

DIVERSION DIGEST

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HIGHLIGHTING ANOMALIES IN GLOBAL TRADE

ANALYSING GLOBAL CUSTOMS DATA

TRACKING INDIVIDUAL SHIPPING RECORDS

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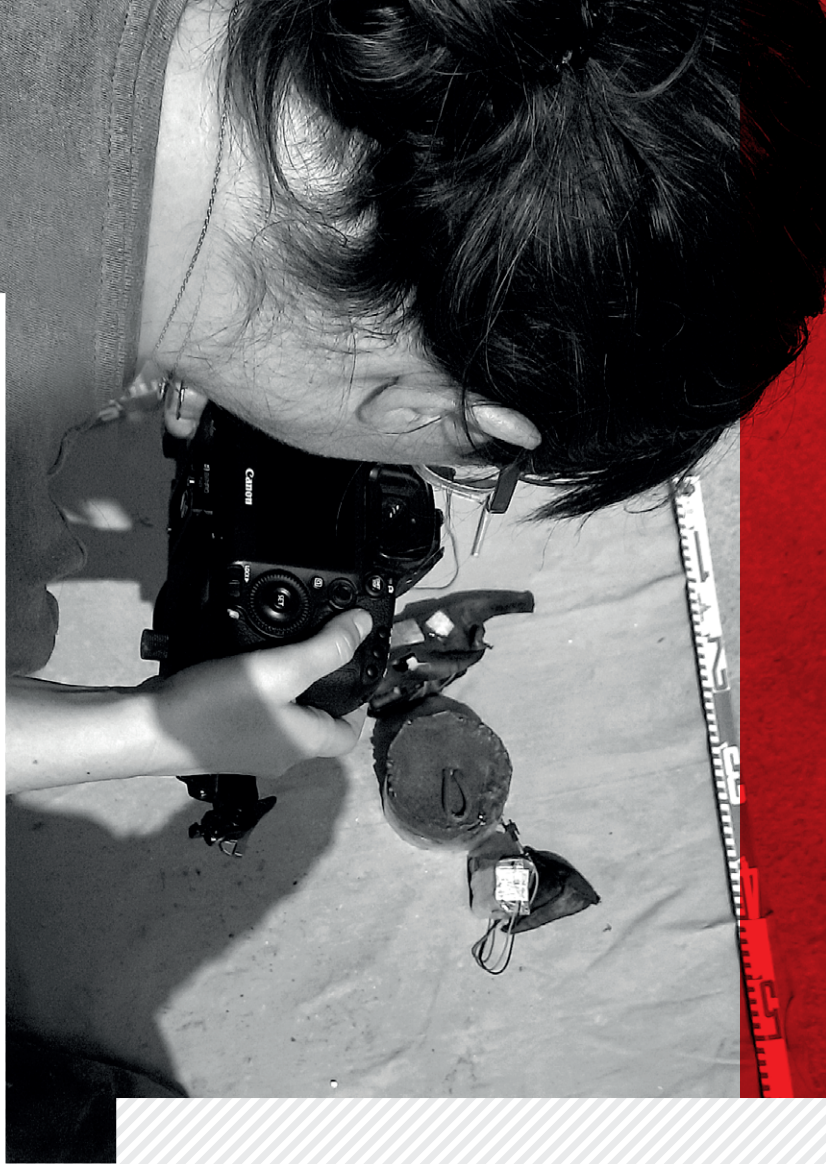
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INTRODUCTION

Analysis of global customs data and individual shipment records can help identify potential sources and intermediaries responsible for the diversion of materiel that can become precursors to homemade explosives (HME) used in the production of improvised explosive devices (IEDs).

By scrutinising the reporting of licit trade flows of these sensitive commodities, Conflict Armament Research (CAR) investigators have been able to highlight distinctive outlier trends in cross-border purchases. These irregularities can indicate potential red flags. Building on these flags through detailed analysis of bill-of-lading trade data can further pinpoint prospective ‘choke points’, key junctions where enforcement action could disrupt the illicit supply of multiple commodities.

CAR traces materiel where possible with manufacturers, governments, and other entities involved in the supply chain to identify the point of diversion.

In support of its field investigations into the diversion of explosive precursors into conflict zones, CAR has conducted analysis of commercial trade data relating to three regions where its field investigation teams have been documenting recoveries of sensitive commodities from illicit armed actors: the Horn of Africa and Gulf of Aden,¹ West Africa, and the Middle East—specifically Iraq and Syria. CAR investigators drew on two key types of source:

- » national governments’ aggregated reporting of imports and exports to the United Nations (UN) Comtrade database since 2000 (see Figure 1 for an example); and
- » transaction-level bill-of-lading trade data, made available by a range of commercial data providers.²



ABBREVIATIONS

CAR
Conflict Armament Research

HME
Homemade explosives

HS
Harmonised system

IEDs
Improvised explosive devices

IS
Islamic State

UNSC
United Nations Security Council

The full methodology for this data analysis is included towards the end of this Digest. This Digest explores three case studies derived from CAR’s frontline field work investigating illicit supplies of (i) detonators seized in Yemen, (ii) detonating cord recovered in Burkina Faso and (iii) explosive precursor materiel documented across Iraq and Syria.

