



THE SCHOOL OF PUBLIC POLICY

MASTER OF PUBLIC POLICY CAPSTONE PROJECT

The National Shipbuilding Procurement Strategy: Securing Canada's Future Naval Shipbuilding Industry and Maritime Sovereignty

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Submitted in fulfillment of the requirements of PPOL 623 and completion of the requirements for the Master of Public Policy degree.



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ACKNOWLEDGEMENTS

It is with immense gratitude that I acknowledge the support and help of Professor Dr. David J. Bercuson, Director of Centre for Military and Strategic Studies at the University of Calgary. His guidance, patience, motivation, and immense knowledge helped me in all the time of research and writing of this policy paper. I could not have imagined having a better advisor for my Capstone Project.

I take this opportunity to thank all of the Faculty Members and Staffs at the School of Public Policy for their help and support.

I also place on record, my sense of gratitude to all my classmates, who directly or indirectly, have lend their hands in my educational pursuit.



Capstone Executive Summary

The Government of Canada announced the National Shipbuilding Procurement Strategy (NSPS) in 2010. This paper seeks to inform the debate about the future of naval shipbuilding industry in Canada within the framework of NSPS. Developing, realizing and sustaining the shipping industry are not just a major industrial challenge. It also presents a major strategic opportunity to capitalize on substantial government investment in this sector. Lessons from Canada's own experience as well as successful policy from selected countries are investigated. Those countries have thriving naval shipbuilding industries, forward planning and long-term commitment to a naval procurement strategy. To secure maritime sovereignty and efficient shipbuilding procurement strategy, a series of recommendations are presented in this study: continuity of naval shipbuilding activities beyond NSPS project, establishing value chains for the national shipbuilding industry, a good governance structure and sound project management. NSPS approach to naval procurement will continue to be a major step in modernizing the Royal Canadian Navy and the Canadian Coast Guard. With continuous commitment and forward-looking policy from the government of the day, supported by good governance and efficient project management, the success of NSPS will lay the foundation for Canada's future naval shipbuilding industry and maritime sovereignty.

ABBREVIATIONS

AOPS	Arctic/Offshore Patrol Ship
CADSI	Canadian Association of Defense and Security Industries
CCG	Canadian Coast Guard
CPF	Canadian Patrol Frigate
CSC	Canadian Surface Combatant
DND	Department of National Defense
DOFC	Department of Ocean and Fisheries Canada
DPS	Defence Procurement Strategy
HMSC	Her Majesty Ship of Canada
IC	Industry Canada
IRB	Industrial Regional Benefits
ITB	Industrial and Technological Benefits
JSS	Joint Support Ship
KIC	Key Industrial Capabilities
NSPS	National Shipbuilding Procurement Strategy
OAG	Office of the Auditor General
OFSV	Offshore Fishery Science Vessel
OOSV	Offshore Oceanographic Science Vessel
PWGSC	Public Works and Government Services Canada
R&D	Research and Development
RCN	Royal Canadian Navy
SAC	Shipbuilding Association of Canada
WTO	World Trade Organization

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Section 1: Introduction

Three oceans bound Canada: Pacific on the West, Atlantic in the East and Arctic in the North. This strategic location gives both opportunities and challenges in maritime security and international trade. The Royal Canadian Navy (RCN) and the Canadian Coast Guard (CCG) fleets protect these maritime approaches from smuggling and trafficking. The fleets also serve to meet Canada's commitments for international peace and security and to protect Canadian interests in the international waters. Both the navy and the CCG also provide life-saving search and rescue while the Coast Guard aids scientific research.¹ In addition, the changing Arctic environment coupled with expanding shipping routes and resource development, promises to bring new activity and potential threats to the region. As such, the Canadian Armed Forces' role in the Arctic will grow in importance in the coming years.

Amid these opportunities and changing environment, the RCN and CCG fleets are aging and require renewal to ensure that operations can continue. Several of Canada's federal ships have been in service for more than 40 years and are nearing the end of their useful life. These existing fleets cannot meet the Canadian Government's objectives with respect to security, sovereignty and Canada's Northern Strategy.² After multiple studies and consultations with subject matter experts and industry associations including the Canadian Association of Defense

¹ Laurence Hickey. *The Canadian Navy and Domestic Maritime Enforcement*. (Cardiff: Cardiff University Press). Accessed April 20, 2015. <http://orca.cf.ac.uk/54805/1/U585194.pdf>

² Public Works and Government Service Canada. *Backgrounder: A Unique Process*. Accessed March 10, 2015. <http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/ddi-bkgr-4-eng.html>

and Security Industries (CADSI), and the Shipbuilding Association of Canada, the Government of Canada initiated a new approach to naval ship procurement.³

In June 2010, the Government of Canada announced the National Shipbuilding Procurement Strategy (NSPS) and its plans to build approximately 55 Navy and Coast Guard ships over the next 30 years to meet its maritime security requirements. According to Public Works and Government Services Canada (PWGSC), these acquisitions, along with associated In-Service Support spending, have the potential to generate \$50 billion in Canadian industrial opportunities over this period.⁴ The NSPS will also support an estimate of more than 10,000 jobs annually in communities across Canada, and sustain a domestic Canadian supply chain of hundreds of companies, and deliver world-class vessels.⁵ This is a historic and an important shift in shipbuilding procurement in Canada — from a project-by-project basis to a long-term strategic approach. It is also anticipated that this new approach “will generate enhanced regional and industrial benefits and engage Canada's world-class industrial skill-base.”⁶

This paper examines the implementation of the National Shipbuilding Procurement Strategy and recommends key policies to improve the efficiency of shipping and naval shipbuilding procurement in Canada.

The primary objective of a nation's defence spending is to provide its military forces with equipment and services of quality and of a level that are sufficient for them to undertake the roles assigned by the Government. An important cornerstone in this process is the availability of a

³ Ibid.

⁴ Public Works and Government Services Canada. *Background on National Shipbuilding Procurement Strategy*. Accessed May 20, 2015. <http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/distratnacn-bkstratnsp-eng.html>.

⁵ Ibid.

⁶ Ibid.

capable, reliable, cost-effective, domestic defence industrial base. Political priorities, for example as expressed through a defence industrial strategy, have significant impact on the size, structure, capabilities, and the operating behaviours of individual firms and ultimately their sustainability.⁷

In the 2014 report published by the Center for Military and Strategic Studies and The School of Public Policy at the University of Calgary, “*Something Has to Give: Why Delays are the New Reality of Canada’s Defense Procurement Strategy*,” Elinor Sloan points out that Canadian governments from past and present have always insisted on industrial and regional benefits for Canada in the military procurement process.⁸ According to Sloan, this emphasis has heightened political cautiousness on ensuring maximum value for taxpayers’ money rather than meeting the immediate requirements of the CAF. Over the past decades, unprecedented government spending to counter the global financial crisis has also added enormous pressure to public budgets. As the single largest discretionary item in government budgets, while already a relatively small defense budget⁹, military expenditures make a tempting target. The Government has also ordered other military kit that is versatile and capable of carrying out more than their traditional functions.¹⁰

The demand for more versatility and the need to stretch spending has led to plans for equipment that does not yet exist. Defense acquisition targets are often technologically so

⁷ Ron Kane. National governments and their defense industrial bases: a comparative assessment of selected countries. 2009. Accessed August 1, 2015.

