



Forensis

REPORT

Short Study

German Arms Exports to Israel
2003-2023

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Forensis

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1. Introduction

As of 29 March 2024, 32,623 Palestinian people have been killed since the start of Israel's major military assault on Gaza in October 2023.¹ Approximately 70% of those killed have been women and children. At least 75,092 Palestinians have been injured, and thousands more are missing.² Israel's relentless, indiscriminate bombardment and siege of Gaza has created an unprecedented humanitarian catastrophe, with 1.7 million people on the verge of man-made famine, as the Israeli military has embarked on unparalleled and catastrophic levels of infrastructural destruction and agricultural damage,³ and the systematic targeting of life-sustaining civilian structures, including hospitals and health care facilities, food-providing facilities, schools, universities, religious and cultural heritage sites, and homes.⁴

As early as November 2023, a group of UN experts warned that Israel's actions by that time pointed to a "genocide in the making",⁵ while on 11 and 12 January 2024 the International Court of Justice (ICJ) held public hearings on the request for the indication of provisional measures submitted by South Africa in the case concerning the *Application of the Convention on the Prevention and Punishment of the Crime of Genocide in the Gaza Strip* (South Africa v. Israel) – a case that has received support from more than 50 states worldwide.⁶ In late January, the ICJ ruled that there is a "plausible" risk of genocide of the Palestinian people in Gaza. This ruling, alongside with a global mobilisation movement, have since started to have a slow but visible effect on the international arms transfers to Israel. In the past two months, several states, including Belgium, the Netherlands, Spain, and Canada have taken steps to suspend export licences and halt military exports to Israel, either for specific weapons or for all.⁷ In late February 2024, UN experts under the remit of the Office of the High Commissioner on Human Rights (OHCHR) stated unequivocally that "any transfer of weapons or ammunition to Israel that would be used in Gaza is likely to violate international humanitarian law (IHL) and must cease immediately", adding that "states must accordingly refrain from transferring any weapon or ammunition – or parts for them – if it is expected, given the facts or past patterns of behaviour, that they would be used to violate international law."⁸

¹ OCHA - OPT, '[Hostilities in the Gaza Strip and Israel - Reported Impact | Day 175](#)', 29 March 2024.

² Ibid.

³ Forensic Architecture, "[No Traces of Life](#)": Israel's Ecocide in Gaza 2023-2024', 29 March 2024.

⁴ United Nations Special Rapporteur on the Occupied Palestinian Territories, '[A/HRC/55/73: Report of the Special Rapporteur on the Situation of Human Rights in the Palestinian Territories Occupied since 1967 - Advance Unedited Version](#)', 25 March 2024; See also: Forensic Architecture, '[Destruction of Medical Infrastructure in Gaza](#)', 20 December 2023; Forensic Architecture, '[Humanitarian Violence: Israel's Abuse of Preventative Measures in Its 2023-2024 Genocidal Military Campaign in the Occupied Gaza Strip](#)', 7 March 2024.

⁵ OHCHR, '[Gaza: UN experts call on international community to prevent genocide against the Palestinian people](#)', 16 November 2023.

⁶ Gerald Imray, '[Genocide case against Israel: Where does the rest of the world stand on the momentous allegations?](#)' *AP News*, 13 January 2024.

⁷ Al Jazeera, '[Canada stops arms sales to Israel: Who else has blocked weapons exports?](#)', 15 February 2024.

⁸ OHCHR, '[Arms Exports to Israel Must Stop Immediately: UN experts](#)', 23 February 2024.

While Israel holds a significant arms manufacturing industry, it also relies on international imports of weapons, weapon systems, or parts thereof, to carry out its genocidal military campaign. Germany is one of the world's largest arms exporters, often listed amongst the top ten arms suppliers worldwide. For several years, Israel figures amongst the top recipient countries of German arms exports,⁹ while the two states have a long history of military cooperation.¹⁰

Forensis studied publicly available information on past,¹¹ current, and potential future export licences and deliveries of weapons and military equipment from Germany to Israel. This information has been compiled from a number of monitoring groups and open access governmental data. Sources for information on international arms transfer are scarce, data is always partial and incomplete. This report attempts to bring together this information on arms exports from Germany to Israel in a comprehensive manner, aiming to contribute to international calls to stop all arms exports to Israel.

The datasets that have been collected, analysed, and consolidated throughout the course of this research can be made available upon request.

⁹ [Arms Transfers Database](#), Stockholm International Peace Research Institute (SIPRI)

¹⁰ Christopher Steinmetz, '[German-Israeli Armaments Cooperation](#)' *BITS*, 2022.

¹¹ For analytical and comparative purposes, information on arms exports to Israel for the last two decades, from 2003 onwards, has been collected and analysed.

2. Summary

Germany is the second largest exporter of major conventional arms to Israel after the US (SIPRI)

- According to the Stockholm International Peace Research Institute (SIPRI), in **2023** Germany was the **second largest supplier of “major conventional arms”** to Israel, responsible for 47% of Israel’s total imports, following the US at 53%.¹² This percentage includes the delivery of two Sa’ar 6-class missile corvettes,¹³ as well as missiles and engines for tanks and other armoured vehicles. This figure does not appear to be an outlier: since 2003, Germany has been consistently ranking second – and sometimes first – at the share of total imports of major conventional weapons by Israel. **Over the period between 2019-2023, Germany’s share** of major conventional arms imported by Israel was **30%**, second after the US at 69%.
- According to SIPRI, **between 2003 and 2023**, major conventional arms with **a value of more than 2 billion TIVs** (SIPRI’s Trend-Indicator Values) were “actually” exported from Germany to Israel.¹⁴ Since 2013, **Israel has featured 9 times in the top ten recipient countries** of major conventional arms deliveries from Germany in SIPRI’s Arms Transfers Database.
- **Since 2003**, Germany has authorised **4,427 individual arms export licences** to Israel, with a combined **value of approximately 3.3 billion Euro**, as reported in the annual *Military Equipment Export Reports* by the German government.¹⁵ For comparison, over the same period – and despite the ongoing Israeli occupation, as well as major military assaults on Gaza over the years in question – only 54 export licences were rejected, with a value of 8.1 million Euro – **marking an approval rate of 99.75%**.¹⁶
- **Since 2013**, Israel has featured **at least 8 times in the list of the “top twenty most important countries of destination”** for which individual export licences for military equipment were granted by Germany.¹⁷ Out of the 3.3 billion Euro combined value of the

¹² SIPRI’s sources, methodology, as well as the major conventional weapons that SIPRI’s Arms Transfers Database tracks are specified in chapter 3.

¹³ The warships were delivered to Israel in 2020 and 2021, but they were booked under 2022 and 2023 in SIPRI’s [arms transfer database](#).

¹⁴ For more information about the unit measuring system of SIPRI, see chapter 3.

¹⁵ With the exception of the figures for 2023, which derive from the governmental response dated 08.11.2023 to question Nr. 21 posed by a member of the German parliament. Bundesministerium für Wirtschaft und Klimaschutz, ‘[Schriftliche Fragen an Die Bundesregierung Im Monat Dezember 2023, Frage Nr. 12/531](#)’, 9 January 2024.

¹⁶ This approval rate is calculated by comparison of the value of the denied licences to that of the total value of the licences requested.

¹⁷ At least 8 times, because the *Military Equipment Export Report* for 2023 has not yet been published at the time of writing; however, the large volume of arms exports authorisations to Israel this year suggests that Israel would feature in the list of top recipient countries of military equipment from Germany for the year 2023 too.

licences between 2003 and 2023, **53%** regard export permits for the Germany-designated subsector of **war weapons** and the rest for that of **other military equipment**.¹⁸

- Between 2003 and 2018 – data is redacted thereafter – **war weapons** worth more than **1.1 billion Euro were exported** from Germany to Israel.
- In the past five years alone, **between 2019 and 2023**, Germany granted **export licences** to Israel for **over 1.1 billion Euro worth of military equipment** – almost half of which regards export licences of *war weapons*. Figures for actual war weapons exports over the same period have been redacted by the German government in the corresponding official reports.

Sharp increase in arms export licences from Germany to Israel after October 2023

- In **2023, 308 individual licences** for exports of military equipment to Israel were authorised, with a total value of approximately **326.5 million Euro**, according to the German government.¹⁹ This marks **a tenfold increase from 2022**, where the total value of approved licences amounted to 32.3 million Euro.²⁰ The largest volume of these licences in terms of value – **88%** – was authorised **in the second half of 2023**.²¹ According to *Tagesschau*, **185 individual export permits were approved** in the twenty-six days **between 7 October and 2 November alone**.²²
- The value of approved arms export licences to Israel in 2023 constitutes the fourth largest in the last two decades. If licences for large naval warships – submarines and corvettes – were to be excluded, 2023 represents in fact **the largest** – in terms of value – **volume of arms export licences** from Germany to Israel **of the last twenty years**. Additionally, 2023 marks the year with **the second largest number of approved export licences** over the same period.

¹⁸ For more information about the distinction between *war weapons* and *other military equipment* in the German export licence authorisation process, see chapter 3.

¹⁹ The number of export licences listed here is the sum of individual permits as attributed to each ML (*Military List*) position. It may be slightly higher than the total number of licences, as one permit can contain several articles that are covered by different ML positions, but this figure is not yet available, as the *Military Equipment Export Report* for 2023 has not been published at the time of writing. For more information on the ML positions, see chapter 3. Bundesministerium für Wirtschaft und Klimaschutz, 'Schriftliche Fragen an die Bundesregierung im Monat Dezember 2023, Frage Nr. 12/531', 9 January 2024.

²⁰ Bundesregierung, 'Bericht der Bundesregierung über ihre Exportpolitik für Konventionelle Rüstungsgüter im Jahre 2022', 22 December 2023.

²¹ Bundesregierung, 'Bericht der Bundesregierung über ihre Exportpolitik für Konventionelle Rüstungsgüter im Ersten Halbjahr 2023', 6 February 2024.

²² Tagesschau, 'Deutsche Rüstungsexporte nach Israel fast verzehnfacht', 8 November 2023.

- According to *the Financial Times* in November 2023, the German government “created **a working group** of the foreign office, ministry of economic affairs and office for export control **tasked with expediting Israeli arms requests**”.²³
- As of February 2024, despite the ICJ’s ruling on provisional measures that demanded Israel to take actions to prevent the genocide of the Palestinian people, and despite the evident worsening of the humanitarian situation in Gaza due to Israel’s relentless military assault, the German government has continued to authorise export licences for military equipment and war weapons to Israel. **From 1 January up to 21 February 2024**, Germany approved individual export licences with a combined value of slightly **more than 9 million Euro** – 32,449 Euro of which regard licences for *war weapons*.²⁴

Anti-tank weapons, ammunition, warships, tank engines, missiles – amongst others

- The individual export licences that were authorised in 2023 – the majority of which in the second half of the year – include a large number of permits for the export of **wheeled and tracked military vehicles** (65 licences), **military technology** (57 licences), and **military electronics** (29 licences). The *Military List* (ML)²⁵ positions of **bombs, torpedoes, rockets, missiles, other explosive devices and charges** (17 licences) and, to a smaller extent, of **ammunition, explosive and fuels**, as well as **large calibre weapons** and **small firearms** were also included in the export authorisations.
- The Germany-designated subsector of *War Weapons* amounted to 20.1 million Euro.²⁶ This included, amongst others, licences for **3,000 portable anti-tank weapons**, **500,000 rounds of ammunition** for machine, submachine guns or fully/semi automatic rifles, as well as **ignition and propelling charges** for ammunition and other types of weapons.
- The **portable anti-tank weapons** authorised for export are likely to be the RGW 90, known as **“Matador”**, a portable shoulder-fired rocket launcher jointly developed by Germany, Israel, and Singapore and manufactured in Germany by Dynamit Nobel Defence, based in Burbach. The Matador has been used by the Israeli army since 2009²⁷. During Israel’s ongoing military assault, Matador’s use by Israeli soldiers has been documented on multiple occasions, including against Palestinian homes in Khan Younis, southern Gaza.²⁸

²³ Roula Khalaf, ‘German Arms Exports to Israel Surge as Berlin Backs Campaign against Hamas’ *The Financial Times*, 9 November 2023.

²⁴ Bundesministerium für Wirtschaft und Klimaschutz, ‘Fragestunde des Deutschen Bundestages am 21. Februar 2024, Frage Nr. 052’, 21 February 2024.

²⁵ For more information on the *Military List* positions, see chapter 3.

²⁶ This figure is included in the total value of export licences in 2023 amounting to 326.5 million Euro.

²⁷ Breaking the Silence, ‘Soldiers’ Testimonies from Operation Cast Lead, Gaza 2009’, June 2009.

²⁸ Middle East Monitor, ‘Khan Younis’ homes targeted by Israeli MATADOR fun missiles’, 12 February 2024; Nico Tielke, ‘Würgendorf: Rüstungsfirma Dynamit Nobel Defense liefert Panzerfäuste nach Israel’ *Siegener Zeitung*, 31 October 2023. Forensis has seen additional evidence of the Matador being used by the Israeli army in Gaza since October 2023.

- According to SIPRI's arms transfer database, in 2023 exports of the following major conventional weapons could be documented: **2 Sa'ar 6-class corvettes** (warships); **10 diesel engines MTU 750hp** (or possibly 6V-890) for Eitan APC (Armoured Personnel Carriers) and IFV (Infantry Fighting Vehicles); **50 diesel engines MT883Ka for Merkava-4 tanks and Namer APC** (Armoured Personnel Carriers); **10 DM2A4 Seehecht (SeaHake mod 4) torpedoes** (underwater missiles) for Israel's (German-manufactured) Dolphin submarines.²⁹
 - The Sa'ar 6 corvettes – approximately one third of whose cost was subsidised by the German government³⁰ – have been operational for the first time during Israel's ongoing military assault on Gaza, actively involved in strikes offshore.³¹ Additionally, the corvettes reinforce the Israeli Navy's arsenal, as the latter is imposing a total naval blockade of Gaza, amidst a severe humanitarian aid crisis.
 - The Eitan APC – for which diesel engines were exported to Israel, according to SIPRI – is the newest armoured personnel vehicle in the Israeli army and has reportedly become operational in Israel's military assault on Gaza, ahead of schedule,³² while its fighting vehicle counterpart has also been employed “on the front lines of Israeli forces, along with tank units and infantry conducting assault operations in the urban areas of the Gaza Strip.”³³
 - The Merkava-4 tank – for which diesel engines were exported to Israel, according to SIPRI – has long been considered “integral” to Israel's military operations,³⁴ while in the context of the ongoing ground invasion of Gaza, it has been characterised as “Israel's main asset”.³⁵ Since October 2023, there has been extensive documentation of the use of tanks in targeting civilians and indiscriminate attacks and besiegement of critical infrastructure.³⁶ There is also documentation of the Namer APC being deployed in Gaza since October 2023.³⁷ Additionally, tanks, alongside tractors and other military vehicles, have been used to systematically uproot farms and agricultural land in Gaza in a deliberate

²⁹ Except for the corvettes, the number of the rest of the arms delivered is an estimation, according to SIPRI.

³⁰ The German government co-financed the corvettes with an amount of 115 million Euro. Bundesregierung, '[Antwort der Bundesregierung, Drucksache 18/5040](#)', 26 May 2015. See also: SIPRI's [arms transfer database](#).

³¹ Richard Thomas, '[Israeli Navy's Sa'ar 6 Corvettes Used to Strike Gaza Ground Targets](#)' *Naval Technology*, 16 October 2023.

³² Rebecca Rommen, '[Israel's New Eitan APC Spotted in Combat against Hamas in Gaza. The IDF Prematurely Rushed the High-Tech Armor into Service](#).' *Business Insider*, 12 November 2023.

³³ Militaryni, '[Israel Uses Latest Eitan AFVs in War against Hamas](#)', 6 November 2023.

³⁴ Army Recognition, '[Merkava Tanks Provide Crucial Firepower for Israeli Army in Gaza Urban Warfare](#)', 13 November 2023.

³⁵ Diego Stacey and Rodrigo Silva, '[The Merkava IV Tank, Israel's Main Asset for the Ground Offensive in Gaza](#)', *EL PAÍS English*, 24 October 2023.

³⁶ See chapter 4 for indicative documentation references for such attacks.

³⁷ For example, see: Army Recognition, '[Israel Defense Forces Deploy Heavily Armored Namer APCs at Gaza Border](#)', 16 October 2023.

act of ecocide, which is a critical dimension of Israel's ongoing genocidal campaign.³⁸ Since 2002, Germany has exported an estimated number of 1,060 diesel engines for the Merkava tanks and Namer APCs to Israel, according to SIPRI's database.³⁹

- In January 2024, *Der Spiegel* reported that the German government **had agreed to fulfil a request by Israel**, made in November 2023, for the supply of **10,000 rounds of 120mm tank ammunition**.⁴⁰ In order to ensure a speedier delivery, the ammunition would be supplied from the existing Germany military stockpiles, which would then be replenished by the German arms manufacturing industry, according to *Der Spiegel*.⁴¹ The indiscriminate use of tank ammunition against Palestinians and critical civilian infrastructure, including medical facilities, aid convoys, and civilian shelters in Gaza since October 2023 has been widely documented.⁴²
- Additionally, in October 2023, Germany **authorised Israel to use two of the five Heron TP combat drones** that they had leased from the Israeli arms manufacturer *Israeli Aerospace Industries* (IAI).⁴³ According to its CEO, the Heron TP drone has “demonstrated its strategic importance” in the ongoing military offensive in Gaza.⁴⁴ It has been widely documented that in past Israeli offensives in Gaza, the Israeli army has used drones not only in surveillance and target acquisition, but also for attacking civilians with missiles.⁴⁵ The use of drones for targeting and killing Palestinian people, including journalists as well as medical staff, has also been documented in the context of Israel's ongoing military assault on Gaza.⁴⁶

³⁸ Forensic Architecture, “‘No Traces of Life’: Israel's Ecocide in Gaza 2023-2024”, 29 March 2024; Kaamil Ahmed, Damien Gayle, and Aseel Mousa, “‘Ecocide in Gaza’: does scale of environmental destruction amount to a war crime?” *The Guardian*, 29 March 2024’.

³⁹ Stockholm International Peace Research Institute (SIPRI).

⁴⁰ Matthias Gebauer, Christoph Schult, and Gerald Traufetter, ‘Waffenhilfe für den Gaza-Krieg: Bundesregierung prüft Lieferung von Panzermunition an Israel’ *Der Spiegel*, 16 January 2024.

⁴¹ Ibid.

⁴² See chapter 4 for indicative documentation references for such attacks.

⁴³ Matthias Gebauer and Marina Korbaki, ‘Waffenhilfe: Deutschland stellt Israel Heron-Kampfdrohnen zur Verfügung’, *Der Spiegel*, 11 October 2023.

⁴⁴ The Jerusalem Post, ‘Introducing the IAI Heron Unmanned Aerial Vehicle (UAS)’, 22 November 2023.

⁴⁵ Human Rights Watch, ‘Precisely Wrong: Gaza Civilians Killed by Israeli Drone-Launched Missiles’, July 2009.

⁴⁶ See chapter 4 for indicative documentation references for such attacks.

3. Sources

Even though efforts have been made in the past decades to create a more transparent policy on documenting international arms imports and exports, official data published by states is still limited in scope, rendering it difficult to form a comprehensive picture. While it is easier to access information on the authorisation of exports – i.e. arms export licences – official information on “actual” exports is much scarcer and more inaccessible. Actual exports occur when the (already approved for export) military article has been delivered or is on route to the recipient state. Export licences do not always correspond to data on actual arms exports in any given year for different reasons; the actual export may take place in different calendar years, or, sometimes, not take place at all. Information on export licences is as important nonetheless because – apart from the fact that a significant part of the arms approved for export is eventually being delivered – such information also shows “the willingness of governments of exporting states”⁴⁷ to equip repressive regimes.

In light of the scarcity of official information, a number of independent monitoring institutes, UN databases, as well as other research initiatives provide insights on arms deliveries taking place annually. Due to differences in methodology, unit measurement system, as well as the range of weapons and military equipment covered by each different source, none of the existing databases can be considered exhaustive, and no direct comparisons between them can usually be made; each one offers, however, different degrees of resolution on the opaqueness of the structure that characterises international arms transfers.

Over the course of this research, a variety of sources were consulted in order to examine past, current, and potential future arms export licences and deliveries from Germany to Israel. The sources are listed below, together with a summary of key information regarding each source’s scope and methodology.

The data collected and analysed are also presented in a series of diagrams. The diagrams are listed between the text throughout the document, while a selection is also available in larger format in *Appendix B: Arms Exports Diagrams*.

3.1. Military Equipment Export Reports by the Government of the Federal Republic of Germany, 2003-2022

Since 1999, the German government publishes annual *Military Equipment Export Reports*⁴⁸ (Rüstungsexportbericht) where they present information on their annual arms export licences and policy. Within the scope of this research, the respective reports for the period between 2003 and 2022 have been collected and analysed, covering information on the arms exports to Israel over the last two decades, for comparative and analytical purposes. The report for 2023 has not yet been published at the time of writing.

⁴⁷ Amnesty International, ‘[Israel / OPT: Fuelling Conflict: Foreign Arms Supplies to Israel/Gaza](#)’, February 2009.

⁴⁸ The full title of the annual report in English is *Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in [year]*.

The annual reports present an overview of the individual export licences⁴⁹ that have been authorised over the course of the year to each recipient state, with a rough breakdown of the licences according to the categories of the military equipment *Export List* (“Ausfuhrliste”) that the military products are distributed to. The *Part I, Section A* of the *Export List* – also referred to as the *German Munitions List* – breaks down the military equipment into 22 positions (No. 0001 to No. 0022) that have their own subdivisions, too. The *German Munition List* is almost identical with the *Common Military List* of the European Union (ML), i.e. number ML1 of the *Common Military List* is the equivalent to Nr. 0001 of the *German Munitions List*, ML2 = Nr. 0002, and so on. For the purposes of this research, the ML abbreviation is used when referring to the military equipment positions.⁵⁰

Key	Position	Item	Ware
■	ML 1	Small firearms	Handfeuerwaffen
■	ML 2	Large calibre weapons	großkalibrige Waffen
■	ML 3	Ammunition	Munition
■	ML 4	Bombs, torpedoes, missiles	Bomben, Torpedos, Flugkörper
■	ML 5	Fire control systems	Feuerleitanlagen
■	ML 6	Wheeled and tracked military vehicles	militärische Ketten- und Radfahrzeuge
■	ML 7	Equipment for NBC defence, irritants	ABC - Schutzausrüstung, Reizstoffe
■	ML 8	Explosives and fuels	Explosivstoffe und Brennstoffe
■	ML 9	Naval vessels	Kriegsschiffe
■	ML 10	Military aircraft/aircraft technology	militärische Luftfahrzeuge/-technik
■	ML 11	Military electronics	militärische Elektronik
■	ML 12	High velocity kinetic energy weapon systems	Waffensysteme mit hoher kinetischer Energie
■	ML 13	Ballistic protection equipment	ballistische Schutzausrüstung
■	ML 14	Training and simulator equipment	Ausbildungs-/Simulationsausrüstung
■	ML 15	Infrared/thermal imaging equipment	Infrarot-/Wärmebildausrüstung
■	ML 16	Semi-finished parts for the production of certain items of military equipment	Halbzeug zur Herstellung von bestimmten Rüstungsgütern
■	ML 17	Miscellaneous equipment	verschiedene Ausrüstungen
■	ML 18	Manufacturing equipment for the production of military articles	Herstellungsausrüstung zur Produktion von Rüstungsgütern
■	ML 19	HF weapon system	HF - Waffensystem
■	ML 20	Cryogenic and "superconductive" equipment	Kryogenische und „supraleitende“ Ausrüstung
■	ML 21	Military software	militärische Software
■	ML 22	Technology	Technologie
■	ML 23	Security and para-military equipment *	Sicherheits- und paramilitärische Ausrüstung *

Fig. 1. The different ML (*Military List*) positions presented in a shortened form. All licences for the export of military equipment need to be categorised to one or more of these positions. The colours depicted here are maintained uniform for each position in all diagrams throughout this report.

⁴⁹ For the purposes of this research, only data regarding individual (and not collective) export licences has been included.

⁵⁰ Ausfuhrliste, Außenwirtschaftsverordnung (AWV), Anlage 1 Anlage AL zur Außenwirtschaftsverordnung; Council of the European Union, ‘COMMON MILITARY LIST OF THE EUROPEAN UNION Adopted by the Council on Dd Mm 2024 (Equipment Covered by Council Common Position 2008/944/CFSP Defining Common Rules Governing the Control of Exports of Military Technology and Equipment)’.

Additionally to the Military List (ML) positions, in Germany, a distinction exists between exports of *weapons of war* (“Kriegswaffen”) and of *other military equipment* (“sonstige Rüstungsgüter”); accordingly, decision on the issuance or rejection of an export licence for the former is taken by the Federal Ministry for Economic Affairs and Climate Action in agreement with the Federal Foreign Office and the Federal Ministry of Defence, while for the latter it is the responsibility of the Federal Office for Economic Affairs and Export Control.⁵¹ In specific cases, the Federal Security Council may take over the decision-making.⁵²

According to the *War Weapons Control Act* (“Kriegswaffenkontrollgesetz” or “KrWaffKontrG”), *war weapons* are defined as “objects, materials, and organisms capable of causing destruction or damage to persons or objects and capable of being used as the means of inflicting force in the course of armed conflicts between states”.⁵³ Military products classified as *war weapons* are listed in the *War Weapons List* (WWL, “Kriegswaffenliste”).⁵⁴ The export for the rest of military products – *other military equipment* – is instead governed by the *Foreign Trade and Payments Act and Ordinance*. It should be noted that certain parts and components of weapons or of weapon systems may not be classified as *war weapons* but rather as *other military equipment*. A 2005 report by *Oxfam International* and *Berlin Information-center for Transatlantic Security (BITS)* highlights how this dual legal structure alongside other factors encourages a sort of “double standard”, where “components are treated as *armaments lite* in the export licensing process compared to entire arms systems”⁵⁵ despite the fact that “in general, weapons are only the sum of their components and that the technical production know-how has a longer life-span than the weapon itself.”⁵⁶

While information about export licences includes a certain degree of specificity – in terms of providing the breakdown to different ML categories – information on “actual” exports of military equipment is significantly more limited in the annual reports of the German government. The only piece of information included regards the value of the exported products that fall within the *war weapons* category – and not that of the *other military equipment*, or the total combined. However, even that piece of information is not always guaranteed; since 2019, the data concerning actual exports of *war weapons* to Israel has been redacted, in order to avoid the “identification of relevant companies” and to “protect trade and business secrets.”⁵⁷

⁵¹ Federal Ministry for Economic Affairs and Climate Action, ‘A Restrictive, Responsible Policy on the Export of Military Equipment’.

⁵² The Federal Security Council decides on the issuance of export licences of *war weapons* when diverging opinions amongst the ministries involved in the decision-making or in especially contentious or problematic cases.

⁵³ Central Customs Authority, ‘Weapons of War’.

⁵⁴ In German, the abbreviation for the *War Weapons List* is *KWL*. See: Ausführungsgesetz zu Artikel 26 Abs. 2 des Grundgesetzes (Gesetz über die Kontrolle von Kriegswaffen) Anlage (zu § 1 Abs. 1) Kriegswaffenliste.

⁵⁵ Otfried Nassauer and Christopher Steinmetz, ‘“Made in Germany” inside Components – the Forgotten Arms Transfers’, 2, *Oxfam Deutschland and Berlin information-center for Transatlantic Security (BITS)*, March 2005.

⁵⁶ *Ibid.*

⁵⁷ Bundesregierung, ‘Bericht der Bundesregierung über ihre Exportpolitik für konventionelle Rüstungsgüter im Jahre 2019’, 30 June 2020.

3.2. Annual Reports by the Council of the European Union on Exports of Military Technology and Equipment, 2003-2022

The *Annual Report according to Article 8(2) of Council Common Position 2008/944/CFSP defining common rules governing the control of exports of military technology and equipment* by the EU Council is a consolidation of the different corresponding national reports of EU states. For the purposes of this research, the respective reports (6th to 25th) covering data for the period between 2003 and 2022 have been collected and analysed.

These reports do not include a substantial amount of additional information on arms transfers as opposed to the German annual *Military Equipment Export Reports*, but they do include the number of individual licences as they are distributed in the different ML categories, information that in the latter is only provided for the top ML positions – in terms of value – authorised in any given year.

3.3. Stockholm International Peace Research Institute (SIPRI)

As the national reports on military equipment exports by the German government, as well as the annual EU reports, do not provide sufficient information regarding the actual transfers of military equipment and war weapons, Forensis consulted the publicly accessible data on arms transfers collected by the *Stockholm International Peace Research Institute* (SIPRI). SIPRI is an independent international institute “dedicated to research into conflict, armaments, arms control and disarmament.”⁵⁸

SIPRI uses a wide variety of publicly available sources in order to track arms transfers between states, including, amongst others, media articles and broadcasts, national reports, defence budget documents and governmental records.⁵⁹ In particular, two factors are significant to note about SIPRI’s methodology: a) the types of weapons tracked, and b) the value measuring system.

SIPRI’s data on arms transfers regard actual deliveries of what is being referred to as “major conventional weapons”. These include aircraft; air defence systems; anti-submarine warfare weapons; armoured vehicles; engines; missiles; sensors; satellites; ships; and turrets with designated specifications.⁶⁰ SIPRI does not cover, however, “other military equipment such as small arms and light weapons (SALW) other than portable guided missiles such as man-portable air defence systems (MANPADS) and guided anti-tank missiles. Trucks, artillery under 100-mm calibre, ammunition, support equipment and components (other than those mentioned above), repair and support services or technology transfers are also not included in the database.”⁶¹

Regarding the measuring system, in order to allow for comparisons between arms exports data from different states and sources and the identification of trends in transfers, SIPRI has

⁵⁸ Stockholm International Peace Research Institute (SIPRI).

⁵⁹ SIPRI, ‘Sources and Methods’.

⁶⁰ Ibid.

⁶¹ Ibid.

“developed a unique system to measure the volume of international transfers of major conventional weapons using a common unit, the trend-indicator value (TIV).⁶² The TIV is not meant to represent the financial value of the transfer, but is instead based on the known unit production costs of a core set of weapons – thus TIVs cannot be directly comparable with other known financial values. They do, however, provide an approximation of the volume of the arms transfer, which is an adequate estimate for establishing shares, percentages, as well as trends.⁶³

3.4. United Nations Commodity Trade Statistics Database (UN Comtrade)

The *United Nations Commodity Trade Statistics Database* (UN Comtrade) is another database often consulted within the field of international arms trade research. UN Comtrade is a repository of imports and exports statistics reported by statistical authorities of close to 200 countries or areas.⁶⁴ The traded products are categorised according to an international standardised system, known as the Harmonized Commodity Description and Coding System (HS). A relevant code for arms in the HS system is category 93 “arms and ammunition; parts and accessories thereof”.⁶⁵ The UN Comtrade database provides some insightful statistics; however, no useful information is registered regarding the exact types or quantity of military equipment exported or imported – most of the time, merely a combined value of all registered transfers is included in the database. Additionally, UN Comtrade’s figures are by no means comprehensive, as governments do not necessarily report on all arms exports and imports – sometimes, for example, transfers remain unreported if they are government-to-government, are shipped directly from military stocks, or are deemed classified.⁶⁶ “Dual use” equipment and technology is also excluded.⁶⁷ Lastly, reports indicate that it is common for states to tend to underreport, which can also be derived from the huge discrepancies between importers’ and exporters’ records, meaning that, consequently, “the actual value of trade is undoubtedly higher than the figures extracted from the UN Comtrade database, because of underreporting”.⁶⁸

⁶² Ibid.

⁶³ For more detailed information about SIPRI TIV units, see SIPRI, ‘[Sources and Methods](#)’.

⁶⁴ United Nations Commodity Trade Statistics Database ([UN Comtrade](#)).

⁶⁵ Category 93 “arms and ammunition; parts and accessories thereof” of the Harmonized Commodity Description and Coding System (HS Convention) include the following subcategories: 93.01 / military weapons; 93.02 / revolvers and pistols; 93.03 / other firearms and similar devices which operate by firing an explosive charge; 93.04 / other arms (for example, spring, air or gas guns and pistols, truncheons); 93.05 / parts and accessories of articles of headings 93.01 to 93.04; 93.06 / Bombs, grenades, torpedoes, mines, missiles and similar munitions of war and parts thereof; and 93.07 / Swords, cutlasses, bayonets, lances and similar arms and parts thereof. The category HS 93 does not include armoured vehicles and parts thereof, warships, or any other components and parts of military equipment that do not fall within the above-mentioned subcategories. See: World Customs Organization, ‘[Harmonized System](#)’.

⁶⁶ N.R. Jenzen-Jones and Matt Schroeder, ‘[An Introductory Guide to the Identification of Small Arms, Light Weapons, and Associated Ammunition](#)’, 307, 15 November 2018.

⁶⁷ Amnesty International, ‘[Israel / OPT: Fuelling Conflict: Foreign Arms Supplies to Israel/Gaza](#)’, February 2009.

⁶⁸ IPIS, ‘[Online Public Databases for Arms Trade Research](#)’, 29 August 2013.

