

# SAW



ASSESSMENT OF THE HALO TRUST  
MARKING AND REGISTRATION OF  
SMALL ARMS AND LIGHT WEAPONS  
PROJECT IN BOSNIA-HERZEGOVINA

2017-2019

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International Center  
for Conversion \

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## SUMMARY

In the Western Balkans, the diversion of state-owned small arms and light weapons (SALW), and limited control over privately held SALW, are a main source of illicit arms trafficking. The HALO Trust has contributed to improving the control of SALW in Bosnia-Herzegovina (BiH) since 2017, when HALO started a marking and registration project. HALO's project in BiH has been a success, which has yielded valid lessons learnt for similar projects that can be replicated with the police in BiH and other countries across the Western Balkans.

Future projects can draw on HALO's experience with the legal, political, logistical and training preparation that was required for the successful implementation of the project. The preparation, especially the design of the registration database and the procedures of selecting, cleaning, transporting, securing and handling weapons, proved to be more demanding than the marking procedure itself. This report gives feedback to HALO's donors and implementing partners; thereby contributing to a broader overarching understanding of the strategic, policy and operational requirements to tackle the illicit spread of SALW in the Western Balkans.



# KEY FINDINGS

## PREPARATION

The professional preparation phase, including training and the acquisition of equipment and resources, was an essential aspect of HALO's marking and registration project. HALO's national partners expressed their appreciation and acknowledgment of HALO's contribution, which was based on sensitivity and understanding of local problems, ensuring the working relationship was grounded in mutual trust rather than commandeering and controlling oversight.



## COMMITMENT

The Ammunition, Weapons, and Explosives (AWE) Master Plan in BiH played a decisive role in committing the national stakeholders to addressing the SALW problem. The inclusion and engagement of all relevant actors, the setting of priorities, and choice of a train-and-equip programme were crucial to moving from intention to action. In this regard, BiH adopted legislation (on exports, imports and marking) complying with EU norms, which served as the underlying framework for HALO's marking and registration project.



## NATIONAL OWNERSHIP

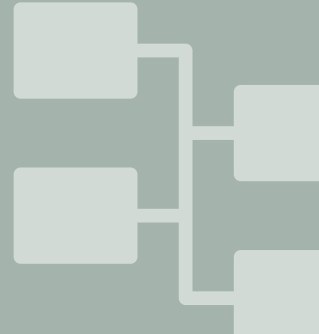
A sustainable life cycle management (LCMA) system is only successful if the state assumes ownership and responsibility for stockpile management. National experts with knowledge of stockpile management played a key role in securing agreement on the implementation of the SALW strategy within the AWE Master Plan. Since 2012, BiH, with the support of EUFOR, has significantly built up its own PSSM capacities, of which HALO's project directly contributed to these efforts.





## TRACING

HALO improved BiH's capacity to trace weapons by enabling the MoD and MoFTER to exercise its control over weapons holdings and exports, thus improving record-keeping practices. The bespoke software protects against the corruption or manipulation of records in the database and allows for a stolen weapon to be traced back to its origin and owner. In addition, system user tracking can show the last person who took inventory of the weapon or authorised its move.



## INTEGRATING DATA SYSTEMS

Any transfer of the BiH experience should take into account the development of a logistical information system capable of integrating various datasets on marked weapons in the armed forces and other security services, as well as imports and exports. The training packages offered should be expanded beyond the registration and marking to the whole system of storekeeping.



## EXTENSION TO THE POLICE AND INDIVIDUALS

It is expected that the experiences and insights gained from HALO and the AFBiH will be transferred to the police of BiH at a later stage. In spring 2019 there was no central database for the police's weapons holdings. HALO suggested to train and equip two marking teams for the police (and asked the US State Department for a \$300,000 grant); however, the authorities have not yet agreed to an expansion of HALO's marking and registration project to the police.



# INTRODUCTION

The following report assesses the “Marking and Registration of small arms and light weapons” project in Bosnia-Herzegovina (BiH), implemented by The HALO Trust<sup>1</sup> (HALO) and financed by the Ministry of Foreign Affairs of Germany, UNSCAR (UN Trust Facility Supporting Cooperation on Arms Regulation), and the Ministry of Defence of Norway. In conjunction with national and international actors, HALO has contributed to the control of small arms and light weapons (SALW) in BiH since 2017.

This report assesses the ongoing and partially completed intervention in SALW control in BiH and sheds light on the effectiveness of counter-proliferation efforts. It pays particular attention to the coordination between BiH authorities, countries supporting BiH, and HALO’s contractual commitments to its donors. The report further assesses the project in terms of effectiveness, efficiency and sustainability and provides lessons learnt regarding organisation and management.

The goal of the Government of BiH and the international organisations supporting the country is to establish a sustainable life cycle management (LCMA) system for arms and ammunition in the armed forces and other security services. This includes the transparent disposal of surplus weapons by destruction, sale or donations. Certain insights from the BiH case are useful for other states in the Western Balkans.



**Figure 1.** Quality assurance of the marking process, November 2018; © The HALO Trust

<sup>1</sup> The HALO (Hazardous Area Life-support Organisation) Trust is a registered British charity and US-American non-profit organisation that removes the debris left behind by war, in particular landmines, employing more than 6,000 deminers world-wide.

The purpose of controlling SALW, inclusive of marking and registration, is to prevent proliferation and reduce the risk of unplanned explosions at munitions sites and resulting environmental damage. A holistic approach to physical security and stockpile management (PSSM) includes legislation; the establishment of coordination and oversight bodies; assessments of inventory and physical security; training of personnel to build sustainable national capacity; and the sale, donation or destruction of SALW.

Post-war or conflict-affected societies often face problems with illicit distribution of weapons, the sale of arms on the black market, and deficient storage of ammunition and weapons, thus enabling the spread of organised crime, national or international terrorism, or even insurgency.

In the interest of sustaining a state monopoly on the use of “legitimate” violence, as well as international security, it is vital to reduce the risks of a deficient control over SALW. This is particularly relevant to BiH, as its territory contains a concentration of Yugoslav-era weapons and ammunition production facilities and remains a major exporter of SALW as a significant source of income for the state. As a sovereign state, BiH is legally entitled to sell weapons as long as the sales comply with certain standards. According to a snapshot overview by SEESAC for 2016, BiH sold weapons and ammunition to countries from every continent, including France, Iraq, Serbia and Saudi Arabia. However, the issue of SALW control in BiH made international headlines in January 2015 after SALW used in the Islamist terrorist attack in Paris was traced back to BiH. This attack, as well as the November 2015 attacks in which weapons were traced back to other areas in the Western Balkans, instigated tougher action against the illicit arms trade.

