HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

DEVELOPMENT AND SUPPORT OF THE AEROSPACE INDUSTRY

Report of the Standing Committee on Industry and Technology

Joël Lightbound, Chair

JUNE 2022
44th PARLIAMENT, 1st SESSION

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NOTICE TO READER

Reports from committees presented to the House of Commons

Presenting a report to the House is the way a committee makes public its findings and recommendations on a particular topic. Substantive reports on a subject-matter study usually contain a synopsis of the testimony heard, the recommendations made by the committee, as well as the reasons for those recommendations.

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THE STANDING COMMITTEE ON INDUSTRY AND TECHNOLOGY

has the honour to present its

FIFTH REPORT

Pursuant to its mandate under Standing Order 108(2), the committee has studied the development and the support of the aerospace industry and has agreed to report the following:

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SUMMARY

On 5 November 2020, the House of Commons Standing Committee on Industry and Technology (the Committee) agreed to undertake a study on issues related to the development and support of the aerospace industry. As part of this study, it held four meetings, during which it heard 33 witnesses and received two written briefs.

Chapter One of the present report explains that, before the COVID-19 pandemic, the aerospace sector was a strong contributor to economy. However, some subsectors were already experiencing difficulties. The aerospace sector was among the sectors most severely affected by COVID-19, which compounded existing challenges.

Chapter Two summarizes arguments for and against supporting the aerospace sector as Canada recovers from the pandemic. Those in favour recommended supporting the sector on four main fronts: direct financing; research, development and training; procurement; and federal strategies and regulations.

Based on witnesses' proposals, Chapter Three lists the Committee's recommendations for the recovery of Canada's aerospace sector. The Committee acknowledges that a full recovery to the industry's peak could take years. The federal response to this hard-hit industry is likely to shape Canada's future in aerospace for decades to come.

LIST OF RECOMMENDATIONS

As a result of their deliberations committees may make recommendations which they include in their reports for the consideration of the House of Commons or the Government. Recommendations related to this study are listed below.

HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

DEVELOPMENT AND SUPPORT OF THE AEROSPACE INDUSTRY

INTRODUCTION

On 5 November 2020, the House of Commons Standing Committee on Industry and Technology (the Committee) agreed that:

> the committee undertake a study on issues related to the development and support of the aerospace industry; and that the committee devotes a minimum of four meetings to this study and report its findings and recommendations to the House.[1]

The Committee held four meetings and heard 33 witnesses as part of this study. It also received two written briefs.

This report summarizes witness testimony in two chapters. Chapter One describes the impact of the pandemic on the aerospace industry. Chapter Two presents witnesses' visions of the way forward for the industry. The report concludes with the Committee's observations and recommendations.

CHAPTER ONE: IMPACT OF THE PANDEMIC

This chapter summarizes what the Committee heard about the state of Canada's aerospace industry before the COVID-19 pandemic and how the pandemic affected the industry.

State of the Industry Before the Pandemic

As described in this section, witnesses collectively portrayed the state of the industry prior to the pandemic. In short, when COVID-19 began, the aerospace industry was a strong contributor to economy, but some of its elements were already experiencing difficulties. The Committee heard that Canada's aerospace sector generates revenues of $34 billion, contributes $20–28 billion to Canada's GDP, and attracts $1.4 billion in

1 House of Commons Standing Committee on Industry and Technology (INDU), *Minutes*, 5 November 2020.

annual investment.[2] While the industry directly employs an estimated 160,000 to 208,000 people, some maintained that it creates 235,000 direct, indirect and induced jobs, which pay workers about 10% above the national average.[3] In addition, the aerospace sector is Canada's third largest exporter. Approximately 93% of aerospace manufacturers are exporters, and the sector exports 70% to 80% of its production, with major customers in the United States (U.S.), Germany and France.[4] Furthermore, Canada is the second-most attractive country for aerospace investment.[5]

Nevertheless, even before the pandemic, Canada's aerospace sector had fallen from the fifth-largest in the world in the 1980s to the ninth largest.[6] Canada was once the fourth-largest aircraft manufacturer but it has dropped to the 12th-largest.[7] Many witnesses emphasized that the aerospace sector had faced labour shortages and training gaps before the pandemic.[8] Some noted that Canada had already begun losing highly skilled workers to other countries with high research and development (R&D) investments.[9]

Robert Donald, Executive Director of the Canadian Council for Aviation and Aerospace, told the Committee that Canada needed an additional 55,000 maintenance workers by 2025 and that only 25% of them would be graduates from Canadian post-secondary institutions. He pointed to a lack of local training facilities in many areas, especially in northern and rural areas, adding that training is time-consuming and expensive.[10] To

2 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1110 (Suzanne Benoît, President and CEO of Aéro Montréal), 1115 (Mike Mueller, Interim President and CEO, Aerospace Industries Association of Canada), 1130 and 1220 (David Chartrand, Quebec Coordinator of the International Association of Machinists and Aerospace Workers); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1135 (Andy Gibbons, Director, Government Relations and Regulatory Affairs, WestJet Airlines Ltd); INDU, *Evidence*, 25 March 2021, 1125 (Gilles Labbé, Executive Chairman of the Board, Héroux-Devtek Inc.).

3 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130 (David Chartrand); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1135 (Andy Gibbons); INDU, *Evidence*, 25 March 2021, 1125 (Gilles Labbé).

4 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1105 (Philippe Balducchi, CEO, Airbus Canada) and 1135 (Andy Gibbons); INDU, *Evidence*, 25 March 2021, 1125 (Gilles Labbé).

5 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130 (David Chartrand).

6 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1110 (Suzanne Benoît).

7 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1130 (Jerry Dias, National President, Unifor).

8 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130 (David Chartrand); INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1200 (Tracy Medve, President, KF Aerospace).

9 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1110 (Suzanne Benoît); Downsview Aerospace Innovation and Research, *Brief*.