⁸ Elinor Sloan. *Something Has to Give: Why Delays are the New Reality of Canada’s Defense Procurement Strategy*. 2014. (Calgary: DDFAI & University of Calgary)

⁹ Canada spent 1.2 % of GDP on national defense, ranking at 80th in the world - just ahead of Belarus (1.2 %), and the Philippines (1.9 %). CIA Fact Book. Countries Comparison: Military Expenditures. Accessed June 20, 2015, <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2034rank.html>

¹⁰ Sloan, *Something Has To Give*, 4.

ambitious that industry cannot deliver what the Canadian government expects.¹¹ The Joint Strike Fighter (JSF) and Joint Support Ship (JSS) projects represent a good example of these challenges. The JSF project took too long and is far more expensive than it was planned. The vessel design for the JSS project initially envisioned in 2004 did not exist anywhere and therefore, was difficult to fully and accurately estimate the cost in advance¹².

In February 2014, the Government of Canada released a new Defense Procurement Strategy (DPS). It is a broad defense procurement strategy and applies to all military procurements for the Canadian Armed Forces, including the RCN and CCG. The stated goal of DPS is to maximize Canadian industrial opportunities while equipping the Canadian Armed Forces in a timely fashion. This new approach, as some argue, may be unrealistic: no procurement strategy can achieve the two goals at the same time.¹³ Either industrial opportunity is lost as equipment is purchased off-the-shelf, or the Canadian Armed Forces (CAF) will have to wait longer if military equipment is developed and built in Canada. Under the DPS 2014, the industrial and regional benefits (IRB) policy is modified and renamed industrial and technology benefits (ITB). The desired result of ITB is to ensure that Canadian industries receive some share of benefits from investing public tax dollars in the defense sector, and to retain expertise and ability in equipping the Canadian Armed Forces by nurturing a permanent base of domestic defense industry.

¹¹ A good example is the highly problematic Maritime Helicopter Project recently delivered.

¹² Elinor Sloan. Something has to give. P.3-4

¹³ Ibid.

Section 2: Literature Reviews

2.1 Historical Approach to Shipbuilding Industry in Canada

Canadian shipping and the shipbuilding industry has a proud history dating back to the ‘golden age of sail’ between 1840 and 1880, when the British maritime colonies’ fleet was one of the largest in the world.¹⁴ The timber trade industry in the early 19th century stimulated a rapid expansion of shipbuilding. Large vessels at over 90 meters length were built that could claim to be the largest sailing ships in the world at that time. Many conventional vessels were also built. Lévis and Lauzon in Québec became vast timber shipyards. These vessels were built of different sizes and types suited to the demands, whether inshore or offshore.¹⁵ At the end of the 19th century, iron and steel-hulled sailing ships and steamships built in Europe replaced wooden square-riggers. Canada found it harder and harder to compete and the Canadian builders were soon out of the big-ship business. Tens of thousands of men skilled in marine industry were put out of work.

At the outbreak of World War I, wooden shipbuilding was revived because of the urgency of demand. Canadian shipyards from the East Coast to the West became busy again to supply the wartime demands for ships.¹⁶ Some steel vessels were also built in Quebec. By the end of World War I, the Government of Canada incorporated Merchant Marine Ltd. in an effort to maintain shipyard employment and to continue ocean shipping. However, many wartime vessels were soon obsolete and were eventually sold off during the Great Depression.

¹⁴ Ships Start Here, *History of Shipbuilding*, Accessed June 15, 2015 <http://shipsstarthere.ca/history/history-of-shipbuilding/>

¹⁵ Historica Canada. *Canadian Shipbuilding and Ship Repair*. Accessed June 30, 2015 <http://www.thecanadianencyclopedia.ca/en/article/shipbuilding-and-ship-repair/>

¹⁶ Michael A. Hennessey. *Postwar Ocean Shipping and Shipbuilding in Canada: An Agenda for Research*, 1991. The Northern Mariner 25 - 27. Accessed June 15, 2015. http://www.cnrs-scrn.org/northern_mariner/vol01/tnm_1_3_25-33.pdf

During the course of World War II, the Royal Canadian Navy was expanded to 95,000 officers and ratings, and over 400 vessels of all types.¹⁷ At the end of the war, the Italian, German and Japanese navies surrendered or were destroyed, and the French Navy was decimated. By that time, the RCN was the third largest navy after the US Navy and the British Royal Navy.¹⁸ In 1947, the Canadian Maritime Commission was created and the RCN embarked on an aggressive program to replace many of its warships that had been the mainstay of the navy during World War II.¹⁹ Financial incentives were provided to Canadian shipyards to continue building vessels: naval warships, merchant ships, oilers and tankers, and maintain thousands of jobs.²⁰ Government defense contracts were allocated with the intention of keeping major shipyards operational and a series of incentives were offered to ship owners to construct vessels in Canada.

From 1956 to 1965, the postwar government policy towards shipping and shipbuilding industries underwent reconsideration.²¹ The growing obsolescence of wartime-produced vessels and the rate of technical change prompted increasing the defense budget. A review of the shipbuilding industry concluded that overcapacity in Canadian shipyards was being artificially maintained by government contracts. In the process of restructuring government agencies and priorities, the Canadian Maritime Commission lost its role and the assignment of government shipbuilding contracts came under the Department of Industry (now Industry Canada).

¹⁷ Michael A. Hennessey. *Postwar Ocean Shipping and Shipbuilding in Canada: An Agenda for Research*, 1991. The Northern Mariner 25 - 27. Accessed June 15, 2015. http://www.cnrs-scrn.org/northern_mariner/vol01/tnm_1_3_25-33.pdf

¹⁸ Eric W. Sager and Lewis R. Fischer. *Shipping and Shipbuilding in Atlantic Canada 1820–1914*, Canadian Historical Association, Historical Booklet No. 46, 1986, p. 3, accessed June 20, 2015, http://www.nlc-bnc.ca/obj/008004/f2/H-42_en.pdf.

¹⁹ Bowering, Ken. *Naval Procurement in Canada: A Flawed Process*. General Sir Arthur Currie Paper, November 2008. Accessed June 10, 2015. http://www.navyleague.ca/_documents/CurriePaper108NavyLeague.pdf

²⁰ Hennessey. *Postwar Ocean Shipping and Shipbuilding in Canada: An Agenda for Research*.

²¹ Ibid.

