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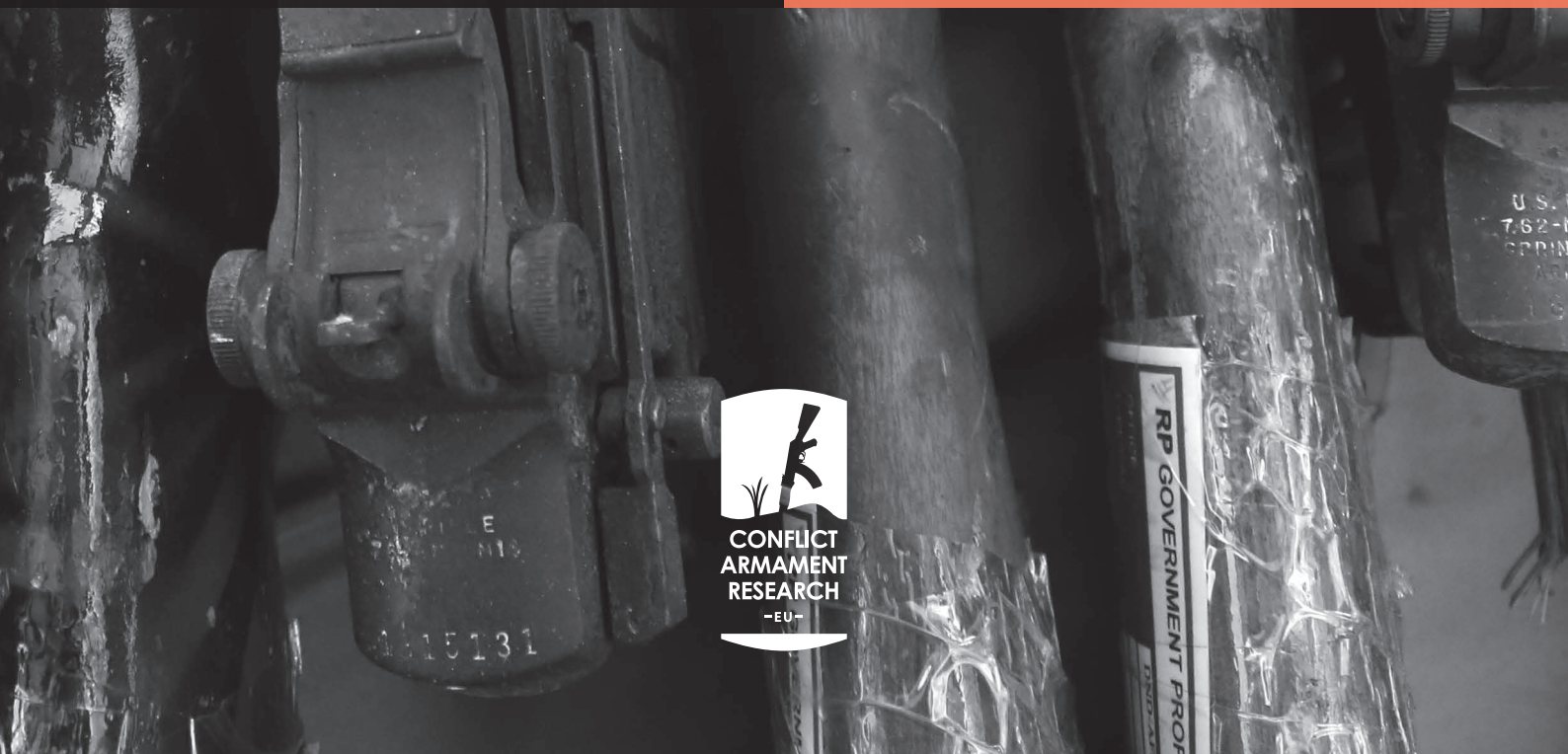
DIVERSION DIGEST

A Case for Tracing

An analysis of: Conflict Armament Research's trace response archive; the processes that underpin tracing; and tracing as a tool to combat diversion.

IN THIS ISSUE



CONFLICT ARMAMENT RESEARCH
-EU-

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

Copy-editing by Tania Inowlocki

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INTRODUCTION

When Conflict Armament Research (CAR) field investigation teams document weapons, ammunition, and related materiel recovered from unauthorised users in armed conflicts, they do so in order to trace their supply chains.

Tracing weapon supply chains from the point of origin to the point of recovery is a powerful counter-diversion tool. The executive and legislative arms of the European Union direct CAR to trace the provenance of military and related materiel circulating in conflict-affected areas of the world.[1] Tracing, together with the investigations it supports, reveals vulnerabilities in supply chain security, exposes weaknesses in national trade controls, and identifies malicious actors and entities. The tracing process also fosters valuable information-sharing partnerships among states, industry, and civil society.

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The 2005 UN International Tracing Instrument (ITI), which is the defining instrument in this field of activity, describes tracing as:

> *the systematic tracking of illicit small arms and light weapons found or seized on the territory of a State from the point of manufacture or the point of importation through the lines of supply to the point at which they became illicit (UNGA, 2005, para. 5).*

ABBREVIATIONS

CAR
Conflict Armament Research

EU
European Union

IED
Improvised explosive device

INTERPOL
International Criminal Police Organization

ITI
International Instrument to Enable States to Identify and Trace, in a Timely and Reliable Manner, Illicit Small Arms and Light Weapons (International Tracing Instrument)

SOP
Standard operating procedure

UNODC
United Nations Office on Drugs and Crime

While CAR's tracing operations extend well beyond the ITI's scope, which is restricted to small arms and light weapons, the essential tracing processes outlined in the ITI apply as much to the practicalities of tracing major conventional weaponry, or even commercial products, as they do to small arms and light weapons.

In this, the third issue in CAR's Diversion Digest series, CAR explores its entire trace request archive, which comprises more than 3,000 trace requests. It analyses a large body of data, highlighting unique cases to illustrate the value of timely and comprehensive trace investigations in preventing the diversion of illicit materiel.

This Digest illustrates:

- how tracing, which has traditionally been conducted by national law enforcement agencies that focused solely on crime weapons, can be applied in situations of major armed conflict;
- how and to what effect an organisation that is not a national law enforcement body conducts its tracing operations; and
- what lessons can be drawn from the limitations and opportunities experienced by CAR in the field of conflict tracing.

CAR explores its entire trace request archive, which comprises more than 3,000 trace requests.

CAR METHODOLOGY

CAR field investigation teams document illicit weapons, ammunition, and related materiel in conflict-affected locations and trace their supply sources.

The teams inspect weapons in a variety of situations—whether recovered by state security forces, surrendered at the cessation of hostilities, cached, or held by insurgent forces. They document all items photographically, date and geo-reference the documentation, and incorporate contextual interview data gathered from the forces in control of the items at the time of documentation. CAR also works with contracted local data collectors, whom it has trained to support data gathering in sensitive locations.

CAR occasionally uses information and photographs from social media as background information but does not base its investigations on them, since the provenance of such data is often difficult to verify. Moreover, open-source information does not always provide the detailed physical elements—notably external and internal markings—required to trace weapons and ammunition.

CAR traces only a portion of the items it documents in the field. This traced materiel is usually of particular significance to CAR investigations. If numerous individual items were to be traced, an excessive burden would need to be placed on the national governments and manufacturing companies concerned. Furthermore, some of the documented items are untraceable. For example, most loose small-calibre ammunition lacks the lot numbers required to identify it in production, sales, and export records. Similarly, records pertaining to the production, sale, and export of many older weapons are no longer available. CAR supplements formal weapon tracing by analysing physical evidence gathered from the weapons themselves and from related materiel; obtaining government, commercial, transport, and other documents; and interviewing individuals with knowledge or experience of the equipment transfers under scrutiny.

CAR retains all documents, interview notes, emails, recordings, photographs, and other data obtained from third parties in a secure, encrypted format.

CAR TRACES ONLY A PORTION OF THE ITEMS IT DOCUMENTS IN THE FIELD. THIS TRACED MATERIEL IS USUALLY OF PARTICULAR SIGNIFICANCE TO CAR INVESTIGATIONS

Wherever relevant, CAR publications refer to these items as being 'on file'. To protect its sources, CAR refrains from publishing all details about them and the circumstances under which it acquired certain items. CAR's sources provide all such items willingly and with full knowledge of their use by CAR. CAR does not undertake undercover work or use other clandestine investigation methods. For privacy reasons, CAR publications do not refer to private individuals by name, except in the case of well-known public officials.

CAR has contacted all governments and companies substantively referenced in this report. Unless specified, no reference to the names of countries of manufacture, manufacturing companies, intermediary parties, distributors, or intended end users implies illegality or wrongdoing on the part of the named entity. CAR would like to acknowledge the cooperation of the governments, companies, and individuals whose responses to CAR's trace requests and provision of other information have been critical in its ongoing investigations.

KEY FINDINGS

TRACE REQUESTS CONTRIBUTE INFORMATION IN SUPPORT OF RISK ASSESSMENTS

Trace requests are not merely requests for information; they provide formal, independent notice of suspected illicit activity. They alert national authorities to post-export diversion—which might otherwise go undetected—and provide export licensing authorities with a **diversion risk metric** that can assist them in conducting due diligence before approving or denying an export request.

THE SUBSTANCE OF A TRACE RESPONSE AFFECTS THE SUCCESS OF INVESTIGATIONS

Most responses received by CAR (70 per cent) are 'permissive' and provide a basis for further investigations. An additional 5 per cent of responses are 'expansive' and provide either the full information requested or more. **CAR's overall (global) response rate is 40 per cent.** Whether permissive or expansive, thorough responses describe the supply chain in detail, help to verify and authenticate transfer documents, identify the source of diversion, and thus inform the development of targeted counter-diversion measures. In 25 per cent of CAR's cases, however, responses are 'dissuasive' and fail to provide any information required to launch further investigations.

MOST RESPONSES RECEIVED BY CAR (70 PER CENT) ARE 'PERMISSIVE' AND PROVIDE A BASIS FOR FURTHER INVESTIGATIONS

TRACE REQUESTS EMPOWER EXPORT LICENSING AUTHORITIES

A formal trace request may give national export licensing authorities reasons to **request more detailed information from a prospective exporter.** In discussions with CAR, many national authorities reported that they would have been unaware of an entity's previous role in diversion had a trace request not alerted them to it.

TRACING AMMUNITION AND RELATED MATERIEL IS JUST AS IMPORTANT AS TRACING WEAPONS

With respect to supplies to an insurgent or terrorist force, **all types of materiel are significant,** even if they are largely omitted from recognised tracing guidelines. Tracing aims to establish where the object of a trace request was procured, yet also potentially where other items were procured, which can inform due diligence on a wide range of commodities—whether subject to export controls or not.

EFFECTIVE RECORD-KEEPING IS A CRITICAL PREREQUISITE FOR TRACING

Unique identifying marks (such as serial numbers) and collective identifiers (such as lot numbers) applied to materiel ensure its traceability, but only when they are registered in effective record-keeping systems. Inaccessible records obstruct successful tracing. **In 30 per cent of CAR's attempted traces, records have been destroyed or otherwise discarded, have reportedly 'expired', or have become unobtainable because the state or company that held them has been dissolved**. These factors halt investigations and may allow future transfers to escape scrutiny. In comparison, trace request recipients with comprehensive record-keeping systems have provided supporting documentation detailing the transfer of an additional 162 million units of weapons, ammunition, and related materiel in response to the 3,087 trace requests sent by CAR.

EXPORTING STATES PLAY A PIVOTAL ROLE IN SUCCESSFUL TRACING

Initial exporters are critical in facilitating tracing. Trace requests issued by CAR to initial exporters (primary trace requests) achieve a 43 per cent response rate; however, this response rate declines markedly (to 24 per cent) for trace requests issued to parties further along the supply chain. This discrepancy highlights the **pivotal role that exporting states play** in efforts to trace materiel. Among them are seven EU member states that respond to CAR's trace requests at rates exceeding 95 per cent.

COLLABORATIVE TRACE RESPONSES ARE CRUCIAL TO 'RED-FLAGGING' DIVERTING PARTIES

The exercise of due diligence by national exporters requires the identification of diverting parties, so that if such a party applies for an export licence, it may be **'red-flagged' during the export risk assessment process.** Red-flagging requires open information sharing among all concerned parties. A reluctance to respond to trace requests not only hinders the process, but also raises questions as to why trace recipients do not respond (whether for valid legal, or other, reasons).

INDUSTRY BENEFITS FROM THE TRACING PROCESS

Tracing is particularly beneficial for industries whose products may be in demand—**often without their prior knowledge**—in illicit markets and, indeed, for anyone who wishes to understand, in detail and in support of future due diligence, the mechanisms that entities employ to evade export control regulations and processes.

CAR'S TRACING OPERATIONS

CAR was born out of a necessity to monitor illicit flows of weapons into armed conflicts, to identify and address the sources of weapon diversion, and to produce quantifiable evidence to inform effective counter-proliferation measures. Diversion can be described as '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' (CAR, 2018c).