10 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1115 (Robert Donald, Executive Director, Canadian Council for Aviation and Aerospace).

illustrate the labour shortage in the aerospace field, Michael Arthur, President of Boeing International and the Boeing Company, forecasted that there would be 40,000 new planes in 20 years' time, all of which will require pilots, maintenance and ground services. He told the Committee that, while Boeing does not have a pilot training school, it invests in partnerships with universities for recruitment purposes.[11] William Lyons, Senior Director of Global Technology and Global Engineering at Boeing Engineering Test & Technology, added that this research partnership produces knowledge process documents that translate into action for small and medium enterprises (SMEs) that form part of the network.[12]

Dwayne Charette, President and CEO of Airbus Helicopters Canada, identified a "disconnect" between post-secondary educational offerings and the type of advanced manufacturing skills required in the aerospace sector. Aerospace companies often need to fill this training gap themselves.[13]

When asked by a Committee member to identify upcoming challenges facing the sector, Philippe Balducchi, CEO of Airbus Canada, warned of rising international competitiveness and the need for environmentally sustainable travel.[14] Other witnesses offered thoughts on these issues, too. Hugo Brouillard, Chief of Operations and Operations Officer at STELIA Aerospace St-Laurent, noted that Canada used to have a sectoral advantage due to its aerospace expertise, but that its advantage had lessened now that other emerging economies have enhanced their own expertise. He also explained that the vast majority of aerospace-sector revenues flow from new aircraft orders from airlines and business jet clients. In addition, although Canadian manufacturers have enough capability to build an entire plane, the supply chain remains global. Thus, Mr. Brouillard cautioned that outsourcing tier-1 production (the most advanced process in the manufacturing supply chain) can lead to outsourcing for the remaining tiers.[15]

Daniel Goldberg, President and CEO of Telesat, suggested that COVID-19 had hurt business but that "the larger disruption we're facing stems from changes in technology

11 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1210, 1300 (Michael Arthur, President, Boeing International, the Boeing Company).

12 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1215 (William Lyons, Senior Director, Global Technology and Global Engineering, Boeing Engineering Test & Technology).

13 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1110, 1225 (Dwayne Charette, President and CEO, Airbus Helicopters Canada).

14 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1235 (Philippe Balducchi).

15 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1115 (Hugo Brouillard, Chief of Operations and Operations Officer, STELIA Aerospace St-Laurent).

and the hyper competitive global market that we compete in." He stated that his company is competing with businesses in other innovative, advanced economies that receive strong government support. In addition, Mr. Goldberg linked the repurposing of spectrum for 5G to the success of satellite operating services. He also cautioned against the reckless launching of new satellites due to the traffic from existing satellites.[16]

Stewart Bain, CEO and Co-Founder of NorthStar Earth and Space, agreed that the management of satellite and debris traffic in earth's orbit is vital for climate health and for avoiding collisions that could disrupt service provision. He stated that there were 2,300 operational satellites orbiting the Earth at the start of this decade and projected there would be 100,000 by the end. He argued that the ability to retain and retrain workers in this industry depends on having demand for services and being competitive in the marketplace.[17]

Mike Greenley, CEO of MDA, told the Committee that the government's early contributions to the space sector 60 years ago have provided it a comparative advantage today in relation to other countries. In his view, Canada's space sector is well positioned to take part in, and benefit from, the trillion-dollar economy of space. He also indicated that Canadian companies could be well situated to contribute to an eventual north warning system.[18]

Christyn Cianfarani, President and CEO of the Canadian Association of Defence and Security Industries, told the Committee that the Canadian Armed Forces are overdue for recapitalization. She stated that fighter jets are an important component of Canada's and the U.S.' national security, given threats from Russian and China. While she did not suggest that Canada should begin manufacturing fighter jets, Ms. Cianfarani noted that Canada's defence procurement processes are lengthy and do not always benefit Canadian businesses.[19]

16 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1120, 1210 (Daniel Goldberg, President and CEO, Telesat).

17 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1135, 1140, 1225 (Stewart Bain, CEO and Co-Founder, NorthStar Earth and Space).

18 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1135 1225 (Mike Greenley).

19 INDU, *Evidence*, 43rd Parliament, 2nd Session, 1245, 1300 (Christyn Cianfarani, President and CEO, Canadian Association of Defence and Security Industries)

Impact of the Pandemic on Aerospace

The aerospace sector was among the sectors most severely affected by COVID-19. This section describes the impact of the pandemic on the aerospace industry and on its various segments, as well as how Nav Canada responded to the crisis.

Downsview Aerospace Innovation and Research explained that aerospace companies in Canada have collectively lost 40% of their revenue, and over half of these companies needed to lay off employees.[20] Tracy Medve, President of KF Aerospace, told the Committee that the industry's employment fell by 33% in 2020, compared to a fall of 5.2% in the broader economy. However, she argued that the drop in employment was not the industry's fault and that "the speeds and means of recovery are not within the industry's control."[21]

Andy Gibbons, Director of Government Relations and Regulatory Affairs at WestJet Airlines Ltd. (WestJet), told the Committee that the air travel industry was experiencing revenue losses of over 40% and that 95% of air travel companies were reporting shutdowns. He also noted that the airline's decision to refund cancelled flights had unintended consequences for its travel agent and adviser partners.[22]

Mr. Balducchi explained that airlines were operating at about 20% of 2019 levels due to travel restrictions and lower demand for travel. Airbus' own A220 program was also set back about two years by the pandemic. It lost 300 of its 2800 pre-pandemic employees and shifted from delivering 48 aircraft from Mirabel, Quebec, in 2019 to delivering 32 aircraft from Mirabel and six from Alabama in 2020.[23] Some witnesses explained that it would take time to rebuild infrastructure and return to prior airline services, reminding the Committee that government actions could determine how long the recovery takes.[24] This report will address the matter of recovery more deeply in its following Chapter.

Suzanne Benoît, President and Chief Executive Officer of Aéro Montréal, explained that many airlines had taken on debt before the pandemic to invest in new equipment and expand plants. As a result of those capital investments and pandemic changes to repayment terms, SMEs were left with cash flow problems. She "observed a nearly 60% reduction in airlines' new aircraft requirements and [she did] not anticipate a return to

20 Downsview Aerospace Innovation and Research, *Brief*.

21 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1130 (Tracy Medve).

22 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1135, 1205 (Andy Gibbons).

23 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1105 (Philippe Balducchi).

