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Canada

# State of Canada's Defence Industry Report

Spring 2024



# Objective: Develop relevant, quality and timely strategic information on Canadian production of defence goods and services to brief policy and industry decision makers

- Canada is the first country from the Organisation for Economic Co-operation and Development (OECD) and North Atlantic Treaty Organization (NATO) to conduct an in-depth Government statistical agency survey on defence industry capabilities
- This report is supported by a multi-year collaborative analytics agreement between Innovation, Science and Economic Development Canada (ISED) and the Canadian Association of Defence and Security Industries (CADSI)



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- This report presents a statistical overview of Canadian defence industry activities in 2022, based on the most recent data available
  - It also provides a comparative analysis into the state of the Canadian defence industry between 2020 and 2022
- The next iteration of the biennial survey will measure 2024 industrial activities
  - Statistics Canada's publication of 2024 data is scheduled for 2026

# Report Development Process

## **1. Stakeholder Engagement (May 2022 – December 2022)**

- Consultation with industry and government stakeholders and policy decision-makers on their priority data requirements
- Development, field testing, and refinement of new survey questions
- Verification of priority firms and key contact information with industry association partners

## **2. Data Development (January 2023 – January 2024)**

- Administration of ISED-sponsored Statistics Canada biennial survey
  - Distribution of survey questionnaire by Statistics Canada
  - Completion of the survey is a legal requirement under the *Statistics Act*
- Outreach to membership by industry association partners to encourage firms' participation
- Validation of data quality and imputation of firm-level data based on Government of Canada administrative data and independent subject matter expert data sources

## **3. Research & Analysis (February 2024 – June 2024)**

- Modelling of total economic impact (i.e. GDP\* and jobs contributions)
  - Methodology principles informed by experts at the OECD and Statistics Canada\*\*
- Preparation of customized tabulations data tables by Statistics Canada
- Review of results with CADSI's Industry Advisory Committee
- Joint release of the report by ISED and CADSI

\* Gross Domestic Product (GDP) is the total unduplicated value of the goods and services produced in the economic territory of a country or region during a given period.

\*\* See Annex 1 for detailed methodology principles.

# Report Overview



Key Industrial Indicators,  
% Change, 2020–2022



Economic Impact



Key Industrial Indicators  
by Firm Size



Key Industrial Indicators  
by Domain



Regional Breakdown



Gender Breakdown by  
Occupation



Skills & STEM



Innovation



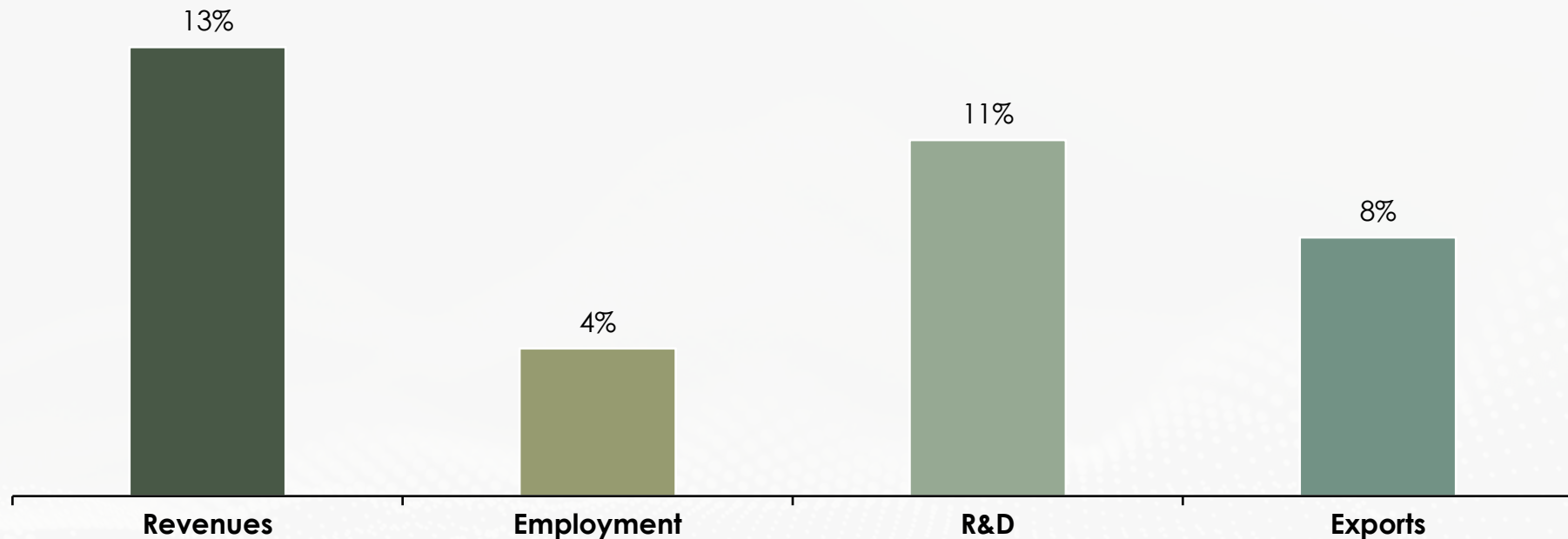
Global Supply Chains



Exports

Between 2020 and 2022, the Canadian defence industry's revenues, employment, R&D\* and exports grew

### Canadian Defence Industry Key Industrial Indicators\*\*, % Change, 2020–2022

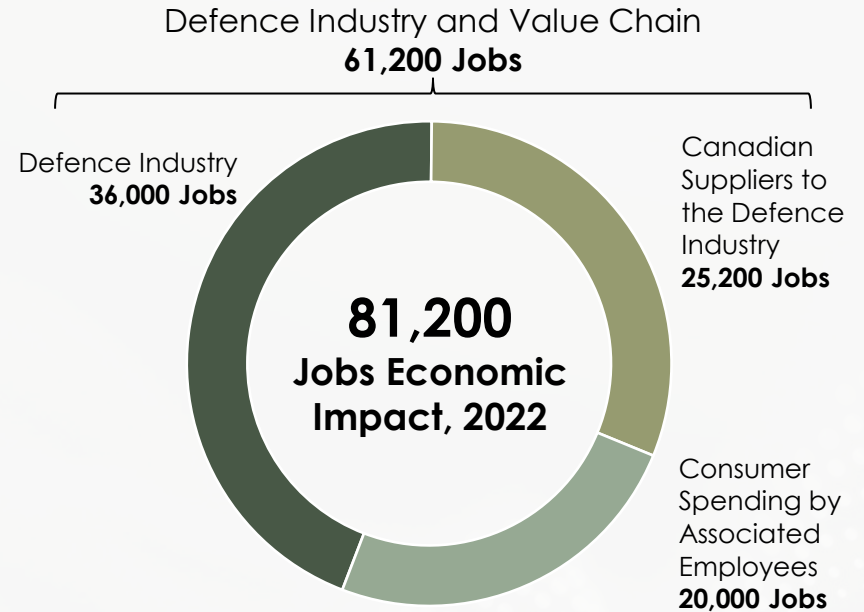
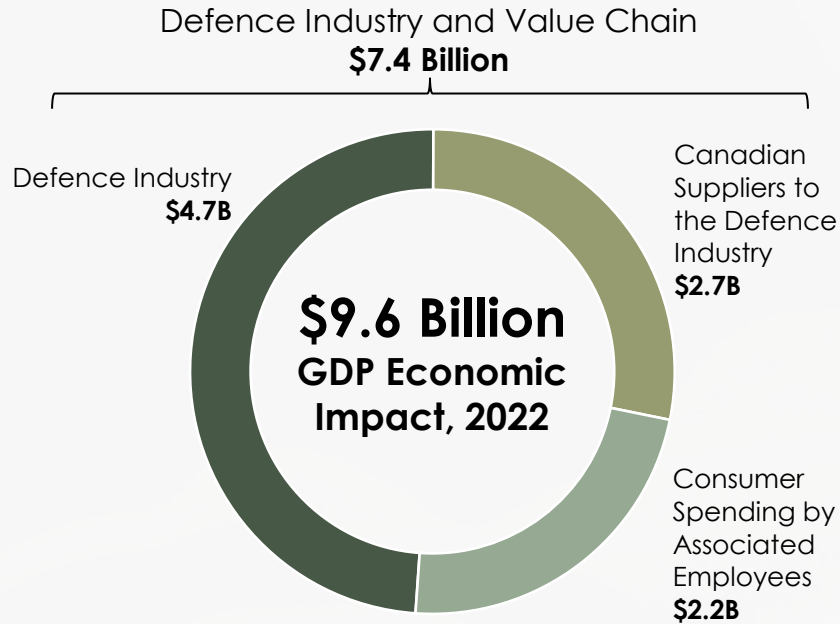


\* Research & Development (R&D) expenditures relate to businesses' in-house R&D.

\*\* Financial values are in nominal/current terms and are not adjusted for inflation. See Annex 2 for a comparative analysis of Canadian defence industry key industrial indicators between 2014 and 2022.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2020 and 2022), 2022 survey released in 2024.