HALO’s SALW project in BiH started after extensive preparation in cooperation with EUFOR (European Union Force in BiH), the BiH Ministry of Defence (MoD), the Ministry of Foreign Trade and Economic Relations (MoFTER) and the armed forces of BiH (AFBiH). The report draws upon conclusions from HALO and Small Arms Survey’s previous cooperation in BiH and the Western Balkans; conversations with representatives of the BiH Ministries of Defence, Foreign Trade, and Security; and the AFBiH. The report also utilises insights gained from field visits to weapons storage sites, armouries and several AFBiH logistics units in January and May 2019, as well as interviews with representatives of HALO, EUFOR and the national parliament of BiH. The report relies on the definition of SALW used by the BiH Small Arms and Light Weapons Control Strategy.<sup>2</sup>



**Figure 2.** *Cleaning weapons before marking, Banja Luka, December 2019; © The HALO Trust*

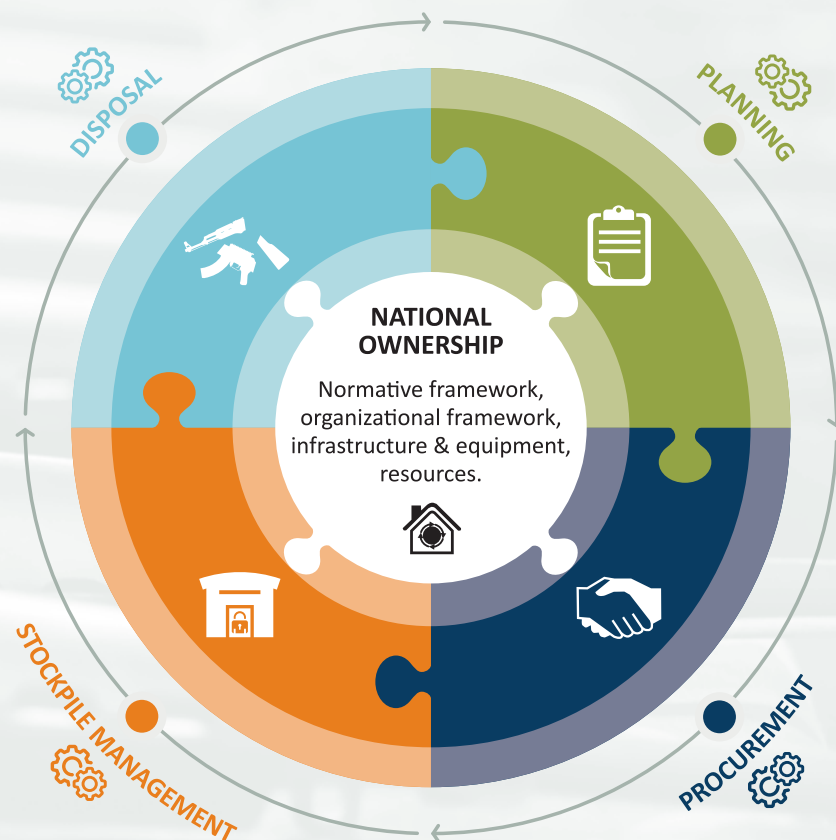
<sup>2</sup> “Small arms and light weapons are man-portable weapons made or modified to military specifications for use as lethal instruments of war. Small arms are broadly categorised as those arms intended for use of individual members of armed or security forces. They include revolvers and self-loading pistols; rifles and carbines; semiautomatic rifles; assault rifles; and light machine guns. Light weapons are broadly categorised as those weapons intended for use by several members of armed or security forces serving as a crew. The category includes heavy machine guns; hand-held and mounted grenade launchers; portable anti-aircraft guns; portable anti-tank guns; recoilless rifles; portable launchers of anti-tank missile and rocket systems; portable launchers of anti-aircraft missile systems; and mortars under 100mm calibre.” [www.seesac.org/f/docs/Bosnia.../SALW\\_ENG-FINAL\\_BiH\\_1.pdf](http://www.seesac.org/f/docs/Bosnia.../SALW_ENG-FINAL_BiH_1.pdf)



# POLICY COMMITMENTS AND LEGAL OBLIGATIONS

After the disintegration of Yugoslavia and the Yugoslav Army, weapons that were stored in more than 30 military locations suddenly fell under the control of the newly independent republics, with limited capacity to maintain the often outdated facilities. Governments faced a large quantity of aged weapons and ammunition, often in unknown condition, with insufficient security and limited capacity of weapons handlers. Until 2006, the AFBiH were under the control of domestic sub-entities, and only when the armed forces nationalised did a country-wide approach to controlling SALW become possible.

In 2012 a review of the Dayton Agreement took place, which found that ammunition, weapons and explosive management still needed improvement. Under EUFOR leadership, the AFBiH developed the AWE Master Plan, which led to the establishment of a LCMA system in BiH.<sup>3</sup> The LCMA model, created by Small Arms Survey, prioritises national ownership in four main areas: planning, procurement, stockpile management and disposal (see Figure 3).



**Figure 3**  
Small Arms Survey,  
LCMA Model,  
Carapic, J. et al  
(2018)

**Key** Structural Element 🏠 Functional Element ⚙️ Milestone ●

<sup>3</sup> The AWE Master Plan was set up together with representatives of the international community and deals with inventory, training of personnel, safety and security of storage sites, disposal and LCMA of SALW. The Master Plan foresaw the introduction of a sustainable LCMA and transparent disposal of surplus ammunition by September 2020—a realistic end date.

MARKING METHODS	
BIH MARKING LAW	BIH MARKING RULEBOOK
Marks have to be readily recognisable, permanent, durable and not easily removed; they have to be technically retrievable.	Either cold or hot marking methods can be used, including casting, stamping, mechanical engraving, laser, radio frequency identification and electrochemical methods.
Marks have to be placed in a safe manner and with the aim of maintaining the technical quality and properties of the weapons.	Manufacture marks must be placed on a visible location, with a minimum size of 2mm and a minimum depth of 0.2mm.
	Import and transfer marks have to be placed on a visible part, with a minimum size of 2mm and a minimum depth of 0.1mm if being placed on metal and 0.2mm if being placed on polymer.
	Marks have to be permanent during the entire life expectancy of the weapons and not susceptible to easy erasing, alteration or removal.

**Table 1.** *Marking Methods in BiH*

Following the Dayton Agreement review, in 2016 BiH adopted the law on marking SALW and associated ammunition, which distinguishes between initial identification marking and post-manufacture marking. As part of the law, SALW must be marked at the time of manufacturing (Article 9), import (Article 11) and transfer or export (Article 14). In line with BiH's legal obligations, SALW should be marked according to a standard set of symbols with numeric or alphanumeric code on an essential structural component of the weapon (see Annex A). The law (and bylaws) allow the organisation undertaking the marking, whether manufacturers, importers or stockholders transferring or exporting weapons, to choose the marking method. Both the law and a BiH Marking Rulebook provide clear guidance on the physical characteristics (see Table 1).

BiH is legally or politically bound to comply with various international and regional political commitments and frameworks<sup>4</sup> (see Annex B). These commitments and frameworks were a necessary condition for the start of HALO's marking and registration project to ensure national collaboration, ownership and sustainability. HALO's close and regular communication on technical, administrative and content-related issues with its BiH counterparts, supported continuously by EUFOR, resulted in mutual trust and an appreciation for professionalism shown from all stakeholders.

<sup>4</sup> Including, but not limited to, the OSCE SALW Document, Palermo Convention, UN Programme of Action (PoA), International Tracing Instrument (ITI), Arms Trade Treaty (ATT), and European Firearms Directive.



