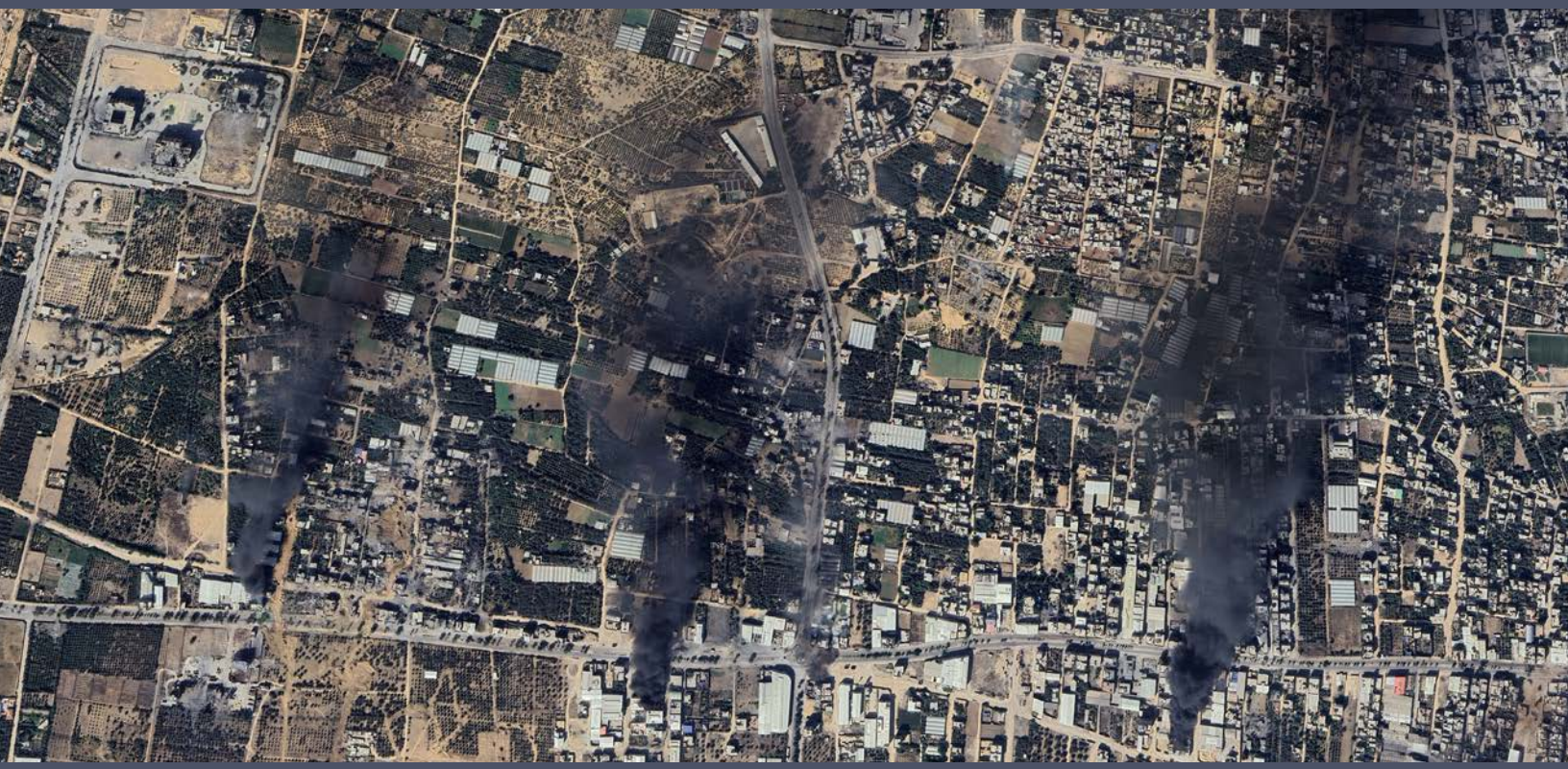
Ploughshares

REPORT

Global Production of the Israeli F-35I Joint Strike Fighter



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Global Production of the Israeli F-35I Joint Strike Fighter

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Cover image: Plumes of smoke rising along Salah Al Deen Street, north of No. 10 road, in northern Gaza, captured in November 2023. Image credit: Google Earth/Airbus.

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Abbreviations

ATT	Arms Trade Treaty
OGEL	Open General Export Licence
ICRC	International Committee of the Red Cross
IDF	Israel Defense Forces
IHL	International humanitarian law
LRIP	Low-Rate Initial Production Lot
PIID	Procurement Instrument Identifier
UK	United Kingdom
UN	United Nations
US	United States

Summary

The Lockheed Martin F-35 Joint Strike Fighter program exemplifies the complexity of modern joint military production. When these weapons are used in contexts marked by serious breaches of international humanitarian law, as in Israel's 2023–2025 military operation Swords of Iron in Gaza, questions arise about the accountability of the global supply chain that enables their use.

This report aims to bring clarity to the global production chain behind the F-35 aircraft, with a specific focus on the Israeli F-35I, and to assess the implications for compliance with international arms control frameworks.

Section I

Methodology

This report seeks to highlight the urgent need for greater transparency and traceability in the transfer of advanced weapons components, thereby reinforcing national and international arms-control obligations with a focus on the 2013 Arms Trade Treaty (ATT). It does so by scrutinizing the flow of conventional arms and technologies to states with troubling human-rights records through the F-35 program — one of the largest joint military production programs in history. Israel's use of its fleet of F-35s — known as F-35I "Adirs" — in Operation Swords of Iron will serve as a case study.

A greater understanding of the F-35's joint supply chain and, thereby, greater clarity on the transfer of F-35 components through the United States to Israel, can be achieved by analyzing F-35 contract data that is made available by the US Department of the Treasury.

US federal bodies are required to publish information on all contract, grant, loan, and other financial assistance awards valued at more than $25,000, including all prime contracts (or "prime awards") and subcontracts (or "subawards") associated with the F-35 program. Individual awards can be traced by their Procurement Instrument Identifier (PIID), a unique 13- to 17-digit alphanumeric identifier given to each prime award. This data is made available by the US government through several online portals, including USAspending.gov.

Lockheed Martin Corporation is the prime contractor for the F-35 program. Many manufacturers from participating states have been granted subawards to supply components for the aircraft. The subaward data available via the US Department of the Treasury includes, inter alia, the value of each subaward, the name of the manufacturer associated with the subaward, the manufacturer's location, the date of the subaward, and a description of the subaward.

The F-35 program has reportedly involved approximately 1,650 individual manufacturers since its inception (Eastwood 2024). F-35s are produced in batches or "lots," typically of hundreds of aircraft that are destined for a number of end-users. The US government does not list F-35 prime awards by lot numbers. However, in most cases, the lot numbers of each prime award can

The Arms Trade Treaty

The ATT, adopted in April 2013 and entering into force in December 2014, is the first international treaty to regulate the conventional arms trade. The treaty was realized after years of advocacy by civil society organizations from around the world, which celebrated it as a transformative multilateral framework that would address the humanitarian toll posed by the unchecked trade and transfer of military goods. Core obligations of States Parties to the ATT include ensuring that arms exports will not be used in human-rights violations, increasing transparency in the arms trade, and safeguarding against the diversion of conventional arms. At the time of this report's publication, the treaty included 116 States Parties — more than half of the world's countries.

be determined by reviewing the description of the award or associated subawards.

By determining which lots produced aircraft for Israel and then determining which manufacturers from which countries won subawards for those lots, civil society can gain a clearer picture of the global supply chain involved in producing the Israeli F-35I.

Determining which prime awards were associated with each F-35 production lot was also achieved by analyzing Lockheed Martin documents on the F-35 subcontractor "Terms & Conditions" portal (LMC 2024b) and reviewing company promotional materials. This information was supplemented by information available in media and defence publications. Beginning with Lot 12, the F-35 has been manufactured under "block buys" (Insinna 2018), by which several lots are produced by Lockheed Martin under a single large award (Tirpak 2019).