24 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1135, 1235 (Andy Gibbons).

previous production levels until 2024–2025." In addition, Ms. Benoît lamented the absence of targeted support to the aerospace sector in Canada since the pandemic, noting that other countries had supported theirs. She pointed to the U.S. ($80 billion in funding), France ($26 billion) and Germany (nearly $10 billion).[25]

Mr. Charette stated that helicopter manufacturers and operators "have been deeply affected by the double whammy of the COVID-19 pandemic and the severe slowdown in the resources sector," with many going bankrupt or pulling out of the sector.[26] Mr. Brouillard explained that STELIA's clients had postponed their orders due to the cancelled and delayed deliveries that COVID-19 caused their clients. His company's order volume and five-year forecasts had dropped over 30% to date.[27] Rick Whittaker, CEO of AirShare Inc., noted that restrictions on major events had reduced demand for drones and drone systems. Accordingly, suppliers reduced production, increased product costs or ceased operating.[28]

Jerry Dias, National President of Unifor, stated that due to low demand for travel, the airline industry was not buying planes during the pandemic, resulting in worker layoffs. Approximately 40% of Unifor members in the aerospace sector were laid off during the pandemic and, while many members returned to work, 8% of layoffs were not rescinded.[29] David Chartrand, Quebec Coordinator of the International Association of Machinists and Aerospace Workers, indicated that his union had about 10,000 people on layoff, furlough or not at work due to the pandemic. Many of these workers changed sectors or retired early, resulting in the loss of knowledge transmission—a problem exacerbated by the cessation of most training during the pandemic. He warned that the loss of expertise would translate into lower investment.[30] Mr. Chartrand also reminded the Committee that airports are communities of many different workers who are all affected if flights, especially regional routes, do not run and ticket prices increase.[31]

According to Mr. Donald, the pandemic provided a temporary reprieve for labour shortages in some sectors of the aerospace industry, especially air operators. Roughly 35% of the aerospace sector was lost to layoffs, early retirements and the departure of

25 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1110 (Suzanne Benoît).

26 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1110 (Dwayne Charette).

27 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1115 (Hugo Brouillard).

28 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1105 (Rick Whittaker, CEO, AirShare Inc.).

29 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1130 (Jerry Dias).

30 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1230, 1245, 1250 (David Chartrand).

31 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1250 (David Chartrand).

workers to other sectors. However, Mr. Donald predicted a return to labour shortages once demand for services resurges. If Canadian companies cannot handle the demand for maintenance work, companies will outsource it offshore. Mr. Donald added that Transport Canada permitted online training during the pandemic, but the uncertainty about whether this permission would extend post-pandemic created long-term planning difficulties for colleges.[32] Ms. Medve indicated that KF Aerospace had kept employees working and had trained new workers during the pandemic because it expected high demand for workers when demand resurges. It invested $14 million, without subsidies, to build training colleges and help ensure new employees use KF facilities.[33]

In addition, Mr. Brouillard noted that Airbus did not know whom to contact in the federal government to resolve issues because there is no direct line of communication as there is in the Government of Quebec. This made it difficult to resolve issues with, for example, the Canada Emergency Wage Subsidy.[34]

Ms. Cianfarani noted that the defence aerospace sector fared better than commercial aerospace during the pandemic because Canada and other countries have not reduced defence spending.[35] While the space sector did not experience the same sharp decline in R&D as did other aerospace businesses, Mr. Goldberg suggested that this was because the space sector is too competitive to forgo R&D.[36]

Impact of the Pandemic on Nav Canada

Several organizations told the Committee about the effects of the pandemic on Nav Canada (NavCan), a private, not-for-profit corporation that manages Canadian civil airspace and oversees air traffic. NavCan recovers air navigation service (ANS) costs through service charges paid by aircraft operators. According to a brief NavCan sent to the Committee, ANS revenues have been reduced due to lower air travel, leading to a shortfall of roughly $550 million.[37] Since NavCan will recuperate its shortfall by raising

32 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1115, 1150, 1230 (Robert Donald).

33 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1200 (Tracy Medve).

34 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1155 (Hugo Brouillard).

35 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1120 (Christyn Cianfarani).

36 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1150 (Daniel Goldberg).

37 Nav Canada, *Brief*.

service charges to operators, Mr. Gibbons noted that consumers would be paying the cost of NavCan's 30% fee increase.[38]

NavCan recognized that COVID-19 increased the need to "safely accelerate initiatives that will drive operational efficiencies, increase system resiliency and therefore Canadian competitiveness."[39] It launched aeronautical studies to identify airport locations whose ANS services could be streamlined. Notably, NavCan also eliminated 720 positions, or 14% of its pre-pandemic workforce, in all areas of business.[40]

Doug Best, President and CEO of the Canadian Air Traffic Control Association (CATCA), stated that the air traffic control segment was already facing 13% labour shortfalls pre-pandemic. He explained that NavCan aimed to balance lost revenues by terminating trainees. NavCan offered early retirement incentives in 2020 and, by March 2021, it was 18% short-staffed to its pre-pandemic numbers, with potential to rise to 20%.[41]

Mr. Best warned that these short-term financial decisions would impair delivery of service in the long-term because cuts would create bottlenecks for airlines and customers. He also stated that layoffs could cause Canada to lose expertise to other countries when people looking for work are hired elsewhere. Furthermore, he noted that NavCan's staffing shortfalls posed a safety risk; he cited a survey of 1,400 CATCA members finding that 80% believed that looming cuts posed a moderate or high risk to public safety. Mr. Best emphasized that the staffing safety risks of increased fatigue and stress pre-dated the pandemic, noting that over 84% of air traffic controllers did not trust management to put safety first. He added that CATCA had not been consulted on most processes.[42]

NavCan representatives disagreed; Ray Bohn, President and CEO of NavCan, stated that NavCan's governance structure includes "representation and consensus amongst our four founding members: the air carriers, the Government of Canada, business in general aviation and our employees."[43] With respect to labour shortages, Mr. Bohn stated that he understands concerns about job losses but that safety was a paramount concern for

38 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1250 (Andy Gibbons).

39 Nav Canada, *Brief*.

40 Ibid.

41 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1115, 1205 (Doug Best, President and CEO, Canadian Air Traffic Control Association).

42 Ibid.

43 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1155 (Ray Bohn, President and CEO, Nav Canada).

all decisions made. He also argued that, despite assertions otherwise, the outcomes of NavCan's aeronautical studies are not pre-determined and instead account for the results of widespread consultation. It will also be adding an extra step to its stakeholder input process to allow stakeholders to make representations regarding specific recommendations for 60 days before the study is sent to Transport Canada.[44] Jonathan Bagg, Director of Stakeholder and Industry Relations at NavCan, explained that Transport Canada – NavCan's safety regulator – independently reviews and approves studies before the outcomes are implemented.[45]

CHAPTER TWO: THE WAY FORWARD

Chapter One described the state of the aerospace industry before the pandemic and listed the effects of the pandemic on its operations. This chapter summarizes what the Committee heard about the government's role in supporting the aerospace sector and helping it recover from the COVID-19 pandemic. The first section of this chapter provides an overview of witnesses' arguments for and against supporting the aerospace sector. The second section summarizes what witnesses argued will be needed for a sectoral recovery.

