



small arms survey

WEAPONS & MARKETS

# Research Notes

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## Producers of Small Arms, Light Weapons, and Their Ammunition

Thousands of companies from some 100 countries produce small arms, light weapons, and their ammunition. While comprehensively identifying producers and estimating the global production of small arms and light weapons is a challenging exercise due to the opacity of the market, this Research Note draws on existing data from the industry and authorized trade to provide insights into the main producers and categories of weapons produced worldwide.

The Research Note identifies 30 states that comprise some of the world's major producers of small arms, light weapons, and their associated ammunition. It focuses on the 20 countries reported to be the top exporters<sup>1</sup> (see Table 2), as well as India, Iran, North Korea, and Pakistan (which produce sizeable quantities of arms largely for domestic customers). It also focuses on Finland, which the Small Arms Survey believes routinely exports USD 50–99 million worth of small arms per year, but cannot be documented as having exported more than USD 100 million worth of weapons in a calendar year. The report primarily covers arms intended for military use. Only about a dozen countries produce advanced guided light weapons, and these are also outlined in the Research Note.

### The weapon-producing companies

Table 2 lists some of the companies producing small arms, light weapons, or their associated ammunition from the top 20 arms-exporting countries (listed in Table 3), as well as Finland, India, Iran, North Korea, and Pakistan. Many of the larger companies producing such weapons and their associated ammunition own and operate enterprises in several countries. One example, Rheinmetall AG, headquartered in Germany, owns subsidiary companies manufacturing small arms, light weapons, or their associated ammunition or components in Canada, Germany, South Africa, Switzerland, the United States, and elsewhere.

Furthermore, for some large companies, such as Raytheon in the United States, the production of small arms, light weapons, or their associated ammunition constitutes only a small portion of their total production output in terms of revenue. Another complicating factor for researchers is that some companies producing small arms, light weapons, or ammunition are joint-venture enterprises with controlling interests in several countries. One example is MBDA Missile Systems, which

is a joint venture involving BAE Systems PLC of the United Kingdom (37.5 per cent), Airbus Group—itself a conglomerate of various European interests—(37.5 per cent), and Finmeccanica SpA of Italy (25 per cent).

The companies given in Table 3 may be state owned or privately held, or a combination of the two. They usually produce a mix of small arms (such as handguns, shotguns, assault rifles, and light and medium<sup>2</sup> machine guns), light weapons (such as heavy machine guns, portable grenade launchers and rifle grenades, man-portable anti-tank weapons and ammunition, and man-portable air defence systems (MANPADS)), ammunition, and pyrotechnics. Many of these companies also produce, sell, and export firearms for civilian markets (personal defence, hunting, and sporting).

More than 60 countries currently produce complete light weapons systems or components. More than half of them are known to produce MANPADS or anti-tank guided weapons (ATGWs) (see Table 1), or components for these (Berman and Leff, 2008).

The granting of licences and production rights and the spread of technology have enabled many countries to produce small arms and light weapons without undertaking expensive or time-consuming research and development programmes. The Survey estimates that 530,000–580,000 military rifles, assault rifles, and carbines are produced annually either under licence or as unlicensed copies (Sulashvili, 2007).

Table 1 Countries producing MANPADS and/or ATGWs (1947–2007)

● Argentina	●● Poland
● Brazil	●● Romania
●● Bulgaria	●● Russia
●● China	●● Serbia
■ Czech Republic	●● Singapore
■● Egypt	●● Slovak Republic
■● France	● South Africa
■● Germany	■ South Korea
■ Greece	● Spain
● India	●● Sweden
■● Iran	●● Switzerland
● Israel	● Taiwan
● Italy	●● Turkey
■● Japan	●● United Kingdom
■ Netherlands	●● United States
●● North Korea	● Vietnam
■● Pakistan	

■ MANPADS ● ATGWs

Source: Berman and Leff (2008, pp. 34–35)

## Ammunition producers

Research suggests that over 100 countries currently produce small arms ammunition; however, only 36 companies were identified as significant producers of ammunition for export to military customers. Further, just 15 states accounted for 90 per cent of identified ammunition exports in 2011. Only a handful of countries have the capacity to reliably produce small arms ammunition of consistent quality in significant quantities (Corney and Marsh, 2013, p. 5).

