SUSTAINABLE DEVELOPMENT

Link between United Nations Sustainable Development Goals and CSA S503:20 Community Drainage System Planning, Design, and Maintenance in Northern Communities – Public Corporations Perspective

Enabling Sustainable Development through Standards





United Nations Sustainable Development Goals Addressed:

SDG 6 – Clean Water and Sanitation,
SDG 9 – Industry, Innovation and Infrastructure

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Summary

CSA Group is a leader in standard development, research, education, and advocacy with the goal of enhancing the lives of Canadians through the advancement of standards in the public and private sectors. CSA Group has developed the CSA S503:20 *Community Drainage System Planning, Design, and Maintenance in Northern Communities* standard to assist in both water and infrastructure development and operation and maintenance in Northern communities. Due to the geographic location challenges, limited resources, and limited funding prevalent within Northern communities, this standard directly concerns community developers, consulting firms, engineers, and community stakeholders. In light of the 2030 Agenda for Sustainable Development, and the United Nations Sustainable Development Goals (UN SDGs), the objective of this study is to assess the link between the CSAS503:20 standard and the UN SDGs and their targets. For the purpose of this report, the perspectives from the viewpoint of users of the standard will be analyzed in further detail.



1 Introduction

The CSA S503:20 standard specifies the minimum planning, design, and maintenance requirements for community drainage systems in Canada's Northern communities. The standard aims to increase the knowledge of communities and individuals so they can prepare and implement effective community drainage plans. These plans address both existing and anticipated drainage management challenges arising from deficiencies in past practices, as well as the need to adapt to future changes in the climate.

Drainage systems in small, remote Northern communities have historically been poorly developed and managed. This standard was developed in order to:

a) Specify techniques to plan for and implement community drainage systems to account for the effects of a changing climate and permafrost regime;

b) Describe practices for site and community planning that help to maintain the service life of community infrastructure, as well as the natural landscape processes through avoidance, mitigation, and drainage system management practices;

c) Provide low-cost, practical solutions that can be adapted and implemented given local constraints on capacity and resources;

d) Help Northern communities protect community assets; and

e) Promote public health and safety in Northern communities.

Through a robust mapping process, connections to the following UN SDGs have been identified:



SDG 6 – ensure availability and sustainable management of water and sanitation for all.



SDG 9 – build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.



SDG 11 – make cities and human settlements inclusive, safe, resilient, and sustainable.



SDG 12 – ensure sustainable consumption and production patterns.



SDG 13 – take urgent action to combat climate change and its impacts.

This study focuses on two of the SDGs that are most strongly supported by the standard: SDG 6 and SDG 9.

2 Results and Impact

For this study, interview questions were tailored and informed by a general understanding of the standard and the SDGs prior to the interview phase, in order to explore how the standard relates to both SDG 6 and SDG 9. During this phase, several interviews were conducted with local users and industry experts of the standard to discuss perspectives related to specific organizations and communities.

The study summarizes the experiences of two water management engineering consulting firms which use the standard. Both firms have a strong relationship to sustainability policies and practices within their organizations. Both companies release sustainability reports and have internal sets of metrics for sustainability-related initiatives. These include reports of carbon emissions, occupational health and safety documents, diversity targets, recycling of products, and so on. Both companies have background experience with CSA S503:20 and have been implementing the standard in their practice for over five years[1]. Although interview participants had little knowledge about the SDGs, they understood the impact of their actions on sustainability in a general sense.

2.1 SDG 6 – Clean Water and Sanitation

The participants agreed that CSA S503:20 had a direct relation to SDG 6. l. Target 6.b.1 states, *"Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management".* This target and goal directly relate to CSA S503:20, as the standard provides requirements and recommendations along with checklists to support local communities in the operation and maintenance of their local drainage systems. The CSA S503:20 is currently mandated for use in Nunavut, and recommended for use elsewhere through Northern Canada. All interview participants stated that their respective companies and contractors were implementing and using the standard voluntarily for compliance to municipal requirements. In addition, they were using the standard specifically for the sustainable implementation of drainage systems, which is in alignment with and supports SDG target 6.b.1.



