THE LAO PEOPLE'S DEMOCRATIC REPUBLIC
UXO LAO

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR
SUPPORTING UNEXPLODED ORDNANCE (UXO) CLEARANCE
IN SURROUNDING AREAS OF MAIN ROADS
IN
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

AUGUST 2012

JAPAN INTERNATIONAL COOPERATION AGENCY

ORIENTAL CONSULTANTS CO., LTD.
LANDTEC JAPAN, INC.

EID
JR
12-167

THE LAO PEOPLE'S DEMOCRATIC REPUBLIC
UXO LAO

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR
SUPPORTING UNEXPLODED ORDNANCE (UXO) CLEARANCE
IN SURROUNDING AREAS OF MAIN ROADS
IN
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

AUGUST 2012

JAPAN INTERNATIONAL COOPERATION AGENCY

ORIENTAL CONSULTANTS CO., LTD.

LANDTEC JAPAN, INC.

PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to consist of Oriental Consultants Co., Ltd. and Landtec Japan, Inc.

The survey team held a series of discussions with the officials concerned of the Government of the Lao People's Democratic Republic, and conducted a field investigations. As a result of further studies in Japan, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Lao People's Democratic Republic for their close cooperation extended to the survey team.

August 2012

Kiyofumi KONISHI
Director General,
Economic Infrastructure Department
Japan International Cooperation Agency

SUMMARY

SUMMARY

1 Outline of the Recipient Country

(1) Territory and Nature

Lao People's Democratic Republic (hereinafter referred to as “Lao PDR”) is located in 14–23 degrees north latitude and 100–108 degrees east longitude, and has land totalling 240,000 km^2, which is equivalent to the area of Honshu Island of Japan. It is an inland country located in the central part of the Indochina Peninsula, has no coastline, and adjoins five countries: Vietnam in the east, Thailand in the west, Cambodia in the south, and China and Myanmar in the north. The Mekong River, which forms the Laotian borderline with Myanmar and Thailand, flows through the southern part of Lao PDR, Cambodia, and Vietnam before it reaches the South China Sea. Lao PDR is a country of geographic importance, as it is situated in the central part of the Mekong Basin, named the “Great Mekong Sub-region (GMS).”

The climate in Lao PDR has distinctive rainy and dry seasons under the influence of the monsoons. The rainy season lasts from May through October while the dry season lasts from November through April. The annual average temperature is around 28°C, and the highest temperature rises to 38°C in April and May, while the lowest temperature in Vientiane goes down to 17°C in January. Rainfall in Vientiane is approximately 1,500 to 2,200 mm (with average annual rainfall of around 1,700 mm). A total of 85% or more of all annual rainfall occurs during the rainy season from May through October, and rainfall in excess of 200 mm a month is often observed during that period. The maximum daily rainfall during the three-year period from 2007 through 2009 was 127 mm. Thunderstorms also occur often in the rainy season, and damage to buildings is reported.

While Lao PDR may seem to be seldom hit by typhoons as it is an inland country, it has been damaged either slightly or severely by typhoons and heavy rains since 2008. In September 2009, Typhoon No. 16 (Asian name: Ketsana), which was born in the waters near the Philippines, crossed the Philippines, directly hit Vietnam and Cambodia, and reduced itself to a tropical cyclone as it headed to Lao PDR, caused floods in the southern part of the country. The rainfall in 2011 increased to approximately 144% that of ordinary years under the influence of Typhoon No. 6 (Asian name: Haima) in June, Typhoon No. 8 (Asian name: Nok Ten) in July, and continual heavy rains, and this caused overflows in the branches and main stream of the Mekong River, which caused severe damage to roads, bridges, and agricultural land.

(2) Socioeconomic Conditions

According to World Bank data from 2010, the population of the country is approximately 6.2 million, and approximately 10% of that lives in the unique city of Vientiane. The data also

shows that the country's nominal GDP is approximately 7.29 billion dollars, the GNI per capita is 1,050 dollars, the GDP growth rate is 9.4%, and the inflation rate is 6.0%. With a poverty rate of 27.6% (in 2008) and an unemployment rate of 1.4% (in 2005), the country is still recognized as a least-developed country.

In terms of industrial structure, the service industry accounts for approximately 42%, agriculture approximately 33%, and industry approximately 25%, while approximately 80% of the working population is engaged in agriculture. Bolaven Plateau, in the southern part of Champasak Province, produces quality coffee, cabbage, and potatoes, and coffee is the largest agricultural exported product of Lao PDR. The promotion of UXO clearance and the securing of safe agricultural land through this project are expected to contribute to the further expansion of agricultural land.

2 Background of the Project

While the Lao National Unexploded Ordnance Programme (hereinafter referred to as "UXO Lao") has cleared UXO in approximately 3,000 ha (30 km^2) of land each year, currently, the UXO-contaminated area officially announced by the government of Lao PDR is as vast as 87,000 km^2, and the area cleared before the end of 2011 accounts for only 0.27%[1] of the total. The number of cleared UXO accounts for only 0.6%[2] of the total at the end of 2010. The additional funds, personnel, equipment, and other resources is essential in view of the fact that the UXO sector, if left with its current overall clearance capacity, will not be able to achieve the target figures[3] described in the national programme for the UXO sector, "National Strategic Plan for the UXO Sector in the Lao People's Democratic Republic 2010-2020."

As to the equipment, vehicles become damaged quickly, as they are used on extremely severe roads in mountainous terrain and in bombed areas located relatively near the mountains, while some of the other equipment is noticeably worn out, as it has been in use since the foundation of UXO Lao. The equipment is not properly renewed, as the budget of UXO Lao consists of contributions by donors, and use of the funds is limited to clearance activities only, while the purchase of equipment in excess of certain amounts is often subject to donor approval.

Furthermore, UXO Lao has been forced to detect and remove UXO quickly and smoothly to ensure the security of flood-stricken areas in various situations, including the case of some areas that were struck by floods during the heavy rains in 2011. This required UXO Lao to

[1] Cumulative cleared area by UXO Lao until 2011 is 23,442ha. 23,442ha/8,700,000ha=0.27%

[2] Approximately 80 million unexploded bombies remained in Lao after the war, and 480,297bombies are cleared until 2009. (480,297/80,000,000 cluster bomb =0.60%)

[3] This plan intended to reduce the number of UXO casualties from 300 to less than 75 per year by 2020. Moreover, listed in the plan as one of the major objectives is clearing of land amounting to 200,000ha including agricultural land in the 47 poorest districts during, the decade from 2010 to 2020.

preferentially clear land on which they were forced to relocate their public facilities. The flood-stricken areas include the provinces of Savannakhet, Sekong, and Attapue in the central and southern districts of the country, where Japan has, for the purpose of the growth and development of the Mekong Basin on a regional basis, preferentially assisted community development and the improvement of major roads to increase the transportation capacity and where Japanese-affiliated enterprises have set up operations in response to such improvements in infrastructure. Accordingly, it is an important and urgent issue, in addition to the measures against UXO across Lao PDR, to secure the safety of trunk roads and other districts in those flood-stricken areas. Landslides resulting from heavy rain occur every year, and efforts are required to cope with the situation even where UXO are buried deep in the ground they may emerge through landslides; thus, latent risks become apparent.

Under the circumstance, the government of Japan was requested to support UXO clearance activities by Lao PDR government, and the government of Japan conducted the preparatory survey, for improving the efficiency of its UXO clearance activities and supporting such activities as operator training, information management, and other infrastructure development.

The items of the request made by Lao PDR to Japan are as mentioned below:

Table 1　Items of the Original Request by Government of Lao PDR

Equipment	Detectors (Vallon, Ebinger, Ebinger Large-loop, Minelab, Deep Search Magnetic Metal Detector, or equivalent）, Station Wagons, Pick-up Trucks, Mid-class Cargo Trucks, Motorbikes, Radios (Base, Vehicle, and Mobile Type), GPS, PC (Desktop and Laptop Type), Software for PC, Scanners, Photocopy Machines, Color-Printers, Projectors, Outboard Motors for Boats

As for the request for facilities, the Team proceeded with the onsite survey, as the Team was informed in advance that the Lao side would include the construction of facilities (training center, in particular) in this project. Eventually, due to the limitation of the survey period the onsite survey was directed to the confirmation of the condition of existing facilities to collect data and study the direction of facility development in the future.

3　Outline of the Survey Results and Contents of the Project

The Preparatory Survey Team (hereinafter referred to as the “Team”) was dispatched to Lao PDR, the first survey from 11 January 2012 to 28 January 2012 and the second from 11 March 2012 to 30 March 2012, and held discussions with UXO Lao, National Regulatory Authority for UXO/Mine Action in the Lao PDR (hereinafter referred to as “NRA”), other donors, and related organizations about the Project. After returning to Japan, the Team continued to study and analyze results of field survey to make an outline design and compile the draft final report.

Then, the Team was dispatched to Lao PDR from 1 July 2012 to 7 July 2012 to explain the outline design in accordance with the draft final report to implement to government of Lao PDR.

During the first survey, the Team confirmed the priority about requested equipment by the recipient country and, on the second survey, basically fixed equipment items and its quantity to be provided according to the result of consultation. After that, some modifications concerning the quantity of equipment were requested by UXO Lao during the details discussion including equipment specifications. The requirement was evaluated and accepted and appropriate modifications were made as necessary, and finally summarized in Technical Notes (T/N). After returning to Japan, an additional analysis was continuously conducted and the Project cost was estimated based on the detailed study by the Team, and finally, the Minutes of Discussion (M/D) was agreed with signature from the Lao government on the third survey.

The following equipment was excluded from this Project following the discussion with UXO Lao.

Table 2 Equipment Excluded from the Project

Name of Equipment	Reasons
Deep Search Magnetic Metal Detector	From the perspective of security, the major target of UXO is cluster sub-munitions. The cluster sub-munitions are located 30cm under the ground, so the priority for procurement of a deep search detector is low. The technical level of the magnetic detector has not been confirmed and the reliability has not yet been tested. In addition, a lot of support is needed for direction on use, operation and maintenance, etc. Therefore, adopting a deep search magnetic detector is not effective at the present stage and has been excluded from this Project.
Pick-up Truck (Single Cabin)	The main purpose of a pick-up truck is transportation of large sized UXO. However due to the maximum number of passengers are only 3, UXO Lao deems that a single cabin pick-up truck is not efficient for their activities and thus has been canceled.
Outboard Motor for Boats	Small craft are used for transportation to isolated areas that cannot be accessed by vehicles in Luangphrabang province. The existing engine of the craft is too old to work properly so UXO Lao requested the equipment. However, as a result of the site survey, the requested engine is not an outboard and thus cannot be procured by a Japanese supplier. It has been excluded from the requested items.

The project components and items of equipment were finalized as summarized in Table 3 and 4.

Table 3 Equipment Arrangement for Project Site Offices

Project Site Office / Equipment	National Office	Training Center	Luangphrabang	Huaphanh	Xiengkhuang	Khammuane	Savannaket	Saravan	Champasak	Sekong	Attapue	Total
UXO Detector (Vallon)	3	30	8	14	57	20	51	29	17	34	12	275
UXO Detector (Ebinger)	3	2	5	5	2	3	12	7	5	6	2	52
UXO Detector (Minelab)	3	10	7	7	13	4	13	10	7	1	4	79
Station Wagon	1	2	5	7	11	3	8	8	5	5	5	60
Pick-up Truck	1	1	1	2	2	1	2	1	1	1	1	14
Mid-class Cargo Truck	1	1	2	2	3	2	3	3	2	2	2	23
Motorbike		12	3	5	6	2	6	4	4	4	4	50
Desktop PC	10	5	5	3	5	4	7	3	4	4	5	55
Laptop PC	5	2	3	3	4	2	4	4	3	3	3	36
Scanner	1		1	1	1	1	1	1	1	1	1	10
Photocopy Machine	2	1	2	2	2	2	3	2	3	3	3	25
Printer (Color)	1	1	2	2	2	2	2	2	2	2	2	20
Printer (Black/White)	9	2	3	3	2	2	3	2	2	2	2	32
Facsimile Machine	2	1	1	1	2	2	2	2	2	2	2	19
Generator			5	5	5	6	5	5	4	4	4	43
Grass Cutter			10	5	6	5	10	4	4	5	5	54
Radio (Base)			1	1	1	1	2	3	1	1	1	12
Radio (Vehicle)	3	4	8	11	16	6	13	12	8	8	8	97
Radio (Mobile)		10	10	10	10	10	10	10	10	10	10	100
GPS		10	10	10	10	10	10	10	10	10	10	100
Digital Camera			2	3	2	3	3	3	3	3	3	25
Projector		1	1	1	1	1	1	1	1	1	1	10

Note: UXO Lao shall make final adjustments for equipment allocating to each provincial office after confirmation of latest annual plan.

Table 4　Equipment Specification and Intended Use

No.	Equipment	Specification	qt.	Purpose of Use
1	Detector (Vallon)	Model：VMXC1 UXO	275	UXO detection and training.
2	Detector (Ebinger)	Model：UPEX 740M	52	
3	Detector (Minelab)	Model：F3LS UXO	79	
4	Station Wagon	4WD (diesel, more than 10 passenger, winch, rooftop carrier, off-road tires)	60	Equipment and personnel transportation for Technical Survey, Clearance, Roving Clearance and Community Awareness.
5	Pick-up Truck	4WD (diesel, double cabin, winch, off-road tires)	14	Transportation of personnel, equipment and UXO (auxiliary for station-wagon).
6	Mid-class Cargo truck	4WD (diesel, 4-6 ton, rag-roof, winch)	23	Transportation of large-sized equipment.
7	Motorbike	displacement: more than 170cc, off-road type	50	Prompt transfer to UXO site for General Survey Team.
8	Desktop PC	CPU Intel Core : more than 2.9 GHz, memory: more than 2 GB, HDD : more than 400 GB, monitor : more than 17 inch (liquid crystal color)	55	Record of UXO cleared site condition and report of UXO clearance activity.
9	Laptop PC	CPU Intel Core : more than 2.2 GHz, memory: more than 2 GB, HDD more than 400 GB, monitor : more than 14 inch and less than 15.6 inch (liquid crystal color)	36	Site information input by the General Survey Team and UXO risk educational activity by the Community Awareness Team (video showing at community congregation).
10	Scanner	Automatic let off motion, both sides reader, A3 size, optical resolution: more than 600 dpi, scanning speed: A4 300 dpi – 35 sec or less	10	Each provincial office sends the monthly and completion reports to NRA by scanned data. The existing scanner is manual and A4 size, and lot of effort has been used in scanning work by the Operation Assistant of provincial offices.
11	Photocopy Machine	Resolution: more than 600×600 dpi, copy speed: A4－25 copy/min. or faster, A3 size, memory: 512 MB or more	25	Effective organization of UXO clearance information.
12	Printer (Color)	Print speed: A4－20 ppm or faster, print quality: 1200×1200 dpi or more, memory: 8MB or more	20	
13	Printer (Black/White)	Print speed: A4－25 ppm or more, print quality: 2400 dpi or more, memory: 160MB or more	32	
14	Facsimile Machine	Paper size: A4	19	
15	Generator	Rated voltage: 200V-240V, frequency: 50Hz-60Hz, max. output: 2.8KVA or more	43	Charging the detector battery is essential for UXO detection. Generator is essential at remote sites.
16	Grass Cutter	2-blade cutter or mowing cutter	54	Grass cutting is required prior to the UXO detection. Motorized grass cutters are effective equipment.

No.	Equipment	Specification	qt.	Purpose of Use
17	Radio (Base)	Frequency: 1.6-24 MHz or wider, power output: 125 W or more, channels: 200 or more	12	Communication between provincial office and site vehicles.
18	Radio (Vehicle)	Frequency: 1.6-30 MHz or wider, power output: 125 W or more, channels: 200 or more	97	
19	Radio (Mobile)	Hand-held, Frequency: 134-174 MHz or wider, channels: 50 or more	100	Communication of site operator.
20	GPS	Waterproof, receiver: 12 parallel channels	100	UXO cleared site location (coordinates) is recorded by GPS. Coordinates are sent to NRA for IMSMA data.
21	Digital Camera	Dust protected and waterproof, camera effective pixel: 3.2x or more	25	Record of UXO cleared site.
22	Projector	Digital Light Processing (DLP), resolution: not less than 800×600, Screen (more than 100inch)	10	UXO risk educational activities are conducted by the CA Team. The CA Team uses TV monitor to explain risks of UXO. However, the TV monitor is too small to be seen by many people. A large screen provided by the projector is effective when used with a laptop PC instead of a TV monitor.

4 Implementation Schedule and Project Cost

The implementation period of the Project will be 5.0 months for detailed design and tender process including tender evaluation and 8.0 months for procurement and installation works which includes manufacturing of equipment, transportation, operational guidance, final inspection and handover. Thus, the total implementation period of the Project will be 13 months after conclusion of consulting services agreement.

And, an estimated cost to be borne by the recipient side for the implementation of the Project is as follows:

Cost to be borne by the recipient side: 2.92 Million Japanese Yen (LAK304.77 Million)

5 Project Evaluation

(1) Relevance

This project is in agreement with the key areas of Lao PDR's national programmes and the assistance policy of Japan. The project is high in urgency in terms of securing safety in the areas around the main roads and achieving UXO clearance targets officially set and announced by the Lao PDR government, and is meant to address the needs related to the UXO clearance. The

equipment to be procured consists mainly of the replacement of existing equipment, and operation and maintenance is deemed possible through the skill of UXO Lao staff.

Accordingly, this project is deemed highly adequate in the above-mentioned aspects.

(2) Effectiveness

The following outputs are to be expected from the Project and therefore it is considered that the Project will be confidently effective.

Quantitative Outputs

1) Total clearance area per year

By using the equipment to be procured in this project, the annual clearance area will be increased from 2,938 ha in 2011 to 3,783 ha in 2016.

While 546 operators were involved in the UXO clearance operation in 2011, only 514 units of detectors (Vallon) are currently registered and used for clearance operations, meaning two or more operators are using one detector in turn at certain sites. Since every clearance operator will be provided with their own detector due to the renewal and increase of the equipment in number in the project, the clearance operation efficiency will be improved by 546 (unit)/514 (unit) times. Furthermore, although approximately 10% of the detectors will be out of use for approximately one month in each year as shown by the past data due to the breakdown/repair of detectors, the stoppage of work thereby will be cleared to secure the clearance operation throughout the year because spare detectors will be provided through this project. Accordingly, the efficiency will be improved by 100 (%)/90 (%) times and also by 12 (month)/11 (month) times.

Based on the above, the annual clearance area has been calculated as mentioned below on the assumption that the improved condition will be maintained once this project is put into practice.

Annual cleared land area (ha/year)
= (Annual cleared land area in 2011) × (546units x 514units) × (100%/90%)
× (12months/11months)
＝2,938ha/year×546/514×100/90×12/11
＝3,783ha/year

2) The number of beneficiaries by clearance operations

Due to higher efficiency in clearing UXO-contaminated agricultural land, which will be achieved through the use of the equipment provided in this project, the number of people who will benefit from the clearance operations to be able to cultivate the cleared agricultural lands will increase from 466,337 in 2011 to approximately 510,486 in 2016.

As far as we can see from the analysis of the past records, the number of the beneficiaries varies depending upon the sites of annual clearance operation. While the number of people to benefit from the clearance of agricultural lands is expected to increase almost in proportion to the area of cleared land as shown in 1) above, the target for residential and tourist areas will be to maintain the level of 2011 on a continuous basis in view of the large number of uncertainties involved (existence and scale of annual development programmes).

In view of the fact that agricultural land accounts for approximately 87% of the total clearance area (result from 2011) and the number of the beneficiaries per 1 ha is estimated to be around 60,[4] the following number of people are expected to benefit in 2016.

Beneficiaries (people/year)
＝Beneficiaries in 2011 + increase in cleared area × share of agricultural land (87%) × beneficiaries per unit area
＝466,377 people/year +(3,783ha/year－2,938ha/year) x 87/100 x 60 people/ha
＝510,486 people/year

3) The number of persons covered by community awareness activities

Due to the development of UXO Lao's system to conduct safety education (community awareness activities) and the increase in the number of opportunities and scale thereof through the use of the equipment to be provided in this project, the number of participants in safety education is expected to increase from 143,447 in 2011 to 150,619 in 2016.

As far as we can see from the analysis of past records, the amount of safety education classes conducted by the local offices remains almost unchanged at approximately 600 in total in a year. This number is not likely to change even when the trucks and other equipment are renewed. The number of beneficiaries per year has remained unchanged at approximately 150,000 for the last five years, which can be interpreted as the result of the community awareness activities rooted in many villages across the country and

[4] An average value calculated from the number of beneficiaries of the farmland cleared by UXO Lao in 2011, excluding Xiengkhuang province, under a special project during the year.

conducted on a regular basis.

According to the UXO Lao's record of Sekong Province in the southern part of Lao PDR, 80%–90% of the residents of targeted areas have participated in the community awareness activity, leaving only 10%–20% of them to be taking safety education in the future. The average number of attendees based on the past records is around 250 per meeting, and this is expected to increase by approximately 5% in comparison with the past meetings if one out of three of the residents that had not previously taken part in a meeting (which is 10%-20% of the residents) take part in the new meetings, using television monitors because projectors and screens will be used for a larger number of attendees in the meetings after the implementation of this project.

Number of participants (people/year)
＝Results from 2011 × (1 + 0.05)
＝143,447people/year x 1.05
＝150,619 people/year

4) Maintenance cost of all equipment

The equipment maintenance cost will decrease from US$69,769 in 2011 to US$54,262.30 in 2016 because the equipment currently in use will be replaced by the new equipment to be procured in the project and because current maintenance costs and procurement costs will accordingly decrease.

The equipment maintenance costs of UXO Lao are classified into the maintenance cost for office equipment and the installation and maintenance costs for field equipment. As for the office equipment, it is expected that maintenance costs will remain unchanged from the 2011 results (US$36,272.84) on the grounds that almost all of the existing equipment will be used continuously, while regarding the field equipment, 55% of the 2011 results (US$34,522.69) will still be required since the same percentage of the existing equipment (mainly detectors) will remain in use continuously, while procurement and maintenance costs will not be needed for the new equipment. The total costs will be reduced as follows:

Equipment maintenance costs (US$)
＝ Office equipment maintenance costs + field equipment installation and maintenance costs
＝US$35,274.82 + (US$34,522.69 x 55/100)
＝US$35,274.82 + US$18,987.48
＝US$54,262.3

Table 5　Quantitative Outputs

Indicators	Present Situation (2011)	Measure Achievement (2016)
1) Total clearance area per year	2,938 ha	3,783 ha
2) The number of beneficiaries by clearance operations	466,337 people	510,486 people
3) The number of persons covered by community awareness activities	143,447 people	150,619 people
4) Maintenance cost of all equipment	69,769 USD	54,262.3 USD

Qualitative Outputs

1) Contribute to the expanded use of land through UXO clearance and technical surveys.
2) Contribute to a safe and secure life for residents by decreasing the UXO-contaminated area.
3) Facilitate the maintenance of equipment and its functional performance, and enhance the safety of workers through the replacement of worn-out equipment with new equipment.
4) Enhance the development of local public facilities including schools and hospitals (health centers), etc.
5) Contribute to a decrease in the number of UXO victims, namely, contribute to the achievement of the goal to “reduce the number of UXO causalities from 300 to less than 75 per year” as established in the “National Strategic Plan for the UXO Sector in the Lao People’s Democratic Republic 2010–2020, ‘The Safe Path Forward II’”
6) Secure the safety of the Japanese enterprises currently operating in Lao PDR in terms of their business activities.

CONTENTS

Appendices

LOCATION MAP

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

A/P	Authorization to Pay
B/A	Banking Arrangement
CA Team	Community Awareness Team
CCM	Convention on Cluster Munitions
CT	Area Clearance Team
E/N	Exchange of Notes
CMAC	Cambodian Mine Action Centre
GDP	Gross Domestic Product
G/A	Grant Agreement
GMS	Greater Mekong Sub-region
GNI	Gross National Income
GPS	Global Positioning System
GS Team	General Survey Team
HF	High Frequency
IMSMA	Information Management System for Mine Action
JAIF	Japan-ASEAN Integration Fund
JICA	Japan International Cooperation Agency
JMAS	Japan Mine Action Service
LAK	Lao Kip
MAG	Mines Advisory Group
M/D	Minutes of Discussions
MDGs	Millennium Development Goals
NGO	Non-Governmental Organizations
NRA	National Regulatory Authority for UXO/Mine Action in the Lao PDR
OA	Operation Assistant
RT	Roving Team
SEOD	Senior Explosive Ordnance Disposal
SOP	Standard of Operation
TS Team	Technical Survey Team
USAID	US Agency for International Development
UN	United Nations
UNICEF	The United Nations Children's Fund
UNDP	United Nations Development Programme
UXO	Unexploded Ordnance
UXO Lao	Lao National Unexploded Ordinance Programme
VAT	Value Added Tax
VHF	Very High Frequency

CHAPTER 1
BACKGROUND OF THE PROJECT

Chapter 1 Background of the Project

1-1 Present Conditions and Issues of the Sector

1-1-1 Present Conditions and Issues

Large-scale ground battles and aerial bombing was waged in Lao People's Democratic Republic (hereinafter referred to as "Lao PDR") in the Vietnam War, and the amount of bombing dropped per-capita is worst in the world. More than 500,000 aerial bombs were dropped from 1964 to 1973, and more than 2 million tons of explosive bombs were dropped on northern Lao south-east of the Ho Chi Minh Trail[1] located on the Vietnamese border.

In addition, a lot of Unexploded Ordnance (hereinafter referred to as "UXO") remains on the ground, not only American bombs but also rocket bombs, grenades, ordnance, mortar shells, landmines and Improvised Explosive Devices (IED) from the independence war with France and between the Lao Kingdom Army and Pathet Lao[2]. These UXO that remain in the ground have a risk of explosion and threaten the safety of people. Moreover, UXO constitute a significant obstacle to ensuring the sustainable food through agricultural expansion hindering the socio-economic development of Laos.

After 20 years of battle in Lao, UXO examinations/surveys started in 1996 and it became clear that 15 provinces are seriously contaminated by UXO. The UXO-contaminated area officially announced by the Lao PDR government reportedly covers as much as 87,000 km^2 [3], almost one third of the country. The United Nations (UN) estimates that more than 500,000 tons of UXO remain in the whole of Lao and the National Social and Economic Development Plan reported that poverty areas and UXO contaminated areas are correlated.

Bombs dropped on the agricultural fields that are covered with forest have a low risk to explode, and ratio of UXO is high in the forests and especially 30%[4] of cluster bombs (80 million[5]) remain. The Lao PDR government cleared 480,297 cluster bombs[6] from 1996 to 2009,

---

[1] Land supply route for the National Front of the Liberation of South Vietnam during the Vietnam War, which was running from North Vietnam to South Vietnam through the territories of the independent nations of Lao PDR and Cambodia; approximately 90% of the route was built in Lao PDR territory.

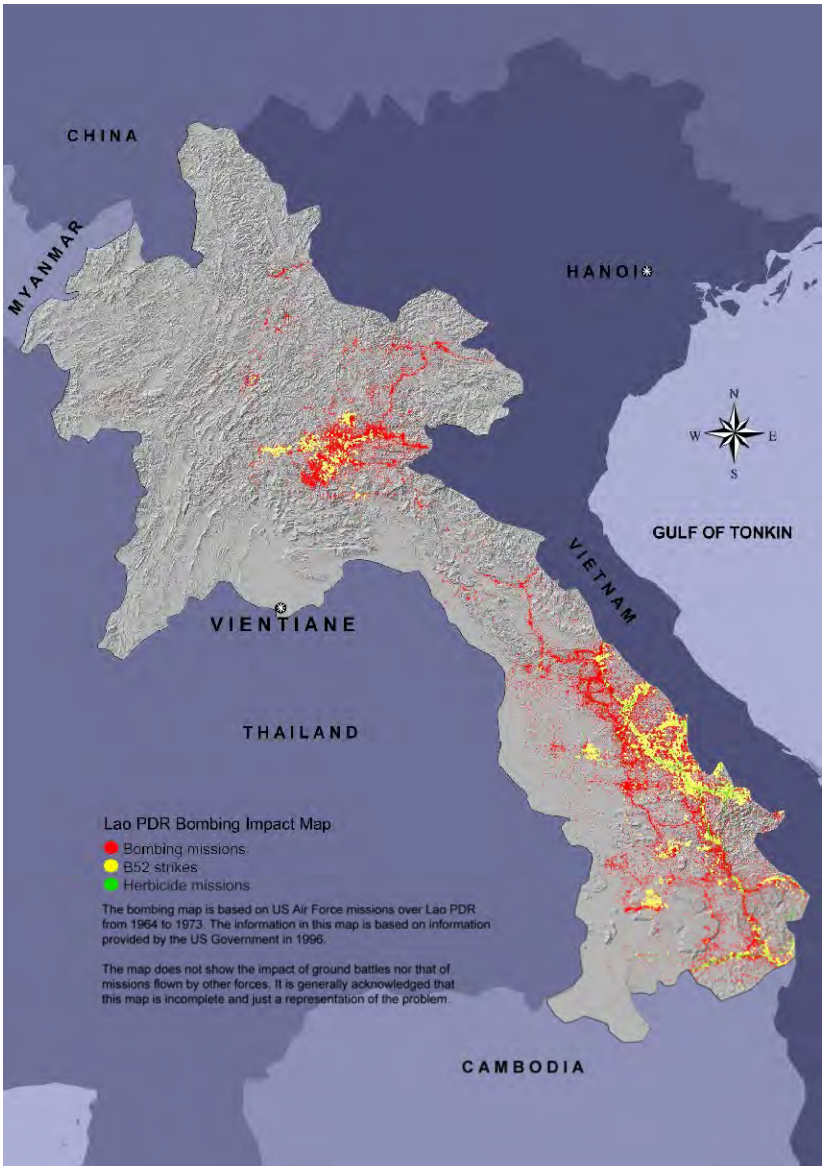
[2] "Lao Patriotic Front," a revolutionary force that existed in Lao PDR from the 1950s to the 1970s, the basis of the present Laotian regime.