Faced with escalating costs, federal government policies adopted in 1965 brought rapid changes. Major navy construction programs were cancelled, most advanced ship-design research and development were reduced, and much of the navy's independent design and production planning were curtailed. Employment in Canadian shipyards declined from approximately thirteen thousands workers in 1966 to about 7,200 in 1970.²² Without tax incentives to compete with foreign producers, no domestic shipyard produced a vessel for export. Several major shipyards withdrew from the industry. Only a few smaller merchant ships were built in Canada during that period. While Canada ceased assistance to the shipbuilding industry, other countries did not, thus reducing the competitiveness of Canadian shipyards in the international marketplace. By early 2000s, there seemed to be a worldwide shortage of commercial shipbuilding capacity. With this new increase in demand, some of Canada's shipyards managed to survive without government subsidy.²³

From the *Tribal* class destroyer at the end of the war to the Canadian-designed *St Laurent* class of the 1950s was a quantum leap in design and production to provide an escort vessel that was the envy of other navies. The *Mackenzie* class of the 1960s followed the new *Tribal* class after which came the Canadian Patrol Frigate (CPF) *Halifax* class.²⁴ The CPF vessels were the first to be equipped with the Integrated Machinery Control System, which allows for a high degree of computer control for the machinery plant. A variety of service vessels ranging from wood-and-aluminum minesweepers to auxiliary oilers replenishment (AOR) vessels were also built during this period.²⁵

²² Ibid.

²³ Bowering, *Flaw Process*.

²⁴ Historica Canada, *Shipbuilding and Ship Repairs*.

²⁵ Michael Hennessey. *Postwar Ocean Shipping and Shipbuilding*

Table 1 Shipbuilding activity in Canada after World War II

Destroyer Escort/Destroyer/Frigate Shipbuilding Projects 1950-1998				
Project		Time-frame	Shipyard(s)	Prime/Design Agent Responsibility
Destroyer Escorts	St. Laurent Class (7)	1950-1957	Halifax Shipyard (4) Davie Shipbuilding (2)	Navy
	Restigouche Class (7)	1953-1959	MIL (Sorel) (3)	
	Mackenzie Class (4)	1958-1963	Canadian Vickers (4) Burrard Drydock (4)	
	Annapolis Class (2)	1960-1964	Victoria Machinery Depot (2) Yarrows (1)	
Destroyers	Iroquois Class (4)	1969-1973	MIL (Sorel) (3) Davie (1)	Navy
Frigates	Halifax Class (12)	1987-1996	St. John Shipbuilding (9) MIL Davie (Lauzon) (3)	Industry

Source: Bowering, Naval Procurement Process

The RCN currently operates 13 warships, 12 coastal defence vessels and 4 submarines. The surface ships consist of one *Iroquois class* guided-missile destroyer, twelve *Halifax class* multi-role patrol frigates, and 12 *Kingston class* coastal defence vessels.²⁶ In addition to the surface vessels, the RCN owns four *Victoria class* submarines that were acquired from the Royal Navy in 1998. Two supply ships: HMCS *Protecteur* and HMCS *Preserver*, along with two destroyers: HMCS *Algonquin* and HMCS *Iroquois* were retired in late 2014. HMCS *Protecteur* and *Preserver* carried fuel, food, and ammunition for warships. They also provided medical services, helicopter support, and maintenance facilities. Since they were retired, the RCN won't have Canadian-made replacement ships fully ready until 2021.

²⁶ Royal Canadian Navy. *The Fleets*. Accessed August 2, 2015. <http://www.navy-marine.forces.gc.ca/en/fleet-units/jss-home.page>

In the meantime, the Government of Canada is negotiating with Davie Shipyards of Levis in Quebec to fast-track the leasing and commissioning of commercial vessels that can provide fuel and provisions to its warships.²⁷ Contract negotiations and refurbishing commercial vessels takes time – leaving the RCN incapable of resupplying its own frigates and other vessels. To meet this gap in operability, Canada is currently leasing resupply ships from Chile and Spain on a temporary basis.

In fact, when the HMCS destroyers and supply ships were still operational, they were already more than 40 years old. With most of the RCN fleet are at near the end of their lifespans and with the recent decommissioning of four major ships, the RCN is now downgraded from a “Rank Three Navy” to a “Rank Six Navy.” This is a great fall in status, far behind other navies such as Australia and the Netherlands.²⁸ Having lost the ability to defend itself against a long-range threat and to effectively command a Canadian formation, the RCN no longer has the choice to insist on independent operations. At this point, the RCN can only operate with the support of navies from our allies in the international waters.

How did we get here? As we review the historical approach for naval procurements from WWI and WWII to the present day, two key factors contributed to the problems we face today in the RCN. First, government policies are based on outside events and in response to short-term demands such as the two World Wars and the Korean War. Shipping and shipbuilding industries are expanded during wartime and significantly reduced thereafter. Maintaining a strong navy for military and strategic capacity, and for protecting national security and sovereignty are not given

²⁷ David Puliese. *Canada's Navy 'Rents' Chilean Resupply Ship*. Defense Review. Accessed on August 20, 2015. <http://www.defensenews.com/story/defense/naval/ships/2015/07/11/canada-renting-resupply-ships-from-chile-spain/29869123/>

²⁸ Ken Hansen. *Ship cuts send RCN naval ranking tumbling according to their own system*. <http://www.navalreview.ca/2014/10/ship-cuts-send-rcn-naval-ranking-tumbling-according-to-their-own-system/>

priority in naval procurement policy. Therefore, navy shipbuilding occurs at infrequent intervals – on average about 20-30 years between major projects. There is no continuity of business for the Canadian shipyards and the associated industries. When major shipbuilding projects are completed, shipyards are out of business or closed. Hard-earned expertise from the industries go elsewhere. When it is time to build new ships, Canada has to start all over again to recruit and build the expertise. Canada cannot afford to continue with this costly and inefficient approach.

Secondly, naval procurement is a complex system in addition to a complicated bureaucratic process. Major shipbuilding projects, from start to finish, can take 15-20 years to complete. They begin with letters of interest through project definition phases to final design, then the final “build” and “support” contracts with their “onerous requirements, mandatory terms and conditions, and obligations.”²⁹ This lengthy process, as Bowering argues, “though full of good intentions, often leads to schedule delays and a distorted view of domestic shipbuilding industry and its capabilities.”³⁰

In the past few decades, there are three government departments that have key roles in naval procurement with no single point of accountability. The Department of National Defense defines the operational, technical requirements, and project management and determines the budget. Public Works and Government Services negotiate and manage the contracts. Industry Canada has responsibility for industrial and regional benefits (now renamed industrial and technology benefits). This complex system and complicated process led to a slow-motion crisis in naval procurement. If these two aspects are addressed, it would go a long way to fix Canada’s shipping and shipbuilding industries.

²⁹ Ken Bowering. *Naval Procurement in Canada: A Flaw Process*

³⁰ Ibid.

2.2 Naval Procurement in Selected Countries

2.2.1 Australia

Defense procurement in Australia was achieved through local industry participation targets and offsets during the cold war era. This offsets policy compelled foreign suppliers to direct work locally. The 1998 Defense and Industry Strategic Policy (DISP) changed this traditional approach by setting out a vision for a sustainable ‘in-country’ defense industry that can support a technologically advanced Australian Defence Forces.³¹ Confronted with a number of pressures stemming from globalization and growing technical complexity, the Australian government modified its Defense and Industry Strategic Policy in 2007. The new modified policy aims to ensure cost-effective delivery of equipment in line with strategic circumstances.

