

**REPORT ON:**

# **Procurement of Personal Protective Equipment During the COVID-19 Pandemic**

## **Phase 1 - Provincial Procurement Excluding the Healthcare System**

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## Executive Summary

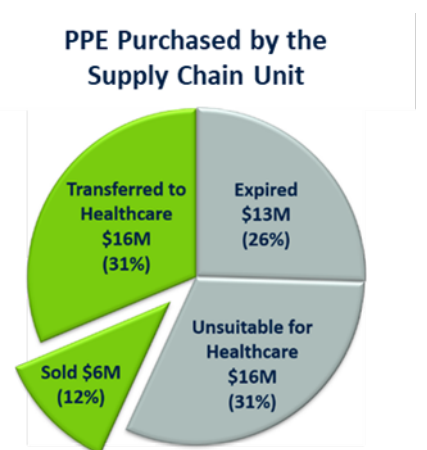
The COVID-19 pandemic (pandemic) resulted in the first supply chain disruption of this scale, and most of the world was unprepared. Throughout the initial response there were overriding positive outcomes, including society working together towards a common goal. There were also global challenges as countries competed for scarce supplies and national borders closed.

Personal protective equipment (PPE) became essential to protect frontline workers, limit the spread of the virus, and enable the economy to continue operating safely. Early in the pandemic the market for PPE was volatile, with high global demand and insufficient supply. This shortage resulted in a significant influx of new suppliers increasing the risk of low quality and counterfeit PPE.

The procurement of PPE became a key focus of the Government of British Columbia (Government) during the pandemic. The Government prioritized the procurement of a large volume of PPE due to the uncertainty of the pandemic and the potential devastating consequences of not having sufficient PPE available. A governance framework was established where the Ministry of Health led the healthcare sector response and Emergency Management B.C. led all non-health related efforts. A new working group, the Provincial Supply Chain Coordination Unit (Supply Chain Unit), was created to monitor and support the supply chain as well as procure and resell PPE to the broader public sector, excluding healthcare. This required the establishment of new processes and procedures, including demand modelling, vendor vetting and quality assurance.

Internal Audit & Advisory Services, Ministry of Finance, completed a review to capture lessons learned from the Supply Chain Unit's procurement efforts during the early stages of the pandemic.

The Supply Chain Unit secured \$61 million of PPE, of which approximately \$6 million was sold to the broader public sector. Of the remaining surplus inventory, \$16 million was transferred to the Provincial Health Services Authority for use within the ongoing medical response. The Supply Chain Unit also negotiated reductions to contract volumes resulting in approximately \$10 million in cost savings. An estimated \$16 million of PPE was disposed of due to quality issues and a further \$13 million expired throughout the year.



**Source:** Figures obtained from Emergency Management B.C. and the Ministry of Citizens' Services as at May 31, 2021.

**The key observations identified through the lessons learned process include:**



Teamwork and cooperation were consistently identified as strengths of the Government's emergency response, enabling the Government to set up a cross ministry working group quickly. This team worked collectively to ensure the Government had the PPE it needed to remain safe throughout the pandemic. They also implemented several new processes to monitor the supply chain, and to identify and vet vendors ensuring that only quality PPE was distributed throughout the Government.



The Government does not have a supply chain management framework and emergency response plans have limited consideration for supply chain disruptions. This resulted in three key challenges:

- 1. Getting PPE to those in need quickly.** The Government did not have a sufficient stockpile in place necessitating the emergency procurement of PPE. This required establishing the Supply Chain Unit and determining the legal authority to stockpile and resell PPE, which ultimately delayed the distribution of PPE.
- 2. Estimating the demand for PPE.** The uncertainty of the pandemic, and limited global supply chain expertise contributed to overstated demand assumptions.
- 3. Vendor vetting and purchasing in a volatile market.** Buying in uncertain market conditions led to purchasing low-quality PPE.

Developing a provincial supply chain management strategy would help to address these issues and identify and prepare for future supply chain security risks.