Joint Military Production and Arms Controls

Joint military production programs typically involve production by multiple states of components for a single military system. In some cases, these programs include a leading or intermediary state responsible for final assembly. Such programs can lead to the assumption of reduced responsibility for national arms-control obligations by states in the production chain.

While some completed systems are often retained by the leading state or major component-producing states, others may be sent on to third parties.

Component-producing states may regard the state to which they send their components to be the end-user of those weapon systems, even when it is clear that the technology could or will be retransferred to other parties once integrated into the final product. In these cases, instead of considering the risks posed by the ultimate end-user, they consider only the risks posed by providing weapon systems to the intermediary state. This practice poses major risks when the ultimate end-user has a markedly worse human-rights record than that of the intermediary state.

Under such circumstances, the responsibility for the final risk assessment is effectively handed over to the intermediary state. When this state has a comparatively relaxed arms-control regime compared to that of the component-producing states, it can contribute to a regulatory "race to the bottom," reducing what may otherwise be effective control regimes across the production chain to a single, lower threshold. The International Committee of the Red Cross (2024b, 81-83) has indicated the problems posed by identifying intermediary states as end-users when there is knowledge that arms transfers could or will later be retransferred to third parties, which has been characterized as making the risk assessments required by the ATT "either impossible or irrelevant" (Brehm and Giorgou 2024).

This dynamic has played out in the F-35 program. In this case, the intermediary state is the United States, the only F-35 partner nation that is not a state party to the ATT. The ultimate end-user for some F-35s is Israel, which has been credibly accused of international humanitarian law violations throughout Operation Swords of Iron in Gaza, in which it has employed the aircraft. Experts from the UN Office of the High Commissioner for Human Rights (2024b) have called on states to end "indirect [arms] transfers through intermediary countries" (para 4) that could be used in Gaza and further called on manufacturers to ensure that their products are not being used in human-rights abuses (para 2).

To date, the bulk of the production on Israel's current fleet of F-35Is can be tied to approximately six large contracts that contributed to the production on F-35s for a host of recipients. According to the data collected, more than 36,000 individual subawards from these contracts, valued at more than US$41.5 billion, were granted to 609 manufacturers from at least 14 countries. Of these, only a small subset of the production of each lot would be destined for Israel. For example, Lot 11 produced 141 aircraft for 11 end-users, with six aircraft going to Israel.

This report only analyzes subawards on the larger six prime awards identified and does not include information related to lower-tier awards. In other words, sub-subawards (granted by companies awarded subawards to other manufacturers further down the supply chain) are not captured in the dataset.

Figure 5 lists individual manufacturers tied to each production lot from which Israel procured the F-35. However, with the available information, it is not currently possible to determine the extent to which each manufacturer produced components destined for each F-35I. This is because, in some circumstances, it is possible that some components could have been provided by multiple manufacturers under a given lot, instead of being sole-sourced from one supplier.

The data compiled has been collected from open online sources. This data is exploratory, non-exhaustive, and open to further interpretation. Its purpose is to contribute to a greater understanding of global industrial contributions to the Israeli F-35I fleet and to promote compliance with national and international arms-control frameworks.

All data was downloaded in November 2024 and includes only the subawards that were available up to that date. Future updates are anticipated as additional information becomes available. For the full datasets, contact author Kelsey Gallagher at kgallagher@ploughshares.ca.

F-35I Lot Analysis

Figure 1

LOT NO. VS NO. OF F-35Is PRODUCED	
LOT NUMBER	F-35s PROCURED BY ISRAEL
LOT 8	2 (LMC 2017)
LOT 9	7 (Ibid.)
LOT 10	6 (Ibid.)
LOT 11	6 (Phantom Aviation 2021)
LOT 12	6 (Ibid.)
LOT 13	6 (AirForces Monthly 2022)
LOT 14	6 (Egozi and Clark 2019)
LOT 15	UNKNOWN[1]
LOT 16	UNKNOWN
LOT 17	UNKNOWN

Figure 2

LOT NO. AND PRIME AWARD ID[2]	
LOT NUMBER[3]	PRIME AWARD ID[4]
LOT 8 (2013)	N0001913C0008 (2013)
LOT 9 (2014)	N0001914C0002 (2014)
LOT 10 (2015)	N0001915C0003 (2015a)
LOT 11 (Ibid.)	N0001916C0033 (2015b)
LOT 12 (Ibid. 2022)	N0001917C0001 (2017)
LOT 13	N0001917C0001 (2017)
LOT 14	N0001917C0001 (2017)
LOT 15 (Ibid. 2023)	N0001920C0009 (2019)
LOT 16	N0001920C0009 (2019)
LOT 17	N0001920C0009 (2019)

1 F-35 Lots 15–17 have experienced severe delays due to software and hardware issues. It does not currently appear that Israel has received any aircraft under these lots, and it is unclear how many it is expected to receive under each. See (Lake 2024) for more information.

2 This table includes only large awards and does not include the smaller awards associated with each lot that were assigned on an as-needed basis, or long-term sustainment awards.

3 LMC is the source of information for Lots 8 and 9. The rest of the citations in this column are from LM Aeronautics Co.

4 USAspending.gov is the source for all information in this column.

Israel procured its first F-35s (see Section II for further discussion) under Low-Rate Initial Production (LRIP) Lot 8 and, according to available sources, is currently slated to procure more F-35s under block-buy Lots 15–17 (AirForces Monthly 2022). Prime award and sub-award data for Lot 18 and onwards had not been published by the US Department of the Treasury when datasets were initially collected and, therefore, are not included in this analysis.

Figure 3

NATIONAL PRODUCTION BY F-35 LOT NUMBER						
	LOT 8	LOT 9	LOT 10	LOT 11	LOT 12-14	LOT 15-17
AUSTRALIA	X	X	X	X	X	X
BELGIUM					X	X
CANADA	X	X	X	X	X	X
DENMARK	X	X	X	X	X	X
GERMANY						X
ISRAEL			X	X	X	X
ITALY	X	X	X	X	X	X
JAPAN	X	X	X	X	X	X
LUXEMBOURG	X	X	X			
NETHERLANDS	X	X	X	X	X	X
NORWAY	X	X	X	X	X	X
TÜRKIYE	X	X		X	X	X
UNITED KINGDOM	X	X	X	X	X	X
UNITED STATES	X	X	X	X	X	X
F-35s PROCURED BY ISRAEL	2	7	6	6	18	N/A

Manufacturers from 14 countries were granted subawards under the prime awards analyzed. Of these, all but Belgium, Germany, Israel, Luxembourg, and Türkiye contributed work towards all lots under which Israeli-destined F-35s were, or are to be, produced.

Current Subaward Totals by Supplier State

According to the US government, more than 600 individual manufacturers from 14 countries have been awarded subcontracts to produce components for lots from which Israel has procured, or is expected to procure, the F-35. This total does not include suppliers associated with standalone sustainment awards — smaller contracts awarded on F-35 lots that are typically associated with upkeep of the aircraft. It also does not include the many lower-tier manufacturers that have been granted sub-subawards.

Figure 4

SUBAWARD TOTALS BY SUPPLIER STATE	
COUNTRY	VALUE (US dollars)
UNITED STATES	$28,376,220,313
UNITED KINGDOM	$6,746,188,525
ITALY	$3,449,283,425
NETHERLANDS	$889,622,396
ISRAEL	$699,669,042
CANADA	$589,821,201
NORWAY	$498,797,236
DENMARK	$137,619,759
JAPAN	$78,254,872
AUSTRALIA	$64,515,458
TÜRKIYE	$17,666,104
LUXEMBOURG	$3,834,514
BELGIUM	$410,585
GERMANY	$132,000

By value, suppliers based in the United States were granted the majority (68.2 percent) of subawards under lots 8 through 17, followed by suppliers based in the United Kingdom (16.2 percent) and suppliers based in Italy (8.3 percent).