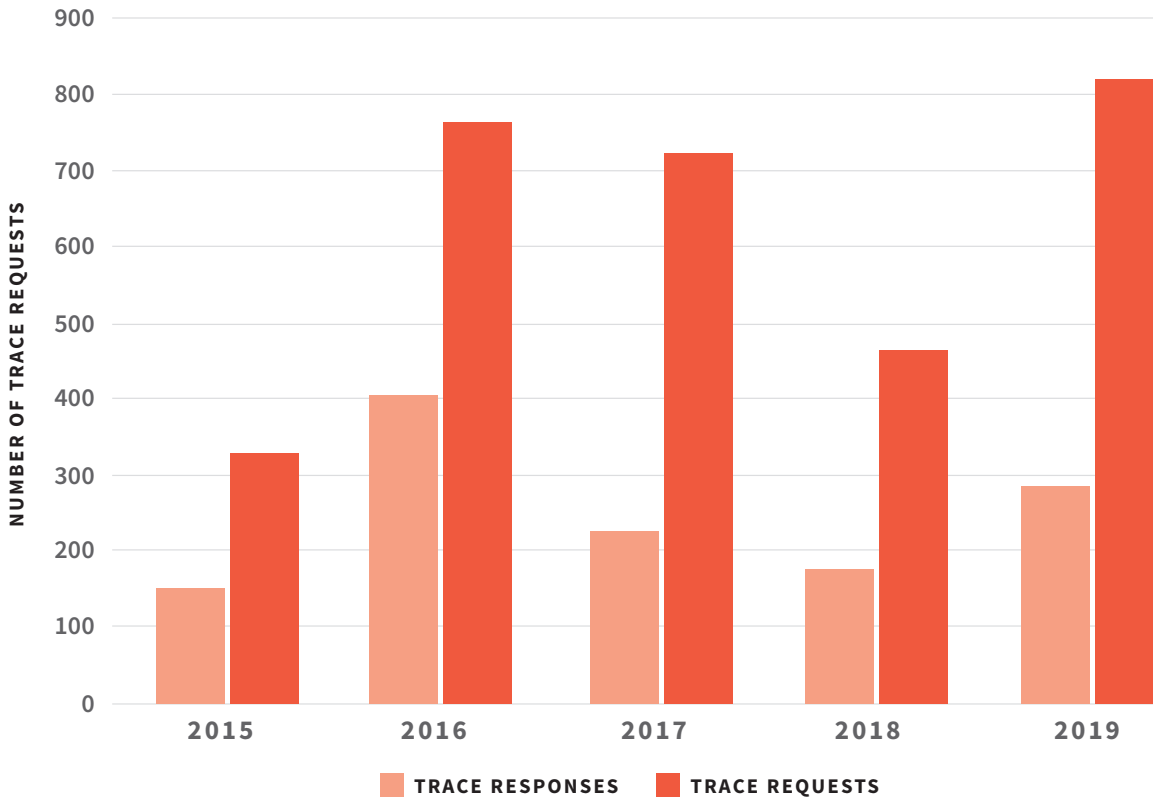
Formally tracing materiel is the most effective way to identify how diversion may have occurred. It is also the method that provides the most robust evidence—that is, information that would withstand scrutiny in a court of law. It entails issuing requests for information to manufacturers, suppliers, national export licensing authorities, and to any other party that has either taken custody of an item, authorised its transfer, or played an active role in its supply or financing. These 'trace requests' seek to identify the time and place from which an item left the custody of its authorised custodian and when, where, and how unauthorised users acquired it. One of the most effective potential outcomes of this process is the ability to alert export licensing authorities by 'red-flagging' entities that have orchestrated or facilitated diversion in the past.

When CAR commenced operations, international processes for tracing weapons were: a) largely based on bilateral arrangements between states or facilitated through INTERPOL; b) geared primarily towards law enforcement; and c) generally restricted to small arms (the types of weapon that most commonly feature in criminal investigations).[2] International state-to-state tracing played—and continues to play—only a very limited role in investigating supplies of 'conflict weapons'. The EU Council decisions that direct CAR to investigate international

IN FIVE YEARS OF TRACING OPERATIONS, CAR ISSUED 3,087 TRACE REQUESTS. THESE REQUESTS ELICITED 1,238 FORMAL TRACE RESPONSES: A 40 PER CENT RESPONSE RATE

FIGURE 1

TRACE REQUESTS ISSUED BY CAR (N=3,087) **VS. TRACE RESPONSES RECEIVED** (N=1,238)**, 2015–19**



weapon flows on behalf of the European Union and in line with ITI provisions encourage effective tracing, marking, and record-keeping, alongside capacity building through training and mentoring services (Council of the EU, 2019).

Parties to today's armed conflicts employ a wide range of weapons. As a rule, non-state forces typically use the same weapon systems as their national adversaries, as long as they can acquire them. If they cannot obtain these systems, or if operational requirements dictate, they develop improvised weapons and improvised explosive devices (IEDs), largely by employing off-the-shelf civilian market commodities or weaponising civilian products (CAR, 2016a; 2016b; 2017). In a significant departure from the scope of the ITI, but reflecting the realities of contemporary armed conflict, CAR's conflict tracing operations encompass weapons, ammunition, and related materiel, as well as a wide variety of 'dual-use' commodities that parties either weaponise or otherwise use in support of their offensive operations.

Since CAR began formal tracing operations in 2014, its field investigation teams have documented more than 600,000 units of weapons and ammunition, and identified more than 14,000 separate cases of diversion, which are distributed across 27 conflict-affected states. In five full years of tracing operations (2015–19), CAR issued 3,087 trace requests to national governments, manufacturers, private companies, brokers, and intermediaries.[3] These requests elicited 1,238 formal trace responses, representing a 40 per cent response rate, but one with significant year-by-year variations (see Figure 1). Once it has verified the information provided by trace responders, CAR considers trace responses a primary and reliable source for its further investigations.

EXPORT RISK ASSESSMENT

A trace request informs export licensing authorities, or other parties to the supply chain, that an item has been recovered from an unauthorised user, such as an insurgent or terrorist group. For many national governments, this type of notice is sufficient to flag diversion and recognise that 'something has gone wrong' in the supply chain, even if the precise circumstances have yet to be understood. Since exporting governments generally know to which user they authorised the export of an item, a trace request represents a clear indication that the item is no longer in that user's possession and has been diverted—information that exporters may otherwise have no means of knowing. Even if they elect not to respond to CAR's trace requests, governments can act on these communications unilaterally to avert potential diversion.

When governments do respond to trace requests, however, the tracing process acts as a force multiplier in international efforts to address diversion. If governments identify the party to which they exported weapons, CAR's field investigation teams—and notably its Tracing Unit and Enhanced Investigations Unit—are able to focus on that party and test whether the diversion resulted from leakage from unsecured weapon stockpiles, operational losses sustained on the battlefield, intentional support to non-state factions, or other causes. CAR's investigations may also indicate that a consignment never reached its stated end user and that it was diverted before or during delivery. In all such cases, CAR works to identify parties involved in diversion, red-flagging them to national export licensing authorities to ensure they are known and easily identifiable if connected with future export licence applications.

A growing number of states have recognised the value of this approach either by taking practical action in response to CAR's investigations or by making legislative changes to facilitate cooperation with CAR. In the former case, at least three EU member states have denied export licences for consignments to red-flagged entities and importing states.[4] In the latter case, in late 2019, one EU member state modified its national legislation to permit information exchange with CAR; specifically, the amendment allowed relevant authorities to share information directly with any entity authorised by an EU Council decision under the framework of the EU Common Foreign and Security Policy. The country's national authorities had previously been unable to provide CAR with detailed responses that could have enabled further investigations.

Tracing and due diligence

Since the tracing process attempts to reconstruct the supply chain, and all known entities along it, it

WHEN GOVERNMENTS DO RESPOND TO TRACE REQUESTS, THE TRACING PROCESS ACTS AS A FORCE MULTIPLIER IN INTERNATIONAL EFFORTS TO ADDRESS DIVERSION

is a very effective to way to understand the commercial, financial, and political relationships that exist among those entities. Often tracing is the starting point from which to build an understanding of how entities may be connected, be it:

- directly, as when the same director controls several companies involved;
- indirectly, as when one company or government finances the purchase of weapons but never takes physical possession of them; or
- by proxy, for political reasons, as when an intermediary agency or government handles supply logistics on behalf of one or more parties.

Investigations into these entities, and the linkages between them, provide valuable information based on which industry and national export control authorities can better exercise due diligence when deciding whether to sell or export materiel.

A solid understanding of the relationships between supply chain entities is particularly important with respect to complex, high-volume supplies to parties in major armed conflicts. In these circumstances, it is common for entities to be involved in repeated diversions (often to parties in different conflicts or in breach of different sanctions regimes); for company owners to dissolve companies, register new companies, or operate anonymously owned companies, in order to conceal their involvement in arms-related transactions; and for states engaged in diversion to procure materiel, repeatedly and through the same channels.

Public reporting to encourage wider due diligence

A response to a CAR trace request initiates a chain of collaborative engagement between CAR and the trace request responder. This collaborative process ends when there is general agreement (or a concrete lock text date has been set) in an activity that CAR describes as a 'right of reply'.[5]

The public release of findings is critically important. While CAR keeps certain ongoing investigations confidential, it recognises that public reporting exposes a wide range of stakeholders to findings. Such exposure provides governments and companies—which might otherwise have little connection to the case in question—with 'lessons learned'. It is particularly beneficial for industries whose products may be in demand on illicit markets; for export licensing authorities that may be approached by entities with past involvement in diversion; and for anyone who wishes to understand, in detail and in support of future due diligence, the mechanisms that entities employ to evade export control regulations and processes.

Beyond 'single-item' traces

Certain aspects of CAR's approach mirror law enforcement tracing processes, but others differ from them considerably, reflecting dissimilarities between the structure of weapon supplies into major armed conflicts and that of transfers associated with most criminal activities.

When CAR traces single weapons to identify the point at which they were diverted, for example, it does so in much the same way as many law enforcement operations would. This process may itself quickly identify the circumstances of diversion and the unauthorised party that acquired the item. However, these cases are generally restricted to weapons with a short supply chain (meaning, items that have not passed through many hands before they were recovered). This type of tracing usually involves new or recently produced items.

In contrast, large volumes of 'legacy' weapons circulate among conflict-affected areas of the world. Regardless of whether they are supplied directly from national arsenals, or purchased piecemeal on illicit markets by non-state parties and then retransferred, these consignments tend to include disparate weapon types of various ages and origins. What makes these shipments difficult to trace for investigators is that they are heterogeneous and do not originate in any single manufacturing or exporting country.

In these cases, CAR traces a selection of weapons from a given shipment. The objective of these traces is not to focus on the weapons' entire chains of custody (many, after all, are likely to have been previously consigned to *authorised* users), but rather to identify where the latest shipment of weapons originated. In this sense, and in contrast to most law enforcement operations, CAR traces weapons to provide data points for shipments of materiel whose provenance would otherwise remain unknown (see Case study 1).

CASE STUDY 1

Tracing to establish the provenance of large-volume weapon retransfers

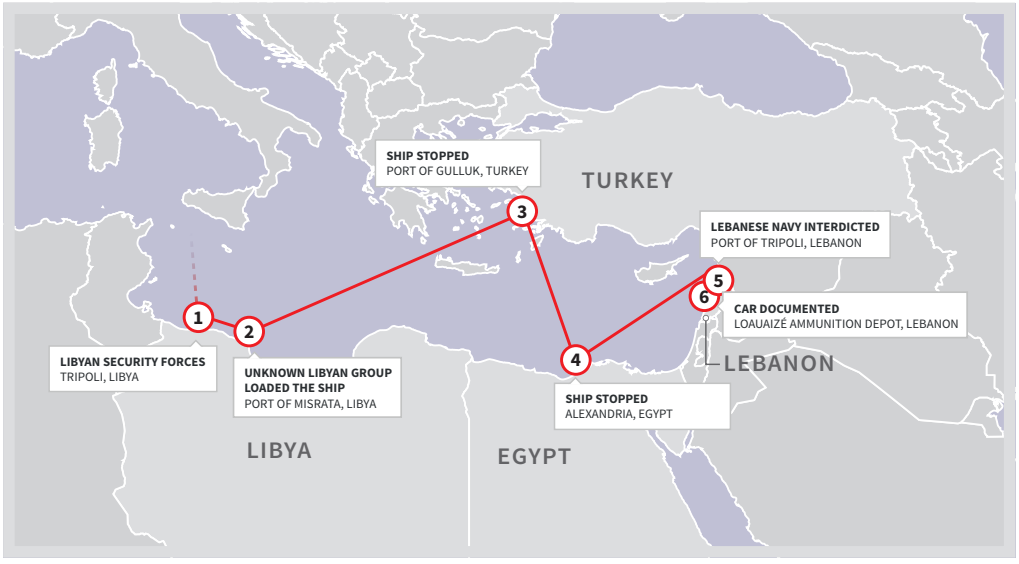
On 27 April 2012, Lebanese authorities intercepted the cargo ship *Letfallah II* in the port of Tripoli, Lebanon. The vessel was carrying a large shipment of weapons and ammunition of disparate ages and origins, which were reportedly destined for Syrian rebel forces (UNSC, 2013, p. 35). In an attempt to triangulate information that would indicate the recent provenance of the shipment, CAR sent trace requests for a selection of legacy weapons to six EU member states.