The project-by-project approach of Australia in the 1990s exemplifies the problems associated with ineffective application of an industry policy framework.³² During this period, the Australian government awarded six major projects to five different companies at different locations. The consequence was that the capabilities and skills developed in these projects were not sustained once completed. This project-by-project approach left the Australian shipbuilding industry in a fragile state and not ready to respond to different strategic circumstances.

In 2009, the new modified Naval Shipbuilding and Repair (NSR) sector plan was released, a key element of Australian defense industrial base policy today.³³ The NSR highlighted that Australian naval shipbuilding and repair sector is of strategic importance. It

³¹ Kane, *National Governments and their Defence Industrial bases*, G24-31

³² Ibid.

³³ Eric Sager and Lewis R. Fischer. Shipping and Shipbuilding in Atlantic Canada 1820–1914, Canadian Historical Association Historical Booklet No. 46, 1986, p. 3, available at: http://www.nlc-bnc.ca/obj/008004/f2/H-42_en.pdf (accessed 25 June 2015)

emphasizes that self-reliance cannot be assumed unless capabilities exist in the Australian industry to maintain, modify, upgrade, and repair Australian warships.

Key lesson from the Australian NSR sector is the benefit of in-country construction for major vessels. In country built procurement lowers the cost of repairing, maintaining and refitting warships throughout their life cycles. Another benefit is the indirect economic impacts of building warships domestically. The joint ANZAC (Royal Australian Navy and Royal New Zealand Navy) frigate program generated between \$3 and \$7.5 billion in additional GDP from the \$5.6 billion construction program.³⁴ Perceived benefits include the contribution to innovation and technology advancement and improved productivity throughout the NSR sector and its supply chain that draws from several other sectors.

2.2.2 France

State-supported naval shipbuilding has been and is French national policy. The General Delegation for Armament undertakes defense procurement in France, including shipping and naval shipbuilding. The defense White Paper 2008 articulates that “a national design and production capacity for nuclear submarines must be retained. All other sea power recruitment such as conventional submarines and surface ships should be open to European collaboration.”³⁵

Traditionally, the General Department of Armament relied on national supplies to control the cost and quality of defense equipment. The new policy states that engaging with single source firms (with a regular flow of business) would reduce overhead cost in the long run. The use of fixed price contracts ensures an equitable sharing of costs based on technical specifications and export potentials. In addition, the General Department of Armament builds

³⁴ Kane, *National governments and their Defence Industrial bases*, G 37-39

³⁵ European Union. *Code of Conduct on Offsets*. Brussels, October 24, 2008

bilateral and multilateral alliances within the defense industry to gain access to European markets while maintaining domestic industrial capacity.³⁶ This allows France to preserve a broad based defense industry to meet its current and future requirements.

2.2.3 Germany

The Directorate General of Armaments and the Federal Office of Military Technology Programmes (BWB) are responsible for defense procurement in Germany. The BWB is a separate civilian agency that serves as interface between the German Armed Forces and other industries. From the end of World War II to until recently, Germany faced a considerable gap in defense technology in comparison with other Western countries.³⁷ Tight restrictions were maintained on the development and production of defense equipment until the late 1970's. When Germany began to build up its Armed Forces after the Second World War, there was virtually no domestic defense industry in existence. As a result, it adopted a two-track defense procurement strategy. Defense equipment are procured from foreign contractors and produced in-country where existing capacities in the civil sectors could be used or adapted.

Naval shipbuilding contracts are generally given to national shipyards. Production cost and prices are not primary consideration. The German Navy almost exclusively produces their goods from domestic industry and accounts for 25% of shipbuilding production.³⁸ United States and German shipbuilders also develop joint projects in the field of coast guard shipbuilding. Administrative regulations require public sector contracts (including defence) be awarded competitively. They do, however, allow exceptions for special circumstances such as the

³⁶ Kane, *National governments and their Defence Industrial bases*, G 37-39

³⁷ Kane, *National Governments And Their Defence Industrial Bases*. G40-41.

³⁸ Ibid.

consolidation and preservation of key industrial capability. Unlike other European countries, Germany does not apply offsets to defense equipment contracts awarded to foreign contractors. With this mixed policy approach, the German shipbuilding industry has a stable and reliable procurement base for the navy's requirements.

2.2.4 United Kingdom

The mantra that competition is always needed to ensure the attainment of best-value-for-money guided UK defense procurement in the 1990s.³⁹ The UK government divested itself from the shipbuilding industry and privatized its naval shipyards. There was little investment, modernization or upgrades in the shipyards during this period. After decades of consolidation and bankruptcy, only some major firms remain involved in naval shipbuilding, maintenance and repair of warships (BAE Systems, Swan Humpty, VT Shipbuilding).

In 2010, the Ministry of Defense conducted a review of the strategic outlook for the shipbuilding industry.⁴⁰ This review assessed the “supply and demand” of three distinct areas: labour, facilities and supplies.⁴¹ These key findings, highlighted in the UK Defense Technology Strategy 2010, are the importance of comprehensive, long-term shipbuilding strategy. This approach facilitates better use of workforce, greater understanding of industrial capacity, future budgets and procurement options.

³⁹ Lewis Johnman and Hugh Murphy. *Conventional submarine building at Scott's of Greenock, 1912–84*. University of Westminster and University of Glasgow. 2002. Accessed July 15, 2015. <http://www.tandfonline.com/doi/pdf/10.1080/21533369.2003.9668333>

⁴⁰ Kane, *National Governments And Their Defence Industrial Bases*, G 16-23.

⁴¹ Ibid.

In summary, naval procurement policy is rationalized by a number of factors that are unique from other defense procurement. In this brief review, Australia, France, Germany, and United Kingdom's shipbuilding strategy highlights the importance of availability of suitable ships, ability of managing complex systems, access to markets, and long-term budget of domestic production as cornerstones of naval procurement strategy.

Section 3: National Shipbuilding Procurement Strategy

3.1 NSPS: A Paradigm Shift in Naval Procurement

The National Shipbuilding Procurement Strategy (NSPS) was announced in June 2010. The goal of NSPS is to break the "boom-and-bust" cycle of Canada's shipbuilding industry through large-scale orders and subsequent in-service support contracts spread over decades.⁴² The first phase of the NSPS program was to select two Canadian shipyards to rebuild the fleets for the Royal Canadian Navy and the Canadian Coast Guard. A "Solicitation of Interest and Qualification" was issued by the Department of Public Works and Government Services and five Canadian shipyards were short-listed to build the large vessels.⁴³ The Request for Proposal (RFP) was released on February 2011. Three Canadian shipyards: Irving Shipbuilding, Davie Yards Incorporated, and Seaspan Marine Corp. presented their bidding proposals.

In October 2011, the Government of Canada selected Irving Shipbuilding Inc. for the \$25 billion combat work package. Seaspan Marine Corp. in Vancouver Shipyards was awarded the \$8 billion non-combat shipbuilding contracts. For smaller ship construction, repair, refit and

⁴² Industry Canada. *National Shipbuilding Procurement Strategy, 2010*. Accessed March 15, 2015, <http://www.ic.gc.ca/eic/site/sim-cnmi.nsf/eng/uv00050.html>.