Ammunition products, production, and markets differ in many ways

from those for small arms and light weapons. The production capacity of a single production line is calculated on the basis of its maximum output of rounds produced per minute, per hour, or per shift. A typical assembly line might manufacture 130 rounds per minute, with a potential annual output of 7–12 million rounds per assembly line. Total ammunition production will fluctuate, however, to adapt to higher demand, routine maintenance, and new client requirements. At present there are ten ‘full product line’ manufacturers in the world manufacturing rimfire, centre-

fire, and shotshell ammunition, as well as the cartridge cases, primers, projectiles, and shot columns/wads to produce such ammunition. These manufacturers typically offer 400–1,000 line items globally. The ten manufacturers identified are: Arms Corporation of the Philippines (Philippines), ATK Defense Group (United States), CBC Group (Brazil), Fiocchi Munizioni SpA (Italy), Industrias Tecnos (Mexico), Nammo AS (Norway), Poongsan Corporation (South Korea), Remington Arms Co. LLC (United States), RUAG Group (Switzerland), and Winchester Ammunition (United States) (Bussard, 2012).

Table 2 Selected companies producing small arms and light weapons, by country\*

Host country	Producer (company) <sup>a</sup>	Primary product type/s
Austria	<ul style="list-style-type: none"> <li>■ GLOCK GmbH</li> <li>■ Steyr Mannlicher GmbH &amp; Co. KG</li> </ul>	<ul style="list-style-type: none"> <li>■ Small arms</li> <li>■ Small arms</li> </ul>
Belgium	<ul style="list-style-type: none"> <li>■ Groupe Herstal SA</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons, small arms, and small arms ammunition</li> </ul>
Brazil	<ul style="list-style-type: none"> <li>■ CBC Group</li> <li>■ Forjas Taurus SA</li> <li>■ Indústria de Material Bélico do Brasil (IMBEL)</li> </ul>	<ul style="list-style-type: none"> <li>■ Small arms ammunition</li> <li>■ Small arms</li> <li>■ Light weapons ammunition and small arms</li> </ul>
Canada	<ul style="list-style-type: none"> <li>■ Colt Canada Corporation<sup>b</sup></li> <li>■ General Dynamics Ordnance and Tactical Systems-Canada<sup>c</sup></li> </ul>	<ul style="list-style-type: none"> <li>■ Small arms</li> <li>■ Light weapons ammunition and small arms ammunition</li> </ul>
China <sup>d</sup>	<ul style="list-style-type: none"> <li>■ China Poly Group Corporation</li> <li>■ China North Industries Corporation (NORINCO)</li> </ul>	<ul style="list-style-type: none"> <li>■ Less-lethal ammunition, less-lethal weapons, light weapons, light weapons ammunition, small arms, and small arms ammunition</li> <li>■ Less-lethal ammunition, less-lethal weapons, light weapons, light weapons ammunition, small arms, and small arms ammunition</li> </ul>
Czech Republic	<ul style="list-style-type: none"> <li>■ Česká Zbrojovka AS</li> </ul>	<ul style="list-style-type: none"> <li>■ Small arms and light weapons</li> </ul>
Finland	<ul style="list-style-type: none"> <li>■ Patria Oyj</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons, light weapons ammunition, and small arms ammunition</li> </ul>
France	<ul style="list-style-type: none"> <li>■ Nexter Group SA</li> <li>■ Thales Group SA</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons, light weapons ammunition, and small arms</li> <li>■ Light weapons, light weapons ammunition, small arms, and small arms ammunition</li> </ul>
Germany	<ul style="list-style-type: none"> <li>■ J.G. ANSCHÜTZ GmbH &amp; Co. KG</li> <li>■ Diehl Stiftung GmbH</li> <li>■ Heckler &amp; Koch GmbH</li> <li>■ L &amp; O-Holding<sup>e</sup></li> <li>■ PW Group</li> <li>■ Rheinmetall AG</li> </ul>	<ul style="list-style-type: none"> <li>■ Small arms</li> <li>■ Light weapons and light weapons ammunition</li> <li>■ Light weapons and small arms ammunition</li> <li>■ Light weapons and small arms</li> <li>■ Small arms</li> <li>■ Less-lethal ammunition, light weapons, light weapons ammunition, small arms, and small arms ammunition</li> </ul>
India	<ul style="list-style-type: none"> <li>■ Bharat Dynamics Ltd</li> <li>■ Ordnance Factories Board</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons and light weapons ammunition</li> <li>■ Light weapons, light weapons ammunition, small arms, and small arms ammunition</li> </ul>
Iran	<ul style="list-style-type: none"> <li>■ Defence Industries Organization</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons, light weapons ammunition, small arms, and small arms ammunition</li> </ul>
Israel	<ul style="list-style-type: none"> <li>■ Elbit Systems Ltd</li> <li>■ Israel Aerospace Industries Ltd</li> <li>■ Israel Military Industries Ltd</li> <li>■ Rafael Advanced Defence Systems Ltd</li> <li>■ SK Group</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons and light weapons ammunition</li> <li>■ Light weapons and light weapons ammunition</li> <li>■ Light weapons, light weapons ammunition, and small arms</li> <li>■ Light weapons and light weapons ammunition</li> <li>■ Light weapons and small arms</li> </ul>
Italy	<ul style="list-style-type: none"> <li>■ Beretta Holding SpA</li> <li>■ Finmeccanica SpA</li> <li>■ Fiocchi Munizioni SpA</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons, small arms, and small arms ammunition</li> <li>■ Light weapons and light weapons ammunition</li> <li>■ Small arms ammunition</li> </ul>
Japan	<ul style="list-style-type: none"> <li>■ Asahi-Seiki Manufacturing Co. Ltd</li> <li>■ Howa Machinery Co. Ltd</li> </ul>	<ul style="list-style-type: none"> <li>■ Small arms ammunition</li> <li>■ Light weapons and small arms</li> </ul>
North Korea <sup>f</sup>	<ul style="list-style-type: none"> <li>■ First Machine Industry Bureau</li> </ul>	<ul style="list-style-type: none"> <li>■ Light weapons and small arms</li> </ul>