For the purposes of this research, UN Comtrade export records from Germany to Israel for code HS 93 between 2003 and 2023 were collected; however, the aforementioned parameters suggest that the data retrieved is quite limited in scope.

3.5. Other Sources

Additional sources that were consulted over the course of this study include the United Nations Register of Conventional Arms (UNROCA);⁶⁹ the Arms Trade Treaty (ATT) Annual Reports;⁷⁰ parliamentary questions to the federal government; media articles; social media posts; as well as other websites and databases that have been gathered by collectives and individuals engaged in disarmament efforts.

The UNROCA database as well as the ATT Annual reports that were consulted did not yield additional information to what had already been sourced otherwise. Parliamentary questions have been particularly useful in sometimes adding resolution to the often simplified data presented in official reports, as well as anticipating the release of information before the publication of such reports – as has been the case with the information about arms export licences of 2023. Regarding quantitative information presented in media reports, it has been attempted, wherever possible, to corroborate that information with original sources. Lastly, social media posts were useful in confirming the use of certain equipment by Israel and/or in Gaza during the ongoing offensive, although a more comprehensive open source investigation on social media for identification of specific weaponry use and its manufacturer is outside the scope of this research.

⁶⁹ The UN Register of Conventional Arms is a UN mechanism that requires states to report their exports and imports of major conventional weapon systems. UNROCA covers only large scale-equipment and entire weapons systems (not parts thereof), which are classified into the following seven categories: 1) battle tanks, 2) armoured combat vehicles, 3) large-calibre artillery systems, 4) combat aircraft and unmanned combat aerial vehicles (UCAV), 5) attack helicopters, 6) warships, 7) missiles and missile launchers with a range of at least 25 km. States are also invited to report on small weapons and light weapons (SALW), but it is not a requirement. The restrictions of the range of weapons covered, as well as the fact that, according to reports, states often report selectively, excluding data on certain transfers, limits significantly the scope of UNROCA in documentation. N.R. Jenzen-Jones and Matt Schroeder, 'An Introductory Guide to the Identification of Small Arms, Light Weapons, and Associated Ammunition', 311, 15 November 2018; United Nations Register of Conventional Arms ([UNROCA](#)).

⁷⁰ Since 2015, signatory states to the *Arms Trade Treaty* (ATT) are required to submit a report on authorised or actual exports and imports of major conventional arms. In practice, the information submitted in these annual reports is identical to that to the UNROCA's register, and thus very limited in scope. See: 'Arms Trade Treaty (ATT)'.

4. Arms Exports from Germany to Israel

4.1 Export Licences and Actual Exports in 2023-2024

In 2023, Germany approved 308 individual export licences of military equipment and weapons to Israel with a total value of 326,505,156 Euro.⁷¹ Of this amount, 306,371,958 Euro relates to *Other Military Equipment* while the remaining amount of 20,133,198 Euro relates specifically to the export of the German-designated subsector of *War Weapons*. The 2023 figure represents a tenfold increase from 2022, when the total value of approved arms export licences amounted to 32,288,819 Euro.⁷² The largest volume of the licences in terms of value – 88% – was authorised in the second half of the year.⁷³ According to *Tagesschau*, 185 individual export permits were approved in the twenty-six days between 7 October and 2 November alone.⁷⁴

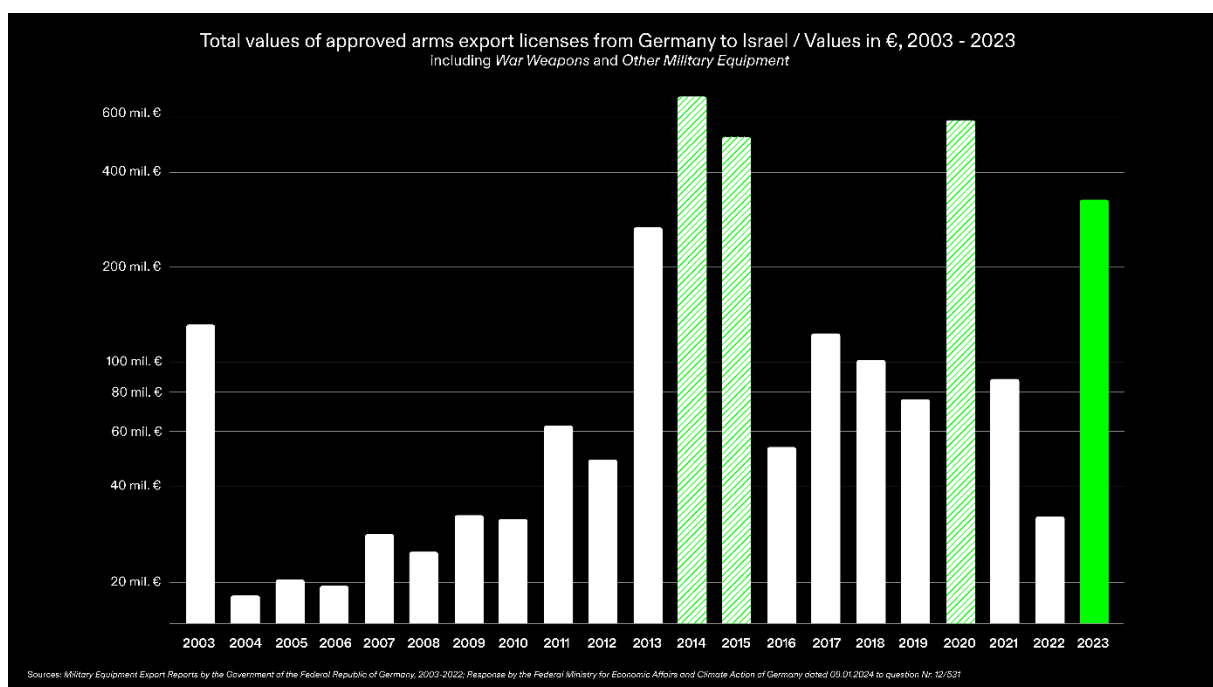


Fig. 2. Total value of approved arms export licences from Germany to Israel between 2003–2023. In green, the value of approved licences for 2023 is highlighted. In diagonal fill, the years with the largest value of licences over the period in question are marked. A logarithmic scale has been used for the graph, as otherwise values for certain years would not be discernible. Sources: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022; *Frage Nr. 12/531*, BMWK.

⁷¹ Bundesministerium für Wirtschaft und Klimaschutz, 'Schriftliche Fragen an die Bundesregierung im Monat Dezember 2023, Frage Nr. 12/531', 9 January 2024; ZDF, 'Bericht zu 2023: Deutsche Waffen für 20 Millionen an Israel', 17 January 2024.

⁷² Bundesregierung, 'Bericht der Bundesregierung über ihre Exportpolitik für konventionelle Rüstungsgüter im Jahre 2022', 22 December 2023.

⁷³ Bundesregierung, 'Bericht der Bundesregierung über ihre Exportpolitik für konventionelle Rüstungsgüter im ersten Halbjahr 2023', 6 February 2024.

⁷⁴ Tagesschau, 'Deutsche Rüstungsexporte nach Israel fast verzehnfacht', 8 November 2023.

The latest data on arms export licences in 2023 constitutes the fourth largest – in terms of value – volume of arms exports permits from Germany to Israel since 2003 (see fig. 2). If licences for large naval warships – two submarines in 2014, 2015 and four missile corvettes in 2020 – were to be excluded, the latest figure for 2023 represents in fact the *largest* – in terms of value – volume of arms export licences from Germany to Israel since 2003 (see fig. 3). Additionally, 2023 marks the year with the *second largest* number of approved export licences in the last two decades (see fig. 4).⁷⁵

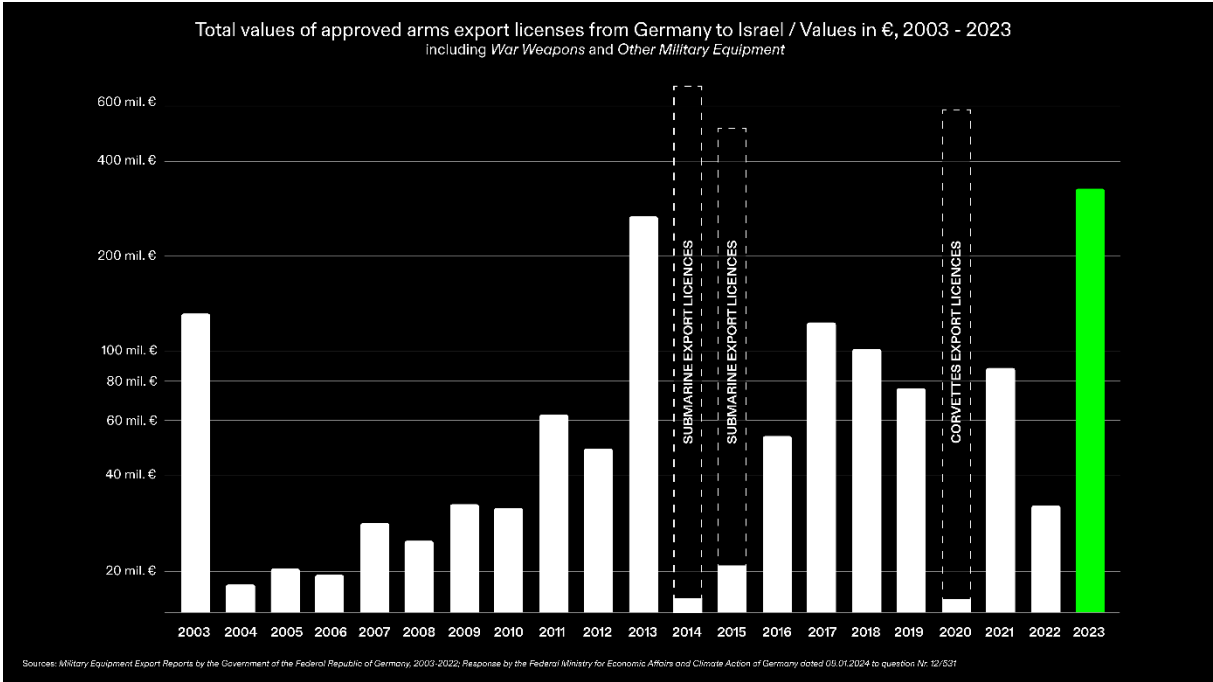


Fig. 3. Total value of approved arms export licences from Germany to Israel between 2003–2023, excluding the licence values for two submarines and parts thereof (2014, 2015) as well as four corvettes and parts thereof (2020). In green, the value of approved licences for 2023 is highlighted. Sources: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022; *Frage Nr. 12/531*, BMWK.

⁷⁵ The number of export licences listed here is the sum of individual permits as attributed to each ML position. It may be slightly higher than the total number of licences, as one permit can contain several articles that are covered by different ML positions, but this figure is not yet available, as the *Military Equipment Export Report* for 2023 has not been published at the time of writing.

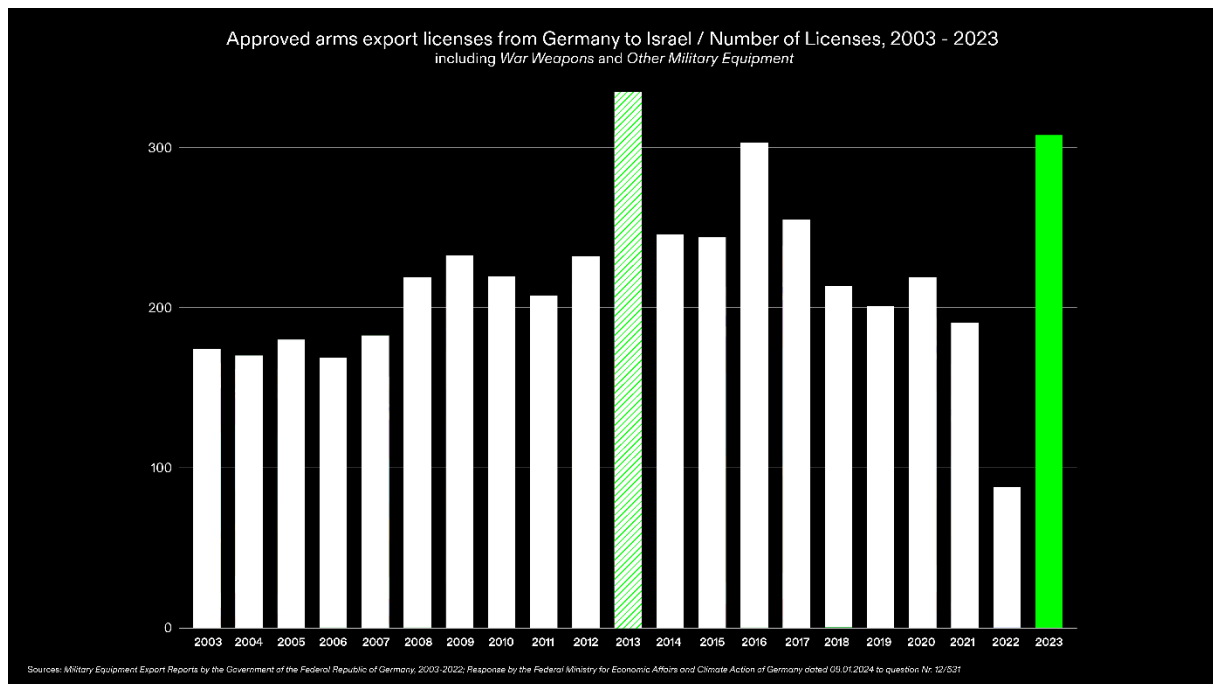


Fig. 4. Total number of approved arms export licences from Germany to Israel between 2003–2023. In green, the number of approved licences for 2023 is highlighted. In diagonal fill, the year with the largest number of licences over the period in question is marked. Sources: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022; *Frage Nr. 12/531*, BMWK.

The individual export licences that were authorised in 2023 – the majority of which in the second half of the year – include military equipment from almost all ML positions, with the exception of ML 12, 19, and 20.

More specifically, Germany approved the following export permits, in descending order of number of licences (see also fig. 5):⁷⁶

- **65** licences of articles in **ML 6** (*Ground vehicles and components*)
- **57** licences of articles in **ML 22** (*Military technology*)
- **29** licences of articles in **ML 11** (*Military electronic equipment*)
- **29** licences of articles in **ML 9** (*Vessels of war [surface or underwater], special naval equipment, accessories, components and other surface vessels*)
- **26** licences of articles in **ML 5** (*Fire control, surveillance and warning equipment, and related systems, test and alignment and countermeasure equipment*)
- **18** licences of articles in **ML 21** (*Military software*)
- **17** licences of articles in **ML 18** (*'Production' equipment, environmental test facilities and components*)
- **15** licences of articles in **ML 4** (*Bombs, torpedoes, rockets, missiles, other explosive devices and charges and related equipment and accessories*)
- **13** licences of articles in **ML 7** (*Chemical agents, "biological agents", "riot control agents", radioactive materials, related equipment, components and materials*)
- **7** licences of articles in **ML 17** (*Miscellaneous equipment, materials and "libraries"*)

⁷⁶ Bundesministerium für Wirtschaft und Klimaschutz, 'Schriftliche Fragen an die Bundesregierung im Monat Dezember 2023, Frage Nr. 12/531', 9 January 2024.

- 6 licences of articles in **ML 3** (*Ammunition and fuse setting devices*)
- 6 licences of articles in **ML 8** (*"Energetic materials", and related substances*)
- 6 licences of articles in **ML 16** (*Forgings, castings and other unfinished products, specially designed for items specified by ML1 to ML4, ML6, ML9, ML10, ML12 or ML19*)
- 5 licences of articles in **ML 15** (*Imaging or countermeasure equipment, specially designed for military use*)
- 4 licences of articles in **ML 13** (*Armoured or protective equipment, constructions and components*)
- 2 licences of articles in **ML 2** (*Smooth-bore weapons with a calibre of 20 mm or more, other weapons or armament with a calibre greater than 12,7 mm [calibre 0,50 inches], projectors specially designed or modified for military use and accessories*)
- 1 licence of articles in **ML 1** (*Smooth-bore weapons with a calibre of less than 20 mm, other arms and automatic weapons with a calibre of 12,7 mm [calibre 0,50 inches] or less and accessories*)
- 1 licence of articles in **ML 10** (*"Aircraft", "lighter-than-air vehicles", "Unmanned Aerial Vehicles" ("UAVs"), aero-engines and "aircraft" equipment, related equipment, and components*)
- 1 licence of articles in **ML 14** (*'Specialised equipment for military training' or for simulating military scenarios, simulators specially designed for training in the use of any firearm or weapon specified by ML1 or ML2*)

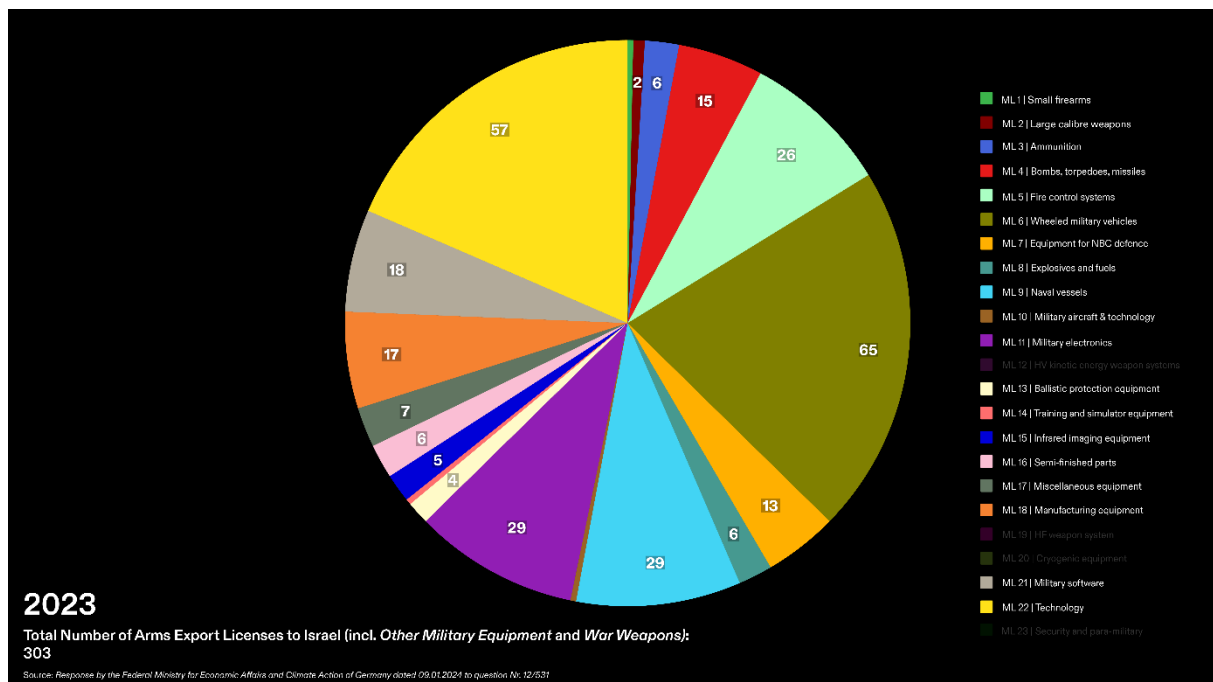


Fig. 5. Breakdown of arms export licences from Germany to Israel in 2023, incl. *other military equipment* and *war weapons*, with the distribution of the number of licences in the different ML positions. The corresponding values for each ML position have not been disclosed by the German government at the time of writing. Source: *Frage Nr. 12/531, BMWK.*

The subsector of *war weapons* – included in the aforementioned ML positions – is further broken down into the different categories of the *War Weapons List* (WWL). It should be noted

that, as only the general category of the designated *war weapon* is disclosed in the official information, more detailed specifications – for example, calibre size of the ammunition – is not publicly available at the time of writing. The categories listed below derive from the information included in the WWL and describe the range of weapons that the specific components approved for export could be destined for.

The export licences regarding *war weapons* in 2023 included 3,000 pieces of WWL-Nr. 37, 500,000 pieces of WWL-Nr. 50, 44 pieces of WWL-Nr. 55, and 239 pieces of WWL-Nr. 57. Consulting the WWL, these arms correspond to the following:⁷⁷

- **3,000** pieces of **WWL-Nr. 37**, which regards:
 - Recoilless, unguided, portable anti-tank weapons
- **500,000** pieces of **WWL-Nr. 50**, which regards ammunition for either of the following:
 - Machine guns
 - Submachine guns
 - Fully automatic rifles
 - Semi-automatic rifles
- **44** pieces of **WWL-Nr. 55**, which regards propelling charges for ammunition for either of the following:
 - Cannons, howitzers, any kind of mortars (WWL-Nr. 31)
 - Automatic cannons (WWL-Nr. 32)
 - Recoilless, unguided, portable anti-tank weapons (WWL-Nr. 37)
 - Mine-laying and mine-throwing systems for land mines (WWL-Nr. 39)
- **239** pieces of **WWL-Nr. 57**, which regards ignition charges (except for propellant charge igniters) for either of the following:
 - Guided projectiles (WWL-Nr. 7)
 - Unguided projectiles (WWL-Nr. 8)
 - Other projectiles (WWL-Nr. 9)
 - Torpedoes (WWL-Nr. 40)
 - Mines of all types (WWL-Nr. 43)
 - Bombs of all types including water bombs (WWL-Nr. 44)
 - Hand grenades (WWL-Nr. 46)
 - Infantry explosive devices, adhesive and hollow charges as well as mine-sweeping devices (WWL-Nr. 47)
 - Ammunition for cannons, howitzers, any kind of mortars, or automatic cannons (WWL-Nr. 49)
 - Ammunition for machine guns, rifles, pistols for combat grenades (WWL-Nr. 51)
 - Ammunition for recoilless, unguided, portable anti-tank weapons or mine-laying and mine-throwing systems for land mines (WWL-Nr. 52)
 - Rifle grenades (WWL-Nr. 53)
 - Submunition for weapons with WWL-Nr. 7 to 9, 44, 49, and 61 (WWL-Nr. 59)

⁷⁷ This list describes the corresponding WWL categories following a shortened version of the descriptions. There are several exceptions to what would be classified as *War Weapon* in the WWL list, which can be found here: '[Kriegswaffen, Gesetz über die Kontrolle von Kriegswaffen, Erläuterungen zur Kriegswaffenliste](#)'. The translated version of the list in English, as presented here, derives from the corresponding official translations of the *Military Equipment Export Reports* of the German government.

The 44 propelling charges of WWL-Nr. 55 and 239 ignition charges of WWL-Nr. 57 that were authorised will likely be destined for one or a few WWL-Nr. categories of *war weapons* – and not each and all of those listed above – but as the German government does not provide more specific information about the type of ammunition or weapons the charges are destined for, it is unknown at the time of writing whether, for example, the propelling charges authorised for export are for ammunition for howitzers, other cannons, anti-tank weapons and so forth. However, past export authorisations for items in the same WWL category can provide some further indications regarding the specifications of these weapon components, as they may underline the manufacturing capacity of the German arms industry as well as existing supply cooperations and reliance. As an example, as recently as in 2022, parts for howitzer ammunition (ML 3) worth approximately 6.4 million Euro were authorised for export to Israel (see fig. 6),⁷⁸ while in 2019 howitzer ammunition and ammunition for recoilless weapons and parts thereof, as well as parts for mortar ammunition, worth approximately 10.1 million Euro, were approved for export, amongst other items in the same category (see fig. 7).⁷⁹

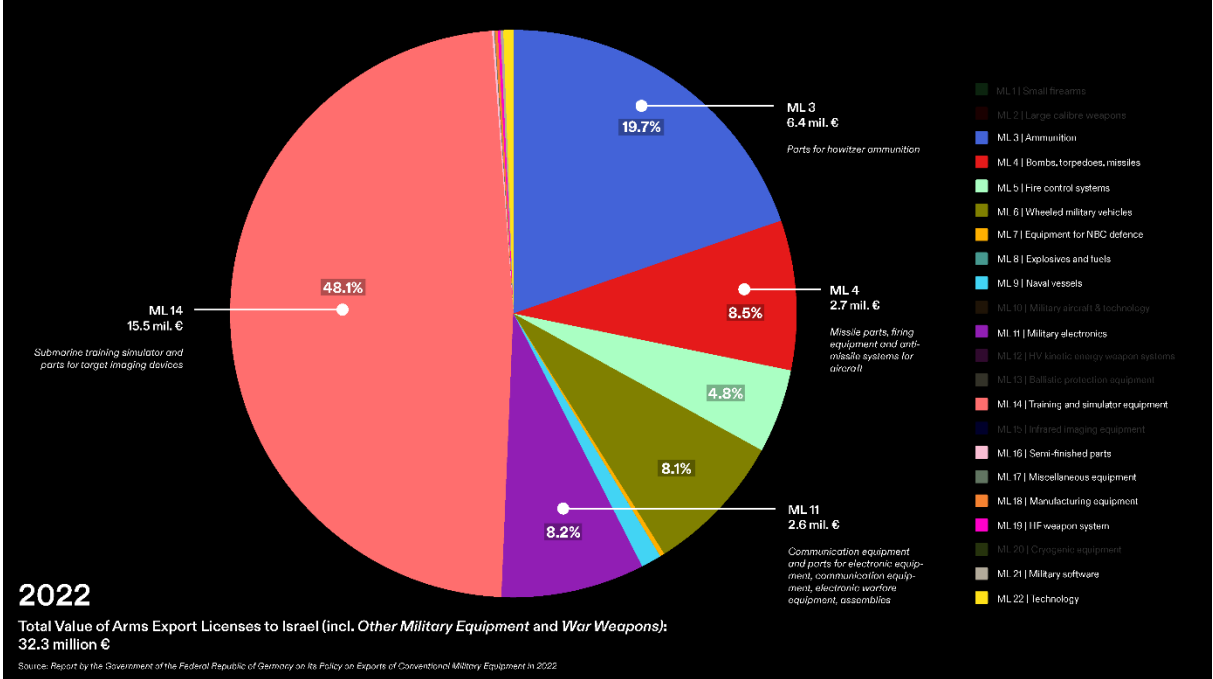


Fig. 6. Breakdown of arms export licences from Germany to Israel in 2022, incl. *other military equipment* and *war weapons*, with the distribution of the licences in the different ML positions. 19.7% of the total value, approximately 6.4 million Euro, corresponds to licences in ML 3, more specifically for parts for howitzer ammunition. Source: *Rüstungsexportbericht 2022*

⁷⁸ Bundesregierung, 'Bericht der Bundesregierung über ihre Exportpolitik für konventionelle Rüstungsgüter im Jahre 2022', 22 December 2023.

⁷⁹ Bundesregierung, 'Bericht der Bundesregierung über ihre Exportpolitik für konventionelle Rüstungsgüter im Jahre 2019', 30 June 2020.

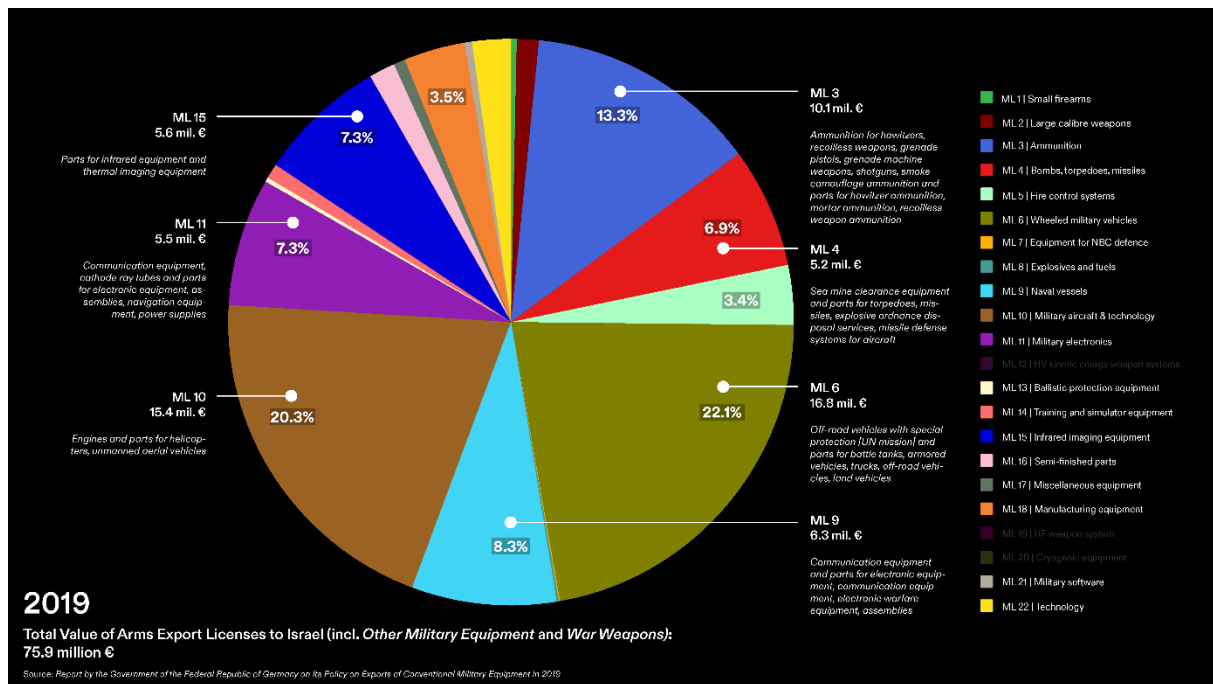


Fig. 7. Breakdown of arms export licences from Germany to Israel in 2019, incl. *other military equipment* and *war weapons*, with the distribution of the licences in the different ML positions. 13.3% of the total value, approximately 10.1 million Euro, corresponds to licences in ML 3, more specifically for howitzer ammunition, ammunition for recoilless weapons, and parts thereof, amongst others. Source: *Rüstungsexportbericht 2019*

The 3,000 portable anti-tank weapons approved for export in 2023 are likely to be the RGW 90, known as “Matador”, a portable shoulder-fired rocket launcher jointly developed by Germany, Israel, and Singapore and manufactured in Germany by Dynamit Nobel Defence GmbH (DND), an arms manufacturing company based in Burbach. DND is a subsidiary of Rafael Advanced Defense Systems, a large Israeli state-owned weapons manufacturer.⁸⁰ Matador was introduced in the Israeli army in 2009, during Israel’s offensive in Gaza known as “Operation Cast Lead”.⁸¹ According to *Siegener Zeitung*, DND representatives confirmed in late October 2023 that the Israeli army is still amongst the users of their portable shoulder-fired weapons, presumably the Matador.⁸² During Israel’s ongoing military assault, Matador’s use by Israeli soldiers has been documented at multiple occasions, including against Palestinian homes in Khan Younis, southern Gaza.⁸³

Lastly, no additional information is provided by the German government regarding the calibre size of the 500.000 rounds of ammunition for the machine/submachine guns or fully/semi-

⁸⁰ AFSC Action Center for Corporate Accountability, ‘[Companies Profiting 2023-2024 Attacks on Gaza](#)’.

⁸¹ Breaking the Silence, ‘[Soldiers’ Testimonies from Operation Cast Lead, Gaza 2009](#)’, June 2009; Outlook Series, ‘[IDF Leveraged Revolutionary Matador Missile in Operation Cast Lead](#)’, 23 February 2009.

⁸² Nico Tielke, ‘[Würgendorf: Rüstungsfirma Dynamit Nobel Defense liefert Panzerfäuste nach Israel](#)’ *Siegener Zeitung*, 31 October 2023.

⁸³ Middle East Monitor, ‘[Khan Younis’ homes targeted by Israeli MATADOR fun missiles](#)’, 12 February 2024. Forensis has seen additional evidence of the Matador being used by the Israeli army in Gaza.

automatic rifles that were approved. The indiscriminate use of ammunition of this broader weapon category by the Israeli forces in the context of the ongoing military assault on Gaza, though, has been extensively documented. An indicative instance of the use of such ammunition from corresponding arms has been associated in particular with a series of deliberate attacks against humanitarian convoys and Palestinians seeking humanitarian aid in Gaza, that have become known as ‘flour massacres’.⁸⁴ As of 15 March 2024, over 500 people have been killed in such attacks according to various reports.⁸⁵

Regarding 2024, as reported in a recent response by the Federal Ministry of Economic Affairs and Climate Action, arms export licences with a total value of 9,003,676 Euro were approved between 1 January and 15 February 2024.⁸⁶ Of this amount, 32,449 Euro regarded licences for *war weapons*, while the remaining 8,971,227 Euro licences for *other military equipment*. No specific ML positions have been disclosed in relation to those licences. Additionally, on 16 January 2024, *Der Spiegel* reported that the German government had agreed to fulfil a request by Israel, already made in November 2023, for the supply of 10,000 rounds of 120mm tank ammunition.⁸⁷ As reported, the delivery of the order had been approved in principle, waiting for the final confirmation of the price. In order to ensure a speedier delivery, the ammunition would be delivered from Germany’s existing military stockpiles, which would then be replenished by the German arms manufacturing industry, according to sources of *Der Spiegel*.⁸⁸ The indiscriminate use of tank ammunition against Palestinians and critical civilian infrastructure, including medical facilities,⁸⁹ aid convoys,⁹⁰ and civilian shelters⁹¹ in Gaza since October 2023 has been widely documented. Additionally, such tank shells have also been used by the Israeli forces in southern Lebanon against a group of “clearly identifiable journalists” in violation of

⁸⁴ Al Jazeera, [‘UN sees ‘large number of gunshot wounds’ after Israel’s ‘flour massacre’](#), 2 March 2024; Euro-Med Human Rights Monitor, [‘New evidence confirms Israel’s full involvement in ‘Flour Massacre’ of starving Palestinian civilians’](#), 6 March 2024; OHCHR, [‘UN experts condemn ‘flour massacre’, urge Israel to end campaign of starvation in Gaza’](#), 5 March 2024; Al Mezan Center for Human Rights, Al Haq, and Palestinian Center for Human Rights (PCHR), [‘Flour Massacre’: Impunity Persists as Israeli Forces Open Fire On Starving Palestinians Seeking Vital Aid’](#), 29 February 2024.

