it is essential to obtain and confirm information that is considered particularly important by establishing a relationship of trust that enables direct communication (by correspondence) through repeated acquaintances in 1) and 2).

(2) Establishment and development of assistance systems for Ukraine

After the conflict situation is resolved, it is common practice to provide assistance to war-torn Ukraine and regions by identifying "rehabilitation support needs (short-term assistance)" and "reconstruction support needs (mid to long-term assistance)," and to provide assistance on an urgent basis to the highest priority issues in the former category, while at the same time providing the latter from a mid to long-term support perspective. However, there is a consensus among the international community to implement rehabilitation and reconstruction efforts, starting with those that are feasible, in order to protect the lives of the people in the war-torn Ukraine and to revive the Ukraine's economic activities.

Against this background, many donors, international organizations, and international NGOs are providing assistance to Ukraine, but in order to avoid duplication of assistance and maximize its effective use, it is necessary for those providing assistance to work together to develop and establish a more efficient implementation system (including the development of laws, procedures, and data in addition to the substantive system) and an aid coordination framework. The establishment of a framework for coordination of assistance is necessary. Currently, studies and efforts are ongoing, but since the situation is still in progress, it will be necessary to follow up on the progress in the future.

(3) Ukrainian government's structure for Mine Action

There are several implementing agencies in Ukraine related to the landmine and UXO fields, and efforts are being made to review the division of roles and centralize certain tasks. However, there are some cases where there are differences in the information released by each agency, and there are also some cases where the information on the website is not updated, making it difficult to ascertain the latest status of contamination and countermeasures. SESU and other concerned Ukrainian organizations have to give top priority to responding to the emergency situation that they are facing. Information gathering is indispensable to formulate a case, but considering the wartime situation in Ukraine, it is considered necessary to avoid placing an excessive burden on Ukrainian organization for information gathering, and consideration should be given to targeting information with a narrower scope and target.

5-2 Points to be noted for consideration of assistances for Mine Action

(1) Flexibility not bound by conventional methods and procedures

A number of administrative procedures (e.g., holding committee meetings, obtaining necessary documents and signatures, etc.) are required when implementing assistance by Japan. Since many Ukrainian concerned organizations and agencies (counterparts) have to engage in dealing with emergencies and contingencies, therefore, it is important to reduce the burden on such counterparts as much as possible. It is essential to take flexible measures according to the counterpart's situation (e.g., not holding a committee meeting but circulating minutes for confirmation), and to identify procedures and documents that can be omitted, and to organize them into efficient procedures.

(2) Grant Aid (projects of procurement of equipment)

The equipment that contributes to mine and UXO clearance activities, which is a prerequisite for Grant Aid to Ukraine, is as proposed in Chapter 3. While many donors have made pledges and implemented the assistances to meet the needs of Ukraine, the mine detector / ALIS and demining machine are distinctive equipment utilizing Japan's unique technology, and are expected to provide a new approach to mine and UXO clearance in Ukraine.

On the other hand, SESU is in the process of strengthening its structure to meet the enormous needs for demining and UXO clearance, and there is a growing need for basic equipment for newly deployed demining teams (e.g., equipment and gear that contribute to ensuring the safety of deminers, such as protective clothing for explosive ordnance disposal and clearance). Therefore, it is essential to pay attention to a good balance and combination of highly technology equipment and basic equipment in future Grant Aid.

In addition, when Japan makes assistances to a war-torn Ukraine, it is very important to do with flexibility in procurement conditions, such as easing procurement conditions (setting conditions that reduce the burden on suppliers) and establishing a reserve fund.

(3) Technical Cooperation

1) Under the complicated situation in Ukraine, the importance of technology transfer to SESUs, whose personnel are rapidly increasing, is very high. However, it is necessary to keep in mind the current situation under military invasion and the need for a flexible approach to be implemented according to each situation, from emergency response to post ceasefire response. It is extremely important to improve the technical capacity of the Japanese-made demining equipment to be provided by ALIS and Grant Aid, including its operational capability and maintenance, and to support the formulation of SOP for its introduction, as well as to pursue the possibility of an effective demining method combining multiple tools based on the experience in Cambodia and other countries. However, it is difficult for Japanese nationals to

work in Ukraine, so cooperation with CMAC and Poland is indispensable.

2) As mentioned above, in situations where it is difficult for Japanese nationals to work in Ukraine, it is realistic to invite trainees from Ukraine to Japan or a third countries to conduct Technical Cooperation, as done in this study.

Based on the experience of this study, when inviting trainees from Ukraine under "wartime" situation, the following various points should be advised (as of August 2023).

① Dealing with departure procedures from Ukraine

Due to the special wartime circumstances, in principle, Ukrainian males from the ages of 20 to 59 are prohibited from getting out of Ukraine (for the purpose of securing human resources for the war effort). Therefore, persons of the said age and gender must obtain special permission to getting out of Ukraine if they wish to participate in training, etc.

However, it is necessary to prepare and provide a letter from the training organizer indicating that the training will be held (there is no prescribed format or form, but a letter indicating that the training will be held and that the invitation will be extended).

② Insurance during the training period

Trainees and related personnel are required to purchase insurance (e.g., overseas travel insurance) in case of injury or illness during the training period. If the destination is Japan, insurance can be purchased from a Japanese insurance company. However, if the destination is a third countries, it is not possible to purchase insurance for the trainees, therefore, the trainees must make his/her own insurance arrangements.

In this study, we arranged for insurance coverage through a local agent in order to reduce the burden on the traveler as much as possible.

③ Safety measures for the trainees

<Domestic transportation>

Participation in a training program outside of the Ukraine means, of course, leaving the Ukraine. Since air transportation is not available at this moment, the most convenient means of transportation inner of Ukraine is by car (train is inconvenient due to the limited number of trains and arrival points).

For this study, a dedicated vehicle was chartered to ensure the safe transportation of the crew (trainees and related personnel, researchers and interpreters) and to monitor their movement status. At the same time, regular communication with the crew was conducted (checking the movement status using the GPS function of the smartphone and providing regular status

reports via SMS).

<Correspondence to domestic movement restrictions>

Since travel within Ukraine is prohibited between the hours of 22:00 and 5:00, due to the "curfew" from the perspective of ensuring the safety of the people, it is necessary to plan a schedule for departure from the Ukraine with sufficient time to spare, taking into consideration the restrictions on travel time based on the training schedule.

In this study, based on the previously mentioned travel ban and travel distance and time, several overnight days (maximum four nights under this survey) were provided during round-trip travel within Ukraine (lodging arrangements were made through a local agent from the perspective of reimbursement and safety confirmation).

④ Smooth entry into third countries from Ukraine

In the case of entering into third countries where an entry visa is required, it goes without saying that it is necessary to confirm the necessary procedures, documents, and places where visas can be obtained in order to ensure smooth visa acquisition, and to coordinate in advance with the relevant authorities (the competent embassy of the destination Ukraine, the ministry or agency in charge of the Ukraine, etc.). In addition, in the case of entry by land, even if a visa is not required, prior coordination should be made among the concerned parties (e.g., border immigration authorities of the destination country and concerned ministries and agencies of Ukraine) to ensure smooth entry procedures at the border (currently, there are long lines at the border for people and vehicles entering Poland from Ukraine, and it is reported that border crossing procedures generally require 5 to 7 hours to complete). The training program in Poland of this study also involved entry by land from Ukraine, therefore, a special entry gate (a kind of fast-track) was opened for the trainees based on the prior communication and arrangement of necessary documents with the Ministry of the Interior of Poland, the Polish Border Office of the Immigration Department, and the Ministry of the Interior of Ukraine.

⑤ Bring necessary equipment into Ukraine

Under this study, the equipment (ALIS) procured was once used in the Ukraine (after SESU trained with procured ALIS) ,and then brought to the Poland for follow-up training. Since there was a possibility of bottlenecks at the border when the special equipment (ALIS) was brought into Poland, we issued a letter of explanation and request to the Ministry of the Interior of Poland, in order to enable smooth procedures at the border (the procedures related to bringing in the equipment).

It is essential to continue to be proactive when bringing necessary equipment to third counties, as it may take time to prepare the required procedures and documentation.

⑥ Flexible reimbursement procedures

For expenses incurred by trainees and related parties themselves, reimbursement is required based on the submission of vouchers (e.g., receipts). However, under this study, in consideration of the situation in Ukraine, we did not require the trainees to submit vouchers for expenses regarding the return trip to Ukraine (e.g., transportation and fuel costs of inner travel of Ukraine), and instead, we took flexible measures such as providing the same amount as the expenses incurred on the outward trip. We believe that similar flexible measures are necessary in the future.

⑦ Appropriate publicity and press releases

It goes without saying that publicity and press releases are important as part of efforts to promote understanding among the public and the international community regarding Japan's support for Ukraine.

However, the nature of the event differs from conventional initiatives and events in that it is a "wartime" event in which participants are invited from a "war-torn" Ukraine to participate in training and other events. It is preferable to avoid excessive publicity and press releases, while giving top priority to the safety for the people involved in this kind of event. Common sense consideration should also be given to the timing of press releases.