Each F-35 lot involves the assembly of more than 100 aircraft for numerous end-users, with Israel receiving only a few units from each lot. Thus, the data in Figure 4 **does not show the total subaward value of each nation's production of F-35 components specifically destined for Israel**. Instead, the value of subaward totals covers production on entire lots from which some Israeli F-35Is were, or are to be, procured.

Section II

A Brief Overview of the F-35 Production Program

The F-35 program (Pappalardo 2014) is regarded as one of the world's largest and most complex joint military production programs. Originally advertised as a cost-effective means to procure fifth-generation combat aircraft, it is now regarded as the "most expensive weapon program in history" (Grazier and Ruiz 2024, para 4). Production has been marked by significant delays (Panella 2024) and a frequent inability to deliver on stated capabilities.

The F-35 program began in the 1990s when the US Department of Defense selected Lockheed Martin Corporation, the world's largest arms manufacturer, as one of two companies to develop concepts for a new multirole combat aircraft. In October 2001, Lockheed Martin was declared the winner. The first F-35A took flight in December 2006 (Hoehn 2022, p. 8) and the first F-35 was delivered in July 2011 to the US Air Force (King 2011).

Lockheed Martin conducts final assemblies of most F-35s at its production facility in Fort Worth, Texas. It is also responsible for granting subawards to produce the components required in manufacturing the aircraft. Only manufacturers from F-35 partner nations or some F-35 Foreign Military Sales customers can produce components for the aircraft (TERMA 2025).[5]

As of November 2024, 20 countries had either procured or stated their intention to procure this aircraft (Tirpak 2024). The most recent, in July 2024, was Romania (LMC 2024a). In total, more than 3,000 F-35s will be produced before the program ends (Spray 2024a, para 6 under "Clearing the backlog"). The aircraft are expected to be operational until 2088 (Losey 2024, para 3).

However, as explained below, this example of joint military production raises concerns about arms control compliance, accountability, and transparency.

Israel

In October 2010, Israel became the first international customer of the F-35 (IDF editorial team 2016) when it signed a Letter of Agreement for 33 aircraft (Air & Cosmos–International 2016). In 2016, Israel received its first two F-35s from LRIP Lot 8 (Gross 2016). According to available sources, beginning with Lot 10, Israel has received an estimated six aircraft from each production batch, for the current total of 39 (Spray 2024b, para 4).

In 2018, Israel became the first country to use the F-35 in combat (Reuters 2018). The Israeli F-35I is built on the F-35's baseline variant, the F-35A (Spray 2024b, 1st chart), with addition-

5 It should be noted that, although Luxembourg is not formally associated with the F-35 program, manufacturers based in Luxembourg have been reported in the F-35 subaward data available via USASpending.org, as reflected in Figure 4. It is not clear why this is the case.

al "capabilities on top of the existing infrastructure" (Grudo 2017, p. 63) provided by Israeli manufacturers.

As noted above, by the end of November 2024, Israel had taken possession of 39 of the 50 F-35s ordered before 2024. In July 2024, Israel signed an agreement for an additional 25 aircraft with the US government (Fabian 2024), which provides the aircraft to the Israeli government through the Foreign Military Financing program (U.S. Department of State 2025, para 2) as a form of military aid (Deen 2023).

The Use of F-35Is in Gaza

Following the October 7, 2023, attacks in Israel, the Israel Defense Forces (IDF) launched Operation Swords of Iron, a combined air- and land-based bombardment of Gaza that was followed by a full-scale ground invasion. Since the outset of the operation, Israel has faced consistent and credible allegations of the commission of serious violations of international humanitarian law (IHL) by major human-rights and humanitarian organizations, including Amnesty International (2024a), Oxfam International (2024), and Human Rights Watch (2024), along with the UN High Commissioner for Human Rights (UN General Assembly 2024).

Some incidents likely constitute war crimes (UN Office of the High Commissioner for Human Rights 2024c). In January 2024, the International Court of Justice found it plausible that Israel's conduct in Gaza could constitute war crimes (Ibid. 2024a), and in December 2024, Amnesty International (2024b) released a report that concluded that "Israel has committed genocide in Gaza" (p. 296).

Arms transfers to Israel from outside countries that could be used to commit human-rights abuses have received widespread attention. The F-35I has been subjected to particular scrutiny because it has been directly used in the IDF's campaign of airstrikes (Gallagher 2024, pp. 9-10), which have been a primary driver of civilian harm events in Gaza (Reuters Fact Check 2024).

By mid-December 2024, more than two percent of all Palestinians in Gaza had been killed during Operation Swords of Iron (Hasson 2024), largely from the use of explosive weapons in populated areas (Humanity & Inclusion 2023). It is estimated that nearly 60 percent of buildings in Gaza have been damaged or destroyed (Wood 2024, para 4), and 85 percent of the population, or 1.9 million civilians, have been forcibly displaced (UN 2024, para 1).

ATT States Parties as Sources of Israel's F-35I

Many of the components that comprise the F-35 are currently produced by a consortium of eight F-35 partner nations (Australia, Canada, Denmark, Italy, the Netherlands, Norway, the United Kingdom, and the United States) (F-35 Lightning II Joint Program Office [JPO] n.d.). Except for the United States, all these countries are States Parties to the ATT.

Under ATT Article 6.3 (2013, p. 5), States Parties are prohibited from authorizing transfers of arms, including components, if the exporter has knowledge that such transfers would be used in "the commission of genocide, crimes against humanity, grave breaches of the Geneva Conventions of 1949, attacks directed against civilian objects or civilians protected as such, or other war crimes as defined by international agreements to which it is a Party."

Under ATT Article 7.3 (Ibid.), States Parties are also prohibited from authorizing transfers of arms, including components, if those transfers present an overriding risk of being used in serious violations of IHL, serious violations of international human rights law, or other abuses, and those risks cannot be mitigated.

To determine the potential risk associated with each transfer and to safeguard against these potential abuses, before authorizing arms exports, ATT States Parties must conduct case-by-case assessments that include identifying end-users to determine the potential risk associated with each transfer. However, some states involved in the F-35 component supply chain do not conduct such comprehensive risk assessments on these component transfers, and typically consider the United States the end-user, even though a significant number of the aircraft being produced are destined for non-US recipients (Romaniello 2020).

Moreover, despite the demonstrable risk in continuing to supply weapon systems to Israel, during Operation Swords of Iron, no F-35 component-producing state stopped supplying components to the United States that could be integrated into F-35 aircraft destined for Israel. Due to the complex and indirect nature of these transfers, some states claimed that it was simply not possible to trace which of their outgoing components were destined for Israel (Rose 2024), and so did not implement any end-user assurances to prohibit the supply of F-35 technology through the United States to Israel.

In other cases, some supplier states have regulatory "carve-outs" for transfers of components to the United States or to certain joint military production programs, such as that of the F-35.

The ICRC (2024c) has contrasted these carve-outs with ATT Article 5.1 (2013, p. 4), which obliges States Parties to implement the treaty's provisions in a "consistent, objective and non-discriminatory manner."

This diminishing of safeguards further contributes to a general lack of transparency on who supplies which components to whom, shrouding the activities of even the most transparent arms-exporting states in the F-35 supply chain.

The F-35 and National Accountability

While no state has formally prohibited the transfer of components to Israel via the United States, some countries — reportedly including Australia (Canales 2024), Canada (Reuters 2024a), Germany (Alkousaa 2024), Italy (Reuters 2024b), the Netherlands (Trittenbach, Dorsey, and Spijkers 2024), Norway (Action on Armed Violence 2024), Spain (The New Arab 2024), and the Walloon region of Belgium (*The Brussels Times* 2024) — have placed some

level of restriction on direct arms flows to Israel due to the risk that those transfers could be used in IHL violations or to commit other abuses.

The United Kingdom

The UK arms industry claims that 15 percent of the technology used in every F-35 is produced in the United Kingdom (AMFG 2024).