⁸⁵ Mahmoud Higazy and Thaer Abu Aoun, [‘Flour massacres’ continue: At least 40 dead, 150 injured in Occupation attack on aid delivery in Gaza City’](#), *Mada Masr*, 15 March 2024.

⁸⁶ Bundesministerium für Wirtschaft und Klimaschutz, [‘Fragestunde des Deutschen Bundestages am 21. Februar 2024, Frage Nr. 052’](#), 21 February 2024.

⁸⁷ Matthias Gebauer, Christoph Schult, and Gerald Traufetter, [‘Waffenhilfe für den Gaza-Krieg: Bundesregierung prüft Lieferung von Panzermunition an Israel’](#) *Der Spiegel*, 16 January 2024.

⁸⁸ Ibid.

⁸⁹ Indicative references: Al Jazeera, [‘Israeli tanks besiege Gaza’s Indonesian Hospital’](#), 1 November 2023; Lorenzo Tondo, [‘Medics trapped by Israeli gunfire at two Gaza hospitals, says Red Crescent’](#) *The Guardian*, 23 March 2024. See also: Forensic Architecture, [‘Destruction of Medical Infrastructure in Gaza’](#), 20 December 2023.

⁹⁰ Indicative references: Médecins Sans Frontières (MSF), [‘MSF convoy attacked in Gaza: all elements point to Israeli army responsibility’](#), 1 December 2023; Médecins Sans Frontières (MSF), [‘Attacks on humanitarian workers in Gaza make vital assistance nearly impossible’](#), 27 February 2024.

⁹¹ Indicative references: Al Jazeera, [‘At least 9 killed in Israeli attack on UN shelter in southern Gaza’](#), 24 January 2024; Médecins Sans Frontières (MSF), [‘MSF strongly condemns Israeli attack on MSF shelter in Al-Mawasi which kills two and injures six’](#), 21 February 2024; Médecins Sans Frontières (MSF), [‘Gaza: MSF condemns strike on shelter that killed staff member’s five-year-old daughter’](#), 9 February 2024.

international law, as concluded by an investigation by the *United Nations Interim Force in Lebanon*.⁹²

Regarding actual arms exports in 2023, no official information has been made available by the German government. According to the *Stockholm International Peace Research Institute's* (SIPRI) Arms Transfers Database, in 2023 Germany was the second largest supplier of “major conventional weapons” to Israel, responsible for 47% of Israel’s total imports, following the U.S. at 53%.⁹³ This percentage includes the delivery of two Sa’ar 6-class corvettes as well as missiles and engines for tanks and other military vehicles. The four warships were delivered to Israel in 2020 and 2021 but were booked in the database under 2022 and 2023. This figure does not appear to be an outlier: since 2003, Germany has been consistently ranking second – and sometimes first – at the share of total imports of major conventional weapons to Israel. Over the period between 2019-2023, Germany’s share of major conventional arms imported by Israel was 30%, second after the U.S. at 69% (see fig. 8).⁹⁴

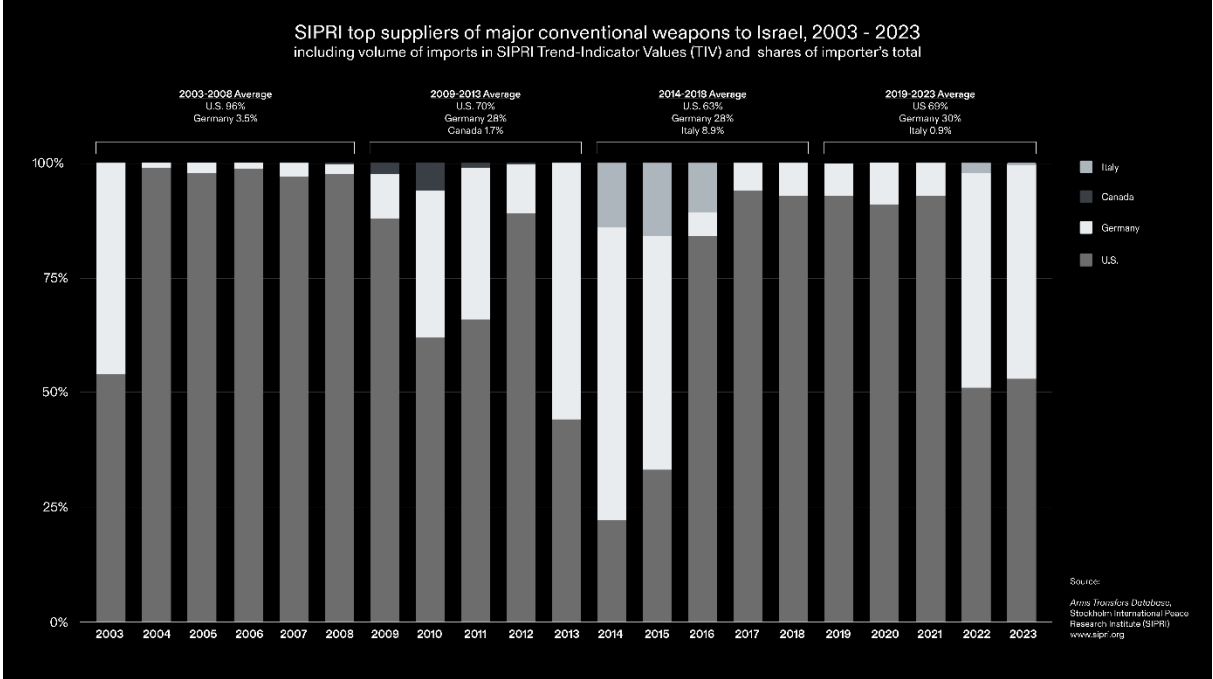


Fig. 8. A bar chart that lists the top suppliers of “major conventional weapons” to Israel, and each supplier’s respective share of the importer’s total, for the period 2003-2023, as reported by SIPRI. Additionally, percentages for 5-year periods are given. Source: *Arms Transfers Database*, Stockholm International Peace Research Institute (SIPRI)

⁹² Reuters, ‘Israel broke international law with tank shelling that killed journalist, UN finds’ *The Guardian*, 13 March 2024.

⁹³ *Arms Transfers Database*, SIPRI

⁹⁴ *Ibid.*

According to SIPRI, the exports of “major conventional weapons” from Germany to Israel over the course of 2023 included:⁹⁵

- 2 MEKO PC-IN frigates, Israeli designation Sa’ar 6
- 50 vehicle diesel engines MT883Ka for Merkava-4 tanks and Namer APC (Armoured Personnel Carriers)
- 10 vehicle diesel engines MTU 750hp (or possibly 6V-890) for Eitan APC (Armoured Personnel Carriers) and IFV (Infantry Fighting Vehicles)
- 10 DM2A4 Seehecht (SeaHake mod4) torpedoes, i.e. underwater missiles, for Israel’s (German-manufactured) Dolphin submarines

The MEKO-type missile corvettes, known also as Sa’ar 6 – approximately one third of whose cost was subsidised by the German government⁹⁶ – were manufactured in a joint venture by German Naval Yards Holdings and ThyssenKrupp Marine Systems (TKMS).⁹⁷ The corvettes reinforce the Israeli Navy’s arsenal, as the latter is imposing a total naval blockade and siege of Gaza, amongst other by curtailing fishing activities along the coast amidst severe food shortages.⁹⁸ Additionally, the corvettes have been operational for the first time during Israel’s ongoing military assault on Gaza, actively involved in strikes offshore.⁹⁹

The MT883 diesel engine has been developed by MTU Friedrichshafen GmbH, a subsidiary of Rolls-Royce Power Systems, and together with the German-made RENK transmission system, makes up the powerplant of the Merkava-4 tanks and Namer APC.¹⁰⁰ The engines are reported to be assembled under licence in the U.S. (see also Appendix A).¹⁰¹ The Merkava-4 tank has long been considered “integral” to Israel’s military operations,¹⁰² while in the context of the ongoing ground invasion of Gaza, it has been characterised as “Israel’s main asset” in its army arsenal, responsible for “destroying targets that have not been eliminated during airstrikes.”¹⁰³ As aforementioned, since October 2023, there has been extensive documentation of the use of tanks in targeting civilians and indiscriminate attacks and besiegement of critical

⁹⁵ As aforementioned, SIPRI’s database does not include the tracking of the majority of small arms and light weapons, ammunition, or artillery under 100-mm calibre, amongst others.

⁹⁶ The German government co-financed the corvettes with an amount of 115 million Euro. Bundesregierung, ‘Antwort der Bundesregierung, Drucksache 18/5040’, 26 May 2015. See also: SIPRI’s arms transfer database.

⁹⁷ Himaja Ganta, ‘TKMS delivers third and fourth SA’AR 6-class corvettes to Israeli Navy’ *Naval Technology*, 28 July 2021.

⁹⁸ Ikram Kouachi, ‘Israeli navy targets Palestinian fishing boat off southern Gaza’, *Anadolu Agency*, 24 February 2024.

⁹⁹ Richard Thomas, ‘Israeli Navy’s Sa’ar 6 Corvettes Used to Strike Gaza Ground Targets’ *Naval Technology*, 16 October 2023.

¹⁰⁰ This combined power unit is also known as ‘EuroPowerPack’. Army Technology, ‘Merkava 4 Israel Defence Forces Main Battle Tank’, 10 July 2020.

¹⁰¹ Ibid.

¹⁰² Army Recognition, ‘Merkava Tanks Provide Crucial Firepower for Israeli Army in Gaza Urban Warfare’, 13 November 2023.

¹⁰³ Diego Stacey, Rodrigo Silva, ‘The Merkava IV tank, Israel’s main asset for the ground offensive in Gaza’, 24 October 2023.

infrastructure.¹⁰⁴ There is also documentation of the Namer APC being deployed in Gaza since October 2023.¹⁰⁵ Additionally, tanks – some of which are powered by German-made components – alongside tractors and other military vehicles, have been used to systematically uproot farms and agricultural land in Gaza in a deliberate act of ecocide, which is a critical dimension of Israel’s ongoing genocidal campaign.¹⁰⁶ According to SIPRI, an estimated number of approximately 1,060 MT883 diesel engines for Merkava tanks and Namer APCs have been exported to Israel since 2002 (see fig. 21).¹⁰⁷

The Eitan APC (Armoured Personnel Carrier) as well as its infantry combat version AFV (Armoured Fighting Vehicle) are powered by either the MTU 6V890 or the Caterpillar C18 diesel engine.¹⁰⁸ The Eitan model is the newest armoured personnel vehicle of the Israeli army and, according to various reports, has become operational in Israel’s military assault on Gaza, ahead of schedule,¹⁰⁹ while its fighting vehicle counterpart has also been employed “on the front lines of Israeli forces, along with tank units and infantry conducting assault operations in the urban areas of the Gaza Strip.”¹¹⁰ According to SIPRI, 2023 marked the first year that such diesel engines were exported from Germany to Israel.

The underwater missile DM2A4 Seehecht (SeaHake mod 4), manufactured in Germany by Atlas Elektronik GmbH, has been listed by *Naval Technology* as one of “the world’s deadliest torpedoes.”¹¹¹ According to SIPRI, an estimated number of 120 German-manufactured torpedoes, for use in the German-manufactured Dolphin submarines of the Israeli navy, have been exported to Israel since 2014 (see fig. 21).¹¹²

Lastly, another piece of information relevant to Germany’s military support to Israel since October 2023 regards the authorisation granted to Israel to use two of the five Heron TP combat drones that Germany had leased from the Israeli arms manufacturer Israeli Aerospace Industries

¹⁰⁴ Additionally, see: *Merkava Tanks Operate and Fire Shells in Gaza* טנקי מרכבה פועלים ויורים פגזים בעזה, 28 December 2023; *Merkava MK4 Operate in Gaza* טנקי מרכבה פועלים בעזה, 5 November 2023.

¹⁰⁵ For example, see: Army Recognition, ‘[Israel Defense Forces Deploy Heavily Armored Namer APCs at Gaza Border](#)’, 16 October 2023.

¹⁰⁶ Forensic Architecture, ‘[“No Traces of Life”: Israel’s Ecocide in Gaza 2023-2024](#)’, 29 March 2024; Kaamil Ahmed, Damien Gayle, and Aseel Mousa, ‘[“Ecocide in Gaza”: does scale of environmental destruction amount to a war crime?](#)’ *The Guardian*, 29 March 2024’. The use of tanks, amongst other vehicles, for the deliberate destruction of agricultural land has also been documented by Palestinian farmers as well as Israeli soldiers in past offensives in Gaza. See: Breaking the Silence, ‘[Testimony 723062](#)’, 2014; Muhammad Shehada (Twitter), *[Video from Another Angle: Israeli Bulldozers & Merkava Tank Razing Strawberry Farm in Gaza’s Beit Lahia Yesterday Morning, Close to the Perimeter Fence](#)*, 25 December 2021.

¹⁰⁷ [Arms Transfers Database](#), SIPRI.

¹⁰⁸ Army Technology, ‘[Eitan Armoured Personnel Carrier, Israel](#)’, 20 June 2023; Tamir Eshel, ‘[Oshkosh Defense to Produce Hundreds of Eitan Armored Vehicles for Israel](#)’ *Defense Update*, 28 December 2022.

¹⁰⁹ Rebecca Rommen, ‘[Israel’s new Eitan APC spotted in combat against Hamas in Gaza. The IDF prematurely rushed the high-tech armor into service.](#)’ *Business Insider*, 12 November 2023.

¹¹⁰ Militarnyi, ‘[Israel Uses Latest Eitan AFVs in War against Hamas](#)’, 6 November 2023.

¹¹¹ Naval Technology, ‘[The world’s deadliest torpedoes](#)’, 8 June 2014.

¹¹² [Arms Transfers Database](#), SIPRI.

(IAI).¹¹³ According to its CEO, the Heron TP drone “demonstrated its strategic importance” in the military offensive in Gaza.¹¹⁴ It has been widely documented that in past Israeli offensives in Gaza, the Israeli army has used drones not only in surveillance and target acquisition, but also for attacking civilians with missiles.¹¹⁵ According to *Al Mezan Center for Human Rights*, between 2000 and 2022, at least 2,145 Palestinians, including 378 children and 86 women, were killed in Gaza by Israeli drones, while more than 3,300 homes were attacked over the same period in question.¹¹⁶ The use of drones for targeting and killing Palestinian people, including journalists¹¹⁷ as well as medical staff,¹¹⁸ has also been documented in the context of Israel’s ongoing military assault in Gaza.

¹¹³ Matthias Gebauer and Marina Korbaki, ‘Waffenhilfe: Deutschland stellt Israel Heron-Kampfdrohnen zur Verfügung’, *Der Spiegel*, 11 October 2023.

¹¹⁴ The Jerusalem Post, ‘Introducing the IAI Heron Unmanned Aerial Vehicle (UAS)’, 22 November 2023.

¹¹⁵ Human Rights Watch, ‘Precisely Wrong: Gaza Civilians Killed by Israeli Drone-Launched Missiles’, July 2009; Robert Mackey, ‘Secret Israeli Report Reveals Armed Drone Killed Four Boys Playing on Gaza Beach in 2014’ *The Intercept*, 11 August 2018.

¹¹⁶ Al Mezan Center for Human Rights, ‘Al Mezan Condemns Israel’s Constant Use of Drones over Gaza and Calls for a Stop to This Practice’, 4 January 2023.

¹¹⁷ International Federation of Journalists, ‘Israel drone strike kills two journalists near Rafah’, 8 January 2024; Committee to Protect Journalists, ‘Al-Jazeera reporter, cameraman, critically injured by Israeli drone strike in Rafah’, 13 February 2024; Committee to Protect Journalists, ‘Al-Jazeera cameraperson Samer Abu Daqqa killed, correspondent Wael Al Dahdouh injured in drone attack in Khan Yunis’, 15 December 2023.

¹¹⁸ Anushka Patil, ‘Red Crescent Says Israeli Drone Killed 6 in Ambulance’ *The New York Times*, 10 January 2024.

4.2 Export Licences and Actual Exports between 2003-2023

Between 2003 and 2023, the German government approved 4,427 individual export licences¹¹⁹ for *other military equipment* and *war weapons* to Israel that amount to almost 3.3 billion Euro, according to the annual official reports (see fig. 9, 10, 11). Of this, more than half - approximately 1.7 billion Euro - relate to export licences for *war weapons*. For comparison, over the same period, only 54 export licences were rejected, with a value of 8.1 million Euro – marking an approval rate of 99.75%.¹²⁰ The aforementioned figures do not include approved collective export licences granted to Israel during the period in question.

Year	Total Value of Approved Arms Export Licenses	War Weapons - Value of Approved Export Licenses	Other Military Equipment - Value of Approved Export Licenses	War Weapons - Value of Actual Exports
2003	131,567,362 €	100,142,000 €	31,425,362 €	100,560,000 €
2004	14,770,993 €	120,557 €	14,650,436 €	417,000 €
2005	20,358,689 €	0 €	20,358,689 €	477,000 €
2006	19,558,179 €	191,000 €	19,367,179 €	2,014,000 €
2007	28,370,968 €	188,367 €	28,182,601 €	770,000 €
2008	25,083,601 €	565,041 €	24,518,560 €	726,000 €
2009	32,632,918 €	4,994,677 €	27,638,241 €	5,145,000 €
2010	31,620,418 €	697,796 €	30,922,622 €	1,104,000 €
2011	62,905,618 €	522,915 €	62,382,703 €	245,000 €
2012	49,108,100 €	1,497,531 €	47,610,569 €	991,000 €
2013	266,550,442 €	57,495,665 €	209,054,777 €	57,317,000 €
2014	684,563,088 €	605,358,887 €	79,204,201 €	606,539,000 €
2015	507,240,809 €	408,498,000 €	98,742,809 €	350,769,000 €
2016	53,866,312 €	2,869,950 €	50,996,362 €	12,748,000 €
2017	123,298,112 €	1,101,200 €	122,196,912 €	338,000 €
2018	101,194,601 €	0 €	101,194,601 €	23,475,000 €
2019	75,932,282 €	13,532,360 €	62,399,922 €	REDACTED
2020	582,405,816 €	507,891,668 €	74,514,148 €	REDACTED
2021	87,978,727 €	824,861 €	87,153,866 €	REDACTED
2022	32,288,819 €	780,000 €	31,508,819 €	REDACTED
2023	326,505,156 €	20,133,198 €	306,371,958 €	UNDISCLOSED
TOTAL	3,257,801,010 €	1,727,405,673 €	1,530,395,337 €	1,163,635,000 € *

Fig. 9. A table that lists the value of the yearly approved export licences in four categories: a) total value of approved arms export licences; b) value of approved export licences for *war weapons*; c) value of approved export licences for *other military equipment*; and d) value of “actual” exports of *war weapons*. Sources: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022; *Frage Nr. 12/531*, BMWK.

¹¹⁹ For 2023, the number of export licences calculated is the sum of individual permits as attributed to each ML (*Military List*) position. For the rest of the years, the total number of approved export licences calculated is as presented in the annual *Military Equipment Export Reports* of the German government.

¹²⁰ This approval rate is calculated by comparison of the value of the denied licences to that of the total value of the licences requested.

The years 2014 and 2015 include, amongst other, export licences for two Dolphin AIP class submarines, while 2020 includes export licences for the four MEKO-type (Sa'ar 6) missile corvettes. Approximately one third of the cost for the submarines, manufactured by ThyssenKrupp, was subsidised by the German government – as with the four corvettes.¹²¹ The delivery of another submarine, procured under similar terms, is pending as of 2023.¹²² In 2017, it was announced that the German government would subsidise the procurement of three new submarines of the so-called Dakar class for the Israeli Navy, covering again approximately one third of the total cost of 1.5 billion Euro.¹²³

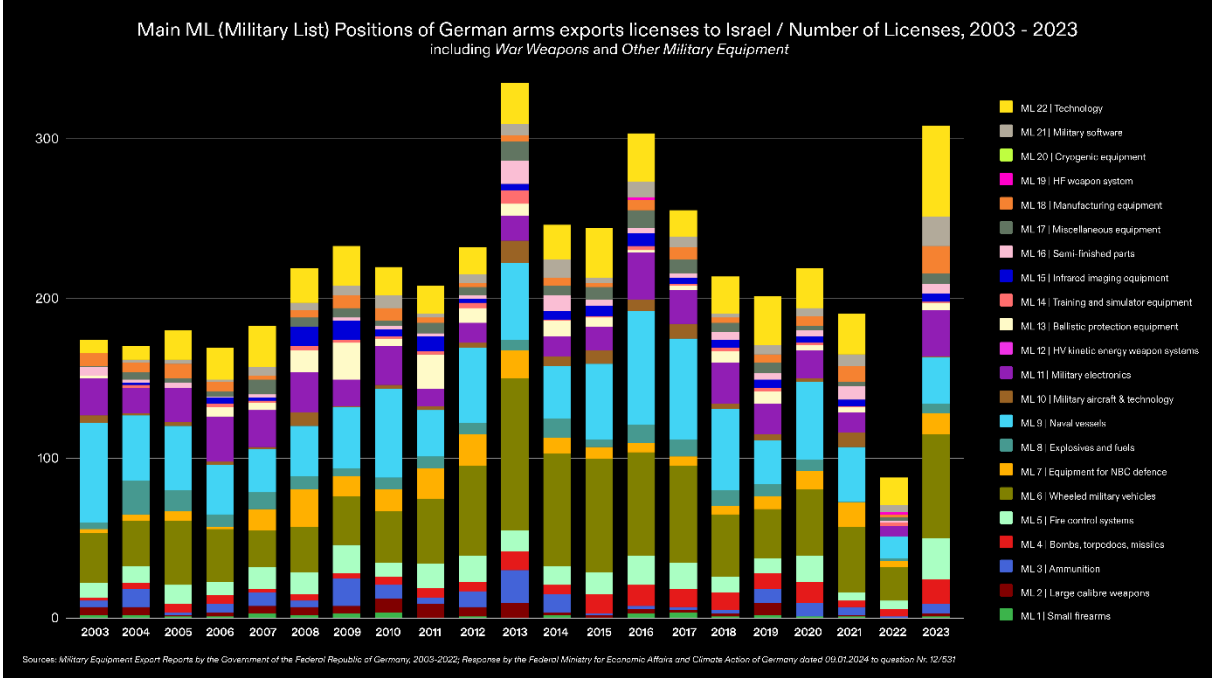


Fig. 10. Total number of approved arms export licences from Germany to Israel between 2003 –2022, with a breakdown into the different ML (Military List) positions according to the number of licences attributed to each position. Sources: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022; *Frage Nr. 12/531*, BMWK.

The aforementioned major licences for the export of the six warships (two submarines and four corvettes) during the period 2003-2022¹²⁴ resulted in a large percentage of the total value of approved export licences over the same period being attributed to **ML 9 position**, which corresponds to “vessels of war [surface or underwater], special naval equipment, accessories,

¹²¹ Peter Münch, ‘Gezerre um das sechste Boot’ *Süddeutsche Zeitung*, 23 July 2010; Der Spiegel, ‘Bundesregierung genehmigt U-Boot-Export nach Israel’, 10 April 2015.

¹²² These were not the first submarines exported from Germany to Israel. In the first half of the 1990s, the German government granted licences for three submarines of the Dolphin class, which were delivered in 1999 and 2000. This makes the latest submarine whose delivery is still pending (as of 2023) the sixth German-made submarine to be supplied to the Israeli Navy. Simone Wisotzki, ‘German arms exports to the world? taking stock of the past 30 years’ *Leibniz-Institut Hessische Stiftung Friedens- und Konfliktforschung (HSFK), Peace Research Institute Frankfurt (PRIF)*, 2020.

¹²³ Der Spiegel, ‘Israel: Deutschland beteiligt sich finanziell an drei U-Booten’, 23 October 2017.

¹²⁴ Breakdown information on the ML positions of the approved export licences, in terms of value, for 2023 is not yet publicly available at the time of writing.

components and other surface vessels”.¹²⁵ The combined value attributed to ML 9 between 2003 and 2022, which includes the warships and related components, amounted to approximately **1.5 billion Euro**, as shown in fig. 11 and 14.

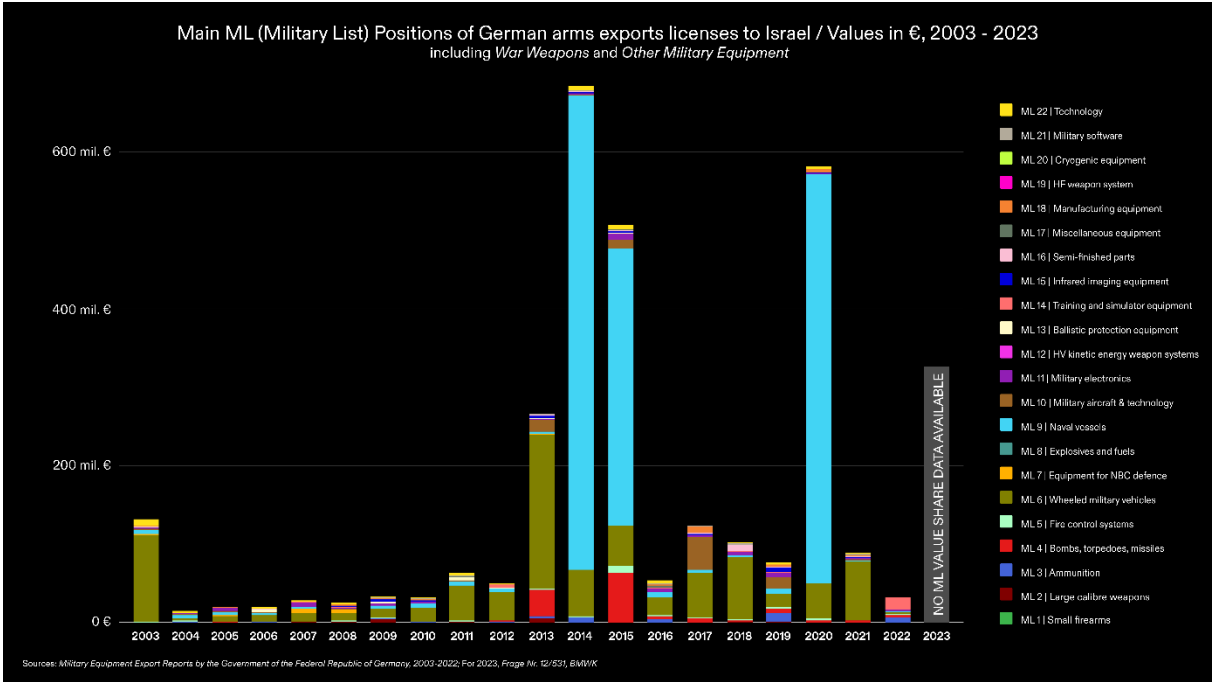


Fig. 11. Total value of approved arms export licences from Germany to Israel between 2003 –2023, with a breakdown into the different ML (Military List) positions, according to each position’s corresponding value. Such breakdown information on the ML individual values is not available for 2023 at the time of writing. Sources: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022; *Frage Nr. 12/531*, BMWK.

¹²⁵ Council of the European Union, 'Common Military List of the European Union', 2024.

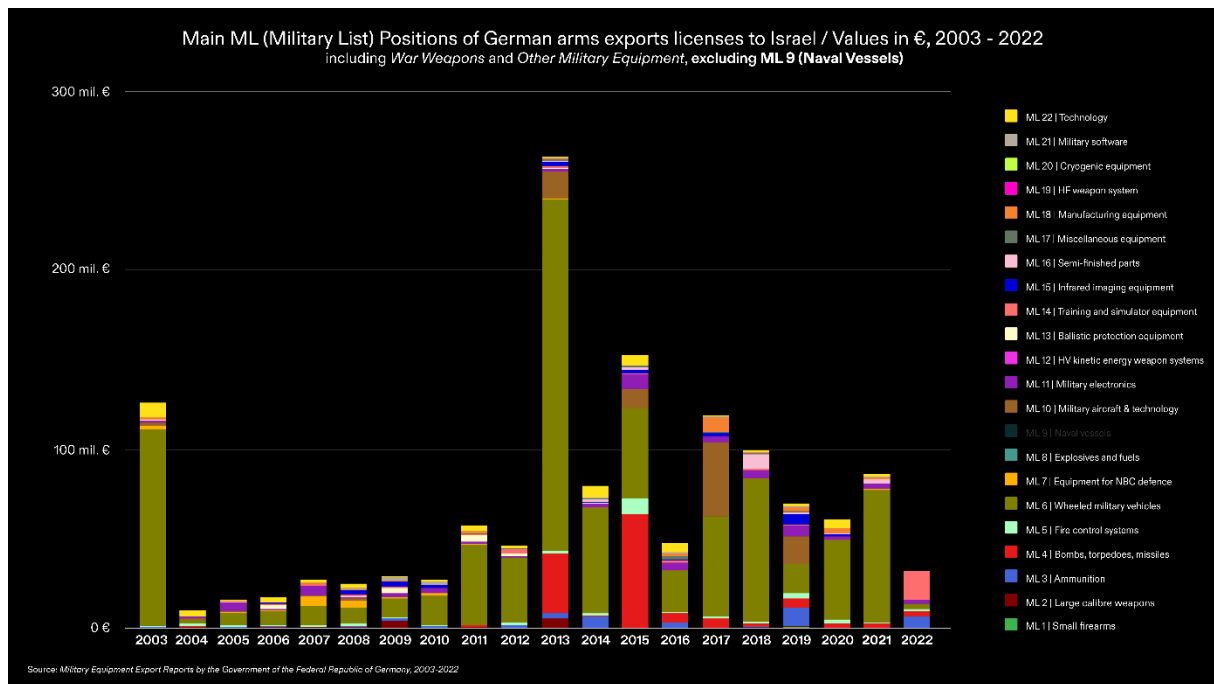


Fig. 12. Total value of approved arms export licences from Germany to Israel between 2003–2022, with a breakdown into the different ML (Military List) positions, according to each position’s corresponding value, excluding ML 9 (naval vessels). Source: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022.

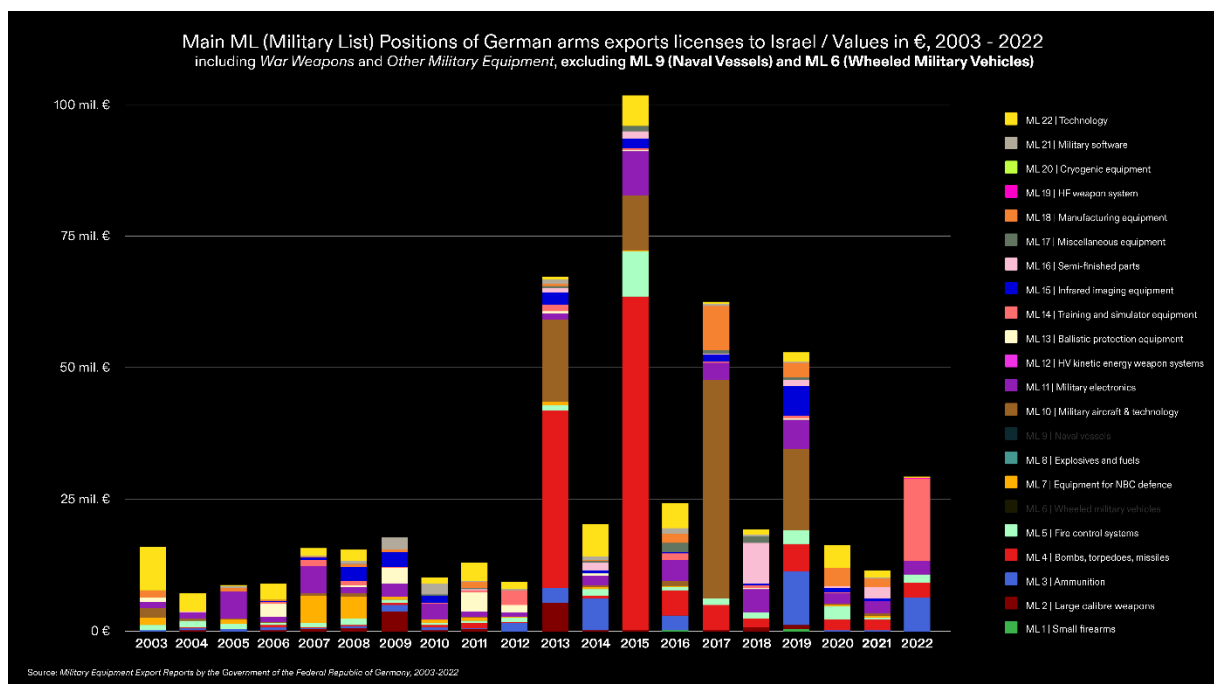


Fig. 13. Total value of approved arms export licences from Germany to Israel between 2003–2022, with a breakdown into the different ML (Military List) positions, according to each position’s corresponding value, excluding ML 9 (Naval vessels and components) and ML 6 (Ground vehicles and components). Source: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022.

