



# State of Canada's Defence Industry Report

Spring 2022

# **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 among OECD\* countries to conduct an **in-depth Government Statistical Agency survey** on defence industry capabilities
- Supported by a multi-year collaborative analytics agreement between **ISED** and the **Canadian Association of Defence and Security Industries (CADSI)**



Innovation, Science and  
Economic Development Canada

Innovation, Sciences et  
Développement économique Canada



- This analysis presents a **statistical overview** of **Canadian defence industry activities in 2020**, based on the most recent data available
- As such, these findings provide insights into the state of Canada's defence industry **during the first year of the COVID-19 pandemic**
- The **next iteration** of the biennial survey will **measure 2022 industrial activities**
  - Publication of **the basic 2022 data by Statistics Canada** is currently scheduled for **early 2024**

## Survey Refinement & Preparations (May 2020 – February 2021):

- Consultation with industry, subject matter experts, defence and public security organizations, and policy makers on the research framework and updating the targeted population and questionnaire

## Data Development (March 2021 – January 2022):

- ISED sponsored Statistics Canada biennial survey measuring **2020 activities (first year of Covid-19)** with **completion a legal requirement** under the Statistics Act
  - Previous data collection efforts measured 2014, 2016 and 2018 with their findings summarised under previous reports
  - The next round of data collection will measure 2022 industrial activities
- **Data quality validation and firm-level imputation** based on administrative and other data

## Data Analysis (February 2022 – May 2022):

- Data analytics and report **structure development**
- Economic impact estimation based on a methodology informed by **experts** at the OECD and Statistics Canada

## Core Areas of Research and Analysis



**Comparative Analysis, 2018-2020**



**Economic Impact**



**Size of Firm Footprint**



**Activities by Type**



**Regional Areas of Strength**



**Gender Diversity**



**Skills/STEM**



**Innovation**



**Global Supply Chains**

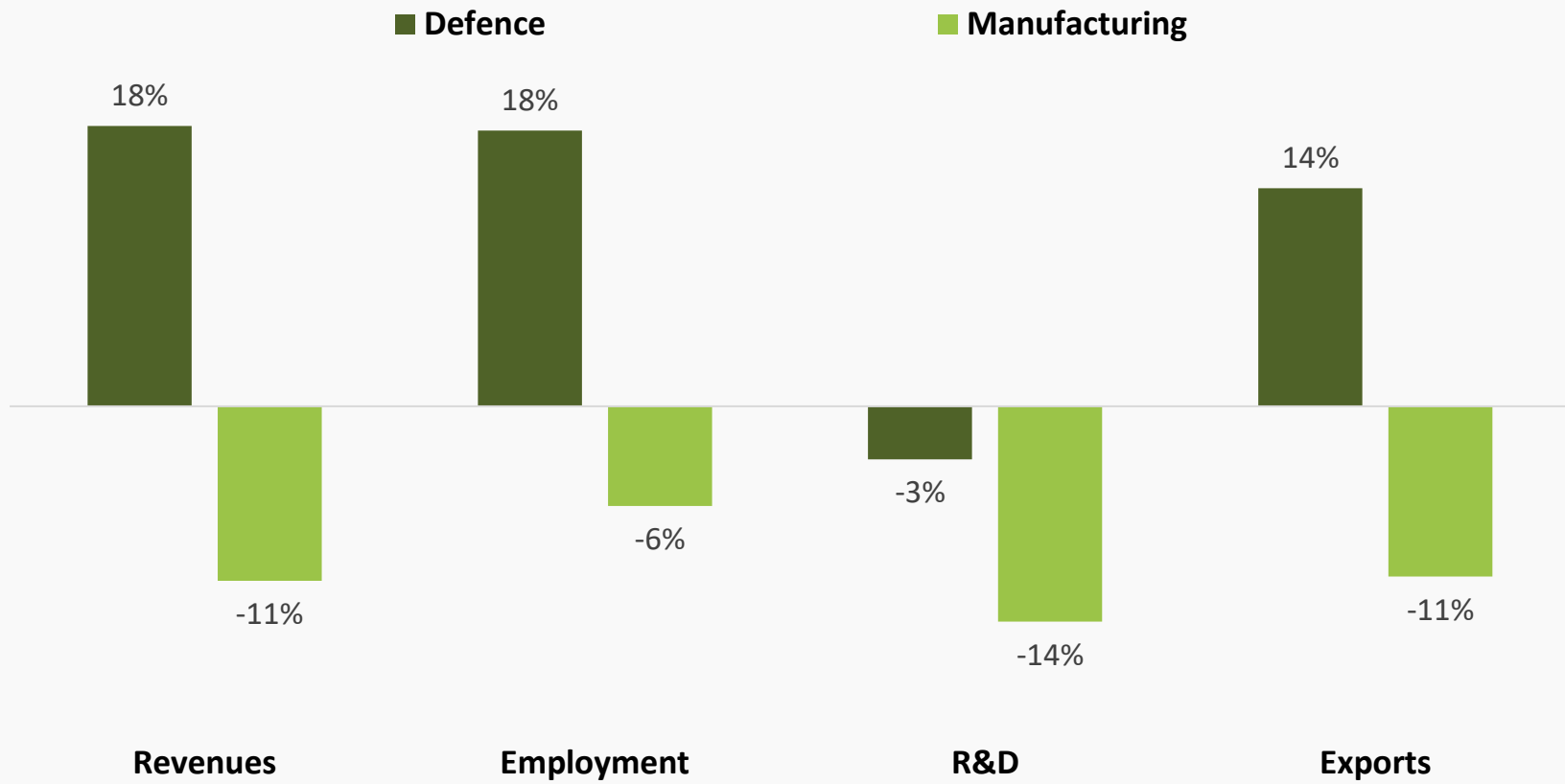


**Exports**



# Canada's **defence industry outperformed** the broader **manufacturing sector** across industrial indicators between 2018-2020\*

## Performance of Key Variables, the Canadian Defence Industry vs. the Broader Manufacturing Sector, % Change, 2018-2020\*

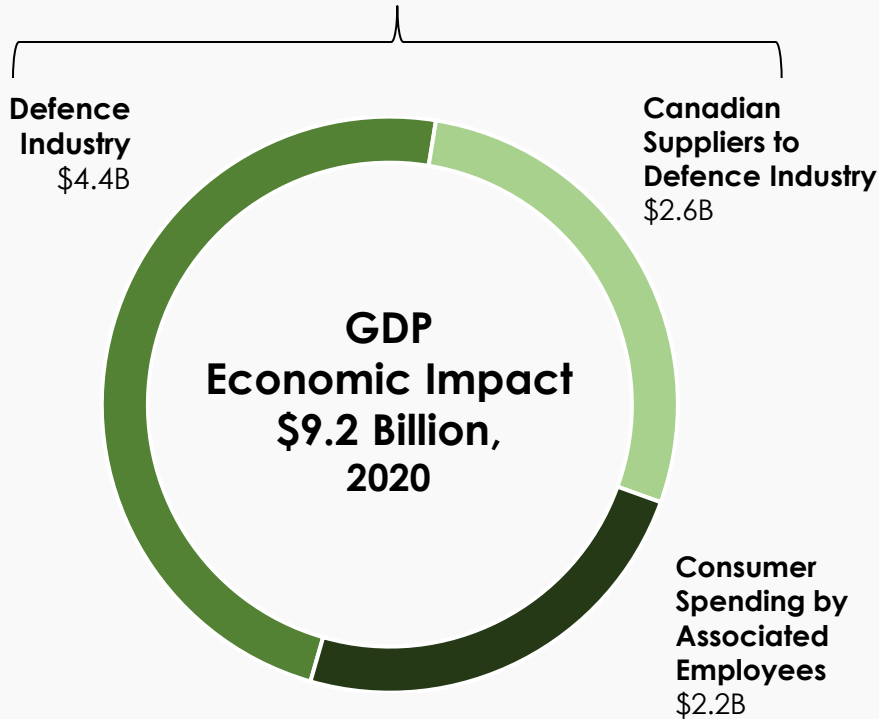


\* Note: Financial values are in nominal terms and are not adjusted for inflation, and R&D spending relates to defence industry businesses' in-house R&D. See annex for 2014 to 2020 data and changes over time  
Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2018, 2020), 2020 survey released in 2022; Statistics Canada export data accessed through "Trade Data Online"; and Statistics Canada's online tables: 27-10-0333-01 (released in 2021)14-10-0202-01, 16-10-0047-01 (both released in 2022)