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We would like to thank everyone who participated in and contributed to this review, for their cooperation and assistance. Additionally, we would like to acknowledge and thank the British Columbia Public Service for its immense dedication and tireless efforts in serving its citizens through this unsettling time.

Alex Kortum, CPA, CA  
Executive Director  
Internal Audit & Advisory Services  
Ministry of Finance

# Overall Conclusion

The Government was not prepared for a global supply chain disruption of this scale. Although the Government has a system of plans in place to respond to various emergencies, there is a gap in the planning, knowledge and resources relating to the management of a global supply chain disruption.

The Government would benefit from implementing a framework to address provincial supply chain management. This framework should consider program objectives including assessing supply chain risks and mitigation strategies, scenario planning for future emergencies, as well as a jurisdictional analysis to ensure best practices. This framework should also determine the oversight structure, resource requirements, information systems and legal and financial authorities required to achieve its objectives.

**A comprehensive supply chain management framework would enable the Government to prepare for future disruptions and develop a strategy to mitigate supply chain risks.**

Planning for Supply Chain Disruptions	
<p><b>Key finding:</b> The Government’s emergency response plans and procedures have limited guidance relating to supply chain disruptions. Further, there are limited resources responsible for provincial supply chain management. This led to challenges establishing new structures and processes and building knowledge and capacity, while managing the provincial supply chain.</p>	<p><b>Recommendation 1:</b> The Government should incorporate supply chain management into response plans to prepare for future supply chain disruptions.</p>
	<p><b>Recommendation 2:</b> The Government should consider the need to build resource capacity with global supply chain expertise.</p>
<p><b>Key finding:</b> The Supply Chain Unit did not have legal authority to stockpile and resell PPE. Legal consultations to clarify the authority delayed distribution to ministries and other government entities. As such, these entities purchased PPE independently which contributed to the oversupply of PPE. The Government is currently revising the relevant legislation to reflect lessons learned.</p>	<p><b>Recommendation 3:</b> The Government should ensure revisions to legislation incorporate the authority to stockpile and resell personal protective equipment.</p>

<b>Procuring Personal Protective Equipment</b>	
<p><b>Key finding:</b> There were limited stockpiles of PPE available at the onset of the pandemic. As such, the Government needed to quickly establish a demand model to estimate its inventory requirements and execute the purchases during volatile market conditions. This also contributed to the surplus of PPE and resulted in the purchase of low-quality goods and product expiration.</p>	<p><b>Recommendation 4:</b> The Government should consider demand modelling for other types of emergency scenarios to enhance preparedness.</p>
	<p><b>Recommendation 5:</b> The Government should develop a stockpile strategy to determine inventory requirements and assess inventory management practices.</p>
<b>Supply Chain Security</b>	
<p><b>Key finding:</b> The global supply chain disruptions during the pandemic highlighted supply chain security risks. The Government did not have the capacity or capability to meet demand for PPE domestically and was reliant on foreign markets. Global supply chain disruptions can occur for a variety of reasons, including labour shortages, extreme weather events or political conflict.</p>	<p><b>Recommendation 6:</b> The Government should develop a supply chain management strategy to identify, analyze and mitigate supply chain security risks.</p>

