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Summary Report

# TRANSLATING ASIA PACIFIC COVID-19 EXPERIENCES FOR CANADA:

Building Resilient and Comprehensive Responses to Future Pandemics



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01

# INTRODUCTION

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The COVID-19 pandemic has proven to be an exacting test for public health systems, economies, and societies worldwide. In Canada, the pandemic has claimed over 25,000 lives since it started, especially among the elderly. At the same time, Canada's economy has experienced a historic slump, with GDP contracting by 4.5% in 2020 compared to 2019. While the economy has recovered to a degree, it has yet to attain its pre-pandemic value, and lingering negative effects of continued disease transmission and economic shutdowns continue to disproportionately impact certain communities, such as visible minorities, Indigenous groups, low-wage workers, and youth.<sup>1</sup> The pandemic has also strained the international systems of trade and diplomacy that Canada relies on and participates in, adding to economic stress and trade competition, especially for goods critical to the pandemic response. To better prepare for similar health crises in the future, it is crucial that Canada evaluate its own COVID-19 challenges and shortcomings and that it learn from the experience, knowledge, and preparation in pandemic responses from other countries.

The Asia Pacific Foundation of Canada has examined the diverse COVID-19 experiences of multiple economies in the Asia Pacific region with the objective of drawing key lessons for Canada. In comparison to North America and Europe, several Asia Pacific economies – despite their geographical proximity to the pandemic's epicentre in Wuhan, China – experienced relatively lower rates of transmission and death, particularly in the early phase of the pandemic, which caught many western states by surprise.

Several economies in the Asian region have a more recent history of responding to emerging infectious diseases with high economic and social impacts, most significantly severe acute respiratory syndrome (SARS) in 2002-2003 and Middle East respiratory syndrome (MERS) in 2015. Regional economies taken as examples for this project either already possessed practical knowledge in the management of infectious disease outbreaks and their social and economic fallouts, or quickly pivoted, formulating cross-sectoral policies and measures that better responded to the specific characteristics of COVID-19.

This report summarizes the research, analysis, and key findings of four policy reports dissecting the experience of Asia Pacific economies as they responded to COVID-19. These four reports examine the following areas:

- Public health and pandemic response;
- Digital innovation for pandemic response;
- Cross-border trade flows; and
- International engagement in global health.

These analyses provide policy recommendations for the Public Health Agency of Canada (PHAC) and bring forth valuable structural recommendations to help the federal government reform Canada's pandemic preparedness and build comprehensive response strategies for the future. For further information, analyses, and detailed case studies, please consult the full reports.

The first section of this summary report examines public health responses to COVID-19 across seven Asia Pacific economies. Researchers examine pandemic preparedness, institutions, public health policies, and legislation either in place prior to COVID-19 or that was rapidly developed and modified at its onset. It identifies and provides in-depth analysis of the factors in pandemic response that allowed Australia, Japan, New Zealand, Singapore, South Korea, Taiwan, and Vietnam to bring COVID-19 under control and prevent heavy death tolls. The report puts forth recommendations to build whole-of-society pandemic responses based on scientific expertise and lessons from past experiences.

Section 2 explores the development and rollout of digital technologies deployed in pandemic response and health care. This section also identifies and examines the enabling policy, legal, institutional, and societal factors facilitating the development and adoption of such digital tools for public health. It ends with takeaways for the government of Canada on the need to *reform*, at a national level, key structural policies such as data sharing, responsive and open technology development, digital literacy within government

agencies and the public, and evaluation of public-private partnerships for future digital health innovations.

Section 3 provides an overview of the impact the pandemic has had on global value chains (GVCs) and the trade of medical products, such as personal protective equipment (PPE) and vaccines, between Canada and the Asia Pacific region. It examines five major problems faced by Asia Pacific and Canadian multinational corporations (MNCs). The case studies include the disruption of GVCs due to export restrictions, transportation delays, and poor labour practices. Also covered are government or private sector programs facilitating reshoring and collaboration among MNCs and small and medium-sized enterprises (SMEs). This section closes with recommendations on how Canada can better prepare for and mitigate supply chain disruptions on key goods during a future health crisis.

Section 4 examines pandemic responses from prominent international organizations that pivoted their programs, research, and funding to address the challenges of COVID-19. Researchers focused on international, regional, and subnational organizations active in Asia Pacific economies that fulfilled diverse roles complementing global and national response efforts. This report proposes a new ecosystem approach to demonstrate how organizations at multiple levels have worked together throughout the pandemic, and how Canada can maximize its engagement with these organizations to build diverse and resilient ties with the region.

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## 02

# PUBLIC HEALTH RESPONSES TO COVID-19 IN THE ASIA PACIFIC REGION

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While Canada was relatively well prepared for a potential pandemic and fared better than other high-income countries in North America and Europe, its experience during COVID-19 has still resulted in significant loss of life and economic damage. In comparison, economies in the Asia Pacific region, geographically closer to the pandemic's epicentre in Wuhan, China, experienced relatively lower transmission and death rates, particularly in the early phase of the pandemic.

As Canada and others continue to quell subsequent waves of COVID-19 and find a “new normal” for the future, it is critical for it to gather lessons from national and international experiences with COVID-19 in preparation for the next pandemic. Canada has the opportunity to learn not only from its own domestic battle with COVID-19, but from effective and agile responses from partners across the Pacific. Canada can harness these key lessons for its own health policy and institutional changes in preparation for the next health crisis and novel pathogens, a process that will take time and long-term investment, as seen in the cases from the Asia Pacific.

This report, *First Responders: How the Asia Pacific Region Managed the Public Health Response to COVID-19 and What Canada Can Learn From Them*, examines the pandemic preparedness and public health policies of seven Asia Pacific countries. It provides an in-depth analysis of the factors that allowed Australia, Japan, New Zealand, Singapore, South Korea, Taiwan, and Vietnam to bring COVID-19 under control, mitigating disease burdens, death

tolls, and consequent economic damage within their borders. These seven countries were selected based on two key criteria:

1. Overall low cumulative case numbers and mortality through multiple early waves of transmission; and
2. Co-ordinated pandemic preparedness and response across a diversity of governance and political models, and health-care infrastructure.

