**DEFENCE INFRASTRUCTURE MANAGEMENT:
RECAPITALIZATION AND CHANGE IN THE NEXT CHAPTER**

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> Every problem is a gift - without problems we would not grow.
> *- Anthony Robbins*

INTRODUCTION

The Department of National Defence's (DND) real property (RP) provides essential sustainment to operations. Over the years and in the current environment of "do more with less" DND infrastructure has suffered in terrible ways. It was not sufficiently funded nor maintained and at times, only the most urgent repairs were conducted if deemed essential. As a result of lengthy underfunding and mis-management, defence infrastructure was centralized under a single custodian, Assistant Deputy Minister (Infrastructure and Environment) (ADM(IE)). Four years following centralization, the organization is still finding its footing and at this rate, it will take significant time before any real improvement to the portfolio is realized. These upcoming years are critical to ensure that ADM(IE) 'gets it right' to save the future portfolio from disaster.

In the next chapter of transformation, there are many things that can be done to improve the current situation. Ultimately, DND needs better, resilient, and lasting infrastructure. Until ADM(IE) can prove it is responsible, adequately organized and uses its allocated resources effectively, it is unlikely to receive the additional funding that is desperately needed from Treasury Board. To prove ADM(IE) effective, there are shorter term initiatives that are needed which will ultimately save resources and make a better use of efforts to improve the management of defence infrastructure**.** The aim of this paper is to collect some of these opportunities for ADM(IE) to become more effective at real property service delivery to the CAF.

There are many challenges and goals to work towards for ADM(IE) and some of these are easier than others to achieve or improve on. In regards to this paper, arguments will address the objective of expending resources more efficiently and effectively. Efficiency in this case means doing things the right way: it is the relationship between input and output which is primarily useful when both the input and output can be measured This is in contrast to meaning cost.[1] Effectiveness is doing the right things towards organizational objectives.[2]

This paper briefly covers the issues that led to infrastructure centralization and makes recommendations to the governance of ADM(IE). This is followed by the importance of data analytics and business intelligence and concludes with some of the lessons that ADM(IE) can learned from others. These ideas will then be used in an example opportunity to highlight their utility. This paper is not the solution to all of the challenges and offers a few recommendations to improve on the current situation. Further research and cross referencing with the strategic direction of ADM(IE) is recommended.

BACKGROUND

The ultimate reason behind DND's infrastructure centralization is as a result of the 2012 Office of the Auditor General's (OAG) report on the RP of National Defence.[3] The report deemed that there was not "sound stewardship in managing real property" and many officers described the report as scathing although not incorrect.[4]

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[1] Kenton White, "'Effing' the Military: A Political Misunderstanding of Management," Defence Studies 17, no. 4 (October 2, 2017): 346–58, https://doi.org/10.1080/14702436.2017.1351879. 348.

[2] Robbins "The Strategic Management Position Paper - Google Drive," accessed May 2, 2020, https://drive.google.com/drive/folders/15tnRq5_cXjdGB9AbDJO7aIEijA6gxI4v. 8.

[3] Office of the Auditor General of Canada Government of Canada, "Chapter 5—Real Property—National Defence," October 23, 2012, http://www.oag-bvg.gc.ca/internet/English/parl_oag_201210_05_e_37349.html.

[4] Marc Rancourt, "Accelerating the Transformation of Real Property Management in the Department of National Defence," Canadian Forces College DRP, May 2019, 51.

In 2006 there was reform to the Federal Accountability Act which designated the Deputy Minister (DM) of National Defence as accountable for all resources allocated to Department of National Defence.[5] This responsibility included infrastructure but by the time of the OAG report, there was still no clear line of accountability or responsibility from the DM as the resources were primarily assigned and implemented through the Canadian Armed Forces (CAF). This was a disconnect as the ADM(IE) held the responsibility for infrastructure and environment but did not have influence over the resources to manage them. Additionally, preventative maintenance practices were deemed insufficient as expenditure targets set in the *Canada First* Defence Strategy for maintenance and repair and recapitalization were not being met. It was deemed that these weaknesses "can jeopardize the Canadian Forces' ability to carry out the missions stated in the strategy."[6] Therefore the conclusion to the report was that a "fundamental change was required in the way National Defence manages its resources to support real property."[7]