[3] Following the Convention on Cluster Munitions (CCM) meeting held in 2011, the Lao PDR government was required to establish realistic goals and calculated the area contaminated with cluster bombs under the leadership of the Norwegian People's Aid (NPA), and representatives from Lao PDR reported at the second CCM meeting held in September 2011 that the contaminated area consisted of 8,470 km^2. This area is scheduled to be formally reported at the 3rd CCM Meeting of State Parties to be held in September 2012. However, the area of 8,470 km^2 only regards contamination by cluster bombs, and the government of Lao PDR is not currently scheduled to conduct technical survey to define the total contaminated area of 87,000 km^2 in terms of contamination by other kinds of UXO.

[4] Source: National Strategic Plan for the UXO Sector

[5] Source: UXO Sector Annual Report 2010 (National Regulatory Authority)

which is only 0.6% of the total. The Lao PDR Bombing Impact Map is shown in Figure 1-1.



Source: UXO Lao 2011 Work Plan

Figure 1-1 The Lao PDR Bombing Impact Map

More than 13,000 victims of UXO are estimated in Lao from 1975, and 1,000 victims are recorded from 1999 after UXO clearance activity started by the Lao National Unexploded Ordinance Programme (hereinafter referred to as "UXO Lao"). More than 40% of the victims are children and accidents occur in daily life. Many of the UXO accidents occur in agricultural works when a UXO by hit by a plough, or heated in an open fire in the agricultural fields, and

---

[6] Source: National Strategic Plan for the UXO Sector

farmers take apart and sell scrap metal from UXO to get hard cash. The price of scrap metal was 400-500 Kip (4-5 US cents) per kilogram in 2002 but went up to 2,000 Kip (20 US cents) in 2008.

Under the above circumstance, Lao Government established "UXO Lao" in 1996 and the "National Regulatory Authority for UXO/Mine Action in the Lao PDR (hereinafter referred to as "NRA")" in 2004 that controls UXO clearance activities in Lao PDR. Under these implementation structures, the "National Strategic Plan for the UXO Sector in the Lao People's Democratic Republic 2010-2020" was instituted in 2010 and The First Contracting for Conventions on Cluster Munitions was held at Vientiane City in November 2011. In this convention, "Vientiane Declaration" was declared and an action program was laid down. Earlier, setting priorities for agricultural land, perfect clearance of UXO and 50% reduction of UXO victims are declared in "Millennium Development Goals (MDGs) Summit" that was held in New York in September 2010. The efforts for UXO clearance in Lao PDR have improved in recent years.

However, the area contaminated by UXO is vast, and the additional funds, personnel, equipment, and other resources is essential in view of the fact that the UXO sector, if left with its current overall clearance capacity, will not be able to achieve the figures described in the national programme as mentioned above. There is a need to improve efficiency of clearance operation with a view to the possibility of introducing mechanization in the near future. (Please refer to Appendix 6-2)

1-1-2 Development Plans

In 2004, the government of Lao PDR concluded the "National Strategic Plan for the UXO Programme in Lao PDR 2003–2013, the 'Safe Path Forward'." In 2010, the government revised the plan to formulate the "National Strategic Plan for the UXO Sector in the Lao People's Democratic Republic 2010–2020, 'The Safe Path Forward II'," and approved officially in 2012, in which the following six goals are declared:

1) Reduce the number of UXO causalities from 300 to less than 75 per year.
2) Ensure that the medical and rehabilitation needs of all UXO survivors are met in line with treaty obligations.
3) Release priority land and clear UXO in accordance with National Standards and treaty obligations.
4) Ensure effective leadership, coordination and implementation of the national programme.
5) Establish sustainable national capacity fully integrated into the regular set-up of the Government.

6) Meet international treaty obligations.

While it is significant for the economy of Lao PDR to clear approximately 200,000 ha of agricultural land in the exceptionally 47 poorest districts that are designated as the priority area in the National Strategic Plan, it is estimated that the clearance of those areas alone will take about 50 years.

Furthermore, in the First Meeting of State Parties to the Convention on Cluster Munitions (CCM) held in Vientiane, the capital of Lao PDR, in November 2010 as mentioned above, the Vientiane Declaration was adopted to establish an action plan (the disposal and clearance of UXO) to be followed by the State Parties, and Lao PDR is required to steadily increase the volume of cleared cluster munitions by 2020.

Thus, the project is given a high priority, as it agrees with the priority schemes of the Lao PDR government.

1-1-3 Socio-economic Conditions

Lao PDR is located in 14–23 degrees north latitude and 100–108 degrees east longitude, and has land totalling 240,000 km^2, which is equivalent to the area of Honshu Island of Japan. It is an inland country located in the central part of the Indochina Peninsula, has no coastline, and adjoins five countries: Vietnam in the east, Thailand in the west, Cambodia in the south, and China and Myanmar in the north. The Mekong River, which forms the Laotian borderline with Myanmar and Thailand, flows through the southern part of Lao PDR, Cambodia, and Vietnam before it reaches the South China Sea. Lao PDR is a country of geographic importance, as it is situated in the central part of the Mekong Basin, named the “Great Mekong Sub-region (GMS).”

According to World Bank data from 2010, the population of the country is approximately 6.2 million, and approximately 10% of that lives in the unique city of Vientiane. The data also shows that the country’s nominal GDP is approximately 7.29 billion dollars, the GNI per capita is 1,050 dollars, the GDP growth rate is 9.4%, and the inflation rate is 6.0%. With a poverty rate of 27.6% (in 2008) and an unemployment rate of 1.4% (in 2005), the country is still recognized as a least-developed country.

In terms of industrial structure, the service industry accounts for approximately 42%, agriculture approximately 33%, and industry approximately 25%, while approximately 80% of the working population is engaged in agriculture. Bolaven Plateau, in the southern part of Champasak Province, produces quality coffee, cabbage, and potatoes, and coffee is the largest agricultural exported product of Lao PDR. The promotion of UXO clearance and the securing of safe agricultural land through this project are expected to contribute to the further expansion of agricultural land.

1-2 Background and Outline of Proposal for Official Grant Aid

While UXO Lao has cleared UXO in approximately 3,000 ha (30 km^2) of land each year, currently, the UXO-contaminated area officially announced by the government of Lao PDR is as vast as 87,000 km^2, and the area cleared before the end of 2011 accounts for only 0.27%[7] of the total. The number of cleared UXO accounts for only 0.6%[8] of the total at the end of 2010. The additional funds, personnel, equipment, and other resources is essential in view of the fact that the UXO sector, if left with its current overall clearance capacity, will not be able to achieve the figures described in the national programme as mentioned above.

As to the equipment, vehicles become damaged quickly, as they are used on extremely severe roads in mountainous terrain and in bombed areas located relatively near the mountains, while some of the other equipment is noticeably worn out, as it has been in use since the foundation of UXO Lao. The equipment is not properly renewed, as the budget of UXO Lao consists of contributions by donors, and use of the funds is limited to clearance activities only, while the purchase of equipment in excess of certain amounts is often subject to donor approval.

Furthermore, UXO Lao has been forced to detect and remove UXO quickly and smoothly to ensure the security of flood-stricken areas in various situations, including the case of some areas that were struck by floods during the heavy rains in 2011. This required UXO Lao to preferentially clear land on which they were forced to relocate their public facilities. The flood-stricken areas include the provinces of Savannakhet, Sekong, and Attapue in the central and southern districts of the country, where Japan has, for the purpose of the growth and development of the Mekong Basin on a regional basis, preferentially assisted community development and the improvement of major roads to increase the transportation capacity and where Japanese-affiliated enterprises have set up operations in response to such improvements in infrastructure. Accordingly, it is an important and urgent issue, in addition to the measures against UXO across Lao PDR, to secure the safety of trunk roads and other districts in those flood-stricken areas. Landslides resulting from heavy rain occur every year, and efforts are required to cope with the situation even where UXO are buried deep in the ground they may emerge through landslides; thus, latent risks become apparent.

Under the circumstance, the government of Japan was requested to support UXO clearance activities by Lao PDR government, and the government of Japan conducted the preparatory survey, for improving the efficiency of its UXO clearance activities and supporting such activities as operator training, information management, and other infrastructure development.

---

[7] Cumulative cleared area by UXO Lao until 2011 is 23,442ha. 23,442ha/8,700,000ha=0.27%

[8] Please refer to the note 5 and 6. 480,297 cluster bomb/80,000,000 cluster bomb =0.60%

The items of the request made by Lao PDR to Japan are as mentioned below:

Table 1-1 Items of the Original Request by Government of Lao PDR

Equipment	Detectors (Vallon, Ebinger, Ebinger Large-loop, Minelab, Deep Search Magnetic Metal Detector, or equivalent), Station Wagons, Pick-up Trucks, Mid-class Cargo Trucks, Motorbikes, Radios (Base, Vehicle, and Mobile Type), GPS, PC (Desktop and Laptop Type), Software for PC, Scanners, Photocopy Machines, Color-Printers, Projectors, Outboard Motors for Boats

In the Minutes of Discussions (M/D) signed on January 27, 2012, priorities were given to the respective items of equipment requested by UXO Lao during the preparatory survey, and the items and quantity of the equipment to be provided were basically determined in the M/D signed on March 20, 2012 through the confirmation and discussion with UXO Lao based on the detailed survey. After being signed, while changes in the quantity of equipment were requested during the discussion of the details including equipment specifications by UXO Lao, the Preparatory Survey Team (hereinafter referred to as "the Team") evaluated that the necessity and relevance of the changes are no major problem, and were finally summarized as Technical Notes. After returning to Japan, the Team made further analyses, calculated the project cost based on the detailed survey, and finally obtained the approval of the Lao PDR government in the M/D signed on July 6, 2012.

As for the request for facilities, the Team proceeded with the onsite survey, as the Team was informed in advance that the Lao side would include the construction of facilities (training center, in particular) in this project. Eventually, due to the limitation of the survey period the onsite survey was directed to the confirmation of the condition of existing facilities to collect data and study the direction of facility development in the future.

1-3 Japan's Past Assistance

The details of the Technical Cooperation Project and Grant Aid Project provided by Japan to the UXO sector are as mentioned below. No Loan Assistance Project has been undertaken with respect to the UXO sector.

Table 1-2　Technical Cooperation Project (UXO Sector)

Type	Implementation year	Project	Outline
Technical cooperation	2011.1～2013.3	IT training for UXO Lao	IT training of UXO Clearance activities for UXO Lao
Technical cooperation	2011.2～2012.3	Laos-Cambodia South-South Cooperation on UXO/Mine Action Sector	To share knowledge and learn from each other's experience between Cambodian Mine Action Centre (CMAC) and UXO Lao

Table 1-3　Grant Aid Projects (UXO Sector, for the Past Three Years)

unit : hundred million yen

Type	Implementation year	Project	Grant limit	Outline
Japan-ASEAN Integration Fund	2007	Lao National Unexploded Ordnance Programme	0.2	Support implemented by JAIF established in March 2006
Grant Assistance for Grass-Roots Human Security Project	2009	Support for UXO Clearance activities in Saravan and Sekong Provinces （Phase 2）	0.6	Support for the activities in Saravan Province and Sekong Province
Grant Assistance for Japanese NGO Project	2009	UXO Clearance in Pek District, Xieng Khouang Province (Phase 2)	0.9	Support for the activities in Xieng Khouang Province since 2006
Grant Assistance for Grass-Roots Human Security Project	2010	Support for UXO Clearance activities in Saravan and Sekong Provinces （Phase 3）	0.6	Support for the activities in Saravan Province and Sekong Province
Grant Assistance for Japanese NGO Project	2010	Assistance for Survivors of Cluster Munitions and Other UXOs in Xieng Khouang Province (Phase 1)	0.2	Establishment of emergency medical system and training of first-aid treatment for unexploded-bomb victims in Xieng Khouang Province
Grant Assistance for Japanese NGO Project	2011	UXO Clearance in Lao Ngam District, Saravan Province (Phase 1)	0.8	Promotion for UXO Clearance at target site （200ha）
Grant Assistance for Japanese NGO Project	2011	Promotion project for Unexploded Ordnance (UXO) Clearance in Attapue Province (Phase 1)	0.4	Technical training of bomb disposal to UXO Lao through OJT and lectures by Japan Mine Action Service (JMAS) experts

1-4 Other Donor Assistance

For the purpose of promoting the performance of the CCM in Lao PDR, the UXO Trust Fund was established in March 2010 by the Lao PDR government and the United Nations Development Programme (UNDP), and it has been managed and operated by the UNDP. The fund has been spent for NRA and UXO Lao in charge of measures against UXO and used to assist UXO victims, clear UXO, and promote community awareness activities. Donors participating in the UXO Trust Fund as of 2011 are Ireland, Austria, Canada, Switzerland, New Zealand, and Luxemburg, and the UXO Trust Fund accounts for as much as 59% of the total donors' contribution provided to UXO Lao. Financial assistance has been provided to UXO Lao through the UNDP and directly through bilateral arrangements. The details of Financial Assistance to UXO Lao Implemented by Donors in 2011 are as shown in the table below.

Table 1-4 Financial Assistance to UXO Lao Implemented by Donors (2011)

Financial assistance	Donor	Amount (USD)
1) Trust Fund managed by UNDP (UXO Trust Fund)	Australia	1,120,299
	Canada	772,400
	Ireland	769,538
	Luxemburg	214,500
	New Zealand	860,215
	Switzerland	875,000
2) Other UN Modalities	UN (Austria)	43,941
	Germany	359,023
	JMAS（Japan）	165,843
	Grant Assistance for Grass-Roots (Japan)	191,084
	UN (United Kingdom)	36,127
	UNDP TRAC	110,000
	UN CPR	50,000
	UN (Japan)	100,191
1)+2) subtotal (UNDP Managed Funds)		5,668,159
3) Bilateral Funds	Grant Assistance for Grass-Roots to Saravan (Japan)	201,800
	Grant Assistance for Grass-Roots to Sekong (Japan)	356,710
	US-MAG (KM/SV)	467,290
	Norwegian People's Aid	250,000
	World Without Mines	150,000
	United State – AGNA	679,535
	Korea	25,000
	UNICEF	7,773
	Poland	14,792
	European Commission	17,000
3) subtotal (Bilateral Funds)		2,169,900
Total		**7,838,059**

In the UXO Lao national office, the following personnel are delegated by the donors to UXO Lao. The wages of the respective advisors are paid by the donors who delegate the advisors.

Table 1-5 Human-resources Assistance to UXO Lao (as of March 2012)

Donor	Responsibility	Note
UNDP	Chief Technical Advisor (CTA)	Work contents are advising the director, discussions with the director and financial planning etc.
UNDP	Finance Advisor	Reports are directly submitted to CTA.
United States Agency for International Development (USAID)	Quality Management Advisor	Reports are submitted to US AID and CTA is uninvolved.
JMAS	Operation Advisor	Reports are submitted to JMAS and CTA is uninvolved.

1-5 Natural Conditions

The climate in Lao PDR has distinctive rainy and dry seasons under the influence of the monsoons. The rainy season lasts from May through October while the dry season lasts from November through April. The annual average temperature is around 28°C, and the highest temperature rises to 38°C in April and May, while the lowest temperature in Vientiane goes down to 17°C in January. Rainfall in Vientiane is approximately 1,500 to 2,200 mm (with average annual rainfall of around 1,700 mm). A total of 85% or more of all annual rainfall occurs during the rainy season from May through October, and rainfall in excess of 200 mm a month is often observed during that period. The maximum daily rainfall during the three-year period from 2007 through 2009 was 127 mm. Thunderstorms also occur often in the rainy season, and damage to buildings is reported.

While Lao PDR may seem to be seldom hit by typhoons as it is an inland country, it has been damaged either slightly or severely by typhoons and heavy rains since 2008. In September 2009, Typhoon No. 16 (Asian name: Ketsana), which was born in the waters near the Philippines, crossed the Philippines, directly hit Vietnam and Cambodia, and reduced itself to a tropical cyclone as it headed to Lao PDR, caused floods in the southern part of the country. The rainfall in 2011 increased to approximately 144% that of ordinary years under the influence of Typhoon No. 6 (Asian name: Haima) in June, Typhoon No. 8 (Asian name: Nok Ten) in July, and continual heavy rains, and this caused overflows in the branches and main stream of the Mekong River, which caused severe damage to roads, bridges, and agricultural land.

1-6 Socio-environmental considerations

In Lao PDR, the Ministry of Natural Resources and Environment is in charge of the environmental assessment of various projects, and the related items are stipulated in the “Law on Environmental Protection” of 1999. Being focused on the procurement of equipment to assist UXO clearance activities, this project will not cause air pollution, soil contamination, or water pollution. Furthermore, the project will not require the acquisition of additional land or the

movement of residents, nor will it influence the natural growth of animals and plants, because the equipment will be placed within the sites of the UXO Lao national office, nine provincial offices, and training center.

Furthermore, the Project is classified as Category C under the “JICA Guidelines for Environmental and Social Considerations” (issued in April 2010), as it involves the procurement of equipment only and has no impacts on surrounding environments or communities.

CHAPTER 2
CONTENTS OF THE PROJECT

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Overall Goal and Objectives of the Project

The overall goal of the Project is to enhance the functions and activities of UXO Lao to survey and clear the UXO and to have its UXO clearance activities can be promoted in the UXO sector so that Lao PDR can contribute to the poverty reduction in many areas of the country.

To achieve this overall goal, the Project aims to “improve the safety and efficiency of the UXO clearance activities by UXO Lao” by confirming the status of equipment currently owned and the type and scale of the equipment required by UXO Lao, which plays a core role in the UXO clearance activities in Lao PDR.

2-1-2 Outline of the Project

The following Project outline has been confirmed through the preparatory survey.

Table 2-1 Outline of the Project

Outline of the Project		
1) Overall goal	:	The functions and activities of UXO Lao will be enhanced, and UXO removal and detection activities will be promoted.
2) Project objective	:	The safety and efficiency of UXO clearance activities by UXO Lao will be improved.
3) Expected effect	:	Essential equipment for UXO clearance activities will be made available, and outdated equipment will be replaced.
4) Indicators of the Project	:	a) Total clearance area per year b) The number of beneficiaries by clearance operations c) The number of persons covered by community awareness activities d) Maintenance cost of all equipment
5) Action and Injection plan		
[1] Items to be requested from Japan	:	Equipment: UXO Detectors (Vallon, Ebinger, Ebinger Large-loop, Minelab, Deep Search Magnetic Metal Detector, or equivalent), Station Wagons, Pick-up Trucks, Mid-class Cargo Trucks, Motorbikes, Radios (Base, Vehicle, and Mobile Type), GPS, PC (Desktop and Laptop Type), Software for PC, Scanners, Photocopy Machines, Color-Printers, Projectors, Outboard Motors for Boats
[2] Scheme of recipient country	:	Transportation from the place of delivery (training center) to the respective Project sites
6) Target areas (sites)	:	UXO Lao national office, training center, provincial offices in nine provinces
7) Direct & indirect beneficiaries	:	a) Direct: UXO Lao staff b) Indirect: People of Lao PDR

2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

The objective of this Grant Aid Project is to improve the safety and efficiency of UXO clearance activities by UXO Lao. The Project plans to supply the equipment needed for the UXO clearance activities to the UXO national office, 9 provincial offices and training center through Japan's Grant Aid.

The plan of the Project is based on the following policies based on the request from the government of the Lao PDR, and the result of preparatory survey and discussions between the Japan side and the Lao PDR side.

2-2-1-1 Basic Policy

(1) Scope of Cooperation

The UXO clearance sites are selected depending on the priority of the regional development plan from the provincial government; it is not always a high risk of UXO explosion areas will be selected for UXO exploration and clearance. In this context, it is necessary to include the community awareness activities and research to enhance the activities of UXO clearance in long-term and comprehensive manner. Therefore, the equipment of UXO clearance activities needs not only to support the strengthening of the team directly in UXO clearance works but also to raise community awareness activities to reduce the UXO explosion risk in contaminated areas, and to provide support for information management and capacity building.

The Project is not limited to a particular area, and the equipment plan should be conducted nationwide to maintain the same ability level for UXO clearance activities.

The outlines of the operation and personnel organization of the specialized teams performing the fieldwork in the provincial office areas are explained in Table 2-2, and the number of specialized teams assigned to each provincial office is as shown in Table 2-3.

Table 2-2 Outlines of Operations and the Personnel Organization of Specialized Teams

Team	Operation	Personnel Organization
General Survey Team (GS)	Research the degree of UXO contamination of each village from the following works: - Determine the contamination area by using GPS, etc. - Interview the local residents - Collect the UXO information from the local governments and other organizations such as NGO/NPO - Analyze the records of the U.S. bombing map GS Teams work in pairs in the survey. The surveyor prepares the report, which becomes the basis of the work plan, after the General Survey.	Team Leader, Surveyor (Two people work as a pair.)
Technical Survey Team (TS)	From the result of the General Survey, a technical survey is conducted in the high priority areas (25% sampling site clearance works). If no UXO exist, land is available to use.	Team Leader, EOD Technicians, Driver, Medic
Area Clearance Team (CT)	100% of site clearance works in the target site using detectors. Disposal of the UXO.	10 members in one team include Team Leader, EOD Technicians, Driver, Medic
Roving Team (RT)	Hasten to the scene of any site reported by local residents to dispose of the UXO. Also, explode UXO at the CT's working site or move it to a separate disposal site and destroy it there. RT doesn't detect the UXO using detectors.	Team Leader, EOD Technicians, Driver, Medic
Community Awareness Team (CA)	Conducting mine risk education regarding UXO for villagers, especially to the children in school, etc.	Team Leader, CA Technicians, Driver

Table 2-3 Number of Specialized Teams Assigned to Each Provincial Office

Team / Project Site Office	GS (unit: people)	TS (unit: teams)	CT (unit: teams)	RT (unit: teams)	CA (unit: teams)
National office	-	-	-	-	-
Training Center	-	-	-	-	-
Luangphrabang	4	1	6		1
Huaphanh	5	1	6		1
Xiengkhuang	7	1	12		1
Khammuane	3	1	5		1
Savannaket	7	1	12		1
Saravan	6	1	9		1
Champasak	4	1	6		1
Sekong	5	1	6		1
Attapue	4	1	6		1
Total	45 people	9 teams	68 teams		9 teams

(2) Overall Design Guidelines

The outline design of the Project is based on the following guidelines:

1) The UXO clearance equipment used directly in the field and used in operation, management and maintenance is the first priority for UXO clearance activities.

2) The type and number of the equipment should be considered to make it possible to maintain and operate under UXO Lao operation ability and budget.

3) Equipment that can be used at the present technical level should be selected.

4) The detectors to be used directly in the UXO clearance operations shall be the same type that the UXO Lao operators are familiar with.

2-2-1-2 Policy for Natural Conditions

The suitability of equipment for use in the high temperature and high humidity of the UXO clearance sites and the operator's working conditions should be considered. In particular, four-wheel type vehicles that can operate smoothly in muddy road conditions should be selected.

2-2-1-3 Policy Relating to Socio-economic Conditions

To reduce the burden on the UXO Lao's budget, the equipment should be procured mainly from Lao PDR to ensure easy repair, and spare parts should be available locally. Equipment that is the same type as the existing equipment should be selected in consideration of the operators' technical level.

2-2-1-4 Policy Concerning Procurement Affairs and Special Conditions/Commercial Customs of Equipment

The origin of procurement country should be selected to provide an advantage for maintenance by UXO Lao. UXO detectors and vehicles shall be planned as follows:

(1) UXO Detectors

UXO detectors will replace the existing preferred detectors; therefore, they should be of the same manufacture and model.

(2) Station Wagons, Mid-class Cargo Trucks and Motorbikes

Station wagons, mid-class cargo trucks and motorbikes will be procured from Japan since only Japanese manufacturer meet the requested specifications from Lao PDR.

(3) Pick-up Trucks (Double Cabin)

Pick-up trucks (double cabin) are not produced in Japan or Lao PDR, but are produced in Thailand. The normal production time is 2-3 months; however, recently, 6 months has been required due to the influence of flooding in and around the Bangkok area in 2011. In this Project, the procurement plan should consider this situation. In addition, it is also confirm that a local distributor may be able to supply the pick-up trucks.

2-2-1-5 Policy Concerning Operation and Maintenance Capabilities of the Executing Agency

The equipment to be procured in this Project is based on the policy of replacing existing equipment; therefore, the equipment should be the same type and size, which the operators and mechanics are accustomed to using. Spare parts should be procured at the same time with the equipment to avoid problems in the operation and maintenance.

Equipment using the state-of-the-art technology (such as electronic devices have not been used) should be minimized to the number necessary.

2-2-1-6 Policy for Grades of Equipment

Equipment specifications should be determined based on factors such as usage, natural conditions, geographic conditions, operation maintenance ability, after-sales service etc.

However, the specialized equipment such as UXO detectors should be selected to be the same type with the existing equipment considering the possibility and ease of maintenance and operation of the equipment by UXO Lao.

2-2-1-7 Policy Concerning Procurement Method and Implementation Schedule

(1) Procurement Method

The equipment will be procured through open competitive tender.

(2) Implementation Schedule

The implementation schedule will be developed based on the basic policies mentioned above and to the extent required to ensure appropriate procurement. It is necessary to have sufficient preparation in advance since the period to the various procedures is also expected that having more time than expected,

The expected implementation schedule is as shown in 2-2-3-9 Implementation Schedule.

2-2-2 Basic plan (Equipment Plan)

2-2-2-1 Formulation of Basic Plan

The purpose of this Project is to improve the UXO clearance activities in efficiency and safety, to contribute the replacement of equipment and to upgrade and expand the UXO clearance equipment of the national office, each provincial office and the training center. The items and quantity of the equipment will be determined based on sustainable clearance activities.

The equipment plan of UXO clearance is developed based on the clearance activity plan covering the priority of clearance area and proposed amount of clearance area planned by the NRA and UXO Lao, situations of existing equipment, number of clearance teams and assistants, etc.

The following equipment was excluded from this Project based on the result of the discussion with UXO Lao.

Table 2-4 Equipment Excluded from the Project

Name of Equipment	Reasons
Deep Search Magnetic Metal Detector	From the perspective of security, the priority target of clearance is cluster sub-munitions. The cluster sub-munitions are located 30cm under the ground, so the necessity for procurement of a deep search detector is relatively low. The technical level of the magnetic detector has not been confirmed and the reliability has not yet been tested. In addition, a lot of support is needed for direction on use, operation and maintenance, etc. Therefore, adopting a deep search magnetic detector is not effective at the present stage and has been excluded from this Project.
Pick-up Truck (Single Cabin)	The main purpose of a pick-up truck is transportation of large sized UXO. However due to the maximum number of passengers are only 3, UXO Lao deems that a single cabin pick-up truck is not efficient for their activities and thus has been canceled.
Outboard Motor for Boats	Small craft are used for transportation to isolated areas that cannot be accessed by vehicles in Luangphrabang province. The existing engine of the craft is too old to work properly so UXO Lao requested the equipment. However, as a result of the site survey, the requested engine is not an outboard and thus cannot be procured by a Japanese supplier. It has been excluded from the requested items.

Figure 2-1 Existing Engine of the Craft

2-2-2-2 Equipment plan

(1) Study of the Equipment Specification

The procured equipment will be evaluated based on the existing situation of UXO Lao, the basic policy and the entire plan of the Project. The outlines of key equipment specifications are shown as follows:

1) UXO Detectors

UXO detectors are essential equipment for UXO clearance activities; it is the most important element to familiar with in order to prevent incorrect operation safety. Moreover, in order to maintain the work efficiency of clearance activities performed in a limited number, to provide same model with an existing equipment is preferable than the new model. Therefore, it is necessary to consider which types of detectors are currently used by UXO Lao. UXO detectors deteriorate in quality at a relatively rapid used rate due to daily hard work in a severe natural environment. Therefore, the detectors should be updated and spare parts always should be stocked.

2) Station Wagons

Station wagons are used by CT teams and must be able to accommodate 10 persons as CT teams move in groups of at least 10 people (including the driver and medical staff), including detectors and other equipment,. The station wagons must be four-wheel-drive type and equipped with a winch and off-road tires, as these vehicles are sometimes used in muddy road conditions in order to reach clearance sites.

3) Pick-up Trucks

Pickup trucks are used by RT teams to transfer the UXO recovered at the sites to an explosion site located somewhere for disposal by explosion. They are also used for the other purpose of replacing station wagons, due to their larger cargo capacity. UXO CT teams basically use station wagons for transferring to clearance sites; but when the sites are in remote areas, they are forced to camp in nearby villages for a few weeks at a time, and their living and camping supplies must be carried with them in addition to the ordinary UXO clearance equipment. The pickup trucks are complementary to station wagons and are not required in a large quantity. The pick-up trucks must be of a four-wheel-drive type and equipped with a winch and off-road tires, as these vehicles are sometimes used in muddy road conditions in order to reach clearance sites.

4) Mid-class Cargo Trucks

Mid-class Cargo Trucks are used by the CA teams and mainly to transport risk education equipment (large speakers and screens, etc.) and distribution materials (T-shirts, notebooks, etc.) to villagers. The majority of the cargo trucks currently in use, consisting of Russian-made models procured under the assistance of the U.S. in 2002, is equipped with gasoline engines with extremely low fuel efficiency of 1 kilometer per liter and thus cannot be used effectively. Accordingly, they will be replaced by diesel-engine and four-wheel-drive trucks, as the trucks are expected to be often used in muddy road conditions in order to reach clearance activity sites.

5) Motorbikes

Motorbikes, excellent in mobility, are used by GS team members working in groups of two to conduct the preliminary surveys required to formulate annual plans. They are also used when UXO is found and reported by local residents; UXO Lao members then must go to the site to perform off-limits the area immediately. Motorbikes must be of a durable off-road type, as they are often used over a long distance for traveling to sites.