Why Support Aerospace?

As described in this section, most witnesses made arguments in favour of federal supports for the aerospace sector. Several organizations explained that the sector produces a high level of R&D that benefits other industries and supports economic growth across Canada.[46] Other witnesses also emphasized that the aerospace sector is a source of well paid, middle-class, unionized jobs and that public funding for the sector yields higher wages.[47] Some highlighted that Canada profits from the aerospace industry

44 Ibid., 1155 and 1200.

45 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1155 (Jonathan Bagg, Director, Stakeholder and Industry Relations, Nav Canada).

46 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130, (David Chartrand) and 1120 (Mike Mueller); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1130 (Jerry Dias).

47 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130, (David Chartrand), 1145 (Mike Mueller) and 1120 (Kimberley Van Vliet Director of Aerospace, Alberta Aviation Council); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1130 (Jerry Dias).

more than other countries but provides its industry, including its airlines, comparatively little support.[48]

Mr. Chartrand stated that government funding in aerospace stimulates corporate spending at a ratio of 1:4.[49] Mr. Dias claimed that for every dollar the government invests in aerospace, it receives $100.[50] Mr. Gibbons explained that airlines drive demand in the aerospace sector and that WestJet invested $2.7 billion in its suppliers, creating $5.4 billion in output and 25,000 jobs.[51]

Witnesses emphasized that federal support for the aerospace sector inspires industry confidence and attracts foreign direct investment to Canada. By the same token, failure to support the sector could lead to loss of talent, investors, businesses and tier 1 suppliers to other countries. This in turn could slow knowledge transfer between generations of experts.[52] Mike Mueller, Interim President and CEO of the Aerospace Industries Association of Canada, pointed out that the aerospace industry was one of few industries without a national strategy. Without such a strategy and without dedicated funding, Canada could lose skilled workers and opportunities to other countries with those advantages.[53]

Jason Hamilton, Chief Revenue Officer at Hexagon's Autonomy & Positioning Division, maintained that Canada is "uniquely positioned to benefit from airspace modernization" given its vast size and the transportation needs of northern and remote communities.[54] For her part, Ms. Medve encouraged the government to view the aerospace industry as a partner in Canada's economic foundation and growth, rather than a source of revenue.[55] Mr. Greenley argued that the space sector holds special importance for Canada's manufacturing, national security, prosperity and international prestige. It also inspires pursuits in science, technology, engineering and math (STEM) pursuits. He

48 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130, (David Chartrand) and INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1105 (Philippe Balducchi).

49 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130, (David Chartrand).

50 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1200 (Jerry Dias).

51 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1135 (Andy Gibbons).

52 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1200 (Suzanne Benoît) and 1230, 1255 (Mike Mueller); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1110 (Mr. Balducchi).

53 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1115, 1155, 1200 (Mike Mueller); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1135 (Andy Gibbons).

54 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1135 (Jason Hamilton, Chief Revenue Officer, Hexagon Autonomy & Positioning Division).

55 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1130 (Tracy Medve).

explained that public funds invested in space produce "twice the impact" in multiplier effects. In addition, Mr. Greenley reminded the Committee that the government plays a paramount role in the space sector as an investor, owner, regulator and anchor customer.[56]

Mr. Gibbons indicated that federal policies supporting travel price reductions would be appropriate when the economy is strong but would be inappropriate for recovery. In addition to lowering the cost of travel, he told the Committee that supporting WestJet's preferred policies would also support workers "and ensure that Canada has a competitive global airline based in the west."

Mr. Gibbons added that 94% of WestJet's key suppliers support their communities by investing in Indigenous rights, environmental organizations and other local charities.[57] He and other witnesses pointed out that the aerospace sector is interested in innovating to provide greener aviation technology.[58] Ms. Benoît specified that transforming the aerospace industry will provide crucial help to meeting Canada's greenhouse gas emissions targets. She highlighted the development of "new low-emissions engines based on hybrid, electric and hydrogen propulsion."[59] Kaylie Tiessen, National Representative at the Research Department of Unifor, explained that aerospace unions give back to the community by reinvesting in training, contributing to social justice funds and making workplaces more diverse and inclusive.[60]

Nevertheless, Aaron Wudrick, Federal Director of the Canadian Taxpayers Federation, raised questions about why the aerospace industry is so different from other industries as to merit more federal support. He pointed out that, while the aerospace industry employs many people, so do other industries that do not receive the same level of subsidies. He added that these subsidies are partly responsible for the higher wages of the industry, so the government should account for the cost of those subsidies when calculating the industry's net benefit to Canadians.[61]

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56 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1135 (Mike Greenley).

57 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1140 (Andy Gibbons).

58 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1140 (Andy Gibbons); INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1210 (Gilles Labbé).

59 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1115 (Suzanne Benoît) and 1145 (Mike Mueller).

60 INDU, *Evidence*, 43rd Parliament, 2nd Session, 1220 and 1225 (Kaylie Tiessen, National Representative, Research Department, Unifor).

61 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1120, 1210 (Aaron Wudrick, Federal Director, Canadian Taxpayers Federation).

Mr. Wudrick acknowledged that the global aerospace industry is not a textbook competitive market due to foreign subsidies. Thus, he wondered "how far Canada should be prepared to go to defend this industry" against foreign competitors with more resources, given that money earmarked for aerospace would be an opportunity cost in other areas. He also contended that subsidizing an industry always involves signalling to the public that some jobs are better than others.[62]

Taking Steps Toward Recovery

Having heard about the state of the aerospace industry and about the advantages and disadvantages of supporting it, the Committee heard recommendations about how the federal government could help the industry recover from the pandemic. Witnesses recommended supporting the sector on four main fronts: direct financing; R&D and training; procurement; and strategies and regulations.