## Introduction

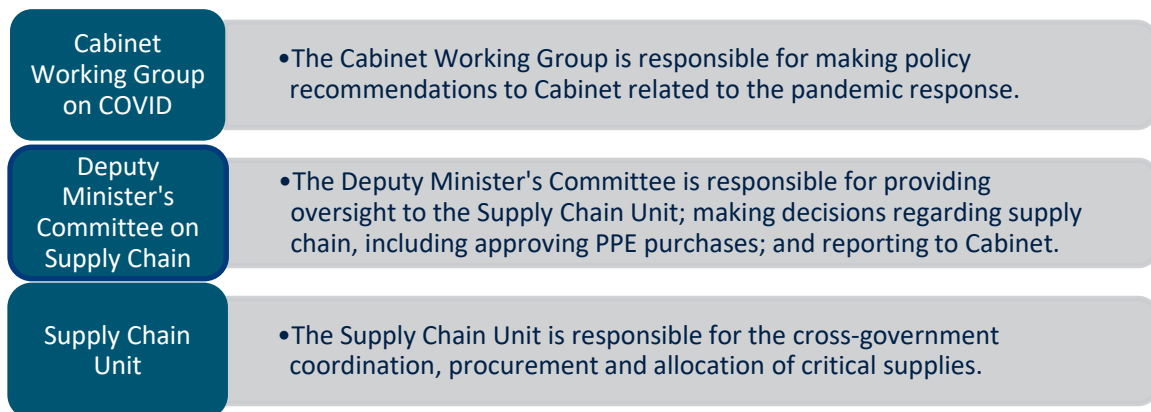
In the early stages of the COVID-19 pandemic (pandemic) there was an unprecedented need for emergency supplies and services throughout British Columbia and internationally. Personal protective equipment (PPE) was essential to protect frontline workers, limit the spread of the virus, and enable the economy to continue operating safely throughout the pandemic. An imminent global supply shortage in the early stages of the pandemic created an urgent need to coordinate and streamline the Government of British Columbia's (Government) emergency procurement processes.

This global **supply chain** disruption created market volatility and made procuring significant volumes of PPE difficult. The Government established a governance framework where the Ministry of Health led the healthcare sector response and Emergency Management B.C. led all non-health related efforts.

A **supply chain** is the network of organizations involved in the production and distribution of consumer goods, from raw material to finished product.

The Provincial Supply Chain Coordination Unit (Supply Chain Unit) was created to monitor and support provincial supply chains as well as procure PPE to meet the needs of the Government outside of healthcare. The Supply Chain Unit<sup>1</sup> was comprised of approximately 120 individuals from across government and reported to the Deputy Minister's Committee on Supply Chain (Deputy Minister's Committee).

**Figure 1: Supply Chain Governance**



The Supply Chain Unit coordinated several aspects of the procurement process, including vendor identification and vetting; purchasing and quality assurance; and the receipt, storage, and distribution of PPE.

<sup>1</sup> The Supply Chain Unit was led by a cross-government team from Emergency Management BC and the Ministries of Citizens' Services; Jobs, Economic Recovery and Innovation; and Transportation and Infrastructure; and was supported by the Provincial Health Services Authority.

## Purpose, Scope and Approach

Internal Audit & Advisory Services conducted a cross-government review to examine emergency procurement practices during the pandemic. Understanding and reflecting on the procurement process can help the Government be better prepared for the next major event where similar procurement challenges may exist.

Specifically, this project was designed to understand the Government's authority to secure and distribute PPE<sup>2</sup>; and the communication and coordination across ministries and other government entities to obtain, prioritize and allocate emergency supplies and services. This included understanding any significant challenges, and identifying potential improvements, and providing considerations to improve future response.

The scope of this review was limited to the activities of the Government outside of the healthcare system.

During the project, we gained an understanding of how the Government:

- obtained authorization to buy, stockpile and resell PPE;
- determined supplies and services requirements, and made critical procurement decisions; and
- coordinated and communicated key procurement processes including vendor identification, vetting and quality assurance.

This work involved:

- reviewing procurement-related legislation, policies, agreements and emergency plans; and
- interviewing executive and procurement specialists across key ministries and other government entities.

This review was conducted by Internal Audit & Advisory Services, Ministry of Finance and fieldwork was completed in October 2021. We require the Government to develop and submit an action plan in response to the recommendations provided in this report, including their timeframe for implementation. We will then conduct an annual follow-up to assess progress in implementing the action plans.

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<sup>2</sup> PPE purchased by the Supply Chain Unit included: gloves, cleaning products, sanitizer, goggles, gowns, and masks.



