CONVENTIONAL AMMUNITION DIVERSION

A supply chain security approach to international control measures

November 2018

CONFLICT ARMAMENT RESEARCH

itrace
European Union Funded

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Published online by Conflict Armament Research

First published in November 2018

This document has been produced with the financial assistance of the European Union and the German Federal Foreign Office. The contents of this document are the sole responsibility of Conflict Armament Research and can under no circumstances be regarded as reflecting the positions of the European Union or the German Federal Foreign Office.

Design and layout: Julian Knott (www.julianknott.com)

Copy-editing: Tania Inowlocki

Front cover image: PG-9 projectiles (of mixed origin) recovered from Islamic State forces. Documentation by a CAR field investigation team in Mosul, Iraq, on 14 November 2016.

Inside cover image: A PG-7PM 40 mm primary propelling charge recovered from Islamic State forces. Documentation by a CAR field investigation team in Ramadi, Iraq, May 2017.

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ABBREVIATIONS

ATT	Arms Trade Treaty
CAR	Conflict Armament Research
DRA	Diversion risk assessment
DVC	Delivery verification certificate
EUC	End-user certificate
EUROPOL	European Union Agency for Law Enforcement Cooperation
GGE	Group of Governmental Experts
IATG	International Ammunition Technical Guidelines
IED	Improvised explosive device
ITI	Instrument to Enable States to Identify and Trace, in a Timely and Reliable Manner, Illicit Small Arms and Light Weapons
INTERPOL	International Criminal Police Organization
NRC	Non-retransfer clause (in an end-user certificate)
PDC	Post-delivery controls
POA	United Nations Programme of Action on Small Arms to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons
PSSM	Physical security and stockpile management
UEMS	Unplanned explosions at munitions sites

DEFINITIONS

CONVENTIONAL AMMUNITION	A complete device, such as a missile, shell, mine, or demolition store, that is charged with explosives, propellants, pyrotechnics, or initiating composition for use in connection with offence, defence, training, or non-operational purposes, including parts of weapon systems containing explosives (UNODA, 2011, IATG 01.40, para. 3.58).
DIVERSION	Any loss of weapons or ammunition from state control and their resulting acquisition by unauthorised users, including insurgent and terrorist forces and other non-state armed groups, or supply to state and non-state parties prohibited under law (CAR, 2018b, p. 3).
COUNTER-DIVERSION (MEASURES)	Measures taken to prevent diversion; often comprised in broader 'counter-proliferation' efforts that focus on addressing illicit proliferation, which is a consequence of diversion.

INTRODUCTION

High-intensity armed conflict significantly increases ammunition consumption. While weapons are durable, and may remain in service for long periods of time, ammunition needs to be replenished at a far faster rate. As a result, measures taken to control unauthorised access to ammunition—such as its acquisition by insurgent or terrorist forces—can have a greater *immediate* impact on conflict intensity than measures enacted to control weapons alone.

Nevertheless, ammunition remains only lightly addressed in most international arms control agreements. It currently falls outside of the formal scope of the United Nations Programme of Action on Small Arms (POA) and of the International Tracing Instrument (ITI), and it is missing from key aspects of the Arms Trade Treaty (ATT).[1] Measures to address ammunition diversion—its loss from state control and acquisition by unauthorised users—are thus missing from all of the major international arms control agreements.

Moreover, the only international instrument to focus exclusively on ammunition, the International Ammunition Technical Guidelines (IATG), addresses only one aspect of ammunition diversion: its loss due to ineffective stockpile management. By contrast, weapon-focused international arms control initiatives, such as the ATT and POA, address a range of factors leading to the diversion of weapons throughout the supply chain—from the point of manufacture, through licensing, transfer, and stockpiling, to the point of use or disposal. This report profiles these dynamics as they relate to ammunition.

Specifically, the report presents a general overview of the factors that lead to ammunition diversion and how they relate to one another. It makes the case for a supply chain security approach to controlling ammunition diversion, arguing that efforts to strengthen parts of the supply chain are not, and should not be considered, independent of one another. That is, fixing one link in the chain—or even a handful of them—does not address the problem as a whole.

Instead, measures taken to address one weak aspect of a supply chain can, and should, prompt efforts to fix inadequacies further down the chain. Thus, for example, when a state rejects an export licence on the grounds that

THE INTERNATIONAL AMMUNITION TECHNICAL GUIDELINES (IATG) ADDRESSES ONLY ONE ASPECT OF AMMUNITION DIVERSION: ITS LOSS DUE TO INEFFECTIVE STOCKPILE MANAGEMENT

▼ Boxes of 7.62 × 54R mm ball ammunition. Documentation by a CAR field investigation team in Syria, February 2015

▲ A 7.62 × 39 mm ammunition cartridge produced in 2015. Documented by a CAR field investigation team in Iraq, 2016

the recipient has ineffective stockpile security measures in place to prevent diversion, such a decision should ideally feed back to encourage national or international programming to enhance stockpile security in that recipient state. Knowledge of stockpile security conditions in the export destination, likewise, should be available to national export licensing authorities when they make diversion risk assessments (DRA).

This report concludes that, in combination, two critical but under-addressed elements underpin effective supply chain security:

- thorough pre-export supply chain controls; and
- monitoring and diagnostic activities.

The former element ensures that exporting states adopt control measures, which enable them to anticipate and react to potential weaknesses further along the supply chain; the latter detects diversion from the supply chain and prompts states to enact the control measures.

Pre-export supply chain controls are relatively simple to implement and often hinge on legal or contractual obligations made as a condition of export. Monitoring and diagnostics is a growing field of activity—encompassing UN sanction monitoring, diversion reporting by organisations such as Conflict Armament Research (CAR), international law enforcement, and physical security and stockpile management (PSSM) programming.

However, national export licensing agencies do not fully exploit information on ammunition diversion gathered during these activities. International arms control agreements, more critically, fail to acknowledge their importance. This report concludes that, while weapon-specific instruments such as the ATT, ITI, and POA address points of weakness in the weapon supply chain—albeit to varying degrees—they fail in almost all respects when it comes to ammunition.

Viewing ammunition from a supply chain security perspective is a structured way to assess the current state of international ammunition control measures and a firm basis for introducing coordinated corrective measures.

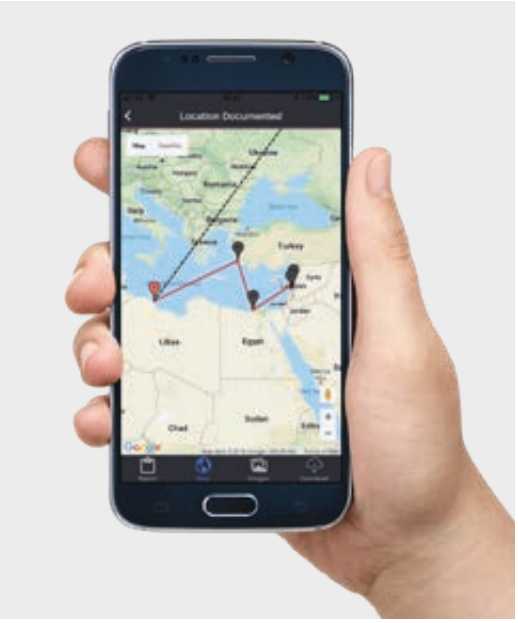
This report first presents findings on the broad factors that lead to ammunition diversion and where they occur in the supply chain. It then assesses the limits of current international efforts to address these problems and, in response, suggests a supply chain security framework for enhancing international ammunition controls.

PRE-EXPORT SUPPLY CHAIN CONTROLS ARE RELATIVELY SIMPLE TO IMPLEMENT AND OFTEN HINGE ON LEGAL OR CONTRACTUAL OBLIGATIONS MADE AS A CONDITION OF EXPORT

CONFLICT-ZONE DATA IN SUPPORT OF TIGHTER AMMUNITION CONTROLS

This section presents a series of findings drawn from materiel that CAR field investigation teams documented in conflict-affected countries.[2] The teams' activities fall within the framework of the iTrace® project, which the European Union funds and the German government and CAR co-finance. CAR has formally traced all cases of unauthorised retransfer presented below with the assistance of the manufacturing states concerned.

The findings illustrate a range of weaknesses in ammunition supply chain security, which have resulted in nearly 7,500 cases of ammunition diversion since 2011, as documented by CAR.[3] Collectively, they underscore the need for more effective and coordinated controls along the full extent of the ammunition supply chain.