⑧ Arrangement of mock-up mines

In conducting ALIS follow-up training in Poland, we asked the Polish Police Training Center to arrange for mock-up mines, and as a result, four types of plastic mock-up mines were produced via a local design company (the cost was borne by the Solidarity Fund). Initially, the Polish side made inquiries to the military, museums, and other relevant institutions, looking for inactivated mines similar to those buried in Ukraine, but the existence itself could hardly be confirmed. As a response measure proposed by the Polish side, a company that produces plastic simulation mines for training purposes for the military was asked to produce custom-made simulation mines. However, it was not easy to meet the same specifications as the inactivated mines required for ALIS training, and after repeated meetings between the Polish police and the design company, a space was created inside the simulated landmine, the interior was filled with a special silicon resin similar in composition to gunpowder, and a metal strip similar to a detonator was embedded The work was conducted under the guidance of Professor Sato, and the suitability for ALIS training was

carefully checked in advance before it was used for training. The Polish police, for whom Mine Action are out of their scope, found the aforementioned preparatory work very time-consuming, and bringing in the simulated mines for training was also a very difficult procedure, placing a very heavy burden on the Polish side. Based on this experience, we believe that Cambodia and Bosnia, where there are actually sufficient numbers of inactivated landmines and UXO, would be preferable as third Ukraine in which to conduct the training.

(4) Support implementation system

Currently, Japanese nationals are not allowed to operate in Ukraine, so active coordination and information sharing by the Embassy of Japan in Ukraine is essential for an efficient and speedy response. It is also very important to secure a reliable coordinator (individual or organization) who can travel and work in Ukraine.

< END >

Attachment

Attachment 2-1: List of equipment provided by major donors to SESU (prepared as of January 2023)
Attachment 3-1: List of SESU Requested Equipment (Tentative Japanese Translation)
Attachment 3-2: Draft of Technical Cooperation Outline and Draft PDM
Attachment 4-1: List participants of SESU for ALIS Operational Training and Follow-up Training
Attachment 4-2: Photos of ALIS Operational Training and Follow-up Training
Attachment 4-3: Supporting documents for the development of SOP (by Dr. Arnold Schoolderman)

Attachment 2-1: List of equipment provided by major donors to SESU
(prepared as of January 2023)

List of equipment provided to SESU by major donors (prepared as of January 2023)

Name of Item	Donors															
	UNDP		USA (US State Department)		UK		Germany		Croatioa		Sweden		OSCE		United 24 Charitable Fund	
Surveying Equipment	20	GPS			1	Magnetometer										
Drone					5	Drone										
Detector	24	Metal Detector	107	Metal Detector	13	Metal Detector			10	Metal Detector						
Protective Equipment	280	Hemet, Vest	50	Hemet, Vest	8	Hemet, Vest	2	Hermet	190	Hemet (123), Vest						
Protective Equipment (Heavy Equipment)			51	PPE												
Radio Equipment (for in-vehicle use)	6	Radio Equipment														
Radio Equipment (Portable)	20	Radio Equipment														
Equupment for transportation of explosives			5	Equupment for transportation of explosives												
Equupment for disposal of explosives			20	Equupment for disposal of explosives (2 types)	6	Equupment for disposal of explosives	2	Equupment for disposal of explosives								
Vehucle for transportation of explosives																
Vehicles			12	Pick-up Truck	9	Off-road Type Vehicle	30	Pick-up Truck					2		1	Armoured Vehicle
Heavy Duty Machinery																
Demining Machine															1	ARMTRAC400
First-aid Kit	240	First-aid Kit			2	First-aid Kit							60	First-aid Kit		
Others（Educational Materials, etc）			8	Cable & Hook	400	Educational Materials										
Underwater Drone							5	Underwatger Drone			2	Underwatger Drone				
Boat													9	Boat		
Underwater Probe													14	Underwatger Probe		
Underwater Equipment													36	Wet-suit(45), others		

Attachment 3-1: List of SESU Requested Equipment (Tentative English Translation)

SESU's Short List of Equipment for Mine and UXO Clearance Activities

(tentative English translation)

(as of November 2022)

1. The following table shows the names and quantities of equipment required by SESU for the new demining work teams (Stage 1: 80 units, Stage 2: 100 units), the quantities of international assistance, and the remaining quantities required as calculated from the national budget quantities.

No.	Name and quantity of equipment for SESU demining teams			Quantity procured by international assistance (3)	Quantity to be purchased under national budget (planned) (4)	Remaining quantity required (1)+(2) - (3)-(4)
	Name of Equipment	Quantity for 1st stage (1)	Quantity for 2nd stage (2)			
1	Operational vehicle for mine clearance operations (4-wheel drive, for transporting workers and equipment, with worker armor protection) Type "Mitsubishi L-200, Toyota Hilux, Toyota Land Cruiser 79" or equivalent	80 (1 unit/unit)	100 (1 unit/unit)	12	64	104
2	Small transport vehicle for mine disposal operations (for transporting explosives) Type "Toursus Terrastorm (on chassis of VOLKSWAGEN CRAFTER), Iveco Daily" or equivalent	40 (1 unit/2 units)	50 (1 unit/2 units)	-	-	90
3	Large transport vehicle for mine clearance operations (for transporting explosives, maximum load capacity 7 tons) Type "ISUZU FTS34, MAN TGS type (6x6)" or equivalent	40 (1 unit/2 units)	50 (1unit/2 units)	2	-	88
4	Remote-controlled mechanical demining machine Type "MV-4" or equivalent	10 (1 unit/8 units)	10 (1 unit/8 units)	-	-	20
5	Remote-controlled mechanical demining machine Type "MV-10", "Armtrac 400" or equivalent	10 (1 unit/8 units)	30 (1 unit/3 units)	1	-	39

No.	Name and quantity of equipment for SESU demining teams			Quantity procured by international assistance (3)	Quantity to be purchased under national budget (planned) (4)	Remaining quantity required (1)+(2) - (3)-(4)
	Name of Equipment	Quantity for 1st stage (1)	Quantity for 2nd stage (2)			
6	Armor set (bulletproof vest, bulletproof helmet)	400 (1 piece/person)	500 (1 piece/person)	100	-	800
7	Anti-impact goggles	400 (1 piece/person)	500 (1 piece/person)	172	-	728
8	Knee and elbow protection pads	400 (1 piece/person)	500 (1 piece/person)	140	-	760
9	Metal detector (for up to 0.6 m underground) Type "Minelab, Vallon" or equivalent	400 (1 piece/person)	500 (1 piece/person)	201	-	699
10	Relay radio car (relay radio) Motorola car or equivalent	160 (2 units/unit)	200 (2 units/unit)	12	-	348
11	Portable radio type "Motorola" or equivalent	400 (1 piece/person)	500 (1 piece/person)	62	-	838
12	Blasting Machines Type "Vortex" or equivalent	160 (2 units/unit)	200 (2 units/unit)	10	-	350
13	Electrical Wiring Inspection Equipment	160 (2 units/unit)	200 (2 units/unit)	-	-	360
14	Electric cable 2000m (reel type) Type "Wire Type SPP-2" or equivalent	80 (1 unit/unit)	100 (1 unit/unit)	-	80	100
15	Tool set for demining and UXO removal Type "Hook & Line" or equivalent	80 (1 set/unit)	100 (1 set/unit)	8	-	172
16	Landmine clearance personal tools	400 (1 piece/person)	500 (1 piece/person)	-	-	900
17	Technical rescue stretcher (all-purpose stretcher for harsh environments)	80 (1 unit/unit)	100 (1 unit/unit)	-	-	180
18	GPS Navigation System Type "Garmin" or equivalent	160 (2 units/unit)	200 (2 units/unit)	4	-	356
19	Laser Rangefinders	80 (1 unit/unit)	100 (1 unit/unit)	4	-	176
20	binoculars	160 (2 units/unit)	200 (2 units/unit)	4	-	356
21	Medical kit for demining teams	80 (1 unit/unit)	100 (1 unit/unit)	-	-	180
22	Personal first aid kit	400 (1 set/person)	500 (1 set/person)	-	-	900

No.	Name and quantity of equipment for SESU demining teams			Quantity procured by international assistance (3)	Quantity to be purchased under national budget (planned) (4)	Remaining quantity required (1)+(2) - (3)-(4)
	Name of Equipment	Quantity for 1st stage (1)	Quantity for 2nd stage (2)			
23	EOD explosion-proof suit for mine disposal operations Type "MED-ENG" or equivalent	80 (1 unit/unit)	100 (1 unit/unit)	40	-	140
24	Metal detector (up to 3 m underground) Type "VMX-10 made by Vallon" or equivalent	160 (2 units/unit)	200 (2 units/unit)	-	-	360
25	Magnetometer (up to 6 m underground) Type "Vallon VX-1" or equivalent	80 (1 unit/unit)	100 (1 unit/unit)	10	-	170
26	Robotic systems for ammunition handling	80 (1 unit/unit)	100 (1 unit/unit)	2	-	178
27	A set of small mechanical tools (electric drill, electric core drill, angle grinder, chain saw, brushcutter)	80 (1 set/unit)	100 (1 set/unit)	-	-	180
28	Rotating Surveillance Cameras	80 (1 unit/unit)	100 (1 unit/unit)	-	-	180
31	Laptop computer (printer included)	80 (1 unit/unit)	100 (1 unit/unit)	12	-	168
32	compass	80 (1 unit/unit)	100 (1 unit/unit)	-	-	180

(Remarks) Clearance by mechanical demining machine

Considering that the Russian military uses mines and special explosives prohibited by international treaties, and in order to increase the safety and speed of demining, SESU employs mechanical demining machines, ranging from No. 5~N0.7 "Armtrac 400," "DOK-ING MV-4," DOK-ING MV-10", "GCS-200", etc., a total of 60 mechanical demining machines are required.