Over the next few of years, the nine Level Ones (L1s), the infrastructure custodians, determined the assets and resources they had under their command that were working in support of real property and transferred them to ADM(IE) via Inter Capability Component Transfers (ICCTs) which were negotiated between ADM(IE) and the L1s. Unfortunately, due to recent government cutbacks like the Deficit Reduction Action Plan, amongst other reasons, "ADM(IE) did not receive the intended personnel [nor financial]

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[5] https://www.tbs-sct.gc.ca/faa-lfi/fs-fi/16/12fs-fi-eng.asp

[6] Office of the Auditor General of Canada Government of Canada, "Chapter 5—Real Property— National Defence," October 23, 2012, http://www.oag-bvg.gc.ca/internet/English/parl_oag_201210_05_e_37349.html.

[7] *Ibid.*

resources at the FOC [Full Operational Capability] of centralization as projected in the early outset of centralization."[8] The funding transfers from the L1s were largely based off of previous years' expenditures plus 2% for inflation.[9] This is one of the major issues that ADM(IE) is still dealing with. The L1s were underfunding their infrastructure portfolios so what ADM(IE) received were insufficient funds to correctly manage the overall portfolio. "The organization is struggling with departmental decisions that have been made over the past 20 years"[10] The past issue of funding remains a current issue as conflicting priorities for funding have long-term consequences as maintenance is often either cancelled or deferred.[11]

ADM(IE) is struggling with several aspects for which they are responsible. In addition to inheriting all of the past pressures, the major concern is that ADM(IE) has not yet been able to demonstrate the actual status of the infrastructure. At most they are able to provide an extrapolation of the Facility Condition Index and a projected deferred maintenance cost for the infrastructure. ADM(IE) has not yet demonstrated a plan to address the deferred maintenance from an overall portfolio lens and thus they gain very little traction when attempting to request more funds.[12]

GOOD GOVERNANCE

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[8] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 9.

[9] Author's own experience as A/A4 CE Infrastructure and a collaborator on the RCAF ICCT. (2013-2016).

[10] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 6.

[11] Author's own experience as A/A4CE Infrastructure (2013-2016).

[12] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 7.

Recovering from and improving on the negative narratives and realities of RP management pre-centralization is no easy task. The perception could be that *any* improvement is a step in the right direction, however this is not true as the stakes are high. As the future portfolio becomes unaffordable without significant investment and revolutionized practices, failure is possible. ADM(IE) is not new to change management, however it is particularly difficult to manage change as the governance itself changes. Yet governance remains the most important aspect to change when it comes to improving the output of an organization: it is the ultimate investment the organization can make.

As depicted in several models[13], leadership is the foundation to good governance. Leadership skills are becoming increasingly important as their value is researched and shared amongst construction and academic communities. ADM(IE) is not unique in this regard and requires strong leadership, clear communication, and must leave little to interpretation.[14] As discussed in a 2015 article from a Chinese university, there exists a strong correlation between the leadership of top managers and infrastructure sustainability.[15] It is unsurprising that the analysis demonstrated that possessing strong managerial competencies was the main determinant in good infrastructure management.

The British Columbia's OAG released a guide to Public Sector Governance, which explains governance as dealing "with the structures and processes by which an organization is directed, controlled and held to account. Proper governance provides the

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[13] Office of the Auditor General of British Columbia "A Guide to the Principles of Good Practice". Accessed 6 May 2020. https://www.bcauditor.com/sites/default/files/imce/OAG%20Public%20Governance%20Bro-FINAL_web.pdf 3.

[14] "Public Sector Governance : Strengthening Performance through Good Governance," accessed May 2, 2020, https://nla.gov.au/nla.obj-494733346. 10-11.