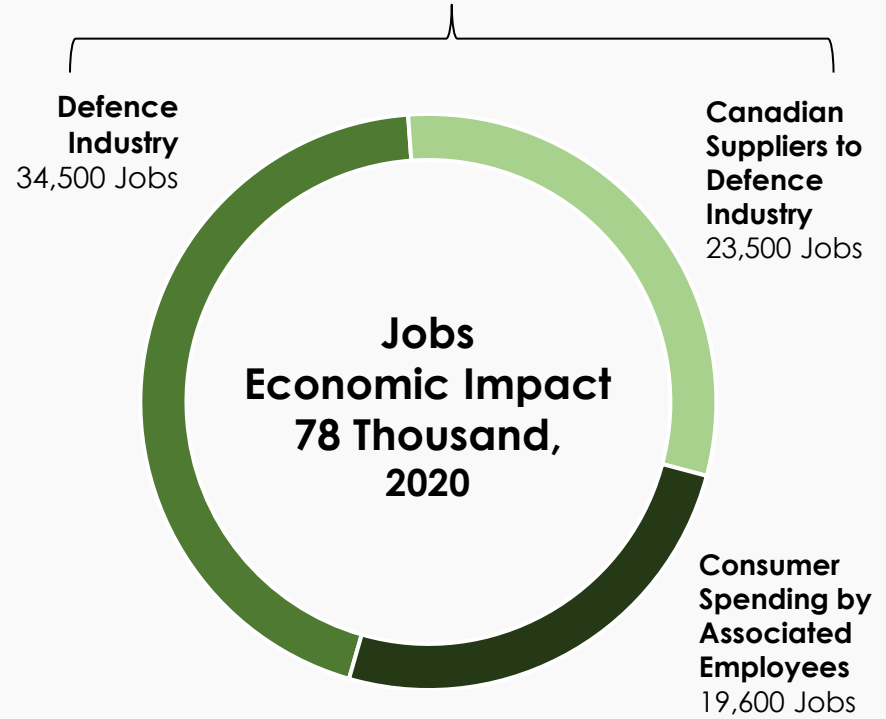


Canada's defence industry contributed **close to \$9.2B in GDP** and **78,000 jobs** across the Canadian economy in 2020\*

Defence Industry and Value Chain  
**\$7.0 Billion**



Defence Industry and Value Chain  
**58,000 Jobs**

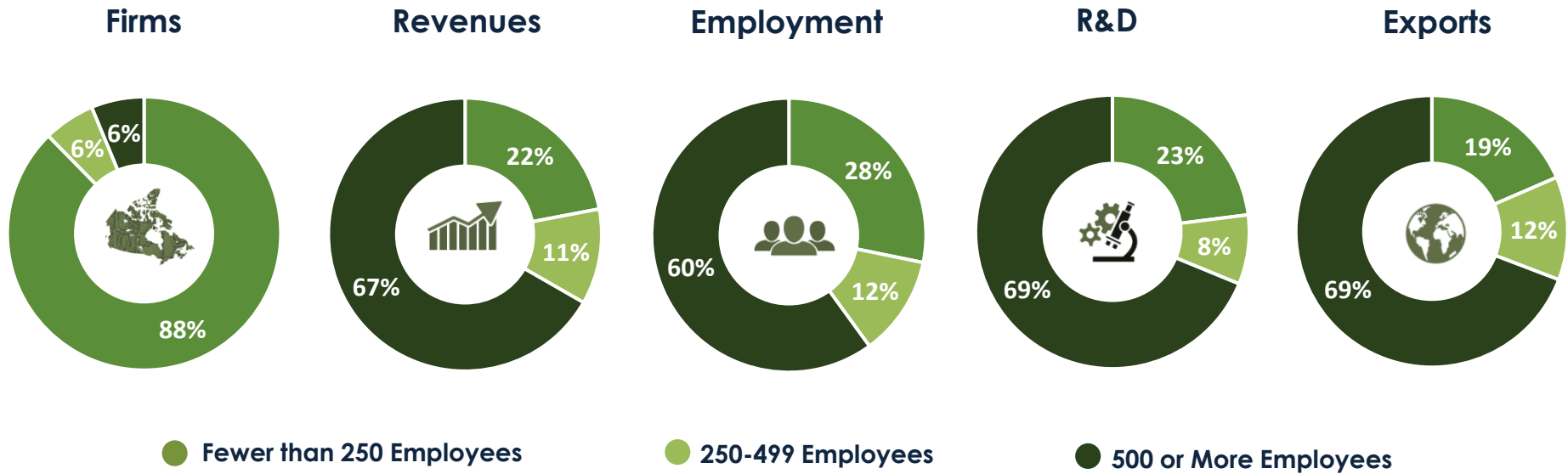


- Total economic activity contribution supported by the Canadian defence industry **increased by close to \$2.2 billion in GDP** and **13,900 jobs** between 2018 and 2020\*

\* Excludes impacts from activities that occurred due to the application of the Industrial & Technological Benefits (ITB) Policy to military procurements if those activities did not relate in any way to Canadian defence industry production in 2020 (as either supplies to the defence industry, or defence goods production by a defence firm). See annex for associated data tables  
Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2018, and 2020), 2020 survey released 2022; ISED economic modelling based on Statistics Canada's latest input-output multipliers (2016 and 2018), and the specific economic impact multipliers most relevant to the survey's individual defence goods and services categories



# Firms with fewer than 250 employees represented close to 90% of firms in the Canadian defence industry in 2020

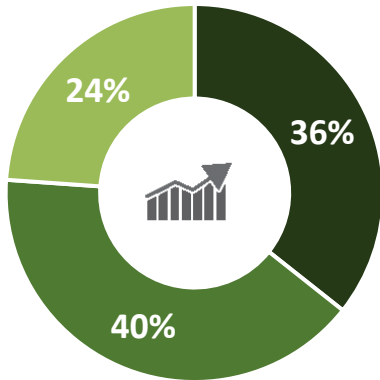


- **Firms with 250-499 employees** captured **12% or less** of the overall **number of firms, revenues, employment, R&D** and **exports**
- **Firms with 500 or more employees** accounted for **over 60%** of the industry **revenues, employment, R&D, and exports**

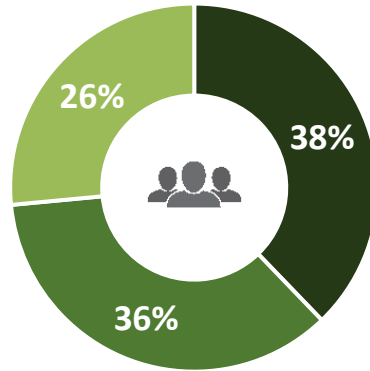


Over **\$12.6B** in defence revenues were generated by **over 620 businesses** across domains in 2020\*

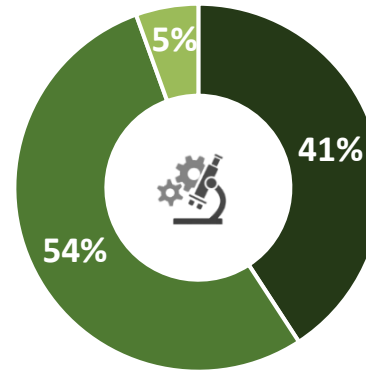
Revenues



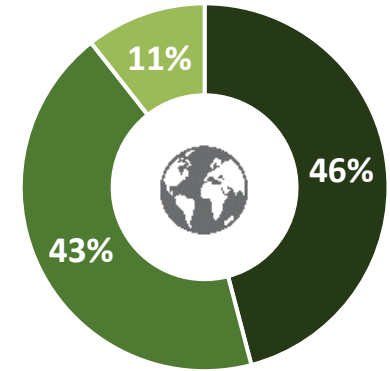
Employment



R&D



Exports



 Air & Space Systems\*\*

 Land & Other

 Marine

- **Air & space systems\*\*** and **land & other** defence goods and services categories accounted for most of the defence industry's R&D and exports

\* In the context of this document, the grouping of defence goods and services categories according to 'domains' is determined by the platform type to which they relate. See annex for associated data tables. For the full official titles and definitions of the survey's defence goods and services categories, and for lists of the categories which are included under the broader "Domain".