The research, analysis, and policy recommendations for Canada focus on seven categories relevant to pandemic planning and public health: (1) governance structure, expertise, and experience; (2) pandemic preparedness; (3) public health and pandemic response; (4) border measures; (5) case-based interventions; (6) population-based interventions; and (7) communication strategies. A summary of key findings and recommendations for each category is presented below.

## **Governance Structure, Expertise, and Experience**

Analysis of the COVID-19 response in the seven Asia Pacific case study countries reveals that their public health institutions and pandemic response planning were largely shaped by previous experience with outbreaks, most significantly SARS in 2002-2003 and MERS in 2015. Common themes for reform included improved inter-governmental and inter-ministry co-ordination, improved definition of roles and authority, elevating the role of experts, and the protection of vulnerable populations. The consequent changes to health governance structure and public health institutions paved the way for the successful responses to COVID-19.

After the SARS (2003) and MERS (2015) outbreaks, Asia Pacific governments like South Korea and Taiwan created new disease control institutions, enhanced their powers through law, and created clear-cut protocols for inter-agency and whole-of-government co-ordination in the event of an infectious disease outbreak. Governments established new agencies like the Korea Disease Control and Prevention Agency (KDCA) and Taiwan's National Health Command Center (NHCC), legally backed by the Infectious Diseases Prevention and Control Act and the Communicable Disease Control Act, respectively.<sup>2</sup> Later on, South Korea and Taiwan reformed their infectious disease legislation to designate the KDCA and NHCC as command centres with clear authority to implement necessary health measures; deploy required medical personnel at the municipal, state, or countrywide level; and co-ordinate among all levels of government and multiple ministries.<sup>3</sup>

Although spared from previous infectious disease outbreaks, Australia has been proactive in establishing mechanisms for co-ordination and co-operation among levels of government in key areas, especially public health after the onset of COVID-19. Lacking a central public health agency analogous to PHAC in Canada or the CDC in the United States, Australia exemplified a co-operative model of pandemic responsiveness. The Australia Health Protection Principal Committee (AHPPC), chaired by the chief medical officer and consisting of the chief health officers of the states and territories, is the principal decision-making committee for public health emergency management and disease control in Australia.<sup>4</sup> The practical effect of agencies like the AHPPC and KDCA is a cohesive national response that is able to balance power among levels of government, and ultimately is more effective than Canada's fragmented approach.

## Pandemic Preparedness

Responses to COVID-19 in Asia Pacific countries heavily benefited from the emphasis on infectious disease control, the pre-eminent role of public health scientists and experts in guiding measures, and rigorous practical testing of existing pandemic plans. Several governments in the region, including Singapore, Taiwan, and South Korea, supported the increase in the number of infectious disease experts and epidemiological staff working at national, provincial, and municipal levels.<sup>5</sup>

Governments also committed to increased funding for infectious disease preparedness, including electronic information systems for health care. In South Korea alone, these policy mandates for medical talent and institutional capacity led to a doubling of the number of epidemic intelligence service officers and a 182% rise in the budget for contagious diseases and quarantine systems over five years.<sup>6</sup> The retention of such expertise and key staff built over time within public health agencies further contributed to rapid pandemic responses. Experts on the forefront of health measure implementations and in decision-making positions also meant that responses were scientifically guided.

Additionally, Asia Pacific economies have made a habit of conducting rigorous practical exercises to evaluate and update pandemic plans. Taiwan updates its Emergency Infectious Disease Response Handbook annually and holds quarterly training sessions and drills for relevant staff.<sup>7</sup> Likewise, the KDCA in South Korea facilitates infectious outbreak simulations with local governments, central government departments, and the private sector. Fortuitously, the KDCA conducted such a drill in December 2019, before its first reported COVID-19 case, further making South Korea's response a well-oiled machine.<sup>8</sup>

Most successful responses in Asia Pacific countries followed an elimination approach, pursuing containment strategies for COVID-19 with the purpose of reducing community transmission to nearly zero.<sup>9</sup> Unlike in Canada, pandemic planning in jurisdictions like Taiwan, while based on pandemic influenza, was designed to more readily adapt to the unique characteristics of novel viruses and incorporated knowledge gathered from prior experience with coronaviruses (SARS and MERS). Australia and New Zealand, despite initially planning for a mitigation strategy, recognized the limitations of this approach as applied to COVID-19 and pivoted to elimination, a decision that resulted in these two countries successfully controlling transmission.<sup>10</sup> Going forward, it is critical that Canada formulates future pandemic plans expansive enough to cover a range of pathogens and characteristics beyond influenza and flexible enough to readily adapt when the available evidence suggests that elimination is the most viable option.

## **Public Health and the Pandemic Response**

Early warning systems that monitor for external threats are an important first component of an effective pandemic response. This type of surveillance played a key role in pandemic responses in the Asia Pacific. For instance, Taiwan and South Korea both conduct real-time, event-based surveillance, identifying public health events and flagging them for risk assessment.<sup>11</sup> Canada's own surveillance system, the Global Public Health Intelligence Network (GPHIN), is a partner of the Global Outbreak Alert and Response Network and has been lauded in the past. However, due to shifting priorities within PHAC, it was operating at diminished capacity before the outbreak of COVID-19. Given the speed with which viruses can transmit, particularly in the era of modern travel, advance notification of emerging infectious diseases (EIDs) provides valuable time to prepare and initiate a response.

Several Asia Pacific economies conducted their own risk-assessments informed by both previous experience with EIDs, proximity to the outbreak epicentre, and severe reactions from other governments to the novel virus. Regional governments like Taiwan and South Korea based their risk-assessment frameworks on WHO and European standards.<sup>12</sup> They also included information coming from beyond their borders, so they became appropriately concerned when China acted quickly to lock down Wuhan and began speed-building hospitals.<sup>13</sup> Hence, Seoul and Taipei kickstarted their responses independently, relying on their own intelligence and standards of risk, while others, like Canada, awaited advice from the WHO.

Throughout the early stages of the pandemic, Asia Pacific economies were highly responsive and quick to adapt their measures based on changing information. For instance, Taiwan updated its case definition to include patients with pneumonia of unknown cause regardless of travel history by mid-February 2020.<sup>14</sup> South Korea also rapidly increased national alert levels – from blue on January 3 to red (the highest level) by February 23 – enabling the activation of extensive testing and contact tracing efforts.<sup>15</sup> Thus, South Korean officials identified and isolated community transmission clusters in a timely manner that prevented rampant domestic spread. Compared to Canada’s delayed and overly cautious response, countries with the most stringent responses in the first months of the pandemic had the best opportunity to control spread without resorting to excessively harsh measures, before widespread community transmission occurred, potentially overwhelming contact tracing and testing systems.