[15] Junna Meng et al., "Relationships between Top Managers' Leadership and Infrastructure Sustainability: A Chinese Urbanization Perspective," Engineering, Construction and Architectural Management 22, no. 6 (November 16, 2015): 692–714, https://doi.org/10.1108/ECAM-01-2014-0013.

means to help an organization achieve its goals and objectives."[16] Clearly, this is not a

consideration to be taken lightly.

Driving the CAR

In January 2020, DND has established a Corporate Accounts Review (CAR)

which is "to ensure the cost drivers are understood, models are valid, the programme is

operating effectively and efficiently, and the allocated resources are sufficient to meet

departmental objectives."[17] The CAR initiative has three phases and the first one is

currently under review in its final draft. Phase 1 is charged with information gathering;

phase 2 with the analysis; and phase 3 with generating solutions.[18] This review is a

critical step towards actual improvement in governance structures and organization which

is intended to change behaviours that will change the overall output.

The CAR recommends that the governance structure of ADM(IE) be further

analyzed and specifically states that ADM(IE) governance must:

> Respect the six principles of good governance prescribed in the
> Department of National Defence Organization and Accountability 2016:
> 1. sound leadership: activities are aligned with the Defence policy
>   and strategy;
>
> 2. clear role and responsibilities: Accountabilities Responsibilities
>   and Authorities (ARAs) framework is available for all the
>   stakeholders;
>
> 3. process transparency: governance process is well documented and
>   available to all the stakeholders;

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[16] Office of the Auditor General of British Columbia "A Guide to the Principles of Good Practice". Accessed 6 May 2020. https://www.bcauditor.com/sites/default/files/imce/OAG%20Public%20Governance%20Bro-FINAL_web.pdf 3.

[17] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 2.

[18] *Ibid, 5.*

4. stewardship of resources: resources are used efficiently;

5. professional and ethical execution: stakeholders involved in governance respect the Defence Ethics Code in their activities; and

6. efficiency structure: establish only bodies that are needed to achieve Defence goals and make sure that these bodies are linked by formal relationships.[19]

The CAR has potential to be crucial to ADM(IE)'s growth and potential success. The document declares that "The governance framework . . . clearly describes the governance process and how information and decisions flow between governance bodies. . . Moreover, it will be necessary to check that only relevant committees are created and maintained within ADM(IE).[20]

Reorganize the Structure

The current governance structure ". . . lacks a level of synchronization to ensure decision making is based upon the true needs of the infrastructure and not just based on a demand list."[21] In order to act with intent rather than react, de-siloization initiatives must occur within ADM(IE). Even review documents such as the CAR observe that "organizations within ADM(IE) are siloed."[22] The CAR also states that

> There are numerous committee meetings and decision bodies based on the TORs within the ADM (IE) Governance Framework, however the general sense from across the organization and based on information gathered, is that the information is not synthesized and analyzed through a portfolio lens.[23]

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[19] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 10.

[20] *Ibid*.

[21] *Ibid*, 2.

[22] *Ibid*, 7.

[23] *Ibid*.

This means that efforts are disjointed and the new structure needs the ability to view the entire process from project planning, to development through to completion and life cycle management. Complex issues require strong coordination, something that cannot be accomplished with siloed structures.[24] Furthermore, when there is duplication of effort, bottle-necks, or critical inefficiencies, they can be observed and corrected through informed decision making. This fosters critical thinking of how to adapt, improve and evolve.

When governments, rather than private industry, make changes, or updates, it typically evolves particularly slowly.[25] For example when faxes became email, the first emails still looked like faxes, similarly, Blackberries are the common practice for instant communication in the workforce when much the rest of the world communicates via SMS. ADM(IE) cannot be afraid to have an honest look at their risk and reward profiles and take a leap into the possibility of a vastly different structure.

The personnel working for ADM(IE) have already adapted immensely as change is their normal state of working. Some people handle change better than others and overall, additional organizational changes will be hard on the staff of ADM(IE). However, with honest and clear messaging, a structural change to the organization will overall benefit ADM(IE). Due care must be considered that the workers have been 'transforming' essentially since the OAG report was released in 2012. Education will be a key component throughout ADM(IE) as training will enhance ADM(IE)'s agility.[26]

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[24] Brian W. Head, "How Can the Public Sector Resolve Complex Issues?," Asia-Pacific Journal of Business Administration 2, no. 1 (2010): 14.