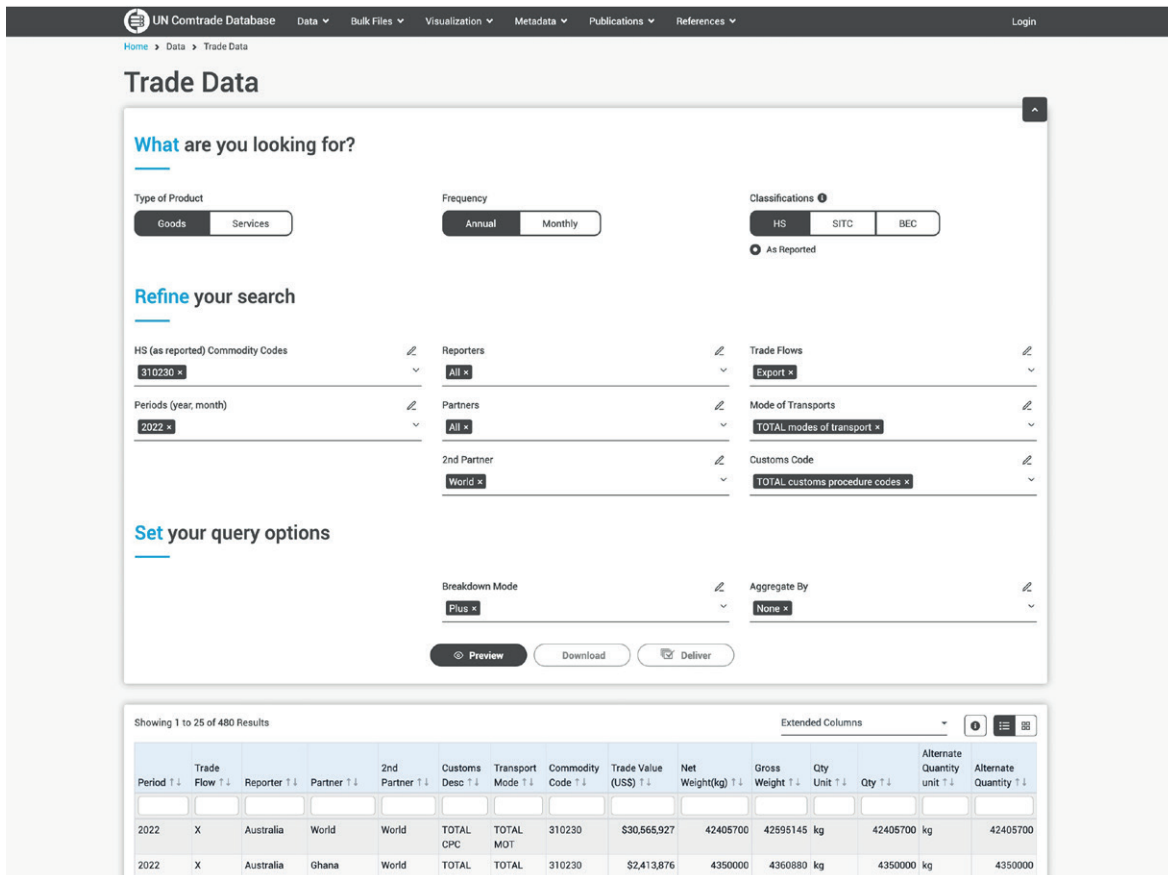
CAR makes no allegations of illegality or wrongdoing by any of the companies involved in these case studies. CAR traces materiel where possible with manufacturers, governments, and other entities involved in the supply chain to identify the point of diversion. CAR would like to acknowledge the cooperation of the companies whose responses to its trace

requests have been critical in its ongoing investigations. Analysis of trade data can raise red flags regarding specific import activities and generate hypotheses about diversion from the licit market, but further research through dedicated field investigations and formal tracing is required to track onward transfer from companies involved in these licit, reported shipments.

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Analysis of trade data can raise red flags regarding specific import activities and generate hypotheses about diversion from the licit market.

FIGURE 1
UN COMTRADE, SHOWING SEARCH RESULTS FOR AMMONIUM NITRATE TRADING IN 2022



RED FLAG 1

RAPID DIVERSION

In April 2021, Yemeni authorities seized 40,000 non-electric detonators in Lahij Governorate (Figure 2). They were part of a cache of 40 crates being illicitly transferred from a skiff to four vehicles transporting the goods overland. CAR investigators documented one of these crates on 26 April 2021.

The detonators that CAR documented in Lahij were manufactured by an Indian-based company. Markings on the crates indicated that the detonators were manufactured between February and March 2021. At most, only two months had passed between production in India and seizure by Yemeni authorities, a very short time frame for diversion to occur.

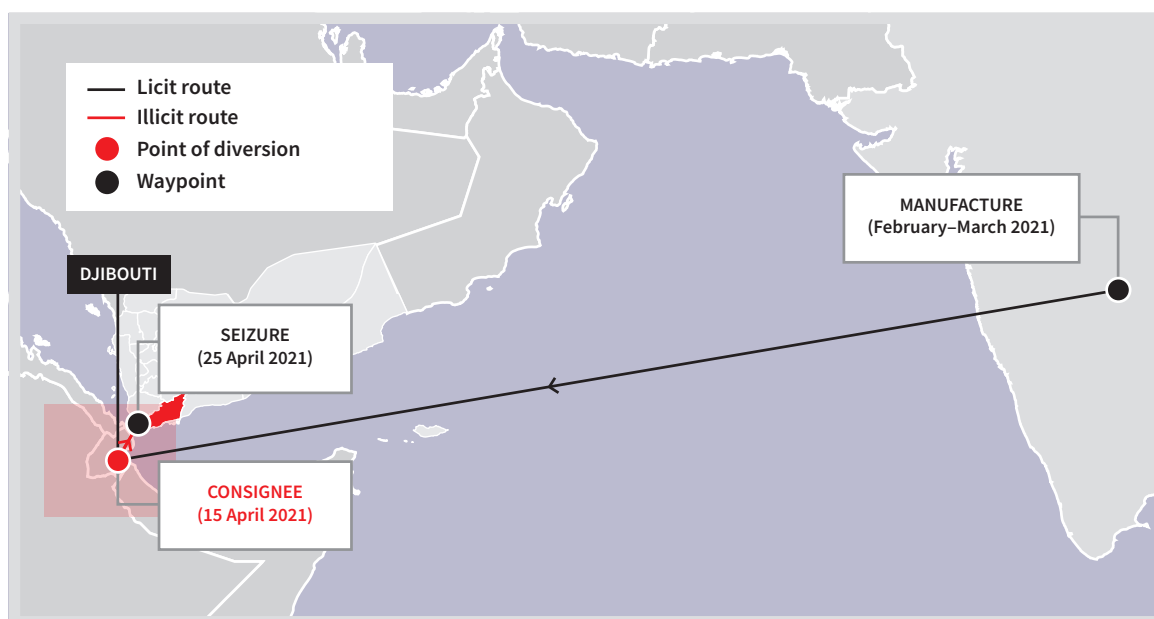
CAR traced the detonators with the Indian manufacturer, which responded promptly to confirm that the detonators documented in Yemen had all been part of a nearly nine tonne shipment, comprising 5.6 million detonators, that had been shipped to a single Djiboutian trading company.