6) Related IT Equipment

With the IT equipment directly used in connection with the operation and management of UXO clearance activities, A3-type scanners (with an automatic transmission function) and desktop computers, which are required by the OAs (operation assistants) working in the national office and provincial offices of UXO Lao to accumulate clearance data and send reports to the NRA should be included. The GS teams, visiting the sites by motorbikes and recording the survey data on-the-spot, require a laptop computer for each of its members; while, the CA team engaged in community awareness activities to display images on screens at various locations in their provincial office areas also requires a laptop computer for each of its teams.

7) Wireless Applications (Radio)

Radios are important communication tools between each provincial office and site operators, especially in isolated areas where mobile phone service is not available. The provincial office and UXO clearance site vehicles can communicate over HF waves and site operators can use walkie-talkies over VHF. Site radios are used to confirm position and to inform people to evacuate away from the UXO explosion. The range of the radios should cover 2-3 km. Configuration of the radio network is shown in Figure 2-2.

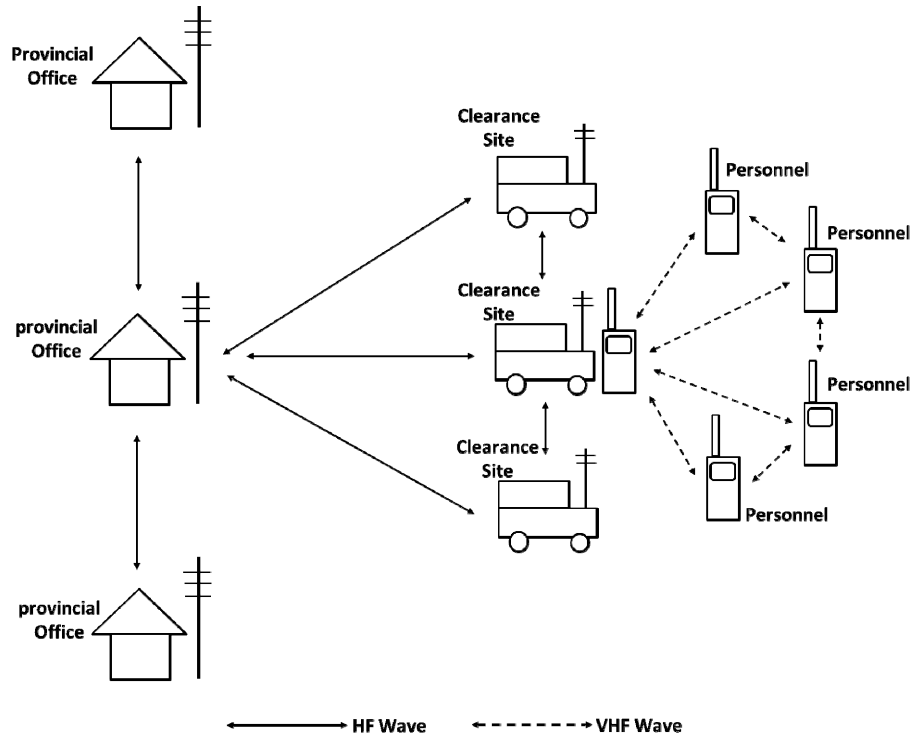


Figure 2-2 Configuration of Radio Network

(2) Study of the Equipment Quantity

Basically, the number of equipment to be procured is calculated by the following formula;

Number of Equipment to be Procured = (Number of Equipment Necessary) - {(Number of Equipment Currently Owned) - (Number of Equipment to be Replaced)}

- Equipment Necessary: Equipment should be allocated based on the number of specialized teams and of team staffs
- Equipment Currently Owned: Registered equipment
- Equipment to be Replaced: Non-usable equipment or non-functioning equipment

Procurement quantity and necessity of UXO detectors and vehicles for national office, training center and provincial office are shown as follows.

Table 2-5 National Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	6	3	0	3	To be procured as reserve stock for provincial offices and sites.
Detector (Ebinger)	6	3	0	3	Same as above.
Detector (Minelab)	6	3	0	3	Same as above.
Station Wagon	9	8	0	1	An additional vehicle that can go directly to the sites from the national office is needed, as only one vehicle is currently equipped for use on site.
Pick-up Truck	3	3	1	1	The 2003-model vehicle is becoming deteriorated and must be replaced. Others including a 2009 Ford vehicle can continue to be used.
Mid-class Cargo Truck	1	1	1	1	To be used for transportation of equipment from the national office to provincial offices and for recovery and transportation of equipment to be repaired from the provincial offices. The 1998 model truck currently in use must be replaced due to deterioration.

Table 2-6 Training Center

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	35	7	2	30	Detectors currently owned are in-sufficient to be allocated to all trainees. Replaces and additions of number of equipment are needed.
Detector (Ebinger)	2	1	1	2	Same as above.
Detector (Minelab)	10	24	24	10	Detectors currently owned are 1999 and 2000 models that are no longer in use and must be replaced.
Station Wagon	2	0	0	2	No vehicles are currently in use, causing trouble in practical clearance training. Vehicles must be procured as originally planned.
Pick-up Truck	1	1	1	1	The currently owned 1998 Toyota vehicle is deteriorated and must be replaced.
Mid-class Cargo Truck	1	1	1	1	The currently owned 1998 vehicle is deteriorated and must be replaced.
Motorbike	14	2	0	12	Used in the training of the GS team; the currently owned vehicles are deteriorated and insufficient in quantity to be allocated to all trainees. Replaces and additions of number of equipment are needed.

Table 2-7 Luang Phrabang Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	53	63	18	8	Among the detectors currently owned, mainly those replaced in 2007 are becoming deteriorated. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	7	3	1	5	The detectors currently owned were replaced in 2008 and do not present any major defect. However, additional number of equipment is needed for the TS and CT teams.
Detector (Minelab)	7	1	1	7	The detectors currently owned are of the 2000 model that are no longer in use and must be replaced. Additional number of equipment is needed for the TS and CT teams.
Station Wagon	8	8	5	5	5 out of 8 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration.
Pick-up Truck	2	3	3	1	The trucks currently owned are from 1998, 1999 or 2001 and are becoming deteriorated. One of them must be replaced for continued use.
Mid-class Cargo Truck	2	2	2	2	The vehicles currently owned are Russian model from 2002 and must be replaced due to deterioration and the low fuel efficiency of their gasoline engines.
Motorbike	6	9	7	3	7 out of 9 vehicles currently owned are from 1999, 2000, 2001 or 2005. Three of them must be replaced.

Table 2-8 Huaphanh Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	53	59	20	14	Among the detectors currently owned, mainly those replaced in 2007 are becoming deteriorated. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	7	6	4	5	3 out of 6 detectors currently owned have been in use since 1996, and some of them often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Detector (Minelab)	7	17	17	7	The detectors currently owned are of models from 1998, 1999 or 2000 that are no longer in use. The number sufficient to the TS and CT teams must be provided.
Station Wagon	8	9	8	7	7 out of 9 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration.
Pick-up Truck	2	2	2	2	The vehicles currently owned are from 1997 or 1998, and must be replaced due to deterioration.
Mid-class Cargo Truck	2	3	3	2	The vehicles currently owned are Russian model from 2002 and must be replaced due to deterioration and the low fuel efficiency of their gasoline engines.
Motorbike	7	10	8	5	8 out of 10 vehicles currently owned are from 1999, 2001 or 2005 and must be replaced due to deterioration.

Table 2-9 Xiengkhuang Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	101	58	14	57	Among the detectors currently owned, mainly those replaced in 2007 are becoming deteriorated. Due to the number of detectors are not supplied in a sufficient quantity to the clearance operators, their work using another kind of equipment (Minelab). The detectors must be replaced and increased in quantity.
Detector (Ebinger)	13	17	6	2	Among the detectors currently owned, 4 of them, which have been in use since 1996, 2003 or 2004, are becoming deteriorated, and some of them often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Detector (Minelab)	13	35	35	13	The 35 detectors, which have been in use since 1999 or 2000, are becoming deteriorated and must be replaced. The detectors of this type are being used in lieu of the Vallon type mentioned above, which are mainly used but insufficient in quantity.
Station Wagon	14	9	7	11	6 out of 9 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration. Wagons in a quantity equivalent to the number of the TS, CT and CA teams must be secured to provide their transportation.
Pick-up Truck	3	3	2	2	Two Ford vehicles supplied in 1998 and 2001 are becoming deteriorated and must be replaced.
Mid-class Cargo Truck	3	9	9	3	2 out of 9 vehicles currently owned have been in use since 1999 and must be replaced due to deterioration. The remaining 7 vehicles are of the 2002 model from Russia and must be replaced due to deterioration and the low fuel efficiency of their gasoline engines.
Motorbike	9	11	8	6	5 out of 11 vehicles currently owned have been in use since 1999, 2000, 2001 or 2005 and must be replaced due to deterioration.

Table 2-10 Khammuane Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	45	52	27	20	Among the detectors currently owned, mainly those replaced in 2007 are becoming deteriorated. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	6	8	5	3	4 out of 8 detectors currently owned have been in use since 1998 or 2004 and often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Detector (Minelab)	6	4	2	4	1 out of 4 detectors currently owned is the outdated 2004 model and does not operate effectively, must be replaced. Some of them often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Station Wagon	7	10	6	3	6 out of 10 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration.
Pick-up Truck	2	3	2	1	2 out of 3 vehicles currently owned have been in use since 1998 or 2000, and must be replaced due to deterioration.
Mid-class Cargo Tuck	2	1	1	2	One vehicle currently owned has been in use since 1999 and must be replaced due to deterioration. In consideration of transportation of materials and equipment to two lodgings located on a remote place, additional vehicle should be provided.
Motorbike	5	6	4	2	4 out of 6 vehicles currently owned have been in use since 2001 or 2005 and must be replaced due to deterioration.

Table 2-11 Savannakhet Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	101	68	18	51	Among the detectors currently owned, mainly those replaced in 2007 are becoming deteriorated. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	13	4	3	12	2 out of 4 detectors currently owned have been in use since 1998 or 2003 and must be replaced due to deterioration. Some of them often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Detector (Minelab)	13	45	45	13	The detectors currently owned are the outdated 1999, 2000, or 2004 models and do not operate effectively, must be replaced.
Station Wagon	14	9	4	8	4 out of 9 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration. Wagons in a quantity equivalent to the number of TS, CT, and CA teams must be secured to provide their transportation.
Pick-up Truck	3	9	8	2	8 out of 9 vehicles currently owned have been in use for more than 10 years and must be replaced due to deterioration.
Mid-class Cargo Truck	3	3	3	3	All 3 vehicles currently owned have been in use since 1999 and must be replaced due to deterioration.
Motorbike	9	11	8	6	8 out of 11 vehicles currently owned have been in use since 1997, 1999, or 2001 and must be replaced due to deterioration.

Table 2-12 Saravan Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	77	54	6	29	The currently owned equipment was replaced in 2008, and some often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	10	11	8	7	4 out of 1 detectors 1, which have been in use since 1996, 2000, 2003, or 2004, and mainly those replaced in 2007 are becoming deteriorated and must be replaced.
Detector (Minelab)	10	0	0	10	No detectors are currently owned. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Station Wagon	11	9	7	8	7 out of 9 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration.
Pick-up Truck	2	2	1	1	1 out of 2 vehicles currently owned has been in use for more than 10 years and must be replaced due to deterioration.
Mid-class Cargo Truck	3	7	7	3	1 out of 7 vehicles currently owned has been in use since 1999 and must be replaced due to deterioration. The remaining 6 vehicles of the 2002 model from Russia must also be replaced due to their low fuel efficiency.
Motorbike	8	8	4	4	4 out of 8 vehicles currently owned have been in use since 2000, 2001, or 2005 and must be replaced due to deterioration.

Table 2-13 Champasak Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	53	48	12	17	Among the detectors currently owned, mainly those replaced in 2007 are becoming deteriorated. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	7	4	2	5	One of the 4 detectors currently owned has been in use since 1998 and often suffers from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Detector (Minelab)	7	0	0	7	No detectors are currently owned. Detectors in a quantity sufficient to the number of the TS and CT teams must be provided.
Station Wagon	8	7	5	5	5 out of 7 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration.
Pick-up Truck	2	4	3	1	3 out of 4 vehicles currently owned have been in use since 1999 or 2001 and must be replaced due to deterioration.
Mid-class Cargo Truck	2	2	2	2	The 2 vehicles currently owned both have been in use since 1999 and must be replaced due to deterioration.
Motorbike	6	5	4	4	4 out of 5 vehicles currently owned have been in use since 2000, 2001, or 2005 and must be replaced due to deterioration.

Table 2-14 Sekong Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	53	41	22	34	Among the detectors currently owned, mainly those replaced in 2006 and 2007 are becoming deteriorated. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	7	4	3	6	The 2 detectors currently owned, which have been in use since 1998 or 2004, and those replaced in 2007, are becoming deteriorated and must be replaced. Detectors in a quantity sufficient to the number of the TS and CT teams must be replaced.
Detector (Minelab)	7	7	1	1	Some of the detectors often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors must be secured (replaced) in a quantity sufficient to be provided to the TS and CT teams.
Station Wagon	8	8	5	5	5 out of 8 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration.
Pick-up Truck	2	4	3	1	3 out of 4 vehicles currently owned have been in use for more than 10 years and must be replaced due to deterioration.
Mid-class Cargo Truck	2	4	4	2	One vehicle out of 4 currently owned has been in use since 1999 and must be replaced due to deterioration. The remaining 3 vehicles of the 2002 model from Russia must be replaced due to their low fuel efficiency.
Motorbike	7	7	4	4	4 out of 7 vehicles currently owned have been in use since 2005 and must be replaced due to deterioration.

Table 2-15 Attapue Office

Name of Equipment	Number of Equipment Necessary	Number of Equipment Currently Owned	Number of Equipment to be Replaced	Number of Equipment to be Procured	Necessity
Detector (Vallon)	53	61	20	12	Among the detectors currently owned, mainly those replaced in 2007 are becoming deteriorated. Detectors in a quantity sufficient to the number of the clearance operators must be replaced.
Detector (Ebinger)	7	6	1	2	Some of the detectors often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. Detectors n a quantity sufficient to the number of the TS and CT teams to be provided.
Detector (Minelab)	7	7	4	4	Three out of 7 detectors currently owned, which have been in use since 1999, are a model no longer in use. Some of the detectors often suffer from malfunction from day-to-day use, although there has not been major trouble occurred. These detectors must be replaced.
Station Wagon	8	9	6	5	6 out of 9 vehicles currently owned have been in use for more than 7 years and must be replaced due to deterioration.
Pick-up Truck	2	4	3	1	3 out of 4 vehicles currently owned have been in use since 1997 or 1999 and must be replaced due to deterioration.
Mid-class Cargo Truck	2	3	3	2	1 out of 3 vehicles currently owned has been in use since 1999 and must be replaced due to deterioration. The remaining 2 vehicles of the 2002 model from Russia must be replaced due to their low fuel efficiency.
Motorbike	6	6	4	4	4 out of 6 vehicles currently owned have been in use since 2001 or 2005 and must be replaced due to deterioration.

After verifying the numbers of equipment required by each provincial office as shown in the above tables, procurement in this Project will be conducted in the quantities given in Table 2-16.

Table 2-16 Equipment Arrangement for Project Site Offices

Project Site Office / Equipment	National Office	Training Center	Luangphrabang	Huaphanh	Xiengkhuang	Khammuane	Savannaket	Saravan	Champasak	Sekong	Attapue	Total
UXO Detector (Vallon)	3	30	8	14	57	20	51	29	17	34	12	275
UXO Detector (Ebinger)	3	2	5	5	2	3	12	7	5	6	2	52
UXO Detector (Minelab)	3	10	7	7	13	4	13	10	7	1	4	79
Station Wagon	1	2	5	7	11	3	8	8	5	5	5	60
Pick-up Truck	1	1	1	2	2	1	2	1	1	1	1	14
Mid-class Cargo Truck	1	1	2	2	3	2	3	3	2	2	2	23
Motorbike		12	3	5	6	2	6	4	4	4	4	50
Desktop PC	10	5	5	3	5	4	7	3	4	4	5	55
Laptop PC	5	2	3	3	4	2	4	4	3	3	3	36
Scanner	1		1	1	1	1	1	1	1	1	1	10
Photocopy Machine	2	1	2	2	2	2	3	2	3	3	3	25
Printer (Color)	1	1	2	2	2	2	2	2	2	2	2	20
Printer (Black/White)	9	2	3	3	2	2	3	2	2	2	2	32
Facsimile Machine	2	1	1	1	2	2	2	2	2	2	2	19
Generator			5	5	5	6	5	5	4	4	4	43
Grass Cutter			10	5	6	5	10	4	4	5	5	54
Radio (Base)			1	1	1	1	2	3	1	1	1	12
Radio (Vehicle)	3	4	8	11	16	6	13	12	8	8	8	97
Radio (Mobile)		10	10	10	10	10	10	10	10	10	10	100
GPS		10	10	10	10	10	10	10	10	10	10	100
Digital Camera			2	3	2	3	3	3	3	3	3	25
Projector		1	1	1	1	1	1	1	1	1	1	10

Note: UXO Lao shall make final adjustments for equipment allocating to each provincial office after confirmation of latest annual plan.

(3) Specification and Purpose of Use

Specification, purpose of use and quantity are summarized in the following Table 2-17, and images of the main equipment are shown in the following Figure 2-3.

Table 2-17 Equipment Specification

No.	Equipment	Specification	qt.	Purpose of Use
1	Detector (Vallon)	Model：VMXC1 UXO	275	UXO detection and training.
2	Detector (Ebinger)	Model：UPEX 740M	52	
3	Detector (Minelab)	Model：F3LS UXO	79	
4	Station Wagon	4WD (diesel, more than 10 passenger, winch, rooftop carrier, off-road tires)	60	Equipment and personnel transportation for Technical Survey, Clearance, Roving Clearance and Community Awareness.
5	Pick-up Truck	4WD (diesel, double cabin, winch, off-road tires)	14	Transportation of personnel, equipment and UXO (auxiliary for station-wagon).
6	Mid-class Cargo truck	4WD (diesel, 4-6 ton, rag-roof, winch)	23	Transportation of large-sized equipment.
7	Motorbike	displacement: more than 170cc, off-road type	50	Prompt transfer to UXO site for General Survey Team.
8	Desktop PC	CPU Intel Core : more than 2.9 GHz, memory: more than 2 GB, HDD : more than 400 GB, monitor : more than 17 inch (liquid crystal color)	55	Record of UXO cleared site condition and report of UXO clearance activity.
9	Laptop PC	CPU Intel Core : more than 2.2 GHz, memory: more than 2 GB, HDD more than 400 GB, monitor : more than 14 inch and less than 15.6 inch (liquid crystal color)	36	Site information input by the General Survey Team and UXO risk educational activity by the Community Awareness Team (video showing at community congregation).
10	Scanner	Automatic let off motion, both sides reader, A3 size, optical resolution: more than 600 dpi, scanning speed: A4 300 dpi – 35 sec or less	10	Each provincial office sends the monthly and completion reports to NRA by scanned data. The existing scanner is manual and A4 size, and lot of effort has been used in scanning work by the Operation Assistant of provincial offices.
11	Photocopy Machine	Resolution: more than 600×600 dpi, copy speed: A4－25 copy/min. or faster, A3 size, memory: 512 MB or more	25	Effective organization of UXO clearance information.
12	Printer (Color)	Print speed: A4－20 ppm or faster, print quality: 1200×1200 dpi or more, memory: 8MB or more	20	
13	Printer (Black/White)	Print speed: A4－25 ppm or more, print quality: 2400 dpi or more, memory: 160MB or more	32	
14	Facsimile Machine	Paper size: A4	19	
15	Generator	Rated voltage: 200V-240V, frequency: 50Hz-60Hz, max. output: 2.8KVA or more	43	Charging the detector battery is essential for UXO detection. Generator is essential at remote sites.
16	Grass Cutter	2-blade cutter or mowing cutter	54	Grass cutting is required prior to the UXO detection. Motorized grass cutters are effective equipment.

No.	Equipment	Specification	qt.	Purpose of Use
17	Radio (Base)	Frequency: 1.6-24 MHz or wider, power output: 125 W or more, channels: 200 or more	12	Communication between provincial office and site vehicles.
18	Radio (Vehicle)	Frequency: 1.6-30 MHz or wider, power output: 125 W or more, channels: 200 or more	97	
19	Radio (Mobile)	Hand-held, Frequency: 134-174 MHz or wider, channels: 50 or more	100	Communication of site operator.
20	GPS	Waterproof, receiver: 12 parallel channels	100	UXO cleared site location (coordinates) is recorded by GPS. Coordinates are sent to NRA for IMSMA data.
21	Digital Camera	Dust protected and waterproof, camera effective pixel: 3.2x or more	25	Record of UXO cleared site.
22	Projector	Digital Light Processing (DLP), resolution: not less than 800×600, Screen (more than 100inch)	10	UXO risk educational activities are conducted by the CA Team. The CA Team uses TV monitor to explain risks of UXO. However, the TV monitor is too small to be seen by many people. A large screen provided by the projector is effective when used with a laptop PC instead of a TV monitor.

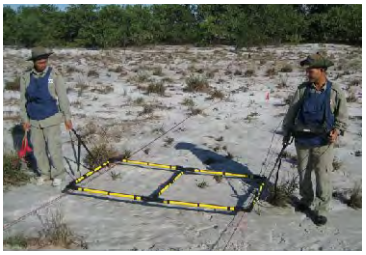
	
UXO Detector (Vallon)	UXO Detector (Ebinger)
	
UXO Detector (Minelab)	Station Wagon
	
Pick-up Truck	Mid-class Cargo Truck
	
Motorbike	Generator
	 Base, Vehicle Type Mobile Type
Grass Cutter	Radio

Figure 2-3 Images of the Main Equipment

2-2-3 Implementation Plan

2-2-3-1 Implementation Policy

(1) Basic Matters

1) With the approval of the Japanese government, Exchange of Notes (E/N) shall be entered into between the Governments of Lao PDR and Japan. Continuously, Grant Agreement (G/A) shall be entered into between the government of Lao PDR and JICA in order for the Project to be formally committed and to be implemented.

2) Following the conclusion of G/A, consultants of Japanese nationality and the Government of Lao PDR will conclude an execution design and supervision contract, and immediately start detailed design work. The Consultant will perform their duties under the agreement until the equipment has been delivered.

(2) Tendering

1) The tendering will be conducted in line with the JICA's Procurement Guidelines of Japanese Grant Aid.

2) While the tender will be executed by the implementation agency (UXO Lao), the Consultant will fully cooperate in executing the tender under the instructions of JICA.

(3) Implementation Process

The winner of the open competitive tender will enter into an equipment procurement contract with UXO Lao to delivery, acceptance, and handover the equipment by the deadline established in the contract. The Consultant will perform their duties in accordance with the Consultancy Guidelines of the Implementation of Japan's Programme Grant Aid issued by JICA to ensure that the Project will be implemented smoothly and the Project's objectives will be achieved.

(4) Implementation Scheme

The implementation agency of the Project is UXO Lao under the Ministry of Labor and Social Welfare. The NRA will be the organization that supervises the overall UXO sector.

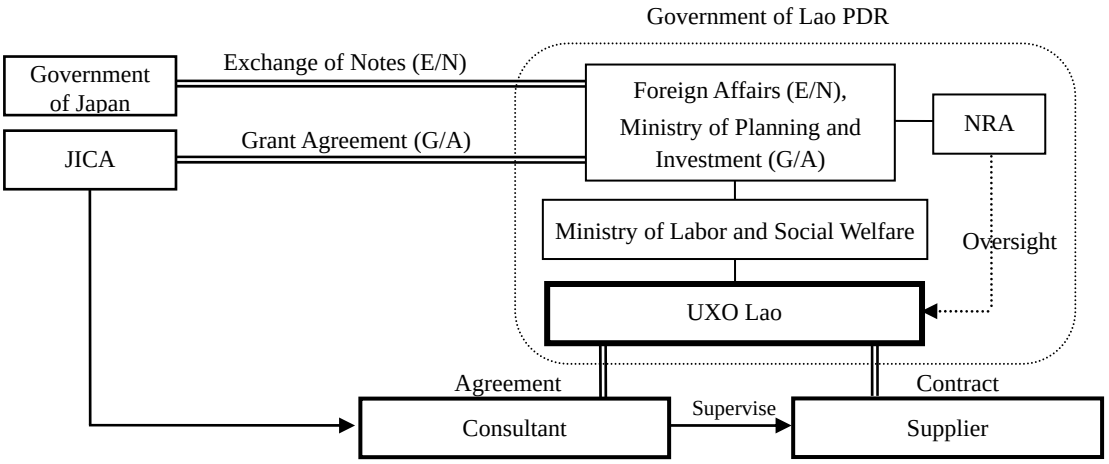


Figure 2-4 Project Implementation Scheme

2-2-3-2 Implementation Conditions

Station wagons, mid-class cargo trucks and motorbikes will be procured from Japan. Pick-up trucks and other equipment can be procured in Lao PDR or from third countries but it is necessary to confirm the availability of the maintenance and repair, and spare parts provide for all of the procured equipment through local distributors. Radios, especially vehicle-mounted radios, are recommended to be procured from Japan because major vehicles are procured from Japan.

The major existing detectors are Vallon (VMXC1), Ebinger large loop (UPEX 740M) manufactured in Germany and Minelab (F3LS UXO) manufactured in Australia, which are the preferred detectors in UXO Lao. Detectors are the most important equipment for UXO clearance activities and continued use of the preferred detectors is important to maintain safety and allow easy operation and maintenance. Faulty maintenance is a cause of malfunctions in detectors.

2-2-3-3 Scope of Works

For the implementation of the Project, the Government of Japan and the Recipient shall be responsible for the procurement of the Project components as shown in Table 2-18 below.

Table 2-18 Major Undertakings to be Borne by each Government

No.	Components	To be covered by Grant Aid	To be covered by Recipient Side
1	Cost of equipment	●	
2	Cost of packing and transporting equipment (by ship, air)	●	
3	Cost of inland transportation of equipment (suppliers to UXO Lao National Training Center)	●	
4	Cost of inland transportation of equipment (from UXO Lao National Training Center to each Project site)		●
5	Unpacking and delivery	●	
6	Instructions on operation	●	
7	Tax exemption (customs duties, VAT, etc.)		●
8	Payment procedures at B/A and A/P, etc.		●
9	Issuance of a certificate of completion following the acceptance of the equipment		●

2-2-3-4 Consultant Supervision

The Japanese consultant will engage in the supervision of the Project pursuant to the following policies:

- To confirm that the requirements given in the technical specifications are fulfilled.
- To supervise and ensure that the procurement will be completed within the predetermined term by monitoring the status of its progress when deemed necessary.

Under these policies, as part of the supervision work of the Consultant for this Project, the Consultant will station one procurement supervisor and one additional procurement supervisor will be dispatched in accordance with the progress of the acceptance test, operational guidance and handover. And in Japan, the Consultant will witness the collation inspections of the pre-shipment equipment at the manufacturer's factory and/or packing warehouse. The consultant will engage in the following super vision works:

- Confirmation and approval of necessary documents for equipment
- Attending the preliminary arrangements with supplier in the recipient country
- Supervising the progress and safety control of the supplier
- Attending the factory inspection and collation inspection prior to shipment in Japan
- Attending the acceptance test and handover
- Completion report

2-2-3-5 Quality Control Plan

(1) Basic Policy

The equipment procured in the Project will not include any equipment to be newly designed on a special order. However, during the manufacturing process, the Consultant will review the manufacturing drawings submitted by the supplier in terms of conformity to the contract and technical specifications, give necessary approvals, and verify the quality of the equipment when deemed necessary.

(2) Quality Inspection by the Consultant

For the quality inspection for the equipment, the following inspections and acceptance tests shall be conducted prior to the handover of the equipment.

1) Factory inspection

Items and quantities of all equipment shall be confirmed during collation inspection prior to packing at the factory by the supplier, and checked by the Consultant.

2) Collation inspection prior to shipment

Items and quantities of all equipment shall be confirmed during collation inspection prior to shipment by a third party inspection agency, and checked by the Consultant.

3) Acceptance test and handover

Under the presence of the Consultant and supplier, the implementation organization of Lao PDR will inspect the equipment in terms of conformity to the technical specifications.

2-2-3-6 Procurement Plan

(1) Suppliers of Equipment

The equipment to be provided for the Project will be supplied as shown in Table2-19 below.

Table 2-19 List of Suppliers of Equipment

Name of Equipment	Source of Procurement			Remarks
	Local	Japan	Third Country	
UXO Detector (Vallon)			○	Germany
UXO Detector (Ebinger)			○	Germany
UXO Detector (Minelab)			○	Australia
Station Wagon		○		
Pick-up Truck	○		○	
Mid-class Cargo truck		○		
Motorbike		○		
Desktop PC	○		○	
Laptop PC	○		○	
Scanner	○		○	
Photocopy Machine	○		○	
Printer (Color)	○		○	
Printer (Black/White)	○		○	
Facsimile Machine	○		○	
Generator	○		○	
Grass Cutter	○		○	
Radio (Base)		○		
Radio (Vehicle)		○		
Radio (Mobile)		○		
GPS	○		○	
Digital Camera	○		○	
Projector	○		○	

(2) Transportation Plan

The place of equipment delivery and acceptance is specified to be the training center that is located 30km north of Vientiane.

1) Equipment to be procured from Japan

The equipment procured in Japan will be shipped from Yokohama, unloaded at the Port of Bangkok in Thailand, cleared through customs at Thanaleng in Vientiane, and transported to the training center. Shipment and land transportation to Lao PDR will take approximately two months in maximum. The national roads in Thailand are well maintained and no problem is expected in land transportation. Vehicles will be transported using car carriers or be driven by the transport company. The roads in Vientiane will not cause any problem used by large

vehicles although some area still under construction for pavement. It is expected that customs clearance will take about one week.