[25] Azeem Azhar, "The Future of Public Service and Governance," Exponential View, accessed November 14, 2018, https://hbr.org/podcast/2018/11/the-future-of-public-service-and-governance.

[26] "Public Sector Governance : Strengthening Performance through Good Governance," accessed May 2, 2020, https://nla.gov.au/nla.obj-494733346. 11-12.

Good governance leads to more timely decisions and processes which consequently reduce resource expenditures. By improving the overall governance within ADM(IE), the objective of the ability for ADM(IE) to be able to expend resources more efficiently can be met, or at least have a significantly improved chance of success. As previously stated, efficiency is the ratio between input and output. The measurement of governance in the public sector is a more subjective analysis than that in the corporate world. Simplistically, the input could be the number of person hours and output the funds expended but that says nothing on the quality of work or effective way the funds were spent. Greater analysis on the effectiveness of governance within ADM(IE) is needed.

Taking the necessary time to adopt these changes to affect behaviours and attitudes towards a new governance model is essential. The organization has been under constant change and evolution for years with no end in sight. Ultimately, improvements to the structure, allowing for overview of the entire process, will facilitate increased collaboration and organizational effectiveness. Additionally, by clearly defining roles expectations and adequately training people will increase employee's commitment and enthusiasm towards work. The value of something does not always lie in its cost. In this case, these improvements to governance may dramatically increase the value of the output.

BUSINESS INTELLIGENCE AND DATA ANALYTICS

The former CEO of Hewlett-Packard Co., Carly Fiorna said "The goal is to turn data into information, and information into insight" and this is exactly what ADM(IE) must do to succeed in the time of big data.[27]

It is widely accepted that ADM(IE) is underfunded and that the Corporate Accounts are not accurately resourced. The outstanding question that remains is how much of an influx of funding is required annually and what will be achieved by the influx of funding.[28]

The absolute first step needed is to know what is in the portfolio and its condition so it is known what one has and to set benchmarks. The second is to know what one needs in the portfolio to meet operational objectives. The third is to determine the delta and generate a plan to go from the existing to needed state. Data analytics can achieve this. It will not resolve the overall complex issues of RP management but is an essential component for better-informed decision making. ADM(IE) is on the path to collecting big data but with fierce competition for resources significant time can be consumed before projects are finalized as in the case of RP data collection. As stated in the CAR, "The assessment of the general condition of infrastructure is not yet completed. There are various tools and studies that have been started and extrapolations of information being used as inference across the portfolio are being utilized in decision making."[29]

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[27] "41 Shareable Data Quotes That Will Change How You Think About Data," Springboard Blog (blog), June 14, 2019, https://www.springboard.com/blog/41-shareable-data-quotes/.

[28] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 8.

[29] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 8.

Phase 1 of the CAR initiative has recommended that the comprehensive review include "analysis of the state of infrastructure and industry benchmarking; and analysis of business intelligence tools as it is important to understand why and how they are used".[30] What is more important than simply understanding business intelligence (BI) tools will be how they can be incorporated into the decision making process.[31] BI is using data analytics to forecast solutions. BI could be applied in many areas to assist with many issues concerning organization, project competition, prioritization of resources and it would help to forecast the overall future needs of infrastructure and resource demands. It has been noted that in order for BI to be highly effective in the domain of facility management, areas of data acquisition and processing must be robust, hence the initial need for sound data collection.[32] BI is seen as the future for facilities management in industry.[33] If ADM(IE) wants to catch up and get ahead of the infrastructure challenge, BI is one mechanism that will enable them to do so if fully invested in the process.