According to the data collected, 16.2 percent of the subawards were granted to manufacturers based in the United Kingdom; BAE Systems (Operations) Limited alone has won subawards valued at US$5.7 billion. The Campaign Against Arms Trade (2024a, p. 2) estimates the value of UK components in Israeli F-35Is to be approximately £360 million since 2016.

In September 2024, the United Kingdom suspended approximately 30 of approximately 350 licences for arms exports destined for Israel (GOV.UK 2024), due to concerns that those arms could be used in violations of IHL. UK-made F-35 components, however, were explicitly not captured under these suspensions (Campaign Against Arms Trade 2024b).

UK-origin F-35 components are exempted because they are initially transferred to the United States under an Open General Export Licence (OGEL) (Ibid., p. 2). OGELs do not regulate arms transfers on a case-by-case basis but are pre-approved blanket authorizations with indefinite validity that can be used to export entire batches of military goods to certain destinations. As well, the United Kingdom does not publish any details of the goods or the quantities that are exported under General Licences including OGELs (Campaign Against Arms Trade n.d.), thus greatly undermining transparency.

In December 2024, it was reported that the UK government was "reviewing its decision to allow the continued export of F-35 fighter jet components in light of concerns that they could end up in Israel" (Hooper 2024, para 1). This came after legal groups threatened an emergency court injunction to block F-35 component transfers in an ongoing attempt to end UK arms exports to Israel that could be used in the conflict in Gaza.

The Netherlands

In February 2024, following a court challenge launched by a consortium of civil society organizations, the Court of Appeal in the Hague ruled that transfers of spare F-35 components from the Netherlands to Israel posed a clear risk of contributing to serious violations of international law by the IDF in Gaza (Trittenbach, Dorsey, and Spijkers 2024). As a result, the Dutch government was forced to stop transfers of F-35 components to Israel.

Dutch authorities have since claimed that they do not consider any exports via third countries, especially the United States, to fall under the court's order. They contend that such transfers cannot be traced to its final destination and adopt the view that, once on American soil, this "equipment [is] owned by the United States and that, therefore, different rules would apply" (Cornelisse 2024, para below subhead "Transnational Constructions and Glob-

al Partnerships"); these transfers of F-35 parts to the United States consist of both Dutch and international spare parts for existing aircraft, as well as Dutch components utilized in the production of newly built aircraft. This interpretation will be assessed by the Courts of Appeal in 2025.

Canada

Using figures cited by Canadian officials, Project Ploughshares (Gallagher 2024) estimates that Canadian technology valued at approximately CAD$120.9 million has been supplied to the Israeli F-35I program since its inception.

In January 2024, Canada suspended the authorization of new arms export permits to Israel. In September of the same year, Canada's Foreign Minister announced that Canadian authorities had suspended "around 30" export permits to Israel (Cosh 2024, para 1).

As with the prior examples, however, these policies did not extend to F-35 components exported to the United States and then later shipped to Israel. Canada, uniquely, does not regulate the vast majority of its arms transfers to the United States, its largest customer for military goods (Gallagher 2023, pp. 19-21). This includes all F-35 components exported to the United States, including those retransferred to third parties, such as Israel.

The Failure to Meet ATT Obligations

Although many F-35 partner states proactively report arms exports annually, many, if not most, components destined for the F-35 program are either reported as transfers to the United States or not reported at all. This practice undermines civil society's ability to determine the extent to which certain countries are providing components used in the Israeli F-35I program.

Some F-35 partner states have indicated that they have chosen not to limit F-35 component transfers to Israel because the aircraft are produced as part of a multinational joint military production program, and such a move would disrupt the global F-35 supply chain (Klare 2024). While the preamble to the ATT (p. 2) does note that the treaty "should not hamper international cooperation and legitimate trade in materiel, equipment and technology for peaceful purposes," this proviso does not override the obligations of ATT States Parties under Article 6.3 or Article 7.3 of the treaty (ICRC 2024a).

Some F-35 partner states have also argued that F-35 component transfers simply cannot be traced after they reach the United States and, therefore, it's impossible to stop the flow of this technology to Israel (Rose 2024).

However, given the highly specific nature of these components, the availability of advanced tracing technologies (Cops 2024), precedents set in other industries (ECA Academy 2025), and the fact that these components are typically export-controlled when destined for other countries or applications, this argument does not stand up to basic scrutiny.

In fact, the complexity of the F-35 program underscores the necessity — and feasibility — of robust tracing mechanisms. Modern manufacturers of consumer goods, industrial machinery, and even low-margin logistics routinely manage and trace highly intricate supply chains with real-time precision. Given the strategic importance and sophistication of the F-35 supply chain, it defies credibility that similar tracing systems could not be implemented in this case.

Furthermore, logistical challenges, however real, do not absolve ATT States Parties of their binding obligations to take proactive measures to prevent the flow of weapons into contexts where serious human rights abuses could occur.

The F-35 Joint Program Office recently indicated that tracing F-35 components is entirely possible when spokesperson Russell Goemaere stated: "While the F-35 supply chain is capable of controlling material movement based on part number/configuration, no current system, process or business rule is in place to filter out or stop the movement of specific serial numbered material to any specific country based on its country of origin" (Akkad 2024, last para under "A programme like no other"). This admission reveals that the lack of tracing is a matter of policy, not capacity, and underscores the need for stronger accountability measures within the F-35 supply chain.

Reaching Accountability

As discussed, there are critical gaps in the collective understanding of the global supply chain involved in the production of the F-35 Joint Strike Fighter. These gaps result in decreased accountability and transparency, particularly regarding components used in the Israeli F-35I.

Joint military production ventures are, by their nature, complex. However, the lack of robust tracing mechanisms and end-user assurances reflects a policy decision rather than a logistical impossibility. This deliberate choice undermines international arms control frameworks, including the ATT, and risks contributing to serious violations of international humanitarian law.

The supplying of F-35 components to Israel during Operation Swords of Iron, despite credible allegations of misuse, underscores the need for urgent action in addressing these regulatory shortcomings. States in the production chain should adopt tracing technologies, enforce strict end-user assurances, and address standing policy gaps to ensure compliance with ATT obligations and safeguard against the risks posed in the transfer of weapon systems that could be utilized in serious violations of human rights.

This report lays a foundation and offers a case study to improve the understanding of the flows of arms and technology in one of the most complex joint military production programs in history. Future efforts should focus on tracing suppliers, increasing transparency, and advocating for stronger accountability on the part of weapons-producing states and arms manufacturers. By addressing these challenges, the international community can take meaningful steps to prevent further harm and uphold the principles of international law.

Appendix

Total Subaward Value by Producer

The names of manufacturers listed in Figure 5 appear as they are reported by the US Department of the Treasury. There is the possibility that some manufacturers have been listed as two separate entities with slightly different naming conventions (e.g., Italy's "Leonardo SPA" and "Leonardo S.P.A."). Other manufacturers may be listed under outdated names or legal names that differ from their public-facing names (e.g., Canada's "Magellan Aerospace, Kitchener" as "Chicopee Manufacturing Limited").