**THE DETONATORS ARRIVED
IN DJIBOUTI PORT **JUST**
TEN DAYS PRIOR TO THEIR
SEIZURE IN YEMEN**

MAP 1

TRANSFER HISTORY OF NON-ELECTRIC DETONATORS DOCUMENTED IN YEMEN IN APRIL 2021



The detonators arrived in Djibouti port just ten days prior to their seizure in Yemen, suggesting a very rapid diversion and illicit retransfer. The Djiboutian company has not responded to CAR’s trace requests.

CAR investigators analysed available bill-of-lading level trade data and found no other records to indicate that the Djiboutian company had imported explosives prior to 2021 (Figure 2).

FIGURE 2
IMPORTS OF DETONATORS AND DETONATING CORD (HS CODE 3603) INTO DJIBOUTI (VALUE IN USD)

CONSIGNEE	2015	2016	2017	2018	2019	2020	2021
1				171,000			
2	15,100						
3		7,695					
4				49,853,500			
5				51,440,625			
6		67,500					
7		34,020					
8		402,379					
9		26,415					
10	68,681						
11							191,680,750
12							86,250
13		47,000					
14	52,200	87,000					
15	322,417				632,400	1,164,040	813,992
16			70,458	19,580		8,660	
17				59,400		52,000	143,600
18				10,000			
19	37,500	33,000					

Source: Indian export records accessed via 52wmb



However, the company had been involved in several other large shipments in 2021, including the import of 550,000 m of detonating cord from India in October (Figure 3).

Having identified that this company is a previously unknown importer of detonators and detonating cord, CAR examined the company's other import activity in 2021, which revealed that the company has been exclusively importing chemicals that can be used to make HME. This includes several shipments of sulphur powder, collectively comprising some 230,000 kg, which can be used as a fuel component in HME. CAR also identified shipments of sodium nitrate, which can be used as an oxidiser in nitrate-based HME, and of diethyl ether, which can be used in the production of peroxide-based primary explosives.

By themselves, large quantities of detonators are not unusual, as Djibouti is a significant importer of explosives for construction and is a re-export point for explosives destined for Ethiopia—the largest regional importer. Trade data reported to UN Comtrade also demonstrates that India is one of the largest reported sources of commercial explosives to Gulf and Horn states in general.

CAR makes no allegation of wrongdoing or complicity in diversion of the companies involved

CAR IDENTIFIED THAT THE IMPORTING COMPANY WAS A NEW, PREVIOUSLY-UNREPORTED ACTOR AND THAT IT HAD ALSO BEEN IMPORTING LARGE QUANTITIES OF OTHER SENSITIVE COMMODITIES.

in this transfer. Given the absence of a response from the Djiboutian trading company to CAR's trace request, it is not possible to assess the legality of the onward transfer.

Trade data analysis in this case has, however, highlighted key red flags for national authorities to address. CAR's exploitation of public and commercially available records and formal tracing efforts identified that detonators seized in Yemen had been diverted within ten days of their import into Djibouti, that the importing company was a new, previously unreported actor, and that this company has also been importing large quantities of other sensitive commodities. As such, this case may merit enhanced scrutiny and further investigation.

FIGURE 3
IMPORTS FROM INDIA BY DJIBOUTI CONSIGNEE 12, SINCE 2018

DATE OF EXPORT	DESCRIPTION OF GOODS	HS CODE (AS DECLARED)	NET WEIGHT (KG)	VALUE (USD - AS DECLARED)	PORT OF DEPARTURE
8 February 2021	Sulphur powder (200 IS. mesh)	25030010	154	44,314	Hazira Port, Surat
8 March 2021	Diethyl ether	29091100	22,400	51,265	Hazira Port, Surat
5 July 2021	Sulphur powder (200 IS. mesh)	25030010	115,000	35,650	Hazira Port, Surat
21 July 2021	Sulphur powder (200 IS. mesh)	25030010	115,000	36,800	Hazira Port, Surat
1 October 2021	Detonating cord 12 g/m	36030020	250,000	45,000	Cochin
1 October 2021	Detonating cord 10 g/m	29091100	300,000	45,000	Cochin
25 October 2021	Sodium nitrate (agriculture grade)	310250000	88,000	48,601	Mundra

Source: Indian export records accessed via 52wmb

Box 1

TRADE SPOTLIGHT SOMALIA

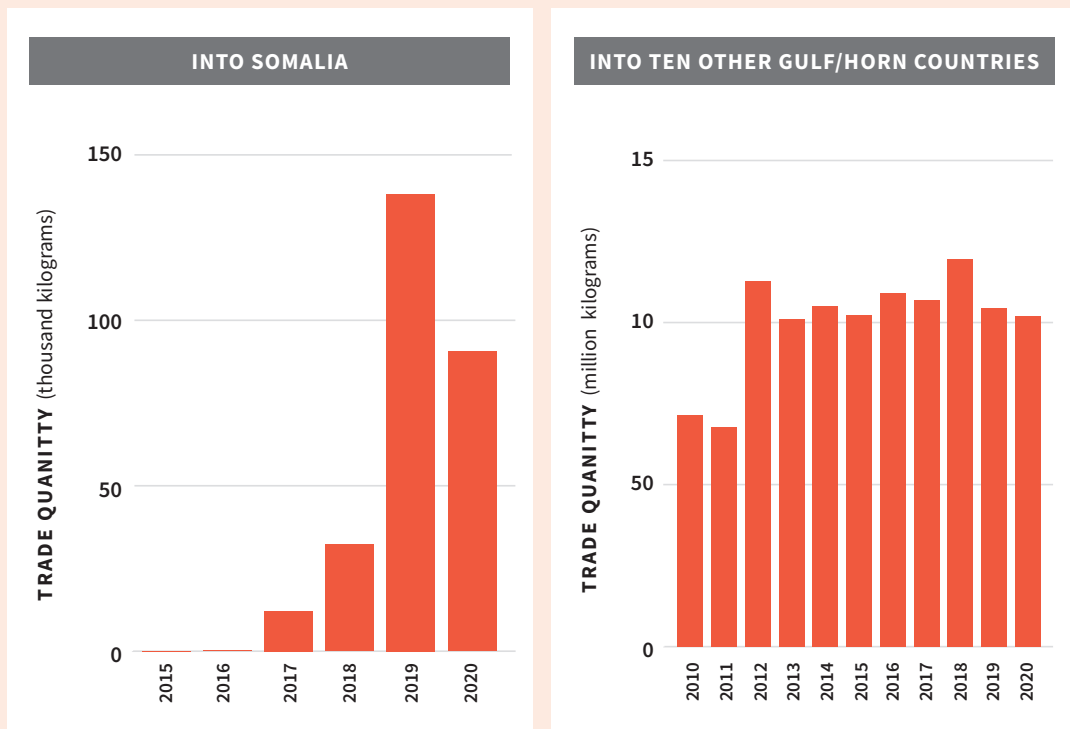
CAR has observed sharp increases in imports of potassium nitrate, nitric acid (Figure 4), and sulphuric acid into Somalia since 2016. These increases are out of step with reported trends in imports of these commodities into the wider region.