2. List of equipment and quantities required for the 60 units (300 people) of demining teams already trained and prepared to conduct humanitarian demining operations in SESU

No.	Name of Equipment	Required Quantity
1	Operational vehicles for mine clearance operations (four-wheel drive, for transporting personnel and equipment) (for transporting workers and supplies, with worker armor protection)	60 (1 unit/unit)

No.	Name of Equipment	Required Quantity
	Type "Mitsubishi L-200, Toyota Hilux, Toyota Land Cruiser 79" or equivalent	
2	Small transport vehicle for landmine disposal operations (for transporting explosives) Type "Toursus Terrastorm (on chassis of VOLKSWAGEN CRAFTER), Iveco Daily" or equivalent	30 (0.5 units/unit)
3	Large transport vehicle for mine clearance operations (for transporting explosives, maximum load capacity 7 tons) Type "ISUZU FTS34, MAN TGS type (6x6)" or equivalent	30 (0.5 units/unit)
4	EOD explosion-proof suit for mine disposal operations Type "MED-ENG" or equivalent	60 (1 unit/unit)
5	Armor set (bulletproof vest, bulletproof helmet)	300 (1 set/person)
6	Tool set for demining and UXO removal Type "Hook & Line" or equivalent	60 (1 set/unit)
7	Landmine clearance personal tools	300 (1 set/unit)
8	Metal detector (for up to 0.6 m underground) Type "Minelab, Vallon" or equivalent	300 (1 set/unit)
9	Relay radio car (relay radio) Motorola vehicles or equivalent	60 (1 unit/unit)
10	Portable Radio Type "made by Motorola" or equivalent	300 (1 car/person)
11	Personal first aid kit	300 (1 set/person)

3. list of equipment and quantities required for SESU underwater demining teams (30 units)

No.	Name and quantity of equipment for SESU's underwater demining team		Quantity procured by international assistance (2)	Quantity to be purchased under national budget (planned) (3)	Remaining quantity required (1)-(2) - (3)
	Name of Equipmen	Required Quantity (1)			
1	Mine clearance operation vehicle (4WD, for transporting workers and diving equipment) (Type "VOLKSWAGEN Crafter DC" or equivalent)	30 (1 unit/unit)	-	-	30
2	Dedicated river (sea) mine clearance vessels (with trailers for transport)	30 (1 unit/unit)	-	-	30
3	Six-person rubber boat with outboard motor	30 (1 unit/unit)	9	-	21
4	Underwater TV system (robotic)	30 (2 units/unit)	-	-	30

5	Pressure chamber for mobile diving (pressure chamber)	30 (2 units/unit)	-	-	30
6	Air-powered diving equipment	60 (2 units/unit)	-	-	60
7	Diving cylinder for open circuit (15 liters)	300 (10 units/unit)	-	-	300
8	Complete set of regulators (first stage, second stage, Octopus (spare regulator))	150 (5 units/unit)	-	-	150
9	Complete dry suit (boots, gloves, helmet, insulated innerwear)	150 (5 units/unit)	-	-	150
10	Console (portable box) for depth gauge, pressure gauge, and thermometer	150 (5 units/unit)	-	-	150
11	buoyancy compensator	150 (5 units/unit)	-	-	150
12	Air compressor (for filling diving cylinders)	30 (1 unit/unit)	-	-	30
13	Portable air compressor (for filling diving cylinders)	30 (1 unit/unit)	-	-	30
14	Wetsuit complete set (boots, gloves, helmet, buoyancy control jacket, diving socks, fins)	150 (3 units/unit)	-	-	150
15	underwater metal detector Type "MW1630B" or equivalent	60 (2 units/unit)	-	-	60
16	bomb detector	30 (1 unit/unit)	-	-	30
17	Underwater communication device (with headset, for 2 divers)	30 (1 unit/unit)	-	-	30
18	Multibeam Acoustic Bathymetry	30 (1 unit/unit)	-	-	30
19	3D scanner	30 (1 unit/unit)	-	-	30
20	Full-face diving mask	150 (5 units/unit)	-	-	150
21	Truck crane for lifting and transporting floating pontoons (minimum load capacity 2t)	60 (2 units/unit)	-	-	60

Attachment 3-2: Draft of Technical Cooperation Outline and Draft PDM

Technical Cooperation Outline (Draft)

1. Name of Project (Country)

Name of Country：Ukraine

Project Title: The Project for Strengthening Capacity on Humanitarian Mine Action and UXO Clearance

2. Background and necessity of the project

(1) Current status and challenges of the peacebuilding/landmine sector in the Ukraine and the positioning of this project

Ukraine has been experiencing contamination problems due to UXO from World War II and from the conflict in eastern Ukraine that began in 2014. According to State Emergency Service of Ukraine (SESU) at the Ukrainian Mine Action Workshop held in Geneva in November 2022, the Ukraine's contaminated areas have been contaminated by landmines and UXO since the conflict in eastern Ukraine in 2014. According to SESU's report at the Ukrainian Mine Action Workshop held in Geneva in November 2022, the contaminated area in Ukraine is 175,000 km2 (land) and 15,000 km2 (underwater), or about 30% of the Ukraine's total area (603,700 km2).

The Ukrainian government announced a national reconstruction plan at a reconstruction conference held in Lugano, Switzerland, in July 2022, and launched 15 national programs, calling on the international community to support the Ukraine's recovery and reconstruction efforts. The government also called for the international community's support for rehabilitation and reconstruction. The third national program, "Rebuild a clean and safe environment," includes measures against landmines and UXO (UXO). The Ukrainian government has indicated that it will strengthen the system and personnel responsible for clearing mines and UXOs,and will work on Mine Action with support from outside the Ukraine.

The war has had a significant impact on Ukraine and neighboring Ukraine, as 7.2 million Ukrainians have fled their Ukraine and 7 million have been internally displaced (OCHA, September 2022). As of this moment (September 2022), fighting continues mainly in the eastern and southern regions of Ukraine, but in areas where the situation has calmed down, some movement toward recovery has begun. In July 2022, the Ukrainian

government will hold a reconstruction conference in Lugano, Switzerland, calling on the international community to support the recovery and reconstruction efforts. The elimination of the threat posed by landmines and UXO is extremely important to facilitate the return of displaced people and the flow of recovery and reconstruction efforts.

The agency in charge of clearing landmines and other explosive devices from a humanitarian standpoint in Ukraine is the State Emergency Unit of Ukraine (SESU). Prior to the invasion, SESU had 600 personnel for mine and UXO clearance, and these operated a mine clearance team of 100 units (6 personnel/unit), but in order to meet the enormous clearance needs described above, SESU has decided to increase the number of personnel to 400 personnel and 80 units (5 personnel/unit) (May 2022, (Interview from SESU). As the war drags on, this scale may be further augmented, and it is critical that quality/reliable and modern equipment (detectors, personal protective equipment, vehicles, etc.) be introduced and that training be provided to processing personnel. The aforementioned World Bank study estimates that these costs will amount to approximately $10.1 billion over the first 10 years and $63 billion over the following 10 years.

In order to meet the needs, this project will promote effective and efficient Mine Action in Ukraine by utilizing the knowledge and technical capabilities of the Cambodian Mine Action Center (CMAC), which has been implementing Mine Action for many years and has experience in South-South cooperation for mine and UXO contaminated Ukraine, including Ukraine, in the past. The project aims to promote effective and efficient Mine Action in Ukraine.

(2) Japan's and JICA's cooperation policy for the peacebuilding/landmine sector and the positioning of this project in the issue-specific project strategy

In line with the Japanese government's policy, JICA has set three pillars ((1) cooperation to support Ukraine's national infrastructure, (2) cooperation with neighboring Ukraine and displaced persons in Ukraine to stabilize the region, and (3) preparation for rehabilitation and reconstruction), and is considering cooperation needed in the emergency

humanitarian assistance phase through the rehabilitation and reconstruction development phase, including utilization of existing projects and formation of new projects where Japan can utilize its strengths. The project is considering cooperation necessary for Ukraine and neighboring Ukraine in the emergency humanitarian assistance phase, including the use of existing projects and the formation of new projects that can take advantage of Japan's strengths.