2) Equipment to be procured in the third country

Pick-up trucks procured in Thailand will be transported using car carriers or be driven by the transport company via national roads in Thailand. They will be cleared through customs at Thanaleng in Vientiane and transported to the training center.

UXO detectors will be procured from third countries, which are Germany and Australia. The transportation route of UXO detectors is shown in Table 2-20.

Table 2-20 Transportation Route of UXO Detector

Name of Detector	Transportation Route	Final Destination
Vallon (VMXC1)	Frankfurt ⇒ Vientiane (air)	Training Center
Ebinger (UPEX740M)	Frankfurt ⇒ Vientiane (air)	Training Center
Minelab (F3LS UXO)	Melbourne ⇒Vientiane (air)	Training Center

3) Equipment to be procured locally

Personal computers and other commercial products will be procured locally and accepted at the training center.

2-2-3-7 Operational Guidance Plan

A basic training program for maintenance and repair of detectors will be held to promote effective use of spare parts. The 5-day program is planed to be held at the training center by one instructor from each detector for three detectors.

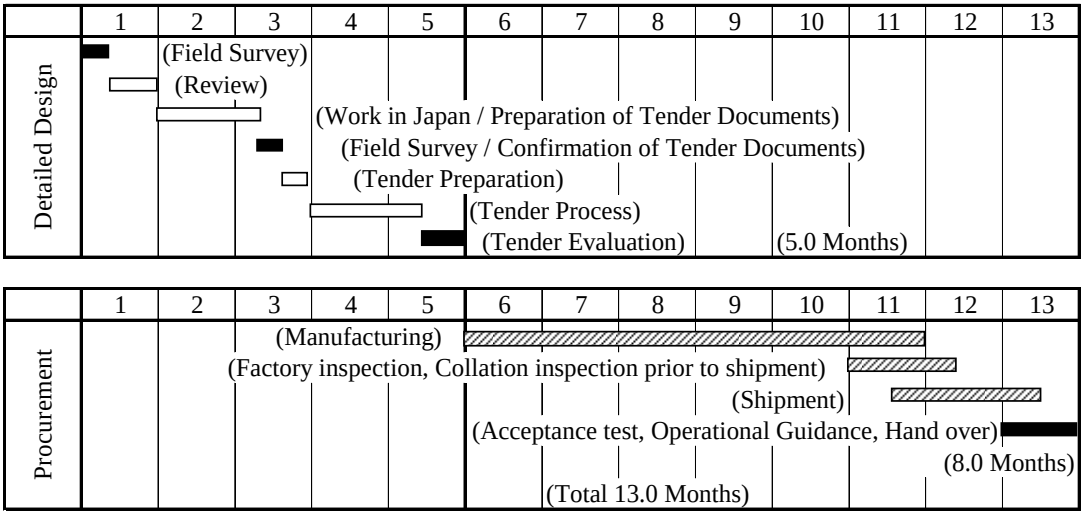
2-2-3-8 Soft Component (Technical Assistance) Plan

Planning of soft components will not be included in this Project.

2-2-3-9 Implementation Schedule

The most rational implementation schedule for the procurement work of this Project is as shown in Table 2-21 below. The total Project implementation period will be 13.0 months including 5 months for detailed design and tender process and 8 months for procurement works.

Table 2-21 Implementation Schedule



2-3 Obligations of Recipient Country

Upon the implementation of this project as a grant aid from Japan, Lao PDR shall be responsible for undertaken those items indicated in Section 2-2-3-3 “Scope of Works” and both governments of Japan and Lao PDR have confirmed the needs for taking the following measures:

(1) The government of Lao PDR will open a bank account in its name at a Japanese bank and issue Authorization to Pay (A/P) to the bank. Based on the Banking Arrangement (B/A), Lao PDR side should bear an advising commissions of an A/P and payment commissions to the bank.

(2) The Government of Lao PDR will facilitate prompt processing of customs clearance of procured equipment.

(3) The Government of Lao PDR should bear the cost for inland transportation from the training center to the Project sites.

(4) To accord all engineers dispatched by the prime supplier, whose services may be required in connection with the supply of the products and the services under the verified contract, such conveniences as may be necessary for their entry into Lao PDR and stay therein for the performance of their work.

(5) The Government of Lao PDR will exempt customs duties, domestic taxes and other charges for Japanese nationals entering into the recipient country to procure equipment

based on the procurement contract of the Project.

(6) The equipment provided under the Grant Aid will be properly maintained and used effectively.

(7) To bear all expenses other than those covered by the Grant Aid that are necessary for the transportation, installation, operation and maintenance of the equipment.

2-4 Project Operation Plan

Since the annual budget of the UXO Lao is covered by the contributions from other donors, the total amount of which is almost the same in every year, the total number of UXO Lao staff has had no changes in the past five years with approximately 1,000 members. Due to the said budget, UXO Lao cannot increase the salary of the staff and employ any additional staff.

Procured equipment for the Project will be handed over to UXO Lao, and UXO Lao will be responsible for operation and maintenance of all equipment. All equipment will be delivered to each provincial office according to the plan.

Regarding the maintenance of the equipment, each provincial office has the responsibility for daily and /or periodical inspections and temporary repair; however, medium-scale repairs of the vehicle are referred to private workshops due to lack of skills to attend to such repairs as well as needed spare parts. For the medium and/or large-scale repairs, after collection of equipment sent from provincial offices to the national office, and will be consigned to the manufacture's agents or repair shops in Vientiane.

UXO Lao has its own standards for operation and maintenance of the equipment, and will monitor the condition of the equipment periodically. The framework for the maintenance of the procured equipment is as shown in Table 2-22.

Table 2-22 Framework of the Maintenance

	Daily repair	Temporary repair (at site)	Periodic inspection	Medium scale repair	Large-scale repair	Training (operator/mechanic)
National office				○ (contract)	○ (contract)	
Training center						○
Provincial office	○	○	○	△		

Note: ○: Mainly responsibility △: Secondary responsibility

In the national office, under the national program director, there have five units, Finance, Procurement & Logistics, HR & Admin Unit, Quality Management, and Programme & Public Information (with total staff of 30 persons) have been established. Procurement and

maintenance of the equipment will be done by the Procurement & Logistics Unit (with 7 staff members). Besides a general manager, the staff members in charge of procurement, fleet management, asset management, and storage and repair, respectively. The unit handles the requests for repair by provincial offices directed to the manufacturers and keeps in its files the details of repairs made in the past, including the number of contents and repair and quotation of the repair costs. The staff member in charge is also familiar with the characteristics of the equipment, including the frequency and causes of broken of the respective equipment. Equipment lists are submitted by the provincial offices to the national office every month, which makes it possible to confirm whether the existing equipment is in a usable condition or not. The organization chart of this unit is as shown below.

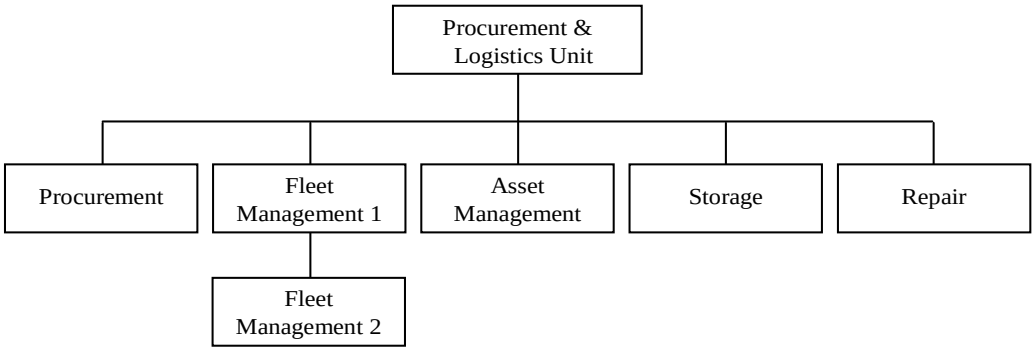


Figure 2-5 Organization Structure of Procurement & Logistics Unit

Most of the provincial offices have engineers in charge of maintenance who perform the repair and management of the equipment. Some provincial offices have independent management for vehicles.

Since the majority of the equipment to be procured in the Project is for the replacement and replenishment of the existing equipment, it will be put into operation and the maintenance engineers will be able to apply their skills have been accumulated without any technical difficulties.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Cost to be borne by the recipient country 304,770,000 LAK

a) Cost for inland transportation
(UXO Lao National Training Center to each Project site): 144,150,000 LAK
b) Cost for Operational Guidance Plan
(daily allowance, travel cost, etc. for trainees): 66,870,000 LAK
c) Cost for Banking Arrangements: 93,750,000 LAK

(2) Condition of Cost Estimate

a) Date estimated : March 2012

b) Exchange rates : 1US$ = 78.42 Yen, 1LAK= 0.0096 Yen,
1€ = 105.19 Yen, 1THB= 2.58 Yen

c) Procurement period : February 2013 - September 2013

d) Others : The estimation was carried out in accordance with the rules and regulations for Japanese Grant Aid.

2-5-2 Operation and Maintenance Cost

Since the Project is aimed mainly at replacing the existing equipment, it will not increase the current equipment procurement or maintenance cost. Rather, the maintenance cost is expected to be decreased as the new replacement vehicles will reduce the number of failure and improve fuel efficiency.

The equipment procurement and maintenance costs of UXO Lao during the last five years are as shown in the table below and account for 30% to 40% of its total budget. The provision of improved equipment through this Project will enable the maintenance budget to be spent for other items more effectively.

Table 2-23 Equipment Maintenance Costs

Item \ Year	No.	2007	2008	2009	2010	2011
1) Total Cost	①	5,984,830	6,795,780	6,709,718	6,478,993	6,966,903
2) Durable Equipment Procurement Costs Subtotal (③+④+⑤)	②	1,149,905	1,436,172	1,026,204	614,184	303,187
Durable Equipment Procurement Cost (Vehicles)	③	142,167	274,683	407,372	132,400	66,900
Durable Equipment Procurement Cost (Office equipment)	④	167,230	43,143	35,115	38,871	50,393
Durable Equipment Procurement Cost (Operation equipment)	⑤	840,508	1,118,346	583,717	442,913	185,894
3) Consumable Equipment Procurement Costs Subtotal	⑥	462,069	274,473	454,010	453,654	437,660
4) Equipment Maintenance Costs Subtotal (⑧+⑨+⑩)	⑦	780,111	1,102,243	859,041	1,108,413	1,358,740
Equipment Maintenance Cost (Vehicles)	⑧	323,755	469,540	406,697	510,048	622,367
Equipment Maintenance Cost (other than vehicles)	⑨	68,361	63,827	45,256	63,719	69,769
Fuel Costs	⑩	387,995	568,876	407,088	534,646	666,604
5) Equipment Procurement & Maintenance Costs Total	⑪	2,392,085	2,812,888	2,339,255	2,176,251	2,099,587
Durable Equipment Procurement Cost Ratio (%) (=⑤/①×100)		19.2	21.1	15.3	9.5	4.4
Consumable Equipment Procurement Cost Ratio (%) (=⑥/①×100)		7.7	4.0	6.8	7.0	6.3
Equipment Maintenance Cost Ratio (%) (=⑧/①×100)		13.0	16.2	12.8	17.1	19.5
Equipment Procurement & Maintenance Cost Ratio (%) (=⑨/①×100)		**40.0**	**41.4**	**34.9**	**33.6**	**30.1**

CHAPTER 3
PROJECT EVALUATION

Chapter 3 Project Evaluation

3-1 Preconditions

Essential preconditions for the implementation of the Project are as follows:

(1) Tax Exemption

In the event that Japanese suppliers involved in the Project procure equipment in Lao PDR or imports from overseas for the implementation of the Project, tax exemption of all taxes such as customs duties, consumer tax and other domestic taxes shall be officially and promptly granted.

(2) Expediencies and conveniences

Expediencies shall be granted so that disembarkation, customs clearance and inland transportation of the equipment imported from Japan or a third country for the Project can be smoothly processed and/or carried out. And, conveniences shall be provided for all engineers dispatched by the supplier for the Project since their entry into Lao PDR and stay therein for the performance of their work is necessary.

(3) Budget for Operation and Maintenance

Since the equipment to be procured consists mainly of the replacement and replenishment of the existing equipment, the current operation and maintenance expenses and equipment procurement costs will not increase. The operation and maintenance expenses on the existing scale shall be secured by UXO Lao on a continuous basis.

3-2 Necessary Inputs by Recipient Country

Necessary inputs to be undertaken by the recipient country which are preconditions for successful completion of the Project as a whole including the accomplishment of the project objectives are as follows:

(1) Inland transportation of procured equipment from the Training Center to the each project site

The equipment to be procured in this project will be delivered to the UXO Lao Training Center, and its inland transportation from the Training Center to each project site (UXO Lao national office and nine provincial offices) will be made by UXO Lao.

(2) Operation and maintenance after handover

The equipment to be procured in this project shall be operated and maintained in an adequate and effective manner by UXO Lao.

3-3 Important Assumptions

Important external conditions for successful completion of the Project as a whole including the accomplishment of the project objectives are as follows:

(1) Continuous contribution of funds by external assistance organizations (Securing of funds for UXO Lao's operation)

Financial assistance must be provided by donor organizations on a continuous basis in order to secure the smooth implementation of this project and the achievement of its objectives.

3-4 Project Evaluation

3-4-1 Relevance

This project is in agreement with the key areas of Lao PDR's national programmes and the assistance policy of Japan. The project is high in urgency in terms of securing safety in the areas around the main roads and achieving UXO clearance targets officially set and announced by the Lao PDR government, and is meant to address the needs related to the UXO clearance. The equipment to be procured consists mainly of the replacement of existing equipment, and operation and maintenance is deemed possible through the skill of UXO Lao staff.

Accordingly, this project is deemed highly adequate in the above-mentioned aspects.

3-4-2 Effectiveness

The following outputs are to be expected from the Project and therefore it is considered that the Project will be confidently effective.

(1) Quantitative Outputs

1) Total clearance area per year

By using the equipment to be procured in this project, the annual clearance area will be increased from 2,938 ha in 2011 to 3,783 ha in 2016.

While 546 operators were involved in the UXO clearance operation in 2011, only 514 units of detectors (Vallon) are currently registered and used for clearance operations, meaning two or more operators are using one detector in turn at certain

sites. Since every clearance operator will be provided with their own detector due to the renewal and increase of the equipment in number in the project, the clearance operation efficiency will be improved by 546 (unit)/514 (unit) times. Furthermore, although approximately 10% of the detectors will be out of use for approximately one month in each year as shown by the past data due to the breakdown/repair of detectors, the stoppage of work thereby will be cleared to secure the clearance operation throughout the year because spare detectors will be provided through this project. Accordingly, the efficiency will be improved by 100 (%)/90 (%) times and also by 12 (month)/11 (month) times.

Based on the above, the annual clearance area has been calculated as mentioned below on the assumption that the improved condition will be maintained once this project is put into practice.

Annual cleared land area (ha/year)
= (Annual cleared land area in 2011) × (546units x 514units) × (100%/90%)
× (12months/11months)
＝2,938ha/year×546/514×100/90×12/11
＝3,783ha/year

2) The number of beneficiaries by clearance operations

Due to higher efficiency in clearing UXO-contaminated agricultural land, which will be achieved through the use of the equipment provided in this project, the number of people who will benefit from the clearance operations to be able to cultivate the cleared agricultural lands will increase from 466,337 in 2011 to approximately 510,486 in 2016.

As far as we can see from the analysis of the past records, the number of the beneficiaries varies depending upon the sites of annual clearance operation. While the number of people to benefit from the clearance of agricultural lands is expected to increase almost in proportion to the area of cleared land as shown in 1) above, the target for residential and tourist areas will be to maintain the level of 2011 on a continuous basis in view of the large number of uncertainties involved (existence and scale of annual development programmes).

In view of the fact that agricultural land accounts for approximately 87% of the total clearance area (result from 2011) and the number of the beneficiaries per 1 ha is estimated to be around 60,[1] the following number of people are expected to

[1] An average value calculated from the number of beneficiaries of the farmland cleared by UXO Lao in 2011, excluding Xiengkhuang province, under a special project during the year.

benefit in 2016.

Beneficiaries (people/year)
= Beneficiaries in 2011 + increase in cleared area × share of agricultural land (87%) × beneficiaries per unit area
=466,377 people/year +(3,783ha/year－2,938ha/year) x 87/100 x 60 people/ha
=510,486 people/year

3) The number of persons covered by community awareness activities

Due to the development of UXO Lao's system to conduct safety education (community awareness activities) and the increase in the number of opportunities and scale thereof through the use of the equipment to be provided in this project, the number of participants in safety education is expected to increase from 143,447 in 2011 to 150, 619 in 2016.

As far as we can see from the analysis of past records, the amount of safety education classes conducted by the local offices remains almost unchanged at approximately 600 in total in a year. This number is not likely to change even when the trucks and other equipment are renewed. The number of beneficiaries per year has remained unchanged at approximately 150,000 for the last five years, which can be interpreted as the result of the community awareness activities rooted in many villages across the country and conducted on a regular basis.

According to the UXO Lao's record of Sekong Province in the southern part of Lao PDR, 80%–90% of the residents of targeted areas have participated in the community awareness activity, leaving only 10%–20% of them to be taking safety education in the future. The average number of attendees based on the past records is around 250 per meeting, and this is expected to increase by approximately 5% in comparison with the past meetings if one out of three of the residents that had not previously taken part in a meeting (which is 10%-20% of the residents) take part in the new meetings, using television monitors because projectors and screens will be used for a larger number of attendees in the meetings after the implementation of this project.

Number of participants (people/year)
= Results from 2011 × (1 + 0.05)
=143,447people/year x 1.05
=150,619 people/year

4) Maintenance cost of all equipment

The equipment maintenance cost will decrease from US$69,769 in 2011 to US$54,262.30 in 2016 because the equipment currently in use will be replaced by the new equipment to be procured in the project and because current maintenance costs and procurement costs will accordingly decrease.

The equipment maintenance costs of UXO Lao are classified into the maintenance cost for office equipment and the installation and maintenance costs for field equipment. As for the office equipment, it is expected that maintenance costs will remain unchanged from the 2011 results (US$36,272.84) on the grounds that almost all of the existing equipment will be used continuously, while regarding the field equipment, 55% of the 2011 results (US$34,522.69) will still be required since the same percentage of the existing equipment (mainly detectors) will remain in use continuously, while procurement and maintenance costs will not be needed for the new equipment. The total costs will be reduced as follows:

Equipment maintenance costs (US$)
= Office equipment maintenance costs + field equipment installation and maintenance costs
=US$35,274.82 + (US$34,522.69 x 55/100)
=US$35,274.82 + US$18,987.48
=US$54,262.3

Table 3-1 Quantitative Outputs

Indicators	Present Situation (2011)	Measure Achievement (2016)
1) Total clearance area per year	2,938 ha	3,783 ha
2) The number of beneficiaries by clearance operations	466,337 people	510,486 people
3) The number of persons covered by community awareness activities	143,447 people	150,619 people
4) Maintenance cost of all equipment	69,769 USD	54,262.3 USD

(2) Qualitative Outputs

1) Contribute to the expanded use of land through UXO clearance and technical surveys.

2) Contribute to a safe and secure life for residents by decreasing the UXO-contaminated area.

3) Facilitate the maintenance of equipment and its functional performance, and enhance the safety of workers through the replacement of worn-out equipment with new equipment.

4) Enhance the development of local public facilities including schools and hospitals (health centers), etc.

5) Contribute to a decrease in the number of UXO victims, namely, contribute to the achievement of the goal to “reduce the number of UXO causalities from 300 to less than 75 per year” as established in the “National Strategic Plan for the UXO Sector in the Lao People’s Democratic Republic 2010–2020, ‘The Safe Path Forward II’”

6) Secure the safety of the Japanese enterprises currently operating in Lao PDR in terms of their business activities.

APPENDICES

Member List of the 1st Survey Team

1.	Mr. Nobuaki MIYATA Team Leader	Visiting Senior Advisor, Japan International Cooperation Agency (JICA)
2.	Ms. Tomoko SHIMADA Planning Management	Assistant Director, Peace Building Division, Peace Building and Urban and Regional Development Group, Economic Infrastructure Department, Japan International Cooperation Agency (JICA)
3.	Mr. Kazuhiro MIYATAKE Chief Consultant/ Management Planner	ORIENTAL CONSULTANTS CO., LTD.
4.	Mr. Nobuo MONOE UXO Operation Planner / Equipment Planner 1	LANDTEC JAPAN, Inc.
5.	Mr. Sumio MORITA Procurement Planner / Cost Estimator	ORIENTAL CONSULTANTS CO., LTD.
6.	Ms. Masako YORITA Facilities Planner	ORIENTAL CONSULTANTS CO., LTD.
7.	Ms. Asuka TODA Coordinator / Assistant for Equipment Planning and Cost Estimator	ORIENTAL CONSULTANTS CO., LTD.

Member List of the 2nd Survey Team

1.	Mr. Nobuaki MIYATA Team Leader	Visiting Senior Advisor, Japan International Cooperation Agency (JICA)
2.	Mr. Kazuhiro MIYATAKE Chief Consultant/ Management Planner	ORIENTAL CONSULTANTS CO., LTD.
3.	Mr. Nobuo MONOE UXO Operation Planner / Equipment Planner 1	LANDTEC JAPAN, Inc.
4.	Mr. Eiji TAKEMORI Equipment Planner 2	LANDTEC JAPAN, Inc.
5.	Mr. Sumio MORITA Procurement Planner / Cost Estimator	ORIENTAL CONSULTANTS CO., LTD.
6.	Ms. Asuka TODA Coordinator / Assistant for Equipment Planning and Cost Estimator	ORIENTAL CONSULTANTS CO., LTD.

Member List of the 3rd Survey Team
(Explanation of Draft Final Report)

1.	Mr. Nobuaki MIYATA Team Leader	Visiting Senior Advisor, Japan International Cooperation Agency (JICA)
2.	Ms. Tomoko SHIMADA Planning Management	Assistant Director, Peace Building Division, Peace Building and Urban and Regional Development Group, Economic Infrastructure Department, Japan International Cooperation Agency (JICA)
3.	Mr. Kazuhiro MIYATAKE Chief Consultant/ Management Planner	ORIENTAL CONSULTANTS CO., LTD.
4.	Mr. Nobuo MONOE UXO Operation Planner / Equipment Planner 1	LANDTEC JAPAN, Inc.

1st Survey Schedule (from 11 Jan. 2012, to 28 Jan, 2012)

No.	Date		Team Leader	Planning Management	Chief Consultant/ Management Planner	Coordinator / Assistant for Equipment Planning and Cost Estimator	UXO Operation Planner / Equipment Planner 1	Procurement Planner / Cost Estimator	Facilities Planner	Stay	
			JICA	JICA	Consultant Team 1		Consultant Team 2			Team1	Team2
1	11-Jan	Wed			Arrival at VTE					Vientiane	
2	12-Jan	Thu			Courtesy call on UXO Lao and NRA, Discussion with JICA Laos Office					Vientiane	
3	13-Jan	Fri			Discussion with UXO Lao, Other donors(US Embassy, AusAID, JMAS), JICA expert (Mr.Heito)				Arrival at VTE	Vientiane	
4	14-Jan	Sat			Draft reports, Internal Meeting					Vientiane	
5	15-Jan	Sun			VTE ⇒ Xieng Khouang (by QV401)		Vientiane ⇒ Champasak (by QV515)			Xieng Khouang	Champasak
6	16-Jan	Mon			Xieng Khouang – Houa Phan (by road)		Visit Champasak Office and sites			Houa Phan	Champasak
7	17-Jan	Tue		Arrival at VTE	Visit Houa Phan office and sites		Champasak – Attapeu (by road)			Houa Phan	Attapeu
8	18-Jan	Wed		VTE ⇒ Xieng Khouang (by QV401)	Houa Phan – Xieng Khouang (by road)		Visit Attapeu office and sites			Xieng Khouang	Attapeu
9	19-Jan	Thu		Visit Xieng Khouang office and sites			Attapeu – Sekong (by road), Visit Sekong office and sites			Xieng Khouang	Sekong
10	20-Jan	Fri		Xieng Khouang ⇒ VTE (by QV402) VTE ⇒ Luang Prabang (by QV103)			Sekong –Saravane (by road), Visit Saravane office and sites			Luang Prabang	Saravane
11	21-Jan	Sat		Visit Luang Prabang office and sites			Saravane – Savannakhet (by road)			Luang Prabang	Savannakhet
12	22-Jan	Sun	Arrival at VTE	Luang Prabang ⇒ VTE (by QV102)			Savannakhet – Khammouane (by road)		Savannakhet ⇒ VTE (by QV202)	Vientiane	Kammouane
13	23-Jan	Mon	Discussion with JICA Laos Office, Courtesy call to UXO Lao Courtesy call to NRA, Visit UXO Lao Training Center				Visit Khammouane office and sites, Khammouane – Savannakhet (by road)		Same as Chief Consultant	Vientiane	Savannakhet
14	24-Jan	Tue	VTE ⇒ Svannakhet (by QV201), visit Savannakhet office, Savannakhet ⇒ VTE (by QV202)		Discussion with UXO Lao, Exchange views with other donors		Visit Savannakhet office and sites, Savannakhet ⇒ VTE (by QV202)		Same as Chief Consultant	Vientiane	
15	25-Jan	Wed	Discussion on the draft of Minutes of Discussion with UXO Lao Courtesy call to Ministry of Labour and Social Welfare, Visit UXO Lao Training Center		Visit UXO Lao Training Center					Vientiane	
16	26-Jan	Thu	Discussion on the draft of Minutes of Discussion with UXO Lao							Vientiane	
17	27-Jan	Fri	Signing of the Minutes of Discussion, Reporting to Embassy of Japan and JICA Laos Office Leaving VTE							In-flight	
18	28-Jan	Sat	Arrival at Narita								

2nd Survey Schedule (from 11 Mar. 2012, to 30 Mar. 2012)

No.	Date		Team Leader	Chief Consultant/ Management Planner	UXO Operation Planner / Equipment Planner 1	Coordinator / Assistant for Equipment Planning and Cost Estimator	Equipment Planner 2	Coordinator / Assistant for Equipment Planning and Cost Estimator	Stay	
			JICA	Consultant Team 1	Consultant Team 2		Consultant Team 1	Consultant Team 2	Team1	Team2
1	11-Mar-12	Sun	Arrival at VTE	Arrival at VTE			Arrival at VTE		Vientiane	
2	12-Mar-12	Mon	Courtesy call on EOJ, JICA Laos Office, UXO Lao				Same as Chief Consultant	Arrangements for Survey, Same as Chief Consultant	Vientiane	
3	13-Mar-12	Tue	VTE⇒ZVK (by QV201), Savannakhet-Sepong (by car)		VTE⇒LPB (by QV101)		Same as Chief Consultant	Same as UXO Operation Planner / Equipment Planner 1	Sepong	Luang Prabang
4	14-Mar-12	Wed	Visit Sepong UXO Lao Office, Sepong-Savannakhet (by car)		Visit Luang Prabang UXO Lao Office, Visit Sites		Same as Chief Consultant	Same as UXO Operation Planner / Equipment Planner 1	Savannakhet	Luang Prabang
5	15-Mar-12	Thu	ZVK ⇒VTE (by QV202)		LPB ⇒ VTE (by QV102)		Same as Chief Consultant	Same as UXO Operation Planner / Equipment Planner 1	Vientiane	
6	16-Mar-12	Fri	Meeting with UXO Lao/JICA expert				Meeting with UXO Lao/Visit UXO Lao Training Center		Vientiane	
7	17-Mar-12	Sat	Internal Meeting, Review of Field Survey	Internal Meeting, Review of Field Survey			Same as Chief Consultant		Vientiane	
8	18-Mar-12	Sun	Internal Meeting, Review of Field Survey	Internal Meeting, Review of Field Survey			Same as Chief Consultant		Vientiane	
9	19-Mar-12	Mon	Meeting with JMAS	Meeting with UXO Lao, JMAS, Survey for Procurement			Same as Chief Consultant		Vientiane	
10	20-Mar-12	Tue	Signing of M/D, Report to EOJ and JICA Laos Office, Meeting with NRA, UNDP, Leaving VTE	Signing of M/D, Report to EOJ, Meeting with NRA, UNDP			Same as Chief Consultant		Vientiane	
11	21-Mar-12	Wed	Arrival at Tokyo	Discussion with UXO Lao, Meeting with each unit of UXO Lao		Arrival at VTE	Same as Chief Consultant		Vientiane	
12	22-Mar-12	Thu		Meeting with each unit of UXO Lao, Survey for Procurement					Vientiane	
13	23-Mar-12	Fri		Meeting with each unit of UXO Lao, Survey for Procurement, Discussion and Signing of Technical Notes					Vientiane	
14	24-Mar-12	Sat		Internal Meeting, Review of Field Survey					Vientiane	
15	25-Mar-12	Sun		Internal Meeting, Review of Field Survey					Vientiane	
16	26-Mar-12	Mon		Meeting with each unit of UXO Lao, Discussion with NRA	Survey for Procurement		Meeting with each unit of UXO Lao, Survey for Procurement, Leaving VTE		Vientiane	In-flight
17	27-Mar-12	Tue		Report to JICA Laos Office	Survey for Procurement, Report to JICA Laos Office		Arrival at Tokyo		Vientiane	Tokyo
18	28-Mar-12	Wed		Leaving VTE	Survey for Procurement	Leaving VTE			Bangkok(Thailand)/Vientiane	
19	29-Mar-12	Thu		Market Survey in Bangkok	Survey for Procurement, Leaving VTE	Market Survey in Bangkok			Bangkok(Thailand)/Vientiane	
20	30-Mar-12	Fri		Arrival at Tokyo					Narita	