## Border Measures

While a contentious policy internationally, Asia Pacific countries and territories did employ well-timed border measures judiciously, inspecting inbound flights and passengers as well as banning certain flight origins based on assessed risk.<sup>16</sup> Such policies were only adopted in the early stages or during severe waves, contributing to delaying and mitigating community transmission.<sup>17</sup> Hence, these territories added time to scale up the implementation of domestic measures and production of crucial testing capacity. Places that rapidly instituted strict border control measures, including mandatory quarantine, also recorded the lowest per-capita mortality rates. Countries and territories in the Asia Pacific region also understood that border measures – and their overall response – were only effective as long as the magnitude of community transmission was properly evaluated through comprehensive testing and border screening, and curbed through complementary restrictions to domestic travel and consistent national-level quarantine measures.

Quarantine protocols in the Asia Pacific region were also more stringent than Canada’s. Singapore, Taiwan, Hong Kong, and South Korea took advantage of technology to monitor and enforce home-based quarantines.<sup>18</sup> This varied from simple phone calls or text messages by health officials to electronic fencing through GPS-enabled smartphone applications or personal devices like wristbands to verify a quarantining person’s location.<sup>19</sup> The travel deterrent posed by quarantine requirements also curbed the population’s international and domestic movement, giving less opportunity for COVID-19 to spread. Hence, it is important for Canada to include and support comprehensive measures – from border restrictions to extensive contact tracing and quarantining – in its pandemic planning, particularly for the early response phase.

## **Case-Based Interventions**

The ability to test a broad range of individuals – and thus to proactively identify cases before they become clusters of community transmission – relies on a high testing capacity at an early stage. Although their methods differed, the Asia Pacific countries and territories that most successfully controlled COVID-19 demonstrated a rapid expansion of capacity and consistent standards for testing that enabled authorities to cast a wider net and to proactively identify cases before they became clusters. In Canada, barriers to increasing testing capacity varied by region and included shortages of test kits, reagents, and lab personnel.<sup>20</sup> Active preparation in the years after SARS and MERS allowed several Asia Pacific jurisdictions to develop surge capacity in test production.

Similarly, aggressive contact tracing, aided by existing pools of already-trained personnel and novel technologies, was a major factor contributing to successful pandemic control in Asia Pacific economies. A successful contact tracing strategy must be fast and thorough; however, it is affected by levels of co-operation and recall bias and is also highly labour-intensive. Japan used a backward contact tracing strategy that sought to identify the source of the infection, thereby enabling the identification of clusters of transmission that emanated from that source.<sup>21</sup> Backward contact tracing was also adopted by South Korea and Australia as the pandemic progressed.<sup>22</sup> South Korea also used digital technology in its contact tracing efforts through the KDCA's Epidemiological Investigation Support System, which collects and analyzes a range of data, including from GPS devices, credit cards, and CCTV, in its contact tracing efforts.<sup>23</sup>

## **Population-Based Interventions**

Asia Pacific responses to COVID-19 benefited immensely from early implementation of social distancing and mobility restrictions. For instance, South Korea began urging social distancing as early as February, and modelling suggests that strong social distancing measures played a key role in South Korea's ability to contain transmission without instituting a lockdown.<sup>24</sup> Nonetheless, timely and judicious use of targeted and short-term lockdowns were effective in curbing subsequent waves of transmission in Australia and New Zealand throughout 2020.<sup>25</sup>

A comparative analysis suggests that the early adoption of mask wearing is one of the factors associated with controlling transmission and lowering death rates due to COVID-19. South Korea, Taiwan, Singapore, and Vietnam were among the first to mandate mask wearing within the first three months of 2020.<sup>26</sup> In South Korea, the public started

wearing masks before official enforcement came into effect in October 2020.<sup>27</sup> Although Canada did not have a culture of mask wearing prior to COVID-19, once masks became the subject of public health orders across the country, the Canadian public demonstrated a high level of compliance. A Statistics Canada survey showed that 84% of respondents reported wearing masks or other PPE in July 2020.<sup>28</sup> COVID-19 has been a learning experience for Canadians as well, raising the possibility that they will voluntarily adopt mask use in response to the next emerging infectious disease.

## Communication Strategies

Many economies in the Asia Pacific region, as well as Canadian provinces such as BC, made health officials the forefront of communication campaigns to build trust and credibility and promote public buy-in. They also maintained consistent and clear messaging, further bolstering public adherence and support for health measures among citizens. In addition, appeals based on emotions, narratives, and shared values in New Zealand, Taiwan, and Singapore proved successful in building trust, especially when tailored to existing social and political circumstances.<sup>29</sup>

Governments in the region have also been proactive in diffusing multilingual messages and information through novel and creative methods. In Vietnam, the government sent regular updates via SMS and released the NCOVI app in March 2020 for the dissemination of information and health recommendations.<sup>30</sup> Singapore and Vietnam also used a broad range of media, including print and social media and messaging applications like WhatsApp, Twitter, TikTok, and Facebook on a daily basis to inform and advise diverse audiences speaking different languages and of varying ages.<sup>31</sup>

## Policy Recommendations

Although the responses of the Asia Pacific region have been highly cohesive compared to that of Canada, a feature that undoubtedly contributed to their effectiveness, analysis shows that a central system of government is not a prerequisite for a cohesive national response, as demonstrated by Australia. The report recognizes the challenges of a federated health-care system that led to a fragmented response in Canada and suggests strategies to close such gaps at the federal and provincial levels and leverage the role of PHAC as a national public health agency.

Moving forward, Canada faces the challenge of building and reforming its pandemic preparedness and response policies for the inevitable emergency of new pathogens in the future. Policy recommendations (included in the full report) for the area of public health and pandemic preparedness are organized along the following key themes:

- 1. Effective pandemic responses are strengthened by structural and institutional preparations following a whole-of society approach, with many policies informed by and shaped through previous experience.**

Public health institutions and pandemic response planning were largely informed and shaped by previous experience with outbreaks, most significantly SARS in 2002-2003 and MERS in 2015. Common themes for reform included improved inter-governmental and inter-ministry co-ordination, improved definition of roles and authority, elevating the role of experts, and the protection of vulnerable populations. The consequent changes to health governance structure and public health institutions paved the way for the successful response to COVID-19 in economies like Taiwan and South Korea.