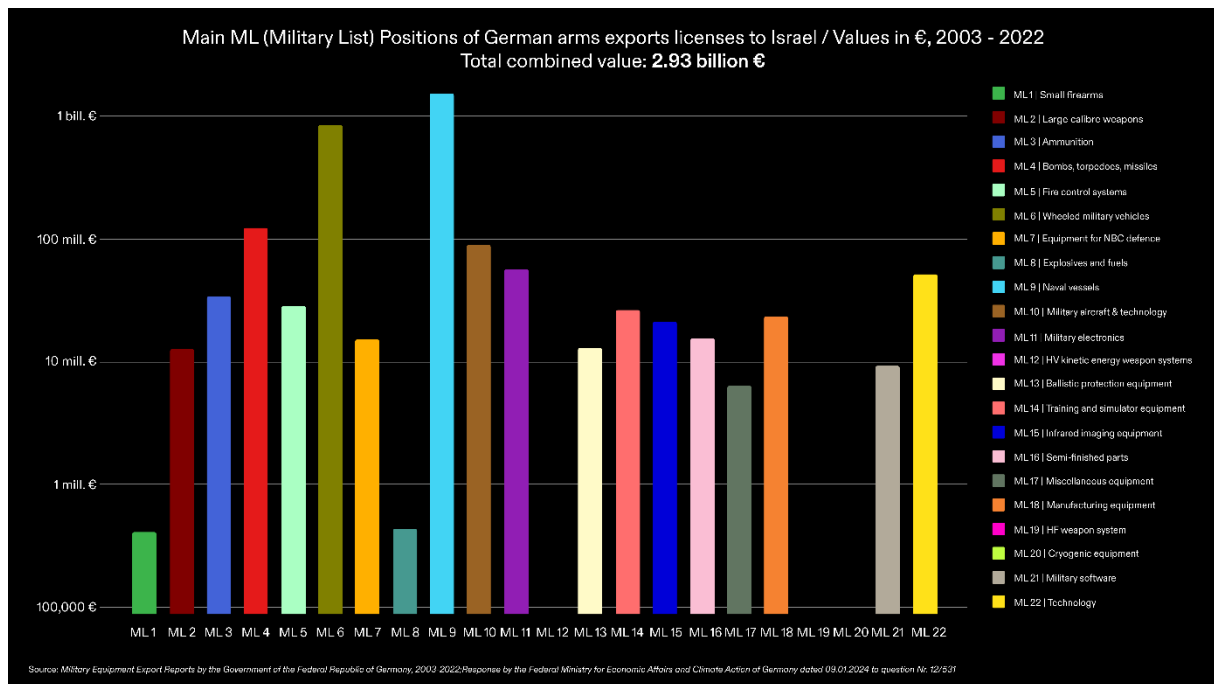


Fig. 14. Bar chart that shows the distribution of the total value of approved arms export licences from Germany to Israel between 2003–2022 to the different ML positions. The ML position with the largest volume (in terms of value) of export licences is ML 9, followed by ML 6 and ML 4. A logarithmic scale has been used for the graph, as otherwise values for certain ML positions would not be discernible. Source: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022.

The second largest volume – in terms of value – of approved arms export licences between 2003-2022 is attributed to **ML 6 position**, which corresponds to “ground vehicles and components”, amongst other “tanks and other military armed vehicles and military vehicles fitted with mountings for arms or equipment for mine laying or the launching of munitions specified by ML4”, “armoured vehicles”, and components thereof.¹²⁶ The combined value of this position for the last two decades amounts to approximately **859 million Euro**, as shown in fig. 12 and 14. The annual *Military Equipment Export Reports* provide some additional information on the general subcategories of arms included in the export licences corresponding to this position. Parts for main battle tanks and other armoured vehicles were included in almost all the years in question, signifying that it is likely these parts were intended for the Merkava tanks and other armoured vehicles of the Israeli army. Additional equipment detailed in certain years include trucks, launchers for anti-aircraft missile systems, as well as parts for anti-aircraft systems, for trucks, and for ballistic protection. While articles in ML 6 position were approved for export at significant numbers each year, there is gradual steady increase over the last decade, and a steep increase in 2013, the year after one of Israel’s major military offensives in Gaza (see fig. 15).

¹²⁶ Ibid.

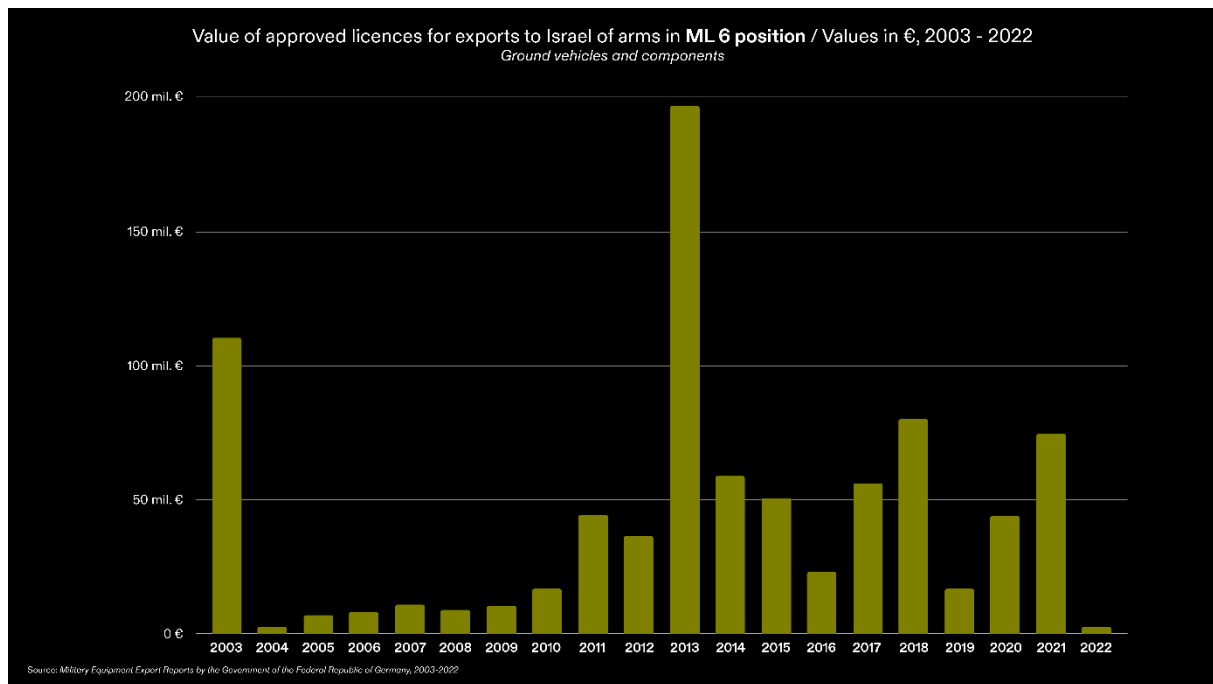


Fig. 15. Yearly value of approved licences for exports to Israel of arms in ML 6 position between 2003-2022. Source: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022.

The third position with the largest share, in terms of value, in the period 2003-2022 is **ML 4 position**, which corresponds to “bombs, torpedoes, rockets, missiles, other explosive devices and charges and related equipment and accessories, and specially designed components thereof”.¹²⁷ The combined value of this position for the last two decades amounts to approximately **124 million Euro**, as shown in fig. 13 and 14. This position shows a steady increase over the last decade, as opposed to the 2000s, and a sharp increase in the years after two major military assaults on Gaza (see fig. 16), whereby thousands of Palestinian people were killed, and civilian infrastructure was severely destroyed.¹²⁸ More specifically, this regards an increase in 2013, the year after Israel’s so-called “Operation Pillar of Defense”, and in 2015, the year after so-called “Operation Protective Edge”. Amongst the military equipment and weapons approved for export over the years in question in this ML position are missiles, pyrotechnic ammunition, firing assemblies and parts for missiles, smoke dischargers, anti-missile systems, as well as torpedoes and components thereof.

¹²⁷ Ibid.

¹²⁸ Forensic Architecture and B’Tselem, ‘Conquer and Divide: The Shattering of Palestinian Space by Israel’, 5 June 2019.

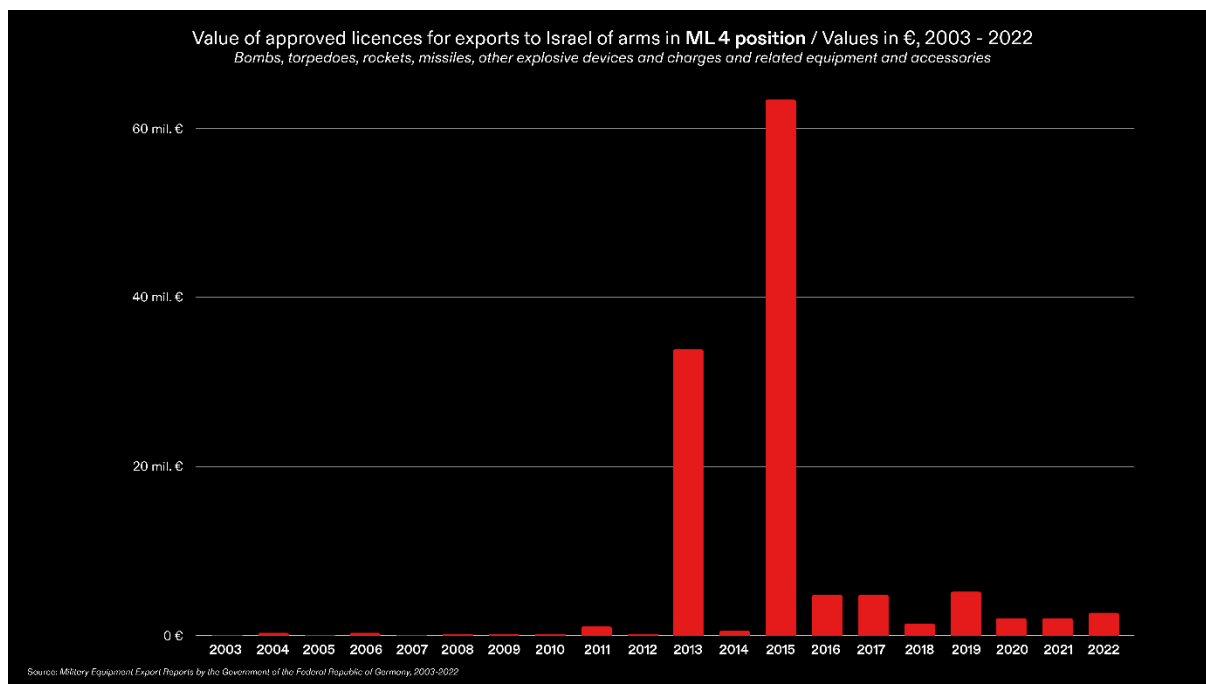


Fig. 16. Yearly value of approved licences for exports to Israel of arms in ML 4 position between 2003-2022. Source: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022.

Subsequent ML positions with the largest share in the total value of approved export licences between 2003-2022 are **ML 10 position**, which corresponds to “aircraft, lighter-than-air vehicles, Unmanned Aerial Vehicles (UAVs)”¹²⁹ and related equipment or components thereof, amounting to a total of approximately **89.2 million Euro**; **ML 11 position**, which corresponds to “electronic equipment, spacecraft and components”,¹³⁰ amounting to approximately **57.2 million Euro**; and **ML 22 position**, which corresponds to “technology required for the development, production, operation, installation, maintenance (checking), repair, overhaul or refurbishing”¹³¹ of items in the ML list, amounting to approximately **51.2 million Euro** over the period in question.

ML 3 position follows with a combined value of approved export licences of **approximately 34.1 million Euro** between 2003-2022. This position corresponds to “ammunition and fuse setting devices” as well as components thereof.¹³² As shown in fig. 17, a sharp increase in approved export licences for articles in this position is registered in 2019, the year after the “Great March of Return” protests near the Gaza-Israel border, when Israeli forces killed at least 214 Palestinians, including 46 children, and injured thousands of people¹³³ – acts that according to the UN Human Rights Council could amount to war crimes or crimes against humanity.¹³⁴

¹²⁹ Council of the European Union, 'Common Military List of the European Union', 2024.

¹³⁰ Ibid.

¹³¹ Ibid.

¹³² Ibid.

¹³³ OCHA - OPT, 'Two years on: people injured and traumatized during the “Great March of Return” are still struggling', 6 April 2020.

¹³⁴ United Nations Human Rights Council, 'Report of the UN Commission of Inquiry on the 2018 Protests in the OPT', 28 February 2019 and 18 March 2019.

Another increase can be discerned in 2013 and 2014, as well as in 2022, the year after another military offensive on Gaza that followed weeks of Israeli state and settler violence in East Jerusalem. Amongst the ammunition and related components approved in 2019 and in 2022, there are howitzer ammunition and parts thereof, as well as ammunition for recoilless weapons, grenade pistols, grenade machine guns, shotguns, smoke camouflage ammunition and components thereof.

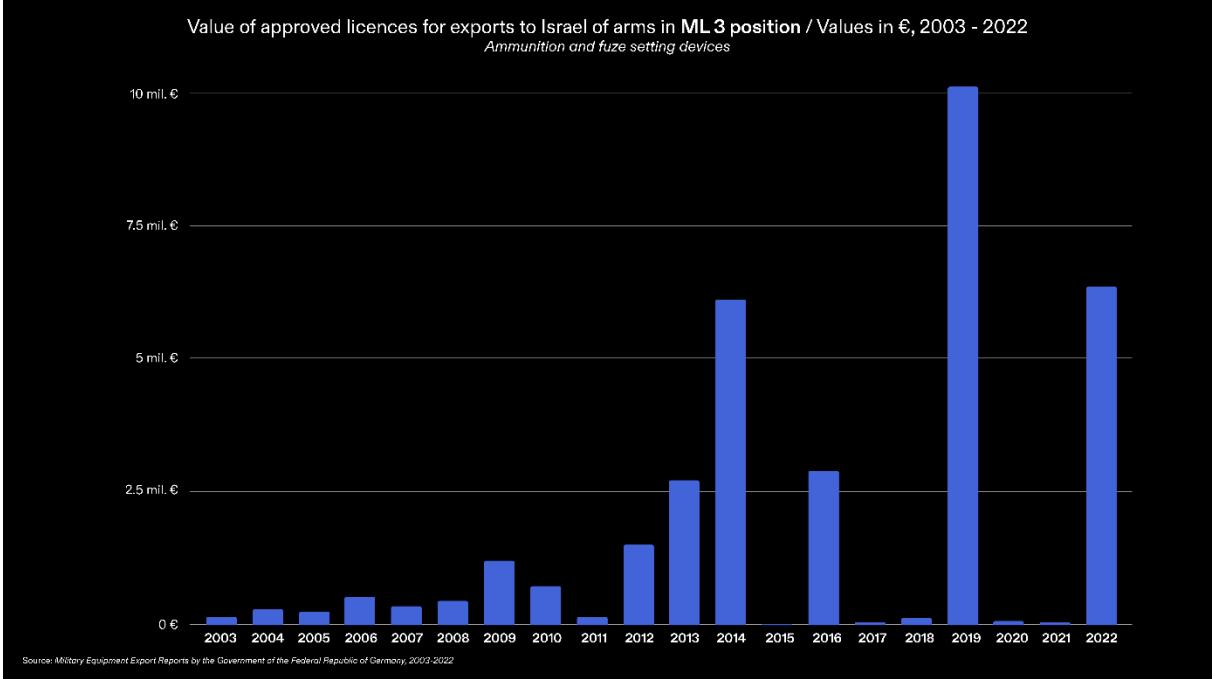


Fig. 17. Yearly value of approved licences for exports to Israel of arms in ML 3 position between 2003-2022. Source: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022.

Another pattern of increase can be discerned for approved export licences in **ML 1 position**, which corresponds to “smooth-bore weapons with a calibre of less than 20 mm, other arms and automatic weapons with a calibre of 12,7 mm (calibre 0,50 inches) or less and accessories” and components thereof.¹³⁵ This position amounted to a combined value of approximately 414 thousand Euro between 2003-2022 (see fig. 18). Almost 60% of this combined value – small arms and components thereof worth approximately 250 thousand Euro – was approved in 2019 alone, the year after the “Great March of Return” protests in Gaza. Documentation shows that the vast majority of people who were killed by the Israeli forces at and around the border fence suffered fatal injuries from the use of live ammunition through firearms.¹³⁶

Lastly, other relevant categories include **ML 2 position**, which corresponds to “smooth-bore weapons with a calibre of 20 mm or more, other weapons or armament with a calibre greater than 12,7 mm (calibre 0,50 inches), projectors specially designed or modified for military use and accessories”¹³⁷ and components thereof; as well as **ML 18 position** which corresponds to

¹³⁵ Council of the European Union, ‘Common Military List of the European Union’, 2024.
¹³⁶ United Nations Human Rights Council, ‘Report of the UN Commission of Inquiry on the 2018 Protests in the OPT’, 28 February 2019 and 18 March 2019.
¹³⁷ Council of the European Union, ‘Common Military List of the European Union’, 2024.

“production’ equipment, environmental test facilities and components”.¹³⁸ In the period 2003-2022, approved export licences for ML 2 amounted to a combined value of approximately 12.7 million Euro, and ML 18 to 23.4 million Euro. Information about the rest of the ML positions can be found in the respective diagrams.

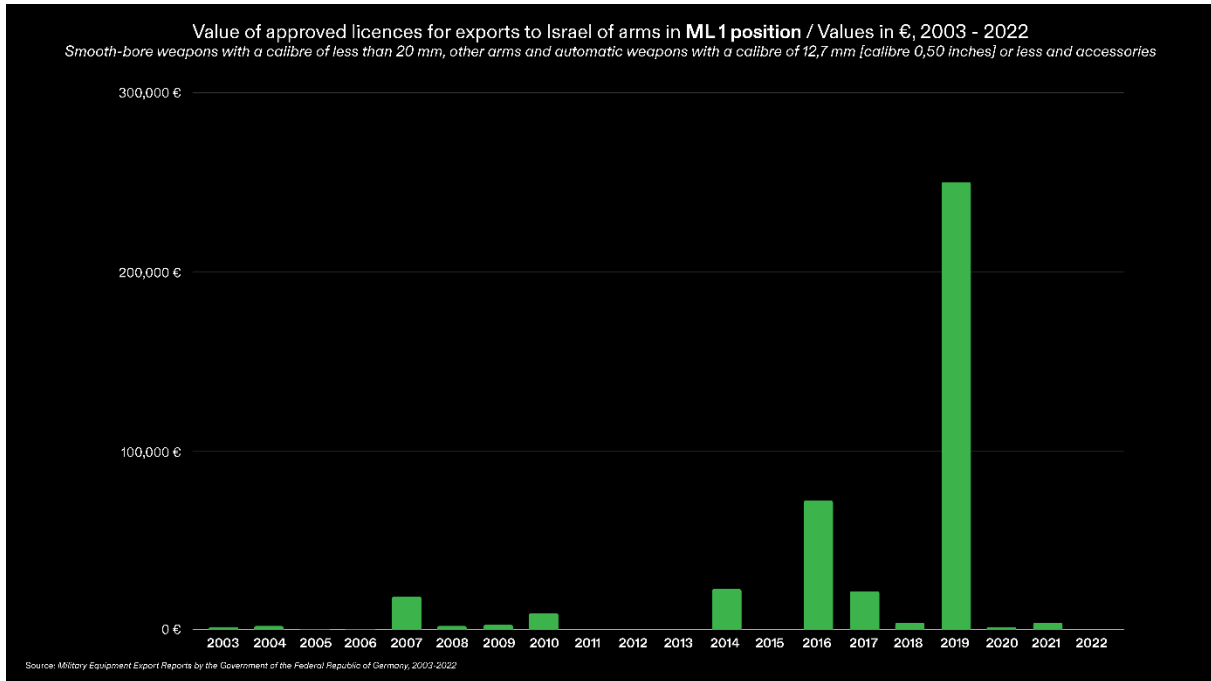


Fig. 18. Yearly value of approved licences for exports to Israel of arms in ML 1 position between 2003-2022. Source: *Military Equipment Export Reports* by the Government of the Federal Republic of Germany, 2003-2022.

While the aforementioned data regards approved arms export licences, the value of **“actual” exports of war weapons** is collected by the Federal Statistical Office, and limited information is presented in the annual *Military Equipment Export Reports* of the German government. No respective information regarding the “actual” export of *other military equipment* is disclosed by the German government. According to the yearly reports, *war weapons* with a total value of **1,163,635,000 Euro** were exported from Germany to Israel between **2003 and 2018** (see fig. 19). No specific details about the types of war weapons that are exported are included in the official reports, apart from those complete weapon systems that are declared to the United Nations Register of Conventional Arms (UNROCA), such as the two submarines exported in 2014 and 2015. Data for actual *war weapons* exports from 2019 onwards remain redacted in the official reports.

While the increase in actual exports of *war weapons* in the years 2014 and 2015 can be partially attributed to the export of the two Dolphin submarines, a significant increase can also be seen in years after Israel’s major military campaigns and attacks on Gaza, for example in 2009, 2013, 2015, as well as in 2016 and 2018.

¹³⁸ Ibid.

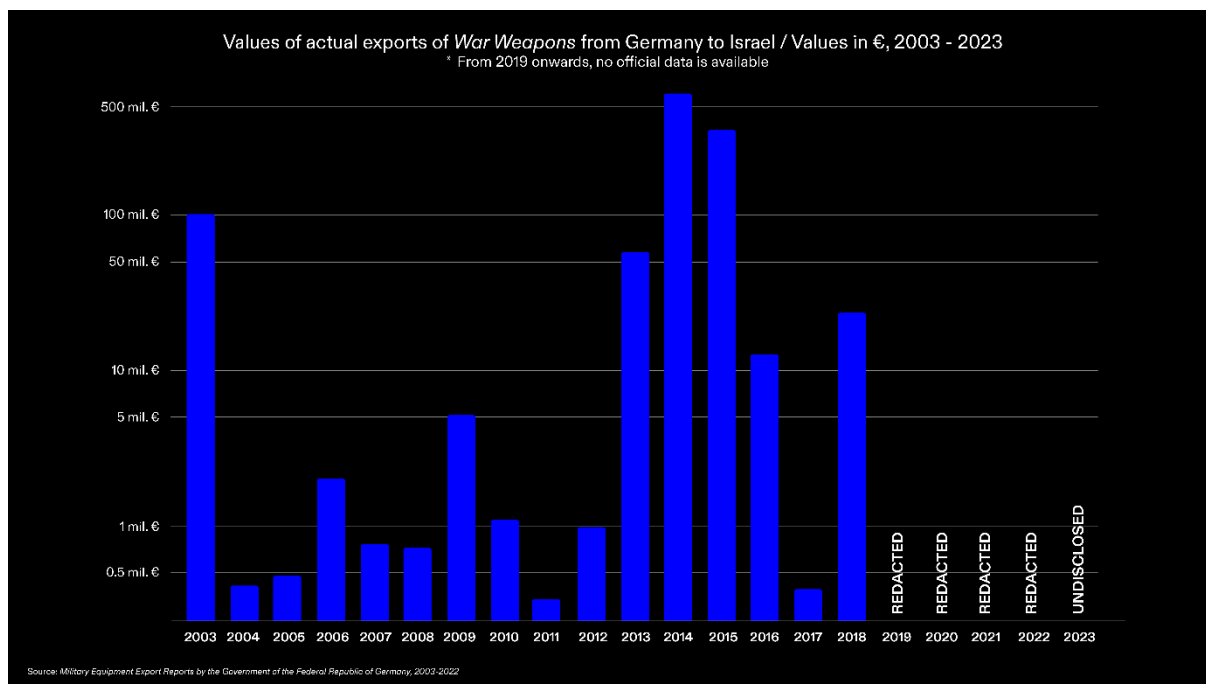


Fig. 19. Values in Euro of actual exports of *War Weapons* from Germany to Israel between 2003 and 2023. A logarithmic scale has been used, as otherwise the significantly large values in 2014 and 2015 covering the authorisation of the export of submarines would render the rest of the data less discernible. Source: *Military Equipment Export Reports by the Federal Government of Germany, 2003-2022*.

According to data deriving from the Arms Transfers Database of SIPRI regarding deliveries of “major conventional weapons” between 2003 and 2023, Germany has been consistently ranking amongst the top suppliers of the share of total imports to Israel, following the U.S. (see fig. 20). Within that period, major conventional weapons with a total value of more than 2 billion TIVs (SIPRI’s Trend-Indicator Values)¹³⁹ were exported from Germany. While this figure cannot be translated into actual financial value, it provides some insights into the military capabilities and volumes of the exports. Additionally, since 2013, Israel has featured nine times in the top ten recipient countries of major conventional arms deliveries from Germany in SIPRI’s database. Within the range of arms delivered, there are the two Dolphin submarines; the four Sa’ar corvettes; torpedoes; armoured vehicle and tank engines; turbofan engines; as well as loans of SAM (surface-to-air missile) radar systems and trainer aircrafts.

¹³⁹ For more information on SIPRI’s measuring unit system, see chapter 3.

SIPRI top suppliers of major conventional weapons to Israel, 2003 - 2023
including volume of imports in SIPRI Trend-Indicator Values (TIV) and share of importer's total

Year	Ranking	Recipient	Volume in SIPRI TIVs (millions)	Share of global arms imports	Main suppliers (share of importer's total %)		
					1	2	3
2003	23	Israel	189	1.0 %	United States (54%)	Germany (46%)	
2004	7	Israel	846	4.0 %	United States (99%)	Germany (0.9%)	
2005	4	Israel	1,107	5.2 %	United States (98%)	Germany (1.9%)	
2006	5	Israel	1,125	4.6 %	United States (99%)	Germany (1.3%)	
2007	7	Israel	840	3.2 %	United States (97%)	Germany (3.0%)	Canada (0.1%)
2008	11	Israel	680	2.8 %	United States (98%)	Germany (2.2%)	Canada (0.1%)
2009	33	Israel	157	0.6 %	United States (88%)	Germany (9.5%)	Canada (2.9%)
2010	52	Israel	71	0.3 %	United States (62%)	Germany (32%)	Canada (6.4%)
2011	48	Israel	86	0.3 %	United States (66%)	Germany (33%)	Canada (1.2%)
2012	41	Israel	136	0.5 %	United States (89%)	Germany (11%)	Canada (0.3%)
2013	33	Israel	160	0.6 %	Germany (56%)	United States (44%)	
2014	19	Israel	549	2.0 %	Germany (64%)	United States (22%)	Italy (14%)
2015	12	Israel	688	2.4 %	Germany (51%)	United States (33%)	Italy (16%)
2016	14	Israel	622	2.0 %	United States (84%)	Italy (11%)	Germany (5.3%)
2017	17	Israel	535	1.7 %	United States (94%)	Germany (6.2%)	
2018	18	Israel	461	1.7 %	United States (93%)	Germany (7.2%)	
2019	15	Israel	486	1.8 %	United States (93%)	Germany (7.8%)	
2020	18	Israel	349	1.5 %	United States (91%)	Germany (9.4%)	
2021	16	Israel	458	1.7 %	United States (93%)	Germany (7.2%)	
2022	9	Israel	849	2.5 %	United States (51%)	Germany (47%)	Italy (2.5%)
2023	11	Israel	857	2.9 %	United States (53%)	Germany (47%)	Italy (0.6%)

Fig. 20. A table that lists the top suppliers of “major conventional weapons” to Israel, and each supplier's respective share of the importer's total, for the period 2003-2023, as reported by SIPRI. Source: *Arms Transfers Database*, Stockholm International Peace Research Institute (SIPRI)

More specifically, according to SIPRI's Arms Transfers Database, the following major conventional weapons were documented as exported from Germany to Israel between 2003 and 2023:¹⁴⁰

¹⁴⁰ The table also includes major recent orders, for example the Dakar submarines, even if the ordered weapons systems have not yet been delivered. Arms transfer database, data as captured in March 2024, Stockholm International Peace Research Institute (SIPRI).

Order year(s)	Delivery year(s)	Weapon designation	Weapon description	Number delivered	SIPRI's comment / note on delivery	SIPRI TIV of delivered weapons
2000	2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023	Vehicle engine	Vehicle engine	10 25 25 50 50 50 50 50 75 50 50 50 50 50 50 50 50 50 50 50 50 50	MT883Ka (1500hp) diesel engine for Merkava-4 tanks and Namer APC produced in Israel and modernization of older Namer; assembled in USA from components produced in FRG	318 million
2002	2014 2015 2016 2017 2018 2019 2020 2021 2022 2023	DM2A4 Seehecht	anti-ship / ASW torpedo	20 20 10 10 10 10 10 10 10 10	For Dolphin submarines	216 million
2002	2003	Patriot	SAM system	2	Second-hand, loan (originally 2 years but extended until probably transferred to Israel 2012); delivered in reaction to possible war in Middle East	37.6 million
2002	2003	MIM-104A Patriot	SAM	128	Second-hand	38.4 million

2002	2002 2003	G-120	Trainer aircraft	6 11	Owned and operated by civilian company for Israeli armed forces; G-120A-I version; Israeli designation Snunit	4.08 million
2003	2007	BR710	Turbofan	4	For 2 G-550 AEW aircraft from USA	10 million
2005	2007	Stollergrund	Support craft	2	Second-hand; Israeli designation Bat Yam	6 million
2006	2014 2015	Dolphin / Type-800	Submarine	1 1	EUR 1b deal (33% financed by FRG aid)	600 million
2011	2011	MPQ-53	SAM system radar	1	Second-hand; loan (while Israeli radar being modernised)	6 million
2012	2013	Patriot	SAM system	2	Second-hand; aid (loan)	37.6 million
2012	2013	MIM-104A Patriot	SAM	125	Second-hand; loan	37.5 million
2012	-	Dolphin / Type-800	Submarine	-	EUR405 m deal (33% financed by FRG aid)	-
2015	2022 2023	MEKO PC- IN	Frigate	2 2	EUR430 m deal (incl. EUR 115m paid by Germany; NIS 700m offsets; incl. production of components and final fitting out in Israel); Israeli designation Saar-6 or Magen	729 million
2019	2023	Vehicle engine	Vehicle engine	10	MTU 750 hp diesel engine (possibly 6V-890) for Eitan APC and IFV produced in Israel	1.1 million
2022	-	Dakar	Submarine	3	EUR3 b deal (partly funded by German aid); delivery planned from 2031	-
					TOTAL TIVs:	2,041.28

Fig. 21. A table that lists the exports of “major conventional weapons” from Germany to Israel that could be documented by SIPRI, for the period 2003-2023. Source: *Arms Transfers Database*, Stockholm International Peace Research Institute (SIPRI)

According to the United Nations Register of Conventional Arms (UNROCA), which only documents complete weapon systems, Germany declared the export of the two submarines in 2014 and 2015, of one missile corvette in 2020 and 3 missile corvettes in 2021, and of 1 ‘portable anti-tank missile launchers and rocket system’ in 2006 as well as 12 systems of the same category in 2021.¹⁴¹

Lastly, between 2003 and 2023, arms worth approximately 12.8 million USD were reported to UN Comtrade in the category HS 93 “arms and ammunition; parts and accessories thereof” as exported from Germany to Israel.¹⁴² Of those, a significant percentage regarded subcategory HS 93.06 “bombs, grenades, torpedoes, mines, missiles and similar munitions of war and parts thereof”, amounting to a total value of approximately 9.1 million USD.¹⁴³ As the types of arms included in this category are almost entirely mutually exclusive to those that are tracked and documented by SIPRI, no comparison can be made between the two sources.¹⁴⁴ Additionally, as aforementioned, according to the German government, between 2003 and 2018 – five years less than the respective period for which UN Comtrade data was retrieved – *war weapons* worth approximately 1.2 billion Euro were exported from Germany to Israel. Excluding years 2014 and 2015, which regard the export of, amongst other arms, two Dolphin submarines – *war weapons* which are certainly not included in the HS 93 category of UN Comtrade – the total value of *war weapons* exports over that same period would amount to approximately 206.4 million Euro¹⁴⁵. This figure still significantly differs from the value of exported arms in the category HS 93 as recorded by the respective authorities to UN Comtrade for the years 2003-2018 (approximately 10.4 million USD), confirming the limitations of this database in tracking the volume of actual arms exports, as well as the incompatibility of the diverse data sources, as described in chapter 3.

¹⁴¹ United Nations Register of Conventional Arms ([UNROCA](#)).

¹⁴² This figure regards customs declaration for arms as reported by the exporting state (Germany). UN Comtrade, ‘United Nations Commodity Trade Statistics Database ([UN Comtrade](#))’.