## Arms exports as an indicator of production

While the industry is in many ways opaque, examining patterns of small arms and light weapons exports provides some insight into the production capabilities of many countries. The Small Arms Survey has identified 20 countries that have exported USD 100 million worth of small arms and light weapons or more in a single calendar year since 2001 (see Table 3). This number is likely larger, given the opacity of the arms trade (Holtom, Pavesi, and Rigual, 2014). All of these exporters

are also significant producers of small arms and light weapons, while other producers manufacture primarily for their domestic markets. However, not all exporters are producers. Some countries with recorded ‘exports’—significantly smaller than those listed in this report—are simply countries through which arms and munitions have transited or been re-exported.

Conversely, most of the top manufacturing countries are also the top exporting countries, and tracking exports is a useful way to gain some insight into a country’s manufacturing capabilities. The main producing coun-

tries include all of the top exporters (USD 100 million worth of exports or more in a single calendar year), as well as several countries with significant industrial capacities that meet the needs of their domestic markets. The Survey has yet to estimate domestic production (focusing instead on transfers).

Some states, however, such as India, Iran, and Pakistan, also have substantial small arms industrial production capacities to accommodate sizeable domestic markets without being major exporters. It is also difficult to assess the production and export volumes of several countries that do not report

Host country	Producer (company) <sup>a</sup>	Primary product type/s
Norway	■ Nammo AS <sup>g</sup>	■ Light weapons, light weapons ammunition, and small arms ammunition
Pakistan	■ Pakistan Ordnance Factories	■ Light weapons, light weapons ammunition, small arms, and small arms ammunition
Russian Federation	■ Central Research Institute for Precision Machine Building (TsNIITochMash) ■ CJSP Klimovsk Specialized Ammunition Plant ■ OJSC V.A. Degtyarev Plant ■ OJSC State Research and Production Enterprise Bazalt ■ SC Russian Technologies (Rostec)	■ Light weapons, light weapons ammunition, small arms, and small arms ammunition ■ Small arms ammunition ■ Light weapons, light weapons ammunition, and small arms ■ Less-lethal ammunition, light weapons, light weapons ammunition, and small arms ■ Light weapons and small arms
South Korea	■ Hanwha Corporation ■ LIG Nex1 ■ Poongsan Corporation ■ S&T Group	■ Light weapons and light weapons ammunition ■ Light weapons and light weapons ammunition ■ Light weapons ammunition and small arms ammunition ■ Light weapons and small arms
Spain	■ INSTALAZA SA ■ MaxamCorp Holding SL	■ Light weapons and light weapons ammunition ■ Light weapons, light weapons ammunition, and small arms ammunition
Sweden	■ Saab Group	■ Light weapons and light weapons ammunition
Switzerland	■ KRISS Group ■ RUAG Group	■ Small arms ■ Light weapons, light weapons ammunition, and small arms ammunition
Turkey	■ Mechanical and Chemical Industry Corporation (MKEK)	■ Less-lethal ammunition, light weapons, light weapons ammunition, small arms, and small arms ammunition
United Kingdom	■ Accuracy International Ltd ■ BAE Systems PLC ■ Chemring Group PLC	■ Small arms ■ Light weapons, light weapons ammunition, and small arms ammunition ■ Less-lethal ammunition and light weapons ammunition
United States	■ Alliant Techsystems Inc. ■ Colt’s Manufacturing Co. LLC ■ Freedom Group ■ GenCorp ■ General Dynamics Corporation  ■ Olin Corporation ■ Raytheon Co. ■ Smith & Wesson ■ Sturm, Ruger & Co. ■ TASER International Inc. ■ Textron Systems	■ Light weapons ammunition and small arms ammunition ■ Small arms and light weapons ■ Small arms and small arms ammunition ■ Light weapons and light weapons ammunition ■ Less-lethal weapons, light weapons, light weapons ammunition, small arms, and small arms ammunition ■ Small arms and small arms ammunition ■ Light weapons and light weapons ammunition ■ Small arms ■ Small arms ■ Less-lethal weapons and less-lethal ammunition ■ Light weapons ammunition and small arms ammunition

<sup>a</sup> Where possible the information in this table was taken from open-source material published by the companies themselves.