Direct Financial Support

Many witnesses proposed supporting the industry through direct financial relief, including by supporting liquidity (e.g., postponing the reimbursement of repayable federal loans) and establishing development and consolidation funds.[63] Since the aerospace industry was hit harder by the pandemic than other industries, some suggested that the Canada Emergency Wage Subsidy (CEWS) be extended for the aerospace sector until the end of the crisis, which Ms. Benoît anticipated being in 2024. Doing so would support employee retention and thus prevent the loss of knowledge transfer and ease pressure on corporate cash flows. Other witnesses added that financial support like the CEWS should be proportional to other countries' and specified it should have controls to ensure it supports employee retention.[64]

Several organizations lamented the government's decision to fold aerospace-specific funding into the Strategic Innovation Fund. This change, they argued, is sector-agnostic, not sufficiently accessible to sectoral players, not funded adequately, and unattractive to foreign investors. With this change, the government lost expertise in aerospace and funding became less flexible. Some pointed instead to previous successful programs, such as the Strategic Aerospace and Defence Initiative, as examples of sector-specific

62 Ibid.

63 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1105 (Philippe Balducchi); 1130 (Jerry Dias).

64 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130 (David Chartrand) and 1150 (Suzanne Benoît); INDU, *Evidence*, 43rd Parliament, 2nd Session, 1130 (Jerry Dias) and 1215 (Kaylie Tiessen).

funding.[65] Mr. Labbé added that a sector-specific program would provide predictability and allow aerospace businesses to sustain five-year long development cycles.[66] According to Mr. Bain, it would also support R&D and the commercialization of innovations.[67]

Kimberley Van Vliet, Director of Aerospace at the Alberta Aviation Council, noted that the government eliminated tax incentives for capital expenditures through the Scientific Research and Economic Development program. She argued that this move adversely affected the aerospace sector by hurting advanced manufacturing and recommended that incentives be reinstated. Ms. Van Vliet also recommended establishing an aerospace-specific Indigenous benefits program and incentivizing foreign direct investment to small companies by improving the Industrial and Technological Benefits (ITB) Policy.[68]

Some argued for support for airlines since they support manufacturing, maintenance and overhaul companies through equipment orders and repairs.[69] However, Mr. Chartrand specified that this support must be earmarked for operations and production rather than corporate bonuses and share buybacks. He also suggested that loans and grants be tied to green technologies. Furthermore, he pointed to the U.S. EXIM bank financing model,[70] which provides incentives for R&D and FDI and which Mr. Chartrand proposed could incentivize "on-the-job training, skills upgrading and training for new technologies.[71]

Mr. Brouillard recommended that the government provide direct and immediate assistance to the aircraft manufacturers, original equipment manufacturers and buyers (i.e., airlines) of next-generation aircraft to boost demand for their construction. He also advocated for direct support for significant investments that companies made before

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65 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1115 (Suzanne Benoît), 1130 (David Chartrand) and 1255 (Mike Mueller); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1105 (Philippe Balducchi); INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1125 (Gilles Labbé).

66 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1150 (Gilles Labbé).

67 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1255 (Stewart Bain).

68 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1125 (Kimberley Van Vliet).

69 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130 (David Chartrand) and 1300 (Mike Mueller); Downsview Aerospace Innovation and Research, *Brief*.

70 The Export-Import (EXIM) Bank of the United States "is the official export credit agency of the United States [that] facilitate[es] the export of U.S. goods and services … by equipping them with the financing tools necessary to compete for global sales… Because it is backed by the full faith and credit of the United States, EXIM assumes credit and country risks that the private sector is unable or unwilling to accept."

71 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130 (David Chartrand).

revenues dropped, and for programming support, such as tax incentives, to face global competition from emerging and industrialized countries alike.[72]

Mr. Best recommended providing NavCan with financial assistance to provide resilience in the face of economic downturn, and to require a moratorium on layoffs.[73] Mr. Bohn explained that NavCan was working to ensure it has the workforce to support the recovery of the aviation sector, but he suggested that a moratorium was appropriate on the condition that safety is NavCan's top priority. However, he noted that recovery to 2019 air traffic levels would take several years and would require governmental-industrial cooperation. Mr. Bohn also stated that management's base and variable pay had been reduced during the pandemic, noting that government grants would form part of NavCan's financial planning. Finally, he recommended establishing targets for re-opening travel, but stressed the importance of safety measures such as rapid testing and isolation.[74] In its brief, NavCan further recommended "a balanced set of supports that can help enable the economic potential of the industry," including investment in emergent technologies.[75]

Mr. Wudrick argued against the provision of corporate bailouts to any industry because the government would be

> either giving money to an entity that doesn't need it, as we've seen some companies openly say; or [it would be] giving it to companies that may not deserve it, because… if they can't survive but for the subsidy, then it's probably a bad idea to give it to them.

While he did not believe subsidies to be worth the benefits to taxpayers, Mr. Wudrick believed that liquidity policies and loans – if repaid, and with proper disclosure – could be more defensible. He also argued that giving the government an equity stake in airlines receiving subsidies is one potential step for achieving accountability, but it is not ideal because businesses should make decisions for profitability and shareholder interests. He also suggested that the government should impose transparency requirements on businesses when providing subsidies.[76]

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72 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1115 (Hugo Brouillard).

73 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1135 (Doug Best).

74 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1135, 1235, 1245 (Ray Bohn).

75 Nav Canada, *Brief*.

76 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1145, 1150, 1155 (Aaron Wudrick).

Support for Research and Development and Training

Various witnesses recommended that the government support R&D and workforce training in the aerospace sector. Mr. Hamilton stressed that skilled labour in STEM fields is the foundation for Canada's innovation, and that the federal government can build skills by investing in universities and research credits.[77]

Mr. Charette recommended that the government capitalize on opportunities to fund R&D toward environmentally sustainable flights and toward adapted programs such as those related to process improvements and product manufacturability.[78] Similarly, Downsview Aerospace Innovation and Research recommended immediate investments in collaborative aerospace R&D in key areas of growth, including clean and sustainable technologies. It also urged greater collaboration between small and large companies and with academia to promote knowledge transfer and exposure to STEM opportunities in aerospace.[79]

Mr. Greenley urged continued investment in technology development and demonstration.[80] Notably, Renaud Gagné, Director of Unifor Quebec, pointed out that supports for R&D are not clear enough for companies to take advantage of.[81]

Mr. Chartrand proposed the implementation of "a cluster policy, based on regional innovation systems, which would include support for academic and industrial research co-operation."[82] For Ms. Van Vliet, the construction of a proposed "Canadian Centre of Excellence for Aerospace and Aviation Research and Training" — a set of aerospace projects akin to a supercluster in Alberta — would be a nation-building project. She argued that this project would

> attract foreign direct investment to link sustainable and responsible northern development; accelerate Canada's Arctic sovereignty; and grow Canada's middle class through advanced manufacturing jobs and training for indigenous peoples, youth and women. This opportunity [would] also provide job transition and export development opportunities to Canadians from coast to coast to coast.[83]

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77 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1255, 1255 (Jason Hamilton).