¹⁴³ *Ibid.*

¹⁴⁴ As aforementioned, SIPRI does not track, for example, small arms or ammunition, which are weapon types that form a significant part of the categories covered by HS 93.

¹⁴⁵ This amount is calculated by excluding entirely the *war weapons* export values for 2014 and 2015, even though it is highly likely that further arms in the Germany-designated subsector of *war weapons* in addition to the submarines would have been exported in those years too. However, since a detailed breakdown of the individual values is not available, the whole amounts have been excluded for the purposes of this simplified comparison.

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7. About Forensis

Forensis is a nonprofit research organisation that works for and in collaboration of individuals and communities affected by state and corporate violence, to support their demands for justice, reparations, and accountability. Drawing on techniques and methodologies developed at the Goldsmiths, University of London-based Forensic Architecture (FA), Forensis is an interdisciplinary team of researchers with expertise in spatial and visual investigation, time-based 3D reconstruction, cartographic platforms, and open source investigation. Forensis and FA produce evidence for presentation in national and international courts, human rights forums, parliamentary inquiries, truth commissions and people's tribunals. Since 2011, FA has published over ninety investigations and presented them in national and international courts, truth commissions and exhibitions worldwide.

For more information about Forensis and FA, please visit:

www.counter-investigations.org

www.forensic-architecture.org

8. Appendix A: German Arms Manufacturing Industry and Connections to Israel

This is a non-exhaustive list, in alphabetical order, of arms manufacturing companies registered in Germany with known connections to military equipment used by the Israeli army and/or military cooperations with Israeli arms manufacturers.

AIM Infrarot-Module GmbH

AIM Infrarot-Module GmbH is a technology company based in Heilbronn, Germany. It specialises in thermal imaging devices, infrared detectors, and the Stirling-chillers needed to operate them. It is, in equal parts, a subsidiary of German arms manufacturers Rheinmetall AG and Diehl Defence GmbH & Co. KG. Military products of AIM that have been reported to be associated with equipment used by the Israeli military include modules in LANTIRN target acquisition containers for the U.S. manufactured F-16 Fighting Falcon and modules in TADS-sensors for the U.S. manufactured AH-64 Apache-helicopter.

Atlas Elektronik GmbH

Atlas Elektronik GmbH is a naval/marine electronics and systems manufacturer based in Bremen-Sebaldsbrück, Germany. Since 2017, it is a wholly owned subsidiary of ThyssenKrupp Marine Systems GmbH. It specialises in development and manufacturing of integrated sonar systems for submarines, minehunters and warships, and torpedoes. Military products associated with equipment used by the Israeli military include sonar systems, such as the ISUS (Integrated Sensor Underwater System), as well as torpedoes (Seehecht DM 2A3 and DM 2A4) for the Dolphin submarines – also manufactured by ThyssenKrupp. In 2022, Atlas Elektronik entered into a cooperation with Israeli company Vsense Technologies Ltd. to develop production, maintenance, inspection, and repair capabilities for equipment on the Dolphin submarines.

Daimler Truck Holding AG

Daimler Truck Holding AG is a commercial vehicle manufacturing company based in Stuttgart, Germany. It is owned in part by the Mercedes-Benz Group AG. Products of Daimler Truck Holding associated with equipment used by the Israeli military include the Unimog 437, an all-wheel drive equipment carrier and medium-heavy truck.

Diehl Defence GmbH & Co. KG

Diehl Defence GmbH & Co. KG is an arms manufacturing company based in Überlingen, Germany. It specialises in the production of missiles and ammunition. Together with Rheinmetall Electronics GmbH and the Israeli state-owned weapons manufacturer Rafael Advanced Defense Systems Ltd., Diehl Defence has co-formed EuroSpike GmbH, to facilitate the manufacturing and marketing of the Israeli developed spike missiles in Europe. Additionally, Diehl Defence cooperates with Elbit Systems Ltd., the largest Israeli military manufacturer, in order to co-develop DIRCM systems for the aircraft fleet of the German military. SIPRI lists Diehl Defence as being the world's 93rd largest arms-producing company worldwide in 2022 (data last updated in December 2023).

Dynamit Nobel Defence GmbH

Dynamit Nobel Defence GmbH (DND) is an arms manufacturing company based in Burbach, Germany. DND has been a wholly owned subsidiary of Rafael Advanced Defense Systems Ltd. since 2004. It specialises in shoulder-fired weapons, command and reconnaissance, vehicle protection, and fire protection. Military products that have been associated with equipment used by the Israeli army include the RGW-90 (also known as “Matador”), an unguided recoilless anti-tank weapon.

EuroSpike GmbH

EuroSpike GmbH is an arms manufacturing company based in Röthenbach a.d. Pegnitz, Germany. It specialises in producing and distributing the Israeli-developed spike missiles to the European market. EuroSpike is a joint venture between German arms manufacturing companies Diehl Defence GmbH & Co. KG and Rheinmetall Defence Electronics GmbH, which own 40% each, and ERCAS BV, a subsidiary of Rafael Advanced Defense Systems Ltd., which owns 20%.

German Naval Yards Holdings GmbH

German Naval Yards Holdings GmbH is a shipbuilding company based in Kiel, Germany, and is a wholly owned subsidiary of Prinvest. German Naval Yard Holdings specialises in the construction of large military vessels such as frigates, corvettes, and patrol ships. Military products of German Naval Yards that have been associated with equipment used by the Israeli military include the MEKO-type corvettes (Israeli designated name Sa’ar 6) built for the Israeli Navy in cooperation with ThyssenKrupp Marine Systems GmbH.

Grob Aircraft SE

Grob Aircraft SE is an aircraft manufacturing company based in Tussenhausen-Mattsies, Germany. Grob Aircraft is a wholly owned subsidiary of H3 Aerospace GmbH & Co KG. Products that have been associated with equipment used by the Israeli military include the trainer aircraft G 120A-I, deployed by the Israeli Air Force.

Heckler & Koch GmbH

Heckler & Koch GmbH is a firearms manufacturing company based in Oberndorf am Neckar, Germany. It specialises in the production of handguns, rifles, submachine guns, pistols, and grenade launchers. Products that have been associated with equipment used by the Israeli military include the P11 underwater-pistol, reportedly deployed by special forces operating in water. In 2017, it was reported that Heckler & Koch announced that it would no longer be selling guns to countries that are corrupt or into war zones, including Israel. It is unclear whether this policy has been adopted in practice thereafter.

Hensoldt AG

Hensoldt AG is an arms manufacturing company based in Taufkirchen, Germany. It specialises in radar, optronics, avionics, and electronic warfare. Military products of Hensoldt that have been associated with equipment used by the Israeli military include a number of Identification-Friend-or-Foe (IFF) products, like MSSR 2000 ID and MSR1000I secondary radars and test equipment, delivered to ELTA Systems Ltd, a subsidiary of Israel Aerospace Industries Ltd – Israel’s major aerospace and aviation manufacturer, also responsible for the Heron TP drones. In late 2023, Hensoldt also entered into a cooperation with Israeli-state owned Rafael Advanced Defense Systems Ltd. to develop jamming systems for naval vessels. SIPRI lists Hensoldt AG as being the world’s 69th largest arms-producing company worldwide in 2022 (data last updated in December 2023).

Krauss-Maffei Wegmann GmbH & Co. KG

Krauss-Maffei-Wegmann GmbH & Co. KG (KMW) is an arms manufacturing company based in Munich, Germany. It specialises in the production of various types of military equipment including tanks, self-propelled artillery as well as other armoured vehicles. KMW, together with Israeli-state owned Rafael Advanced Defense Systems Ltd. and General Dynamics European Land Systems (GDELS) (unit of U.S. arms manufacturer General Dynamics Corporation), formed a joint venture company named Euro-Trophy, in order to market the Israeli-developed Trophy active protection system (APS). Additionally, in 2022, MKW entered into cooperation with subsidiaries of Elbit Systems Ltd. (the largest Israeli military manufacturer) to modernise the Multiple Launch Rocket System (MLRS).

Mercedes-Benz Group AG

Mercedes-Benz Group AG is an automotive corporation based in Stuttgart, Germany. It is one of the largest vehicle manufacturers worldwide. Military products of Mercedes-Benz Group that have been associated with equipment used by the Israeli army include tow trucks for the transportation of Merkava 4 tanks and other armoured vehicles, the delivery of which has been expedited in late 2023, according to reports.

MTU Friedrichshafen GmbH

MTU Friedrichshafen GmbH (formerly MTU Motoren- und Turbinen-Union Friedrichshafen GmbH) is an engine manufacturing company based in Friedrichshafen, Germany. Since 2011, it has been a subsidiary of Rolls-Royce Power Systems (formerly Tognum Corporation). It specialises in production of diesel engines for trains, ships, military vehicles, amongst others. Military products of MTU Friedrichshafen that have been associated with equipment used by the Israeli military include the MT883 engines for Merkava tanks which are reported to be assembled under licence in the U.S. in cooperation with L-3 Communication Combat Propulsion Systems, a former subsidiary of arms manufacturer General Dynamics Land Systems until 2005, subsequently of L-3 Communications, and in 2021 acquired by German company Renk AG. Additionally, MTU provides the 16V 396 SE 84 diesel engines for the Dolphin submarines of the Israeli Navy.

RENK Group AG

Renk Group AG is a mechanical engineering company based in Augsburg, Germany. It specialises in manufacturing transmissions, engines, hybrid drive systems, vehicle suspension systems, plain bearings, couplings, and testing systems. Military products of Renk that have been associated with equipment used by the Israeli army include transmission systems for Merkava-4 tanks.

Rheinmetall AG

Rheinmetall AG is Germany's largest arms manufacturing company, based in Düsseldorf, Germany. It is separated into several specialised divisions: Vehicle Systems, Arms and Ammunition, Electronic Solutions, Sensors and Actuators, and Materials and Trade. Military products of Rheinmetall that have been associated with equipment used by the Israeli army include 120 mm tank shells. Rheinmetall is also one of the world's largest manufacturers of 155mm artillery shells, exports for which (or components of which) have in recent years been approved for export to Israel by the German government. In 2022, Rheinmetall and Elbit Systems Ltd. signed a cooperation agreement to jointly develop and manufacture an automated 155mm wheeled self-propelled howitzer system. In spring 2023, they conducted a live fire demonstration of the howitzer. Additionally, Rheinmetall has partnered with Israeli company UVision Air Ltd. to produce loitering munition destined for the European market. Lastly, Rheinmetall has formed a cooperation with Rafael Advanced Defense Systems Ltd. and the German company Diehl Defence GmbH to produce spike missiles for the European market, under the joint venture of EuroSpike GmbH. In 2024, Rheinmetall announced that it is establishing a new factory in Unterlüß specifically focusing on the production of artillery ammunition, explosives, and rocket artillery components. SIPRI lists Rheinmetall AG as being the world's 28th largest arms-producing company worldwide in 2022 (data last updated in December 2023).

ThyssenKrupp Marine Systems GmbH

ThyssenKrupp Marine Systems GmbH (TKMS) is a standalone business unit within the ThyssenKrupp AG and is divided into four areas: submarines, marine surface ships, naval electronics systems, and services. The company is based in Kiel, Germany. Military products of ThyssenKrupp Marine Systems that have been associated with equipment used by the Israeli military include Dolphin II submarines and MEKO-type corvettes – manufactured through TKMS's subsidiary, Howaldtswerke-Deutsche Werft GmbH (HDW). SIPRI lists ThyssenKrupp as being the world's 62nd largest arms-producing company worldwide in 2022 (data last updated in December 2023).

9. Appendix B: Arms Exports Diagrams

This appendix includes a selection from the series of diagrams created throughout the course of this study, based on the data collected and analysed. The first diagram draws on data from SIPRI, while the rest represent analysis of data deriving from the annual *Military Equipment Export Reports* of the German government.

SIPRI top suppliers of major conventional weapons to Israel, 2003 - 2023

including volume of imports in SIPRI Trend-Indicator Values (TIV) and shares of importer's total

2003-2008 Average

U.S. 96%
Germany 3.5%

2009-2013 Average

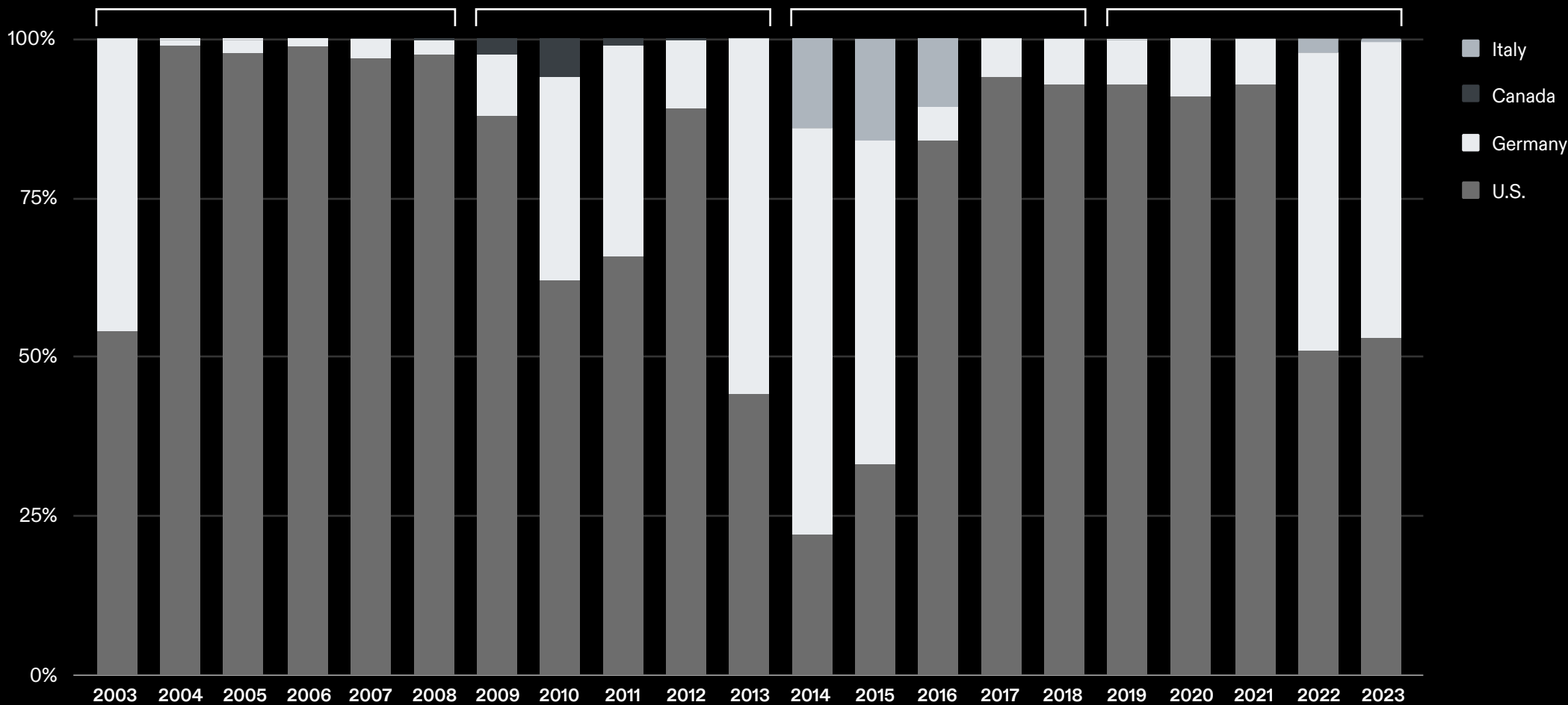
U.S. 70%
Germany 28%
Canada 1.7%

2014-2018 Average

U.S. 63%
Germany 28%
Italy 8.9%

2019-2023 Average

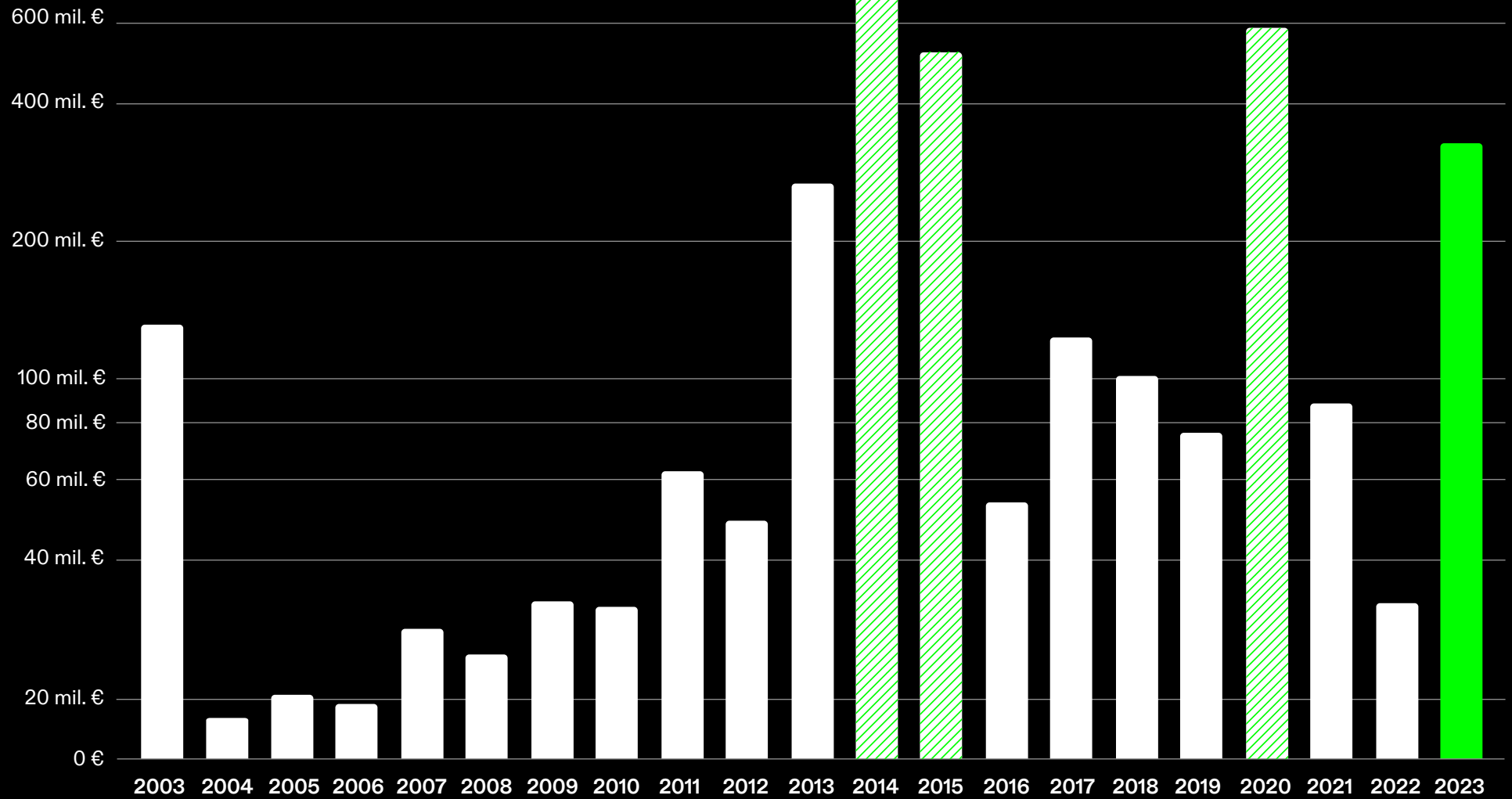
US 69%
Germany 30%
Italy 0.9%



Year	Total Value of Approved Arms Export Licenses	War Weapons - Value of Approved Export Licenses	Other Military Equipment - Value of Approved Export Licenses	War Weapons - Value of Actual Exports
2003	131,567,362 €	100,142,000 €	31,425,362 €	100,560,000 €
2004	14,770,993 €	120,557 €	14,650,436 €	417,000 €
2005	20,358,689 €	0 €	20,358,689 €	477,000 €
2006	19,558,179 €	191,000 €	19,367,179 €	2,014,000 €
2007	28,370,968 €	188,367 €	28,182,601 €	770,000 €
2008	25,083,601 €	565,041 €	24,518,560 €	726,000 €
2009	32,632,918 €	4,994,677 €	27,638,241 €	5,145,000 €
2010	31,620,418 €	697,796 €	30,922,622 €	1,104,000 €
2011	62,905,618 €	522,915 €	62,382,703 €	245,000 €
2012	49,108,100 €	1,497,531 €	47,610,569 €	991,000 €
2013	266,550,442 €	57,495,665 €	209,054,777 €	57,317,000 €
2014	684,563,088 €	605,358,887 €	79,204,201 €	606,539,000 €
2015	507,240,809 €	408,498,000 €	98,742,809 €	350,769,000 €
2016	53,866,312 €	2,869,950 €	50,996,362 €	12,748,000 €
2017	123,298,112 €	1,101,200 €	122,196,912 €	338,000 €
2018	101,194,601 €	0 €	101,194,601 €	23,475,000 €
2019	75,932,282 €	13,532,360 €	62,399,922 €	UNDISCLOSED
2020	582,405,816 €	507,891,668 €	74,514,148 €	UNDISCLOSED
2021	87,978,727 €	824,861 €	87,153,866 €	UNDISCLOSED
2022	32,288,819 €	780,000 €	31,508,819 €	UNDISCLOSED
2023	326,505,156 €	20,133,198 €	306,371,958 €	UNDISCLOSED
TOTAL	3,257,801,010 €	1,727,405,673 €	1,530,395,337 €	1,163,635,000 € *

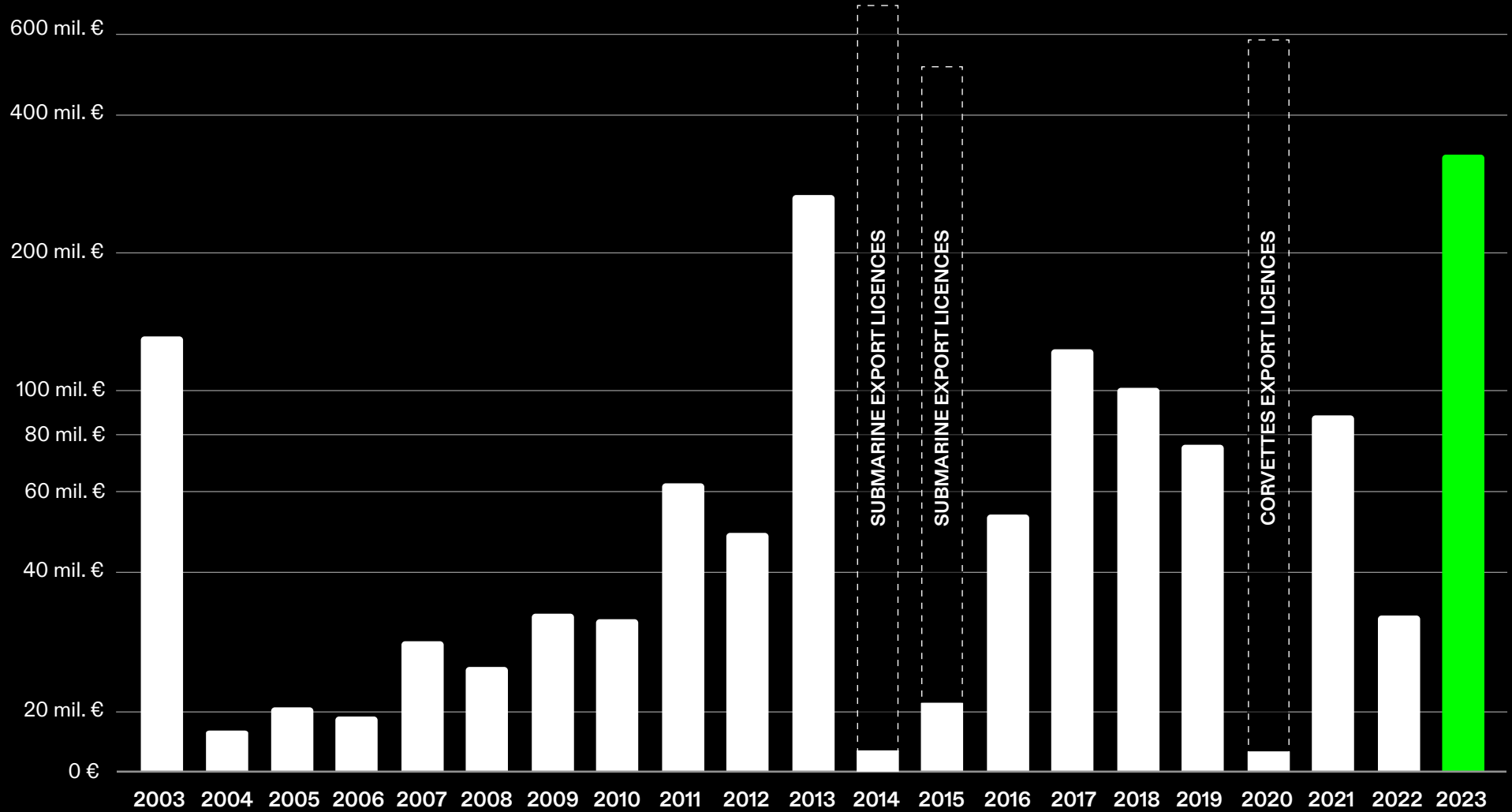
Total values of approved arms export licenses from Germany to Israel / Values in €, 2003 - 2023

including War Weapons and Other Military Equipment



Total values of approved arms export licenses from Germany to Israel / Values in €, 2003 - 2023

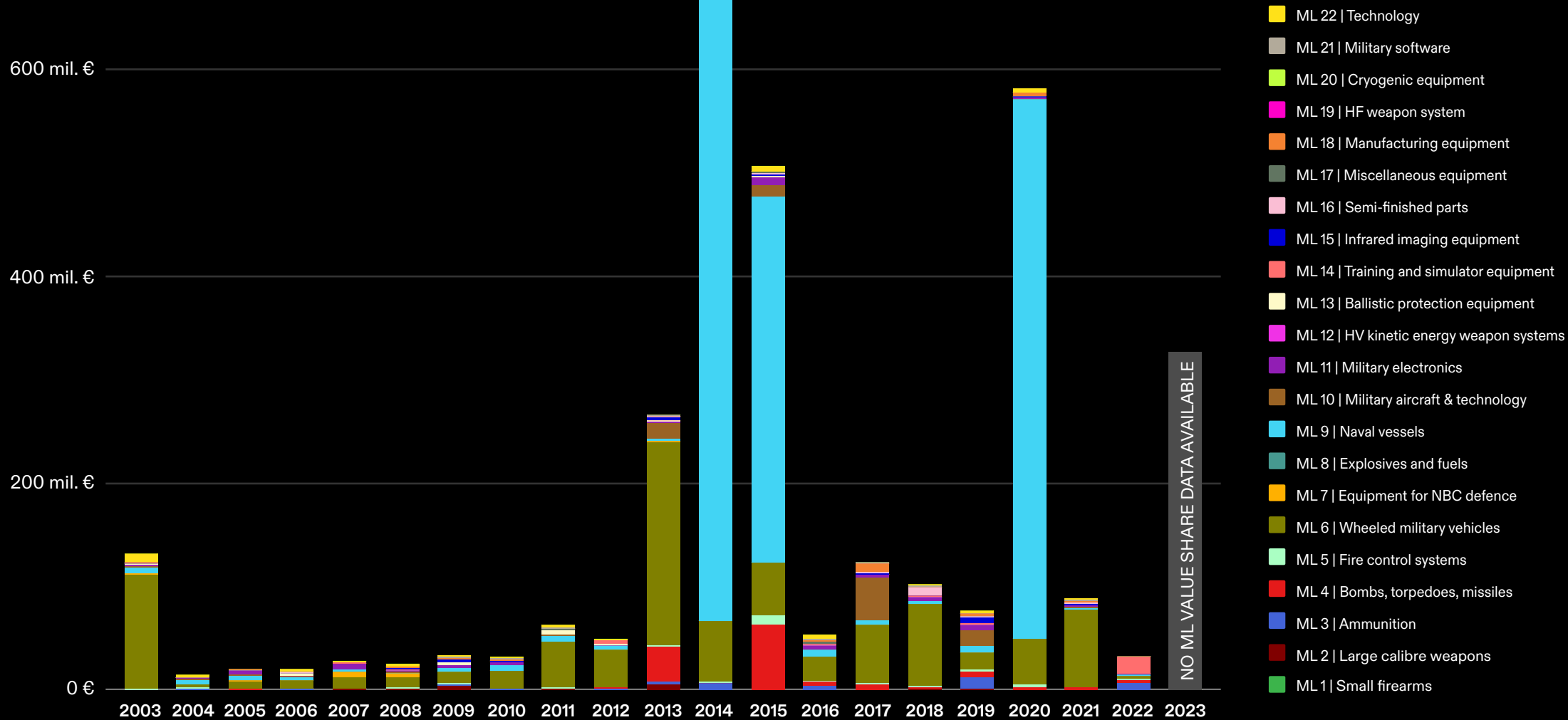
including War Weapons and Other Military Equipment



Sources: Military Equipment Export Reports by the Government of the Federal Republic of Germany, 2003-2022;
 Response by the Federal Ministry for Economic Affairs and Climate Action of Germany dated 09.01.2024 to question Nr. 12/531

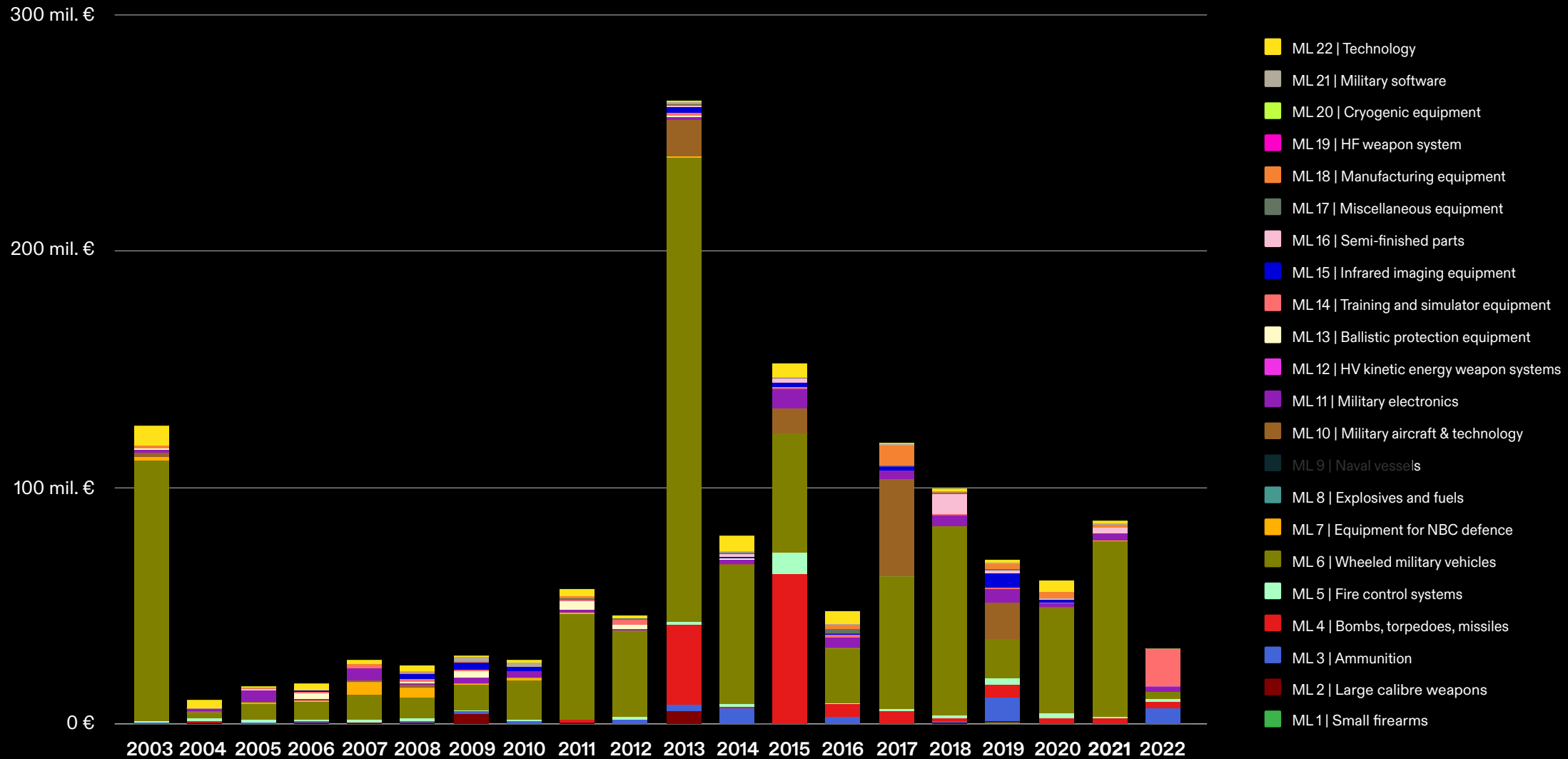
Main ML (Military List) Positions of German arms exports licenses to Israel / Values in €, 2003 - 2023

including War Weapons and Other Military Equipment



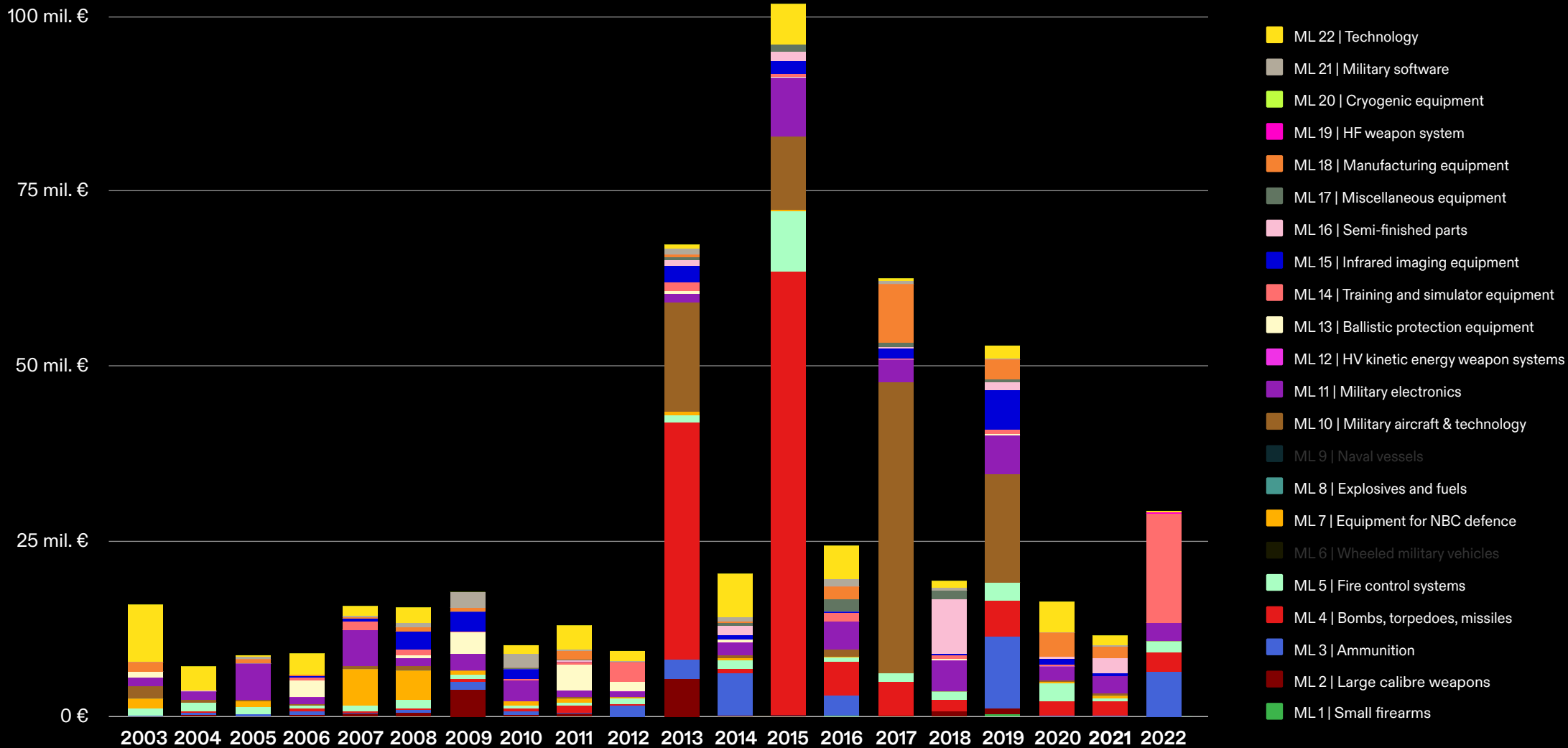
Main ML (Military List) Positions of German arms exports licenses to Israel / Values in €, 2003 - 2022

including *War Weapons* and *Other Military Equipment*, excluding **ML 9 (Naval Vessels)**