Figure 5

SUBAWARD TOTALS BY MANUFACTURER		
COUNTRY	MANUFACTURER	TOTAL SUBAWARD VALUE (US dollars)
AUSTRALIA	GEORGE LOVITT (MANUFACTURING) PROPRIETARY LIMITED	$48,355,465
	LEVETT ENGINEERING PTY. LTD.	$12,876,864
	MARAND PRECISION ENGINEERING PTY. LTD.	$2,758,682
	FERRA ENGINEERING PTY. LTD.	$280,862
	BAE SYSTEMS AUSTRALIA LIMITED	$243,585
BELGIUM	ASCO INDUSTRIES	$410,585
CANADA	HONEYWELL ASCA INC	$346,554,540
	DEVTEK AEROSPACE INC.	$95,260,505
	ASCO AEROSPACE CANADA LTD	$40,672,983
	HONEYWELL LIMITED	$38,071,234
	AVCORP INDUSTRIES, INC	$37,030,020
	CHICOPEE MANUFACTURING LIMITED	$14,980,524
	MAGELLAN AEROSPACE, WINNIPEG	$7,720,570
	CENTRA INDUSTRIES INC.	$2,963,706
	APEX INDUSTRIES INC	$2,377,698
	CENTRA INDUSTRIES INC	$2,292,229
	DEVTEK AEROSPACE INC	$1,555,757
	HOWMET ALUMINUM CASTINGS LTD	$297,000
	NEW CENTRA HOLDINGS INC	$44,434
DENMARK	TERMA AEROSTRUCTURES A/S	$137,071,491
	MULTICUT A/S	$417,925
	TERMA A/S	$130,344

GERMANY	PAMAS PARTIKELMESS- UND ANALYSESYSTEME GMBH	$132,000
ISRAEL	ISRAEL AEROSPACE INDUSTRIES LTD. AVIATION GROUP LAHAV	$695,688,730
	ELBIT SYSTEMS - CYCLONE LTD	$3,980,312
ITALY	LEONARDO SPA	$3,427,364,994
	LEONARDO S.P.A.	$18,099,527
	L.M.A. LAVORAZIONE MECCANICA PER AERONAUTICA SRL	$1,312,660
	OFFICINE MECCANICHE AERONAUTICHE SPA	$1,294,629
	O.M.P.M. OFFICINA MERIDIONALE DI PRECISIONE MECCANICA SRL	$651,723
	O.M.P.M. - OFFICINA MERIDIONALE DI PRECISIONE MECCANICA - S.R.L.	$559,891
JAPAN	MITSUBISHI HEAVY INDUSTRIES, LTD.	$78,254,872
LUXEMBOURG	EURO-COMPOSITES(R) S.A.	$3,834,514
NETHERLANDS	FOKKER AEROSTRUCTURES B.V.	$619,502,885
	FOKKER ELMO B.V.	$256,723,697
	KMWE PRECISION B.V.	$6,453,268
	FOKKER LANDING GEAR B.V.	$5,360,121
	KMWE GROUP B.V.	$1,483,615
	GKN FOKKER AEROSPACE B.V.	$98,810
NORWAY	KONGSBERG DEFENCE & AEROSPACE AS	$465,026,519
	KONGSBERG AVIATION MAINTENANCE SERVICES AS	$17,872,152
	AEROSPACE INDUSTRIAL MAINTENANCE NORWAY SF	$15,832,726
	TECHNI AS	$65,840
TÜRKİYE	ALP HAVACILIK SANAYI VE TICARET ANONIM SIRKETI	$8,911,110
	KALE HAVACILIK SANAYI ANONIM SIRKETI	$8,754,994
UNITED KINGDOM	BAE SYSTEMS (OPERATIONS) LIMITED	$5,753,755,918
	SMITHS AEROSPACE GROUP LIMITED	$342,978,174
	MARTIN-BAKER AIRCRAFT COMPANY LIMITED	$303,397,165
	GE AVIATION SYSTEMS LIMITED	$226,517,925
	ULTRA PCS LIMITED	$72,463,380
	GOODRICH ACTUATION SYSTEMS LIMITED	$23,716,093
	BAE SYSTEMS PLC	$18,981,588
	L3HARRIS RELEASE & INTEGRATED SOLUTIONS LTD	$1,957,657
	ICON AEROSPACE TECHNOLOGY LTD	$1,930,387
	LEONARDO UK LTD	$290,662
	DRUCK LIMITED	$199,575

UNITED STATES (top 100 suppliers by value)	NORTHROP GRUMMAN SYSTEMS CORPORATION	$8,005,624,835
	BAE SYSTEMS INFORMATION AND ELECTRONIC SYSTEMS INTEGRATION INC.	$2,508,938,484
	NORTHROP GRUMMAN SYSTEMS CORP	$2,333,026,878
	GOODRICH CORPORATION	$1,729,249,023
	HONEYWELL INTERNATIONAL INC.	$1,419,876,723
	LOCKHEED MARTIN CORP	$998,220,809
	LAIRD R & F PRODUCTS, INC.	$934,389,158
	L3HARRIS TECHNOLOGIES, INC.	$929,198,645
	MOOG INC	$570,236,445
	NORTHROP GRUMMAN CORPORATION	$543,756,154
	HAMILTON SUNDSTRAND CORPORATION	$536,938,402
	RAYTHEON COMPANY	$457,573,364
	NORTHROP GRUMMAN SPACE & MISSION SYSTEMS CORP.	$450,481,509
	PARKER-HANNIFIN CORPORATION	$380,851,450
	ATK SPACE SYSTEMS LLC	$357,468,494
	HOWMET AEROSPACE INC.	$285,429,887
	COLLINS ELBIT VISION SYSTEMS, LLC	$284,392,256
	GKN AEROSPACE TRANSPARENCY SYSTEMS INC.	$255,930,559
	ALBANY AEROSTRUCTURES COMPOSITES LLC	$253,056,815
	L3 AVIATION PRODUCTS INC	$209,950,783
	GENERAL DYNAMICS-OTS, INC.	$176,793,845
	MOOG INC.	$163,301,949
	MARVIN ENGINEERING CO, INC	$153,291,178
	LOCKHEED MARTIN CORPORATION	$147,982,418
	TIMES MICROWAVE SYSTEMS, INC	$147,211,168
	CUMING MICROWAVE CORPORATION	$144,315,869
	WYMAN-GORDON COMPANY	$142,089,947
	ARKWIN INDUSTRIES, INC.	$133,877,052
	ARROWHEAD PRODUCTS CORP	$123,340,989
	CUBIC DEFENSE APPLICATIONS, INC.	$112,095,770
	ROSEMOUNT AEROSPACE INC	$111,730,431
	GE AVIATION SYSTEMS LLC	$107,867,915
	PROGRESSIVE INC	$101,007,896
	FORREST MACHINING LLC	$99,944,290
	WOODWARD HRT INC	$97,941,280
	BAE SYSTEMS CONTROLS INC.	$94,305,451
	GENERAL DYNAMICS MISSION SYSTEMS, INC.	$87,356,859
	CURTISS-WRIGHT CONTROLS, INC.	$85,672,036
	EATON AEROSPACE LLC	$85,301,132
	EATON AEROQUIP LLC	$85,159,343
	PARKER-HANNIFIN CORP	$84,488,353
	PRO-FAB, LLC	$78,841,335
	PATRIOT MACHINE, INC.	$69,812,233

UNITED STATES (top 100 suppliers by value)	ORIZON AEROSTRUCTURES, LLC	$67,081,374
	EATON AEROSPACE, LLC	$65,520,935
	GKN AEROSPACE MONITOR, INC.	$62,458,729
	CASCADE ENGINEERING TECHNOLOGIES, INC.	$62,214,370
	ARC TECHNOLOGIES LLC	$58,298,842
	MERRITT PREFERRED COMPONENTS INC	$51,977,301
	BALL AEROSPACE & TECHNOLOGIES CORP.	$51,911,611
	AVCORP COMPOSITE FABRICATION INC.	$51,831,600
	LUMINESCENT SYSTEMS, INC	$48,036,205
	AEROSPACE DYNAMICS INTERNATIONAL, INC.	$47,260,158
	MPC PRODUCTS CORPORATION	$45,202,799
	PERFEKTA INC	$44,899,440
	PALL AEROPOWER CORPORATION	$42,730,769
	SIERRACIN CORPORATION	$38,511,507
	GLOBE ENGINEERING CO., INC	$37,817,755
	ADVANCED INTEGRATION TECHNOLOGY LP	$37,328,164
	SARGENT AEROSPACE & DEFENSE, LLC	$34,500,587
	SENIOR OPERATIONS LLC	$33,959,272
	CO-OPERATIVE INDUSTRIES DEFENSE, LLC	$32,783,106
	GAMMA AEROSPACE LLC	$29,664,313
	JCM ENGINEERING CORP	$28,831,030
	CPI AEROSTRUCTURES INC	$26,986,480
	SPS TECHNOLOGIES LLC	$26,753,399
	GKN WESTLAND AEROSPACE, INC.	$26,488,633
	PIONEER AEROSTRUCTURES, LLC	$24,585,759
	K T ENGINEERING CORP	$22,877,827
	CARICH ENTERPRISES, INC.	$22,025,655
	MEGGITT DEFENSE SYSTEMS, INC.	$21,728,154
	MEGGITT SAFETY SYSTEMS INC	$21,160,089
	MODELS & TOOLS INC	$20,471,220
	AERO-GLEN INTERNATIONAL LLC	$19,796,218
	ADVANCED DEFENSE SOLUTIONS TECHNOLOGIES, LLC	$19,406,370
	AERO-TECH ENGINEERING INC	$19,246,025
	RUBBERCRAFT CORPORATION OF CALIFORNIA, LTD.	$19,232,982
	ACROMIL, LLC	$19,216,226
	STEICO INDUSTRIES, INC.	$18,123,341
	AMETEK THERMAL SYSTEMS INC	$17,111,864
	SHULTZ STEEL COMPANY	$16,807,013
	AERO CHIP, INC.	$16,663,982
	COHERENT AEROSPACE & DEFENSE, INC.	$16,166,841
	TE CONNECTIVITY CORPORATION	$16,007,988
	DESIGNED METAL CONNECTIONS INC	$15,659,553
	H.M. DUNN COMPANY INC	$15,573,210

