

# LAO PEOPLE'S DEMOCRATIC REPUBLIC

ARTICLE 4 DEADLINE: 1 AUGUST 2020  
(NOT ON TRACK TO MEET THE DEADLINE)

PROGRAMME PERFORMANCE	2016	2015
Problem understood	5	6
Target date for completion of cluster munition clearance	5	5
Targeted clearance	7	7
Efficient clearance	6	6
National funding of programme	5	5
Timely clearance	5	5
Land release system in place	5	6
National mine action standards	7	7
Reporting on progress	6	6
Improving performance	6	8
<b>PERFORMANCE SCORE: AVERAGE</b>	<b>5.7</b>	<b>6.1</b>

## PERFORMANCE COMMENTARY

Analysis of data in the Information Management System for Mine Action (IMSMA) database revealed many errors requiring a major data clean-up exercise potentially slowing implementation of a badly needed national baseline survey of contamination. Procedures and standards for the survey were again the subject of extensive discussion between the National Regulatory Agency (NRA) and operators in 2016, but without a conclusion being reached. Coordination of survey and clearance required strengthening at provincial level and between provinces and the capital.

## RECOMMENDATIONS FOR ACTION

- National authorities and operators should agree clear standards and criteria for cluster munition remnants survey ahead of the planned national survey.
- Procedures for issuing or renewing Memoranda of Understanding (MoU) continue to create inefficiencies and delays and should be streamlined and made more transparent to facilitate timely use of donor funds.
- The Lao People's Democratic Republic (Lao PDR) should establish a budget line for sustained national funding of the sector.

## CONTAMINATION

Lao PDR has the world's highest level of contamination by unexploded submunitions as a result of the Indochina War of the 1960s and 1970s. The United States (US) conducted one of the heaviest aerial bombardments in history, dropping more than two million tonnes of bombs between 1964 and 1973,<sup>1</sup> including more than 270 million submunitions (known locally as bombies). Clearance teams have found 29 types of submunition, including most commonly BLU 26, 24/66, and 63.<sup>2</sup>

Lao PDR does not have a reliable estimate of contamination by cluster munition remnants (CMR). The NRA reports that 14 of the country's 17 provinces are contaminated by UXO, with 9 heavily affected. In 2016, it embarked on plans for a nationwide survey that should produce an evidence-based assessment of the extent of contamination (see, below, the section on Survey in 2016) by 2020.<sup>3</sup> Survey in the past three years has confirmed more than 320km<sup>2</sup> of CMR contamination.<sup>4</sup> The NRA reported the total area of CHA at 352 km<sup>2</sup>.<sup>5</sup> International operators believe total CMR contamination is likely to amount to less than 2,000km<sup>2</sup>.<sup>6</sup>

Bombies accounted for 84% of all items cleared in 2016, a higher proportion for the third successive year that reflects increased focus on cluster munitions in survey and clearance. In 2014, bombies made up about two-thirds of all items cleared and in 2015 about three-quarters.<sup>7</sup> The NRA has identified submunitions as responsible for close to 30% of all incidents.<sup>8</sup> Submunitions are also said to be the type of ERW most feared by the population.<sup>9</sup> UNDP has reported that "economic opportunities in tourism, hydroelectric power, mining, forestry and many other areas of activity considered main engines of growth for the Lao PDR are restricted, complicated and made more expensive" by submunition contamination.<sup>10</sup>

### Other Explosive Remnants of War and Landmines

Extensive contamination from other ERW includes both air-dropped and ground-fired UXO, though the extent of residual ERW is not known. Clearance operators have reported the presence of at least 186 types of munition in Lao PDR.<sup>11</sup> These range from 20lb fragmentation bombs to 2,000lb general-purpose bombs and sometimes bigger items.<sup>12</sup> Other major causes of incidents are artillery shells, grenades, mortars, and rockets.<sup>13</sup>