In Canada, it is not possible to wholly replicate the more centralized models of government co-ordination in pandemic response seen in South Korea or Taiwan since provinces and territories oversee their own health-care systems and policies. However, the key takeaway from these examples in Asia is the need to strengthen Canada's co-operation between federal and provincial/territorial governments. Formulating a more cohesive national response should be included in future pandemic plans, with PHAC as a key co-ordinating agency.

- 2. Responses need to be guided by scientific expertise using what limited data is available while remaining agile enough to adapt quickly as new data and evidence come to light.**

Responses to COVID-19 in Asia Pacific countries benefited from the heavy emphasis on infectious disease control, the pre-eminent role of public health scientists and experts in guiding pandemic response measures, and rigorous practical testing of existing pandemic plans.

Responses were complemented by quick decision-making, flexibility and rapid adaptation of response measures based on changing information. Asia Pacific economies were quick to act based on their own early warning systems and risk assessments, influenced by past experience with emerging pathogens such as SARS and MERS. Economies without this prior experience also benefitted from taking decisive action in their pandemic responses as they learned more about the novel

virus and how other governments were responding. Canada needs to formulate comprehensive and flexible pandemic plans that can be adapted to different pathogens, and be prepared to more readily shift between mitigation and elimination strategies, as more information about the pathogen in question becomes available.

**3. Timely decision-making and implementation of response protocols, either already established or new, vastly impacts the effectiveness of a response.**

What is notable about the analysis is that the most effective features of the pandemic response were not novel practices but rather swift and decisive action guided by an appropriate level of risk awareness. Canada did not go into COVID-19 unprepared; what was lacking was a sense of urgency and the willingness to take early and decisive action. Countries without the advantage of previous experiences, notably Vietnam, Australia, and New Zealand, had relatively underprepared health-care systems for a pandemic. As a result, they relied on more stringent measures, including strict border restrictions and institutionalized quarantine. These measures, implemented in a timely manner, helped to curb community transmission and avoid the need for frequent, lengthy, and economically damaging lockdowns.

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## 03

# DIGITAL INNOVATIONS IN PANDEMIC RESPONSES

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The pandemic accelerated the development and adoption of digital technology around the world, particularly for digital health tools to combat COVID-19. Governments in China, Taiwan, and South Korea, for example, have deployed different digital systems and applications to accelerate and increase the efficiency of their pandemic response. Such uses of technology have been reported to contribute significantly to their overall success in limiting the outbreak.

The North American coverage and analysis of technology deployment against COVID-19 in Asia have largely focused on invasive uses of data-driven electronic systems and mobile applications that could potentially undermine civil rights. This type of discussion has also drawn the attention to the different political, social, and/or cultural contexts unique to Asia used to underscore the inapplicability of similar digital tools for pandemic response in current Canadian settings.

While the critiques above are partially legitimate, these types of analysis reduce a wide array of factors to the question of whether Asians care about privacy or not. This limited framework fails to recognize the potential technology holds to improve Canada's pandemic preparedness and response strategies in the future, especially as the adoption of digital technologies in a range of sectors beyond health continues.

This report, *Digital Innovation for Pandemic Response in Asia: Lessons for Canada*, seeks to provide both an overview of the digital tools employed for pandemic responses in Asia and a more nuanced understanding of the institutional and social context factors that enabled the relatively successful deployment of digital technology for public health during COVID-19. It examines several examples of deployed data-driven technologies implemented in multiple Asian economies to facilitate: (1) contact tracing; (2) health surveillance and quarantine monitoring; (3) medical supply distribution; and (4) telehealth. Then, it examines the foundational factors that enabled and facilitated the rollout of technologies for pandemic response, ending with policy recommendations.

## Contact Tracing

Multiple economies across the Asia Pacific region have invested in and deployed different forms of digital contact tracing, relying on technology to reduce the human effort and time involved in the notoriously labour-intensive process. For instance, Singapore, Brunei, Indonesia, and Malaysia have all introduced contact-tracing apps similar to the COVID Alert app in Canada, taking advantage of GPS and Bluetooth functionalities in mobile phones.<sup>32</sup>

In South Korea, Taiwan, and Vietnam, the governments created data-sharing mechanisms to facilitate rapid contact tracing. For example, Taiwan's TRACE, its contact tracing platform, is connected to different government databases that facilitate data collection from multiple government sources and real-time monitoring.<sup>33</sup> South Korea's Epidemiological Investigation Support System collects data from different government ministries and agencies and all the mobile service providers to conduct contact tracing.<sup>34</sup> China has leveraged the omnipresent mobile "super apps" like WeChat and Alipay, connecting them to the National Integrated Government Service Platform for contact tracing and transmission surveillance.<sup>35</sup>

## Health Surveillance and Quarantine Monitoring

Multiple governments in Asia also rolled out digital solutions for monitoring and surveillance of confirmed COVID-19 cases, inbound travellers, and suspected carriers, a key part of their quarantine and self-isolation measures. Brunei and Hong Kong provided wearables (i.e., wristbands) for those undergoing mandatory quarantine to confirm their locations.<sup>36</sup> China integrated health data from the health-care system with a real-time monitoring system to develop a health code system with epidemiology maps. In turn,

these maps can be used by local governments for monitoring COVID-19 transmission in the population.<sup>37</sup> Similarly, South Korea's Smart Quarantine System pools data from a variety of government sources and telecommunication companies. This allows South Korea to efficiently identify, contact, and quarantine high-risk inbound travellers.<sup>38</sup>

## Medical Supply Distribution

Several economies in Asia developed and rolled out innovative tools to facilitate the even and effective allocation and distribution of medical supplies such as PPE and vaccines. For instance, Taiwan implemented a mask rationing program based on its pre-existing National Health Insurance (NHI) database. Individuals could purchase 9 masks every 14 days, with the limit verified through the person's NHI card. Taiwan also leveraged crowdsourced information for the NHI mobile app, enabling users to make online purchases, particularly for masks, and reservations for convenient store pickup.<sup>39</sup> Singapore also took a technological and centralized approach to distributing more common medical supplies like masks, using a website to organize pickup schedules.<sup>40</sup> In South Korea, collaboration between the government and tech companies, such as Naver and Kakao, combatted vaccine wastage by allowing users to track the availabilities of vaccines as cancellations or no-shows emerged using an online map feature.<sup>41</sup>