CAR's iTrace® project—a public portal that plots the transfer history and supply route of each item documented by CARs field investigators.

An RHEAT-9MA 73 mm warhead. Documentation by a CAR field investigation team in Iraq, 2017.

INEFFECTIVE PSSM SUSTAINED BY UNRESTRICTED AMMUNITION SUPPLY

PSSM practices remain ineffective in a majority of states, leading to the accumulation of unstable ammunition and diversion. Many states lack the structural capacity and accountability systems to ensure that ammunition remains under the control of national defence and security forces. In these contexts, procurement can pave the way for large-scale diversion (see Figure 1).

The recovery of rockets plotted in Figure 1 took place in a single state over a period of three years, from early 2013 to early 2016. The rates of recovery vary over time, but more than 60 per cent of the total diverted to terrorist forces in that country originated in national stockpile. The primary factor that led to their diversion was ineffective PSSM.

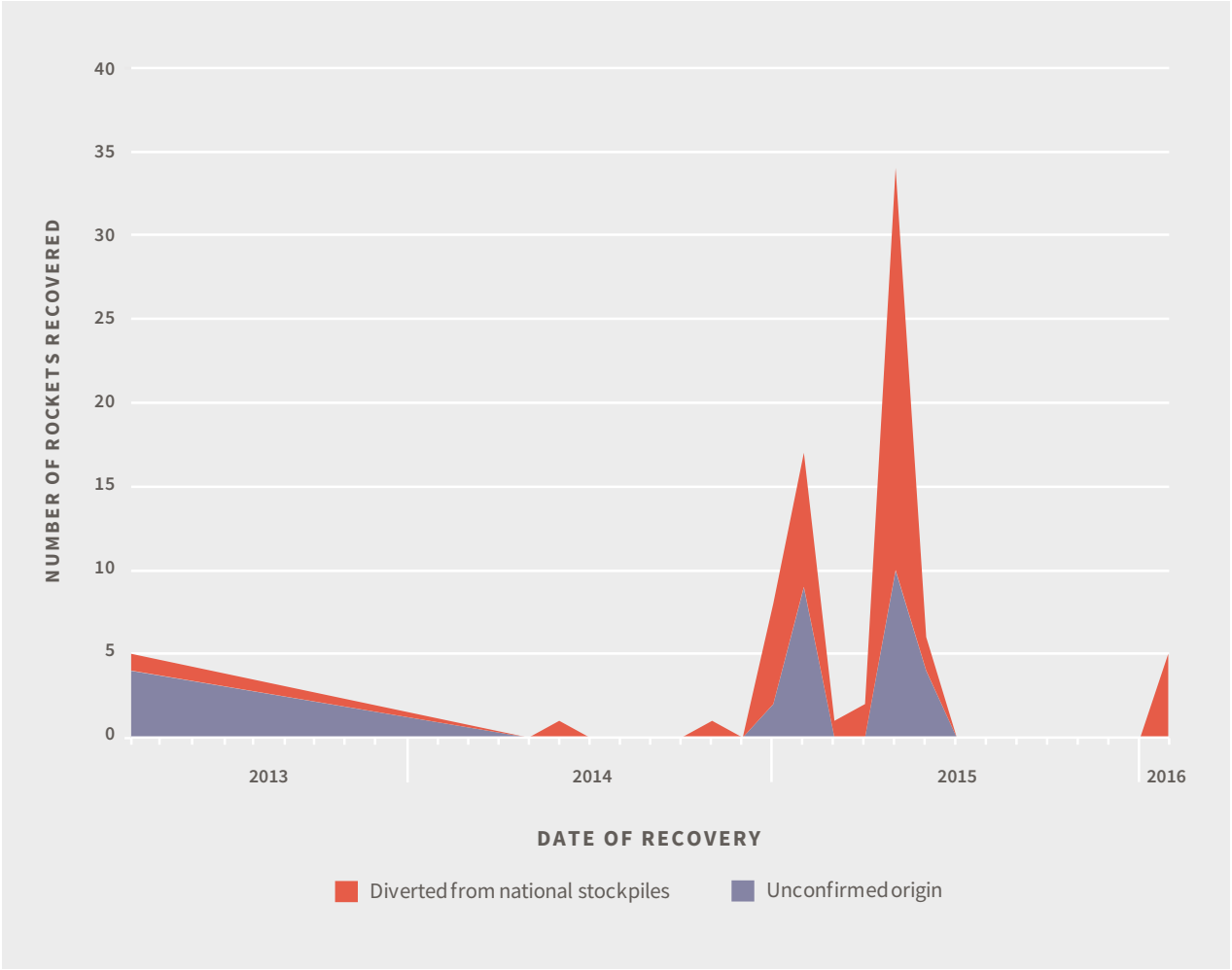
Globally, CAR estimates that ineffective PSSM contributes 12 per cent of diverted materiel to illicit users.[4] The situation varies by country and region, but it is clear that many states continue to grant export licences for ammunition destined for states with ineffective PSSM practices.

Such licensing not only deters recipient states from reviewing and enhancing PSSM practices, but also compounds existing PSSM problems, as further imports enlarge the stockpile of unsecured or unsafe materiel.

PSSM
Physical security and stockpile management

Figure 1

Origins of rockets recovered from factions aligned with al-Qaeda in the Islamic Maghreb in a West African state, by month of recovery, March 2013–January 2016



Source: Analysis of 80 S5 and 9M22 rockets presented in CAR (2016)

NEW AMMUNITION IN THE HANDS OF TERRORIST AND INSURGENT FORCES

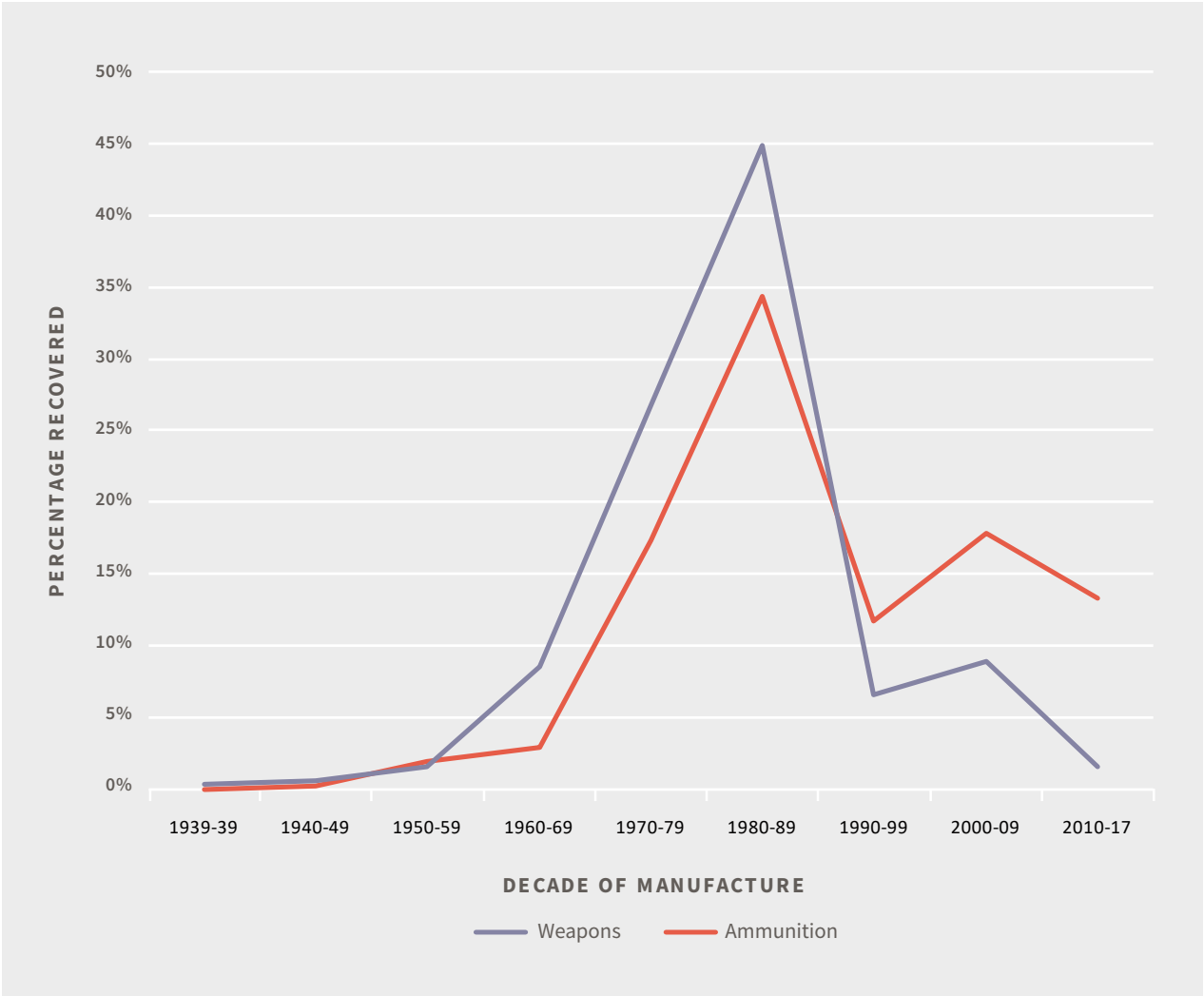
While non-state forces deploy diverse arms, ranging from newly manufactured to old 'legacy' weapons, their ammunition holdings are frequently much newer. Ammunition recovered from Islamic State forces, for example, is skewed significantly towards recent manufacture (see Figure 2).