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## 1.0 Planning for Supply Chain Disruptions

As emergencies become more complex and global in nature, the ability to respond quickly and decisively is increasingly important. This involves planning to ensure the structures and authorities are in place before an emergency event. The pandemic resulted in the first supply chain disruption of this scale, and most of the world was unprepared. As part of this review, we examined the Government's actions related to planning, coordinating and authorizing critical supply chain response activities.

### 1.1 Emergency Response Plans

The British Columbia Emergency Management System (Emergency Management System) is a comprehensive framework to help ensure a coordinated and organized approach to emergencies and disasters. As part of this framework, the Government has a series of plans for specific emergencies, including a pandemic plan and an **all-hazard plan**. These plans detail the Government's strategy for cross-ministry coordination and business continuity in response to an emergency or pandemic event. The Emergency Management System and the related plans broadly cover emergency or disaster response but have very limited guidance relating to emergency procurement and supply chain disruptions.

The **all-hazard plan** is the basis for response to all types of hazards. It defines the roles and responsibilities of provincial entities (ministries, the private sector, volunteers, and others) and it coordinates the integrated provincial response with the Emergency Management System.

As a newly established working group, the Supply Chain Unit faced several challenges. Firstly, while the Supply Chain Unit had knowledge of typical government procurement, it lacked expertise and experience related to global supply chain matters. Secondly, there were challenges relating to setting up the cross-ministry working group without a plan in place. This involved determining roles and responsibilities, communication channels and decision-making structures, while also completing the tasks required of the Supply Chain Unit. Challenges with communication and coordination resulted in the Supply Chain Unit and eligible entities competing for supplies from the same vendors, resulting in higher prices and over purchasing.

To improve communication and coordination during emergency response the Government should incorporate supply chain management into the Emergency Management System; this would require increased global supply chain expertise.

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### Recommendations:

- (1) The Government should incorporate supply chain management into response plans to prepare for future supply chain disruptions.
  - (2) The Government should consider the need to build resource capacity with global supply chain expertise.
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## 1.2 Legislation

The *Emergency Program Act* (the Act) is the legislation that governs emergency response operations within British Columbia. The Act defines the powers and duties of government during an emergency or disaster. To support its COVID-19 response, the Government declared a state of emergency on March 18, 2020. This gave the Government the power to implement provincial emergency measures, such as access to any land and human resources necessary to prevent, respond to, and alleviate the effects of the emergency. This included securing critical supply chains to ensure people had access to essential goods and services.

Within the Act there is explicit language that permits procurement of medical supplies it considers necessary to prevent, respond to, and alleviate the effects of a disaster. However, the Act does not provide explicit authority to amass inventory of PPE beyond the needs of a disaster. Further, the Act is silent on the authority to resell PPE to other entities. The Supply Chain Unit obtained clarification from legal and financial advisors and concluded they did not have the authority to stockpile and resell PPE. These consultations took additional time and delayed the Supply Chain Unit's distribution of PPE. There is an opportunity to integrate these roles into future emergency response.

Throughout the spring of 2020, a significant stockpile of PPE was purchased while authorities provided under the Act were being clarified. Legal consultations to determine what authorities were available to the Government and how to legally distribute and sell PPE caused delays in making PPE available to **eligible entities**. Ultimately, an agreement was negotiated with the Provincial Health Services Authority, which had the authority to resell PPE. The delays, however, contributed to an oversupply as many eligible entities independently acquired PPE before it was available through the **Supply Hub** in August 2020.

**Eligible entities** included first responders, ministries, universities, crown corporations, municipalities, school districts, childcare facilities, community organizations.

**Supply Hub** was a digital sales platform created to sell PPE to eligible entities.

Another legal challenge that was faced by the Government was the liability risk related to the distribution or resale of PPE that was insufficient quality or used inappropriately. A **ministerial order** was issued to protect the Government and other suppliers of goods and services from any liability. This liability protection could be included in proposed amendments to legislation to remove the need for future ministerial orders on the matter.