Figure 4. Close up markings on M60, Tuzla, February 2020; © The HALO Trust

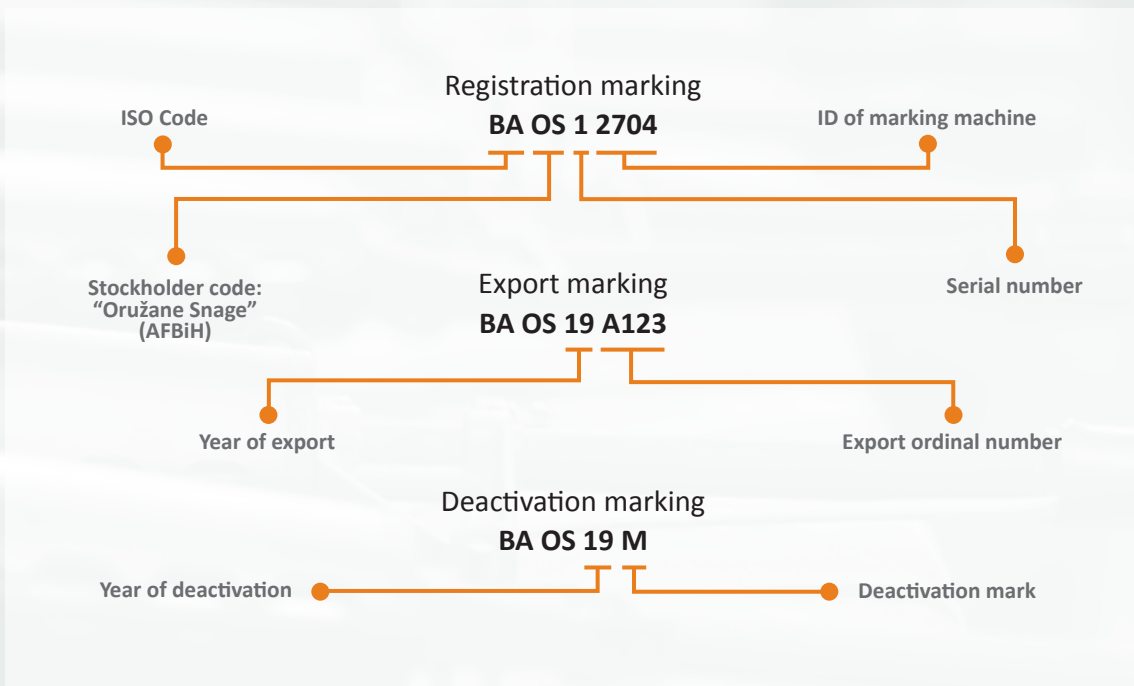


Figure 5. Different types of marking

<sup>4</sup> Including, but not limited to, the OSCE SALW Document, Palermo Convention, UN Programme of Action (PoA), International Tracing Instrument (ITI), Arms Trade Treaty (ATT), and European Firearms Directive.



# SIZE OF THE PROBLEM

At the end of the war in 1995, AFBiH held an estimated 66,000 SALW and heavy weapons, and in the course of assisting the Bosnian forces as a result of its post-Dayton mission in BiH, NATO brought in additional weapons. In 2012 EUFOR's Mobile Training Team conducted the first assessment of the size of the SALW problem in BiH.<sup>5,6</sup>

The assessment found that weapons were not always registered and if they were, used handwritten lists or a central quantitative database. However, this database could not track individual weapons, nor did it contain qualitative information. The assessment further considered weapons holdings, distinguishing between useable weapons, weapons repairable at an acceptable price, weapons repairable at a high price, and irreparable weapons. EUFOR also ascertained that only a small number of individuals possessed the necessary knowledge of arms and weapon stockpile management.

Of the 66,000 weapons identified, approximately 62,000 were SALW. Approximately 22,000 of these weapons were classified as "prospective" for use by the AFBiH and roughly 40,000 as "non-prospective". However, as the MoD and the AFBiH determined the number of required weapons (which can always be adjusted according to changing circumstances), they considered about 18,000 of the total "prospective" weapons to be sufficient for the approximately 9,000 soldiers in the AFBiH.

## TOTAL NUMBER OF WEAPONS IDENTIFIED IN THE AFBiH STOCKPILE

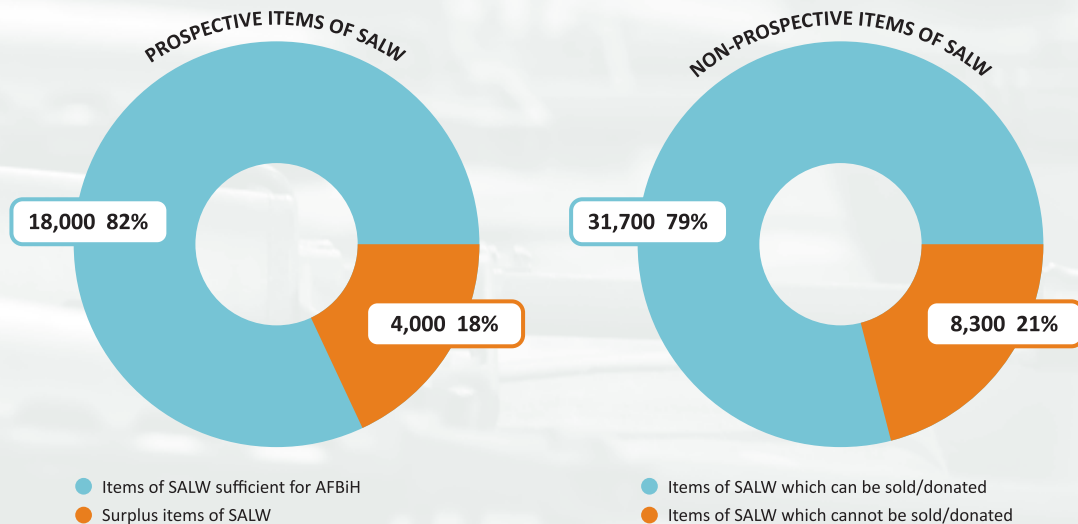


Figure 6. Breakdown of the AFBiH SALW stockpile

<sup>5</sup> <http://www.smallarmssurvey.org/about-us/highlights/2017/highlight-bp-lcma-bih.html>

<sup>6</sup> Privately held weapons and those kept by the police were not included in this assessment.



**Figure 7.** Weapons storage site, Zenica, October 2017, © The HALO Trust

A commission in the MoD is responsible for deciding whether weapons are scrap or can be further utilised. Out of the 40,000 non-prospective weapons, 31,700 small arms could be sold or donated—the notion of non-prospective is thus relative to the assessed needs of the armed forces of BiH or economic considerations but does not equal “useless” or “beyond any reasonable use”.<sup>7</sup>

In addition to a large SALW surplus within the AFBiH, incidents of theft and diversion from the armed forces’ stockpile contributed to poor SALW control efforts and general insecurity. In 2011 47 pistols went missing at the weapons storage site in Visoko. In 2013 a Fagot anti-tank guided missile disappeared from the ammunition storage site Kula 2 in Mrkonjic Grad (Carapic & Holtom, 2018, pp. 6-7). Between 2009 and 2013, and again in 2017, cases of illegal diversion of weapons from military storage sites became a reason for concern and a sound reason for improved marking procedures (see Annex C).

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<sup>7</sup> SAWAD Col. M. Trachsler, Sarajevo, provided figures in February 2019.





## RESPONSE TO THE PROBLEM

In 2016 representatives of the MoD requested support for weapons marking and registration at the Regional Approach for Stockpile Reduction meeting in Croatia. EUFOR then invited HALO to conduct a marking and registration project with the MoD. In the preparatory phase, outlined further in the 'Planning and Stages' section, HALO collaborated with Small Arms Survey<sup>8</sup> to conduct an initial capacity and needs assessment in 2017. The assessment included a regulatory analysis of marking, registration and recordkeeping legislation and regulations to determine which frameworks, treaties and laws marking and registration activities in BiH must adhere to. The assessment ultimately supported the MoD in developing a comprehensive weapons management system, allowing BiH to meet the political and legal requirements in the frameworks, treaties and laws the country has acceded to.