\*\* 'Space Systems' as measured here is narrower in scope than the broader concept of the 'Space Sector' as measured by the Canadian Space Agency (CSA)

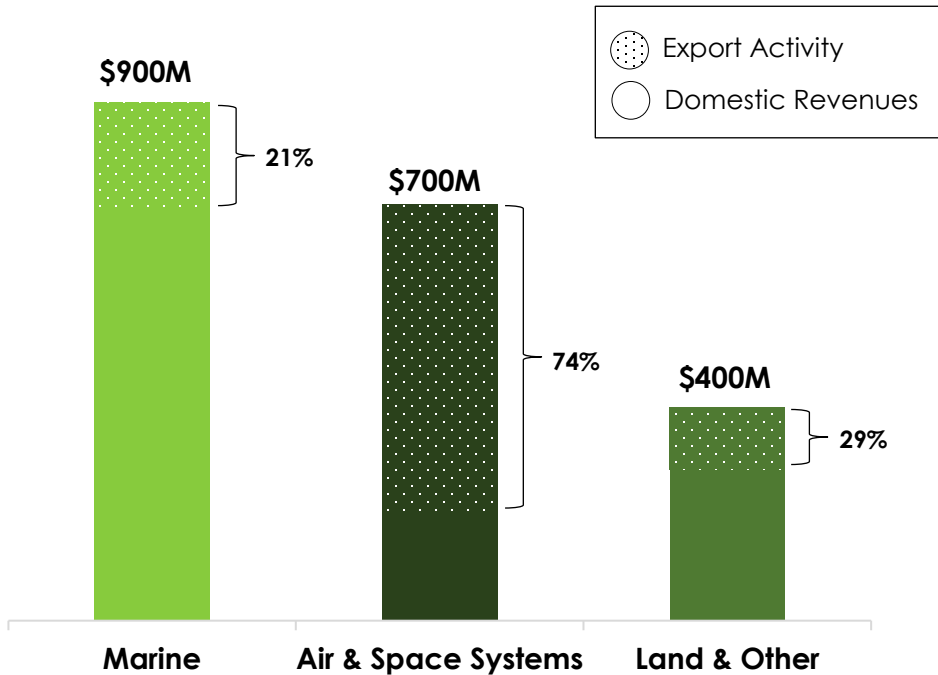
Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022



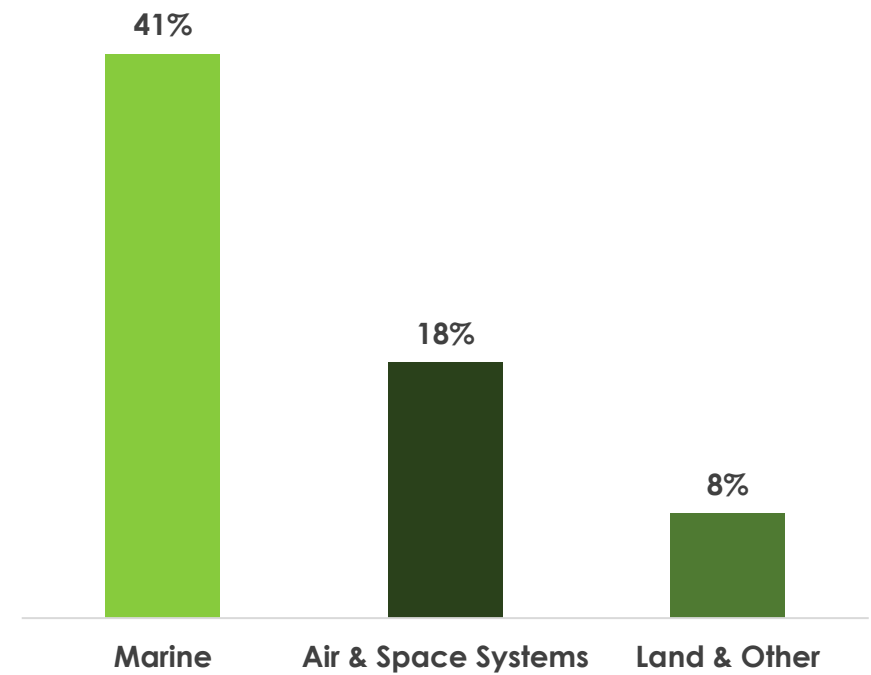


# Marine related activities led revenue growth both in dollar value and relative terms between 2018-2020\*

### Defence Revenues by Domain, Change in \$, Millions, 2018-2020\*\*



### Defence Revenues by Domain, Change in %, 2018-2020\*\*



- **Export activities** were responsible for close to **75%** of the growth of revenues in **air & space systems**, close to **30%** in **land & other** and more than **20%** in **marine** between 2018 and 2020

\* In this document, the grouping of defence goods and services categories by 'domain' reflects the platform types to which they relate. See annex for associated data tables and full official titles and definitions of the goods and services categories, and lists of the categories included under the broader "domain" type groupings

\*\* Revenues are not adjusted for inflation

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022

# Each region had specific areas of strength in 2020\*

## Canadian Defence Industry Employment Regional Breakdown\*\*, with Top Regional Specializations 2020

### Western & Northern Canada, 19%

- Naval Shipbuilding, & Design
- Naval Vessel MRO
- Aircraft MRO

### Quebec, 22%

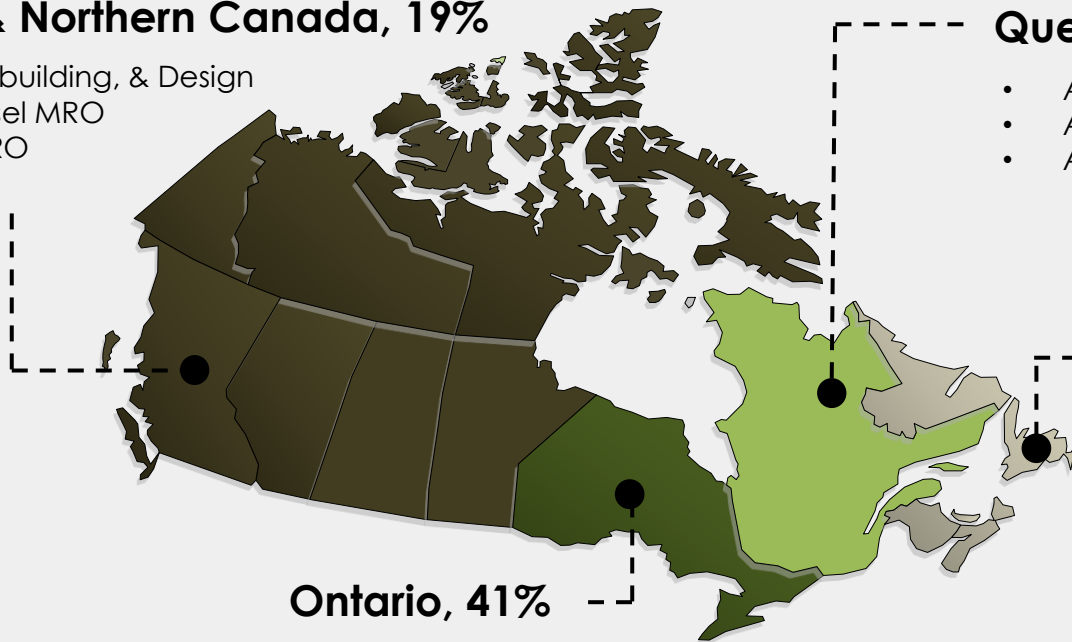
- Aircraft MRO
- Ammunition & Other Munitions
- Aircraft & Aircraft Parts Fabrication

### Atlantic Canada, 18%

- Naval Shipbuilding, & Design
- Aircraft MRO
- Naval Vessel MRO

### Ontario, 41%

- Combat Vehicle Fabrication
- Aircraft & Aircraft Parts Fabrication
- Airborne Sensors, Fire-Control & Countermeasures