<sup>b</sup> These companies are not necessarily the top-tier parent companies, but represent the highest level company in a group participating in the defence industry.

<sup>c</sup> Colt Canada Corporation is a subsidiary of Colt’s Manufacturing Company LLC (USA).

<sup>d</sup> General Dynamics Ordnance and Tactical Systems-Canada is a subsidiary of General Dynamics Corporation (United States).

<sup>e</sup> Information on Chinese arms manufacturers is sparse and riddled with inaccuracies. These represent our best attempt to give examples of Chinese production.

<sup>f</sup> Consisting of two interconnected holdings, L & O-Holding Verwaltungs-GmbH and L & O-Holding GmbH & Co. KG.

<sup>g</sup> Information on North Korean arms production is extremely limited.

<sup>h</sup> Nammo AS is owned by the Norwegian state (50 per cent) and Patria Oyj of Finland (50 per cent).

**Table 3 Top exporters of small arms based on UN Comtrade data, listed in descending order of value exported on average for 2001–11\***

■ United States	■ Canada
■ Italy	■ Czech Republic
■ Germany	■ Israel
■ Brazil	■ South Korea
■ Austria	■ Turkey
■ Belgium	■ United Kingdom
■ Switzerland	■ France
■ Japan	■ China
■ Russian Federation	■ Norway
■ Spain	■ Sweden

**Red:** countries reported to have exported USD 100 million worth of arms at least five times between 2001 and 2011.

**Black:** countries reported to have exported USD 100 million worth of arms at least once between 2001 and 2011.

\* This list relies on figures reported in UN Comtrade for the following categories, reflecting the trade in small arms and light weapons, including their parts, components, accessories, and ammunitions: 930100 (military weapons), 930120 (rocket and grenade launchers, etc.), 930190 (military firearms), 930200 (revolvers and pistols), 930320 (sporting and hunting shotguns), 930330 (sporting and hunting rifles), 930510 (parts and accessories of revolvers and pistols), 930521 (shotgun barrels), 930529 (parts and accessories of shotguns and rifles), 930621 (shotgun cartridges), and 930630 (small arms ammunition). It is important to note that several countries do not report or do not fully report their exports of small arms, light weapons, and associated ammunition.

**Sources:** NISAT (n.d.); UN Comtrade (n.d.); Rigual (2014).

exports. Some of these, including Iran and North Korea, are suspected of exporting significant quantities of small arms and light weapons.

Export data can also help in estimating units of weapons produced globally. The 2009 *Small Arms Survey* identified an international trade of some half a million military-standard long arms (not including Chinese exports), as well as over 1.5 million handguns. In addition, some 2.5 million units of sporting rifles and shotguns were identified among global exports. These estimates are conservative, with actual international trade likely to be significantly higher. Production, of course, is higher still, with most producers typically satisfying both a domestic and an export market. Rifles, including assault rifles, have constituted the bulk of military small arms production in the 20<sup>th</sup> and 21<sup>st</sup> centuries, and are manufactured widely throughout the world. Research conducted by the Survey has provided some indicative numbers relating to the total production of selected rifles. It estimates that 35–100 million AK-pattern weapons were produced from the 1950s until the present day, and that 8–12 million AR-15 rifles and derivatives were produced from the 1960s onwards

(Bevan, 2013). The Survey also estimates that approximately 17 million Lee Enfield-series rifles and at least 7 million G3-pattern rifles have been produced to date (Bevan, 2014). ■

## Notes

- 1 It is important to differentiate between exporting and producing countries, however, as several states produce sizeable quantities of small arms and light weapons for their domestic markets.
- 2 Also known as general-purpose machine guns.

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**For more information about producers of small arms, light weapons, and their ammunition, please visit: <<http://www.smallarmsurvey.org/?producers.html>>**

## About the Small Arms Survey

The Small Arms Survey serves as the principal international source of public information on all aspects of small arms and armed violence, and as a resource centre for governments, policy-makers, researchers, and activists. In addition to Research Notes, the Survey distributes its findings through Occasional Papers, Special Reports, Working Papers, Issue Briefs, a Book Series, and its annual flagship publication, the *Small Arms Survey*.

The project has an international staff with expertise in security studies, political science, international public policy, law, economics, development studies, conflict resolution, sociology, and criminology, and works closely with a worldwide network of researchers and partners.

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