## PROGRAMME MANAGEMENT

The NRA, created by government decree in 2004 and active since mid-2006, has an interministerial board chaired by the deputy prime minister and composed of 22 representatives from government ministries.<sup>14</sup> Until 2011, the NRA came under the supervision of the Ministry of Labour and Social Welfare. A decree issued in June 2011 appointed a minister in the Prime Minister's Office responsible for rural development and poverty reduction as Vice-Chair of the Board, together with the Vice-Minister of Foreign Affairs.<sup>15</sup> A February 2015 decree expanded the NRA board to 22 members, which is chaired by the Minister in the Prime Minister's Office responsible for rural development, Bounheuang Douangphachanh, and with ministers of Defence, Foreign Affairs and Labour and Social Welfare as vice-chairmen.<sup>16</sup>

A parliamentary election in March 2016 led to leadership changes, including the retirement of Bounheuang Douangphachanh. In September 2016, the government transferred the NRA and the mine action sector back under the control of the Ministry of Labour and Social Welfare. The reasons for the change were not known. The draft of a new decree formalising changes to the NRA board was submitted for approval by the Ministry of Labour and Social Welfare in April 2017.<sup>17</sup>

The change reportedly resulted in confusion at provincial and district level over distribution of responsibilities. Operators said the change also resulted in significant additional delays to processing even routine requests in addition to lengthy delays routinely experienced in obtaining approval of MoUs, which have the effect of delaying operations and obstructing improvements in scale and efficiencies.

NRA said it reviewed its structure in 2016 and plans to develop a network of regional offices in light of preparations for a nationwide survey and its inability to coordinate survey activities at a provincial level, including the management of information and conduct of quality assurance. NRA intended to trial increased support in three provinces.<sup>18</sup>

## Strategic Planning

The Lao government adopted UXO clearance as a ninth Millennium Development Goal in 2010, targeting removal of all UXO from priority agricultural land by 2020.<sup>19</sup> In 2013, the government identified 64 priority areas planned to become small rural townships, 167 focal sites to consolidate and “stabilise” remote rural communities, and more than 1,680 priority projects.<sup>20</sup> Although progress is not measured against these targets they remain as a reference point for the sector.

Strategic goals were set out in the “Safe Path Forward 2” (SPF) plan, as revised in June 2015, when the NRA set a number of specific targets for the remaining five years up to 2020. These included non-technical survey of 3,860 villages, pursuing technical survey, keeping clearance as a priority of the government’s poverty eradication programme, bringing down the number of casualties to less than 40 a year, and providing medical care, vocational training, and economic support to 1,500 UXO victims.<sup>21</sup>

Many of these were superseded in March 2016 when the NRA issued a landmark paper committing to time-bound nationwide non-technical and technical survey, with a view to producing Lao PDR’s first baseline estimate of cluster munitions contamination.<sup>22</sup> The paper called for completing non-technical survey of all villages in the 14 CMR-affected provinces within 4 years, at an estimated cost of \$6.84 million, and technical survey of all evidence points in 5 years (by the end of 2021), at a projected cost of at least \$20 million. Once technical survey is 30% complete, the government would be able to provide an estimate of total CMR contamination.

Survey would be conducted mostly by international NGOs and UXO Lao, possibly with some involvement of the Lao Army in non-technical survey. The paper also stated, without explanation, that the government expects international humanitarian operators, who account for about half the capacity of the humanitarian UXO sector, to cease conducting clearance after technical survey has been completed.<sup>23</sup>

The NRA set out amended targets in a sector working group meeting in November 2016. These called for non-technical survey of 3,160 villages between 2017 and 2019 at an estimated cost of \$5.6 million and completion of technical survey in 2,700 villages in five years (2017–21) at a cost of \$69.7 million.<sup>24</sup> As at May 2017, no detailed plan, priorities, or timelines for conducting the survey had been decided. Operators were due to submit bids to the US Office of Weapons Removal and Abatement in the State Department’s Bureau of Political-Military Affairs (PM/WRA) in August 2017 and to start work in January 2018.<sup>25</sup>