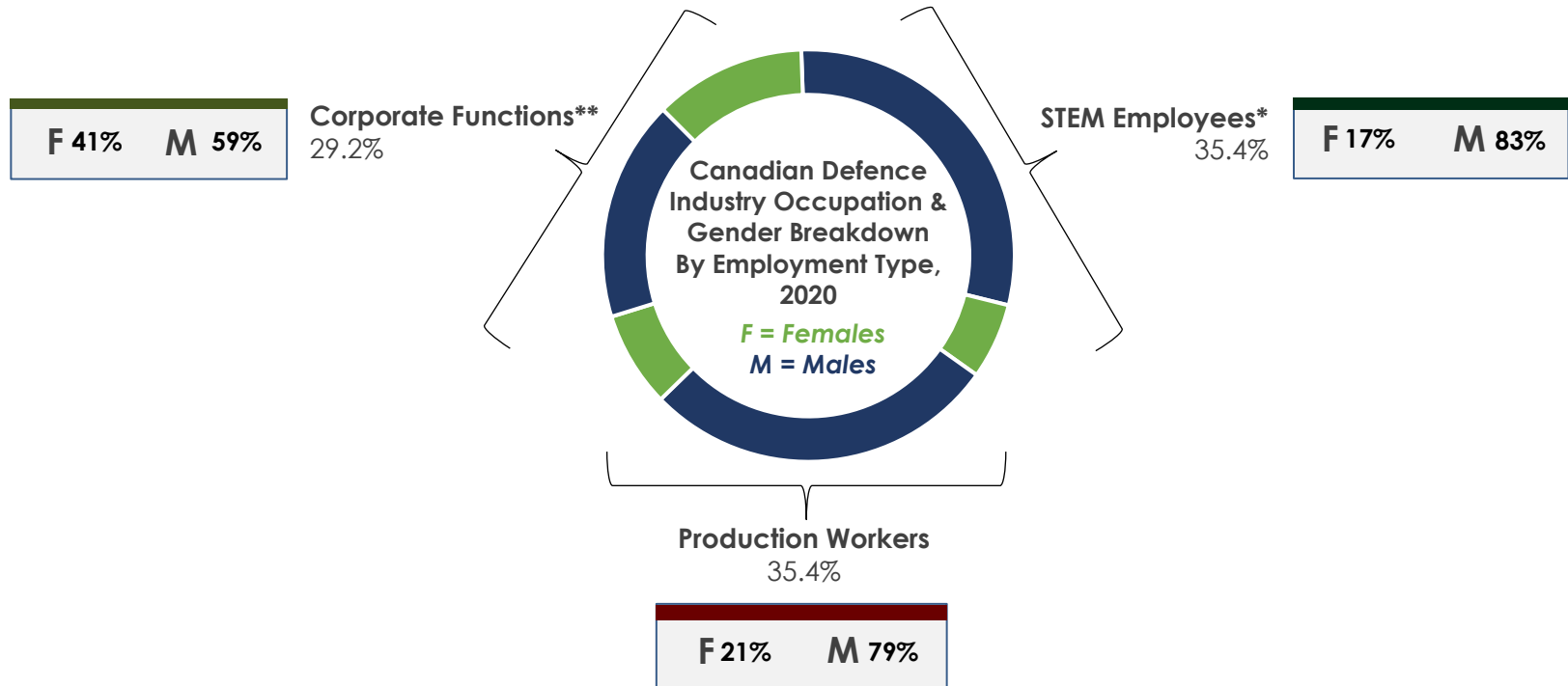
\* See annex for the associated data table, the top 10 specializations per region, and for the full official titles of the defence goods and services categories

\*\* Ontario's share was rounded up to 41% so that the chart total sums to 100%. Shares of employment by region are based on businesses that specified their regional employment breakdown and reflect the defence industry's own 34.5K in total employees. The rankings of top 3 activities per region exclude a survey category which covered a mix of other (unspecified) defence goods and services

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022



# Women in STEM accounted for 17% of STEM employees in the defence industry, compared to 23% in the broader manufacturing sector in 2020



Female Employees' Share of Occupation Types		
Occupation Type	Canada's Defence Industry	Canada's Manufacturing Sector
Corporate Functions	41%	46%
STEM	17%	23%
Production Workers	21%	21%
<b>TOTAL</b>	<b>25%</b>	<b>28%</b>

\* Under the survey, Science, Technology, Engineering, & Mathematics (STEM) occupations include engineers, scientists and/or researchers, and technicians and technologists. See annex for associated data tables

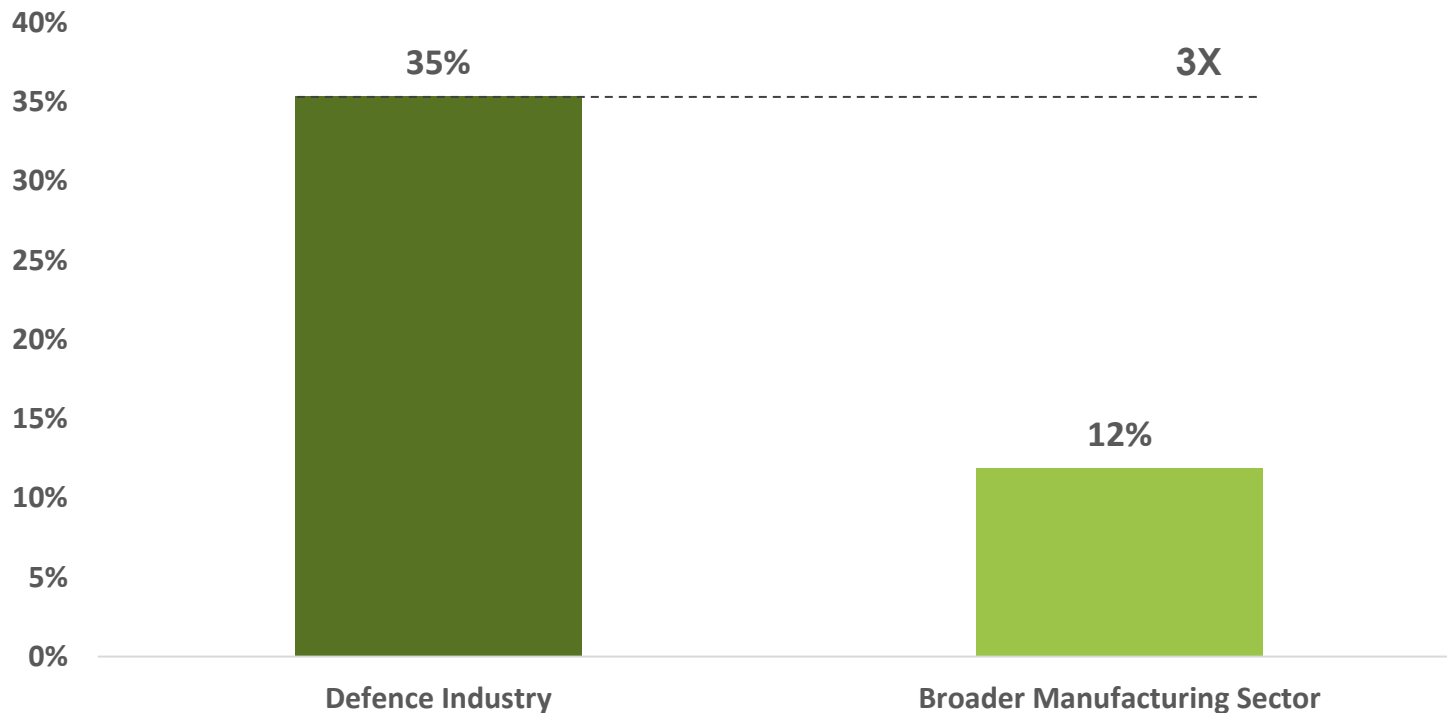
\*\* Includes occupations in: management, administration, marketing, and all other employees

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022; and Statistics Canada custom tabulations based on the Labour Force Survey (2020), 2022



# STEM\* occupations' share of employment was almost 3X the Canadian manufacturing sector average in 2020

## Share of an Industry's Employees in STEM\* Related Occupations, the Canadian Defence Industry vs. the Broader Manufacturing Sector, 2020

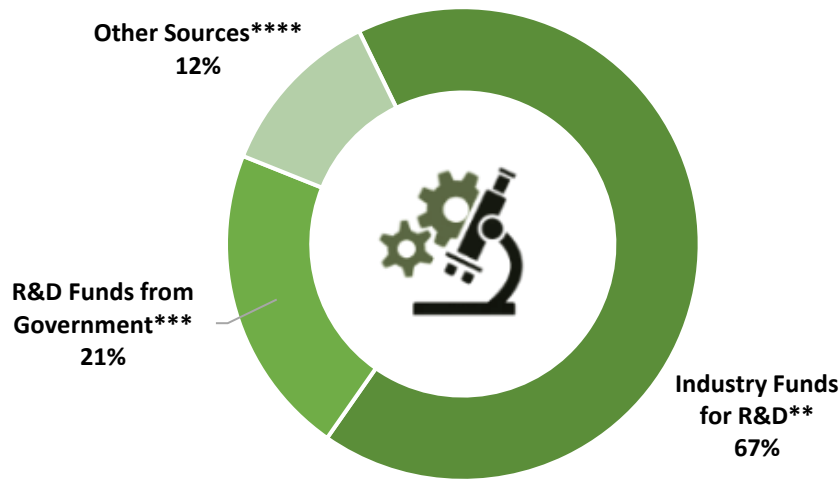


\* Under the survey, Science, Technology, Engineering, & Mathematics (STEM) occupations include engineers, scientists and/or researchers, and technicians and technologists. See annex for the associated data table  
Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2018, 2020), 2020 released in 2022, custom tabulations for ISED; and Statistics Canada custom tabulations based on the Labour Force Survey (2020), 2022