## Telehealth

COVID-19 also led to a rapid adoption of various telehealth services and mobile apps throughout 2020. While private services, these applications served important roles as both screening tools for COVID-19 and as remote doctor consultation platforms. Indonesia's Check COVID-19 app, Japan's LINE Healthcare, and China's Ping An Good Doctor are examples of either private sector-led or public-private partnered digital initiatives that have helped screen suspected COVID-19 patients remotely.<sup>42</sup> Other telehealth applications, like Ali Health and We Doctor in China,<sup>43</sup> GrabHealth in Indonesia,<sup>44</sup> Doctor Anywhere in Singapore, and VieVie and Jio Health in Vietnam,<sup>45</sup> are digital solutions offering remote doctor consultations, medication ordering, and even automated delivery options to patients seeking help for common and chronic illnesses. Facilitating medical services like virtual screening and doctor consultations eased the demand on and inflows into already strained hospitals during the pandemic.

## Technological Foundations: Institutional Factors and Social Contexts

The rollout of these technologies in Asia was made possible and facilitated by certain institutional and societal factors in place prior to the pandemic. Some Asian governments, based on their experiences with SARS and MERS earlier in the century, have established or reformed government institutions, laws, electronic systems, and procedures to swiftly respond to a pandemic. Infectious disease laws created new public health institutions in multiple jurisdictions. Examples of these include the Centre for Health Protection in Hong Kong, the National Centre for Infectious Diseases in Singapore, the KDCA in South Korea, and the Central Epidemic Command Center in Taiwan. These public health agencies played crucial co-ordinating and advising roles over the pandemic and were key information repositories guiding response measures.

Additionally, the laws granted governments in Asia, especially the recently established public health agencies, certain key rights that aided in the rollout of digital tools in pandemic response. First, these laws allowed public health agencies to access and manage a wealth of personal and health data from government and private sources to assist them in determining health measures to curb transmission of an infectious disease. Second, in collaboration with government, these agencies were also allowed to establish their own electronic systems to better perform their law-mandated duties in the event of a health crisis.

Aspects present in the diverse social contexts in Asia also aided in the deployment and relative acceptance, even high adoption, of digital tools against COVID-19. It is important to recognize that citizens in Asia are equally or more concerned about online privacy in comparison to North American and European counterparts.<sup>46</sup> In fact, the use of invasive forms of digital technology in response to COVID-19 has raised questions and backlashes in the region. Additionally, countries in Asia have more challenges related to lower levels of public trust in government compared to Canada.<sup>47</sup>

In this context, governments in Asia have endeavoured to foster trust in their public health measures, including the use of data-driven digital tools and systems, throughout the pandemic. They have also needed to be responsive to privacy and data-use concerns from their citizens to demonstrate that they are trustworthy stewards of personal data, employing the data for health purposes, to keep the public informed, and to hasten a return to a new normal.<sup>48</sup>

Another important point to consider is the familiarity of the Asian public with digital public service and tools. In 2020, Asia as a region scored ahead of Canada on the United

Nations E-Government Development Index, in particular global leaders in e-government adoptions such as South Korea, Singapore, and Japan.<sup>49</sup> This shows that populations across Asia, particularly in leading countries, have higher levels of familiarity with digitally accessing public services, creating a more welcoming environment for pandemic digital tools like contact-tracing apps.

Close collaboration between governments and key tech players to develop and roll out COVID-19 digital tools, either as stand-alone mobile apps or additional functions within an app, contributed to the public's comfort and ability to engage with such technologies. This was especially true when these private sector applications facilitated key public services aiding in pandemic responses. For example, South Korea partnered up with domestic tech leaders Kakao and Naver to facilitate vaccine distribution through free, in-app vaccine availability mapping and bookings.

Also, the platform effects of these ubiquitous services must be taken into consideration. For instance, WeChat and Alipay are so ubiquitous in China that it is almost impossible to conduct day-to-day tasks without them. Apps such as Grab, Gojek, or Kakao enjoy similar statuses in their respective economies. These mobile applications provided an existing and widespread foundation for convenient dissemination of digital pandemic response tools.

Further, attitudes about technology may have influenced the public support or, at least, toleration of digital tools used in response to COVID-19 in Asia. According to a poll by Oxford, there is a sharp discrepancy in global risk perception of AI decision-making by region, with respondents in Asia generally having a positive attitude toward AI in comparison to North American and European respondents.<sup>50</sup> Another study done by Edelman in 2021 showed that respondents in several Asian economies – including India, Indonesia, and South Korea – still maintained high levels of trust toward their technology sectors, while this trust had declined across North America and Europe.<sup>51</sup> As a result, local populations in the region were likely more amenable to the use of digital tools throughout the pandemic.

## Policy Recommendations

For Canada, it is not the lack of ideas or access to technology that makes the deployment of these solutions challenging in a domestic context; after all, Canadian software developers are perfectly capable of developing the same apps or systems. Instead, this research demonstrates that what has made the rollout of these digital solutions possible in Asia, but not in Canada, are institutional factors and social attitudes. Analysis of these enabling

factors leads to relevant lessons for Canada beyond highlighting interesting technology solutions.

The report provides the following recommendations and key takeaways for Canada, including legal and institutional frameworks allowing for comprehensive and secure data governance, mechanisms to build trust in technology and digital literacy among the public, and re-defining collaboration between public and private sectors.

**1. Reform data governance frameworks – in both the short and long term.**

The ability of governments in Asia to share personal data between different ministries and levels of government was a key factor contributing to the success of digital technologies in controlling COVID-19's transmission. While the more intrusive forms of data collection and usage would not align with Canada's social values, Canadian policy-makers have been consistently informed about the need to develop a more coherent model of data governance at the national level, not just for the pandemic response, but also for modernized public administration, health care, and economic competitiveness.

**2. Build channels for public participation – and eventually, public ownership.**

The effectiveness of programs deploying digital technologies as pandemic response relies significantly on community buy-in to drive high levels of uptake among the public. Digital solutions should be developed in a way that actively channels public input, be it in the form of surveys/questionnaires, requests for comment, information gathering, or real-time feedback. Given methods to engage in the technology deployment process, the public can develop a better understanding of the mechanisms and rationales behind these tools and platforms, while at the same time developing a stronger sense of ownership.