Responses from the Governments of Belgium, Italy, and Romania confirmed that materiel manufactured in their respective national territories had been exported to the Government of Libya, probably between the 1960s and 1980s (see Map 1).[6] The UN Panel of Experts on Libya traced other materiel on board the *Letfallah II* to Libyan stockpiles, including Russian-manufactured SA-24 surface-to-air missiles. The cooperation of national governments, as well as the presence of a small proportion of traceable weapons in the shipment, confirmed that all items in the shipment, which originated in ten countries of manufacture, derived from the stockpiles of the former Libyan regime.

The case highlights that a small number of trace responses can shed light on the supply chains of large volumes of weapons whose provenance would otherwise be difficult to ascertain. The case also provides linkages to materiel documented by CAR in the Central African Republic, Libya, and Mali (CAR, 2016c).

MAP 1

LAST MOVEMENTS OF THE CARGO SHIP *LETFALLAH II*, INCLUDING THE TRANSPORT (2–5) OF DIVERTED WEAPONS FROM LIBYA TO THEIR PLACE OF INTERCEPTION IN LEBANON



OTHER AMMUNITION SYSTEMS, SUCH AS SHOULDER-LAUNCHED ROCKETS, FEATURE 'COLLECTIVE IDENTIFIERS' THAT CONTAIN LOT AND BATCH NUMBERS

TRACING MATERIEL OTHER THAN WEAPONS

In contrast to the ITI, which addresses small arms and light weapons but excludes ammunition from its scope (see Box 1 on page 14), CAR's tracing covers a wide range of conventional ammunition. It also traces vehicles and aircraft, as well as commercial and dual-use products.

Conventional ammunition

Between 2015 and 2019, CAR issued more than 1,100 trace requests for conventional ammunition.

> *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 (CAR, 2018b, p. 7).*

Conventional ammunition encompasses a wide range of types whose markings vary considerably. Many of these types can be traced successfully through processes that are similar to those used to trace weapons; however, a number of ammunition-specific considerations have a strong bearing on the success of traces.

Unique vs. collective identifiers

Many technologically sophisticated or strategically sensitive conventional ammunition systems, such as guided missiles, are marked with one or more 'unique identifiers', such as serial numbers applied to man-portable air defence system missiles and missile tubes. Unique identifiers pertain to a single unit of ammunition and no two units have the same identifier.

Other ammunition systems, such as shoulder-launched rockets, feature 'collective identifiers' that contain lot and batch numbers. Such identifiers are applied to warheads, propellant sections, and other components of numerous ammunition units. Consequently, many units have identical collective identifiers.

On the whole, collective lot numbers are not applied to individual rounds of small-calibre ammunition.[7] This information is generally applied only to small-calibre ammunition packaging (wooden outer boxes, metal tins, and cardboard sub-packaging), which CAR is able to trace.

Traceable and untraceable ammunition

Given accurate and comprehensive record-keeping, and the cooperation of parties to the supply chain, supplies of uniquely marked (serialised) units of ammunition can be traced to specific users—in much the same way as a firearm might be traced. However, items with collective identifiers are frequently manufactured in production runs that range from thousands to millions of units. Consequently, each unit is marked with the same lot number, meaning that no single item is uniquely marked. In these

cases, the likelihood of successfully tracing supplies to a customer depends on that customer's volume of acquisition. For example, a national military force may purchase ammunition on such a scale that it, and it alone, procures an entire production lot of ammunition. This means that a lot number applied to an item—such as a rocket or a box of small-calibre ammunition—can be used to trace that item to a single customer by consulting sales or export records.

'Split-lot' complications

The splitting of lots—in which more than one customer receives ammunition from the same lot number—reduces the potential for successful tracing. The greater the number of customers, the more complicated the tracing process. If, for instance, a single lot of rockets is split and sold to three national militaries, a process of elimination may be able to indicate the probable source in the event of diversion. If, however, lots of small-calibre ammunition are split and sold to thousands of civilian users, they are rendered untraceable unless they bear unique identifying marks. What is traceable, or what is not traceable, thus depends largely on what materiel is present at a recovery site. Despite split-lot complications, CAR has conducted almost 400 successful ammunition traces (relating to consignments totalling several million units), suggesting that the prospects of ammunition tracing should not be overlooked.

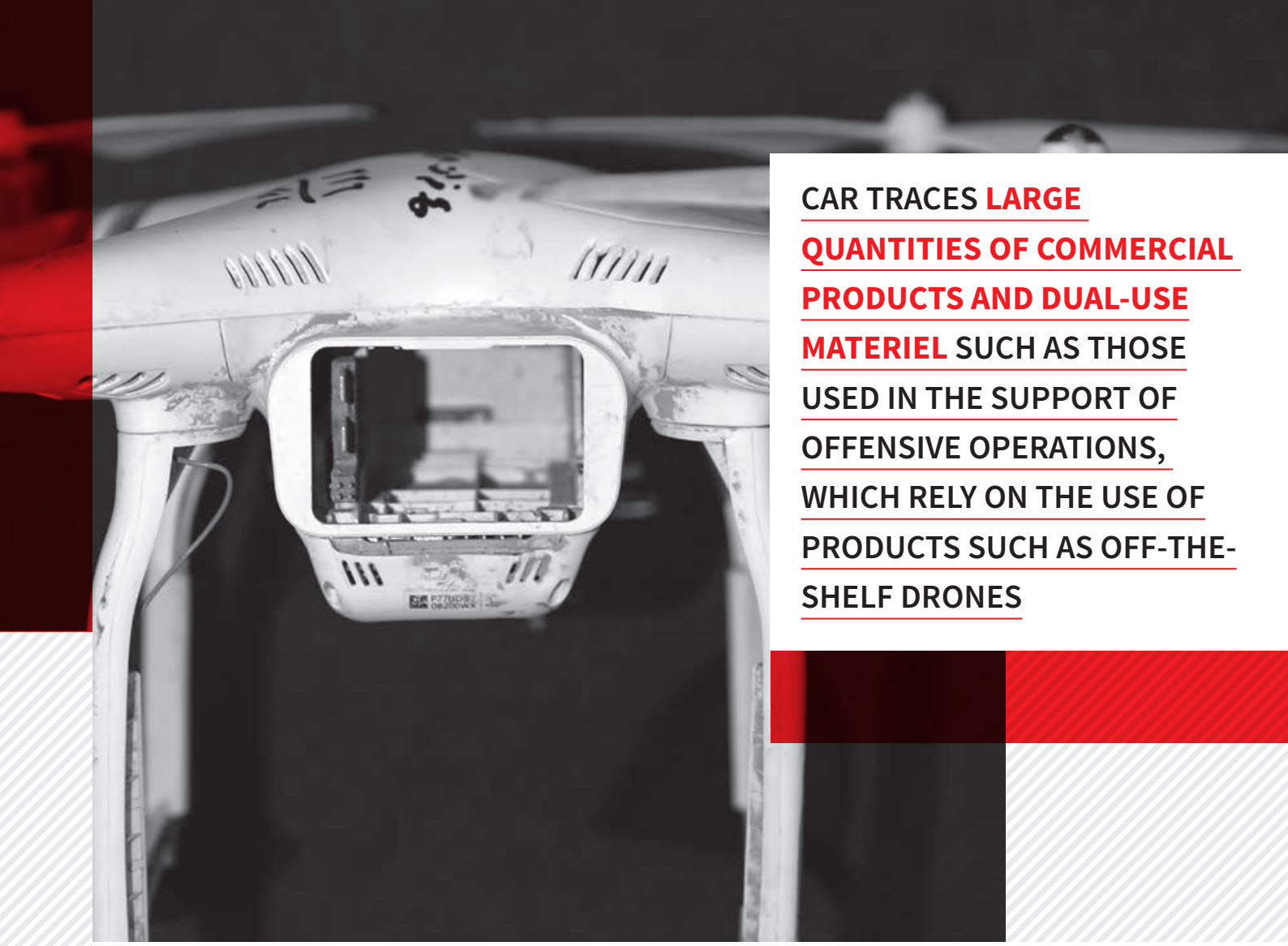
Box 1

THE INTERNATIONAL TRACING INSTRUMENT

The year 2020 marks 15 years since UN member states adopted the International Tracing Instrument (ITI).[8] The ITI—the only global, politically binding instrument to address weapon tracing—is often described as a law enforcement-oriented instrument because it encourages using INTERPOL as a facilitator of international trace requests. Its scope is restricted to small arms and light weapons and explicitly excludes ammunition (McDonald, 2006, p. 108).

While the ITI's provisions may not have been intended to cover activities that some might refer to as 'conflict tracing', the instrument's impact does extend beyond its scope, not least because it enshrines the essential components of a successful trace: 1) items must be marked sufficiently to permit their unique identification; 2) manufacturing, trade, and transfer records pertaining to them need to be comprehensive and accessible; and 3) states (and companies) need to cooperate by promptly sharing information in response to trace requests issued by competent authorities.

These essential components apply to the tracing of all commodities, and the ITI remains the only internationally agreed document that sets out these processes clearly. In this vein, the 'international cooperation and assistance' section of the instrument—and notably the reference to 'building national capacity' in the area of tracing—has the potential to enhance all types of tracing operation. Put another way, enhanced national capacity to trace small arms and light weapons suggests an improved ability to trace all commodities, since tracing prerequisites differ only marginally across the board.



CAR TRACES LARGE QUANTITIES OF COMMERCIAL PRODUCTS AND DUAL-USE MATERIEL SUCH AS THOSE USED IN THE SUPPORT OF OFFENSIVE OPERATIONS, WHICH RELY ON THE USE OF PRODUCTS SUCH AS OFF-THE-SHELF DRONES

Commercial products and dual-use materiel

CAR traces large quantities of commercial products and dual-use materiel. Many of these items are not subject to export controls and fall well outside of the scope of arms control instruments. Insurgent and terrorist forces use such products: 1) in the production of homemade explosives, for improvised weapons, and in IEDs, which are made using products such as sugar, sorbitol, nitrate fertiliser, aluminium paste, batteries, dry box containers and drums, model aircraft components, semiconductors, switches, electrical connectors, commercial detonators, and mobile phones; and 2) to support offensive operations, which rely on the use of products such as vehicles, communications equipment, satellite navigation devices, commercial off-the-shelf drones, and medical supplies.

These products serve legitimate commercial markets, and tracing them alerts companies and governments to their misuse by hostile parties. In some cases, the risks posed by their uncontrolled availability have prompted governments and intergovernmental bodies to seek to regulate their supply. In February 2016, CAR reported that Islamic State forces had procured large quantities of nitrate-based fertiliser that originated from distributors serving the Turkish domestic market (CAR, 2016a; 2016b). Similarly, in reports issued from 2015 to 2017, CAR documented the group's widespread use of aluminium paste, which it refined into a homemade explosive oxidiser for use in IED main charges (European Commission, 2016).

These investigations are critical because of the increasing frequency with which well-resourced, well-connected groups, such as Islamic State forces, have procured and weaponised products whose sale and transfer are either lightly controlled or uncontrolled. Indeed, it is often only because of these investigations that manufacturers and distributors of such products have been made aware of their potential uses in offensive operations. From a counter-terrorism perspective, such investigations play a critical role in international 'attack the network' efforts, which are designed to deprive insurgent and terrorist groups of the resources that sustain their hostile activities (see Case study 2).

CASE STUDY 2

Interrupting supplies to terrorist groups through tracing

In 2016, CAR field investigation teams operating in Iraq documented bags of sorbitol in a number of abandoned improvised weapon-production facilities, which had previously been operated by Islamic State forces. Sorbitol is an artificial sweetener (a sugar alcohol) that is widely used in the food, health, and cosmetic industries. It is not subject to export controls.

Islamic State forces employed sorbitol in the production of rocket propellant. In response to trace requests issued by CAR, the manufacturer—a global agricultural product supplier—confirmed having sold sorbitol to three companies based in Turkey and one company in Belgium. Subsequent investigations by CAR identified that one customer (a Turkish distributor of food, health, paper, and textile starches) purchased all of the sorbitol that had been recovered from Islamic State forces.

In 2017, a CAR field investigation team operating in Hawija, Iraq, documented more sorbitol that had been produced by the same company and used by Islamic State forces to manufacture rocket propellent. Additional traces revealed that the same Turkish distributor had purchased this sorbitol for onward distribution to sister companies based in Syria. These shipments were very large (78 tonnes in total) and accounted for 40 per cent of all Turkish sorbitol exports to Syria in 2015. That year, they coincided with an unusual spike in Turkish sorbitol exports to Syria, which rose five-fold compared to the previous year, from 16.5 tonnes in 2014 to almost 187 tonnes in 2015.

On 10 December 2017, the manufacturer announced a suspension of sorbitol sales to countries that were experiencing conflict or that bordered on conflict zones (Tereos, 2017). Sources: CAR (2017; 2018a).