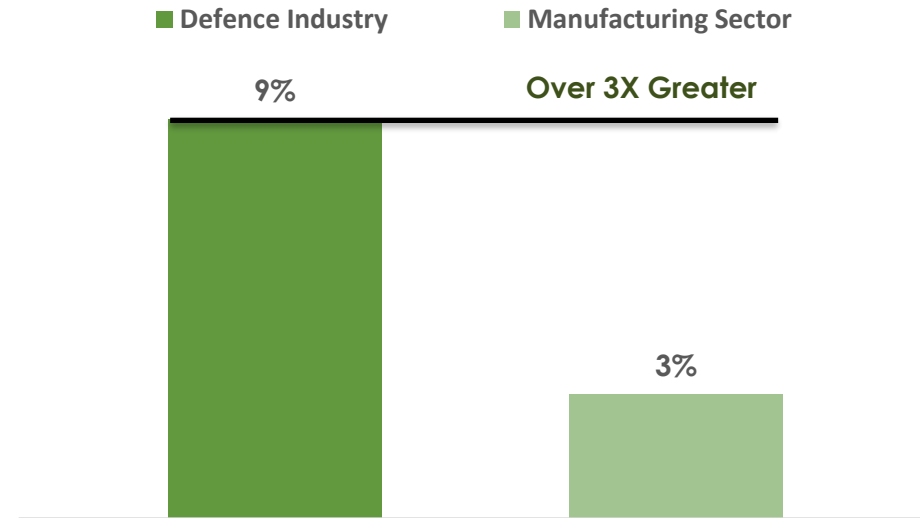


# The defence industry's R&D intensity\* was over 3X greater than the Canadian manufacturing sector average in 2020

### Canadian Defence Industry R&D Breakdown By Source of Funds, 2020



### R&D Intensity, Defence Industry vs. Total Manufacturing, 2020\*



- Close to **\$401M of R&D** performed by the defence industry in 2020
  - **67% funded by industry**, and close to **21% funded by Canadian government sources**\*\*\*

\* 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 & services categories, R&D to GDP ratios are not available, but ratios of category-level R&D to sales are available, and are provided in the annex for insights into differences in relative R&D orientation across specific defence activities

\*\* This was led by internal funds from the defence businesses performing the R&D, plus some funds from their parent, affiliated and subsidiary companies. Contract work for other businesses only accounted for under 4% of industry funds for defence industry in-house R&D.

\*\*\* Government funded R&D was led by contract funds

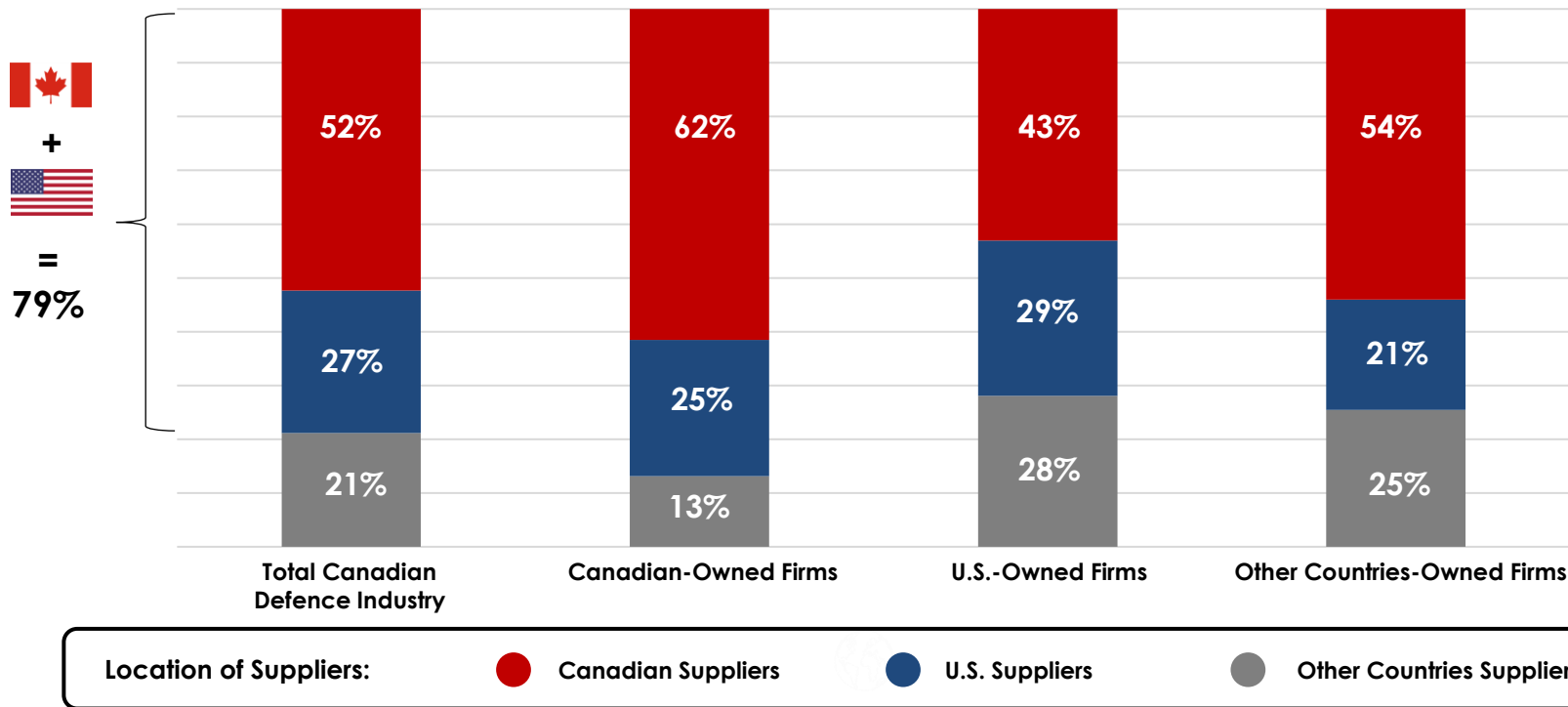
\*\*\*\* Other sources may include universities, foreign governments, individuals, etc.

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022; ISED estimates of defence industry GDP; and Statistics Canada online tables 27-10-0344-01, 27-10-0333-01 (released in 2021) and tables 36-10-0434-01, 18-10-0005-01 (released in 2022). See annex for associated data tables.



# Close to 80% of Canadian defence industry supply chain expenditures were with Canadian and U.S. based suppliers in 2020

## Canadian Defence Industry Supply Chain Footprint by Suppliers' Location (% of Expenditures), 2020\*



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

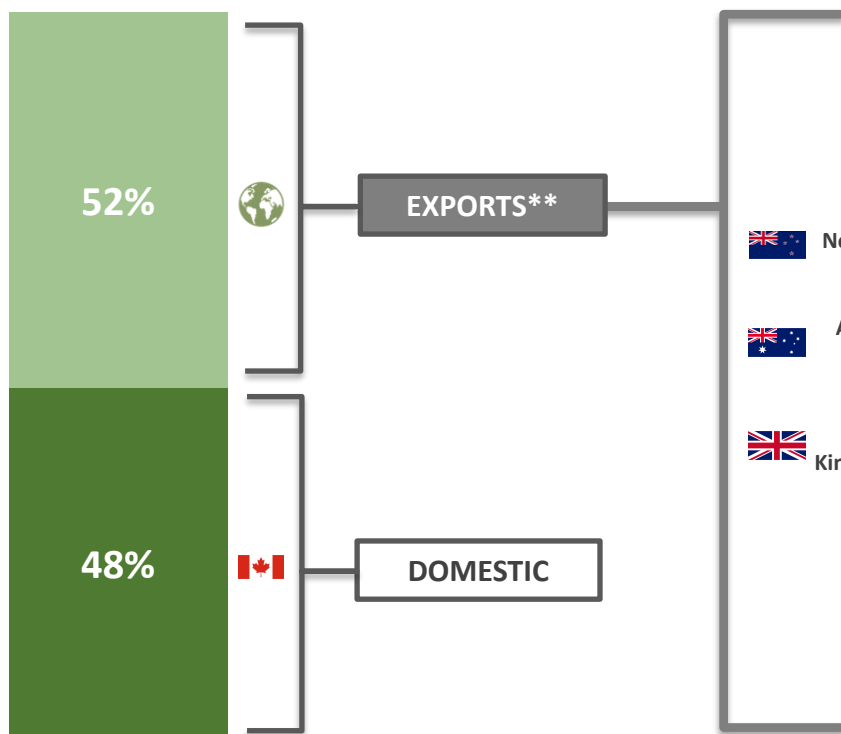
\* This reflects the subset of operating expenditures that relate to purchases of mainly raw materials and components that are more directly used for/in manufacturing processes, and differences in the extent to which Canadian vs. foreign-owned businesses make their purchases of such inputs from domestic companies or distributors