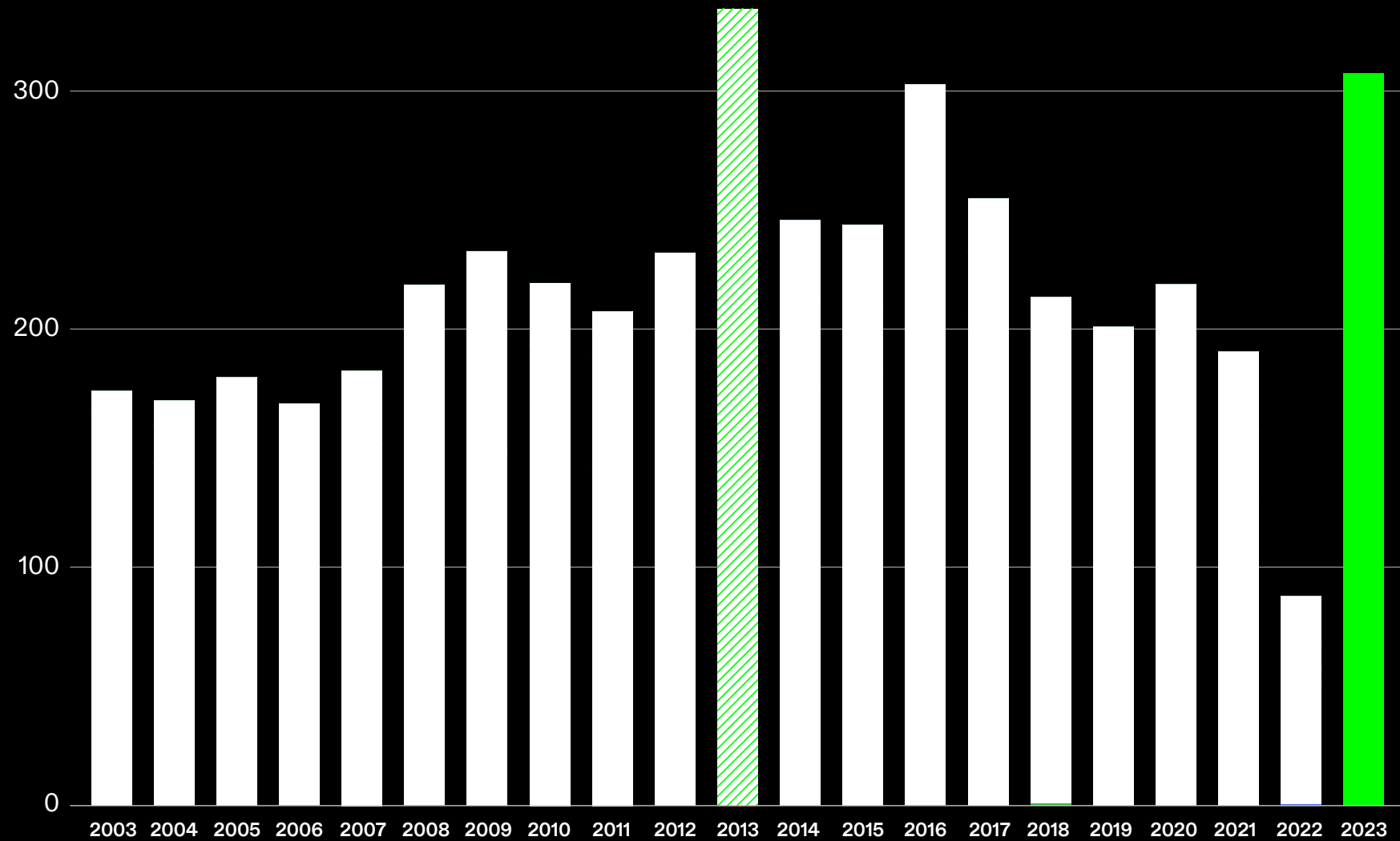
Main ML (Military List) Positions of German arms exports licenses to Israel / Values in €, 2003 - 2022

including *War Weapons* and *Other Military Equipment*, excluding **ML 9 (Naval Vessels)** and **ML 6 (Wheeled Military Vehicles)**



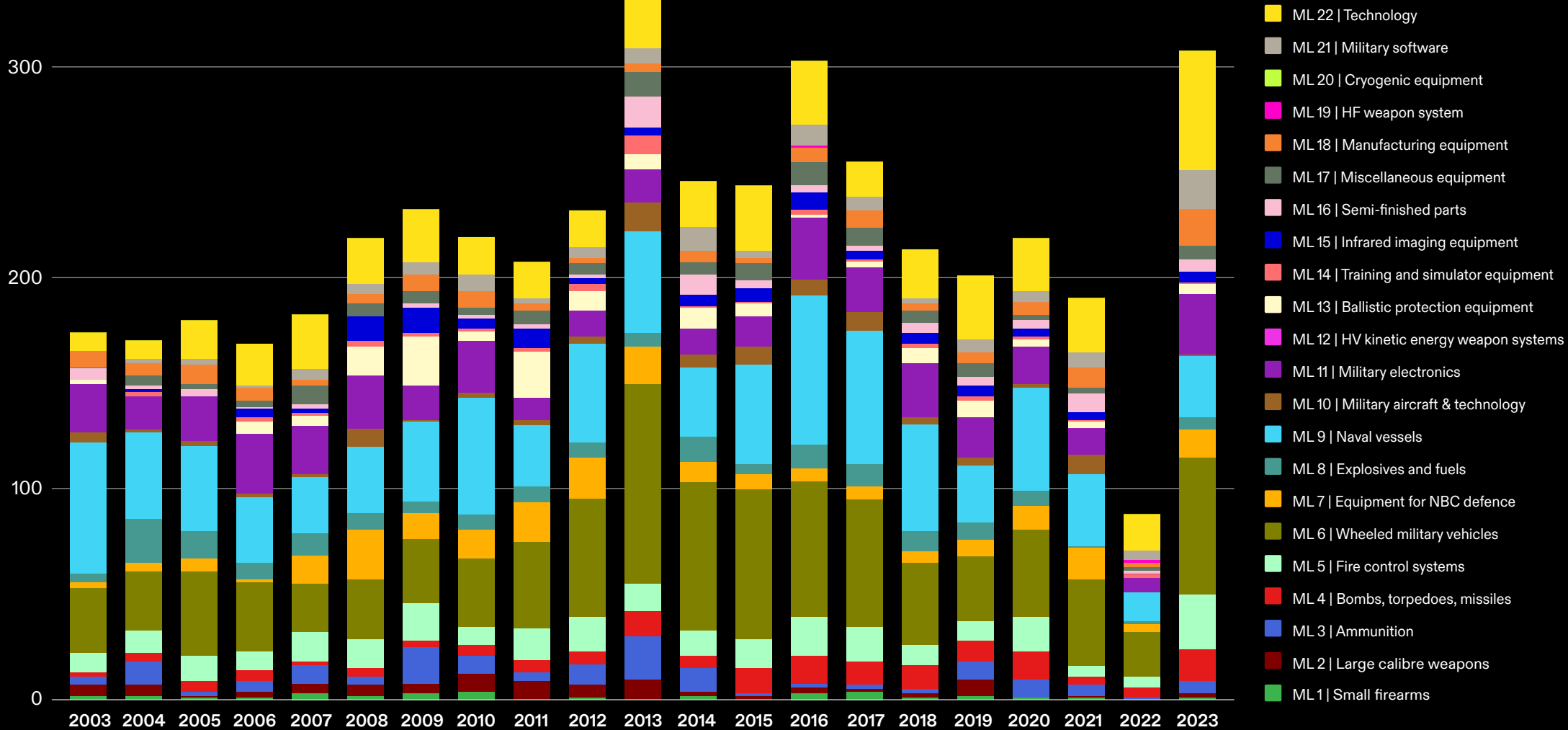
Approved arms export licenses from Germany to Israel / Number of Licenses, 2003 - 2023

including War Weapons and Other Military Equipment



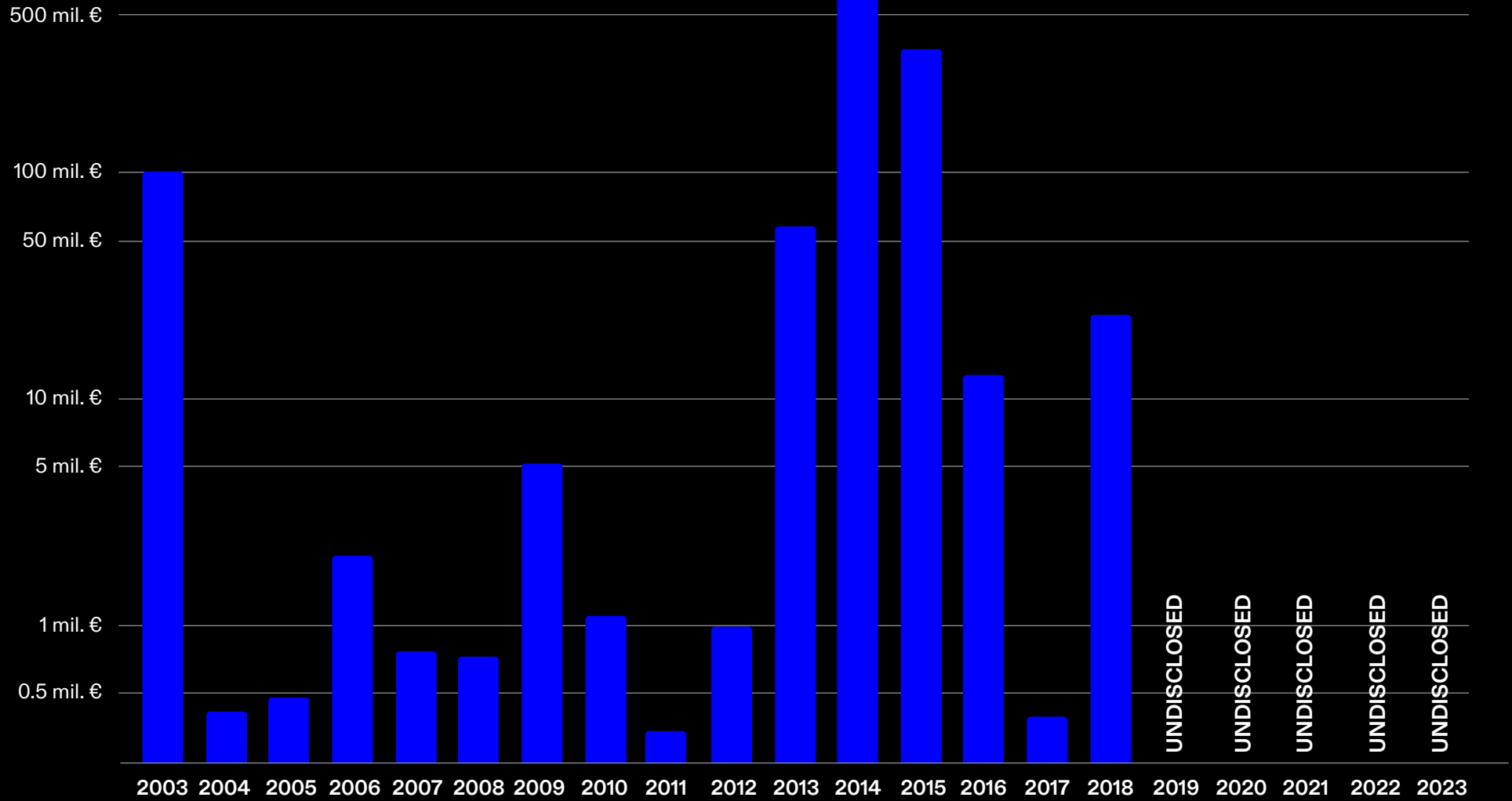
Main ML (Military List) Positions of German arms exports licenses to Israel / Number of Licenses, 2003 - 2023

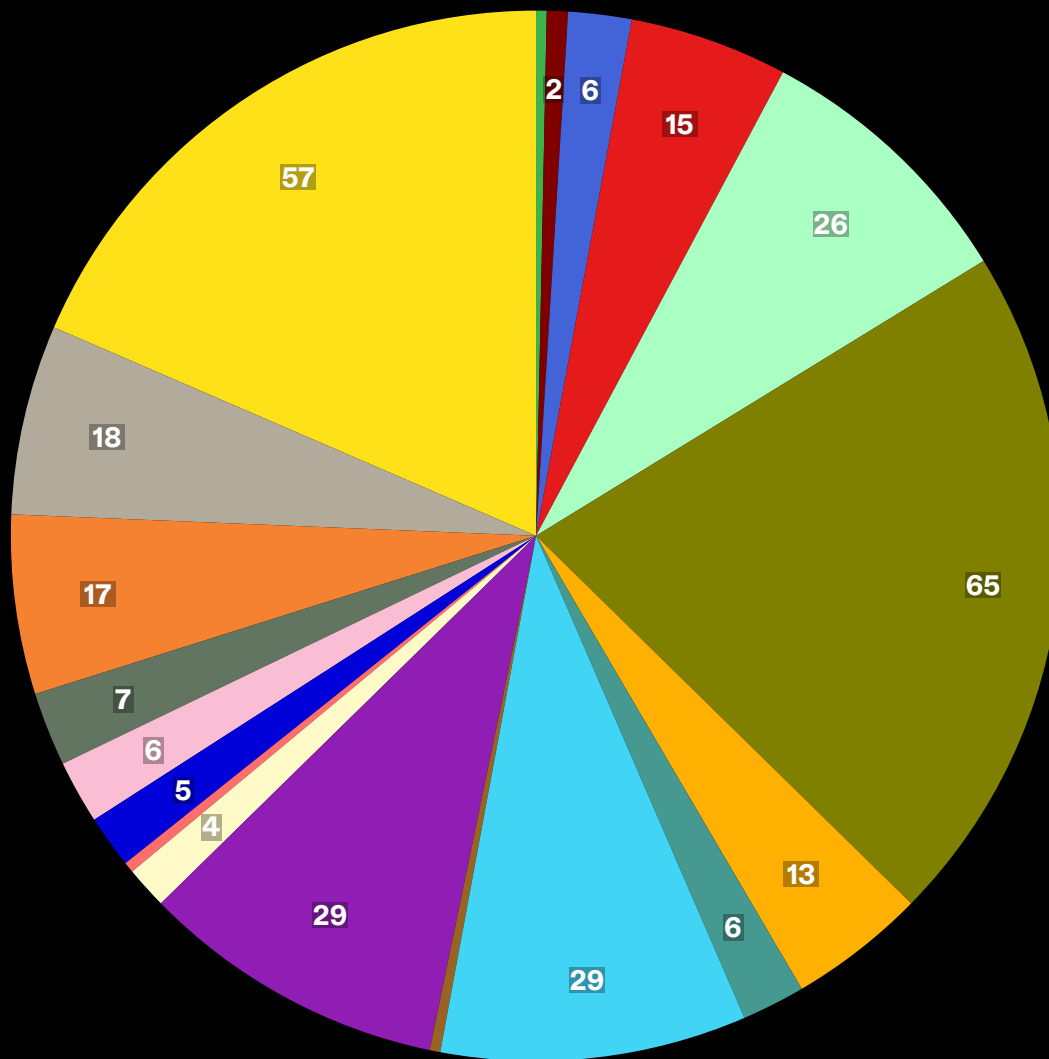
including *War Weapons* and *Other Military Equipment*



Values of actual exports of War Weapons from Germany to Israel / Values in €, 2003 - 2023

* From 2019 onwards, no official data is available





- ML 1 | Small firearms
- ML 2 | Large calibre weapons
- ML 3 | Ammunition
- ML 4 | Bombs, torpedoes, missiles
- ML 5 | Fire control systems
- ML 6 | Wheeled military vehicles
- ML 7 | Equipment for NBC defence
- ML 8 | Explosives and fuels
- ML 9 | Naval vessels
- ML 10 | Military aircraft & technology
- ML 11 | Military electronics
- ML 12 | HV kinetic energy weapon systems
- ML 13 | Ballistic protection equipment
- ML 14 | Training and simulator equipment
- ML 15 | Infrared imaging equipment
- ML 16 | Semi-finished parts
- ML 17 | Miscellaneous equipment
- ML 18 | Manufacturing equipment
- ML 19 | HF weapon system
- ML 20 | Cryogenic equipment
- ML 21 | Military software
- ML 22 | Technology

2023

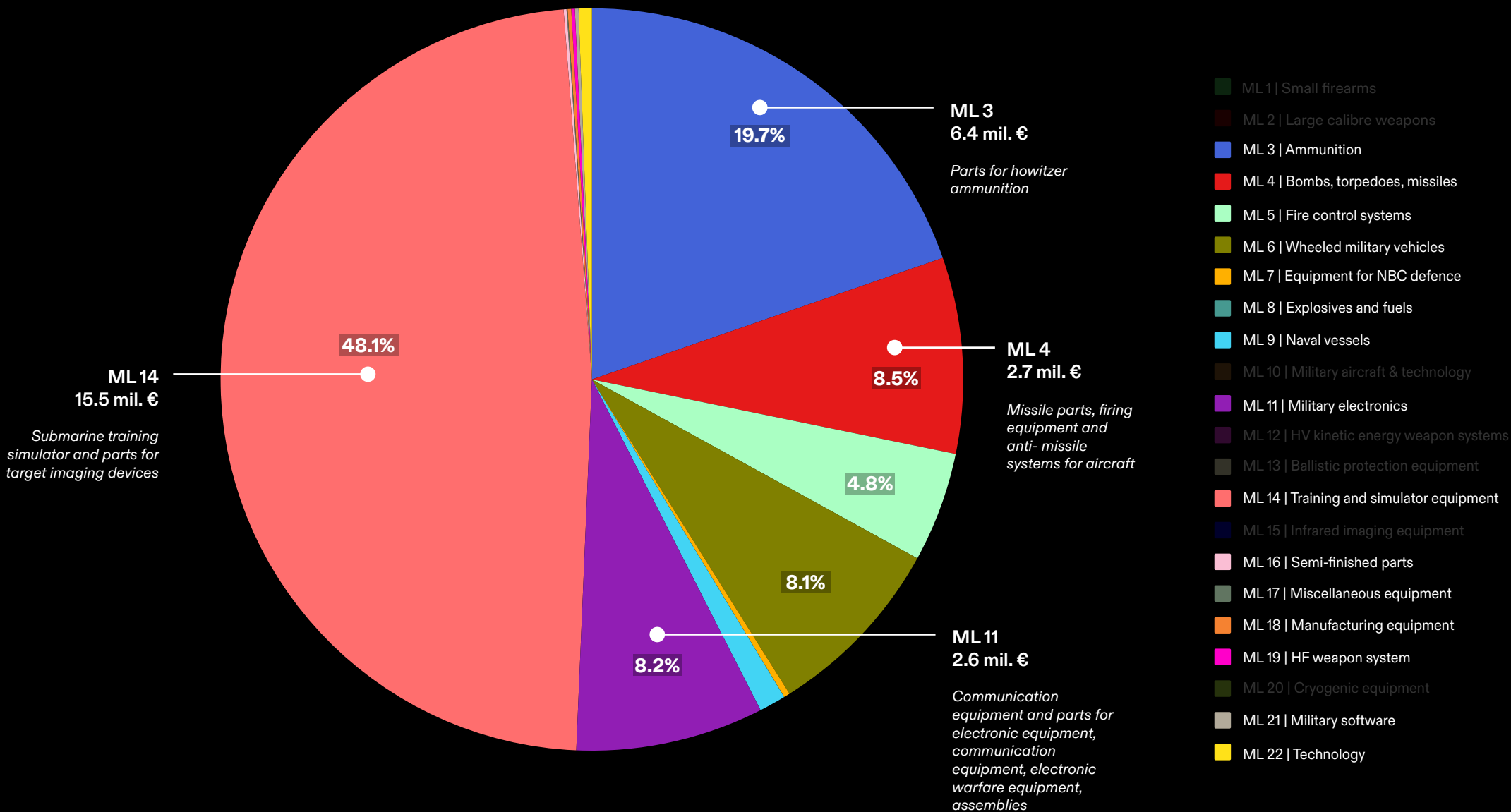
**Total Number of Arms Export Licenses to Israel (incl. *Other Military Equipment and War Weapons*):
308**

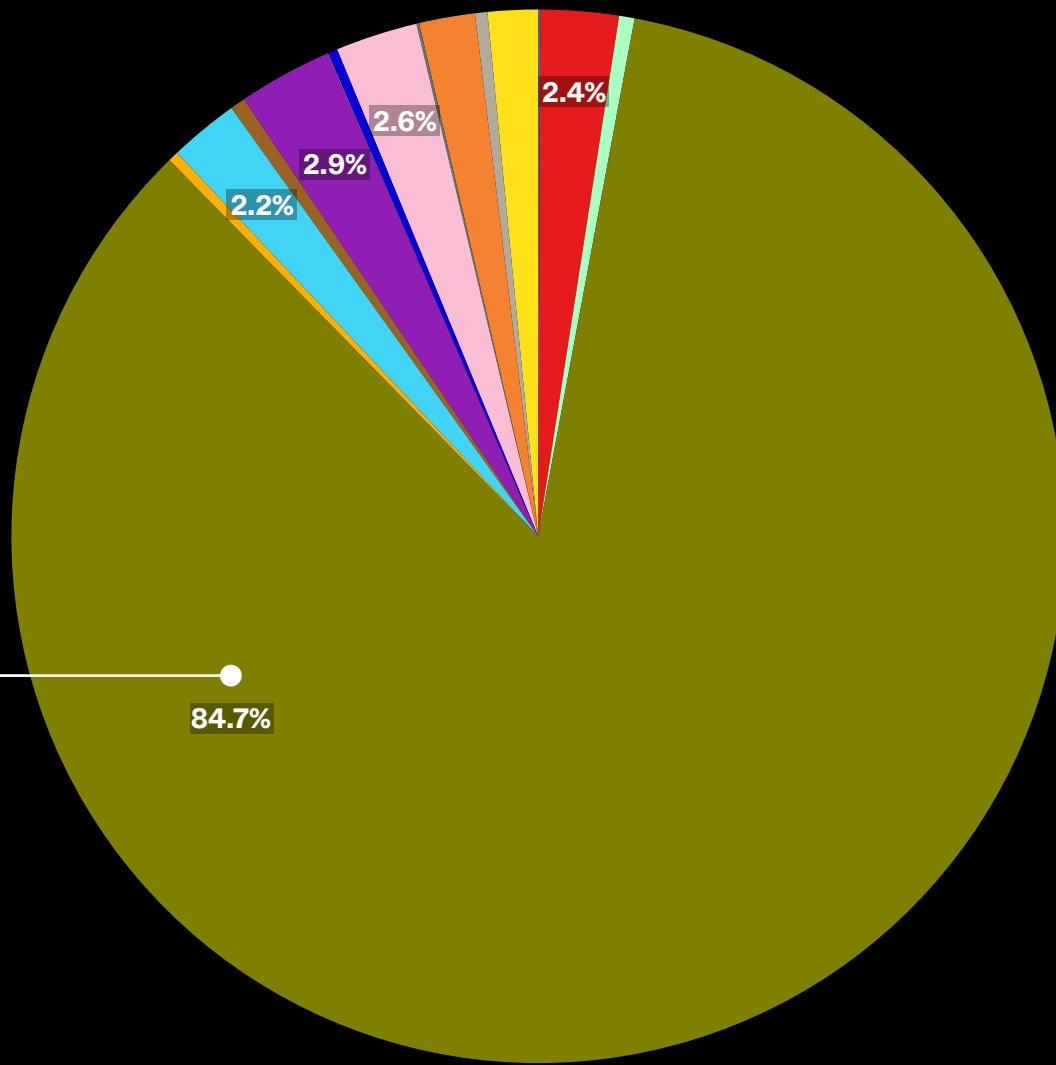
Source: Response by the Federal Ministry for Economic Affairs and Climate Action of Germany dated 09.01.2024 to question Nr. 12/531

2022

Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
32.3 million €

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2022



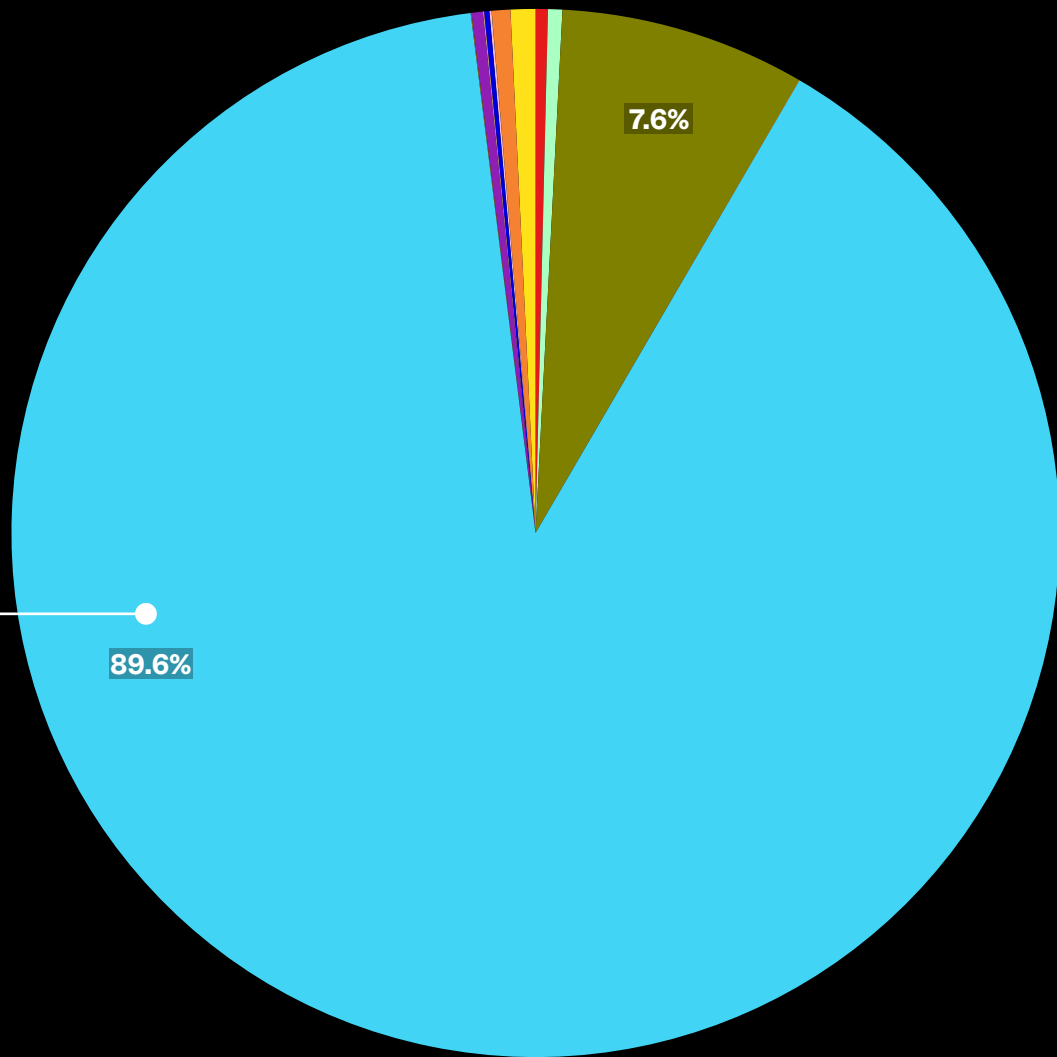


- ML 1 | Small firearms
- ML 2 | Large calibre weapons
- ML 3 | Ammunition
- ML 4 | Bombs, torpedoes, missiles
- ML 5 | Fire control systems
- ML 6 | Wheeled military vehicles
- ML 7 | Equipment for NBC defence
- ML 8 | Explosives and fuels
- ML 9 | Naval vessels
- ML 10 | Military aircraft & technology
- ML 11 | Military electronics
- ML 12 | HV kinetic energy weapon systems
- ML 13 | Ballistic protection equipment
- ML 14 | Training and simulator equipment
- ML 15 | Infrared imaging equipment
- ML 16 | Semi-finished parts
- ML 17 | Miscellaneous equipment
- ML 18 | Manufacturing equipment
- ML 19 | HF weapon system
- ML 20 | Cryogenic equipment
- ML 21 | Military software
- ML 22 | Technology