A multi-layered approach

CAR's tracing operations have expanded in scope, from covering conventional weapons and ammunition to encompassing a wide range of related materiel, including repurposed civilian-market commodities. When provided with access to a weapon recovery site, CAR field investigation teams document and attempt to trace anything with a unique or collective identifier (see Box 2 on the importance of import marks). These investigations reflect a multi-layered approach to understanding where insurgent and terrorist forces source their equipment and how national governments might better interrupt these supplies.

This multi-layered approach integrates material, financial, and political indicators that play a role in the identification of procurement and support networks (including state sponsorship) that sustain such groups' activities. The process of 'layering' information gained from trace requests provides increasingly granular information about a group, including where it procures materiel, who backs it politically, who finances it, and where people in its procurement networks reside. This information is critical for national governments that seek to curb the illicit proliferation of weapons while also pursuing a more holistic approach to addressing the specific demand and supply factors behind proliferation.

With the aim of enabling such layering, CAR moved its data sets from a weapon-specific database to geographic information systems and network analysis-enabled platforms in 2019. These platforms allow CAR to link multiple, relational data sets—such as ones that pertain to weapons, companies, flights, shipping, financial records, or commodity transfers. The system enhancements are specifically designed to provide: 1) information to law enforcement agencies in support of investigations into weapon trafficking or support provided to proscribed groups, 2) information required by export licensing agencies to identify parties linked to diversion, and 3) to red-flag a greater proportion of diverting entities.

Box 2

THE ADVANTAGES OF IMPORT MARKS

An import mark on a weapon is a code that identifies the importing country.[9] The term is often used as shorthand to denote the authorised government user of a weapon. Some commentators prefer alternative terms, including 'national identifying mark' or 'arsenal mark', given that such marks may be applied:

- at the time of manufacture and at the request of the recipient government before export;
- by the importing government at the time of importation; and
- to any weapon in a government's national stockpile—regardless of when and even whether the weapon was imported.

Irrespective of when and how they are applied, most import marks tend to reduce the complexity and duration of investigations considerably as they identify a party to the chain of custody *after* manufacture and export. A weapon that bears an import mark allows for the identification of a national user, meaning that CAR does not necessarily need to issue trace requests to a manufacturer, or even to parties further along the supply chain. This is particularly important when: 1) exporting states do not respond to CAR's trace requests; or 2) records are unavailable (see the section on Record-keeping, below), precluding the identification of a recipient in sales or export records.

TRACING IN PRACTICE

The following sections of this Digest explore the practicalities of CAR's tracing operations, factors that encourage responses to trace requests, and factors that assist the tracing process.

METHODS

While the ITI encourages states to use INTERPOL when coordinating international traces, it is not restrictive in terms of which parties can issue requests and how. This flexibility may reflect a recognition that, beyond law enforcement agencies, a number of non-state entities also issue trace requests—notably United Nations Security Council sanction monitoring groups.

CAR's tracing operations closely resemble those of sanction monitoring groups. These groups existed prior to CAR's establishment, continue to trace weapons today, and provided CAR with a precedent model for tracing. Sanction monitoring groups typically send trace requests to the UN member states in which the weapons originated, via their permanent missions to the United Nations in New York. As many permanent missions are familiar with such communications, CAR makes initial contact with a state through this channel.

At later stages in the dialogue (usually following a number of trace requests and responses), and with the agreement of national authorities, CAR typically agrees a more direct point of contact in order to expedite the tracing process. This point of contact normally sits within a state's national export licensing authority.

CAR does not always send trace requests to national governments, however. While some products are export-controlled, meaning that states can be expected to hold records of their transfer, others are not, such that detailed transfer records reside with companies alone. In view of this distinction, this Digest groups CAR trace request recipients into two categories:

- **manufacturing states** (contacted through their permanent missions to the United Nations or an assigned point of contact), which license manufacturing companies to transfer *export-controlled materiel*; and
- **manufacturing companies**, whose exports of commercial products are *largely uncontrolled* by national export regulations.

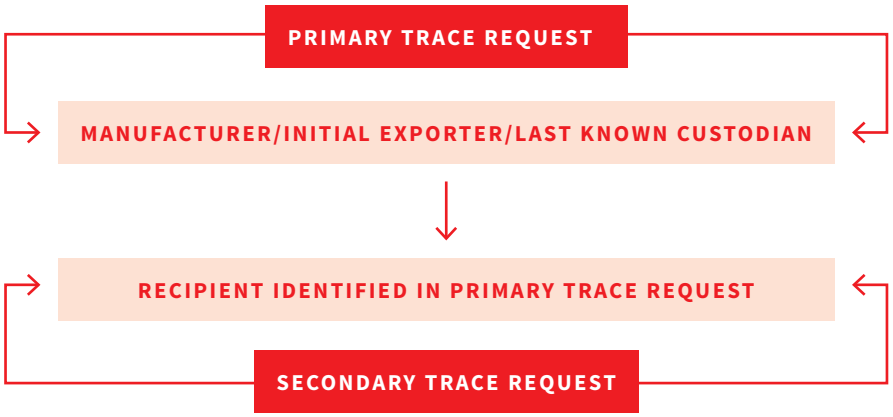
CAR acknowledges the extensive support that both states and private companies have provided to investigations by responding to its trace requests. These relationships, many of which have been built over a number of years, prove the mutual benefit of information sharing.

CAR ACKNOWLEDGES THE EXTENSIVE SUPPORT THAT BOTH STATES AND PRIVATE COMPANIES HAVE PROVIDED TO INVESTIGATIONS BY RESPONDING TO ITS TRACE REQUESTS

TRACE RESPONSES

FIGURE 2

PRIMARY AND SECONDARY TRACE REQUEST FLOW DIAGRAM, SHOWING THAT ONE RECIPIENT HAS BEEN IDENTIFIED



Reactions to CAR's trace requests vary considerably. At one end of the spectrum are entities that have never responded; at the other are ones that invariably respond, and in great detail. In between the two extremes are recipients whose responses vary greatly in terms of frequency and quality.

Primary and secondary trace requests

CAR describes trace requests sent to the manufacturing state or company, initial exporters, or last known custodians as 'primary trace requests'. Responses to these requests confirm that the primary recipient exported an item and pave the way for CAR to issue 'secondary trace requests' to parties further along the supply chain (see Figure 2).

CAR's global response rate for primary trace requests is 43 per cent.[10] It is higher for manufacturing companies of weapons or commercial products (46 per cent) than it is for manufacturing states (42 per cent), and this trend holds for every year except 2015 (see Figure 3). The difference in response rates may indicate that exports of commercial products are deemed less politically sensitive than transfers of military materiel, or that companies wish to avoid potential reputational damage (anecdotally mentioned in some responses to CAR) by responding comprehensively to trace requests. Either way, the difference between manufacturing states' and manufacturing companies' response rates remains slight.

CAR's global response rate for secondary trace requests—24 per cent—is much lower than it is for primary trace requests,[11] illustrating that investigations become more difficult further along the supply chain, in part because entities may:

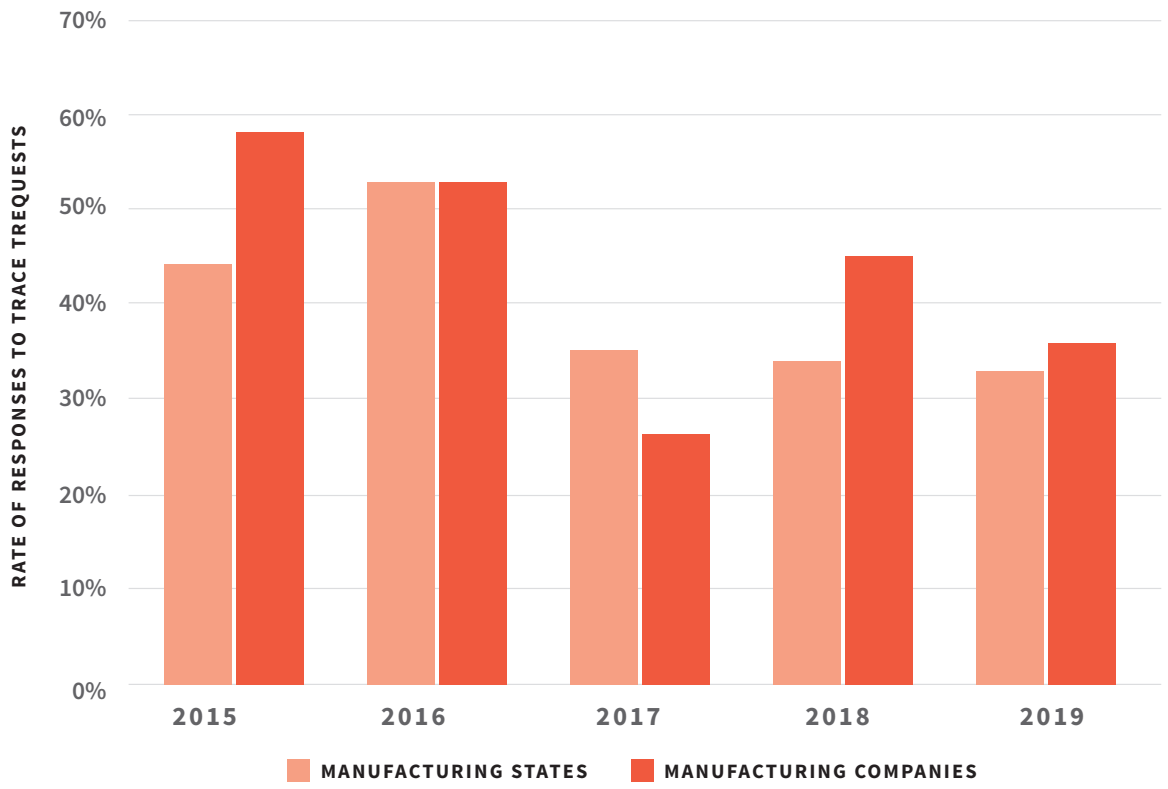
- be less attentive to record-keeping;
- lack the processes required to conduct traces; or
- have played a substantive role in diversion.

These findings highlight the pivotal role that primary trace responders, whether states or companies, play in supporting investigations. Among these primary responders are seven EU member states that reply to CAR's trace requests at rates exceeding 95 per cent; two of them respond 100 per cent of the time. This level of cooperation has an enormously positive impact on the success of CAR's investigations into diversion.

FIGURE 3

RESPONSE RATE TO TRACE REQUESTS ISSUED BY CAR, BY MANUFACTURING STATES AND MANUFACTURING COMPANIES, 2015–19

(N=3,087)



While Figure 3 shows an apparent decline in trace responses from highs in 2015 and 2016, this drop is largely explained by a 2017 change in CAR's methodology. Prior to this date, CAR did not always send trace requests to states and companies whose responses had openly stated that they would not provide information to CAR. However, CAR noted two problems with this approach. First, regardless of whether parties were likely to respond, they should nevertheless—on the grounds of fairness—be provided with the 'right of reply'. Second, excluding parties that were unlikely to reply introduced a positive skew, which inflated the global response rate to CAR's trace requests. More recently, CAR has issued trace requests to all parties—regardless of whether responses are likely to be forthcoming.

Qualitative aspects of responses

While response rates serve as strong indicators of the willingness of states and companies to assist CAR in its tracing operations, another metric is needed to assess the usefulness of an individual response. CAR groups responses to its trace requests into one of the following three categories, based on the 'value' that each provides to its onward investigations:

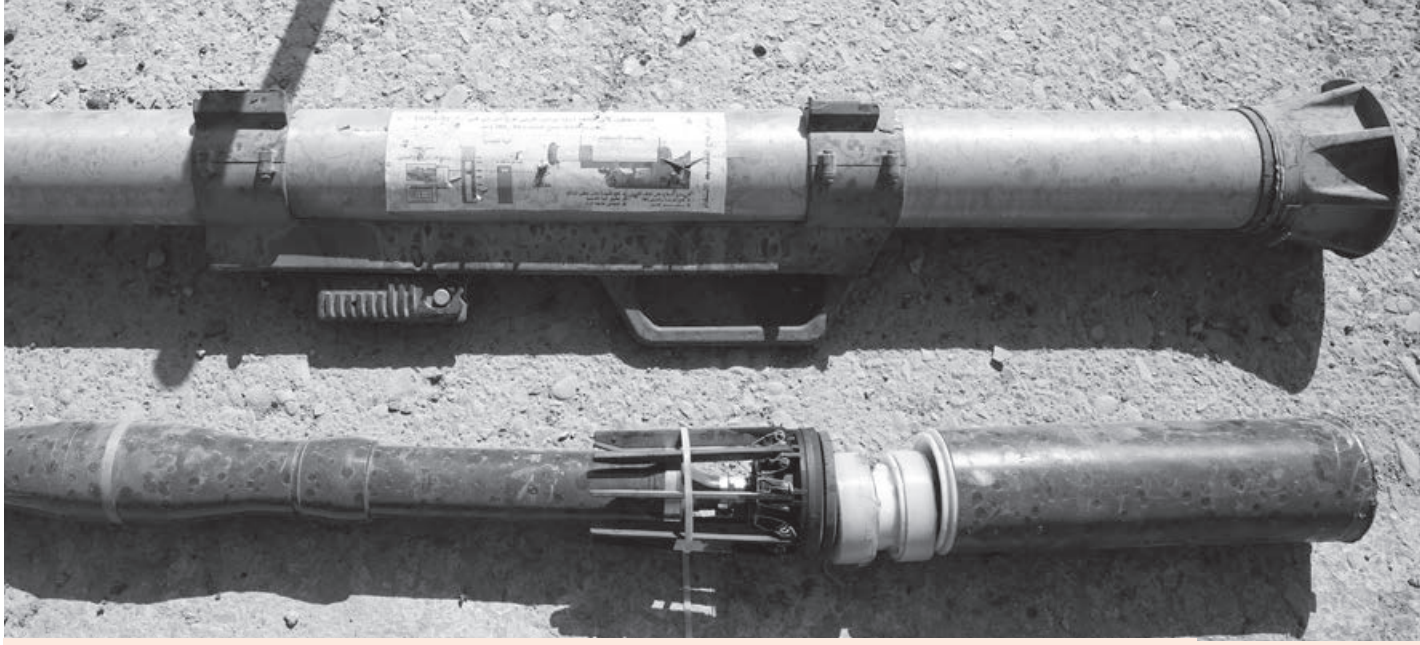
- **Permissive** responses provide a basis for further investigations. Most responses received by CAR (70 per cent) fall into this category.
- **Expansive** responses provide either the full information requested or provide more information than was requested by CAR. Five per cent of responses fall into this category.
- **Dissuasive** responses fail to provide any information required to permit further investigation. One-quarter of responses fall into this category.