2.2 SDG 9 – Industry, Innovation and Infrastructure

CSA S503:20 was also linked to SDG 9. An interview participant advocated for the dynamic nature of the standard and its linkage to supporting innovation by identifying and incorporating new materials and equipment. For example, in the latest edition (published 2020), the standard was updated to include the implementation of more durable pipes and the armoring of the ends of pipes that typically become damaged. Such updates help address sustainability needs by increasing cost efficiency, reducing fuel emissions, and reducing land degradation due to a lengthier pipe service life. Another example of improved infrastructure and fostering innovation that arose during the revision process of the standard was the discussion surrounding snow storage areas in Northern communities. Snow piles were repeatedly being placed in close proximity to community homes and roads. In the spring, with warming temperatures, this snow would melt and overwhelm the drainage system in the community. Therefore, the discussion and standard recommendations for the location of these snow storage areas was an important provision supporting a resilient infrastructure within CSA S503:20. These standard provisions are evidence of the relationship between CSA S503:20 and SDG 9, and are in alignment with SDG target 9.4, *"By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities".*

[1] CSA S503 was first published in 2015.



3 Discussion

In the context of Northern communities, sustainability is hard to implement given severe weather conditions, accessibility challenges, funding shortfalls, proper maintenance activities being undertaken, and advocacy challenges. Simply due to the predominantly cold nature of Northern communities, habits such as idling vehicles is not a convenience but a necessity in order to keep a vehicle warm and operational and ready to drive on short notice. With the extreme weather conditions, it is very difficult to transport resources and materials to Northern communities, particularly those on the fringes of the Arctic bodies of water. Large-scale projects such as drainage system implementation in Northern communities are dependent on cargo ships to supply construction material. Such ships only have two distinct seasonal times each year in which they can access and distribute needed materials. This lack of transportation flexibility as well as the temporary relocation of workforce labour corresponding to when material becomes available leads to high capital costs for projects of any size.

All interview participants mentioned the need for more metrics and policies for sustainability from a governmental standpoint. From an internal organizational perspective, participants mentioned that many firms within their industry have their own initiatives and sustainable practices. Many of these firms originate from jurisdictions outside of Northern Canada that are more advanced and progressive in their regulations and so they have adopted those sustainable practices within their own organizations. Participants emphasized that more needs to be done by regulatory authorities to try and increase environmental protection and mandate change in the delicate ecosystem of the Northern communities. Despite having a strong focus on sustainability and climate action, Northern Canada is faced with challenges such as a lack of both resource availability and funding. Underground drainage systems are not prevalent in Northern Canada because of the geographical location and because of the mapping infrastructure, data, and technology needed for their sustainable implementation. From a business perspective, if there is no direct economic incentive for organizations to implement sustainability initiatives and practices, then the sustainability measures are usually not implemented correctly. Additionally, some of the impacts are so diffuse or separated from the people doing the work that they would never see any of the negative externalities that could result from their work. A call for action should take the form of more guidance and instruction from regulatory bodies.

3.1 Standard's Life Cycle

To address the continuously changing dynamic of sustainability, a review of CSA S503:20 is conducted every five years. As CSA S503:20 is a flexible document, five-year reviews are essential to ensure all stakeholders' voices are heard and that proper measures are taken to update or reaffirm the standard. The latest version was published in 2020. An interview participant mentioned that the five-year time length is appropriate, and added that making it longer would not capture the changing nature of sustainability. Additionally, making the time frame shorter than five years would not allow enough time to both use the current version and develop any necessary updates.

4 Conclusions and Next Steps

Overall, trends in sustainability have improved in the participants' respective industries. However, some companies continue to operate in a non-sustainable "traditional" way of business with minimal to no repercussions (both socially and economically). Interview participants expressed the position that sustainability and financial availability are closely correlated. Depending on the size of the company, sustainability initiatives are implemented after financial stability has been solidified.

Discussion surrounding the types of sustainable initiatives is very dependent on the external environment. The SDGs are a very broad set of goals that encompass a diverse range of issues pertaining to social, economic, political, and technological disparities. In locations such as communities in Northern Canada, some sustainability issues are more prevalent than others. Due to the scarcity of population centres and consequently resources, only a limited number of sustainability-related goals appear to be applicable in these communities. An interview participant referred to the current policies in place as a "patchwork across geographies" and mentioned that some small firms do a very good job of adapting to clients and jurisdictional requirements, however many small firms do not have the funding to do the same. Many rural locations do not have the requirements for sustainability initiatives nor the money to implement them. Implementing CSA S503:20 is one way to help embed sustainability in Northern communities while supporting SDG 6 and SDG 9.



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