It follows that diverted 'new' ammunition supplies play a major role in sustaining the activities of such groups and, consequently, that controlling ammunition supplies is likely to curtail the acquisition and use of materiel more rapidly than similar restrictions applied to weapons.

The diversion of the 40,000 plus units of conventional ammunition listed in Figure 2 resulted from factors such as: ineffective PSSM among states in the region; transfers to non-state forces with few controls on the physical security of ammunition; and unauthorised retransfers, including violations of non-re-transfer clauses (NRCs) in end-user certificates (EUCs). These factors exemplify weaknesses across the full ammunition supply chain, ranging from inadequate risk assessment prior to export and a lack of restrictive end-user certification processes on the part of exporters, to ineffective PSSM practices among export recipient states.

Figure 2

Weapons and ammunition recovered from Islamic State forces, 2014–17, by decade of manufacture



Source: Analysis of 42,816 units of weapons and ammunition presented in CAR (2017)

EXCESS AMMUNITION IN SERVICE WITH NON-STATE FORCES

Contemporary insurgencies demonstrate that non-state forces have developed improvised weapon systems that are explicitly designed to launch or fire modified conventional ammunition, confirming that although these forces may experience weapon shortages, their access to supplies of 'off-the-shelf' ammunition is far less restricted.

NRC
Non-retransfer clause

Figure 3 presents the relative proportions of weapons and ammunition recovered from Islamic State forces for two weapon systems—RPG-7 rocket launchers and SPG-9 recoilless guns. It reveals a clear preponderance of ammunition in contrast to the weapons required to launch or fire it.

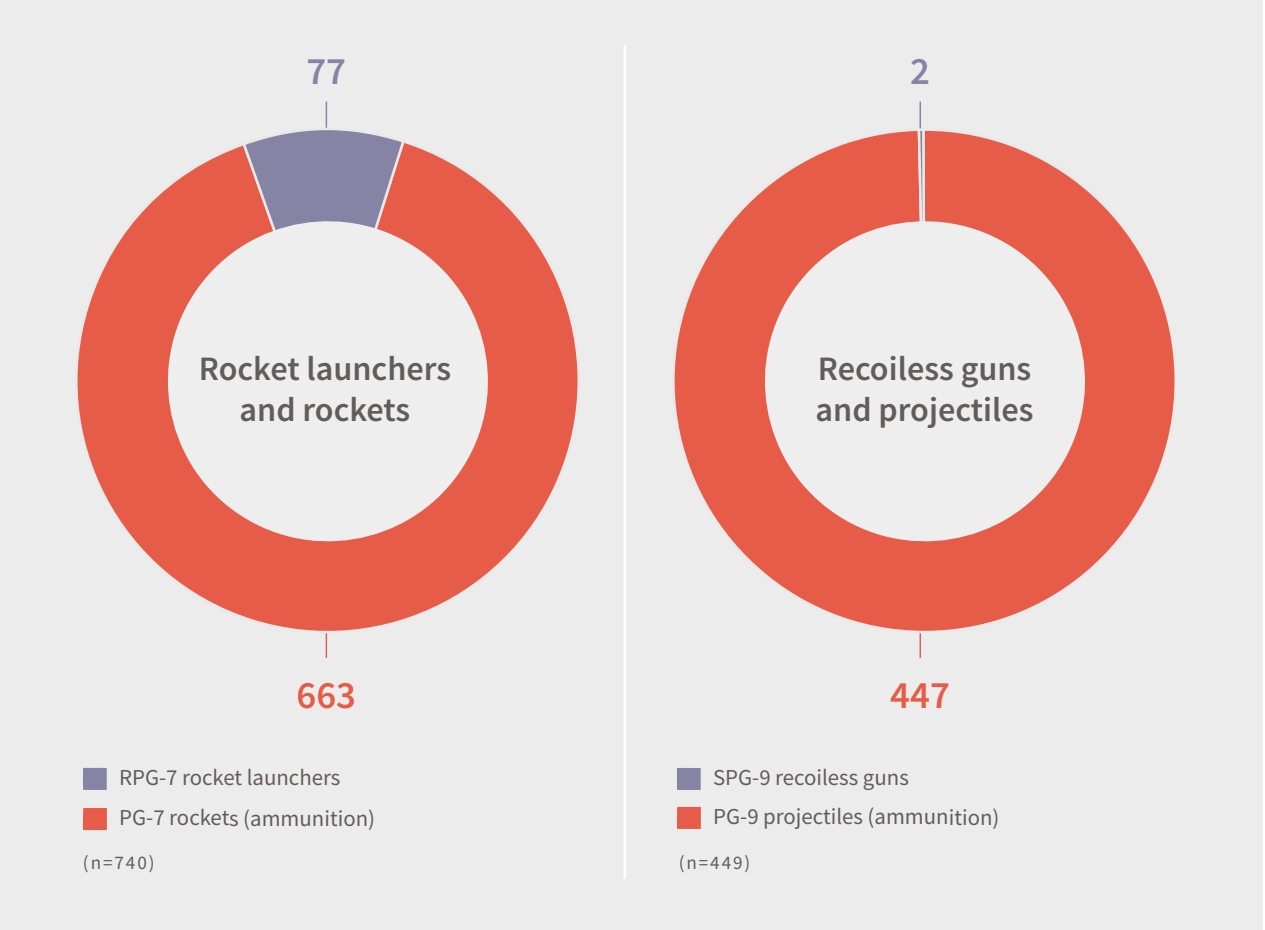
Islamic State forces in Iraq and Syria have responded to weapon shortages by improvising weapons to launch conventional, factory-manufactured ammunition, which they hold in abundance (see Figure 4).

The diversion of the rockets and projectiles described above occurred in the following circumstances: After authorised export by a state, the receiving state transferred the materiel to non-state forces via a third state intermediary and without the authorisation of the original exporter. These non-state forces lost control of the materiel. Islamic State forces acquired the ammunition and modified it for use in their improvised weapon systems.

In these cases, NRCs in EUCs might have deterred re-export by the receiving state, or permitted the original exporter to halt exports when it became aware of unauthorised retransfer.

Figure 3

Ammunition availability by specific weapon type, based on materiel recovered from Islamic State forces, 2014–17



Source: CAR (2017)

Figure 4

Improvised weapons designed by Islamic State forces to launch some of the conventional ammunition referenced in Figure 3

Sources: CAR (2017; 2018a, p. 4)

CONVENTIONAL AMMUNITION USED IN IMPROVISED EXPLOSIVE DEVICES (IEDS)

The development of IEDs by non-state forces is a growing issue of international concern in numerous conflict-affected states, including Afghanistan, Iraq, Nigeria, Syria, and Yemen.[5] Conventional ammunition and military explosives provide non-state forces with easy options for the development of IEDs (see Figure 5).

The conventional ammunition and explosives pictured in Figure 5 were diverted due to a combination of PSSM failings and the collapse of national defence and security forces.

In each case, internationally recognised terrorist forces subsequently acquired and used the materiel in attacks on civilian and military targets.