HALO and Small Arms Survey's assessment therefore informed the implementation process, and by spring 2019, approximately 4,000 weapons in the AFBiH stockpiles had been marked and registered by the HALO project. Marking and registering contributes to limiting diversion of weapons, as it becomes more difficult to illegally sell or divert marked weapons that will leave a trace to the original location. Marking thus functions as a deterrent; perpetrators' movements would be traceable, and they would likely think twice before selling a marked weapon. Registration in the database ensures a stolen weapon can be traced back to where it was last stored and who had most recently authorised movements for it.



**Figure 8.** AFBiH personnel conducting a quality check of the weapons before marking, Zenica, May 2019, © BICC / Heinemann-Grüder

<sup>8</sup> Small Arms Survey is a sector-leading, independent research organisation that provides research and analysis by which to support governments to reduce the incidence of armed violence and illicit trafficking through evidence-based analysis.





PRYOR

Model: \_\_\_\_\_

Serial No: \_\_\_\_\_

Year of Manufacture: \_\_\_\_\_

MADE IN ENGLAND

PRYOR ENGINEERING (UK) LTD

PO BOX 100, WILTON, SOUTHAMPTON, HANTS, SO9 4YD

TEL: 01703 604444 FAX: 01703 604445

EMAIL: SALES@PRYOR.CO.UK

WWW: WWW.PRYOR.CO.UK

CE

# THE ORGANISATIONAL FRAMEWORK

HALO carefully navigated politically-divided entities to establish a coordinated and sustainable international response to BiH's ammunition and weapons stockpile challenges and to secure the cooperation from BiH's defence establishment. Distrust emanating from the war is still widespread among the entities of BiH, therefore, the formation of a strategic coordination board with decision-making powers and the potential to put pressure on stakeholders was key.

A Coordination Board for SALW Control was founded by the BiH Council of Ministers with the mandate to plan, coordinate, direct and supervise activities aimed to implement the SALW Strategy. The Board is headed by the Assistant Minister of Security and two deputies and includes, among others, generals of the armed forces, representatives from implementing international organisations, and diplomats from donor countries. Its main task is to identify and assess the impact of illicit SALW on society, economic and social development, and population's safety and security. While EUFOR coordinates the implementation of the AWE Master Plan, the Coordination Board communicates respective activities to the public, supports the institutions in mobilising resources, and coordinates activities among stakeholders in the strategy implementation process. The Coordination Board is also obligated to regularly report to the BiH Council of Ministers on achieving the Strategy's goals, to the UN in line with the UN PoA, and to OSCE in line with the OSCE SALW Document (Council of Ministers, 2013). Although the Coordination Board is supposed to meet every second month, it convenes less frequently in practice.

Each international organisation that contributes to the overall endeavour of SALW control was assigned a specific task to avoid duplication. To prevent competition among participating organisations (or undue interference), EUFOR organised a workshop jointly with UNDP at the project's outset. HALO was charged with overseeing the marking and registration of the SALW inventory in the storage sites and armouries, as well as supporting EUFOR in strengthening the capacity of the AFBiH.

However, a national SALW commission is, by itself, not in a position to overcome political obstacles without an external coordinator. SEESAC<sup>9</sup> is charged to play this role in the Western Balkans, having developed strategic plans for all countries in the region. Thus, BiH's SALW strategy also operates within the SALW Roadmap for the Western Balkans, initiated by Germany and France. As the Roadmap's coordinator, SEESAC developed measurable indicators, KPIs and timelines in coordination with Western Balkan authorities. National authorities update SEESAC on the progress made towards achieving the targets, and SEESAC monitors and publishes progress when appropriate. In addition, SEESAC coordinates bi-annual regional meetings for all stakeholders to share information and updates.

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<sup>9</sup> SEESAC – The South Eastern and Eastern European Clearinghouse for the Control of Small Arms and Light Weapons is a branch of United Nations Development Programme.



# PLANNING AND STAGES

The preparatory phase of HALO's project lasted from 1 January to 31 October 2017 and was funded by UNSCAR (\$133,000). Phase I consisted of:

- Assuring the support of national stakeholders and international organisations;
- Developing an analysis of the existing marking, registration and recordkeeping process;
- Advocating for the adoption of legislative acts and regulations;
- Selecting appropriate marking technologies; and
- Conducting a capacity assessment.

HALO signed a working contract with the MoD on the delivery of its services. In the initial stage, HALO identified marking technologies and necessary resources and selected weapons technicians, transportation methods and personnel. HALO also furnished marking sites, including the provision of heating, light, electricity, water, and sanitation and security precautions.

The second phase started on 1 November 2017 and will last until 31 December 2020. Phase II consisted of the training of personnel to strengthen sustainable national capacity in conjunction with EUFOR and the development of the registration database. After a comparison of several offers for marking machines, HALO selected a package which included marking machines, software and maintenance from the UK-based company PRYOR Marking Technology. PRYOR was chosen not only for their cost efficiency, but also because of their excellent global reputation in manufacturing, with over 150 years of expertise in aerospace and automotive standards, working with companies such as Boeing and Rolls-Royce as a member of the Advanced Manufacturing Research Centre.

In June and September 2018, HALO conducted preparatory training courses for marking personnel, including HALO Team Coordinators, operators of the dot peen machines and corresponding software, and the weapons handlers and technicians. The weapons technicians also attended a course on stockpiling, storekeeping and quality assessment, conducted by the EUFOR Mobile Training Team. During Phase II, HALO selected appropriate marking codes for the marking teams to use, in line with national and international standards, and submitted the proposed markings to MoFTER, prepared the marking locations, and formed three marking and cleaning teams.



Figure 9. HALO BiH project timeline





**Figure 10.** HALO Programme Manager Alex Maier demonstrating the marking process to German Defence Attaché Kai-Uwe Naepel, August 2019, © The HALO Trust

HALO and EUFOR organised training courses using the Moderating-Mentoring-Monitoring approach, increasing the capacity of AFBiH personnel and allowing those who pass the course to train others in marking and registration procedures in the future. In cooperation with EUFOR HALO also conducted workshops for personnel in the MoD and MoFTER, the commander of EUFOR, and several embassies from donor countries to demonstrate marking and registration procedures.

HALO successfully assured donor visibility with frequent visits and demonstrations, as well as repeated mentioning of donors during presentations by HALO and EUFOR and inclusion of donors' flags in various places around the marking sites. Interviews with government officials and a deputy of the parliament of BiH (in charge of defence affairs) gave the impression they were well informed about the HALO marking and registration project as well as the crucial role of donors.