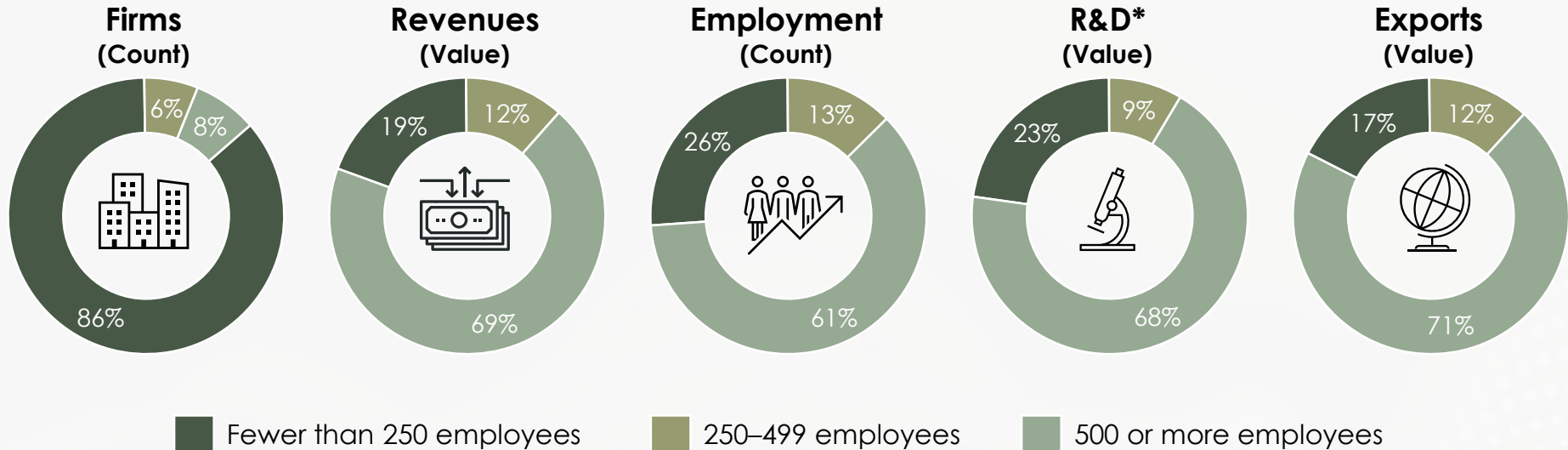
In 2022, the Canadian defence industry contributed over \$9.6B in GDP and 81,200 jobs to the Canadian economy\*



- Between 2020 and 2022, the Canadian defence industry's contribution to the Canadian economy increased by close to \$450 million in GDP and 3,600 jobs

\* Excludes the economic impact of business activities undertaken through the Industrial and Technological Benefits (ITB) Policy that were not involved in Canadian defence industry production. See Annex 1 for detailed methodology principles and Annex 3 for a comparative analysis of Canadian defence industry economic impacts between 2020 and 2022.  
Source: ISED economic model estimates based on Statistics Canada's 2019 Input-Output (I/O) multipliers, 2024; Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2020 and 2022), 2022 survey released in 2024.

# In 2022, firms with fewer than 250 employees represented over 85% of firms in the Canadian defence industry



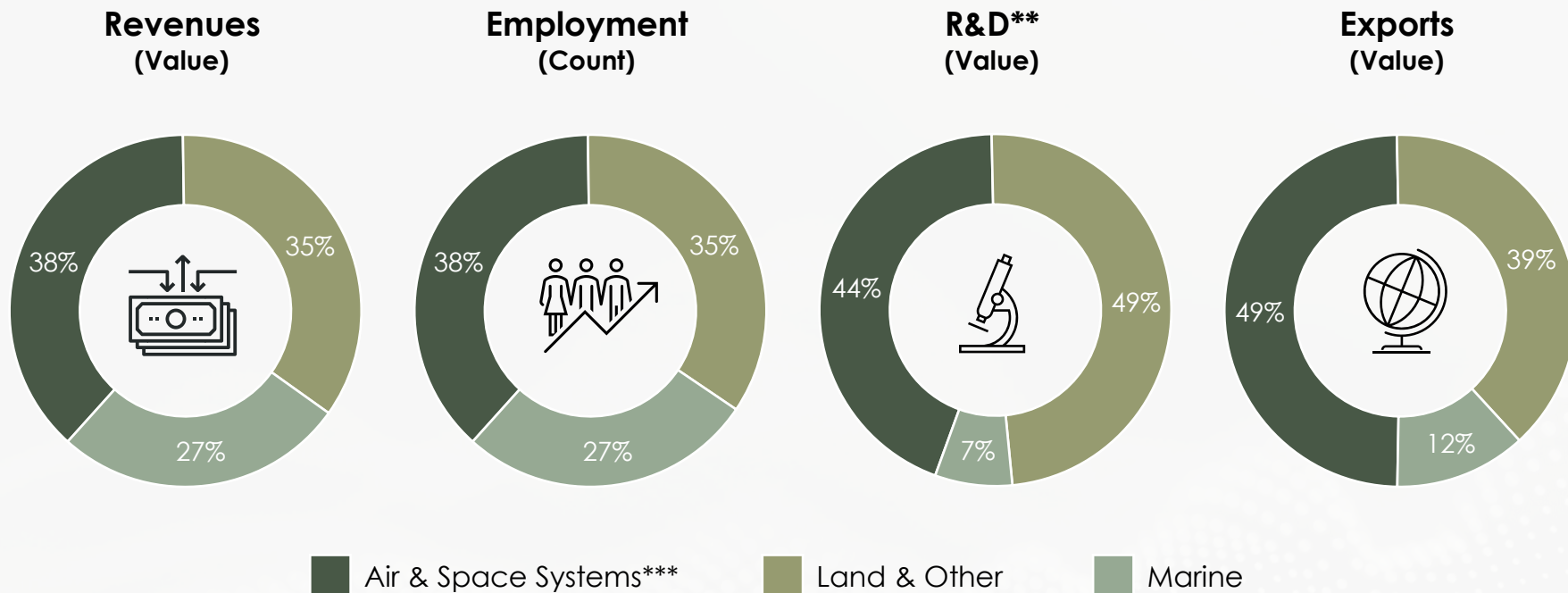
- Firms with 500 or more employees accounted for over 60% of the Canadian defence industry's revenues, employment, R&D and exports
- Firms with 250-499 employees represented less than 15% of revenues, employment, R&D and exports

\* Research & Development (R&D) expenditures relate to businesses' in-house R&D.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2022), released in 2024.



In 2022, the Canadian defence industry generated over \$14.3B in revenues from its more than 585 firms across all three domains\*



\* The grouping of defence goods and services categories by 'domain' is determined here by the platform type to which they relate. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain, Annex 2 for a comparative analysis of Canadian defence industry key industrial indicators between 2014 and 2022, and Annex 4 for a comparative analysis of category-level defence goods and services revenues by domain between 2020 and 2022.

\*\* Research & Development (R&D) expenditures relate to businesses' in-house R&D.

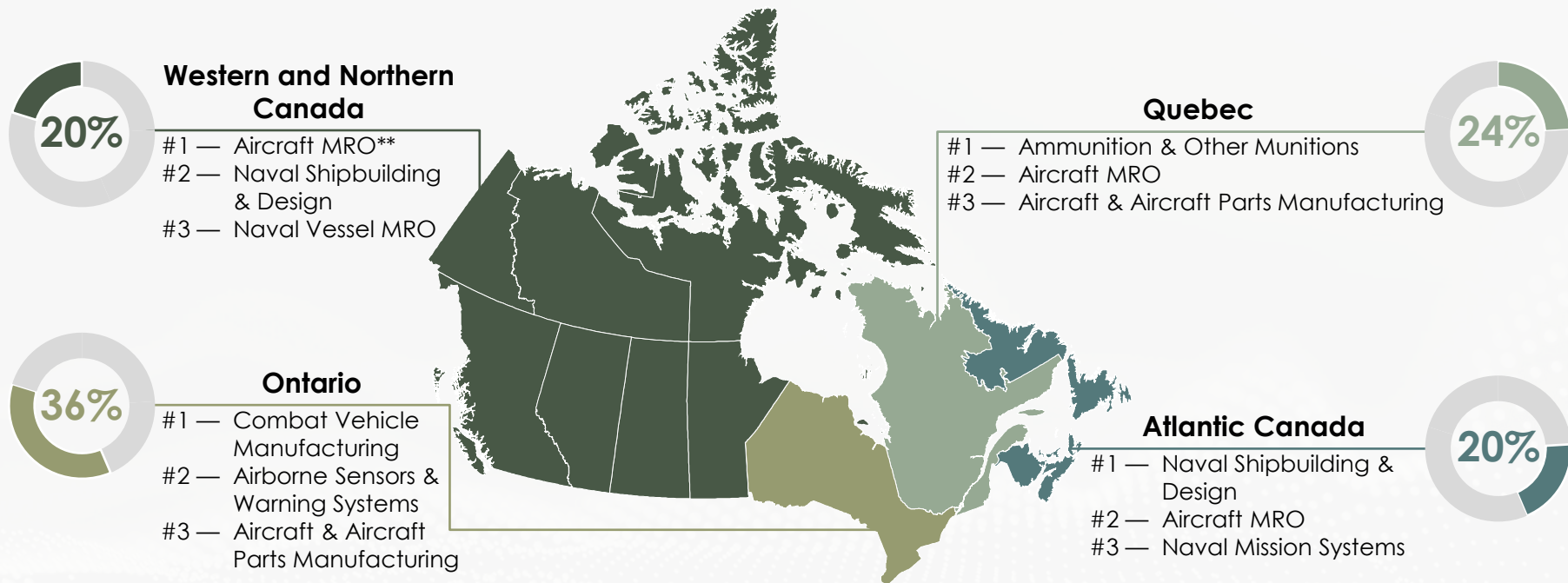
\*\*\* The survey's measurement of 'Space Systems' is narrower in scope than the broader concept of the 'Space Sector' as measured by the Canadian Space Agency (CSA).

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2022), released in 2024.