This comes as the UN Panel of Experts on Somalia reported evidence that al-Shabaab has begun – since at least 2017 – to manufacture HME, having previously relied primarily on accessing military explosives (UNSC, 2019). The Panel reported find-

ings from post-blast investigations that suggest that al-Shabaab is using potassium nitrate in the production of IEDs. Aggregated customs data is not reported at the level of detail that would allow CAR to distinguish between imports of low-nitrate and high-nitrate potassium nitrate.

Perhaps significantly, Somalia’s imports of ammonium nitrate – another common nitrogenous fertiliser – do not show the same post-2016 disjuncture as revealed in imports of potassium nitrate, the precursor identified in al-Shabaab IEDs.

**FIGURE 4
IMPORTS OF NITRIC ACID 2010-20**



Source: Comtrade



RED FLAG 2

SINGLE TRANSACTION

CAR field investigation teams have documented detonators and detonating cord that security forces have seized in Burkina Faso, Côte d'Ivoire, Mali and Niger. Items observed in Burkina Faso include cord carrying markings that indicate manufacture on 13 March 2018 in India. Security forces seized the cord from smugglers near the border between Burkina Faso and Ghana on an unknown date. CAR investigators documented this detonating cord on 21 May 2021.

Indian companies lawfully exported prepared explosives and detonators to five countries in the region between 1 January 2018 and 31 March 2021. In this time period, bill-of-lading level data for Indian companies shows only one reported export of detonating cord of the model that CAR documented, delivered to a company in Nigeria and arriving at Lagos port in April 2018. This date window would correspond with the manufacture date of the detonating cord seized in Burkina Faso in May 2021.

CAR formally traced this detonating cord with the manufacturer, who responded in July 2022 to confirm that it had exported the cord to the identified

Nigerian company in April 2018. The manufacturer also provided CAR with copies of the customs examination report, export invoice, packaging list, bill of lading, and national explosives regulations forms to support ongoing investigations.

This trace response confirmed the hypothesis derived from bill-of-lading trade data. CAR attempted to trace the material with the Nigerian company, who have not responded.

Formal tracing is required to uncover the onward chain of custody from this company. This kind of shipment-level trade match, however, provides a sufficient 'red flag' to encourage national authorities to check the disposition and use records of other explosives shipments to this company.

INDIAN COMPANIES LAWFULLY
EXPORTED PREPARED
EXPLOSIVES AND DETONATORS
TO FIVE COUNTRIES IN THE
REGION BETWEEN 1 JANUARY
2018 AND 31 MARCH 2021.

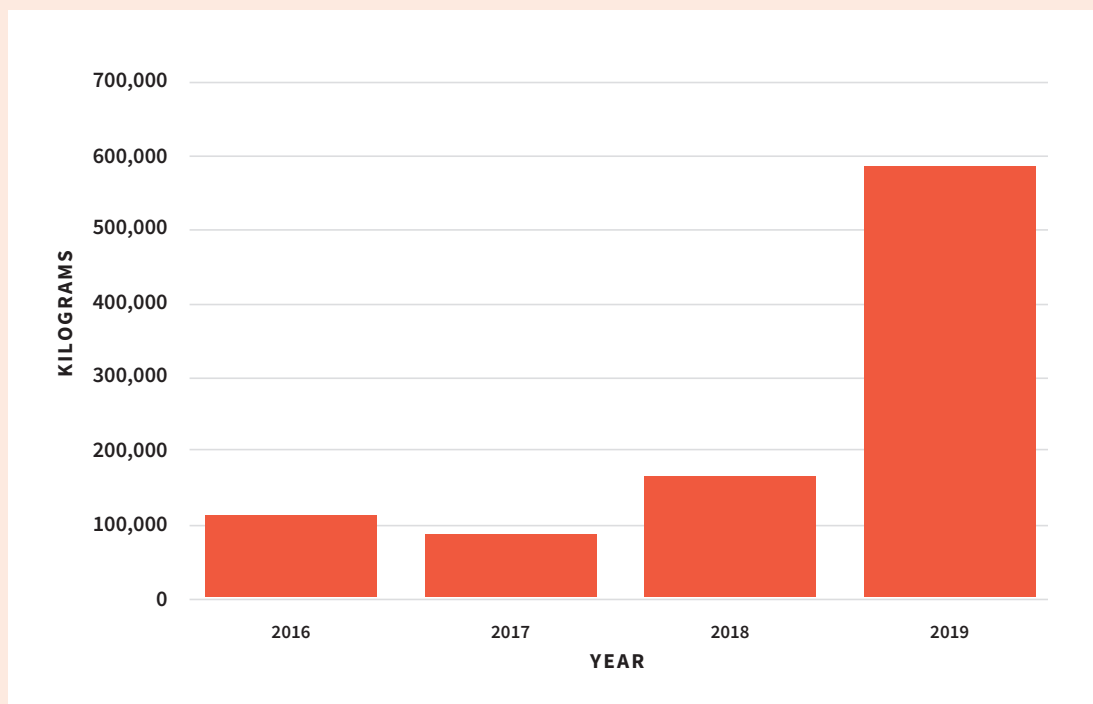
Box 2

TRADE SPOTLIGHT BURKINA FASO

Licit Burkinabe imports of prepared explosives increased dramatically in 2019. This spike was not matched by an overall rise in imports of precursor and explosive commodities. The majority of this 2019 spike consists of a growth in imports of explosives from Ghana (Figure 5), which since 2016 has surpassed South Africa and Spain to become the largest source of Burkina Faso’s explosives imports. Compared to the average of the previous three years, recorded Ghanaian exports of prepared explosives to Burkina Faso increased by 485 per cent in 2019.