Whether they are permissive or expansive, thorough responses to CAR trace requests describe the supply chain in detail, help to verify and authenticate transfer documents, help to identify the source of diversion, and thus inform the development of targeted counter-diversion measures.

TABLE 1

FACTORS IN RESPONSES TO CAR TRACE REQUESTS THAT LIMIT OR SUPPORT INVESTIGATIONS, 2015–19 (N=1,238)

		FACTORS LIMITING INVESTIGATIONS					FACTORS SUPPORTING INVESTIGATIONS							
		No Sharing	Records reportedly unavailable				Item information		Transfer information					
Type of trace response	Type of proportion	Formal refusal to share records	Destroyed	Record retention period expired	State or company no long in existence	Records 'not kept'	Manufacturer confirmed	Date of manufacture provided	Transfer recipient provided	Delivery dates provided	Quantity delivered provided	Transfer intermediaries and locations provided	Transfer documents provided	Outcome prompts secondary trace request
Expansive	**% of expansive responses (N=56)**	**0%**	**0%**	**0%**	**0%**	**0%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**64%**
	% of all responses (N=1,238)	0%	0%	0%	0%	0%	5%	5%	5%	5%	5%	5%	5%	3%
Permissive	**% of permissive responses (N=871)**	**3%**	**8%**	**13%**	**12%**	**1%**	**68%**	**40%**	**61%**	**50%**	**37%**	**27%**	**23%**	**26%**
	% of all responses (N=1,238)	2%	6%	9%	8%	1%	48%	28%	43%	35%	26%	19%	16%	18%
Dissuasive	**% of dissuasive responses (N=311)**	**27%**	**3%**	**6%**	**2%**	**8%**	**1%**	**0%**	**0%**	**1%**	**0%**	**0%**	**0%**	**0%**
	% of all responses (N=1,238)	7%	1%	2%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%



Box 3

TYPOLOGY OF FACTORS THAT LIMIT OR SUPPORT TRACING INVESTIGATIONS

Building on Table 1, this box outlines factors that either significantly hinder or advance tracing investigations. These factors are drawn from CAR's observations of conflict tracing, but they reflect general trends that may have a bearing across the field of tracing efforts.

LIMITING FACTORS

» **Formal refusal to share**
National laws or company policies prohibit recipients from sharing information.

» **Records destroyed**
Conflict, business closure, or a change of record-keeping systems has resulted in the destruction of records, rendering further supply chain information inaccessible.

» **Record retention period expired**
The item(s) being traced are older than the relevant records kept by the trace recipient. The national or global record retention period has expired and the recipient is unable to share any further details.

» **State or company no longer in existence**
State collapse or reform has resulted in a loss or unclear custody for national records. For example, weapons produced in the former Yugoslavia cannot be accounted for today because there is no clear delineation for which successor state retained which items or holds which records.

» **Records 'not kept'**
A number of reasons may explain why records are not kept: 1) the materiel itself does not bear unique identifying information; 2) the previous recipient has not provided sufficient unique identifying information to enable a secondary trace request; 3) records were not kept in sufficient detail (for example, recipients were not recorded by lot number) or a recipient does not have the capacity to keep records; and 4) the materiel is only sold on the domestic market and does not require an export licence. CAR finds that trace recipients who provide this response appear to keep only general purchaser information, such as the model or quantity purchased.

CAR has analysed its entire trace response archive, which contains 1,238 responses received between 2015 and 2019, to explore the extent to which these replies have either supported or limited its investigations into diversion (see Table 1).

This analysis confirms the centrality of comprehensive trace responses to CAR's onward investigations into diversion. In more than 20 per cent of all cases, expansive and permissive responses led CAR to issue secondary trace requests to parties further along the supply chain.[12] This figure downplays the critical role of other responses, however. Nearly half of all responses (48 per cent) confirmed the recipient of a transfer, which often proved integral to onward investigations (see Figure 4 overleaf). In addition, in more than 20 per cent of all cases, recipients provided supporting sales and transfer documentation in their responses to CAR's trace requests. These documents are often key to verifying transactions and identifying parties that are linked to diversion (see the section on Supporting documentation).

Box 3 (continued)

SUPPORTING FACTORS

- **Manufacturer confirmed**
  The manufacturer has confirmed or corrected assessments made by the tracing entity (such as assessments relating to model ID or manufacture provenance).
- **Date of manufacture provided**
  The trace response clarifies the date of manufacture, often including the day, month, and year.
- **Transfer recipient provided**
  The trace response identifies the next or, possibly, multiple recipients in the supply chain.
- **Delivery dates provided**
  The trace response details the date of each specific point in the transfer chain, allowing investigations to build up an accurate life cycle for an item.
- **Quantity delivered provided**
  The trace response states the quantity of the specific item that was sold to the recipient. This information may also include every other item included in the specific delivery.
- **Transfer intermediaries and locations provided**
  The trace response provides details such as the name of the shipping vessel, aircraft, or ports of loading and unloading.
- **Transfer documents provided**
  Submitted documents corroborate, verify, and elaborate on information provided in a trace response. These documents are often critical to wider investigations. (See the section on supporting documentation, below.)

NEARLY HALF OF ALL RESPONSES TO CAR (48 PER CENT) CONFIRMED THE RECIPIENT OF A TRANSFER, WHICH OFTEN PROVED INTEGRAL TO ONWARD INVESTIGATIONS

FIGURE 4

RECIPIENT PROVIDED IN RESPONSE (N=1,238)

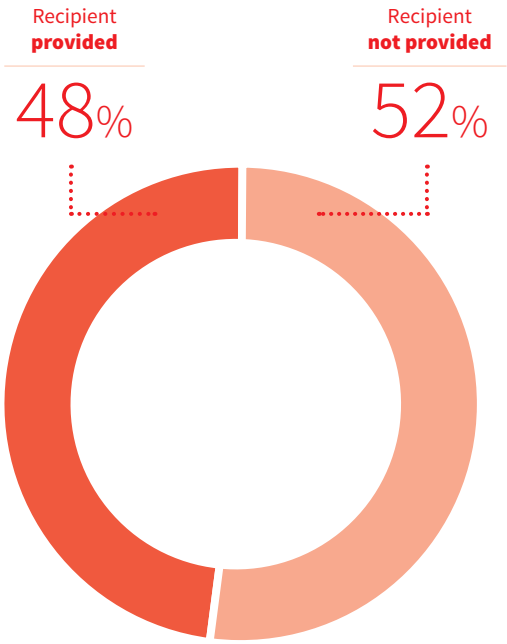
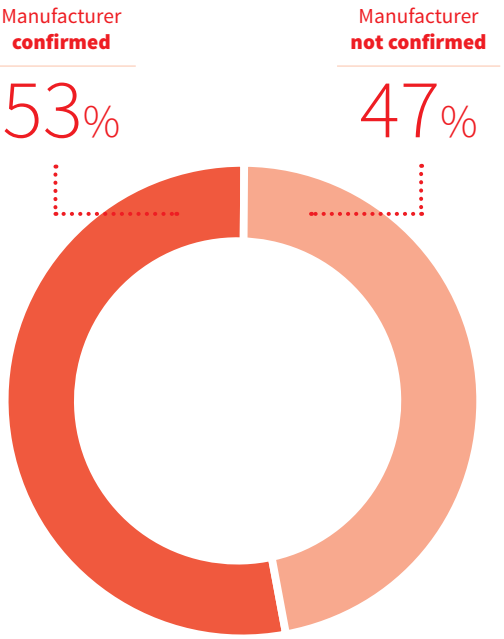


FIGURE 5

MANUFACTURER CONFIRMED IN RESPONSE (N=1,238)

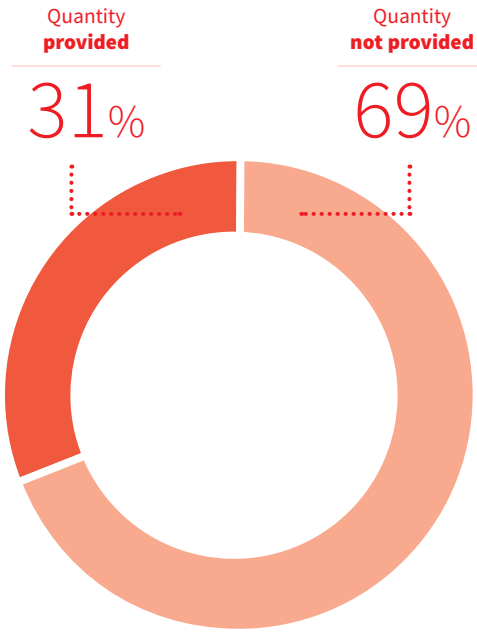


Both the permissive and expansive responses listed in Table 1 play a critical role in facilitating investigations. They also help to verify the type and origin of the materiel itself, which is important given the large volumes of unlicensed copies in circulation and the need to identify weapons that may not have been produced for many decades. By stating 'yes, this is definitively our product', a manufacturer provides the firmest possible basis upon which to: 1) pursue investigations; and 2) determine which construction features and markings identify a specific model of weapon—so that the weapon can serve as a verified 'comparator' with which to identify weapons recovered in the future. More than 50 per cent of responses to CAR's trace requests have provided such confirmation (see Figure 5). Cumulatively, this formally provided, manufacturer-verified information helps to set the iTrace® Global Weapon Reporting System apart from other repositories of weapon-identifying information.

CUMULATIVELY, THIS FORMALLY PROVIDED, MANUFACTURER-VERIFIED INFORMATION HELPS TO SET THE ITRACE® GLOBAL WEAPON REPORTING SYSTEM APART FROM OTHER REPOSITORIES

FIGURE 6

QUANTITY OF DELIVERY PROVIDED IN RESPONSE (N=1,238)



A SINGLE TRACE OF A DIVERTED WEAPON MAY INDICATE THE CIRCUMSTANCES IN WHICH SOME OR THE ENTIRETY OF A CONSIGNMENT OF MATERIEL HAS BEEN DIVERTED TO UNAUTHORISED USERS

Supporting documentation

Supporting documentation received by CAR from trace recipients includes end-user certificates, delivery verification certificates, international import certificates, purchase invoices, bills of lading, packing lists, delivery notes, goods receipt notes, transport documents, safety data sheets, technical leaflets, and airway bills.[13]

This documentation often contains granular information about the nature of a transfer (who was involved, who financed it, and precisely which route it followed), as well as shipment volumes. One-third of supporting documentation provided to CAR in response to trace requests indicates the overall quantity and type of materiel delivered (see Figure 6). This kind of information provides critical insight into diversion investigations. At the very least, a single trace of a diverted weapon may indicate the circumstances in which some or the entirety of a consignment of materiel has been diverted to unauthorised users (see Case study 3). It provides a very large data set of verified transfers into conflict-affected regions to which recovered weapons can be compared. Specifically, the supporting documentation provided in the 1,238 trace responses in CAR's archive details the transfer of 162 million units of weapons, ammunition, and related materiel.[14]