The adaptation to use BI within ADM(IE) will be able to assist with efficient life cycle asset management and help to achieve the ultimate goal of efficiency. As part of incorporating BI into ADM(IE) it is necessary to consider what Organizational Change specialist Paul Gibbons says: "The human side of analytics is the biggest challenge to implementing big data."[34] Meaning that such a significant change to how business is

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[30] *Ibid,* 11.

[31] Bartlomiej Gawin and Bartosz Marcinkowski, "Business Intelligence in Facility Management: Determinants and Benchmarking Scenarios for Improving Energy Efficiency," Information Systems Management 34, no. 4 (October 2, 2017): 347–58, https://doi.org/10.1080/1058530.2017.1366219. 347.

[32] *Ibid.* 348.

[33] *Ibid.* 347.

[34] "41 Shareable Data Quotes That Will Change How You Think About Data," Springboard Blog (blog), June 14, 2019, https://www.springboard.com/blog/41-shareable-data-quotes/.

conducted along with this technology requires a great deal of change management, a concept not new to ADM(IE).

LESSONS TO LEARN

Why reinvent the wheel when ADM(IE) can learn how to build one from others who have done it before? ADM(IE) can capitalize on the good practices from others like industry and allies. In order to take advantage of knowledge and experience from others, ADM(IE) should have more contact with industry and allies, resulting in more access to and awareness of innovative and alternative ideas to shared problems.

Innovation from Allies

Due to the awful state of DND infrastructure, it is not an easy task for government to independently solve all of the issues. Innovative solutions must therefore be considered. One recommendation from the United States is to remove infrastructure funding decisions from political influence to ensure that adequate funds are dedicated to maintenance and repair.[35] This also means allowing flexibility in moving funds from one corporate account to another, something that the CAR review has also recommended as needed.[36] Another US recommendation is to "create a mandatory depreciation reserve".[37] This means setting aside funding specifically for depreciating infrastructure which cannot be moved for operational reasons. For example, the state of "Utah prohibits funding of new projects until enough money is appropriated to maintain existing assets. Missouri

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[35] Joseph M. Giglio, John H. Friar, William F. Crittenden, "Integrating Lifecycle Asset Management in the Public Sector," D'Amore-McKim School of Business, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, U.S.A., Business Horizons, 61, no. 4 (August 2018): 517.

[36] Department of National Defence Corporate Account Review Working Group, "Infrastructure and Environment Corporate Account Review" Draft Phase 1 Report version 3.0. Ottawa, Chief of Programme, March 2020, 8.

[37] Joseph M. Giglio, John H. Friar, William F. Crittenden, "Integrating Lifecycle Asset Management in the Public Sector," D'Amore-McKim School of Business, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, U.S.A., Business Horizons, 61, no. 4 (August 2018): 517.

sets aside 1% of its general fund revenue in a maintenance reserve fund."[38] As ADM(IE) re-evaluates their approaches, they should seek out innovation from industry to enhance and evolve defence infrastructure management.

Experience from Allies

There is no need to chart new paths when it comes to governance and integrating data analytics. ADM(IE) is not alone in the challenge with transformation and RP management. Other countries have been through similar transformation of infrastructure centralization and have committed to BI. For example, the United Kingdom's (UK) Defence Infrastructure Organization (DIO) belongs to the Ministry of Defence (MoD) who is one of the largest land owners in their country and has an extensive portfolio. There are many similarities between the DIO and ADM(IE), primarily that they both centrally manage all RP on behalf of their Defence Ministries. DIO was created in 2011 to centrally manage the MoD's RP. Much like in Canada, the UK had challenges with RP management with a crumbling, unaffordable and poorly managed portfolio. During the rollout of DIO it was declared that "[DIO] will deliver better strategic management of the military estate as well as savings of £1.2bn over the first four years alone."[39] Both organizations have the pressure on to deliver RP management while attempting to find cost savings.