3rd Survey Schedule (from 1 Jul. 2012, to 7 Jul. 2012)

No.	Date		Team Leader	Planning Management	Chief Consultant/ Management Planner	UXO Operation Planner / Equipment Planner 1	Stay	
			JICA	JICA	Consultant	Consultant		
1	1-Jul-12	Sun	Arrival at VTE				Vientiane	
2	2-Jul-12	Mon	Meeting with JICA Laos Office, Explanation of Draft Report to UXO Lao				Vientiane	
3	3-Jul-12	Tue	Discussion on Minutes of Discussion with UXO Lao				Vientiane	
4	4-Jul-12	Wed	Courtesy call on NRA, Meeting with UNDP, Meeting with JMAS, Prepare the documents for the meeting with UXO Lao				Vientiane	
5	5-Jul-12	Thu	Discussion on the draft of Minutes of Discussion with UXO Lao, Ministry of Planning and Investment				Vientiane	
6	6-Jul-12	Fri	Signing of the Minutes of Discussion, Discussion with JICA expert, Reporting to Embassy of Japan and JICA Laos Office				Vientiane	In-flight
				Leaving VTE				
7	7-Jul-12	Sat	Leaving VTE	Arrival at Tokyo			In-flight	Tokyo
8	8-Jul-12	Sun	Arrival at Tokyo				Tokyo	

Appendix 3. List of Parties Concerned in the Recipient Country

1st Survey (from 11 Jan. 2012, to 28 Jan, 2012)

1. Lao National Unexploded Ordnance Programme (UXO Lao)

<UXO Lao National Office>

Mr. Bounpone Sayasenh	:	National Programme Director
Mr. Sor Bourlaphan	:	Chief of Procurement & Logistics Unit
Mr. Vatchana Songvilay	:	Chief of Field Operations Unit
Ms. Heuangphachanh Panpadith	:	Chief of Programme and Public Information Unit
Mr. Khamsay Xayabonth	:	Technical Officer
Mr. Lamphong	:	Fixed Asset Technician

<UXO National Training Center>

Mr. Khamone	:	Chief of Training Center
Mr. Vatchana	:	Chief of Operation Unit
Mr. Phixaykhommiy	:	Chief of Instructor
Mr. Khema	:	Chief of Instructor

<UXO Lao Huaphanh Province Office>

Mr. Viengkham Phengsoulith	:	Provincial Coordinator
Mr. Anouxay Khamvongsack	:	Deputy Provincial Coordinator

<UXO Lao Xiengkhuang Province Office>

Mr. Kingphet Phimmavong	:	Provincial Coordinator

<UXO Lao Luang Phrabang Province Office>

Mr. Houmphanh Chanthavong	:	Provincial Coordinator
Mr. Aloun	:	Fleet Manager

<UXO Lao Champasack Phrabang Province Office>

Mr. Chanthee	:	Provincial Coordinator
Mr. Khamphao Souphanthalop	:	Deputy Provincial Coordinator
Ms. Chanthavong Inthavongsy	:	SEOD
Mr. Inpanh Thephrsalin	:	Logistic
Mr. Bouneua	:	OM Center
Mr. Bounthoug Sisompay	:	Chief Medic
Mr. Doua Coms	:	OPS
Mr. Mehsavanh	:	OPS

<UXO Lao Attapeu Province Office>

Mr. Bounom	:	Provincial Coordinator
Mr. Phonexay	:	Deputy Provincial Coordinator
Mr. Samlane	:	Operations Assistant

<UXO Lao Sekong Province Office>

Mr. Bounkhene Palangsy	:	Provincial Coordinator
Mr. Vixiane Noimalayphan	:	Deputy Provincial Coordinator

<UXO Lao Saravane Province Office>

Mr. Liemmixay	:	Provincial Coordinator
Mr. Vii Youtsada	:	SEOD
Mr. Boutsy	:	SEOD
Mr. Singma	:	Logistic
Mr. Lienthong	:	Fleet Manager
Ms. Viengphaehanh	:	Secretary

<UXO Lao Khammuane Province Office>

Mr. Bounkhong Phuasingha	:	Provincial Coordinator
Mr. Phoukhao Khunnolat	:	Deputy Provincial Coordinator
Mr. Vanxay Volakumman	:	SEOD
Mr. Vilaphong Chanthavong	:	Admin Technician

<UXO Lao Savannakhet Province Office>

Mr. Soubin Phasouking	:	Provincial Coordinator

2. National Regulatory Authority for UXO/Mine Action Sector in Lao PDR (NRA)

Mr. Phoukhieo Chanthasomboune	:	Director
Mr. Stan Brabant	:	Senior Technical Advisor(UNDP)
Mr. Bounpheng Sisawath	:	Programme and Public Relations Officer
Ms. Thongvone Sosamphan	:	Director's Assistant

3. Embassy of the United States in the Lao People's Democratic Republic

Mr. Dustin R. Bickel	:	Political-Economic Officer
Ms. Tracy L. Taylor	:	First Secretary, Chief, Political/Economic Section

4. Australian Agency for International Development (AusAID)

Ms. Dulce Carandang-Simmanivong	:	Senior Program Manager, Development Cooperation Section
Mr. Pisay Souvansay	:	AusAID (Senior Program Officer)

5. Japan Mine Action Service (JMAS)

Mr. Junichi Kurokawa	:	Representative

6. Donor

Ms. Kyoko Yokosuka	:	UNDP (Deputy Resident Representative)
Ms. Chikako Kodama	:	UNDP (Chief Crisis Prevention and Recovery Unit)
Mr. Kris Dartnell	:	UNDP (UXO Lao Technical Advisor)
Mr. Philip Bean	:	Armorgroup North America (Task Order Manager (NRA/UXO Lao))
Mr. Wolhgang Thovan	:	German Embassy (DCM)
Ms. Anne Rowe-Khieu	:	Handicap International (Country Director)
Mr. David Horrocks	:	MAG (Country Director)
Ms. Nithsa Vongphanakhone	:	Swiss Agency for Development and Cooperation-SDC (National Programme Officer)
Ms. Barbara Lewis	:	World Education Laos (Technical Consultant)

7. Embassy of Japan in the Lao People's Democratic Republic

Ms. Akiko TOMITA	:	Second Secretary

8. JICA Laos Office

Mr. Masato TOGAWA	:	Chief Representative
Mr. Masahiko TAKIZAWA	:	Senior Representative
Ms. Izumi IWAOKA	:	Aid Coordination
Ms. Yuki YOSHIMURA	:	Representative
Mr. Tsuneo HEITO	:	JICA Expert

2nd Survey (from 11 Mar. 2012, to 30 Mar. 2012)

1. Lao National Unexploded Ordnance Programme (UXO Lao)

<UXO Lao National Office>

Mr. Bounpone Sayasenh	:	National Programme Director
Mr. Tim Lardner	:	Senior Technical Advisor of UXO Lao (UNDP)
Mr. Champhorn Phongsavath	:	Chief of Finance Unit
Mr. Sor Bourlaphan	:	Chief of Procurement & Logistics Unit
Mr. Houmphanh Vannasing	:	Procurement & Logistics Technician
Mr. Khamphane	:	Fleet Manager
Mr. Alexang Hongkeo	:	Chief of Admin Unit
Ms. Phoukhong Noradath	:	Admin Technician
Mr. Bounthary	:	Deputy Head of Quality Management Unit
Mr. Kongkaeo Saengoudomxay	:	Field Technician of Quality Management Unit
Ms. Heuangphachanh Panpadith	:	Chief of Programme and Public Information Unit
Mr. Vilaysouk	:	Chief of Plan & Database Unit
Mr. Vatchana Songvilay	:	Chief of Field Operations Unit
Mr. Lamphong	:	Fixed Asset Technician
Mr. Khamsay Xayabonth	:	Technical Officer

<UXO Lao Luang Phrabang Province Office>

Mr. Houmphanh Chanthavong	:	Provincial Coordinator
Mr. Mr. Santi	:	Deputy Provincial Coordinator
Mr. Aloun	:	Fleet Manager

<UXO Lao Savannakhet Province Office>

Mr.Saly	:	Deputy Provincial Coordinator
Mr. Bounpon	:	Operation Assistant
Mr. Phomma	:	SEOD

2. National Regulatory Authority for UXO/Mine Action Sector in Lao PDR (NRA)

Mr. Bounpheng Sisawath	:	Programme and Public Relation Officer
Mr. Khammoungkhoun Southivong	:	Information Management Officer
Mr. Jurg Hug	:	TA Information Management

3. United Nations Development Programme (UNDP)

Ms. Chikako Kodama	:	UNDP (Chief Crisis Prevention and Recovery Unit)

4. Japan Mine Action Service (JMAS)

Mr. Junichi Kurokawa	:	Representative

9. Embassy of Japan in the Lao People's Democratic Republic

Mr. Masato ISO	:	Minister, Deputy Chief of Mission
Ms. Akiko TOMITA	:	Second Secretary

5. JICA Laos Office

Mr. Masato TOGAWA	:	Chief Representative
Mr. Masahiko TAKIZAWA	:	Senior Representative
Ms. Izumi IWAOKA	:	Aid Coordination
Mr. Hiroyuki IDE	:	JICA Expert
Mr. Tsuneo HEITO	:	JICA Expert

3rd Survey / Explanation of Draft (from 1 Jul. 2012, to 8 Jul. 2012)

1. Lao National Unexploded Ordnance Programme (UXO Lao)

<UXO Lao National Office>

Mr. Bounpone Sayasenh	:	National Programme Director

2. National Regulatory Authority for UXO/Mine Action Sector in Lao PDR (NRA)

Mr. Bounphamith Somvichith	:	Deputy Director (Operation)
Mr. Bounpheng Sisawath	:	Programme and Public Relation Officer

3. Ministry of Planning and Investment (MPI)

Mr. Kouthong Sommala	:	Deputy Director, Asia-Pacific and Africa Division

4. Japan Mine Action Service (JMAS)

Mr. Junichi Kurokawa	:	Representative
Mr. Koji IDETA	:	Project Director (Mechanical Bombie Clearance Project)

5. United Nations Development Programme (UNDP)

Mr. Tim Lardner	:	Senior Technical Advisor of UXO Lao (UNDP)
Mr. Iori Kato	:	UNDP (Assistant Resident Representative Chief, Policy & Management Support Unit)

10. Embassy of Japan in the Lao People's Democratic Republic

Ms. Akiko TOMITA	:	Second Secretary

6. JICA Laos Office

Mr. Masato TOGAWA	:	Chief Representative
Mr. Masahiko TAKIZAWA	:	Senior Representative
Ms. Izumi IWAOKA	:	Aid Coordination
Mr. Akihito HAYASHI	:	JICA Expert (JICA Advisor for UXO Sector)

Minutes of Discussions

on the Project for Supporting Unexploded Ordnance (UXO) Clearance in surrounding areas of main roads in the Lao People's Democratic Republic

To respond to the urgent needs for supporting Unexploded Ordnance (UXO) clearance after the flood damage in the Lao People's Democratic Republic (hereafter referred to as "Lao PDR"), the Government of Japan decided to conduct a Preparatory Survey on the Project for Supporting Unexploded Ordnance (UXO) Clearance in surrounding areas of main roads (hereinafter referred to as "the Project") in the Lao PDR and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA") .

JICA sent to the Lao PDR the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Nobuaki MIYATA, Senior Advisor, JICA, and is scheduled to stay in the country from January 11, 2012 to January 27, 2012.

The Team held discussions with the officials concerned of the Government of the Lao PDR and conducted a field survey at the study area.

As a result of discussions and field survey, both parties confirmed the main items described in the attached sheets. The Team will proceed to conduct further study.

Vientiane, January 27, 2012

Mr. Nobuaki MIYATA
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Mr. Bounpone SAYASENH
National Programme Director
Lao National Unexploded Ordnance Programme
Lao People's Democratic Republic

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve Unexploded Ordnance (UXO) clearance activities of the Lao National Unexploded Ordnance Programme (hereinafter referred to as "UXO Lao"), through procurement of necessary equipment.

2. Project site

The project sites are UXO Lao Headquarters, Training Center, and all the activities areas of the UXO Lao's nine provincial offices as shown in Annex-1.

3. Responsible and Implementing Agency

The responsible and implementing agency is the UXO Lao. The organization chart of the UXO Lao is shown in Annex-2.

4. Items Requested by UXO Lao/ the Government of the Lao PDR

4-1 After discussions with the Team, the items described in the list on Annex-3 were requested by UXO Lao.

4-2 UXO Lao also explained the priority of the requested components as described in the list on Annex-3.

4-3 The Team will assess the appropriateness of each component of the request and will recommend to the Government of Japan for approval.

4-4 The number of each item will be discussed when the Team with outline design mission is dispatched in March 2012.

5. Japan's Grant Aid Scheme

5-1 UXO Lao understood the Japan's Grant Aid Scheme explained by the Team, as described in Annex-4.

5-2 UXO Lao will take the necessary measures, as described in Annex-5, for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

6. Schedule of the Study

6-1 The Team will proceed to conduct further study in Japan and develop the Interim Report. Based on the Interim Report, the Government of Japan will appraise the Project and the results will be submitted to the Cabinet for approval.

6-2 With waiting for the Cabinet approval, JICA will dispatch the Team with outline design mission to the Lao PDR from tentatively 11th of March to 30th of March, 2012.

6-3 The Team will prepare the draft report of the study in English and dispatch the Team to the Lao PDR in order to explain its contents in July 2012.

6-4 In case that the contents of the report are accepted in principle by UXO Lao, JICA will complete the final report and submit it to the Government of the Lao PDR around August, 2012.

7. Other relevant issues

7-1 Both sides agreed that equipment plan should be formulated based on the following principles;

- To contribute to the UXO Lao's comprehensive activities including general survey, technical survey, clearance, roving and community awareness.
- To strengthen functions for supporting UXO clearance activities, such as training and information management.
- To respond to urgent survey, awareness and clearance needs resulting from flood influences in 2011

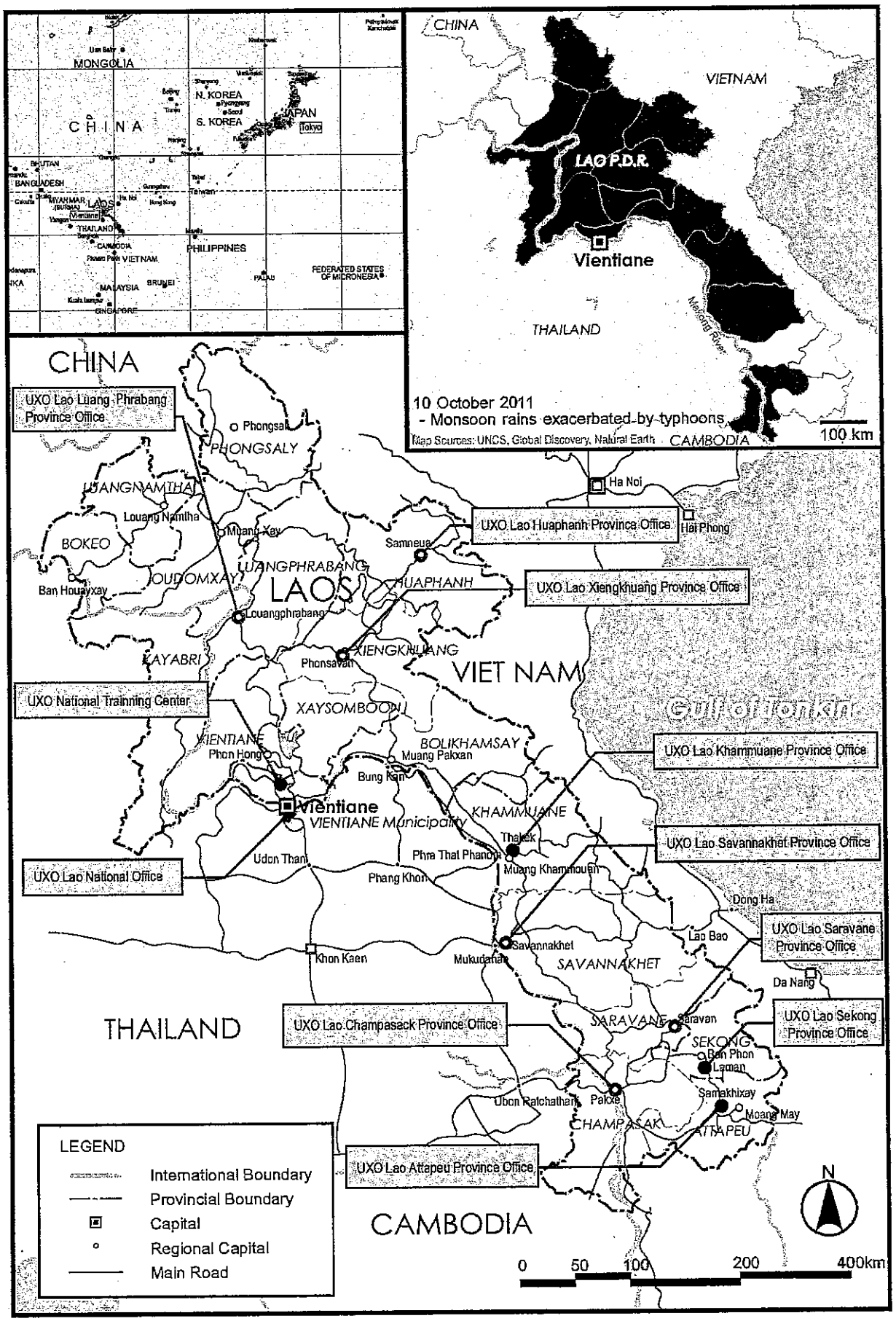
7-2 Both sides agreed that equipment plan should accommodate the needs of the UXO Lao's respective provincial offices, as each provincial office has different needs of equipment.

7-3 Both sides agreed that a certain amount of spare parts for detectors, vehicles and motorbikes should be included into the equipment plan.

7-4. As for detectors, both sides recognized that different types of detectors should be included in the equipment plan, as each detector has its strengths and characteristics, and each clearance site has different types of soil.

7-5. Although the Project focuses on the procurement of equipment, the Team recognized the needs for improvement of facilities such as the training centre, provincial offices, and dormitories for workers from the result of field surveys.

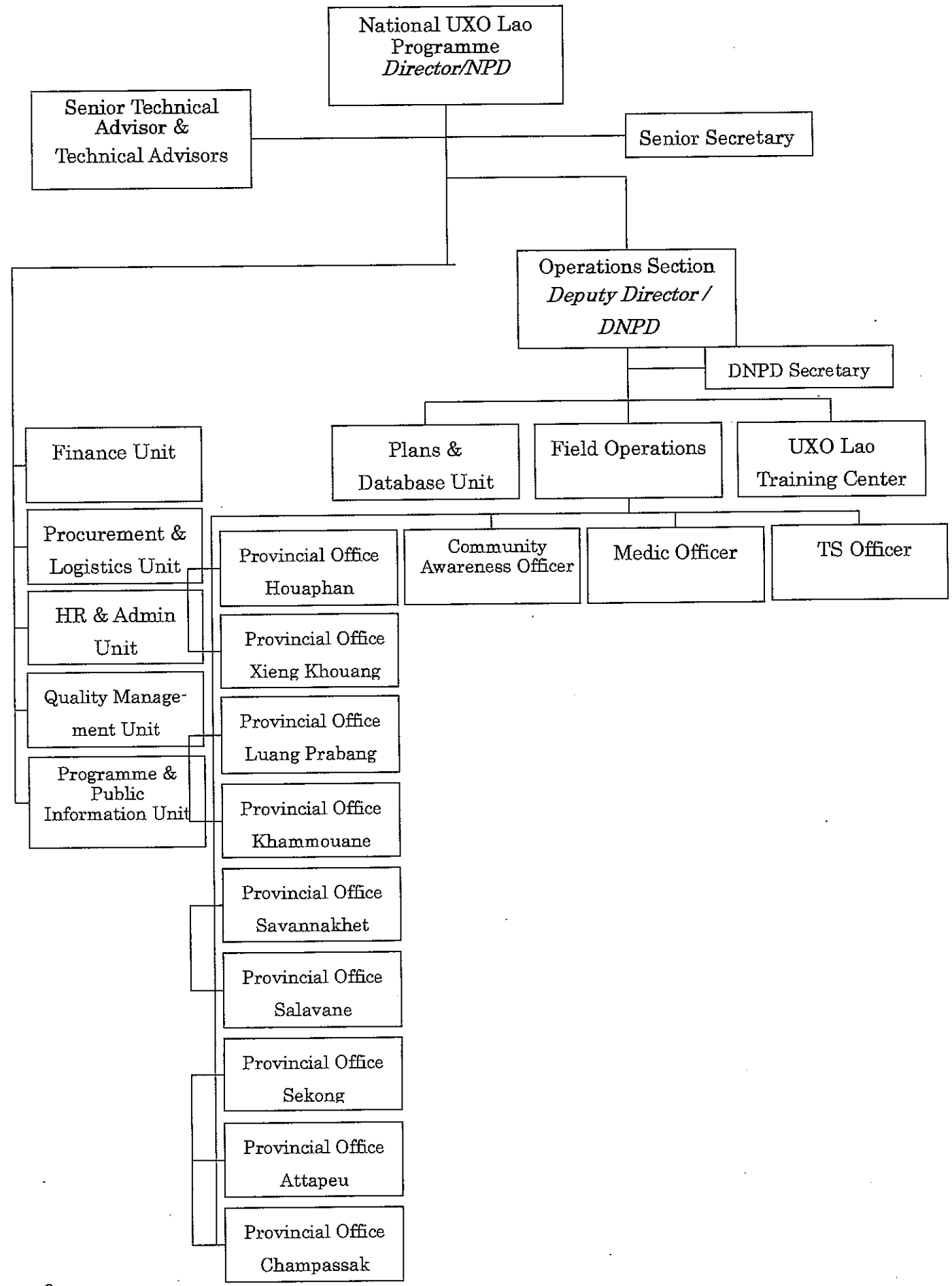
Annex-1 The map of the site
Annex-2 UXO Lao Organization Chart
Annex-3 Items Requested by UXO Lao
Annex-4 Japan's Grant Aid Scheme
Annex-5 Major Undertakings to be taken by Each Government



The map of the site

Annex-2

UXO Lao Organization Chart



Annex-3

Items Requested by UXO Lao

Team	Item	Priority
General Survey Team (GS)	Motorbike	A
	Communication Equipment	A
	GPS	A
	Personal Computer	B
	Scanner	B
	Lap-top Computer, Mobile Printer, Digital Camera	C
Area Clearance Team (CT)	Detector	A
	Truck	A
	Pickup Truck	B
	Station Wagon	A
	Motor for River Boat	B
	Communication Equipment	A
	GPS	A
	Personal Computer	B
	Grass Cutter	A
	Generator	A
	Digital Camera	C
Community Awareness Team (CA)	Truck	A
	Pickup Truck	C
	Station Wagon	B
	Generator	A
	Personal Computer	B
	Equipment for Community Awareness (Amplifier, Speaker, Lap-top Computer, Projector, Screen, Wireless Microphone, Keyboard, etc.)	A
Roving Clearance Team (RT)	Truck	C
	Pickup Truck	A
	Station Wagon	A
	Communication Equipment	A
	GPS	A
	Bullhorn	A
	Electric Resistance Meter	A
	Firing Cable	A
	Exploder	A
Technical Survey Team (TS)	Detector	A
	Truck	C
	Pickup Truck	B
	Station Wagon	A
	Communication Equipment	A
	GPS	A
	Personal Computer	A
	Lap-top Computer, Mobile Printer, Digital Camera	A
Training Section	Detector	A
	Mini-bus (25 seats)	A
	Pickup Truck	B
	Station Wagon	B
	Motorbike	A
	Communication Equipment	A
	GPS	A
	Personal Computer	A
	Scanner	B
	Printer	A
	Lap-top Computer, Projector (for lecture)	A
	Photo Copy Machine	A
Administration Section (Headquarters, Provincial Offices)	Photo Copy Machine	A
	Personal Computer	A
	Printer	A
	Scanner	A
	FAX	A
	Digital Camera	A
	Motorbike	B
	Pickup Truck	B

Note: The highest priority equipments is placed mark "A" on above table, followed by "B" and then "C".

Annex 4

Japan's Grant Aid

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on the law and the decision of the Government of Japan (hereinafter referred to as "the GOJ"), JICA has become the executing agency of the Grant Aid for General Projects.

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

(1) Grant Aid Procedures (Fast Track Procedure)

Japan's Grant Aid scheme is executed through the following procedures.

Preparatory Survey 1	Preparatory Survey (hereinafter referred to as "the Survey") conducted by JICA
Application	Request made by the Recipient
Appraisal	Appraisal by the Government of Japan (hereinafter referred to as "the GOJ")
Preparatory Survey 2	Preparatory Survey for design conducted by JICA
Approval	Approval by the Cabinet
Determination of Implementation	The Notes exchanged between the GOJ and a recipient country
Grant Agreement (hereinafter referred to as "the G/A")	Agreement concluded between JICA and the Recipient
Implementation	Implementation of the Project on the basis of the G/A

Firstly, JICA conducts the Survey using (a) Japanese consulting firm(s).

Secondly, the Recipient submits the official request to the GoJ, while the appropriateness, necessity and the basic components of the project are examined in the course of Preparatory Survey 1.

Thirdly, the GoJ appraises the project to see whether it is suitable for Japan's Grant Aid Scheme, based on the Interim report prepared by JICA, and the results are then submitted

to the Cabinet for approval after the Preparatory Survey 2.

Fourthly, JICA conducts the Survey using (a) Japanese consulting firm(s) for designing.

Fifthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the GoJ and the Recipient.

Sixthly, JICA conclude Grant Agreement (G/A) with the Recipient and makes payment of the amount agreed in the E/N and executes the Grant through strict monitoring of that the funds of the Grant are properly and effectively used.

(2) Preparatory Survey

1) Contents of the Survey

The aim of the Survey is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of cost of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the Recipient to take whatever measures necessary to ensure its responsibilities in implementation of the Project. Such measures must be guaranteed even if they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient through the Minutes of Discussions.

2) Selection of consulting firms

For the smooth implementation of the Survey, JICA will conduct the Survey with registered consulting firm(s). JICA selects the firm(s) based on proposals submitted by firm(s) with interest in implementing the Survey. The firm(s) selected will carry out the Survey and prepare a report, based on the terms of reference set by JICA.

(3) Japan's Grant Aid Scheme

1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the E/N will be signed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the Recipient to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the Recipient, and procurement conditions.

2) Selection of Consultants

The firm(s) which conducted the survey will be recommended by JICA to the Recipient to also work on the Project's implementation after the E/N and G/A, in order to maintain technical consistency.

3) Eligible Source Country

Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals" (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.).

4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. The contracts shall be verified by JICA. This "verification" is deemed necessary to secure accountability to Japanese taxpayers.

5) Major Undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following chart 2-2 (2):

6) "Proper Use"

The Government of the recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

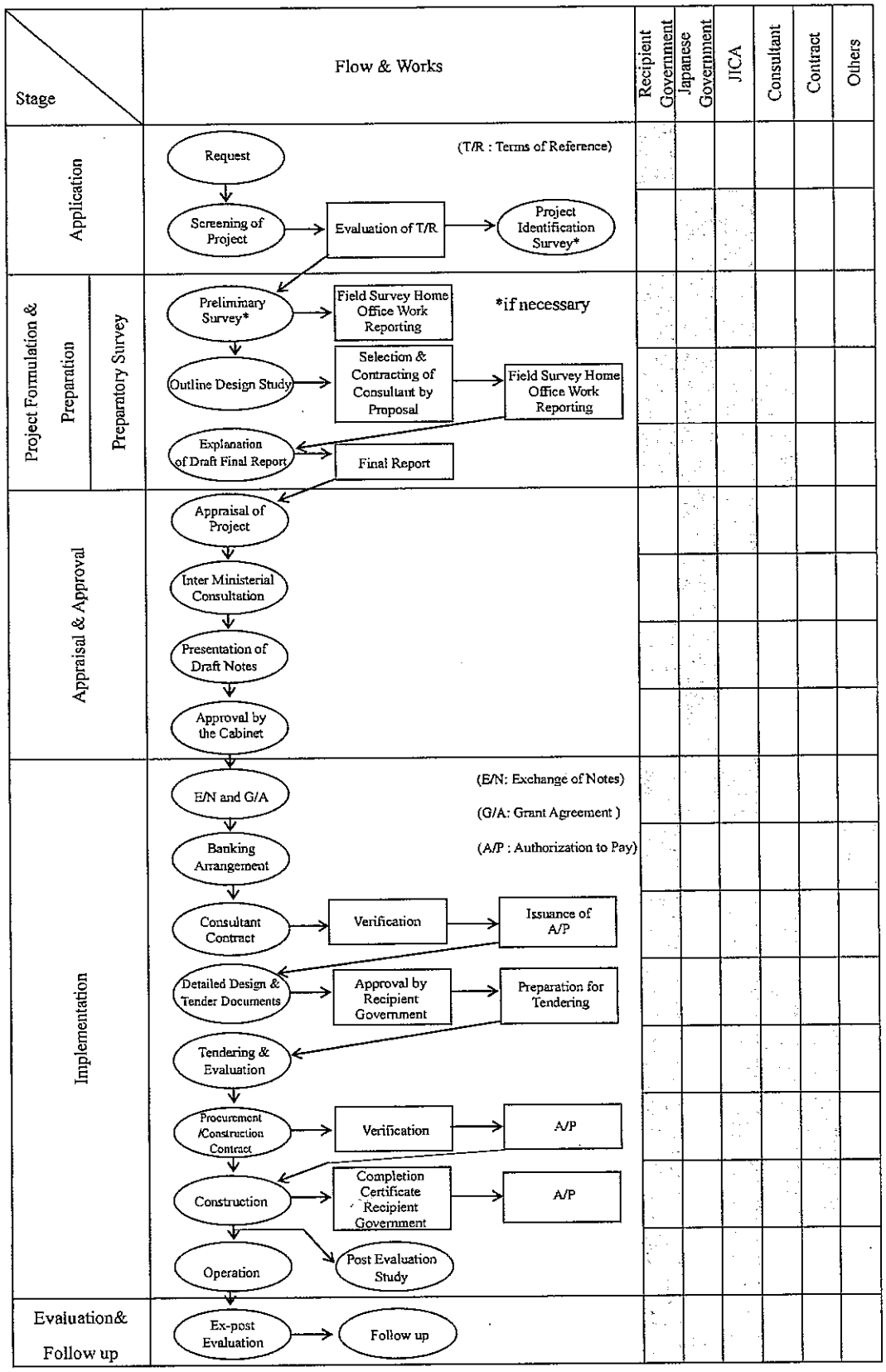
10) Social and Environmental Considerations

The recipient country must ensure the social and environmental considerations for the Project and must follow the environmental regulation or the recipient country and JICA socio-environmental guidelines.