The Ukrainian government announced its National Recovery Plan at the Recovery Conference held in Lugano, Switzerland, on July 4-5, 2022, and has launched 15 national programs. The third national program, "Re-build a clean and safe environment," aims to remove mines and UXO from 5% of Ukraine's land area by 2022. In the areas surrounding Kiev, where the fighting has ended, displaced people are returning to their homes. In addition to emergency and humanitarian measures, Mine Action need to be addressed with the aim of Build Back Better and sustainable development in the medium to long term. While keeping an eye on the transition of the conflict and the possibility of peace, Ukraine needs to provide urgent humanitarian assistance and contribute to medium- and long-term development, and this is an area where the humanitarian, development, and peace nexus (HDP nexus) is required.

In addition, JICA's Global Agenda for Peacebuilding, a task-specific project strategy, states that Mine Action are a challenge unique to conflict-experienced regions that transcends national and regional boundaries, and that cooperation should be developed while sharing knowledge with contaminated Ukraine in Asia, Africa, South America, and various other regions. This project also envisages the sharing of experience of cooperative organizations for Mine Action in other regions where JICA has been cooperating. In addition, while cooperation in this field requires a high level of expertise, it also requires comprehensive efforts through collaboration with related actors, and we will work to strengthen the network among related parties, including the Japanese

government, which contributes to UNDP.

(3) Responses of other aid organizations

Major donor Ukraine providing financial and technical assistance for Mine Action in Ukraine are the United Kingdom, the United States, Norway, Germany, Sweden, the Netherlands, Japan, Canada, France, Denmark, Switzerland, Poland, and the European Union. The areas of assistance include Mine Action, explosive ordnance risk education (EORE), victim assistance, and organizational strengthening. International organizations cooperating in Mine Action include the United Nations Mine Action Service (UNMAS), UNDP, UNICEF, UNOPS, UNHCR, etc. Four international NGOs, HALO Trust, DRC, FSD, and DS, a Ukrainian NGO, are active as certified organizations The Geneva Humanitarian Land Consolidation Project (GHSPP) is a non-profit organization. In addition, the Geneva International Centre for Humanitarian Demining (GICHD) and international NGOs and other organizations provide capacity building and institutional support.

As a mechanism for donor coordination, the Mine Action Sub-Cluster in Ukraine (MASC) was established in 2015, chaired by UNDP, with the participation of major donor Ukraine including Japan, international organizations, international NGOs, and Ukrainian government agencies. MASC meets regularly and shares information. Meetings are held regularly to share information.

3. Outline of Project

(1) Purpose of the Project

This project will provide Technical Cooperation to SESU to contribute to the liberation of mine- and UXO-contaminated areas and the safety of Ukrainian citizens by providing Technical Cooperation to strengthen effective mine and UXO response capabilities, including training of trainers (TOT) for certification and operation and maintenance (O&M) of

equipment to be provided through Grant Aid , such as mine detection equipment ALIS and demining equipment, and preparation and update of SOP. The project will contribute to the safety of the Ukrainian people by facilitating the liberation of mine- and UXO-contaminated areas through Technical Cooperation to strengthen effective mine and UXO response capabilities, including the preparation and updating of SOP.

(2) Project site/area name

Mine contaminated sites in Kyiv, Kharkiv and within Ukraine

(3) Beneficiaries of the Project (Target Group)

Direct beneficiaries: counterparts and trained deminers of the State Emergency Service of Ukraine (SESU)

Final beneficiary: Residents of areas contaminated by mines, UXO, etc.

(4) Total project cost (Japan side)

Consideration of whether or not to travel to Ukraine, including where to conduct third-Ukraine training in the future.

(5) Project implementation period

January 2023 - July 2027 (4 years and 6 months in total)

(6) Project implementation system

Implementing agency: State Emergency Service of Ukraine (SESU)

Organizations involved: Cambodia Mine Action Center (CMAC), Government of Poland (tentative)

(7) Input

1)　Japanese side

(i) Dispatch of experts: operational lead/capacity building/donor collaboration, mine countermeasure equipment/operation and maintenance, ALIS (Dr. Motoyuki Sato), SOP development support (Dr. Schoolderman), training plan/operational support.

*In the contract for implementation of the work, coordinate and arrange for local and third Ukraine training (Cambodia, Poland, etc.) and third Ukraine experts (Cambodia CMAC) and Professor NAS Pochanin.

(ii) Training in Japan

(iii) Provision of materials and equipment: Materials and equipment necessary for operation and training related to newly introduced equipment

2) Ukrainian side

(i) Counterpart assignment

(ii) Office space for project implementation (office space for local staff employed by the project), electricity, internet, and other expenses necessary for project implementation (including office environment for Japanese experts, etc., if experts can be dispatched to Ukraine)

(iii) Provision of data and information necessary for the project

(iv) Provision and coordination of safety-related information (when become possible to dispatch of experts to Ukraine)

(8) Cooperation and division of roles with other projects and development cooperation

1) Japan's Grant Aid

The provision of equipment through Grant Aid is planned, and we will coordinate with the procurement agency and the manufacturer's engineers (ALISys, Inc. for the dual sensor ALIS) to provide support for operation and maintenance of the equipment provided.

2) Assistance activities of other development cooperation organizations, etc.: See 2.(3).Coordination for donor coordination is handled by the MASC

(chaired by UNDP).

(9) Environmental and social considerations, cross-cutting issues, and gender classification

1) Environmental and social considerations

Category Classification: C

The project is judged to have minimal undesirable effects on the environment under the "Guidelines for Environmental and Social Considerations of the Japan International Cooperation Agency" (promulgated in April 2010).

2) Cross-cutting issues: none in particular

Gender Classification: Not applicable

(10) Other special notes:

Since this project is to provide assistance to Ukraine under wartime conditions, the dispatch of experts (Japanese and third-Ukraine nationals) to Ukraine will be postponed for the time being, and work will be carried out mainly through remote operations and training in Japan or a third Ukraine. Local staff (coordinators and interpreters) stationed at SESU will be allocated in the project budget to reduce the administrative burden on SESU side and to facilitate smooth communication with the experts. If the situation improves in the future, such as a ceasefire, and it becomes possible to dispatch experts, the project framework will be reviewed (including the budget for travel expenses to Ukraine, etc.) and discussions will be held with the counterpart.

4. Business Framework

(1) Overarching Goal: SESU's performance in Mine Action will be improved.

Indicators and Target Values:

The area of mines and UXO cleared by SESU in 2030 (per year) will be expanded compared to 2023.

(2) Project Goal: The effective operational capacity of Mine Action tools

for humanitarian Mine Action by SESU will be enhanced.

Indicators and Target Values:

Almost all of the equipment provided will be used in the field or for training.

The SOP created and updated for the equipment provided will be used.

SESU will develop a mechanism to effectively combine different mine countermeasure tools.

(3) Results

Outcome 1: Existing systems for operation and maintenance of provided equipment will be reviewed.

Outcome 2: The capacity of SESU staff and departments to properly utilize the equipment provided will be strengthened.

Outcome 3: Mechanisms for effective operation of equipment will be developed.

(4) Main Activities:

1-1: Deliver equipment (truck with crane) needed to strengthen SESU structure.

1-2: Confirm the system and procedures for removal activities using newly introduced equipment (dual-sensor mine detectors, heavy demining equipment, etc.).

1-3: Review existing SOP and identify areas for updating for certification of newly installed equipment.

2-1: Identify training needs for newly installed equipment.

2-2: Select a training trainer for newly installed equipment.

2-3: Provide training (TOT) to meet identified training needs (in collaboration with CMAC or Japanese manufacturers).

2-4: Develop training courses for newly introduced equipment in SESU (ICHD).

2-5: Conduct training courses on newly introduced equipment at SESU (ICHD).

2-6: Conduct follow-up training for trainers who received TOT to improve the training course (Ukraine or Cambodia, Japan).
3-1: Examine the effective operation of different mine countermeasure tools in the context of the actual situation in Ukraine.
3-2: Develop a combination of mine countermeasure tools (toolbox) needed for each stage of Mine Action.
3-3: Create and update SOP, taking into account the toolbox developed.
3-4: Practice Mine Action using the developed toolbox.

5. Assumptions and external conditions

(1) Assumptions

(i) A counterpart shall be assigned.

(ii) Cooperation by CMAC must be obtained.

(2) External conditions

(i) No delay in the provision of equipment through Grant Aid.

(ii) Cooperation by CMAC will be maintained until the end of the project.

(iii) Cooperation by third Ukraine governments, such as Poland, should be maintained until the end of the project.

(iv) Many of the trained counterparts do not leave the company.

(v) The role of SESU in humanitarian Mine Action and training implementation be maintained.

(vi) Security in areas contaminated by mines and UXO should not deteriorate to an extreme degree.

(vii) The budget of the Ukrainian government for Mine Action should be maintained.

(viii) The Ukrainian government should maintain its policy of humanitarian mine and UXO control.

(ix) Mine and UXO clearance and security in liberated areas must be maintained.

6. Lessons & learn from previous similar projects and their application

The exit evaluation of the Cambodia "Strengthening CMAC Capability for Realization of Human Security Project" indicated that, as a result of lack of coordination with donors, a large-scale and long-term response is required, and that effective work can only be done when the three elements of finance, goods, and technology are in place. Therefore, this project aims to generate effective support by fully understanding the support and policies of other donors and the Ukrainian government, and by confirming the position of JICA and the project before implementation.