This is a striking rise in demand, which coincides with an increase in IED attacks in Burkina Faso and an increase in terrorist activity in the country. It also coincides with an increase in mining activity in the country, both artisanal and commercial. In cases where CAR has been able to trace items from such seizures, since March 2017 tracing results show that several Ghanaian companies originally imported the materiel. Where appropriate, CAR has notified relevant national authorities in both countries and is investigating the onward supply chains from these importing companies.

FIGURE 5
EXPORTS OF COMMERCIAL EXPLOSIVES FROM GHANA TO BURKINA FASO, 2016–2019



Source: Comtrade



RED FLAG 3

SPIKES IN SALES



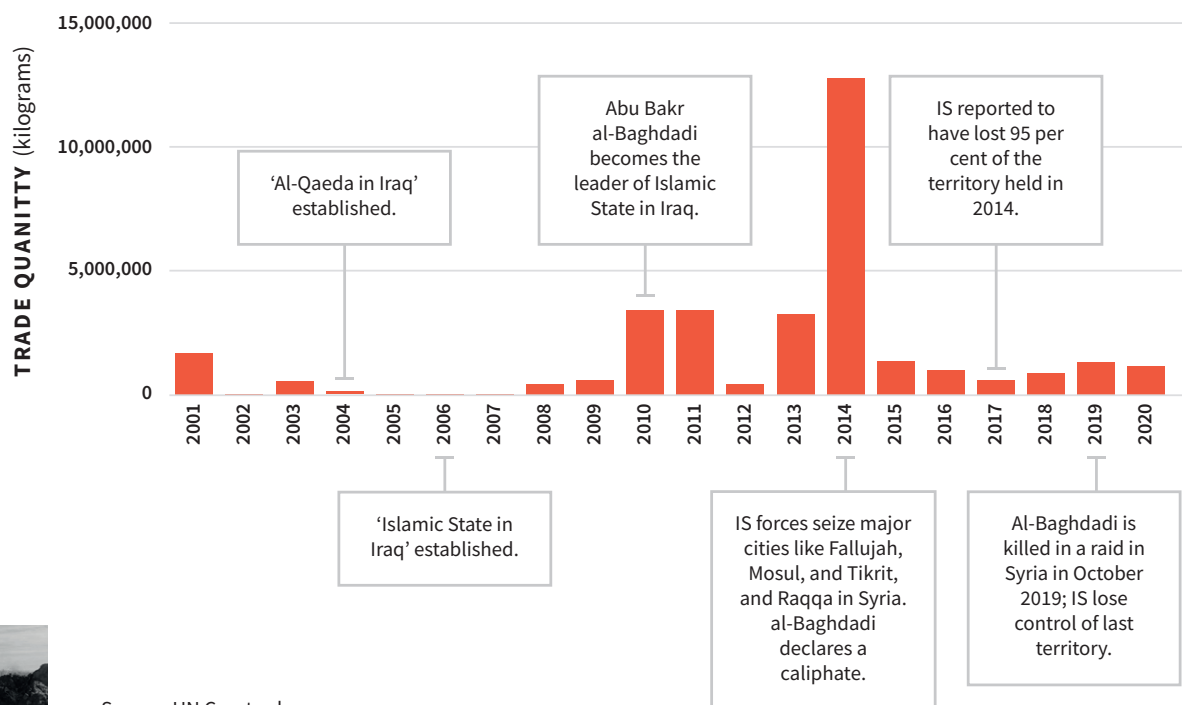
CAR field investigation teams in Iraq and Syria have documented large quantities of explosive precursors and other sensitive commodities that Islamic State (IS) forces have used in the production of IEDs. CAR's reporting has previously shown how IS procurement networks accessed some of this materiel (CAR, 2020).

Analysis of commercial trade data shows that flows of major precursor materials for HME, such as ammonium nitrate, mirrors the rise and fall of the group

itself (Figure 6). Ammonium nitrate is commonly used as a fertiliser in agricultural products or in mining, quarrying, and construction. IS forces regularly used ammonium nitrate to produce HME.

Recorded imports of HME precursors into Iraq peaked between 2014 and 2016 across various commodity groups. In recent years, imports of these commodities into the region have fallen dramatically.

FIGURE 6
AMMONIUM NITRATE IMPORTS TO IRAQ, WITH KEY DATES OF THE RISE AND FALL OF ISLAMIC STATE



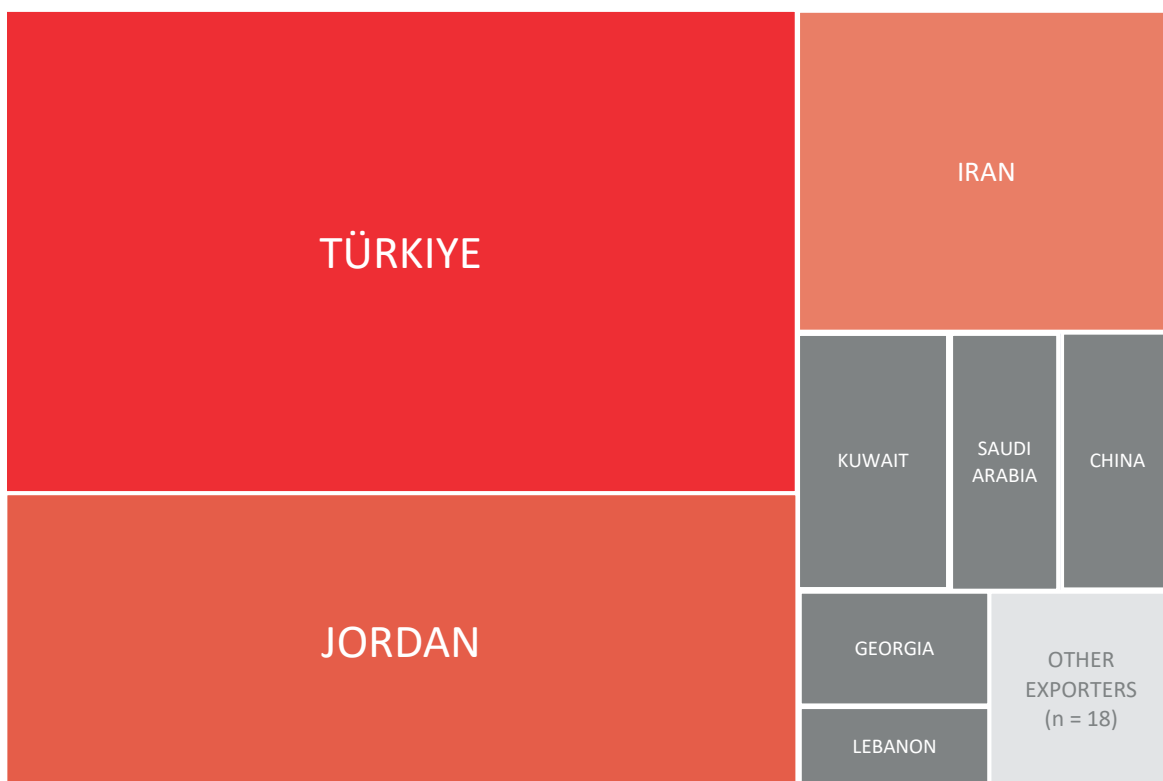
Source: UN Comtrade.
 Sources for key dates: The Wilson Center (2019), Reuters (2019).