CASE STUDY 3

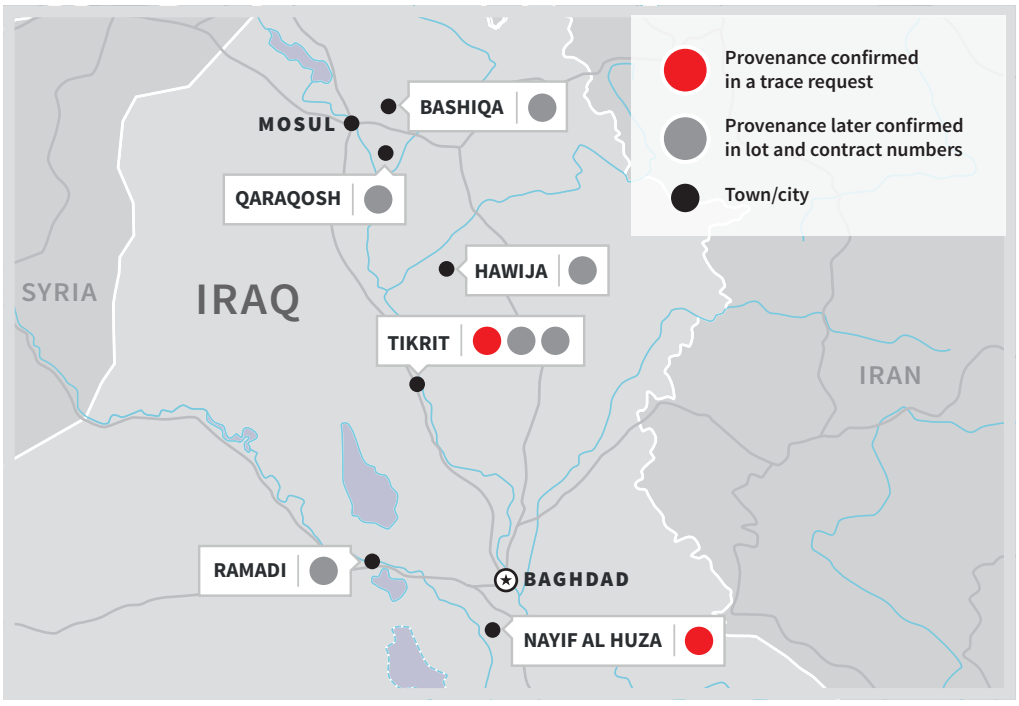
The cumulative value of trace data

In 2015, with the cooperation of an exporting European state, CAR traced the origin of a diverted 81 mm mortar round and a diverted 120 mm mortar round, which Iraqi defence and security forces had recovered from Islamic State fighters between October 2014 and April 2015 in the towns of Nayif Al Huza and Tikrit, respectively. Supporting documentation provided by the exporting state listed the rounds' lot numbers and included a contract number for a consignment to the Government of Iraq.

The supporting documentation enabled CAR to establish that an additional five empty crates and two mortar rounds—recovered from Islamic State forces in four further locations (Bashiqa, Hawija, Qaraqosh, and Ramadi), and a second documentation in Tikrit—had been consigned at the same time (see Map 2). Importantly, the supporting documentation allowed CAR to make this determination immediately, without recourse to further trace requests and without placing additional administrative burdens on the European state's export licensing authorities. In this respect, the provision of supporting documentation with trace responses saves time and resources for all parties engaged in the process.

MAP 2

DISTRIBUTION OF DIVERTED MATERIEL ORIGINATING FROM A SINGLE CONSIGNMENT TO THE GOVERNMENT OF IRAQ, ESTABLISHED THROUGH TWO TRACED ITEMS



Record-keeping

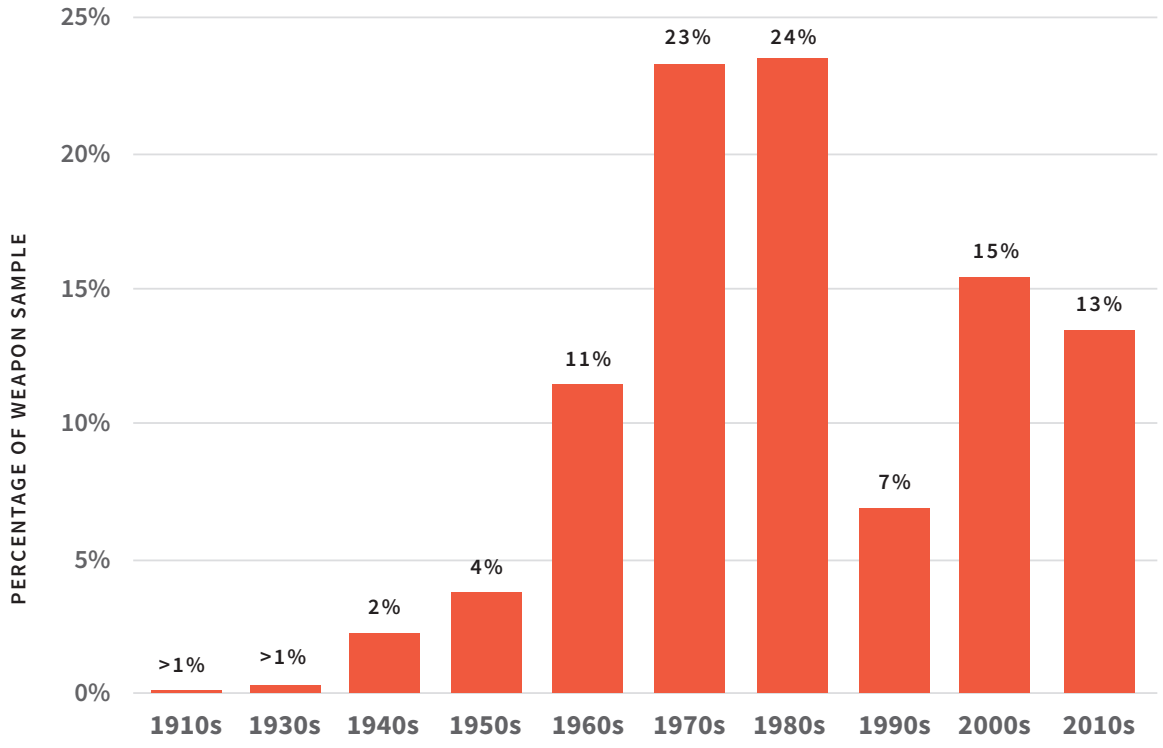
CAR's trace response archive also confirms that the primary obstacles to pursuing investigations are formal refusals to share information (7 per cent of total responses) and problems associated with record-keeping (30 per cent of CAR's attempted traces). In the latter case, records may have been destroyed or discarded, sometimes for purported space-saving reasons; they may have 'expired' following the end of a record retention period; or they may have become inaccessible after the collapse or disintegration of a state or company that held them. Ten per cent of CAR's trace requests have failed because the state that produced the items being traced was dissolved following their manufacture, most commonly in the case of the former Yugoslavia.

Some of these obstacles—and particularly the ones linked to historical developments—are nearly impossible to address retroactively; others may be far easier to overcome. The ITI stipulates minimum requirements for the retention of records—30 years for manufacturing records and 20 years for all other records, including records of import and export. While the objective of the instrument's drafters was clearly to improve record-keeping practices, some states appear to claim (as a default position) that records no longer exist for materiel that is either older than 30 years, or that was transferred more than 20 years ago, regardless of whether these records actually exist. Digital advances since the ITI's adoption make it far easier for all production and transfer records to be stored and held indefinitely by states.

A failure to maintain accurate and detailed manufacturing, export, and import records frustrates efforts to trace diverted weapons. It is not possible, in most cases, to identify a point of diversion if states cannot establish the details of an original export. The patchwork nature of international and regional guidelines has created inconsistencies in state practice that often inhibit trace investigations that would benefit all states. While the ITI encourages states to keep records indefinitely, record-keeping systems remain a national prerogative.

FIGURE 7

DECADE OF MANUFACTURE OF WEAPONS FOR WHICH CAR HAS ESTABLISHED A PRODUCTION DATE (N=2,578)[15]



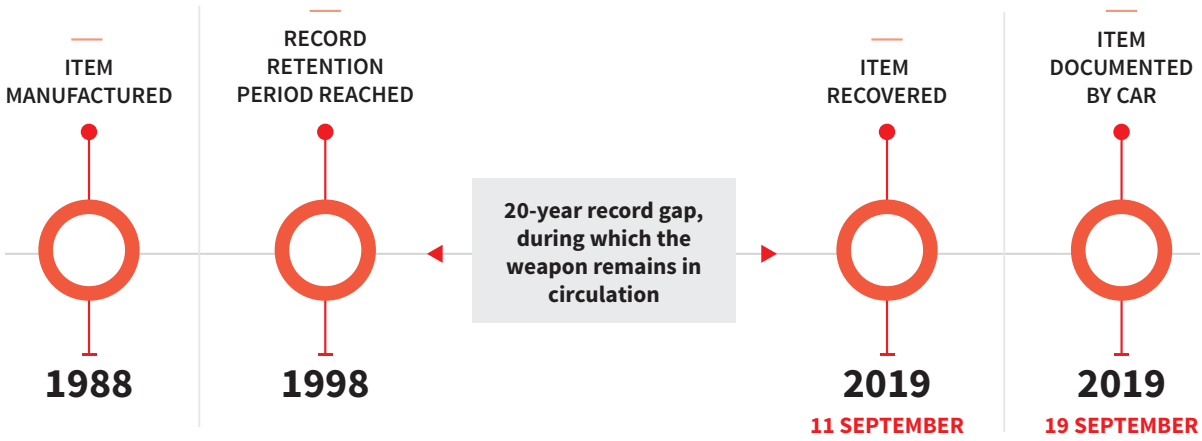
Note: The sample does not include any weapons manufactured in the 1920s. The sample includes one weapon from the 1910s and seven weapons from the 1930s, which are reflected as >1 per cent due to rounding.

International instruments that address minimum record-keeping requirements are also inconsistent. Whereas the politically binding ITI calls for a minimum retention period of 20 years for export records, the legally binding Arms Trade Treaty requires records to be kept for only ten years (UNGA, 2013, art. 12). Of the 2,578 recovered weapons for which CAR has established a year of manufacture, 71 per cent exceed the ITI minimum 20-year export record retention period and 64 per cent exceed the ITI minimum 30-year manufacturing record retention period (see Figure 7). These proportions indicate that weapons commonly outlive even the most generous record retention periods.

Figure 8 illustrates this point. It shows that CAR documented a weapon that was manufactured in 1988 and recovered from unauthorised users during field operations in 2019. The original exporter, an EU member state, reported in its response to CAR's trace request that, despite the provisions of the ITI, the country's mandatory record retention period remains limited to ten years. Based on this state's report, it follows that the weapon remained in circulation for 20 years after records pertaining to its manufacture and export expired.

FIGURE 8

THE RECORD-KEEPING GAP IN PRACTICE



71 PER CENT EXCEED THE ITI MINIMUM 20-YEAR EXPORT RECORD RETENTION PERIOD AND 64 PER CENT EXCEED THE ITI MINIMUM 30-YEAR MANUFACTURING RECORD RETENTION PERIOD