UNITED STATES (top 100 suppliers by value)	H.M. DUNN COMPANY, INC.	$14,497,990
	GLOBAL TOOLING SYSTEMS, LLC	$14,292,480
	TEXSTARS LLC	$14,217,228
	KSARIA CORPORATION	$14,169,795
	ELBITAMERICA, INC.	$13,777,808
	MERCO MFG. CO.	$13,746,362
	AERO DYNAMIC MACHINING, INC	$13,730,012
	KIRKHILL INC.	$13,659,986
	ESSEX INDUSTRIES, INC.	$12,977,625
	MAROTTA CONTROLS INC	$12,503,473
	AERO CNC, INC	$12,213,586
	WHITCRAFT SOUTH WINDSOR LLC	$12,190,421
	L3HARRIS AVIATION PRODUCTS, INC	$12,039,704
	FMH AEROSPACE CORP.	$11,495,427

Works Cited

Action on Armed Violence. 2024. "Who is arming Israel? Other Global Exports to Israel." April 12. https://aoav.org.uk/2024/who-is-arming-israel-other-global-exports-to-israel.

Air & Cosmos - International. 2016. "Israel set to order 17 more F-35s." November 29. https://aircosmosinternational.com/article/israel-set-to-order-17-more-f-35s-1888.

AirForces Monthly. 2022. "Three more Israeli F-35I delivered." May. https://www.f-16.net/forum/download/file.php?id=37517&sid=1826126bfbaced1d71fe86590206a0b9&mode=view.

Akkad, Dania. 2024. "Legal battles loom over supply chain keeping Israeli F-35s flying over Gaza and Lebanon." Middle East Eye, October 4. https://www.middleeasteye.net/news/israel-US-f-35-global-supply-legal-spare-parts.

Alkousaa, Riham. 2024. "Germany has stopped approving war weapons exports to Israel, source says." Reuters, September 19. https://www.reuters.com/world/germany-has-stopped-approving-war-weapons-exports-israel-source-says-2024-09-18.

AMFG. 2024. "The Staggering Scale of the F-35 Supply Chain." July 22. https://amfg.ai/2024/07/22/the-staggering-scale-of-the-f-35-supply-chain.

Amnesty International. 2024a. "U.S.-Made Weapons Used by Government of Israel in Violation of International Law and U.S. Law." April 29. https://www.amnestyusa.org/press-releases/u-s-made-weapons-used-by-government-of-israel-in-violation-of-international-law-and-u-s-law.

———. 2024b. 'YOU FEEL LIKE YOU ARE SUBHUMAN': ISRAEL'S GENOCIDE AGAINST PALESTINIANS IN GAZA. file:///C:/Users/Wendy/Downloads/MDE1586682024ENGLISH.pdf.

"Arms Trade Treaty." Opened for signature June 3, 2013. The Arms Trade Treaty.org. https://thearmstradetreaty.org/hyper-images/file/ATT_English/ATT_English.pdf?templateId=137253.

Brehm, Maya and Eirini Giorgou. 2024. "Ensuring Respect for International Humanitarian Law in Arms-Transfer Decisions." Just Security. https://www.justsecurity.org/104127/international-humanitarian-law-arms-transfer.

Campaign Against Arms Trade. 2024a. ARMING GENOCIDE: *UK arms sales to Israel, the partial export licence suspension, and the F-35 exemption*. December. https://caat.org.uk/app/uploads/2024/10/CAAT-F35-briefing-update-v3.0.pdf.

———. 2024b. *The UK's partial suspension of arms export licences to Israel, and the F-35 exemption: a briefing*. https://caat.org.uk/app/uploads/2024/10/CAAT-F35-briefing-v4.2.pdf.

———. n.d. "UK Export Licence Data." https://caat.org.uk/data/exports-uk/faq.

Canales, Sarah Basford. 2024. "Australia amends or ends 16 defence export permits to Israel amid review." *The Guardian*, November 12. https://www.theguardian.com/australia-news/2024/nov/13/australia-amends-or-ends-16-defence-export-permits-to-israel-amid-review-ntwnfb.

Cornelisse, Galina. 2024. "How Europe Dodges the International Arms Control Regime." Verfassungsblog, March 7. https://verfassungsblog.de/how-europe-dodges-the-international-arms-control-regime.

Cops, Diederik. 2024. *PROJECT D-TECT: Countering the diversion of the components of conventional weapons. An assessment of potential technological solutions.* https://vlaamsvredesinstituut.eu/wp-content/uploads/2024/08/4010848-VVI-ANALYSE-02-DTECT-WEB.pdf.

Cosh, Alex. 2024. "What Mélanie Joly Said And Didn't Say About Israel Arms Exports." *The Maple*, September 12. https://www.readthemaple.com/what-melanie-joly-said-and-didnt-say-about-israel-arms-exports.

Deen, Thalif. 2023. "How the US made Israel's military what it is today." Responsible Statecraft, No-

vember 27. https://responsiblestatecraft.org/us-military-aid-israel-gaza-war.

Eastwood, Brent M. 2024. "The Air Force's Greatest Fear: Killing the F-35 Program." *The National Interest*. https://nationalinterest.org/blog/buzz/air-forces-greatest-fear-killing-f-35-program-208342.

ECA Academy. 2025. GMP search engine. https://www.gmp-compliance.org/gmp-news/us-track-trace-requirements.

Egosi, Arie and Colin Clark. 2019. "Lockheed Presses For Sale Of 75 F-35s To Israel; Boeing Touts F-15s." *Breaking Defense*, December 18. https://breakingdefense.com/2019/12/lockheed-presses-for-sale-of-75-f-35s-to-israel-boeing-touts-f-15s.

Fabian, Emanuel. 2024. "Israel inks deal to buy 25 more F-35 fighter jets for $3 billion." *The Times of Israel*, June 4. https://www.timesofisrael.com/israel-inks-deal-to-buy-25-more-f-35-fighter-jets-for-3-billion.

F-35 Lightning II JPO. n.d. "About us." https://www.jsf.mil/aboutus.

Gallagher, Kelsey 2023. *An Analysis of Canada's Reporting on Military Exports*. January. https://cdn.prod.website-files.com/63e066081ef50cb16a3f4157/63e066081ef50c7e5b3f42be_CanadianReportingPracticesJan.2022.pdf.

———. 2024. *Fanning the Flames: The grave risk of Canada's arms exports to Israel*. Project Ploughshares, January. https://cdn.prod.website-files.com/63e066081ef50cb16a3f4157/65a93fceed-d2a489c326fa7b_Fanning%20the%20Flames%20Report_Updated_Jan.18.24.pdf.