(End)

Attachment 1

FLOW CHART OF JAPAN's GRANT AID PROCEDURES



Annex-5

Major undertaking to be taken by each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To ensure prompt customs clearance of the products and to assist internal transportation of the products in the recipient country		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the Products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project site	(•)	(•)
2	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted		•
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
4	To ensure that the Facilities and the products be maintained and used properly and effectively for the implementation of the Project		•
5	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		•
6	To bear the following commissions paid to the Japanese bank for banking services based upon the Bank Arrangement (B/A)		
	1) Advising commission of Authorization to pay (A/P)		•
	2) Payment commission		•
7	To give due environmental and social consideration in the implementation of the Project.		•

Minutes of Discussions
on the Project for Supporting Unexploded Ordnance (UXO) Clearance in Surrounding Areas of Main Roads in the Lao PDR

To respond to the urgent needs for supporting Unexploded Ordnance (UXO) clearance after the flood damage in the Lao People's Democratic Republic (hereafter referred to as "Lao PDR"), the Government of Japan decided to conduct a Preparatory Survey on for Supporting Unexploded Ordnance (UXO) Clearance in Surrounding Areas of Main Roads (hereinafter referred to as "the Project") in the Lao PDR and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA") .

JICA sent to the Lao PDR the Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Nobuaki MIYATA, Senior Advisor, JICA, and is scheduled to stay in the country from March 11 to March 27, 2012.

The Team conducted a second field survey at the study area following to the first field survey in January and held discussions with the officials concerned of the Government of Lao PDR.

As a result of discussions and field survey, both parties confirmed the main items described in the attached sheets. The team will proceed to further study.

Vientiane, March 20, 2012

Mr. Nobuaki MIYATA
Leader,
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Mr. Bounpone SAYASENH
National Programme Director
Lao National Unexploded Ordnance Programme
Lao People's Democratic Republic

1. Items Requested by UXO Lao

   After discussions with the Team, the items and quantities described in the list on Annex were requested by the UXO Lao.

2. Schedule of the Study

   2-1 The Team will prepare a draft report of the study in English and dispatch a mission to the Lao PDR in order to explain its contents in July 2012.

   2-2 In case that the contents of the report are accepted in principle by the Government of Lao PDR, JICA will complete the final report and submit it to the Government of Lao PDR around August, 2012.

3. Other relevant issues

   3-1 Both sides agreed to set indicators to measure the achievement of the Project as follows:

Proposed indicators	Present situation (2011)
Total clearance area per year	2,938 ha
Number of beneficiaries by clearance operations	466,337 persons
Number of persons covered by community awareness activities	143,447 persons
Maintenance cost of all equipment	69,769 USD

   3-2 The Team explained the implementation procedure and irregular schedule of this Project to the UXO Lao. In this context, the Team Leader verbally informed the total amount of Grant Aid which JICA had reported to the Ministry of Foreign Affairs of Japan for the approval by the Cabinet. Lao side accepted it as a fact and would start preparation for the implementation of the Project.

   3-3 As for the facilities to be improved but excluded from the Project, Lao side requested to consider the construction of facilities such as Training Center, Headquarter office, provincial branch offices and dormitories for operators, central and branch workshops extended under the Japanese assistance in another stage.

   3-4 Both sides confirmed that the UXO Lao shall be responsible for the in-country distribution of the handed-over equipment from the Training Center in Vientiane to respective provincial branches.

Annex Items requested by the UXO Lao

Annex: Items requested by the UXO Lao

		Name of Equipment	Quantity
1	Detector	Vallon (VMXC1 30cm)	258
2		Ebinger Large-Loop (UPEX 740M)	39
3		Minelab (F3 SL)	58
4	Vehicle	Station Wagon	32
5		Pic-up Truck (single-cab)	12
6		Pic-up Truck (double-cab)	24
7		Truck (middle class)	22
8		Motorbike	42
9		Outboard mortar	2
10	IT Equipment	Desktop PC	55
11		Laptop PC	30
12		Scanner	10
13		Photocopy machine	25
14		Color laser printer	52
15		Facsimile	19
16	Others	Generator	43
17		Grass cutter	54
18		Base radio	12
19		Vehicle radio	54
20		Handy radio	100
21		Handy GPS	100
22		Digital camera	25
23		Projector	10

Note: Items and quatities of equipment listed above are subject to change.

Minutes of Discussions on Preparatory Survey on the Project for Supporting Unexploded Ordnance (UXO) Clearance in Surrounding Areas of Main Roads in the Lao PDR (Explanation of Draft Final Report)

In January and March 2012, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on the Project for Supporting Unexploded Ordnance (UXO) Clearance in Surrounding Areas of Main Roads (hereinafter referred to as "the Project") to the Lao People's Democratic Republic (hereafter referred to as "Lao PDR"), and through discussions and field survey and examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult with the Lao side on the contents of the draft report, JICA sent to the Lao PDR the Explanation of Draft Final Report Team (hereinafter referred to as "the Team"), which is headed by Mr. Nobuaki MIYATA, Senior Advisor, JICA, from July 1 to July 6, 2012.

As a result of discussions, both sides confirmed the main items described in the attached sheets.

Vientiane, July 6, 2012

Mr. Nobuaki MIYATA
Leader
Explanation of Draft Report Team
Japan International Cooperation Agency

Mr. Bounpone SAYASENH
National Programme Director
Lao National Unexploded Ordnance Programme
Lao People's Democratic Republic

ATTACHMENT

1. Components of the Draft Final Report and Specifications

The Lao National Unexploded Ordnance Programme (hereinafter referred to as "the UXO Lao") agreed and accepted in principle the contents of the draft final report of the Preparatory Survey prepared by the Team.

The list of equipment is attached to Annex-1.

The Team handed one copy of the draft final report detailed specification of the equipment to the UXO Lao, and these shall be confidential to third parties in order to secure the fairness of the tender of the Project.

2. Japan's Grant Aid Scheme

2-1 The Team explained to the UXO Lao that the undertaking of the internal transportation to the UXO Lao Training Center in Vientiane should be covered by Grant Aid. On the other hand, the internal transportation from the Training Center to the work site will be conducted by the UXO Lao.

2-2 The equipment procured under the Grant Aid should be used properly and effectively for a reasonable period of time. When it becomes unusable for operations after that, the UXO Lao is required to consult with the Embassy of Japan and JICA Laos office before it is disposed, transferred, or used for other purposes.

2-3 JICA will conduct an ex post evaluation on the Project in three years.

3. Schedule of the Study

JICA will complete the Final Report in English, in accordance with the confirmed items and send it to the Lao side by the end of August, 2012.

4. Other Relevant issues

4-1 With reference to the Grant Agreement between JICA and the Government of the Lao PDR dated June 5, 2012 (hereinafter referred to as "the G/A"), the UXO Lao confirmed that the Lao side will take necessary measures to carry out all undertakings which are stated in the G/A.

4-2 Both sides agreed that there would be a few alterations to the allocation plan of equipment for each provincial office at the implementation stage, according to the latest version of the UXO Lao annual plan.

Annex-1 List of Equipment

Annex-1 List of Equipment

Request by UXO Lao				Result of analysis & examination		
Name of Equipment			Quantity	Name of Equipment		Quantity
1	Detector	Vallon (VMXC1 30cm)	280	1	Vallon (VMXC1 30cm)	275
2		Ebinger Large-Loop (UPEX 740M)	50	2	Ebinger Large-Loop (UPEX 740M)	52
3		Minelab (F3LS)	100	3	Minelab (F3LS)	79
4		Deep Search Detector	10	4	Deep Search Detector	0
5	Vehicle	Station Wagon	50	5	Station Wagon	60
6		Pick-up Truck (double-cab)	50	6	Pick-up Truck (double-cab)	14
7		Cargo Truck	25	7	Truck (middle class)	23
8		Motorbike	50	8	Motorbike	50
9		Outboard motor	2	9	Outboard motor	0
10	IT Equipment	Desktop PC	100	10	Desktop PC	55
11		Laptop PC		11	Laptop PC	36
12		Scanner	10	12	Scanner	10
13		Photocopy machine	25	13	Photocopy machine	25
14		Color laser printer	50	14	Color laser printer	20
15		Black-white laser printer	0	15	Black-white laser printer	32
16		Facsimile	19	16	Facsimile	19
17	Others	Generator	43	17	Generator	43
18		Grass cutter	54	18	Grass cutter	54
19		Base radio	12	19	Base radio	12
20		Vehicle radio	200	20	Vehicle radio	97
21		Handy radio	200	21	Handy radio	100
22		Handy GPS	100	22	Handy GPS	100
23		Digital camera	25	23	Digital camera	25
24		Projector	10	24	Projector	10

TECHNICAL NOTES

on the Project for Supporting Unexploded Ordnance (UXO) Clearance
in Surrounding Areas of Main Roads
in the Lao PDR

Regarding the preparatory survey on for Supporting Unexploded Ordinance (UXO) Clearance in Surrounding Areas of Main Roads (hereinafter referred to as "the Project") in the Lao PDR, the Minutes of Discussions (M/D) was signed on 20th of March, 2012 between UXO Lao and JICA Preparatory Survey Team (hereinafter referred to as "the Team").

The consultant team of the Team conducted its research and discussing with UXO Lao on the basis of M/D. Trough discussion, both parties have agreed on the following items.

1. Items and Quantities of the Listed Equipment
2. Tentative Implementation Schedule

Vientiane, March 23rd, 2012

Mr. Kazuhiro MIYATAKE Chief Consultant Preparatory Survey Team Japan International Cooperation Agency JAPAN	Mr. Bounpone SAYASENH National Programme Director Lao National Unexploded Ordnance Programme LAO PEOPLE'S DEMOCRATIC REPUBLIC

Annex-1 : Items and Quantities of the Listed Equipment
Annex-2 : Tentative Implementation Schedule

Items and Quantities of the Listed Equipment

As a result of mutual discussion held between the UXO Lao and the Consultant, following items and quantities as to the Listed Equipment have been revised:

1. Vehicles

During rainy season, Pick-up Truck is not easy to transport equipment on its load-carrying platform wbile Station-wagon is easy to transport staff and equipment in any weather condition. Thus, Station-wagon is most convenient type of vehicle to for the UXO Lao. And consequently, the UXO Lao side requested to reduce the number of Pick-up Truck and increase the number of Station-wagon.

The Consultant analyzed above request from the UXO Lao side and evaluated as follow:

The number of existing site operation teams (TS/CT/RT) are 75 (87 including GS), and the number of existing Station-wagon is also 75 units. However, out of the existing number of Station-wagon of 75 units, more than 40 units have been in use for more than 10 years. In case that more than 10 years old Station-wagon cannot work, site works and operation of the UXO Lao will face with the serious situation from shortage of transportation. Thus, in order to keep minimum number of 75 of Station-wagon, the Consultant evaluated that the request of 50 units of Station-wagon is deemed reasonable.

Specific changes are as follows:

No.4 Station-wagon: increase quantity from 32 to 50 units
No.5 Pick-up Truck (Single-cab): cancelled
No.6 Pick-up Truck (Double-cab): reduced quantity from 24 to 12 units

2. Outboard motor

The Consultant checked the boat at Luang Phabang operation site and found out that the boat was equipped with inboard motor (engine). Thus, the Consultant explained to the UXO Lao side that it is difficult to procure only inboard motor (engine) for the existing boat from Japanese company for a technical reason.

The UXO Lao side agreed the above reason explained by the Consultant. Specific change is as follows:

No.9 Outboard motor: cancelled

3. Color laser printer

Color ink for Color laser printer is quite expensive in Lao, so the UXO Lao side requested to reduce the number of the Color laser printers and add Black and white laser printers.

Specific changes are as follows:

No.14 Color laser printer: reduced from 52 to 20 units
No.14' Black and white laser printer: add 32 units

4. Vehicle radio

The UXO Lao side requested that Vehicle radio is needed to be installed for all types of vehicles i.e. Station-wagon, Pick-up truck and middle class Truck. Thus, since the total number of vehicle is 84, the number of Vehicle radio sball be increased to 84.

Specific changes are as follows:

No.19 Vehicle radio: increased from 54 to 84 units

The Consultant evaluated that above request is deemed reasonable. However, final quantities of equipment are subject to change depending on necessity and total budget of the Project.

The summary of revised equipment list is as follows:

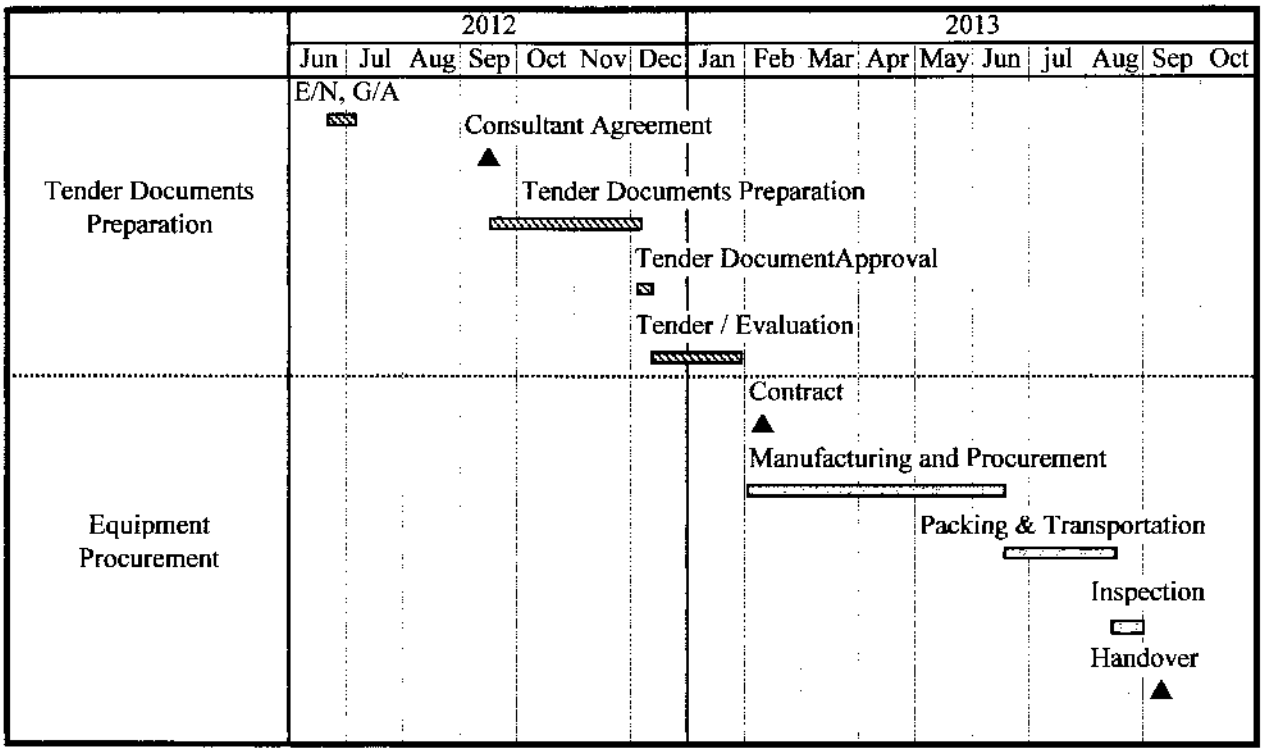
Comparison of Original and Revised Items and Quantities

Original				Revised			
Name of Equipment			Quantity	Name of Equipment			Quantity
1	Detector	Vallon (VMXC1 30cm)	258	1		Vallon (VMXC1 30cm)	258
2		Ebinger Large-Loop (UPEX 740M)	39	2		Ebinger Large-Loop (UPEX 740M)	39
3		Minelab (F3 SL)	58	3		Minelab (F3LS)	58
4	Vehicle	Station Wagon	32	4		Station Wagon	50
5		Pic-up Truck (single-cab)	12			Pic-up Truck (single-cab)	0
6		Pic-up Truck (double-cab)	24	5		Pic-up Truck (double-cab)	12
7		Truck (middle class)	22	6		Truck (middle class)	22
8		Motorbike	42	7		Motorbike	42
9		Outboard motor	2			Outboard motor	0
10	IT Equipment	Desktop PC	55	8		Desktop PC	55
11		Laptop PC	30	9		Laptop PC	30
12		Scanner	10	10		Scanner	10
13		Photocopy machine	25	11		Photocopy machine	25
14		Color laser printer	52	12		Color laser printer	20
				13		Black-white laser printer	32
15		Facsimile	19	14		Facsimile	19
16	Others	Generator	43	15		Generator	43
17		Grass cutter	54	16		Grass cutter	54
18		Base radio	12	17		Base radio	12
19		Vehicle radio	54	18		Vehicle radio	84
20		Handy radio	100	19		Handy radio	100
21		Handy GPS	100	20		Handy GPS	100
22		Distal camera	25	21		Distal camera	25
23		Projector	10	22		Projector	10

Note: Above equipment and quantity is subject to change.

Implementation Schedule (Tentative)

The Team explained the tentative implementation schedule of the Project to UXO Lao.



SOURCE OF APPENDIX 6

Appendix 6. Other Relevant Data

6-1 UXO Lao Operations Flows

: JICA Preparatory Survey Team

6-2 Trial calculation of the future prospects of UXO clearance in Lao PDR

: JICA Preparatory Survey Team

6-3 Condition of Buildings at UXO Lao Training Center

: JICA Preparatory Survey Team

6-4 Newspaper Article “Four killed, three injured as UXO, continues to haunt Laos”

: Vientiane Times

6-5 Newspaper Article “Xieng Khuang hospital struggling to treat UXO victims”

: Vientiane Times

Appendix 6-1 UXO Lao Operations Flows

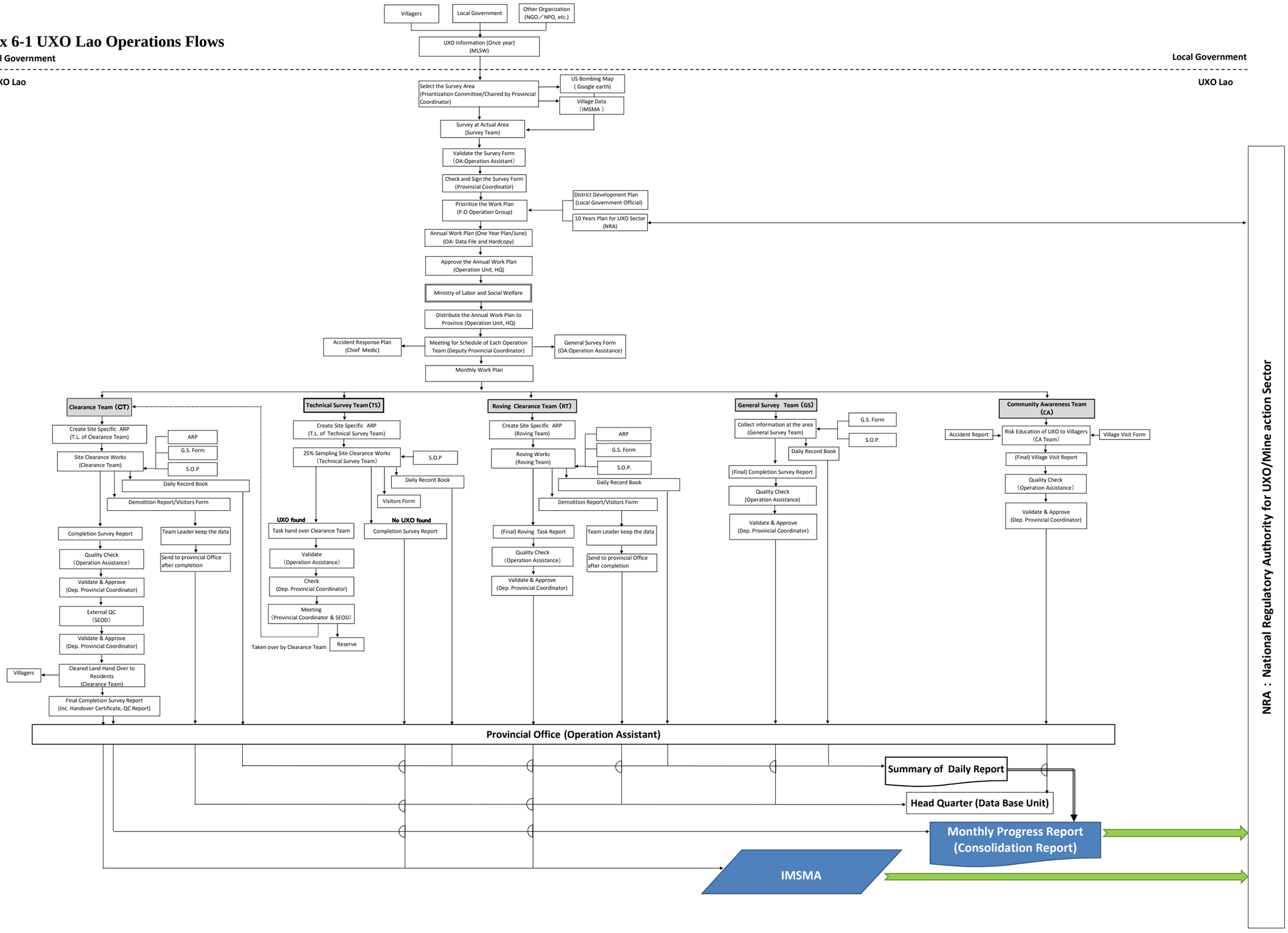
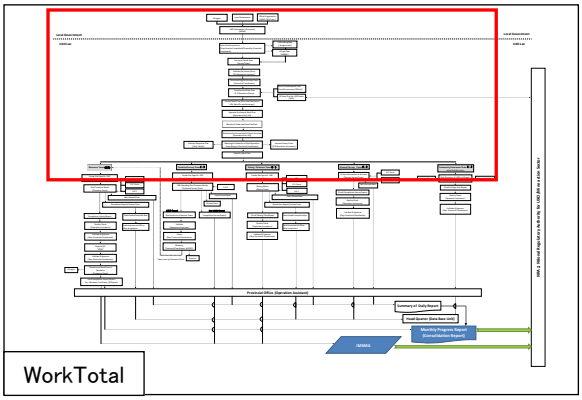


Fig. UXO Lao Operations Flow (Overall View)



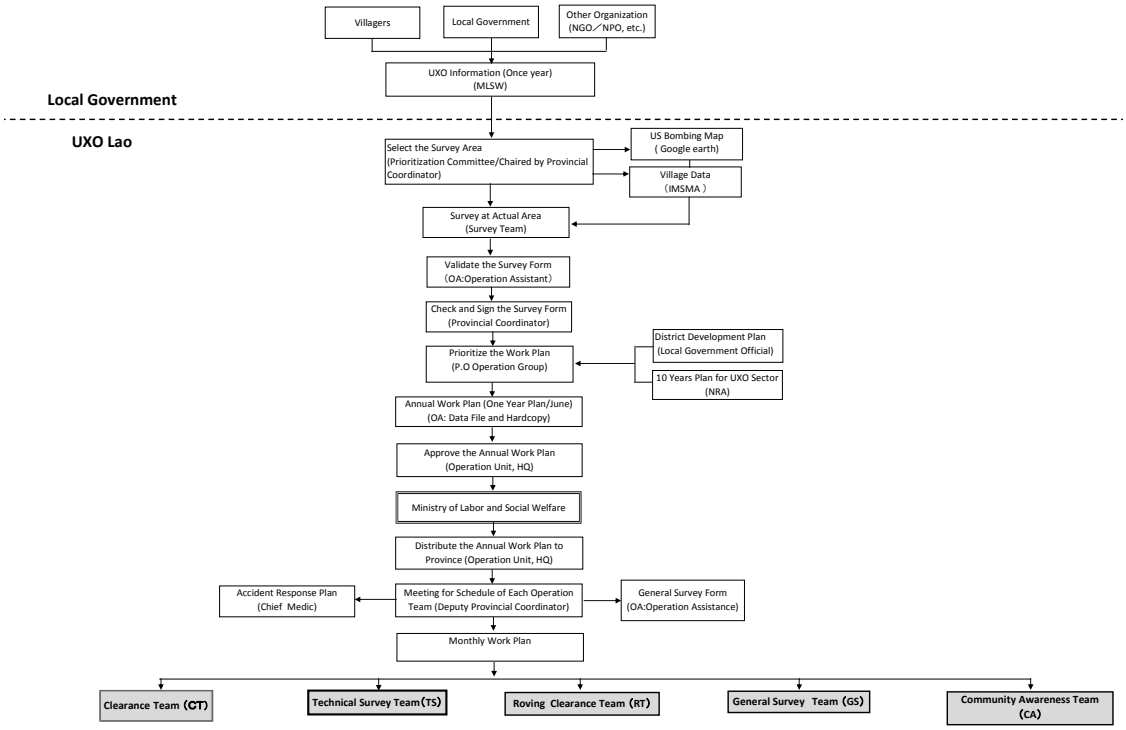
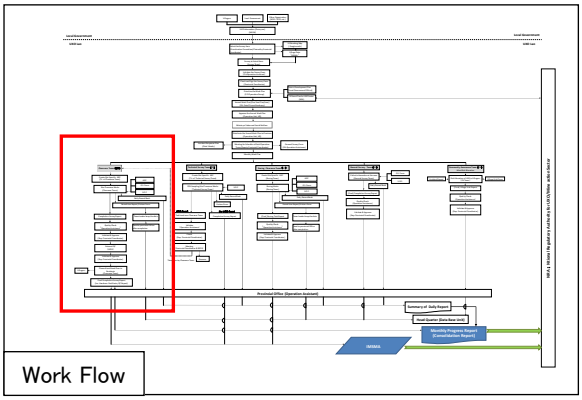


Fig. UXO Lao Work Flow



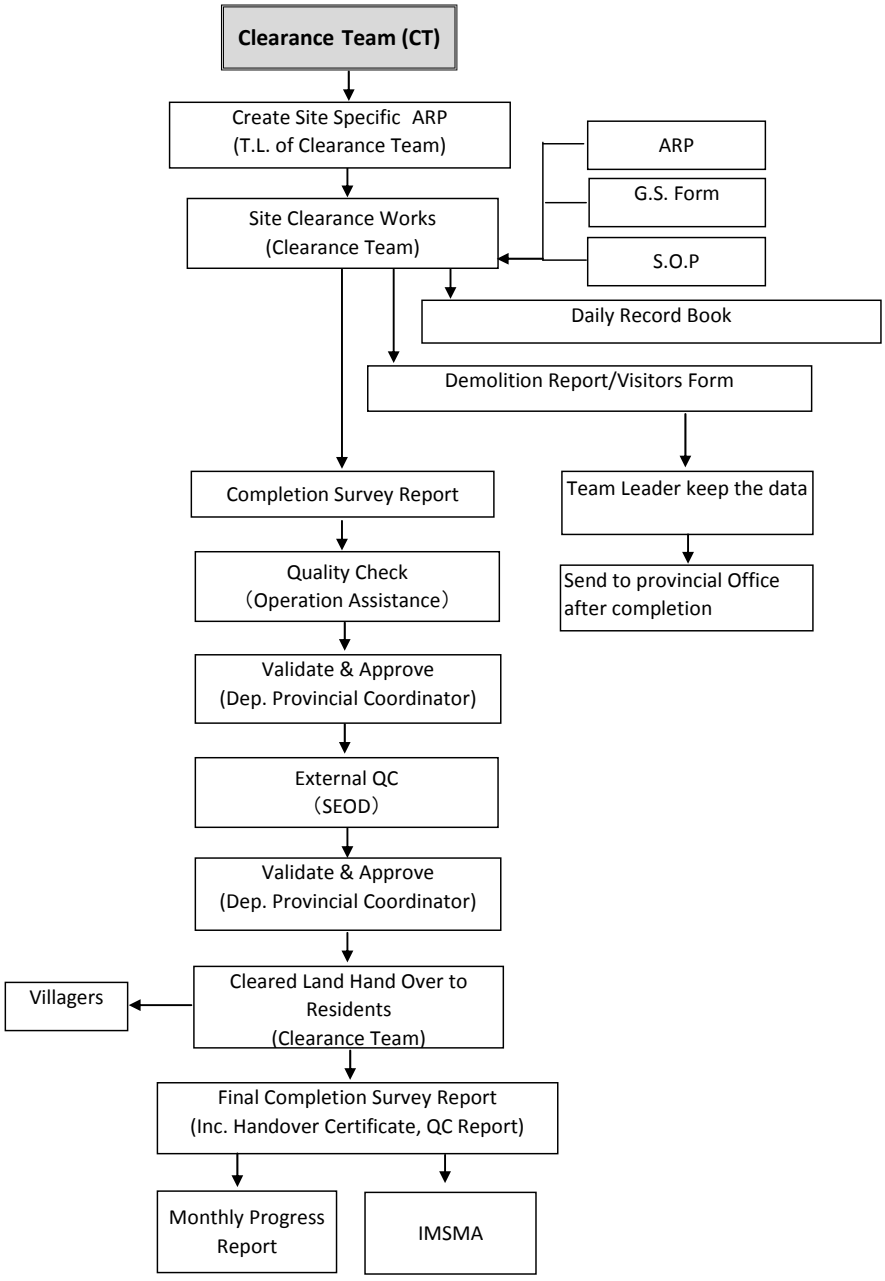
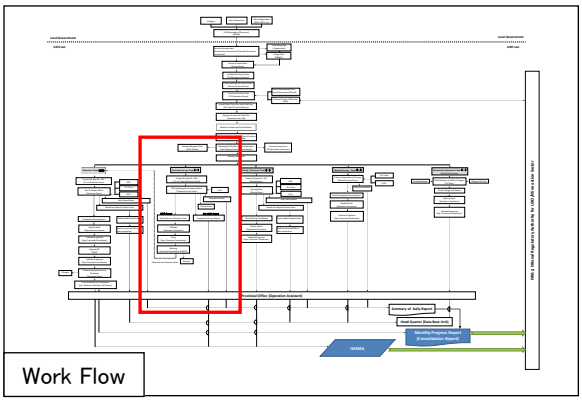