There is a strong case to be made for prioritizing enhanced ammunition controls as a critical element of counter-terrorism efforts worldwide (in much the same way that states and regional organisations have sought to regulate access to explosive chemical precursors, such as nitrate-based fertilisers).

Figure 5

Factory-manufactured C4 explosive employed by al-Qaeda in the Arabian Peninsula (left) and OF-26 projectiles used by Islamic State forces in the production of IED main charges (right)

Sources: Documentation by CAR field investigation teams in Aden, Yemen, on 6 December 2017 (left) and in al-Qaim, Iraq, on 23 January 2018 (right)

CONCLUSIONS ON THE DYNAMICS BEHIND DIVERSION

The cases described above reveal a range of supply chain security problems that have resulted in ammunition diversion. In some cases, several such weaknesses have combined to allow unauthorised users to acquire conventional ammunition. The cases are illustrative of both supply-side weaknesses, such as exporters' incomplete knowledge of the onward supply chain or the integrity of recipients, and demand-side failings, including unauthorised retransfer and ineffective PSSM processes.

International arms control agreements, as currently framed, are unable to address these shortcomings.

The following two sections of this report specify what prevents these instruments from mitigating supply- and demand-side weaknesses and consider options for enhanced ammunition controls.

▼ Mortar rounds of mixed caliber, recovered from Islamic State Forces. Documentation by a CAR field investigation team in Mosul, Iraq, on 14 November 2016.

THE STATE OF INTERNATIONAL PROGRESS

Ammunition has remained largely off the international arms control agenda because certain UN member states are opposed to its discussion within the context of small arms and light weapons control initiatives. This opposition has spilled over into debates on control of conventional arms—the majority of which are weapon systems that are larger than small arms and light weapons—such as during the drafting of the ATT. The origin and substance of these political objections do not fall within the scope of this policy paper, but the following aspects are relevant to this discussion:

- The 2001 POA, which is a small arms and light weapons control instrument, does not include any reference to ammunition because some states objected to its inclusion. The states provided complex reasoning for their decision to reject ammunition from the scope of the POA, including the fact that, in the main, small-calibre ammunition is not marked with a unique or collective identifier—a serial or lot number, respectively. They argued that, as a result, it is not possible to identify and trace the provenance of ammunition, nor to inventory it like weapons. This argument omits the fact that many ammunition types that fall under the small arms and light weapons category—notably grenades, rockets, and missiles—are marked with lot and batch numbers, and that some *do* feature unique serial numbers, which can be traced.[6]
- The negotiations that produced the 2005 ITI were closely linked to the POA debate. They similarly led to the exclusion of ammunition from the ITI's formal scope, because the same states objected to its inclusion on the same grounds.

THE 2001 POA, WHICH IS A SMALL ARMS AND LIGHT WEAPONS CONTROL INSTRUMENT, DOES NOT INCLUDE ANY REFERENCE TO AMMUNITION BECAUSE SOME STATES OBJECTED TO ITS INCLUSION

▼ A 7.62 × 39 mm ammunition cartridge. Documentation by CAR field investigation teams in Iraq, December 2014.

SURPLUS WAS PROBLEMATIC FOR ANY STATE: IT EITHER CREATED SUPPLY-SIDE PROBLEMS OR BECAME UNSTABLE, POSING AN EXPLOSIVE OR CONTAMINATION RISK

- Possibly because of the fallout from the POA and ITI debates, and certainly due to objections by the same UN member states, the 2013 ATT only partially addresses ammunition. The treaty explicitly excludes ammunition from some of its key provisions, such as its articles on controlling diversion.[7]

These developments form the backdrop against which ammunition was 'orphaned' in international arms control debates and subsequent agreements. Recognising that ammunition constitutes a critical problem, a collective of UN member states formed in 2006 to look closely at ways to address ammunition diversion internationally. They sought to do so in a way that would free ammunition from increasingly contentious debates in the UN.

The decision taken by these states was to address ammunition control measures within the framework of an issue that was—for almost all UN states—an incontrovertible problem, but that was distinct from, and less contentious than, the UN small arms and light weapons control debates. That issue involved the accumulation of surplus conventional ammunition and the problems arising from it. Surplus was problematic for any state: it either created supply-side problems (as states were tempted to transfer their surplus to irresponsible purchasers) or it became unstable, posing an explosive or contamination risk to all states and societies that could not manage it properly. A spate of depot explosions at ammunition storage facilities—so-called unplanned explosions at munitions sites (UEMS)—lent further support to the initiative.[8]

Following a UN resolution, the UN Group of Governmental Experts (GGE) on Conventional Ammunition in Surplus was formed to enhance collaboration on the issue.[9] In 2008, under Germany's leadership, the group purposefully addressed ammunition within the framework of PSSM processes.

THE SCOPE AND LIMITATIONS OF THE 2008 GGE-INITIATED PROCESS

The 2008 GGE and the resulting International Ammunition Technical Guidelines (IATG) provide a comprehensive framework for national action to address threats arising from the unsafe and insecure storage of conventional ammunition (UNGA, 2008; UNODA, 2011).

IATG
International Ammunition Technical Guidelines

The IATG apply the fundamental principles of ammunition management to address: 1) unsafe storage practices, which lead to ammunition instability and threats to public safety, and 2) unsecured ammunition, which is at risk of diversion through loss, theft, or seizure by unauthorised users. In this respect, the IATG present effective PSSM processes as a system—one that is designed to address often interdependent safety and security risks through measures such as accounting, record-keeping, and surveillance and proof.

If they were to be comprehensively applied to national stockpiles, the measures contained in the IATG would simultaneously lower the risk of ammunition instability, which can lead to catastrophic explosion and contamination, and the likelihood of stockpile diversion. While full national implementation of the IATG would address most of the ammunition instability risks faced by national governments, however, it would leave many avenues for conventional ammunition diversion unaddressed.

This gap reflects the fact that PSSM-specific measures to mitigate conventional ammunition diversion do not address weaknesses in the broader ammunition supply chain, which extends from the point of ammunition manufacture to the point of use or disposal. Effective PSSM may be one critical element within ammunition supply chain security, but it cannot be considered independently of controls enacted elsewhere in that supply chain; in practice, its effectiveness is largely a measure of such controls.

MEASURES TO ENCOURAGE FULL NATIONAL IATG IMPLEMENTATION

Since 2008, most of the states in which CAR field investigation teams have detected critically ineffective PSSM have done little to implement IATG processes. Moreover, these states continue to acquire ammunition with few restrictions—despite the threats that their stockpiles present to public safety and the persistence of ineffective security measures, which increases the risk of diversion.

One key obstacle to more widespread national uptake of IATG processes is that states have not associated PSSM—one mechanism to address aspects of conventional ammunition diversion—with more broadly focused international supply-side control instruments. This disjuncture is apparent in three areas:

- **Diversion risk assessments.** States review the strength of prospective export recipients' PSSM processes during DRAs made prior to licensing ammunition exports. Such measures offer a powerful incentive for recipient states to implement effective PSSM measures in conformity with IATG prescriptions—or else risk export denials. No international instruments currently make direct reference to PSSM measures within the range of factors that states need to consider when making DRAs.
- **Restrictive retransfer clauses in EUCs.** Exporting states use non-retransfer clauses to dissuade the onward transfer of weapons by recipient states without their prior authorisation. They enable exporting states to conduct DRAs on recipients, with the expectation that the ammunition will remain in the hands of those recipients and not be retransferred subsequently to states with ineffective PSSM. Few international arms control instruments make direct reference to NRCs in EUCs and, as noted above, PSSM does not factor into existing instruments that reference diversion risks.[10]
- **Post-delivery controls.** These measures can raise an exporting state's confidence in the accuracy of DRAs that led it to grant export licences. They range from delivery verification certificates (DVCs), which confirm whether the stated end user (as described in an EUC) received the transfer, to post-delivery inspection regimes, which evaluate, among other things, the physical security of the ammunition at the place of receipt. While a number of states enact post-delivery controls bilaterally, international arms control instruments make few direct references to them.

Mixed small-calibre ammunition recovered from Islamic State forces. Documentation by a CAR field investigation team in Mosul, Iraq, in November 2017.

MOVING BEYOND THE IATG

Figures 6–10 present simplified flow charts of ammunition diversion throughout the international supply chain to illustrate how counter-diversion measures, encompassing supply-side controls and PSSM measures, combine to curtail diversion risks.