78 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1115, 1230 (Dwayne Charette).

79 Downsview Aerospace Innovation and Research, *Brief*.

80 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1140 (Mike Greenley).

81 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1200 (Renaud Gagné).

82 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1135 (David Chartrand).

83 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1120 (Kimberley Van Vliet).

Ms. Benoît recommended the creation of a cross-Canadian "strategic aerospace industry program" to mobilize sectoral players. She and Mr. Chartrand pointed to France as an example, which supported a specific, long-term, green R&D project by providing funding to and assisting SMEs.[84] Ms. Benoît also supported the establishment of a "centre of excellence in aerospace-related artificial intelligence or … in aerospace 4.0 and robotics" that could allow major foreign corporations awarded federal contracts to transfer knowledge to Canada.[85]

Mr. Balducchi suggested increasing R&D funding by fuelling the hype around aerospace as a high-tech sector and supporting existing projects such as the next generation of green aircraft.[86] Mr. Lyons pointed out that Canadian R&D policies should support the development of Canadian advantages, such as advanced materials and data analytics.[87]

Mr. Whittaker pointed to the U.S. Small Business Innovation Research program as a model for Canadian innovation. He underlined that it focuses on the government as an end user, funds early-stage projects, matches private funding, provides a path to large-scale procurement, and provides support on a multi-year basis. Furthermore, Mr. Whittaker emphasized the importance of supporting the long-term retention of employees to create certainty for employees and employers alike.[88] Some witnesses reiterated the importance of establishing a policy climate that promotes aerospace training to underrepresented groups, such as women and girls. Flexible requirements for training could be one way of achieving this goal.[89]

Mr. Donald criticized the lack of colleges as well as Transport Canada's regulation of colleges and its unpreparedness for the pandemic. He stated that Transport Canada-approved colleges are required to follow 20-year-old, outdated curricula that include information about how to fix and maintain parts no longer in use. In addition, the training is hours-based rather than competency-based, and only half of graduates from college programs meet Transport Canada requirements. Thus, he identified a need for

84 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1115, 1130 (David Chartrand) and 1150 (Suzanne Benoît).

85 According to Deloitte, "Industry 4.0, or the Fourth Industrial Revolution, is the creation of a digital manufacturing enterprise that is not only interconnected but also communicates, analyzes, and uses information to drive further intelligent action back in the physical world." The aerospace industry is undertaking such a transformation. INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1205 (Suzanne Benoît).

86 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1105, 1150 (Philippe Balducchi).

87 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1250 (William Lyons).

88 INDU, Evidence, 43rd Parliament, 2nd Session, 25 March 2021, 1225 (Rick Whittaker).

89 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1135 (Tracy Medve) and 1250 (William Lyons).

more training capacity "through new, more accessible, efficient, effective and targeted ways of training," ideally through a federal-industrial pilot project.

Mr. Donald also advocated for permanent hybrid training models rather than full-time brick-and-mortar learning. He proposed stronger recognition for the competencies of immigrants and gap training for immigrant workers.[90] Ms. Medve added that Canada's foreign worker program is expensive and time-consuming, but the program is necessary to address skilled labour shortages in manufacturing, repair and operating roles.[91] Mr. Chartrand and Mr. Charette also recommended earmarking federal funds for training programs, including in the provinces.[92]

Procurement Support

Many witnesses told the Committee that the federal government can leverage procurement by buying Canadian products and awarding maintenance contracts to Canadian companies to support its aerospace industry. Some pushed the government to accelerate planned procurement spending in the sector, including defence and space, in partnership with the U.S.[93] Mr. Labbé explained that accelerating defence programs would help retain and employ more highly trained and skilled experts.[94] Ms. Cianfarani specified that Canada is a world leader in training systems, so training programs should be accelerated.[95]

Witnesses also encouraged support for SMEs to win aerospace and defence contracts, including by ensuring procurement criteria are fair, unbiased, transparent and clearly defined.[96] Mr. Dias suggested that the federal government promote Canadian-made aerospace products in local and export markets.[97] Ms. Medve recommended that carriers be required to give priority to Canadian maintenance, repair and operating

90 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1140, 1150, 1230, 1240, 1255 (Robert Donald).

91 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1255 (Tracy Medve).

92 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1135 (David Chartrand); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1115 (Dwayne Chartrand).

93 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1300 (Mike Mueller); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1115 (Dwayne Charette); INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1120 (Christyn Cianfarani).

94 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1225 (Gilles Labbé).

95 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1300 (Christyn Cianfarani).

96 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1130 (David Chartrand); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1115, 1225, 1240, 1245 (Dwayne Charette).

97 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1130 (Jerry Dias).

services when awarding contracts, since awarding those contracts elsewhere erodes Canadian capabilities.[98]

Several witnesses indicated that through the ITB policy, defence contracts could be leveraged to provide extra value by requiring suppliers to invest in Canada, including by using Canadian suppliers to implement the contract.[99] However, Ms. Medve suggested that the use of the ITB policy for contracts awarded to foreign companies is a zero sum-game:

> All you're doing is taking it away from a Canadian company, which is using Canadian companies to do the work, and giving it to a foreign company to then require them to hire all the people you just lost to this company.[100]

She added that, if a company innovates too much, the government may not invest in those new ideas.