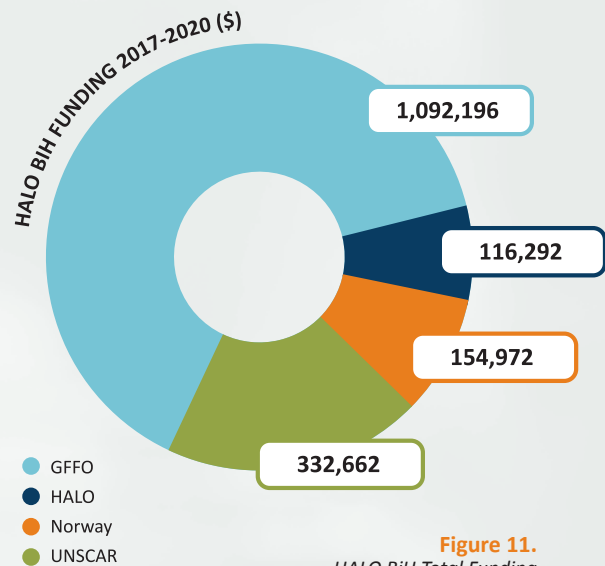
Originally, HALO had planned to start marking weapons in July 2018, but unforeseen circumstances in the MoD caused delay; therefore, HALO began marking activities in November 2018.



# FUNDING OF THE SALW MARKING PROJECT

Donors for HALO’s project include the Ministry of Foreign Affairs of Germany, the Ministry of Defence of Norway, and UNSCAR.

- An UNSCAR grant of \$250,000 funded the original assessment in 2017 (Jan—Dec 2017) and one marking team, including equipment, through 2019.
- The German Federal Foreign Office (GFFO) provided a substantial part of the funding from November 2017 onwards. An initial sum of €148,000 funded the training of personnel over three months, as well as the purchase of two marking machines and the weapons registration software. From February to July 2018, HALO reserve funds were used to bridge the funding gap, until GFFO donated \$190,000 in 2018 for an additional six months.
- In December 2018 after a presentation of the marking procedure at the military camp in Rajlovac, the Norwegian MoD pledged to contribute approximately €125,000 to the project for 2019.



**Figure 11.**  
HALO BiH Total Funding  
2017-2020

At the time of writing (March 2020), funding was secured through December 2020. The Government of Germany has pledged to contribute €350,000 to cover part of the costs until the end of the year, and HALO is seeking funds from other donors to ensure the project is completed by the end of 2020. See Table 3 for a breakdown of funding from donors through December 2020. HALO expects future marking projects to cost significantly less than the project in BiH. Because the BiH project was HALO’s first marking project, significant time and resources were given to research and development that can

now be used in other settings. In addition, there were many political obstacles from the planning stage to implementation that were particular to the BiH context, and the AFBiH held a large stockpile compared to the rest of the region.



**Figure 12.**  
Poster at a marking site  
showing HALO’s donors  
and partner organisations.  
October 2019,  
© The HALO Trust



# TRAINING

Prior to the actual marking, EUFOR and HALO trained the marking teams with the support of EUFOR's Mobile Training Team from Austria. The training sought to build a sustainable capacity in the AFBiH and to establish mobile marking teams that could move around the country with mobile marking machines. The AFBiH's original deployment plan stated that the marking teams would visit sites rather than moving weapons to marking locations; however, in practice it proved to be more efficient to move the SALW rather than the machines and teams.

HALO trained Team Coordinator and instructors, totalling twelve military personnel (with one drop-out). The selection procedure took prior qualifications as well as gender equality into account. Although HALO stressed the importance of gender balance to AFBiH, the underrepresentation of women in the military, specifically in the logistics branch, meant that no women were sent to the training.

The training proved effective and efficient. When they were later asked whether the training courses taught sufficient knowledge and skills for the marking process, members of the marking teams at both marking sites confirmed the usefulness and completeness of the training. All team members gave well-informed and coherent answers during the whole cycle of the marking process. Attendants were confident in their knowledge of assigned tasks, the workflow, documentation and security requirements, and communication between team members. Judging by observation, the procedure ran smoothly. The marking teams know the division of labour among themselves, and an officer oversees their work. The HALO-employed Team Coordinator provides an additional level of oversight by ensuring the marking procedure is conducted in line with HALO's marking and registration standard operating procedures (SOPs). The HALO Team Coordinator also performs quality assurance procedures such as regular spot checks of the marked weapons to ensure the marking is conducted in line with HALO SOPs and international standards.

**Figure 13.** HALO BiH personnel overseeing the training process at Čapljina, December 2019, © The HALO Trust





# MARKING

## DATABASE DEVELOPMENT

In the post-war period, the AFBiH did not develop a countrywide inventory list for its SALW stockpile. Data was kept in booklets, or later on excel spreadsheets, but lacked a unified record-keeping template or system. NATO offered the AFBiH its Data Access and Retrieval for Entity Armed Forces system, but it was deemed outdated and unsuitable. Therefore, marking weapons necessitated a prior technical inventory of weapons holdings in the armed forces. A wide range of SALW needed marking—altogether 280 different types, each with a distinct design, metal and coating. In conjunction with EUFOR, HALO obtained access to weapons storage sites and was able to take photographs.<sup>10</sup> HALO then developed a comprehensive weapons catalogue, with photographs, that was used to develop the marking and registration database.

In designing a database on SALW holdings, HALO provided an answer to the shortcomings in record-keeping systems up to this point and allowed weapons to be traced back to their point of origin. Given this additional security measure, the MoD decided that all SALW holdings of the armed forces should be marked and registered irrespective of their future use.

The database system developed by HALO and PRYOR, which can make an inventory of weapons of all conditions, is the unique and central selling point for countries and national authorities interested in a holistic SALW control solution. Some key advantages of HALO's database include:

Registration no	Factory serial	Mark date	Type	Model	Original status	Move action
200000	442584	27/11/2018	Assault rifle	M16A1	S	Export
200002	442584	27/11/2018	Assault rifle	M16A1	S	Deactivated
200004	442574	27/11/2018	Assault rifle	M16A1	S	
200005	176783	27/11/2018	Assault rifle	M16A1	S	
200006	446759	27/11/2018	Assault rifle	M16A1	S	
200007	419473	27/11/2018	Assault rifle	M16A1	S	
200008	429425	27/11/2018	Assault rifle	M16A1	S	
200009	419033	27/11/2018	Assault rifle	M16A1	S	
200010	417399	27/11/2018	Assault rifle	M16A1	S	
200011	448582	27/11/2018	Assault rifle	M16A1	S	
200012	418185	27/11/2018	Assault rifle	M16A1	S	
200013	418084	27/11/2018	Assault rifle	M16A1	S	
200014	418797	27/11/2018	Assault rifle	M16A1	S	
200015	448037	27/11/2018	Assault rifle	M16A1	S	
200016	417578	27/11/2018	Assault rifle	M16A1	S	
200017	418606	27/11/2018	Assault rifle	M16A1	S	
200018	212993	27/11/2018	Assault rifle	M16A1	S	
200019	4960347	27/11/2018	Assault rifle	M16A1	S	
200020	416254	27/11/2018	Assault rifle	M16A1	S	
200021	416384	28/11/2018	Assault rifle	M16A1	S	
200022	4444942	28/11/2018	Assault rifle	M16A1	S	
200023	4475787	28/11/2018	Assault rifle	M16A1	S	
200024	4483676	28/11/2018	Assault rifle	M16A1	S	
200025	4453959	28/11/2018	Assault rifle	M16A1	S	
200026	4482614	28/11/2018	Assault rifle	M16A1	S	
200027	4175386	28/11/2018	Assault rifle	M16A1	S	
200028	429934	28/11/2018	Assault rifle	M16A1	S	
200029	4129887	28/11/2018	Assault rifle	M16A1	S	
200030	4349839	28/11/2018	Assault rifle	M16A1	S	
200031	4483527	28/11/2018	Assault rifle	M16A1	S	
200032	4150687	28/11/2018	Assault rifle	M16A1	S	
200033	4152414	28/11/2018	Assault rifle	M16A1	S	