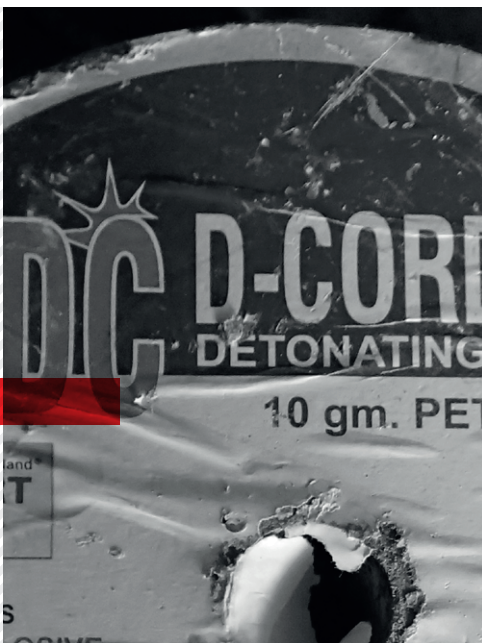
UN Comtrade data shows that three countries dominate the licit export of ammonium nitrate into Iraq, all of which are neighbouring states. Since 2000, Türkiye (14 million kg), Jordan (nine million kg), and Iran (two million kg) together account for 78 per cent of Iraq’s ammonium nitrate imports (Figure 7). Extra-regional supplies make up a relatively low proportion of overall trade of ammonium nitrate.

In 2014, there was a significant spike in imports of ammonium nitrate to Iraq (see Figure 6 on page 11). This correlates with sharp increases in the acquisition of other nitrates, commercial explosives, and precursors such as sorbitol—a sugar alcohol with a range of commercial purposes that can also be used as a fuel component in improvised rocket propellant (Figure 8 on page 13).

FIGURE 7
COUNTRIES OF ORIGIN FOR IMPORTS OF AMMONIUM NITRATE AND OTHER UREA PRECURSORS INTO IRAQ, 2015–2020



Source: Comtrade



DATA SHOWS THAT THREE COUNTRIES DOMINATE THE LICIT EXPORT OF AMMONIUM NITRATE INTO IRAQ, ALL OF WHICH ARE NEIGHBOURING STATES.

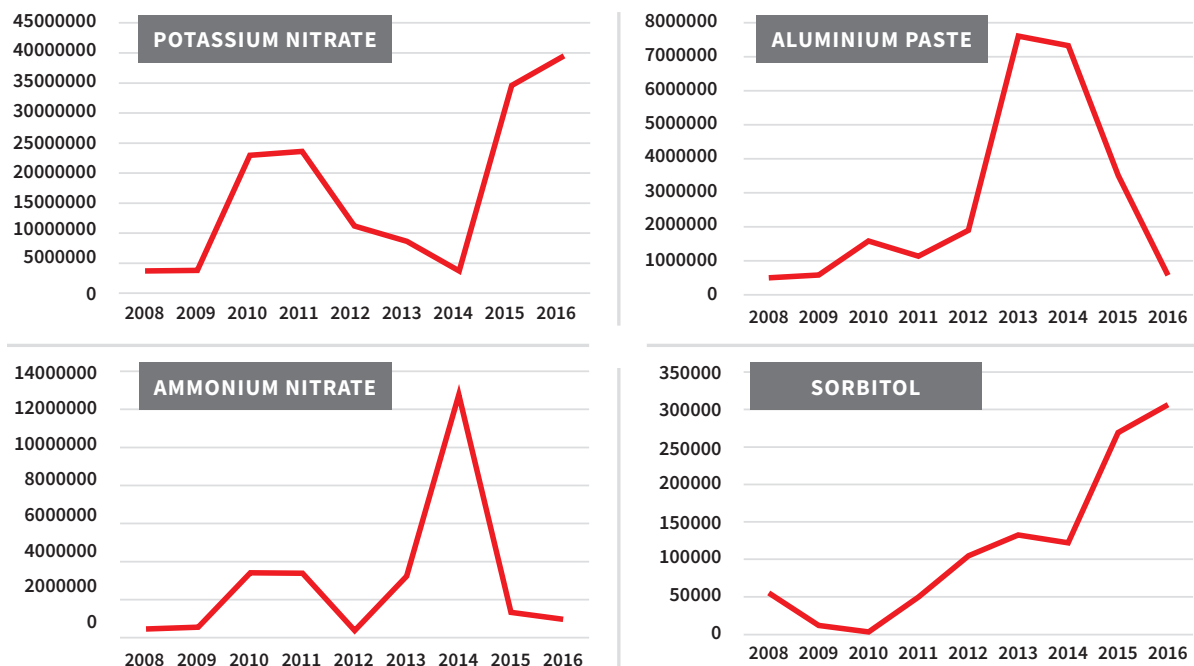


- » Iraq imported around three million kg of sorbitol from a variety of countries between 2000 and 2020. Yearly imports peaked in 2017, with the reported import of 429 tonnes of sorbitol. In 2020, that number had dropped to just shy of 250 tonnes.
- » Iraq imported over 13 million kg of commercial explosives between 2000 and 2020, largely from Türkiye (eight million kg). Imports peaked between 2012 and 2016, with a high of 2.8 million kg imported in 2014 alone.
- » Iraq’s imports of various nitrates, including potassium nitrate— which investigators documented in IS production facilities, where it was being used to create rocket propellant— similarly peaked in 2015 and 2016, subsequently declining year on year.