To help categorise these controls in their operational contexts, this section presents a series of scenarios that are based on real-world cases.[11]

Scenario 1: EUCs without non-retransfer clauses

The exporting state (E) makes a full DRA of the recipient state (R^1), judges that the recipient's PSSM measures are effective, that it has no known past history of intentionally diverting ammunition, and concludes the export (see Figure 6).

However, the EUC issued by the recipient state does not include an NRC. This allows the recipient state to retransfer the ammunition without the consent of the exporting state. On re-export, the recipient state (R^1) fails to make a full DRA and:

1) retransfers the ammunition to an unauthorised non-state recipient (U^1); or

2) retransfers the ammunition to another national recipient (R^2) with ineffective PSSM measures, which leads to stockpile diversion (through loss and theft) to non-state recipients (U^2).

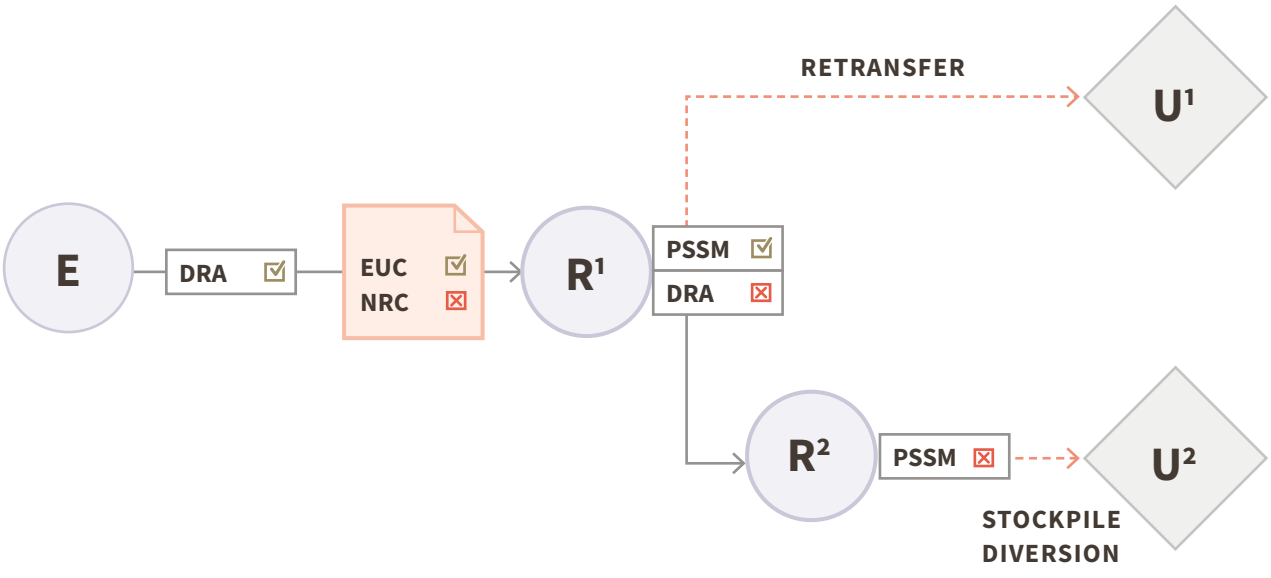
DRA
Diversion risk assessment

The absence of an NRC effectively offloads the exporting state's responsibility to assess the risks of ammunition diversion prior to export—its due diligence—onto the recipient state (R^1). Furthermore, it illustrates that PSSM counter-diversion measures (which are effective in state R^1) are not sufficient to prevent diversion later in the supply chain. In this analysis PSSM-specific counter-diversion measures and supply side-controls are interdependent.

Counter-diversion measures available to the exporting state in such a case include NRCs in EUCs, as well as DRAs that consider, at a minimum, whether the recipient state: 1) is providing materiel to another state, particularly one involved in protracted armed conflict; 2) is supporting a foreign insurgency or rebellion; or 3) has a history of diverting materiel to non-state users.

Figure 6

EUCs without non-retransfer clauses



Scenario 2: In-transfer diversion under a false EUC

The exporting state (E) makes an incomplete DRA of the declared recipient state (R^3), judges that the recipient's PSSM measures are effective, but fails to conduct checks with the stated end user to affirm the authenticity of the EUC (see Figure 7).

Cases such as this may involve a false EUC (forged or issued unlawfully in the name of the end user) or falsely completed end-user certification (genuine end-user certificates that are used to exaggerate end-user purchases and to divert 'surplus' materiel).

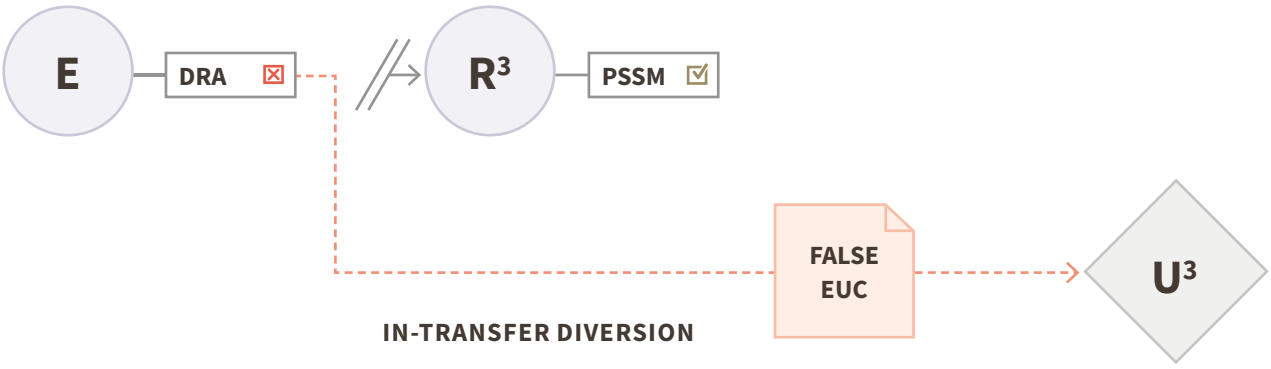
The exporter authorises the transfer and the goods are diverted to non-state recipients (U^3).

The strength of the declared recipient state's (R^3) PSSM measures are, in this case, irrelevant because the transfer bypasses the state in question.

In such cases, the exporting state might employ counter-diversion measures such as DRAs that cover, at a minimum, 1) the structure and functioning of the stated end user (encompassing factors such as corruption or mismanagement); and 2) past cases of diversion resulting from the false use of EUCs by transfer parties. The exporting state might further insist on post-delivery controls, such as DVCs or post-delivery inspection, as a condition for export.

Figure 7

In-transfer diversion



Scenario 3: No PSSM assessment made during DRA

The exporting state (E) makes an incomplete DRA of the recipient state (R^4): it fails to assess diversion risks associated with ineffective PSSM in the recipient state (see Figure 8).

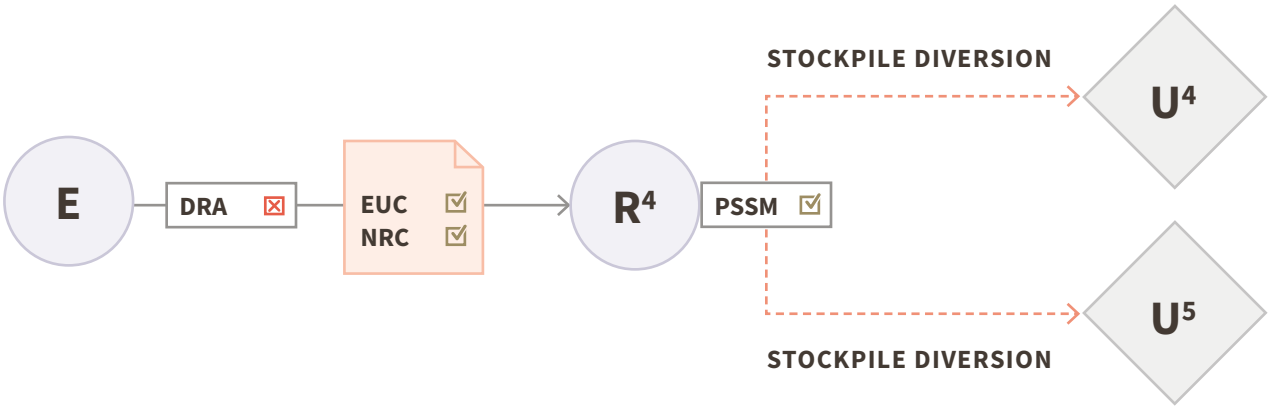
The exporting state is satisfied with the results of the DRA, which follows the very basic criteria outlined in major international instruments (for assessing the risk of retransfer to unauthorised users). It thus authorises the export.