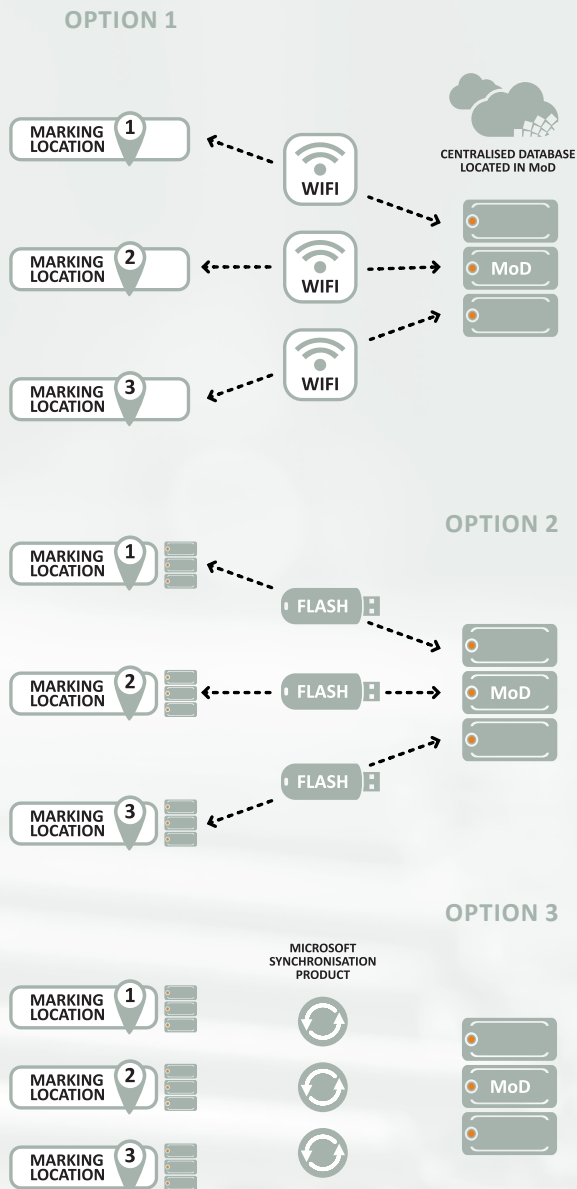
Figure 14. An example page of the bespoke registration and record-keeping software. © The HALO Trust

<sup>10</sup> EUFOR's peace enforcement mandate implies extensive rights, including the right to open of sealed boxes.



**Figure 15.** A member of the BiH Armed Forces ensures the depth of the marking meets international standards. Čapljina, February 2020, © The HALO Trust.

- **Tailor-made:** the system can be customised to suit the needs of the host country—fields can be added or removed as necessary to create a fit-for-purpose solution. The system is wholly customisable and flexible to fit a country's needs.
- **Easy to handle:** the system has an easy-to-use interface with simple clickable buttons and dropdown menus.
- **Fail safe:** the system has required fields, according to national and international standards that must be filled in before marking can commence. The system has pre-set fields that only allow certain selections for each weapon based on the weapons catalogue. For example, if marking an M-16 A1/A2, the only option for calibre is 5.56 x 45mm, therefore no mistakes can be made when filling in this field. The factory serial field must be filled in two times, and the system does not allow this field to be copy-pasted, ensuring that human error is minimised.
- **Tamper-proof:** the data cannot be tampered with, as the system does not allow amendments after the registration process is complete. Because the database is connected to the marking machine, the weapon is marked immediately after registration. This means that all weapons maintain their unique identifying marks and are not duplicated.
- **User accounts with roles and rights:** user accounts can be set up with different levels of access to allow different departments/units to change/edit the database as the MoD dictates.
- **Every entry is recorded, and deleted entries can be recovered:** this is to safeguard against errors or malicious action. The system administrator can see deleted information and who deleted the information, which ensures accountability.
- **Signing off a weapon needs to be authorised:** only accounts with authorisation can sign off on a weapon. Weapons need to be signed off if they are moved, exported or destroyed.



**Figure 16.**  
Data integration system choices

accesses the computers, they must be authorised with a one-time code by the commander at the marking location. Data kept on USB sticks as a temporary backup can be downloaded but not read without authorised access to the software. At the marking site, the laptops used for data entry are not connected to the internet, neither through a WLAN nor LAN connection, making remote access difficult if not impossible.

The MoFTER published a tender for the development of a separate registration software package to develop a programme that allows combining the individual data on a centralised web platform operated by MoFTER.<sup>11</sup> The data compiled by the HALO marking and registration project would thus be transferred to MoFTER's database at a later stage.

The integration of all marking data into a join, centralised database (with access rights for MoFTER in case of a planned sale) is not yet possible. The MoD should share the data at least once a year with MoFTER. The MoD and the Joint Staff will determine a database concept for data integration that is the best fit for their purposes. HALO has proposed three options to integrate data into one system (see Figure 16):

1. A single, centralised and cloud-based database;
2. A non-integrated, stand-alone, centrally managed database; or
3. A non-integrated, stand-alone, central database with a Microsoft synchronisation product.

HALO recommends Option 1, as a single, centralised and cloud-based database solution is the most cost effective, sustainable and easy to use and will also meet the needs of all national authorities.

Several procedures assure that data security is prioritised. The software includes a password-protected, personalised user account for each individual who passed the training course, an administrator account reserved for HALO, and authorisation accounts for officers in the Joint Staff or MoD to authorise weapons moves and exports. The software does not allow records to be altered or deleted once all data is entered, which ensures traceability and reduces the risk of diversion. PRYOR provides updates for the software and can make amendments when needed, but does not have direct access to the computers used for data entry. Each time PRYOR

<sup>11</sup> The information on MoFTER is in part based on an interview with Damir Karabodzic, Head of Department for the regulation of arms production in Sarajevo. 22 January 2019.





**Figure 17.** Registration and marking of a weapon conducted by the marking team, Rajlovac, November 2018; © The HALO Trust

## MARKING MACHINES

HALO estimates that given the 9,000 soldiers in the AFBiH, the “prospective” category will include marked weapons as part of the strategic reserve, while the surplus weapons will be either sold, donated or scrapped. Regardless of the fate of the weapon, HALO’s intervention ensures that all weapons owned by the AFBiH will be traceable back to the point of origin, thereby increasing security and transparency in the sector.

Weapons are marked with a dot peen machine. Its software uses an existing number or generates a new serial number for each weapon. HALO purchased dot peen marking machines at a price of £12,000 (approximately €14,300 at the time of writing) per item, including software. A laser-marking machine, to be acquired at a later stage for one marking site, will cost approximately €45,000. HALO recommended the use of dot peen machines for their ease of use, comparatively low cost and robustness, however, the MoD insisted on the import and use of laser-marking machines, though they are more expensive and sensitive. HALO and the MoD agreed to use a mixed-methods approach by using dot peen machines at most locations and importing a laser-marking machine for use at one location.

The machines are imported from the UK and are therefore subject to customs charges. HALO paid for the import of the first dot peen machine, allowing the marking process to begin. However, to avoid high tax rates for items the MoD and other BiH authorities will eventually own, HALO had to designate the additional machines as a donation, allowing them to be imported tax-free. This process required approval from the Council of Ministers and the Presidency and consequently took more than three months to complete.