# Each region had specific areas of strength in 2022

## Share of Canadian Defence Industry Employment\* and List of Top Defence Activities by Region, 2022

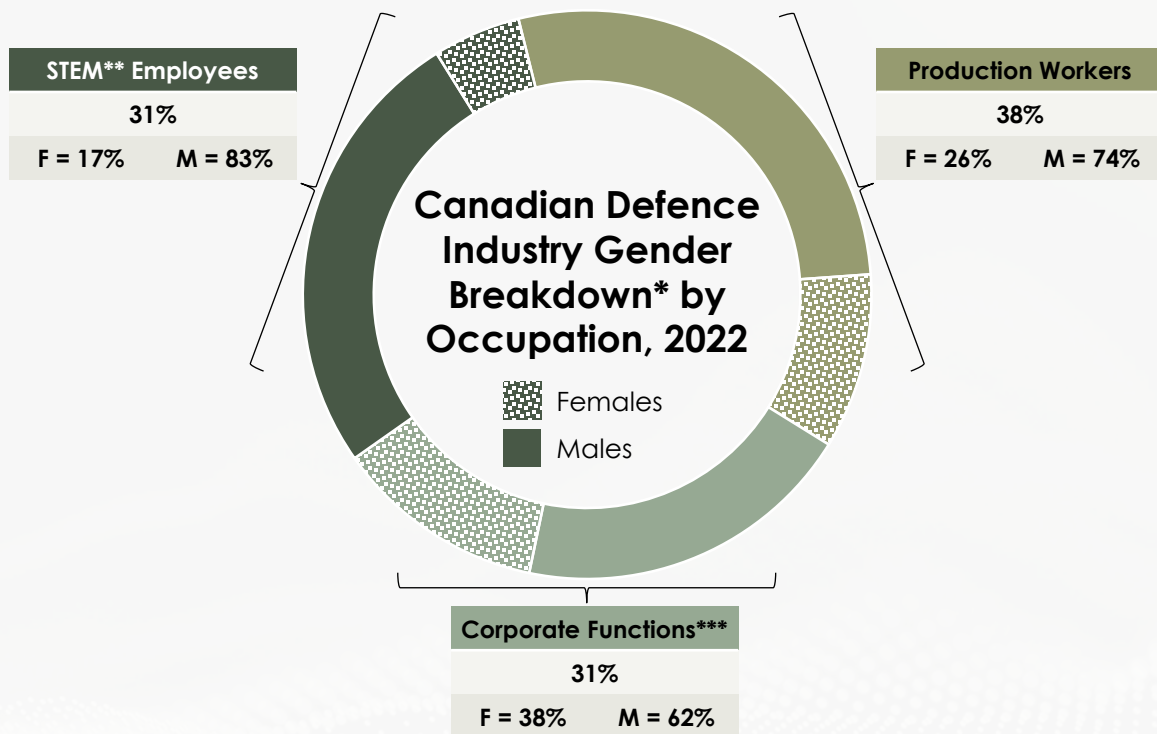


\* Shares of employment by region are based on businesses that specified their regional employment breakdown and reflect the 36,000 direct employees in the Canadian defence industry. See Annex 5 for the Top 10 regional defence activities, ranked by employment, and Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

\*\* Maintenance, Repair and Overhaul (MRO)

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

In 2022, the share of female employees in the Canadian defence industry was comparable to the broader manufacturing sector



Share of Female Employees by Occupation		
Occupation	Canadian Defence Industry	Broader Manufacturing Sector
STEM Employees	17%	21%
Production Workers	26%	23%
Corporate Functions	38%	53%
<b>TOTAL</b>	<b>27%</b>	<b>29%</b>

\* Gender breakdown reflects the 36,000 direct employees in the Canadian defence industry.

\*\* Science, Technology, Engineering, and Mathematics (STEM) occupations include survey categories on engineers, scientists and/or researchers, and technicians and technologists.

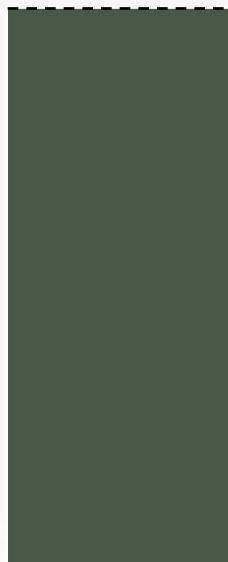
\*\*\* Corporate functions include occupations in management, administration, marketing, and all other employees.

Source: ISED custom tabulations based on Statistics Canada's Labour Force Survey (2022), 2024; Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022), released in 2024.

In 2022, the Canadian defence industry's share of employment in STEM\* occupations was over 2.5X greater than the broader manufacturing sector

### Share of Employees in STEM Occupations, 2022

31%



2.5X

12%



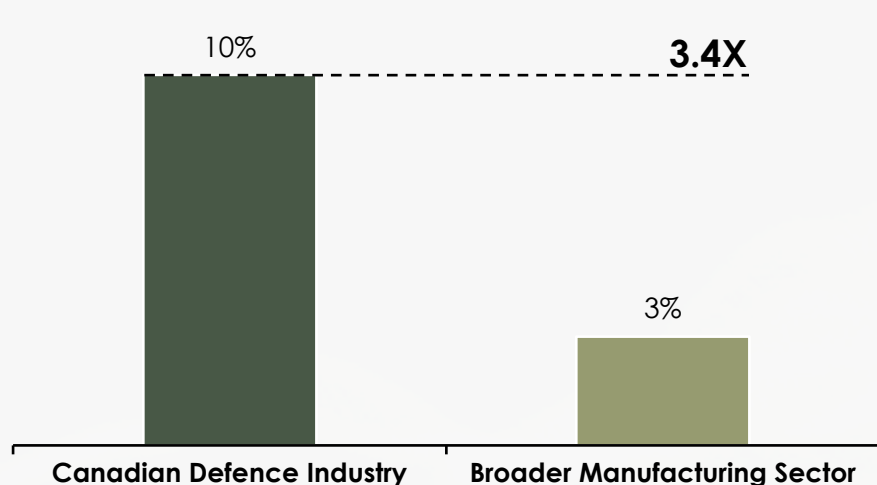
**Canadian Defence Industry**

**Broader Manufacturing Sector**

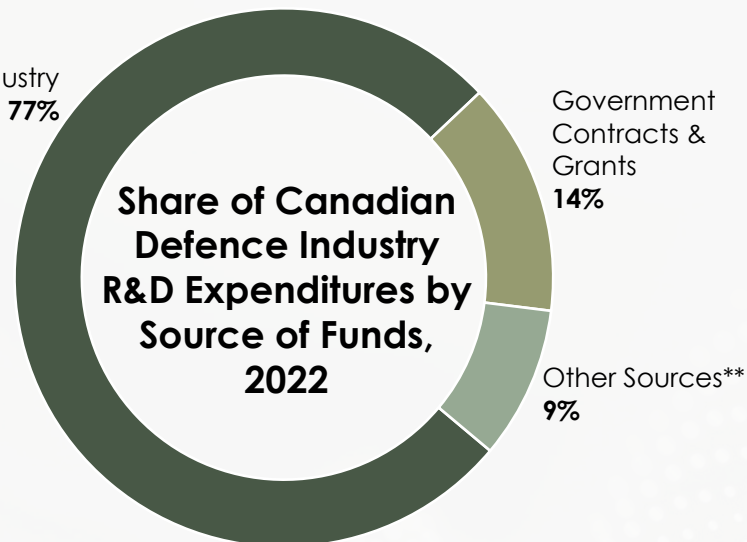
\* Science, Technology, Engineering, and Mathematics (STEM) occupations include survey categories on engineers, scientists and/or researchers, and technicians and technologists.  
Source: ISED custom tabulations based on Statistics Canada's *Labour Force Survey (2022)*, 2024; Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

In 2022, the Canadian defence industry was over 3X more R&D-intensive\* than the broader manufacturing sector

### R&D Intensity, 2022



Defence Industry  
77%



- In 2022, the Canadian defence industry performed over \$440M of R&D
  - 77% funded by industry and 14% by Canadian government sources

\* Research & Development (R&D) expenditures relate to businesses' in-house R&D. Industry-level R&D intensity is measured as the ratio of R&D performed by a given industry or sector relative to its own GDP. At the level of individual defence goods and services categories, R&D to GDP ratios are not available. Instead, see Annex 6 for category-level defence goods and services R&D to revenues ratios, and see Annex 1 for detailed methodology principles.

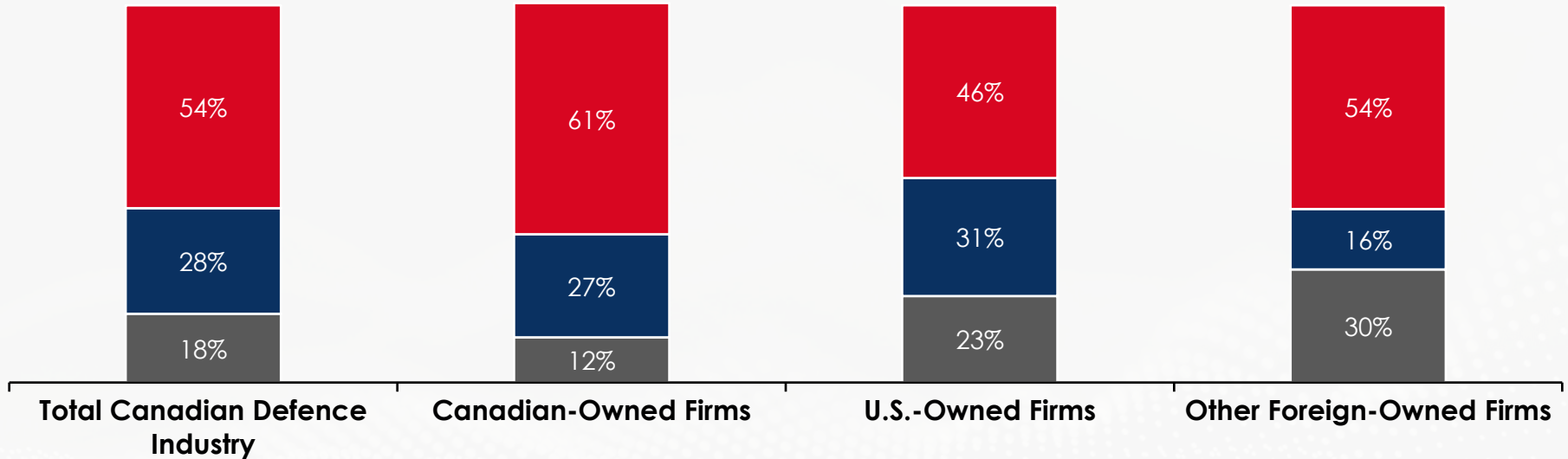
\*\* Other sources may include universities, foreign governments, individuals, etc.