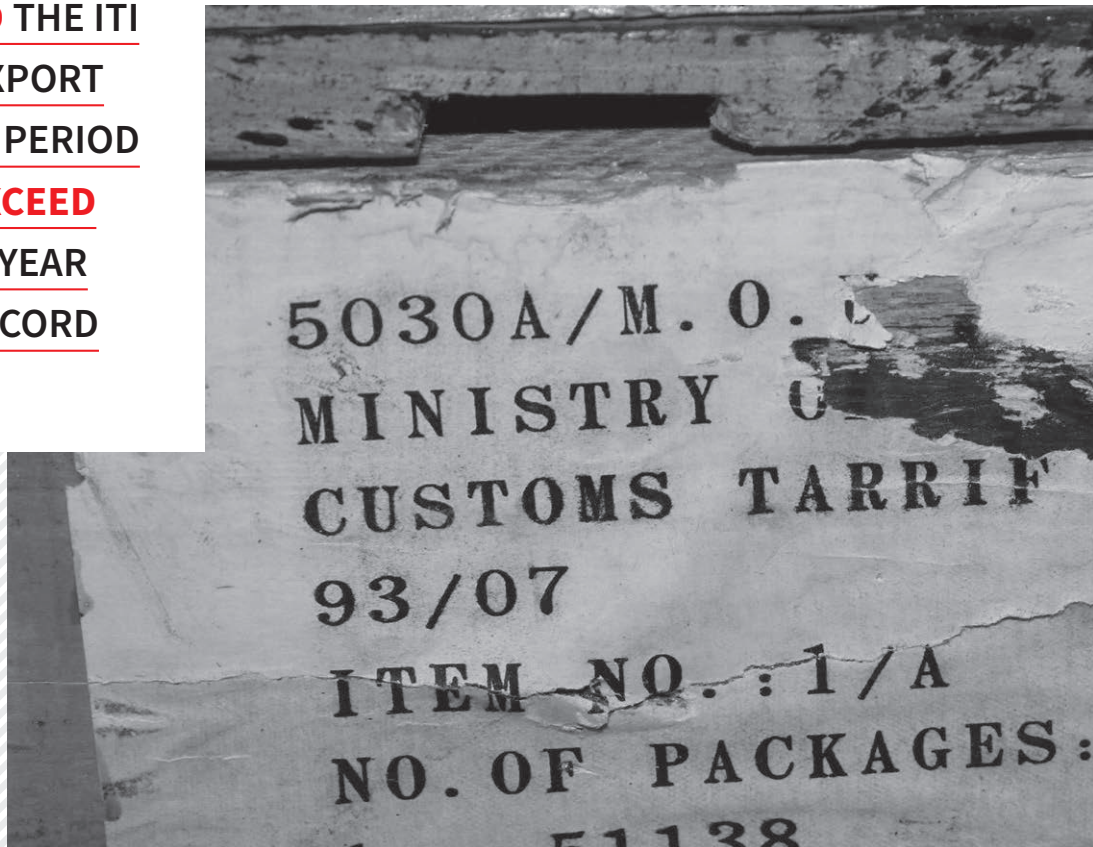
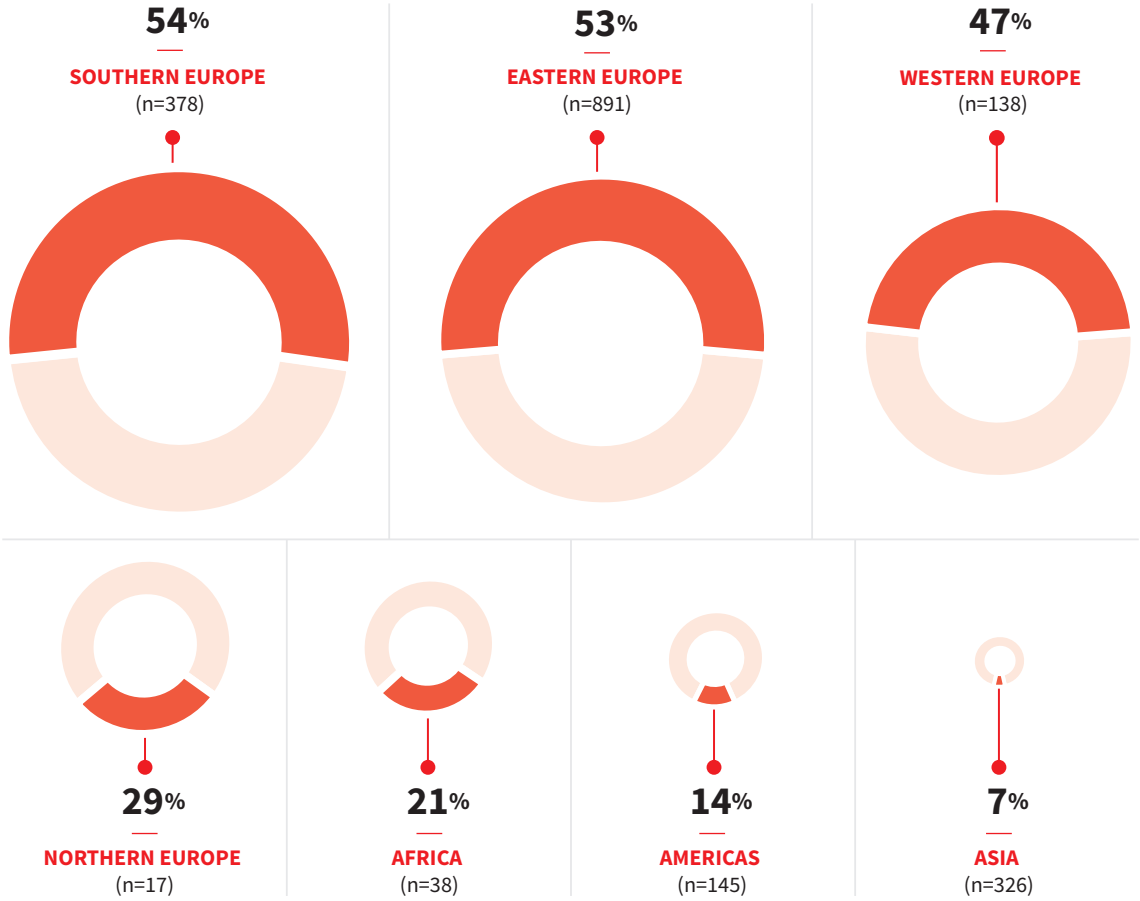


FIGURE 9

PRIMARY AND SECONDARY TRACE REQUESTS ISSUED TO GOVERNMENTS AND RESPONSE RATES BY REGION (N=1,933)



Key: n = trace requests sent, % = trace responses

Regional trace cooperation

The numbers of trace requests CAR sends to national governments vary significantly across different regions of the world, as do the rates of response.[16] The distribution of global weapon production and export has a considerable impact on these regional variations. Products manufactured in certain exporting states are particularly common in the conflict-affected states in which CAR operates, while other states' products have a far smaller market share in these regions. Moreover, certain major weapon-exporting states do not respond to CAR's trace requests, despite the fact that their products comprise a significant proportion of recovered weapons.

National governments in Eastern Europe received the greatest number of trace requests issued by CAR (891) and had the second-highest regional response rate (53 per cent). While national governments in Asia received the third-highest number of trace requests (326), the regional response rate was the lowest of all regions, at just 7 per cent (see Figure 9). The supply side situation is similar for the two regions concerned, as both are major exporters to the regions of the world in which CAR operates. In Eastern Europe, a small number of governments authorise large volumes of weapon exports to the governments of conflict-affected countries, as reflected by the volumes of weapons recovered from unauthorised users and later traced by CAR. However, these Eastern European states typically respond comprehensively to CAR's trace requests. When it comes to Asia, the volumes of recovered weapons are lower, although they remain significant. One large exporter does not respond to CAR's trace requests, resulting in a very low regional response rate for Asia.

CAR IS KEENLY AWARE THAT THE PROCESS OF RECORDING INFORMATION REQUIRED FOR A SUCCESSFUL TRACE REQUEST IS OFTEN A DIFFICULT UNDERTAKING

FACILITATING FACTORS

Much of the success of tracing operations depends on the party issuing the trace request. In this context, two factors are of particular relevance: 1) the tracing party's competence with reference to recording the correct information, identifying a weapon definitively, and communicating pertinent information to the recipient of a trace request; and 2) the perceived value that the tracing party brings to prospective trace request responders.

Competence in weapon identification

As an organisation with nearly a decade's experience in tracing weapons, CAR is keenly aware that the process of recording information required for a successful trace request is often a difficult undertaking—one that it has had to refine continually over the years.

The ITI makes it clear that three pillars of activity underpin the international tracing process—marking, record-keeping, and cooperation in tracing. However, none of these enabling factors apply unless the tracing party is able to: 1) identify a weapon's manufacturer definitively—that is, determine to whom to send a trace request; and 2) impart the information required to identify the weapon in manufacturing, sales, or export records in that trace request. Although a tracing party's capacity to generate systematic and reliable data is fundamental to the tracing process, it receives little attention.

As CAR's investigations have proven, that capacity is often the deciding factor between a successful and an unsuccessful trace. In particular, the likelihood of a successful trace depends on a tracing party's ability to deliver the following elements:

» **Accurate weapon identification.** The potential for parties to misidentify certain weapons—and, critically, their manufacturers—is very high. Among these weapons are the ubiquitous Kalashnikov-pattern assault rifles, known to most people as 'AK-47s'. While it may be easy to recognise this type of weapon in its generic form, CAR has more than 70 differently named variants in its iTrace® Global Weapon Reporting System (excluding an equally large number of visually similar artisanal copies). Each specific model features unique identifying construction characteristics and marks.

» **Precise identification of all relevant marks.** Weapons destined for military markets typically feature numerous marked surfaces, which have been stamped or engraved with various numerals, letters, and typographical symbols. Parties that endeavour to trace these weapons may find it hard to discern which mark among many is the serial number (serial numbers may feature various combinations of symbols, letters, and digits). They may also be unsure about whether to include marks that are not numerical (but

nevertheless vital unique identifiers) when reporting the serial number in trace requests. To be able to identify weapons in response to trace requests, manufacturers require, at a minimum: 1) identification of the manufacturer; 2) precise weapon model identification (such as AKM, AKMS, AK-47, or AK-74); and 3) the entire serial number character set (numerals, letters, and typological symbols).

» **Clear photographic evidence.** The identification of a weapon often involves several points of reference other than the serial number, as some weapon types differ only subtly. Unless tracing parties provide manufacturers with detailed photographs of all sides of a weapon, and unless they document marked surfaces comprehensively and systematically, it is highly likely that manufacturers will be unable to identify weapons in the associated records. This is particularly the case for weapons that were manufactured many decades ago; if company staff members have little familiarity with products manufactured in the 1970s or 1980s, for example; and if a manufacturer has to perform comparative analysis to identify one of its own weapons.

As these points underscore, weapon identification requires training and written guidance.[17] That is why the successive EU Council decisions that direct CAR to investigate weapon diversion on behalf of the European Union also require that CAR build capacity by providing training and mentoring services to national government agencies, in line with the ITI (Council of the EU, 2019).[18]

Since 2015, CAR has provided training and mentoring on weapon identification, weapon data collection methods, and the tracing process to 13 national governments, including a number of multi-year programmes.[19] These initiatives aim to provide national governments with tailored solutions that: 1) are suited to the particular circumstances of weapon recovery in their countries (acknowledging that many of these states suffer more from high-intensity armed conflict than from armed crime, for example); 2) recognise extant structures that are responsible for collecting information on recovered weapons (noting that law enforcement agencies may not be the primary agencies involved); and 3) promote the centralisation of data on recovered weapons and the sharing of information among national agencies.

In some instances, CAR has moved beyond providing bilateral support to governments to assisting regional information-sharing mechanisms. One example is a unique network of collaborative relationships that involves West African national counter-terrorism and judicial agencies, as well as national small arms commissions and related agencies, to which CAR provides capacity assistance on weapon documentation, tracing, and cross-border weapon monitoring.

For a number of years, CAR field investigation teams have documented and traced weapons in a variety of local contexts, often operating alongside national defence and security forces, which it has assisted by providing tailored capacity support. In collaboration with a number of governments, CAR has drafted standard operating procedures (SOPs) for tracing. One example is CAR's partnership with the Government of Burkina Faso. Adopted formally as a *décret* (decree) by the prime minister of Burkina Faso, the SOP details the process of centralising weapon data collected by all security agencies in the country in a database, which CAR developed and which resides with the Haute Autorité de Contrôle des Importations d'Armes et de leur Utilisation (High Authority for the Control of Import and Use of Weapons).

IN COLLABORATION WITH A NUMBER OF GOVERNMENTS, CAR HAS DRAFTED STANDARD OPERATING PROCEDURES FOR TRACING

The resources that CAR provides to its national partners also underpin recently compiled international tracing guidelines. For example, in 2020, the United Nations Office on Drugs and Crime (UNODC) released Guiding Templates for Firearms-related Investigations, which UNODC states were 'built upon' the templates developed by CAR to support its partner governments' investigations into recovered weapons (UNODC, 2020, p. 1).

Early warning alerts for companies

Tracing is not a one-way process. Previous sections of this Digest describe how tracing supports national governments in their exercise of export due diligence. CAR's trace requests also assist companies, for example by 1) allowing them to address the misuse of their products and thereby limit possible reputational risks, and 2) making them aware of counterfeit products that undermine their legitimate business interests.

With respect to the first example, a number of companies have taken measures either to limit exports to certain areas of the world (as in the above-mentioned sorbitol case) or to implement policies to prevent the misuse of products or technologies that have already reached these destinations. In 2017, for instance, CAR field investigation teams documented commercial off-the-shelf drones that Islamic State forces operating in Iraq had modified to drop explosive ordnance on Iraqi troops. CAR traced the drones to various countries in Europe and the Middle East. While the manufacturer did not share precise sales and export records with CAR, it had electronically blocked the drones from operating in Iraq and Syria, prior to CAR's trace request, in a measure that it described as a 'no-fly zone'. Information from third parties, such as CAR, can help support internal compliance measures.[20] CAR has had similar experiences with other companies, including chemical suppliers, which have either ceased supplying certain customers or have enhanced their record-keeping systems to restrict hostile parties' access to their products.

In relation to alerting lawful manufacturers to unlicensed copies of their products—the second example cited above—CAR has begun issuing 'counterfeit notifications' to well-known weapon producers. At present, around two per cent of weapons traced by CAR are counterfeit. However, in certain regions of the world—notably in West Africa and Afghanistan—counterfeit weapons comprise a far higher percentage of recovered weapons.

Figure 10 shows a genuine product and a counterfeit made to resemble it. In response to CAR's trace requests, the Turkish manufacturer, GİRSAN Machine and Light Weapon Industry, confirmed that it manufactured the weapon pictured on the left and that the weapon pictured on the right is an unlicensed copy.[21] CAR continues to liaise with GİRSAN and a number of other manufacturers as it tracks the counterfeit trade in weapons.

Beyond weapons, CAR has also alerted manufacturers to other counterfeit commodities, including supplies of electronic components used in the manufacture of IEDs.