A **ministerial order** is created and authorized under a statute or regulation granted to a minister to enact temporary law. For example, during the pandemic a ministerial order was issued for the temporary prohibition of reselling essential goods or supplies.

The Government is currently developing a new, modernized emergency management act and is considering what changes to legislation are necessary regarding emergency procurement and the corresponding liability protection.

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### Recommendation:

- (3) The Government should ensure revisions to legislation incorporate the authority to stockpile and resell personal protective equipment.
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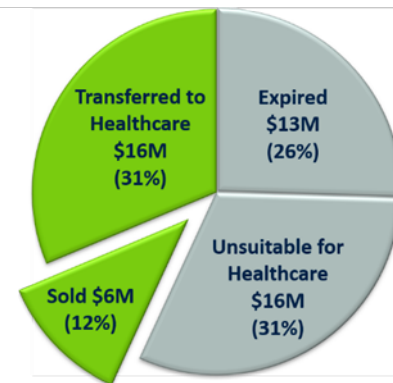
## 2.0 Procuring Personal Protective Equipment

In our review, we sought to understand the challenges associated with PPE procurement during the pandemic and identify opportunities to mitigate these in the future. Specifically, we examined how the Government determined the volume of PPE required and made other critical procurement decisions that may have contributed to an oversupply of PPE. We also reviewed how the Government helped ensure the quality of PPE through its vendor identification, vetting and quality assurance processes.

The Supply Chain Unit estimated that \$64 million of PPE would be required for the operations of core government and eligible entities to maintain operations for a six-month period. Given the high uncertainty at the outset of the pandemic, the demand model assumptions were designed to ensure ample PPE. This resulted in significant PPE purchases based on early demand estimates. However, global supply chains rebounded within a few months which made PPE available through traditional channels and greatly reduced estimated demand.

The Supply Chain Unit secured \$61 million of PPE, of which approximately \$6 million was sold to eligible entities. Of the remaining surplus inventory, \$16 million was transferred to the Provincial Health Services Authority for use within the ongoing medical response. The Supply Chain Unit also negotiated reductions to contract volumes resulting in approximately \$10 million in cost savings. An estimated \$16 million of PPE was disposed of due to quality issues and a further \$13 million expired throughout the year.

**Figure 2: PPE Purchased by the Supply Chain Unit**



**Source:** Figures obtained from Emergency Management B.C. and the Ministry of Citizens' Services as at May 31, 2021.

### 2.1 Assessing the Supply and Demand for Personal Protective Equipment

Understanding the Government's need for PPE during the pandemic was critical; having too little PPE would put the public at risk, while procuring too much would result in overspending and waste. There were two key factors that significantly influenced the quantity of PPE that the Supply Chain Unit needed to procure: the ability of eligible entities to access PPE on their own, and their rate of consumption. Demand modelling was used to provide an estimate of provincial demand based on a series of assumptions such as population size, usage rates and the availability of PPE.

Demand modelling for the pandemic was initially outsourced to a third-party contractor due to time pressures and the lack of available resources. As demand modelling is an iterative process, subsequent updates were required to maintain the model. Using a contractor to maintain a model of this size and complexity comes with a significant cost and as such, the responsibility of managing the model was transferred internally to **BC Stats**.

**BC Stats** publishes an array of provincial economic and statistical data and offers custom services, including data modelling and forecasting. BC Stats has access to the statistical information required to make informed modelling decisions.

Demand modelling requires many assumptions to be made that are highly variable. The demand model's assumptions were based on available information, including demographic statistics and updated health and safety guidelines. The model was iterative and flexible to accommodate the everchanging understanding of the COVID-19 virus and orders by the Provincial Health Officer. However, to mitigate the risk of a shortage, there were overarching assumptions applied in the model that when compared to actual outcomes were conservative. For example, the date that eligible entities would return to the office; or that alternative PPE, such as cloth masks, would be available. These assumptions, combined with the delays in making the PPE available to the eligible entities, contributed to surplus of PPE.