Source: ISED custom tabulations based on Statistics Canada's Table 27-10-0333-01, 27-10-0344-01, 36-10-0222-01, 36-10-0223-01, and 36-10-0402-01 (all released in 2023), 2024; ISED economic model estimates based on Statistics Canada's 2019 Input-Output (I/O) multipliers, 2024; Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2022), released in 2024.

In 2022, close to 55% of Canadian defence industry supply chain expenditures\* were with Canadian-based suppliers

### Share of Canadian Defence Industry Supply Chain Expenditures by Supplier Location, 2022

Canadian Suppliers U.S. Suppliers Suppliers from Other Countries

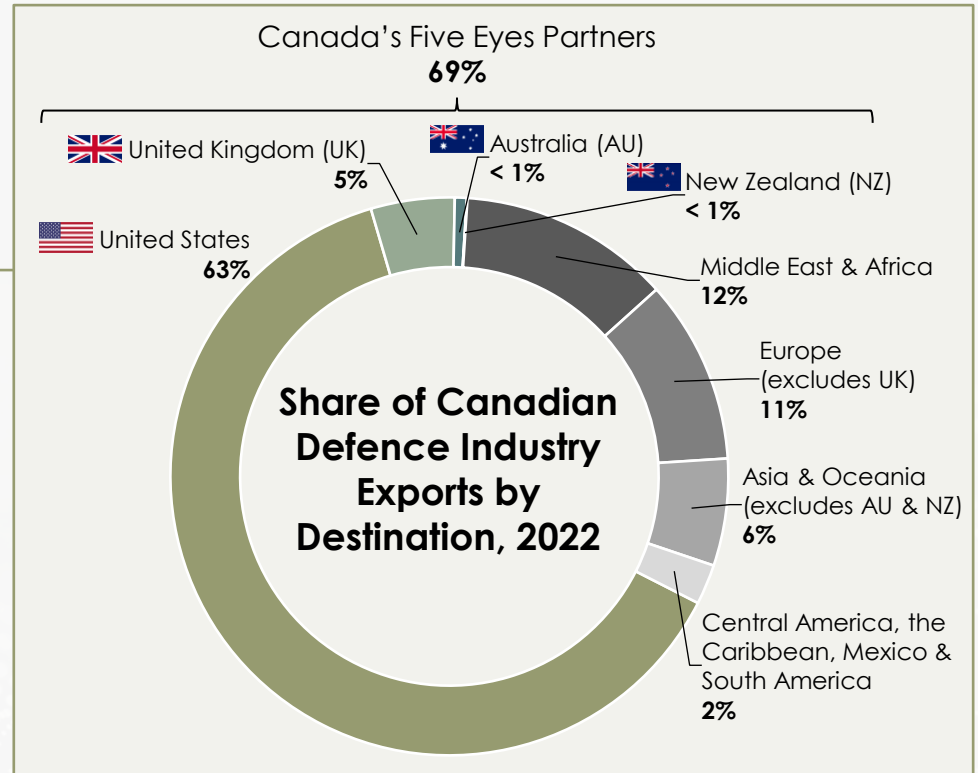
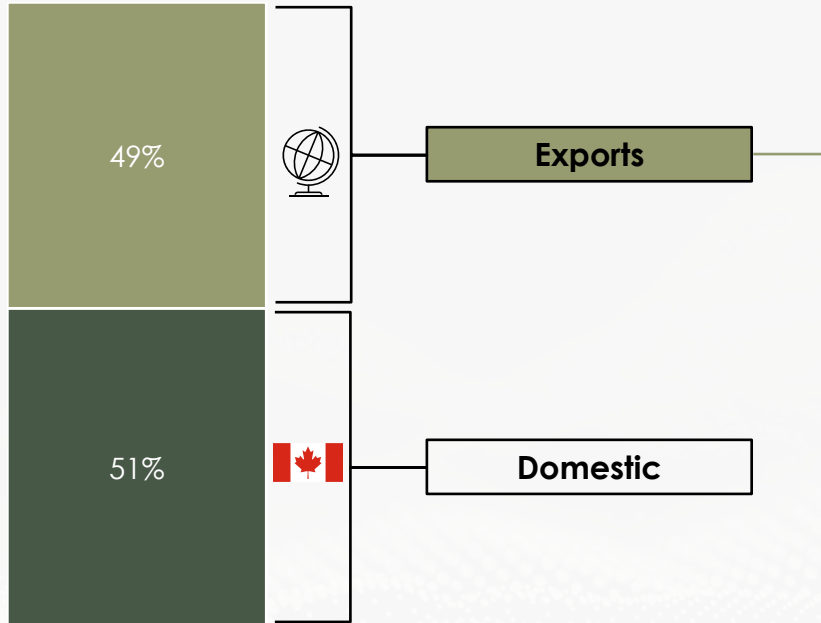


- Canadian-owned firms used domestic suppliers more than foreign-owned firms

\* This reflects the subset of operating expenditures related to the purchase of mainly raw materials and components that are more directly used for/in manufacturing processes.  
Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2022), released in 2024.

In 2022, the Canadian defence industry exported\* over \$7.0B in goods and services, of which close to 70% was to Canada's Five Eyes partners

### Share of Canadian Defence Industry Revenues, 2022



\* See Annex 7 for a comparative analysis of Canadian defence industry exports by destination between 2020 and 2022 and Annex 8 for category-level defence goods and services exports to revenues ratios, ranked by export intensity.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2022), released in 2024.

# Key Findings

In 2022, the Canadian defence industry:

- Grew across all key industrial indicators between 2020 and 2022
- Generated over \$14.3B in revenues from its more than 585 firms across all three domains
- Contributed over 81,200 jobs to the Canadian economy
  - An increase of close to 3,600 jobs between 2020 and 2022
- Was national in scope, with regional specializations
- Was over 2.5X more STEM-intensive and over 3X more R&D-intensive than the broader manufacturing sector
- Had close to 55% of its supply chain expenditures with Canadian-based suppliers
- Exported over \$7.0B in goods and services, of which close to 70% was to Canada's Five Eyes partners



# Annexes

**Annex 1** – Economic Impact Methodology Principles

**Annex 2** – Canadian Defence Industry Key Industrial Indicators (2014 vs. 2022)

**Annex 3** – Canadian Defence Industry Economic Impact (2020 vs. 2022)

**Annex 4** – Revenues of Defence Goods and Services Categories by Domain (2020 vs. 2022)

**Annex 5** – Top 10 Regional Defence Activities, Ranked by Employment (2022)

**Annex 6** – R&D to Revenues Ratios of Defence Goods and Services Categories (2022)

**Annex 7** – Canadian Defence Industry Exports by Destination (2020 vs. 2022)

**Annex 8** – Exports' Share of Revenues, Defence Goods and Services Categories Ranked by Export Intensity (2022)

**Annex 9** – Official Definitions of Defence Goods and Services Categories by Domain

# Annex 1 – Economic Impact Methodology Principles

- ISED's approach is informed by experts from the Organisation for Economic Co-operation and Development (OECD) and Statistics Canada.
- Foundation data from Statistics Canada's latest (2022) *Canadian Defence, Aerospace, Marine, and Cybersecurity Industries Survey*, released in 2024.
- ISED's model reflects the economic structure of Canada through Statistics Canada's 2019 Input-Output (I/O) economic impact multipliers.
  - **NOTE:** While ISED normally uses the most current multipliers, the latest (2020) multipliers were not used due to Statistics Canada guidance which indicates that:
    - Due to the COVID-19 pandemic in 2020, the structure of the economy was significantly altered. The 2020 I/O multipliers and I/O models should be used for analysis of economic impacts that occurred in 2020. For economic impact analysis for more current periods, the 2019 I/O multipliers and models may be considered as more reflective of current economic structures.
  - Defence activities (i.e. each defence industry goods and services category) have been linked to the closest related and most relevant specific economic impact multiplier(s).
- Total economic impact includes activities that occur within the Canadian defence industry (direct economic impact from survey participants), its Canadian suppliers (indirect economic activity from the Canadian defence industry's value chain partners), and consumer spending by associated employees (induced economic activity) across the Canadian economy.
  - GDP impact is reported on an annual average basis.
  - Jobs impact is reported on an annual average basis and measured in terms of full-time equivalent (FTE) employment.
  - Economic impact estimates are reported at the national level and cannot be broken down at the regional level.
- All values are in Canadian nominal/current dollars.

## Annex 2 – Canadian Defence Industry Key Industrial Indicators\* (2014 vs. 2022)

Key Industrial Indicator	2014	2022	% Change 2014–2022
<b>Revenues</b>	\$9,231,524,542	\$14,310,628,198	55%
<b>Employment (Number of Jobs)</b>	26,857	36,016	34%
<b>R&amp;D** (2016 vs. 2022)</b>	\$398,848,412	\$443,592,739	11%
<b>Exports</b>	\$5,509,665,830	\$7,039,146,000	28%

\* Financial values are in nominal/current terms and are not adjusted for inflation. Estimates related to 2014 defence industry activities are based on updated 2014 data, which reflect the necessary revisions that occurred after Statistics Canada's original data release and ISED-CADSI's 2016 publication of the *State of Canada's Defence Industry, 2014* report.

\*\* Research & Development (R&D) expenditures relates to businesses' in-house R&D. Defence industry R&D expenditures from 2014 could not be used for comparisons over time, with the 2016 value used instead. Among firms accounting for 50.1% of 2014 defence industry revenues, it could not be determined if they performed in-house R&D and/or the value of such spending. The 2014 R&D value is more likely to notably understate actual R&D in that year and cannot be regarded as statistically representative of the overall defence industry with sufficient confidence.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2014, 2016 and 2022), 2022 survey released in 2024.