Similarly, Stéphane Oehrli, President and CEO of Rheinmetall Canada Inc., cautioned that government policies and programs that encourage overcommitment to spill-over benefits in procurement could distort entrepreneurs' calculations. As a result, he argued the current ITB requirements could stifle innovation and "weaken the competition in the long term." Mr. Oehrli thus recommended to respect the hard cap of 100% of contract value in ITB obligations. He also recommended including point multipliers for SMEs and expanding the list of key industrial capabilities to attract investment. Finally, he proposed lowering the allowed maximum for banked transactions so that contractors do not rely on past investments to meet ITB obligations.[101]

Steeve Lavoie, President of Bell Textron Canada Limited, recommended that Canada introduce a Canadian content-based national procurement strategy to support its aerospace industry, including defence procurement. He added that the recommendations from the Emerson (2012) and Jenkins (2013) reports, which address Canada's future in aerospace, have not been implemented.[102] Marc Bigaouette, Director of the CH-146 Griffon Fleet, Bell Textron Canada Limited, noted that demand from the Department of National Defence had ensured the company did not have a single layoff

98 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1130 (Tracy Medve).

99 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1105 (Michael Arthur).

100 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1250 (Tracy Medve).

101 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1135, 1220, 1245 (Stéphane Oehrli, President and CEO, Rheinmetall Canada Inc.).

102 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1115 (Steeve Lavoie, President, Bell Textron Canada Limited).

during the pandemic, and even increased capacity in Calgary. He pointed to the United Kingdom as an example of a country that integrates industry into its defence policy and successfully sole sources most of its defence procurement.[103]

Mr. Bain pointed to the "other transaction authorities" mechanism in the U.S., to which non-traditional defence companies have access, that allow for non-traditional public-private partnerships. He recommended that a similar mechanism be created in Canada.[104]

Some favoured government procurement as a solution because it provides industrial players the long-term predictability and capital necessary for recovery and employee retention.[105] Others saw government procurement as a means to maximize partnerships between government and industry, including by serving as an anchor customer to help commercialize aerospace outputs.[106] Some added that government contracts create new jobs, which in turn contributes to workforce training.[107] However, Mr. Dias noted that procurement discussions were simpler when Air Canada was federally owned.[108]

Federal Strategies and Regulations

The Committee also heard several recommendations that focused on the creation of a federal strategy or modifications to the regulatory regime. Witnesses pointed out that the government had turned down the idea of an aerospace supercluster on the grounds that the sector already had sufficient organization. Various organizations argued for the creation of a supercluster or its replacement with an integrated, funded national aerospace strategy across the civil, defence and space segments.[109]

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103 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1140, 1145 (Marc Bigaouette, Director, CH-146 Griffon Fleet, Bell Textron Canada Limited).

104 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1225 (Stewart Bain).

105 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1300 (Mike Mueller); INDU, *Evidence*, 43rd Parliament, 2nd Session, 1145 (Jerry Dias); INDU, Evidence, 43rd Parliament, 2nd Session, 25 March 2021, 1225 (Rick Whittaker).

106 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1140 (Mike Greenley) and 1255 (Mike Mueller).

107 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1210 (Michael Arthur).

108 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March, 1200 (Jerry Dias).

109 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1115, 1150 (Suzanne Benoît), 1130 and 1240 (David Chartrand), 1155, 1205, and 1300 (Mike Mueller); INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1130 (Jerry Dias) and 1215 (Andy Gibbons); INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1140 (Robert Donald).

While witnesses' priorities varied, some suggested that the strategy could fund basic research and apply it to certain sectors and to support green transformation of the sector. It could also facilitate long-term planning and more effectively retain sectoral expertise. The strategy could also address training and skilled labour shortages, which were exacerbated by the pandemic and mainly affect the most junior and most senior employees. Such a strategy could also structure support to make the industry, including its supply chains, more resilient to crises.[110] Mr. Dias specified that this strategy should be developed by a multi-stakeholder aerospace industry council.[111]

Mr. Greenley stressed the need for "a long-term space plan that outlines the government's planned investments in space as well as a modern regulatory framework." The space plan could stimulate all areas of the space economy and adjust regulations to support the operation of spacecraft from control centres in Canada.[112] Mr. Bain recommended that Canada prioritize sustainable space development as part of a green recovery, "including building on the best space traffic management services developed here in Canada."[113]

Mr. Hamilton explained that Canada must invest to protect its global positioning system infrastructure from jamming and spoofing, and that it must monitor and enforce protections for the satellite navigation radio frequency system.[114] He also told the Committee that more regulation and guidance on the interoperability of manned and unmanned aircraft would help attract investment. In addition, companies need regulatory support for exporting aerospace technologies to make them predictable, transparent, and consistent with international standards. He noted that government agencies should help companies export.[115]

Mr. Balducchi highlighted the importance of keeping Export Development Canada active.[116] Mr. Oehrli noted that the ITB policy promotes exportation but noted that the

110 Ibid.

111 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1130 (Jerry Dias).

112 INDU, *Evidence*, 43rd Parliament, 2nd Session, 9 March 2021, 1140 (Mike Greenley).

113 INDU, *Evidence*, 43rd Parliament, 2nd Session, 25 March 2021, 1140 (Stewart Bain).

114 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1135 (Jason Hamilton).

115 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1135, 1255 (Jason Hamilton).

116 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1105, 1150 (Philippe Balducchi).

issuing of export permits is slowing down, suggesting that this imbalance should be mitigated.[117]

Ms. Medve suggested that the government remove impediments to business prosperity, such as making it easier for airlines and aerospace companies to do business and not imposing charges that airlines pass onto customers (e.g., airport rents, NavCan fees). She also recommended government partnerships with, and support to, the tourism industry in order to provide carriers with a stable income stream.[118]

Mr. Whittaker suggested that the government establish regulatory sandboxes to support innovation.[119] Mr. Gibbons recommended that aerospace recovery efforts prioritize domestic travel and that the government negotiate, with provinces, a clear policy for COVID-safe travel. He further recommended transitioning Alberta's pilot project on arrivals testing and providing funding for testing, emphasizing that the relationship between testing and quarantine must evolve.[120]

CHAPTER THREE: COMMITTEE OBSERVATIONS AND RECOMMENDATIONS

The Committee recognizes that the aerospace industry is a vital contributor to the Canadian economy and an important source of well-paying jobs. Aerospace spans various sectors, from tourism to defence, and brings multiplier effects down each sector's supply chain. Canada has been involved in aerospace since the industry's nascent stages and Canadians will continue innovating in this industry long into the future.

As the global economy emerges from the COVID-19 pandemic, the Committee acknowledges that the aerospace industry was among the hardest hit. A full recovery to the industry's peak could take years. The federal response to this hard-hit industry is likely shape Canada's future in aerospace for decades to come. The Committee notes that the government introduced measures in Budget 2021 designed to support the aerospace industry. Its recommendations are intended to complement and build on these measures in order to enlighten the Government on the implementation of a

117 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1215 (Stéphane Oehrli).