Another key challenge was understanding the supply of PPE that existed outside of government. The Government does not currently have a supply chain team with expertise on global and provincial supply chain activities. The Supply Chain Unit reached out to key stakeholders in the supply chain and monitored the inventory of critical items throughout the pandemic. Ultimately, there was uncertainty about the quantity that eligible entities would be able to procure on their own. As such, the modelling incorporated the assumption that eligible entities would be unable to get any PPE from other sources and that the Supply Chain Unit would be the sole provider of PPE. However, supply chains recovered relatively quickly and most entities were able to procure PPE on their own before it was made available by the Supply Chain Unit, contributing to the oversupply.

In future emergencies there may be similar supply chain and procurement-related challenges that arise. Building internal supply chain expertise into the demand modelling process would help refine underlying assumptions. Demand modelling for other types of emergency scenarios could also help the Government be more prepared in the event of another emergency.

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### **Recommendation:**

- (4) The Government should consider demand modelling for other types of emergency scenarios to enhance preparedness.
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## 2.2 Assuring Quality of Personal Protective Equipment

Global demand for PPE increased by 300-400% between 2019 and 2020 due to record consumption by the general public, healthcare systems and organizations worldwide. This spike in demand resulted in a significant influx of new suppliers in the marketplace and an increased risk of low quality or counterfeit PPE. To address these risks, the Supply Chain Unit established **vendor vetting** and **quality assurance** processes to ensure that the PPE met quality standards.

**Vendor vetting** is the process of screening a potential vendor and their goods prior to contracting with them.

**Quality assurance** is the process of testing and assessing goods after they have been received, and before they are distributed for use.

The global marketplace was forced to veer away from traditional procurement practices in response to the increased demand for, and limited supply of, PPE. The negotiating power shifted towards vendors and it was not uncommon for vendors to significantly mark up prices, include non-refundable terms in their contracts, require cash payments upfront and limit opportunities to sample products. The Government's vendor vetting processes needed to adapt to competitive market conditions, primarily around the speed at which new vendors were identified, evaluated, and selected.

A third-party contractor was initially used to vet vendors on behalf of the Government. The contractor provided additional capacity as well as their network of international manufacturers. To manage costs, in May 2020 the vetting process was moved internally. For each vendor, a risk evaluation was performed that looked at vendor certifications and licences, payment terms, previous supply quality and vendor credibility. Once a vendor was successfully vetted, the Deputy Minister's Committee was responsible for final approval. While vendor vetting can help to mitigate some risk, it does not guarantee the credibility of suppliers or the quality of their goods.

**Figure 3: Supply Chain Unit Purchasing Process**



Once goods were purchased and received into the warehouse, the quality assurance process began. While the process varied by product, it generally involved independent visual and physical inspections, lab testing, and/or fit testing. Approximately \$16 million of the PPE purchased did not meet specified quality standards for several reasons such as insufficient particle filtration and poor composition. The Government is in the process of disposing both the expired and the unsuitable for healthcare inventory, additional costs are likely to be incurred.

These quality issues were a result of emergency buying under competitive market conditions, where standard procurement practices could not be upheld. Due to limited local suppliers, the Government purchased from several international vendors. This made vendor vetting more challenging and limited recourse when low quality PPE was received. A sufficient supply of inventory may have reduced the challenges experienced with both quality assurance and vendor vetting process.

## 2.3 Stockpiling

The purpose of a stockpile of PPE is to ensure the Government has enough supplies on-hand to get through an emergency or supply chain disruption. The Government had access to two stockpiles at the beginning of the pandemic. The first was a provincial stockpile, implemented after the Severe Acute Respiratory Syndrome pandemic in 2003, and the second was the federal National Emergency Stockpile System. We were advised that the provincial stockpile was not sufficient to meet the needs of the current pandemic, as many goods had expired and were not replaced. The federal stockpile had a limited supply which was shared across the country. Access to these stockpiles was not sufficient to meet the Government's need for PPE.