## Annex 3 – Canadian Defence Industry Economic Impact\* (2020 vs. 2022)

<b>GDP Economic Impact (Millions of Dollars)</b>	<b>2020</b>	<b>2022</b>
Defence Industry	\$4,420	\$4,657
Canadian Suppliers to the Defence Industry	\$2,567	\$2,744
<b>Defence Industry and Value Chain</b>	<b>\$6,987</b>	<b>\$7,401</b>
Consumer Spending by Associated Employees	\$2,199	\$2,234
<b>Total GDP Economic Impact</b>	<b>\$9,186</b>	<b>\$9,635</b>
<b>Jobs Economic Impact (Number of Employees)</b>	<b>2020</b>	<b>2022</b>
Defence Industry	34,500	36,000
Canadian Suppliers to the Defence Industry	23,500	25,200
<b>Defence Industry and Value Chain</b>	<b>58,000</b>	<b>61,200</b>
Consumer Spending by Associated Employees	19,600	20,000
<b>Total Jobs Economic Impact</b>	<b>77,600</b>	<b>81,200</b>

\* Excludes the economic impact of business activities undertaken through the Industrial and Technological Benefits (ITB) Policy that were not involved in Canadian defence industry production. See Annex 1 for detailed methodology principles.

Source: ISED economic model estimates based on Statistics Canada's 2019 Input-Output (I/O) multipliers, 2024; Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2020 and 2022), 2022 survey released in 2024.

# Annex 4 – Revenues\* of Defence Goods and Services Categories by Domain\*\* (2020 vs. 2022)

Air & Space Systems*** Defence Goods and Services Categories	2020 Revenues	2022 Revenues	\$ Value* Change 2020–2022	% Change 2020–2022
Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$1,339,505,777	\$2,079,143,232	\$739,637,455	55.22%
Aircraft Fabrication, Structures and Components	\$1,416,086,478	\$1,445,924,277	\$29,837,799	2.11%
Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components	\$994,181,470	\$1,071,151,042	\$76,969,572	7.74%
Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$377,610,671	\$375,868,525	-\$1,742,146	-0.46%
Simulation Systems for Aircraft	\$235,430,669	\$238,783,900	\$3,353,231	1.42%
Unmanned Aerial Systems and Vehicles (UAS/V) and Components	\$63,556,985	\$168,930,867	\$105,373,882	165.79%
Military Systems Deployed in Space, Space Launch Vehicles, Land-based Systems for the Operation, Command and Control of Space Launch Vehicles or Systems Deployed in Space, and Related Components	\$70,704,636	\$73,943,779	\$3,239,143	4.58%
<b>Total Air &amp; Space Systems*** Revenues</b>	<b>\$4,497,076,686</b>	<b>\$5,453,745,622</b>	<b>\$956,668,936</b>	<b>21.27%</b>
<b>Total Defence Revenues</b>	<b>\$12,612,286,611</b>	<b>\$14,310,628,198</b>	<b>\$1,698,341,587</b>	<b>13.47%</b>

\* Financial values are in nominal/current terms and are not adjusted for inflation.

\*\* The grouping of defence goods and services categories by 'domain' is determined here by the platform type to which they relate. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

\*\*\* The survey's measurement of 'Space Systems' is narrower in scope than the broader concept of the 'Space Sector' as measured by the Canadian Space Agency (CSA).

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2020 and 2022), 2022 survey released in 2024.

# Annex 4 – Revenues\* of Defence Goods and Services Categories by Domain\*\* (2020 vs. 2022) (cont.)

Land & Other Defence Goods and Services Categories	2020 Revenues	2022 Revenues	\$ Value* Change 2020–2022	% Change 2020–2022
Combat and Other Military Ground Vehicles and Components	\$2,131,512,853	\$1,975,060,892	-\$156,451,961	-7.34%
Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$507,845,649	\$621,696,087	\$113,850,438	22.42%
Ammunition and Other Munitions	\$408,365,530	\$528,584,986	\$120,219,456	29.44%
Other Defence	\$636,232,827	\$528,186,410	-\$108,046,417	-16.98%
Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components	\$332,564,053	\$406,993,358	\$74,429,305	22.38%
Military Training Services	\$355,998,765	\$365,918,369	\$9,919,604	2.79%
Military Personal Protective Equipment, Load Carriage Systems and Operational Clothing	\$166,503,552	\$198,234,077	\$31,730,525	19.06%
Combat and Other Military Ground Vehicles Maintenance, Repair, Overhaul, Modernization and Upgrade Services	\$303,021,503	\$181,838,574	-\$121,182,929	-39.99%
Missiles and Rockets	\$126,891,803	\$104,774,592	-\$22,117,211	-17.43%
Firearms and Other Weapons	\$106,350,078	\$88,640,495	-\$17,709,583	-16.65%
Simulation Systems for Land Vehicles or Other Applications	\$27,861,283	\$16,228,525	-\$11,632,758	-41.75%
<b>Total Land &amp; Other Revenues</b>	<b>\$5,103,147,896</b>	<b>\$5,016,156,365</b>	<b>-\$86,991,531</b>	<b>-1.70%</b>
<b>Total Defence Revenues</b>	<b>\$12,612,286,611</b>	<b>\$14,310,628,198</b>	<b>\$1,698,341,587</b>	<b>13.47%</b>

\* Financial values are in nominal/current terms and are not adjusted for inflation.

\*\* The grouping of defence goods and services categories by 'domain' is determined here by the platform type to which they relate. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2020 and 2022), 2022 survey released in 2024.

# Annex 4 – Revenues\* of Defence Goods and Services Categories by Domain\*\* (2020 vs. 2022) (cont.)

Marine Defence Goods and Services Categories	2020 Revenues	2022 Revenues	\$ Value* Change 2020–2022	% Change 2020–2022
Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services***	\$1,331,866,629	\$1,776,979,321	\$445,112,692	33.42%
Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$775,234,432	\$1,070,632,031	\$295,397,599	38.10%
Naval Shipborne Mission Systems and Components	\$480,265,905	\$643,438,602	\$163,172,697	33.98%
Naval Ships' Structural Elements, Platform Systems, Parts & Components (Excluding Shipborne Naval Mission Systems)	\$415,459,845	\$332,715,246	-\$82,744,599	-19.92%
Simulation Systems for Naval Vessels	\$9,235,218	\$16,961,011	\$7,725,793	83.66%
<b>Total Marine Revenues</b>	<b>\$3,012,062,029</b>	<b>\$3,840,726,211</b>	<b>\$828,664,182</b>	<b>27.51%</b>
<b>Total Defence Revenues</b>	<b>\$12,612,286,611</b>	<b>\$14,310,628,198</b>	<b>\$1,698,341,587</b>	<b>13.47%</b>

\* Financial values are in nominal/current terms and are not adjusted for inflation.

\*\* The grouping of defence goods and services categories by 'domain' is determined here by the platform type to which they relate. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

\*\*\* The survey's "New Naval Vessels Constructed by Shipyards, and Naval Conversions" and "Naval Vessel Architecture, Engineering, Certification and Related Professional Services" categories' data was merged by Statistics Canada to meet the confidentiality requirements of the *Statistics Act*.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2020 and 2022), 2022 survey released in 2024.



# Annex 5 – Top 10 Regional Defence Activities, Ranked by Employment\* (2022)

Rank	Western and Northern Canada
1	Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services
2	Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services**
3	Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services
4	Aircraft Fabrication, Structures and Components
5	Other Defence
6	Naval Shipborne Mission Systems and Components
7	Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components
8	Military Training Services
9	Combat and Other Military Ground Vehicles and Components
10	Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components

\* Shares of employment by region are based on businesses that specified their regional employment breakdown and reflect the 36,000 direct employees in the Canadian defence industry. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

\*\* The survey's "New Naval Vessels Constructed by Shipyards, and Naval Conversions" and "Naval Vessel Architecture, Engineering, Certification and Related Professional Services" categories' data was merged by Statistics Canada to meet the confidentiality requirements of the *Statistics Act*.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

# Annex 5 – Top 10 Regional Defence Activities, Ranked by Employment\* (2022) (cont.)

Rank	Ontario
1	Combat and Other Military Ground Vehicles and Components
2	Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components
3	Aircraft Fabrication, Structures and Components
4	Other Defence
5	Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components
6	Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services
7	Naval Shipborne Mission Systems and Components
8	Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components
9	Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components
10	Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services

\* Shares of employment by region are based on businesses that specified their regional employment breakdown and reflect the 36,000 direct employees in the Canadian defence industry. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

# Annex 5 – Top 10 Regional Defence Activities, Ranked by Employment\* (2022) (cont.)

Rank	Quebec
1	Ammunition and Other Munitions
2	Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services
3	Aircraft Fabrication, Structures and Components
4	Simulation Systems for Aircraft
5	Military Training Services
6	Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services
7	Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components
8	Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components
9	Military Personal Protective Equipment, Load Carriage Systems and Operational Clothing
10	Naval Shipborne Mission Systems and Components

\* Shares of employment by region are based on businesses that specified their regional employment breakdown and reflect the 36,000 direct employees in the Canadian defence industry. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

# Annex 5 – Top 10 Regional Defence Activities, Ranked by Employment\* (2022) (cont.)

Rank	Atlantic Canada
1	Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services**
2	Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services
3	Naval Shipborne Mission Systems and Components
4	Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services
5	Other Defence
6	Aircraft Fabrication, Structures and Components
7	Military Training Services
8	Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components
9	Naval Ships' Structural Elements, Platform Systems, Parts & Components (Excluding Shipborne Naval Mission Systems)
10	Combat and Other Military Ground Vehicles and Components

\* Shares of employment by region are based on businesses that specified their regional employment breakdown and reflect the 36,000 direct employees in the Canadian defence industry. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

\*\* The survey's "New Naval Vessels Constructed by Shipyards, and Naval Conversions" and "Naval Vessel Architecture, Engineering, Certification and Related Professional Services" categories' data was merged by Statistics Canada to meet the confidentiality requirements of the *Statistics Act*.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

# Annex 6 – R&D\* to Revenues Ratios of Defence Goods and Services Categories (2022)

Defence Goods and Services Categories	2022 Revenues	R&D to Revenues Ratio	Rank
Simulation Systems for Aircraft	\$238,783,900	15% < X ≤ 18%	1
Unmanned Aerial Systems and Vehicles (UAS/V) and Components	\$168,930,867	12% < X ≤ 15%	2
Simulation Systems for Land Vehicles or Other Applications	\$16,228,525	6% < X ≤ 9%	3
Simulation Systems for Naval Vessels	\$16,961,011	6% < X ≤ 9%	4
Military Training Services	\$365,918,369	6% < X ≤ 9%	5
Military Systems Deployed in Space, Space Launch Vehicles, Land-based Systems for the Operation, Command and Control of Space Launch Vehicles or Systems Deployed in Space, and Related Components	\$73,943,779	6% < X ≤ 9%	6
Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$375,868,525	6% < X ≤ 9%	7
Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components	\$406,993,358	3% < X ≤ 6%	8
Combat and Other Military Ground Vehicles Maintenance, Repair, Overhaul, Modernization and Upgrade Services**	\$181,838,574	3% < X ≤ 6%	9
Ammunition and Other Munitions	\$528,584,986	3% < X ≤ 6%	10
Combat and Other Military Ground Vehicles and Components**	\$1,975,060,892	3% < X ≤ 6%	11

\* Industry-level R&D intensity is measured as the ratio of R&D performed by a given industry or sector relative to its own GDP. At the level of individual defence goods and services categories, R&D to GDP ratios are not available, and R&D to revenues ratios are used instead. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

\*\* In the case of the two combat vehicles-related categories, there is relatively greater certainty regarding their combined R&D to revenue ratio. Merged, the R&D to revenue ratio is also within 3% < X ≤ 6%, and such a merged grouping would rank at about 10th position out of 22 categories (22 would be left after such a merger).