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022, Statistics Canada

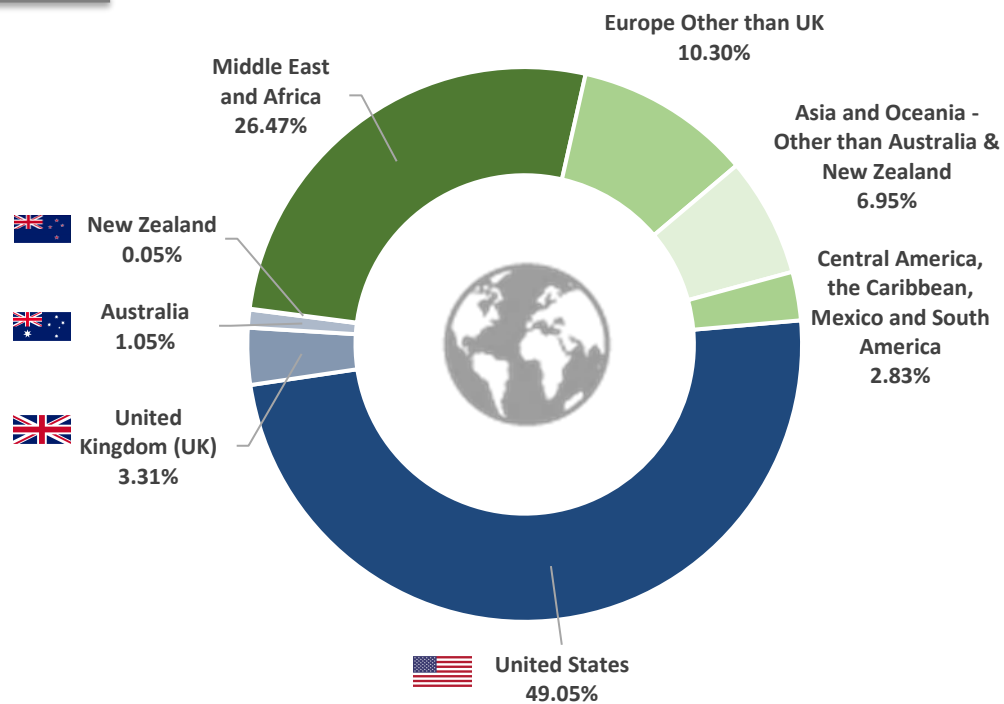


Over **\$6.5B** in **exports**, with close to **55%** accounted for by exports to Canada's **Five Eyes** partners\*

### Defence Industry Revenues Breakdown, Domestic Revenues vs. Exports, 2020



### Defence Industry Exports, Breakdown by Region, 2020



\* The Five Eyes partner nations include: Australia, Canada, New Zealand, the United Kingdom, and the United States of America

\*\* Ratios of category-level exports to sales are also available, and are provided in the annex for insights into differences in the relative export orientation of specific defence activities

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022. See annex for associated data tables



## Key Findings

In 2020, Canada's defence industry:

- **Outperformed** the **broader manufacturing sector** across industrial indicators between 2018-2020
- Had over **620 firms** active across domains with over **\$12.6B in revenues**
- Contributed close to **78,000 jobs** to the Canadian economy
  - **An increase** of close to **13,900 jobs** between 2018 and 2020
- Was national in scope, with regional specializations
- Was close to **3X more STEM oriented** and **R&D intensive** than the broader manufacturing sector
- Had close to **80%** of its **supply chain expenditures** with **Canadian and U.S. based suppliers**
- Had **\$6.5B** worth of exports, with **close to 55% of exports** going to Canada's **Five Eyes** partners





# Annex



# Annex 1: Economic Impact Methodology Principles

- Foundation data is based on the latest (2020) Canadian Defence, Aerospace, Marine, and Cybersecurity Industries Survey released in 2022
- ISED economic modelling based on Statistics Canada's latest Input-Output multipliers (2018) and closest related specific economic impact multipliers that relate to defence activities
- Economic model is based on Statistics Canada Input-Output multipliers
  - Defence activity has been linked to the latest (2018) and most relevant specific economic impact multipliers per defence industry goods and services category
  - GDP impact is reported cumulatively and on a yearly average basis
  - Job impact is reported on the annual average basis and measured in terms of full-time equivalent employment (FTE)
  - Total economic impact of the defence industry includes the activity that occurs within the Canadian defence industry, Canadian suppliers to the Canadian defence industry, as well as consumer spending by associated employees across the Canadian economy
  - Economic impact estimates are reported at the national-level and cannot be broken down at the regional-level



## Annex 2: Data Tables

**Table I: Defence Industry vs. Manufacturing Sector Revenues, Employment, R&D and Exports, % Change—2018 to 2020\***

	<b>Defence</b>	<b>Manufacturing</b>
Revenues	18%	-11%
Employment	18%	-6%
R&D	-3%	-14%
Exports	14%	-11%

\* Note: Financial values are in nominal terms and are not adjusted for inflation, and R&D spending relates to defence industry businesses' in-house R&D.  
Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2018, 2020), 2020 survey released in 2022; Statistics Canada export data accessed through "Trade Data Online"; and Statistics Canada's online tables: 27-10-0333-01, 14-10-0202-01, and 16-10-0047-01



# Annex 2: Data Tables (cont.)

**Table II: Defence Industry vs. Manufacturing Sector Revenues, Employment, R&D and Exports—2014 to 2020\***

Key Industry Indicators	DEFENCE INDUSTRY			MANUFACTURING SECTOR		
	2014*	2020	% Change	2014	2020	% Change
Revenues	\$ 9,231,524,542	\$ 12,612,286,611	36.6%	\$ 616,609,722,000	\$ 611,216,697,000	-0.9%
Employment	26,857	34,489	28.4%	1,492,981	1,452,860	-2.7%
R&D** (2016-2020)	\$ 398,848,412	\$ 400,806,699	0.5%	\$ 6,680,000,000	\$ 5,680,000,000	-15.0%
Exports	\$ 5,509,665,830	\$ 6,532,679,153	18.6%	\$ 318,754,843,000	\$ 335,539,476,000	5.3%

\*Changes in monetary values are in current dollars/not adjusted for inflation, with R&D relating to businesses' in-house R&D. Estimates presented here in relation to 2014 defence industry activities are based on updated 2014 data reflecting necessary revisions which occurred subsequent to both Statistics Canada's original data release, and the ISED CADSI publication in 2016 of the "State of Canada's Defence Industry, 2014" report.

\*\*A 2014 defence industry R&D value could not be used for comparisons over time, with 2016 used instead. Among firms accounting for 50.1% of 2014 defence industry revenues, it could not be determined if they performed such R&D, and/or the value of such spending. Hence, the 2014 estimate cannot be regarded as statistically representative of the overall defence industry with sufficient confidence. Since the 2014 value is more likely to notably understate actual R&D in that year, is not used here.