CAR INVESTIGATORS DOCUMENTED DIVERTED AMMONIUM NITRATE IN IRAQ THAT HAD BEEN TRACED TO TURKISH INTERMEDIARIES.

In most, but not all, cases across these commodities, trends in the licit market matched those in the illicit market. For example, CAR investigators documented diverted ammonium nitrate in Iraq that had been traced to Turkish intermediaries, a finding that suggests there may be some cases where parallels can be drawn between licit flows reported to UN Comtrade and illicit diversion of some of that material.

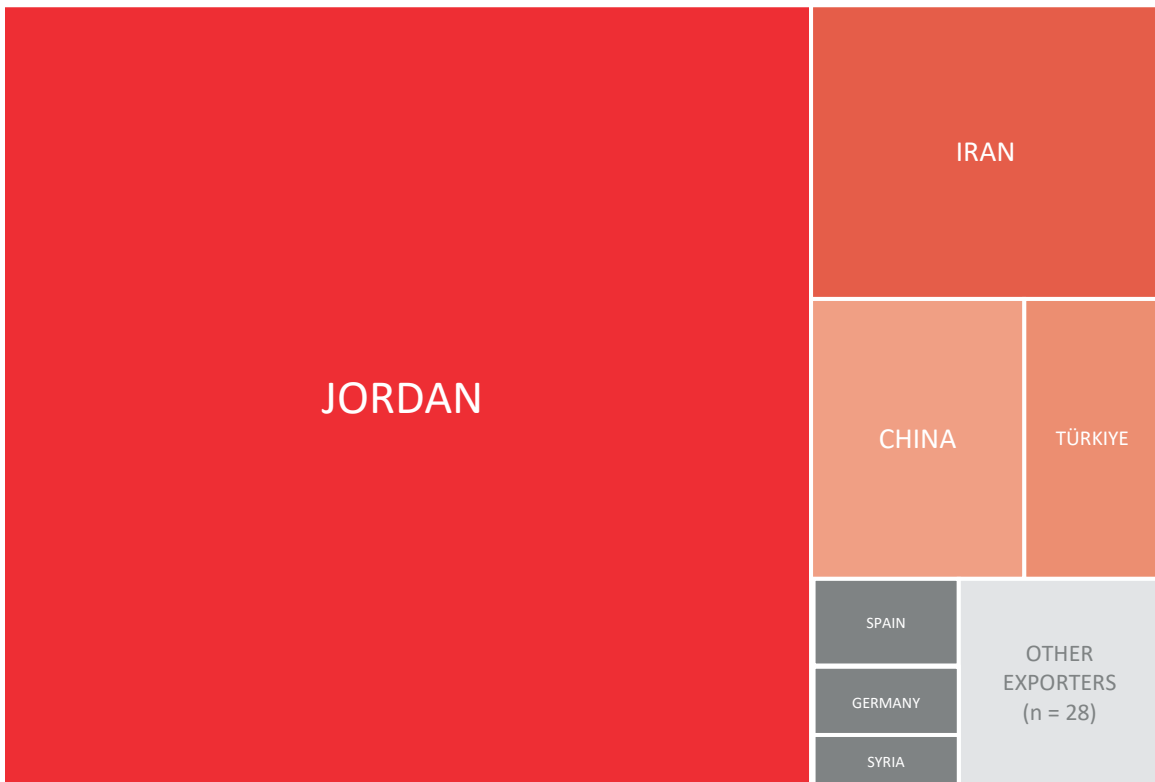
FIGURE 8
SPIKES IN IMPORTS OF PRECURSOR MATERIALS INTO IRAQ, 2008–2016
(Trade quantity, kilograms)



Similarly, the vast majority of licit imports of other nitrates into Iraq were reported to be from neighbouring Jordan (Figure 9). CAR field investigators have traced ammonium nitrate, potassium nitrate, and other nitrogenous fertilisers back to Jordanian

companies and, in some instances, traced the onward licit sale of these supplies to Iraq-based end users. This implies that diversion may have taken place post-delivery from custodians in-country, whether deliberate or inadvertent.

FIGURE 9
COUNTRIES OF ORIGIN FOR IMPORTS OF ‘OTHER NITRATE PRECURSORS’ INTO IRAQ, 2000–2020



Source: Comtrade



CAR FIELD INVESTIGATORS
HAVE TRACED AMMONIUM
NITRATE, POTASSIUM
NITRATE, AND OTHER
NITROGENOUS FERTILISERS
BACK TO JORDANIAN
COMPANIES.

CONCLUSION

Analysis of baseline trade data through open sources such as UN Comtrade can help investigators spotlight unusual trends. These shifts in demand and supply of sensitive commodities may be important signals of prospective vulnerabilities to diversion.

Observed increases or changes in trade patterns, however sudden or distinct, do not necessarily indicate any illicit activity. These are important commodities for many sectors, with a wide range of commercial purposes such as agriculture, construction, mining, and quarrying. Correlations between IED prevalence and rising imports of precursors are suggestive, but not definitive. Identification of new trends could serve as an indicator for enhanced monitoring, especially if these materials subsequently appear on the illicit market or if there is an increase in IED activity in the region.

The cases presented here demonstrate the value to investigators of combining anomaly analysis in aggregated trade data and granular bill-of-lading information to help guide and inform monitoring of sensitive commodities.

Analysing trade data flows has supported ongoing CAR investigations in three key ways :

- » **Highlighting unusual trends** in cross-border purchases of sensitive commodities;
- » **Comparing the manufacturer profiles of seized explosives and precursors** against those of licit imports into a particular country or region; and
- » **Identifying key importers and traders of explosives and precursors**, which can be helpful to national authorities to target sensitisation of chemical security and to spot traders whose commercial profile may trigger red flags for illicit procurement.

MONITORING TRADE FLOWS OF PRECURSOR MATERIALS AND COMMERCIAL EXPLOSIVES MAY HELP INVESTIGATORS AND NATIONAL AUTHORITIES PREVENT DIVERSION FROM LEGAL ACTIVITIES TO THE ILLICIT MARKET.