The plan outlined at the Working Group also targeted clearance for 2017–21 of 45km<sup>2</sup> a year, far in excess of current clearance rates (see Table 2). The plan called for spending on clearance of \$57 million.<sup>26</sup>

## Operators

UXO Lao, working in nine provinces, continued as the biggest operator employing around 1,400 staff, including 80 clearance teams, 15 technical survey teams and 9 non-technical survey teams, though fluctuating donor support raised questions about future role and capacity. In Luang Prabang, UXO Lao operated with funding from Norway and management support from Norwegian People’s Aid (NPA).<sup>27</sup>

International humanitarian operators included The HALO Trust conducting survey and clearance in four of Savannakhet province’s most contaminated districts (Nong, Phine, Sepon, and Vilabouly) with a total of 240 staff; Handicap International (HI), with 54 staff also working in Savannakhet province; and MAG, with 332 staff conducting survey and clearance in Xieng Khouang province and clearing CHAs identified by NPA in Khamouane province. NPA, with 268 staff, conducted survey mainly in three southern provinces of Attapeu, Saravane, and Sekong.<sup>28</sup>

Lao PDR has accredited 15 commercial companies but in 2016 reported clearance by only 7. International commercial operators include Auslao UXO Clearance, BACTEC (Battle Area Clearance, Training, Equipment and Consultancy), Milsearch, and Munitions Management Group (MMG). National commercial operators that have been accredited include ASA Power Engineering, GREAT Company, Lao BSL UXO Clearance, Lao Uneod Cooper, OUMMA UXO Clearance, PSD, SBH, Sengphet UXO Clearance, and XTD UXO Clearance. Two more local commercial companies accredited in 2016 were L&B UXO Clearance and Longlo Lao UXO Clearance.<sup>29</sup>

The Lao armed forces had three humanitarian teams reportedly funded by the government (approximately US\$100,000) and two teams funded by the Korean International Cooperation Agency (US\$700,000).<sup>30</sup> Its teams were reportedly preparing to start work in 2016 in Xaisomboun, Bolikhamxay and Khamouane provinces but no clearance was reported. The army plans to increase the number of teams to 25 within the coming five years.<sup>31</sup> Separately, Lao army engineers not involved with humanitarian teams and not coordinated by the NRA were reportedly due to start clearance of UXO, which was holding up construction work on the \$6 billion Laos-China high speed railway.<sup>32</sup>

## LAND RELEASE

UXO sector results in 2016 underscored Lao PDR's sharp swing away from a focus on square metres cleared, often involving land with no contamination, to survey of cluster munitions contamination that will provide an understanding of the scale of the problem for the first time and to evidence-based clearance that is more productive in terms of items cleared. The amount of land confirmed as hazardous in 2016 was close to 80% higher than in 2015, based on operator data (see Table 1).<sup>33</sup> By contrast, land released by clearance amounted to 30km<sup>2</sup> in 2016 (see Table 2), a drop of more than one-quarter from clearance in 2015 and 55% less than two years previously.

### Survey in 2016

CMR-focused survey led by international operators continued to accelerate in 2016 and far outstrips clearance rates. International operators surveyed nearly 230km<sup>2</sup> in 2016, 45% more land than the previous year, while the 138km<sup>2</sup> they confirmed as hazardous more than doubled the 2015 result. UXO Lao, which historically has concentrated on clearance, provided no data on its activities in 2016.