In addition, by utilizing third-Ukraine related organizations (Cambodia and Poland), experts, and C/P human resources developed through the ALIS pilot training conducted as part of the "Information Collection and Verification Study for Supporting Countermeasures against Mines and UXO in Ukraine," this project will also make use of the relationships established through the ALIS pilot training. Efficient human resource development and effective operation of the provided equipment will be achieved.

7. Evaluation Results

This project is highly significant because it is consistent with Ukraine's policies, reconstruction needs, and the cooperation policies of Japan and JICA, and will contribute to strengthening the safety of Ukrainian citizens through effective and efficient progress in the liberation of mines and UXO-contaminated areas.

8. Future evaluation plan

(1) Main indicators to be used in future evaluations As described in 4.

(2) Future evaluation schedule

Post evaluation after 3 years of project completion

< END >

Project Monitoring Sheet I
PDM

Project Title: The Project for Strengthening Capacity on Humanitarian Mine Action and UXO Clearance
Implementing Organization: The State Emergency Service of Ukraine (SESU)
Target Group:
(a) Direct Beneficiaries: Officers of the Interregional Center for Humanitarian Demining (ICHD), SESU, (b) Indirect Beneficiaries: People living in the ERW contaminated areas
Duration: 4 Years and 6 months (January 2023 - July 2027)
Project Site: Ukraine

Version 2.0 Draft
Dated 26 July 2023

Super Goal: The safety of the Ukrainian citizens through mine action is promoted.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Performance of humanitarian mine action and UXO clearance is strengthened.	1. Released areas in 2030 are increased compare with ones in 2023.	1. Data of SESU	- The Government of Ukraine maintains its policy on humanitarian mine action. - Security is maintained in the released areas.		
Project Purpose					
The capacity of SESU for effective usage of different demining tools is strengthened.	1. Most of the newly provided equipment are used in the field and/or training. 2. SESU uses the drafted SOPs for the newly provided equipment. 3. SESU develop a mechanism for effective usage of different demining tools.	1. Monitoring Sheet of the Project, Records of the equipment usage by SESU 2. Monitoring Sheet of the Project, Drafted SOPs 3. Monitoring Sheet of the Project, Developed tool boxes	- Security in mine contaminated areas is not deteriorated drastically. - Budget for mine action of the Government of Ukraine is maintained.		
Outputs					
Output 1: Operation and maintenance system for provided equipment is reviewed.	1-1. Crane trucks are provided. 1-2. Operation and maintenance system for provided equipment is examined.	1-1. Provided crane trucks. 1-2. Monitoring Sheet	- Most of the trained counterparts do not leave from their job. - Roles and responsibilities of SESU concerning humanitarian mine action and its training are maintained.		
Output 2: Human resources and departments concerned for operating and maintaining the provided equipment are strengthened.	2-1. XX trainers are trained for the newly provided equipment. 2-2. XXX SESU staff are trained by the developed training courses. 2-3. Training plan/courses are developed.	2-1. Records of conducted TOT sessions 2-2. Records of conducted training courses 2-3. Developed training plan/courses			
Output 3: A mechanism for effective usage of the provided equipment is developed.	3-1.Tool boxes for effective usage of different demining tools is developed. 3-2. SOPs for the newly provided equipment are drafted. 3-3. Organogram for operation and maintenance including the newly provided equipment is drafted.	3-1. Developed tool boxes 3-2. Drafted SOPs. 3-3. Drafted organogram.			
Activities	**Inputs**		**Important Assumption**		
	The Japanese Side	The Ukrainian Side			
1-1 : Provide crane trucks under this technical cooperation. 1-2 : Review and analysis the existing system and standard operation procedures (SOPs) in demining activities for the newly provided equipment (e.g. dual-sensor mine detectors, demining machineries). 1-3 : Identify issues and needs for modification of the SOPs and the organogram.	(a) Dispatch of Experts (Chief Advisor/Capacity Development, Equipment/Maintenance, ALIS operation (Dr. Sato), SOP development (Dr. Schoolderman), Training Plan and Coordination) (b) Counterpart Personnel Training(s) in Japan with technical inputs by Japanese manufactures (c) Counterpart Personnel Training(s) in Cambodia/Poland with technical inputs by CMAC (d) Salary for local coordinator/interpureter(s) in SESU (e)Technical inputs by Prof. Pochanin (f) Provision of crane trucks (g) Other expenses and necessary items	(SESU) (a) Services of SESU counterpart personnel and administrative personnel: - Project Director (SESU) - Project Manager (SESU/ICHD) - Other counterparts (b) Custom clearance support for provided equipment (c) Running expenses necessary for the implementation of the Project (d) Suitable office space with necessary equipment when request by JICA (e) Supply or replacement of machinery, equipment, instruments, tools, spare parts and any other materials necessary for the implementation of the Project other than the equipment provided by JICA	- Installation of demining equipment by the Japanese Grant Aid is not delay. - Technical cooperation by CMAC continues until the end of the project. - Third country government such as Poland continues their cooperation until the end of the project.		
2-1 : Identify training needs for the newly provided equipment. 2-2 : Select trainers for the newly provided equipment. 2-3 : Conduct training of trainers courses based on the training needs (in collaboration with CMAC and/or Japanese manufactures). 2-4 : Develop a training plan for the newly provided equipment by SESU/ICHD. 2-5 : Conduct training courses for the newly provided equipment by SESU/ICHD. 2-6 : Conduct follow-up sessions for the trained trainers to improve the training courses (in Ukraine or Cambodia/Poland)			**Pre-Conditions** - Counterparts are assigned. - CMAC cooperates with the project.		
3-1 : Examine effective use of different demining tools in Ukranian context. 3-2 : Develop tool boxes of demining tools for different demining stages. 3-3 : Draft/Amend the SOPs and the organogram. 3-4 : Practice demining actions using the tool boxes.			<Issues and countermeasures>		

Attachment 4-1: List participants of SESU for
ALIS Operational Training and Follow-up Training

List of participants for ALIS Operational Training and Follow-up Training

No.	Name	Organization	Division	Position	Operational Training	Follow-up Training
1	N/A	SESU	Deputy Head of Division for Pyrotechnic and Special Works, Department for Emergencies Deputy Chief, Explosive Ordnance Countermeasures and Special Missions, Emergency Department	-	participation	participation
2	N/A	Interregional Center of Humanitarian Demining and Rapid Response Regional Center for Humanitarian Demining and Emergency Response	Leading Expert of the Department for Demining Quality Control Leading Expert, Mine Clearance Quality Control Department	-	participation	participation
3	N/A		Group of Pyrotechnic and Special Diving Assignments, Unit of Humanitarian Demining Humanitarian Demining Unit Explosive Ordnance Disposal and Special Diving Task Group	Head of the Group group leader	participation	participation
4	N/A		Pyrotechnic Assignments Team, Group of Pyrotechnic and Special Diving Assignments, Unit of Humanitarian Demining Humanitarian Mine Action Unit Explosive Ordnance Countermeasures and Special Diving Task Group Explosive Ordnance Countermeasures Team	Sapper mine sweeper	participation	participation
5	N/A		Expert of the department for demining quality control Expert, Mine Action Quality Control Dept.	Expert expert	-	participation
6	N/A	Mobile Rescue Center and Emergency Response Mobile Rescue and Emergency Response Center	Group of Pyrotechnic Works, Pyrotechnic and Special Assignments Unit Explosive Ordnance Countermeasures and Special Missions Unit Explosive Ordnance Countermeasures Group	Head of the Group group leader	participation	-
7	N/A		Pyrotechnic Works Team, Group of Pyrotechnic Works, Pyrotechnic and Special Assignments Unit Explosive Ordnance Countermeasures and Special Missions Unit Explosive Ordnance	Deputy Head of the Group/Team Leader Deputy Group Leader and Team Leader	participation	participation

			Countermeasures Group Explosive Ordnance Countermeasures Team			
8	N/A	Emergency Response Unit of Khmelnytsky Region Khmelnitsky Oblast Emergency Response Unit	Underwater Demining Team, Group of Pyrotechnic Works Underwater Mine Clearance Team, Explosive Ordnance Countermeasures Group	Team Leader team leader	participation	participation
9	N/A		Pyrotechnic Works Team, Group of Pyrotechnic Works Explosives Response Group Explosives Response Team	Driver-Sapper Mine clearer and driver	participation	participation

Attachment 4-2: Photos of ALIS Operational Training and Follow-up Training

ALIS Operational Training (Cambodia)

Opening Ceremony at TIMA attended by all participants from Cambodia, CMAC, JICA, etc.