The PSSM failings in the recipient state (R^4) are such that the materiel is diverted to multiple end users, for example through loss, theft, or unauthorised entry into ammunition storage facilities and subsequent acquisition by unauthorised end users.

In such cases, the exporting state might use counter-diversion measures such as DRAs that, at a minimum, take into consideration: 1) the results of previous PSSM assessments conducted by, or for, the state in question (notably pertaining to the specific end user of transferred materiel); and 2)pre-export licensing PSSM assessments designed to evaluate the strength of PSSM measures in place prior to granting export licences. The exporting state might further insist on post-delivery controls, such as DVCs or post-delivery inspection, as a condition for export.

Figure 8

DRA does not address PSSM diversion risks



Scenario 4: Effective, interdependent PSSM and supply-side measures

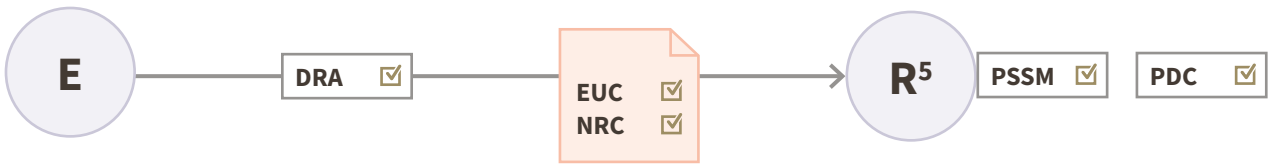
As illustrated in Figure 9, the exporting state (E) undertakes a complete DRA of the recipient state (R^5). This assessment draws on all available information pertaining to the recipient state's capacity and willingness to retain control over the transferred ammunition.

The DRA encompasses: 1) inquiries into possible past cases of diversion involving the prospective recipient state or parties to the transfer; 2) export licences previously denied to the recipient on the grounds of diversion risk; 3) the recipient state's role in potential regional insecurity (including support for other states involved in armed conflict or support to non-state forces); 4) the results of past national, regional, and international assessments of the strength of PSSM measures in the recipient state; and 5) possible pre-export physical inspections by the exporting state's diplomatic personnel of the end-user's physical storage facilities and ammunition management systems.

In this scenario, the exporting state employs NRCs in EUCs as a further guard against diversion. In addition, the exporting state requires post-delivery controls (PDC), including that the end user issue DVCs upon receipt of the materiel and that the exporter conducts randomised, post-delivery inspections—consent to which is also a precondition for export.

Figure 9

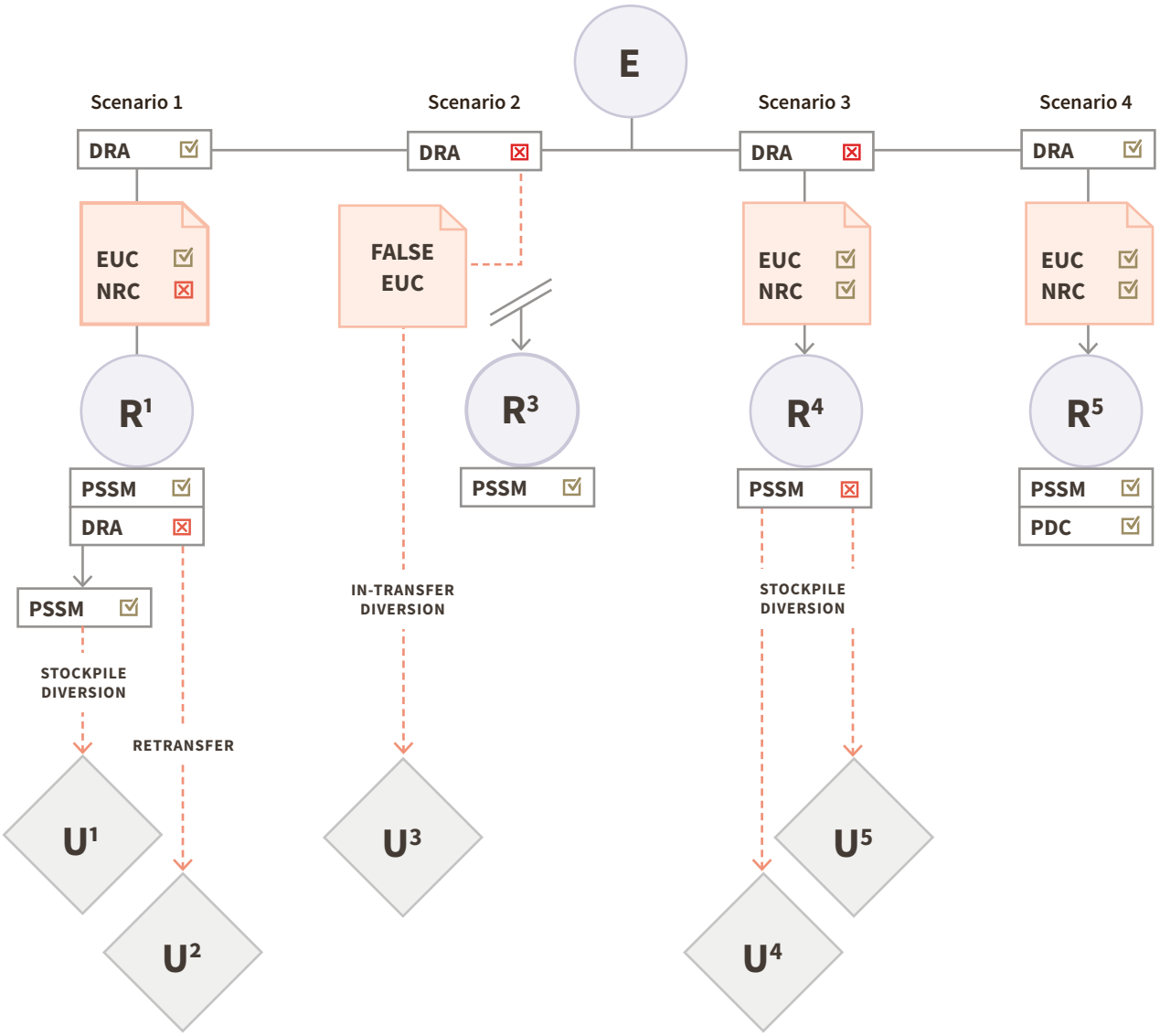
Interdependent supply chain security controls



▼ A Type 69 40 mm rocket. Documentation by a CAR field investigation team in Syria, December 2014.

Figure 10

PSSM and supply side counter-diversion measures



LEGEND

ENTITIES

- E — Exporting state
- R¹ — National recipient (authorised)
- U¹ — Non-state recipient (un-authorised)