**Table 1: Technical survey of CMR-suspected area in 2016<sup>34</sup>**

Operator	Area surveyed (km <sup>2</sup> )	CHAs identified	Area identified (km <sup>2</sup> )
The HALO Trust	30.41	365	9.04
HI	34.18	185	13.73
MAG	62.19	105	46.26
NPA	102.93	404	69.91
UXO Lao	N/R	N/R	41.26
<b>Totals</b>	<b>229.71</b>	<b>1,059</b>	<b>180.20</b>

N/R = Not Reported

The NRA reports that a total of 28,674 submunitions were destroyed during technical survey in 2016.<sup>35</sup>

Operators continued to refine their cluster munition survey methodology in a bid to accelerate operations. MAG and NPA, partnering in Khamouane province, trialled a process of "chequerboarding" in which teams finding items in one survey box skipped the immediate neighbouring box and surveyed the box next to that. Operators believed this may be applicable in areas of heavy contamination such as Xieng Khouang province with multiple, overlapping strikes and large CHA polygons, but less applicable in areas with more scattered strikes. After testing this procedure in the first half of 2016, as well as different survey team sizes and configurations, MAG said productivity rose 30% per day per team in the course of the year from eight to ten 50m x 50m boxes, depending on the site and terrain, to twelve to fourteen boxes.<sup>36</sup>

The Cluster Munition Remnants Survey (CMRS) approach was modified in 2016 to put more emphasis on desk assessment and non-technical survey. The Evidence Point Polygon (EPP) mapping pioneered by MAG, which uses historical operations data to map and define contaminated areas, has supported this process.

NPA started a review of villages surveyed between 2011 and 2017 in Attapeu, Saravane, and Sekong, which was due for completion by July 2017, and expected to go back and resurvey several hundred villages. NPA's internal quality management concluded teams had not made sufficient use of historical data in some villages. It amended procedures to include analysis of non-technical survey data by senior information management and operations staff and changed team structures to strengthen quality management.<sup>37</sup>

The importance of tightening non-technical and technical survey procedures was underscored in a report by Sterling International which said analysis of data in the NRA IMSMA database found errors affecting up to 9,300 entries, or 14% of the 67,000 entries on the database, and believed that the errors could affect 22% of the area recorded in the database as cleared or technically surveyed. The errors included operators' misreporting of coordinates and mistaken entry of reports into IMSMA. Others errors included use of the wrong GPS format or the wrong map datum. The result was to put many tasks in the wrong location. Sterling found that the errors occurred mostly in UXO Lao reporting and mostly between 2004 and 2010 but that it affected "many" organisations.<sup>38</sup>

The NRA circulated proposals for revised survey requirements in March 2017, calling for correction of data errors in the IMSMA database in the course of the national cluster munition survey. It noted this would have a significant effect on the planning and work of operators conducting the survey but proposed that organisations conducting the survey should be responsible for data corrections, irrespective of which operator originally carried out the work. It proposed a series of changes to standards for use of evidence points, procedures for reporting conclusion of survey and introducing operator "liability" for survey quality.<sup>39</sup> Discussion of the proposals in the UXO sector continued as this report was being drafted but were expected to lead to amendments to standing operating procedures (SOPs) for both non-technical survey and technical survey.

## Clearance in 2016

The sharp fall in area clearance from 41.20km<sup>2</sup> in 2015 to 30.17km<sup>2</sup> in 2016 was most pronounced in the results of commercial companies, which released little more than half of the area they cleared in the previous year. Humanitarian operators recorded a 21% fall in area cleared in 2016 when the sector focused increasingly on survey, but the rewards of evidence-based clearance were apparent in a much smaller drop (8%) in the number of items they destroyed.