The UK RP centralization occurred on 1 April 2011, exactly 5 years ahead of ADM(IE) in Canada. There are three lessons DIO is sharing following the UK's

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[38] *Ibid.*

[39] "New Ministry of Defence Infrastructure Organisation Created." New Civil Engineer (17 February, 2011). https://search-proquest-com.cfc.idm.oclc.org/docview/852681520?accountid=9867.

infrastructure centralization from which ADM(IE) can benefit even today as

transformation is re-evaluated for improvement:

    1. Build a strong team and take risks with who to include
    2. Focus on the value added, the overall goal, not just short-term objectives
    3. Be agile - goals and expectations will inevitably change[40]

Each of these three lessons if applied correctly can have a significant impact and help to

improve ADM(IE)'s overall efficiency. The first recommendation directly relates to some

of the ideas proposed in the section on governance. Part of building a strong team is

ensuring it is joint and diverse so as to increase the output of innovation and diversity of

thought.

In 2012 DIO awarded a BI contract to IBM to use their Smarter Buildings

software and consultancy services to help to reduce building operating costs and optimize

their existing infrastructure.[41] Since contract implementation DIO has been able to use

the data for estate management on their Infrastructure Management System (IMS),

however as stated in an overview of the MoD "progress is needed to further improve the

data to enable it to be used to better manage the Defence estate."[42] ADM(IE) would

benefit from leveraging DIO's experiences and gain their perspectives on this BI tool to

determine what lessons can be learned from their experiences with BI, similar to

centralization.

AN OPPORTUNITY TO PRACTICE EFFICIENCY

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[40] "How to Deliver Complex Transformation - Three Lessons from the UK's Defence Infrastructure Organisation," PA Consulting, accessed April 5, 2020, https://www.paconsulting.com/insights/how-to-deliver-complex-transformation-three-lessons-from-the-uks-defence-infrastructure-organisation2/.

[41] "Technology to Create Smarter, Greener Buildings," CTB10, November 28, 2012, www-03.ibm.com/press/us/en/pressrelease/39549.wss.

[42] National Audit Office, "A Short Guide to the Ministry of Defence". July 2015, https://www.nao.org.uk/wp-content/uploads/2015/08/A-Short-Guide-to-the-Ministry-of-Defence1.pdf 19.

There are always new opportunities to practice balancing resources with shifting priorities while incorporating adaptive approaches. An example of how these combined initiatives can be applied is towards a new government target which is quickly approaching. In 2017, the Canadian Government introduced new carbon neutral targets through the Greening Government Strategy (GGS). In response to climate change, the GGS aims: to "reduce greenhouse gas (GHG) emissions to the atmosphere and increase the resiliency of assets, services, and operations to adapt to the changing climate."[43] In this strategy, "the government commits to low carbon, sustainable, and climate resilient real property."[44] Additionally, no later than in 2022, all new federal buildings should be constructed to be carbon neutral.[45] There is a whole host of other commitments with targets that the government has made in relation to GGS that will affect how ADM(IE) delivers RP. Adapting and incorporating this new way of doing business will also take a great deal of analysis to determine what exactly the impacts are on ADM(IE) and how it meets its mandate.

While these government initiatives are fantastic for the environment, this is not business as usual. There is an associated resource tail to the GGS both in personnel and infrastructure funding. Until carbon neutral infrastructure becomes the new normal, contractors will capitalize on the government's commitments to greener infrastructure. The GGS initiatives will need ADM(IE) to have robust governance or leadership to guide this change, to rely heavily on data analytics and possibly BI to know where

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[43] Treasury Board of Canada Secretariat, "Greening Government Strategy," aem, December 19, 2017, https://www.canada.ca/en/treasury-board-secretariat/services/innovation/greening-government/strategy.html.

[44] *Ibid.*

[45] *Ibid.*

improvements can be made, and to rely heavily on industry to develop innovative solutions.