**3. Re-think the public-private partnership.**

The case studies from Asia highlight the need for the government of Canada to re-think the model of public-private partnerships in the development of digital solutions. In Asia, the collaboration between public health agencies and major tech companies such as WeChat, Alipay, Kakao, Naver, or Gojek has enabled the rollout of digital solutions in various areas of the COVID-19 response. However, these responses were made possible because of a different type of relationship between the public and private sectors; governments have a more hierarchical relationship with the firms, and the tech companies are often seen as "national champions" that have a stake in the well-being of the citizens.

**4. Strengthen public understanding – and eventually, trust – in technology.**

The public engagement with digital solutions introduced by governments in Canada and Asia has underscored the importance of strengthening the public understanding of these new tools. Educating the public on how their data is collected and used and how they can properly address misuse of their data could enhance trust in future rollouts of digital solutions. Asian governments have shown responsiveness to public queries and criticisms of their technology during the pandemic, enhancing trust (or at least, acceptability) of the digital solutions.

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## 04

# SUPPLY CHAIN DISRUPTIONS DURING THE COVID-19 PANDEMIC

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The rapid spread of COVID-19 in early 2020 caused a sudden increase in global demand for medical goods that could limit the spread of the virus or reduce its deadliness. The overwhelming demand for these products put stress on global value chains (GVCs), which encompass the full range of activities involved in bringing a product to market. It caused universal shortages of medical goods and PPE. Companies found themselves ill-equipped to meet the increased demand due to low stockpiles of the required goods, the difficulties involved in quickly scaling up production, and the complexity of co-ordinating the safe delivery of goods to those in need.

Supply chains were particularly affected by the pandemic as they typically rely on a “just-in-time” model of production, meaning that goods arrive right before they are placed on the shelves or are included in the manufacturing process. The last-minute nature of this system meant that companies were left with insufficient inventory when the demand for medical goods increased.

Goods produced in Canada, such as automobiles, often rely on intermediary goods from Asia that then have “value” added to them through modifications made in Canada. These value-added exports highlight the interconnectedness of Canadian goods and GVCs in Asia. For example, a recent Statistics Canada report that analyzed 2016, 2017, and 2018 trade data found that almost 50% of Canada’s domestic production inputs rely on some Chinese content.<sup>52</sup> These Canadian goods that rely on inputs from Asian GVCs are often

adversely affected when a sudden external shock, such as an increase in global demand, leads to supply chain failures.

In March 2020 the Institute for Supply Management conducted a survey of 600 firms in the United States and found that 75% of the companies had experienced supply chain disruptions as a result of COVID-19.<sup>53</sup> Canada also experienced its share of supply chain failures due to protectionism and logistical strains during the course of the pandemic.

Asia Pacific countries are some of the leading manufacturers of medical goods and PPE due to their large manufacturing capabilities and were among the first to experience large-scale supply chain disruptions caused by the pandemic. Firms based in Asia Pacific countries faced the same difficulties that plagued companies and MNCs around the world, but they have more experience combatting widespread respiratory viruses due to the 2002-2003 SARS outbreak in Asia and the 2015 MERS outbreak in South Korea. This experience provided many Asian countries with the tools necessary to mitigate supply chain tensions during the COVID-19 pandemic.

This report, *Supply Chain Disruptions During the COVID-19 Pandemic: Lessons for Canada*, explores five major problems that contributed to the breakdown of supply chains during the COVID-19 pandemic and offers recommendations for how to better handle these issues in the future:

1. The increase in demand for certain goods, which caused a manufacturing shortage. Throughout the pandemic, there was an overwhelming demand for any COVID-19-related product. Companies could not produce these goods fast enough to meet the demand, which subsequently caused supply chain issues;
2. Goods that cannot be domestically produced, through reshoring or refocusing operations, and for which there are only a few supply chains readily available, and the problems that followed in relying on specific companies for production;
3. Temporary export restrictions that were put in place by some countries that were able to produce these goods domestically;
4. The overreliance on certain economies for COVID-19-related goods, which in some cases resulted in the decision to reshore production; and
5. The logistical challenges companies faced in transporting vaccines. Once vaccines had been manufactured, the next challenge for multinational corporations was determining the best way to distribute and transport them. There were challenges in temperature requirements, transportation methods, and deliveries to remote communities.

## Policy Recommendations

To overcome these intertwined challenges, the report proposes the establishment of a supply chain task force to promote transparency, research, and funding of initiatives that will increase Canada's understanding of GVCs; increase public-private discussion and collaboration; identify critical goods; and cultivate a diversified stockpiling strategy. These measures could ensure that Canada is better prepared to weather any future global crises that have a significant impact on supply chains.

The purpose of the task force will not only be to respond to crises, but also to prepare preventive mechanisms that can identify potential disruptions and provide a framework that can be used to respond to these issues. The task force will provide support to the government and private companies in the form of technical assistance or consulting services and funding to support the implementation of any programs deemed necessary to prepare for future supply chain shocks.

This specialized task force will do the following:

- 1. Increase access to supply chain data.**

At the beginning of the pandemic, companies that had invested in creating supply chain maps for their operations were better prepared and informed when tackling production challenges. The mapping process can be very expensive and difficult to maintain. Hence, the supply chain task force can provide a valuable service by identifying critical goods that need to be easily accessible during a crisis and their key suppliers. Then, it could provide subsidies or other incentives to encourage companies to map their own supply chains to ensure that this type of information is readily available in a crisis.

- 2. Improve assessment of reshoring decisions.**

The government of Canada can also use the supply chain task force to address reshoring decisions. In concert with businesses, producers, health-care experts, trade specialists, and economists, the task force can assess the feasibility of reshoring or near-shoring critical and vulnerable supply chains. Once the imperative for reshoring is determined, a security mandate from the federal government would be necessary to enforce this process.

- 3. Ensure due diligence to avoid supporting unsafe labour practices.**

Manufacturers of goods that cannot be domestically produced through reshoring and refocusing will occasionally employ unsafe labour practices that lead to delays,

including disease outbreaks in production facilities and human rights violations. Therefore, the supply chain task force can be useful as a monitoring body, ensuring that companies are doing their due diligence in regard to labour conditions and practices. This can be done by facilitating a company's own investigations on labour conditions or by prompting companies providing critical goods to conduct such reviews.