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

# Annex 6 – R&D\* to Revenues Ratios of Defence Goods and Services Categories (2022) (cont.)

Defence Goods and Services Categories	2022 Revenues	R&D to Revenues Ratio	Rank
Other Defence	\$528,186,410	3% < X ≤ 6%	12
Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components	\$1,071,151,042	3% < X ≤ 6%	13
Aircraft Fabrication, Structures and Components	\$1,445,924,277	3% < X ≤ 6%	14
Naval Shipborne Mission Systems and Components	\$643,438,602	3% < X ≤ 6%	15
Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$621,696,087	0% ≤ X ≤ 3%	16
Missiles and Rockets	\$104,774,592	0% ≤ X ≤ 3%	17
Naval Ships' Structural Elements, Platform Systems, Parts & Components (Excluding Shipborne Naval Mission Systems)	\$332,715,246	0% ≤ X ≤ 3%	18
Firearms and Other Weapons	\$88,640,495	0% ≤ X ≤ 3%	19
Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$2,079,143,232	0% ≤ X ≤ 3%	20
Military Personal Protective Equipment, Load Carriage Systems and Operational Clothing	\$198,234,077	0% ≤ X ≤ 3%	21
Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$1,070,632,031	0% ≤ X ≤ 3%	22
Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services**	\$1,776,979,321	0% ≤ X ≤ 3%	23

\* Industry-level R&D intensity is measured as the ratio of R&D performed by a given industry or sector relative to its own GDP. At the level of individual defence goods and services categories, R&D to GDP ratios are not available, and R&D to revenues ratios are used instead. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

\*\* The survey's "New Naval Vessels Constructed by Shipyards, and Naval Conversions" and "Naval Vessel Architecture, Engineering, Certification and Related Professional Services" categories' data was merged by Statistics Canada to meet the confidentiality requirements of the *Statistics Act*.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

## Annex 7 – Canadian Defence Industry Exports\* by Destination (2020 vs. 2022)

Destination	2020 Exports	2022 Exports	\$ Value* Change 2020–2022	% Change 2020–2022
United States	\$3,204,296,920	\$4,431,692,402	\$1,227,395,482	38.3%
Middle East** and Africa	\$1,729,372,701	\$864,553,528	-\$864,819,173	-50.0%
Europe (excludes UK)	\$672,894,201	\$750,267,518	\$77,373,317	11.5%
Asia and Oceania*** (excludes AU & NZ)	\$454,006,753	\$436,801,294	-\$17,205,459	-3.8%
United Kingdom (UK)	\$216,011,845	\$341,528,766	\$125,516,921	58.1%
Central America, the Caribbean, Mexico and South America	\$184,818,726	\$163,095,058	-\$21,723,668	-11.8%
Australia (AU)	\$68,312,835	\$48,812,468	-\$19,500,367	-28.5%
New Zealand (NZ)	\$2,965,172	\$2,394,966	-\$570,206	-19.2%
<b>Total Exports</b>	<b>\$6,532,679,153</b>	<b>\$7,039,146,000</b>	<b>\$506,466,847</b>	<b>7.8%</b>

\* Financial values are in nominal/current terms and are not adjusted for inflation.

\*\* The Middle East is comprised of Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates and Yemen.

\*\*\* Oceania is comprised of Australia, Fiji, New Zealand and Papua New Guinea.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey* (2020 and 2022), 2022 survey released in 2024.



# Annex 8 – Exports' Share of Revenues, Defence Goods and Services Categories Ranked by Export Intensity (2022)

Defence Goods and Services Categories	2022 Revenues	Exports' Share of Revenues	Rank
Unmanned Aerial Systems and Vehicles (UAS/V) and Components	\$168,930,867	80% < X ≤ 100%	1
Aircraft Fabrication, Structures and Components	\$1,445,924,277	60% < X ≤ 80%	2
Military Systems Deployed in Space, Space Launch Vehicles, Land-based Systems for the Operation, Command and Control of Space Launch Vehicles or Systems Deployed in Space, and Related Components	\$73,943,779	60% < X ≤ 80%	3
Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components	\$1,071,151,042	60% < X ≤ 80%	4
Combat Vehicles and Components & Combat Vehicles Maintenance, Repair and Overhaul*	\$2,156,899,466	60% < X ≤ 80%	5
Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems, and Related Components	\$406,993,358	60% < X ≤ 80%	6
Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$375,868,525	60% < X ≤ 80%	7
Simulation Systems for Aircraft	\$238,783,900	40% < X ≤ 60%	8
Naval Ships' Structural Elements, Platform Systems, Parts & Components (Excluding Shipborne Naval Mission Systems)	\$332,715,246	40% < X ≤ 60%	9
Ammunition and Other Munitions	\$528,584,986	40% < X ≤ 60%	10
Missiles and Rockets	\$104,774,592	40% < X ≤ 60%	11

\* The survey's "Combat and Other Military Ground Vehicles and Components" and "Combat and Other Military Ground Vehicles Maintenance, Repair, Overhaul, Modernization and Upgrade Services" categories were merged here by Statistics Canada to provide an export intensity estimate more certain to be representative of the combined set of associated activities than individual estimates, where the combat vehicles MRO estimate would have been of more uncertain reliability. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

# Annex 8 – Exports' Share of Revenues, Defence Goods and Services Categories Ranked by Export Intensity (2022) (cont.)

Defence Goods and Services Categories	2022 Revenues	Exports' Share of Revenues	Rank
Primarily Land-Based, Ground Vehicle-Borne, Man-Portable or Non-Platform Specific Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$621,696,087	40% < X ≤ 60%	12
Naval Shipborne Mission Systems and Components	\$643,438,602	40% < X ≤ 60%	13
Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$2,079,143,232	40% < X ≤ 60%	14
Firearms and Other Weapons	\$88,640,495	20% < X ≤ 40%	15
Other Defence	\$528,186,410	20% < X ≤ 40%	16
Simulation Systems for Naval Vessels	\$16,961,011	20% < X ≤ 40%	17
Military Training Services	\$365,918,369	20% < X ≤ 40%	18
Military Personal Protective Equipment, Load Carriage Systems and Operational Clothing	\$198,234,077	20% < X ≤ 40%	19
Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$1,070,632,031	0% ≤ X ≤ 20%	20
Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services*	\$1,776,979,321	0% ≤ X ≤ 20%	21
Simulation Systems for Land Vehicles or Other Applications	\$16,228,525	0% ≤ X ≤ 20%	22

\* The survey's "New Naval Vessels Constructed by Shipyards, and Naval Conversions" and "Naval Vessel Architecture, Engineering, Certification and Related Professional Services" categories were merged here by Statistics Canada to meet the confidentiality requirements of the *Statistics Act*. See Annex 9 for the full official titles and definitions of the survey's defence goods and services categories by domain. Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2022)*, released in 2024.

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain

## Air & Space Systems

### Aircraft Fabrication, Structures and Components

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to:

Military aircraft, and military aircraft structural elements, control surfaces, systems, sub-systems, parts and components of manned military aerial platforms, and complete manned military aerial platforms, intended for use in combat and military transport. This includes things like landing gear (e.g., wheels, shock absorbers and related parts for the retraction and extension of aircraft landing gear, helicopter pontoons); flight control actuators; and propulsion and power systems for military aircraft (e.g., aircraft gas turbine engines, compressors, fuel systems).

Excluded from this category are sales related to military aircraft maintenance, repair and overhaul (MRO) services; aircraft communication systems; navigation systems; avionics; air-borne sensors; missiles, rockets and projectiles made to be fired from aerial platforms; display units; and other electronics for manned military aerial platforms—these are to be reported under separate defence product and service categories as appropriate

### Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services

This category includes sales of

- maintenance, repair and overhaul (MRO) services carried out under contract for military aircraft (including the MRO of their systems and subsystems like engines, avionics, etc.), as well as for related MRO training; examples of related activities include sales under contracts for
  - military aircraft repair, maintenance, rebuilding or overhauling on a factory basis (i.e., restoring aircraft to original design specifications)
  - basic servicing, repairing and maintenance of military aircraft;
  - MRO-related military aircraft inspection and testing services
  - associated engineering support and material management
- contracts for military aircraft modernization, upgrade, conversion or modification services (including systems and subsystems like avionics, engines, associated software, etc.).

Excluded from this category are

- sales from the provision of systems like avionics (e.g., flight control systems, radar, electro-optical, communications, navigation, countermeasures systems), engines or other platform systems and parts
  - to be integrated into military aircraft undergoing MRO, modernization, upgrades, conversion or modifications
  - to be integrated into new military aircraft
- sales of such goods and services should instead be reported as most appropriate under the alternative defence goods and services categories for
  - primarily airborne electro-optical, radar, sonar and other sensor and information collection systems; fire control, warning and countermeasures systems, and related components
  - primarily airborne communications and navigation systems, and other information systems (including processing and dissemination), software, electronics and components
  - aircraft fabrication, structures and components
- sales from the provision of aircraft (re)fuelling services, aircraft cleaning and fumigation services at airports; such sales should not be reported under any of the defence goods and services categories.