Source: Statistics Canada's *Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2014, 2016, 2018, & 2020)*, 2020 survey date released 2022; Statistics Canada export data accessed through "Trade Data Online"; and Statistics Canada's online tables: 27-10-0333-01, 14-10-0202-01, and 16-10-0047-01



# Annex 2: Data Tables (cont.)

**Table III: Economic Impact**

<b>GDP Economic Impact (\$M)</b>				
<b>Defence Industry</b>	<b>Suppliers to Defence Industry</b>	<b>Defence Industry and Value Chain</b>	<b>Consumer Spending by Associated Employees</b>	<b>Total GDP Economic Impact</b>
\$4,420M	\$2,567M	<b>\$6,987M</b>	\$2,199M	<b>\$9,186M</b>

<b>Jobs Economic Impact</b>				
<b>Defence Industry</b>	<b>Suppliers to Defence Industry</b>	<b>Defence Industry and Value Chain</b>	<b>Consumer Spending by Associated Employees</b>	<b>Total Annual Average Jobs</b>
34,500 Jobs	23,500 Jobs	<b>58,000 Jobs</b>	19,600 Jobs	<b>77,600 Jobs</b>

Source: Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), released in 2020; ISED economic modelling based on Statistics Canada's latest Input-Output multipliers (2018) and closest related specific economic impact multipliers that relate to defence activity



# Annex 2: Data Tables (cont.)

## Table IV: Firm Size Breakdown

Size Breakdown	Share of Total Defence Industry Enterprise Counts	Share of Total Defence Industry Revenues	Share of Total Defence Industry Employment	Share of Total Defence Industry R&D	Share of Total Defence Industry Exports
Enterprises with Fewer than 250 Employees	88%	22%	28%	23%	19%
Enterprises with Between 250 and 499 Employees	6%	11%	12%	8%	12%
Enterprises with 500 or More Employees	6%	67%	60%	69%	69%
Total Enterprises	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

## Table V: Domain Breakdown

Domain	Share of Total Defence Industry Revenues	Share of Total Defence Industry Employment	Share of Total Defence Industry R&D	Share of Total Defence Industry Exports
Aerospace and Space	36%	38%	41%	46%
Land and Other	40%	36%	54%	44%
Marine	24%	27%	6%	11%
Total Enterprises	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



# Annex 2: Data Tables (cont.)

### Table VI: Growth in Revenues by Domain, 2018-2022

	Revenue, % Change, 2018-2020	Revenue, Change in \$ Billion, 2018-2020	Share of Growth from Exports, %
Air & Space Systems	18%	\$ 0.70	74%
Land & Other	8%	\$ 0.36	29%
Marine	41%	\$ 0.87	21%

### Table VII: Regional Employment Breakdown

Regional Breakdown	Western and Northern Canada	Ontario	Quebec	Atlantic Canada
Distribution of Employment in the Defence Industry	19.1%	40.4%	22.3%	18.2%



# Annex 2: Data Tables (cont.)

## Table VIII: Ranking of Regions' Top 10 Activities, by Employment

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





# Annex 2: Data Tables (cont.)

## Table VIII: Ranking of Regions' Top 10 Activities, by Employment

Ranking	Quebec Top 10 Ranking of Activities
1	Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services
2	Ammunition and Other Munitions
3	Aircraft Fabrication, Structures and Components
4	Simulation Systems for Aircraft
5	Military Training Services
6	Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components
7	Combat and Other Military Ground Vehicles and Components
8	Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services
9	Other Defence
10	Naval Ships' Structural Elements, Platform Systems, Parts and Components (Excludes: Ship-Borne Naval Mission Systems)

Ranking	Atlantic Canada Top 10 Ranking of Activities
1	Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services
2	Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services
3	Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services
4	Other Defence
5	Aircraft Fabrication, Structures and Components
6	Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems and Related Components
7	Naval Ships' Structural Elements, Platform Systems, Parts and Components (Excludes: Ship-Borne Naval Mission Systems)
8	Naval Ship-Borne Mission Systems and Components
9	Primarily Land-Based or Man-Portable Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems and Related Components
10	Combat and Other Military Ground Vehicles Maintenance, Repair, Overhaul, Modernization and Upgrade Services



# Annex 2: Data Tables (cont.)

**Table IX: Occupation and Gender Breakdown**

Occupation Breakdown	Share of Employment by Occupation	Gender Breakdown	Share of Occupations' Employment by Gender
STEM	35.4%	Male	83.2%
		Female	16.8%
Production Workers	35.4%	Male	78.8%
		Female	21.2%
Corporate Functions	29.2%	Male	59.3%
		Female	40.7%

## Female Employees' Share of Occupation Types

Occupation Type	Canada's Defence Industry	Canada's Manufacturing Sector
Corporate Functions	41%	46%
STEM	17%	23%
Production Workers	21%	21%
<b>TOTAL</b>	<b>25%</b>	<b>28%</b>

**Table X: Share of an Industry's Employees in STEM Related Occupations**

	2020
Defence Industry	35%
Broader Manufacturing Sector	12%



# Annex 2: Data Tables (cont.)

### Table XI: R&D Funding Sources

Sources of Funds for R&D	Share of R&D Breakdown
Industry Funds for R&D**	67.0%
R&D Funds from Government***	21.3%
Other Sources****	11.7%

### Table XII: Defence and Manufacturing Sector R&D Intensities\*

	2020
Defence Industry	9.1%
Manufacturing Sector	2.8%

\* 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 & services categories, R&D to GDP ratios are not available, but ratios of category-level R&D to sales are available, and are provided in the annex for insights into differences in relative R&D orientation across specific defence activities

\*\* This was led by internal funds from the defence businesses performing the R&D, plus some funds from their parent, affiliated and subsidiary companies. Contract work for other businesses only accounted for under 4% of industry funds for defence industry in-house R&D.

\*\*\* Government funded R&D was led by contract funds

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

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022; ISED estimates of defence industry GDP; and Statistics Canada online tables 27-10-0344-01, 27-10-0333-01 (released in 2021) and tables 36-10-0434-01, 18-10-0005-01 (released in 2022). See annex for associated data tables.



# Annex 2: Data Tables (cont.)

**Table XIII: Defence Goods & Services Categories' R&D to Revenues Ratios**

	Category Revenues	Category R&D Relative Revenues	Ranking, from Highest to Lowest R&D to Revenue Ratio
Unmanned Aerial Systems/Vehicles (UAS/V) and Components	\$ 63,556,985	X > 15%	1
Simulation Systems for Aircraft	\$ 235,430,669	12% < X ≤ 15%	2
Simulation Systems for Naval Vessels	\$ 9,235,218	9% < X ≤ 12%	3
Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$ 377,610,671	9% < X ≤ 12%	4
Missiles and Rockets	\$ 126,891,803	3% < X ≤ 6%	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	\$ 332,564,053	3% < X ≤ 6%	6
Military Training Services	\$ 355,998,765	3% < X ≤ 6%	7
Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems and Related Components	\$ 994,181,470	3% < X ≤ 6%	8
Combat and Other Military Ground Vehicles and Components*	\$ 2,131,512,853	3% < X ≤ 6%	9
Military Personal Protective Equipment, Load Carriage Systems and Operational Clothing	\$ 166,503,552	3% < X ≤ 6%	10
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	3% < X ≤ 6%	11
Other Defence	\$ 636,232,827	3% < X ≤ 6%	12
Ammunition and Other Munitions	\$ 408,365,530	3% < X ≤ 6%	13
Combat and Other Military Ground Vehicles Maintenance, Repair, Overhaul, Modernization and Upgrade Services*	\$ 303,021,503	3% < X ≤ 6%	14
Firearms and Other Weapons	\$ 106,350,078	0% ≤ X ≤ 3%	15
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	0% ≤ X ≤ 3%	16
Simulation Systems for Land Vehicles or Other Applications	\$ 27,861,283	0% ≤ X ≤ 3%	17
Naval Ship-Borne Mission Systems and Components	\$ 480,265,905	0% ≤ X ≤ 3%	18
Aircraft Fabrication, Structures and Components	\$ 1,416,086,478	0% ≤ X ≤ 3%	19
Naval Ships' Structural Elements, Platform Systems, Parts and Components (Excludes: Ship-Borne Naval Mission Systems)	\$ 415,459,845	0% ≤ X ≤ 3%	20
Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$ 1,339,505,777	0% ≤ X ≤ 3%	21
Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$ 775,234,432	0% ≤ X ≤ 3%	22
Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services	\$ 1,331,866,629	0% ≤ X ≤ 3%	23

\* In the case of the two combat vehicles related categories, there is relatively greater certainty in regards to their combined R&D to revenue ratio. Merged together, the R&D to revenue ratio is within 3% < X ≤ 6%, and such a merged grouping would rank at about 12<sup>th</sup> position

Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022, Statistics Canada, Custom Tabulation



## Annex 2: Data Tables (cont.)

**Table XIV: Firms' Sourcing of Inputs to Manufacturing, Share (%) of their Purchases from Canadian Suppliers, 2020\***

	2020
Canadian-Owned Firms' Purchases	62%
Other Foreign-Owned Firms' Purchases	54%
U.S.-Owned Firms' Purchases	43%

\* This reflects the subset of operating expenditures that relate to purchases of mainly raw materials and components that are more directly used for/in manufacturing processes, and differences in the extent to which Canadian vs. foreign-owned businesses make their purchases of such inputs from domestic companies or distributors  
Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022, Statistics Canada