**EVEN IN COUNTRIES IN ACTIVE
CONFLICT, SUCH AS IRAQ AND
SYRIA—CAR'S INVESTIGATIONS
HAVE IDENTIFIED CASES
WHERE THESE ITEMS HAVE
ULTIMATELY BEEN DIVERTED
FOR USE IN IEDS.**

The cases presented in this Digest highlight prospective red flags identified through trade data analysis. These red flags may inform effective supply chain integrity measures. They include a new, previously unknown importer of sensitive commodities making large purchases, multiple commodities being shipped to one specific importer, and large spikes in sales of multiple sensitive commodities to a particular country.

In countries where IED threats are rising or persistent, monitoring trade flows of precursor materials and commercial explosives may help investigators

and national authorities to prevent diversion from lawful activities to the illicit market. Even in countries in active conflict, where UN Comtrade data shows relatively small and intermittent levels of cross-border trade—such as Iraq and Syria—CAR's investigations have identified cases where these items have ultimately been diverted for use in IEDs.

While the identification of outlier trends in trade data does not necessarily correlate to illicit activity, effective monitoring of supply chains for sensitive commodities is paramount as a measure to prevent possible diversion.



ANNEX 1

METHODOLOGY

CAR field investigation teams document illicit weapons, ammunition, and related materiel such as chemical precursors or commercial explosives in conflict-affected locations and trace their supply sources. The teams inspect this materiel in a variety of situations—whether recovered by state security forces, surrendered at the cessation of hostilities, cached, or held by insurgent forces.

Data gathering

CAR teams 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. The trade data analyses conducted in these cases are all derived from, and instigated by, observations in the field of explosives and precursor materiel that have been recovered by national security forces in conflict-affected locations.

To conduct this trade analysis, CAR investigators drew on two key types of source:

- » national governments' aggregated reporting of imports and exports to the UN Comtrade database since 2000; and
- » transaction-level bill-of-lading trade data, made available by a range of commercial data providers.

Data sources

Comtrade is a global trade data platform managed by the UN Statistics Division that aggregates detailed global annual and monthly trade statistics by product and trading partner (UNSD, n.d.). It claims to represent more than 99 per cent of the world's merchandise trade and therefore provides analysts observing the international movement of sensitive goods with a valuable tool for understanding licit flows and trade dynamics.

The different data sources used for this Dispatch have time lags which can affect their utility as an 'early warning' system. Though some countries report data to Comtrade monthly, for example, many

have a lag of up to 12-24 months. Most commercially available bill-of-lading data has a shorter lag of three to six months, but has far from global coverage.

Data synthesis and analysis

Investigators drew up a list of 43 commodity groups derived from national and international control lists and reflecting precursors and explosives most often encountered by CAR field teams.

CAR then identified relevant reporting codes for each commodity as used by states to provide information to UN Comtrade, known as the Harmonised System (HS). As some commodity groups span multiple HS codes, and shippers from different jurisdictions often use differing codes for the same item, CAR took care to include reporting codes using sampled bills of lading to maximise total coverage of commonly identified items.

In total, CAR included 114 HS code categories. CAR then created a series of dashboards to allow investigators to filter and visualise trade data to isolate imports or exports to particular countries and to gauge their change over time. Where investigators isolated unusual trade trends from the Comtrade baseline, CAR then used bill-of-lading level trade data where available to identify individual importers, exporters, and shipments involved in trades of interest. Investigators conducted granular analysis of this trade data on individual transactions of concern in relation to field-derived observations of materiel recovered from illicit groups.

**CAR IDENTIFIED REPORTING
CODES USED BY STATES TO
PROVIDE INFORMATION TO
UN COMTRADE. IN TOTAL
CAR INCLUDED **114 CODE**
CATEGORIES.**

ANNEX 2

TABLE OF COMMODITY CODES

EXAMPLE HS CODES	SUBSTANCE CATEGORY
28111990	Perchloric acid
28299090	Ammonium perchlorate
28299090	Potassium perchlorate
28341000	Potassium nitrite
28341000	Sodium nitrite
28341000	Potassium nitrite
28342990	Barium nitrate
29042090	Tetranitro methane
29141100	Acetone
29252900	Guanidine nitrate
31051020	Sodium nitrate / potassium nitrate mixtures
31059000	Sodium nitrate / potassium nitrate mixtures
31206000	Calcium ammonium nitrate
34029012	Liquid anionic washing or cleaning preparation containing explosive precursors
34029013	Other washing or cleaning preparation in liquid form not for retail sale, containing explosive precursors
36010000	Propellant powders
36020000	Prepared explosives, other than propellant powders
36030010	Semi-fuses, elemented caps, signal tubes
36030020	Safety fuses, detonating fuses
36030090	Percussion or detonating caps; igniters; electric detonators; other detonators
39122011	Nitrocellulose
25199040, 25309099, 81043000, 81049000	Magnesium powders

EXAMPLE HS CODES	SUBSTANCE CATEGORY
28080010, 28080000	Nitric acid
28070000, 28111990	Sulphuric acid
28291100, 28291990	Sodium chlorate
28342990, 29420090	Magnesium nitrate hexahydrate
29212910, 29336990	Hexamine
28342990, 31026000	Calcium nitrate
28342100, 31059000, 38220090	Potassium nitrate
31022900, 31051090	Ammonium sulphate / ammonium nitrate mixtures
31023000, 31051090	Ammonium nitrate
31024000, 31051090	Calcium carbonate / ammonium nitrate mixtures
31026000, 31051090	Calcium nitrate / ammonium nitrate mixtures
31028000, 31051090	Urea / ammonium nitrate mixtures
32070000, 32129000	Aluminium powders
28299010, 28299020, 28299030	Potassium perchlorate
28470000, 28470010, 28530099	Hydrogen peroxide
28291900, 28291920, 28291990, 29420090	Potassium chlorate
29054400, 29054900, 29339900, 29350090	Sorbitol
28272000, 28299010, 28299020, 28299030, 28291990	Sodium perchlorate
29040000, 29042090, 29049090, 29051100, 29054290	Nitromethane
28342100, 28342990, 31054000, 31059010, 31059090	Potassium nitrate
28341090, 28342990, 31051000, 31025000, 31051090, 31059090, 38220000	Sodium nitrate

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ENDNOTES

- 1 — Bahrain, Djibouti, Eritrea, Ethiopia, Oman, Qatar, Saudi Arabia, Somalia, United Arab Emirates, and Yemen.
- 2 — Providers include but are not limited to: 52wmb (Great Export Import), Export Genius LLC, manifestDB Inc, and Panjiva Inc.



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