GOV.UK. 2024. "UK suspends around 30 arms export licences to Israel for use in Gaza over International Humanitarian Law concerns." September 2. https://www.gov.uk/government/news/uk-suspends-around-30-arms-export-licences-to-israel-for-use-in-gaza-over-international-humanitarian-law-concerns.

Grazier, Dan and Lucas Ruiz. 2024. "F-35: $2T in 'generational wealth' the military had no right to spend." Responsible Statecraft, August 20. https://responsiblestatecraft.org/biden-foreign-policy-2670880329.

Gross, Judah Ari. 2016. "First two F-35 jets en route to Israel." *The Times of Israel*, December 8. https://www.timesofisrael.com/first-two-f-35-jets-en-route-to-israel.

Grudo, Gideon. 2017. "The Israeli F-35s." WWW.AIRFORCEMAG.COM, April. https://www.airandspaceforces.com/PDF/MagazineArchive/Documents/2017/April%202017/0417_Grudo_Israeli.pdf#page=2.

Handicap International. 2023. *Blast Impacts: Looking into the Consequences of Explosive Weapons in Gaza*. December. https://www.hi-us.org/sn_uploads/document/FS-EWIPA-effects-Gaza-FINAL-Dec2023.pdf.

Hasson, Nir. 2024. "Gaza Death Toll Passes 45,000 Since War's Start, Hamas-run Health Ministry Says." *Haaretz*, December 16. https://www.haaretz.com/middle-east-news/2024-12-16/ty-article/.premium/gaza-death-toll-passes-45-000-since-wars-start-hamas-run-health-ministry-says/00000193-d05d-d3fc-a3b7-db7f90780000.

Hoehn, John R. 2022. *F-35 Joint Strike Fighter (JSF) Program*. Congressional Research Service, May 2. https://sgp.fas.org/crs/weapons/RL30563.pdf#page=14.

Hooper, Simon. 2024. "UK 'reviewing F-35 fighter jet and Israel arms licences', say campaigners." Middle East Eye, December 4. https://www.middleeasteye.net/news/uk-reviewing-f-35-fighter-jet-and-israel-arms-licences-say-campaigners.

Human Rights Watch. 2024. "Israeli Forces' Conduct in Gaza: Human Rights Watch and Oxfam Submission to Biden Administration's NSM-20 Process." March 19. https://www.hrw.org/news/2024/03/19/israeli-forces-conduct-gaza.

ICRC. 2024a. "Arms transfers to parties to armed conflict: what the law says." June 3. https://www.icrc.org/en/document/arms-transfers-parties-armed-conflict-what-law-says.

———. 2024b. INTERNATIONAL HUMANITARIAN LAW AND THE CHALLENGES OF CONTEMPORARY ARMED CONFLICTS: BUILDING A CULTURE OF COMPLIANCE FOR IHL TO PROTECT HUMANITY IN TODAY'S AND FUTURE CONFLICTS. https://www.icrc.org/en/report/2024-icrc-report-ihl-challenges.

———. 2024c. Statement by the International Committee of the Red Cross (ICRC) Arms Trade Treaty Working Group on Effective Treaty Implementation (WGETI) Sub-working Group on Articles 6 & 7. February 20. https://www.thearmstradetreaty.org/hyper-images/file/CRC%20statement_WGETI%20Sub-WG%20on%20Arts%206%20and%207/CRC%20statement_WGETI%20Sub-WG%20on%20Arts%206%20and%207.pdf.

IDF editorial team. 2016. "What you need to know about our new F-35." Israeli Air Force, December 12. https://www.idf.il/en/mini-sites/israeli-air-force/what-you-need-to-know-about-our-new-f-35.

Insinna, Valerie. 2018. "Lockheed gets $6B downpayment to start F-35 block buy." DefenseNews, November 14. https://www.defensenews.com/air/2018/11/14/lockheed-gets-6b-downpayment-to-start-f-35-block-buy.

King Jr., Samuel. 2011. "First F-35 arrives at Eglin." United States Air Force, July 15. https://www.af.mil/News/Article-Display/Article/112801/first-f-35-arrives-at-eglin.

Klare, Michael T. 2024. "Canada and UK Restrict Arms Sales to Israel Over Gaza War." *Arms Control Today*, October. https://www.armscontrol.org/act/2024-10/news/canada-and-uk-restrict-arms-sales-israel-over-gaza-war.

Lake, Jon. 2024. "F-35: the future of air dominance or a trillion -dollar trainwreck?" European Security & Defence. July 4. https://euro-sd.com/2024/07/major-news/39170/f-35-the-future-or-trainwreck.

Lockheed Martin Aeronautics Company. 2015 (original contract). PRIME SUPPLEMENTAL FLOWDOWN DOCUMENT (PSFD) ADDITIONAL TERMS AND CONDITIONS FOR SUBCONTRACTS/PURCHASE ORDERS UNDER LRIP 11 PRODUCTION CONTRACT – CONTRACT NUMBER N00019-16-C-0033. June 4. https://www.lockheedmartin.com/content/dam/lockheed-martin/aero/documents/scm/tandc/T-C-s--F-35-/N00019-16-C-0033_LRIP11_Production_Rev5.pdf.

———. 2022 (contract rev 5). PRIME SUPPLEMENTAL FLOWDOWN DOCUMENT (PSFD) ADDITIONAL TERMS AND CONDITIONS FOR SUBCONTRACTS/PURCHASE ORDERS UNDER Block Buy Lots 12-14 Production Contract N00019-17-C-0001. March 21. https://www.lockheedmartin.com/content/dam/lockheed-martin/aero/documents/scm/tandc/T-C-s--F-35-/n00019-17-c-0001/N00019-17-C-0001_PSFD_Rev5.pdf.

———. 2023 (contract rev 8). PRIME SUPPLEMENTAL FLOWDOWN DOCUMENT (PSFD) ADDITIONAL TERMS AND CONDITIONS FOR SUBCONTRACTS/PURCHASE ORDERS UNDER Prime Contract Number N00019-20-C-0009 (formally N00019-19-C-0062. May 30. https://www.lockheedmartin.com/content/dam/lockheed-martin/aero/documents/scm/tandc/T-C-s--F-35-/n00019-20-c-0009/PSFD_N00019-20-C-0009_Rev8.pdf.

Lockheed Martin Corporation. 2013 (original contract). PRIME SUPPLEMENTAL FLOWDOWN DOCUMENT (PSFD) ADDITIONAL TERMS AND CONDITIONS FOR SUBCONTRACTS/PURCHASE ORDERS UNDER N00019-13-C-0008 (LRIP 8). May 21. https://www.lockheedmartin.com/content/dam/lockheed-martin/aero/documents/scm/T-C-Archives/T-C-s--F-35--Archive/F35_PSFD_N00019-13-C-0008_20130521_LRIP_VIII.pdf.

———. 2014 (original contract). PRIME SUPPLEMENTAL FLOWDOWN DOCUMENT (PSFD) ADDITIONAL TERMS AND CONDITIONS FOR SUBCONTRACTS/PURCHASE ORDERS UNDER LRIP 9 F-35/JSF Production N00019-14-C-0002. May 5. https://www.lockheedmartin.com/content/dam/lockheed-martin/aero/documents/scm/tandc/T-C-s--F-35-/N00019-14-C-0002Rev3_11012020.pdf.

———. 2017. *F-35 Lightning II Program Status and Fast Facts*. March 21. https://mif35.org/wp-content/uploads/2017/03/F-35-Fast-Facts-Mar_2017-1.pdf.

———.2024a. "Romania Joins the F-35 Lightning II Program." F-35 Lightning II website, November 21. https://www.f35.com/f35/news-and-features/Romania-Joins-F-35-Lightning-II-Program.html.

———. 2024b. T&C's [F-35]. https://www.lockheedmartin.com/en-us/suppliers/business-area-pro-

curement/aeronautics/terms-and-conditions/terms-and-conditions-f-35.html.