# Annex 2: Data Tables (cont.)

**Table XV: Domestic and Foreign Market Breakdown**

Defence Domestic Revenues		48%	Defence Export Revenues		52%
<i>Domestic Revenues by Customer Type</i>			<i>Export Revenues by Destination</i>		
• Canadian Federal Government	72%	• Canada's 'Five Eyes' Partners		53.4%	
		• United States		49.1%	
• Other Canadian Customers	28%	• United Kingdom (UK)		3.3%	
		• Australia		1.0%	
		• New Zealand		0.1%	
		• Middle East and Africa		26.5%	
		• Europe Other than UK		10.3%	
		• Asia and Oceania - Other than Australia & New Zealand		6.9%	
		• Central America, the Caribbean, Mexico and South America		2.8%	
Defence Industry Domestic Revenues Total		100%	Defence Industry Export Revenues Total		100%



# Annex 2: Data Tables (cont.)

**Table XVI: Defence Goods & Services Categories' Exports to Revenues Ratios**

	Category Revenues	Exports' Share (%) of Category Revenue [Export Intensity]	Ranking, from Highest to Lowest Export Intensity
Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems and Related Components	\$ 994,181,470	80% < X ≤ 100%	1
Unmanned Aerial Systems/Vehicles (UAS/V) and Components	\$ 63,556,985	80% < X ≤ 100%	2
Aircraft Fabrication, Structures and Components	\$ 1,416,086,478	60% < X ≤ 80%	3
Combat Vehicles and Components & Combat Vehicles Maintenance, Repair and Overhaul*	\$ 2,434,534,356	60% < X ≤ 80%	4
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	60% < X ≤ 80%	5
Missiles and Rockets	\$ 126,891,803	60% < X ≤ 80%	6
Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components	\$ 377,610,671	40% < X ≤ 60%	7
Simulation Systems for Aircraft	\$ 235,430,669	40% < X ≤ 60%	8
Naval Ship-Borne Mission Systems and Components	\$ 480,265,905	40% < X ≤ 60%	9
Naval Ships' Structural Elements, Platform Systems, Parts and Components (Excludes: Ship-Borne Naval Mission Systems)	\$ 415,459,845	40% < X ≤ 60%	10
Ammunition and Other Munitions	\$ 408,365,530	40% < X ≤ 60%	11
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	40% < X ≤ 60%	12
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	40% < X ≤ 60%	13
Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$ 1,339,505,777	40% < X ≤ 60%	14
Simulation Systems for Naval Vessels	\$ 9,235,218	20% < X ≤ 40%	15
Military Personal Protective Equipment, Load Carriage Systems and Operational Clothing	\$ 166,503,552	20% < X ≤ 40%	16
Other Defence	\$ 636,232,827	20% < X ≤ 40%	17
Military Training Services	\$ 355,998,765	20% < X ≤ 40%	18
Simulation Systems for Land Vehicles or Other Applications	\$ 27,861,283	0% ≤ X ≤ 20%	19
Firearms and Other Weapons	\$ 106,350,078	0% ≤ X ≤ 20%	20
Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services	\$ 1,331,866,629	0% ≤ X ≤ 20%	21
Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services	\$ 775,234,432	0% ≤ X ≤ 20%	22

\* The survey's two combat vehicles related categories were merged here to provide an export intensity estimate more certain to be representative of the combined set of associated activities, than would be individual estimates where the combat vehicles MRO estimate would have been of more uncertain reliability  
 Source: Statistics Canada's Canadian Defence, Aerospace, Marine and Cybersecurity Industries Survey (2020), 2022, Statistics Canada, Custom Tabulation



# Annex 3: Defence Goods and Services Categories by Domain/Platform Relation

## Air & Space

Aircraft Fabrication, Structures and Components
Military Aircraft Maintenance, Repair, Overhaul, Modernization or Upgrade Services
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
Primarily Airborne Communications and Navigation Systems; and Other Information Systems (Including Processing and Dissemination), Software, Electronics and Components
Primarily Airborne Electro-Optical, Radar, Sonar and Other Sensor/Information Collection Systems; Fire Control, Warning and Countermeasures Systems and Related Components
Simulation Systems for Aircraft
Unmanned Aerial Systems/Vehicles (UAS/V) and Components

## Land and Other

Ammunition and Other Munitions
Combat and Other Military Ground Vehicles and Components
Combat and Other Military Ground Vehicles Maintenance, Repair, Overhaul, Modernization and Upgrade Services
Firearms and Other Weapons
Military Personal Protective Equipment, Load Carriage Systems and Operational Clothing
Military Training Services
Missiles and Rockets
Other Defence
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
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
Simulation Systems for Land Vehicles or Other Applications

## Marine

Naval Ship Maintenance, Repair, Overhaul, Modernization or Upgrade Services
Naval Ship-Borne Mission Systems and Components
Naval Ships' Structural Elements, Platform Systems, Parts and Components (Excludes: Ship-Borne Naval Mission Systems)
Naval Vessel Construction, Conversions, Architecture, Engineering and Related Services
Simulation Systems for Naval Vessels





# Annex 4: Defence Goods and Services Category Official Definitions

## **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'.

## **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.

## **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.

## **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).



# Annex 4: Defence Goods and Services Category Official Definitions (Cont.)

## **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".

## **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".

## **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".



# Annex 4: Defence Goods and Services Category Official Definitions (Cont.)

## **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".

## **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.

## **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



# Annex 4: Defence Goods and Services Category Official Definitions (Cont.)

## **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/restricted to use by militaries in combat, their transportation of military goods and personnel, or to otherwise perform military/naval specific functions).

Relevant Services Include:

- Assessing design requirements and proposals, and determining basic vessel characteristics;
- Modeling related to hydrodynamics and to vessel signature management (e.g., radar cross section; thermal, acoustic and electromagnetic emissions, etc.);
- Overall ship hull and superstructure design, and determination of platform system requirements (e.g., requirements to be met by power and propulsion, steering, HVAC systems, etc.);
- Specifying the layout of vessels' interior space, and the physical layout of platform systems and other systems and machinery within vessels;
- Provision of associated drawings/schematics and job specifications;
- Inspections of machinery and equipment, hulls and superstructures, (including damage surveys);
- Developing and conducting testing and evaluation of machinery and equipment, and of platforms' operational performance;
- 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 as most appropriate in accordance with their respective definitions.
- Sales under contracts specifically for the provision and/or management of maintenance, repair and overhaul services; or of the actual modernization or upgrade of naval vessels and their systems.



# Annex 4: Defence Goods and Services Category Official Definitions (Cont.)

## **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



# Annex 4: Defence Goods and Services Category Official Definitions (Cont.)

## **Naval Ship Maintenance, Repair and Overhaul**

This category includes sales, carried out under contract, related to the provision of services for maintenance, repair, and overhaul of naval surface and subsurface marine vessels (e.g., submarines); as well as for related training activities.

## **Combat 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 designed for use in combat and to transport and protect soldiers, and the 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 relating to combat vehicle-based weapons systems such as guns and missiles 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 be reported under either the appropriate categories for:

- '[Primarily land-based or man-portable] electro-optical, radar, sonar and other sensor/information collection systems; fire control, warning and countermeasures systems; and related components';
- '[Primarily land-based, 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 vehicles maintenance, repair and overhaul'.

## **Combat Vehicles Maintenance, Repair and Overhaul**

This category includes sales, carried out under contract, related to the provision of services for maintenance, repair, and overhaul of land-based vehicles designed for use in combat and to transport and protect soldiers; as well as for related training activities.

## **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



# Annex 4: Defence Goods and Services Category Official Definitions (Cont.)

## **Military Aircraft Maintenance, Repair and Overhaul Services**

This category includes sales relating to maintenance, repair and overhaul activities (carried out under contract) in relation to military aircraft, engines and accessories; as well as for related training activities.

## **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'.

## **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.

## **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.

## **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.



# Annex 4: Defence Goods and Services Category Official Definitions (Cont.)

## **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.

## **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 sustenance 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 4: Defence Goods and Services Category Official Definitions (Cont.)

## **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 and/or performing research and development for:

- Systems and/or services specifically designed or adapted for (and generally restricted to) use by militaries to conduct military operations, and which perform military functions/missions; and related subsystems, components or parts limited in use/specific to such military systems or services and the performance of military specific functions. To be in-scope, businesses' industrial activities must also involve actual production/provision of such goods and services by their employees located in Canada.

EXCLUDED are sales of:

- Goods and/or services that were produced/rendered/provided by facilities and employees located outside of Canada, and then just delivered/sold as is by a business located in Canada;
- Goods sold by wholesaler/distributor/retailer operations located in Canada which were not actually produced by those businesses in Canada, (but which were produced by other businesses located in Canada and/or abroad);
- Cleaning services provided to military facilities, construction and maintenance services for basic housing and infrastructure (e.g., roads, sewers, etc.) 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 (i.e., chemical feed-stocks, metals, etc.).

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