⁴³The five shipyards shorted listed were: Kiewit Offshore Services (Marystown, NL), Irving Shipbuilding (Halifax, NS), Davie Yards Incorporated (Levis, QC), Seaspan Marine Corp (Vancouver, BC), Seaway Marine and Industrial (St. Catharines, ON)

maintenance projects, the requirements are to be competed through RFP for competitive procurements amongst Canadian shipyards other than the Irving and Seaspan shipyards. The designation of two shipyards as a source of supply under NSPS is a departure from Canada's traditional project-by-project approach to defense procurements. Lessons learned from Canada's past experiences and the practice of a country such as Australia and other OECD countries points to the importance of making a long-term and strategic relationship with a limited number of shipyards.

As with all major defense procurements, companies awarded contracts are required to fulfill the conditions of the Industrial and Technology Benefits (ITB) policy.⁴⁴ The aim of the ITB policy is to provide a 'dollar-for-dollar' investment in the Canadian economy: for every dollar a company acquires as part of a procurement contract, it has to spend a dollar in Canada — either as part of the same procurement, or in the course of other business. In addition, the ITB requires a "Value Proposition", a weighted, rated, and required element for successful bidders to contribute a percentage of contract value to projects that build Canadian industrial capacity. Mike Greenly, former Chair of the Canadian Association of Defense and Security Industries supported this new approach:

...the requirement for domestic value propositions that are to be weighted and rated as part of procurement evaluations represents a sea change in this country's approach to defense acquisition. It recognizes the importance of having a healthy domestic defense industry from a sovereignty and national security perspective.⁴⁵

⁴⁴ Industry Canada. *Industrial and Technological Benefits*. Accessed August 2, 2015, <http://www.ic.gc.ca/eic/site/086.nsf/eng/home>.

⁴⁵Mike Greenley. Speaking Notes at the Economic Club of Canada, February 5, 2014. As cited by Janet Thorsteinson in *New Strategy Supports Canada's New Fleet*. Accessed June 30, 2015. <http://www.navalreview.ca/wp-content/uploads/public/vol10num1/vol10num1art6.pdf>

Industrial considerations factor into determining which bidding firm wins the contract. The value propositions are scored by their contribution to Key Industrial Capabilities (KICs) as identified by the Jenkins Report.⁴⁶ KICs are determined by operational requirements perspective, market opportunity perspective, and innovations.⁴⁷ For the NSPS implementation, these also include the long-term capacity development of strategic partners in the Canadian marine sector in the following priority areas: human resources development, technology investment and industrial development. From all indicators of the process and evaluation, the NSPS objectives of openness, competitiveness and transparency is unique and innovative.

3.2 Current Status of NSPS

The NSPS has helped to define Canada's defence industrial aspirations by requiring successful bidders to achieve a 'target state' at which point, "they will have the capability to build vessels at established international benchmark productivity levels."⁴⁸ The following figure summarizes the vessels to be built under the NSPS.⁴⁹

⁴⁶ Tom Jenkins. *Canada First: Leveraging Defence Procurement Through Key Industrial Capabilities*. Report of the Special Advisor to the Minister of Public Works and Government Services. Ottawa: Public Works and Government Services Canada; February 2013.

⁴⁷ Ibid. KICs recommended in Jenkins Report are arctic and maritime security, protecting the soldier, command and support, cyber-security, training systems, and in-service support

⁴⁸ PWGSC. Backgrounder on the National Shipbuilding Procurement Strategy (NSPS), Year 2: A Status Update, November 2013.

⁴⁹ Gereffi et al. *The NSPS Shipbuilding Value Chains*. Halifax: Nova Scotia Department of Economic and Rural Development and Tourism. Accessed July 15, 2015. <http://www.cggc.duke.edu/pdfs/>

The NSPS Combat and Non-Combat Vessels*

Combat Vessels (\$25B)	Canadian Surface Combatant (15 vessels)	Irving Shipbuilding (Halifax)
	Arctic/Offshore Patrol Ship (up to 8 vessels)	
Non-Combat Vessels** (\$8B)	Joint Support Ship*** (up to 3 vessels)	Seaspan Shipyards (Vancouver & Victoria)
	Polar Icebreaker (1 vessel)	
	Offshore Oceanographic Science (1 vessel)	
	Offshore Fisheries Science (3 vessels)	

* Does not include the \$2B for small vessels construction (116 vessels) or the \$500-\$600m/yr for repair & refit (ISS)

** Does not include \$5.2B Canadian Coast Guard vessels announced in April, 2012

*** Current JSS configuration contains armament

Arctic Offshore Patrol Ships (AOPS – 6 vessels): Irving Shipbuilding is the prime contractor for the AOPS ships and will build them at its Halifax shipyards. BMT Fleet Technology has completed the definition design phase. The ship specification and drawing package has been shared with the shipyard. RA Lion, the Robert Allan, and ALION Science and Technology have completed final designs and construction specifications. Irving Shipbuilding of Canada has also awarded BAE Systems a contract to deliver up to six modified 25mm Mk 38 Machine Gun Systems for the AOPS program.⁵⁰ The award also covers spare parts, technical support, and long-term field support services. The number of vessels to be built has been reduced to six vessels due to cost increases. Steel has been cut in September 2015.

Offshore Fisheries Science Vessel (OFSV – 3 vessels): Construction has started at Seaspan Vancouver Shipyard on one of the three new fisheries ships for the Canadian Coast Guard.⁵¹ The

⁵⁰ Sarah Chadwick. *BAE Systems' Naval Guns Chosen For Canadian Arctic Patrol Ships*. Accessed August 30, 2015. <http://www.businesswire.com/news/home/20150818006151/en/BAE-Systems%E2%80%99-Naval-Guns-Chosen-Canadian-Arctic#.Ve3br85K6ec>

⁵¹ <http://www.cbc.ca/news/canada/british-columbia/new-offshore-fisheries-science-ship-under-construction-in-north-vancouver-1.3126130>

first vessel will be named the CCGS Sir John Franklin after the British explorer. The first OFSV ship will be completed by the spring of 2017.

Offshore Oceanographic Science Vessel (OOSV – 1 vessel): According to PWGSC technical specification, this project will procure a single vessel that will be 90-100 meters in length capable of carrying 30 crews as well as 37 scientists.⁵² The first phase of procurement process for OOSV was announced in 2009 along with three OFSV vessels. The government issued a Solicitation of Interest and Qualification to identify qualified designers. It was scheduled to be delivered in 2014 but has been delayed because the shipyard cannot build many large vessels at the same time. Construction for OOSV can begin when the first batch of OFSV and JSS vessels are completed.