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Air & Space Systems

### **Military systems deployed in space, space launch vehicles, land-based systems for the operation, command and control of space launch vehicles or systems deployed in space, and related components**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services:

- Relating to primarily military systems deployed in space (e.g., satellites, spacecraft, and space robotic systems) and their sub-systems and components; as well as space launch vehicles.
- Related design, engineering and production of earth-based systems used for the operation, Command & Control of military systems deployed in space and space launch vehicles (e.g., ground stations, satellite tracking systems, and launch facilities).

### **Primarily airborne communications and navigation systems; and other information systems (including processing and dissemination), software, electronics and components**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to primarily airborne:

- military communications systems, secure cyber/information systems, and other military Information Technologies (including software);
- navigation and guidance systems (e.g., Global Positioning System [GPS] based systems, gyroscopes, accelerometers) and other geomatics related systems and services (e.g., geographic information system [GIS] products and services for military applications, remote sensing services for military applications);
- other technologies for the receipt, exchange/disseminating, processing, synthesizing, analysis and integration of multiple types of data;
- display technologies, digital control systems and other avionics; Other mission system avionics, computers and electronics;
- other aircraft avionics for military aircraft not elsewhere specified.

Note: sales relating to similar systems but which are integrated into naval vessels should be reported under the category for: "Naval Ship-Borne Mission Systems and Components".

### **Primarily airborne electro-optical, radar, sonar and other sensor / information collection systems; fire control, warning and countermeasures systems, and related components**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to primarily airborne:

- electro-optical systems (e.g., image intensification night-vision systems, thermal imaging systems, lasers), radars, dipping sonar, other sensors, and fire-control systems used to aid weapons in target acquisition, tracking and engagement;
- warning systems (e.g., technologies that detect enemy radars, enemy laser targeting systems, and approaching threats such as missiles);
- countermeasures (e.g., electronic jamming equipment, smoke screens, flares to counter heat-seeking missiles).
- other related aircraft avionics systems.

Note: sales relating to similar systems, parts and components but which are integrated into naval vessels should be reported under the category for "Naval Ship-Borne Mission Systems and Components".

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Air & Space Systems

### **Simulation systems for aircraft**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services for the hardware and software technologies used by military and security forces to develop, experiment and test operational doctrines and to train personnel using situational scenarios (e.g., intelligent software, visual systems, network simulations, real-time simulators) as primarily related to aircraft and operations in the air-domain.

### **Unmanned aerial systems and vehicles and components**

This category includes sales related to production, research, development, design, engineering, testing and evaluation services relating to:

- Military unmanned aerial vehicles/systems and drones, and related sub-systems, parts, components and accessories (including related ground control systems and launchers).

Excluded are sales relating to missiles; or to weapon systems (e.g., guns, missile launchers) and ammunition, munitions, and missiles carried on/delivered by unmanned aerial systems or vehicles. Such sales should be reported under either the category for: 'Firearms and other weapons' or under the category for 'Missiles & rockets'.

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Land & Other

### **Ammunition and other munitions**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services, and disposal activities such as relating to:

- conventional ammunition in small/medium/large calibers, artillery and mortar rounds, bombs, grenades, torpedoes, mines, other munitions and related precision manufacturing;
- related propellants and explosives like explosive plastics, gels, liquids, and powders; and nuclear, biological and chemical warheads.

Excluded are sales of missiles, rockets and other related parts and components which should be reported under the category for, 'Missiles and Rockets'.

### **Combat and other military ground vehicles and components**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to:

- Land-based vehicles specifically designed for military use in combat and to transport and protect soldiers and materials, and the basic platform systems, sub-systems and components of such vehicles (e.g., vehicle structures, electrical systems, armour, engines, transmission systems, heating/cooling systems, engineering).

Excluded are sales such as of combat vehicle-based weapons systems like guns and missile launchers as such sales should be reported under the 'Firearms and other weapons' category.

Sales relating to associated projectiles like tank gun rounds or missiles should be reported separately under the 'Ammunition and other munitions' or 'Missiles and rockets' categories as appropriate.

Combat vehicle communication systems, electronics, sensors, fire-control and navigation systems sales should instead be reported under either the appropriate categories for:

- '[Primarily land-based, ground vehicle-borne, man-portable or non-platform specific] electro-optical, radar, sonar and other sensor/information collection systems; fire control, warning and countermeasures systems; and related components';
- '[Primarily land-based, ground vehicle-borne, man-portable or non-platform specific] communications and navigation systems; and other information systems (including processing and dissemination), software, electronics, and components'.

Similarly, sales relating to maintenance, Repair, overhaul (MRO) and/or training services relating to combat vehicles should also be reported separately in the category for:

- 'Combat and other military ground vehicles maintenance, repair, overhaul, modernization and upgrade services'.

EXCLUDED ENTIRELY from the survey are any sales relating to consumer, commercial or industrial vehicles sold to militaries.

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Land & Other

### **Combat and other military ground vehicles maintenance, repair, overhaul, modernization and upgrade services**

This category includes sales of

- maintenance, repair and overhaul (MRO) services carried out under contract for combat and other military ground vehicles, as well as for MRO-related training; examples of related activities include sales under contracts for
  - military vehicle repair, maintenance or overhaul to original design specifications
  - basic servicing, repairing and maintenance of military vehicles
  - MRO-related military vehicle inspection and testing services
  - associated engineering support, material management
- contracts for vehicle modernization, upgrade, conversion or modification services.

EXCLUDED from this category are sales relating to

- associated projectiles like tank gun rounds or missiles, sales of which should be reported separately under the "ammunition and other munitions" or "missiles and rockets" categories as most appropriate; the sale of items such as vehicle-mounted guns or missile launchers, which should be reported separately under the "firearms and other weapons" goods and services sales category
- vehicle-based mission systems like communication systems, sensors, fire-control and navigation systems, countermeasures, and other electronics and software, which should be reported under the appropriate categories for the following:
  - "[primarily land-based, ground vehicle-borne, man-portable or non-platform specific] electro-optical, radar, sonar and other sensor and information collection systems; fire control, warning and countermeasures systems; and related components"
  - "[primarily land-based, ground vehicle-borne, man-portable or non-platform specific] communications and navigation systems; and other information systems (including processing and dissemination), software, electronics and components."

EXCLUDE ENTIRELY from the survey any sales relating to consumer, commercial or industrial vehicles that happen to be sold to militaries.

### **Firearms and other weapons**

This category includes military sales related to production as well as research, development, design, engineering, testing and evaluation services relating to technologies aggressively used to gain or defend a tactical advantage over an adversary; to attack, defend and protect assets and personnel. This includes lethal and non-lethal kinetic and non-kinetic weapon systems like:

- light/medium/heavy firearms;
- vehicle-based or mobile weapons like tank guns, howitzers, mortars and missile launchers;
- acoustic, laser, and other electromagnetic based weapon systems.



# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Land & Other

### **Military personal protective equipment, load carriage systems and operational clothing**

This category includes sales related to production, research, development, design, engineering, testing and evaluation services; as well as to the maintenance and repair of:

- Soldiers' personal protective equipment (PPE) including:
  - ballistic/blast protection and related military body armor, helmets, eyewear and related accessories; as well as soldier flame/thermal protection;
  - chemical, biological, radiological & nuclear (CBRN) military protective suits, as well as military respirators and associated
  - soldier load carriage systems (includes exoskeletons and other personal equipment designed specifically to help soldiers carry their respective fighting, battle and sustainment loads);
  - other personal military items designed for use by individual soldiers to aid in their concealment from enemy detection;
  - other operational military clothing and footwear.

Excluded from this category are sales relating to ceremonial uniforms, as well as commercial/civil market items purchased for soldiers. Nor are these to be reported as defence goods and services sales under any of the other defence sales categories.

Excluded from this category are sales relating to sensors/electronics designed for military use in the detection and identification of CBRN and explosives related threats.

- Sales of goods and services relating to such sensors/electronics should instead be reported under the most appropriate category relating to:
  - "Electro-optical, radar, sonar and other sensor / information collection systems; fire control, warning and countermeasures systems, and related components"

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Land & Other

### **Military training services**

This category includes sales related to the provision and development (by operations in Canada) of:

- Live military training services to military personnel such as in relation to combat training exercises, including military airborne training services and any similar land or maritime training services; military marksmen and sniper training, etc.
  - Relevant activities are those that occur in real/natural physical environments mirroring expected operational environments/ conditions to the extent possible, using actual platforms and/or other systems and equipment.
- Training services involving individuals/trainees operating simulated platforms and/or other warfighting systems/equipment in simulated/synthetic environments mirroring expected operational environments/scenarios.
  - Such activities may relate to training of specific military personnel in isolation, or to training of multiple individuals. For example, multiple individuals simultaneously operating separate but networked military aircraft simulators.
- Training and simulation based services involving simulated actors/ forces operating simulated systems/equipment in simulated/ synthetic environments and scenarios, based at least in part on inputs entered into simulations prior to the running of simulations (e.g., war-gaming models).

Excluded are sales of actual simulation system hardware and associated software—which should instead be reported under the three categories relating to 'Simulation Systems' as appropriate.

Excluded are sales for training services related to the maintenance, repair and overhaul (MRO) of military platforms and systems—as these should be reported under appropriate MRO categories under the survey.

### **Missiles and Rockets**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to military missiles and rockets, including advanced missiles used by anti-ballistic missile (ABM) systems.

Excluded here are sales relating to:

- Space launch vehicles;
- Munitions/sub-munitions and other types of warheads carried on, or delivered by missiles and rockets.

Those are to be reported under either the categories for 'Ammunition and Other Munitions' or for military space systems as appropriate.