TRANSFERS

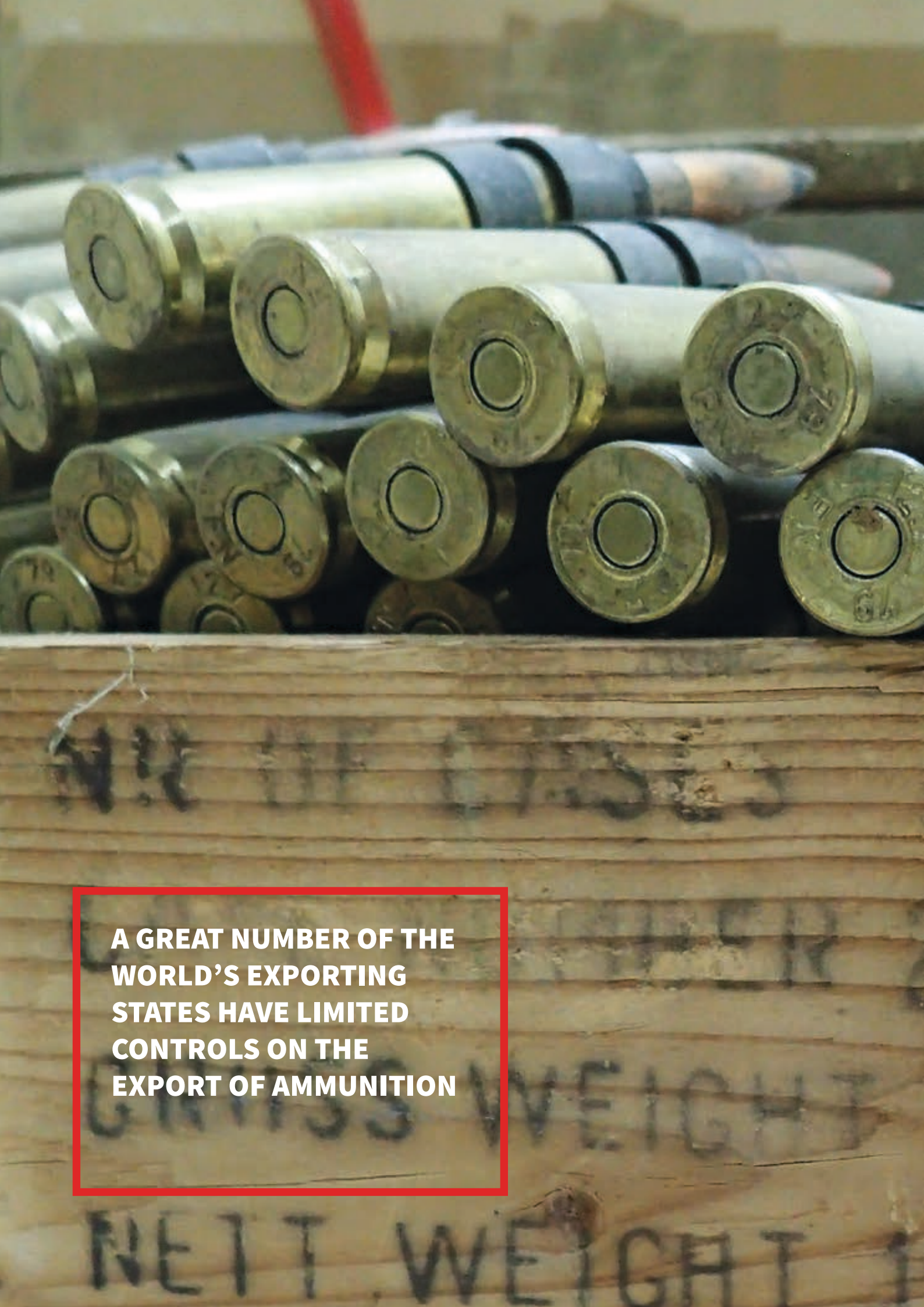
- Authorised
- Diverted

CONTROL MEASURES

- DRA ☒ — Diversion risk assessment (incomplete)
- DRA ☑ — Diversion risk assessment (extensive)
- PSSM ☒ — PSSM systems (ineffective)
- PSSM ☑ — PSSM systems (effective)
- PDC ☑ — Post-delivery controls (effective)

DOCUMENTATION

- EUC ☑ NRC ☑ — End-user certificate **with** non-retransfer clause
- EUC ☑ NRC ☒ — End-user certificate **without** non-retransfer clause
- FALSE EUC — False or fraudulent end-user certificate (includes 'over ordering')



A GREAT NUMBER OF THE WORLD'S EXPORTING STATES HAVE LIMITED CONTROLS ON THE EXPORT OF AMMUNITION

THE CASE FOR FULL AMMUNITION SUPPLY CHAIN SECURITY

The term 'ammunition supply chain security' encompasses a set of measures that, collectively, are designed to anticipate, detect, react to, and redress supply chain weaknesses.

Ammunition supply chain security can be divided into two independent, yet mutually reinforcing streams of control measures:

- thorough pre-export supply chain controls; and
- monitoring and diagnostic activities (see Figure 11).

▲ Sealed crates of 14.5 × 114 mm ammunition with black paint applied to conceal shipping and consignee information. Documented in South Sudan on May 2016.

◀ A crate of 12.7 mm ammunition. Documented in Sebha, Libya on July 2015.

PRE-EXPORT SUPPLY CHAIN CONTROLS

On the pre-export supply chain control side, national arms export control agencies are currently constrained in the degree to which they can conduct DRAs. Their work is complicated by a general lack of transparency about the movement of materiel among conflict-affected states and recipient states that experience—or actively engage in—diversion. As a result, national export licensing authorities making DRAs usually struggle to find accessible indicators of diversion risks, which underscores the importance of monitoring and diagnostic activities.

Given the paucity of information available to national export licensing authorities, it is arguably easier to implement legal or contractual pre-export controls (such as NRCs) on ammunition exports than to upgrade the DRA process. These measures are designed to provide exporting states with 'reactive controls'—specifically, the legal or contractual grounds on which to halt or review further exports if they establish that diversion has occurred further along the supply chain and in violation of pre-export agreements, such as an NRC.

The application of such reactive controls is currently limited among exporting states, as some are not aware of or interested in finding out about developments following export—which would alert them to NRC violations. States' use of reactive controls may increase through enhanced monitoring and diagnostics, which represent critical means of alerting states to diversion that may otherwise remain undetected.

NATIONAL EXPORT LICENSING AUTHORITIES MAKING DRAs USUALLY STRUGGLE TO FIND ACCESSIBLE INDICATORS OF DIVERSION RISKS

Figure 11

Central aspects of ammunition supply chain security

MONITORING AND DIAGNOSTIC ACTIVITIES

On the monitoring and diagnostics side, most states claim that resource constraints prevent post-delivery controls, such as regular post-export inventories of transferred materiel. These controls are costly because they require that states mobilise diplomatic and technical personnel to visit and physically inspect ammunition storage facilities in recipient states.[12]

However, such cost limitations do not prevent national export licensing authorities from engaging with a range of agencies and monitoring bodies to gather data on diversion risks when making DRAs. These monitoring and diagnostic activities include information exchange with:

- **law enforcement (primarily police) agencies with the capacity to identify and trace ammunition** that has been seized or recovered from unauthorised end users. Investigations by INTERPOL and EUROPOL are increasingly coordinated internationally and provide information on major diversion cases and parties involved. In many conflict-affected states, however, national-level information on diverted materiel is less reliable. Police forces are often among the first 'casualties' of armed conflict; they are either 'excluded' from conflict-affected areas that come under military control, or they collapse in the face of major insurgency or rebellion. Beyond police forces in resource-rich or highly developed countries, very few agencies have adopted standardised processes for collecting weapon-related evidence or formally tracing weapons or ammunition as a matter of course during criminal investigations.[13]

- **UN sanction monitoring groups and other bodies that identify and trace weapons and ammunition.** UN sanction monitoring groups have restrictive mandates that generally focus on states under embargo and constrain their investigations to weapons, ammunition, and related materiel that enter (and sometimes exit) the territories of the states under review. While this means that UN arms embargo monitoring mechanisms lack the scope required to provide exporting states with a consistent measure of supply chain weaknesses at the regional level, they do provide critical information on past cases of diversion and parties involved. Broader, global monitoring mechanisms, such as CAR's iTrace® system, provide a growing baseline of information on the diversion of ammunition—including ammunition traced with the cooperation of national authorities.[14]

- **organisations engaged in PSSM programming with the potential to provide insight into the physical security and accountability structures in place to prevent ammunition diversion in recipient countries.** PSSM programming is generally the most informative means of assessing a state's capacity to maintain control over weapons and ammunition over time. However, PSSM programming always occurs following the invitation of the host government and usually takes place within the framework of relatively self-contained, domestically focused activities, such as constructing or rehabilitating police armouries, providing safe storage solutions for dangerously stored military ammunition stockpiles, or securing specific weapon systems that are attractive to terrorist or insurgent groups. Since PSSM programmes are largely conceived—by implementers and recipients alike—as domestic affairs, there has been little consideration of how they 'fit' into an international framework of potential ammunition controls. Information gathered during PSSM programmes is likely to be of great benefit to national export licensing agencies making DRAs and could be considered under information sharing agreements.

Four different rockets packed within heat-sealed polyethylene bags sharing identical features. Documentation by a CAR field investigation team in Iraq, May 2017.

CONCLUSION

▲ Small-calibre ammunition. Documentation by a CAR field investigation team following state-sponsored diversion in East Africa, December 2014.