118 INDU, *Evidence*, 43rd Parliament, 2nd Session, 23 March 2021, 1130 (Tracy Medve).

119 INDU, Evidence, 43rd Parliament, 2nd Session, 25 March 2021, 1225 (Rick Whittaker).

120 INDU, *Evidence*, 43rd Parliament, 2nd Session, 11 March 2021, 1140 (Andy Gibbons).

national strategy for its aerospace industry and to underline the importance of implementing it as soon as possible.

The Committee would like to thank all the witnesses who presented testimony and organizations that have submitted briefs. It has considered their proposals and makes the following recommendations:

Recommendation 1

That the Government of Canada ensure that a Center of Excellence on Aeronautics 4.0 be created and that it can bring together university- and college-level expertise in this field, and that this Center increase research capacities and development in this sector.

Recommendation 2

That the Government of Canada ensure that significant financial incentives be put in place for basic research, including to develop a greener aircraft and expertise in the energy transition of this industry through green technologies.

That the Government of Canada promote a circular economy approach in order to establish a policy for recycling aircraft that are taken out of service.

Recommendation 3

That the Government of Canada accommodate the needs of the various air fleets, particularly with regard to the maintenance of their aircraft, and support the development of companies specializing in the maintenance of these aircraft.

Recommendation 4

That the Government of Canada, in addition to sector-specific funding allocated to the aerospace sector through the Strategic Innovation Fund in Budget 2021, dedicate specialized staff to assist Canadian firms seeking to benefit from aerospace funding and support.

Recommendation 5

That the Government of Canada, following consultation with industrial partners and labour representatives, develop a national strategy for its aerospace sector.

Recommendation 6

That the Government of Canada accelerate its planned procurement of goods, services and real property in the aerospace sector where possible to assure quality and value for money for Canadians.

Recommendation 7

That the Government of Canada collaborate with provinces and territories to fund post-secondary training across all sectors of the aerospace industry, adequately accessible all over Canada.

APPENDIX A
LIST OF WITNESSES

The following table lists the witnesses who appeared before the committee at its meetings related to this report. Transcripts of all public meetings related to this report are available on the committee's webpage for this study.

43rd Parliament – 2nd Session

Organizations and Individuals	Date	Meeting
Aéro Montréal	2021/03/09	21
Suzanne Benoît, President and Chief Executive Officer		
Aerospace Industries Association of Canada	2021/03/09	21
Mike Mueller, Interim President and Chief Executive Officer		
Alberta Aviation Council	2021/03/09	21
Kimberley Van Vliet, Director of Aerospace		
International Association of Machinists and Aerospace Workers	2021/03/09	21
David Chartrand, Quebec Coordinator		
MDA	2021/03/09	21
Mike Greenley, Chief Executive Officer		
Airbus Canada	2021/03/11	22
Philippe Balducchi, Chief Executive Officer		
Pierre Cardin, Senior Vice-President and Head of Public Affairs		
Airbus Helicopters Canada	2021/03/11	22
Dwayne Charette, President and Chief Operating Officer		
STELIA Aerospace St-Laurent	2021/03/11	22
Hugo Brouillard, Chief of Operations and Operations Officer		

Organizations and Individuals	Date	Meeting
Telesat	2021/03/11	22
Daniel S. Goldberg, President and Chief Executive Officer		
Stephen Hampton, Manager Government Affairs and Public Policy		
Unifor	2021/03/11	22
Jerry Dias, National President		
Renaud Gagné, Director Unifor Québec		
Unifor	2021/03/11	22
Kaylie Tiessen, National Representative Research Department		
WestJet Airlines Ltd.	2021/03/11	22
Andy Gibbons, Director Government Relations and Regulatory Affairs		
Boeing Canada	2021/03/23	24
Charles S. Sullivan, Managing Director		
Boeing Engineering Test & Technology	2021/03/23	24
William Lyons, Senior Director Global Technology and Global Engineering		
Canadian Council for Aviation and Aerospace	2021/03/23	24
Robert Donald, Executive Director		
Canadian Taxpayers Federation	2021/03/23	24
Aaron Wudrick, Federal Director		
Hexagon Autonomy & Positioning Division	2021/03/23	24
Jason Hamilton, Chief Revenue Officer		
KF Aerospace	2021/03/23	24
Tracy Medve, President		
Rheinmetall Canada Inc.	2021/03/23	24
Stéphane Oehrli, President and Chief Executive Officer		
The Boeing Company	2021/03/23	24
Michael Arthur, President Boeing International		

Organizations and Individuals	Date	Meeting
AirShare Inc	2021/03/25	25
Rick Whittaker, Chief Executive Officer		
Bell Textron Canada Limited	2021/03/25	25
Marc Bigaouette, Director – CH-146 Griffon Fleet		
Steeve Lavoie, President		
Canadian Air Traffic Control Association	2021/03/25	25
Doug Best, President and Chief Executive Officer		
Canadian Association of Defence and Security Industries	2021/03/25	25
Christyn Cianfarani, President and Chief Executive Officer		
Héroux-Devtek Inc.	2021/03/25	25
Gilles Labbé, Executive Chairman of the Board		
NAV CANADA	2021/03/25	25
Jonathan Bagg, Director Stakeholder and Industry Relations		
Ray Bohn, President and Chief Executive Officer		
Ben Girard, Vice President and Chief of Operations		
NorthStar Earth and Space	2021/03/25	25
Stewart Bain, Chief Executive Officer and Co-Founder		

APPENDIX B
LIST OF BRIEFS

The following is an alphabetical list of organizations and individuals who submitted briefs to the committee related to this report. For more information, please consult the committee's webpage for this study.

43rd Parliament – 2nd Session

Downsview Aerospace Innovation and Research

NAV CANADA

REQUEST FOR GOVERNMENT RESPONSE

Pursuant to Standing Order 109, the committee requests that the government table a comprehensive response to this Report.

A copy of the relevant *Minutes of Proceedings* (Meeting No. 26) from the 44th Parliament, 1st Session and (Meetings Nos. 21, 22, 24 and 25) from the 43rd Parliament, 2nd Session is tabled.

Respectfully submitted,

Joël Lightbound
Chair