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Land & Other

### **Primarily land-based, ground vehicle-borne, man-portable or non-platform specific communications and navigation systems; and other Information systems (including processing and dissemination), software, electronics and components**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to land-based, ground vehicle-borne, man-portable or non-platform specific:

- military communications systems, secure cyber/information systems and other military Information Technologies (including software);
- navigation and guidance systems (e.g., Global Positioning System [GPS] based systems, gyroscopes, accelerometers) and other geomatics related systems and services (e.g., geographic information system [GIS] products and services for military applications, remote sensing services for military applications);
- other technologies for the receipt, exchange/disseminating, processing, synthesizing, analysis and integration of multiple types of data;
- display technologies and digital control systems;
- other defence computer and electronics related products not elsewhere specified.

Note: sales relating to similar systems but which are integrated into naval vessels should be reported under the category for: "Naval Ship-Borne Mission Systems and Components".

### **Primarily land-based ground vehicle borne, man-portable or non-platform specific electro-optical, radar, sonar and other sensor/information collection systems; fire control, warning and countermeasures systems, and related components**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to primarily land-based, ground vehicle-borne, man-portable or non-platform specific:

- electro-optical systems (e.g., image intensification night-vision systems, thermal imaging systems, lasers), radars, sonar, other sensors, and fire-control systems used to aid weapons in target acquisition, tracking and engagement;
- warning systems (e.g., technologies that detect enemy radars, enemy laser targeting systems, and approaching threats such as missiles), and countermeasures (e.g., electronic jamming equipment, smoke screens, flares to counter heat-seeking missiles).

Note: sales relating to similar systems, parts and components but which are integrated into naval vessels should be reported under the category for: "Naval Ship-Borne Mission Systems and Components".

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Land & Other

### **Simulation systems for land vehicles or other applications**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services for the hardware and software technologies used by military and security forces to develop, experiment and test operational doctrines and to train personnel using situational scenarios (e.g., intelligent software, visual systems, network simulations, real-time simulators) as primarily related to land vehicles/ground-based systems and operations; or for other applications not elsewhere specified.

### **All other defence (specify)**

This category includes sales that could not otherwise be captured under other specified defence goods and services categories, and which are earned from designing, engineering, testing, evaluating, producing, providing, maintaining, upgrading, modernizing or performing research and development for

- systems and services specifically designed or adapted for (and generally restricted to) use by militaries to conduct operations, and that perform military functions or missions; and related subsystems, components or parts limited in use or specific to such military systems or services and the performance of military specific functions.

To be in-scope, the industrial activities of businesses must also involve actual production and provision of such goods and services by their employees located in Canada.

EXCLUDED are sales of

- goods and services that were produced, rendered or provided by facilities and employees located outside of Canada, and then just delivered or sold “as-is” by a business located in Canada
- goods sold by wholesaler, distributor, or retailer operations located in Canada that were not actually produced by those businesses in Canada (but that were produced by other businesses located in Canada or abroad)
- cleaning services provided to military facilities, construction and maintenance services for basic housing and infrastructure (e.g., roads, sewers) at military bases, human resources staffing services, basic commercial transportation services to military clients (e.g., commercial trucking firms transporting goods to a base) and raw materials (e.g., chemical feed-stocks, metals).

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Marine

### **Naval ship maintenance, repair, overhaul, modernization or upgrade services**

This category includes sales of

- maintenance, repair and overhaul (MRO) services carried out under contract for naval surface vessels, and subsurface vessels and submarines, as well as for MRO-related training; examples of related activities include sales under contracts for:
  - naval vessel repair, maintenance or overhaul to original design specifications
  - basic servicing, repairing and maintenance of naval vessels
  - MRO-related naval vessel inspection and testing services
  - associated engineering support, material management
- contracts for naval vessel modernization, upgrade, conversion or modification services.

EXCLUDED from this category are

- sales of systems, like naval ship-borne mission and platform systems
  - produced for integration into vessels undergoing MRO, modernization, upgrades, conversion or modification
  - produced for integration into new naval vessels during their construction.

Sales of such goods and services should instead be reported as most appropriate under the goods and services categories for

- "naval ship-borne mission systems and components"
- "naval ships structural elements, platform systems, parts and components."

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Marine

### **Naval ship's structural elements, platform systems, parts & components (excluding shipborne naval mission systems)**

This category includes sales for production as well as research, development, design, engineering, testing and evaluation services relating to: Platform systems, subsystems, structural parts and components intended for either existing manned naval surface ships/submarines or for use during the building of new manned naval vessels (e.g., vessels that were specifically designed or modified for use by militaries in combat or the transportation of military goods and personnel).

For example, this would include sales of bulkheads, ship propulsion plant and electrical power systems, ship propellers and propeller shafts, steering mechanisms, machinery control systems, ballistic protection materials, fire extinguishing systems, climate control/ventilation and water treatment systems, plumbing, deck machinery, living spaces, and hull compartments and other hull sections, naval ships' helicopter handling systems, etc.

Excluded from this category are sales related to shipborne naval mission systems/naval vessels' combat systems like command, control, and communications systems; radars, sonar, electro-optical systems, naval countermeasures, navigation systems, displays and other sensors and electronics, naval guns and missile launchers. Those are to be reported under the category for: Naval ship-borne mission systems and components.

Excluded from this category are sales related to maintenance, repair and overhaul services provided for manned naval surface ships/submarines. Those sales should instead be reported under the separate category for: Naval ship maintenance, repair and overhaul.

Excluded from this category are sales by shipyards relating to their design or construction/assembly and delivery of newly built naval ships (including submarines); and/or naval conversions. These should instead be reported under the separate category for: New naval vessels constructed by shipyards, and naval conversions.

### **Naval ship-borne mission systems and components**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services relating to such systems as: Naval vessel mission/combat systems: command, control, and communications; radar, sonar, electro-optical and other sensors, navigation systems, displays, other Information Technologies (including Software) and electronics, countermeasures; guns, and missile or torpedo launchers.

Excluded from this category are sales related to the actual missiles, torpedoes and other munitions or projectiles launched or fired from/by naval vessels' weapon systems; as well as associated warheads. Such sales are to be reported under either the category for 'Missiles and Rockets' or the category for 'Ammunition and Other Munitions' as appropriate.

# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Marine

### **Naval vessel architecture, engineering, certification and related professional services**

This category includes sales under contracts specifically for naval architecture and engineering services relating to naval surface ships or naval submarines operated by navies (i.e., vessels specifically designed for and restricted to use by militaries in combat, their transportation of military goods and personnel, or to otherwise perform military and naval specific functions). Relevant services include

- assessing design requirements and proposals, and determining basic vessel characteristics
- modelling related to hydrodynamics and vessel signature management (e.g., radar cross section; thermal, acoustic and electromagnetic emissions)
- providing overall ship hull and superstructure design, and determining platform system requirements (e.g., requirements to be met by power and propulsion; steering; heating, ventilation and air conditioning systems)
- specifying the layout of the interior space of vessels, and the physical layout of platform systems and other systems and machinery within vessels
- providing associated drawings, schematics and job specifications
- inspecting machinery and equipment, hulls, and superstructures (including damage surveys)
- developing and conducting the testing and evaluation of machinery and equipment, and of the operational performance of platforms
- ensuring compliance with marine vessel standards and regulations, and certification of systems and vessels
- deriving vessel construction cost estimates, and establishing contract specifications and vessel production schedules.

Exclude from this category

- sales under contracts specifically for the actual provision or integration of businesses' specific ship-borne mission systems, platform systems and structural elements, as well as of simulation systems for naval vessels; such sales should instead be reported under other naval goods and services categories that are in accordance with their respective definitions
- sales under contracts specifically for the provision and management of maintenance, repair and overhaul services, or of the actual modernization or upgrade of naval vessels and their systems.



# Annex 9 – Official Definitions of Defence Goods and Services Categories by Domain (cont.)

## Marine

### **New naval vessels constructed by shipyards, and naval conversions**

Only to be reported here are sales by shipyards in relation to their construction/assembly work (and/or related research, development, design and engineering work) conducted by their operations in Canada in relation to the:

Assembly of new manned naval surface ships or submarines at a business' shipyards in Canada (i.e., vessels that were specifically designed for use by militaries in combat, the transportation of military goods and personnel, or to otherwise perform military/naval specific functions).

Conversion of existing vessels that were originally designed and built as commercial/civil vessels into naval vessels for future use by militaries in combat, the transportation of military goods and personnel, or to otherwise perform military/naval specific functions.

Excluded from this category are sales of goods and services related to shipborne naval mission systems such as naval radars, battle management command and control systems, mine detection and naval countermeasures, naval guns and missile launchers etc. Those are to be reported under a preceding category for: Naval ship-borne mission systems and components.

Excluded from this category are sales related to maintenance, repair and overhaul services (MRO) for manned naval surface ships and submarines. Those sales should instead be reported under a separate category for: Naval ship maintenance, repair and overhaul.

Excluded from this category are sales of goods and services relating to structural elements, other platform systems, subsystems, parts and components of naval vessels not elsewhere reported. Such sales should instead be reported under the separate preceding category for: Naval ships' structural elements, platform systems, parts, & components (excludes shipborne naval mission systems)

Further exclusions or guidance: if the business is not a shipyard in Canada but was nonetheless responsible for, (and paid by a government/military for progress on) the eventual delivery of naval vessels being assembled by a shipyard in Canada that is not its subsidiary, or otherwise owned by the business or by a common parent company—then, such a business should not report sales figures which include the amount of associated sales made by the shipyard(s). For such businesses, they should only report any relevant sales relating to work done by their respective operations' employees in Canada, which exclude the sales value of work the businesses contracted/subcontracted or passed through to shipyards in Canada. This is necessary in order to prevent potential large scale double counting of the actual value of naval vessels being delivered by shipyards in Canada, and hence overestimation of the actual volume of associated industrial activity at shipyards in Canada

### **Simulation systems for naval vessels**

This category includes sales related to production as well as research, development, design, engineering, testing and evaluation services for the hardware and software technologies used by military and security forces to develop, experiment and test operational doctrines and to train personnel using situational scenarios (e.g., intelligent software, visual systems, network simulations, real-time simulators) as primarily related to naval vessels and operations in the maritime-domain.

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