**4. Support collaboration between stakeholders.**

One of the key takeaways from the COVID-19 pandemic is that responses were not organized quickly enough and did not always involve the right actors. To address this issue, the proposed task force could facilitate the timely communication and consultation among the relevant stakeholders – from trade ministers to local businesspeople – to address supply chain problems during a crisis.

**5. Foster an information-sharing innovation ecosystem in Canada.**

As part of the supply chain task force's mandate to promote discussion, it can also foster an innovation ecosystem in Canada and encourage large corporations to connect with SMEs. Intentionally creating linkages between universities, civil society, and industry, as well as fostering knowledge sharing between firms, can be achieved through a systems of innovation approach. This will not only build resilience during massive global supply shocks and demand surges, but it will also allow companies to increase their productivity.

**6. Diversify Canada's stockpiling strategy.**

Canada already has a stockpiling protocol in the form of the National Emergency Strategic Stockpile (NESS), but this is only one form of stockpiling. The NESS relies on the management of a public stock of critical goods by a public authority, which can be unwieldy and entails the risk of products expiring. Other forms of stockpiling include requiring producers to maintain pre-defined stocks of critical products and/or intermediate goods, like active pharmaceutical ingredients. This can be achieved via fiat, preferential sourcing (granting companies that comply with stockpiling requirements coveted procurement contracts with the government), or financial incentives like subsidies or tax breaks. A feasibility study should be conducted to compare the just-in-time inventory model that has become ubiquitous in global value chains with a “just-in-case” model where inventory exceeds demand in the event of a demand surge.

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## 05

# COVID-19, CANADA– ASIA PACIFIC RELATIONS, AND INTERNATIONAL ORGANIZATIONS

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Even as global institutions struggled to address the pandemic, many international organizations in the Asia Pacific demonstrated a variety of rapid and proactive responses across the fields of health, economics, trade, investment, political co-operation, and regional integration, that were often more effective than those of global international institutions. This may indicate that what is occurring is not actually a decline in international co-operation but rather a shift away from global institutions. Canada is only involved in a few of these institutions in the Asia Pacific, and there is a great deal of room for expansion in terms of collaboration and exchange of information and ideas.

This report, *COVID-19, Canada–Asia Pacific Relations, and International Organizations*, proposes a new ecosystem approach to explain how international organizations function together and how Canada can use this principle to pursue resilient and long-term engagement strategies in the Asia Pacific, with international organizations of diverse sizes, scales, and scopes.

COVID-19 evoked an apparent decline in the allegiance of many nations to the principles of multilateral institutions such as the WHO. However, the challenges that these institutions faced in responding to COVID-19 did not emerge out of nowhere; rather, there has been a steady movement away from multinational institutions in recent years, accompanied by an increased rivalry between China and the United States.<sup>54</sup> This has fostered a trend toward smaller groupings aligned around a more regional or interest-based focus, as

exemplified by the largely economically focused BRICS (Brazil, Russia, India, China, and South Africa) and MIKTA (Mexico, Indonesia, Korea, Turkey, and Australia) formations to the Quadrilateral Security Dialogue between the United States, Australia, India, and Japan.<sup>55</sup>

The issues around which these various organizations are aligned have largely been focused on security, economics, trade, and development. COVID-19 re-oriented the focus of many international organizations to include pandemic and health-related programs and responses. The pandemic has clearly shown that these disciplines are in fact closely related to public health and that moving forward, international organizations, regardless of their primary focus, should continue to include a health lens in their work.

The disproportionate impact of the COVID-19 pandemic along lines of race, socioeconomic status, age, Indigeneity, gender, and other axes of difference, in Canada and beyond, also revealed the shortcomings of viewing policy using a narrow lens and the impact that public health has on other areas of policy. This process has been facilitated by a reduced focus on binding formal agreements and policy initiatives as scholars and policy-makers have increasingly pointed toward the role international organizations play in “policy transfer” or “policy learning.”<sup>56</sup> This shift has been marked by a rise in the influence of epistemic communities and subnational networks, particularly with respect to the field of global health.<sup>57</sup> The response to COVID-19 demonstrated the outsized role now played by these networks. An ecosystem approach to international organizations seeks to understand and identify the roles that various organizations play in a given area of co-operation and takes into account a multitude of interactions and opportunities for engagement at various levels and scales.

The report covers a range of international institutions large and small, encompassing political, financial, and security concerns, including the WHO, the Association of Southeast Asian Nations (ASEAN), the Asia-Pacific Economic Cooperation (APEC), the Asian Development Bank, and the Quadrilateral Security Dialogue. Although the WHO, already focused on public health, seemed less prepared to adapt to the pandemic environment, the response of many other organizations to COVID-19 demonstrates the real-world application of the ecosystem concept.

These institutions collaborated with other international organizations to co-ordinate pandemic responses, advise policy actions, and adapt from their original mandates to prioritize alleviating pandemic-related issues. The research revealed an overwhelming emphasis on staying interconnected through co-operating, collaborating, and co-ordinating response actions on subnational and international levels. Disaster response

and connections forged in previous natural hazard environments emerged as a theme characterizing the activities of several of the international organizations in this report, as in the case of the Asian Development Bank.

The research revealed that Canada had only a minimal presence in the activities of many of these organizations. This may be indicative of the lack of an overarching strategy in Canada–Asia Pacific relations that predates the pandemic. Further, Canada has limited itself to engaging with traditional global international organizations that have acted slowly or been criticized for general inactivity such as the UN, G7, G20, WHO, and the WTO. In addition, Canada’s engagement on global health matters in the Asia Pacific was mostly led by Global Affairs Canada (GAC), without involvement from PHAC.

When and how key international organizations in the Asia Pacific reacted to the COVID-19 crisis highlighted several potential opportunities for Canada to take a more active role within the region in the future. There is a great deal of opportunity for Canada to further engage around public health, but an ecosystem approach should drive this engagement in the Asia Pacific.