Joint Support Ship (JSS – 3 vessels): The Joint Support Ship project is currently conducting the initial design review contract. This will enable Vancouver Shipyards Co. Ltd. to fully review the *Berlin class*, off-the-shelf ship design from ThyssenKrupp Marine Systems Canada. The contract negotiation and design preparation work will take place in 2015/2016, in order to bring ship design to a production ready state.⁵³ The building of the first Joint Support Ship is expected to start in the 2016-2017 timeframe. This means the first ship would be anticipated by 2019, assuming no further delays in the schedule.⁵⁴

Polar Icebreaker (1 vessel): This vessel is one of the centerpieces of Canada's *Northern Strategy*, which focuses on strengthening Canada's Arctic sovereignty, northern economic and

⁵² PWGSC. *National Shipbuilding Procurement Strategy Technical Briefing on Offshore Fisheries Science Vessel*. Accessed August 2, 2015. <http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/2015-06-12-eng.html>

⁵³ Royal Canadian Navy. *The Joint Support Ships*. Accessed on August 10, 2015. <http://www.navy-marine.forces.gc.ca/en/fleet-units/jss-home.page>

⁵⁴ Ibid.

social development, and protecting the North's environmental heritage. The new Polar Icebreaker is named after John G. Diefenbaker, the 13th Prime Minister of Canada who established the Canadian Coast Guard in 1962. CCGS John G. Diefenbaker will be built in Seaspan Vancouver Shipyards and is expected to join the fleet in 2021-2022.⁵⁵

Canadian Surface Combatants (CSC – 15 vessels): These warships will replace Canada's destroyers and frigates. While these ships will be based on a common hull design, the frigates and destroyer variants will be equipped with different weapons, communications, surveillance and other systems.⁵⁶ The CSC project is in the options analysis phase. Design work has not yet commenced, and extensive industry consultations will be held to determine the most appropriate process. This \$26.2 billion shipbuilding project will be built in Irving shipyards in Halifax. The Government of Canada will pick the key suppliers sometime in early 2017 on a competitive bid based on price and economic contribution to Canada.

Under the NSPS projects, the two prime contractors Irving Shipyards in Halifax and Seaspan Shipyards in Vancouver are already working with ship designers to ensure the final designs are efficient and affordable. Some designs work has already been completed, and steel has been cut. Irving Shipbuilding has awarded over \$720 million in contracts to 128 suppliers from across Canada through the modernization of its shipyard and the AOPS project.⁵⁷ Irving Shipyard as the prime contractor has also already awarded Lockheed Martin Canada to build a command and surveillance system integrator for AOPS. With a contract valued at more than

⁵⁵ The Canadian Press. Arctic icebreaker delayed as Tories prioritize supply ships. Accessed on August 15, 2015. <http://www.cbc.ca/news/politics/arctic-icebreaker-delayed-as-tories-prioritize-supply-ships-1.1991522>

⁵⁶ PWGC. *Background: The Ships to be Built For the Department of National Defence*. Accessed July 5, 2015, <http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/ddi-bkgr-7-eng.html>

⁵⁷ Government of Canada. *Harper Government Marks Shipbuilding Milestone*. Accessed July 10, 2015, http://news.gc.ca/web/article-en.do?nid=988589&_ga=1.92477784.439563793.1417784167

\$170 million, Lockheed Martin Canada is responsible for key integration of data and information sources to increase the ships' situational awareness and provide command, control and decision support at all levels of command.⁵⁸ With both shipyards engaging in recruitment strategies⁵⁹ and seeking companies interested in being part of their supplier chains, the NSPS have showed signs of economic growth and new employment. According to the Conference Board of Canada, the work at Irving Shipyards is “projected to generate average \$661 million annual GDP for Nova Scotia, \$66 million in federal, and \$51 million in provincial income tax revenues.”⁶⁰

Building for smaller ships, repair, refit and maintenance contracts are awarded to Canadian firms and shipyards through a competitive bidding process. In July 2015, Ontario based Hike Metal Products was awarded a \$43.3 million contract to build search and rescue boats for the Canadian Coast Guard.⁶¹ The Government of Canada is currently negotiating \$65 million contracts with Quebec based Davie Shipyards for resupply ships until the Joint Supply Ships are ready to join the fleet in 2021.⁶²

The two prime contractors Irving and Seaspan, as source of supply for the NSPS projects, create an online registry for suppliers to enter relevant information on their organizations for

⁵⁸ OBJ Staff. *Lockheed Martin Canada Awarded Implementation Subcontract for Arctic/Offshore Patrol Ships*. Accessed 6/28/2015, <http://www.obj.ca/Local/Defence-and-security/2015-04-08/article-4104528/Lockheed-Martin-Canada-wins-Irving-contract-for-Arctic-ships/1>

⁵⁹ Tracy Johnson. Irving Shipbuilding holds job fair in Fort McMurray to lure oil workers east. CBC News, July 7, 2017. <http://www.cbc.ca/news/business/irving-shipbuilding-holds-job-fair-in-fort-mcmurray-to-lure-oil-workers-east-1.3141636>

⁶⁰ Conference Board of Canada statistics (May 2011) as cited in “*Measuring the Potential Impact of the National Shipbuilding Procurement Strategy on Nova Scotia*,” prepared by Jupia Consultants Inc. for The Greater Halifax Partnership.

⁶¹ Ellwood Shreve. Wheatley shipbuilder wins \$43.4M contracts to build six Canadian Coast Guard vessels. Chatham Daily News, July 9, 2015. Accessed July 12, 2015, <http://www.chathamdailynews.ca/2015/07/09/wheatley-shipbuilder-wins-434m-contract-to-build-six-canadian-coast-guard-vessels>

⁶² National Post View. *Harper's shipbuilding strategy is coming apart at the seams*. *The National Post*. June 29, 2015, Accessed July 5, 2015, <http://news.nationalpost.com/full-comment/national-post-view-harpers-shipbuilding-strategy-is-coming-apart-at-the-seams>

subcontracts. The intention is to improve competitiveness and allows small and medium-sized enterprises to provide their goods and services to the selected shipyards and other suppliers involved in building the ships.⁶³

Section 4: Observations and Recommendations

There are good lessons to learn from Canada's past experience as well as the naval procurement policy of other countries. Some of these findings can be applied to Canada's future naval shipbuilding strategy, and some policy instruments are already in place under the NSPS. Based on the observations made in this study, policy recommendations and strategy for implementations are outlined as follows:

4.1 Breaking the Boom & Bust Cycle

Shipbuilding in Canada has for many years suffered from the boom and bust cycle. Naval shipbuilding in Canada occurs at infrequent intervals – on average about 20-30 years between major projects. Thus, there is no continuity of activities for the shipyards and the associated industries. When major shipbuilding projects are completed, shipyards are out of business or closed, and hard-earned expertise from the industries go elsewhere. When it is time to build new ships, we had to start all over again to recruit and build the expertise required.