FIGURE 10

A GENUINE GIRSAN 9 X 19 MM PISTOL (LEFT) AND AN UNLICENSED COPY (RIGHT)

Note: Documented by CAR field investigation teams in Burkina Faso in October 2017 (left) and Afghanistan in June 2019 (right).

CONCLUSION

Tracing is a powerful measure, not only for identifying the diversion of weapons, ammunition, and related materiel, but also for helping national governments to address these destabilising activities in the future. Since tracing is the most effective and verifiable way to generate granular information about the supply chain, and the parties to it, it is a critical source of information for any state or company that seeks to exercise more effective due diligence when evaluating the legitimacy of its prospective sales or export recipients.

This Digest provides a snapshot of the tracing operations of a single non-governmental organisation, Conflict Armament Research. Its findings are not universally applicable and are most relevant to tracing in the context of armed conflict; however, they speak to the universal value of 'layering' investigations and to tracing both weapons and other commercial commodities. While these commodity groups are distinct, not least because they are subject to differing degrees of export control, both are exposed to misuse by parties that tap into any and all markets—whether commercial or military—to sustain their activities.

All trace requests serve as notices of potentially illicit activity. Regardless of whether they derive from competent national authorities or from the non-governmental sector, they provide national governments with information that is often instrumental in identifying illicit activity, informing more effective arms control policies, and ultimately securing national interests against the activities of terrorist and insurgent groups. A trace request provides governments with information to which they would not otherwise be party—irrespective of whether they choose to act on the information.

The ITI remains the only global instrument to address tracing in its own right. While the ITI is limited in scope, the fundamental processes that it articulates (marking, record-keeping, and cooperation) apply as much to tracing any uniquely or collectively marked commodity as they do to tracing small arms and light weapons. This is not to suggest, in any way, that the international community should revisit the scope of the ITI, but merely to emphasise that tracing—particularly in the context of armed conflict—must encompass a broader set of activities than originally conceived.

From CAR's perspective, tracing needs to be considered a critical element among a series of interlocking activities that are designed to fill knowledge gaps and address unauthorised access to weapons, ammunition, and related materiel—including weaponisable commercial products. This broader perspective has prompted CAR to diversify the range of items that it traces. In so doing, it has engaged in, and demonstrated the value of tracing to an increasing number of stakeholders. These

A TRACE REQUEST PROVIDES GOVERNMENTS WITH INFORMATION TO WHICH THEY WOULD NOT OTHERWISE BE PARTY

stakeholders encompass governments, the entities in the defence sector, and companies operating in purely civilian commercial markets.

Demonstrating the value of tracing is critical because cooperation in tracing—one of the ITI's three fundamental pillars in successful tracing—remains weak, thus representing the greatest obstacle to better understanding and addressing diversion. As a tracing party with a 40 per cent global response rate, CAR is well positioned to contribute to both national and international cooperation in tracing. Some states continue to impose significant barriers to information sharing, arguably detracting from the capacity of all parties to tackle diversion and the political, social, and economic insecurities it feeds. Despite this challenge, CAR continues to enhance its tracing operations as well as other methods for identifying the diversion of weapons in conflicts.

AS A TRACING PARTY WITH A 40 PER CENT GLOBAL RESPONSE RATE, CAR IS WELL POSITIONED TO CONTRIBUTE TO BOTH NATIONAL AND INTERNATIONAL COOPERATION IN TRACING

This Digest identifies how both tracing parties and responders can work to maximise the impact of tracing and utilise it to identify points of diversion, including by:

- **engaging in accurate tracing**, including, at minimum, identifying serial numbers and taking photos of all materiel seized or recovered from illicit actors;
- **ensuring that manufacturers of non-export-controlled goods are made aware of any possible counterfeits** and of any armed groups that may be repurposing or weaponising their products, while working with industry to promote preventive measures;
- **maintaining accessible digital records indefinitely**; and
- **given that tracing benefits all parties concerned, cooperating effectively and responding in full** by providing the highest level and most expansive response requested.

ENDNOTES

1 See Council of the EU (2019) and European Commission (n.d., p. 4), which lists iTrace Plus as grant number 826579.

2 The intergovernmental organisation INTERPOL is a closed network. It comprises INTERPOL national bodies, which operate under the authority of each INTERPOL member state and are usually integrated into each state's national law enforcement agencies. The ITI encourages states to submit trace requests to and trace weapons through INTERPOL's iARMS system. CAR does not follow this guidance, although it does contribute data to the system and, on request, runs iARMS data through its own iTrace® database, primarily to check for serial number matches.

3 This Digest draws on a data set that covers five full years of operations—1 January 2015 to 31 December 2019; it does not present data on trace request replies received in the years 2014 or 2020, as these would offer only a partial value.

4 Information relayed to CAR bilaterally by the states concerned, or reported in closed multilateral sessions (confidential).

5 CAR provides all parties that reply to its trace requests with a 'right of reply' text. This text combines the information provided by CAR with the information supplied by the party in response (that is, the circumstances of export); it serves as a full description of the transaction concerned. Once agreed by the party concerned, this text is 'locked' and CAR uses this text verbatim in every reference to the transaction—whether in its iTrace® Global Weapon Reporting System or any other output with an external audience.

6 CAR discovered additional indications of Libyan provenance in the materiel seized from the *Letfallah II*, including ammunition consigned to the Government of Libya in the 1980s and ammunition that was supplied during the recent conflict (CAR, 2017, pp. 60–63). As with all CAR investigations, information gathered in tracing operations is only one component of evidence gathered.

On 7 October 2015, the Government of Romania responded promptly to a formal tracing request issued by CAR on 20 August 2015. This response confirms that: 1) the Romanian company Uzina Mecanică Cugir SA manufactured the FPK sniper rifle, calibre 7.62 x 54R mm, with lot number F-7503, between 1976 and 1978; 2) Uzina Mecanică Cugir SA delivered the item concerned to the Romanian Ministry of Defence under a supply contract ordered by the ministry; 3) between 1978 and 1979, the Foreign Trade Department of the Romanian Ministry of Defence exported a consignment of 7.62 x 54R mm calibre rifles to Libya from Romanian army stocks; and 4) the exporter could not provide any further information regarding the export documentation, the circumstances of the export, or details regarding the consignment, because the materiel was manufactured and exported more than 30 years ago. The Government of Romania confirmed that according to Romanian legislation, records and relevant documents for military goods subject to the UN International Tracing Instrument must be kept for a period of 30 years by manufacturing companies and 20 years by exporters and importers of such materiel.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the Belgian company FN Herstal manufactured the FN MAG general-purpose machine gun with serial number 99352, subject to CAR's trace request. The weapon was part of order number 23-2-7520 of 4 October 1979, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the Belgian company FN Herstal manufactured the FN FAL rifle, subject to CAR's trace request. The weapon was part of order number 9503 of 23 December 1965, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the Belgian company FN Herstal manufactured the FN FAL rifle, subject to CAR's trace request. The weapon was part of order number 23-2-4709 of 30 July 1973, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the Belgian company FN Herstal manufactured the FN FAL rifle, subject to CAR's trace request. The weapon was part of order number A3493 of 23 March 1972, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 1225111, subject to CAR's trace request, was part of order number 23-2-6255 of 29 August 1975, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 1243069, subject to CAR's trace request, was part of order number 23-2-6255 of 29 August 1975, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 995754, subject to CAR's trace request, was part of order number 23-2-4709 of 30 July 1973, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 1232064, subject to CAR's trace request, was part of order number 23-2-6255 of 29 August 1975, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 1240363, subject to CAR's trace request, was part of order number 23-2-6255 of 29 August 1975, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 1004805, subject to CAR's trace request, was part of order number 23-2-4709 of 30 July 1973, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 781694, subject to CAR's trace request, was part of order number A752 of 18 December 1967, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 798432, subject to CAR's trace request, was part of order number A934 of 13 May 1968, which was delivered to Libya on an unspecified date.

On 9 October 2015, the Government of Belgium responded to a formal trace request issued by CAR on 5 August 2015. This response confirms that the FN Herstal-manufactured rifle with serial number 792525, subject to CAR's trace request, was part of order number A934 of 13 May 1968, which was delivered to Libya on an unspecified date.

On 15 December 2016, the Government of Italy responded to a formal trace request issued by CAR on 5 August 2015. In its response, the Government of Italy stated that the Italian company Oto Melara SpA inherited a contract, which the government of Libya signed in the 1980's, to produce 155H RDX-TNT artillery rounds and related propellant charges. Avio Srl delivered the aforementioned items to the end-user, which is described as "Libyan Security Force" between 1982 and 1985. The Italian authorities stated that the complete records of these items are no longer available.

7 There are important exceptions to this generalisation. In the past decade, manufacturers have applied lot numbers (whether through laser-marking or stamping) to individual units of small-calibre ammunition. However, in global terms, the proportion of lot-marked, small-calibre ammunition is miniscule.

8 Adopted by the United Nations General Assembly on 8 December 2005, the International Tracing Instrument is a politically binding commitment to enable states to identify and trace, in a timely and reliable manner, illicit small arms and light weapons (UNGA, 2005).

9 This Digest uses the term 'import marking' rather than other terminology because it is broadly understood internationally and stipulated in two international arms control instruments: the ITI and the UN Firearms Protocol (UNGA, 2001).

10 Analysis provided for primary (manufacturer) trace request responses (N=1,144). CAR defines a primary trace request as the trace request issued to the manufacturer, or first known custodian of materiel; a secondary trace is one issued to recipients identified in a previous response concerning the same materiel.

11 Analysis provided for secondary trace request responses (N=112). There is a 2 per cent difference between secondary responses from states (25 per cent) and companies (23 per cent).

12 CAR does not issue a secondary trace request for items that it has documented in the country of the last known recipient. In these cases, CAR field investigation teams work directly with national partners.

13 The list is not exhaustive. For further examples, see CAR (2019).

14 As of December 2019, the precise number of units was 162,123,968.

15 CAR has been able to determine the year of manufacture for 41 per cent of weapons documented in its database.

16 In this analysis, CAR assigns countries to regions of the world in accordance with Annex I of the United Nations Statistical Yearbook (UNSD, 2019, pp. 469-473). It provides the data pertaining to Europe disaggregated into four European subregions, as trace request replies from the region are far more numerous than from other regions of the world. In the following regions, the identified states received trace requests: **Africa** (Algeria, Egypt, Ethiopia, Mauritania, Morocco, Rwanda, South Africa, Sudan, and Uganda); **the Americas** (Argentina, Brazil, Canada, and the United States); **Asia** (Afghanistan, Azerbaijan, China, Democratic People's Republic of Korea, Georgia, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kyrgyzstan, Lebanon, Pakistan, Republic of Korea, Saudi Arabia, South Korea, Turkey, and the United Arab Emirates); **Eastern Europe** (Belarus, Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Russian Federation, Slovakia, and Ukraine); **Northern Europe** (Finland, Norway, Sweden, and the United Kingdom); **Southern Europe** (Albania, Bosnia and Herzegovina, Croatia, Italy, Montenegro, Serbia, Slovenia, Spain, and the former Yugoslav Republic of Macedonia); and **Western Europe** (Austria, Belgium, France, Germany, the Netherlands, and Switzerland).

17 For these reasons, CAR trains its own personnel extensively through its in-house Firearms Explosive and Ammunition Recognition course. CAR supplements this training with a wide range of standard operating procedures and photographic guides for documenting weapons during field operations.

18 The ITI encourages states to support others with technical, financial, and other assistance in the form of capacity building (UNGA, 2005, para. 27).

19 The 13 governments are those of Bahrain, Benin, Burkina Faso, the Central African Republic, Gambia, Iraq, Lebanon, Mali, Niger, Nigeria, Senegal, Somalia, and South Sudan.

20 Confidential correspondence with CAR.

21 On 13 March 2019, Girsan Machine and Light Weapon Industry responded promptly to a formal trace request issued by CAR on 8 March 2019. This response confirms that: 1) Girsan Machine and Light Weapon Industry manufactured the MC21 pistol with serial number T6368-13 G00356, subject to CAR's trace request; 2) Girsan Machine and Light Weapon Industry sold the pistol as part of an order of 175 handguns to Billy Trading Company and Civil Engineering (La Gachette du Centre, 01 BP 6706, Ouagadougou, Burkina Faso); and 3) the order was shipped on 4 December 2013. Girsan Machine and Light Weapon Industry included a copy of the packing list and customs declaration in it's response to CAR.

On 7 August 2019, Girsan Machine and Light Weapon Industry responded promptly to a formal trace request issued by CAR on 6 August 2019. This response confirms that: 1) Girsan Machine and Light Weapon Industry did not manufacture the Zigana 36 pistol with serial number T0620-10H00582, subject to CAR's trace request; and 2) the serial number format does not follow that of genuine Girsan manufacture. Girsan Machine and Light Weapon Industry confirmed that the serial number format of genuine Girsan-manufactured weapons begins T6368 (T indicating the country of manufacture and 6368 the manufacturer).

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Address
Belsloten vennootschap
Kleemburg
9050 Gemeente
Gentbrugge
België

Email
admin@conflictarm.com

Twitter
@conflictarm

Instagram
@carinthefield

www.conflictarm.com