**Table 2: Battle area clearance in 2016<sup>40</sup>**

Operator	Area cleared (m <sup>2</sup> )	Submunitions destroyed	Bombs destroyed	Other UXO destroyed	Mines destroyed
<b>Humanitarian</b>					
The HALO Trust	1,432,835	2,109	0	1,200	0
HI	64,685	302	0	302	0
MAG	5,031,422	4,717	4	186	0
NPA	647,788	1,168	0	33	0
UXO Lao	16,733,714	36,765	17	8,863	8
<b>Subtotals</b>	<b>23,910,444</b>	<b>45,061</b>	<b>21</b>	<b>10,584</b>	<b>8</b>
<b>Commercial</b>					
BACTEC	46,656	1	0	39	0
Lao BSL	3,900	12	1	13	0
Milsearch	310,350	39	0	32	0
MMG	1,543,052	184	3	862	1
OUMMA	889,000	193	1	0	0
SBH	3,046,534	62	0	1	1
XTD	415,360	0	0	0	0
<b>Subtotals</b>	<b>6,254,852</b>	<b>491</b>	<b>5</b>	<b>947</b>	<b>2</b>
<b>TOTALS</b>	<b>30,165,296</b>	<b>45,552</b>	<b>26</b>	<b>11,531</b>	<b>10</b>

UXO Lao continued working in the nine most contaminated provinces (Attapeu, Champasak, Houaphan, Khamouane, Luang Prabang, Saravane, Savannakhet, Sekong, and Xieng Khouang) but its area clearance dropped in 2016, falling 15% compared to the previous year. US funding enabled UXO Lao to add 15 teams and 150 personnel in 2016 but the organisation faced uncertainty over the future support of other key donors and over the balance between survey and clearance in its future operations.<sup>41</sup>

International operators increasingly converged around strategies for tackling survey and clearance of cluster munitions, but uneven support delivered mixed results. The HALO Trust, after increasing the number of teams from eight to ten and adding new equipment, increased the amount of land it cleared in Savannakhet province by one-third to 1.4km<sup>2</sup>.<sup>42</sup>

MAG remained the international operator with the biggest area clearance operation working in three districts of Xieng Khouang. In Khamouane province it cleared CHAs identified in survey conducted by NPA. But the ending of two grants in late 2015 and early 2016 meant that by the end of the year it was operating with only half the number of BAC teams it had in 2015, and the area it cleared was almost one-third less than the previous year.<sup>43</sup> HI shifted the focus of its small number of teams from clearance to technical survey and the area cleared fell sharply as a result from 0.5km<sup>2</sup> in 2015 to 64,155m<sup>2</sup> in 2016.<sup>44</sup> HI reduced international staff in the first half of 2017 and was exploring opportunities for shifting operations from Savannakhet, where The HALO Trust already operates, to Houaphan province where no other international operator is working.<sup>45</sup>

NRA data on roving operations showed the number of submunitions destroyed was 40% higher than the previous year, but significant discrepancies with results reported by operators in both years left the outcome uncertain. However, The HALO Trust more than doubled the number of submunitions destroyed in roving operations.<sup>46</sup>

**Table 3: Roving clearance operations in 2016<sup>47</sup>**

Operator	Submunitions destroyed	Bombs destroyed	Other UXO destroyed	Mines destroyed
The HALO Trust	5,075	15	1,222	0
HI	2,308	27	1,295	5
MAG	5,595	4	988	0
Milsearch	13	0	1	0
NPA	11,410	3	826	0
UXO Lao	8,009	31	1,641	30
<b>Totals</b>	<b>32,410</b>	<b>80</b>	<b>5,973</b>	<b>35</b>

## ARTICLE 4 COMPLIANCE

Under Article 4 of the Convention on Cluster Munitions, Lao PDR is required to destroy all CMR in areas under its jurisdiction or control as soon as possible, but not later than 1 August 2020.