Fig. Clearance Team Work Flow



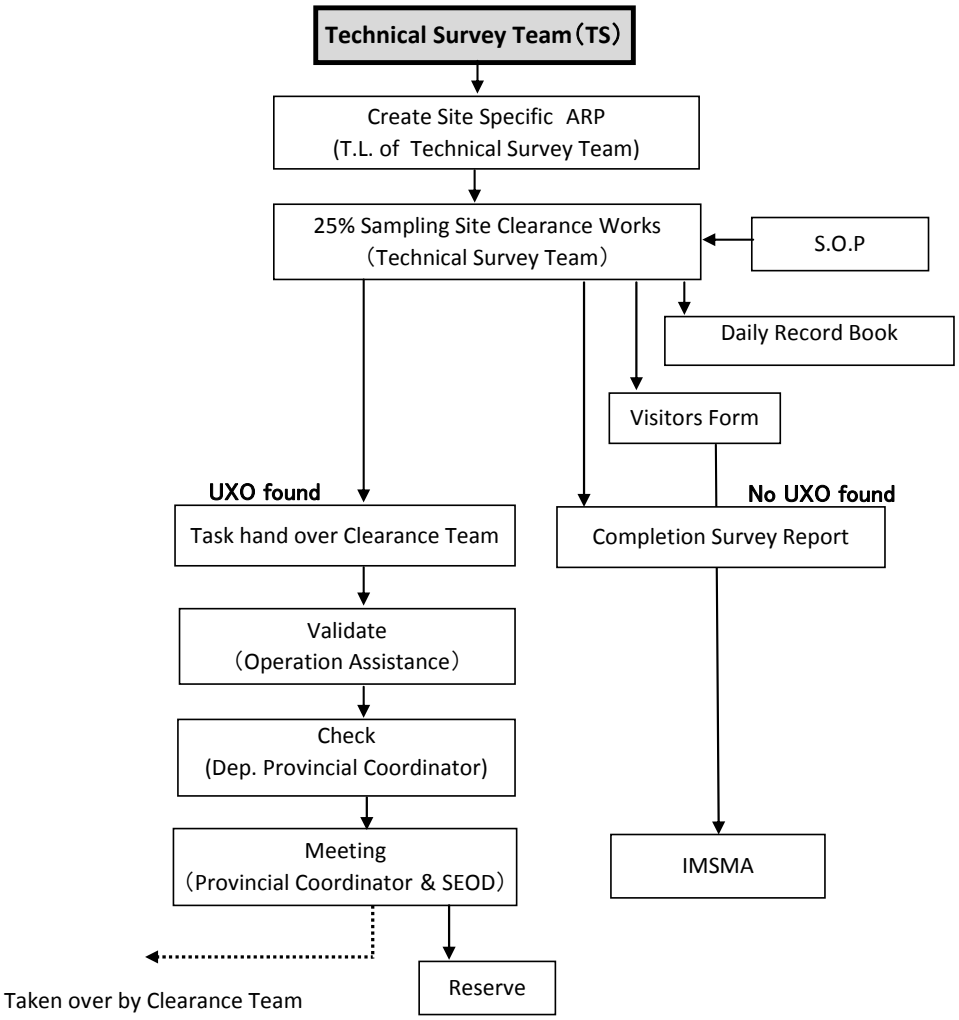
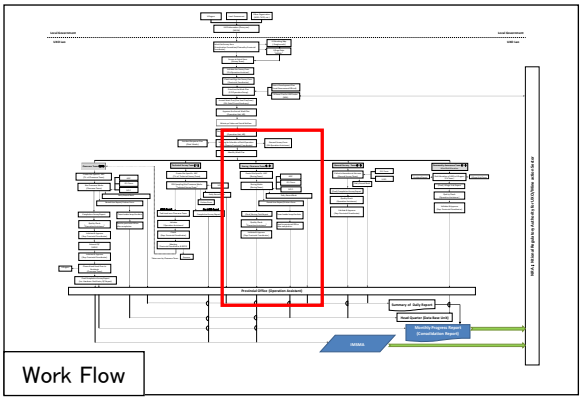


Fig. Technical Survey Team Work Flow



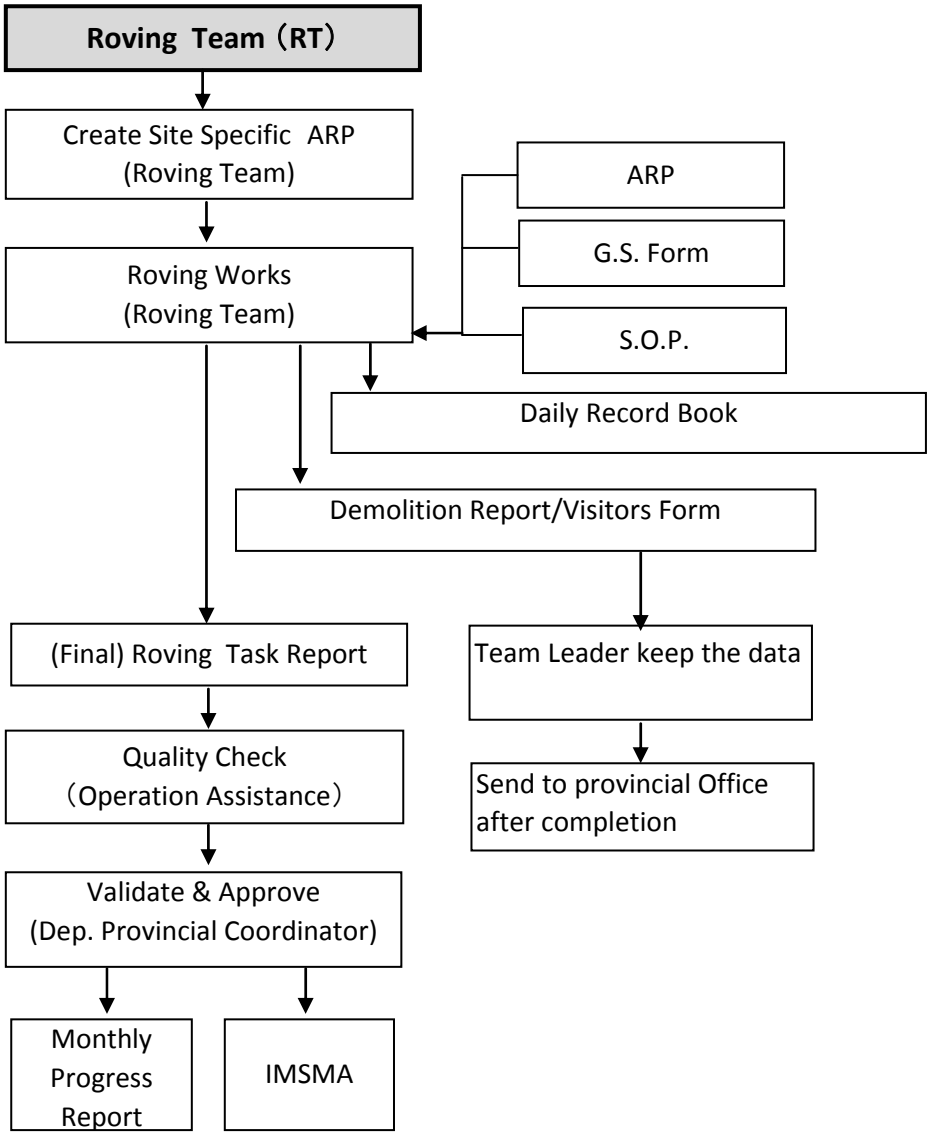
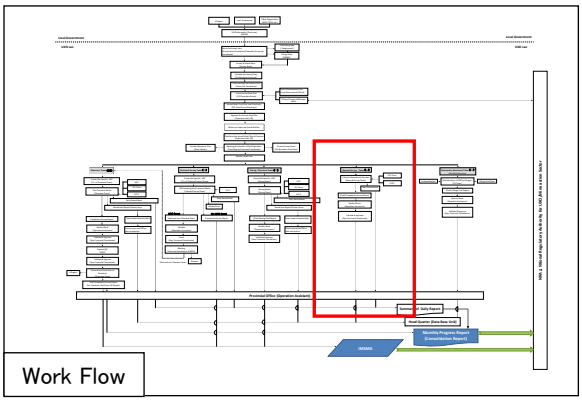


Fig. Roving Team Work Flow



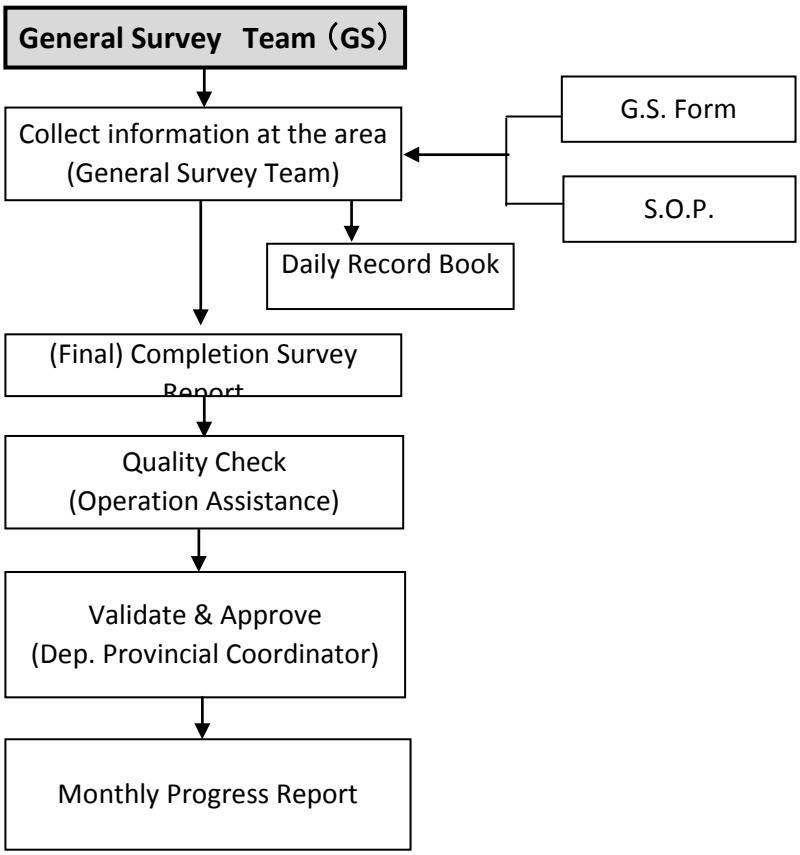
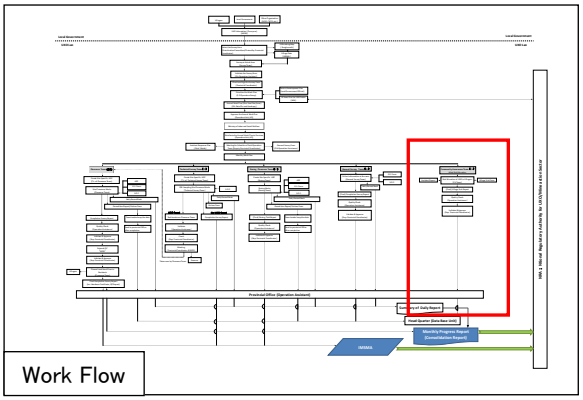


Fig. General Survey Team Work Flow



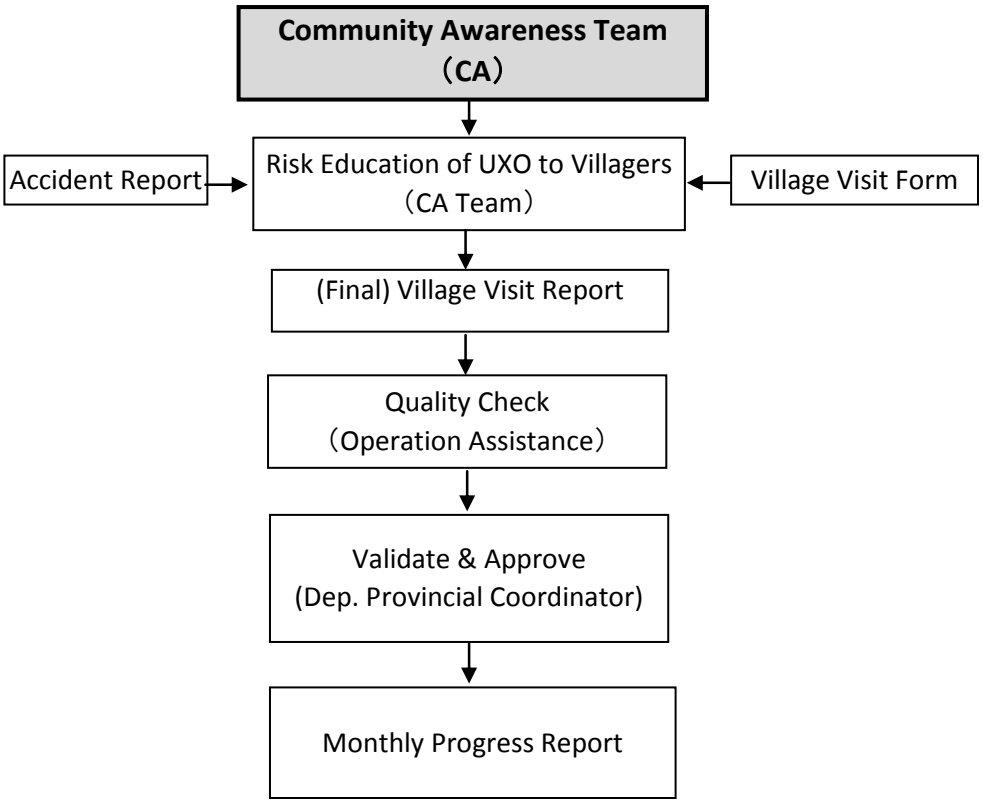


Fig. Community Awareness Team Work Flow

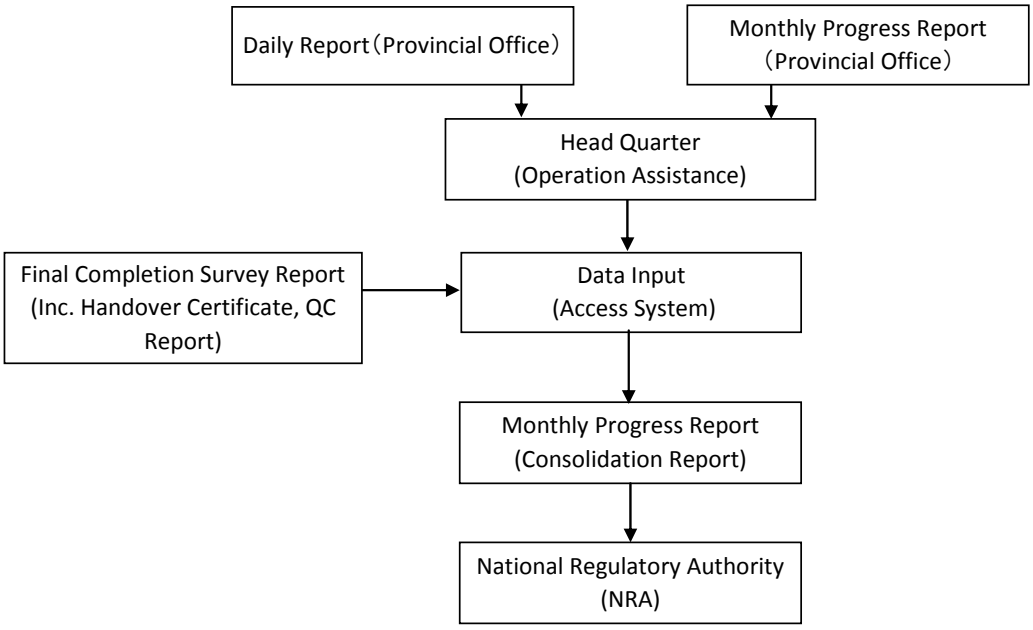


Fig. Daily Report and Monthly Report Work Flow

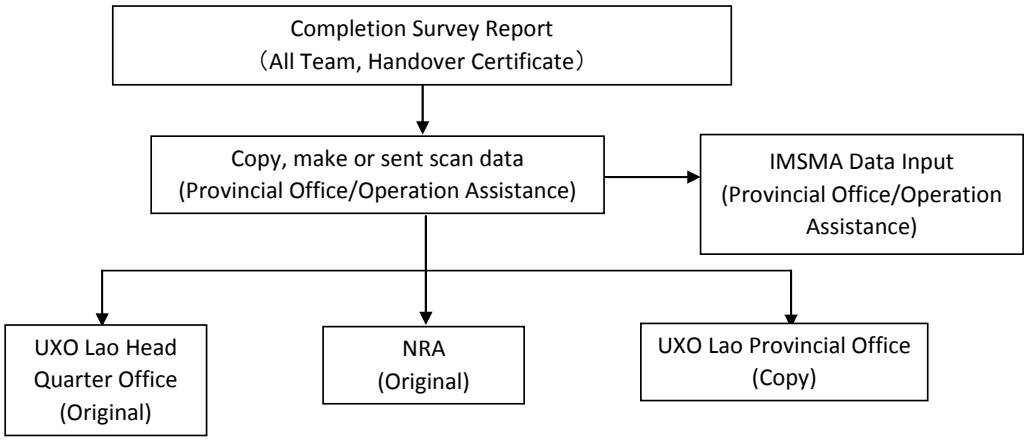


Fig. Final Report Work Flow

Appendix 6-2 Trial calculation of the future prospects of UXO clearance in Lao PDR

With respect to an overall picture of the UXO Sector in Lao PDR, the contaminated area, the area of annual clearance, and other individual data have been published, but an explanation of no overall study based on such data is available. In this project, plans based on future prospects are not considered because the grant aid project currently under discussion is focused on the renewal of worn-out equipment. Accordingly, we have come to the conclusion that it would be significant to take a bird's-eye view of future development by comparing the results of the past activities of UXO Lao with the contaminated area officially announced.

As a matter of fact, it is easily calculated that it will take approximately 3,000 years to clear the entire contaminated area officially announced (8.7 million ha) if we continue the operation at the speed of the actual activities in the past. We cannot avoid being astounded at the seriousness of the contamination and reconfirm that UXO clearance in Lao PDR is a history making act and project.

From the viewpoint of avoiding that much time spent for UXO clearance and for humanitarian considerations to further decrease the time required for the clearance we are going to make some trial calculations based on certain assumptions and show the results.

Chronological cumulative land area of UXO clearance (1996-2011) is **23,442ha** in year 2011 as shown in Fig. 1.

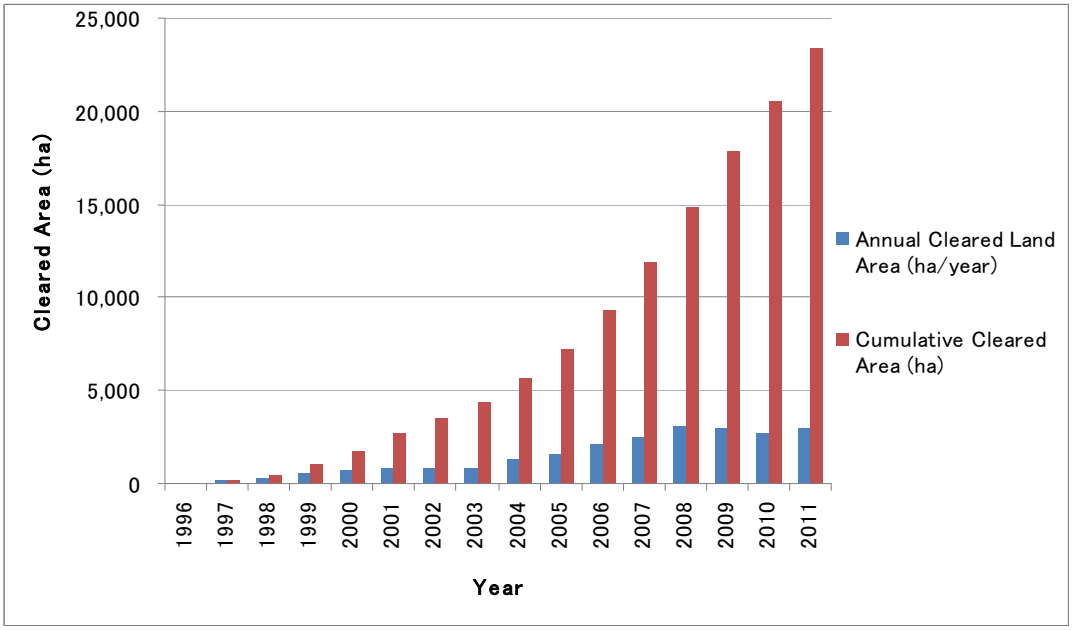


Fig. 1 Chronological Cumulative Land Area of UXO Clearance 1996-2011

Scenario 1

<Condition>

- Total contaminated area = 8,700,000ha
- Total contaminated area (Only for Cluster Submunition) = 847,000ha (=8,470km^2)
- Demining speed = 3,000ha/year (same as present 2011)
- EOD Operators (Deminers) = 546 prs. (same as present 2011)

<Consideration>

Estimated clearance duration for all UXO

= {8,700,000(ha)-23,442(ha)}/3,000(ha/year) = ***2892*** **years**

→Unrealistic!

Estimated clearance duration for cluster submunition

={847,000(ha)-23,442(ha)}/3,000(ha/year) = ***275*** **years**

→Still unrealistic!

On the assumption of **Doubled/Tripled** demining speed

Double: {847,000(ha)-23,442(ha)}/6,000(ha/year)＝ ***137*** **years**

Triple: {847,000(ha)-23,442(ha)}/9,000(ha/year)＝ ***92*** **years**

→Still impracticable!

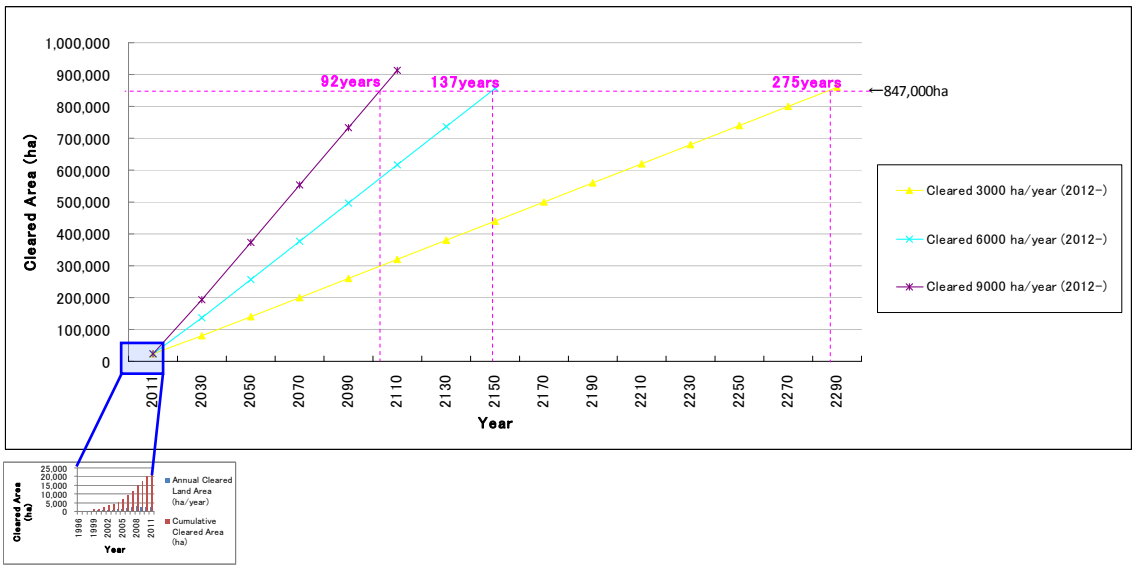


Fig. 2　Estimated clearance duration of “Scenario 1”

Scenario 2

<Condition>

Short-term goal of clearance from 2010 to 2020

"National Strategic Plan for the UXO Sector in the Lao PDR 2010-2020"

- The Safe Path Forward II

- Target total land area to be cleared = 200,000ha
- Daily demining speed per single operator = 235m^2/day
- Annual operator 's working days = 240days (from the real record of operation)
- EOD Operators (Deminers) = 546 prs. (same as present 2011)

< Calculation 1>

235(m^2/day) x 546(prs.) x 240(days) = 30,522,400(m^2/year) = 3,052(ha/year)

200,000(ha)/{2020-2010(years)} = 20,000(ha/year)>>>3,052(ha/year)

or

3,052(ha/year) x 10(year) = 30,520(ha)<<<200,000(ha)

→Far short of the goal

Cumulative Cleared area in 2020

= (Cumulative Cleared Area until 2011) + (Cumulative Cleared Area 2012 to 2020)

=23,442(ha)+{3,052(ha)×9(years)} = 50,910(ha)

→Equivalent to **6.01%** (= 50,910/847,000) of total contaminated area for Cluster Submunition

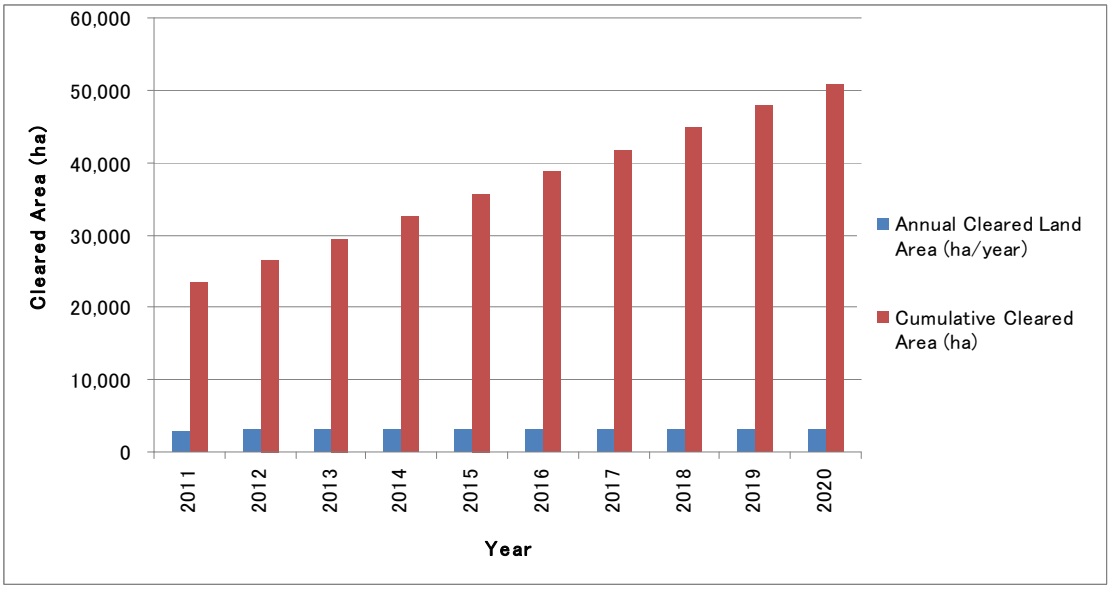


Fig. 3 Chronological Cumulative Land Area of UXO Clearance 2011-2020
(In the case of the same clearance speed as present 2011)

<Calculation 2>

Even if the short-term goal has been achieved, total land area shall be **<u>220,504ha</u>**

Cumulative Cleared area in 2020

= (Cumulative Cleared Area until 2010) +200,000ha = 220,504ha

→Equivalent to **26.0%** (=220,504/847,000) of total contaminated area for Cluster Submunition

Estimated clearance duration for Cluster Submunition in this case assuming same clearance speed

= {847,000(ha)-23,442(ha)}/20,000(ha/year) = ***41*** **years**

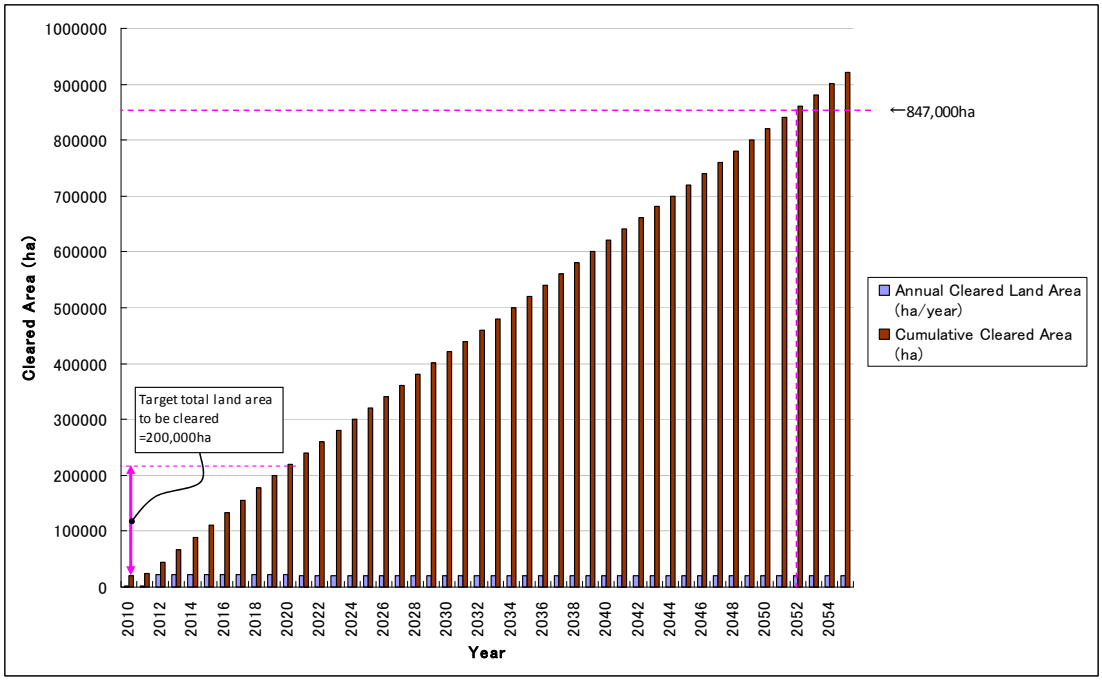


Fig. 4 Chronological Cumulative Land Area of UXO Clearance 2011-2052
(In the case of the same clearance speed as the Short-term goal)

Scenario 3

In response to the Scenarios 1 and 2, let us consider a more realistic clearance plan in Scenario 3. Basic conditions are as follows:

- Total contaminated area (Only for Cluster Submunition) = 847,000ha (=8,470km^2)
- EOD Operators (Deminers) = 546 prs. (same as present 2011)
- Daily demining speed per single operator = 235m^2/day
- Annual operator's working days = 240days (from the real record of operation)

<Consideration>

(1) Total number of EOD Operators shall be 3 times as many as present by considering organization size and administration ability of UXO Lao. Personnel increasing by 10% each year is deemed to be able to be administered efficiently by the organization.
(2) There is a tangible limit for human resources input. There is a need for some kind of automatic detecting machine (detecting robot).
(3) In cases where the machines are introduced, organization size and administration ability of UXO Lao should be considered.