## MARKING PROCESS

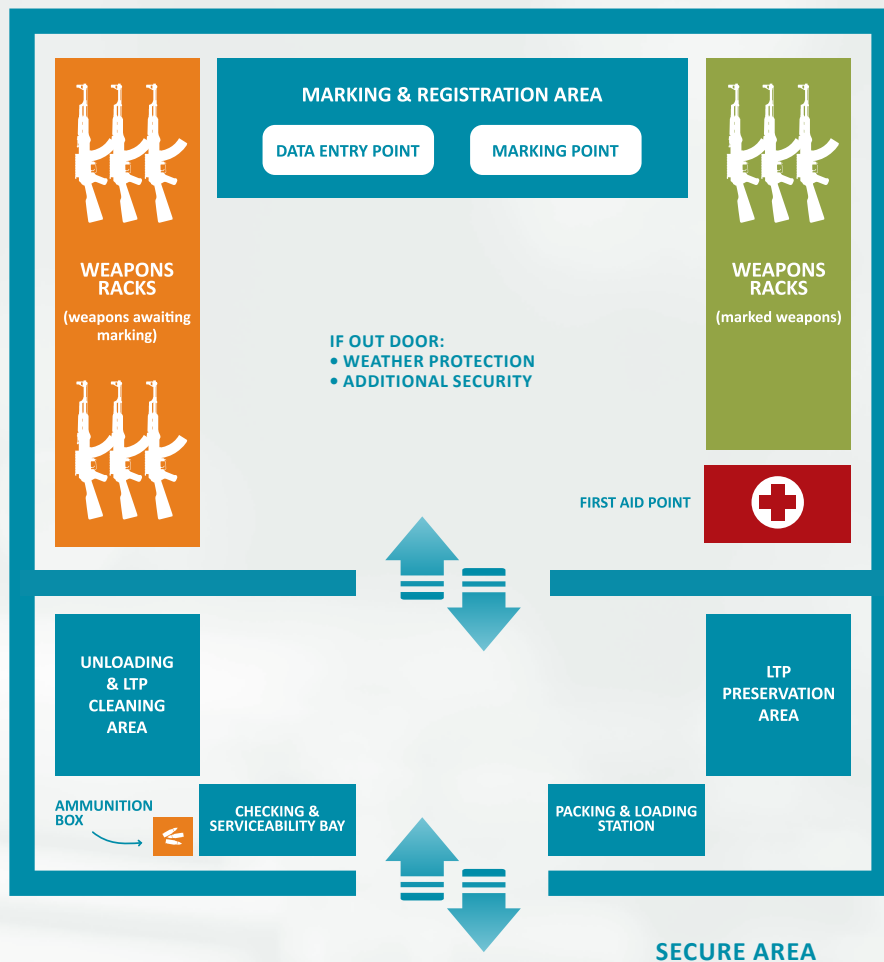
Before marking, the Joint Staff of the MoD and its Logistics Command instruct the personnel at military camps and the marking sites as to which weapons will be prepared for marking in a given period. The military camps are responsible for setting up a delivery plan in advance and communicating it with the officer in charge of the marking site. After the move is authorised, weapons are transported to the marking site, where they are taken out of the transport boxes, checked for quality and cleaned. Weapons earmarked for long-term preservation are covered in a thick solvent that solidifies over time; and therefore, need to be deep cleaned on arrival at the marking location.

The AFBiH team leader supervises the marking team; they are responsible for quality management, the security of personnel, and the security of the marking site. HALO's Team Coordinator is responsible for the marking and registration process and are trained on the marking equipment and registration database. They HALO Team Coordinator also provides equipment and consumables in coordination with the Logistics Command in order to carry out all activities in line with the correct safety measures, under appropriate working conditions, and according to relevant international standards.

**Figure 18.** AFBiH personnel marks a weapon. Banja Luka, December 2019, © The HALO Trust







**Figure 19.** Diagram showing the areas within a marking location, each location varies slightly due to the size and availability of buildings

While the observed marking sites are kept clean, the physical security of the marking sites and the perimeter appear to leave room for improvement. At one site, the boxes with weapons were kept in a caged compartment while, in another site, no similar compartments were in place. Installing cameras, adding steel doors at all entrances, and enhancing the perimeter fences would improve the physical protection of marking sites.

HALO covers the costs for the HALO-employed Team Coordinator and a vehicle, as well as personal protective equipment for all team members. HALO also provides necessary equipment such as weapons oil, solvent for cleaning weapons, and, in one case, heating devices for the marking location. The MoD covers all other running costs, including those of military personnel at the marking sites.

Overall, the marking teams have achieved the average rate of 50 weapons marked per day per team (250 per week, 1,000 per month). By the end of January 2019, a total of 3,900 weapons were marked by both teams, and by the end of December 2019, a total of 29,018 had been marked.



# LESSONS LEARNT AND CONCLUSIONS

## PREPARATION

The preparation phase, including training and the acquisition of equipment and resources, was an essential aspect of HALO's marking and registration project. HALO's national partners expressed their appreciation and acknowledgment of HALO's contribution, which was based on sensitivity and understanding of local problems, ensuring the working relationship was grounded in mutual trust rather than commandeering and controlling oversight.

## MEANS-END RATIO

Measured against its purpose—and in terms of efficiency—HALO's marking and registration project in BiH has been a success. The preparation phase, specifically the logistical coordination and design of the database, proved to be more demanding than the marking procedure itself. The transfer of HALO's experiences elsewhere therefore need to consider the substantial preparatory legal and political input as well as the logistical and training requirements. HALO demonstrated a principled and professional approach while solving problems in a flexible and innovative manner.

## ASSESSMENT OF THE PROBLEM

The experience of BiH demonstrates the importance of prioritising the identification and disposal of surplus, unstable and unsafe ammunition and weaponry at an early post-conflict stage. It is crucial to establish appropriate planning and management systems to ensure the safety and security of items in storage. Any country strategy must be based on a prior assessment of the size and nature of the SALW problem and the subsequent marking and registration needs.

## INTERNATIONAL COMMUNITY

The political will from a national government with continued support from the international community, including its expertise, political leverage and commitment to cover costs, is critical for the accomplishment of the mission. A prerequisite for success in this case has been the support and engagement of EUFOR's Commander, EU political representatives, and the defence attaché community in BiH.

## COMMITMENT

The AWE Master Plan in BiH played a decisive role in committing the national stakeholders to addressing the SALW problem. The inclusion and engagement of all relevant actors, the setting of priorities, and choice of a train-and-equip programme were crucial to moving from intention to action. In this regard, BiH adopted legislation (on exports, imports and marking) complying with EU norms, which served as the underlying framework for HALO's marking and registration project.

## NATIONAL OWNERSHIP

A sustainable LCMA system is only successful if the state assumes ownership and responsibility for stockpile management. National experts with knowledge of stockpile management played a key role in securing agreement on the implementation of the SALW strategy within the AWE Master Plan. Since 2012, BiH, with the support of EUFOR, has significantly built up its own PSSM capacities, of which HALO's project directly contributed to these efforts.

## TRACING

HALO improved BiH's capacity to trace weapons by enabling MoFTER to exercise its control over weapons holdings and exports, thus improving record-keeping practices. The bespoke software protects against the corruption or manipulation of records in the database and allows for a stolen weapon to be traced back to its origin and owner. In addition, reporting records can show the last person who took inventory of the weapon or authorised its move.