Prof. Sato and CMAC lecturers giving an introductory lecture on ALIS to training participants in Cambodia

CMAC lecturers training participants in Ukraine on ALIS pre-use inspections (TIMA)

CMAC lecturers instructing training participants in Cambodia on the initial operation of ALIS in the field1 (TIMA)

Initial ALIS operation instruction in the field by CMAC instructors to training participants in Ukraine2 (TIMA)

Initial operational instruction of ALIS in the field by CMAC to training participants in Ukraine3 (TIMA)

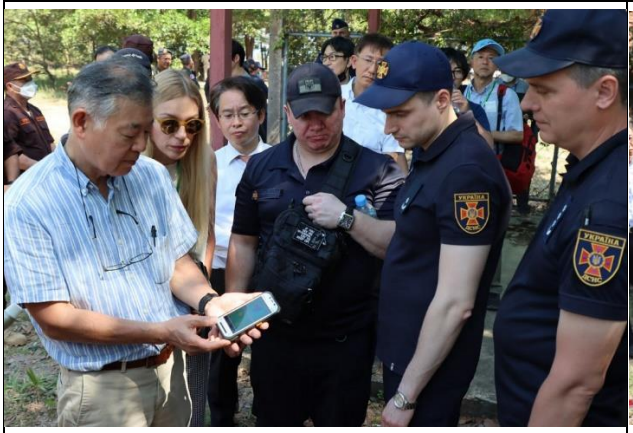
ALIS Operational Training (Cambodia)

Explanation by Prof. Sato on points to keep in mind when operating ALIS for training participants in Cambodia (TIMA)

Training participants from Ukraine using ALIS to detect buried objects under the guidance of CMAC1 (TIMA)

Training participants from Ukraine using ALIS to detect buried objects under the guidance of CMAC2 (TIMA)

Training participants from Ukraine using ALIS to detect buried objects under the guidance of CMAC3 (TIMA)



Prof. Sato explains ALIS image analysis to the training participants in Cambodia (Siem Reap)

Training participants from Ukraine giving a final demonstration of ALIS under the guidance of CMAC (Siem Reap)

	
CMAC inspection of an actual demining site using ALIS (Battambang)	Inspection of demining equipment used by CMAC at the demining site (Battambang)
	
CMAC Director Ratana explains the CMAC-owned demining machine to training participants in Ukraine (Siem Reap).	All participants of the training in UKRAINE, CMAC, JICA, etc. (Siem Reap)
	
Closing ceremony attended by all participants from Cambodia, CMAC, JICA, etc.	Presentation of certificates of completion of initial training to participants from Cambodia at the closing ceremony

ALIS Operational Training (Japan Training Program)

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Discussions between training participants from Cambodia and JICA officials</td><td>Visit to Japanese demining equipment manufacturers by training participants from Cambodia (information gathering on demining equipment) 1-1</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Visit to Japanese demining equipment manufacturers by training participants from Cambodia (information gathering on demining equipment)1-2</td><td>Visit to Japanese demining equipment manufacturers by training participants from Cambodia (information gathering on demining equipment) 2-1</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Visit to Japanese demining equipment manufacturer by training participants from Cambodia (demonstration of actual demining equipment)2-2</td><td>Visit to Japanese demining equipment manufacturer by training participants from Cambodia (demonstration of actual demining equipment)2-3</td></tr>
</table>

ALIS Follow-up Training (Poland)

Director of CSP delivers speech at the opening ceremony (CSP Conference Room)

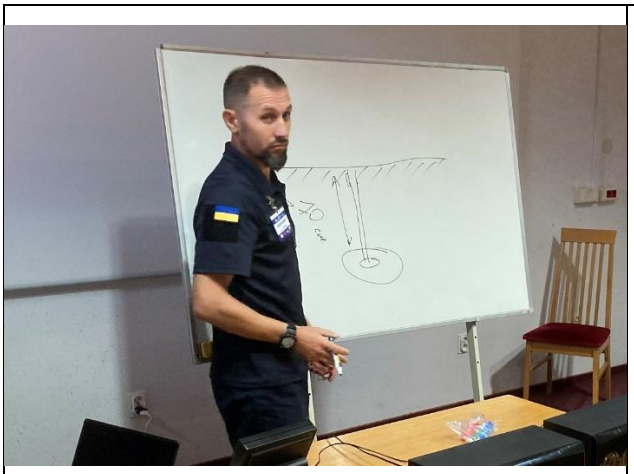
Presentation on review of basic ALIS operations

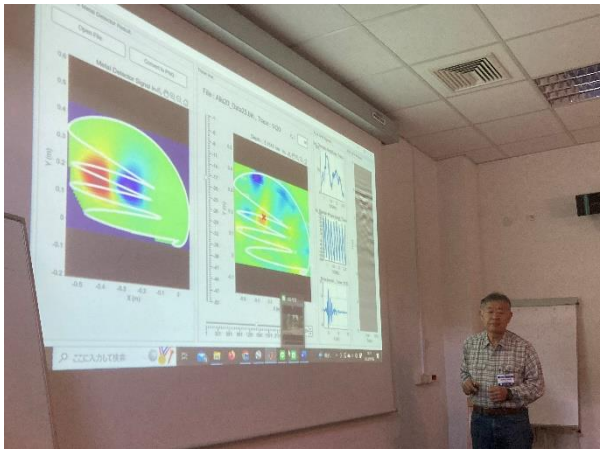
Basic ALIS scanning demonstration by CMAC trainer

Basic ALIS scanning practice

Practice visualizing a simulated landmine buried by each person in the test lane

Dr. Pochanin asking for opinions on a simulated mine visualized in the test lane

	
Presentation by SESU participants on the reality and challenges of mine detection in the local Ukraine	Commentary by Prof. Sato in the test lane
	
Training for more complex situations in test lanes Demonstration by CMAC trainer	Training for more complex situations in test lanes The burial of simulated mines and metal fragments at SESU itself
	
Evaluation test in the test lane CMAC trainer chaperones and records implementation	Evaluation test in the test lane CMAC trainers review visualized images

	
Review of evaluation results by Prof. Sato on the last day	Wrap-up meeting on the last day
	
Ambassador Miyajima of Poland delivers his speech at the closing ceremony	Presentation of certificates by Ambassador Miyajima, JICA Director Ando, CMAC Deputy Director General Pumulo, and Professor Sato
	
Demonstration for media Detection of simulated mines buried in crates prepared by CSP	Media coverage Japanese media interviewing SESU members who demonstrated

Attachment 4-3: Supporting documents for the development of SOP
(by Dr Arnold Schoolderman)

Memorandum

Oude Waalsdorperweg 63
2597 AK Den Haag
P.O. Box 96864
2509 JG The Hague
The Netherlands

www.tno.nl

T +31 88 866 10 00
F +31 70 328 09 61

To
JICS, attn. Mr. Kawasaki

From
A.J. Schoolderman

Subject
ALIS SOP for UKR

Date
14 August 2023

Our reference
TNO 2023 M11489 (final version)

Direct dialling
+31(88 661 08 0

Introduction
The number of methods and technologies that is currently used for the detection of landmines in both humanitarian and military demining operations is rather limited. Apart from the prodder, a fibre to detect tripwires and the use of dogs and some other animals, such as rats, for mine detection, the most commonly used technology is the metal detector, or more correctly: the electromagnetic induction (EMI) technology. The capabilities of metal detectors have improved considerably over the last 20 years. With modern metal detectors, it is possible to detect and locate small pieces of metal buried in soils with a high content of minerals, as long as these metal pieces are in the top layer of the soil, i.e. up to depths of 15 cm. Since landmines contain at least small pieces of metal and are emplaced in the top layer, a metal detector is a suitable tool for mine detection.
However, a metal detector detects, in principle, all metal pieces, and not only those present in a landmine. Hence, with a metal detector it is not possible to discriminate between a (metal piece in a) landmine and a harmless piece of metal, such as a nail, bullet cartridge or fragment of shrapnel. In the daily practice of demining, this results in many so-called false alarms: metal detector alarms due to the presence of harmless pieces of metal. Up to 1000 false alarms are reported on 1 found mine in some demining operations. A high number of false alarms slows down demining operations considerably, since for quality control purposes all metal pieces have to be checked and removed.

Dual-sensor technology
In order to accelerate the detection of mines, a metal detector may be combined with another detection technology, so that discrimination between a mine and a harmless object is possible. With the current state of development, the most suitable sensor to combine with a metal detector is the ground penetrating radar (GPR). Volumes of different electromagnetic properties in the soil can be detected and located with a GPR, and, by using suitable processing methods such as synthetic aperture processing, images of these volumes can be produced. In case that the location of such a volume coincides with a metal detector alarm, the probability of a landmine can be considered as high. On the other hand, a metal detector alarm that does not coincide with a volume with different electromagnetic properties can be neglected, since it will originate from a harmless piece of metal. In this way, discrimination between a mine and a harmless object is possible. The ALIS dual-sensor detector combines a metal detector and a GPR, and uses synthetic aperture processing.

Most efficient SOP

In order to apply a dual-sensor detector, such as the ALIS detector, for landmine detection in the most efficient way, its capability to discriminate between a mine and a harmless metal fragment should be used. Since it is not possible to implement a dual-sensor detector in demining operations with the current Standard Operating Procedure (SOP), which is based on the use of a metal detector, a new SOP will have to be developed. For the acceptance of this new SOP by demining organizations, it is preferred to propose an SOP that is as similar as possible to the current SOP for a metal detector. In the following proposal for an SOP for a dual-sensor detector, the first 6 steps are similar to the current SOP used by SESU for metal detectors.