Lao PDR will need to apply for an extension given the extent of its CMR contamination but is expected to present an evidence-based estimate of the extent of contamination as a result of its proposed national survey. Plans for conducting the survey and accelerating clearance will depend on the level of international donor support. In 2016, the Lao PDR sector received \$26 million, less than in the previous two years.<sup>48</sup>

**Table 4: Five-year summary of clearance**

Year	Area cleared (km <sup>2</sup> )
2016	30.17
2015	41.30
2014	67.78
2013	64.86
2012	54.42
<b>Total</b>	<b>258.53</b>

US President Barack Obama pledged in September 2016 that the United States would provide \$30 million a year over three years for the UXO sector, doubling the level of US funding in 2015.<sup>49</sup> The United States has not reaffirmed that commitment since the inauguration of President Donald Trump, whose administration has signalled its intention to make major cuts in international aid, raising uncertainty about how much of the \$90 million will be delivered. In the meantime, the NRA and other stakeholders are concerned that support by other donors has fallen and any shortfall in US support could leave the plans for survey and clearance underfunded.<sup>50</sup>

The government reported providing \$4.82 million for the UXO sector in 2015, nearly identical to the figure reported the previous year, and including rent for UXO Lao and the NRA, tax exemption on operator equipment imports, and costs associated with UXO sector activities of the Lao PDR armed forces. The government would contribute \$380,000 to the sector in 2016.<sup>51</sup>