## INTEGRATING DATA SYSTEMS

Any transfer of the BiH experience should take into account the development of a logistical information system capable of integrating various datasets on marked weapons in the armed forces and other security services, as well as imports and exports. The training packages offered should be expanded beyond the registration and marking to the whole system of storekeeping.

## EXTENSION TO THE POLICE AND INDIVIDUALS

It is expected that the experiences and insights gained from HALO and the AFBiH will be expanded to the police of BiH at a later stage. In spring 2019 there was no central database for the police's weapons holdings. HALO suggested to train and equip two marking teams for the police (and asked the US State Department for a \$300,000 grant); however the authorities have not yet agreed to an expansion of HALO's marking and registration project to the police. The proven success of this project shows potential for using a similar model for registering privately owned weapons in the future.

## COMMUNICATION AND OUTREACH

HALO's project was visible to its donors, who were regularly informed about the project's progress on trainings and operations at marking sites, and donor visibility was ensured. A successful SALW strategy, however, should include a broader information policy, including a media strategy and public awareness raising campaigns at the local level and in schools. Although confidentiality and security concerns limit the amount of public outreach that can be done in relation to this project, HALO regularly communicates with donors to ensure they receive up-to-date information.

# LIST OF ACRONYMS AND ABBREVIATIONS

AWE	Ammunition, Weapons, and Explosives
BA	Bosnian Army
BiH	Bosnia-Herzegovina
CIAT	Countering Illicit Arms Trafficking Project
EUFOR	European Union Force in Bosnia and Herzegovina
HALO	Hazardous Area Life-support Organisation
LCMA	Life Cycle Management of Ammunition
MoD	Ministry of Defence
MoFTER	Ministry of Foreign Trade and Economic Relations
OSCE	Organization for Security and Co-Operation in Europe
PSSM	Physical security and stockpile management
SALW	Small arms and light weapons
SEESAC	South Eastern and Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons
UNDP	United Nations Development Programme
UNSCAR	United Nations Trust Facility Supporting Cooperation on Arms Regulation



BiH should develop marking requirements for state-owned weapons, seized or confiscated weapons, weapons earmarked for deactivation and weapons earmarked for destruction, according to BiH's legal obligations regarding the marking of SALW under the Firearm Protocol and (partially) in compliance with the International Tracing Instrument (ITI) and the Modular Small-arms-control Implementation Compendium (MOSAIC). See below for a table detailing the various obligations relating to weapons marking and registration under the BiH Marking Law (no. 83/16). BiH Marking Law (no. 83/16).

ARTICLE	OBLIGATION
3	Section E of article 3 rules that manufacture marks are to contain simple geometric symbols with numeric or alphanumeric code. Sections F and G hold that import and transfer or export marks are to be printed in alphanumeric code.
9	Article 9 dictates that all SALW must be marked at time of manufacture. Article 9 also dictates that the country of manufacture, the manufacturer's label, the year of manufacture and the serial number should be marked.
10	Article 10 regulates that manufacture marks should be placed in a prominent location that is on essential structural components of a weapon. An 'essential structural component' is defined as every element or spare part, which is uniquely made for the weapon and is key for its effective functioning (including the barrel, frame, slide, breechblock).
11, 12 (import)	All SALW must be marked at time of import. Markings should indicate the country of import (BA = BiH) the year of import and a unique marking in case the firearm does not bear manufacture marks. Assigns the international ISO code for BiH: BA; as well as the name of the designated stockholder, containing a unique geometric symbol or alphanumeric code, with a minimum of two characters and in line with the authorisation obtained from MoFTER.
14 (export)	All SALW must be marked at time of transfer or export. a1) pertains to transfers for civilian use: the marking should include the country mark (BA), the designated stockholder, the year of transfer or export and the ordinal number of transfer or export. a2) foresees a symbol designating the holder of the stockpile at the time of transfer or export.

**Table 3.** BiH national law on weapons marking

# ANNEX B

INTERNATIONAL AND REGIONAL INSTRUMENTS	DATE OF ADOPTION	ENTRY INTO FORCE	BIH STATUS
OSCE Document on Small Arms and Light Weapons	24 November 2000; reissued 20 June 2012 (FSC Decision No. 3/12)		Politically binding
The United Nations Convention against Transnational Organised Crime (UNTOC also known as the Palermo Convention)	15 November 2000 (A/RES/55/25)	29 September 2003	Legally binding; Ratified on 24 April 2002
Protocol against the Illicit Manufacturing and Trafficking in Firearms, their Parts and Components and Ammunition (also known as the Firearms Protocol)	31 May 2001 (A/RES/55/255)	3 July 2005	Legally binding; Accession on 1 April 2008
The United Nations Programme of Action to Prevent, Combat, and Eradicate the Illicit Trade in Small Arms and Light Weapons in all its Aspects (also known as UN PoA)	24 December 2001 (A/RES/56/24)	3 July 2005	Politically binding
The International Instrument to enable states to identify and trace in a Timely and Reliable Manner, Illicit Small Arms and Light Weapons (also known as the International Tracing Instrument; ITI)	8 December 2005 (A/CONF.192/15)		Politically binding
The European Firearms Directive	18 June 1991; amended on 21 May 2008 (91/477/EEC)	17 October 1991	Politically binding
Arms Trade Treaty (ATT)	2 April 2013 (A/RES/67/234B)	24 December 2014 (A/RES/67/234B)	Legally binding, 25 September 2014
Sustainable development Goals target 16.4	25 September 2015		Politically binding

**Table 4.** *Small Arms Survey, BiH Regulatory Refinement Analysis, Carapic, J. et al (2017)*

# ANNEX C

YEAR	DESCRIPTION OF INCIDENT
2009	About 8,500 rounds of ammunition and hand grenades disappeared from the ASS in Busovaci (Azinovic, et al., 2012, pp. 101-102).
2011	Alleged disappearance of 11,000 tonnes of TNT explosives from sites guarded by the AFBiH (Azinovic, et al., 2012, pp. 101-102).
2011	47 pistols went missing at the WSS 'TBT' in Visoko, the value of guns was estimated at BAM 84,600 (Filipovic, 2011). Interlocutors suggest that some breech-blocks were also stolen from the artillery pieces stored at the site.
2013	The disappearance of a guided anti-tank missile type FAGOT from the ASS Kula 2, in Mrkonjic Grad (Doznajemo, 2013; Klix, 2013).
2013	SIPA discovered a cache of weapons buried near the town of Tešanj (Jahic, 2014, p. 146).
2013	A year and a half after Binas (Bugojno) received funds from the MoD BiH to destroy explosive devices, dozens of tonnes were found in its warehouses (CIN, 2012; Jahic, 2014, pp. 146).
2015	The discovery of the use of Bosnian Kalashnikov ammunition in the Charlie Hebdo attacks in Paris (Economist, 2016).
2017	The discovery of missing weapons from the military barracks 'Bilecki Borci', in Bileca, including: 6 MAKAROV 9mm pistols; 8 APi M84 7.65mm pistols; 8 frames for APi M84 7.65mm; 8 large frames for APi M84 7.65mm; and 3 frames for the MAKAROV 9mm pistol (Vijesti, 2017).

**Table 5.** Cases of diversion of ammunition and weapons from Ammunition Storage Sites (ASS) and Weapons Storage Sites (WSS)

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