The last major shipbuilding project was the Canadian Patrol Frigates in 1983. These warships construction was completed in the mid-nineties. During that same period, there was an excess supply of ships in the global market, which meant Canadian shipbuilding industry was not a good investment. Coupled with changes to federal government tariffs and tax policies to

⁶³ Reuters. *Government National Shipbuilding Procurement Strategy Already Showing Signs as an Economic Booster*. Accessed June 2015, <http://www.reuters.com/article/2012/02/24/idUS134889+24-Feb-2012+MW20120224>

Canadian ship owners, Saint John Shipbuilding was left with little work after the *Halifax*-class frigates were completed. The skilled workforce at Saint John Shipbuilding dwindled as welders and engineers and other trades and professionals left for work on other projects across Canada. After 30 years, when the Government of Canada announced the National Shipbuilding Procurement Strategy in 2010, the skills and expertise no longer exist, and shipyards are not ready to start construction immediately. The consequences are delays and uncertainty in the process. Five years after the announcement of NSPS, no single ship has been delivered. Had there been a continuity of shipbuilding activity, this delay could be minimized or completely avoided.

Recommendation 1: Breaking the “boom and bust” cycle requires a fundamental shift in procurement policy and government thinking. All Canadian Armed Forces should have the equipment they need to protect the country at all time. It is the primary responsibility of the government. As of June 2015, with no resupply ships of its own, Canada had to lease supply ships from Chile and Spain on a temporary basis until Davie Shipyard’s refurbished commercial vessels are ready for the joint supply ship roles.⁶⁴ This calls for a change in government decision. Maritime sovereignty and national security interest should always come first in government decision-making for naval procurement. Economic leverages, such as jobs creation and contribution to GDP growth should not stand in the way of defense procurement decisions.

Recommendation 2: The NSPS should serve as the beginning of a new procurement policy for more effective forward planning to remain competitive and retain the expertise in the industry. This can be achieved by the continuity of building a ship every two to three years. With this approach, the RCN will have new ships equipped with the latest technology and thus more

⁶⁴ Puliese. *Canada's Navy 'Rents' Chilean Resupply Ship*.

capable of meeting changing requirements. Maintenance of ships can be expensive. It would be economically wise to sell them at discount rates to Canada's trading partners with lower rank navies (countries in Southeast Asia, Africa, and Latin American countries). This forward and continuity policy will secure a stable and predictable budget for naval procurement.

4.2 Skills Work Force Strategy

The challenge with maintaining skills workforce is directly linked with the “peak and valley” procurement approach (the boom and bust cycle). Peter Cairns, a retired Vice Admiral and Commander of Maritime Command, states that the “peak-and-valley” cycle of naval procurement is a persistent cause for uncertainty and concern in Canada's shipbuilding sector.⁶⁵ As with the CPF projects in the 1980s, the availability of skilled workforce is one major issue in implementing NSPS. After 30 years since the CPF projects, very few shipyards remain active and most shipbuilders have been employed in other sectors or retired. Canadian shipyards do not have enough skilled workers for full-scale construction.

Recommendation 1: Developing a workforce strategy for future shipbuilding projects will answer the shortage of skilled labour. This can be achieved by providing incentive grants to postsecondary institutions and scholarships to individual students. Postsecondary education being under the jurisdiction of provincial governments, the federal government can share the cost of training apprentices and curriculum development for the shipbuilding industry.

⁶⁵ Peter Cairns. *Crisis in Naval Shipbuilding*. Navy League – Ocean of Opportunity. Accessed July 10, 2015, http://www.navyleague.ca/_documents/Shipbuilding%20Crisis.pdf

Recommendation 2: Bridging programs will develop a flow of skilled workers, and transfer of skills to the shipbuilding sector. Postsecondary institutions can play a key role by offering inter-industry skills bridging programs. Shipbuilding is different from other sectors such as manufacturing, oil and gas, and the mining industry. However, the skills and expertise of welders, electricians, metal fabricators, and engineers of all trades can be transferred to the shipbuilding industry. A shipbuilding industry oriented bridging program will expedite the transfer of skill workers from other industrial sectors. This bridging program can be implemented by training skilled tradesmen in the shipyards to have industry exposure as part of their apprenticeship certification.

4.3 Shipbuilding as National Industry

Canada has the world's largest coastline and numerous inland waterways. An extensive ferry fleet approximating some 130 vessels operate on these waters.⁶⁶ Canadian shipyards also build some of the world's most technologically advanced ferries, using new environmentally friendly technologies such as LNG propulsion and even battery-power.⁶⁷ The industry is a technology based and specialized skill-oriented field, which uses the products of numerous Canadian companies from steel mills to advanced information technology providers. Quebec and Newfoundland have maintained an admirable policy to renew its fleet in Canada. Davie Shipyard is building two advanced LNG-powered ferries. Chantier Naval Forillon has also delivered an innovative battery-powered ferry for the province. In Newfoundland, a series of 6 ferries is

⁶⁶ Shipbuilding Association of Canada. *Striving For a Coherent Shipbuilding Policy*. Accessed July 15, 2015 http://canadianshipbuilding.com/?page_id=2331

⁶⁷ Shipbuilding Association of Canada. Accessed on July 20, 2015. http://canadianshipbuilding.com/?page_id=2507

planned.⁶⁸ In the West Coast, BC Ferries is the largest passenger ferry line in North America and the second largest in the world.⁶⁹

Recommendation 1: Create strong commercial links between NSPS and the domestic shipping and shipbuilding projects. Partnerships between government and private enterprises will benefit from the economy of scale in production for domestic as well as export demand in the marine industry. As the world trading volume increases, the shipping and shipbuilding industries will see increases in demand for their products and services. Canada, with its strategic location, can become a global leader in the maritime industry again.

Recommendation 2: Protecting Canadian marine industries from international free trade agreements will be the foundation of a striving Canadian shipping and shipbuilding industries. Canada is currently pursuing free trade agreements with some of the world's most successful shipbuilding nations, including Japan, the European Union, and South Korea. While the NSPS projects are exempted under WTO's defense subsidy, the commercial side of the marine industry can access very few support measures. Under North American Free Trade agreement (NAFTA), Canadian shipbuilders have been virtually shut out of the US. Under the Jones Act of United States, Canadian built ships cannot be used on United States domestic trades whereas the United States is able to do so in Canada.⁷⁰ The Government of Canada should, at the minimum, can protect Canadian commercial shipbuilding industries from such an unfair disadvantages in future

⁶⁸ Striving For a Coherent Shipbuilding Policy. Accessed July 15, 2015
http://canadianshipbuilding.com/?page_id=2331

⁶⁹ BC Ferry. *Ferries Fact*. Accessed August 28, 2015, http://www.bcferrries.com/files/AboutBCF/travelmedia/Fact_Sheet_2010.pdf

⁷⁰ Shipbuilding Association of Canada. Accessed September 14, 2015, http://canadianshipbuilding.com/?page_id=2504

trade negotiations. In order to make both the NSPS and marine industry a success, government protection is required while Canada develops itself as a major specialized shipbuilding nation.