At the onset of the pandemic, the Government began to stockpile PPE, but experienced many challenges, including availability, price, and quality. Stockpiles provide a buffer from supply chain disruptions, and in this case would have reduced the need to purchase goods from unknown suppliers during volatile market conditions. A sufficient stockpile would ensure that the Government has supplies to respond immediately.

There are costs associated with establishing and maintaining a stockpile, such as the upfront cost of PPE, the storage, staffing, and systems required to manage the inventory. Stockpiles need active management to purchase appropriate inventory levels, ensure inventory is regularly consumed and replenished, and manage storage and distribution. Robust inventory management systems are necessary to track data such as expiration dates or batch numbers and help to effectively monitor the assets. The Government should analyze its need for PPE beyond the current pandemic and ensure its stockpile is maintained and managed on an ongoing basis.

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### Recommendation:

- (5) The Government should develop a stockpile strategy to determine inventory requirements and assess inventory management practices.
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### 3.0 Supply Chain Security

The Government faced significant challenges to obtain PPE at the onset of COVID-19 due to worldwide shortages. There are several contributing factors, including high competition for global supply, minimal inventory held by the Government, and limited local production. This global supply chain disruption highlighted supply chain security as a risk for the Government. When the Government was vulnerable and in urgent need of PPE, it did not have the capacity or capability to meet those needs domestically and was reliant on foreign markets. While stockpiling can create a buffer to relieve this risk in a health crisis, it does not address the long-term oversight and management components required for a secure supply chain.

The prioritization of domestic manufacturing would improve provincial supply chain security by reducing dependence on foreign manufacturing. This issue is complex and requires subject matter expertise to analyze the impacts on policy, ensure alignment with trade agreements and coordinate with the federal government. Reviewing supply chain risks, including performing long-term cost-benefit analyses of potential solutions, may provide valuable insights into future emergency response and supply chain security.

The Government has identified supply chain security as a risk and included supply chain resiliency in their economic recovery plan, **StrongerBC**. This includes the Supply Chain Resiliency Grant Program, which supports industry and trade associations working to support the resilience of local manufacturing.

**StrongerBC** is an economic recovery plan to support people and communities, it was launched to help the Government recover from the impacts of the pandemic.

Supply chain security is being discussed internationally and is being addressed by governments in various ways. During the pandemic, the Government of Ontario launched Supply Ontario, a centralized supply chain agency, that aims to support the broader public sector by centralizing buying, ensuring supply chain security, increasing support for domestic production, and driving innovation. The agency is currently focused on stabilizing the PPE supply chain but has a long-term mandate to support Ontario's supply chains.

The Supply Chain Unit was formed to fill a similar mandate but only operated temporarily through the pandemic. A more permanent solution should be explored for the Government, including dedicated resources to monitor supply chain health, develop supply chain strategies, and implement action plans.

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#### Recommendation:

- (6) The Government should develop a supply chain management strategy to identify, analyze and mitigate supply chain security risks.
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## Appendix A - Summary of Recommendations

1	The Government should incorporate supply chain management into response plans to prepare for future supply chain disruptions.
2	The Government should consider the need to build resource capacity with global supply chain expertise.
3	The Government should ensure revisions to legislation incorporate the authority to stockpile and resell personal protective equipment.
4	The Government should consider demand modelling for other types of emergency scenarios to enhance preparedness.
5	The Government should develop a stockpile strategy to determine inventory requirements and assess inventory management practices.
6	The Government should develop a supply chain management strategy to identify, analyze and mitigate supply chain security risks.

## Appendix B - Abbreviations

Act	Emergency Program Act
Deputy Minister's Committee	Deputy Minister's Committee on Supply Chain
Emergency Management System	British Columbia Emergency Management System
Government	Government of British Columbia
Pandemic	COVID-19 pandemic
PPE	Personal Protective Equipment
Supply Chain Unit	Provincial Supply Chain Coordination Unit