## Policy Recommendations

In consideration of the proposed ecosystem approach, the report makes the following recommendations for Asia Pacific engagement with respect to both the ongoing COVID-19 pandemic and future pandemic planning:

- 1. Recognize and advocate for interconnectedness of health, trade, and economic resilience and support more sustained Canadian engagement in the Asia Pacific.**

Canada will benefit from supporting deeper, more sustained engagement in the Asia Pacific via an ecosystem approach that highlights the importance of maintaining relationships, trust, and good faith with regional and international partners. It is also necessary for Canada to re-evaluate its representation on regional organizations, strengthening and expanding its existing participation beyond traditional organizations like ASEAN, Pacific Islands Forum, or Pacific Community.

Building more robust relationships with regional organizations does not diminish the importance of helping to strengthen the WHO (e.g., funding, advocating for reform) so it is less beholden to program specific funding, geopolitical influence struggles, and is more institutionally nimble in times of crisis.

At the same time, Canada needs to broaden its methods of obtaining global health information beyond solely relying on the WHO's Secretariat in Geneva. Canada can benefit from direct engagement with WHO regional offices, regional organizations, disease surveillance networks, epidemiology networks, and expert networks (Track 2, etc.).

In times of crisis, Canada needs to ensure the continued and consistent engagement across regions globally and the inclusion of experience and knowledge from the Asia Pacific at different levels. This can be done through mechanisms like an ad-hoc crisis engagement committee and a storehouse of readily available information on which Canadian government actors are working with international organizations in the field of health in the Asia Pacific. In times of crisis, not having an accurate picture of who is doing what and where makes it difficult to quickly access information, act, and formulate evidence-driven policy-making. This would add to the ability of PHAC and an ad-hoc crisis engagement committee to act in times of crisis.

**2. Enhance ministerial communication, co-operation in international health programming, and engagement.**

Maximizing the benefits of an ecosystem approach may also require building more channels for communication and co-operation between GAC and PHAC. Greater representation of PHAC on GAC global health engagement programs is critical for Canada to stay interconnected through an ecosystem in times of health crisis. PHAC's lack of presence in GAC global health engagement programs is a missed opportunity for PHAC to contribute its resources, knowledge, and expertise in disease outbreaks and management, and to develop interpersonal relationships with public health officials and scientists in the region that can be called on as a complementary source of emerging outbreak information in addition to GPHIN.

Within the ecosystem approach, international engagement is necessary to co-ordinate and collaborate with other international organizations to ensure concerns are addressed and to build on information sharing. Thus, it is crucial that Canada add an international engagement component to its pandemic planning, particularly with a focus on international organizations in the Asia Pacific. To strengthen regional relationships, Canada should continue to expand international assistance for pandemic readiness and infectious disease surveillance. Increased presence opens higher possibilities of pathways for collaborations and co-ordination of response plans with countries in the Asia Pacific during times of health crises.

**3. Amplify opportunities for Canadian leadership with locally driven initiatives.**

The pandemic has repeatedly highlighted that a weak point of public health and health-care policy is equality of care. Local and marginalized communities such as refugees, minorities, migrant workers, women, and Indigenous groups have disproportionately experienced the negative impacts of COVID-19. These trends were especially noticeable throughout the Asia Pacific, where Canada can play a larger role in helping diminish such inequities. Canada can contribute by funding subnational efforts on global health and equity, engaging consistently with epidemiological groups and networks, and providing the necessary tools to engage with local governments and key civil society organizations.

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06

## CONCLUSION

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This project examined and analyzed the diverse COVID-19 experiences of Asia Pacific economies and drew valuable insights and lessons to improve Canada's own future pandemic response. It is important that policy-makers in Canada go beyond the headlines discussing the success of certain responses in the Asia Pacific that have attracted global attention, and endeavour to study what factors contributed to making these responses so effective and noteworthy in the first place.

Similar to how economies in the Asia Pacific learned, reformed, and evolved from the repeated experiences of SARS and MERS, Canada must take the COVID-19 pandemic as a resonating call to action to better prepare for the next inevitable instance when a novel pathogen goes viral. In addition to learning from its own setbacks and miscalculations, Canada can and should learn from the responses in the Asia Pacific jurisdictions that handled the pandemic better, including those examined and analyzed for this project.

Since COVID-19's impact expands beyond the realm of health, pandemic preparation and planning must adopt a comprehensive, multipronged approach to counteract the fallout of future health crises on interconnected components like the economy, trade, and Canada's regional and global engagement. As demonstrated through the research and analysis in the four policy reports covered here, future pandemic preparation and plans must emphasize cohesive, scientifically guided, national-level responses supported by policies that define clear roles, authorities, and co-ordination mechanisms across all government actors.

Reforms only to public health institutions and policies that leverage decisive action based on scientific expertise, while welcome and important, will not be enough. There also needs to be a fundamental shift in how Canada approaches structural policies key to updating and facilitating pandemic planning, such as data governance, technology development, and public-private co-operation. Similar changes need to occur in Canada's traditional approach to international organizations, to move toward a more agile and diversified ecosystem approach in the Asia Pacific. This more structural transformation will create the requisite foundation for whole-of-government and whole-of-society responses to pandemics. As seen by the examples from the Asia Pacific, it is not possible to carry out system changes overnight; they are a long-term effort and an investment of years. In Canada's case, there is no better time than the present to start.

# ABOUT APF CANADA



The Asia Pacific Foundation of Canada (APF Canada) is a not-for-profit organization focused on Canada's relations with Asia. Our mission is to be Canada's catalyst for engagement with Asia and Asia's bridge to Canada.

APF Canada is dedicated to strengthening ties between Canada and Asia with a focus on seven thematic areas:

## **Business Asia:**

Trade and Investment

## **Digital Asia:**

Digital Technologies

## **Sustainable Asia:**

Sustainable Development

## **Perspectives Asia:**

Surveys and Polling

## **Engaging Asia:**

Domestic Networks

## **Education:**

Asia Competency

## **Strategic Asia:**

Regional Security

Our research provides high-quality, relevant, and timely information, insights, and perspectives on Canada-Asia relations. Providing policy considerations and business intelligence for stakeholders across the Asia Pacific, our work includes [Reports](#), [Policy Briefs](#), [Case Studies](#), [Dispatches](#), [Digital Media](#), and a regular [Asia Watch](#) newsletter that together support these thematic areas.

APF Canada also works with business, government, and academic stakeholders to provide custom research, data, briefings and Asia Competency training for Canadian organizations. Consulting [services](#) are available by request. We would be pleased to work with you to meet your research and business intelligence needs.

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