1. Base bar emplacement,
2. Trip wire search,
3. Control check with the mine detector (search for strong signals: 'course search'),
4. Visual check,
5. Vegetation removal,
6. Detailed metal detector sweep: the ALIS detector is used as a metal detector and the complete survey area (generally a box of 1 m wide and 50 cm deep) is swept.
7. When a metal detection alarm is observed in the survey area, a notional box of approximately 50x50 cm with the location of a metal detector alarm in the center is swept. For this sweep it is important to acquire correct data for the synthetic aperture processing. The correct sweep procedure is explained in the sections 4 and 5 of the ALIS Operational Manual.
8. Inspection of metal detector and GPR images on the tablet, according to the procedure described in section 6 of the ALIS Operational Manual.
9. In case the operator decides (based on the image interpretation) that the location contains a mine: prodding and/or excavation of the object/mine. In case the operator decides that the metal detector alarm is not caused by a mine: the alarm is neglected and the metal piece, causing the metal detector alarm, is not removed from the ground.

Two elements in this SOP for the ALIS detector are essential for its acceptance and implementation by demining organizations:

1. The ability of the operator to acquire metal detector and GPR data with the ALIS detector, suitable for the synthetic aperture processing;
2. Interpretation of the metal detector and GPR images on the tablet of the ALIS detector by the operator.

These elements can only be achieved by training and practising of the operator. Since training may cost a lot of (scarce) time, an intermediate SOP is proposed in the next section in which the training is combined with the mine detection phase in actual demining operations.

Towards the implementation of the ALIS detector in demining operations

A new detector will only be implemented in demining operations if the demining organization and its deminers are convinced of the capabilities of this detector. The detection performance of a detector can be tested in special tests, separate from the demining operations, but this may not convince the operators completely, since the conditions in such a test are different than in actual demining operations. In this section an intermediate SOP is proposed, that combines several aspects to facilitate the implementation of the ALIS detector in demining operations:

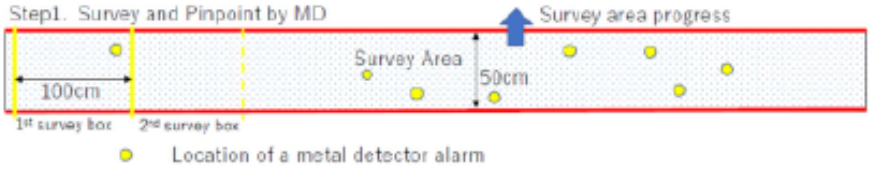
- The primary detector in this intermediate SOP is the currently used metal detector, and for that reason,
- This intermediate SOP is based on the metal detector SOP that is currently in use.
- This intermediate SOP can be used in ongoing demining operations,
- So it can be regarded as a training-on-the-job, which saves time.

Intermediate SOP proposal: for this intermediate SOP, an initial survey area is defined with a depth of 50cm (same as in the current SOP for metal detectors) but with a large width, say 5m. The bottom and top of the survey area are marked with a red rope (start line and finish line), while the left side is marked with a yellow bar. As in the current metal detector SOP, an overlap of 10 cm can to be applied whenever the deminer moves his survey area, both for lateral and forward movements.

In Step 1, the operator sweeps the survey area from left to right with the metal detector in steps of 100cm. First a 100x50cm box, marked with the yellow bar mentioned above on the left side, and a second yellow bar on the right side, is swept with the metal detector. Locations of metal detector indications are marked with a yellow plastic marker.

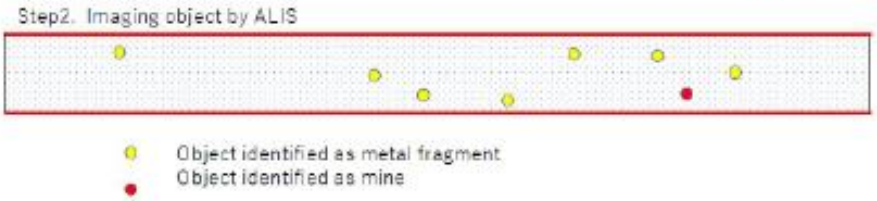
Then this box is moved 100cm to the right by placing the left yellow bar 2m to the right (thus it becomes the righthand side bar of the second 100x50cm box), and sweeping with the metal detector is continued, etc.

Practically this way of working is the same operation as in the SOP for a metal detector; the only difference is that in the regular SOP the deminer makes progress of 25m in the depth of the field (length of the lane), and in this proposed procedure only 0,5m. Also the deminer will not excavate signals (locations with a yellow marker) until they are checked with the ALIS detector (Step 2).



After completing the large/wide survey area (5m x 50cm) with the metal detector, Step 2 is conducted with the ALIS detector. Each location indicated with a yellow marker is investigated with the ALIS detector. Based on the metal detector and GPR images on the tablet of ALIS, the operator declares the metal detector

indications as 'harmless metal fragment' or as 'mine'. In the latter case, the yellow marker is replaced by a red marker.



In the final step, all locations indicated with a yellow or red marker are excavated, and the metal pieces and mines are removed. Recording of the locations of the yellow and red markers and recording of the result of the excavation (either metal fragment or mine) can be used for building up confidence in the ALIS detector and the capabilities of the operators.

Appendix 1.

Collection List

Collection List

Created on August 15, 2023

No.	Name of Data	Language	Size	Page	Original or Copy	Q'ty	Resource	Donated or Purchased	Contents	confirmation
1-1-1	Managing Main Action in Ukraine (Filename: 1.1_ Managing Main Action in Ukraine)	English	A4	25	Soft copy	1	NMAA	Donation	Report on the current status of Mine Action in Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-2	Organization of Nontechnical Survey process in Ukraine (File name:1.2_Organization of Nontechnical Survey)	English	A4	10	Soft copy	1	NMAA	Donation	Report on the current status of the NTS for Mine Action in U (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-3	THE STATE EMERGENCY SERVICE OF UKRAINE (1.3 SESU_ Presentation)	English	A4	14	Soft copy	1	SESU	Donation	SESU Status Report on Landmine and UXO Response (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-4	EVOLUTION OF EXPLOSIVE ORDNANCE RISK EDUCATION IN THE POST INVASION PERIOD (File name: 1.4_MINTOT_ Evolution of EORE post invasion)	English	A4	2	Soft copy	1	SESU	Donation	SESU Status Report on Explosives Ordinance Risk Education (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-5	Humanitarian Mine Action in Ukraine (File name: 2.1_Germany)	English	A4	6	Soft copy	1	Government of Germany	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-6	U.S. Department of State demining assistance to Ukraine (File name: 2.2_United States)	English	A4	4	Soft copy	1	U.S. Government	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-7	Introduction to Japan International Cooperation Agency (File name: 2.3_Japan)	English	A4	9	Soft copy	1	JICA	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-8	Dutch Mine Action Policy and Strategy (filename:2.4. Netherlands)	English	A4	4	Soft copy	1	Government of the	Donation	Outline of Assistance to Ukraine	

No.	Name of Data	Language	Size	Page	Original or Copy	Q'ty	Resource	Donated or Purchased	Contents	confirmation
							Netherlands		(GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-9	EU Support to Mine Action in Ukraine (File name: 2.5_ European Commission)	English	A4	6	Soft copy	1	European Commission (executive of the EU)	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-10	Swiss support to Mine Action Ukraine (filename:3.1_Switzerland)	English	A4	5	Soft copy	1	Swiss Government	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-11	Global Affairs Canada's Support to Mine Action in Ukraine (File name: 3.2_Canada)	English	A4	7	Soft copy	1	Government of Canada	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-12	Ukraine Donor Coordination Workshop (File name: 3.3_United Kingdom)	English	A4	5	Soft copy	1	British Government	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-13	Swedish Mine Action support to Ukraine (File name: 3.4_Sweden)	English	A4	3	Soft copy	1	Swedish Government	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-14	Norway's Support to Mine Action in Ukraine 2022-2023 (File name: 3.5_Norway)	English	A4	9	Soft copy	1	Norwegian Government	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-15	PLENARY DISCUSSION (File name: 4.1_SESU)	English	A4	12	Soft copy	1	SESU	Donation	SESU Report on Issues Related to Landmine and UXO Response (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-16	Untitled (video) (File name: 4.1_SESU)	-	-	(1 min 27 sec)	VIDEO. (Mp3)	1	SESU	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action	