2021

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
88 million €**

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2021



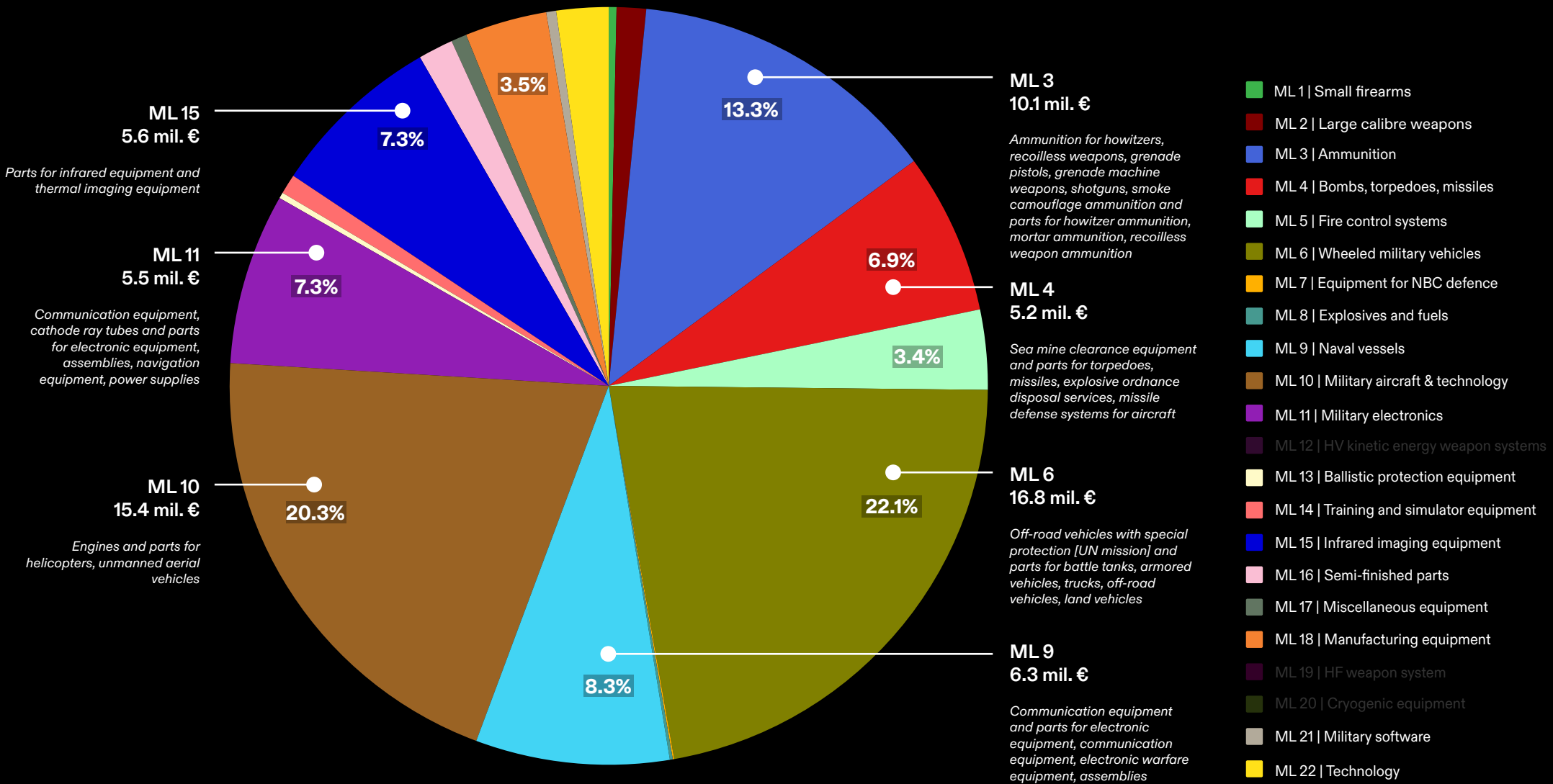
- ML 1 | Small firearms
- ML 2 | Large calibre weapons
- ML 3 | Ammunition
- ML 4 | Bombs, torpedoes, missiles
- ML 5 | Fire control systems
- ML 6 | Wheeled military vehicles
- ML 7 | Equipment for NBC defence
- ML 8 | Explosives and fuels
- ML 9 | Naval vessels
- ML 10 | Military aircraft & technology
- ML 11 | Military electronics
- ML 12 | HV kinetic energy weapon systems
- ML 13 | Ballistic protection equipment
- ML 14 | Training and simulator equipment
- ML 15 | Infrared imaging equipment
- ML 16 | Semi-finished parts
- ML 17 | Miscellaneous equipment
- ML 18 | Manufacturing equipment
- ML 19 | HF weapon system
- ML 20 | Cryogenic equipment
- ML 21 | Military software
- ML 22 | Technology

ML 9
522 mil. €
Corvettes, hull bushings and parts for submarines, combat ships, submarine diesel engines, air-independent propulsion systems, hull bushings

2020

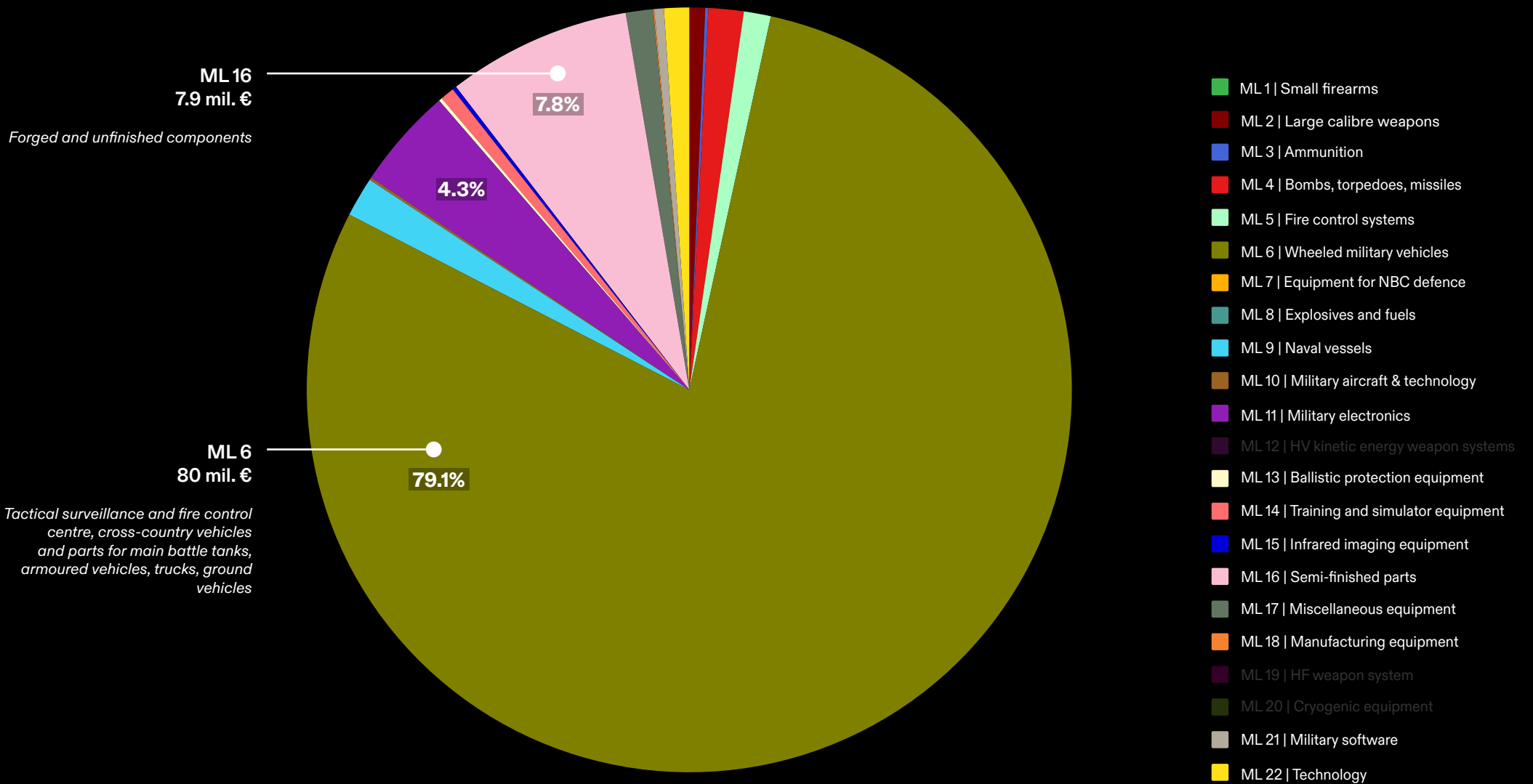
Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons): 582.4 million €

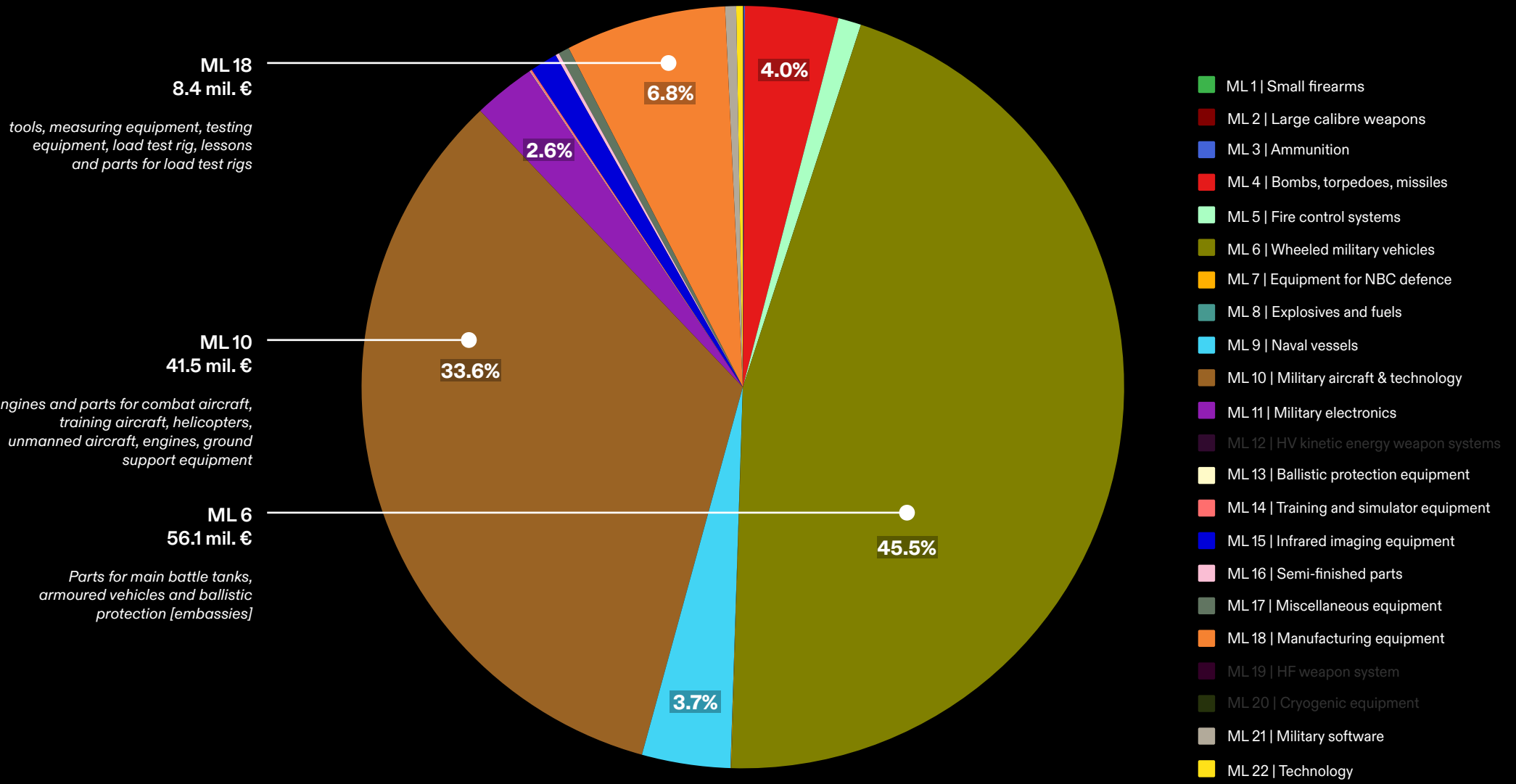
Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2020



2019
Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
75.9 million €

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2019

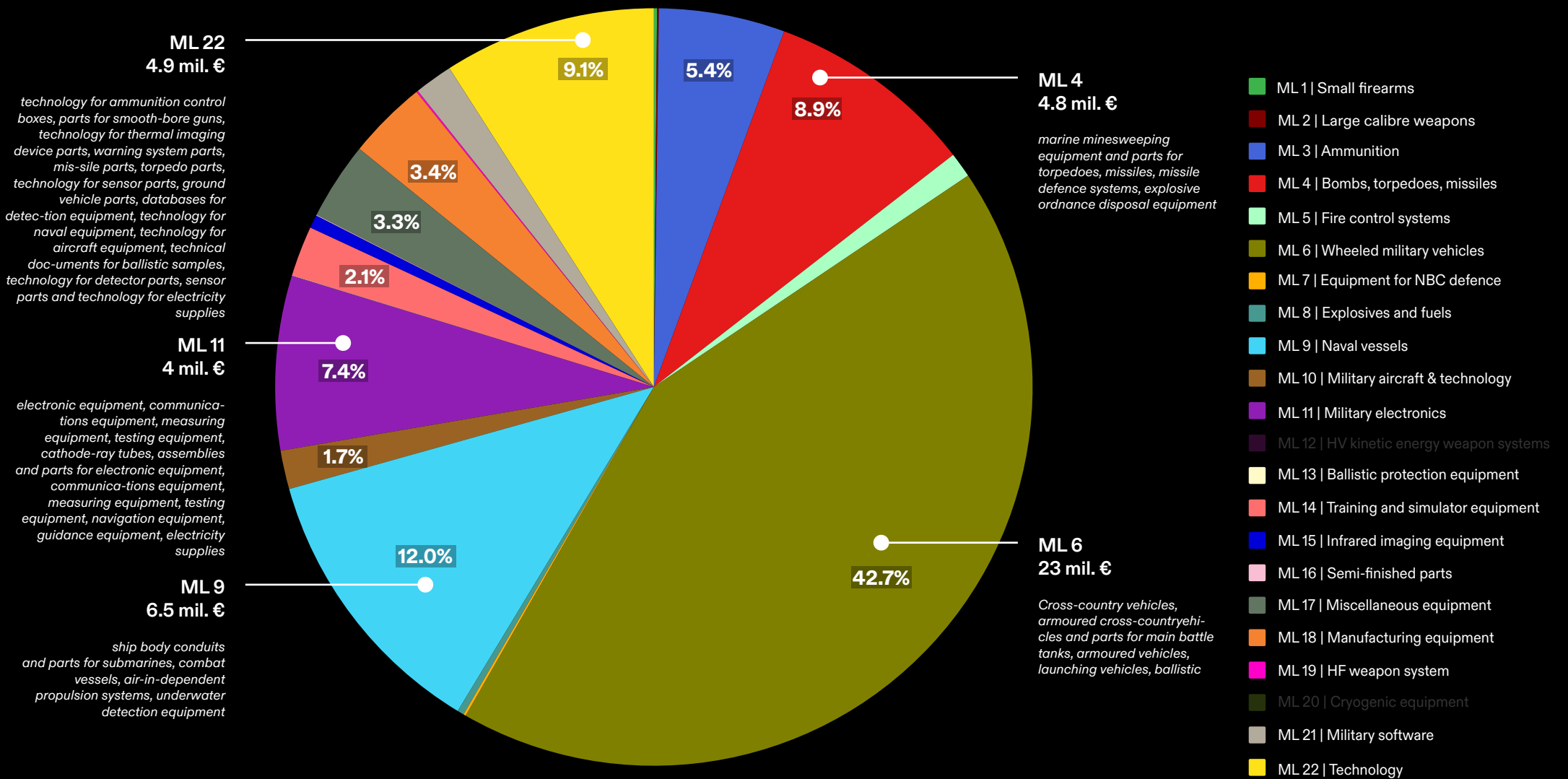




2017

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
123.3 million €**

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2017



2016

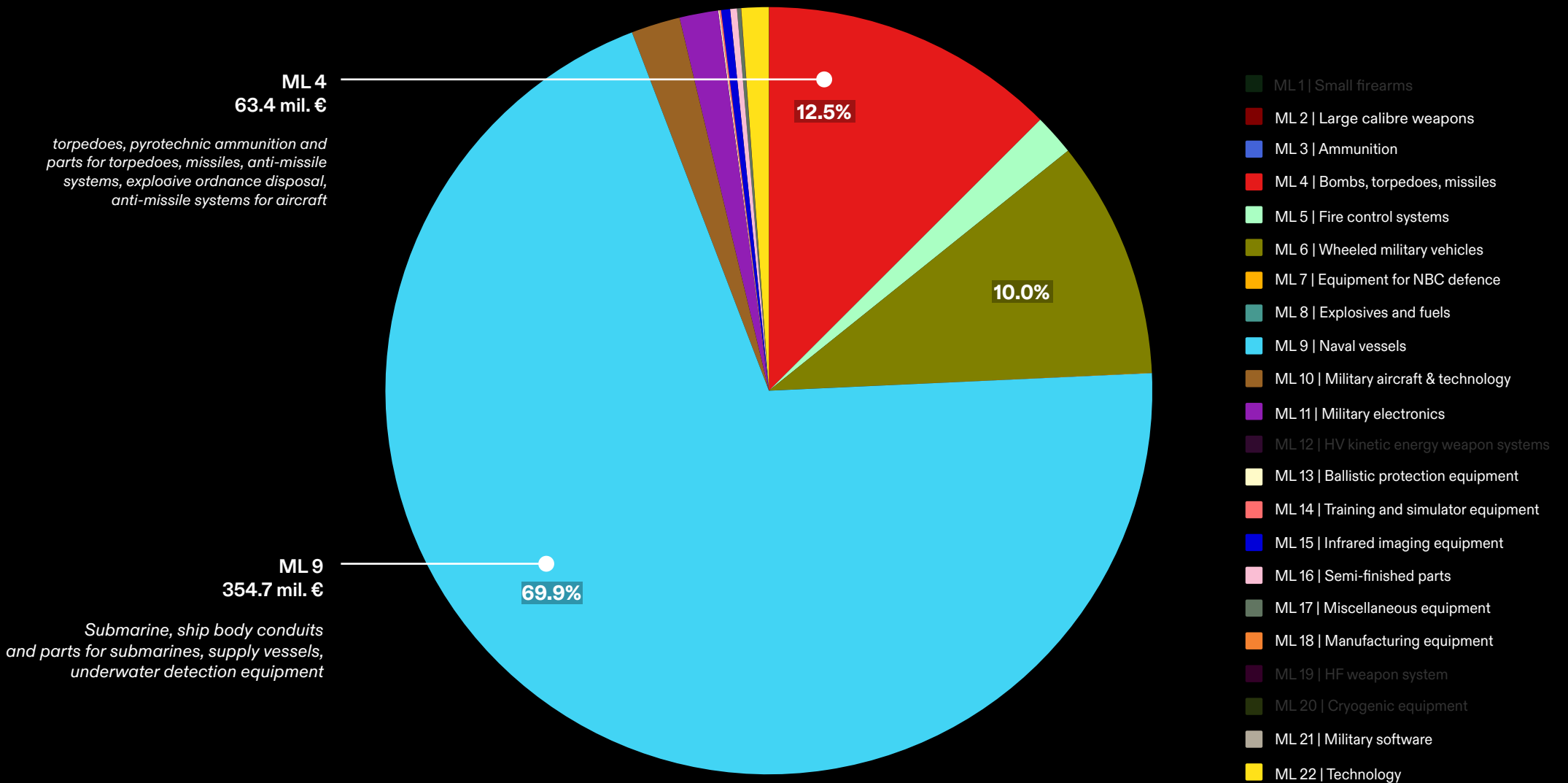
Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons): 53.9 million €

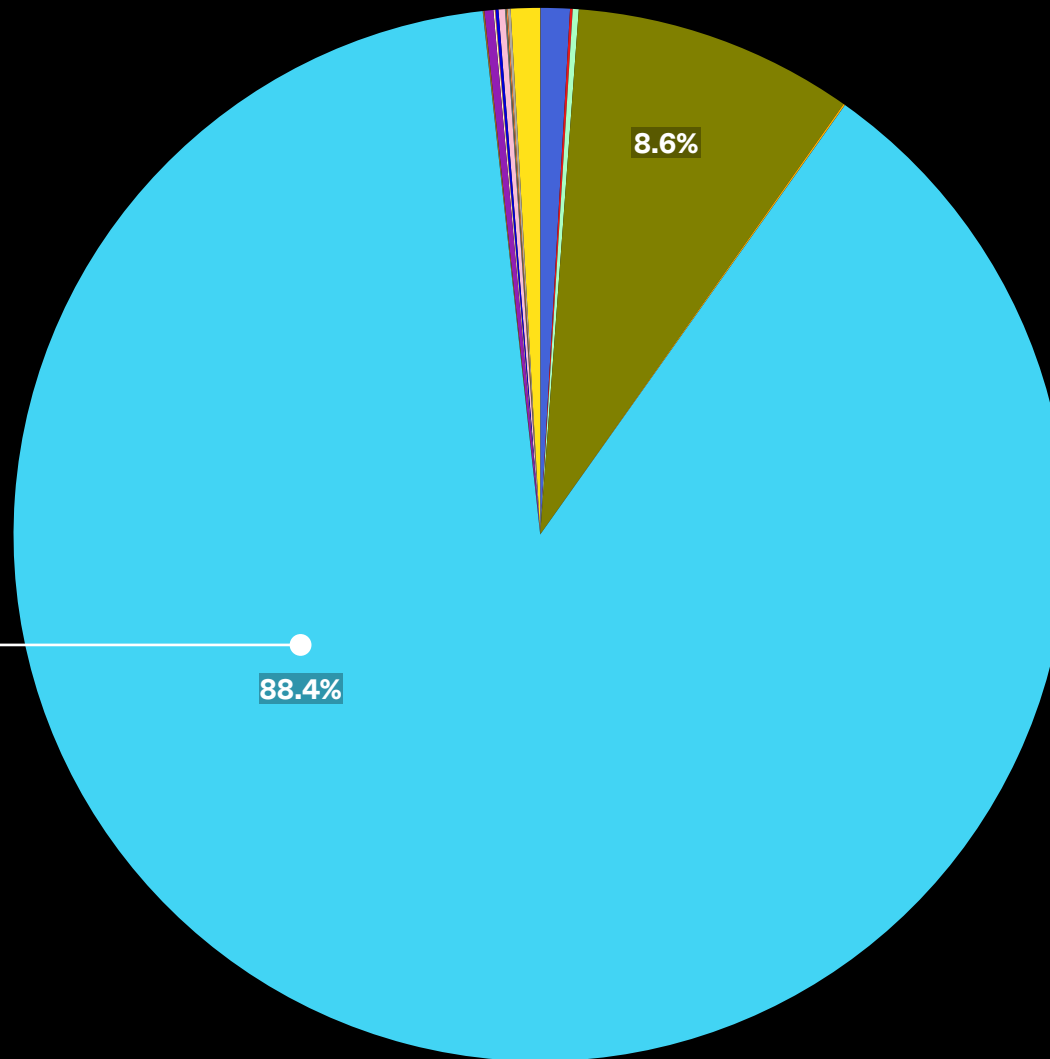
Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2016

2015

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
507.2 million €**

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2015





- ML 1 | Small firearms
- ML 2 | Large calibre weapons
- ML 3 | Ammunition
- ML 4 | Bombs, torpedoes, missiles
- ML 5 | Fire control systems
- ML 6 | Wheeled military vehicles
- ML 7 | Equipment for NBC defence
- ML 8 | Explosives and fuels
- ML 9 | Naval vessels
- ML 10 | Military aircraft & technology
- ML 11 | Military electronics
- ML 12 | HV kinetic energy weapon systems
- ML 13 | Ballistic protection equipment
- ML 14 | Training and simulator equipment
- ML 15 | Infrared imaging equipment
- ML 16 | Semi-finished parts
- ML 17 | Miscellaneous equipment
- ML 18 | Manufacturing equipment
- ML 19 | HF weapon system
- ML 20 | Cryogenic equipment
- ML 21 | Military software
- ML 22 | Technology

ML 9
605.4 mil. €

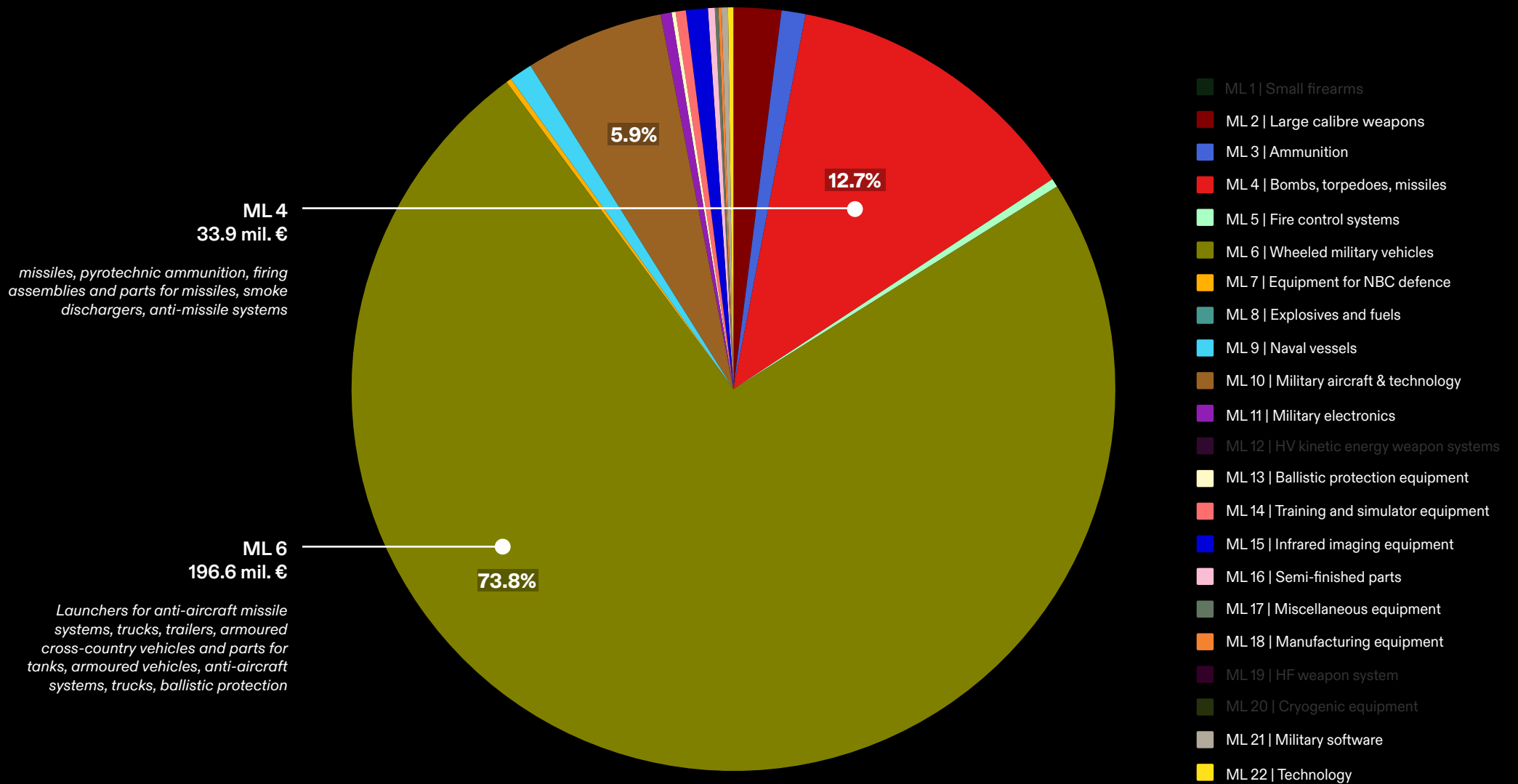
88.4%

Submarine, ship body conduits and parts for submarines, underwater detection equipment

2014

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
684.6 million €**

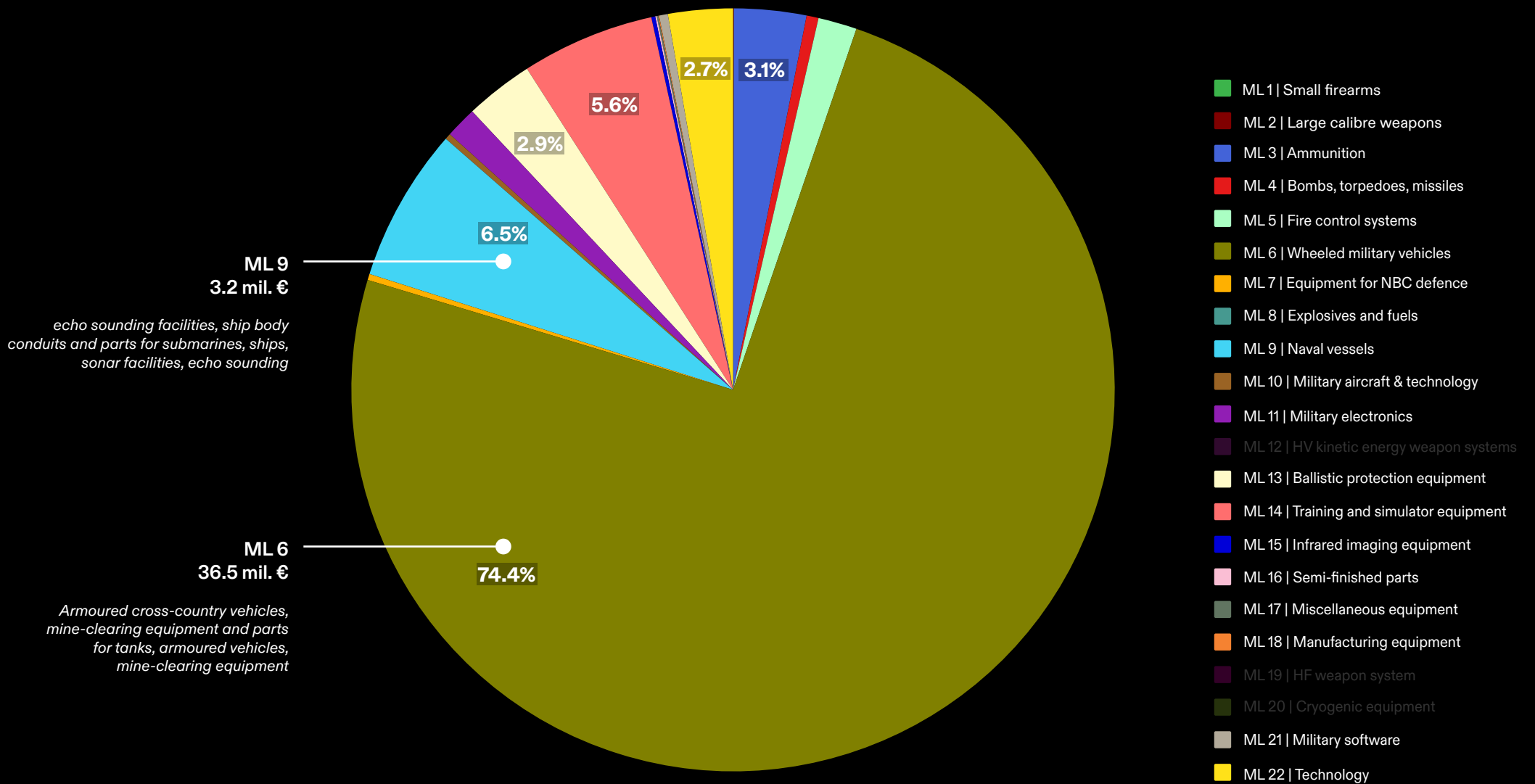
Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2014