A great number of the world's exporting states have limited controls on the export of ammunition. This situation persists because of a failure to monitor and diagnose diversion. With little detection of diversion, until very recently, most states were largely unaware that their exports had been diverted and hence few had reason to enquire what was happening further along the supply chain and develop appropriate controls.

It is only in the past decade that exporting states have become more aware of the risks, frequency, and impact of post-export diversion, largely as a consequence of the growing reliability of findings made public by traditional monitoring bodies, such as UN sanctions groups, and organisations such as CAR.

Just as containing the spread of a disease is predicated on first establishing its transmission vectors, so too must international counter-diversion efforts be built on an understanding of the mechanics of the problem they are meant to address. The international community has not enabled the current regime of arms control instruments to play such a role with respect to the illicit proliferation of ammunition.

To begin to fill the gap, this report identifies the 'transmission vectors' of illicit ammunition: the main weaknesses in its supply chain. In so doing, it takes a close look at how these weaknesses interrelate with the controls applied to fix them.

The report argues that the states with the greatest power to exert influence over supply chain security are the suppliers—the origins of a chain that often extends many thousands of kilometres and many decades into the future. The primary imperative is for states to fix supply chain problems in their earliest stages, that is, before ammunition changes hands so many times as to make ascertaining its whereabouts all but impossible for the original exporter.

An essential fix requires that exporters put in place legal or contractual controls to prevent export recipients from retransferring ammunition without their prior consent. In practice, exporters can do so by inserting NRCs into EUCs, so as to retain the authority to decide whether a prospective recipient would be a suitable custodian of ammunition.

Given that numerous states periodically lose ammunition due to ineffective PSSM, or deliberately divert it to unauthorised users, NRCs are fundamental to any exporting state's efforts to exercise due diligence over ammunition exports.

WITH LITTLE DETECTION OF DIVERSION, UNTIL RECENTLY, MOST STATES WERE LARGELY UNAWARE THAT THEIR EXPORTS HAD BEEN DIVERTED

MONITORING AND DIAGNOSTICS IS THE NECESSARY COUNTERPART TO PRE-EXPORT SUPPLY CHAIN CONTROLS

Likewise, DRAs represent an effective way to test the onward supply chain for weaknesses before granting ammunition export licences. Although a lack of transparency may prevent a state from implementing a DRA to the fullest degree, the measure can shed some light on past activities of the parties in the supply chain—brokers, shippers, financiers, and end users—and their willingness or capacity to ensure that exported ammunition remains in the hands of authorised users.

These two pre-export supply chain controls are anticipatory and reactive: DRAs assess future diversion risks, while NRCs, when violated, can be cited as grounds to deny further exports. To be effective, however, each depends on the capacity and willingness to detect 'when things went wrong' in the supply chain.

Monitoring and diagnostics is, therefore, the necessary counterpart to pre-export supply chain controls, even if it is among the weakest components of current international counter-diversion initiatives.

Put simply, conflict-affected states are, by their nature, opaque places—often weakly monitored by the news media, hostile to external observers, and suffering shifting and unpredictable power dynamics. Yet, despite these constraints, a large and growing pool of virtually untapped monitoring and diagnostic resources is available to export licensing authorities—whether as a source of information for DRAs or for use in reporting on the diversion of exported ammunition.

CAR has reported on nearly 7,500 cases of diversion that have taken place since 2011, providing a clear indication of the growing strength of monitoring and diagnostics in this field. The activities of UN sanction monitors and the growing capacity of international law enforcement bodies also contribute critical data on parties involved in diversion, which can be of key importance to export licensing agencies.

Coupled with these activities, PSSM programmes worldwide provide a clear—albeit untapped—resource for gauging the robustness of PSSM in recipient states prior to export.

For the time being, these monitoring and diagnostic resources remain poorly connected to supply-side ammunition controls—whether in terms of their limited use by national export licensing authorities or, critically, the scant attention they have received in international arms control debates. In basic terms, compliance with agreements and laws requires monitoring, not only to verify that conditions are met, but also to ensure that lessons are learned and applied effectively.

A tin of 12.7 × 108 mm armour-piercing, incendiary ammunition. Documentation by a CAR field investigation team in Iraq, July 2016.

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CAR HAS REPORTED ON NEARLY 7,500 CASES OF DIVERSION THAT HAVE TAKEN PLACE SINCE 2011

ENDNOTES

1 In long form, the agreement titles are: The United Nations Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons and the International Instrument to Enable States to Identify and Trace, in a Timely and Reliable Manner, Illicit Small Arms and Light Weapons.

2 Since 2011, CAR has worked in more than 25 conflict-affected countries around the globe and documented approximately 550,000 illicit weapons and units of ammunition recovered from unauthorised users.

3 Data held in CAR's internal database. The total number of diversion cases (weapons and ammunition) in CAR's systems exceeds 12,000 and is growing steadily. For details, see CAR (2018b, p. 3).

4 See CAR (2018b, p. 9). Data on ammunition diversion by volume almost certainly underestimates the problem because the 'diversion of ammunition resulting from inadequate PSSM is extremely difficult to verify, primarily because states rarely maintain detailed inventories of ammunition. They tend to record ammunition in bulk, by production lot, rather than by unique identifying numbers assigned to each round' (CAR, 2018b, p. 11).

5 For very recent findings on IED use by non-state forces, in particular, see the growing deployment of landmine-type IEDs—technically, victim-operated IEDs, employing pressure plates—in Yemen, as documented by CAR (2018c).

6 Most small-calibre cartridges are not marked with lot or batch numbers, which means that identifying a loose cartridge uniquely (and attributing its supply to a single shipment) is impossible. However, manufacturers generally mark small-calibre ammunition packaging (cartons, boxes, and crates) with lot numbers and other identifying information. As a result, small-calibre ammunition that remains stored in its original packaging can usually be traced. Furthermore, a small number of producers lot-mark (by stamping or laser etching) small-calibre cartridges, which allows for the tracing of individual rounds of ammunition.

7 The ATT cover ammunition only within the scope of Article 6 (on prohibitions) and Article 7 (on export and export assessment). Importantly, Article 11 (on diversion) omits ammunition entirely. As a result, the ATT's prescriptions address neither ammunition diversion, nor the diversion risk assessments that are required to minimise it.

8 See, for example, the Small Arms Survey's UEMS handbook (Berman and Reina, 2014).

9 The GGE was established pursuant to General Assembly Resolution 61/72 (UNGA, 2006).

10 In international arms control instruments, NRCs are referenced only in guideline documents for the implementation of agreements, rather than in the texts of the agreements themselves. These documents include: the EU User's Guide to the Council Common Position on the control of military exports, which explicitly references a 'clause prohibiting re-export of the goods covered in the end-user certificate' (Council of the EU, 2015, ch. 1, s. 1.3); the Organization for Security and Co-operation in Europe's Best Practice on Export Control of Small Arms and Light Weapons Export Control, which is not ammunition-specific (OSCE, 2003, s. IV(7)); and the Wassenaar Arrangement's 'Best Practice Guidelines on Subsequent Transfer (Re-export) Controls for Conventional Weapons Systems' (WA, 2011).

11 The dynamics presented in Scenarios 1–3 are common to a wide range of transfers investigated by CAR since 2011. They encompass significant export control failings on the part of exporting states, unauthorised retransfers by recipient states, and state-sponsored diversion in numerous cases. The purpose of the scenarios is to explain the effects of weaknesses in supply chain security, rather than to identify malpractice by specific states.

12 Under the terms of Council Decision 2017/2283, CAR provides post-delivery inspection controls, on request, to all 28 EU member states (Council of the EU, 2017).

13 Organisations such as the United Nations Office on Drugs and Crime (UNODC) and CAR are currently working to improve weapon identification and tracing among defence and security forces worldwide. To the same end, CAR provides training and mentoring programmes to these forces.

14 In particular, CAR provides country statistics on diversion (categorised into post-manufacture, post-export, and post-re-export diversion) through its iTrace® system and conducts export assessments at the request of EU member states. To contact CAR's 24/7 Support Centre, EU member states can send a message to support@conflictarm.com.

7.62 x 54R mm ammunition documented in Um Serdiba, Sudan, June 2016.

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Address
CAR Headquarters
PO Box 74665
London
WC1A 9PE
United Kingdom

Telephone
+44 (0)20 3355 6575

Email
admin@conflictarm.com

Twitter
@conflictarm

Facebook
ConflictArm

Instagram
@carinthefield

www.conflictarm.com