- 1 "US bombing records in Laos, 1964–73, Congressional Record", 14 May 1975.
- 2 NRA, "UXO Sector Annual Report 2009", Vientiane, undated but 2010, p. 13; Convention on Cluster Munitions (CCM) Article 7 Report (for 2013), Form F.
- 3 Interview with Phoukhieo Chanthasomboune, Director, National Regulatory Authority, Vientiane, 4 May 2016; NRA, "From Survey to Safety, Quantifying and Clearing UXO Contamination in Lao PDR", March 2016.
- 4 Data compiled by the Mine Action Review in 2015, 2016, and 2017.
- 5 Information provided by Phoukhieo Chanthasomboune, NRA, 27 April 2017.
- 6 Interviews with international operators, Vientiane, 3–7 May 2016.
- 7 "Sector Achievements" for 2015 and 2014, received from the NRA, Vientiane, 4 July 2016 and 11 May 2015.
- 8 NRA, "UXO Sector Annual Report 2012", Vientiane, undated but 2013, p. 5.
- 9 Interview with Jo Durham, author of "Post-Clearance Impact Assessment", Vientiane, 10 November 2011.
- 10 "Hazardous Ground, Cluster Munitions and UXO in the Lao PDR", UNDP, Vientiane, October 2008, p. 8.
- 11 Landmine Action, Explosive remnants of war and mines other than anti-personnel mines, Global Survey 2003–2004, March 2005, p. 104.
- 12 NRA website, "UXO types: Bombs", at: <http://www.nra.gov.la/bombs.html>.
- 13 NRA, "National Survey of UXO Victims and Accidents, Phase 1", Vientiane, 2009, p. 39.
- 14 NRA, "UXO Sector Annual Report 2009", Vientiane, May 2009, p. 14.
- 15 Prime Minister's Decree No. 164, 9 June 2011; NRA, "National Regulatory Authority for UXO/Mine Action Sector in Lao PDR Switches Ministries", October 2011.
- 16 "Announcement 93: UXO clearance for socio-economic development projects in the Lao PDR", NRA Board, 19 November 2012.
- 17 Interview with Allan Poston, Technical Adviser, UNDP, 26 April 2017; with Phoukhieou Chanthasomboune, NRA, 27 April 2017
- 18 Information provided by Phoukhieo Chanthasomboune, NRA, 27 April 2017.
- 19 "Laos: new MDG to tackle UXOs", IRIN, 12 November 2010.
- 20 Interviews with Phoukhieo Chanthasomboune, NRA, Vientiane, 13 June 2013, and Phil Bean, NRA, Vientiane, 12 June 2013.
- 21 Interview with Phoukhieo Chanthasomboune, NRA, Vientiane, 4 May 2016.
- 22 NRA, "From Survey to Safety, Quantifying and Clearing UXO Contamination in Lao PDR", March 2016.
- 23 Ibid., pp 1–3.
- 24 "Survey and clearance plan for UXO/mine action sector in Lao PDR, 2017–2021", presentation by Phommachanh Khammanichanh, Chief of UXO Clearance Section, NRA, 8 November 2016.
- 25 Interviews with Allan Poston, Technical Adviser, UNDP, 24 and 26 April 2017.
- 26 "Survey and clearance plan for UXO/mine action sector in Lao PDR, 2017–2021".
- 27 Interviews with Jonas Zachrisson, Country Director, NPA, 24 April 2017; and Thipasone Soukhathammavong, National Programme Director, UXO Lao, Vientiane, 26 April 2017.
- 28 Emails from Susanna Smale, Programme Manager, HALO Trust, 11 May 2017; Kim Warren, Head of Mission, HI, 22 March 2017; Simon Rea, Country Director, MAG, 19 May 2017; Thanalat Samalavong, NPA, 26 May 2017; and (for UXO Lao) "Sector Achievements 2016", received from NRA, 19 May 2017.
- 29 Information provided by Phoukhieo Chanthasomboune, NRA, 27 April 2017.
- 30 "Progress and Plans of Lao People's Army", presentation by Lao Army Humanitarian Team, 8 November 2016.
- 31 Interview with Phoukhieo Chanthasomboune, NRA, Vientiane, 27 April 2017.
- 32 Souksakhone Vaenko, "Army deployed to clear UXO for Laos-China railway", *Vientiane Times*, 6 January 2017.
- 33 The NRA reported 101.48km<sup>2</sup> confirmed as hazardous in 2015 and 113.41km<sup>2</sup> in 2016 but its data included major discrepancies with operators' results. The NRA did not record any survey activity by The HALO Trust and reported NPA confirmed 12.14km<sup>2</sup> as hazardous area.
- 34 Data provided by Susanna Smale, HALO Trust, 11 May 2017; Kim Warren, HI, 22 March 2017; Simon Rea, MAG, 19 May 2017; Thanalat Samalavong, NPA, 26 May 2017; and (for UXO Lao) "Sector Achievements 2016", received from NRA, 19 May 2017.
- 35 "Sector Achievements 2016", received from NRA, 19 May 2017.
- 36 Email from Simon Rea, MAG, 11 April 2017 and Skype interview 25 April 2017.
- 37 Emails from Jonas Zachrisson, Country Director, NPA, 17 March and 23 May 2017, and interview, 24 April 2017.
- 38 "Data errors on IMSMA", Nigel Orr, Technical Adviser, Sterling International, 26 April 2017.
- 39 "Lao PDR National Survey Procedures Supplement, Revised Survey Requirements", NRA, undated but April 2017.
- 40 "Sector Achievements 2016", received from NRA, 19 May 2017.
- 41 Interview with Thipasone Soukhathammavong, UXO Lao, 26 April 2017, and Phoukhieo Chanthasomboune, NRA, Vientiane, 27 April 2017.
- 42 Email from Susanna Smale, HALO Trust, 22 March 2017 and skype interview 25 April 2017.
- 43 Email from Simon Rea, MAG, 11 April 2017, and Skype interview, 25 April 2017.
- 44 Email from Kim Warren, HI, 22 March 2017.
- 45 Telephone interview with Noémie Marcellin, Field Coordinator, HI, 26 April 2017.
- 46 "Sector Achievements 2016", received from the NRA, 19 May 2017.
- 47 NRA data on HALO Trust roving operations in 2016 included items reported by The HALO Trust as destroyed in technical survey.
- 48 Information provided by Phoukhieo Chanthasomboune, NRA, 27 April 2017.
- 49 Mark Landler, "Obama Acknowledges Scars of America's Shadow War in Laos", *New York Times*, 6 September 2016.
- 50 Interviews with Phoukhieo Chanthasomboune, NRA, 27 April 2017; and Allan Poston, Technical Adviser, UNDP, 24 and 26 April 2017.
- 51 Interview with Phoukhieo Chanthasomboune, NRA, Vientiane, 4 May 2016.