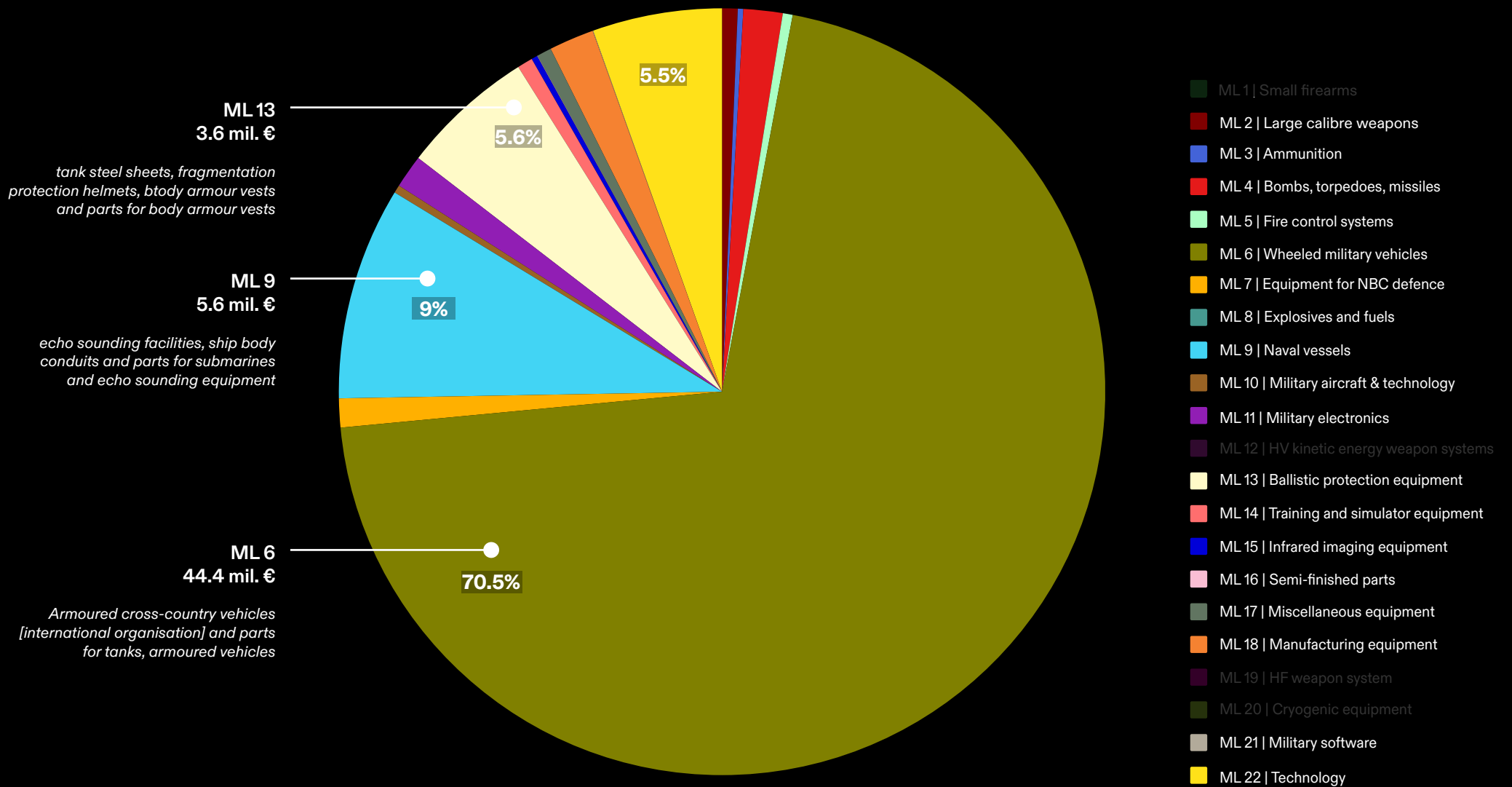


2013

Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
266.6 million €

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2013





2011

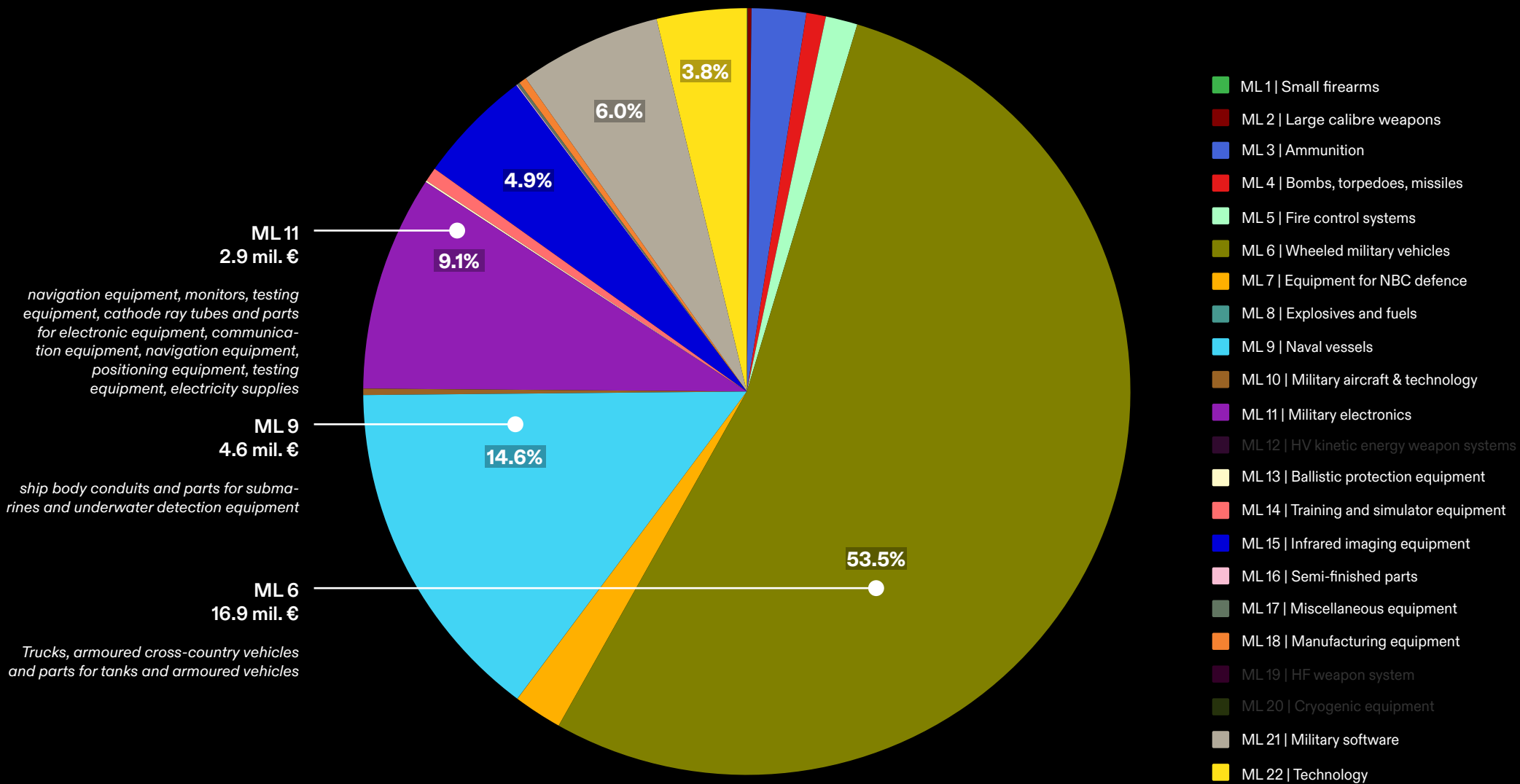
Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
62.9 million €

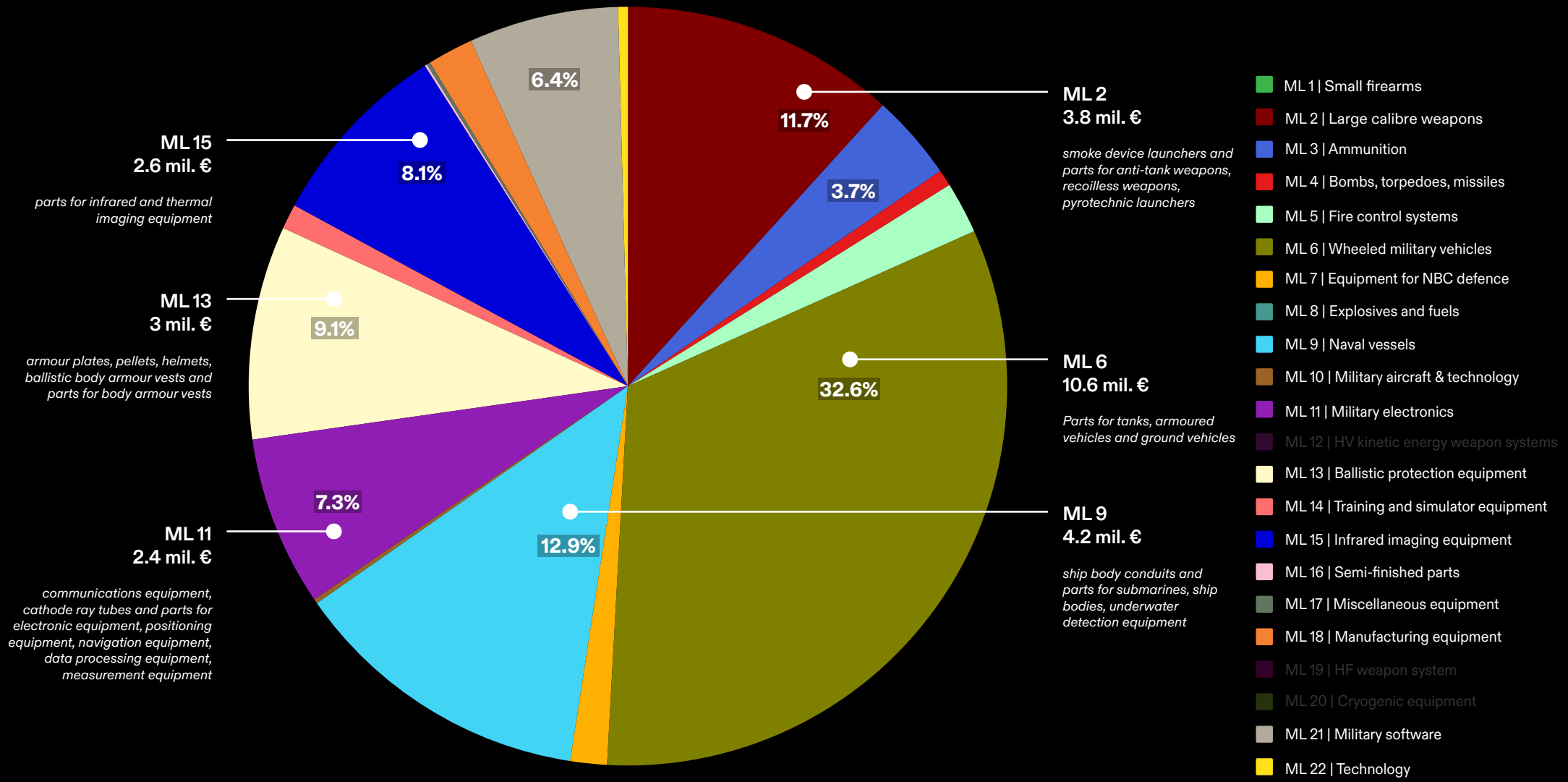
Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2011

2010

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
31.6 million €**

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2010





2009

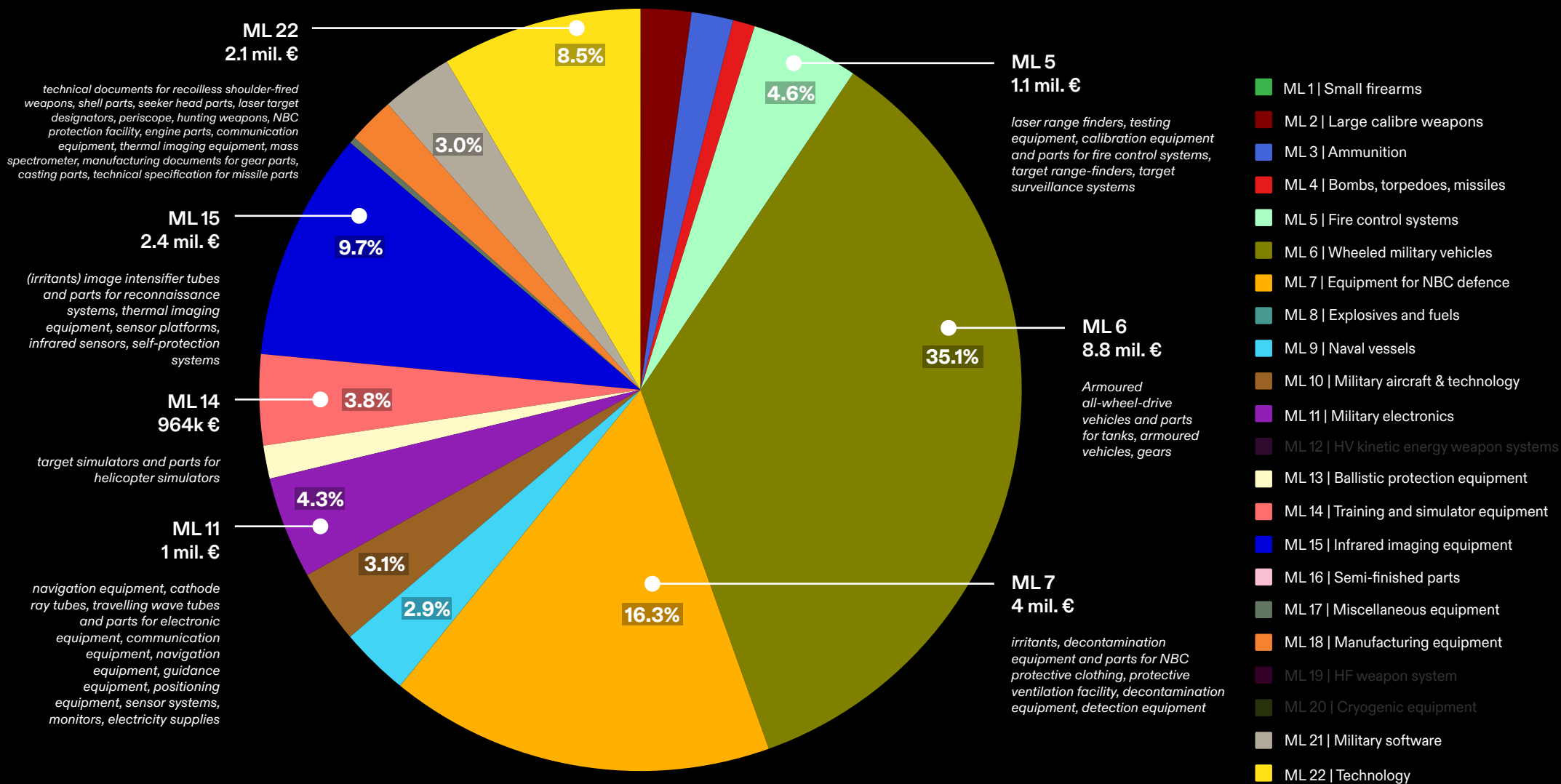
Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons): 32.6 million €

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2009

2008

Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons): 25 million €

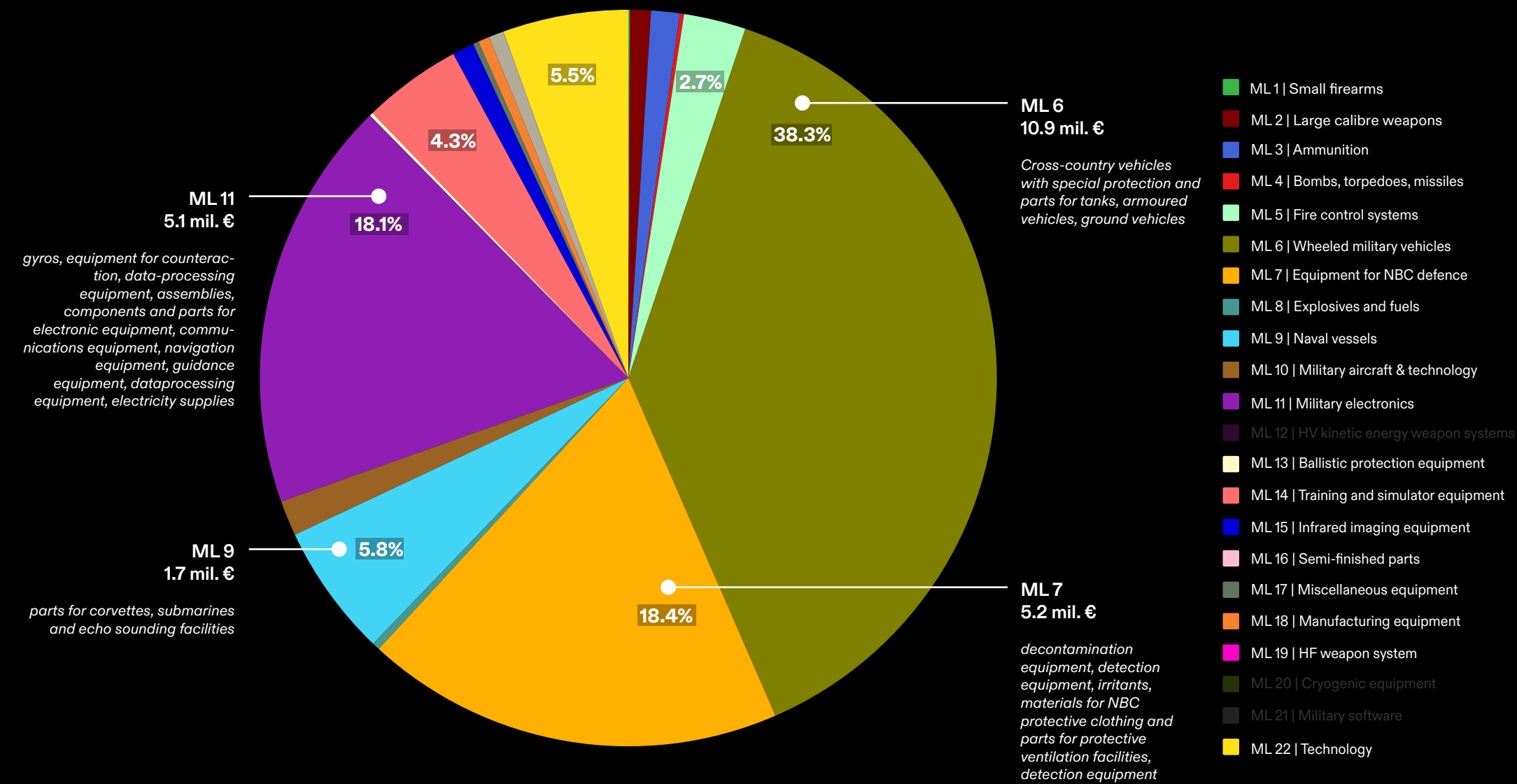
Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2008



2007

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
28.4 million €**

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2007



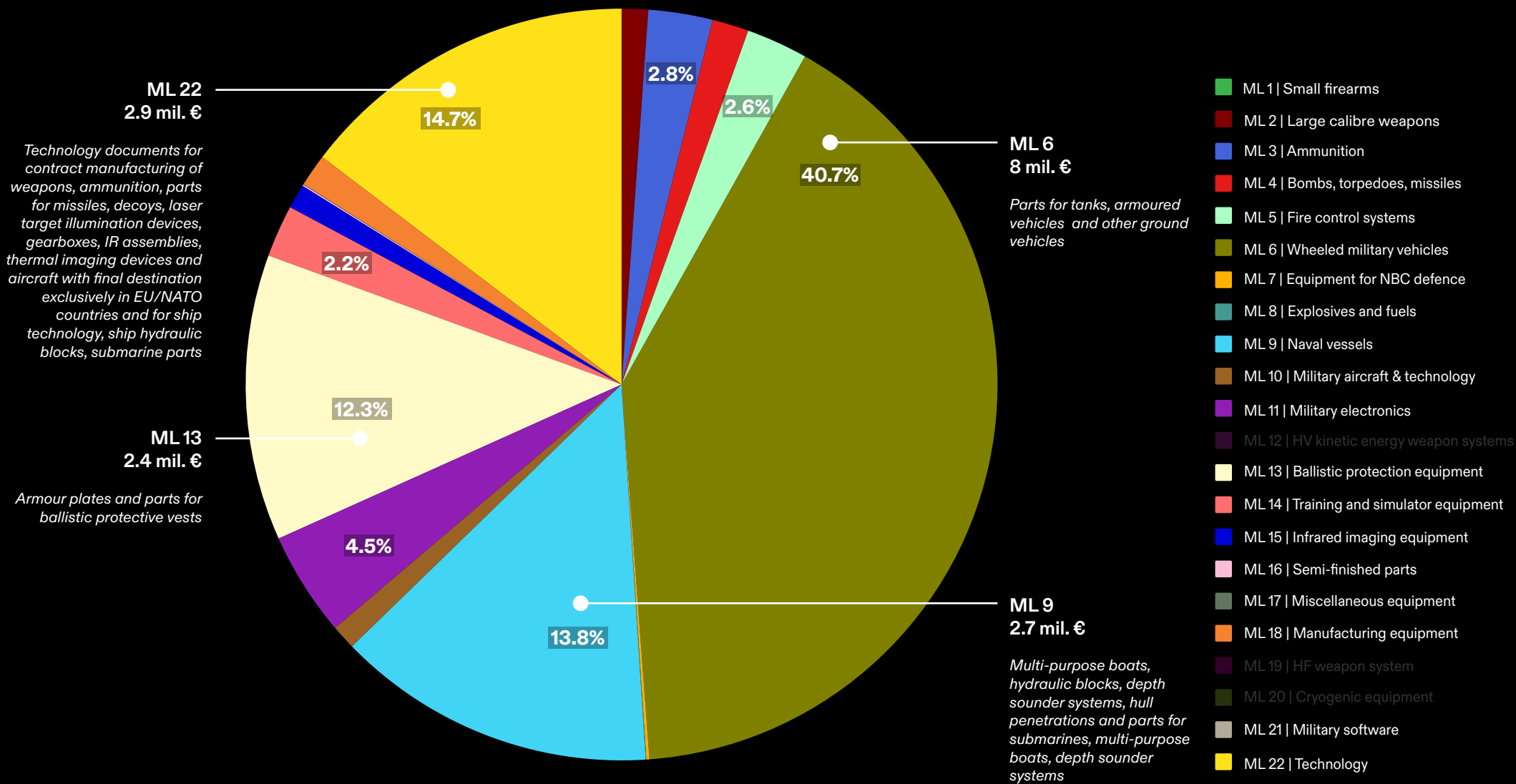
ML 11
5.1 mil. €
gyros, equipment for counteraction, data-processing equipment, assemblies, components and parts for electronic equipment, communications equipment, navigation equipment, guidance equipment, dataprocessing equipment, electricity supplies

ML 9
1.7 mil. €
parts for corvettes, submarines and echo sounding facilities

ML 6
10.9 mil. €
Cross-country vehicles with special protection and parts for tanks, armoured vehicles, ground vehicles

ML 7
5.2 mil. €
decontamination equipment, detection equipment, irritants, materials for NBC protective clothing and parts for protective ventilation facilities, detection equipment

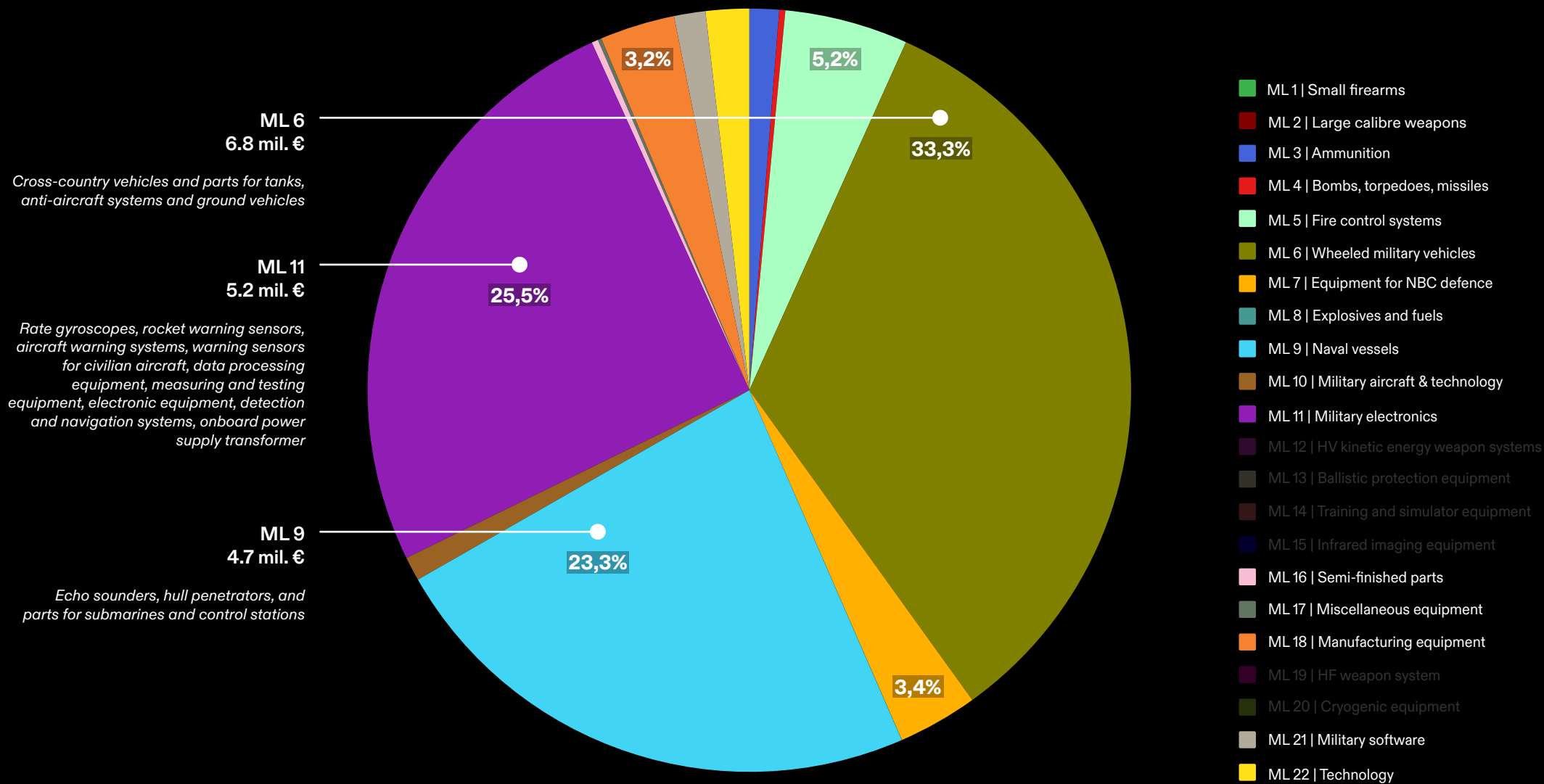
- ML 1 | Small firearms
- ML 2 | Large calibre weapons
- ML 3 | Ammunition
- ML 4 | Bombs, torpedoes, missiles
- ML 5 | Fire control systems
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- ML 19 | HF weapon system
- ML 20 | Cryogenic equipment
- ML 21 | Military software
- ML 22 | Technology



2006

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
19.6 million €**

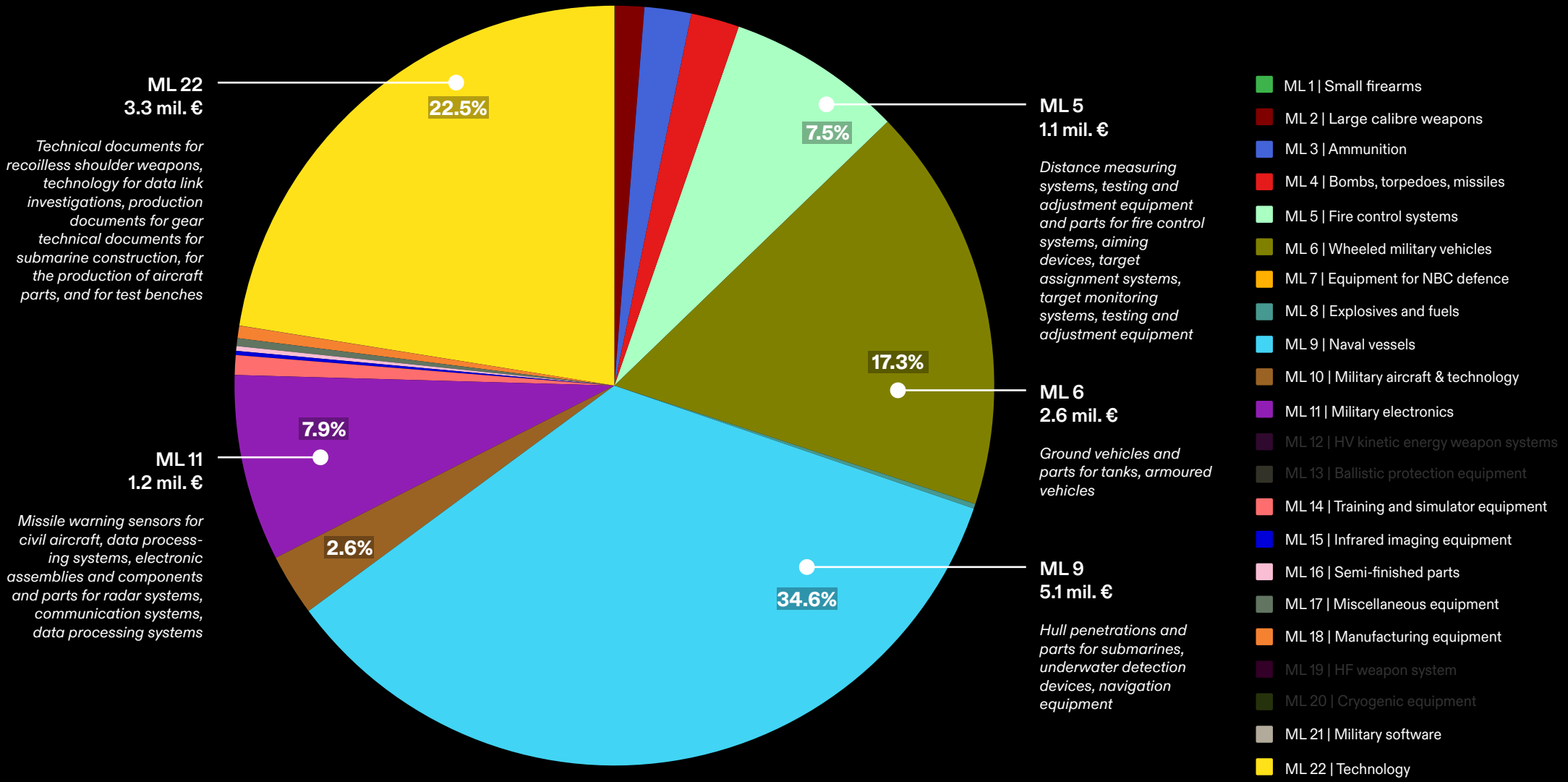
Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2006



2005

Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons): 20.4 million €

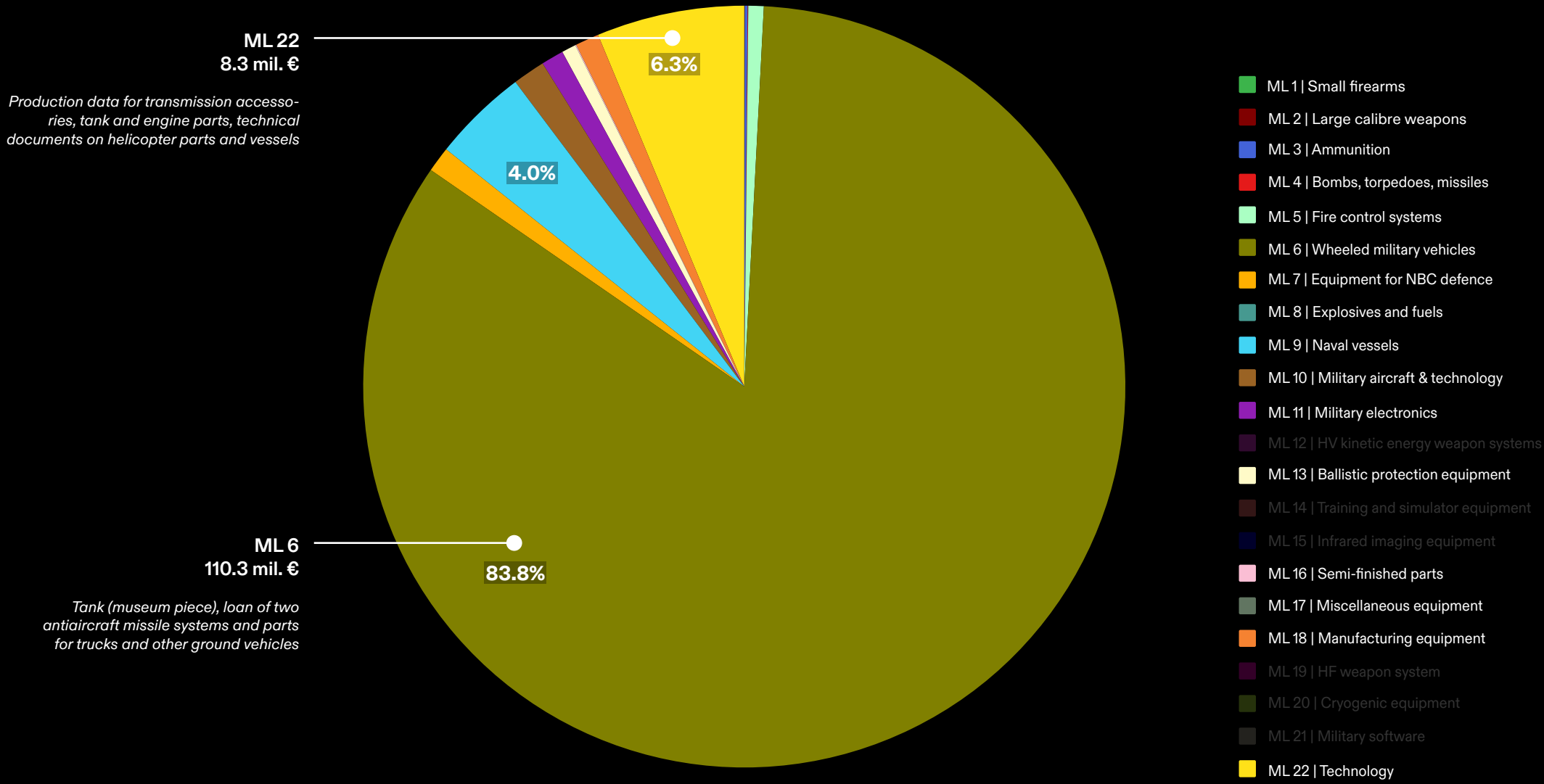
Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2005



2004

**Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons):
14.8 million €**

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2004



2003

Total Value of Arms Export Licenses to Israel (incl. Other Military Equipment and War Weapons): 131.6 million €

Source: Report by the Government of the Federal Republic of Germany on Its Policy on Exports of Conventional Military Equipment in 2003