<Additional Condition>

Based on the considerations above, let us do the calculations by adding the following conditions.

- Since 2012, UXO Lao increase the number of EOD Operators (Deminers) by 10% each year. Eventually, the total number of EOD Operators will reach an upper limit of 3 times as many as at present, based on limitations of staff administration and interviews with the UXO Lao administrator.
- In the near future (10 years later after the Project completion = around 2023), some kinds of automatic detecting machines at up to 200 units are to be introduced in the disposal process.
- Effective level for the machine = 10 times as much as human capability.
  (Effective level of machine must be more than 10 times as much as human capability in cases where the machines are introduced.)
- Annual working day of the machine, excluding the maintenance days = 200 days/year

<Calculation>

<u>Manpower</u>

Number of the personnel is enhanced 10% annually until 2023; cumulative cleared area is 95,628 ha as shown in Table 1.

The number of Operators will be approximately three times the current situation in the year

2023, the Operator numbers don't increase after this, but remain at that level. Therefore, the annual cleared land area by manpower since 2023 has been fixed to 9,621 ha/year.

Table 1　Manpower

Year	EOD Operators (prs.)	Daily Demining Speed per Single Operator (m^2/day)	Annual Working Days (days)	Annual Cleared Land Area (ha/year)	Cumulative Cleared Area (ha)
2011（Actual）	546				23,442
2012	600	235	240	3,384	26,826
2013	660	235	240	3,722	30,548
2014	726	235	240	4,094	34,642
2015	798	235	240	4,500	39,142
2016	877	235	240	4,946	44,088
2017	964	235	240	5,436	49,524
2018	1060	235	240	5,978	55,502
2019	1166	235	240	6,576	62,078
2020	1282	235	240	7,230	69,308
2021	1410	235	240	7,952	77,260
2022	1551	235	240	8,747	86,007
2023	1706	235	240	9,621	95,628
2024 ～	1706	235	240	9,621	

Note: Annual Cleared Land Area（ha/year）=

(EOD Operators (prs.) x Daily Demining Speed (m^2/day）x Annual Working Day (days))/10,000

Machine Power

Introducing the machines from 2023, the number of the Machines increases by 200 units by 2040; cumulative cleared area is as shown in Table 2.

Machine numbers don't increase after 2040, annual cleared land area by machine has been fixed to 9,400 ha/year.

Table 2　Machine Power

Year	Number of Machines	Daily Demining Speed per Machine (m^2/day)	Annual Working Days (days)	Annual Cleared Land Area (ha/year)	Cumulative Cleared Area (ha)
2023	30	2,350	200	1,410	1,410
2024	40	2,350	200	1,880	3,290
2025	50	2,350	200	2,350	5,640
2026	60	2,350	200	2,820	8,460
2027	70	2,350	200	3,290	11,750
2028	80	2,350	200	3,760	15,510
2029	90	2,350	200	4,230	19,740
2030	100	2,350	200	4,700	24,440
2031	110	2,350	200	5,170	29,610
2032	120	2,350	200	5,640	35,250
2033	130	2,350	200	6,110	41,360
2034	140	2,350	200	6,580	47,940
2035	150	2,350	200	7,050	54,990
2036	160	2,350	200	7,520	62,510
2037	170	2,350	200	7,990	70,500
2038	180	2,350	200	8,460	78,960
2039	190	2,350	200	8,930	87,890
2040	200	2,350	200	9,400	97,290
2041 以降	200	2,350	200	9,400	

Note: Annual Cleared Land Area（ha/year）=

(Number of Machines x Daily Demining Speed (m^2/day) x Annual Working Day (days))/10,000

“Annual cleared land area” and/or “Cumulative cleared area” by manpower and machine are as shown in Fig. 5, Table 3. All of the area contaminated by Cluster Submunition (847,000ha) is expected to be cleared by 2066.

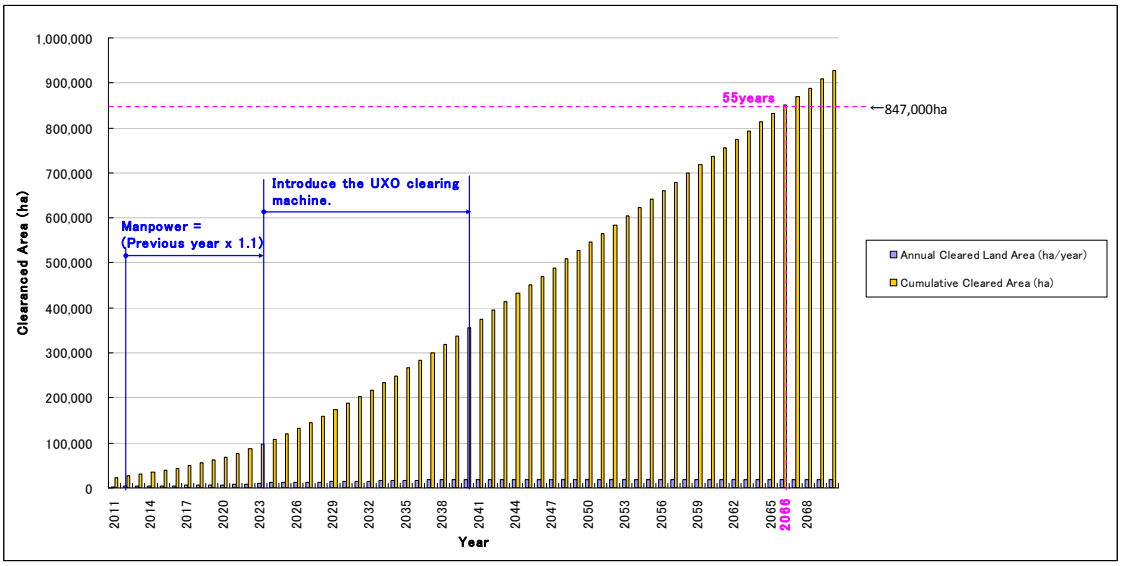


Fig. 5　Chronological Cumulative Land Area of UXO Clearance

(The case in increasing the number of EOD operators and introducing UXO clearing machines)

Table 3　Annual Cleared Land Area & Cumulative Cleared Area
(Manpower + Machine Power)

Year	Annual Cleared Land Area	Cumulative Cleared Area
2011		23,442 ha
2012	3,384 ha/year	26,826 ha
2013	3,722 ha/year	30,548 ha
2014	4,094 ha/year	34,642 ha
2015	4,500 ha/year	39,142 ha
2016	4,946 ha/year	44,088 ha
2017	5,436 ha/year	49,524 ha
2018	5,978 ha/year	55,502 ha
2019	6,576 ha/year	62,078 ha
2020	7,230 ha/year	69,308 ha
2021	7,952 ha/year	77,260 ha
2022	8,747 ha/year	86,007 ha
2023	11,031 ha/year	97,038 ha
2024	11,501 ha/year	108,539 ha
2025	11,971 ha/year	120,510 ha
2026	12,441 ha/year	132,951 ha
2027	12,911 ha/year	145,862 ha
2028	13,381 ha/year	159,243 ha
2029	13,851 ha/year	173,094 ha
2030	14,321 ha/year	187,415 ha
2031	14,791 ha/year	202,206 ha
2032	15,261 ha/year	217,467 ha
2033	15,731 ha/year	233,198 ha
2034	16,201 ha/year	249,399 ha
2035	16,671 ha/year	266,070 ha
2036	17,141 ha/year	283,211 ha
2037	17,611 ha/year	300,822 ha
2038	18,081 ha/year	318,903 ha
2039	18,551 ha/year	337,454 ha
2040	19,021 ha/year	356,475 ha

Year	Annual Cleared Land Area	Cumulative Cleared Area
2041	19,021 ha/year	375,496 ha
2042	19,021 ha/year	394,517 ha
2043	19,021 ha/year	413,538 ha
2044	19,021 ha/year	432,559 ha
2045	19,021 ha/year	451,580 ha
2046	19,021 ha/year	470,601 ha
2047	19,021 ha/year	489,622 ha
2048	19,021 ha/year	508,643 ha
2049	19,021 ha/year	527,664 ha
2050	19,021 ha/year	546,685 ha
2051	19,021 ha/year	565,706 ha
2052	19,021 ha/year	584,727 ha
2053	19,021 ha/year	603,748 ha
2054	19,021 ha/year	622,769 ha
2055	19,021 ha/year	641,790 ha
2056	19,021 ha/year	660,811 ha
2057	19,021 ha/year	679,832 ha
2058	19,021 ha/year	698,853 ha
2059	19,021 ha/year	717,874 ha
2060	19,021 ha/year	736,895 ha
2061	19,021 ha/year	755,916 ha
2062	19,021 ha/year	774,937 ha
2063	19,021 ha/year	793,958 ha
2064	19,021 ha/year	812,979 ha
2065	19,021 ha/year	832,000 ha
2066	**19,021 ha/year**	**851,021 ha**
2067	19,021 ha/year	870,042 ha
2068	19,021 ha/year	889,063 ha
2069	19,021 ha/year	908,084 ha
2070	19,021 ha/year	927,105 ha

Recommendations

As a result of studies based on some scenarios as mentioned above, the following recommendations have been prepared.

1. While figures based on vague assumptions are included in the scenarios, the accuracy of these figures must be improved based on the facts and actual conditions in order to improve these scenarios and make them realistic. Data concerning the area contaminated with cluster munitions is a typical example, the assumed contaminated area applied for these scenarios must be reviewed in a timely and appropriate manner in accordance with the conditions determined through technical surveys, and improved or adjusted where appropriate, such as the possibility of excluding releasing lands through general survey. Actually, this determination of the contaminated area by general survey leading to this land release exemption is a key issue in the future. A nationwide survey must be conducted at an early date, immediately or in the short time in stages[1] so as to obtain data based on actual conditions in order to set a target year for the completion of clearance.

2. While the safety of Operators working in the sites must first be secured, efforts must be made to improve operational efficiency. Accordingly, an understanding of the current operational efficiency and a complete analysis of the streamlined operation processes are indispensable.

3. Improvement in efficiency will come to a deadlock if the clearance operation is performed only manually. It is expected to be necessary to mechanize the clearance operation in some manner.

4. The efficiency of mechanized operation must be calculated based on the analysis mentioned in 2 above and compared with the efficiency of the manual operation. The development of efficient clearance machines is also an important challenge.

5. To clear an area of 200,000 ha as much as possible, which has been established as the most urgent objective for the current decade to 2020, we must depend on the injection of human resources, which is most practical, in order to implement the project under the current situation. The injection of human resources requires the training and education of operators, whether they are new or experienced, and the securing of their safety. The improvement and development of training center is a matter of utmost urgency because the current training center is considerably insufficient to provide the required training.

6. It is necessary and important to discuss among the parties relevant to UXO sector about the above mentioned recommendations, including the priorities for implementation.

[1] There is also an information that the verification survey of the contaminated area was conducted in three provinces in 2011, led by the NRA. It is important to reflect these latest survey results to the removal plan (work plan) adequately.

Appendix 6-3 Condition of Buildings at UXO Lao Training Center

Outline of Training Center

The training center is located some 30 km north of the national office building at Ban Ilay in Vientiane. The training center was established in 1996 at Namxouang initially with the assistance of the U.S. military, and has been in operation at Ban Ilay since 1998.

Training for all UXO deminers of UXO Lao and all workers of other UXO clearance organizations is provided by the training center. The training center, which is expected to develop abilities and improve skills, plays an important role, as the workers are not allowed to work on site without receiving the center's training certificate.

The training programs are generally designed with seven different courses as mentioned below.

Table 1 Training Programme

Course	Capacity (unit:people)	Object Person	Training Objectives
Demining Technician's Course	Up to 35		Provides basic clearance skills through 8 weeks of instruction.
Survey Course	Up to 10	Students require a minimum of six months clearance experience.	Teaches UXO survey skills involving level one and level two surveys through 5 weeks of instruction.
Medical Course	6-10	Students who graduate from other nursing schools (with better than Intermediate grade) qualify to participate in this course.	Teaches trauma medical care for stabilization of casualties prior to evacuation and preventative medicine through 6 weeks of instruction. Also, there are 9 days of technical improvement courses offered separately.
Team Leader's Course	6-12	Excellent staff will be selected from each provincial office.	Teaches experienced demining technicians leadership skills to prepare them for team leader appointments through 8 weeks of instruction.
Community Awareness Course	6-10		Teaches basic community awareness programmes for use in provinces through 2 weeks of instruction. Also, there is another 2 weeks of teaching a CA team leaders skills course.
Instructor's Course	6-12	Selected from team leaders.	Teaches training development and methods of instruction skills to team leaders through 2 weeks of instruction.
Senior Explosive Ordnance Disposal (SEOD) Course	12-16		Teaches management, supervision and operational responsibilities of an SEOD technician etc. through 16 weeks of instruction.

Condition of Existing Buildings at the Training Center

The Training Center consists of 3 classrooms, a 40 person capacity dormitory house, an administration office, and a warehouse, etc. There is some space for hands-on training using equipment on the property. A practical site for demonstration and training of clearance and disposal of bombs is 1km distant from the Training Center.

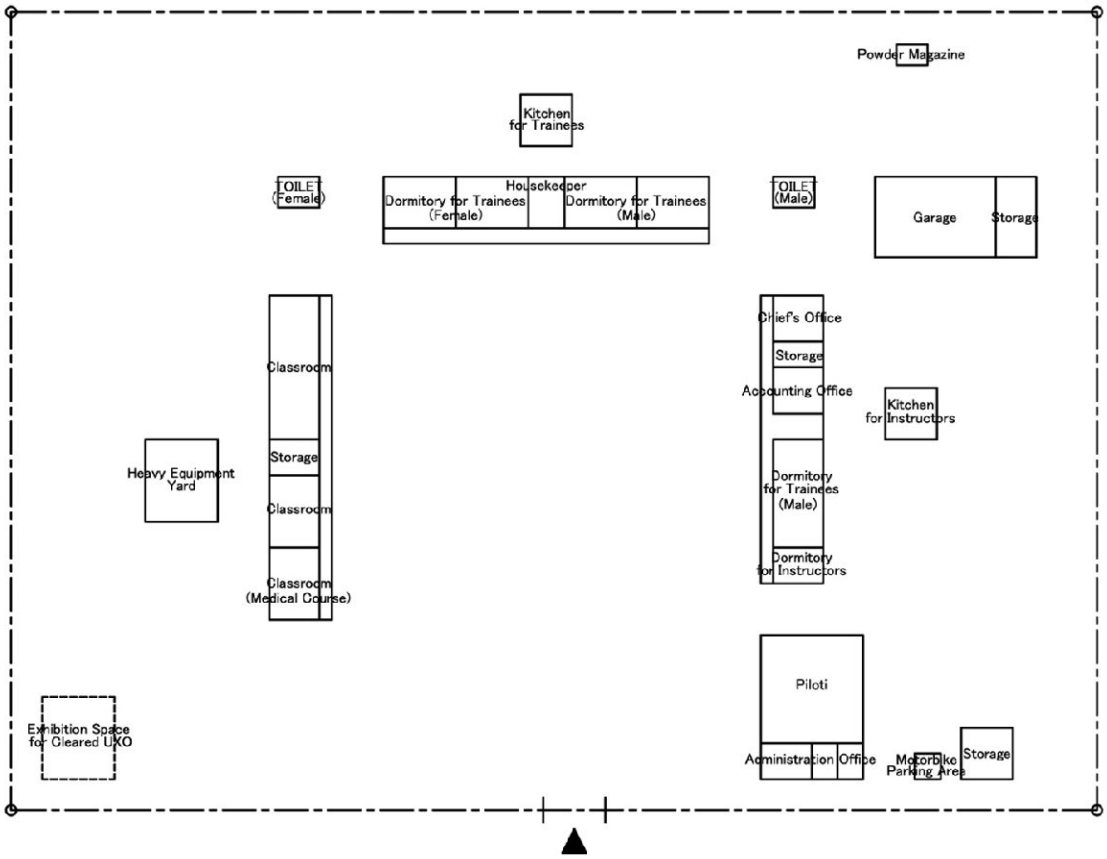


Fig. 1 UXO Lao Training Center at Ban Ilay in Vientiane

Classroom Building

Administration Office

Facility scale of the existing Training Center is shown in Table 2. Although the Training Center has 3 classrooms, the number of classrooms is not adequate for the current training courses. As to the dormitory, due to the lack of space, even the trainers have to share a big room with the trainees in an entirely unprivate situation, and beds are laid tightly, the space per person is very narrow. The facilities are also suffering from continual overall aging. Environmental improvement is needed.

Table 2 Floor Area of Existing Training Center

No.	Room	Dimension (m x m)	Floor Area (m^2)
1	Classroom	5.0x31.5	157.5
2	Administration	10.0x3.5 + 5.0x11.5	92.5
3	Dormitory（Trainee, Instructor）	5.0x31.5 + 5.0x14	227.5
4	Exhibition Space for Cleared UXO	5.0x7.0	35.0
5	Storage for Teaching Materials	7.2x3.9	28.1
6	Garage	7.2x11.7	84.24
7	Kitchen	5.0x5.0+5.0x5.0	50.0
8	Toilet	2.5x3.5+2.5x3.5	17.5
Total		-	692.3

Review of the scale of facilities to respond to the increased number of operators

As shown in Appendix 6-2, “Trial calculation of the future prospects of UXO clearance in Lao PDR,” additional human resources must be injected to increase the clearance area, and training and education are indispensable from the viewpoint of the safety of the workers, whether the worker is new or experienced. In view of the fact that the existing Training Center is considerably insufficient in capacity, we have decided to study the scale of the required facilities.

As documented in Appendix 6-2, the number of operators is expected to be increased by 10% each year until it becomes approximately three times as large as the current number. Our study is based on the assumption that up to 150 workers will receive training and education every year. This has produced the following recommendation regarding training classrooms and their scales required for each course.

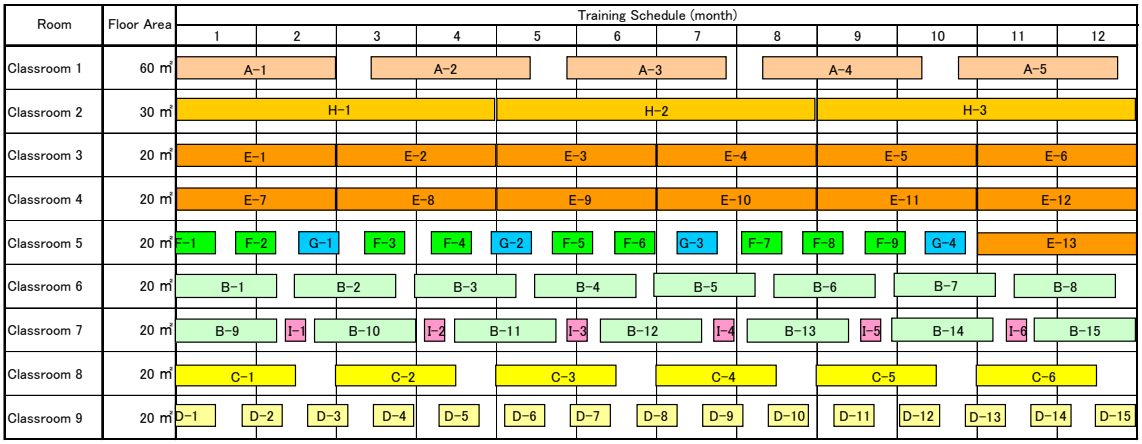
Table 3 Assumed Training Capacity and Schedule

Training Course	Capacity (people)	Annual Number of Trainees (Assumption)	Training Period	Annual Number of Training Times (Assumption)
A) Demining Technician's Course	35 people	150 people/year	2 months	5 times/year
B) Survey Course	10 people	150 people/year	1.25 months	15 times/year
C) Medical Course	10 people	54 people/year*1	1.5 months	6 times/year
D) Medical Course (advanced course)	10 people	144 people/year*1	0.5 months	15 times/year
E) Team Leader's Course	12 people	147 people/year*1	2 months	13 times/year
F) Community Awareness Course	10 people	90 people/year*1	0.5 months	9 times/year
G) Instructor's Course	12 people	45 people/year	0.5 months	4 times/year
H) Senior Explosive Ordnance Disposal (SEOD) Course	16 people	45 people/year	4 months	3 times/year
I) TS Team Leader's Course	10 people	60 people/year*1	0.25 months	6 times/year

Note 1: Three times the number of 2011.

Based on the above conditions, the scale of required training classrooms and their assignment are assumed to be as follows to thereby calculate the number of training rooms required for each course.

Table 4 The Scale of Required Training Classrooms and the Assignment



The specifications of the entire facilities including the number of classrooms and other rooms studied above are as shown in the following table.

Table 5 The Required Floor Area for Training Center

Room		Floor Area (m^2)	Remark
Training Space	Classroom 1	60 m^2	
	Classroom 2	30 m^2	
	Classroom 3	20 m^2	
	Classroom 4	20 m^2	
	Classroom 5	20 m^2	
	Classroom 6	20 m^2	
	Classroom 7	20 m^2	
	Classroom 8	20 m^2	
	Classroom 9	20 m^2	
	Lecture Hall	200 m^2	Use for the opportunity of joint trainings, lectures. Seating style: Up to 150 people Seminar style (with desk): Up to 90 people
	Library	80 m^2	
	Computer Room	150 m^2	
	Materials Store	160 m^2	
	Multipurpose Room	60 m^2	
	Conference Room	40 m^2	
	Office, Staffroom	160 m^2	Approx. 23prs.
	Chief's Office	20 m^2	
			Sub Total 1,100 m^2
Dormitory Space	Dormitory for Trainees（Male）	800 m^2	Maximum of 100 prs. （10 prs./room x 10rooms）
	Dormitory for Trainees（Female）	160 m^2	Maximum of 20 prs. （10prs./room x 2 rooms）
	Dormitory for Instructors, Guest Room	65 m^2	Maximum of 8 prs. （4prs./room x 2 rooms）
	Kitchen, Dining room	120 m^2	
	Shower Rooms（Male/Female）	75 m^2	50 m^2, 25 m^2
	Laundry Room	40 m^2	20 m^2 x 2rooms
			Sub Total 1,260 m^2
Common Use Space	Guard House	15 ㎡	
	Corridors, Stairs, Toilets, Storage, etc.	1,590 ㎡	About 40% of total floor area.
Total		3,965 ㎡	

The layout, number of floors, and scale of the facilities as studied above must be designed according to the construction site to be designated by the Lao side. In addition to the above, the construction of a workshop for vehicles and equipment and/or practical training site for clearance operation must be evaluated regarding its efficiency.

LAO PRESS IN FOREIGN LANGUAGES

Vientiane Times

The First National English Language Newspaper

SATURDAY JANUARY 28, 2012 ISSUE 23 www.vientianetimes.org.la 4500 kip

INSIDE

Four killed, three injured as UXO continues to haunt Laos

Khonesavanh Latsaphao

Four children were killed and two children and one woman were injured in Savannakhet province on Monday after a cluster bomb exploded while the children huddled around a fire to keep warm.

The tragic incident occurred in Tamluang village, Nong district, after the children started a fire in their backyard to warm themselves in the evening chill. The cluster bomb, or bombie, was identified as a Blu 26, a small but deadly explosive designed to maim and kill.

"The bomb was buried in the ground where the woman and six children were burning wood, so when it heated up it exploded, killing and injuring these poor children and the woman," UXO Lao provincial coordinator Mr Soubinh Phasouking told *Vientiane Times* on Friday.

Three of the children died instantly from shrapnel wounds and another died later in hospital due to the extent of his injuries. The three survivors suffered serious burns to their legs, and risk infection. However, they were very lucky that the blast characteristics meant they suffered no upper body injuries.

Of the four children who died, three were boys – Sack aged 12, Chith aged 10, and Touk aged 10. A little girl named Ser, aged 3, was also killed.

Those who were injured in the explosion were named as Ms Khale, 28, and two boys, Mued aged 11 and Ya-ok aged 9.

This heartrending incident is part of the deadly legacy of the Indochina war, which will haunt Laos for generations to come, despite the best efforts of the many UXO clearance organisations working in the country.

Cluster munitions are barbaric weapons designed to kill or maim everyone in their path. During the war, injuries were considered to be as effective as fatalities, because they incapacitated more than one person by forcing others to look after them.

Consequently, Laos is at the forefront of the campaign to have cluster munitions banned completely as weapons of war. Laos is a signatory to the International Convention on Cluster Munitions and the Oslo Convention. As the most bombed country on Earth, Laos hosted the First Meeting of States Party to the Convention on Cluster Munitions in Vientiane in 2010.

An injured boy receives treatment at a local hospital after a cluster bomb exploded in rural Savannakhet.

The cluster bomb that exploded in Savannakhet on Monday was just one of the hundreds of millions of cluster sub-munitions that were dropped on Laos from 1964 to 1973, of which an estimated 30 percent did not detonate.

The government has been working systematically in conjunction with non-government and other organisations to clear UXO since 1996, but it is a monumental task. Currently, the government is considering the second National Strategic Plan for UXO clearance for 2011-2020, which aims to clear about 20,000 hectares of land per year.

Appendix 6-5

Vientiane Times "Xieng Khuang hospital struggling to treat UXO victims" (20th February, 2012)

Xieng Khuang hospital struggling to treat UXO victims

Khonesavanh Latsaphao

Xieng Khuang province has inadequate funds to provide proper treatment to unexploded ordnance (UXO) victims, the Director of the Xieng Khuang provincial hospital Dr Bounxay Nounthasing said on Friday.

The hospital received a grant from the United States Agency for International Development (USAID) to fund the transportation and treatment of UXO victims, but the grant money ran out almost two years ago.

"We have a hospital donation box to collect money but that is all. Over the years we have collected donations of about 30 million kip and that is all we have left now," Dr Bounxay said.

This amount is only enough to treat two seriously injured UXO victims, but each month Xieng Khuang provincial hospital has to treat at least 10 people injured by ordnance left over from the Indochina War.

Without grant money from international agencies, the hospital finds it very difficult to provide satisfactory treatment as it doesn't have enough money to buy medicines, dressings, bandages and other essential supplies.

A UXO victim receives treatment at the Xieng Khuang provincial hospital.

At present, staff are relying on the goodwill of others to get by and provide at least basic treatment, with most UXO victims coming from poor rural families. The number of people treated for UXO injuries does not do justice to the extent of the problem either, as accidents are often fatal.

Many survivors suffer severe burns or have to have arms or legs amputated. Other victims are rendered deaf, blind or both by violent explosions, Dr Bounxay said.

Many people die soon after arriving at the hospital, due to the fact they have had to travel long distances from remote villages. Sadly, their deaths could have been prevented had they received treatment earlier.

Most UXO accidents occur during the harvesting of wet season rice and in cooler weather, Dr Bounxay said. She went on to tell the story of a recent victim, who lost his right hand in an accident.

Mr Meuang from Huameuang village in Huaphan province, which borders Xieng Khuang, was injured when a device detonated as he was digging his land.

It was the next day before he reached the provincial hospital as it was a long journey from his village. Dr Bounxay told *Vientiane Times* that because it took so long for him to get to the hospital there was no option but to amputate his right hand. The doctor said it was also more than likely he will go blind as a result of shrapnel wounds from the accident.

Mr Meuang told hospital staff he went to clear bamboo clumps from his vegetable plot while the rest of the family were sitting in the hut sharpening their mattocks and machetes. He didn't see the bomb because it was buried in the ground.

Dr Bounxay said the hospital hopes to source further funding so they can provide proper treatment to UXO victims, as they are likely to be coming through the door for many years to come.

Xieng Khuang is the second most UXO contaminated province in Laos after Savannakhet. Most of the leftover ordnance consists of cluster munitions known locally as bombies. Concentrations of between 90 and 100 bomblets per hectare of rice field are not uncommon.