Another opportunity for ADM(IE) to try a different approach to be more efficient relates to a specific case of resource management and the recognition of how "green" a newly constructed building is. In 2019, the House of Commons recommended that a Leadership in Energy Efficiency and Design (LEED) standard of Gold or Platinum policy be implemented for retrofits of its buildings.[46] This is in addition to the government's desire for all new federal buildings to be LEED certified. While LEED is an excellent program and drives changes in building standards and practices which benefit the environment, and the certification itself is a credible way of recognizing green building achievements, it is extremely costly.[47] Instead of obtaining Gold or Platinum certifications and being constrained by the standards that must be adhered to, ADM(IE) could follow the intent behind the standard and construct infrastructure to the same standards without following through with the certification and obtaining the official status. If correctly written into the contract specifications, the projects and buildings can benefit from all the significant good that LEED offers without the costly certification process and the gaming of the point allocation system to obtain the various tiered levels.[48] This way the spirit behind greener infrastructure can be maintained without the

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[46] Canada, House of Commons, Tom Lukiwski, "AN EVEN GREENER GOVERNMENT: IMPROVING THE GREENING GOVERNMENT STRATEGY TO MAXIMIZE ITS IMPACT," June 2019, https://www.ourcommons.ca/Content/Committee/421/OGGO/Reports/RP10579319/oggorp18/oggorp18-e.pdf. 17.

[47] Tina Louise Basso, "An Investigation into Sustainable Building Evaluation Strategies for Use within the Canadian Forces and the Department of National Defence" (M.S., Canada, Queen's University (Canada), 2012), http://search.proquest.com/docview/1511439311/abstract/C238D2D439A94883PQ/1. 50.

[48] "LEED-Certified Buildings Are Often Less Energy-Efficient Than Uncertified Ones," accessed May 5, 2020, https://www.forbes.com/sites/realspin/2014/04/30/leed-certified-buildings-are-often-less-energy-efficient-than-uncertified-ones/#68e8e17b2554.

significant costs for LEED certification. The goal should be about energy efficiency, not certification.

As new certification systems (like LEEDs), rating systems and targets are designed in concert with innovative facility engineering, ADM(IE) should be awarded the flexibility to meet visions and intents behind strategies and policies without being concerned about "green status" and held to specific standards. By constraining ADM(IE), valuable resources and efficiency are lost without actual gain.

Ultimately, innovation from within industry will be the enabler so that the Canadian Government can be a global leader in low-carbon, resilient and green government operations. However, it is ADM(IE) who will face and deliver the GGS initiatives for RP.

CONCLUSION

ADM(IE) is still experiencing transformation and will continue to do so for quite some time. ADM(IE) needs to take the steps to be more efficient if they hope to be more effective. Ultimately, they must be properly governed and resourced to do the job with which they are charged in a complex and ever-changing environment. It is paramount that the proper time and sustained attention be dedicated to each of these elements to consider how behaviours and attitudes will change along with the organization and to overall manage the delicate balance between needs. The demand for output is so high, ADM(IE) risks being a slave to only react to problems rather than deliberately planning, thinking and analyzing with a critical mind. Some changes cannot be rushed but neither is there the luxury of time to contemplate every 'what if?' scenario. Some risk must be assumed in order to make the changes needed to better the governance for ADM(IE). The CAR is

centered on resourcing and governance of the corporate accounts so it is the correct forward step towards conscious improvement, however it does not encompass the entirety of ADM(IE). A holistic view of interconnections and analysis is required for any substantial improvements.

While many of the ideas in this paper are just opinion. Key to moving forward is real action. The CAR review and its subsequent phases are an enabler to make some of the necessary changes; as long as the work receives the necessary dedication, analysis and time and is supported by leadership, there is hope for improvement. The shortfall is that this review does not take in a holistic view of ADM(IE). The risk is that improvement is not enough to catch up, adapt to new policies and eventually improve the status of the portfolio. Subsequent reviews with a wider view followed by action may hold the answers that ADM(IE) needs to succeed.

With time, ADM(IE) will evolve, critical to this evolution is: improved governance, the use of data analytics and BI, innovation and shared experience from industry and allies. With these accomplishments, the quality of DND's infrastructure portfolio will increase, become more resilient and some financial resources may be saved along the way, eventually. Only by revolutionizing the current ways of doing business and embracing innovative methodologies from industry and allies will ADM(IE) begin to improve the management of the DND portfolio and ultimately, become efficiently effective.

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