No.	Name of Data	Language	Size	Page	Original or Copy	Q'ty	Resource	Donated or Purchased	Contents	confirmation
									Donor Coordination Workshop Handout)	
1-1-17	EU Support to Mine Action Equipment Needs (File name: 4.2_ European Commission)	English	A4	5	Soft copy	1	European Commission (executive of the EU)	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-18	Operational Equipment Needs (File name: 4.4_Tetra Tech)	English	A4	2	Soft copy	1	Tetra Tech, Inc.	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-19	DRC Humanitarian Disarmament and Peacebuilding (HDP) in Ukraine (File name: 4.5_ DRC)	English	A4	4	Soft copy	1	DRC (Danish Refugee Council)	Donation	Outline of Assistance to Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-20	Ukrainian Perspective on Institutional Development and Technical Aid (File name: 5.1_ STS)	English	A4	10	Soft copy	1	NMAA	Donation	c. Concept of institutional development and technical assistance in Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-21	MINE ACTION SYSTEM IN THE REPUBLIC OF CROATIA achievements and experiences (File name: 5.2_Croatia)	English	A4	18	Soft copy	1	Government of the Republic of Croatia	Donation	Mine Action System in the Republic of Croatia Proven track record and experience (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-22	Developing Capacity for Impactful EORE (File name: 5.3_UNICEF)	English	A4	7	Soft copy	1	UNICEF	Donation	Capacity building for realizing explosives risk education in Ukraine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	
1-1-23	untitled (File name: 5.4_The HALO Trust)	English	A4	1	Soft copy	1	HALO Trust	Donation	HALO Trust's activities in Ukraaine (GICHD Ukraine Mine Action Donor Coordination Workshop Handout)	

No.	Name of Data	Language	Size	Page	Original or Copy	Q'ty	Resource	Donated or Purchased	Contents	confirmation
2-1-1	Mine Action in Ukraine (February the 17th, 2016)	English	A4	15	Soft copy	1	Government of Ukraine	Donation	Mine Action by the Government of Ukraine as of February 2016 (https://www.Mine Action.org/sites/default/files/documents/lt._col._yevhenii_zubarevskyi.pdf)	
2-1-2	Challenges for Mine Action	English	A4	11	Soft copy	1	Government of Ukraine	Donation	Mine Action by the Government of the Ukraine against the Russian military invasion in 2022 (published on the website dated June 20, 2022)	
2-1-3	Execution of Mine Action measures by the State Emergency Service of Ukraine	English	A4	13	Soft copy	1	SESU	Donation	SESU's activities on Mine Action since 2014	
2-2-1	Ukrainian Emergency Ministerial Decree 791 (in Ukrainian)	c-number of words	A4	107	Soft copy	1	Ministry of Emergency Situations of Ukraine	Donation	Procedures for removing land mines and other explosive devices on land and in water	
2-2-2	Ordinance of the Ministry of Emergency Situations of Ukraine 791 (provisional English translation)	English	A4	116	Soft copy	1	Ministry of Emergency Situations of Ukraine	Donation	Procedures for removing land mines and other explosive devices on land and in water	
2-2-3	SOP of SESU (No.1~No.11) (U.S. language)	c-number of words	A4	11 sets	Soft copy	1	SESU	Donation	11 types of SOP created by SESU	
2-2-4	SOP of SESU (No.1~No.11) (Tentative English translation)	English	A4	11 sets	Soft copy	1	SESU	Donation	11 types of SOP created by SESU	
2-3-1	Introduction to ALIS 1: Technology	English	A4	40	Soft copy	1	Pro. Motoyuki Sato, Tohoku University	Donation	Explanatory material on ALIS1 (Handouts distributed at the ALIS Operational Training in Cambodia)	-
2-3-2	Introduction to ALIS 2: History	English	A4	56	Soft copy	1	Pro. Motoyuki Sato, Tohoku University	Donation	ALIS Explanatory Material 2 (Handouts distributed at the ALIS Operational Training in Cambodia)	-
2-3-3	Introduction to ALIS 3:Dual Sensor	English	A4	17	Soft copy	1	Pro. Motoyuki Sato, Tohoku	Donation	Explanatory material on ALIS3 (Handouts distributed at the ALIS Operational Training in	-

No.	Name of Data	Language	Size	Page	Original or Copy	Q'ty	Resource	Donated or Purchased	Contents	confirmation
							University		Cambodia)	
2-3-4	ALIS Operation Manual	English	A4	21	Soft copy	1	Pro. Motoyuki Sato, Tohoku University	Donation	ALIS Operations Manual (Handouts distributed at the ALIS Operational Training in Cambodia)	-
2-3-5	CMAC: Programs, Progress and Path Ahead	English	A4	17	Soft copy	1	CMAC	Donation	Explanatory material on CMAC's demining activities (Handouts distributed at the ALIS Operational Training in Cambodia)	-
2-3-6	ALIS TRAINING COURSE	English	A4	21	Soft copy	1	CMAC	Donation	For ALIS training at CMAC text (Handouts distributed at the ALIS Operational Training in Cambodia)	-
2-3-7	ADVANCED LANDMINE IMAGING SYSTEM (ALIS) IN DEMINIG OPERATION IN CMAC (File name: 2-3-7_ALIS IN DEMINIG OPERATION IN CMAC)	English	A4	26	Soft copy	1	CMAC	Donation	CMAC's ALIS-based demining activities (Handouts distributed at the ALIS Operational Training in Cambodia)	-
2-3-8	THE STATE EMERGENCY SERVICE OF UKRAINE	English	A4	14	Soft copy	1	SESU	Donation	SESU Status Report on Landmine and UXO Response (Handouts distributed at the ALIS Operational Training in Cambodia)	-
2-4-1	CMAC SOP 113 Annex G-1 OPERATIONAL ALIS - DUAL SENSORS DETECTOR (File name: 2-4-1_CMAC SOP 113 Annex G-1 OPERATIONAL ALIS)	English	A4	11	Soft copy	1	CMAC	Donation	CMAC has developed SOP of ALIS	-
2-4-2	Proposals for SOP with the ALIS dual-sensor detector version 0.3 (25 June 2021) (File name: 2-4-2_Proposals for SOPs with the ALIS ver. 0.3)	English	A4	4	Soft copy	1	Dr. Arnold Schoolderman	Donation	ALIS SOP developed under the NATO program in Bosnia and Herzegovina	-
3-1-1	MINE ACT 19th SYMPOSIUM MINE ACTION 2023 (File name: 3-1-1_BROSURA-CTRO-MINE ACTION-2023)	English	A4	108	Soft copy	1	Croatian Mine Action Center - Center for Testing, Development and Training	Donation	Handout from the 19th Symposium on Mine Action in Croatia	

No.	Name of Data	Language	Size	Page	Original or Copy	Q'ty	Resource	Donated or Purchased	Contents	confirmation
							(HCR-CTRO)			
3-1-2	Secretariat of NMAA Mine Action Humanitarian demining in the context of Russian aggression (File Name: 3-1-2 NMAAMine Action)	English	A4	15	Soft copy	1	NMAA	Donation	Handout from the 19th Symposium on Mine Action in Croatia	
3-2	Mine Action RESPONSE ARCHITECTURE (DRAFT 29.05.23)	English	A4	1	Soft copy	1	MASC	Donation	Future framework for Mine Action in Ukraine (MASC handout, June 6, 2023)	
4-1-1	Curriculum and process chart for ALIS proficiency training	Japanese (language)	A4	1	Soft copy	1	Prof. Motoyuki Sato ALISys	Donation	ALIS process to proficiency, training curriculum, time required, etc.	
4-2-1-1	Dual sensor ALIS(1)	English	A4	34	Soft copy	1	Prof. Motoyuki Sato ALISys	Donation	Features, structure, use of ALIS, etc. (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-1-2	Dual sensor ALIS(2)	English	A4	37	Soft copy	1	Prof. Motoyuki Sato ALISys	Donation	Example of ALIS usage, image confirmation, etc. (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-1-3	ALIS Cloud (Overview)	Japanese and English	A4	2	Soft copy	1	Prof. Motoyuki Sato ALISys	Donation	[Handling caution] System image of ALIS using CLOUD, etc. (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-2-1	SESU Situation update	English	A4	16	Soft copy	1	SESU	Donation	Landmine and UXO contamination in Ukraine and countermeasures, etc. (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-2-2	ALIS GPR TESTING APRIL-JUNE 2023	English	A4	11	Soft copy	1	SESU	Donation	ALIS testing conducted independently by SESU and results (Handouts distributed at the	

No.	Name of Data	Language	Size	Page	Original or Copy	Q'ty	Resource	Donated or Purchased	Contents	confirmation
									follow-up training for handling actual ALIS equipment in Poland)	
4-2-3	ALIS in CAMBODIA	English	A4	15	Soft copy	1	CMAC	Donation	How to operate and utilize ALIS by CMAC in Cambodia (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-4	ALIS SOP DEVELOPMENT	English	A4	5	Soft copy	1	Dr. Arnold Schoolderman	Donation	ALIS's Policy for Developing Draft SPOs (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-5	SOILS in UKRAINE	English	A4	8	Soft copy	1	Dr. Pochanin	Donation	Description of Ukrainian Soils (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-6	Supporting Mine Action for Peace	English	A4	7	Soft copy	1	Mr. JICA Komukai	Donation	Japan's Cooperation in Humanitarian Mine Action (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
4-2-7	Technical Cooperation	English	A4	6	Soft copy	1	OCG Mr. Sekiguchi	Donation	Technical Cooperation Proposal (Handouts distributed at the follow-up training for handling actual ALIS equipment in Poland)	
5-1-1	ALIS Follow-up Training in Poland Implementation Report	English	A4	11	Soft copy	1	Prof. Motoyuki Sato ALISys	Donation	Report on ALIS Follow-up Training in Poland	