Losey, Stephen. 2024. "F-35s to cost $2 trillion as Pentagon plans longer use, says watchdog." *DefenseNews*, April 15. https://www.defensenews.com/air/2024/04/15/f-35s-to-cost-2-trillion-as-pentagon-plans-longer-use-says-watchdog.

Oxfam International. 2024. *Inflicting Unprecedented Suffering and Destruction*. March 15. https://webassets.oxfamamerica.org/media/documents/Oxfam-inflicting-unprecedented-suffering-and-destruction-150324-en_GKMWw3T.pdf.

Panella, Chris. 2024. "The US F-35 stealth fighter fleet has a readiness problem that 6 years and over $12 billion haven't fixed, watchdog finds." Business Insider, October 22. https://www.businessinsider.com/us-f-35-stealth-fighter-failed-mission-capable-goals-watchdog-2024-10.

Pappalardo, Joe. 2014. "Inside the Plant Where Lockheed Builds the F-35." *Popular Mechanics*, September 8. https://www.popularmechanics.com/military/g8/inside-the-plant-where-lockheed-builds-the-f-35.

Phantom Aviation. 2021. *F-35 Lightning II.* July. https://www.phantomaviation.nl/Manufacturer/Lockheed-Martin/Aircraft/F-35-02-Production-lots.htm.

Reuters. 2018. "Israel says it is the first country to use U.S.-made F-35 in combat." May 22. https://www.reuters.com/article/world/israel-says-it-is-the-first-country-to-use-us-made-f-35-in-combat-idUSKCN1IN0OI.

———. 2024a. "Canadian freeze on new arms export permits to Israel to stay." March 20. https://www.reuters.com/world/canadian-freeze-new-arms-export-permits-israel-stay-2024-03-20.

———. 2024b. "Italy arms exports to Israel continued despite block, minister says." March 14. https://www.reuters.com/world/europe/italy-arms-exports-israel-continued-despite-block-minister-says-2024-03-14.

Reuters *Fact Check. 2024. Fact Check: Graph suggesting low Gaza air strike casualty rate misrepresents data*. Reuters, January 29. https://www.reuters.com/fact-check/graph-suggesting-low-gaza-air-strike-casualty-rate-misrepresents-data-2024-01-29.

Romaniello, Federica. 2020. "F-35: Which Countries Use The Aircraft?" BFBS Forces News, September 16. https://www.forcesnews.com/news/f-35-which-countries-use-aircraft.

Rose, Sunniva. 2024. "Legal challenge to Dutch government over 'loopholes' in export ban on F-35 parts." *The National,* September 27. https://www.thenationalnews.com/news/2024/09/27/dutch-government-faces-legal-challenge-over-loopholes-in-ban-on-exporting-f-35-jet-parts-to-israel.

Spray, Aaron. 2024a. "A Closer Look At Key Issues With The US F-35 Program." Simple Flying, November 4. https://simpleflying.com/key-issues-us-f-35-program/#:~:text=Earlier%20this%20year%2C%20F%2D35s,purchasing%20over%201%2C700%20of%20them.

———. 2024b. "How Many F-35 Adir Fighter Jets Has Israel Bought From US?" Simple Flying, October 5. https://simpleflying.com/how-many-f-35-adir-fighter-jets-israel-bought-us/#:~:text=Israel%20has%20so%20far%20received,production%20of%20aircraft%20components%20sold.%22.

TERMA. 2025. "GLOBAL SUPPLIER TO THE F-35 LLIGHTNING II." https://www.terma.com/who-we-are/cases/f-35-joint-strike-fighter.

The Brussels Times. 2024. "Wallonia bans transit of all arms towards Israel." May 28. https://www.brusselstimes.com/1064804/wallonia-bans-transit-of-all-arms-towards-israel.

The New Arab. 2024. "Spain freezes arms sales and purchases to Israel over Gaza." October 24. https://www.newarab.com/news/spain-freezes-arms-sales-and-purchases-israel-over-gaza.

Tirpak, John A. 2019. "Lockheed Opens Negotiations on F-35 Lots 12–14, Aiming Below $80 Million Each." AIR&SPACE FORCES MAGAZINE, May 3. https://www.airandspaceforces.com/lockheed-opens-negotiations-on-f-35-lots-12-14-aiming-below-80-million-each.

———. 2024. "F-35 Program Office Have Handshake Deal on Next Two Lots." *Air & Space Forces Magazine*, November 21. https://www.airandspaceforces.com/lockheed-f-35-program-office-lots-18-19.

Trittenbach, Johanna, Jessica Dorsey, and Otto Spijkers. 2024. "Dutch Appeals Court Blocks Deliveries of F-35 Parts to Israel: Overview, Analysis and Initial Reflections." OpinioJuris, February 15. https://opiniojuris.org/2024/02/15/dutch-appeals-court-blocks-deliveries-of-f-35-parts-to-israel-overview-analysis-and-initial-reflections.

UN. 2024. "As Israel's Aerial Bombardments Intensify, 'There Is No Safe Place in Gaza', Humanitarian Affairs Chief Warns Security Council." Meetings coverage Security Council, January 12. https://press.un.org/en/2024/sc15564.doc.htm.

UN General Assembly. 2024. Annual report of the United Nations High Commissioner for Human Rights and reports of the Office of the High Commissioner and the Secretary-General. A/HRC/55/28, March 4. https://documents.un.org/doc/undoc/gen/g24/023/38/pdf/g2402338.pdf.

UN Office of the High Commissioner for Human Rights. 2024a. "Gaza: ICJ ruling offers hope for protection of civilians enduring apocalyptic conditions, say UN experts." January 31. https://www.ohchr.org/en/press-releases/2024/01/gaza-icj-ruling-offers-hope-protection-civilians-enduring-apocalyptic.

———. 2024b. "States and companies must end arms transfers to Israel immediately or risk responsibility for human rights violations: UN experts." June 20. https://www.ohchr.org/en/press-releases/2024/06/states-and-companies-must-end-arms-transfers-israel-immediately-or-risk.

———. 2024c. "UN Commission finds war crimes and crimes against humanity in Israeli attacks on Gaza health facilities and treatment of detainees, hostages." October 10. https://www.ohchr.org/en/press-releases/2024/10/un-commission-finds-war-crimes-and-crimes-against-humanity-israeli-attacks.

U.S. Department of State. 2025. *U.S. Security Cooperation with Israel.* January 20. https://www.state.gov/u-s-security-cooperation-with-israel.

USAspending.gov. 2013 (contract start date). Definitive Contract PIID N0001913C0008. February 28. https://www.usaspending.gov/award/CONT_AWD_N0001913C0008_9700_-NONE-_-NONE-.

———. 2014 (contract start date). Definitive Contract PIID N0001914C0002. March 19. https://www.usaspending.gov/award/CONT_AWD_N0001914C0002_9700_-NONE-_-NONE-.

———. 2015a (contract start date). Definitive Contract PIID N0001915C0003. May 26. https://www.usaspending.gov/award/CONT_AWD_N0001915C0003_9700_-NONE-_-NONE-.

———. 2015b (contract start date). Definitive Contract PIID N0001916C0033. December 21. https://www.usaspending.gov/award/CONT_AWD_N0001916C0033_9700_-NONE-_-NONE-.

———. 2017 (contract start date). Definitive Contract PIID N0001917C0001. November 17. https://www.usaspending.gov/award/CONT_AWD_N0001917C0001_9700_-NONE-_-NONE-.

———. 2019 (contract start date). Definitive Contract PIID N0001920C0009. November 26. https://www.usaspending.gov/award/CONT_AWD_N0001920C0009_9700_-NONE-_-NONE-.

———. 2025. https://www.usaspending.gov.

Wood, Daniel. 2024. "These maps and images show what's left of Gaza, 1 year into the Israel-Hamas war." NPR, October 10. https://www.npr.org/2024/10/09/g-s1-27175/israel-hamas-war-gaza-map#:~:text=Recent%20analyses%20find%20that%20nearly,or%20destroyed%20by%20the%20conflict.

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