4.4 Good Governance

An NSPS Secretariat was created under the NSPS in 2010 to implement and oversee naval procurement projects. The NSPS's guiding principles include extensive consultation with industry, the use of third-party experts, and a strong governance structure to make key decisions on project implementation. This multi-departmental Secretariat is composed of representatives from the Department of National Defense (DND), Canadian Coast Guard / Department of Ocean and Fisheries Canada (CCG/DOFC), Industry Canada, and Public Works and Government Services Canada (PWGSC). The Secretariat is led by PWGSC with other members being Deputy Ministers of DND, IC and CCG/DOFC. The Project Management Office, an integrated team from either the DND or CCG, is responsible for the implementation of individual shipbuilding projects. This new governance structure has been generally regarded as a successful model for complex defense procurement and the government has extended this structure to other defense acquisitions.⁷¹

The Government of Canada has the opportunity to examine the shipyards periodically – to confirm they are attaining their commitments under the Umbrella Agreement.⁷² The NSPS Secretariat also appointed Hallux Consulting Inc. as an independent third-party monitor for fairness in the procurement process undertaken by PWGSC.⁷³ This presents transparency and accountability for all stakeholders involved in the projects. The 2014 Fairness Monitoring report

⁷¹ Please refer to Fixed-Wing Search and Rescue (FWSAR Projects and Defense Procurement Strategy 2014

⁷² Ibid.

⁷³ PWGSC. *National Shipbuilding Procurement Strategy – NSPS Special Advisors Procurement*. Accessed July 30, 2015, <http://www.tpsgc-pwgsc.gc.ca/se-fm/2014/mar1-2014-eng.html>

from this independent monitoring indicated that all the NSPS projects were carried out in a fair, open and transparent manner.⁷⁴

Recommendation: The current governance structure and monitoring process does not require fundamental change. However, opportunities and challenges will come as in other complex procurement projects. Continuous monitoring of progress is necessary to avoid unexpected downturns. Change should not be made without clear assessment of needs. As noted earlier, the NSPS Secretariat exemplifies good governance in other defense procurement projects.

Independent third party assessments provide unbiased advice, expertise, and validation to help inform procurement decisions. Considering this success, the NSPS Secretariat should continue with this approach.

4.5 Change Management

As in any other project, change is necessary and must be managed in a systematic, structured process. Preventative measures should be used where possible and countermeasures or mitigation where prevention is no longer possible. Planning, communication, and assessment provide the basic concepts of managing change. Bowering, a retired Commander of RCN, observes that the NSPS Secretariat and the two shipyards, as well as their contractors, have continuous communication, consultation and evaluation of the progress. Prevention starts with early and frequent communication between stakeholders.⁷⁵

⁷⁴ Bowering. *Naval Procurement in Canada: A Flawed Process*

⁷⁵ Ken Bowering. *National Shipbuilding: Where We Are and Where We're Headed*. Canadian Naval Review, Vol. 8, No. 2, Summer 2012, p. 20. Accessed July 20, 2015, <http://www.navalreview.ca/wp-content/uploads/public/vol8num2/vol8num2art5.pdf>

Recommendation: Special attention should be given to details as the parties make every effort to understand the requirements. Any areas of concern should be resolved at the earliest possible time to prevent the compounding affect of instability. Shipyard build schedules optimize the available workforce and capital costs within the constraints of the acquisition milestones. The schedules should provide on-time delivery without disrupting other projects. As in any complex schedule, there should be available slack time throughout in shipbuilding projects.⁷⁶ This provides greater ability to absorb design change without traumatic impacts to the schedule.

Section 5: Conclusion

This study observes the past and present naval shipbuilding procurement in Canada, United Kingdom, Germany, France, and Australia. Sovereign countries have their own strategic interests in shipping and shipbuilding industries, and use different procurement approaches. An efficient naval procurement strategy depends on several factors including continuous shipbuilding activities, the availability of expertise and skilled workforce, linkages with commercial and national security interest, and good governance.

In the space of five years, the NSPS has achieved several milestones. This includes selecting and preparing shipyards, and finalizing ship designs. The OFSV and AOPS vessels are now in construction phase. Seaspan Shipyards in Vancouver has started construction of the OFSV, the first non-combat ship under the NSPS contracts. Steel has been cut in June 2015. Seaspan's NSPS work will create more than 5,000 direct, indirect and induced jobs through

⁷⁶ Ibid.

shipbuilding supply chains.⁷⁷ It will also generate an estimate of \$500 million per year in GDP for British Columbia's economy. The OFSV vessel is expected to be operational in 2017. Irving Shipbuilding at Halifax shipyards has also begun the AOPS project. Steel for the first AOPS ship has been cut and will be completed by 2020. The NSPS contracts with Irving Shipyards will create approximately 1,000 jobs during the AOPS projects alone.⁷⁸ The Canadian Surface Combat warships will be built at Irving's Halifax Shipyards after the AOPS projects are completed.

Amid this success, the NSPS has also faced public criticism from various experts including the Office of Auditor General of Canada.⁷⁹ The cost estimates provided by the federal government may not be accurate due to inflation, increasing cost of materials and labour cost among others.⁸⁰ The delays and cost overrun with individual ship projects are another concern. Some expressed that the federal government should expedite the delivery of NSPS projects faster.⁸¹ These concerns are valid but they are not an isolated case for shipbuilding projects. Fluctuations, cost overruns and schedule delays are the norm of large procurement in any sector.

⁷⁷Marine Log. *Vancouver Shipyards cuts steel for first NSPS ship*. Accessed July 29, 2015, http://www.marinelog.com/index.php?option=com_k2&view=item&id=9355:vancouver-shipyards-cuts-steel-for-first-nsps-ship&Itemid=223

⁷⁸ Jenifer Henderson. *Irving Shipbuilding to cut steel on first Arctic patrol ships*. Accessed September 5, 2015, *Vancouver Shipyards cuts steel for first NSPS ship*. Accessed July 29, 2015, <http://www.marinelog.com/>

⁷⁹ Office of The Auditor General of Canada. National Shipbuilding Procurement Strategy, 2013.; Office of the Parliamentary Budget Officer [PBO], *Budget Analysis for the Acquisition of a Class of Arctic/Offshore Patrol Ships*, 28 October 2014; Accessed June 17, 2015, http://www.oag-bvg.gc.ca/internet/docs/parl_oag_201311_03_e.pdf

⁸⁰ Michael Byers and Stewart Webb. *Blank Cheque: National Shipbuilding Procurement Strategy Puts Canadians at Risk*. Canadian Centre for Policy Alternatives, December 2013. Accessed August 20, 2015. https://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2013/12/Blank_Cheque.pdf

⁸¹ Eric Lerhe. *The National Shipbuilding Procurement Strategy: An Update, Strategic Studies Working Group Papers*, Canadian International Council and Canadian Defence and Foreign Affairs Institute, February 2013. Accessed June 25, 2015, <http://opencanada.org/wp-content/uploads/2013/02/SSWG-Paper-Eric-Lerhe-February-2013.pdf>

NSPS is still in its early stages and a considerable amount of work remains to be completed to gain better experience.

The NSPS will sustain the Canadian shipbuilding industry and maintain the operational capability of the RCN and CCG for decades to come and will last through much of this century. The NSPS approach to acquiring those ships will continue to be a major step in modernizing the Royal Canadian Navy and the Canadian Coast Guard. With continuous commitment and forward-looking policy from the government of the day, supported by good governance and efficient project management, the NSPS will secure the foundation for Canada's maritime sovereignty in the twenty-first century.

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